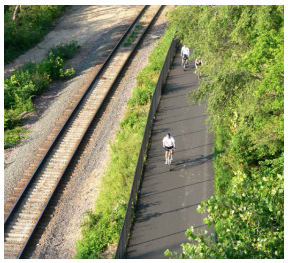
Louisville Loop

# DESIGN GUIDELINES

## A Guide to Designing and Implementing Louisville's 100-mile Loop



December 2009

Jerry E. Abramson, Mayor
Louisville Metro Council

HNTB alta PLANNING + DESIGN

# Table of Contents


- Acknowledgements ..... ii
- SECTION 1 - Introduction (Purpose, Design Policies, & Design Inspiration) ..... 1-1
- SECTION 2 - Definitions of Terms and Quick Users Guide to Design Standards Manual ..... 2-1
- SECTION 3 - Regulatory Standards ..... 3-1
- SECTION 4 - Loop Branding Standards ..... 4-1
- SECTION 5 - Reference Guide ..... 5-1
- SECTION 6 - Beyond the Loop ..... 6-1
- Appendix ..... A-1

# Acknowledgements

The Louisville Loop Design Guidelines is a testimony to the vision, dedication and direction provided by the community and its various organizations and individuals. The result is the emergence of a bold plan...guided by community conscience and indicative of the community's ideals and principles. Several individuals and groups have had a significant influence directing the development of these design guidelines, and their vision created for the Louisville Loop is a testimony to their commitment and participation.

LOUISVILLE METRO

LOUISVILLE METRO COUNCIL

LOUISVILLE METRO PARKS

LOUISVILLE METRO PUBLIC WORKS

LOUISVILLE METRO PLANNING

LOUISVILLE METRO SAFETY

LOUISVILLE METRO POLICE DEPARTMENT

LOUISVILLE METRO FIRE DEPARTMENT

TARC

KYTC

MSD

MACOPA

ANCHORAGE PUBLIC WORKS

PROSPECT CITY ENGINEERING

DESIGN TEAM:

HNTB Corporation
in association with ALTA Planning + Design

SECTION 1

# Introduction

In the late 1800's Frederick Law Olmsted was engaged to create a bold vision for parks, parkways, and open space in Louisville. Majestic flagship parks such as Cherokee Park, Iroquois Park, and Shawnee Park, and their connecting Parkways are the result of that effort. Today, whether walking along Southern Parkway or attending a family reunion in Shawnee Park, the community has a lasting and identifiable legacy of that earlier vision.

Olmsted understood the need to create healthy environments and facilities such as parks and parkways that could contribute to making cities safer and healthier places for all people. His designs for Louisville demonstrate his commitment for designing spaces that were accessible to many different people and for many different activities. His designs for Louisville's parkways included facilities for all levels of users---pedestrians, bicycles, and carriages. And each person, regardless of wealth, social status, or age could use the parkways for transportation, exercise or pleasure. The early goals for the Olmsted parks and parkways are not all that different than the overarching goal the City has established for the Louisville Loop: providing safe, efficient, and pleasing facilities that accommodate all levels of users and creates a more connected community.

While portions of Olmsted's idea have evolved over the years, there are still consistent visual cues in the environment that help users to identify that they are in the "Olmsted system" --- visual connections that link the parts of the system and create a "unified whole."

In 2005, Louisville Mayor Jerry Abramson, Louisville Metro Parks, and 21st Century Parks unveiled the *City of Parks Initiative*, a multi-million dollar, multi-year initiative to add thousands of acres of park land and protected green space to Louisville Metro. Like the Olmsted vision a century earlier, this bold vision outlined the next generation of park and open space beyond the Olmsted ring and into areas of Louisville Metro that are under served by parks and open space. Key to this vision is the development of the Louisville Loop Trail, an estimated 100-mile loop trail system that will ring the City and link existing and new parks and neighborhoods to civic attractions, transportation alternatives, and recreation opportunities.

This effort builds upon the groundwork laid by Olmsted over a century ago, and will complete Louisville's transformation into a City of Parks.

The City of Parks initiative is a major component of Louisville Metro's overall program to make the City a healthier, more livable, and more sustainable community with a high quality of life for its residents. The City's Healthy Hometown Movement defines the

goal to “create a community wide culture that encourages and supports healthy lifestyles by promoting increased physical activity, better nutrition, healthy public policy and access to needed resources.” It is intended to “unite diverse community partners from business, schools, government, academia, neighborhood groups and non-profit organizations to coordinate activities that will increase physical activity and healthy eating to improve the health status of Louisville Metro residents.”

Other community initiatives such as *Active Louisville* and *Bike Louisville* also seek to encourage residents to be more active and take advantage of the community’s resources to create more healthy lifestyles. The City’s *Go Green Louisville* program encourages resident to practice more sustainable practices in the community, further contributing to creating a more livable and healthy community. These are just a few of the many community initiatives in Louisville Metro, but, like the City of Parks Initiative and the Louisville Loop, they all strive towards a singular goal: making Louisville a healthy and safe community. The Louisville Loop will play a key role in achieving this goal. Through careful design and systematic treatment of both multi-use and soft surface trails, the Loop will provide a safe and accessible environment that encourages all levels of users to engage in a more active lifestyle. It is envisioned as a catalyst that continues to build upon the high quality of life in Louisville, promoting alternative transportation and establishing a strong community connection to the arts and culture.

Like Olmsted’s earlier work, the Louisville Loop will also pass through a varying cross-section of neighborhoods, physiographic regions, cultural amenities, and land uses on its 100-mile route. It will connect to communities and facilities that differ in character and aesthetic. These design standards are intended to provide that unifying character---the lasting identifiable legacy---of the City of Parks Initiative and the 100-mile Louisville Loop.

Louisville has a rich and diverse culture with a dynamic and evolving set of unique characteristics and qualities. The purpose of the design standards is to both celebrate the uniqueness of the different areas through which the trail passes and to find a way to provide the visual cues that provide a consistent user experience throughout the entire system. The design standards are intended to provide the regulatory guidelines for development of the Loop and a unifying character to the system regardless of the location of the trail.

***Louisville Loop is to construct a 100-mile (approximately) shared use path system around Louisville that will:***

- ***Improve mobility for non-motorized travel for pedestrians, bicyclists, transit users and equestrians.***
- ***Connect neighborhoods, schools, parks, workplaces and shopping areas to the Loop where possible***
- ***Encourage a wide range of users including families, children, people with disabilities, and athletes to improve their health and fitness***
- ***Celebrate the natural and cultural history of Louisville***
- ***Enrich our lives with public art***
- ***Serve as a catalyst for economic development by increasing property values near the Loop, encouraging tourism and providing amenities for neighborhoods and workplaces near the trail.***

PHOTO: Louisville Metro Parks

## Purpose

These standards describe, both graphically and in text, the intended standard to which the entire 100-mile loop is to be constructed. They are meant to ensure that the trail functions as one cohesive system, regardless of when segments are constructed. The standards are respectful of the unique identity of individual trail segments such as the Levee Trail, Floyd's Fork Greenway and Riverwalk. These standards are based on current state and national documents including the AASHTO Guide for Development of Bicycle Facilities, (AASHTO, 1999), the Manual for Uniform Traffic Control Devices (MUTCD) and the Kentucky Transportation Cabinet's Highway Design Manual (Exhibit 1500-01). The Louisville Loop Trail guidelines use these documents as a baseline for minimum conditions, and are intended to facilitate creative solutions to a wide range of bicycle facility types. It is recognized that when facilities are maintained by the Kentucky Transportation Cabinet, the State's design guidelines will apply, and that Louisville has the potential to exceed these minimum guidelines where conditions warrant on facilities within their jurisdiction.

The following are key principles for these guidelines:

- ***Shared-use Paths and On-Street Bikeways:*** Louisville will have both a complete network of shared-use paths and a complete network of on-street bicycling facilities. These two systems will be interconnected to make it possible for all destinations in Louisville to be accessible by bicycle.

- ***Bicycling is "Street Legal":*** All roads in Louisville are legal for the use of bicyclists, (except those roads designated as limited access arterial or freeway facilities which prohibit bicyclists). Bicyclists generally are not allowed to ride on the sidewalk, except for young children and seniors. This means that most streets are bicycle facilities, and will be planned, designed and maintained accordingly. A "Complete Streets" policy approach will guide infrastructure development by ensuring the bicycle facilities are integrated in the community's infrastructure.

- ***Design for All Bicyclists:*** Bicyclists have a range of skill levels, from "Type B/C" inexperienced / recreational bicyclists (especially children and seniors) to "Type A" experienced cyclists (adults who are capable of sharing the road with motor vehicles). These groups are not always exclusive – some elite level athletes still like to ride on shared-use paths with their families, and some recreational bicyclists will sometimes use their bicycles for utilitarian travel.

- ***Baseline Accommodations:*** At a minimum, facilities will be designed for pedestrians, all levels of bicyclists, and other non-motorized uses such as equestrians. While some specific portions of the Loop may not be able to accomodate all users, the intent is that all efforts will be made to accomodate all users throughout the Louisville Loop.

- ***Flexibility:*** Design guidelines are intended to be flexible and can be applied with professional judgment by designers. Specific national and state guidelines are identified in this document, as well as design treatments that may exceed these guidelines.

Finally, these design guidelines are intended to provide:

- Regulatory guidelines to ensure that the trail meets safety requirements for all users, and to ensure that the design allows the trail to meet stringent funding requirements
- Aesthetic/Branding standards to establish a consistent and unified character throughout the system.

PHOTO: Louisville Metro Parks

# Policy Statements

PHOTO: HNTB

PHOTO: Louisville Metro Parks

PHOTO: Louisville Metro Parks

PHOTO: HNTB

## Policy Statements

The following policies were established to direct the development of the design standards and to outline the goals to be achieved through the development of the Louisville Loop. These policies form the cornerstone upon which these design standards are based and will serve as the foundation for all future construction of Louisville Loop segments.

***The Louisville Loop shall provide a safe and healthy environment for all users.***
The Loop's bicycle and pedestrian facilities may vary, but will strive to meet the needs of all users at all levels. Facility types will vary depending on the context.

***The Louisville Loop is part of the City's larger integrated infrastructure system, providing linked, connected opportunities for a system of alternative transportation and recreation facilities.***
The Loop will support transportation use as well as recreation use. Policies regarding operating times, lighting, maps, access to bus routes and other transportation systems will be coordinated through the appropriate Louisville Metro regulatory agencies.

***The Louisville Loop shall provide connections to existing trails and parkways as well as future trails.***
The Loop will connect to current and future trail and pathway projects in Louisville Metro in order to further expand the non-motorized transportation network.

***The Louisville Loop shall be a venue for temporary and permanent public art as part of its aesthetic environs.***
The Loop will support installations of art, small and large, in coordination with the Mayor's Advisory Committee on Public Art. Specific elements will be developed as pieces of art in conjunction with commitment to public art.

***The Louisville Loop shall demonstrate principles of sustainability and environmental stewardship.***
Materials and site design shall be selected to reflect principles of sustainability and environmental stewardship. If passing through a sensitive environment, no or low impact shall be made and the site shall be highlighted for educational value.

***The Louisville Loop shall balance high-quality design with cost-effective maintenance.***
Neither design nor maintenance will be compromised without agreement between the two objectives.

***The Louisville Loop shall have an identity that is exclusive to the City of Parks Initiative while allowing variations in distinct segments.***
The Loop will include special features, furnishings, amenities, etc. that will brand the Loop as a system.

***The Louisville Loop shall celebrate, educate and highlight the uniqueness of the communities, the people, the history, the geology, and the environment.***
Variations of the Loop, due to the uniqueness of the environment, will emphasize the differences while maintaining the overall identity of the system.

***The Louisville Loop shall be a catalyst for economic development throughout the City.***
Various economic impacts will be created by the construction and use of the Louisville Loop.

PHOTO: Louisville Metro Parks

PHOTO: HNTB

PHOTO: Louisville Metro Parks

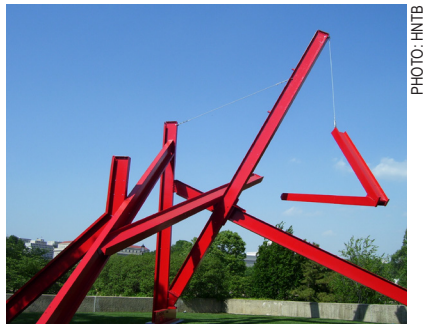


PHOTO: HNTB

# Design Inspiration & Intent

## Design Inspiration

Overall, the guidelines are intended to provide the look and character that sets the Louisville Loop apart from other trail systems, creating a world-class trail system. The standards also recognize that maintenance and affordability are critical issues for the overall development of the system. These standards seek to strike a balance that achieves the desired character while being conscious of the maintenance and costs of the trail and its amenities.

### Design Intent #1: Unique & Unifying Character

The Louisville Loop will have a distinct character---one that belongs only to the Loop and not to any other trail or pedestrian facility within the community. As such, the materials and amenities associated with the Loop will help to achieve a unifying character and give the overall Loop a "brand image." While portions of these standards, such as the trail, trailhead, and other infrastructure may be used as the design standard for trails throughout the community, the use of specific branding amenities should be used solely on sections of the designated Loop.

A second unifying item for the Loop will be its use of Louisville's five physiographic regions as a materials, interpretive, and educational component used throughout the Louisville Loop. Material representations of the regions will be used as key design elements. In addition, the trail has the opportunity to function as a walking story board, explaining the different regions as the trail passes from one region to the next, or as specific geological features are crossed.

### Design Intent #2: Affordability and Maintenance

While communities grapple with the demands of building new paths, administrators and park departments struggle with installation and maintenance costs. Recognizing these types of budgetary issues, the design solutions must focus on minimizing excess fabrication and construction costs and address the issues of continual maintenance of trail amenities and longer-term life-cycle costs. These standards seek to give the trail a unique character while minimizing custom work and focusing those expenditures on very specific portions of the Loop. Where possible, sustainable solutions and green infrastructure options are also incorporated.

## Design Intent #3: World Class Identity

The third objective of the design is to create a world-class identity for the Louisville Loop. The Loop is the ***Monument to Merger***---a physical legacy that demonstrates the positive community impact of combining civic resources and bringing the community together. There are several initiatives that go into creating the features that Louisville wants the Loop to be known for:

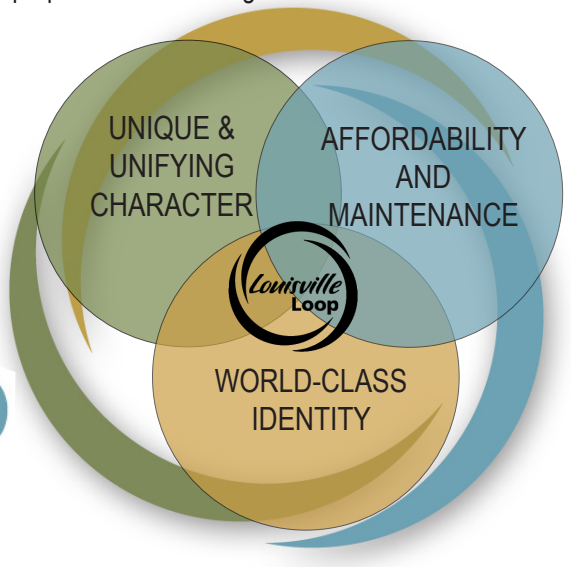
- The creation of a sequential educational and interpretive component highlighting cultural and natural resources including physiography unique to Louisville;
- The inclusion of art as an integrated part of the design that adds educational, recreational and aesthetic value to the trail;
- The marketing of this unique City of Parks Initiative and the 100-mile Louisville Loop
- The development of a unique set of easily-recognizable identifying amenities that become the image of the Louisville Loop.

When these things are accomplished, the Louisville Loop will be like no other trail system in the world---it will have transcended recreation and transportation and will truly have become a world-class facility.

## The Outcome

All three of the design objectives must be met to truly achieve the objectives of this plan and its success is rooted in where the three objectives come together. In finding a balance between these three objectives, the unique character of the Loop will emerge. That is the purpose of these design standards.

Louisville Loop



SECTION 2

# Definitions

There has been a resurgence of creating walkable communities with a high quality of life---communities that are bicycle and pedestrian-friendly with facilities and infrastructure that support an active lifestyle. One community's *multi-use trail* is another community's *shared-use path*, and is a *bike trail* in a third community. Even different agency standards vary in their use these terms, often using them interchangeably, although even the slightest variation in terminology could have significant unintended impacts.

With so many terms and different types of pedestrian and bicycle amenities, it is important that communities speak the same language---that there is a fundamental understanding and agreement---which allows interagency collaboration. The *Louisville Loop Design Standards Manual* is intended to set the standards for the development of the entire Louisville Loop trail system. As such, a common vernacular is used throughout this manual in describing the trail, its components, and amenities associated with the Louisville Loop. To ensure a shared understanding of the standards and their implications, a list of terms and their usage have been developed. This list of terms and their definitions are intended to reduce confusion and create uniformity throughout the system. Many of the terms below are described more fully in a design standard elsewhere in this manual. Finally, a "How to use this document" reference is provided as a guide to understand the intent of design standards application and how the guidelines are organized.

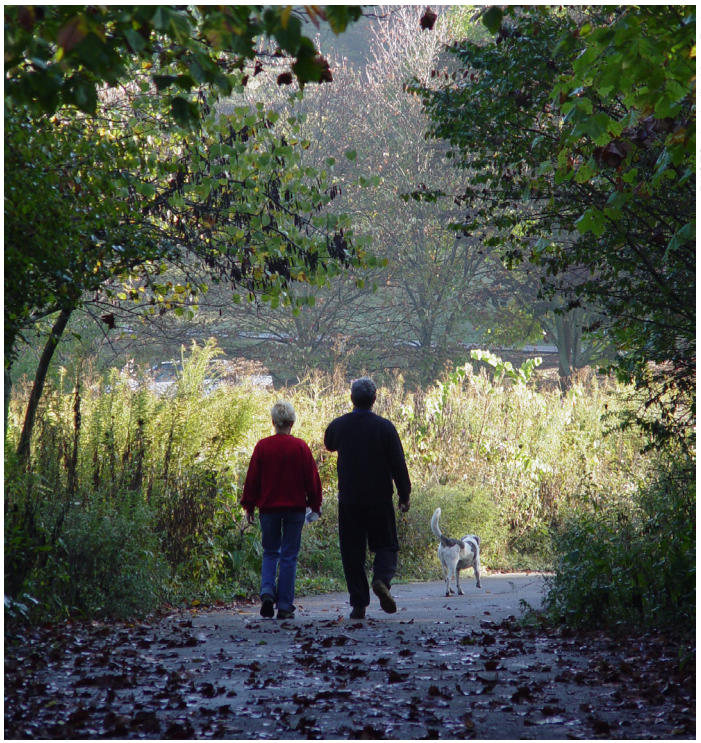


PHOTO: Louisville Metro Parks

# Definition of Terms

**Access:** The opportunity to approach, enter, or make use of public lands or rights-of-way.

**Access Points:** Designated areas and passageways that allow the public to reach a trail from adjacent streets or community facilities.

**Access Trail:** Any trail that connects the main trail to a town, road, or another trail system.

**Accessible:** A term used to describe a site, building, facility, or trail that complies with the Americans with Disabilities Act (ADA) Accessibility Guidelines and can be approached, entered, and used by people with disabilities.

**Accessible Route:** A continuous, unobstructed path connecting all accessible elements and spaces of a facility or building that meets the requirements of ADAAG.

**Adverse Visual Impact:** Any modification in land forms, water bodies, or vegetation, or any introduction of structures, which negatively interrupts the visual character of the landscape and disrupts the harmony of the basic elements (i.e., form, line, color, and texture).

**Alignment:** The layout of the trail in horizontal and vertical planes. The bends, curves, and ups and downs of the trail. The more the alignment varies, the more challenging the trail.

**Amenities:** Any element used to enhance the user's experience and comfort along a trail.

**Americans with Disabilities Act of 1990 (ADA):** A federal law prohibiting discrimination against people with disabilities. Requires public entities and public accommodations to provide accessible accommodations for people with disabilities.

**Americans with Disabilities Act Accessibility Guidelines (ADAAG):** Design guidelines for providing access to a range of indoor and outdoor settings by people with disabilities.

**At-Grade Crossing:** A trail crossing a roadway on the same elevation. Ideally, a safe at-grade crossing has either light automobile traffic or a traffic signal that can be activated by trail users.

**Attractive Nuisance:** Something on a trail or greenway that attracts users and that is potentially dangerous to them, such as a mineshaft without a fence around it.

**Barrier:** A structure installed to protect an environmentally sensitive area. A barrier can be hard (fence); live (planted); a combination of hard and live; or a terrain feature (berm). A barrier can be physical (obstructing passage) or psychological (deterring access).

**Barrier-Free Design:** A trail design that promotes the elimination of physical barriers that reduce access by people with disabilities.

**Base Course:** The layer or layers of specified material of designed thickness placed on a trailbed to support surfacing.

**Berm:** The ridge of material formed on the outer edge of the trail that projects higher than the center of the trail tread. When improperly designed or unintentionally caused by tread compaction and soil displacement during trail use, a berm can trap water on the trail and lead to erosion.

**Best Management Practices (BMPs):** A suite of techniques that guide, or may be applied to, management actions to aid in achieving desired outcomes. Best management practices are often developed in conjunction with land use plans, but they are not considered a land use plan decision unless the land use plan specifies that they are mandatory. They may be updated or modified without a plan amendment if they are not mandatory.

**Bicyclist:** A user of a bicycle from advanced rider to novice or recreational user.

**Bicycle Boulevard:** A local/neighborhood street is modified, by way of traffic calming, to function as a through street for bicycles while maintaining local access for automobiles. Bicycle boulevards are intended to provide an advantage for bicycles over motor vehicles, introducing low speed traffic conditions, and significantly improve bicycle and pedestrian environment.

**Bicycle Friendly Area(s):** An area that provides compatible and safe streets for bicyclists. These areas are designated with a comprehensive sign program that alerts motorists or shared bicycle use along roadways. Bike lanes may or may not be used in BFAs depending on site constraints. Typically, BFAs are used in residential neighborhoods, although these areas could be used in any type of development where designated bike lanes are not required, but motorists should be aware of bicyclists using the roadways.

**Biodegradable:** Able to decompose when exposed to biological agents and soil chemicals.

**Bicycle Lane:** A portion of the roadway that has been designated by stripping, signing and pavement marking (bicycle stencil and directional arrow) for the preferential or exclusive use of bicyclists. This facility is typically used by experienced bicyclists.

**Bicycle Path:** A pathway designated for bicycle use, often a multi-use trail separated from other sidewalks and streets. For purposes of the Louisville Loop, bike paths are considered shared-use paths.

**Bicycle Route:** A designated location, either on or off street, that is identified and designated as a route for bicycle traffic.

**Biodiversity:** The variety and variability within and among living populations and species of organisms and the ecosystems in which they occur.

**Bollard:** A barrier post, usually 30 to 42 inches in height, used to block vehicular traffic at trail access points. Should be installed in odd numbers (one or three). Also an electric light post found alongside trails.

**Brownfield(s):** Abandoned, idled, or under-used commercial, industrial, or institutional properties, where investment for redevelopment or reuse is discouraged by the presence of light to moderate contamination from hazardous substances.

**Buffer (Buffer Zone):** Any type of natural or constructed barrier (trees, shrubs, or wooden fences) used between the trail and adjacent lands to minimize impacts (physical or visual). Buffers also provide a transition between adjacent land uses.

**Categorical Exclusion (CE):** A technical exclusion for federal projects that do not result in significant environmental impacts. Such projects are not required to prepare environmental reviews. (NEPA process.)

**Clear Height (Vertical Clearance):** The vertical dimension, which must be cleared of all tree branches and other obstructions that would otherwise obstruct movement along the trail.

# Definition of Terms

**Clear Zone:** The area over and beside a trail that is cleared of trees, limbs, and other obstructions.

**Cross Section (Typical Cross Section or Typical, Profile):** Diagrammatic presentation of a trail or path profile, which is at right angles to the centerline at a given location.

**Crossing, Grade-Separated:** Overpasses or tunnels that allow trail users to cross a railroad right-of-way or street at a different level than trains or traffic.

**Crosswalk (Crossing):** Any portion of a roadway distinctly indicated for pedestrian crossing by lines or other markings on the surface.

**Cultural Resource(s):** The physical remains of human activity (such as artifacts, ruins, burial mounds, petroglyphs, etc.) having scientific, prehistoric, or social values.

**Curb:** A wood, concrete, or stone component (2 to 8 inches high) built along the edge of a trail or street to form part of a gutter.

**Curb Cut:** A cut in the curb where a trail crosses a street. The curb cut should be the same width as the trail.

**Curvilinear:** A free-flowing trail layout pattern characterized by the general absence of straight trail segments allowing for ease of trail user movement.

**Designated Route (Roads and Trails):** Specific roads and trails identified by the agencies where some type of use (motorized or nonmotorized) is appropriate and allowed either seasonally or yearlong and which have been inventoried and mapped and are appropriately signed on the ground.

**Footpath:** A path over which the public has a right-of-way on foot only. Wheelchairs are also permitted, although this may not be practical due to surface or slope.

**Geotextile (Geo-synthetic, Geofabric, Filter Fabric):** A semi-impervious, nonwoven, petrochemical fabric cloth that provides a stable base for the application of soil or gravel. Most commonly used in the construction of turnpikes.

**Green Infrastructure:** An interconnected network of waterways, wetlands, woodlands, wildlife habitats, and other natural areas; greenways, parks and other conservation lands; working farms, ranches and forests; and wilderness and other open spaces that support native species, maintain natural ecological processes, sustain air and water resources and contribute to the health and quality of life for communities and people.

**Greenspace:** Natural areas, open spaces, trails, and greenways that function for both wildlife and people.

**Greenway:** A linear open space established along a natural corridor, such as a river, stream, ridgeline, rail-trail, canal, or other route for conservation, recreation, or alternative transportation purposes. Greenways can connect parks, nature preserves, cultural facilities, and historic sites with business and residential areas.

**Guardrail:** A 36- to 42-inch high railing for guarding against danger at the edge of a deck, bridge, or boardwalk to prevent people from falling. Also a barrier (posts and steel cables or bars) placed along the edge of a highway at dangerous points.

**Handrail:** A 32- to 35-inch high railing along a stairway to help people avoid falling down the stairs.

High Potential Site (or Segment): Historic sites or trail segments which afford high quality recreation or interpretation opportunities.

**Historic Property:** Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register; such term includes artifacts, records, and remains which are related to such a district, site, building, structure, or object.

**Impermeable Material:** A soil or material whose properties prevent movement of water.

**Impervious Surface:** Hard surfaces that do not allow absorption of water into the soil and that increase runoff. Examples of such surfaces include concrete or asphalt paved trails and parking areas.

**Infrastructure:** The facilities, utilities, and transportation systems (road or trail) needed to meet public and administrative needs.

**Intermodal:** Connections between modes of transportation, such as automobile, transit, bicycle, or walking.

**Interpretive Display:** An educational display usually in an interpretive center or at a trailhead that describes and explains a natural or cultural point of interest on or along the trail.

**Intersection (Junction):** Area where two or more trails or roads join together.

**Louisville Loop-** the 100-mile shared-use path and on-street bicycle facilities system that will ring the City and link existing and new parks and neighborhoods to civic attractions, transportation alternatives, and recreation opportunities. The Louisville Loop contains shared-use paths and on-street bicycle facilities

**Marker, Trail:** An appropriate and distinctive symbol with the name of the trail imprinted on plastic or metal triangles or diamonds and used to mark a trail route.

**Non-motorized Transportation:** Walking, bicycling, use of small-wheeled vehicles (skates, skateboards, push scooters and hand carts), wheelchair use.

**Park:** Any area that is predominately open space with natural vegetation and landscaping used principally for active or passive recreation.

**Park, Linear:** A linear open space established along a natural corridor, such as a river, stream, ridgeline, rail-trail, canal, or other route for passive recreation, education, and scenic purposes.

**Parkway:** A broad roadway bordered with (and often divided by) plantings of trees, shrubs, and grass, often designated as linear parks.

**Pavement:** That part of a trail having a constructed hard paved surface for the facilitation of wheeled trail traffic.

**Pavement, Porous:** A special type of pavement that allows rain and snowmelt to pass through it, thereby reducing the runoff from a site and surrounding areas. There are two types of porous pavement: porous asphalt and pervious concrete. Porous asphalt pavement consists of an open-graded coarse aggregate, bonded together by asphalt cement, with sufficient interconnected voids to make it highly permeable to water. Pervious concrete consists of specially formulated mixtures of Portland cement, uniform, open-graded coarse aggregate, and water with enough void space to allow rapid percolation of liquids through the pavement. The porous pavement surface is typically placed over a highly permeable layer of open-graded gavel and crushed stone. A filter fabric is placed beneath the gravel and stone layers to screen out fine soil particles. *Also often referred to as impervious pavement.*

# Definition of Terms

**Paved Shoulder:** The paved portion of the roadway contiguous with the traveled way. This facility is also used by stopped vehicles, and emergency vehicles. A commitment to keeping this portion of the roadway clear is essential. This is often used on rural roads or other roads without curbs.

**Pedestrian:** Any person on foot or in a wheelchair.

**Public Art:** Installations of art---permanent or temporary---in the public realm of Louisville Metro, including the exteriors of buildings and outdoor public areas.

**Radius:** An arc or curve that connects two straight trail segments in order to provide smooth horizontal and vertical alignment.

**Rail Corridor:** The path of a railroad right-of-way, including the tracks and a specified tract of land on either side of the tracks (generally one hundred feet wide).

**Rail-Trail (Rail-to-Trail):** A multi-purpose, public path or trail (paved or natural) created along an inactive railroad corridor.

**Rail-with-Trail:** Any shared-use path that is located on or directly adjacent to an active railroad or fixed route transit corridor.

**Rest Area:** A physical facility that exists along a pedestrian or bicycle facility to provide a place to sit, possibly in shade, trash receptacles and signage. This is a variation of an Access Point/ Mini-Trailhead.

**Right-of-Way:** A linear corridor of land held in fee simple title, or as an easement over another's land, for use as a public utility (highway, road, railroad, trail, utilities, etc.) for a public purpose. Usually includes a designated amount of land on either side that serves as a buffer for adjacent land uses.

**Right of Way:** The right of one trail user or vehicle to proceed in a lawful manner in preference to another trail user or vehicle.

**Road-crossing:** Intersection of trail and road traffic. Can be the most dangerous section of a trail since they are sometimes located on ridge tops, blind hills, or hairpin turns.

**Road-to-Trail Conversion:** Involves narrowing an old logging road to provide a meandering trail with a solid trail tread for users.

**Route:** A traveled way, a means of access, a line of travel, an established or selected course of travel.

**Shared Lane:** A standard width travel lane where bicyclists share the travel lane with motor vehicles. A dedicated facility is not provided and this facility does not provide a facility for pedestrians. Signage and pavement markings are often but not always present.

**Shared-use Path:** Shared use paths may be used by pedestrians, bicycles (all experience levels), skaters, wheelchair users, joggers, and other non-motorized users. Shared-use path is a term adopted by the American Association of State Highway and Transportation Officials (AASHTO) to encompass a bicycle facility that is physically separated from motorized vehicular traffic by an open space or barrier. There are two types of shared-use paths; within the roadway right-of-way or within an independent right-of-way. This facility is often called path, trail, multi-use path, and greenway. The facility ranges from ten to twelve feet in width. In this document we will be using the term Shared-use path.

**Sidepath:** An inferior option to a shared-use path, but superior to a sidewalk. It is usually wider than a typical sidewalk but not as wide as a shared-use path. The separation is usually less than a shared-use path but equal to that of a sidewalk. Sidepaths are often an interim, less preferred solution.

**Sideslope:** The natural slope of the ground measured at right angles to the centerline of the trail, or the adjacent slope, which is created after excavating a sloping ground surface for a trailway, often termed a cut-and-fill-slope, left and right of the trail tread.

**Sidewalk:** A paved strip (typically concrete four feet in width) which runs parallel to vehicular traffic and is separated from the road surface by at least a curb and gutter. Sidewalks are common in urban areas and in some suburban residential areas.

**Sight Line (Sight Distance):** The visible and unobstructed forward and rear view seen by a trail user from a given point along the trail.

**Sign (Signage):** A board, post, or placard that displays written, symbolic, tactile, or pictorial information about the trail or surrounding area. Signage increases safety and comfort on trails. There are five basic types of signs: Cautionary, Directional, Interpretive, Objective, and Regulatory.

**Sign, Cautionary:** Warns of upcoming roadway crossings, steep grades, blind curves, and other potential trail hazards.

**Sign, Wayfinding:** Gives street names, trail names, direction arrows, mileage to points of interest, and other navigational information.

**Sign, Interpretive:** Offers educational information that describes and explains a natural or cultural point of interest on or along the trail.

**Sign, Objective:** Provides information about the actual trail conditions, including grade, cross slope, surface, clear trail width, and obstacle height. This allows users to make more informed decisions about which trails best meet their trail needs and abilities.

**Sign, Regulatory:** Tells the "rules of the trail" by prohibiting certain uses or controlling direction of travel.

**Signed Bicycle Route:** A shared lane, without any pavement markings, that is signed for use by bicyclists as a preferred route. Bicycle routes, in Louisville Metro, have been identified due to road conditions, connectivity and the overall bikeway network.

**Slope:** Rising or falling natural (or created) incline of the land, as shown on contour maps. Generally refers to the hillside (land) and not the trail, as trail "slope" is called the grade.

**Slope, Cross:** The slope or gradient of the undisturbed hillside; the amount or grade of the pre-existing sloped that is perpendicular to the direction of the trail.

**Slope, Cut:** The exposed ground surface resulting from the excavation of material on the natural terrain.

**Slope, Running:** The average slope of a contiguous section that is in the same direction as the trail; measured by averaging the values of slop measurements taken periodically at different points along the trail.

**Slope, Running Cross:** The average cross slope of a contiguous section of a trail; measured by averaging the values of cross slope measurements taken periodically at different points along a given section of trail.

**Slope, Percent:** Number of feet rise (vertical) divided by feet of run (horizontal) times 100 to get percent slope; example: 15-feet of rise over 100-feet of run is a 15% slope.

**Standard(s):** A statement and/or illustration describing a design

recommendation or principle that recommends a preferred development technique for use as a rule or basis of comparison in measuring maximum or ideal requirements, quantity, quality, value, etc.

**Standards, Design:** The specific values selected and documented from the design criteria become the standards for a given trail or greenway project. These standards will be identified and documented by the designer. Standards will be related to the physical characteristics, users, location, and environmental factors of a project.

**Super-Elevated (Superelevation, Bermed, Banked):** Slope or bank of a curve or climbing turn expressed as the ratio of feet of vertical rise per foot of horizontal distance. The outside edge of a trail is raised or banked for the purpose of overcoming the force causing a vehicle (bicycle or OHV) to skid when maintaining speed in a curve.

**Swale:** A linear low-lying natural topographic drainage feature running downhill and crossing the trail alignment in which sheet runoff would collect and form a temporary watercourse. A low-lying ground drainage structure (resembling a swale) can be constructed to enhance drainage across the trail.

**Trail:** A designated route on land or water with public access for recreation or transportation purposes such as walking, jogging, motorcycling, hiking, bicycling, ATVing, horseback riding, mountain biking, canoeing, kayaking, and backpacking.

**Trail, Access:** Any trail that connects the main trail to a town, road, or another trail or trail system.

**Trailhead:** A physical facility that marks a major access point to a bicycle and pedestrian facility. The shape, size and form of trail head will vary and may include amenities such as parking, transit station, signage, drinking fountain, and art.

**Urban Trail:** A hybrid type of bicycle facility that combines the experience of a shared-use path with an on-street infrastructure of a conventional bicycle lane. This type of facility is widely used in European cities and is often referred to as a cycletrack.

*NOTE: Definitions relating to soft-surface trails can be found in Section 6: Beyond the Loop of this manual.*

# How to use this Document

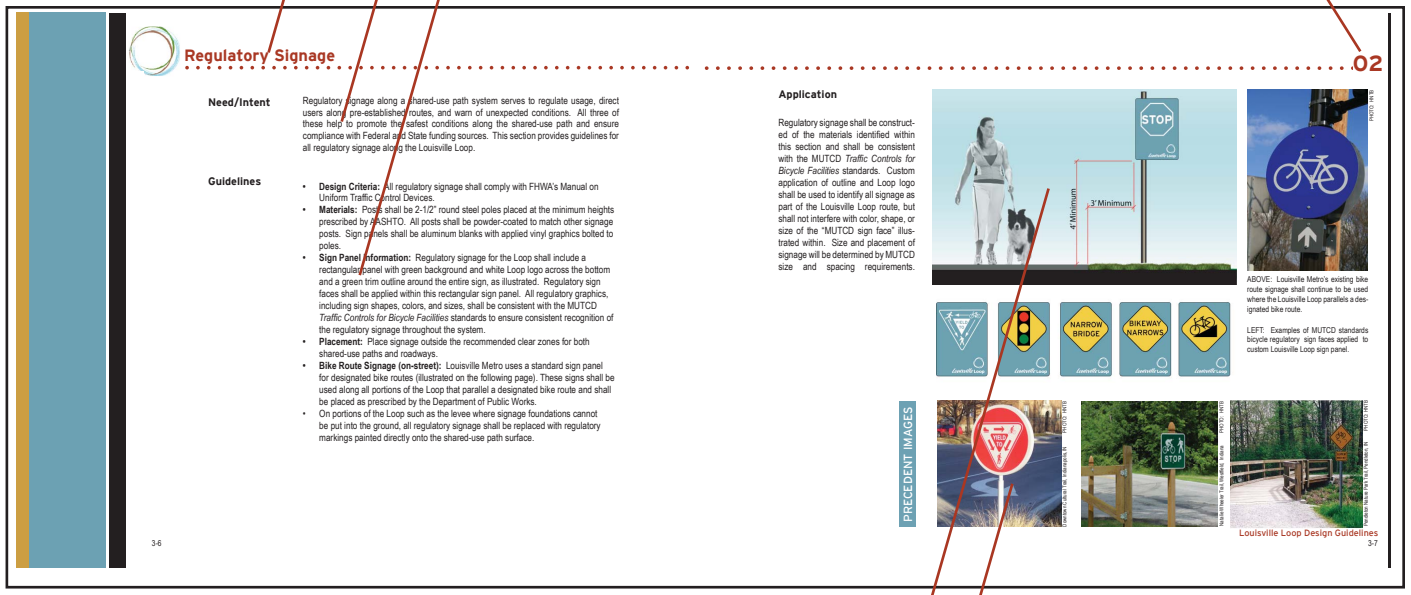
This manual is designed to provide trail standards in a concise, written and graphic forms, and to provide supporting material on successful applications of the design standard in similar situations. Below is a quick reference guide on the layout of the individual design standards in this manual:

**Standard Title**

**Description of Need and/or Intent**
Description of the issues that the design standard is intended to address.

**Guidelines**
Written guidelines and applicable references for the implementation of specific trail standards

**Reference Guide**
Design guideline reference number




**Application to Louisville Loop**
Images representing the prototypical application of the design standard to the Louisville Loop

**Precedent Images**
Images that illustrate how similar guidelines have been applied in other communities.

SECTION 3

# Regulatory Standards


**Operational Standards** ..... 3-3

O1 - Shared-use Path
O2 - Regulatory Signage
O3 - Regulatory Markings
O4 - Trail Rules

**Facility Standards** ..... 3-13

F1 - Shared-use Path & Natural Corridor
F2 - Shared-use Path & Rail Corridor
F3 - Shared-use Path & Interstate Corridor
F4 - Bicycle Lane
F5 - Shared Roadway & Wide Curb Lane
F6 - Bicycle Lane & Shared-use Path
F7 - Urban Trail
F8 - Bicycle Boulevard

**Crossing Standards** ..... 3-29

X1 - Shared-use Path & Road
X2 - Shared-use Path & Driveway
X3 - Shared-use Path & Non-Controlled Intersection
X4- Shared-use Path & Controlled Intersection
X5 - Shared-use Path & Railroad
X6 - Shared-use Path & Natural Features

**Support Facilities** ..... 3-45

T1 - Trailhead
T2 - Access Points (Mini-Trailhead)
T3 - Rest Area

# Regulatory Standards: Operational Standards

## INTRODUCTION

This section of the Design Standards Manual addresses the functional operation standards for the Louisville Loop---the materials and specifications for the trail, its application within the context of the Loop, its spatial relationships, the regulatory requirements for implementation, and the critical functional infrastructure that forms the basis for the physical placement and construction of the trail. This section identifies the critical design criteria that will direct construction of the trail and its amenities.

These operational standards are critical in ensuring a consistent application of trail construction throughout the system.

Of equal importance, though, is that the establishment of these operational standards, and a consistent following of the standards, ensures that the Loop trail segments will meet state and federal funding requirements. By meeting these standards, the system will be eligible for critical funding needed for implementation.

Simply stated, the design standards set for the trail system will do the following:

- Provide the highest level of safety for a shared-use path system;
- Provide construction standards that ensure that future construction meets the aesthetic and functional design standards of past sections;
- Ensure eligibility for critical state and local funding;
- Address maintenance issues.

PHOTO: HNTB

Louisville, Kentucky

# Shared-use Path

## Need/Intent

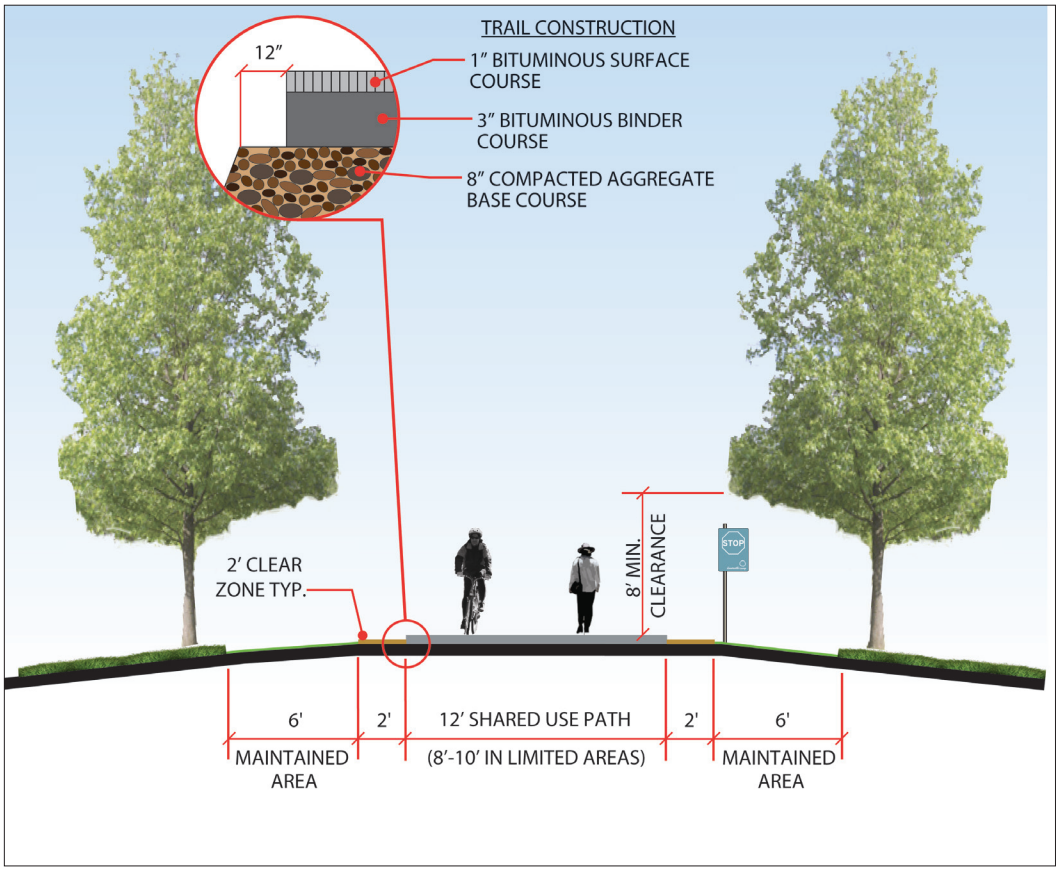
Shared-use paths are the main component of the Louisville Loop and serve as both an extension of the community's transportation network and as recreation facilities . As such they will provide the framework for connecting neighborhoods, schools, parks, retail centers, civic facilities, and work places for all level of users. The Louisville Loop trail shall be designed to meet AASHTO, ADA, and MUTCD Standards.

## Guidelines

- **Materials:** Unless otherwise specified, surface shall be comprised of asphalt and should be structurally suitable for emergency vehicles. The surface should be smooth and free of tread obstacles. Typical construction should include a 4 inch asphalt surface (1 inch bituminous surface course and a 3 inch bituminous binder course) over an 8 inch minimum compacted aggregate base.
- **Width:** Trail width shall be 12 feet where feasible, and a minimum of 10 feet. In cases of limited right-of-way, an 8 foot wide trail may be used if properly marked and signed according to the standards identified in this manual. Aggregate base shall extend 12 inches beyond the edge of asphalt on both sides of the trail in order to reduce edge deterioration.
- **Clear Zone:** A clear zone should occur on both sides of the shared-use path at a minimum of 2-feet wide. Area should be graded at a maximum slope of 6:1. Additionally, a minimum 1-foot buffer zone between the edge of the graded clear zone and any fixed objects such as signs, milemarkers, lighting, or plantings should occur. On bridges this guideline does not apply.
- **Vertical Clearance:** Clear height zone should be a minimum of 8 feet.
- **Drainage:** For drainage, slope should not exceed a uniform cross slope of 2 percent. Where a shared-use path is benched into a slope, a swale on the uphill side should be considered to catch water before it crosses the shared-use path. Culverts may be necessary to move water under the shared-use path. Disturbed areas should be seeded and mulched or sodded to prevent erosion.
- **Design Criteria:** Shared-use path shall comply with all AASHTO requirements for design speed, surface type, sight lines, stopping distances, and grades.
- **Minimum Curve Radius:** 95' as per AASHTO guidelines.
- **Profile Grades:** maximum recommended grade for shared-use paths is 5 percent. Grades steeper than 5 percent are possible, but should be restricted to distances as indicate in the AASHTO Guide.
- **Edge Protection:** Fencing or other barriers should be used along shared-use paths only in areas where safety is a concern. If fences or barriers are used, they should be a minimum of 42 inches high and should include rub-rails for the safety of bicyclists and wheelchairs users. Rub-rails should be installed at ground level and at the general level of an adult bicyclist's handlebars.

## Application

Shared-use path shall be constructed to meet the spatial requirements illustrated and all applicable ADA, FHWA, and MUTCD requirements. Variance from any of these standards should be limited to situations where safety or preservation of sensitive context would be enhanced by variance. All deviations to these requirements should be approved prior to construction.




## PRECEDENT IMAGES

PHOTO: HNTB
Wabash Riverwalk, Wabash, Indiana

PHOTO: HNTB
Zionsville Rail-Trail, Zionsville, Indiana

PHOTO: HNTB
Zionsville Rail-Trail, Zionsville, Indiana

# Regulatory Signage

## Need/Intent

Regulatory signage along a shared-use path system serves to regulate usage, direct users along pre-established routes, and warn of unexpected conditions. All three of these help to promote the safest conditions along the shared-use path and ensure compliance with Federal and State funding sources. This section provides guidelines for all regulatory signage along the Louisville Loop.

## Guidelines

- **Design Criteria:** All regulatory signage shall comply with FHWA's Manual on Uniform Traffic Control Devices.
- **Materials:** Posts shall be 2-1/2" round steel poles placed at the minimum heights prescribed by AASHTO. All posts shall be powder-coated to match other signage posts. Sign panels shall be aluminum blanks with applied vinyl graphics bolted to poles.
- **Sign Panel Information:** Regulatory signage for the Loop shall include a rectangular panel with green background and white Loop logo across the bottom and a green trim outline around the entire sign, as illustrated. Regulatory sign faces shall be applied within this rectangular sign panel. All regulatory graphics, including sign shapes, colors, and sizes, shall be consistent with the MUTCD *Traffic Controls for Bicycle Facilities* standards to ensure consistent recognition of the regulatory signage throughout the system.
- **Placement:** Place signage outside the recommended clear zones for both shared-use paths and roadways.
- **Bike Route Signage (on-street):** Louisville Metro uses a standard sign panel for designated bike routes (illustrated on the following page). These signs shall be used along all portions of the Loop that parallel a designated bike route and shall be placed as prescribed by the Department of Public Works.
- On portions of the Loop such as the levee where signage foundations cannot be put into the ground, all regulatory signage shall be replaced with regulatory markings painted directly onto the shared-use path surface.

## Application

Regulatory signage shall be constructed of the materials identified within this section and shall be consistent with the MUTCD *Traffic Controls for Bicycle Facilities* standards. Custom application of outline and Loop logo shall be used to identify all signage as part of the Louisville Loop route, but shall not interfere with color, shape, or size of the "MUTCD sign face" illustrated within. Size and placement of signage will be determined by MUTCD size and spacing requirements.

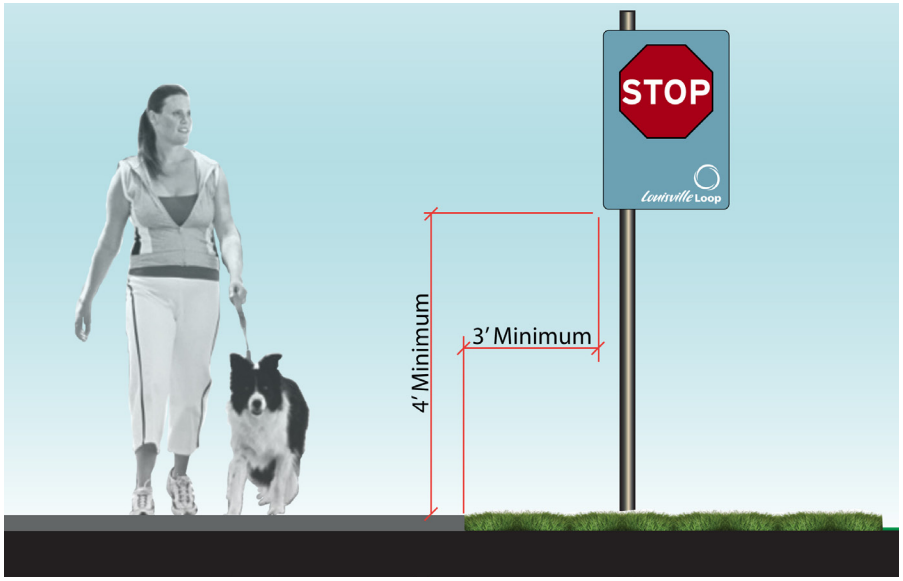
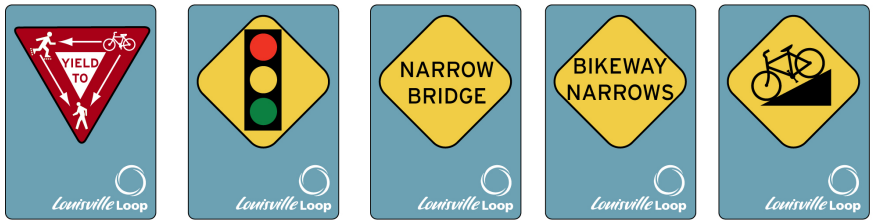


PHOTO: HNTB

ABOVE: Louisville Metro's existing bike route signage shall continue to be used where the Louisville Loop parallels a designated bike route.




LEFT: Examples of MUTCD standards bicycle regulatory sign faces applied to custom Louisville Loop sign panel.

## PRECEDENT IMAGES

PHOTO: HNTB
Downtown Cultural Trail, Indianapolis, IN

PHOTO: HNTB
Natalie Wheeler Trail, Westfield, Indiana

PHOTO: HNTB
Pendleton Nature Park Trail, Pendleton, IN

# Regulatory Markings

## Need/Intent

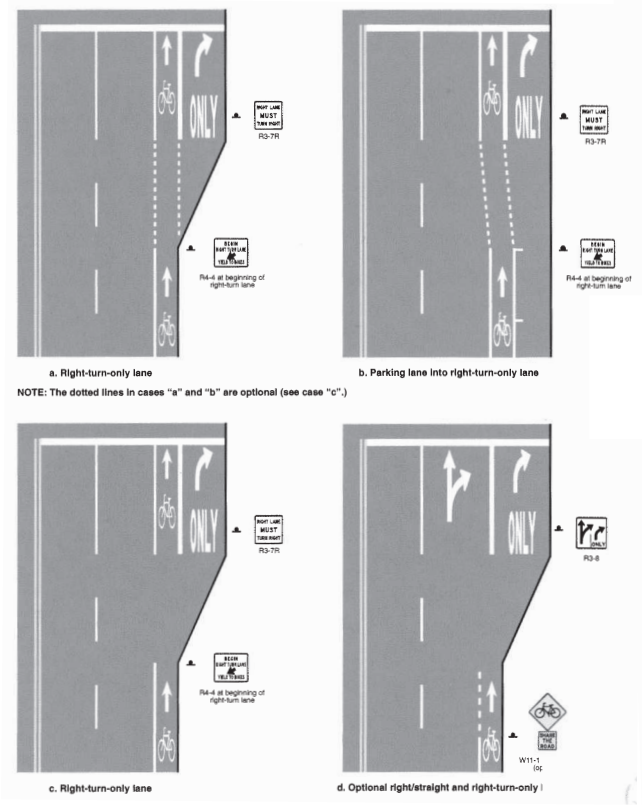
Markings along a shared-use path system, when coupled with regulatory signage, serves to assist in the regulation of shared-use path usage and warn of unexpected conditions to help promote and ensure the safest conditions along the shared-use path. This section provides guidelines for all regulatory markings along the Louisville Loop.

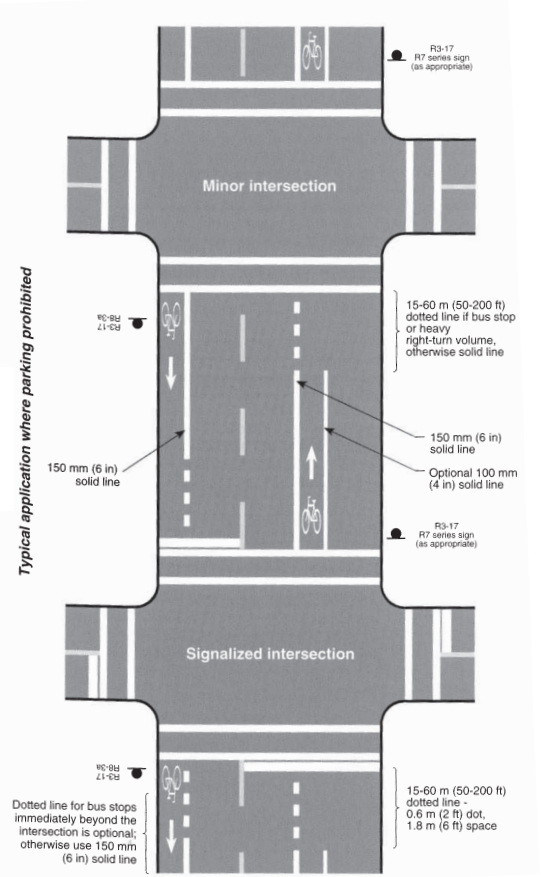
## Guidelines

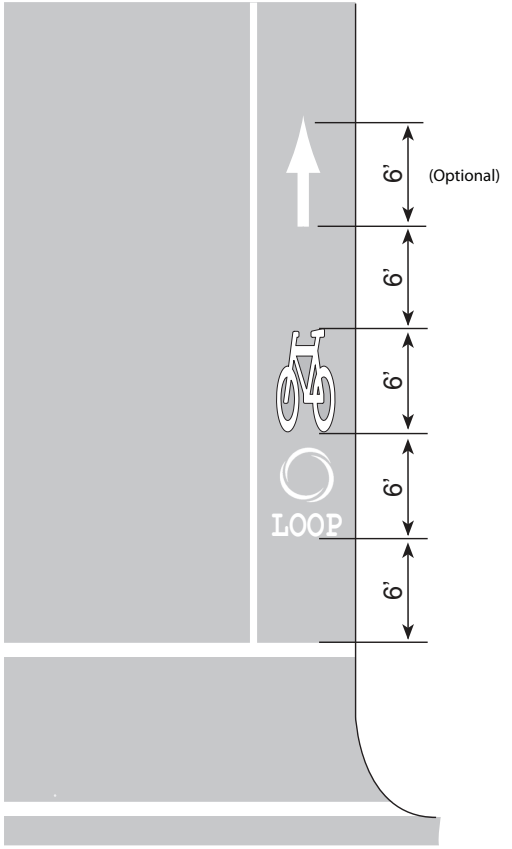
- **Centerline:** The centerline of the shared-use path will be marked with a green stripe in only the following locations:
  - Within 100 feet of approaching trailheads, access points, or other nodes along the shared-use path where users may come upon heavier pedestrian or bicycle traffic. Centerline shall be a broken line and shall break at trailheads and access points.
  - Within 100 feet of approaching caution area (railroad crossings, intersections, or other potential conflict points). Centerline shall continue through caution area except for street crossings.
  - Within 100 feet of blind curves or other trail areas with limited sightlines. Centerline shall be broken in the 100-foot approach areas and shall be solid and continuous throughout the length of the curve or hazard area.
- **Crosswalks:** MUTCD thermoplastic standard 24-inch parallel bar crosswalk markings with 12 inch separation on all intersections and mid-block crossings. Major vehicular drives shall receive same treatment. All crosswalks shall be 10 feet wide minimum. A 3-foot strip of detectable warning (truncated domes) shall be included at all crossings as outlined in the American with Disabilities Act Accessibility Guidelines (ADAAG).
- **Bike Lanes:** Where bike lanes are included as part of the overall Loop, bike lanes shall be marked with standard pavement symbols to inform bicyclists and motorists of the presence of the bike lane. The standard pavement symbols are one of two bicycle symbols (or the words “BIKE LANE”) and directional arrow. These symbols should be placed on the far side of each intersection. Additional stencils may be placed on long, uninterrupted sections of roadway. All pavement markings are to be white and reflective. In addition, bike lanes that are part of the Loop shall also include the Loop designation as illustrated under Bicycle Markings.
- **Additional Markings:** Additional marking requirements, if needed, shall comply with MUTCD’s

The Manual on Uniform Traffic Control Devices (MUTCD) provides guidance for lane delineation, intersection treatments, and general application of pavement wording and symbols for on-road bicycle facilities and off-road paths. In addition to those presented in the MUTCD, the experimental pavement markings may also be considered in consultation with the Kentucky Transportation Cabinet and the Louisville Metro Department of Public Works.

## Application




NOTE: On portions of the Loop such as the levee where signage foundations cannot be put into the ground, all regulatory signage shall be replaced with regulatory markings painted directly onto the shared-use path surface.

PRECEDENT IMAGES

PHOTO: HNTB
Louisville, Kentucky

PHOTO: HNTB
Natalie Wheeler Trail, Westfield, Indiana

PHOTO: Alta

# Trail Rules

## Need/Intent

Operational rules are needed to regulate the use of the shared-use path portion of the Louisville Loop. As unlit parkland, the rules establish the regulations for users of the shared-use path and reinforce the etiquette for consideration of all users of the path.

## Guidelines

- **Design Criteria:** Shared-use path rules shall conform to the rules established for other park facilities within Louisville Metro.
- Shared-use path rules shall be posted at all trailheads and access points along the shared-use path.
- In remote areas with long stretches of path without access points, additional shared-use path rule signs may be posted.
- All on-street portions of the Louisville Loop are regulated by City and State codes for roadways.

### Application

Trail rules shall be posted and shall be consistent with other park facilities.

Portions of the Louisville Loop may also allow equestrian use. These segments shall be clearly marked and addition equestrian rules shall be posted along these segments.

## LOUISVILLE LOOP TRAIL RULES & ETIQUETTE

The Louisville Loop trail is for the recreation and enjoyment of all residents and for alternative transportation. Louisville Metro Parks strongly encourages all trail users to abide by the following safety guidelines:

1. Keep to the right; communicate before passing. Let other trail users know when you are approaching from behind. Signal by saying “passing on your left” and give others time to respond accordingly.
2. Maintain control and safe speed. Adjust your speed to accommodate other users, traffic and trail conditions.
3. Pedestrians have the right-of-way on the Louisville Loop. Bicycle riders and in-line skaters must yield to all other trail users. Parents: please keep children from wandering into oncoming trail lane to avoid accidents.
4. Share the trail and be courteous. The Louisville Loop is a multi-use recreational trail appropriate for walkers, joggers, in-line skaters and bicycle riders. Please respect others, regardless of their mode of travel.
5. Please comply with 15 mph speed limit on shared-use path.
6. Do not trespass or cut through adjacent properties or yards to access the Louisville Loop.
7. Stop for cross traffic and obey all signage.
8. Respect the trail environment. Do not disturb the wildlife or the many native plants and wildflowers that grow along the Louisville Loop.
9. Pick up litter and place in trash bins. Please remove all pet waste.
10. Keep pets on short leashes (4-6 feet max.) If using a retractable leash, please keep pets near you.

***In case of emergency, dial 911.***
***To report suspicious behavior or vandalism, dial 574-LMPD (5673).***
***To report maintenance issues, dial 311.***

# Regulatory Standards: Facility Standards

## INTRODUCTION

Throughout the 100 miles of the Louisville Loop system, the shared-use path passes through diverse contexts--the Ohio River valley and levee systems, the woodlands of the Jefferson Memorial Forest, the stream corridors and rolling terrain of Floyd's Fork, the urban neighborhoods along the Olmsted Parkways, the expansive urban Waterfront Park, and the suburban community conditions along the Northeast Loop Trail. Although the design standards for the physical trail is intended to remain constant, the application guidelines for these varying sections change. This section of the design standards is intended to set minimum guidelines for the placement of the shared-use path within these unique contexts. The following is a list of general guidelines on how the trail could be treated in these situations.

PHOTO: R. Taylor

*Little Turtle Bikeway, Fort Wayne, IN*

# Shared-use Path & Natural Corridor

## Need/Intent

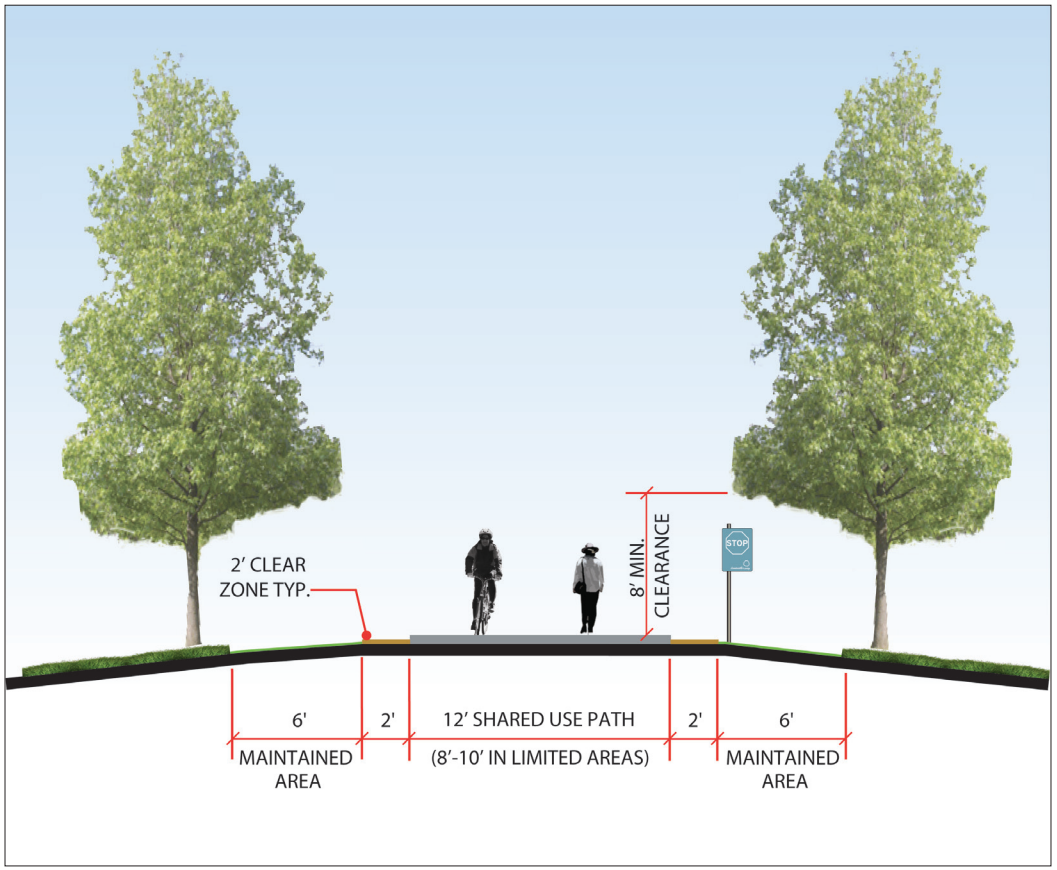
When passing through natural and environmentally sensitive environments, the shared-use path system should respect natural conditions, minimize disturbance to existing conditions, protect cultural resources, and minimize disturbance of biodiversity.

## Guidelines

- Where possible, shared-use path placement should avoid all naturally sensitive environments such as wetlands, streams, mature tree stands, and endangered flora and fauna. The shared-use path should be placed no closer than 30 feet from such areas. In areas where the shared-use path will impact sensitive areas, trail construction should be done in a manner to minimize disturbance and use sustainable methods for construction of shared-use path. For example, if the shared-use path passes through a designated wetland, wood or recycled plastic boardwalks should be used to minimize the trail's effect on the wetland. When designing boardwalks or bridges through these sensitive areas, maintenance issues and costs should be considered; the design should ensure adequate emergency/ maintenance vehicle access.
- The shared-use path and associated amenities should be designed to blend in with the natural context of the environment, and should not create a visual obstruction on the landscape.
- When designing the shared-use path, the path location should take advantage of significant scenic views.
- Shared-use paths shall avoid direct impact of all known habitat areas. Where the shared-use path passes within 50 feet of endangered species habitat, a fence or other protective barrier shall be placed 3 feet from edge of trail to restrict path users from entering habitat.
- Except in forested areas, shared-use path shall be placed outside of the dripline of significantly-sized trees to protect roots from trail construction. In forested areas, shared-use path alignment should be designed to minimize impact to the forest. For each tree removed due to trail construction, 3 trees should be planted adjacent to the trail.
- In natural areas, native plants and grasses should be used in landscaping along the shared-use path.
- 6-foot clear zones shall be maintained/mowed in natural areas so as not to obscure potential obstructions.
- On sloped areas, uphill drainage as well as other standard drainage should be incorporated into the design to prevent trail damage.

## Application

When passing through natural and environmentally sensitive environments, the trail system should respect natural conditions, minimize disturbance to existing conditions, protect cultural resources, and minimize disturbance of biodiversity.




PRECEDENT IMAGES

Northwestway Park Trail, Indianapolis, IN PHOTO: R. Taylor

Wabash Riverwalk, Wabash, IN PHOTO: HNTB

Little Turtle Bikeway, Fort Wayne, IN PHOTO: R. Taylor

# Shared-use Path & Rail

## Need/Intent

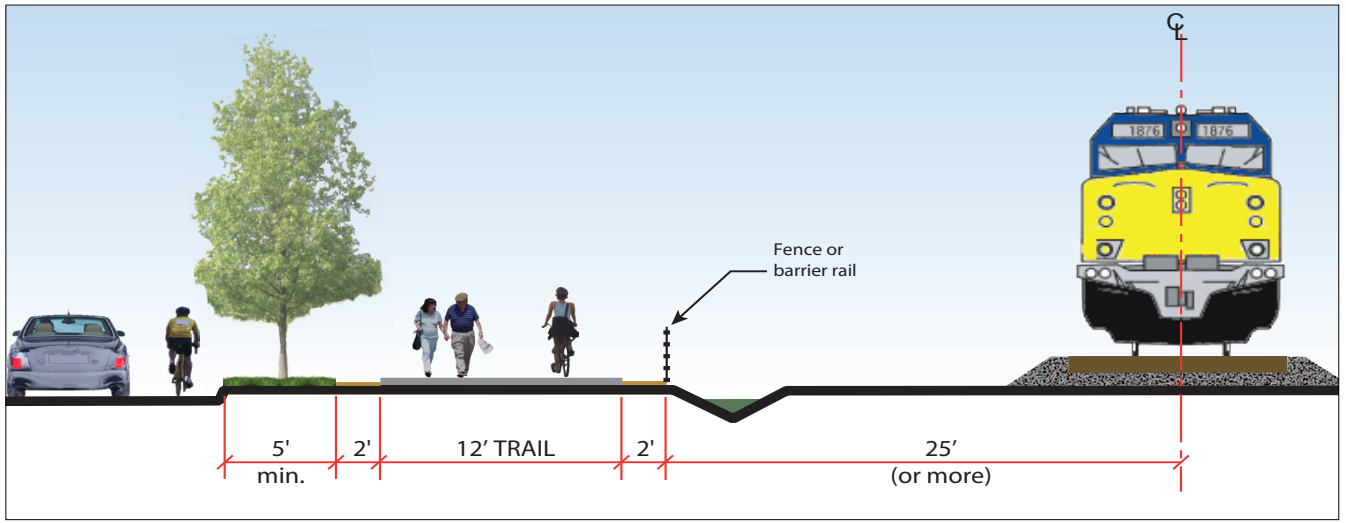
When the shared-use path parallels or shares a railroad right-of-way, protective measures shall be included to ensure the safety of trail users and the uninterrupted operations of the rail line.

## Guidelines

- Where the shared-use path parallels a railroad right-of-way, the path shall be constructed no closer than 3 feet from the right-of-way line (if feasible) and a 4 foot high barrier placed on the right-of-way line. No access through the barrier should be provided for trail users.
- Barriers within 50 feet of an active rail line should have a solid wood barrier.
- Shared-use paths paralleling active rail lines shall be constructed to support heavy truck traffic for railroad repair vehicle use if needed.
- In all cases, shared-use path shall not be constructed within 25 feet of active rail lines, unless there is a significant vertical difference or a natural barrier between trail and rail line.
- Rail crossings shall be provided only at designated street crossings, and shall be clearly marked. Crossings and approaches to crossings shall include regulatory signage as per FWHA's Manual of Traffic Control Devices. Additional crossing guidelines are included in X2 of this manual.

## Application

Portions of the trail that parallel active rail lines shall include a minimum 25-foot buffer between trail and the centerline of the closest set of tracks, and a permanent barrier, such as a fence or a barrier rail. Development of the shared-use path within or adjacent to existing rail lines will require coordination with the railroad.




PRECEDENT IMAGES

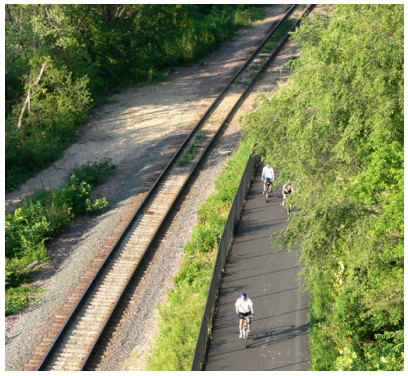


PHOTO: Alta

PHOTO: HNTB

Ohio River Levee Trail, Louisville, KY

PHOTO: Alta

# Shared-use Path & Interstate

## Need/Intent

Interstate highway corridors often present an opportunity for a direct and available route between major destinations. The traditionally wide right-of-way often provides ample space for trail development which can be an especially important transportation link in a regional trail network while also providing recreation access as well.

## Guidelines

- Where the shared-use path parallels an interstate right-of-way and is outside of the right-of-way, the path shall be constructed no closer than 3 feet from the right-of-way line (if feasible) and a 4 foot high barrier shall be placed on the right-of-way line. There should be no access provided through the barrier for trail users.
- Where sufficient right-of-way and agency coordination permits use of interstate right-of-way, shared-use path should be aligned to be as separated from the road and shoulders as possible, and a 4 foot high barrier shall separate the trail area and the remaining interstate right-of-way. No access through the barrier shall be provided for shared-use path users.
- Barrier should meet all KYTC right-of-way fence requirements unless otherwise agreed to by KYTC. Where conditions warrant due to safety factors, a solid wood barrier should be used.
- Barrier between trail and right-of-way should include a black, vinyl clad chain link fence fabric to prevent wildlife intrusion into the right-of-way.
- The location of gathering spaces, rest areas, and other areas for users to congregate along the shared-use path within the highway right-of-way should be minimized.
- Shared-use paths paralleling or sharing interstate corridors shall be constructed to accommodate emergency vehicle traffic.
- Where feasible, shared-use path should share critical infrastructure such as underpasses and overpasses to prevent barriers to connectivity of the path. All shared infrastructure must be coordinated with the Kentucky Transportation Cabinet or other appropriate regulating agency.

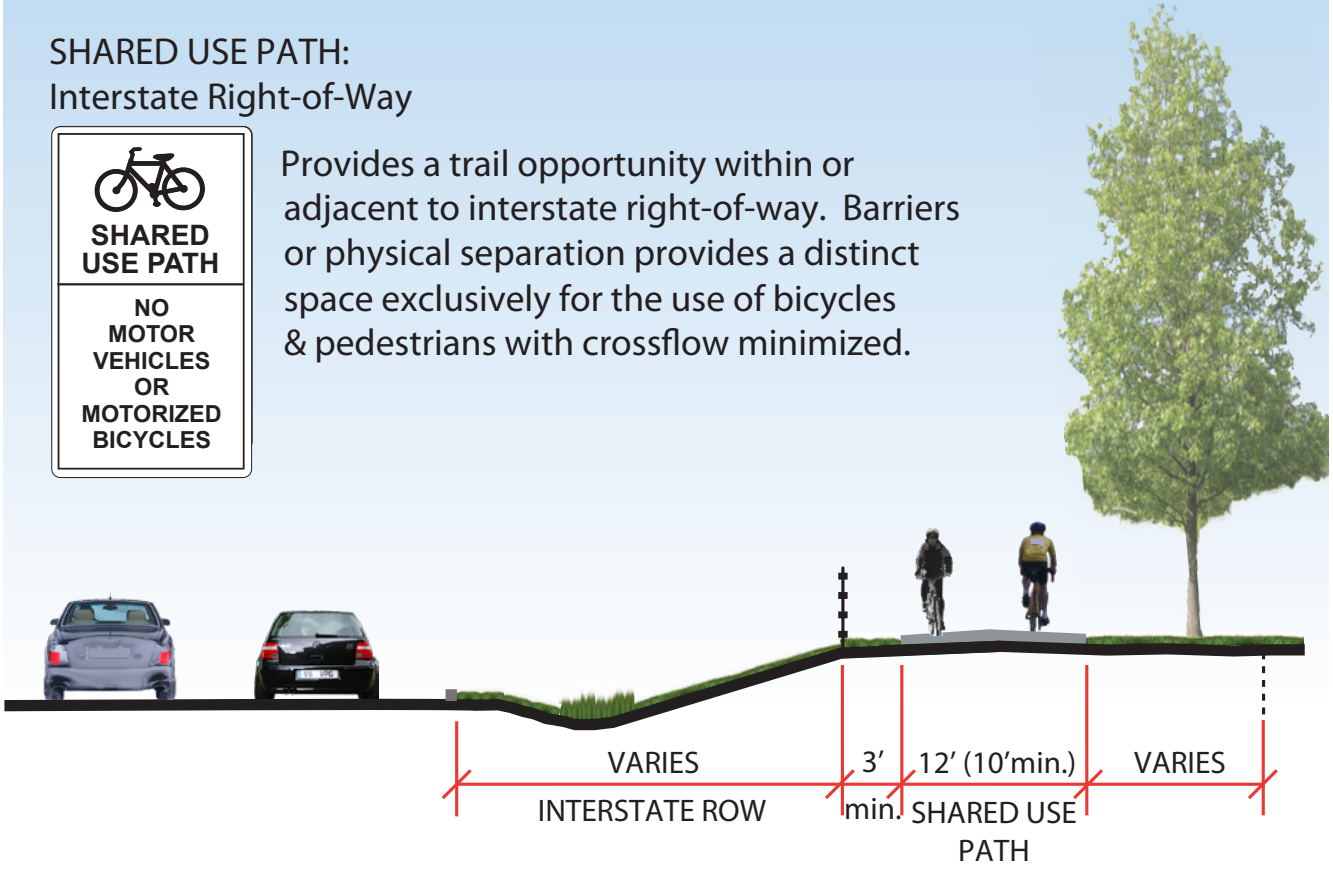
## Application

Where the shared-use path parallels an interstate right-of-way, shared-use path shall be constructed no closer than 3 feet from the right-of-way line (if feasible) and a 4-foot high barrier placed on the right-of-way line. No access through the barrier should be provided for trail users.

### SHARED USE PATH: Interstate Right-of-Way




Provides a trail opportunity within or adjacent to interstate right-of-way. Barriers or physical separation provides a distinct space exclusively for the use of bicycles & pedestrians with crossflow minimized.




PRECEDENT IMAGES

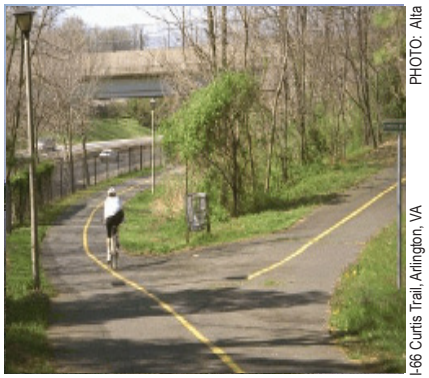


PHOTO: Alta
I-66 Curtis Trail, Arlington, VA

PHOTO: HNTB
Columbus People Trail, Columbus, IN

PHOTO: Alta

# Bicycle Lanes

## Need/Intent

Where the Louisville Loop shared-use path parallels existing streets, bicycle lanes shall be used to further separate the different bicycle users.

## Guidelines

- Bicycle Lanes should be designed according to ADA, AASHTO standards
- Regulatory signage should be used according to MUTCD, AASHTO. For more detail refer to Operational Standard O2.
- Regulatory markings should be used according to AASHTO/MUTCD. For more detail refer to Operational Standard O3.
- Bicycle Lanes should be 5'-6' wide and measures to face of curb or edge of pavement, includes gutter pan if there is curb and gutter.
- Bicycle Lanes should be located on the most right outer edge of pavement/ adjacent to curb.
- Bicycle Lanes should follow same direction as vehicle traffic.
- Bicycle Lanes should be striped to state standards.
- In areas of new construction, header curbs with no gutters shall be used to avoid a longitudinal joint within the bicycle lane. If header curbs are not used, the concrete gutter should be widened to the full width of the bicycle lane.

## Application

All bike lanes shall be designed to comply with ADA and AASHTO standards, and all markings and signage shall comply with MUTCD standards for *Traffic Controls for Bicycle Facilities*.

Bike lanes that parallel portions of the Louisville Loop shall also include the Louisville Loop logo and text as illustrated in the photo to the right.

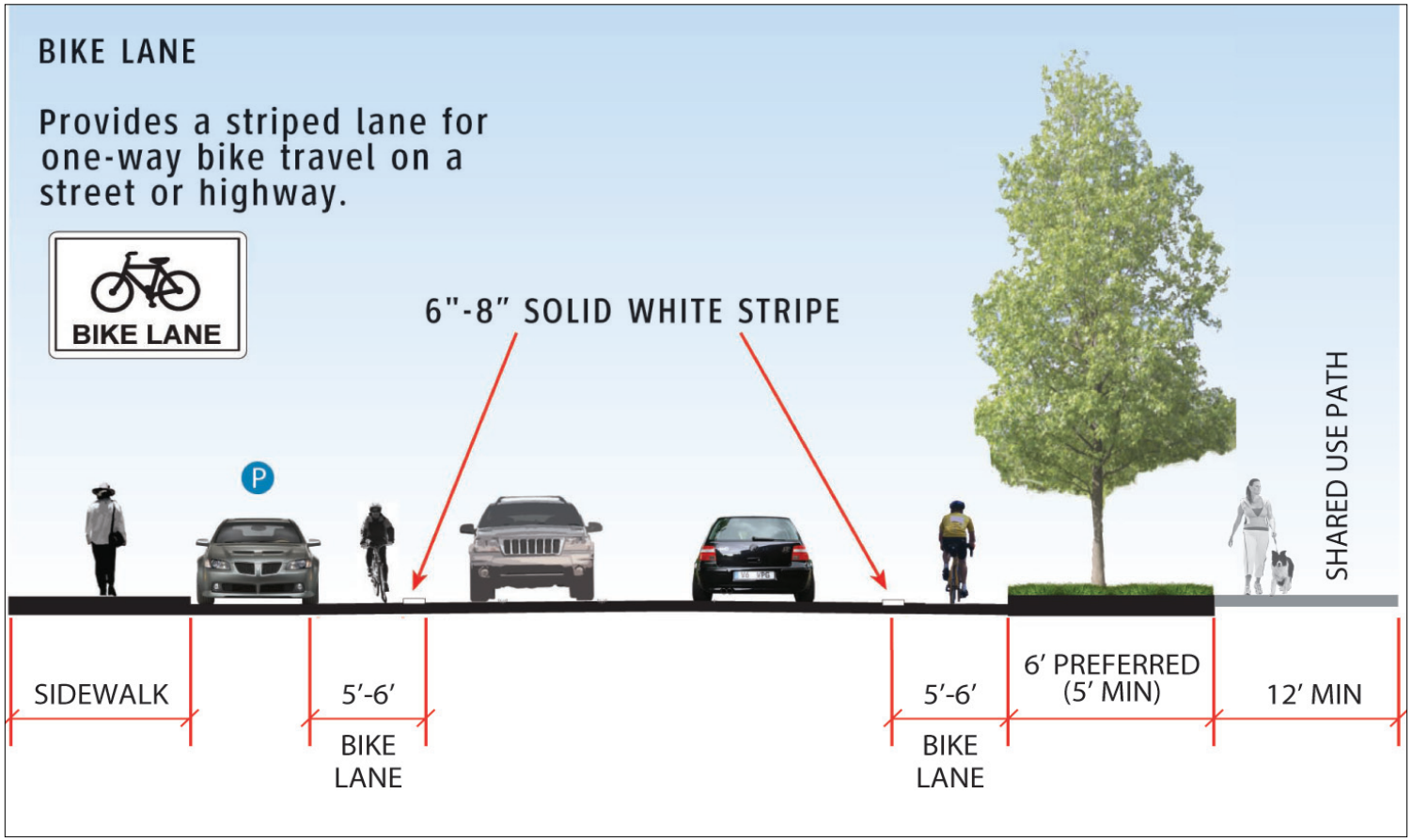
ABOVE: Example of application of Loop symbol to MUTCD standard bike lane markings. This application should occur where on-street facilities are included as part of the Louisville Loop.

PRECEDENT IMAGES

PHOTO: Alta

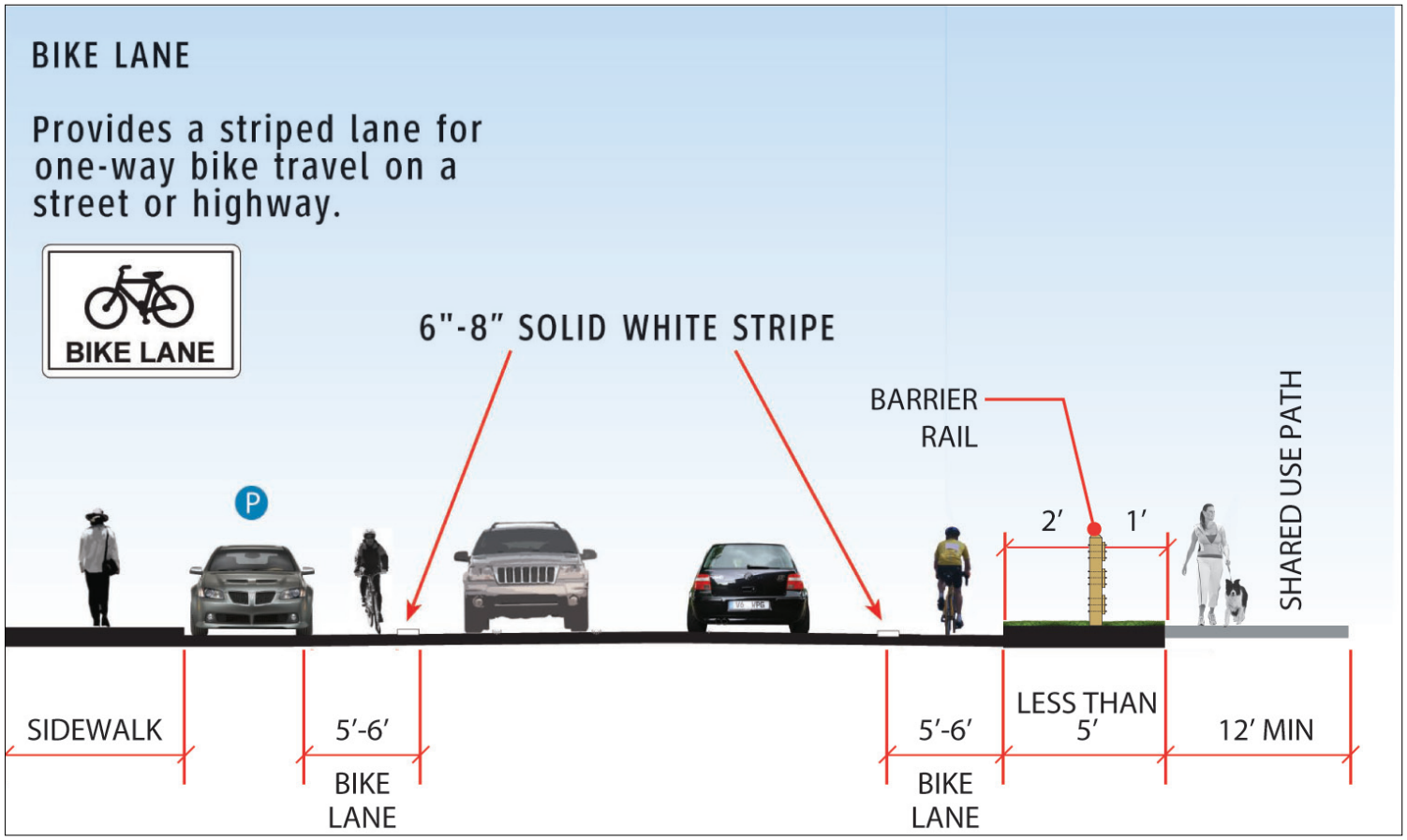
PHOTO: HNTB
Middletown, KY

PHOTO: Alta




## Application

Application of bike routes and their relationship to the shared-use path where there is a minimum 6 feet of separation between path and street. This buffer width is the minimum clear zone for the roadway and is considered the minimum width for successful tree growth along the street.




## Application

Application of bike routes and their relationship to the shared-use path where there is no curb separation between street and path, or where there is less than the AASHTO minimum 5 feet of separation between path and street.

# Shared Roadway & Wide Curb Lane

## Need/Intent

In instances where the Louisville Loop shared-use path parallels a low-volume roadway and/or there is insufficient space for designated bike lanes, shared roadway and wide curb lanes may be used to encourage bicycle use of the street.

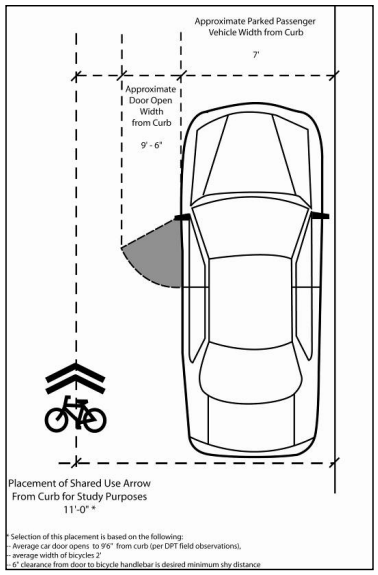
## Guidelines

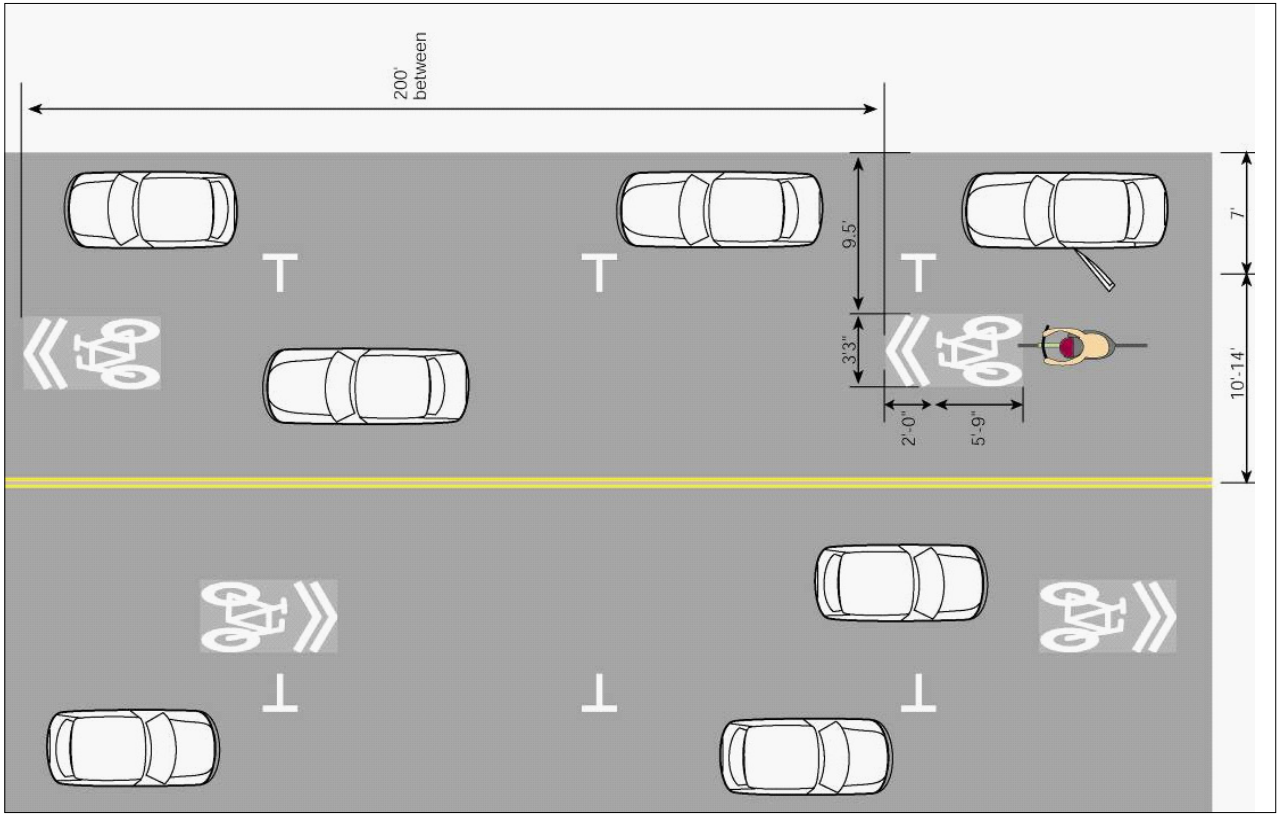
- Shared Roadways should be designed according to ADA and AASHTO standards.
- All regulatory signage shall comply with MUTCD's *Traffic Controls for Bicycle Facilities*. For more detail refer to Operation Standard O1.
- Regulatory markings shall comply with MUTCD's*Traffic Controls for Bicycle Facilities*. For more detail refer to Operation Standard O3.
- Shared Roadways are only appropriate on low volume, low speed roadways. Low volume is classified as 5,000 ADT and low speed is classified as under 20 mph.
- Wide lanes should be the outermost lane.
- Vehicle lanes should be 12'-14' wide and measures to edge of gutter pan.
- Pavement markings, sharrows, should be used to designate the lane as a shared use lane, to state standards.
- Shared Roadway signage shall comply with MUTCD's *Traffic Controls for Bicycle Facilities*.

## Application

Portions of the Louisville Loop that follow roadways should adhere to Louisville's "Complete Streets" policy and should provide both on-street bicycle and separated shared-use paths in order to accommodate all levels of users. Application of this principle shall comply with all AASHTO and MUTCD standards, as well as the other standards incorporated in other sections of this manual.

"Sharrows" may be used on low volume and low-speed roadways where there is insufficient space for bike lanes.




PRECEDENT IMAGES

PHOTO: Alta
George Mason Dr. - Arlington, VA

PHOTO: Alta

PHOTO: Alta
Denver, CO

# Bicycle Lane & Shared-use Path

## Need/Intent

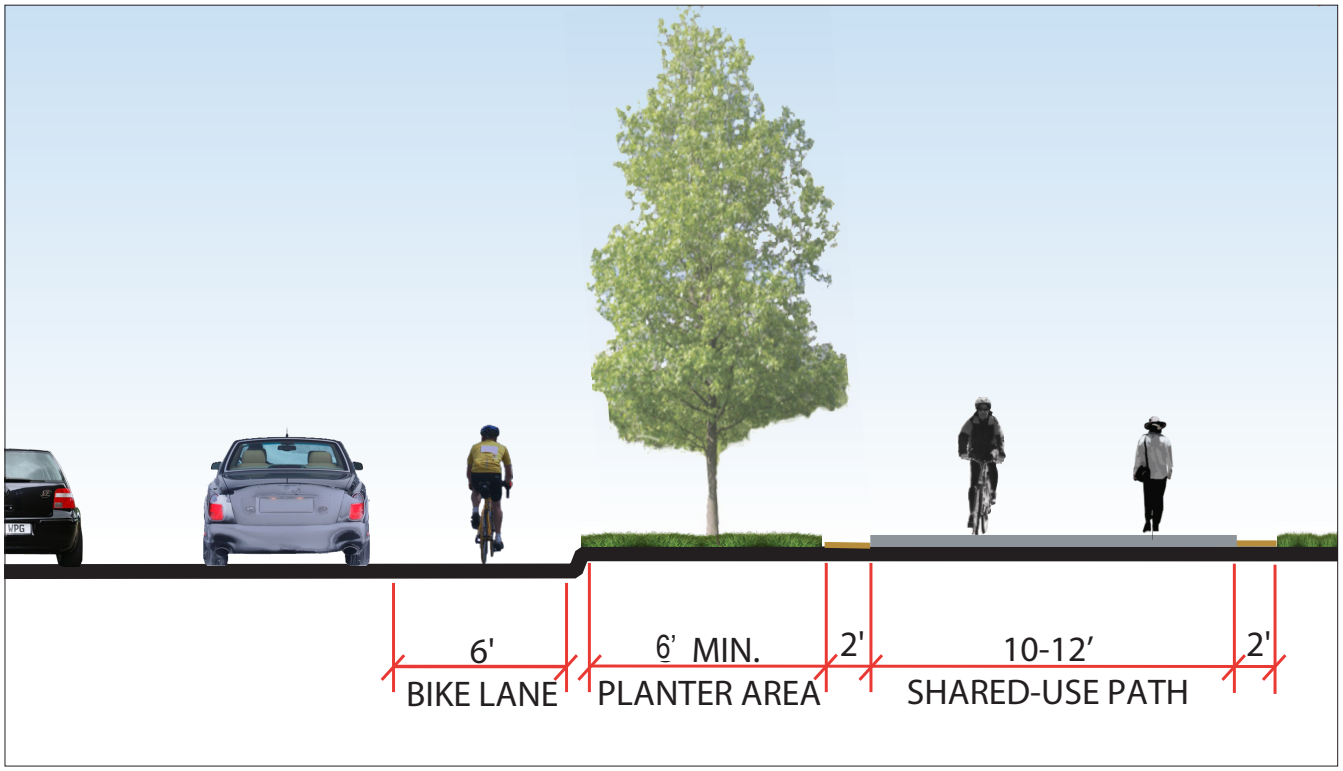
The concept of "Complete Streets" is based on the principle that all streets should include basic amenities that consider and include the use of all forms of transportation, not just motor vehicles. Where the shared-use path parallels streets, the Louisville Loop shall adhere to the "complete streets" concept and shall provide both on and off-street facilities as part of the Loop.

## Guidelines

- Provide both on and off-street facilities as part of the Loop.
- Minimize access between on-street facilities and shared use path except at designated areas. Provide well-marked bicycle connections back to the trail at signalized intersections. Provide street plantings in the planting areas between the roadway and shared-use path.
- Provide Identity signage in conjunction with Louisville's bicycle route signage in the planting area between the shared-use path and the bicycle lanes to alert motorists that they are in a high-volume bicycle and pedestrian environment.

## Application

Portions of the Louisville Loop that follow roadways should adhere to Louisville's "Complete Streets" policy and should provide both on-street bicycle and separated shared-use paths in order to accommodate all levels of users. Application of this principle shall comply with all AASHTO and MUTCD standards, as well as the other standards incorporated in other sections of this manual.




PRECEDENT IMAGES

PHOTO: HNTB
Columbus, IN

PHOTO: HNTB
Louisville, KY

PHOTO: HNTB
Columbus, IN

# Urban Trail

## Need/Intent

Urban Trails are a hybrid type of bicycle facility that combines the experience of a separated path with the on-street infrastructure of a conventional bike lane. Limited application of this trail type may be desirable or necessary on portions of the Louisville Loop.

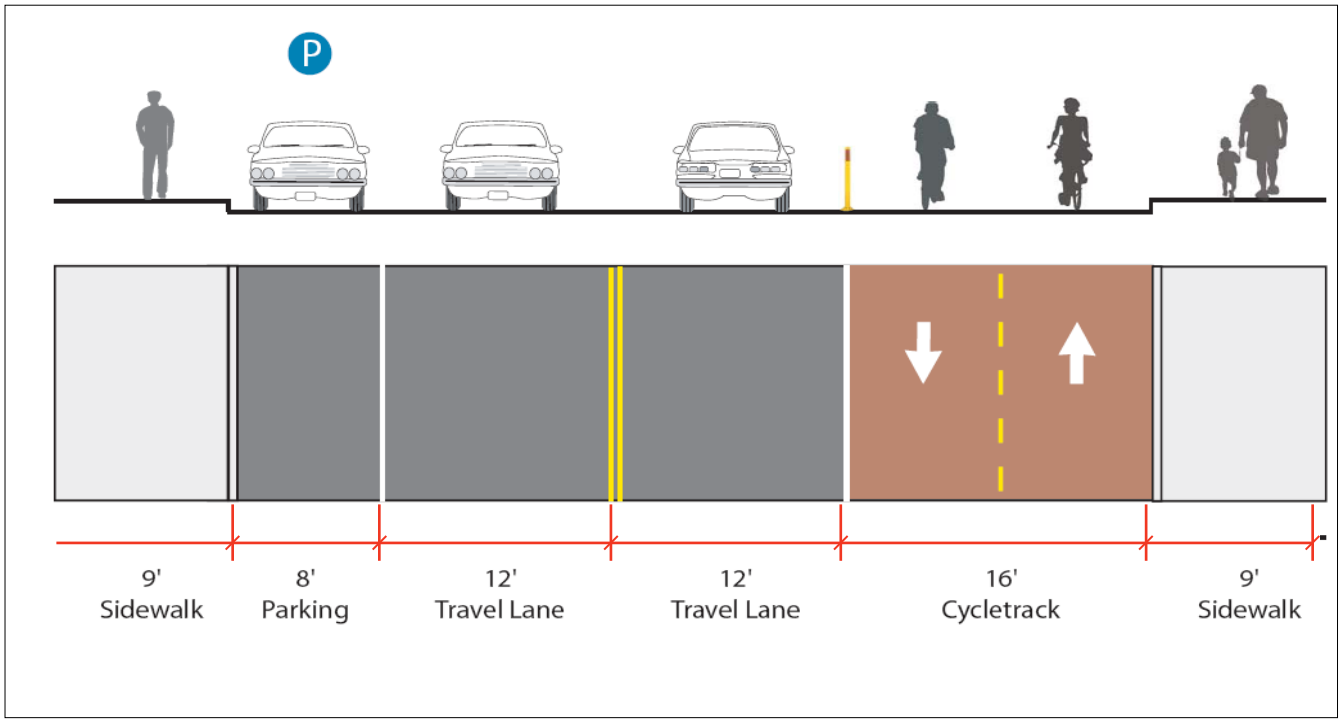
## Guidelines

- Urban Trails should be designed according to ADA and AASHTO standards.
- All regulatory signage shall comply with MUTCD's *Traffic Controls for Bicycle Facilities*. For more detail refer to Operation Standard O2.
- Regulatory markings shall comply with MUTCD's*Traffic Controls for Bicycle Facilities*. For more detail refer to Operation Standard O3.
- Trail surface shall be 16 feet wide with 2 foot shoulders and 10 foot clear height zone.
- Urban Trails shall be located within road right-of-way and shall be separated from motorized vehicle lanes by a physical barrier.
- Urban Trails should have lighting and signage.

*Use of Urban Trails along the Louisville Loop should be designed in consultation with the Kentucky Transportation Cabinet and the Louisville Metro Department of Public Works.*

## Application

Urban trails may be used in specific urban conditions with low-volume and low-speed roads. Consultation with the Kentucky Transportation Cabinet and the Louisville Department of Public Works should occur throughout the design of this type of trail.




PRECEDENT IMAGES

PHOTO: Alta

PHOTO: Alta
Copenhagen, Denmark

PHOTO: Alta
9th Avenue New York, NY

# Bicycle Boulevard

## Need/Intent

Bicycle Boulevards provide an opportunity to provide connectivity and access to users on a dedicated street. Provide connectivity for bicyclists and pedestrians by dedicating a roadway to bicycle use. Limited application of bicycle boulevards may be desirable in residential or urban areas along the Louisville Loop.

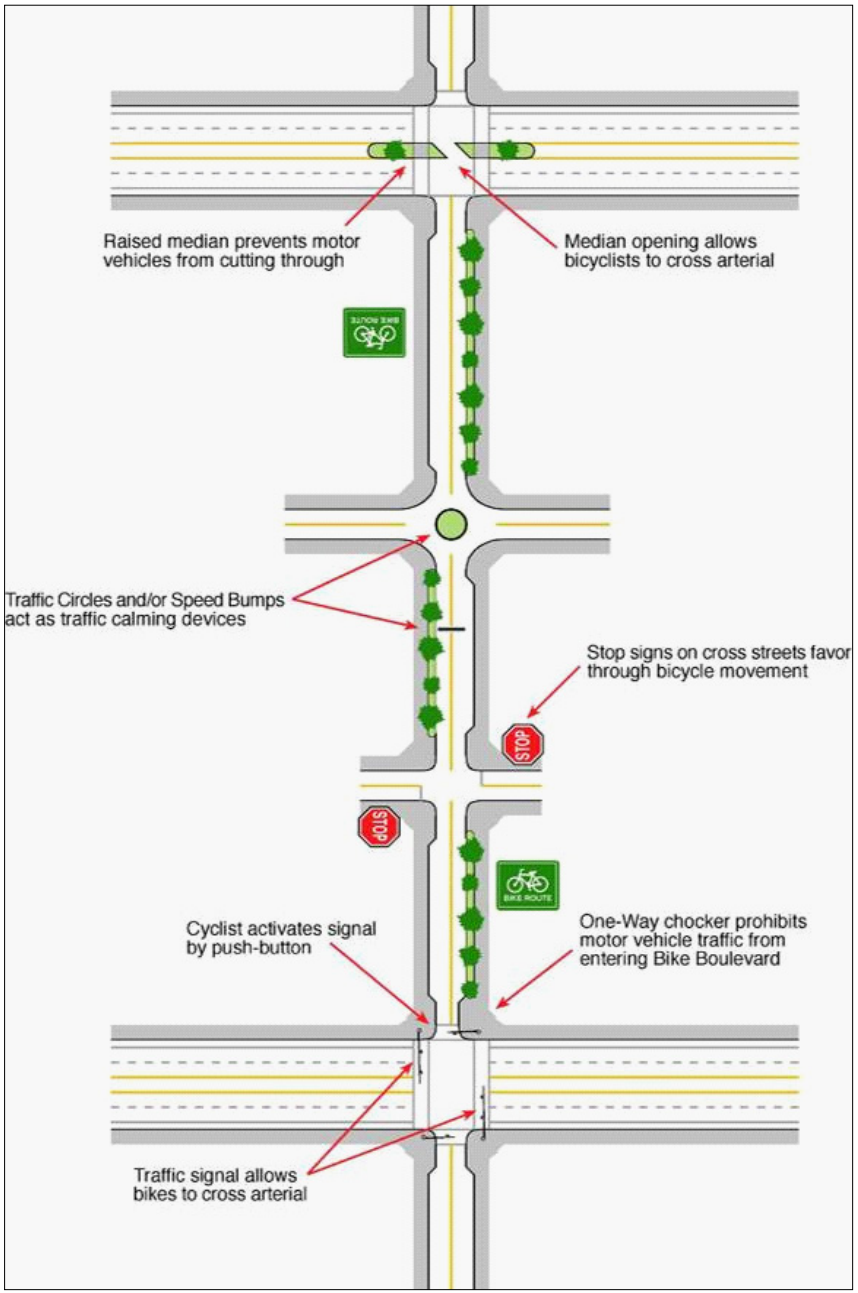
## Guidelines

- Bicycle Boulevard should be designed according to ADA and AASHTO standards.
- All regulatory signage shall comply with MUTCD's *Traffic Controls for Bicycle Facilities*. For more detail refer to Operation Standard O2.
- Regulatory markings shall comply with MUTCD's *Traffic Controls for Bicycle Facilities*. For more detail refer to Operation Standard O3.
- Bicycle Boulevards shall be low-volume streets, separated from motorized vehicle lanes, and contain additional traffic calming devices.
- Bicycle Boulevards should have lighting and signage.

*Use of Bicycle Boulevards along the Louisville Loop should be designed in consultation with the Kentucky Transportation Cabinet and the Louisville Metro Department of Public Works.*

## Application

Detailed application of Bicycle Boulevards vary based on street type, traffic volume, adjacent land uses, and other context-specific factors. Use of this application should take into consideration overall pedestrian movement along the Loop and should be done in in consultation with the neighborhood groups, local businesses, the Kentucky Transportation Cabinet and the Louisville Metro Department of Public Works.




PRECEDENT IMAGES

PHOTO: Alta Berkeley, CA

# Regulatory Standards: Crossing Standards

## INTRODUCTION

One of the greatest potential safety hazards to trail users is when a shared-use path crosses a roadway, railroad, watercourse, or another shared-use path. If not designed properly, there can be tremendous consequences both to the user as well as personal property. This section includes the design standards for crossings. When combined with required regulatory guidelines, they ensure that the trail is meeting the safest requirement.

PHOTO: HNTB

*Lexington Road intersection, Louisville, KY*

# Shared-use Path & Roadway Crossing

## Need/Intent

Shared-use paths need to be specially designed at all roadway intersections to create the safest solution for all users and vehicles.

## Guidelines

- The greatest potential safety hazard to users is when a shared-use path crosses a roadway, driveway, railroad, watercourse, or another sidewalk or shared-use path. The best way to increase safety is to increase visibility. It is important that crossings are visible both to trail users and to motorized vehicles. There are two types of crossings: at-grade and grade-separated. Of these, grade-separated crossings are necessary for watercourses, and strongly recommended for high-volume roadways. At-grade crossings are appropriate where motorized traffic volumes are low or local conditions prohibit grade separation.
- At-grade crossings should be used when roadway traffic volumes are low, where shared-use paths cross roadways at existing traffic signals, or when local conditions restrict the ability to implement a grade-separated crossing.
- Mid-block crossings may be used with special design consideration that would include possible pedestrian crossing devices, pavement markings or striping, and signage.
- Shared-use paths should cross roadways at right angles. In cases where shared-use paths approach the roadway at a skew, the shared-use path should be routed to achieve a right-angle crossing wherever possible.
- Visibility is very important for motorists and trail users so they will be able to see each other at roadway crossings. A motorist needs to be able to stop in time if a trail user is in the road, and a trail user needs to be able to judge his or her ability to cross the street safely.
- Signage, striping and other pavement markings, and signals are the three basic components of at-grade crossings. All regulatory signage shall comply with MUTCD's *Traffic Controls for Bicycle Facilities*. For more detail refer to Operation Standard O1. Regulatory markings shall comply with MUTCD's *Traffic Controls for Bicycle Facilities*. For more detail refer to Operation Standards O2 and O3.
- Where practical, curb radii of street intersections should be minimal to reduce the length of pedestrian and trail crossings. Determination of exact radii shall be dependent on design vehicle, width of the approach and receiving lanes, and the curb radius itself.

*All street crossings along the Louisville Loop should be designed in consultation with the Kentucky Transportation Cabinet and the Louisville Metro Department of Public Works.*

## Application: Sign Placement Guidelines:

| Posted or 85th-Percentile Speed | Advance Placement Distance[1] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Condition A: Speed Reduction and Lane Changing in Heavy Traffic[2] | Condition B: Deceleration to the listed advisory speed (mph) for the condition[4] | | | | | | | |
| | | 0[3] | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| 20 mph | 225 ft | N/A[5] | N/A[5] | — | — | — | — | — | — |
| 25 mph | 325 ft | N/A[5] | N/A[5] | N/A[5] | — | — | — | — | — |
| 30 mph | 450 ft | N/A[5] | N/A[5] | N/A[5] | — | — | — | — | — |
| 35 mph | 550 ft | N/A[5] | N/A[5] | N/A[5] | N/A[5] | — | — | — | — |
| 40 mph | 650 ft | 125 ft | N/A[5] | N/A[5] | N/A[5] | — | — | — | — |
| 45 mph | 750 ft | 175 ft | 125 ft | N/A[5] | N/A[5] | N/A[5] | — | — | — |
| 50 mph | 850 ft | 250 ft | 200 ft | 150 ft | 100 ft | N/A[5] | — | — | — |
| 55 mph | 950 ft | 325 ft | 275 ft | 225 ft | 175 ft | 100 ft | N/A[5] | — | — |
| 60 mph | 1100 ft | 400 ft | 350 ft | 300 ft | 250 ft | 175 ft | N/A[5] | — | — |
| 65 mph | 1200 ft | 475 ft | 425 ft | 400 ft | 350 ft | 275 ft | 175 ft | N/A[5] | — |
| 70 mph | 1250 ft | 550 ft | 525 ft | 500 ft | 425 ft | 350 ft | 250 ft | 150 ft | — |
| 75 mph | 1350 ft | 650 ft | 625 ft | 600 ft | 525 ft | 450 ft | 350 ft | 250 ft | 100 ft |

**Notes:**

1. The distances are adjusted for a sign legibility distance of 175 ft for Condition A. The distances for Condition B have been adjusted for a sign legibility distance of 250 ft, which is appropriate for an alignment warning symbol sign.
2. Typical conditions are locations where the road user must use extra time to adjust speed and change lanes in heavy traffic because of a complex driving situation. Typical signs are Merge and Right Lane Ends. The distances are determined by providing the driver a PIEV time of 14.0 to 14.5 seconds for vehicle maneuvers (2001 AASHTO Policy, Exhibit 3-3, Decision Sight Distance, Avoidance Maneuver E) minus the legibility distance of 175 ft for the appropriate sign.
3. Typical condition is the warning of a potential stop situation. Typical signs are Stop Ahead, Yield Ahead, Signal Ahead, and Intersection Warning signs. The distances are based on the 2001 AASHTO Policy, Stopping Sight Distance, Exhibit 3-1, providing a PIEV time of 2.5 seconds, a deceleration rate of 11.2 ft/second2, minus the sign legibility distance of 175 ft.
4. Typical conditions are locations where the road user must decrease speed to maneuver through the warned condition. Typical signs are Turn, Curve, Reverse Turn, or Reverse Curve. The distance is determined by providing a 2.5 second PIEV time, a vehicle deceleration rate of 10 ft/second2, minus the sign legibility distance of 250 ft.
5. No suggested distances are provided for these speeds, as the placement location is dependent on site conditions and other signing to provide an adequate advance warning for the driver.

PRECEDENT IMAGES

PHOTO: HNTB
Monon Trail, Carmel, IN

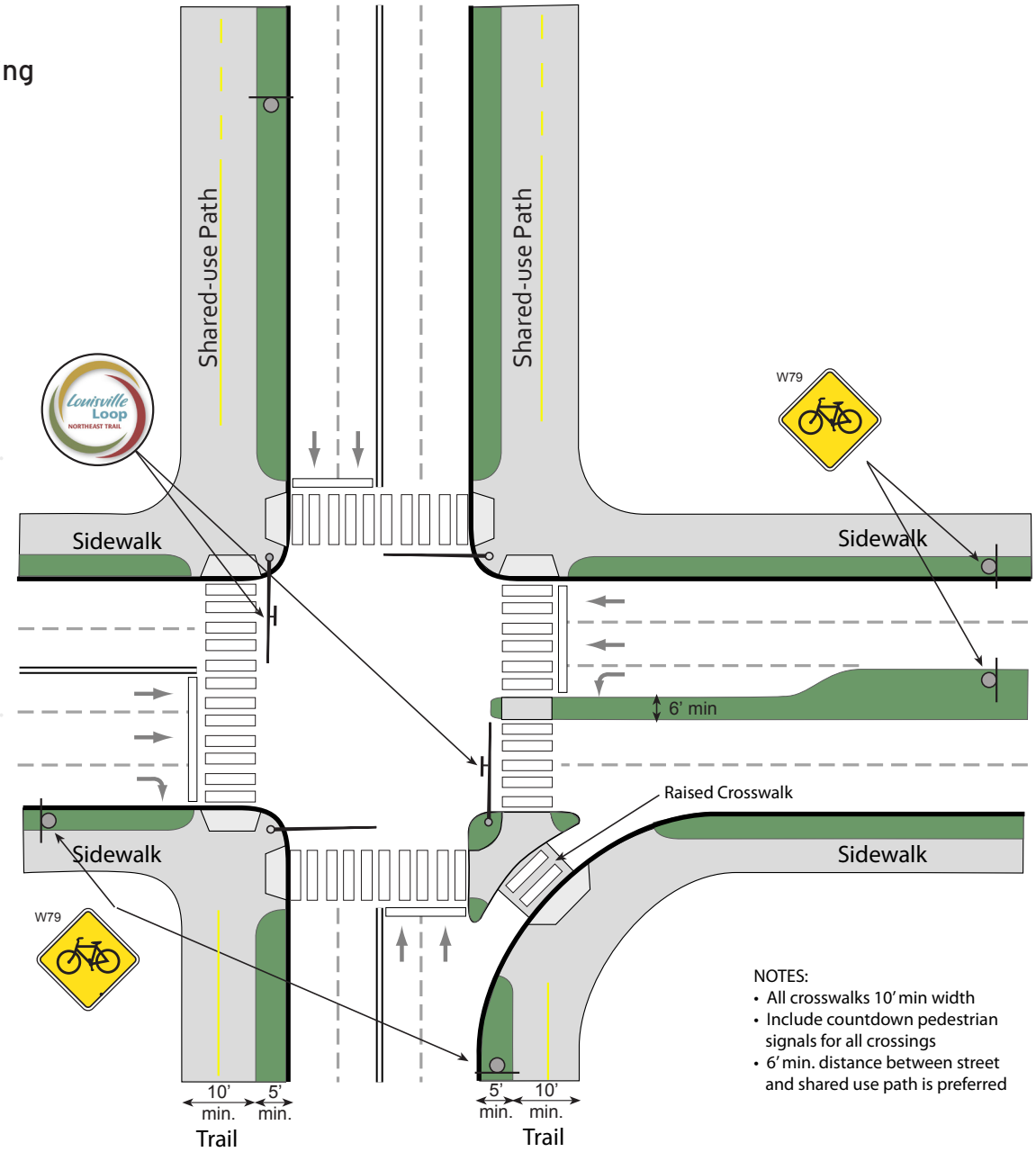
PHOTO: HNTB
Monon Trail, Carmel, IN

PHOTO: Alta
Springwater Trail Portland, OR

PHOTO: HNTB
Monon Trail, Carmel, IN

## Application

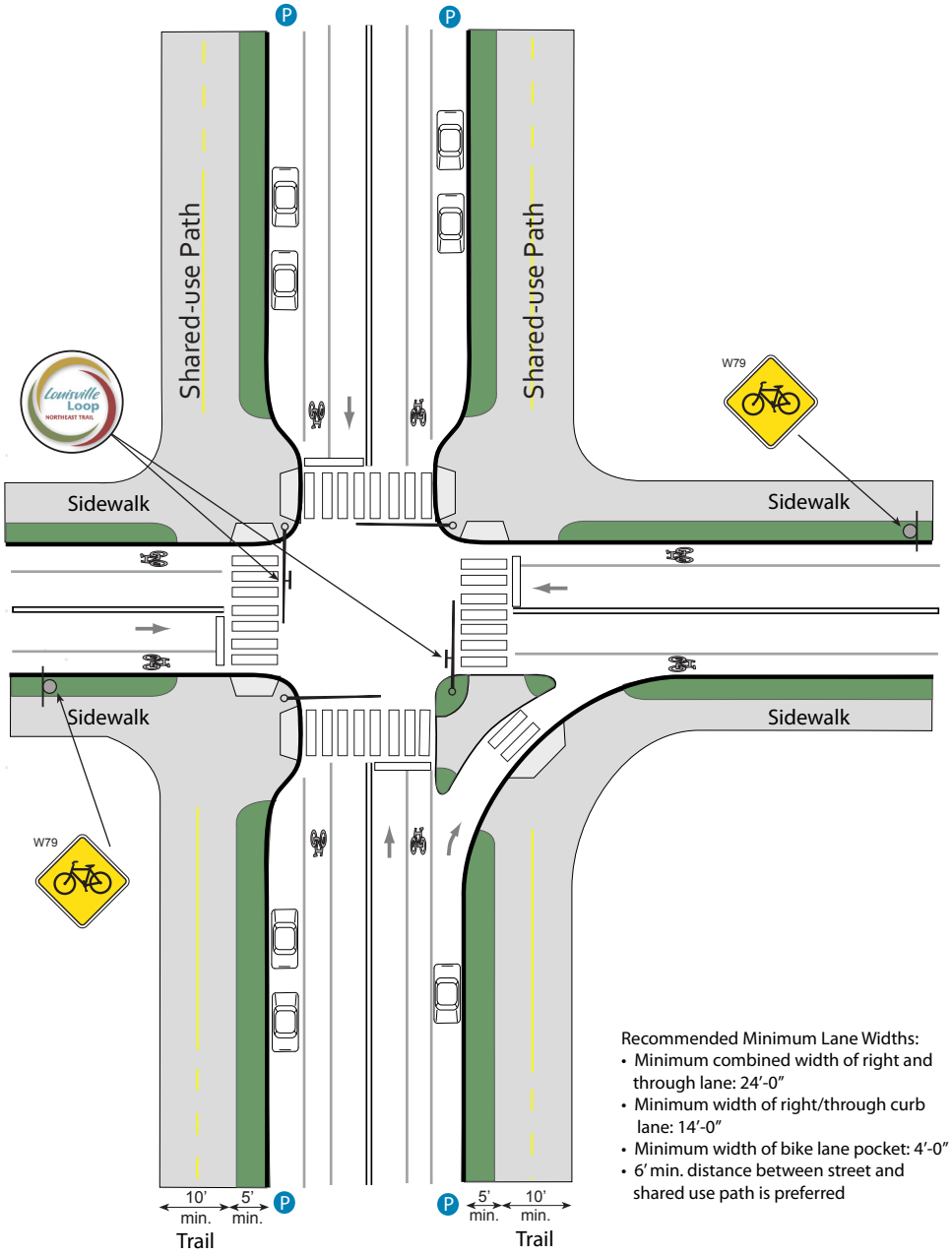
### Typical Crossing at Signalized Intersection




NOTES:
- All crosswalks 10' min width
- Include countdown pedestrian signals for all crossings
- 6' min. distance between street and shared use path is preferred

## Application

### Typical Crossing at Signalized Intersection with Bike Lanes

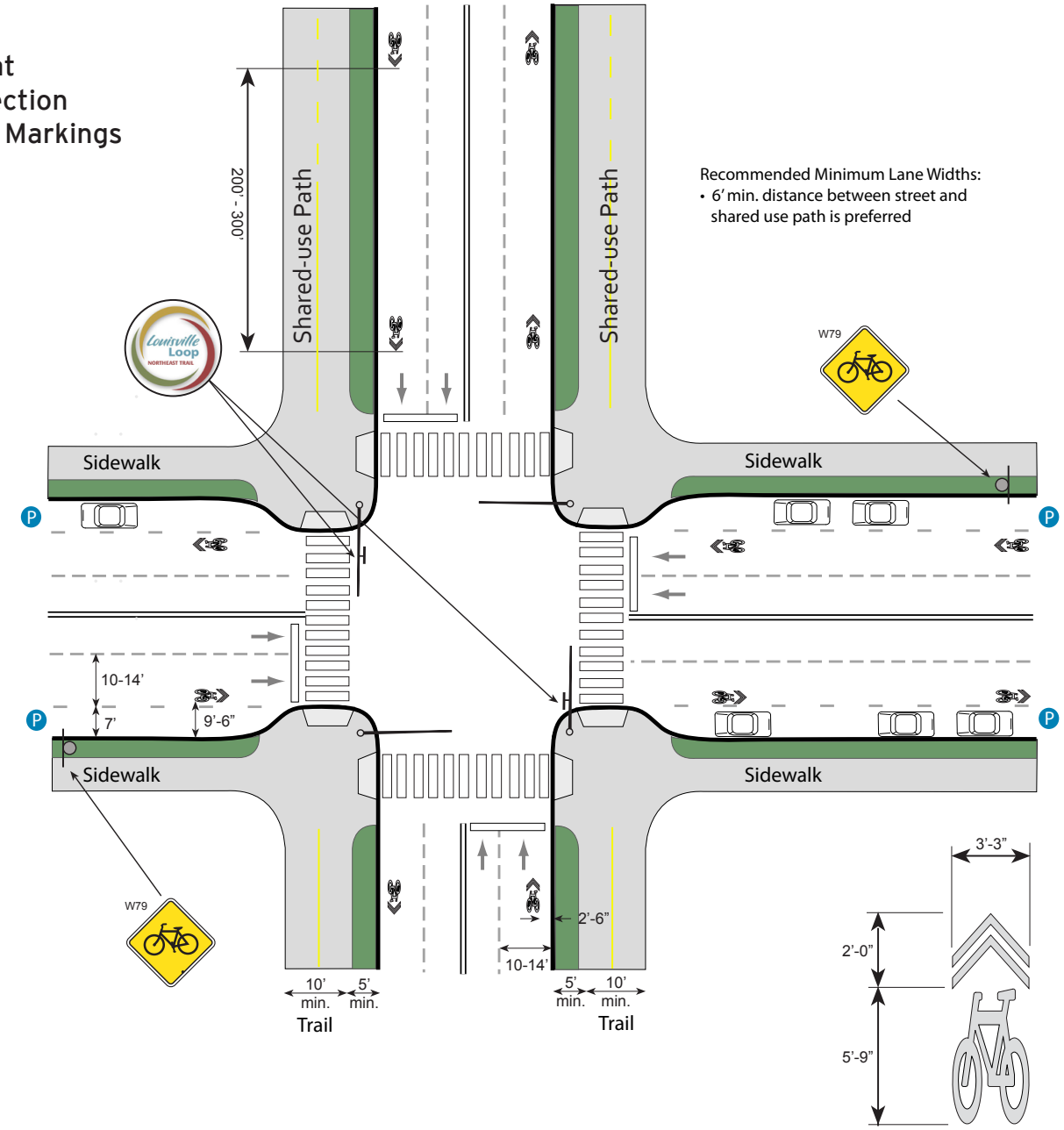



Recommended Minimum Lane Widths:

- Minimum combined width of right and through lane: 24'-0"
- Minimum width of right/through curb lane: 14'-0"
- Minimum width of bike lane pocket: 4'-0"
- 6' min. distance between street and shared use path is preferred

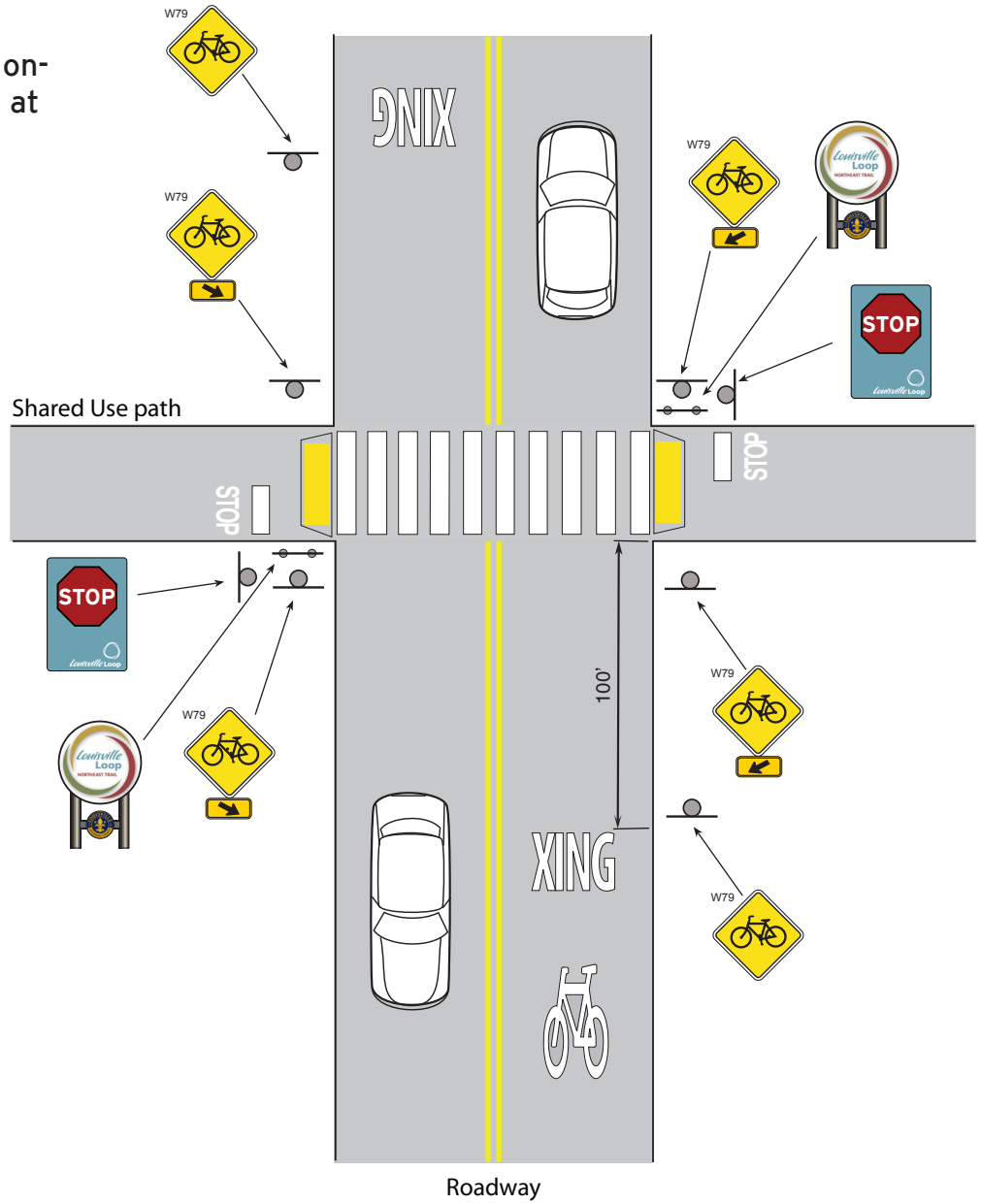
## Application

### Typical Crossing at Signalized Intersection with Shared Lane Markings



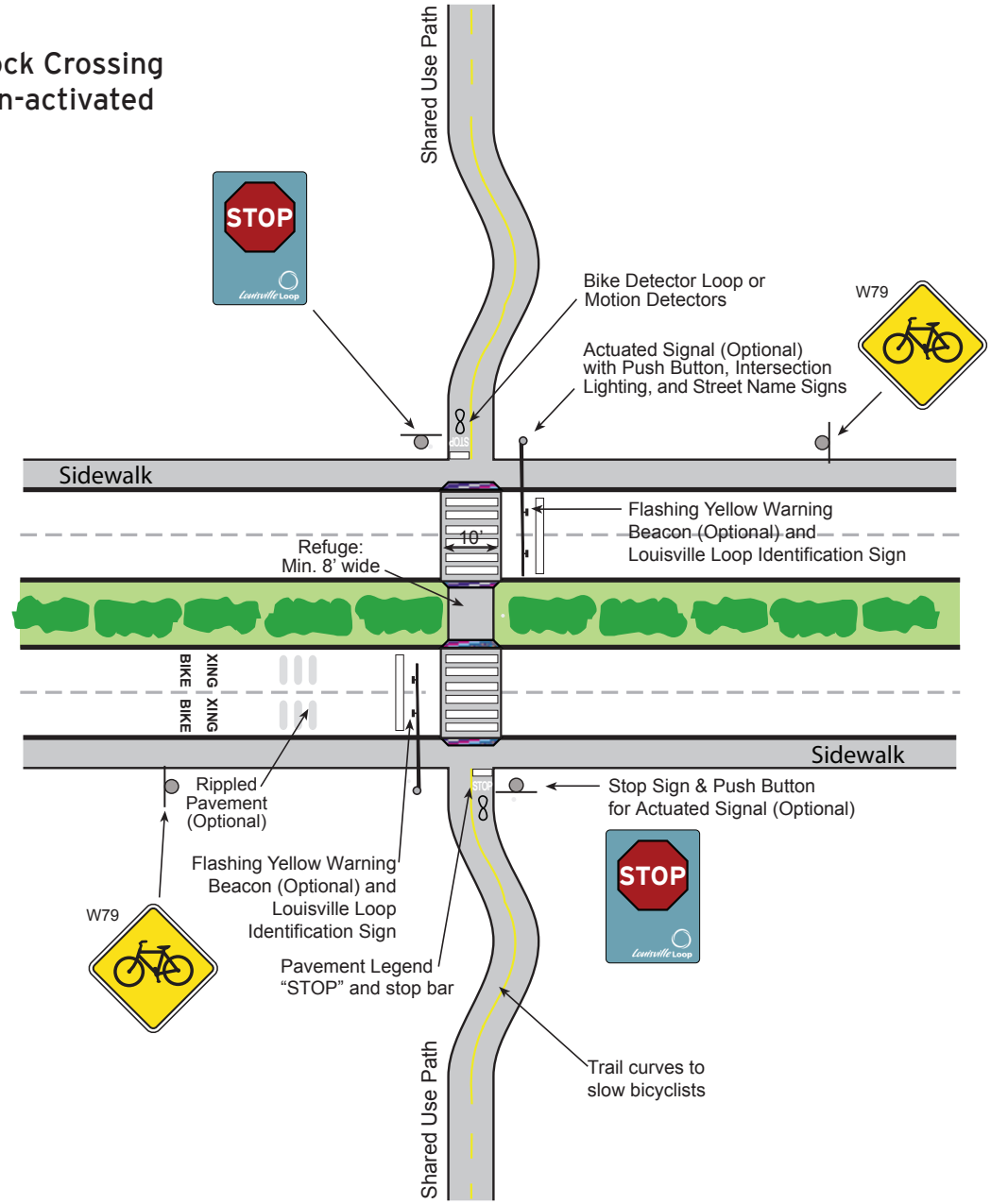
## Application

Typical Mid-block Non-signalized Crossing at Minor Street



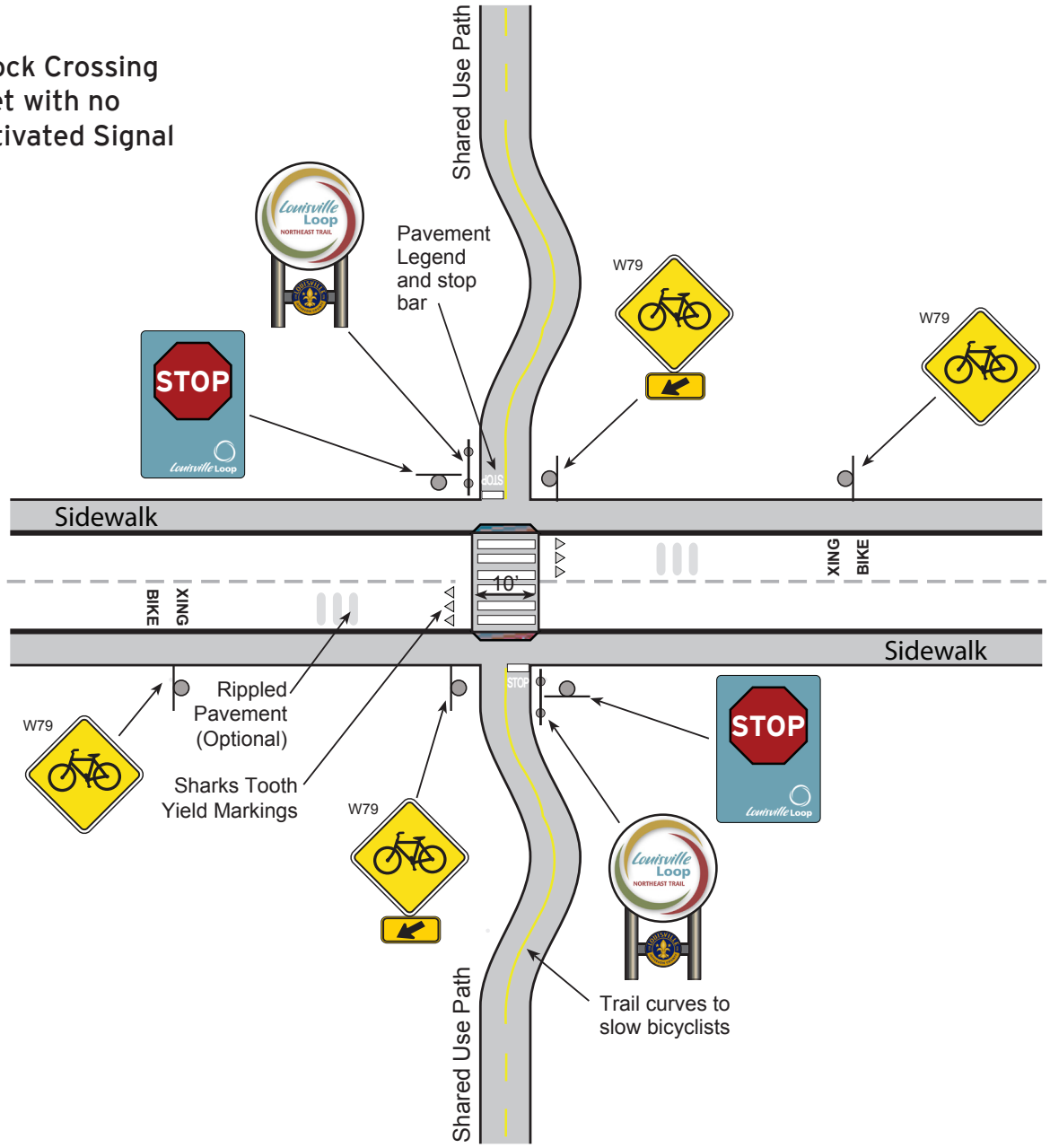
## Application

### Typical Mid-block Crossing with Pedestrian-activated Signal



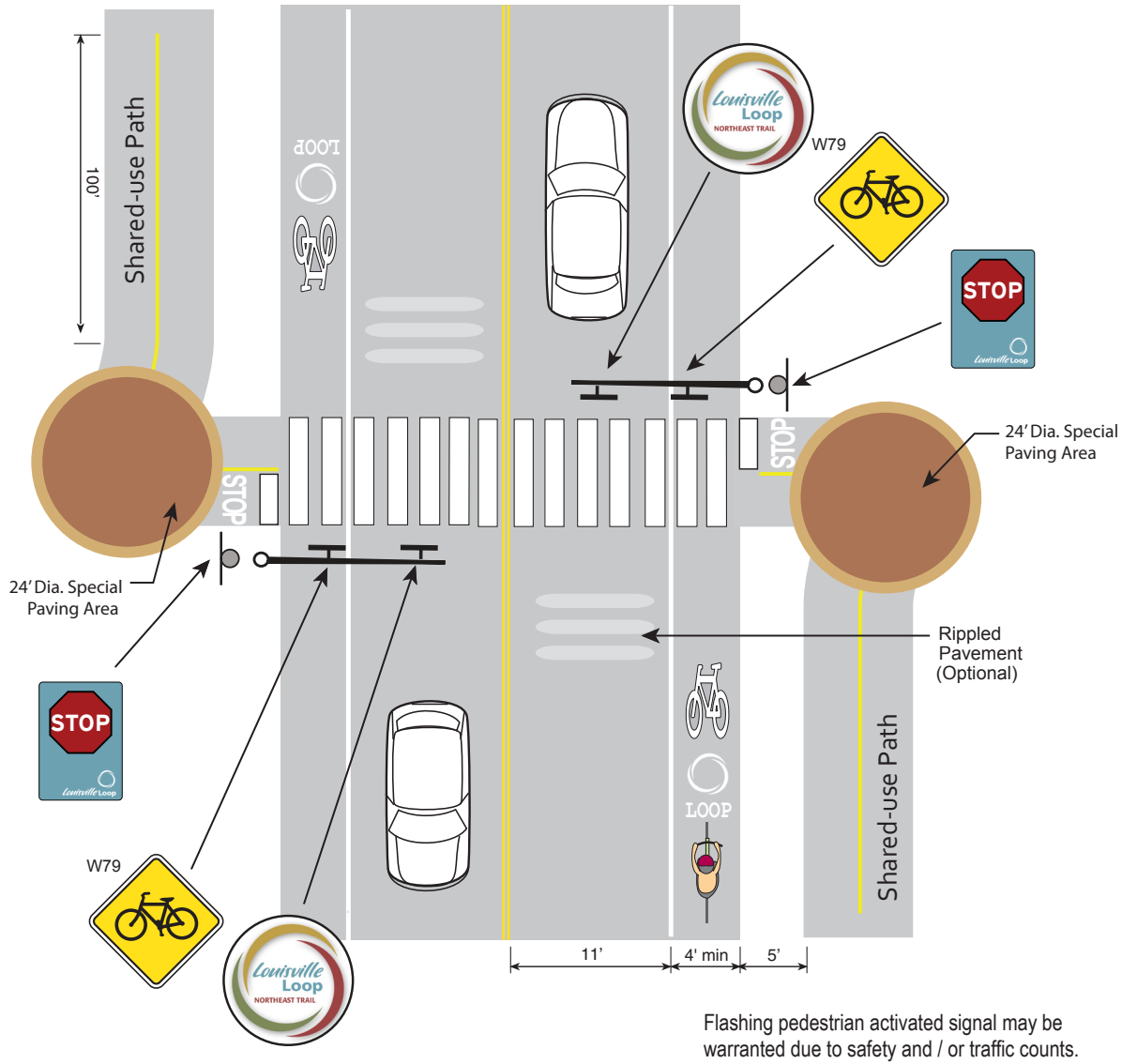
## Application

Typical Mid-block Crossing on Minor Street with no Pedestrian-activated Signal



## Application

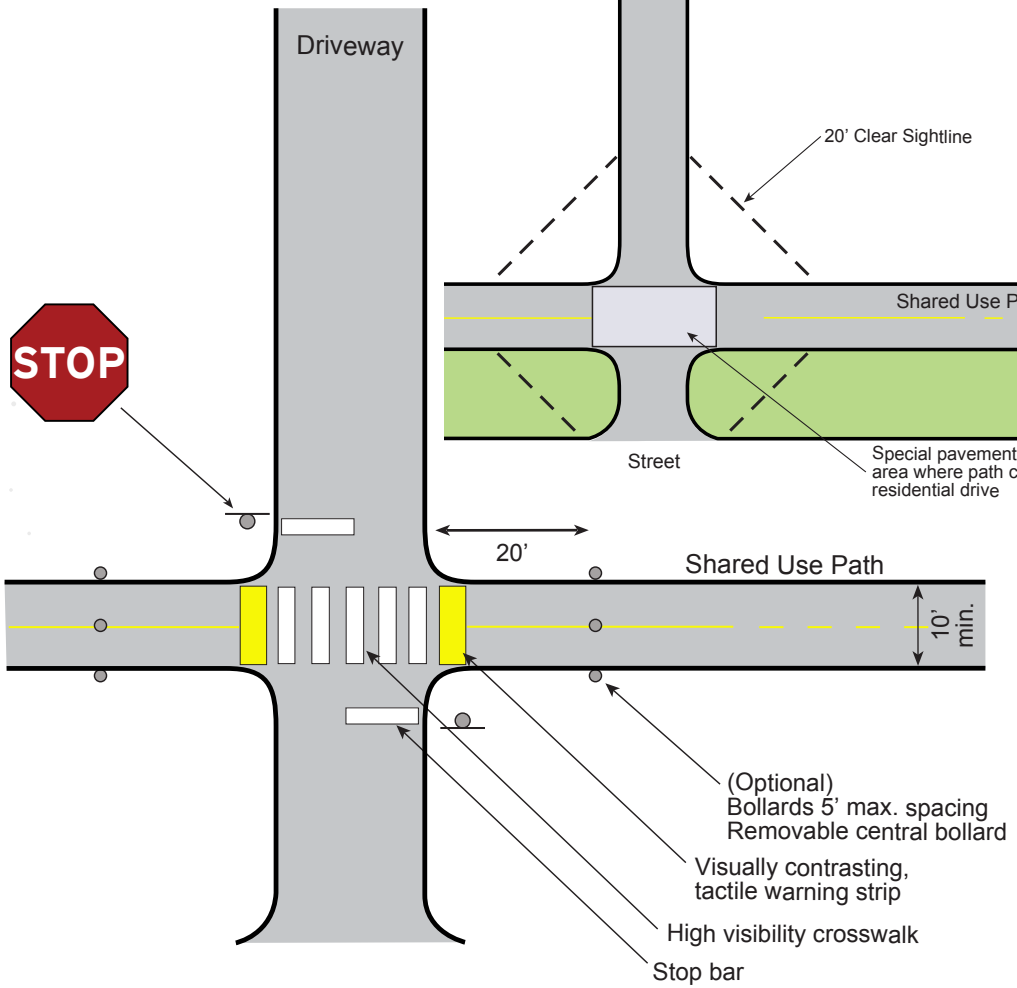
### Typical Mid-block Crossing Where Shared-use Path Parallels Street




Flashing pedestrian activated signal may be warranted due to safety and / or traffic counts.

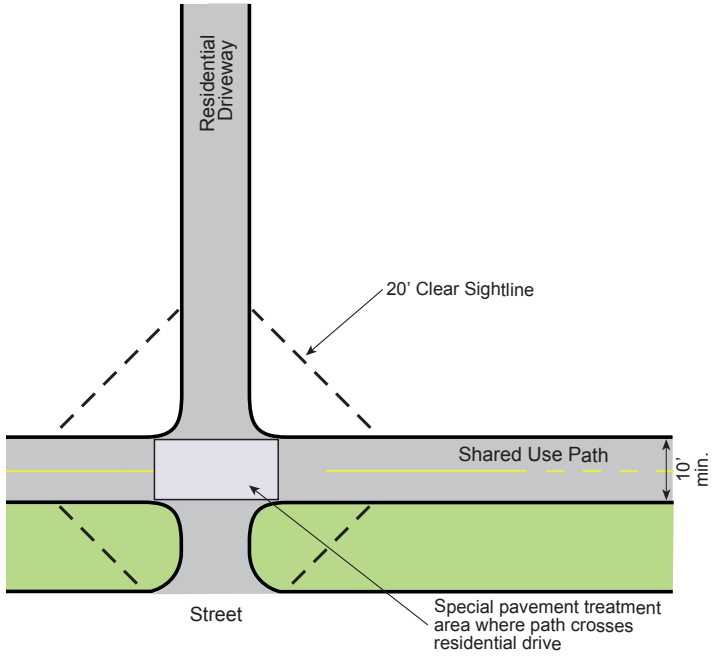
## Application

### Typical Shared Use Path Driveway Crossings



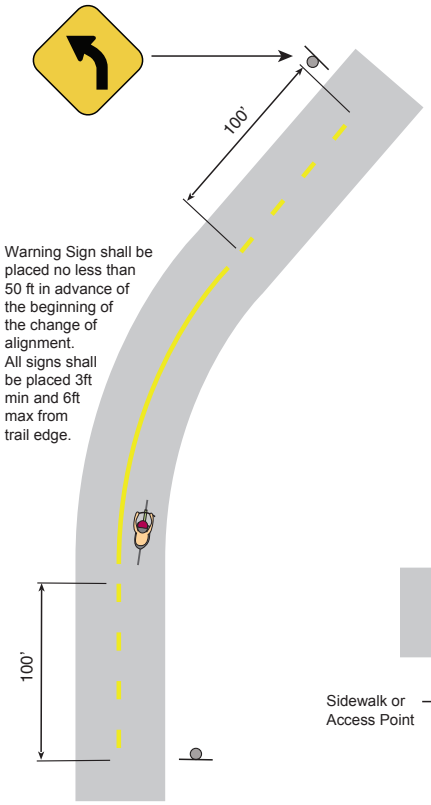

## Application

### Typical Shared Use Path Residential Driveway Crossings

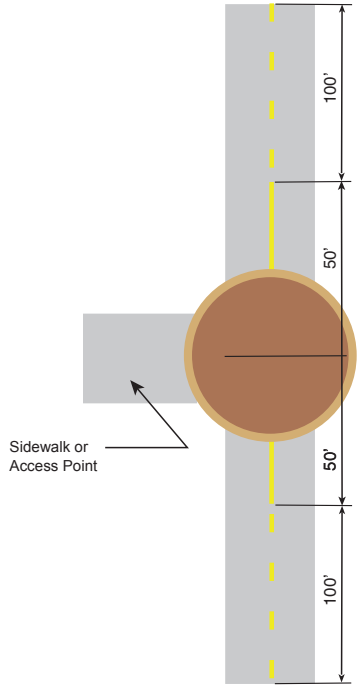



## Application

### Typical Centerline Markings at Areas With Limited Sight Lines and at access Points




Pavement Markings




Pavement Markings

# Shared-use Path & Rail Crossing

**Need/Intent**

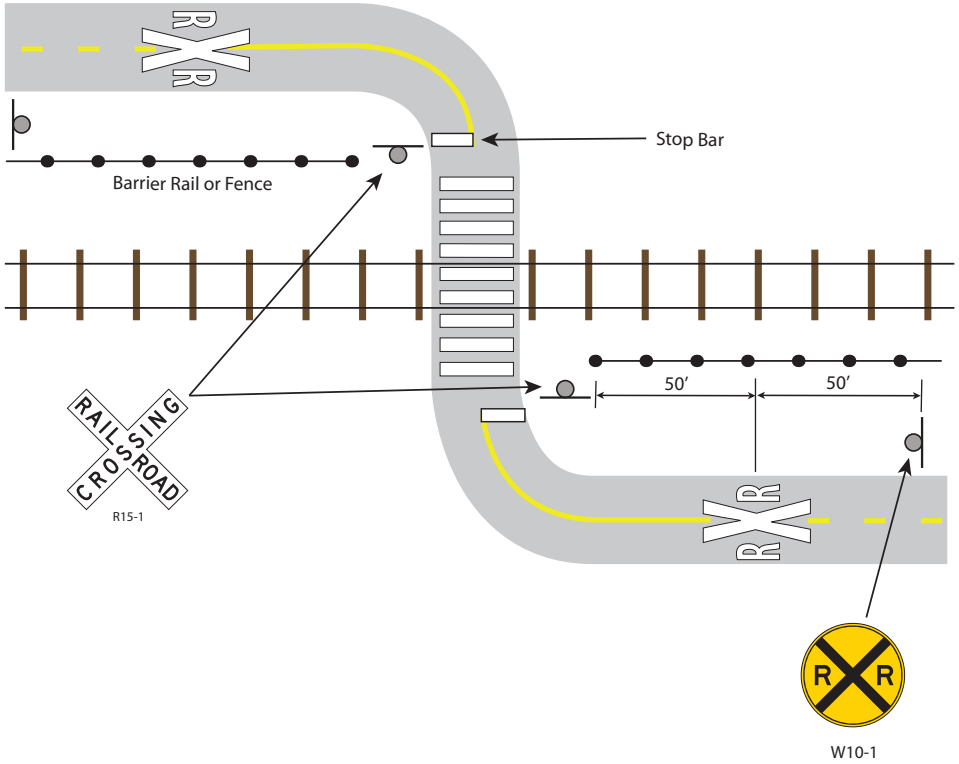
Shared-use paths need to be specially designed at all railroad intersections to create the safest solution for all users.

**Guidelines**

- Railroad crossings present a potential safety hazard to users. The best way to increase safety is to increase visibility.
- At-grade crossings should be used when railroad traffic volumes are low, where shared-use paths cross railroads at existing signals, or when local conditions restrict the ability to implement a grade-separated crossing.
- Shared-use paths should cross railroads at right angles. In cases where shared-use paths approach the railroad at a skew, the shared-use path should be re-routed to achieve a right-angle crossing wherever possible.
- Visibility is very important at railroad crossings, considering the stopping distance required for trains.
- Signage, striping and other pavement markings, and signals are the three basic components of at-grade crossings.

## Application

Railroad Crossings shall cross tracks at 90 degree angles and shall be marked and signed as per MUTCD's *Traffic Controls for Bicycle Facilities* standards.




PRECEDENT IMAGES

PHOTO: HNTB
Paradise Spring Park Trail, Wabash, IN

PHOTO: HNTB
Ohio River Levee Trail, Louisville, KY

PHOTO: Alta

PHOTO: HNTB
Columbus People Trail, Columbus, IN

# Shared-use Path & Natural Feature Crossing

**Need/Intent**

Shared-use paths need to be specially designed at all natural features to provide access across waterways, wetlands and steep terrain.

**Guidelines**

- All crossings of natural and environmentally sensitive areas should be designed to minimize impacts due to trail construction.
- All construction should minimize the amount of fill material used in sensitive areas, especially floodways, floodplains, and wetlands.
- Where possible, shared-use path placement should avoid all naturally sensitive environments such as wetlands, streams, mature tree stands, and endangered flora and fauna. Shared-use path should be placed no closer than 30 feet from such areas. In areas where the shared-use path will impact sensitive areas, trail construction should be done in a manner to minimize disturbance and use sustainable methods for construction of shared-use path. For example, if the shared-use path passes through a designated wetland, wood or recycled plastic boardwalks should be used to minimize the trail's effect on the wetland.
- For bridges over streams and water courses, minimize placement of piers in the water body if feasible.
- Shared-use path and associated amenities should be designed to blend in with the natural context of the environment, and should not create a visual obstruction on the landscape.
- Shared-use paths shall avoid direct or indirect impacts of all known habitat areas. Where the shared-use path passes within 50 feet of endangered species habitat, fence barrier shall be placed 3 feet from edge of trail to restrict path users from entering habitat.
- Except in forested areas, the shared-use path shall be placed outside of the dripline of significantly-sized trees to protect roots from trail construction. In forested areas, shared-use path alignment should be designed to minimize impact to the forest. For each tree removed due to trail construction, 3 trees should be planted adjacent to the trail.
- In natural areas, native plants and grasses should be used in landscaping along the shared-use path.
- 6-foot clear zones shall be maintained/mowed in natural areas so as not to obscure potential obstructions.

## PRECEDENT IMAGES



Mill Creek Trail, Louisville, KY PHOTO: Louisvilled Metro Parks



PHOTO: Louisville Metro Parks



Prairie Spirit Trail, Richmond, KS PHOTO: HNTB

# Regulatory Standards: Support Facilities

## INTRODUCTION

Support facilities are critical to the success of a trail system such as the Louisville Loop. They provide access to the trail for users of all levels, they provide critical trail information, and they generally set the character of the experience. The Louisville Loop will contain four general support facilities:

- Trailheads
- Primary Access Points
- Secondary Access Points
- Rest Areas

In many ways, these support facilities function as the front door to the trail system and can delineate between a positive experience or a negative experience for the user.

These guidelines provide the provisions designated for each of these types of support facilities.

PHOTO: HNTB

*Cherokee Park, Louisville, KY*

# Trailheads

## Need/Intent

Provide trailheads at major access points to the Louisville Loop. Incorporate features into trailheads that set the tone for the entire Louisville Loop experience.

## Guidelines

- Trailheads should be placed at major connections between trail segments or other areas where significant ingress and egress from the trail is likely to occur. Trailheads should be accessible by vehicle, transit, pedestrian and bicycle.
- Trailheads should include parking for both vehicles and bicycles. Permeable pavement should be incorporated into the pavement design where appropriate to reduce stormwater impacts. Vehicle parking may be on trailhead property or be provided via a shared-use agreement with a nearby owner of a parking lot. All parking lot signage and markings shall comply with MUTCD. Where feasible, a landscape buffer should be placed between the parking area and the trail.
- Trailheads should contain important trail information to orient users to their location and to the system as a whole.
- All connections between the trail and trailhead facilities should be universally accessible and meet all ADA criteria.
- Trailhead features should allow for users to exit the main travel paths of the trail and not impede bicycle or pedestrian traffic passing through the trailhead.
- Trailheads should include benches that allow users to rest at trailheads. Trailheads should also provide trash and recycling receptacles.
- Trailheads should be designed to include temporary exhibits of art. To accommodate concrete pavement underneath art exhibit area should be heavy duty and be able to sustain significant weight loads. Electricity should also be provided to the art exhibit area.
- Trailheads should use local stone and native plantings to reinforce the physiographic regions concept and educational component.
- Vegetation and plant material along trail and trailheads to be coordinated with landscape architect.

## Application

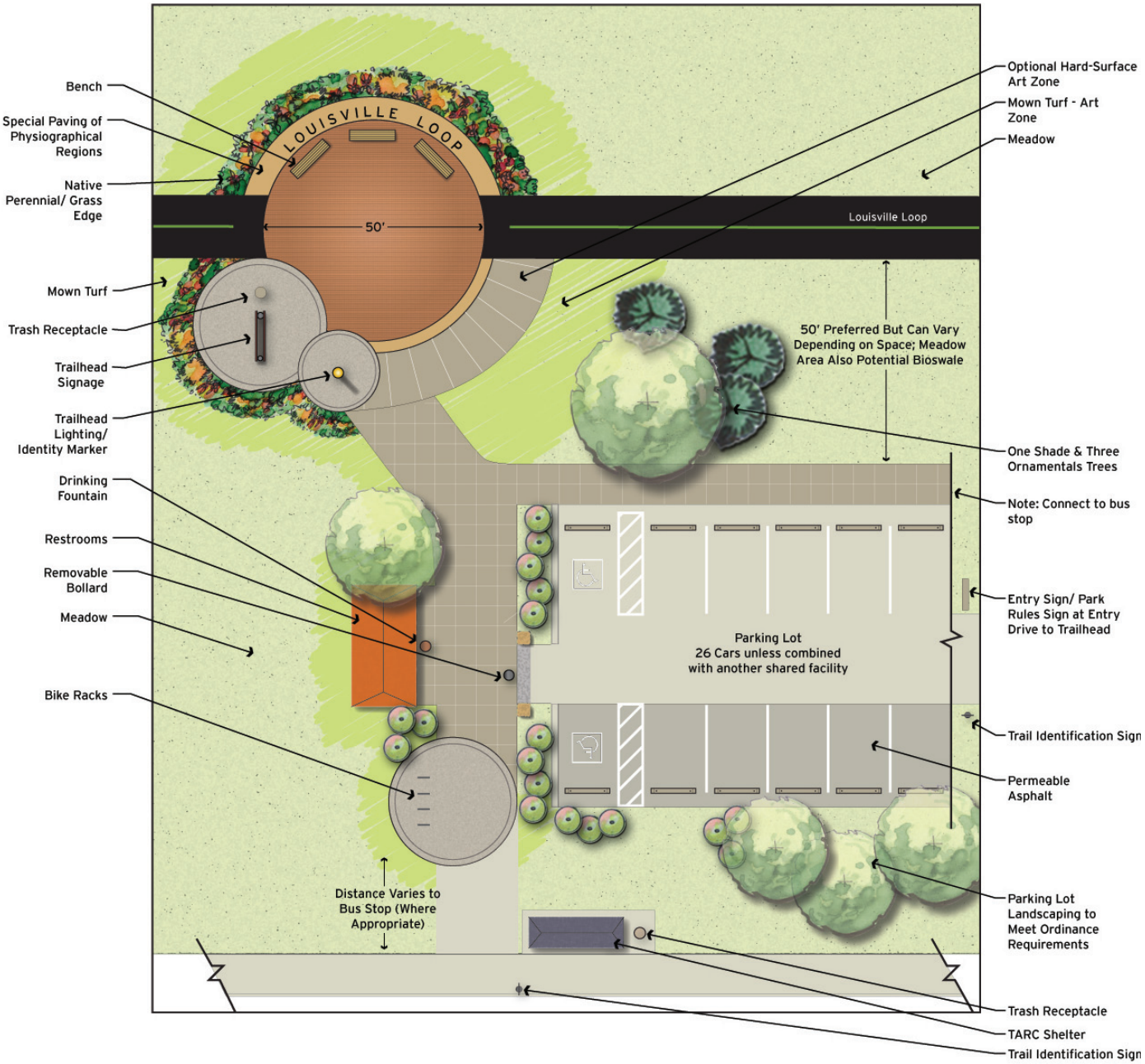
Since the conditions, orientation, and adjacent land uses will be different throughout the Loop, the graphic illustrates a prototypical application of elements and relationships.

**AMENITIES AT EACH TRAILHEAD:**

- Parking (26 spaces min.)
- Trailhead Sign with map and rules
- One Signature Marker (see S3)
- Bike racks (3 min)
- Benches
- Hard and softscape areas for temporary art exhibits

**OPTIONAL AMENITIES:**

- Transit connection and shelter
- Drinking fountains
- Restrooms
- Bike lockers (at transit centers)
- Emergency Call Box



# Trailheads (continued)

## Application

The images on this page are intended to illustrate similar applications of trailhead features and how they might be applied at trailheads on the Louisville Loop. They are intended to provide further guidance to trailhead development.

PRECEDENT IMAGES

### Restroom Facilities

PHOTO: Louisville Metro Parks

PHOTO: Louisville Metro Parks

PHOTO: Louisville Metro Parks

PHOTO: Environs

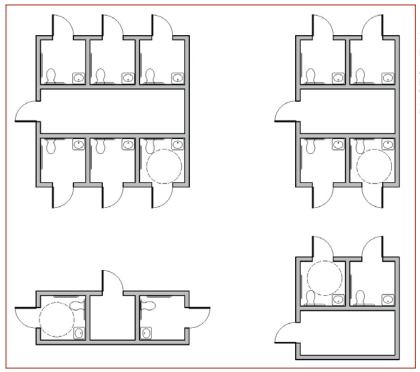


PHOTO: Environs

Existing restroom facilities within Louisville Metro Parks. Restrooms can be designed to reflect neighborhood architecture or other local features. Building facade materials can incorporate materials reflective of the physiographic region of the trailhead.

### Landscape Treatments

PHOTO: HNTB

PHOTO: M. Woemle

Maintained turf edges and low-maintenance native prairie plantings to be used adjacent to trailhead areas.

## Application

The images on this page are intended to illustrate similar applications of trailhead features and how they might be applied at trailheads on the Louisville Loop.  They are intended to provide further guidance to trailhead development.

### Bollard Placement

PHOTO: HNTB

Typical bollard placement at trailheads and access points.

### Temporary Art Exhibits

PHOTO: HNTB

Example of temporary art exhibit.

### Benches

Photo courtesy of Victor Stanley

Typical bench for placement in trailheads and rest areas..

### Truncated Dome

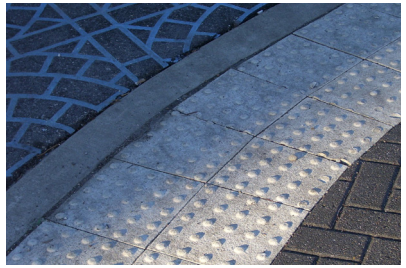


PHOTO: HNTB

Examples of truncated dome at accessible crosswalks.

### Pervious Pavement in Parking Lots

PHOTO: HNTB

PHOTO: HNTB

Example of pervious pavement to be used in trailhead parking lots to help handle stormwater.

### Special Pavement Treatment

PHOTO: HNTB

PHOTO: HNTB

PHOTO: Metro Parks

Examples of special paving applications to be used at trailheads and access points. Place name slabs should be used at entrances to trails and as a transition between hard and soft surface trails.

# Access Points

## Need/Intent

Provide access points to the trail that allow users to access the Loop, introduces the conceptual design elements, and reinforces presence on the trail.

## Guidelines

- Locate access points and amenities at places where there is need for access to trail. At minimum, provide access points at 2-mile intervals. Access points should be accessible by pedestrian and bicycle.
- Amenities and function of access points should not impede trail users.
- Primary access points include connections to major neighborhood trail systems, transit lines, schools, community facilities, parks, or other areas where high levels of local pedestrian traffic is expected. At these locations, access points should include Louisville Loop Identification Marker/wayfinding signage, conceptual pavement treatment that ties to the overall theme of the trail, places to sit, and trash and recycling receptacles.
- Secondary access points include smaller neighborhood connections, sidewalk connections, or other access areas where only limited local pedestrian traffic is anticipated. At these locations, access points should include Louisville Loop Identification Marker/wayfinding signage and limited conceptual pavement treatment that ties to the overall theme of the trail.
- All landscape material should be native and should not obstruct views onto the trail or from the trail.
- Regulatory signage should be used according to MUTCD, AASHTO.
- Place name slabs should be used at the entrances to trails as well as a transition from hard to soft surface trails.

## Application

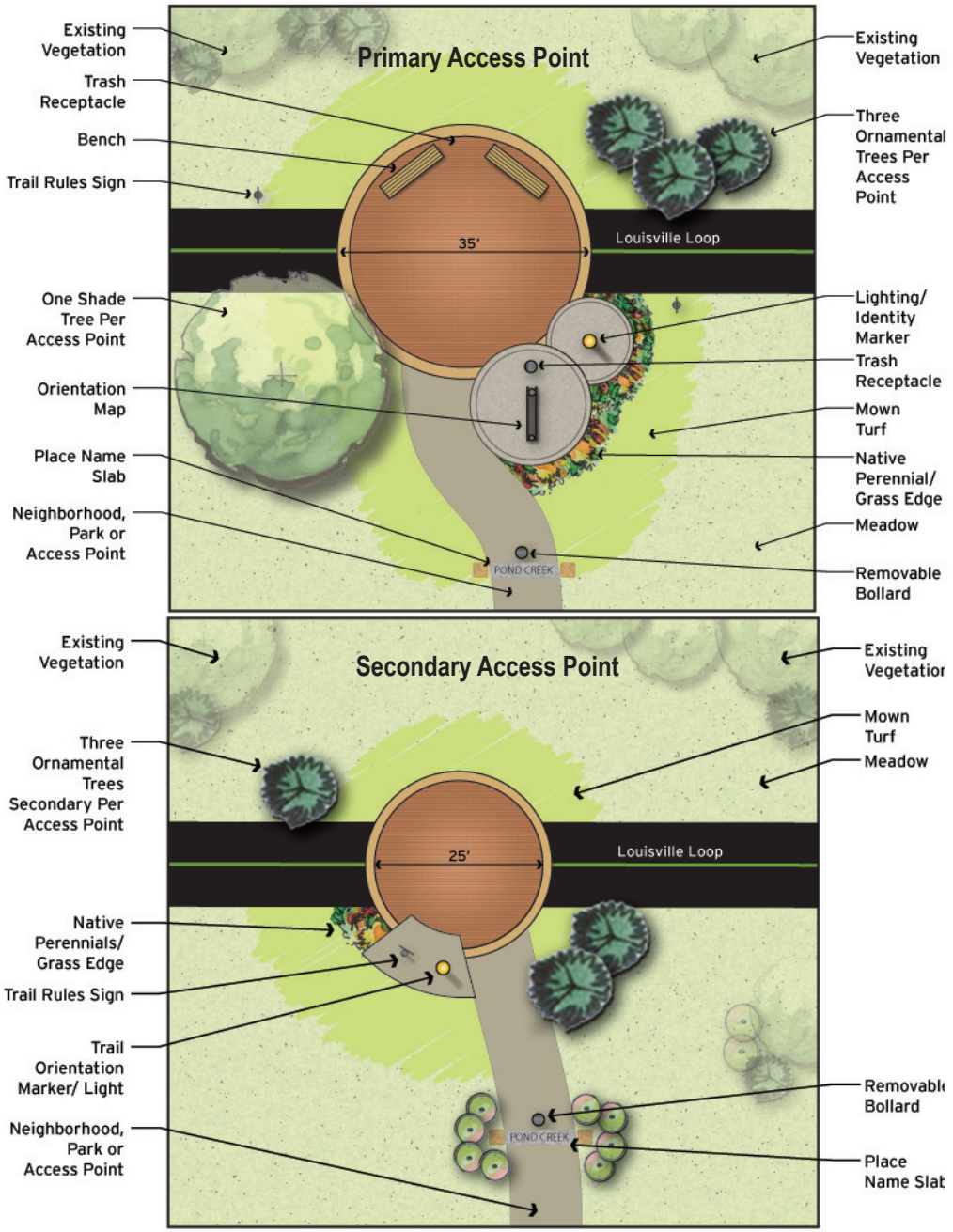
Since the conditions, orientation, and adjacent land uses will be different throughout the Loop, the graphic illustrates a prototypical application of elements and relationships.

**AMENITIES AT EACH PRIMARY ACCESS POINT:**

- Signature marker
- Special paving
- Trailhead signage with map and rules
- Trash receptacle
- Benches
- Bollards

**AMENITIES AS SECONDARY ACCESS POINTS:**

- Signature Markers
- Bollards
- Trail rules sign




PRECEDENT IMAGE

Fall Creek Greenway, Indianapolis PHOTO: HNTB

# Rest Areas

## Need/Intent

Throughout the 100-mile loop, there could be conditions where there are large lengths of shared-use path with minimal access or trailheads. In these sections, rest areas should be provided for users.

## Guidelines

- Locate rest areas and amenities approximately 1 mile apart at general intervals of 200'-400' intervals where there are long distances between trailheads and other access points. (range comes from FHWA examples of 1994 Recreation Access Advisory Committee and California State Parks Guidelines for easy trails) 1/4 mile may be more reasonable.
- Location of rest areas should be done in conjunction with points of interest, educational opportunities, historic sites or other Interpretive signage locations.
- Amenities and function of rest areas should not impede trail users.
- Rest areas should provide places to sit and should include trash and recycling receptacles.
- Emergency call boxes should be included in the design of rest areas in remote areas or other areas where safety of users could be a concern.
- Design materials should include branding of the Louisville Loop.
- Interpretive signage may be incorporated into rest areas where appropriate.
- All landscape material should be native and should not obstruct views onto the trail or from the trail.
- Regulatory signage should be used according to MUTCD, AASHTO.

## Application

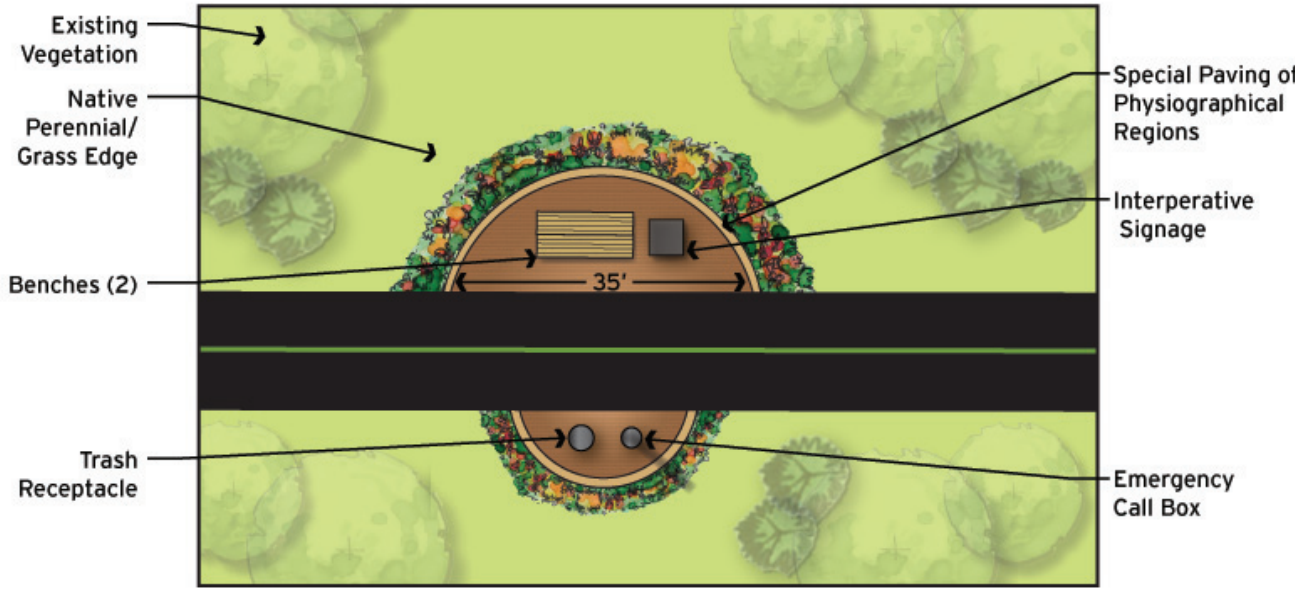
Since the conditions, orientation, and adjacent land uses will be different throughout the Loop, the graphic illustrates a prototypical application of elements and relationships.

AMENITIES AT EACH PRIMARY REST AREA:

- Special paving
- Trash receptacle
- Benches

OPTIONAL AMENITIES AS REST AREAS:

- Emergency call boxes
- Interpretive signage




PRECEDENT IMAGES

PHOTO: HNTB
Southern Parkway, Louisville, KY

PHOTO: HNTB
Prairie Spirit Trail, Richmond, KS

PHOTO: HNTB
Fox River Trail, St. Charles, IL

SECTION 4

# Loop Design Standards


**Signs** ..... 4-3

S1 - Loop Signage System
S2- Trailhead Sign
S3 - Signature Marker / Orientation Sign
S4 - Directional Sign
S5 - Identification Sign
S6 - Interpretive Sign
S7- Donor Recognition

**Cultural Integration** ..... 4-21

C1 - Art Programming - The Loop as a Piece of Art
C2 - Art Programming - Permanent Art
C3 - Art Programming - Temporary Exhibits
C4 - Art Programming - Infrastructure as Art
C5 - Environmental & Geological Programming

**Amenities - Materials & Site Furnishings** ..... 4-33

A1 - Bicycle Rack
A2 - Bench
A3 - Trash/Recycle Receptacle
A4 - Lighting
A5 - Bollard
A6 - Mile Marker
A7 - Emergency Call Box
A8 - Drinking Fountain
A9 - Access Control Rail/Handrail/ Fence
A10 - Pedestrian & Bicycle Control Devices
A11 - Environmental Management

# Design Guidelines: Signs

## INTRODUCTION

Signage is a key tool that provides identification, uniformity and direction to the Louisville Loop. The information on the signage is intended to direct users, help users locate themselves in relation to their surroundings, and identify functional information. Signage and wayfinding is the art of creating tools to help users understand and navigate physical spaces. Wayfinding design relies heavily on graphic communication by using signs and graphics organized into cohesive information-giving programs. The goal of the signage system for the Louisville Loop is to design a consistent and uniform system of directional and information signage to users and visitors to the trail system. In addition, signage is the most effective way to brand the Louisville Loop and identify its various components.

Uniformity in design layout, materials and style are the major attributes of this signage system. The signage program includes trailhead, orientation, directional, identification and interpretive signs. These categories of signs provide the framework for a complete and effective system, each serving its own unique purpose. The system relies on a standard form for uniformity in identifying all signs as part of the Loop system. Consistent formats and type styles also contribute to a uniform and cohesive look.

Individual segments are also identified through a color-coding method that helps to create specific district applications per each segment. Color coding provides a quick visual reference for users that identifies specific segments within the larger Loop system.

The system also provides identification signage for use on existing poles as an option.

The interpretive signage will be used to highlight special areas of interest. These signs may work in conjunction with other efforts like those referenced in the Cultural Integration section, specifically, Environmental & Geological Programming. The physical sign feature will follow the same rules as the overall family of signs as well as a being customized according to the Loop segment.

# Signage - Loop Signage System

## Purpose

The overall signage package for the Louisville Loop will be informative, functional and capture the identity of the Louisville Loop as well as identify all main segments of the Louisville Loop. The entire family of signage includes trailhead, Signature Markers/orientation sign, directional, identification and interpretive signs.

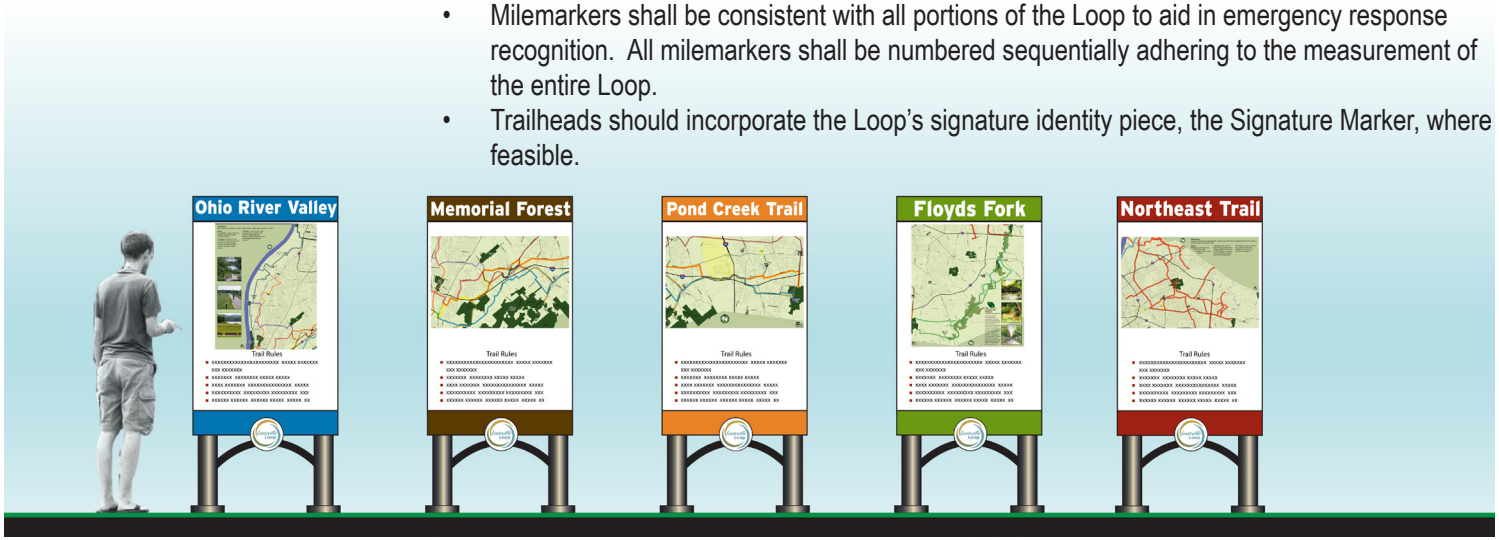
## Guidelines

- Sign materials and graphics shall be uniform throughout the entire length of the Louisville Loop. Individual segments shall be consistent in construction and materials and shall be delineated through a color system that delineates the physiographic regions as follows:

BLUE: Ohio River Valley
BROWN: Jefferson Memorial Forest
ORANGE: Slack-Water Flats
GREEN: Floyds Fork
RED: Limestone Belt

Some segments of the Loop are already constructed, and some segments may have a unique identify separate from the overall Loop that will preclude the application of these signage standards. In those cases, the following should occur, at a minimum, to reinforce their status as part of the Loop, but to preserve the unique character of the individual segment:

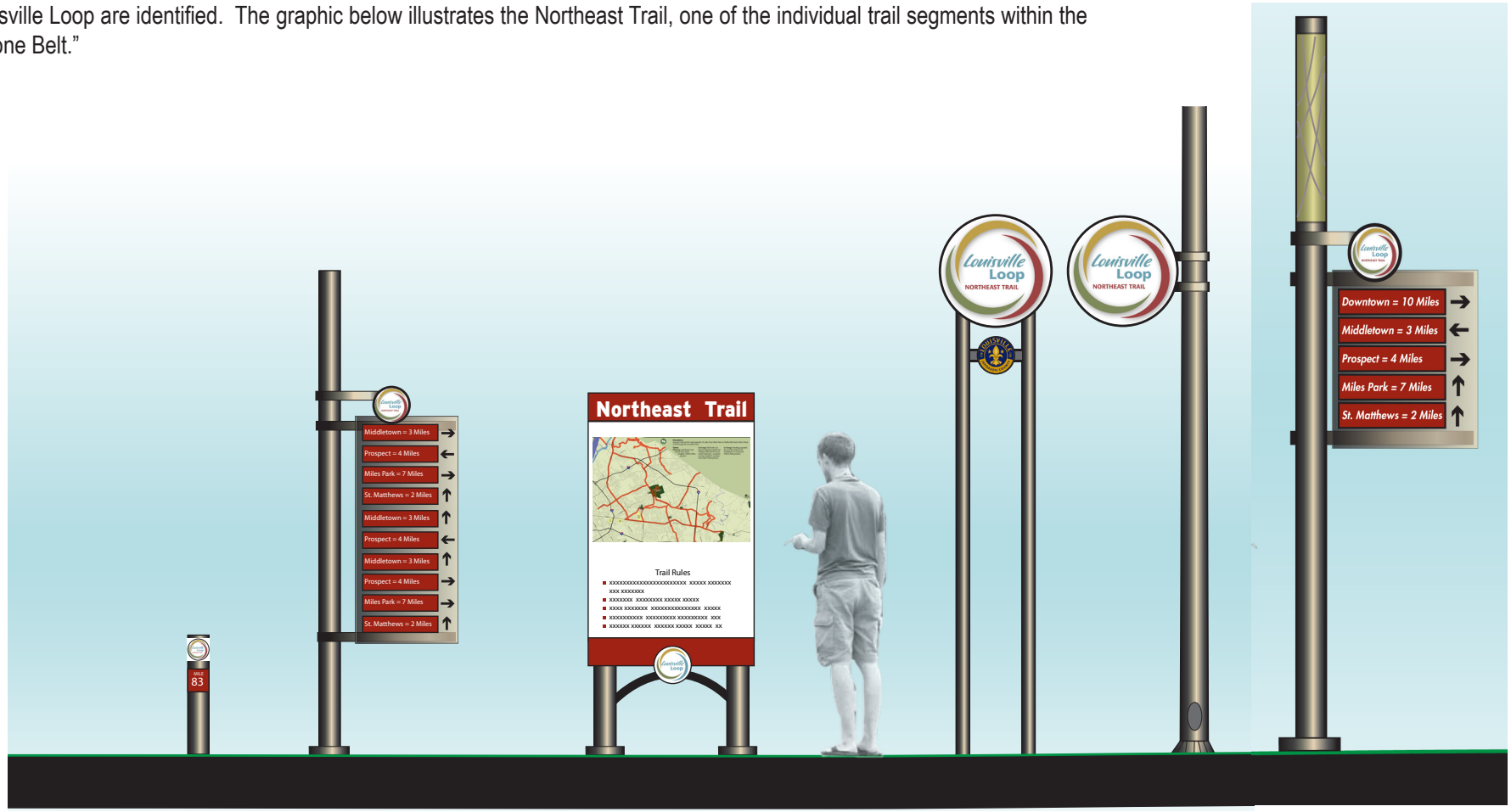
- The Louisville Loop logo and overall system map shall be included in all trailhead signage.
- The Trail Identity signage shall be placed in the public right-of-way at the entrance to all trailheads to identify that the trailhead is a designated access point to the Louisville Loop.
- Milemarkers shall be consistent with all portions of the Loop to aid in emergency response recognition. All milemarkers shall be numbered sequentially adhering to the measurement of the entire Loop.
- Trailheads should incorporate the Loop's signature identity piece, the Signature Marker, where feasible.




*Signage shall be consistent throughout the system with individual Loop segments delineated by the color.*

## Application

Graphic illustrates the application of color to the full family of trail signage and amenities to illustrate how individual segments of the Louisville Loop are identified. The graphic below illustrates the Northeast Trail, one of the individual trail segments within the "Limestone Belt."



# Signage - Loop Signage System/ Logo

## Purpose

Use the Louisville Loop logo to reinforce the identity of the overall system. Introduce color to differentiate the individual segments of the Louisville Loop. The Louisville Loop logo shall be included on various amenities throughout the Louisville Loop as identified in the Design Standards Manual.

## Guidelines

- The use of the Louisville Loop logo shall be consistent according to each identified application in these guidelines. Any logo change shall be applied in the same manner as illustrated on the sketches herein.
- The general logo used to represent the overall Loop shall conform to the style and colors indicated on the adjacent page (blue, green, and gold).
- Signage on individual trail segments shall adhere to the coloring system prescribed for the physiographic region through which the segment passes. Colors are identified below. In each individual segment, the lower right arc shall change to match the color being used to delineate the individual segment, as shown in the lower graphic on the adjoining page.
- All logo applications shall be approved by Louisville Metro Parks prior to construction.

## Segment Applications

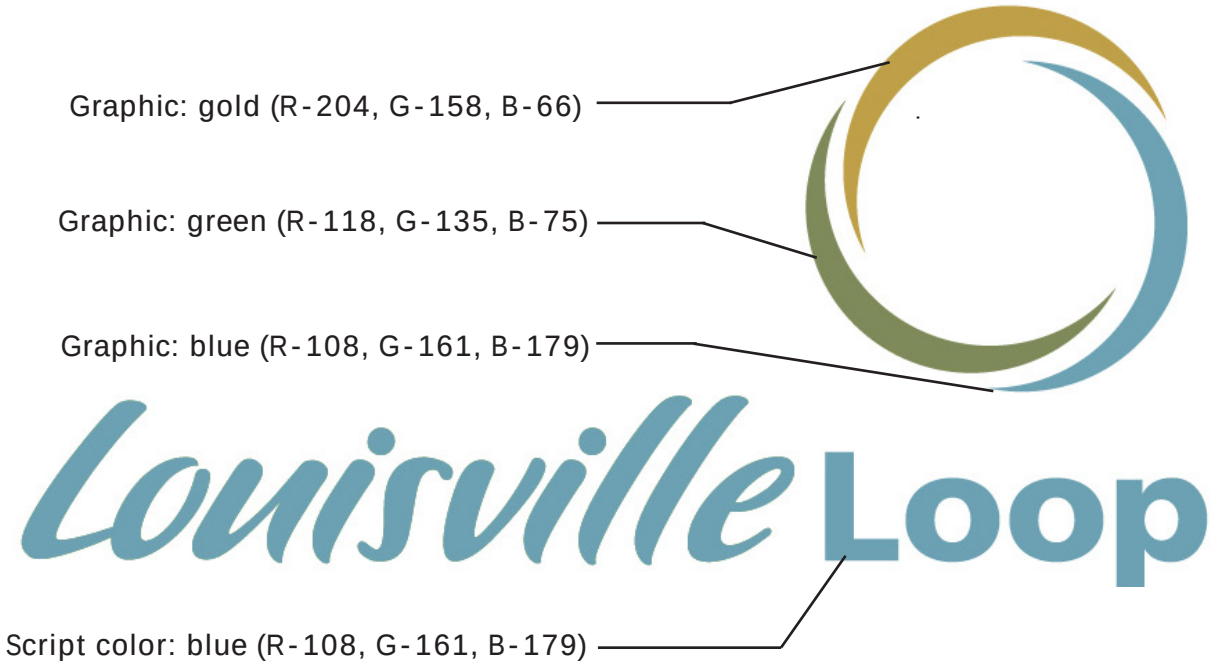
- Individual segments of the Loop shall use the following colors, reflective of the physiographic regions:

Ohio River Valley: Blue (R=1, G=111, B=172)
Jefferson Memorial Forest: Brown (R=112, G=90, B=67)
Slack-Water Flats: Orange (R=236, G=156, B=7)
Floyds Fork: Green (R=0, G=169, B=66)
Limestone Belt: Red (R=157, G=67, B=67)

## Application

The general logo for the overall Louisville Loop utilizes blue, green and gold . RGB color specifications are included. This logo, and these colors, are used to identify or represent the overall Louisville Loop.

Variations to the logo based upon individual trail segments are illustrated at the bottom of this page. These variations are specific to the physiographic region through which the trail passes.



**TRAIL SEGMENTS:**
Limestone Belt
**COLOR:**
Red

**TRAIL SEGMENTS:**
Jefferson Memorial Forest
**COLOR:**
Brown

**TRAIL SEGMENTS:**
Slack-Water Flats
**COLOR:**
Orange

**TRAIL SEGMENTS:**
Floyds Fork
**COLOR:**
Green

**TRAIL SEGMENTS:**
Ohio River Valley
**COLOR:**
Blue

# Signage - Trailhead

## Need/Intent

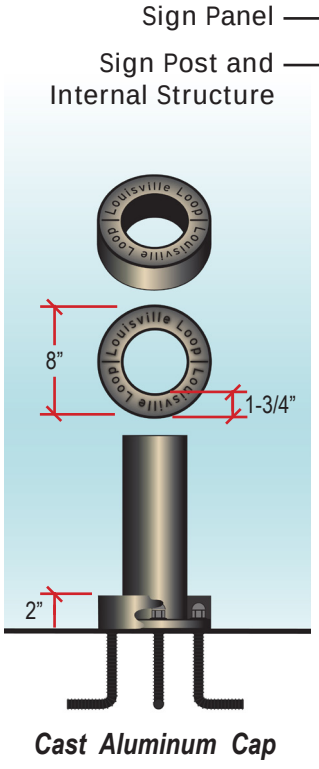
As the main access points to the Louisville Loop, trailheads become the front door to the entire system. Trailhead signage will be used to communicate critical user information in a user-friendly way. Signage will also reinforce the overall theme and aesthetic of the Louisville Loop.

## Guidelines

- Trailhead signs shall be included at all trailheads for the Louisville Loop.
- Signage shall contain Louisville Loop logo and color coding to match the particular segment of the Loop (see section S1).
- Signs shall contain the following information for trail users:
  - **Front sign face:** Front sign face shall include a map of the particular trail route segment, trail rules, and additional information that may be needed by users entering the system from this trailhead. Sign shall face users entering the trailhead from the parking area.
  - **Back sign face:** shall include a map of the entire Louisville Loop system and shall clearly mark the location of this trailhead.
  - Note: if the trailhead sign is a three-sided model, then two of the faces shall be as described allowing for the third panel to be available for local neighborhood or community information.
- **Sign Panel Materials:** 1/4" minimum fiberglass embedded graphic panels with UV protection and vandal-resistant coating in a sealed aluminum cabinet with concealed mounting. Aluminum cabinet shall include a powder-coated bronze finish to match posts and shall have a minimum 1/4" frame around sign panels.
- **Post Materials:** 6" diameter aluminum post with powder-coated bronze finish to match other standards posts throughout the system. Posts shall be set in concrete foundations with top of foundation covered by surface paving material. Posts shall be attached to concrete base with anchor bolts.
- **Post Attachments:** All attachments shall be concealed. If instances arise where it is not feasible, all exposed attachments shall be vandal resistant and shall be finished to match finishing on posts.
- **Base Caps:** Post anchorage shall be concealed by 1/2" thick solid circular cast aluminum caps, with acid-etched or sandblasted lettering and set screw.
- Trailhead signage is one of the amenities that is available for public art interpretation, in accordance with MACOPA (or other public art review entity) and the art programming Loop standard. Signage may be replaced with custom art piece, but caution should be taken when altering the signage to ensure that all information is still provided for users.

## Application

Trailhead signage provides the "guidebook" to the Louisville Loop and its connections to the greater metropolitan area. Signs should provide easily recognizable identity for the overall Loop, visual identification of the specific route, and a guide to the overall system. Trailhead signage should be installed as shown in the typical trailhead layout in section T1-Trailhead of this manual.




*Cast Aluminum Cap*

## PRECEDENT IMAGES

PHOTO: R. Taylor
Pigeon Creek Greenway, Evansville, IN

PHOTO: HNTB
Washington DC

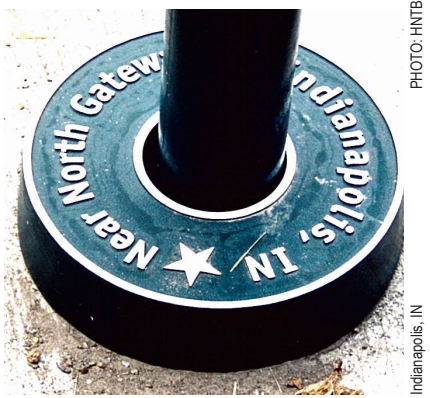



PHOTO: HNTB
Indianapolis, IN

# Signage - Signature Marker/Orientation Sign

## Need/Intent

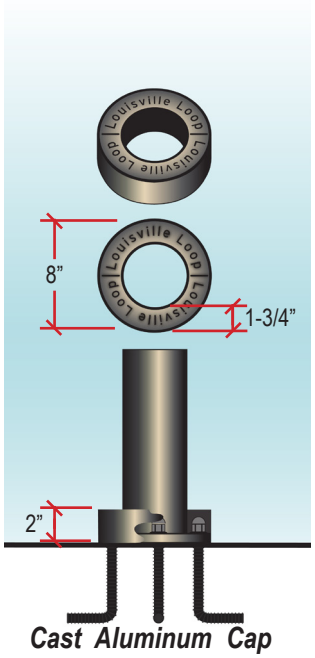
The purpose of the Signature Marker is to create a unique and recognizable symbol that identifies the Louisville Loop. This element, placed at trailheads and access points, serves as a confirmation that visitors are entering the Louisville Loop system. The lit marker includes materials and forms consistent with the design features found throughout the Louisville Loop and provides an orientation sign for users entering at these points. The entire Loop will not be illuminated, therefore, the lighting serves as a key wayfinding tool to further reinforce the branding and identification of the route.

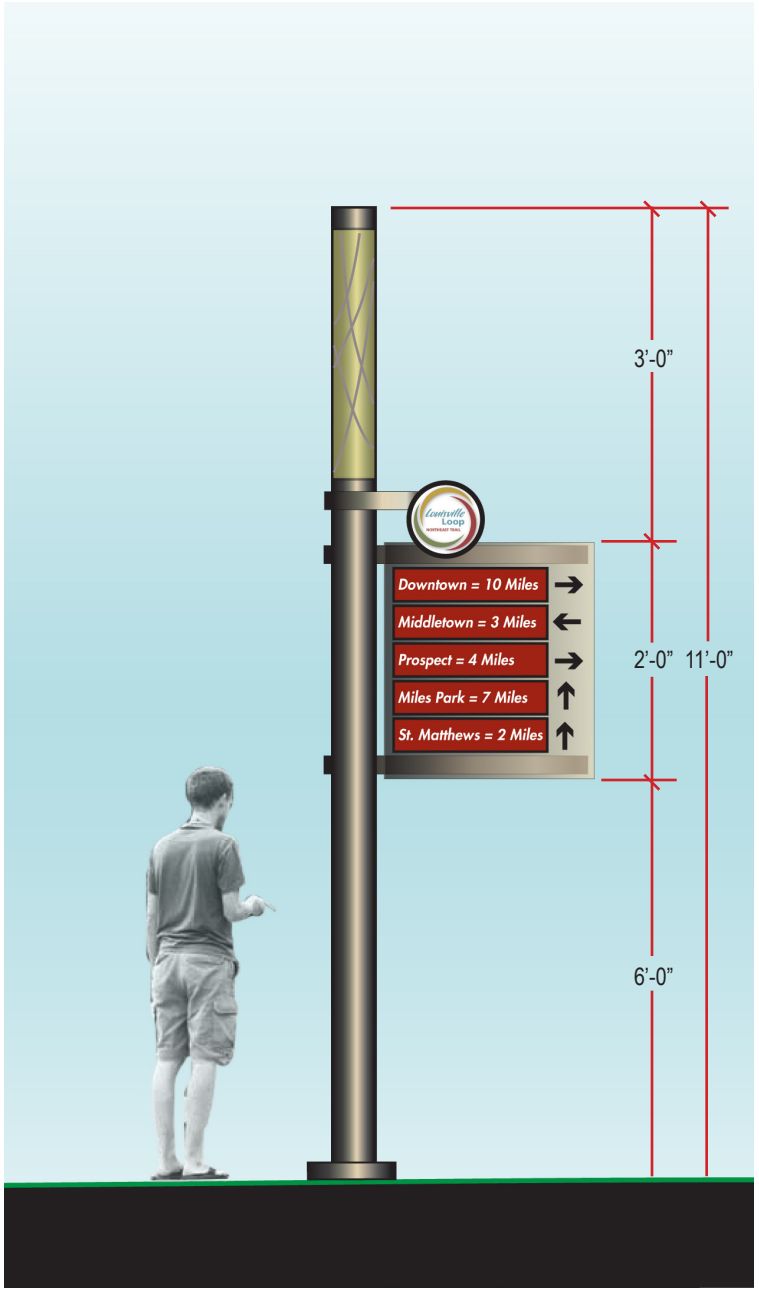
## Guidelines

- Signature Marker / Orientation Sign shall be placed at trailheads and designated access points along the system.
- The Marker is a vertical system that includes a light pier to reinforce the Loop system to users and visitors. This key branding effort will serve to highlight and mark the trail.
- Key wayfinding information regarding nearby destinations and amenities shall be included for orientation. All destinations shall be approved by Metro Parks prior to fabrication.
- **Marker Materials:** 6" diameter aluminum post, powder-coated bronze finish to match other standards posts throughout the system, with illuminated tubes and translucent acrylic graphics at top. Marker shall be set in concrete foundations with top of foundation covered by surface paving material and all anchorage concealed by circular cast aluminum caps. Lighting shall be either green or white illumination.
- **Sign Panels:** All sign panels shall be 3" thick sealed aluminum cabinet signage with internal framing and 1/4" minimum aluminum sign panels with concealed internal mounts. Graphics shall be 3M laser-cut vinyl graphics with colors as indicated on the next page.
- **Pole Attachments:** 3" aluminum wrap around attachments with tamper-resistant tamp screw and finish to match post. Aluminum blank panels with vinyl applied graphics. Any visible attachments shall be vandal-resistant and shall match finish of post and sign.
- **Base Caps:** Post anchorage shall be concealed by 1/2" thick solid circular cast aluminum caps, with acid-etched or sandblasted lettering and set screw.
- Color system used on signs shall comply with the system identified in S1- Loop signage System in order to identify specific segments of the Loop.
- **NOTE:** As the main icon for the Loop, and as a visual marker for emergency access, Signature Markers ***should not*** be included in the program for public art interpretation.

## Application

Signature Markers shall be located as indicated in sections T1 and T2 of this manual. Lit markers identify key portals to the system and serve to create a unique character for the system.




## PRECEDENT IMAGES

PHOTO: Alta
Sacramento, CA

PHOTO: HNTB
Grand Rounds, Minneapolis, MN

PHOTO: HNTB
Hulman Memorial Way, Indianapolis, IN

# Signage - Directional

## Need/Intent

Directional signage is used for user orientation and wayfinding. Directional signs shall be used at key decision points or access points where the Signature Marker is not used. These signs are intended for use by trail users.

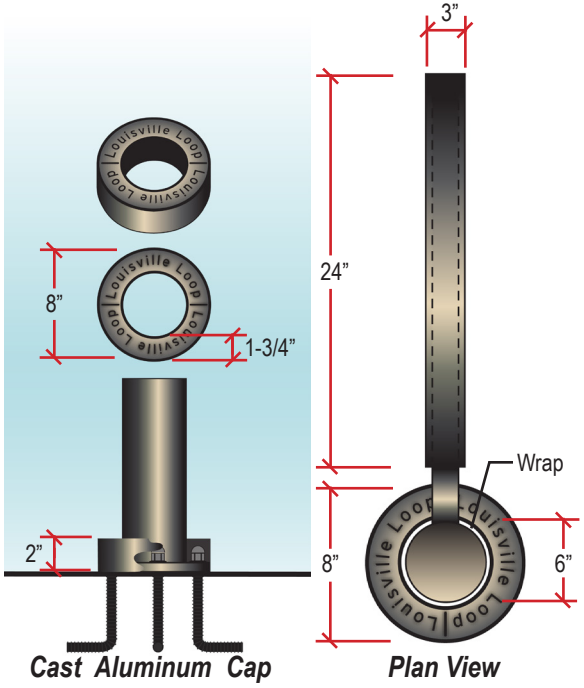
## Guidelines

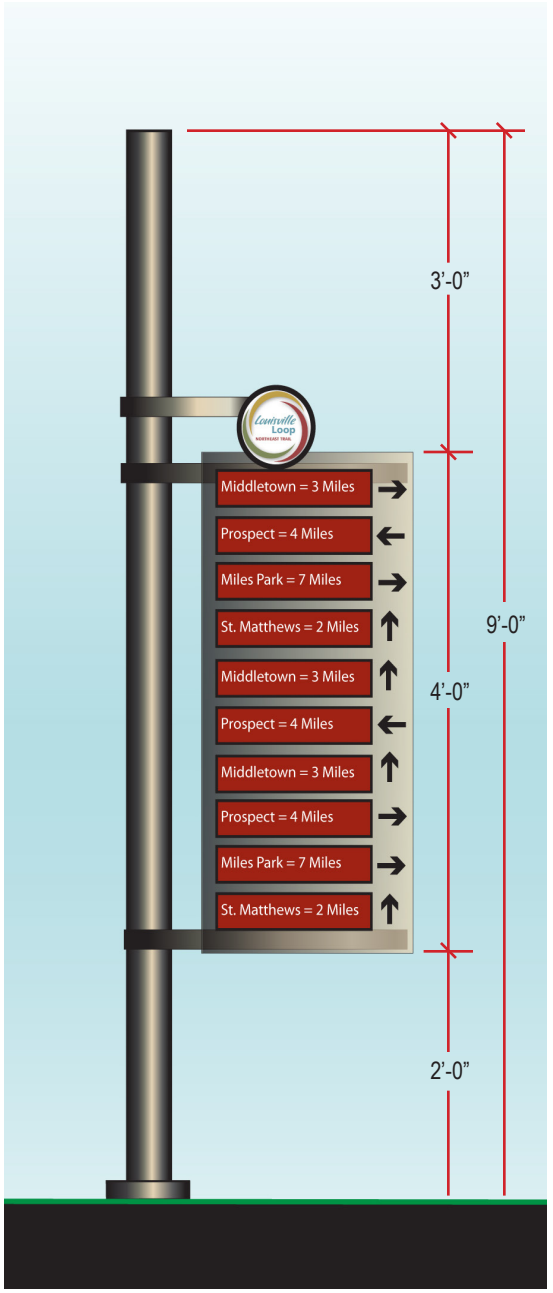
- Directional signs shall be placed where bicycles cross the Loop or where a designated bicycle route crosses a specific bike path or greenway. Consideration for directional sign placement should also be given to any local street that carries significant traffic (including bicycle and pedestrian) to the Loop. The directional signs should be placed a minimum of 50' and a maximum of 200' from the intersections and should face the Loop to provide user destination and direction orientation.
- Directional signs shall indicate the nearest rest area, access point and trailhead, emergency call boxes, nearby points of interest (communities, shopping, restaurants, historic features, parks, other trails, bus routes, etc.) or other significant public facilities.
- Directional signs shall be placed a minimum of 20' and a maximum of 50' in both directions from the intersection of the Loop and local streets, so that a user entering the Loop can readily identify the route. Directional signs identifying and directing to a crossing shall be placed a minimum of 20' and a maximum of 50' prior to the intersection.
- **Materials:** 6" diameter aluminum post, powder-coated bronze finish to match other standards posts throughout the system. Marker shall be set in concrete foundations with all anchorage concealed by circular cast aluminum caps.
- **Pole Attachments:** 3" aluminum wrap around attachments with tamper-resistant tamp screw and finish to match post. Aluminum blank panels with vinyl applied graphics. Any visible attachments shall be vandal-resistant and shall match finish of post and sign.
- **Sign Panels:** All sign panels shall be 3" thick sealed aluminum cabinet signage with internal framing and 1/4" minimum aluminum sign panels with concealed internal mounts. Graphics shall be 3M laser-cut vinyl graphics with colors as indicated on the next page.
- **Base Caps:** Post anchorage shall be concealed by 1/2" thick solid circular cast aluminum caps, with acid-etched or sandblasted lettering and set screw.
- Color system used on signage shall comply with the system identified in S1- Loop signage System in order to identify specific segments of the Loop.
- Directional signage is one of the amenities that is available for public art interpretation, in accordance with MACOPA and the Art Programming Loop standard.

## Application

Directional signs are intended to help users navigate through the Louisville Loop system and to provide critical directions and connections to surrounding areas and destinations.

If desired, one face of wayfinding sign panel may include a map of the overall system, as illustrated in the precedent images.




## PRECEDENT IMAGES

PHOTO: :HNTB
Downtown Fort Wayne, IN

PHOTO: HNTB
Philadelphia, PA

PHOTO: HNTB
Philadelphia, PA

# Signage - Identification

## Need/Intent

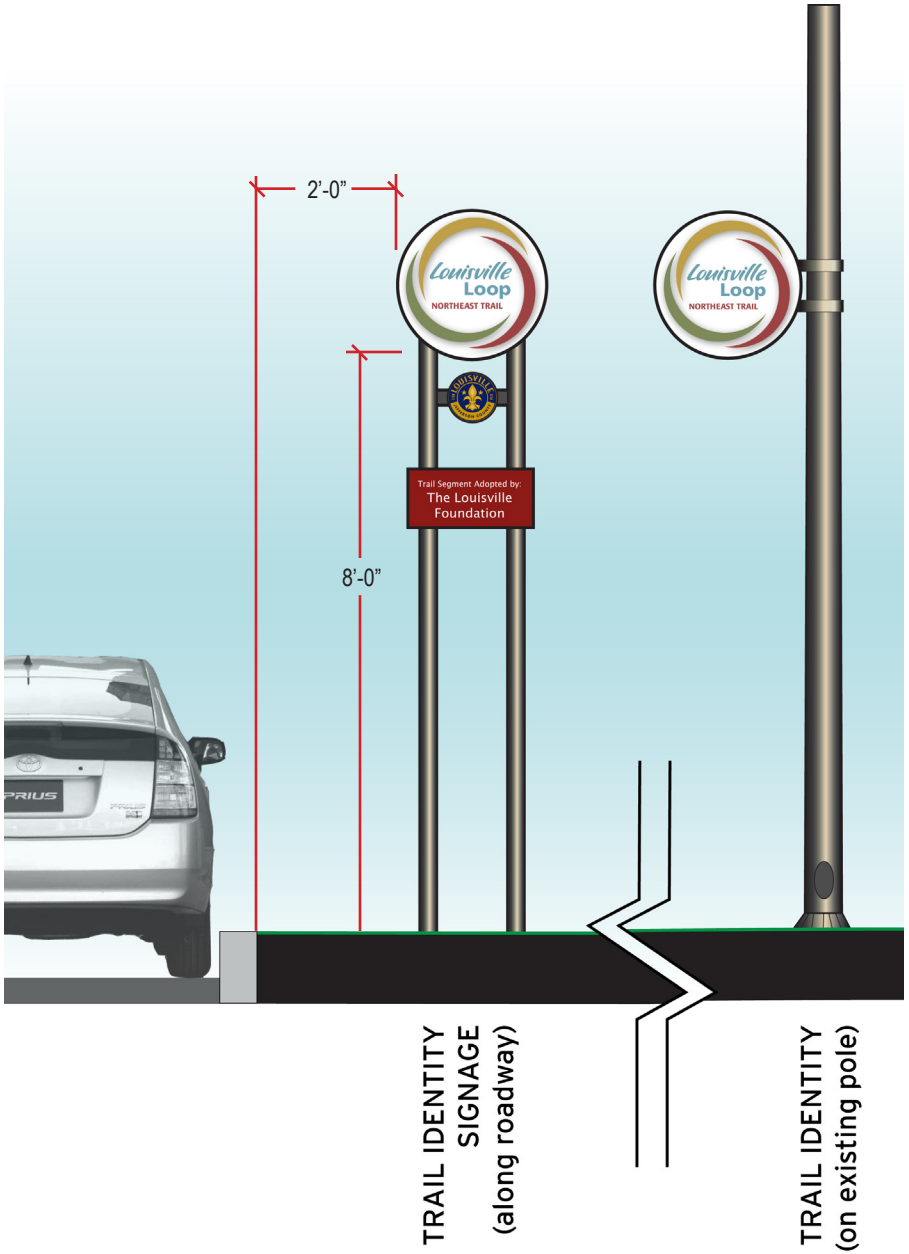
The purpose of the identification signage is to identify the Loop to vehicles where the Loop and existing streets come together or cross.

## Guidelines

- Identification signs should be placed along streets where the shared-use path parallels or crosses streets.
- Where the path parallels a street, Identification signs should be placed facing traffic where the path and street begins to run side by side. For long stretches, place identification signage a minimum of 1 per mile for the entire length. Signs should be placed on both sides of streets, even if the path exists on only one side, as illustrated in Section X1, Shared-use Path & Roadway Corssing. Signs also should be placed at major intersections where the path runs parallel to a street.
- Identification signs should be placed at all locations where the path crosses a street.
- Identification sign panel can be placed as a stand-alone sign, attached to an existing street light pole, or attached to another overhead structure.
- Ensure sign is placed within clear view for all drivers approaching the sign.
- **Posts:** For stand-alone signage, posts shall consist of two 3-inch diameter steel posts, powder coated bronze to match other poles in the system.
- **Stand-alone Sign Panels:** All sign panels shall be a 24” diameter aluminum cabinet signage with internal framing and 1/4” minimum aluminum sign panels with concealed internal mounts. Graphics shall be 3M laser-cut vinyl graphics with colors as indicated on the next page. In addition, on stand-alone signs, an additional smaller aluminum blank panel with double-sided vinyl applied graphic Louisville Metro logo shall be attached under the logo between the two posts.
- **Identification Sign Panel Attached to Existing Poles:** 24” diameter aluminum blank with vinyl applied graphic logo. All attachments shall match finish of existing post.
- **Color Graphics:** Logos applied to the identification signage shall conform to the color system prescribed in section S1. Logo shall include the color variation that matches the individual trail segment.
- **NOTE:** Because of its regulatory use along streets, identity sign should not be included in the program for public art interpretation.

## Application

Identify signage should be incorporated into the design of the Louisville Loop anywhere that vehicles and the shared-use path come together or are in close proximity to one another. Trail identity signage alerts drivers to the presence of pedestrian and shared-use path user and is intended to help elevate the caution level that drivers use in these areas.




## PRECEDENT IMAGES

PHOTO: HNTB
Monon Trail, Carmel, IN

PHOTO: HNTB
Zionsville Rail-Trail, Zionsville, IN

PHOTO: HNTB
Downtown Cultural Trail, Indianapolis, IN

# Interpretive Signage

## Need/Intent

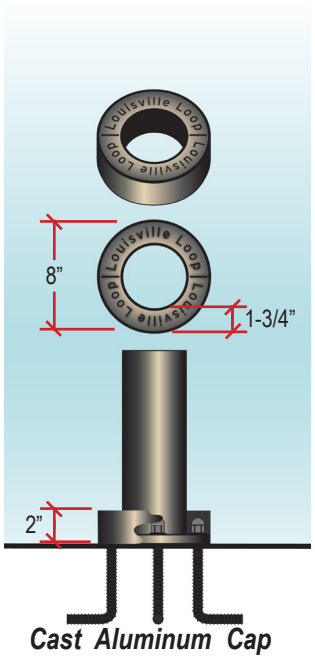
Interpretive signs shall be used along the Louisville Loop to highlight significant natural, cultural, or other distinctive features.

## Guidelines

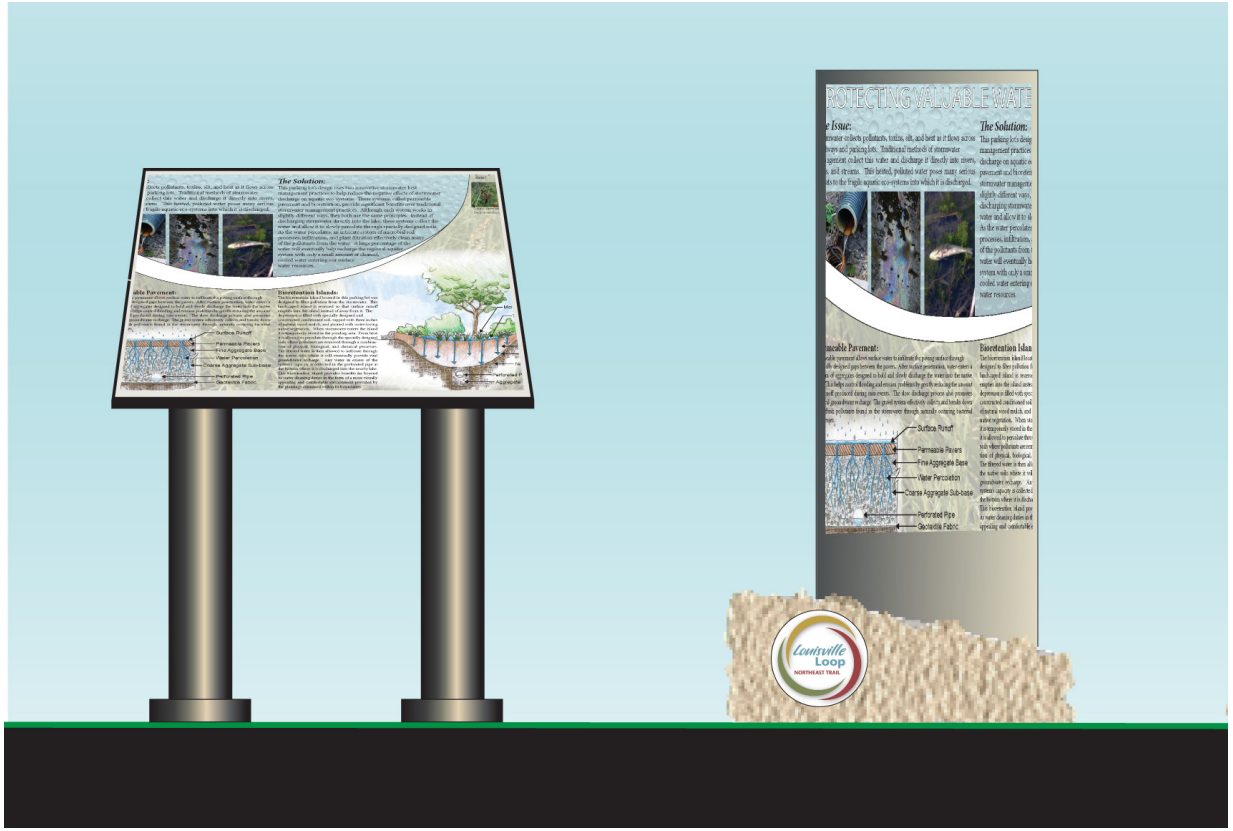
- Interpretive signs should be incorporated into the design of the Louisville Loop to identify and highlight significant natural, cultural or other distinctive features.
- Interpretive signs should include both graphic and written components to communicate desired message.
- Interpretive signs should be located in conjunction with trailheads, rest areas, or within their own nodes along the trail so that those viewing the signage do not interfere with thru traffic on the shared-use path. See S3- Rest Areas for example.
- Interpretive signage can be included in several different types of signs. Interpretive panels can be included on the back of trailhead sign panels, or incorporated as illustrated on the next page.
- **Posts:** If posts are used, posts shall consist of two 3-inch diameter aluminum posts, powder coated bronze to match other poles in the system.
- **Interpretive Sign Panel:** Fiberglass embedded graphic panels with UV protection and vandal-resistant coating. Size and orientation may vary, as illustrated and as needed.
- **Base Caps:** Post anchorage shall be concealed by 1/2" thick solid circular cast aluminum caps, with acid-etched or sandblasted lettering and set screw.
- The interpretive program for interpretive signage should include the physiographical regions within the Louisville Metropolitan Area, as described in section C5- Environmental & Geological Programming.
- Interpretive signage is one of the amenities that is available for public art interpretation, in accordance with the MACOPA and Art programming Loop

## Application

Interpretive signs, as shown to the right, offer trail users an opportunity to educate and higlight unique attributes about the Louisville community and the Louisville Loop. Interpretive signage can also a three-dimensional exhibit. This variation of interpretive signage should be done in conjunction with the Art Programming and environmental education standards.




Cast Aluminum Cap



Interpretive Signage (horizontal panel)

Interpretive Signage (vertical panel)

PRECEDENT IMAGES

PHOTO: R. Taylor
Pigeon Creek Greenway, Evansville, IN

PHOTO: HNTB
Minneapolis, MN

PHOTO: HNTB
Fisherman's Wharf, San Francisco, CA

# Donor Recognition

## Need/Intent

Significant donations may be received for portions of the Louisville Loop or certain amenities along the Loop. An appropriate donor recognition program is needed that recognizes significant contributions without overwhelming the character of the Loop.

## Guidelines

- Louisville Metro needs to develop a donor program to help fund certain portions of the Louisville Loop. Donations could include financial support for construction of specific areas (restrooms, trailheads) or for specific amenities (benches, pieces of art). A comprehensive but specific list of costs should be developed and appropriate guidelines for financial or in-kind support established.
- Donors should be recognized with small stainless steel plaques, engraved with infill painting. Plaques should contain the Louisville Loop logo and identification of the benefactors. Donors shall be recognized in text only, either name or company name. No corporate logos or advertising should be permitted.
- Plaques shall be attached to the item for which financial support was received.
- **MATERIALS:** 8” diameter etched stainless steel marker, core drilled into center of asphalt trail.
- **FINISH:** Brushed stainless steel.
- **GRAPHICS/COLORS:** Etched graphic shall be black filled. All graphics on donor recognition plaques shall be approved by Metro Parks prior to fabrication.

## Application

Donor recognition plaques should be subtle with no commercial references.

***ABOVE:*** *Sample donor recognition plaque.*

PRECEDENT IMAGES

PHOTO: HNTB
Fox River Trail, St. Charles, IL

PHOTO: HNTB
Fox River Trail, St. Charles, IL

PHOTO: R. Taylor
Pigeon Creek Greenway, Evansville, IN

PHOTO: R. Taylor
Pigeon Creek Greenway, Evansville, IN

# Design Standards: Cultural Integration

## INTRODUCTION

Public art is a critical component of livable communities. It speaks to the creative nature and sophistication of its citizens, enlivens public open space and facilities, and raises the internal and external values perpetuated by a community. It adds spontaneity and attraction, memorializes the values of a community, and provides a unique cultural identity for the City. There is a lot of interest in public art in Louisville, and the Mayor has established the Mayor's Committee on Public Art (MACOPA) to oversee inclusion of art in the public realm and to undertake a master plan for establishing Louisville as a premier destination for public art. In MACOPA's 2007 Report to the Mayor, the Louisville Loop Trail was identified as a top opportunity for development of an art program.

By its very nature, art is unique---it evokes emotion, critical thinking, and self exploration. It cannot (or should not) be constrained to design standards. A one-size-fits-all approach to public art perhaps defeats the very purpose of including art. These standards are designed not to constrain art, but to provide greater opportunity for the inclusion of art than exists now. These public art standards are meant to ensure that the Louisville Loop trail provides the appropriate opportunities for programming art into the overall infrastructure and layout of the system. The Louisville Loop itself serves as a monument to the merger of the city and county governments, an accomplishment to be celebrated by the users of the Loop. The Louisville Loop will address art issues in four distinct ways: 1) The Loop as a piece of art, 2) permanent larger pieces of artwork, 3) temporary exhibits, and 4) art as infrastructure.

PHOTO: Alta

*Leaper Trail, Mt. Vernon, WA*

# Art Programming: The Loop as a Piece of Art

## Need/Intent

Conceptually, the Loop itself holds great potential in its own right as Louisville's longest art piece. When completed, the Loop will be approximately a 100-mile long ribbon draped around and across the community. The trail, its parts, and elements along the loop become a cultural ribbon that connects, educates, and provides insights into the values of the community. Even with the level of standardization described herein, the trail brings a unique visual and cultural experience to the community.

## Guidelines

- The trail and all of its amenities should be unique only to the Loop - to truly function as a piece of art, the Loop will be different than the other trail and park systems in the community - by design.
- The trail must be visually connected - design standards must be uniformly applied throughout the entire system to visually identify the Loop, whether in the downtown area, natural suburban areas, or open fields.
- It must provide opportunity for the inclusion of unique pieces of art without jeopardizing the character of the Loop itself.
- It is suggested that the works be expressive of the local natural and cultural landscape.
- Care should be taken in the design process to ensure that the shared-use path and its amenities are designed to fit into the context of the location.
- A representative of MACOPA (or the public art review entity) or an artist approved by MACOPA or said entity should be involved with Metro Parks and its design process to coordinate art applications throughout the Loop.

## PRECEDENT IMAGES

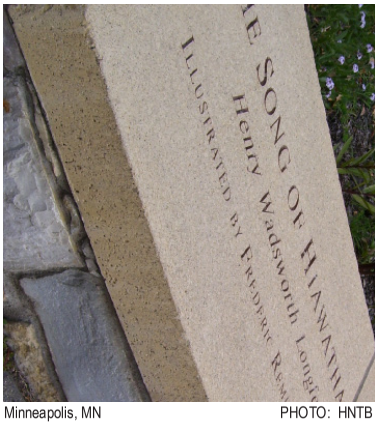
Louisville, KY PHOTO: HNTB

Grand Rounds Parkway, Minneapolis, MN PHOTO: HNTB

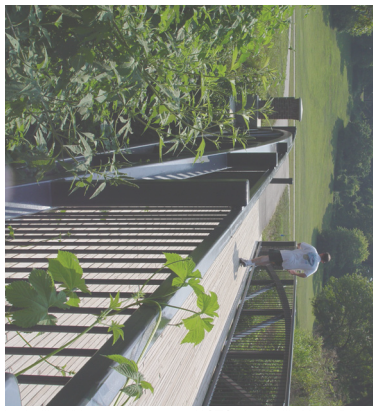
Minneapolis, MN PHOTO: HNTB

Minneapolis, MN PHOTO: HNTB

Minneapolis, MN PHOTO: HNTB




Minneapolis, MN PHOTO: HNTB



Louisville, KY HOTO: Louisville Metro Parks

Wabash, IN PHOTO: HNTB

Minneapolis, MN PHOTO: HNTB

# Art Programming: Permanent/ Large Pieces of Art

## Need/Intent

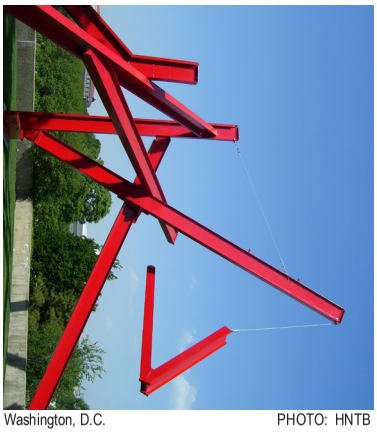
In many ways, the Louisville Loop provides a large canvas with many opportunities for public art. It will ultimately pass through numerous distinct landscapes and cultural areas. Throughout the development, the community should seek out opportunities to purchase additional land along the trail for the installation or creation of permanent art pieces---whether they be individual small-scale sculptural pieces or large rolling environmental artworks. There will be opportunities throughout the development of the trail system to identify significant spaces (sizes not defined) to allow for the creation and exhibit of permanent art pieces along the trail.

## Guidelines

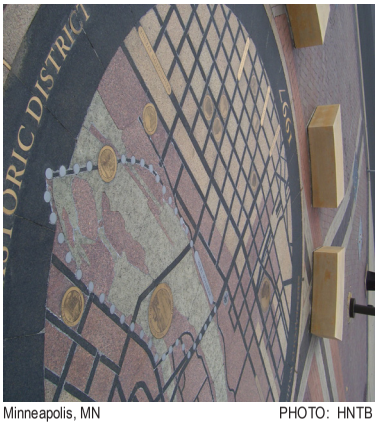
- Prior to release of any trail design RFP, Metro Parks and MACOPA shall conduct a meeting to review the design site and determine whether appropriate areas exist for the commission of a public art piece along the trail.
- During the design of all trail segments, designers should conduct preliminary design reviews with MACOPA to identify potential areas for the inclusion of public art.
- Identification of artists, locations, and types of artwork should be coordinated by Louisville Metro through MACOPA.

## PRECEDENT IMAGES

PHOTO: MACOPA



Washington, D.C. PHOTO: HNTB

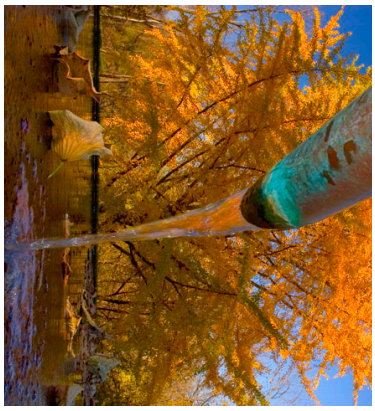


Minneapolis, MN PHOTO: HNTB

PHOTO: Alta

Minneapolis, MN PHOTO: HNTB

PHOTO: MACOPA



Louisville, KY PHOTO: MACOPA

Minneapolis, MN PHOTO: HNTB

Minneapolis, MN PHOTO: HNTB

# Art Programming: Temporary Exhibits

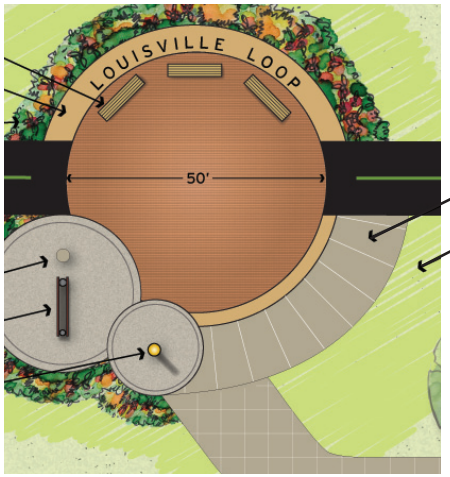
## Need/Intent

The Louisville Loop should provide the appropriate space to serve as a venue for the temporary exhibit of art. There are many traveling exhibits by artists that include several individual pieces or entire collections of an individual's art portfolio for periods of up to one year. With forethought, trail facilities can be designed to allow for these types of exhibits within its infrastructure. Not only does this provide another avenue for including art, but it also provide a sequencing framework for exhibition.

## Guidelines

- Areas should provide both hardscape and softscape areas as a stage, appropriate in size, but not noticeably obtuse in the absence of a piece of artwork.
- Base materials should be heavy duty, capable of supporting heavier loads, but extra infrastructure should not be visually noticeable.
- Electricity should be accessible.

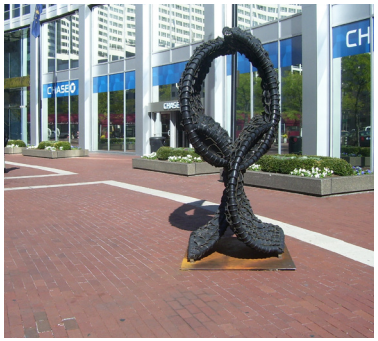
## Application




Trailhead areas include two areas programmed for temporary art exhibits--- one is a pavement area and one is a mown turf. The intent is that the trailheads can become a "station" for temporary art exhibits with limited and non-permanent displays of art.

## Application

### CASE STUDY: Indianapolis Temporary Art Exhibits



PHOTOS: HNTB

The City of Indianapolis and the Arts Council of Indianapolis conducts a temporary art exhibition series. Selected artists exhibit several pieces of their collection at various public spaces throughout the downtown area. Past exhibits included internationally renowned artists Tom Otterness (2005) and Julian Opie (2006-07). In 2008-09, a series of sculptural pieces titled "Mass Transit" (pictured above) by Chakaia Booker was on display.

For the exhibitions, several pieces of the artist's work is displayed throughout the downtown area for a limited period of time (6-18 months). Along with the sculpture is a temporary sign that includes the title of the art piece, a description, and a map identifying the locations of the other art pieces in the collection. Sculptures are not permanently mounted to reduce the cost of the exhibit. Visitors are encouraged to traverse the downtown to view all of the pieces of the exhibit. At the close of the temporary exhibition, the city often buys a piece of the collection and moves it to a permanent location within the City ("Dancing Woman" from the Julian Opie "Signs" exhibit was permanently mounted along the Indianapolis Cultural Trail- see photo bottom right).

This application is envisioned for the trailheads on the Louisville Loop. Trailhead locations are identified to accommodate this type of temporary exhibition, but are designed so that the spaces don't feel empty during periods without an exhibition.

For more information on the Indianapolis exhibits, go to **www.paindy.org.**

PRECEDENT IMAGES

PHOTO: HNTB
Indianapolis, IN

PHOTO: MACOPA
Louisville, KY

PHOTO: HNTB
Indianapolis, IN

PHOTO: HNTB
Las Vegas, NV

PHOTO: HNTB
Minneapolis, MN

PHOTO: HNTB
Indianapolis, IN

# Art Programming: Art as Infrastructure

## Need/Intent

Specific trail features and enhancements can also serve as pieces of art. In downtown, individual sculpture pieces serve as bike racks. These custom bike racks have become a symbolic gesture unique to Louisville. This standard should be extended to the Loop as well, creating a connection to the overall bike system in Louisville. This also continues the development of a piece unique to Louisville. Design standards for bike racks are included in Section A1.

Produced over the total 100 mile length, these standards provide a greater level of affordability while still introducing artistic approaches to even some of the most basic trail infrastructure enhancements.

## Guidelines

- Where appropriate, trail amenities may be designed as art.
- Bollards, milemarkers, and emergency call boxes shall not be included in the art interpretation program.
- Custom art amenities must present no hazards to the public and be constructed in a manner that is durable and maintainable.
- Art work should be incorporated during the planning phase of work to integrate with overall site design.

## Application

**TRAIL AMENITIES WHICH CAN BE DESIGNED AS ART:**

- Trailhead signage
- Directional signage
- Benches
- Bike racks
- Pavement
- Interpretive signage
- Landscape areas

**TRAIL AMENITIES NOT TO BE DESIGNED AS ART:**

- Signature markers
- Bollards
- Milemarkers
- Trail Identity signage

PHOTO: HNTB

PHOTO: Provided by MACOPA

PHOTO: Provided by MACOPA

PRECEDENT IMAGES

PHOTO: HNTB

PHOTO: HNTB

PHOTO: Metro Parks

## Need/Intent

In addition, the Louisville Loop also has the opportunity to serve as an educational art component that brings a unique character to the trail through its interpretation of the natural and cultural heritage of Louisville. There are five general physiographic regions within Louisville Metro that the Loop will cross, and, conceptually, these regions provide both a palatte of materials that can be used to distinguish the regions, as well as opportunities to provide educational interpretation of those regions. These regions were landscapes of transformation---landscapes that shaped the way the community developed and impacted where people lived, worked, and how they sustained the community. The Cornerstone 2020 Comprehensive Plan identifies these five regions as Ohio River Valley, Knob Hills, Slack-water Flats, Limestone Belt, and the Floyd's Fork Drainage Area.

These physiographic regions provide a foundation that can begin to identify forms and natural materials used within the enhancements along the trail system. More importantly, though, is that they provide a basis for an interpretive educational system applied throughout the entire Loop system.

Specifically:

- **Ohio River Valley** - Much of Louisville exists within this valley which "is characterized by level, to sloping alluvial soils on terraces and bottoms along the Ohio River."
- **Knob Hills** - Found mostly in the southwestern portion of the City, these areas include the ridges and steep hills adjoining the Ohio River Valley. The Jefferson Memorial Forest and Iroquios Park are examples found within this region.
- **Slack-water Flats** - This is an area of level, poorly-drained soils which occur on the former site of an ancient lake bed to the north and east of the Knob Hills region.
- **Limestone Belt** - This region is characterized by level to steeply sloping soils formed from limestone and covers a major portion of Jefferson County. Included in this region is Cherokee Park.
- **Floyd's Fork Drainage Area** - this region is characterized by "diverse landscape of gently sloping to steep uplands in the extremely eastern portion of the County."

## Application

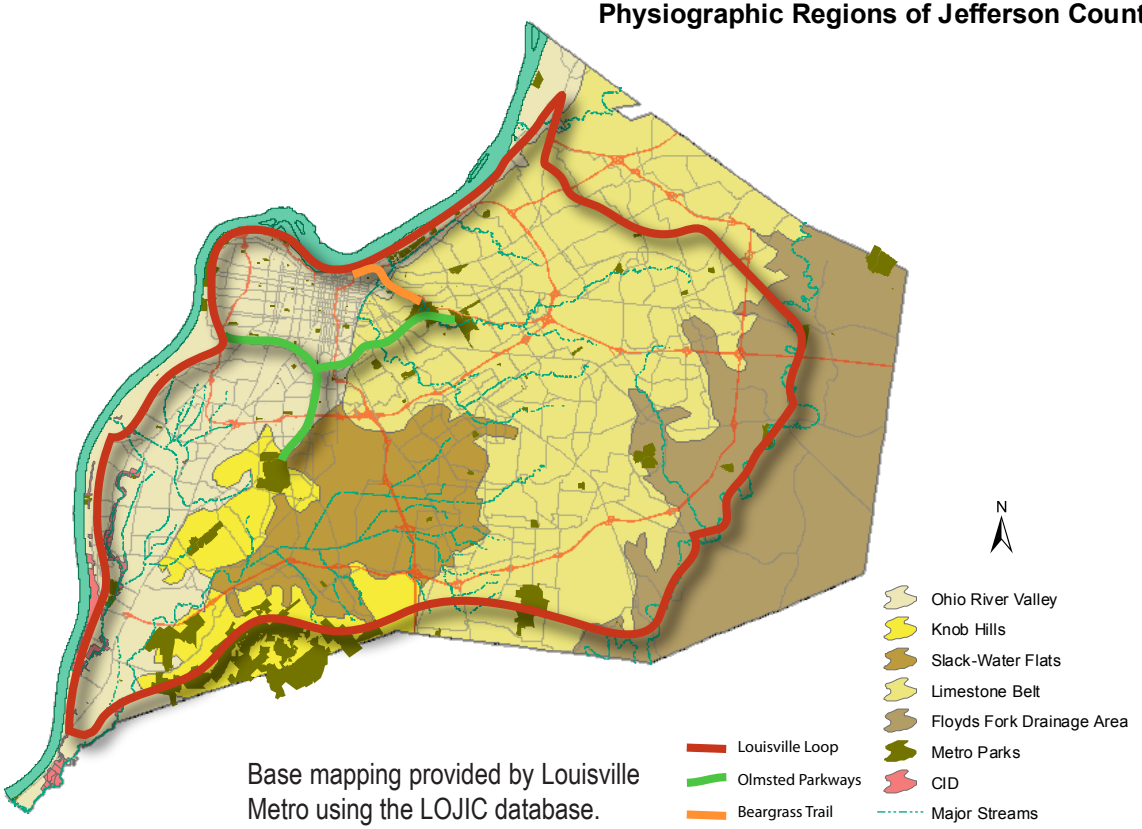
The landscape and environmental design approach draws from the "story" as sources for pattern and form. Historic processes which have particularly influenced the design include the flow of the river and the impacts of the glacial retreat. The stories of this nature and geology offer fertile ground for interpretation.

Streams and watersheds also generally fall within the physiographic regions and can be used as an educational element of the interpretative information found along the Loop.

**OPPORTUNITIES FOR INTERPRETATION OF PHYSIOGRAPHIC REGIONS:**

- Pavements and edging
- Edge bollards
- Landscaping
- Facade treatments on restrooms
- Interpretive signage

**Physiographic Regions of Jefferson County**




Base mapping provided by Louisville Metro using the LOJIC database.

PRECEDENT IMAGES

PHOTO: HNTB

PHOTO: Marc Woernle

PHOTO: Marc Woernle

# Amenities: Materials & Site Furnishings

## INTRODUCTION

The materials and site furnishings used along the shared-use path are the most visible and lasting features users take from their trail experience. Perhaps more than any other element of the system, the site furnishings will "define" the character, look, and feel of the Louisville Loop, and will provide the framework of the lasting impression one has of the experience.

Recognizing this, a family of enhancements have been designed for use along the Louisville Loop. The designs are intended solely for the Loop, to help the Loop stand above all trail segments and to truly function as a piece of art. The furnishings form a cohesive character that will ultimately link the entire 100 miles of the Loop and will create a recognizable identity unique to the Loop.

As with other standards along the trail, the impacts of cost and maintenance have also been considered. These standards seek to build upon readily available products with design enhancements that bring a unique flair to the trail. This helps reduce some overall costs, while still elevating the trail character and providing an experience unique to Louisville. When combined, these furnishings bring a distinct look and unique character to the Louisville Loop.

PHOTO: HNTB

# Bicycle Rack

## Need/Intent

Bicycle parking will be provided at trailheads and destinations. A uniform bicycle rack, like other elements, is integral in contributing to the Loop branding. To contribute to the momentum of the bicycle racks as art, bicycle racks are one of the amenities that are available for public art interpretation, in accordance with the MACOPA and the Art Programming Loop standard.

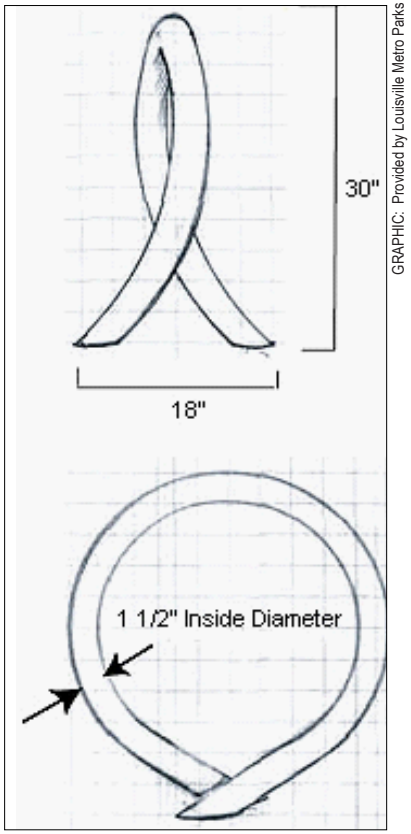
## Guidelines

- Default bike rack is the custom stainless steel spiral loop bicycle rack currently in use throughout the city.
- Install racks so there is enough room between adjacent parked bicycles. If more than one bicycle rack is used at a particular location, they should be spaced no closer than 4 feet on center. This minimum distance also should be applied when bike racks are artistically altered if more than one is used at a particular location.
- Bicycle racks shall be located at trailheads and other destinations where the user would need to park a bicycle.
- The rack element (part of the rack that supports the bike) should keep the bike upright by supporting the frame in two places allowing one or both wheels to be secured.
- Empty racks should not pose a tripping hazard for visually impaired pedestrians.
- Position racks out of the walkway's clear zone.
- Bike lockers should be provided in trailheads that are located next to major transit stations.
- Bike racks are one of the amenities available for public art interpretation in accordance with the MACOPA and Art Programming standard.

## Application

Louisville's unique bicycle rack design is reflective of the Louisville Loop logo and is currently used throughout the city. This bike rack shall serve as the default bike rack standard and should be used for all bike racks not included in the art interpretation program.

PHOTO: HNTB




GRAPHIC: Provided by Louisville Metro Parks

Stainless steel spiral loop bike rack shall be used where bike racks are not being custom designed as part of the City's art interpretation program.

PRECEDENT IMAGES

PHOTO: HNTB
Louisville, KY

PHOTO: HNTB
Louisville, KY

PHOTO: HNTB
Columbus, IN

# Bench / Seating

## Need/Intent

Seating is needed at a variety of locations along the Louisville Loop. A standard bench style shall be used along the Louisville Loop to support branding and consistency. This bench is modular and can be arranged to fit many settings along the Louisville Loop. However, per review set forth by the art guidelines for the Loop, upgrades to the bench that are reflective of artistic statements are allowed. Refer to Section C4 for art programming guidelines.

## Guidelines

- Use Streetsites Series™ seating by Victor Stanley, Inc.
- Seating shall be located at trailheads, access points, rest areas and other destinations.
- General quantities per location type, see below. For specific detail, see specific design standards.
  - Trailheads (2) (more for larger or high usage trailhead)
  - Access Points (Mini-trailhead) (1)
  - Rest Areas (1)

**Victor Stanley, Inc. Technical Brief:**
MODEL: FBF-64 Streetsites Series™ Dynamic criss-cross leg design, also available with welded end armrests. Clean horizontal lines through the use of steel slat seating. Surface mount.

COLOR: VS Bronze

LENGTHS: Available as standard in 4, 6 or 8 ft. (1.2, 1.8 or 2.4 meter) lengths.

Standard:
All fabricated metal components are steel shotblasted, etched, phosphatized, preheated and electrostatically powder-coated with TGIC polyester powder coatings. Publicote™ is our name for an elaborate powder coating process that provides a baked resin coating on all exposed steel frames, bench legs, table assemblies, mounting pipe brackets and on all finished steel products. This process includes steel shotblasting, thorough cleaning and surface preparation, and a final coating of nontoxic sealer that makes the subsequent powder coating dramatically more effective. The entire process utilizes no toxic solvents and represents our ongoing commitment to operating a modern, effective manufacturing process in a responsible and environmentally sound manner.

## Application

The Streetsites Series bench should be used at key access points to the Louisville Loop. The aesthetic design mimics the clean lines of other site amenities, and helps to provide a very subtle continuation of the character established for the Loop.

Photo courtesy of Victor Stanley

Streetsites bench as manufactured by Victor Stanley.

PRECEDENT IMAGES

Photo courtesy of Victor Stanley

Photo courtesy of Victor Stanley

# Trash & Recycle Receptacle

## Need/Intent

Trash and recycling receptacles are needed to maintain a clean environment along the Louisville Loop. The trash receptacles specified by these guidelines are intended to provide the trail system with an attractive, durable and efficient means for recycling and the disposal of litter.

## Guidelines

- Use Ironsites™ Receptacles by Victor Stanley, Inc. (customized with Loop Logo).
- Receptacles shall be located at trailheads, access points, rest areas and other destinations.
- General quantities per location type, see below. For specific detail, see specific design standards.
  - Trailheads (2) (more for larger or high usage trailhead)
  - Access Points (Mini-trailhead) (1)
  - Rest Areas (1)

**Victor Stanley, Inc. Technical Brief:**
MODEL: SD-42: (36-gallon capacity) shown here with standard tapered formed lid.
COLOR: VS Bronze

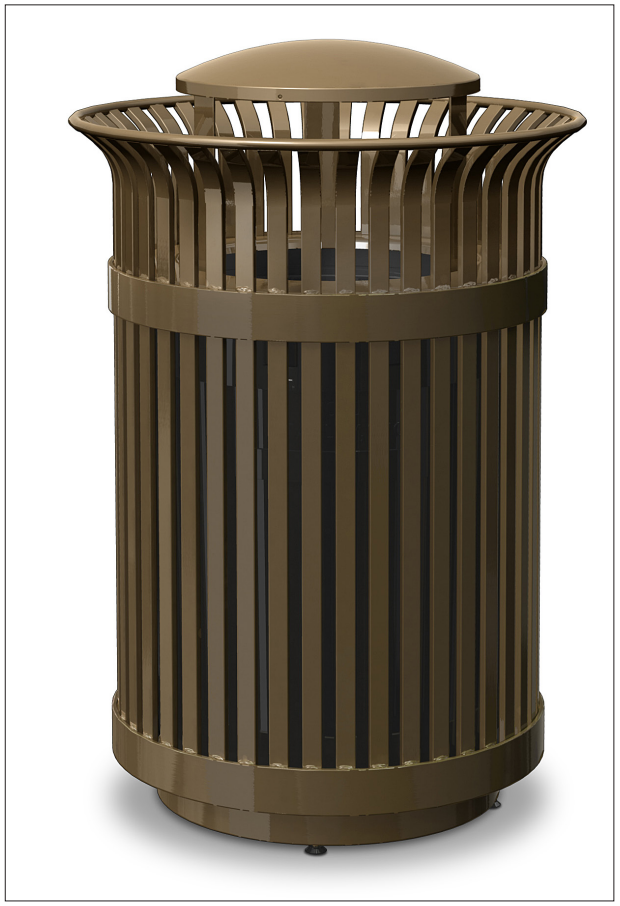
Standard:
All fabricated metal components are steel shotblasted, etched, phosphatized, preheated and electrostatically powder-coated with TGIC polyester powder coatings. Other standard features include a formed lid attached to the frame, a high-density plastic liner, and rubber-tipped leveling feet on the base. Interior plastic cans for our receptacles are made on molds designed by Victor Stanley. These plastic liners are reinforced, ribbed and molded for long life, ease of use and greater capacity

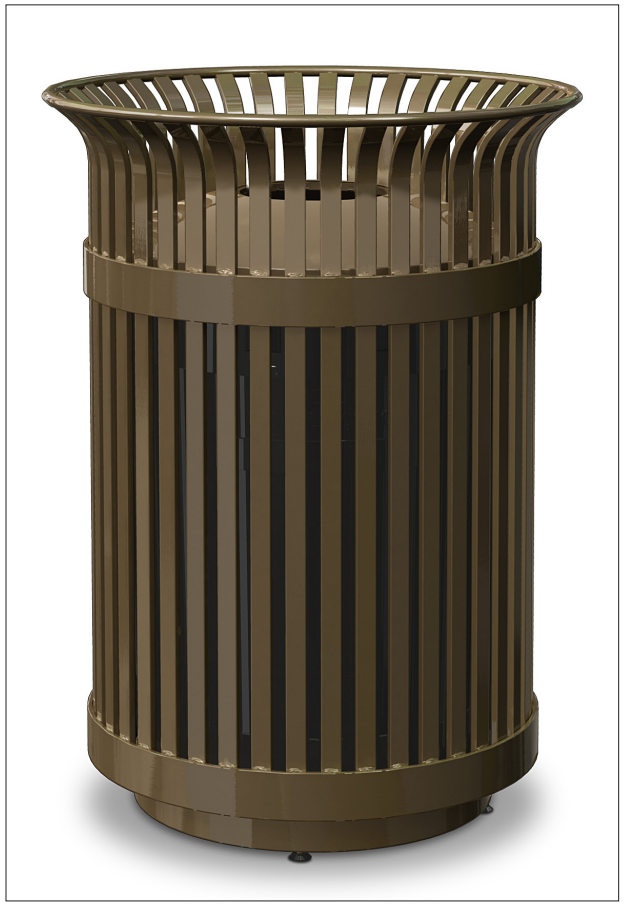
Options:
Side-Door litter receptacles (“SD”) are a marvel of detail and structural integrity. The side door hinges have stainless-steel hinge pins and oil-impregnated bronze bushings. They are available with either key locks or latches and with all lid options.

Promote recycling, advertise or identify special installations with custom designed decals are available for our plaques. Plaques are heavy 20-gauge galvanized steel sheets cut to the appropriate size. Plaques are then powder coated and secured to the receptacles.

## Application

The trash receptacle is reflective of the benches with vertical aluminum elements. This model includes the option to collect both trash and recycling items and also includes the Louisville Loop logo that is reflective of each particular segment of the Loop.





PRECEDENT IMAGES

Photo courtesy of Victory Stanley

# Bollard

## Need/Intent

Bollards will mainly be used to control vehicles and prevent unauthorized vehicles from entering pedestrian and bicycle spaces along the Louisville Loop.

## Guidelines

- **POLE:** Bollards shall consist of 6-inch diameter steel posts.
- **FINISH:** Powdercoated bronze to match other poles throughout the system. White reflective decal of Louisville Loop logo shall be placed on each side of bollard facing the direction that bicycles and pedestrians approach.
- **HEIGHT:** Standard height for bollards shall be 45" (1143mm).
- Bollards shall be removable with locking mechanisms for emergency and maintenance vehicle access when placed within vehicular route.
- Bollards shall be located at the entrance/exit of shared-use path at intersections, trailheads and other access points. Bollards should be placed in the center of the shared-use path and at both edges. Edge bollards may be decorative stone as shown in precedent images. If stone bollards are applied, details shall be approved by Metro Parks prior to fabrication.
- If several bollards are used in succession on larger access points, bollards shall be placed uniformly across the surface at a minimum spacing of 6 feet on center.
- Additional plants or other landscape materials should be placed along outer edge bollards to prevent vehicles from passing around the outside of bollards.
- Because of the need for consistency for emergency vehicle access, bollards placed internal to trail or access point surface shall not be included in the art interpretation program.

## Application

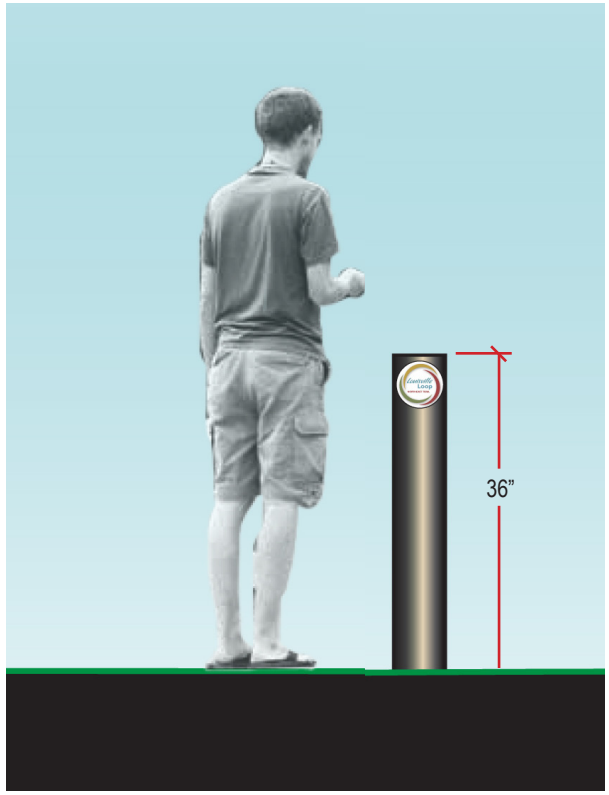
Steel bollards shall be used in conjunction with natural materials similar to the limestone bollards currently used on Beargrass Creek Trail. This detail allows individual trails to be identified but keeps the overall concept consistent throughout the Loop.

PHOTO: HNTB

Typical application of bollards at trailheads between parking areas and active pedestrian and bicycle areas.

Existing limestone bollard on edge of trail at entry points. Existing configuration can be used on other sections of the trail.

**USE OF STONE BOLLARDS TO REFLECT THE PHSYIOGRAPHIC REGIONS ENCOUNTERED ALONG THE LOUISVILLE LOOP.**




## PRECEDENT IMAGES

PHOTO: HNTB

Cherokee Park, Louisville, KY

PHOTO: Metro Parks

Beargrass Creek Trail, Louisville

PHOTO: HNTB

Seneca Park, Louisville, KY

# Mile Marker

## Need/Intent

The purpose of mile markers is to allow users of the Louisville Loop to identify their location and segment and to aid in emergency response.

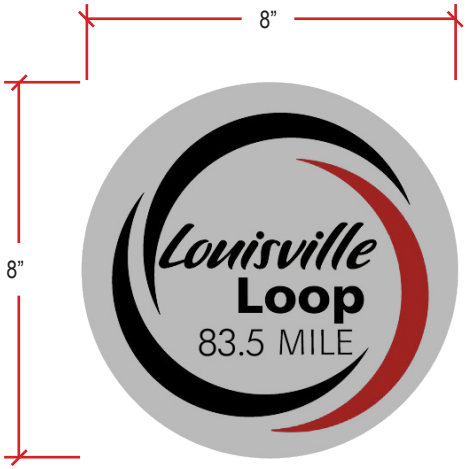
## Guidelines

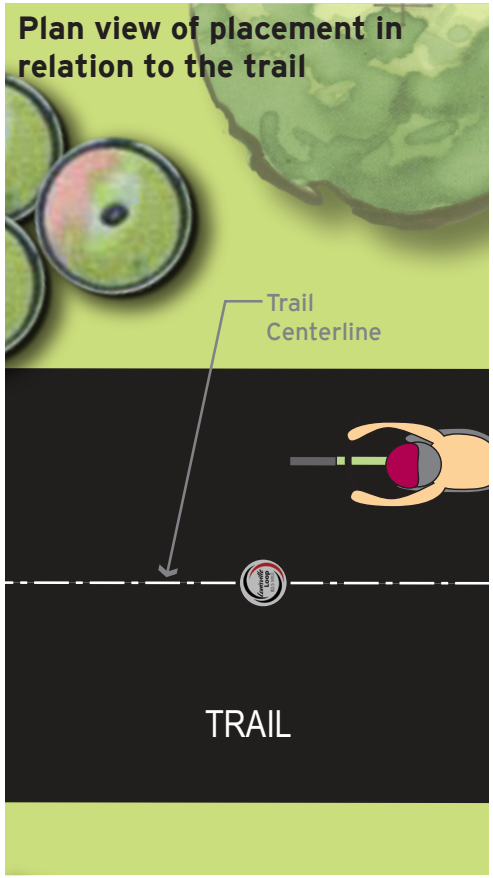
- Mileage calculations shall originate in downtown with the zero point of the Loop at Fourth Street and River Road. Mileage then shall be calculated counter clockwise, beginning with the Ohio River Riverwalk, the Ohio River Levee Trail, the Southwest and Jefferson Memorial Forest Trails, Floyds Fork Greenway, Northeast Loop Trail, and River Road.
- Regardless of section or time of construction, the entire Loop shall have sequential calculations and consistent mile markers to aid in emergency response on the trail.
- Vertical mile markers shall be used at every whole mile designation and in-pavement plaques used at every half mile. On the levees or other situations where use of a vertical marker is not possible, whole mile designations shall also be placed in the pavement following the guidelines for the in-pavement mile markers.
- Vertical mile marker should be placed on the side of the shared-use path that is not adjacent to any street approximately one foot from the edge of pavement.
- In-pavement mile marker shall be placed at every half-mile interval and used on whole-mile intervals on levees or other areas where regulations restrict foundations. In-pavement markers shall be placed in the center of the trail with text to read in the direction of the ascending milage (read as if user is starting at mile marker 0 and proceeding sequentially around the Loop).
- **MATERIALS:** 8” diameter etched stainless steel marker, core drilled into center of asphalt trail.
- **FINISH:** Brushed stainless steel.
- **GRAPHICS/COLORS:** Etched graphic shall be black filled except the right portion of the circular graphic which shall be consistent in coloring with the individual segment of the trail. All graphics on milemarkers shall be approved by Metro Parks prior to fabrication.
- As key location identification for emergency access, mile markers shall be maintained and any snow or flood debris removed as quickly as possible to ensure that mile markers are clearly visible for emergency personnel.
- Because of emergency requirements, mile markers should not be included in art interpretation programming.

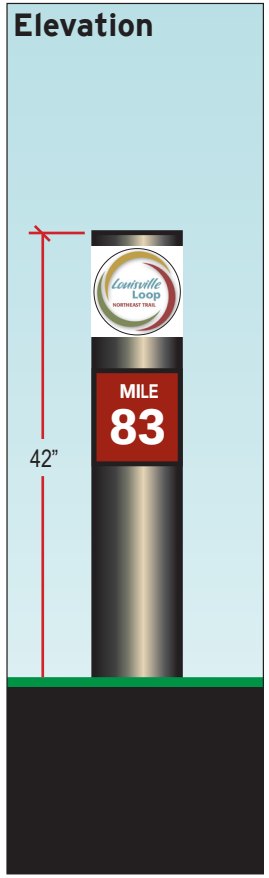
## Application

The vertical mile marker designates every mile along the Louisville Loop as well as each segment of the Loop.

### In-pavement milemarkers for areas where regulations restrict foundations (levee)




PRECEDENT IMAGES

PHOTO: HNTB
Fall Creek Greenway, Indianapolis, IN

PHOTO: HNTB
Beargrass Creek Trail, Louisville

PHOTO: HNTB
Downtown Cultural Trail, Indianapolis, IN

# Emergency Call Box

## Need/Intent

Emergency call boxes will be used to allow communication between trail users and emergency responders. They will be provided to increase security in more remote sections of the Loop.

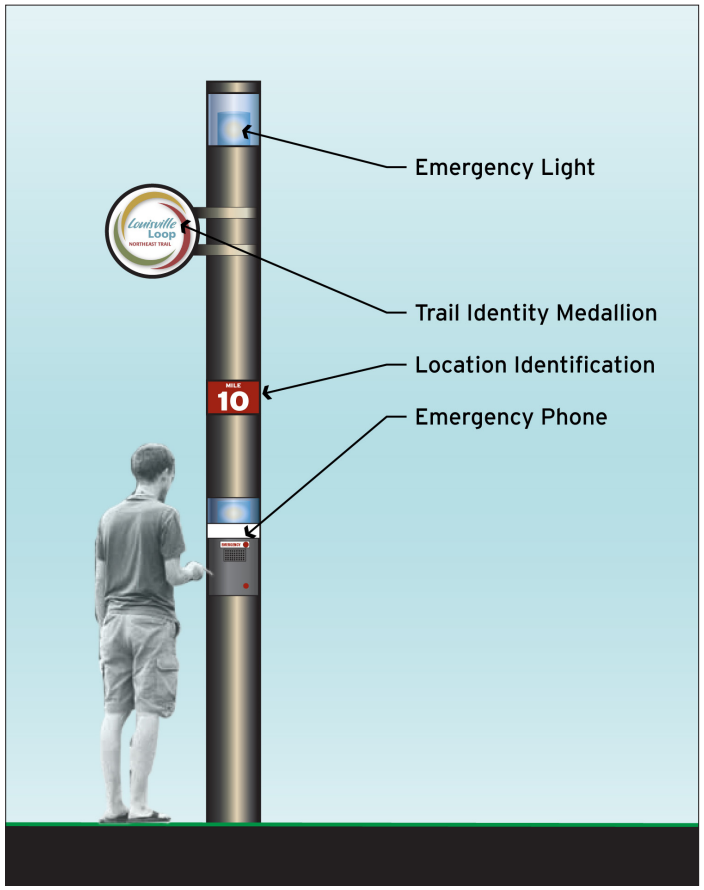
## Guidelines

- Emergency call boxes should be located in areas along the Louisville Loop that are remote or have poor cellular phone coverage.
- At a minimum, emergency call boxes should be placed in remote areas where access is limited. Call boxes shall be placed where the closest access points is a minimum of 1 mile in each direction.
- Call boxes may be located at designate trailheads, access points, or at rest areas along the trail.
- Emergency call boxes shall include light, phone, and the necessary identification information for first responders.
- Pole finish shall be bronze to match other poles along the Louisville Loop.
- Emergency call box structures shall not be included in the art interpretation programming.

## Application

The emergency call box includes an emergency light, trail identification, location identification (segment and mile) and an emergency phone.

While the guideline attempts to set parameters for placement, the final decision on where placement occurs will be dependent on specific conditions along the trail and the discretion of the designer and overseeing city agency.




PRECEDENT IMAGES

PHOTO: HNTB
Illinois Department of Transportation

PHOTO: HNTB
Illinois Department of Transportation

PHOTO: HNTB
Illinois Department of Transportation

# Drinking Fountain

## Need/Intent

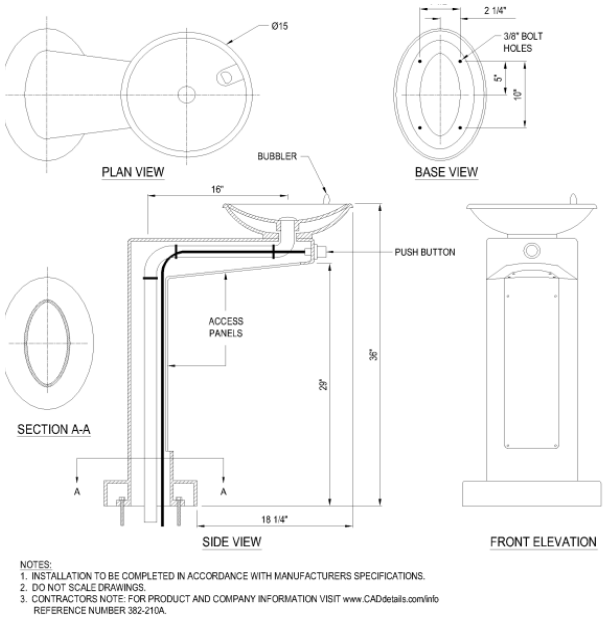
Drinking fountains are an essential amenity along an active use urban trail. Drinking fountains should be located at all trailheads and at designated access points and rest areas. A companion "pet fountain" is an optional addition to the drinking fountain that can be customized to the fixture.

## Guidelines

- General Characteristics:
  - **MANUFACTURER:** Canterbury International
  - **MODEL:** Los Angeles Fountain
  - **COLOR:** Bronze
  - **MATERIAL:** Aluminum, powder-coat finish
  - Drinking fountains shall be located at trailheads, designated access points and rest areas.
  - Frost-proof model required for year around use.

## Application

The drinking fountain is manufactured by Canterbury International with options for single, double and triple arm, with optional pet fountain.




PRECEDENT IMAGES

PHOTO: HNTB
Portland, OR

PHOTO: HNTB

PHOTO: HNTB

# Access Control Rail/Barrier Rail/Fence

## Need/Intent

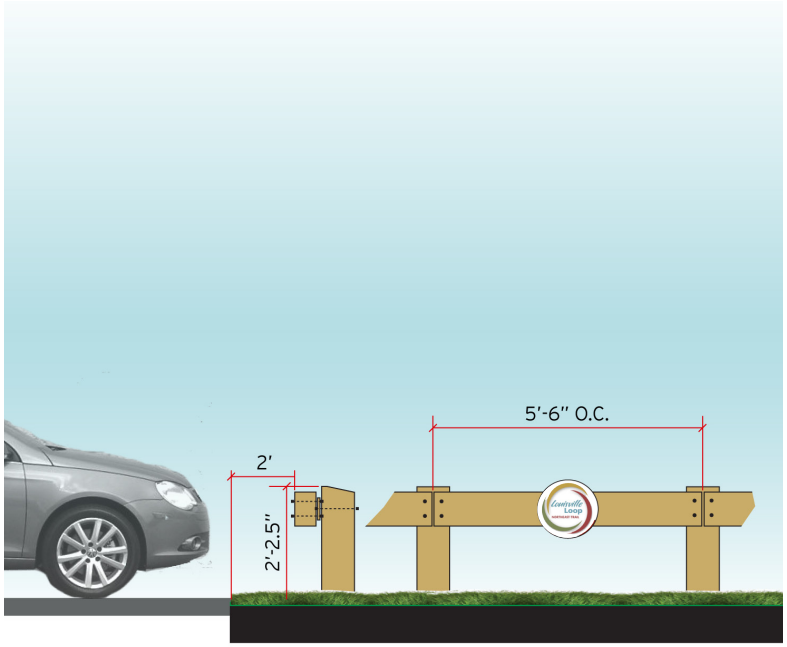
Vehicular Access Control Rail / Handrail / Fencing may be needed in areas along the Louisville Loop near steep slopes, parking areas or where safety and code considerations require barriers against potential injuries to users. Although functional, the railings are a distinctive design feature of the trail. Vehicular rails may also be used to discourage or prevent vehicles from straying off-road into natural areas or onto the Loop.

## Guidelines

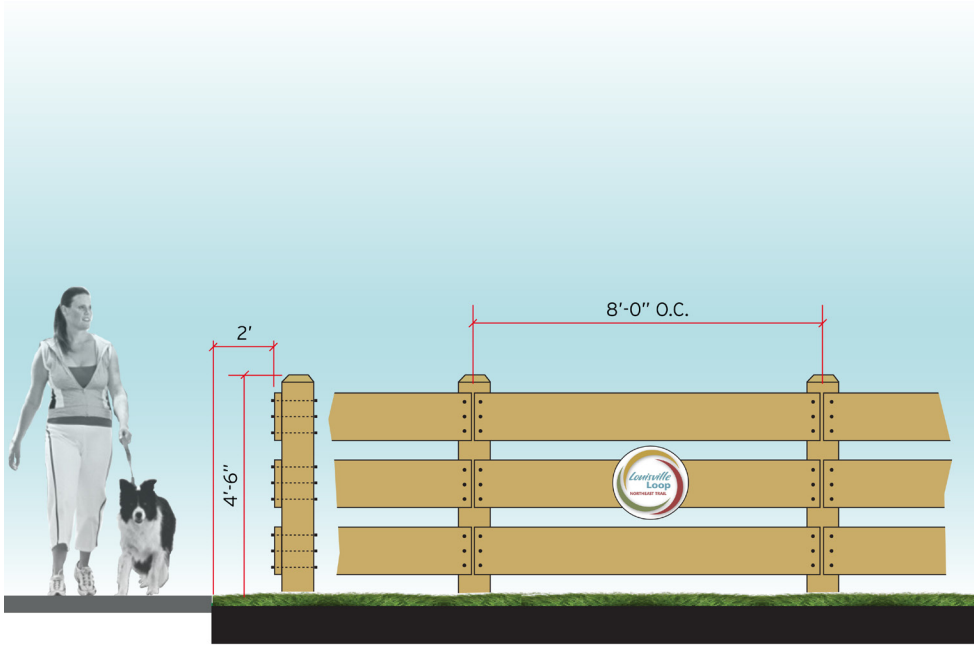
- Custom designs for handrails must comply with standards set forth in ADA (American with Disabilities Act) and all applicable local regulations
- Material should be vandal resistant and durable.
- The need for protective guardrail/handrail/fencing should be determined on a case-by-case basis during a project or trail segments detailed design phase.
- Barrier rail should be used between shared-use paths and streets when AASHTO 5' minimum clear distance cannot be achieved and there is no curb along edge of street.
- May also be used as a barrier between shared-use path and railroad tracks.
- Louisville Loop medallion attachment shall be aluminum blank sign panel with vinyl application, bolted to barrier with vandal-resistant screws. Medallions shall be placed facing trail every 500 feet.

- General Characteristics:
  - **MATERIALS:** Wood
  - **SIZE:** As indicated
  - **DESIGN CRITERIA:** All gap dimensions should comply with all applicable codes.

## Application




**Placement of vehicular access control rail**




**Placement of barrier rail / fence**

PRECEDENT IMAGES

PHOTO: HNTB
Fall Creek Trail, Indianapolis, IN

PHOTO: HNTB
Miles Park, Louisville, KY

PHOTO: HNTB
Seneca Park, Louisville, KY

# Pedestrian & Bicycle Control Devices

**Need/Intent**

Pedestrian signals and flashing alert lights should be used at non-signalized intersections or mid-block crossings to alert vehicles of potential of path users crossing traffic.

**Guidelines**

- Where possible, shared-use path should cross streets at signalized intersections with pedestrian-activated crossing signals.
- For mid-block crossings, flashing warning lights should be included to warn motorist of potential pedestrian and bicycle crossing. Where traffic is significant, a pedestrian activated signal should be considered.

## Application

PHOTO: HNTB

Example of mid-block crossing on the Monon Trail in Carmel, Indiana with a trail identification sign and flashing lights to alert vehicles of pedestrian crossing.

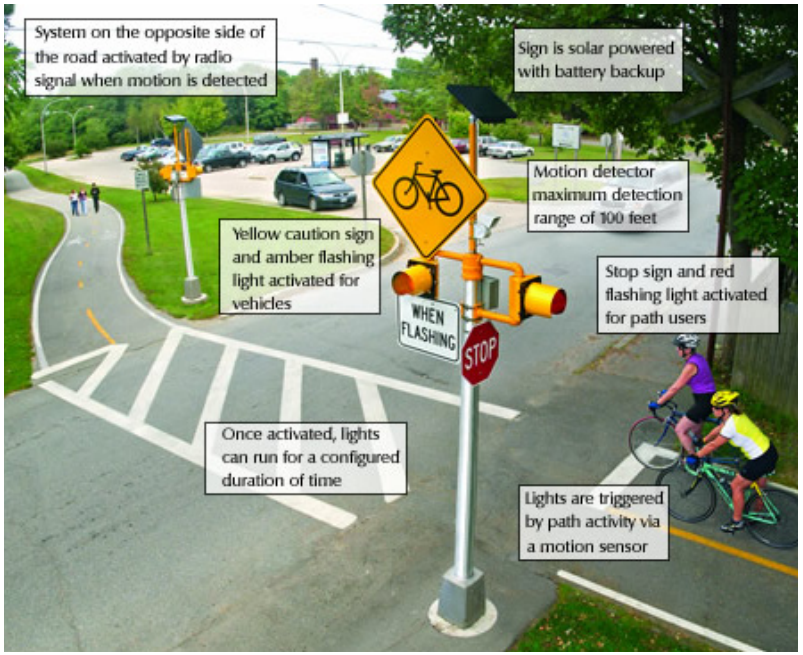



Photo courtesy of Cross-Alert ©

The Cross-Alert System © is a solar-powered, motion-activated flashing system that alerts both street and shared-use path traffic to approaching intersections. This system is particularly beneficial in portions of the system with limited sightlines.

PRECEDENT IMAGES

PHOTO: HNTB

PHOTO: Alta

PHOTO: HNTB

Downtown Cultural Trail, Indianapolis, IN

# Environmental Management

## Need/Intent

To reinforce the concept of a sustainable approach to design and management of the corridor, the recommendations regarding landscape management are intended to contribute to a "healthy-city" environment along the Louisville Loop Trail. General guideline recommendations for specific environmental areas that may be impacted along the trail are highlighted below.

## Guidelines: Native Landscape Restoration

Unless there is a specific design requirement which cannot be met through the use of native plant species, new planting of trees, shrubs and herbaceous species along the Loop should focus on the use of Kentucky native plant associations.

## Guidelines: Meadows

In addition to their visual appeal, meadow areas instead of lawn areas are recommended for a number of environmental benefits, including:

- Improvement of water quality through filtering of surface water runoff;
- Enhancement of local wildlife habitat values; and
- Reduction in energy conservation and chemical treatment required for lawn maintenance operations (thereby also reducing maintenance cost).

Local conservation groups should be encouraged to utilize the Loop meadow areas as an opportunity to propagate rare herbaceous plant species. Meadows should be mowed annually to prevent tree and shrub growth, and to optimize conditions for desired plant growth.

## Guidelines: Stormwater Management

To the greatest extent possible, all impervious surface areas of the Loop shall be designed and constructed so as to infiltrate stormwater into the ground. This may be accomplished through drainage features that allow rainwater to slowly percolate into the soil rather than run directly into the surface stream network. Consideration should also be given to the use of porous pavement for parking areas, per these Guideline recommendations. Any stream channels should be maintained in their natural condition in preference to channelization or pipes.

## Guidelines: Erosion Control and Stream Bank Stabilization

In order to minimize soil erosion, careful attention needs to be paid to maintenance of stream bank restoration areas, thereby preserving a fibrous mat of roots which serves to hold together the soil and rocks along water courses. New drainages which are introduced as a part of the Louisville Loop improvements should be designed with a natural vegetated channel. Wherever possible, the strip of land alongside drainage water courses should be managed as meadow to filter surface stormwater runoff before it enters the surface stream network.

## Guidelines: Wetlands and Streams

The general policy regarding existing wetlands and streams should be to avoid any negative impacts. Where avoidance is impossible, the design should seek to minimize the amount of impact and to mitigate the impact through construction of planned wetlands elsewhere in the corridor or restoration of wetlands and stream corridors.

## Guidelines: Energy Conservation

Design solutions on the Louisville Loop should seek to implement energy conservation. Examples include:

- Use of low energy use fixtures for lighting;
- Use of sensors and controls such as photocells to control night lighting;
- Use of meadows in place of high maintenance lawns;
- Planting of shade trees around parking areas.

## Guidelines: Recycling

Users should be encouraged to recycle through provision of recycling stations at trailheads and major access points.

SECTION 5

# Reference Guide

The following is a list of references and sources utilized to develop design guidelines for Louisville's Loop Trail System. Many of these documents are available online and provide a wealth of information and resources to the public.

- **A Policy on Geometric Design of Highways and Streets, 5th Edition (November 2004)** - American Association of State Highway and Transportation Officials (AASHTO): This document is referred to as "The Green Book" and references pedestrian and bicycle facilities. The full document can be acquired through https://bookstore.transportation.org/item_details.aspx?ID=110.

- **Guide for the Development of Bicycle Facilities (1999)** - American Association of State Highway and Transportation Officials (AASHTO): This book provides part of the information necessary for a safe bicycling environment. The full document can be accessed through http://safety.fhwa.dot.gov/ped_bike/docs/b_aashtobik.pdf

- **Designing Sidewalks and Trails for AccessShared Roadway** - Federal Highway Administration (FHWA): The full document can be accessed through http://www.fhwa.dot.gov/environment/sidewalks/index.htm.

- **Manual on Uniform Traffic Control Devices (MUTCD)** - FHWA: The MUTCD defines the standards used to install and maintain traffic control devises on all streets and highways. The complete document can be accessed through http://mutcd.fhwa.dot.gov/kno_2003r1r2.htm.

- **Special Report: Accessible Public Rights-of-Way Planning and Design for Alterations (July 2007)** - Public Rights-of-Way Access Advisory Committee: This document outlines the specific ADA requirements for all public right-of-way facilities. The complete document can be accessed through http://www.access-board.gov/prowac/alterations/guide.pdf

- **Metro Louisville Complete Streets Manual (October 2007)**: This manual provides detailed information regarding roadway and roadside design as well as multi-modal facilities in Metro Louisville. The complete document can be accessed through http://www.louisvilleky.gov/BikeLouisville/Complete+Streets/.

- **Metro Louisville City of Parks Initiative:** This program is "a visionary and aggressive expansion of Louisville's park system, adding thousands of acres of greenspace, the 100-mile "Louisville Loop" paved trail encircling the city, and improvement projects at hundreds of existing parks all over town." More details can be found at http://www.louisvilleky.gov/MetroParks/cityofparks/.

- **Bicycle Parking Design Guidelines**
  http://www.bicyclinginfo.org/pdf/bikepark.pdf

- **Kentucky Transportation Cabinet**
  Bicycle and Pedestrian Design Guidelines
  http://transportation.ky.gov/design/designmanual/chapters/18Chapter%201500%20AS%20PRINTED%202006.pdf

- **Cornerstone 2020 Comprehensive Plan (June 2000)** - Louisville & Jefferson County Planning Commission: "Cornerstone 2020 represents the vision of Louisville and Jefferson County." The complete document can be accessed through http://www.louisvilleky.gov/NR/rdonlyres/AA2A350C-92EC-41D5-B44D-01207FFFE9C5/0/C2020FinalVersionwithgraphics.pdf.

- **Transit Standards Manual: A Reference Guide -** Transit Authority of River City- Design standards for Louisville Metro public transit facilities.

This page intentionally left blank.

SECTION 6

# Beyond the Loop

**Beyond the Loop** ..... 6-1

B1 - Soft-surface Trail Standards
B2- Equestrian Trails

# Soft Surface Trail

**Need/Intent**

This section to be provided by Metro Parks.

**Guidelines**

- General Characteristics:
  - **Materials:** To be determined
  - **Finish:** To be determined
  - **Color:** To be determined
  - **Size:** To be determined
  - **Design Criteria:** To be determined

## Application

- xxx

PRECEDENT IMAGES

# Equestrian Trail

**Need/Intent**

This section to be provided by Metro Parks.

**Guidelines**

- General Characteristics:
  - **Materials:** To be determined
  - **Finish:** To be determined
  - **Color:** To be determined
  - **Size:** To be determined
  - **Design Criteria:** To be determined

## Application

- xxx

PRECEDENT IMAGES

# APPENDIX A

# Meeting Notes

## Public Works/ KYTC Meeting

August 14, 2008

- Wayfinding Signage should include:
  - Physical signs
  - Pavement markings (John Henry)
  - Direction and verification (thermoplastic) for more information
  - Mile markers at every decision point and installed every tenth of a mile (mile markers can be installed at every 1/10-2/10 mile to start and filled in as money is available).
  - Signs for trail users and motorists
- Vandalism may be an issue so signage should be vandal resistant.
- Signs should be consistent with local sign ordinances including KYTC and MUTCD.
- The striping gone on the Riverwalk.
- The trail should be built in the10 year floodplain or above. If not, there are issues with silt deposit/ piles from cleaning and public works/ MSD maintenance.
- Trail standards will consider the turn radii and slope of the trail and other AASHTO Standards.
- Maintenance procedures in floodplain and sensitive areas are an issue.
- Drainage should occur on uphill side in order to have less sheet drainage across trail. Consideration of cutting tree roots and other localized issues should be taken into account.
- Keep in mind microclimate.
- KYTC would support efforts to highlight conflict points such as colored pavements at conflict points.
- Evergreen Road in Anchorage should have a crosswalk and pavers.
- Permitting process for road ROW is maintained by permitting including breakaway standards and height.

- Conflict points where trail crosses business entrances should use a mixture of bollards and pavement markings (see existing examples). The issue of PVC versus steel bollards and breakaway bollards should be considered.
- Pavement striping should be done at intersections only (MSD has responsibility for anything on the levee).
- KYTC feels no lights are necessary. Front and rear lights required in Louisville to ride bikes at night.
- Truncated domes should be used or other ADA accepted detectable warning surfaces.
- Non-signalized crossings (such as the KYTC office at McDowell Center) need to be considered. Flashing yellow or pedestrian activated options should be considered. Tuscon or Phoenix, AZ has good examples available on their website.
- Obstructions along the trail should look at route location versus roadway; a 15-foot rule is good.
- Prospect could have reduced width for trails.
- In Anchorage, public works (Dirk) is responsible for upkeep once constructed for trails in the roadway.
- Paths need to be brought up to the stop bar at intersections or half way through radius. This provides more visibility of trail user to motorist.
- KYTC has a clear definition of a sidewalk and trail in their Design Manual. http://transportation.ky.gov/design/designmanual/
- Responsible party for maintenance and liability of signage, regardless of who's ROW, is whoever the permittee is.
- Reference the Iowa Standards for trails.
- Public Works Actions:
  - Sign ordinance from each community (Anchorage, Prospect, Metro)
  - Look at the KIPDA website for the KYTC PB Americas Study on interchange and pedestrian paths. http://www.kipda.org/files/PDF/Transportation_Division/Information/KIPDAInterchangeStudyFINALREPORT.pdf

## Public Arts Committee Meeting

August 14, 2008

- Public art master plan is addressing both programming and the location for art. Creative Time is the consultant, Meredith Johnson.
- Signage should have a distinct look; signs can be art.
- Trailhead amenities could be art.
- There are 10 distinct section of loop.
- Trailheads are a focus area, activity node by nature.
- Space for temporary art should be incorporated. Other large cities have platforms for public art
- The plan should think bigger than Loop as a "venue." Structures could be both art and functional. The path or buildings could be art. Form over function should be considered.
- The art is not about decoration or design, it's about the IDEA.
- Coordination between Design Standards and Art Master Plan will be key, considering their varying schedules.
- Engage artists who work in recycled materials; this will tie into the environmental policy.
- Multi-media, earthworks, sound, light should be used as art. There is a need to get outside of a single form (not just one light fixture, but

a series of lights could be used as art).

- Artists who work in audio research (historical, narrative) should be used.
- Artists should be involved with the interpretation of the trail.
- An inventory of the public art almost done and a database is being developed.
- There is seed money for the “monument to merger.”
- The art master plan will include instructions on how to commission and decommission art.
- Public art is an economic driver, in terms of the development of the loop, sponsors.
- For donor signage or recognition, standards should be broad enough to encourage donations but should also be a guideline that can be used as a tool to “say no” to bad stuff (for example, no Pepsi logos).
- Waterfront development was wise in limiting “muchness” plop art. This philosophy should be carried out through the loop too. PAPA – protection against plop art.
- Maintenance requirements should be considered.
- Art is an affordable element for signage that doesn’t get cut from budget.
- This investment of art in the loop and the master plan should stimulate the local art community.
- Art is the driver for ownership in community and local artists. This is currently lacking.
- There is a need for a process to screen artists- this will be developed in the Public Art Master Plan. Call for artists and invite only is a good way to screen.
- Good example of public art is on America Trails- Chattanooga Art Walk.
- A recommendation on the process would be to include one art committee member on each design team.
- To reduce maintenance and vandalism, the standards could incorporate the opportunity for graffiti artists.
- Some natural areas or vistas are art works in themselves; let’s capitalize on the natural beauty of the Louisville landscape.
- The meaning of art should be tied to purpose of trail.
- The standards should include one amenity as art.
- The Bernheim Forest would be a good resource; Julie Schweitzer is Art Coordinator/ Independent Art Consultant.
- The Mayor’s Committee on Public Art (MCOPA) or its future equivalent, if necessary, should be included in the process for design standards and art along the loop.
- Art nodes could be educational or interpretive “guides” to trail art features.
- It is important to get “art language” included as integral standards, not as a throw away piece.
- Standards should reinforce the value of art.
- Education should be incorporated into some of the art.
- Allow art to exist in assigned places as well as artist chosen places. Artists like assignments of spaces, like a platform or specific location, and they also like a blank slate to determine the best location for their art. Inspiration for artists will come from spaces that we don’t see fit to specify.

## Safety and Security Meeting

August 15, 2008

- The Loop will go through 7 of the 8 police divisions; each division was asked to develop a plan.
- The width of the trail needs to accommodate vehicles.
- The weight of vehicles is an issue, such as four wheelers/ ATVs, brush trucks, and ambulances.
- Access points
- EMS personnel do not have set jurisdictions.
- Bollards are a problem with keys; the standards should use a lock box/ code for key or siren activated. However, with a sired activated system, there are problems with it opening when an emergency vehicle drives by.
- Lock box might be the least expensive option.
- ID swipe cards/ ID systems should also be considered.
- If you can't get around bollards, you have to load up everything you need and walk.
- Bollard theft is a problem.
- Height restrictions need to be defined; low hanging trees are a problem.
- Emergency call boxes may not be necessary with cell phones; however, a couple of areas on levee trail don't have cell service.
- There is a perceptual benefit of seeing call box.
- Call boxes could be located only at trailheads.
- Cell phone emergency calls on fringes of County could get wrong tower (such as Spencer County).
- Access Points need to address:
    - Identification at access points and wayfinding signs are extremely important. Emergency response will be dispatched as part of the regular street network.
    - There may be a need for more access points in rural areas because of lack of roads.
    - One standard mile marker system is ideal. If the Loop is broken apart by segment, emergency will identify locations by segment. However, cannot reference Louisville Loop to Floyds Fork then to Louisville Loop again.
    - The zero point of the Loop is at Fourth Street and River Road; it then goes counter clockwise.
- The mile markers need to be kept simple.
- The Riverwalk currently has mile markers.
- The mile markers should be raised on posts. If they are not raised, maintenance is critical issue with debris or snow removal.
- Emergency recognition equals public recognition. Everyone has to be on the same page.
- The name on trailheads must be kept uniform.
- Consistency is important for mile markers.
- Turn around points for emergency vehicles would be great.
- There is a need to get the suburban fire departments involved; if departments are required to crossover districts to get access points, it could be an issue.
- An ambulance weighs 10 tons.

- A fire truck weighs 20 tons.
- Each fire department needs to develop a S.O.P.
- They are trying to get the police to design and develop a patrol plan using horse, helicopter, ATV, etc.
- The standards should consider the separation of programmed uses, such as shelters from trail.
- Cameras would help users feel safe.
- In developing the standards, there is a need to talk to the police.

## Public Works/ KYTC / Public Safety Meeting

February 17, 2009

Over view of design manual:

- Explanation of AASHTO Standards and how the design recommendations meet these guidelines
- Review of the basic units of the Loop – trail, bike lanes – and how those basic units are applied
- Review of support facilities for the Loop – trailheads, rest areas, etc.
- Review of branding for the Loop
- Referenced trail project that parallel's an the I-90 interstate in Seattle / Mercer Island as a potential reference project for some sections of the Loop;
- Discussed threshold for bicycle boulevards;
- The Zero Mile Marker (at 4th Street) should be highlighted;
- Hybrid bike lane: 14' – Chevron, if less than 14', Chevron should be in the center;
- Noted that speed limit for the Loop is 15MPH;
- All spur trails need to follow the same standards as illustrated in the Loop design manual

## Public Arts Committee Meeting

February 17, 2009

- Discussed art opportunities along the Loop, example referenced was Patrick Blanc and his vegetated wall art installation;
- Restroom buildings can also be designed as "structural art" statements at trailhead locations where they are utilized;
- Supported the levels of art inclusion as illustrated in the design manual, and endorsed the plan
- Discussed revisions to the Loop logo.

# City of Parks

On February 22, 2005, Mayor Jerry Abramson and Metro Parks announced a multi-million dollar, multi-year initiative to add thousands of acres of park land and protected green space to Louisville Metro's "greenprint." The Louisville Loop provides the connection and linkages to this great “City of Parks.”

This effort builds upon the groundwork laid by famed landscape architect Frederick Law Olmsted over a century ago, and will complete Louisville's transformation into a City of Parks.

Louisville Loop

METRO Louisville

For more information contact:

METRO LOUISVILLE PARKS AND RECREATION
1297 Trevilian Way
Louisville, Kentucky 40233-7280
tel 502/456-8141
fax 502/456-8116
www.metro-parks.org

Jerry E. Abramson, Mayor
Louisville Metro Council

HNTB alta PLANNING + DESIGN