



Fall Creek Greenway

chapter four

DESIGN STANDARDS





chapter four

DESIGN STANDARDS

inside this chapter:

INTRODUCTION	171
REGULATORY STANDARDS	175
APPLICATION STANDARDS.....	177
FACILITY STANDARDS	191
SIGNAGE STANDARDS	211
SUSTAINABLE PRACTICES	229
BLUEWAY STANDARDS	233



CHAPTER 4

design standards

The Indianapolis Greenways system has a distinct character that has evolved over the years as the system has developed. The use of federal funding has ensured a level of consistency in construction methods and techniques, and the city has held true to the original character of the trails developed during the construction of its earliest segments. With those precedents in mind, it is important that the expansion of the system build upon and reflect the character established by the early development of the system.

This becomes even more critical as the city looks for alternative funding sources, partnerships, and new means for implementing portions of the system. By having a set of design guidelines in place, the city ensures that there will be a level of consistency across the system.

INTRODUCTION

The purpose of establishing design standards include:

- Ensuring consistency across the system--consistency in character, consistency in construction, and consistency in the application of facilities along the greenways.
- Providing design direction that enables alternative development of the system (for example, private development of the system in growing areas of the city).
- Ensuring that the greenways meet the recreation, transportation, and environmental stewardship goals of the plan.
- Establishing regulatory guidelines that ensure that the greenways meet the safety requirements for all users.
- Establishing an appropriate approach to greenway development that results in a high-quality user experience, durability of facilities, and a reasonable approach to trail maintenance.

design intent

World-Class System



Unique &
Consistent
Character

Affordability &
Maintenance

With the design guidelines policy statements in mind, these design guidelines strive to find the balance between three main goals for this master plan:

- Creating and sustaining a **world-class** greenways system with world-class facilities and world-class design standards.
- Establishing a **unique and consistent character** that is unique to Indianapolis and the greenways system.
- Recognizing the need for **affordability, durability, and efficient maintenance** throughout the entire system.

The design standards are intended to strike a balance between these three goals to develop an enduring and successful greenway system for Marion County residents.

As expansion of the system occurs over the next 10-50 years, the design guidelines help ensure that there is a recognized level of expectations for the system. Design standards allow the city to partner with other entities and ensure that the quality and design of independently constructed trails and connections meet the standards of the overall system. The 2014 plan update is the appropriate time to formalize the design standards for the entire system. The system has expanded to the point where opportunities may exist for public-private partnerships and many small neighborhood groups are initiating trail connection projects. It is also an ideal time because the age of the Indy Greenways system allows an honest evaluation of which construction techniques and specifications have worked best throughout the system, and have resulted in the most enduring construction solutions with the least amount of maintenance.

DESIGN GUIDELINES POLICY STATEMENTS

Through the design process, several principles were established that formed the policy guidance for development of the guidelines. While these may seem obvious, it became important to formalize the policy statements to help explain the intent of the guidelines. These policy statements help inform and direct the design decisions made in these guidelines and in future segments of the Indy Greenways system.

The design guidelines for the Indy Greenways system are based upon the following policies formalized in the Indy Greenways Full Circle Plan:

1. Indy Greenways shall provide a safe and healthy environment for all users.
2. Indy Greenways are both recreational and transportation assets.
3. Indy Greenways is part of a larger, integrated transportation network in the city and should provide infrastructure and maintenance to allow the greenways to function as part of that network.
4. Indy Greenways strives to provide connections and access to neighborhoods, commercial centers, and other destinations meaningful to residents.
5. Indy Greenways will demonstrate principles of sustainability and environmental stewardship.
6. Indy Greenways will balance high-quality design with cost-effective maintenance.
7. Indy Greenways will have a unique system identity but still allow variations in the individual segments for cultural elements or natural features. Indy Greenways will highlight Indianapolis' unique cultural, natural, and historic features.

TRAIL AND GREENWAY DEFINITIONS

Throughout the industry, there are varying sources of definitions that describe the different types of facilities and features found along Indianapolis' greenway system. Sometimes, those definitions conflict or cause confusion depending on the context and audience. The following is a list of some of the general terms used in the description of bicycle and pedestrian facilities within the City of Indianapolis. The definitions provided here reference how these terms are used in the Indy Greenways Master Plan.

GREENWAY TERMINOLOGY

Greenway- A linear park or recreation space that typically includes a shared-use path and falls under the jurisdiction of Indy Parks and Recreation (either directly or through some sort of Memorandum of Understanding). Greenways typically include a dedicated right-of-way, unique branding and identification, and signage

and site enhancements unique to the greenway. While most include a shared-use path, some greenways are designated as “conservation corridors” and do not include the trail component.

Conservation Corridors- Designated corridors, usually along creeks, rivers or other natural areas, that are designated for protection from development--often as a potential future greenway corridor. Previous Indy Greenways Master Plans have identified conservation corridors as part of the greenway system.

Shared-use Path or Shared-use Trail- A bicycle and pedestrian way physically separated from motor vehicle traffic. Shared-use paths are typically two-way and are intended for multiple types of non-motorized users (walkers, bicyclists, in-line skaters, wheel chairs). There are several different types of shared-use paths in the Indy Greenways System:

- **Asphalt Path-** Typically 10-12' wide paved path with 2' clear shoulders (can be reduced to 8' when necessary) and designed for multiple users.
- **Crushed Aggregate Path-** 8-12' Wide with crushed limestone surface. Multiple users can use the path, but it is most suited for runners and walkers. Often used in environmentally sensitive areas.
- **Soft-surface Trails (or “Unpaved Paths”)-** Refers to any non-paved trails and aren't necessarily designed to any particular standard. Can refer to footpaths, nature trails, equestrian trails, mulched trails or other pathways with non-paved surfaces.

Connector- A short trail intended to function as a connection between two facilities or two greenways and not necessarily as a stand-alone greenway segment. Typically designed to the same standards as the shared-use paths they connect.

Connections- Term that defines any means by which someone accesses, connects to, or is connected to or from a greenway. Can include shared-use paths, sidewalks, bike lanes, on-street infrastructure, or other bike or pedestrian facilities.

Access Point- Defines any designated entry point to a greenway.

Trailhead- A designated access point to the greenway system. Trailheads are designed to provide parking, trail information, and other amenities such as comfort stations, benches, water fountains or other user-related enhancements.

Blueways- Designated water courses that provide routes and public access facilities (portages, access points, non-motorized connections to greenways) for water activity along its course.

Portage- Refers to areas along blueways where users must exit and re-enter the water to avoid obstructions or other dangers in the waterway.

Maintained area- Areas within the greenway that are immediately adjacent to the trail and require on-going maintenance throughout the growing season.

Rest Areas- Designated areas along the greenway where users can step off of the trails and rest. Rest areas are typically paved and may include benches.

Overlooks- Designated areas along the greenway where users can step off of the trails and view some area of interest. Overlooks are typically paved and may include benches. Overlooks may also include interpretive signage.

Connection Nodes- An area where two trails come together or where a trail meets another bikeway or pedestrian way.



Pennsy Trail on the east side of Indianapolis.



62nd Street Trail is an example of a sidepath.



Access point along Fall Creek Greenway.

OTHER PEDESTRIAN AND BICYCLE FACILITIES

This master plan also uses or connects to several different types of bicycle and pedestrian facilities. Below are standard definitions for some of these other types of facilities that may be encountered in the Indy Greenways system. It should be noted that this list doesn't cover every type of pedestrian and bicycle facility, but does include many of the types of facilities encountered along or pertinent to the Indy Greenways system. It should also be noted that bicycles are street-legal means of transportation and have the same rights to use the roads as cars and trucks. As such, bicycles are not limited to designated facilities and have the right to use streets. Designated facilities are often developed solely as a means to provide safer interaction and shared use between bikes and automobiles.

Bikeways- Any facility designated for bicycle use. Can include shared-use paths, sidepaths, on-street bike lanes, or other bicycle facilities within the street infrastructure. Indy Greenways are bikeways, but the term bikeway is not exclusive to Indy Greenways.

Bike Lanes- Designated, on-street lanes for bicycle use. Bike lanes typically flow in the same direction as traffic.

Buffered Bike Lanes- On-street bike lanes that are designed with a minimum 5' buffer strip between the bike lane and parked vehicles. Buffered bike lanes are designed to provide safer conditions for bicyclist by reducing the potential of being hit by vehicles or opened car doors.

Contra-flow Bike Lane- Refers to bike lanes that flow in the opposite direction of traffic. These are typically only used in very precise conditions.

Shared-lanes or "Sharrows"- On-street marked bicycle facility where vehicles and bikes share a lane. Sharrows are designated with pavement markings and signage.

Cycletrack- On-street bike lanes that have separation from adjoining auto uses, often through the use of curbs or other physical separation devices. Most often they are two-way and designed on a specific side of the street, but there are examples where they can be one-way and put on separate sides of the street (this is rare). A local example of a cycletrack can be found along Shelby Street in Fountain Square.

Bicycle Boulevards- A modified local neighborhood street designed to function as a through street for bicycles while maintaining local access for vehicles. Bicycle boulevards are intended to provide advantage for bicyclists, reducing speed of vehicles, and creating a safer condition for bikes and pedestrians.

Sidewalk- Pedestrian facility designed as part of the street infrastructure, typically 4-6' wide. Not intended for bicycles and in some areas are illegal for bicycles to use.

Enhanced Sidewalk- A widened sidewalk intended to accommodate a higher concentration of users or multiple types of users. Sometimes these are also used where design speeds dictate additional spatial separation between automobiles and pedestrians. Enhanced sidewalks create legal questions about intended users. While bicycles are typically not excluded from using these facilities, their status as a "sidewalk" creates discrepancies where bicycle use of sidewalks is prohibited.

Sidepaths- A shared-use path built as part of the street infrastructure, often in place of sidewalks. Sidepaths are open to all users and function much like a greenway trail. They are used along roadways within the existing rights-of-way. Not all sidepaths are part of the Indy Greenways system, but this plan does include greenway segments that function as sidepaths.

Urban Trail- A hybrid type of bicycle and pedestrian facility that combines the experience of a shared-use path with on-street infrastructure. In Europe, this term often refers to a cycletrack, but new designs in the United States have evolved its definition by taking the infrastructure from the street level to the top of curb level. Locally this can refer to trails such as the Indianapolis Cultural Trail.

DESIGN STANDARDS

The design guidelines are broken into six different sections:

1. **Regulatory Standards** The legal and safety requirements for the greenways, both in terms of use as well as funding eligibility.
2. **Application Standards-** The description of what is included along the greenways and how the greenways are applied in different circumstances. This section also includes typical cross sections of the greenways and construction methods and materials for the shared-use path.
3. **Facility Standards-** The description and details of the other facilities, crossings, and user amenities associated with the greenways.
4. **Signage Standards-** The description and details of signage components for the greenways.
5. **Sustainable Practices-**Description of sustainable practices to be applied to the greenways.
6. **Blueway Standards-** Description of standards that detail treatments where the greenways interface with recreational waterways within the riparian corridor.

Together, these standards prescribe the expectations for the further development of the Indy Greenways system.



1. regulatory standards

There are several regulatory standards already in place from various governing bodies, state and federal agencies, legislation, or professional resources that are recognized as industry standards. Adherence, in many instances, is required by law or is a pre-requisite for certain types of funding sources. These standards are described below.

American Association of State Highway and Transportation Officials (AASHTO)- The American Association of State Highway and Transportation Officials (AASHTO) have established specific guidelines for the development of shared-use paths and other bicycle facilities. The standards cover the design of the geometrics, slopes, clear distances, and other regulations associated with the engineering design and safety of the facilities. These standards are widely used and incorporated into the design standards used by most Departments of Transportation in the country, requiring that local municipalities adhere to the standards if Federal funding is used for the project. AASHTO's most recent set of guidelines, *Guide for the Development of Bicycle Facilities- Fourth Edition (2012)* is somewhat of a departure from previous versions. While its intent is to ensure appropriate consideration of bicycle facilities into the nation's road and street infrastructure, this version allows for greater flexibility to encourage that designs of infrastructure, such as shared-use paths, are sensitive to local context and conditions. The 2012 guide recognizes that "good design practice involves engineering cost effective solutions that balance safety and mobility for all transportation modes, along with the preservation of scenic, aesthetic, historic, cultural, and environmental resources."

Americans with Disabilities Act (ADA)- The landmark Americans with Disabilities Act (ADA) includes design standards that ensure universal access for people of all abilities to recreational facilities and pedestrian ways. AASHTO has incorporated ADA standards into its design standards, but ADA requires additional standards that are intended to ensure that facilities provide a safe and predictable environment for all users.

The Architectural and Transportation Barriers Compliance Board (Access Board) has issued an Advance Notice of Proposed Rulemaking (ANPRM) to develop accessibility guidelines specifically for shared-use paths. The guidelines will include technical provisions for making newly constructed and altered shared-use paths covered by the Americans with Disabilities Act of 1990 (ADA) and the Architectural Barriers Act of 1968 (ABA) accessible to persons with disabilities. To date, these new guidelines have not been released but will need to be considered upon their release.

Manual on Uniform Traffic Control Devices (MUTCD)- The Manual on Uniform Traffic Control Devices (MUTCD), published by the United States Department of Transportation Federal Highway Administration, sets the standards for regulatory signage and traffic controls for bicycle facilities. The intent of these design standards is to promote and create a universally understood system of instructions (signage) for all bicycle facilities. The design standards include regulatory signage and pavement markings.

National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide- NACTO has prepared guidelines for use in the development of on-street bicycle facilities. While shared-use paths are not included in their standards, many of the on-street facilities covered by the new guidelines would provide connections to the system so its worth understanding the intent of the guidelines. The purpose of the NACTO Urban Bikeway Design Guide (part of the Cities for Cycling initiative) is to provide cities with state-of-the-practice solutions that can help create complete streets that are safe and enjoyable for bicyclists. The guide is based on the experience of some of the best cycling cities in the world. All of the NACTO Urban Bikeway Design Guide treatments are in use internationally and in many cities around the US.

Indy Greenways Regulatory Standards- Because Federal funding was used for much of the development of the greenway system currently in place in Indianapolis, the system mostly adheres to many of the design standards described here. The standards have evolved over the years, so some of the older segments met the standards when constructed, even if they don't meet the current standards in place today.

The intent of establishing regulatory design standards as part of the this master plan is to provide a level of consistency across the system

- Ensures that all new trail development complies with the latest safety standards
- Ensures a unified user experience across the system, both in terms of trail types, construction, and materials.
- Ensures that Indy Greenways segments qualify for State and Federal funding sources

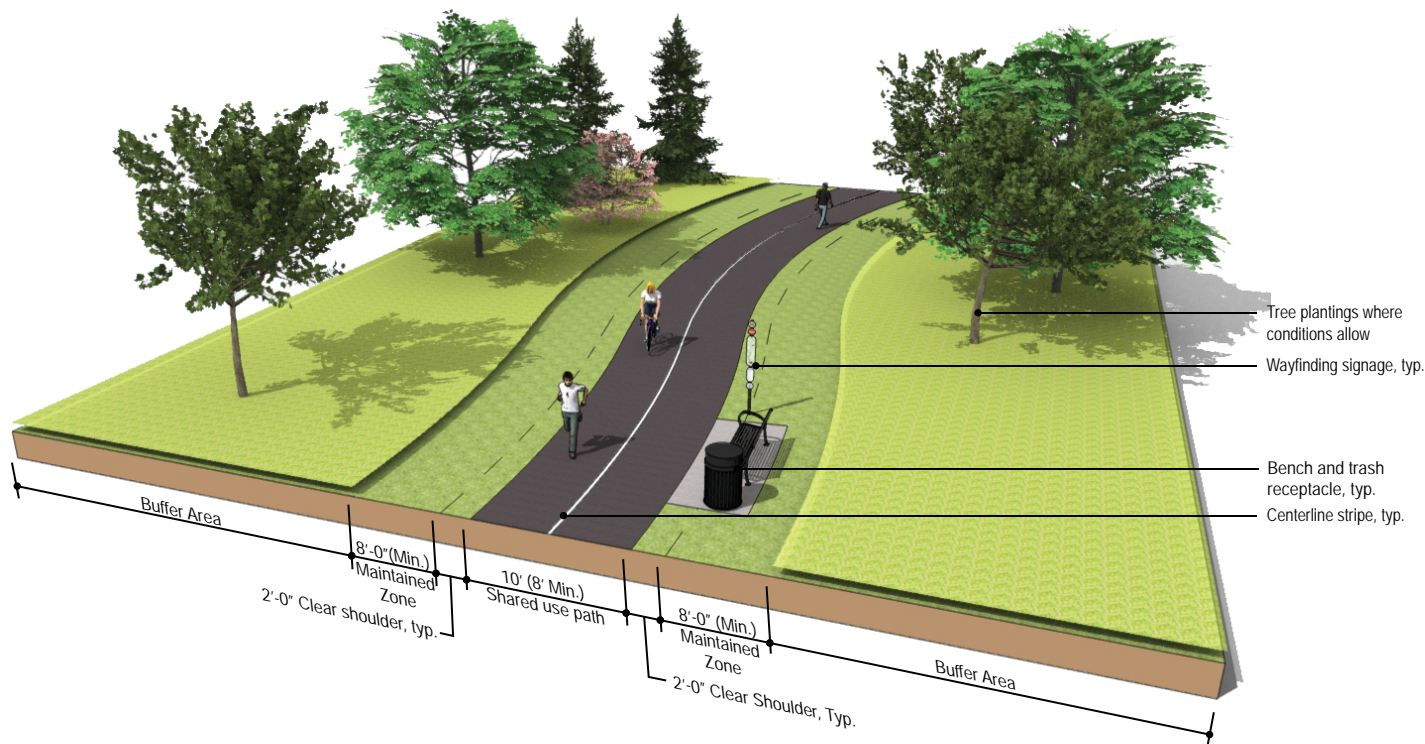
	AASHTO	ADA	PROPOSED INDY GREENWAYS STANDARD
Minimum width- Shared-use Path	8' Minimum	4' Min. (one way)	10' wide- typical trail section
	11-14' Optimum	5' Min. (two way)	8' wide- sidepaths, where context dictates, low user counts
			12' wide- high user count areas
Maximum Longitudinal Slope	5% (1:20)	5% (1:20)	5% (1:20)
Maximum Cross Slope	1% (1:100) Recom.	1% (1:100) Recom.	1% (1:100) Recom.
	2% (1:50) Max.	2% (1:50) Max.	2% (1:50) Max.
Clear Zone	2' Minimum		2' Minimum
	3' Optimum		3' Optimum
Minimum Vertical Clearance	8' Minimum		8' Minimum
	10' Optimum		10' Optimum
Minimum centerline curve radii (18 mph design speed)	60'		95'
Guardrail height	42"/48"	30" or greater	48" standard height (54" where conditions warrant additional protection)
Seperation from Vehicle Lanes	5' (or barrier rail)		5' (or barrier rail)



2. application standards

The Indy Greenways system weaves through a diverse mix of natural and built environments throughout Marion County. Natural corridors such as Fall Creek and Eagle Creek will provide a much different user experience than urbanized routes such as the proposed Interurban Trail or the Penny Trail. Additional site conditions such as ROW widths, adjacent land uses, vehicular traffic, utilities, topography, railroad traffic and environmental concerns further influence the character of greenway development.

The following standards illustrate typical trail applications to facilitate the consistent development of greenways through various environments and conditions. Regardless of context, the applications standards seek to provide a connected, safe and environmentally sensitive greenway system that is consistent.



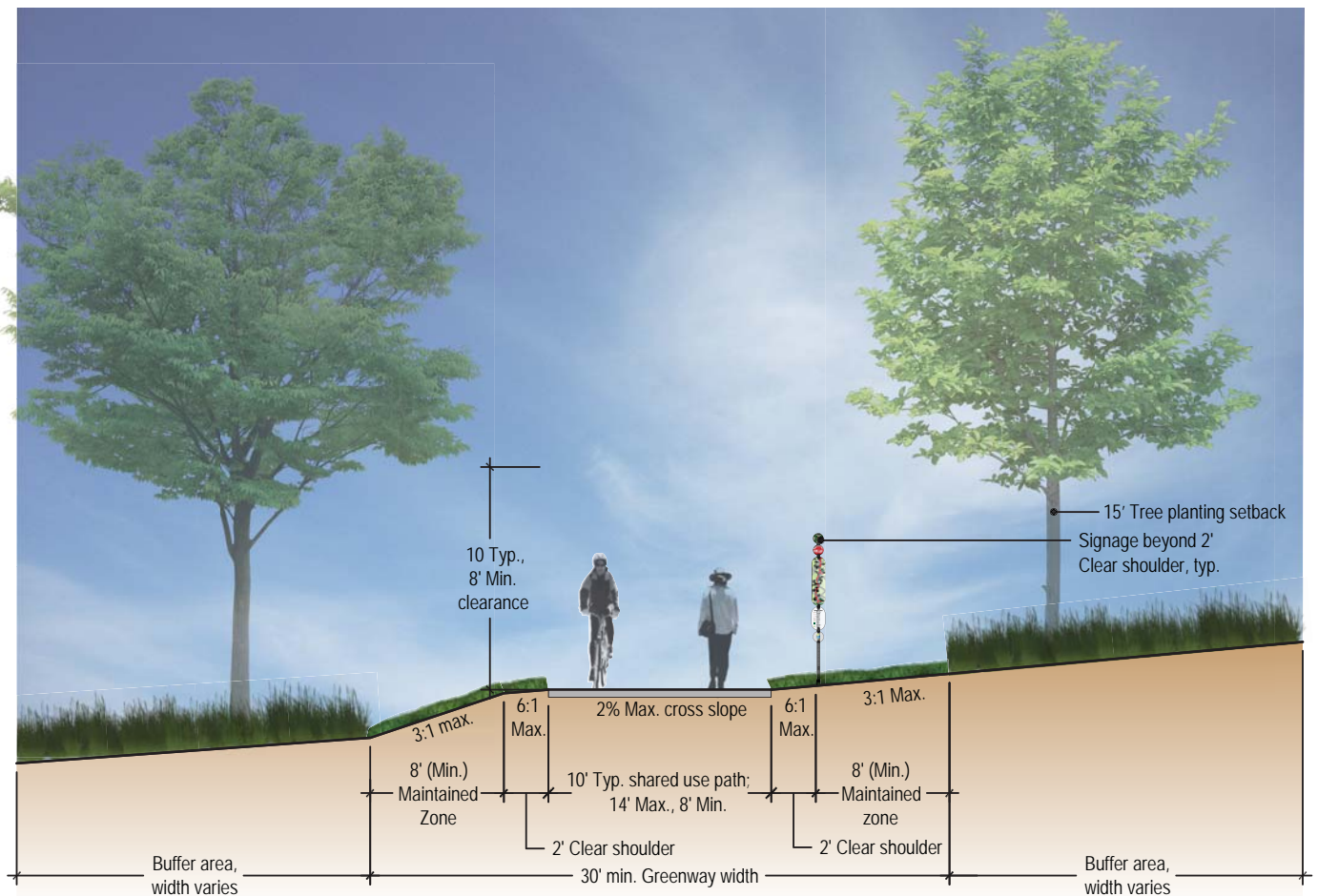
typical greenway application

A greenway is a linear park and recreation space. It typically is located within a dedicated right-of-way and includes a shared-use path. Greenways also typically include user amenities such as benches, trash and recycling receptacles, information signage, and other enhancements unique to recreational greenways. They are intended for use by multiple user types including walkers, runners, bicyclists, families, children, elderly, and users of various ability levels. Greenways also serve as a multi-modal transportation route for bicycle commuting or other forms of non-motorized transportation.

Greenways can exist in several different settings: natural corridors along waterways, abandoned rail corridors, easements, street corridors, utility corridors, or other linear spaces. In Indianapolis, sidepaths are also being used throughout the city and while these sidepaths provide connectivity to the system, they aren't necessarily part of the greenway system. All trails within the Indy Greenway system should include the following:

- Dedicated right-of-way.
- Designation as part of the Indy Greenways system as identified in this plan.
- Consistency in the materials and design of the shared-use path and amenities along the path.
- User enhancements such as benches, trash receptacles, recycling receptacles, and bike racks.
- Branding and signage unique to the greenway system.
- Construction standards that accommodate emergency and maintenance vehicles.
- Maintained right-of-way which includes 2' clear zones, an additional maintained width of 8', and a buffer zone of plantings or other natural areas for plantings to the extent of the right-of-way. The buffer area may be maintained similarly as the adjacent 8' maintained zone, or alternatively, may be treated as native planting areas. Buffer area size and specifications must be approved by DPW Resource Development Planning and Land Stewardship sections.

These standards, along with the specific design standards that follow, shall be applied to all greenways within the Indy Greenways system.



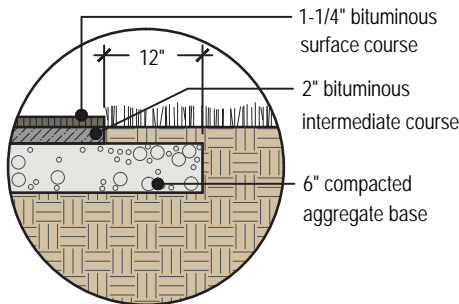
standard greenway cross-section

These standards are intended to establish consistency in trail design and application throughout the Indy Greenways system. As the system continues to grow, portions of the system may be constructed by different agencies, other communities, or even private developers. Establishing set standards for construction ensures that all new trail facilities are consistent and meet the requirements expected of an Indy Greenways trail.

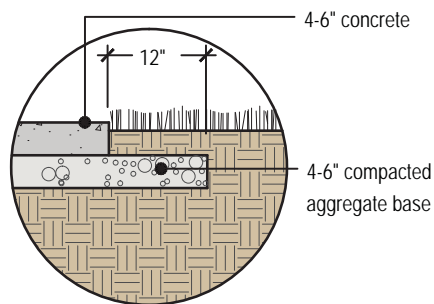
DESIGN STANDARDS:

Trails shall be designed to meet both recreational and transportation standards including AASHTO, ADA, and MUTCD. Specific standards include:

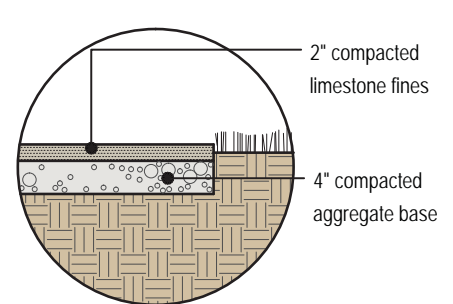
- **Materials:** Asphalt paving is the standard paving material. In some instances on certain greenways, concrete or crushed limestone surface should be used. All materials must meet ADA accessibility requirements. Pavements and bases shall be designed to accommodate the weight of service, security, and emergency vehicles.
- **Width:** 10' is the typical width of shared-use paths. Minor variations are permitted in certain situations (8' minimum, 14' maximum).
- **Pavement Striping:** Trail surface may contain a centerline stripe, but no other striping should occur on the trail. Separation of trail users (such as separate lanes for cyclists and pedestrians) should not occur on the Indy Greenways system.
- **Clear Zone:** 2' from edge of pavement
- **Vertical Clearance:** 8' minimum, 10' typical.
- **Tree Planting Setback:** 15'-0" from edge of trail
- **Maximum Horizontal Grade:** 5% (grades steeper than 5% are permitted, but should be limited to the distances indicated in the AASHTO guidelines).
- **Maximum Cross Grade:** 2%
- **Minimum Curve Radii:** 95'
- **Design Criteria:** Shared-use path design shall comply with all AASHTO requirements for design speed, sight distances, stopping distances, and grades.



asphalt greenway paving



concrete greenway paving



crusher fines greenway paving

typical pavement cross-sections

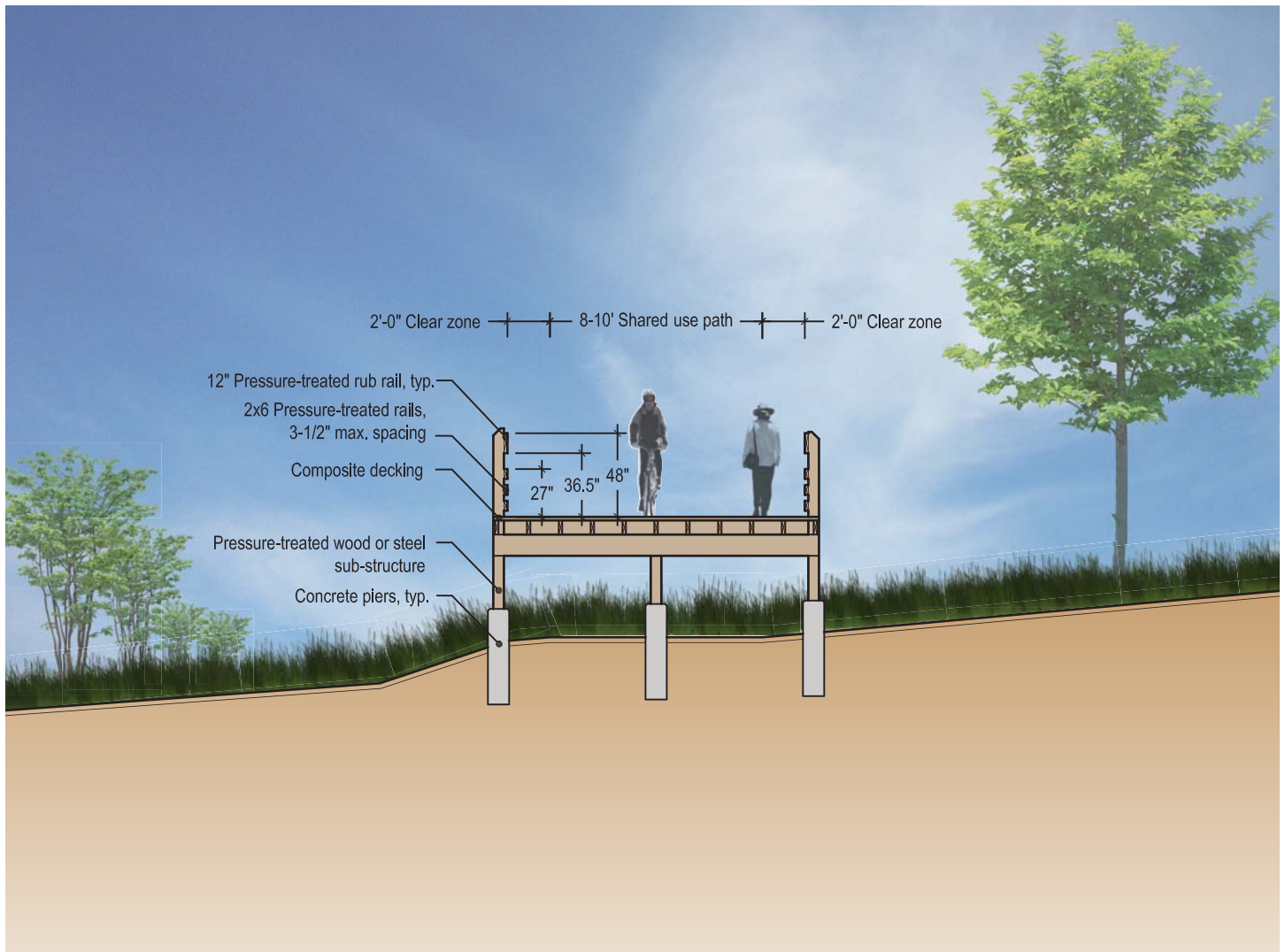
trail construction: pavements

Greenway pavement materials and designs should comply with the standards described below:

DESIGN STANDARDS:

All trail pavement materials shall meet the following standards:

- **Pavement Material Standard:** Asphalt paving is the standard paving material for all trails constructed within the Indy Greenways system. In some instances on certain greenways, concrete or crushed limestone surface may be used if conditions warrant. Deviation from asphalt surface material shall be approved by Indy Parks/DPW prior to construction.
- **Asphalt Paving:** Asphalt cross section shall meet the depths, thicknesses, and base materials as illustrated above. Design width and other spatial standards should be consistent with the design standards illustrated in the Standard Greenway Cross-section standard on the previous page.
- **Concrete Paving:** Concrete pavement may be used in certain circumstances such as areas with annual flooding, urban areas, or other areas where substantial benefit or durability can be gained through the use of concrete. These areas should be dictated by site specific evaluation and must be approved by Indy Parks/DPW prior to construction. If used, design width should be consistent with the overall trail width of the greenway segment it is connecting to and should be consistent with the design standards illustrated in the Standard Greenway Cross-section on the previous page.
- **Crushed Limestone Paving:** Crushed limestone paving currently exists on certain greenway segments, most notably the Central Canal Towpath, and may be required for extensions of that greenway segment. Crushed limestone paving cross section shall meet the depths, thicknesses, and base materials as illustrated above. Design width should be consistent with the overall trail width of the greenway segment it is connecting to and should be consistent with the design standards illustrated in the Standard Greenway Cross-section on the previous page. The use of this paving material should be limited and much be approved by Indy Parks/DPW prior to design or construction.
- All pavements and bases shall be designed to accommodate the weight of service, security, and emergency vehicles and meet ADA accessibility requirements.



2'-0" Clear zone | 8'-10" Shared use path | 2'-0" Clear zone

- 12" Pressure-treated rub rail, typ.
- 2x6 Pressure-treated rails, 3-1/2" max. spacing
- Composite decking
- Pressure-treated wood or steel sub-structure
- Concrete piers, typ.

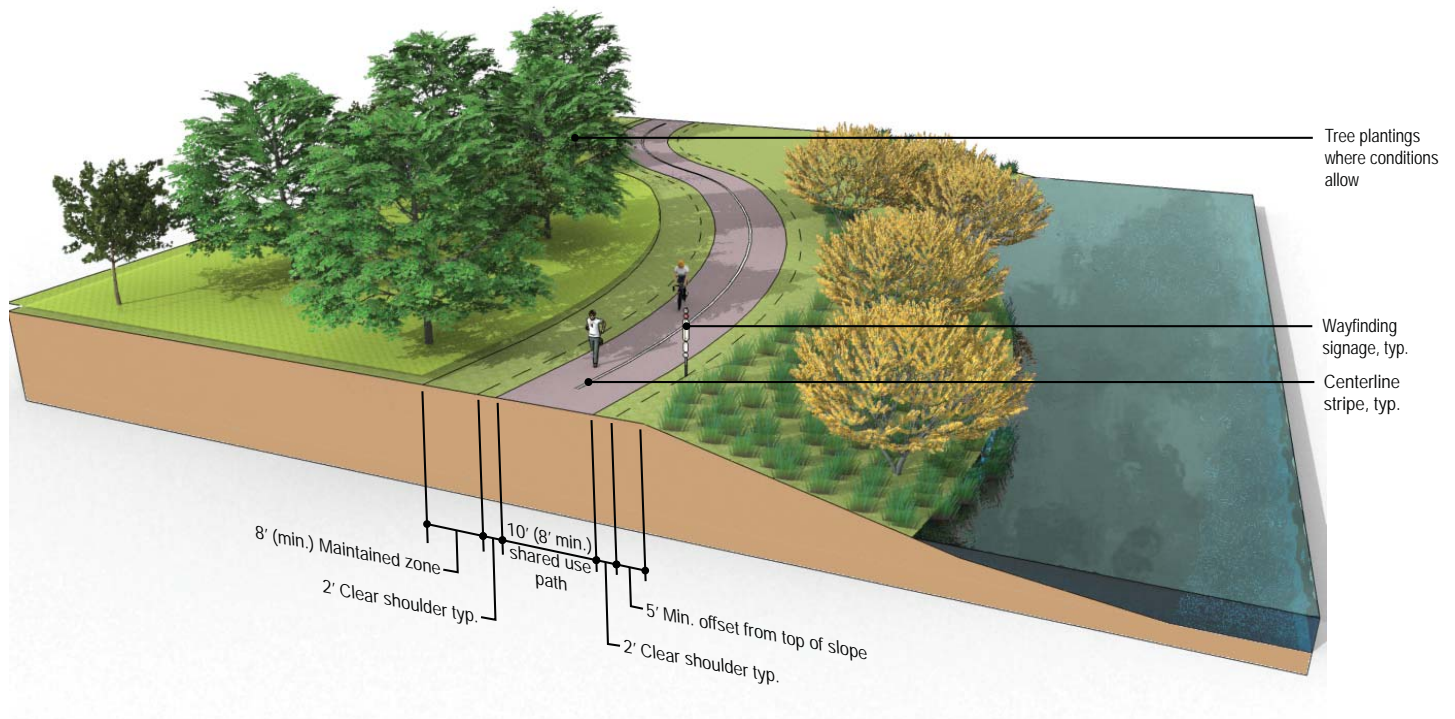
typical cross-section through sensitive environments

trail construction: boardwalks

There may be circumstances along the greenways where elevated boardwalks are necessary. Steep slopes, sensitive environmental areas, or problematic soil conditions are just a few site conditions that may require the use of boardwalks to facilitate greenway development. Where boardwalks are used as part of the greenway, they should meet the standards identified in this section.

DESIGN STANDARDS:

- **Use Of Boardwalks:** Use of boardwalks should be limited to areas where standard at-grade trail construction methods would cause excessive damage to the natural environment, compromise user safety or result in excessive construction costs.
- **Materials:** Boardwalk materials shall consist of pressure-treated wood posts and rails, composite decking and concrete piers. Where required for structural integrity, steel sub-structure may be used.
- **Width:** Width of boardwalk shall be the width of the adjoining trail with 2' clear zone on each side (for a 10' wide typical trail, a boardwalk is required to be 14' wide). Trail widths in the system may range from 8-14' resulting in a minimum boardwalk width of 12' and a maximum boardwalk width of 18'.
- **Pavement Striping:** No pavement striping should occur on boardwalk structures.
- **Clear Zone:** 2' minimum (see width above).
- **Vertical Clearance:** 8' minimum, 10' typical.
- **Maximum Horizontal Grade:** 5% (grades steeper than 5% are permitted, but should be limited to the distances indicated in the AASHTO guidelines).
- **Maximum Cross Grade:** 2%



typical application



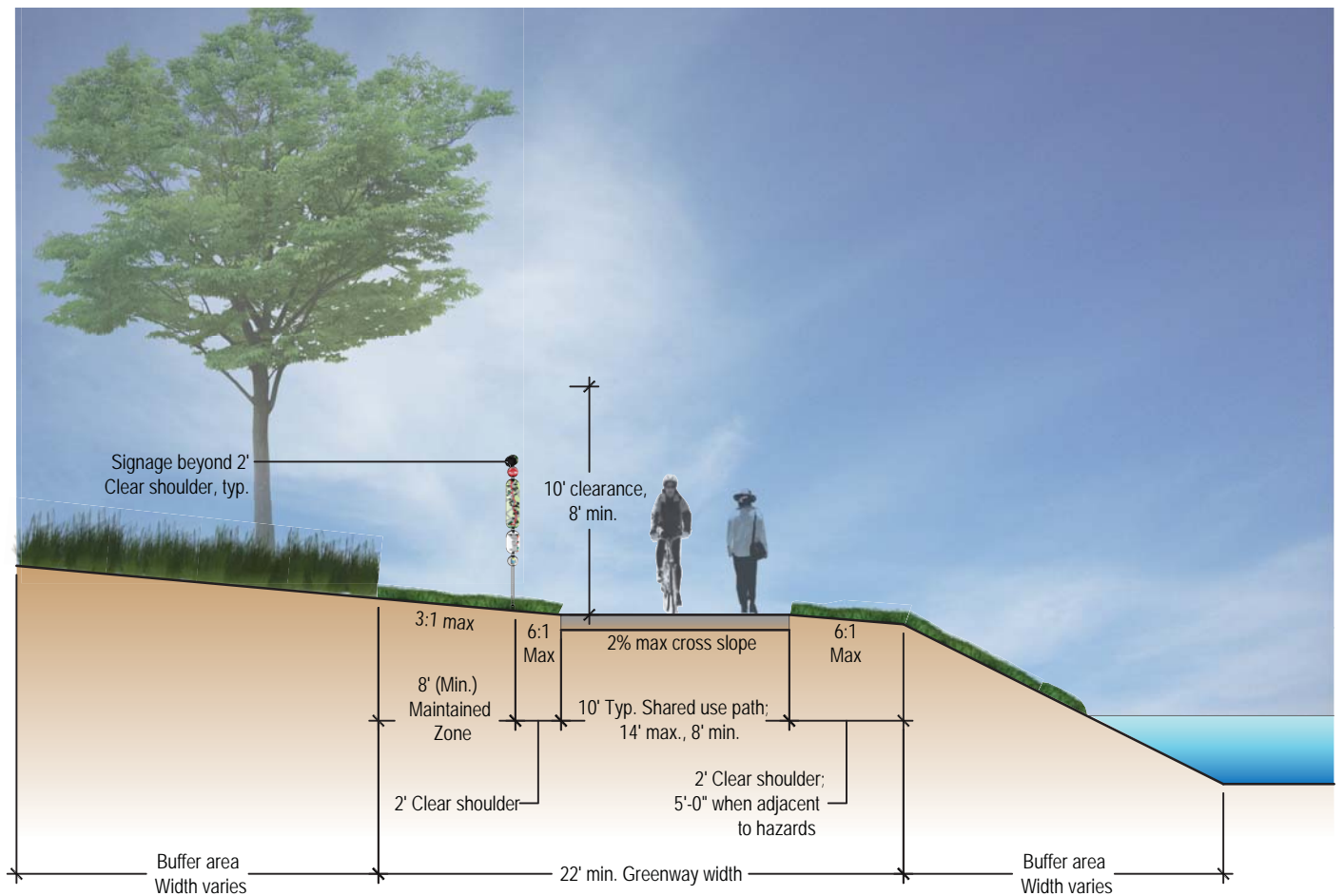
natural greenway cross-section

Where greenways traverse a natural setting, it is important that the trail is blended into the setting and that construction preserves and enhances the character of the natural area.

DESIGN STANDARDS:

Design standards for greenways in a natural setting:

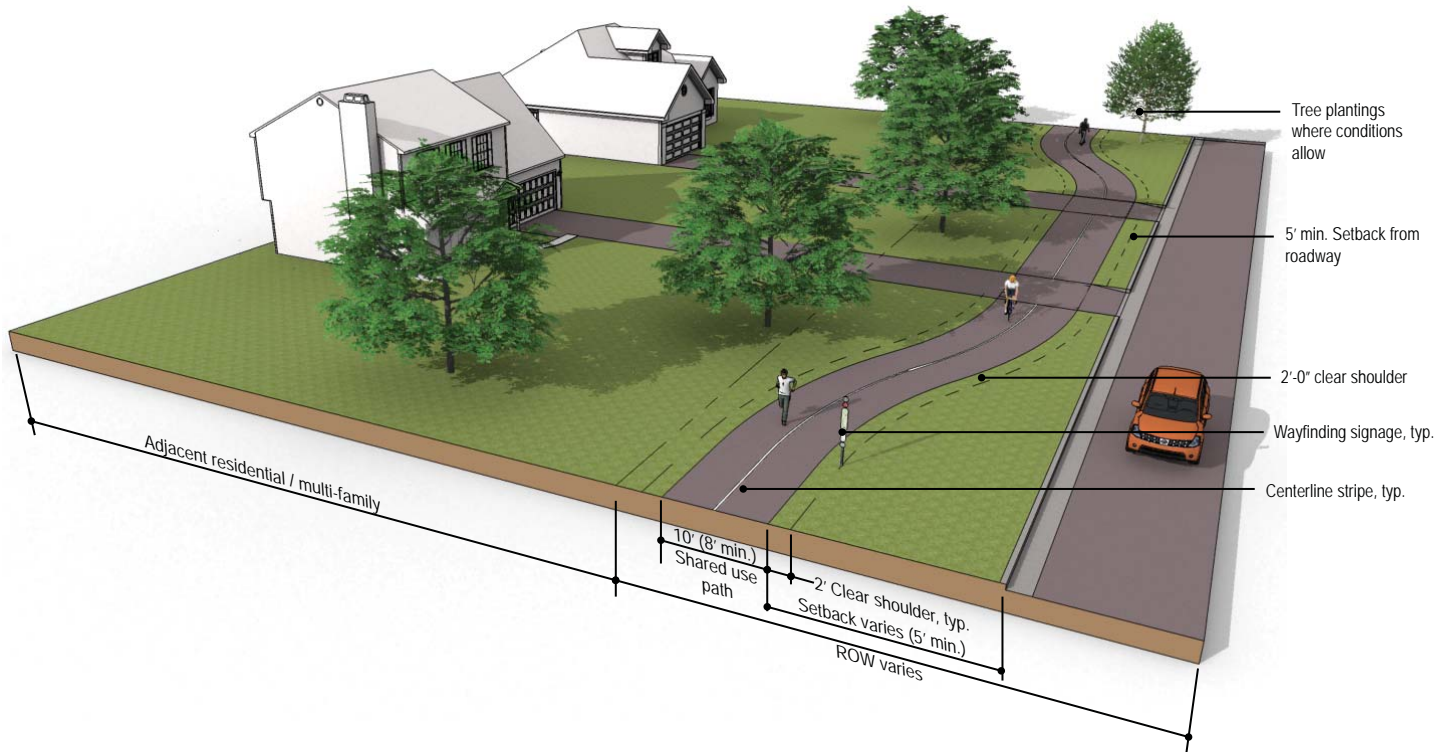
- Greenway design and construction shall comply with all requirements shown in the Standard Greenway Cross-section (page 179) in addition to those listed below.
- All greenways within natural or environmentally sensitive areas should be designed to minimize impacts during construction and by ongoing use of the system.
- All construction should minimize the amount of fill material utilized in wetlands, floodplains, or other water corridors. Design and construction should minimize negative impacts to the greenway corridor.
- Shared-use path alignments and associated enhancements should avoid naturally sensitive environments such as wetlands, streams, rivers, mature tree stands, sensitive habitat areas and ecosystems, or endangered or significant flora and fauna areas. Trail alignment and facilities shall not be placed within 30' of these conditions where feasible. Where trail construction cannot avoid sensitive areas, sustainable construction materials and methods should be employed to counter negative impacts.
- Design of bridges, boardwalks and other constructed crossings should minimize the placement of piers within a waterway or wetland. Recycled material should be used when available. (Reference Application Standards: Boardwalk design).
- Greenways facilities should be designed to blend in with the context of the setting and not create a visual obstruction or focal point within the setting.
- Buffer area size and specifications must be approved by DPW Resource Development Planning and Land Stewardship sections.



typical cross-section

RELATED POLICY ACTION ITEMS

- The greenway design standard shall be applied to all natural corridors that are designated part of the greenway system.
- Maintenance responsibility for these corridors that are part of the Indy Greenways system shall remain with the City of Indianapolis.
- The entire right-of-way shall be maintained within the character of the corridor. The buffer area may be maintained similarly as the adjacent 8' maintained zone, or alternatively, may be treated as native planting areas. Buffer area size and specifications must be approved by DPW Resource Development Planning and Land Stewardship sections.



typical application



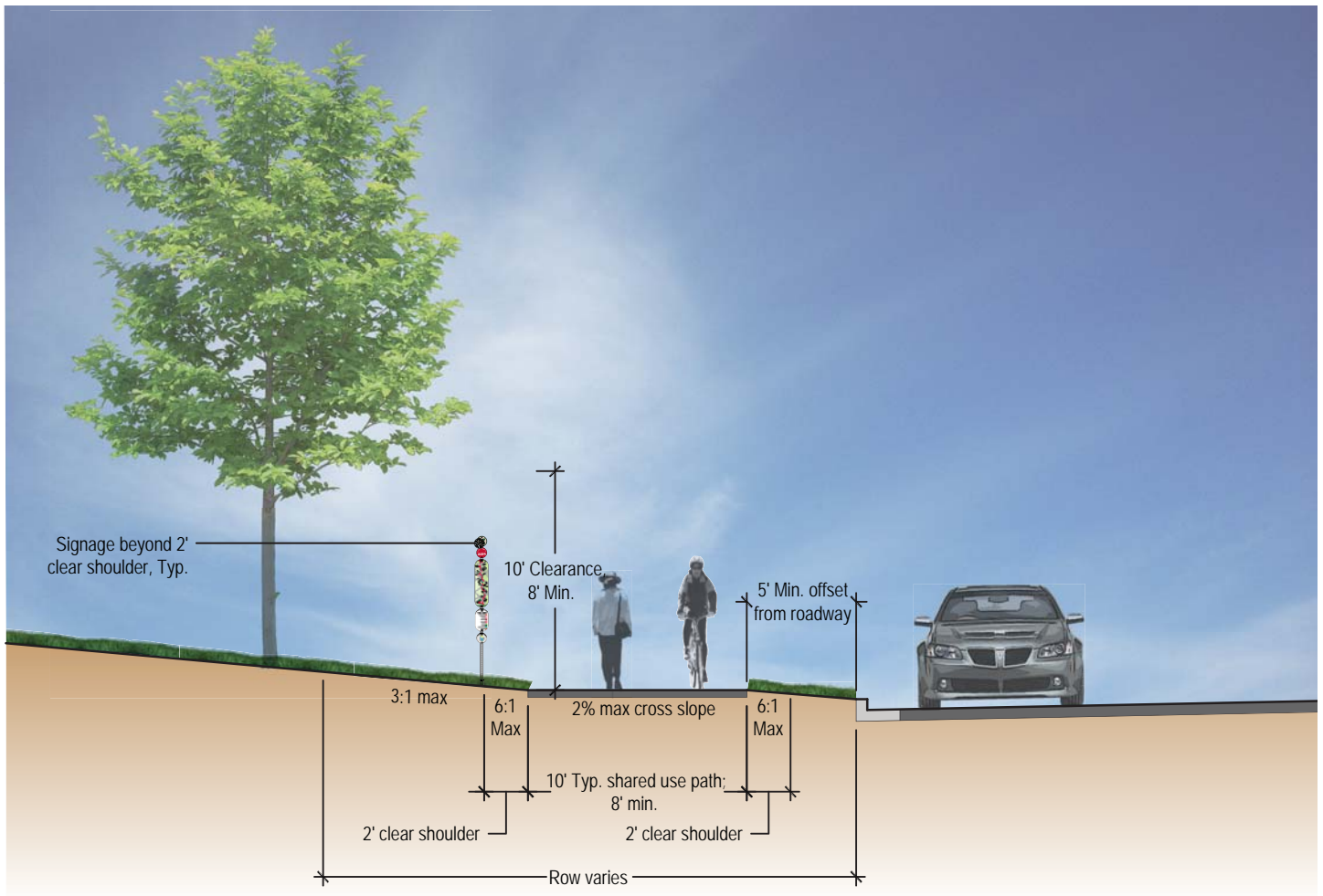
suburban greenway cross-section

In several locations, proposed greenway routes parallel a street or roadway corridor and function similar to a sidepath. In these situations, there is a need to apply the greenway standard to these sections to differentiate them from other sidepaths and to reinforce the continuity and character of the greenway route.

DESIGN STANDARDS:

Design standards for greenways along street corridors in a suburban setting:

- Greenway design and construction shall comply with all requirements shown in the Standard Greenway Cross-section (page 179) in addition to those listed below.
- Minimum right-of-way width for greenway applications along a street corridor shall be 15'---more if sufficient space allows.
- Trail width shall be 10' (8' minimum where conditions warrant).
- Design standards for pavement and alignment should be consistent with the design standards outlined in this chapter (grades, cross slopes, curve radii, design speed).
- Minimum setback from the edge of the street shall be 5', unless a physical barrier is used.
- Greenway signage shall be included along the route to reinforce the greenway character.
- All site furnishings should be consistent with the standard furnishings illustrated in this chapter.
- Street crossings shall be consistent with the crossing standards illustrated in these design guidelines.



typical cross-section

RELATED POLICY ACTION ITEMS

- The greenway design standard shall be applied to all suburban street corridors that are designated part of the greenway system.
- Maintenance responsibility for sidepaths that are part of the Indy Greenways system shall remain with the City of Indianapolis unless a MOU with a partner or adjacent landowner is established.
- The entire right-of-way shall be maintained within the character of the corridor.



typical application



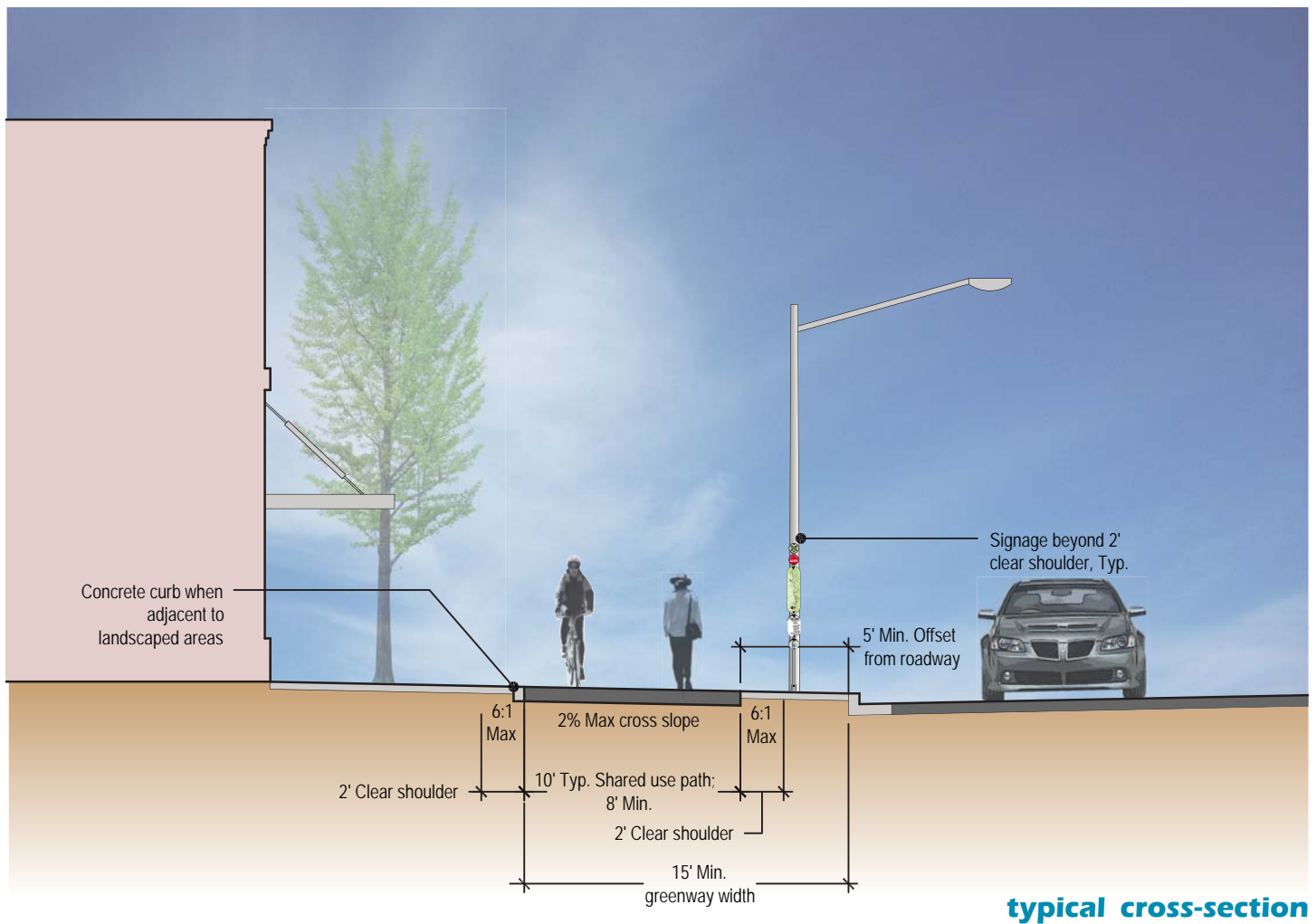
urban greenway cross-section

In several locations, proposed greenway routes parallel a street or roadway corridor and function similar to a sidepath through urban commercial centers. In these situations, there is a need to apply the greenway standard to these sections to differentiate them from other sidepaths and sidewalks and to reinforce the continuity and character of the greenway route through these areas.

DESIGN STANDARDS:

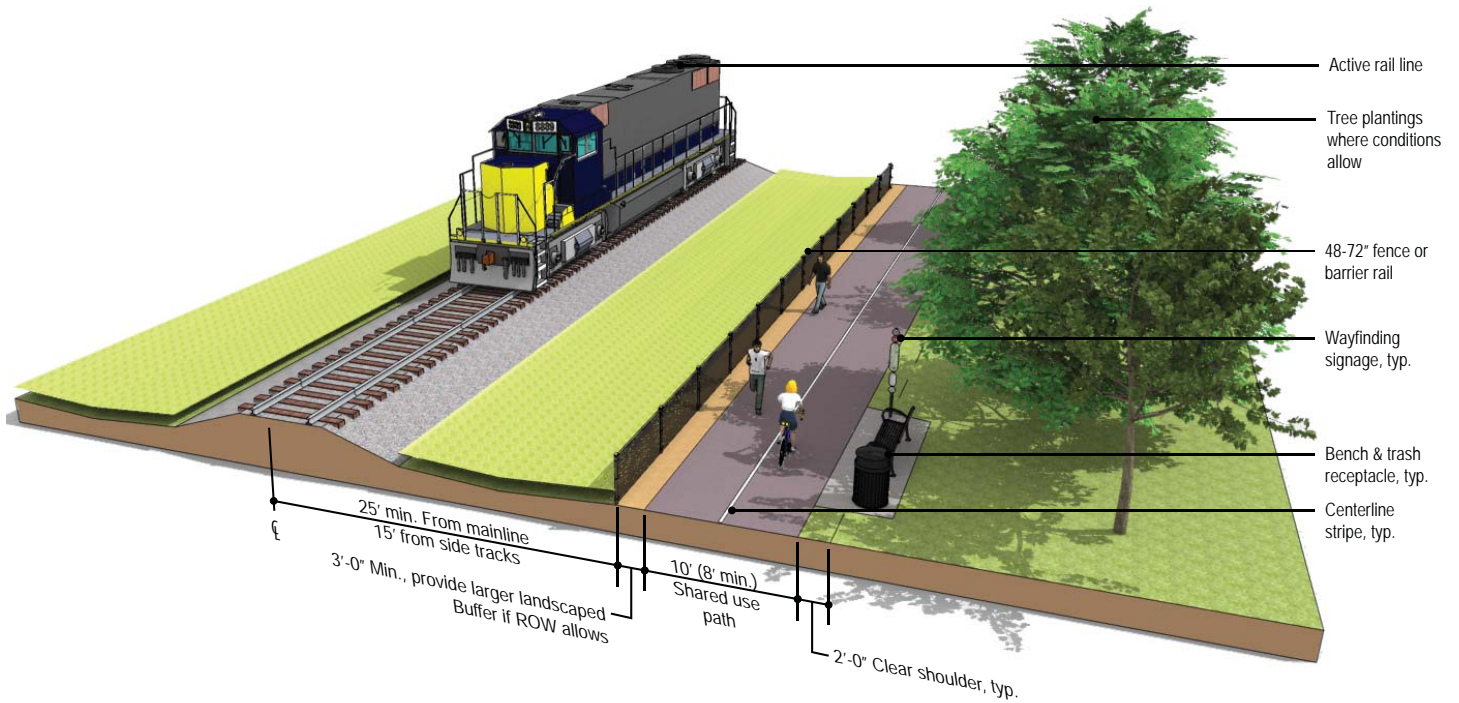
Design standards for greenways along street corridors in an urban setting:

- Greenway design and construction shall comply with all requirements shown in the Standard Greenway Cross-section (page 179) in addition to those listed below.
- Minimum right-of-way width for greenway applications along a street corridor shall be 15'---more if sufficient space allows.
- Trail width shall be consistent throughout the urban center and be 10' (8' minimum where conditions warrant).
- An asphalt path shall provide the visible route recognition through these areas. Adjacent areas can be concrete or planting areas. The continuity of the path route should be visible throughout the urban area.
- Design standards for pavement and alignment should be consistent with the design standards outlined in this chapter (grades, cross slopes, curve radii, design speed).
- Minimum setback from the edge of the street shall be 5' for the actual path route, unless a physical barrier is used.
- Greenway signage shall be included along the route to reinforce the route of the greenway.
- Street and driveway crossings shall be consistent with the crossing standards illustrated in these design guidelines.



RELATED POLICY ACTION ITEMS

- The greenway design standard shall be applied to all urban street corridors that are designated part of the greenway system.
- Maintenance responsibility for sidepaths that are part of the Indy Greenways System shall remain with the City of Indianapolis unless a MOU with a partner or adjacent landowner is established.



typical application



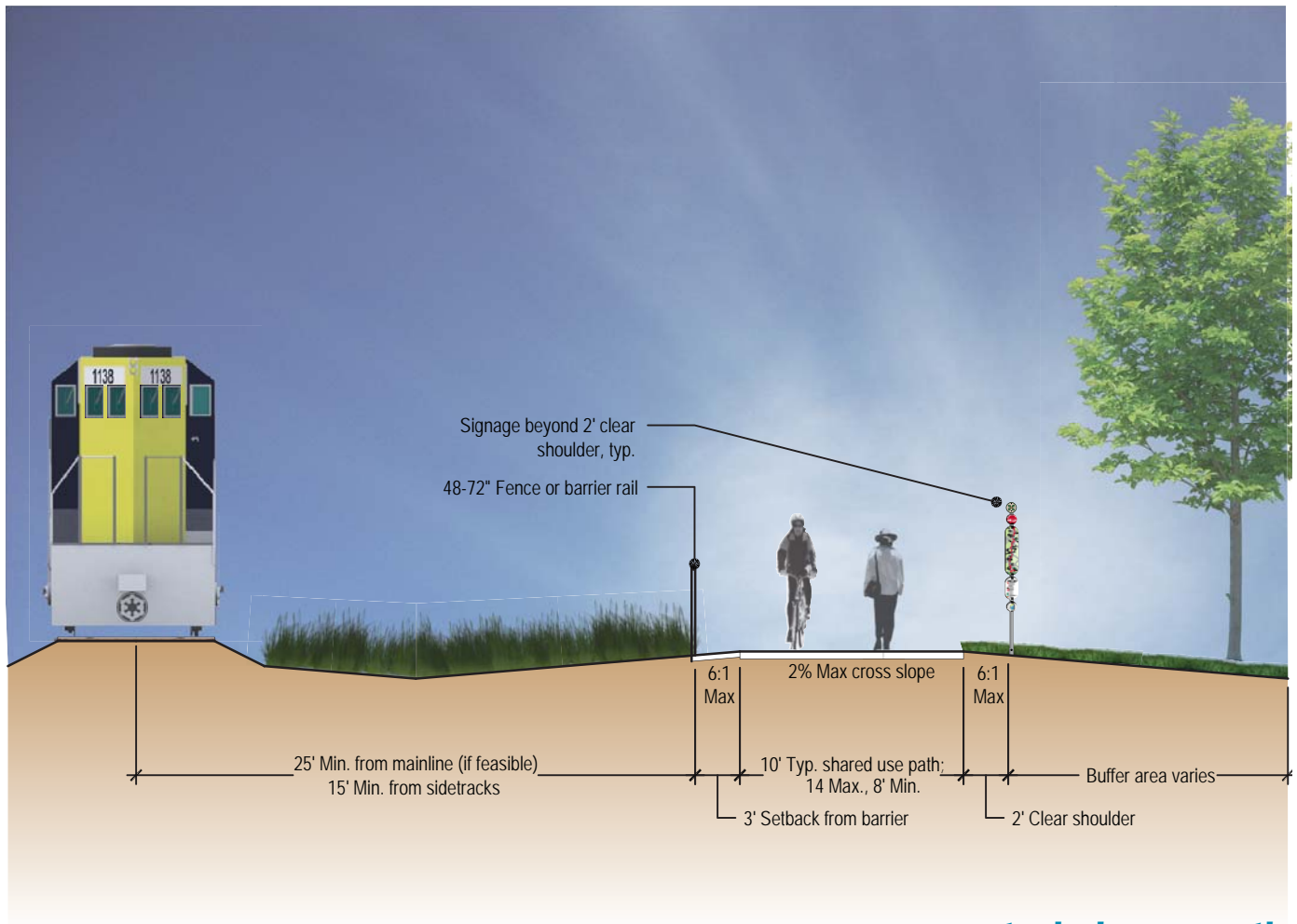
active rail corridor greenway cross-section

Greenways that parallel an active rail or transit corridor shall be designed to provide separation of uses and a safe experience for trail users. Design of greenways along these corridors shall be coordinated with the railroad company or transit agency having jurisdiction over the rail line.

DESIGN STANDARDS:

Design standards for greenways along active rail corridors include:

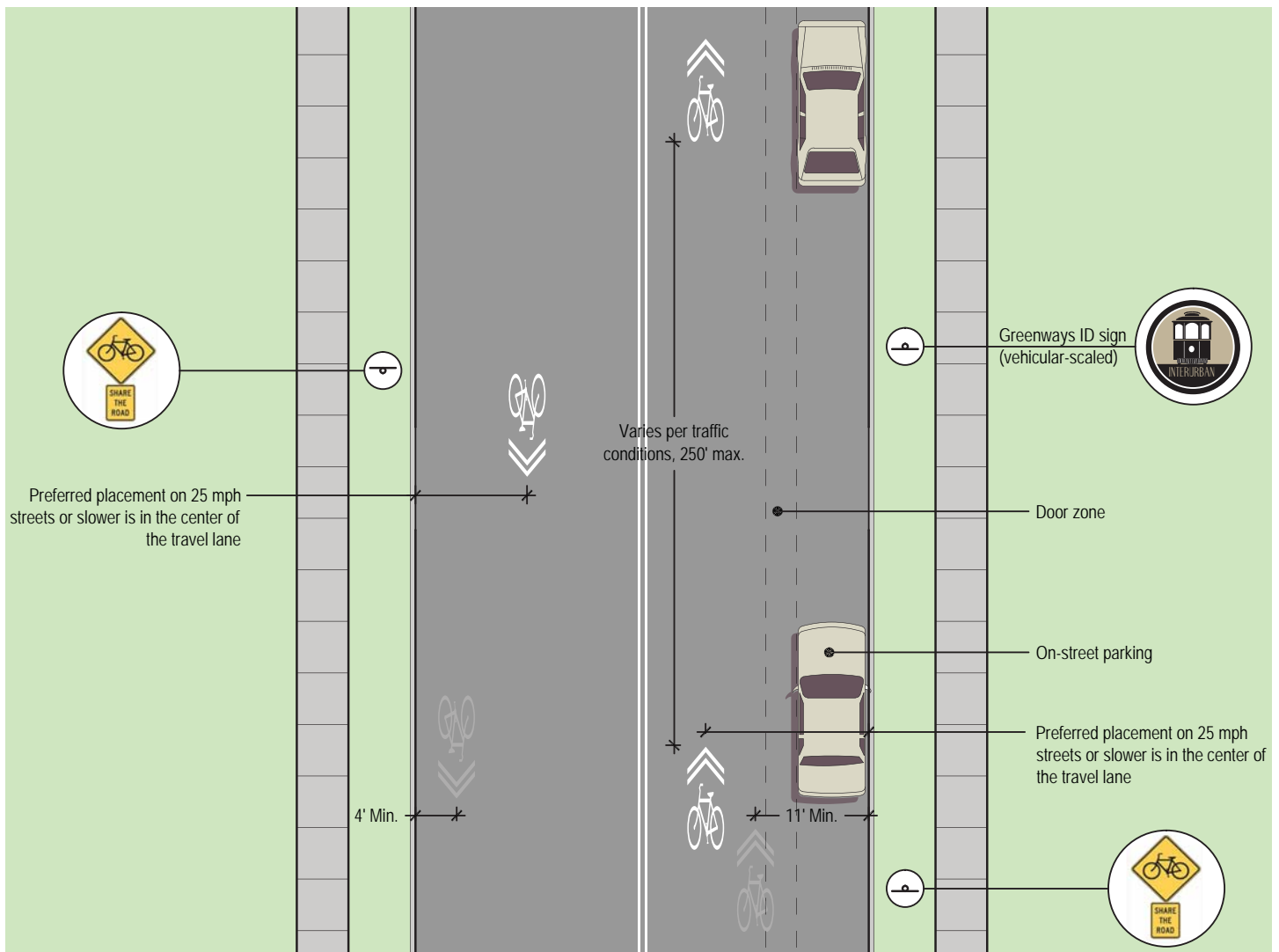
- Greenway design and construction shall comply with all requirements shown in the Standard Greenway Cross-section (page 179) in addition to those listed below.
- The shared-use path should not be constructed any closer than 3' from the edge of the railroad right-of-way with a 48"-72" high continuous barrier placed along the right-of-way. No public access through the barrier should be provided for trail users.
- Shared-use paths should be constructed to support heavy equipment in these areas to provide access for railroad/transit service and maintenance vehicles.
- Shared-use paths should not be constructed within 25' of an active rail line unless there is a significant vertical difference or natural barrier between the rail line and the trail alignment.
- Crossings shall be designed only at designated intersections and shall be clearly marked. Crossings and approaches shall include all regulatory signage as outlined in the most current MUTCD standards.



typical cross-section

RELATED POLICY ACTION ITEMS

- The greenway design standard shall be applied to all corridors that parallel an active rail line and are designated part of the greenway system.
- Maintenance responsibility for these corridors that are part of the Indy Greenways system shall remain with the City of Indianapolis.
- The entire right-of-way shall be maintained within the character of the corridor. The buffer area may be maintained similarly as the adjacent 8' maintained zone, or alternatively, may be treated as native planting areas. Buffer area size and specifications must be approved by DPW Resource Development Planning and Land Stewardship sections.



shared roadways (sharrows)

In limited instances, the Indy Greenways Full Circle Master Plan recommends the use of shared roadways, or “sharrows”, to make greenway connections where traditional greenway development has been deemed not feasible. Shared roadway applications may occur in urban or rural settings as long as traffic volumes and speeds are deemed compatible with bicycle and pedestrian safety objectives. Coordination with Indy DPW will be required to implement shared roadways where proposed.

DESIGN STANDARDS

Shared roadways shall comply with requirements and recommendations stated in the AASHTO Guide for the Development of Bike Facilities, NACTO’s Urban Bikeway Design Guide and MUTCD. Specific standards include:

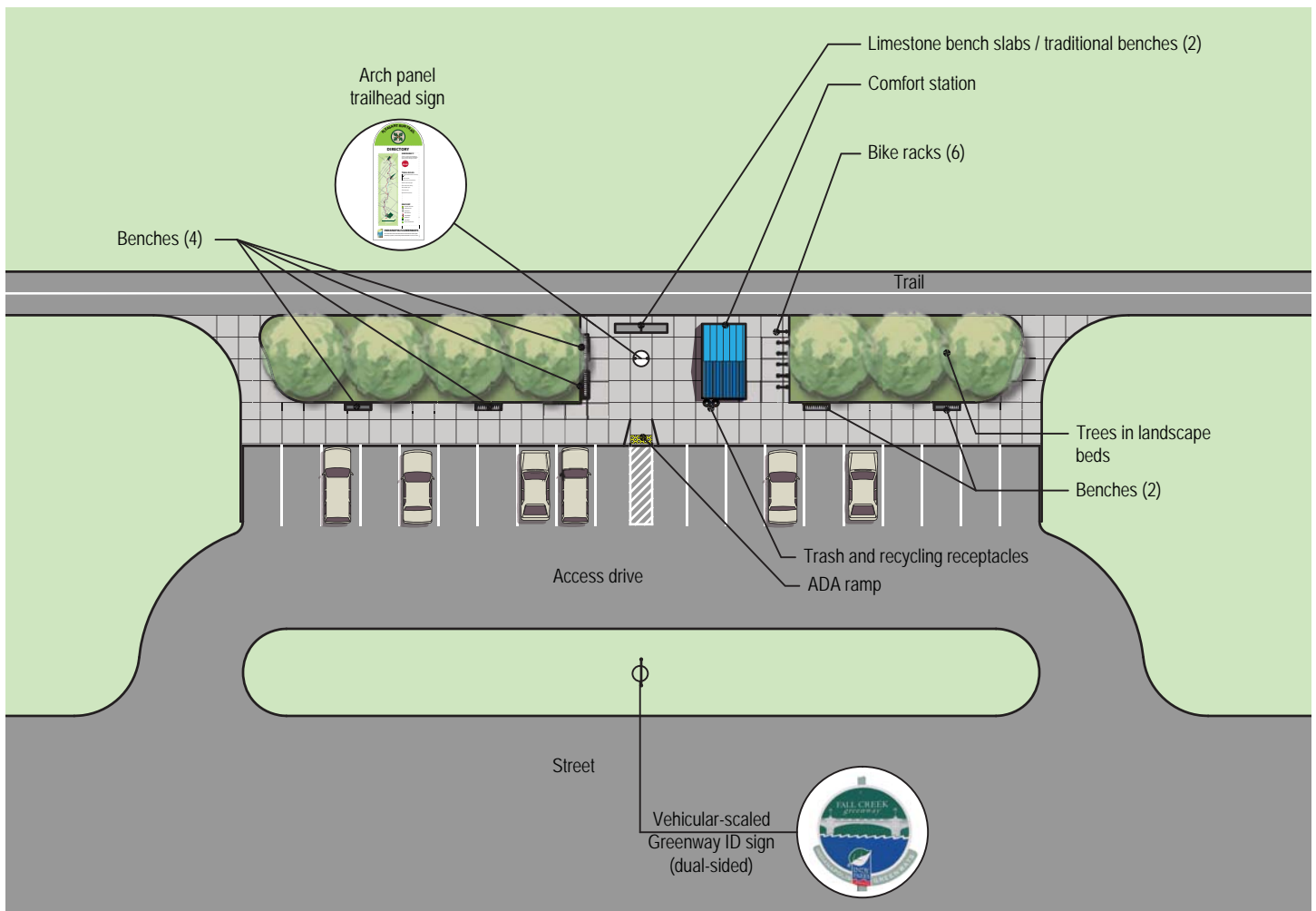
- Shared roadways shall be utilized on low-volume, low-speed roadways only as specifically identified in the Indy Greenways Full Circle Master Plan. Implementation of shared roadway segments of the Full Circle Plan shall be approved by Indy Parks/DPW.
- Sharrow markings and signage shall comply with MUTCD.
- Spacing of sharrow markings may vary based upon anticipated traffic volumes and route complexity, however spacing of markings shall not exceed 250’
- Vehicular-scaled Identification signs shall be included along all shared roadways that are a designated greenway route. Additional greenway signage, such as directional signs, trail-side maps and mile markers shall also be included as appropriate.
- Two routes (Southwest Trail and Lick Creek Greenway) include low-speed, low volume streets where pedestrians and bicycles will both share the road. This application is limited to these specific areas. Any other locations where pedestrians will be using the street must be approved by Indy Parks/DPW.



3. facility standards

In addition to the construction, design and layout of the physical trail, a number of additional amenities contribute to the overall user experience on the greenway system. Amenities such as trailheads, rest nodes, access points, street crossings, bridge crossings and site furniture help to define the character of the greenways and provide for the wide range of users.

The facilities described in the following section help ensure a pleasant and safe greenway experience for users while ensuring management concerns such as durability and efficiency are also achieved. Aesthetic continuity throughout the system is also a primary objective of the facility standards.



trailhead with restroom



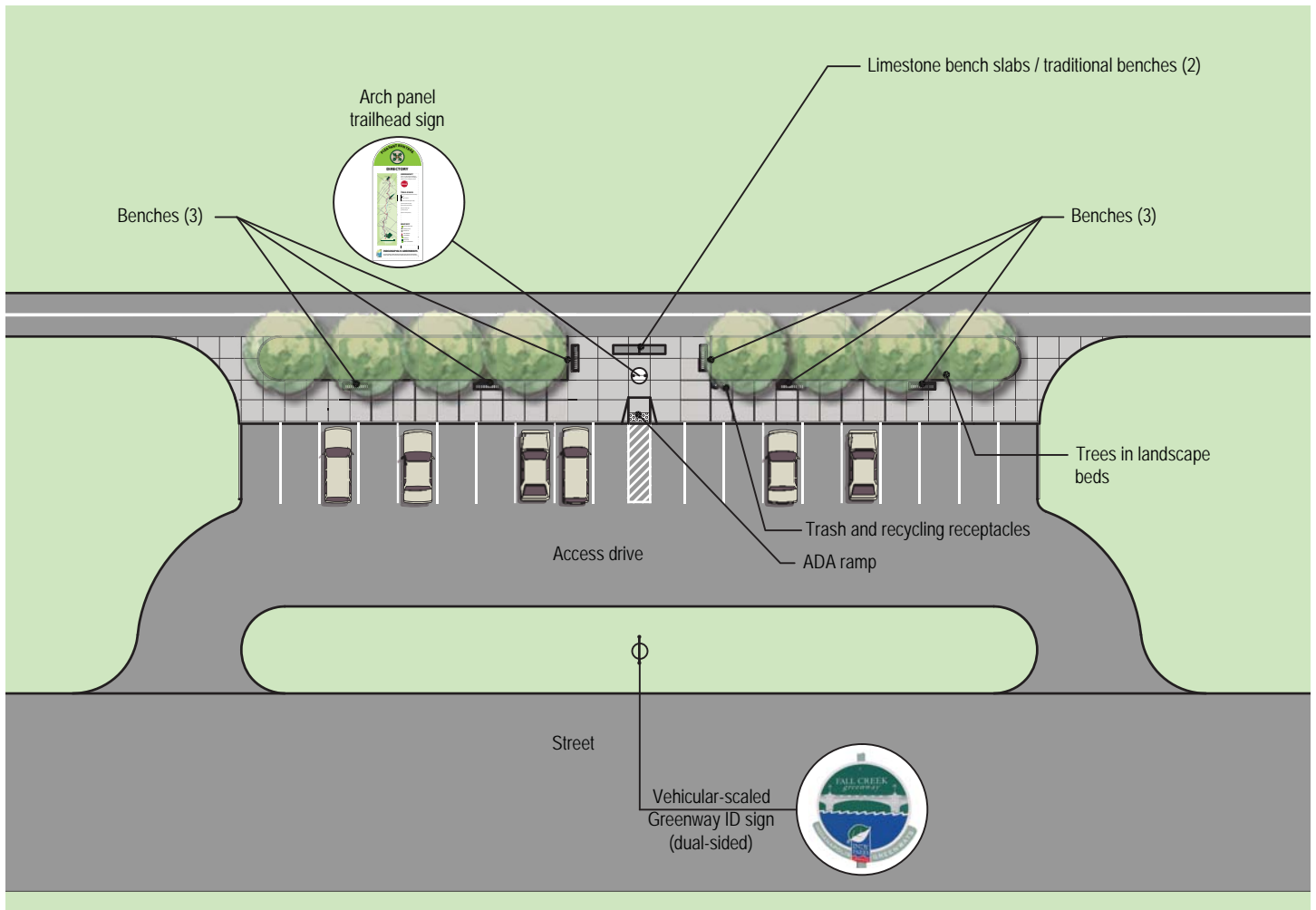
trailheads

Trailheads are designated major entry points to the greenway system. The trailheads represent the first step of the user experience for those who need to travel to get to one of Indy's greenways. As that initial interface, trailheads must perform several functions to help accommodate a variety of different users. Trailheads should be designed to provide parking, trail information, and other amenities such as restrooms, benches, water fountains or other user-related enhancements.

DESIGN STANDARDS:

For Indy Greenways, trailhead standards include the following:

- 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 (if possible,) pedestrian, and bicycles. All trailheads shall be ADA accessible.
- Trailheads should include parking for both vehicles and bicycles. A minimum of ten vehicle parking spaces should be provided at each trailhead.
- Trailheads should be designed so that users at the trailheads do not interfere with users passing the trailhead on the shared-use path. Signage and other areas where people might congregate should be kept out of the pathway.
- Trailheads should include informational signage that provides critical information for users. Information should include a map (orientation), greenway rules, and other information to enhance the user experience.
- Trailheads should include the following user facilities: restroom facilities (at major trailheads), benches, trash and recycling receptacles, trailhead signage (trail information and rules), and bike racks.
- Where feasible, trailheads should include sustainable stormwater design such as permeable pavements or bioswales to treat stormwater runoff from the parking areas.
- Parking areas should have a landscape buffer between the trail and parking facilities where feasible.



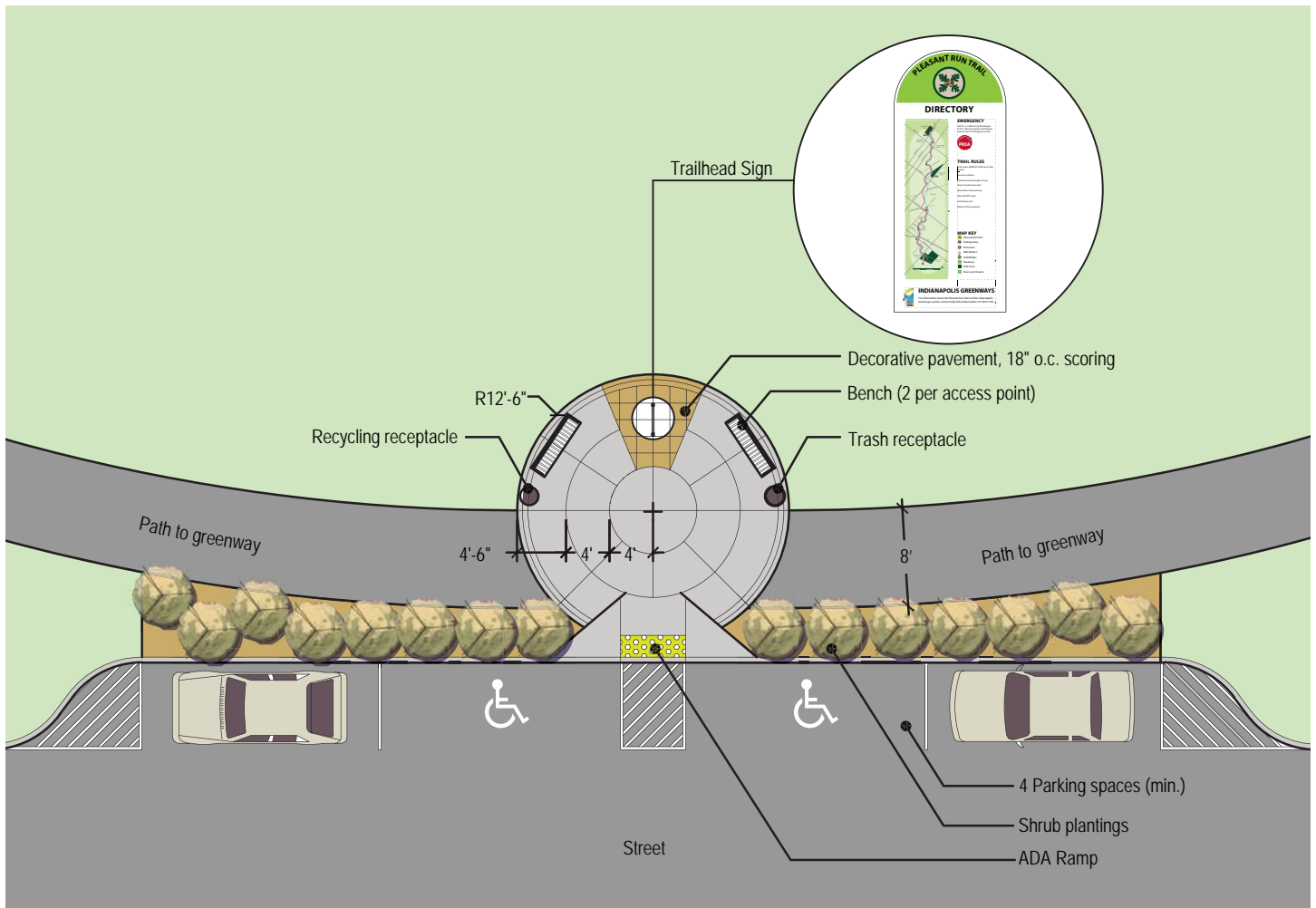
trailhead without restroom

Fall Creek Greenway trailhead near Binford blvd and Allisonville Road.



POLICY STATEMENTS:

- All trailheads should be on city-owned property, or a memorandum of understanding should be in place giving the city authority over the use and operation of the trailhead. All trailheads must be open to the public. Where possible, trailhead facilities should be located within park properties.
- Hours of operation for all trailheads should be consistent with the Greenway in which the trailhead serves.
- Trailheads should be designed for year-round use.
- Trailheads shall be maintained and patrolled as part of the greenway.



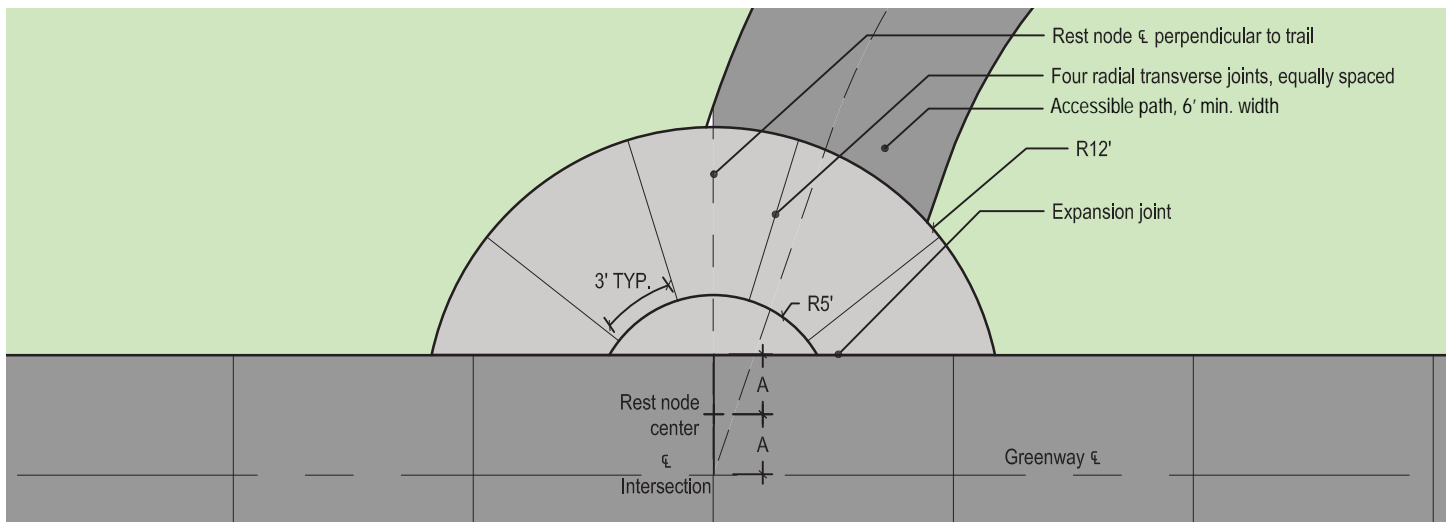
access points

Access points are smaller, intermediate trailhead facilities intended to provide public access to a greenway at more frequent intervals. Access points can serve as more localized connections and should be designed consistent with the character of the trailheads. Access points are smaller in scale.

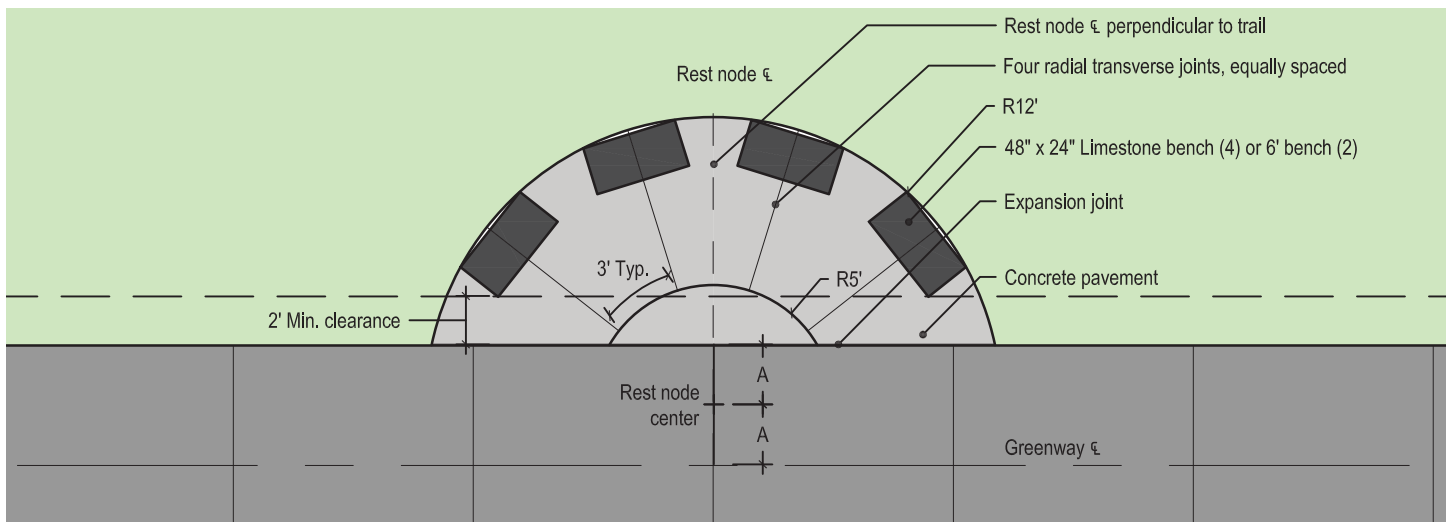
DESIGN STANDARDS:

Design standards for access points include the following:

- Locate access points at locations where there is a need for local vehicular access to the trail. Access points should be constructed where there are long stretches of greenway with no public access point. At a minimum, access points should be located every two miles throughout the system.
- Access points should include parking for up to four (4) vehicles. If a larger demand exists, Indy Parks should consider construction of a trailhead.
- Access points should include benches, trash and recycling receptacles, and trailhead signage. Restrooms should NOT be provided at access points.
- Access points should be located outside of the path of the shared-use path and connected via an 8' wide minimum asphalt path. All access points and connections shall be ADA accessible.
- Regulatory signage for entering the greenway should be consistent with MUTCD standards.



typical connection point



typical rest area

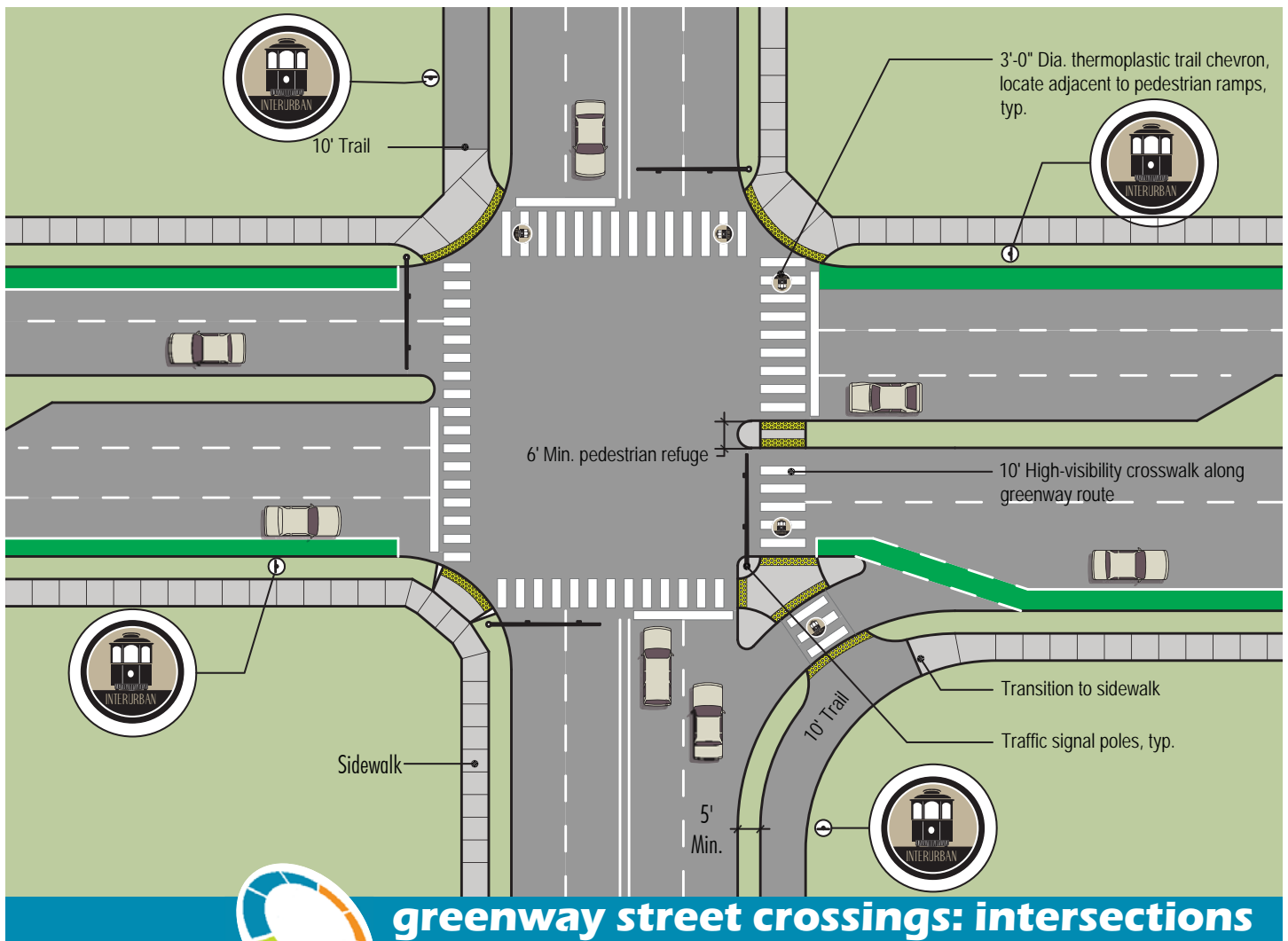


rest areas, overlooks and connection points

Rest areas, overlooks, and connection points are critical design elements along the greenways system. They provide resting areas for users, viewing areas for scenic overlooks along the greenways, educational opportunities, and connections to sidewalks, neighborhoods, or other trails along the greenway. These standards are intended to provide some consistency in the design treatments and applications for these trail features.

DESIGN STANDARDS:

- Rest areas should be provided along the greenways to allow users a place to rest at one-mile intervals. This is especially essential to accommodate users of all levels and abilities.
- Rest areas should include benches and may include trash receptacles.
- Where feasible, combine resting areas with overlooks, areas of educational opportunities, historic sites, scenic views, or other areas where users are likely to stop.
- Ensure rest areas are set back as indicated and do not impede trail users.
- Use materials and sizes as indicated on the drawings where site conditions permit.

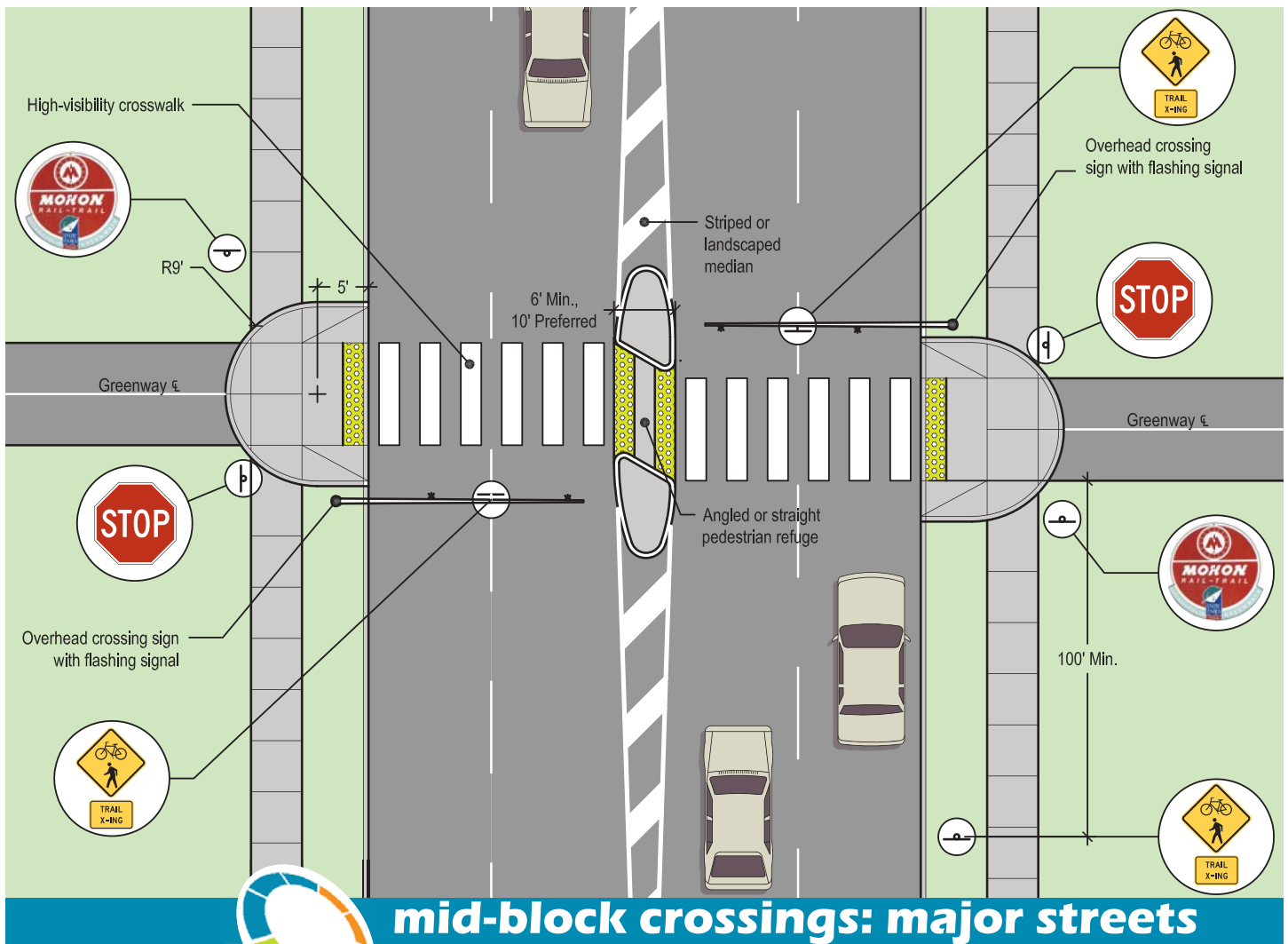


greenway street crossings: intersections

In instances where trails cross through signalized intersections, crossings must be carefully designed and constructed to ensure safety of pedestrians, trail users and vehicles. For trail users, it is also important that there is a visible, obvious route for the trail or greenway through the intersection. This is especially important at intersections where the trail crosses two streets. This standard illustrates how greenway routes should be incorporated into the design of signalized intersections.

DESIGN STANDARDS:

- Greenways should be constructed to merge into the existing pedestrian walks at the intersections. Sufficient space should be provided to accommodate bicycles and other users from the trail.
- Vehicular-scaled Greenway Identification signs should be incorporated into the intersection to alert motorists that the greenway route is passing through the intersection. If the greenway follows the street well before or beyond the intersection, an additional identification sign should be placed between the trail and street in advance of the intersection to alert motorist that the greenway is sharing the street corridor.
- Crossings should be designed to provide high visibility. High visibility lane markings and signage should be used to call attention to the crossing. All signage shall conform to MUTCD standards.
- For the trail route, the crossing markings shall be the same width as the trail route, or 10' minimum width. The greenways logo should be incorporated into the markings to further reinforce the greenway route through the intersection. Logo shall be thermoplastic and applied on each side of the crossing facing the area where users will enter the crossing. Logos should be situated outside of typical wheel path areas to extend the lifespan of the thermoplastic.
- All crossings should have pedestrian-activated signals.
- All crossings shall comply with ADA guidelines.

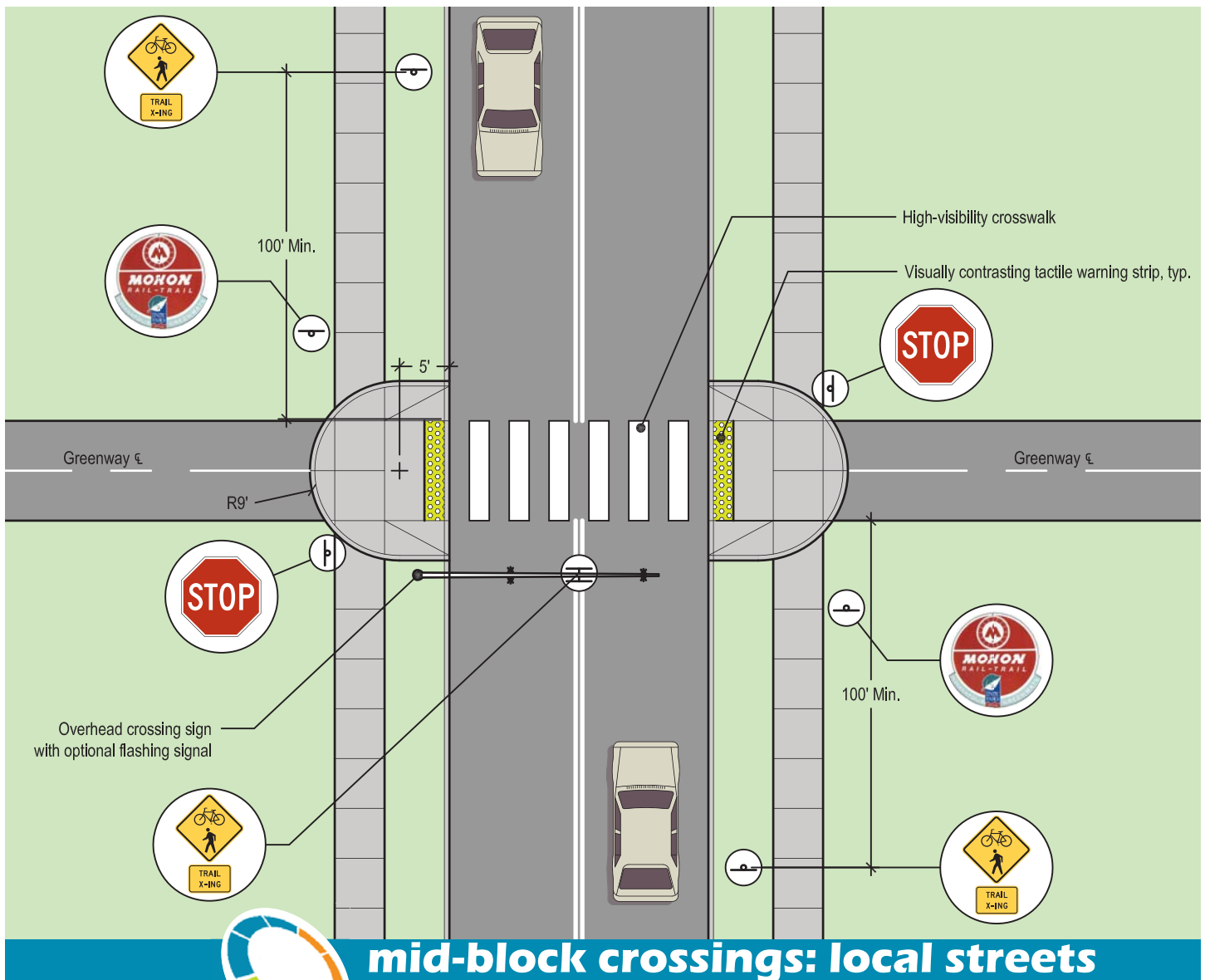


mid-block crossings: major streets

Mid-block crossings may be used with special design consideration that include pedestrian crossing signals, pavement markings and signs. Crossings must be carefully designed and constructed to ensure safety of pedestrians, trail users and vehicles. For trail users, it is also important that there is a visible, obvious route for the trail or greenway across the street. For motorists, it is critical that they are alerted and aware of the crossing well in advance. This standard illustrates how mid-block crossings should be used on major streets.

DESIGN STANDARDS:

- The trails should cross streets at 90-degree angles. Where trails approach a crossing at a skew, the trail should be routed so that the physical crossing is at 90 degrees to the street.
- Concrete pedestrian stacking areas shall be provided at each edge of the crossing and shall be sized to accommodate users waiting to cross the street. The minimum length of the concrete area is 14' from the edge of the street and the minimum width is 9'.
- Regulatory signs (warning and stop) shall be used for the greenway. Trail users shall be required to stop before proceeding through the crossing.
- For streets with high traffic volumes and more than two lanes of traffic, a pedestrian refuge should be used (where feasible) to provide an area for trail users to pause during the crossing. This allows trail users to focus on one direction of traffic at a time. If feasible, crosswalk areas on each side of the refuge should be offset to further slow trail users.
- High visibility pavement markings and signage should be used to call attention to the crossing. All regulatory signs and markings, for both streets and trails, should comply with MUTCD's Traffic Controls for Bicycle Facilities. Crossing markings shall be the same width as the trail.
- Overhead crossing signals with flashing lights should be incorporated into all mid-block crossings. For major streets, flashers should be hung on a mast arm over the crossing.
- Vehicular-scaled Greenway Identification signs should be placed adjacent to the crossing to identify the greenway segment to motorists.
- All crossings shall comply with ADA guidelines.

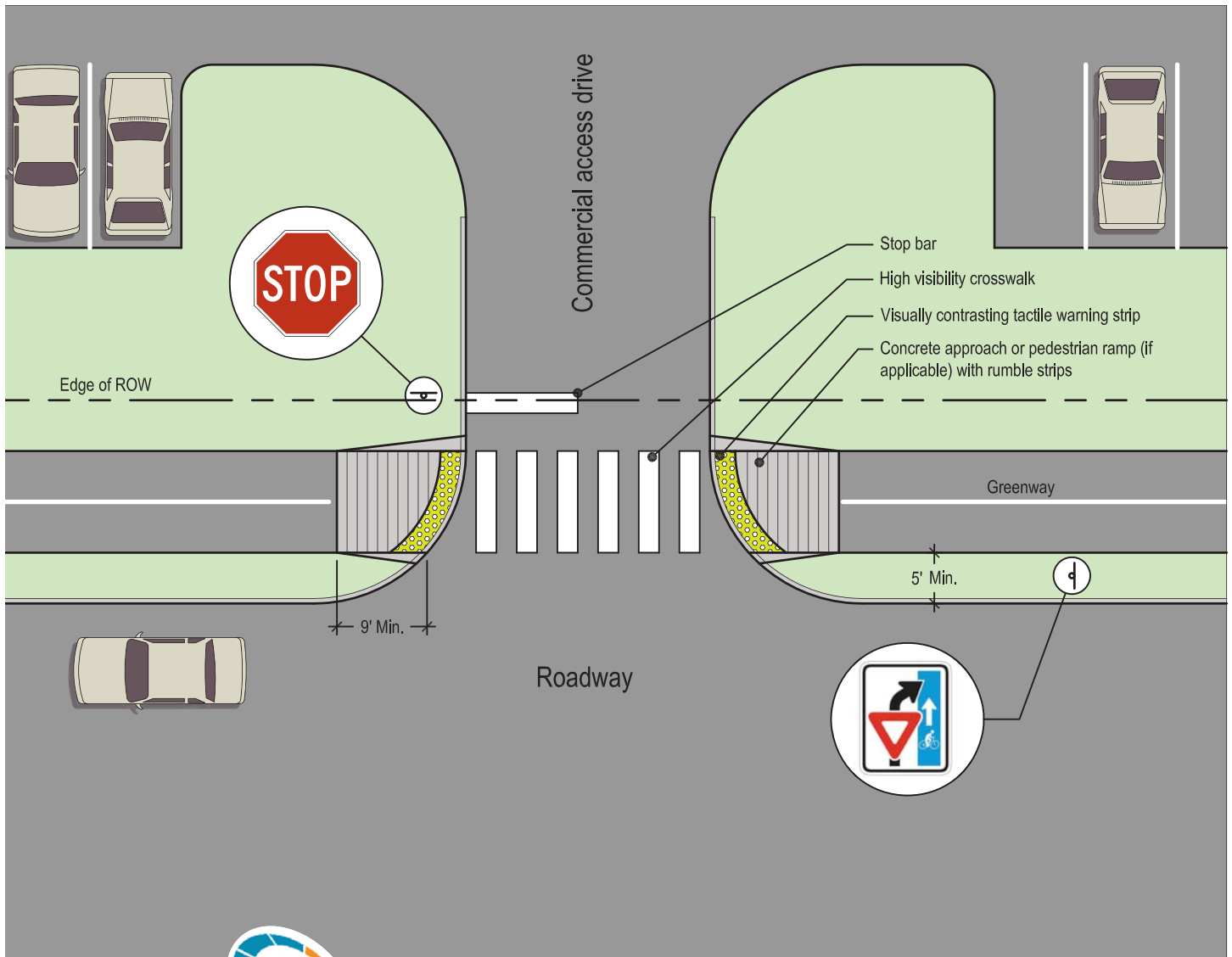


mid-block crossings: local streets

Mid-block crossings may be used with special design consideration that include pedestrian crossing signals, pavement markings and signs on local streets. Crossings must be carefully designed and constructed to ensure safety of pedestrians, trail users and vehicles. For trail users, it is also important that there is a visible, obvious route for the trail or greenway across the street. For vehicles, it is critical that they are alerted and aware of the crossing well in advance. This standard illustrates how mid-block crossings should be used on local streets.

DESIGN STANDARDS:

- The trails should cross streets at 90-degree angles. Where trails approach a crossing at a skew, the trail should be routed so that the physical crossing is at 90 degrees to the street.
- Concrete pedestrian stacking areas shall be provided at each edge of the crossing and shall be sized to accommodate users waiting to cross the street. The minimum length of the concrete area is 14' from the edge of the street and the minimum width is 9'.
- Regulatory signs (warning and stop) shall be used for the greenway. Trail users shall be required to stop before proceeding through the crossing.
- High visibility pavement markings and signage should be used to call attention to the crossing. All regulatory signs and markings, for the both streets and trails, should comply with MUTCD's Traffic Controls for Bicycle Facilities. Crossing markings shall be the same width as the trail.
- Flashing warning signs should be incorporated into all mid-block crossings on a mast arm over the crossing or next to the street.
- Vehicular-scaled Greenway Identification signs should be placed adjacent to the crossing to identify the greenway segment to motorists.
- All crossings shall comply with ADA guidelines.

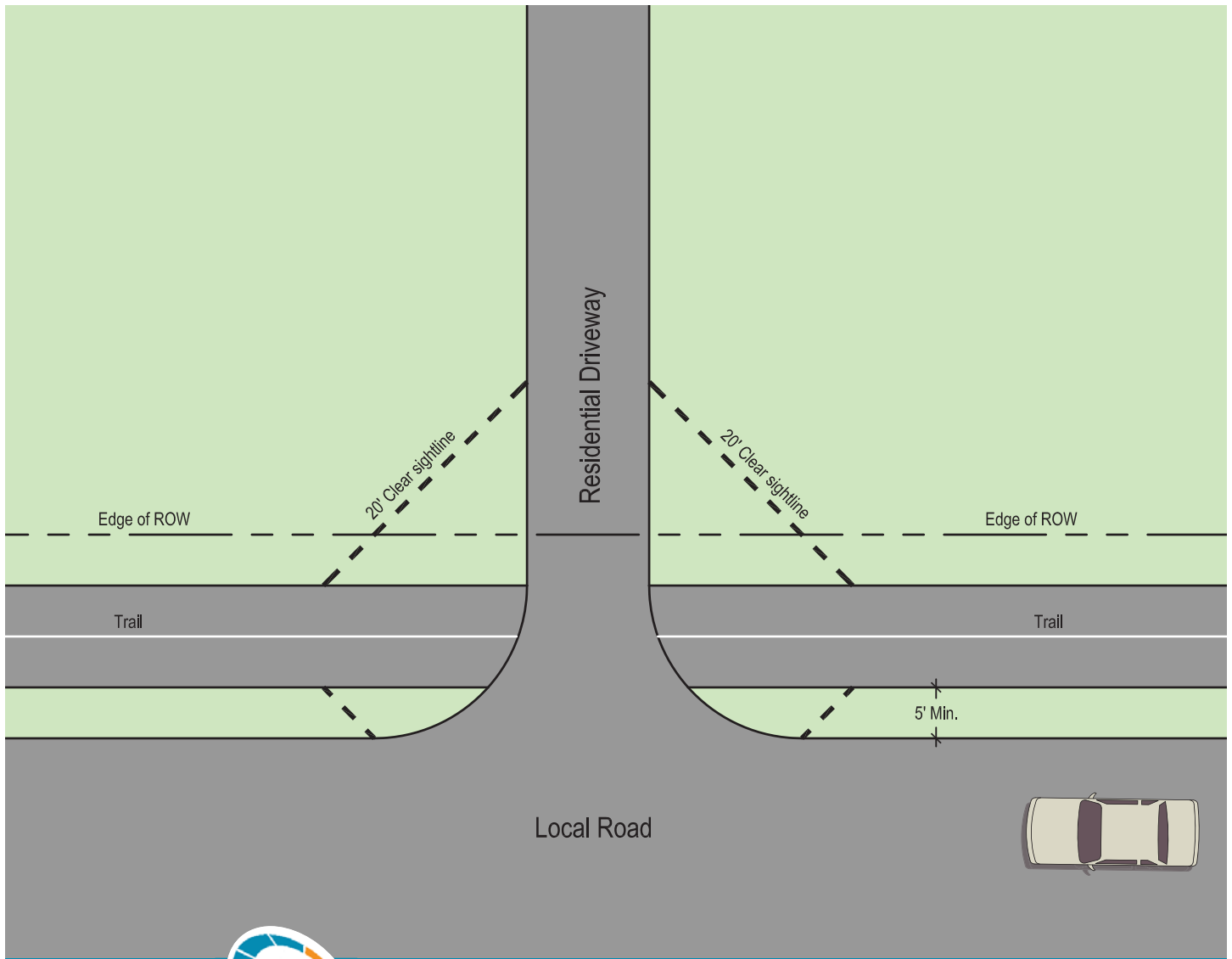


commercial drive crossings

In some areas where a greenway follows a street corridor, crossings of commercial drives will be required. Because of the volume and frequency of vehicular traffic at these drives, special design considerations are required to promote awareness of the greenway and ensure the safest condition for both trail users and vehicles. This standard illustrates a typical standard for commercial drive crossings.

DESIGN STANDARDS:

- For commercial drive crossings, vehicles exiting a commercial use and entering the street should be required to stop prior to proceeding through the crossing. Signage and pavement marking should comply with MUTCD's Traffic Controls for Bicycle Facilities. Warning signs should be used along the street for vehicles turning into the commercial drive. These drivers should be required to yield to trail users.
- Trail users shall not be required to stop, although measures should be taken to make them aware of the potential interaction with vehicles. Warning signs should be used to alert trail users of the approaching traffic.
- If feasible, the trail should cross the commercial drive at 90-degree angles. Where trails approach a commercial drive at a skew, the trail should be routed so that the physical crossing is at 90 degrees to the street.
- Concrete pavement with grooved rumble strips shall be used on the trail approach at each side of the drive as illustrated.
- High visibility pavement markings and signage should be used to call attention to the crossing. All regulatory signs and markings, for the both streets and trails, should comply with MUTCD's Traffic Controls for Bicycle Facilities. Crossing markings shall be the same width as the trail.
- All crossings shall comply with ADA guidelines.



residential drive crossings

In some areas where a greenway follows a street corridor, crossings of residential drives will be required. Since traffic volumes and frequency are low at these crossings, these crossings should be treated differently than commercial drives and minimal design treatments are required. This standard illustrates a typical standard for residential drive crossings.

DESIGN STANDARDS:

- For residential drive crossings, ensure that clear sightlines are maintained within 20' of the drive. Do not include enhancements or any other potential visual obstructions within 20' of the drive.
- Warning signs and pavement markings should not be used unless there are extenuating circumstances where their use is mandated.
- All crossings shall comply with ADA guidelines.



Monon Trail (left). Cental Canal (top-right). Fall Creek Bridge (bottom-right)



bridges

Elevated bridge crossings over roadways or waterways should be provided where infrastructure exists (such as abandoned railroad bridges) or where pedestrian-vehicular conflicts cannot be resolved through traditional methods. Applications may vary widely based upon site-specific constraints, existing infrastructure to be reused and budgetary constraints. The following should be required for all bridge crossings.

DESIGN STANDARDS:

- **Width:** Bridge deck widths should equal adjacent trail widths plus an additional 4'-0" to account for 2'-0" clear zones on either side of the trail.
- **Vertical Clearance:** 8' minimum, 10' where maintenance or emergency vehicle use is anticipated.
- **Protective Railing:** 48" minimum, up to 54" where conditions warrant extra protection. A smooth, wide rubber rail should be provided where a bicyclist's handlebars could come in contact with the railing between the heights of 36" to 44".
- When bridge crossings are provided over roadways, connections should be made to the roadway's pedestrian or bicycle facilities if feasible.
- ADA-compliance shall be achieved at all bridge approaches and where connections to existing bike or pedestrian facilities are proposed.
- Bridges should be engineered to support maintenance or emergency response vehicles.
- Aesthetic treatments to the bridge should be consistent with the character of the greenway and the context of the local neighborhood.

Fall Creek Greenway (left), Northtown Trail (top-right), Central Canal Towpath (bottom-right).

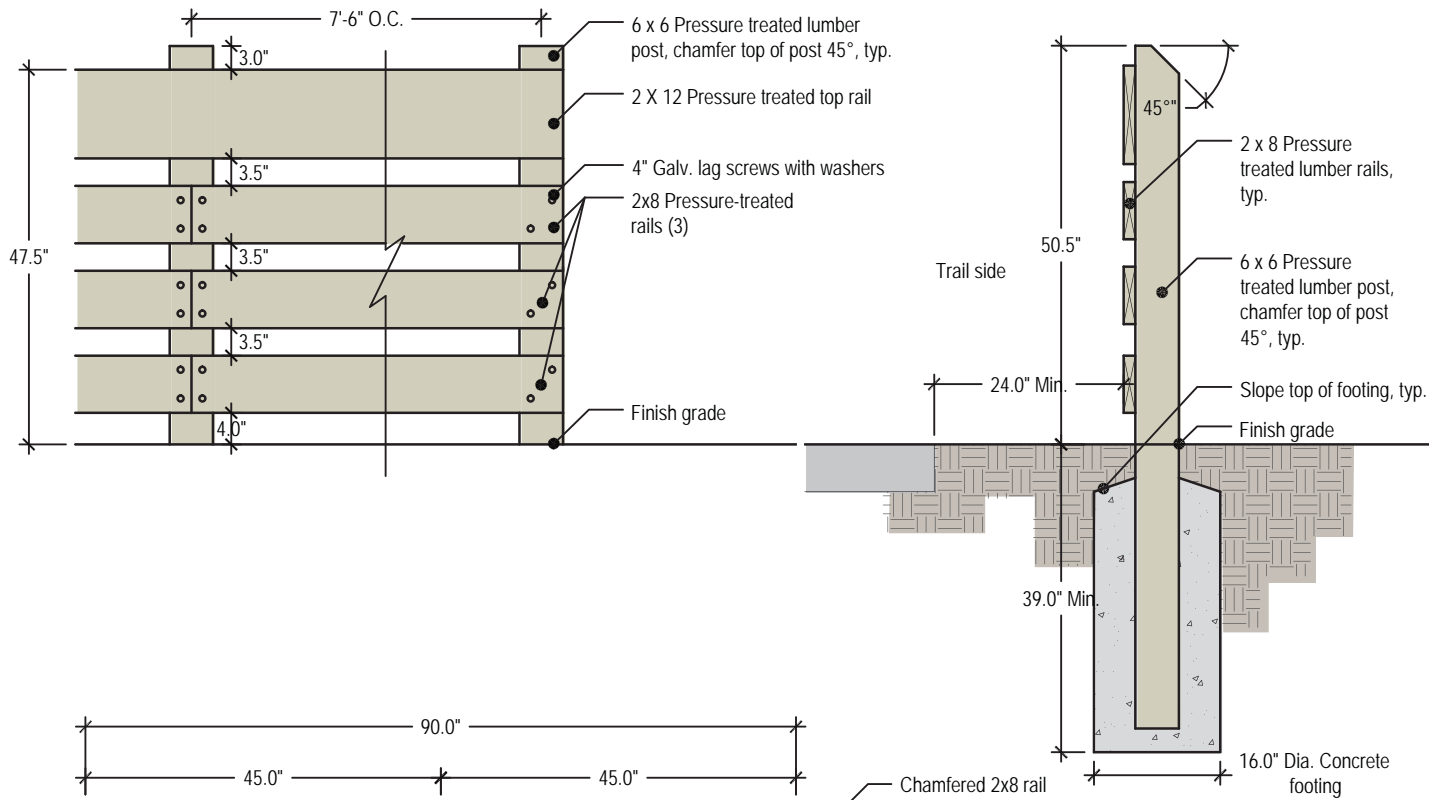


underpasses

Crossing under roads and bridges is necessary on many greenway segments to navigate potential obstacles such as interstate corridors, rail lines or common roadway bridges. Accommodating for future greenway connections as a part of ongoing roadway and infrastructure projects is critical to achieve long-term connectivity objectives. However, these crossings should adhere to the following standards to ensure that applicable safety and regulatory standards are satisfied. Underpass crossings may vary based upon site-specific conditions however the following standards should apply:

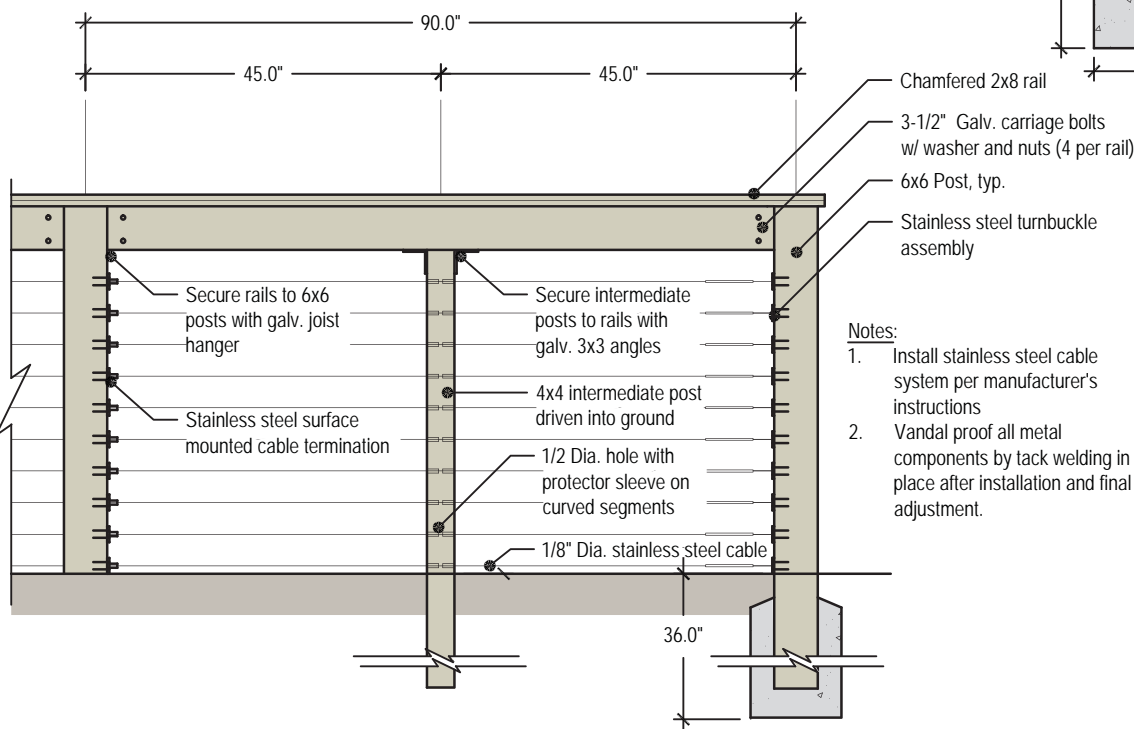
DESIGN STANDARDS

- Greenway underpass crossings shall meet applicable regulatory standards such as ADA and MUTCD. Coordination with transportation officials, the U.S. Army Corps of Engineers and/or railroad companies may also be necessary.
- **Greenway pavement:** Trail surfacing options may vary depending on site constraints. Where frequent flooding is expected, concrete paving may provide the most durable trail surface. In situations where topography is problematic, such as steep riparian banks, a boardwalk may be necessary to accommodate ADA compliance.
- **Width:** Underpass crossings should maintain the same trail width as adjacent greenway segments.
- **Vertical Clearance:** 8' Min., 10' where maintenance or emergency vehicle use is anticipated.
- **Clear Zone:** Trail Edge: 2'-0"
- **Vertical Clearance:** 8' Min.



wood railing

cable railing



- Notes:**
1. Install stainless steel cable system per manufacturer's instructions
 2. Vandal proof all metal components by tack welding in place after installation and final adjustment.

pedestrian railings

Pedestrian railings are required to protect trail users from steep slopes, retaining walls or other hazards.

DESIGN STANDARDS

Pedestrian railings shall be designed to meet both recreational and transportation standards including AASHTO and ADA. Specific criteria include:

- **Materials:** Pressure-treated or decay-resistant lumber, stainless steel cable systems for cable railings.
- **Height:** 47.5" Min, up to 54" where conditions warrant extra protection.
- Railing should not encroach into required 2'-0" clear zones adjacent to greenways.
- Utilize cable railing in areas where wood railings would interrupt desirable views such as along stream corridors.

Fencing along the Monon Trail (left and right)



fencing

Fencing along or within the greenways may be required in specific instances based up a variety of factors such as adjacent land use, utility infrastructure, private property concerns or sensitive environmental areas.

DESIGN STANDARDS

Where required, fencing should meet the following criteria

- **Materials:** Black, vinyl-coated chain link fencing. Fabric should be 2" diamond mesh interwoven wire, 9-gauge thick wire, top and bottoms salvage knuckle end closed.
- **Height:** Vary by application
- Fencing should not encroach into required 2'-0" clear zones adjacent to greenways.



TYP. DRINKING FOUNTAIN

Color: Black Powdercoat
Construction: Steel
Notes: Freeze-resistant assembly, pet bowl, jug-filler, ADA compliant
Mounting: Surface Mount
Available Manufacturers: Most Dependable Fountains



TYP. BIKE REPAIR STATION

Color: Black Powdercoat
Construction: Heavy duty steel tubing side opening
Notes: Includes bicycle pump and hand tools
Mounting: Surface Mount
Application: Major trailheads and along major commuting routes
Available Manufacturers: Dero

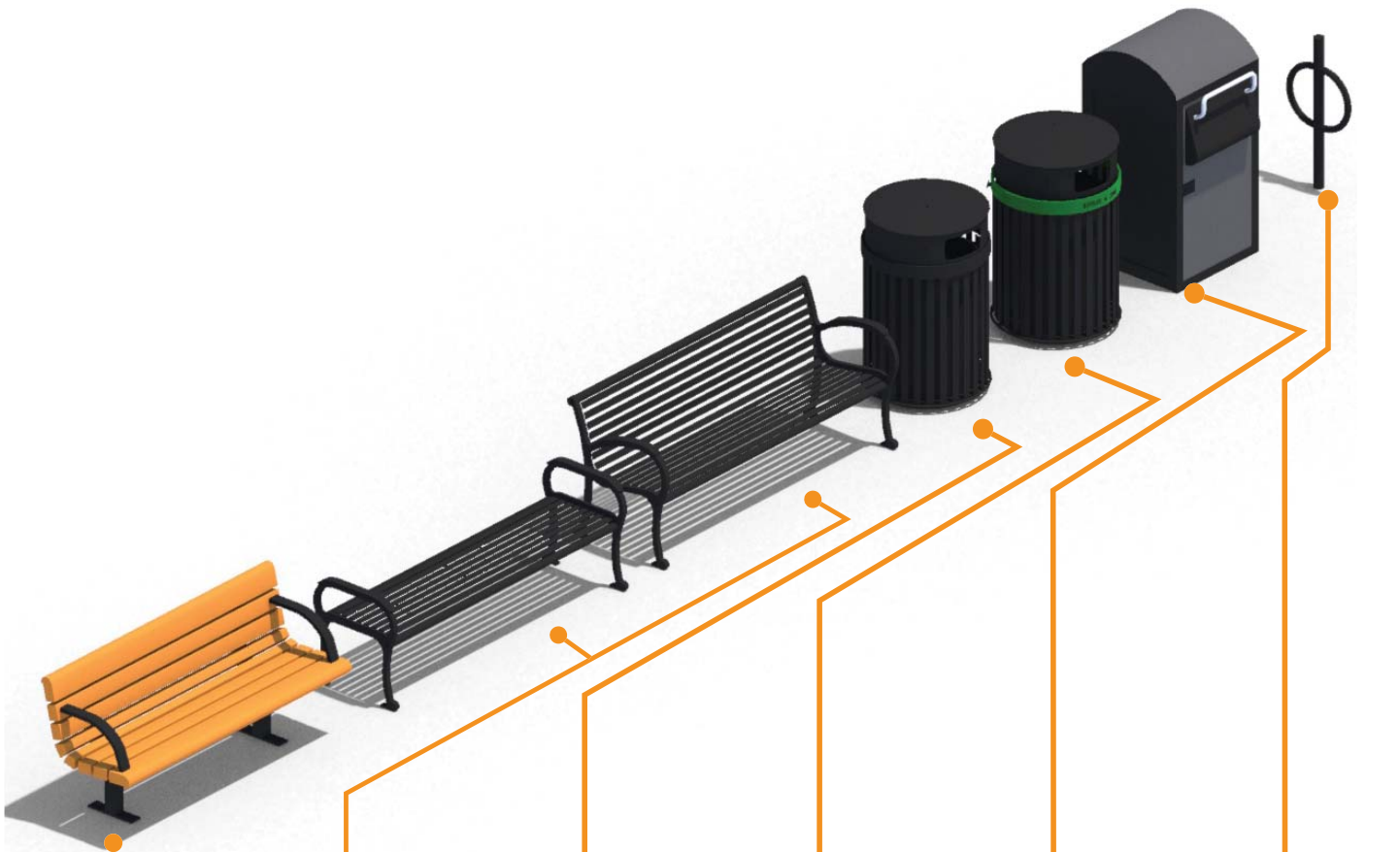


site furnishing standards

Standard site furnishings have been selected to simplify future greenway implementation and bring consistency across the greenways system.

DESIGN STANDARDS:

- **Placement:** Typical placement of site furnishings is depicted in the access points, trailheads, and rest area standards elsewhere in this chapter.
- **Furnishings:** as indicated or approved equal. All furnishings must be approved by DPW Resource Development section.
- **Materials:** As indicated.
- **Color:** Black furnishings have been specified to reinforce a consistent appearance throughout the greenway system.
- **Maintenance:** Highly durable site furnishings have been selected to ensure maximum life cycle of furnishings.
- **Purchasing:** Site furnishings shown are widely available from multiple manufacturers to ensure compliance with competitive bidding requirements. Available manufacturers shown are for informational purposes only. Alternative products of equal quality as those shown are permissible to use within the greenway system.
- **Mounting:** Permanent surface-mounting should be specified for all furnishings to simplify installation and repairs.
- **Donor-Recognition:** Donor-recognition options (such as plaques) are available for all furnishings to allow acknowledgement of greenway supporters while maintaining a consistent material palette.



TYP. RECYCLED LUMBER BENCH

Size: 6'-0"
Color: Black Powdercoat
Construction: Recycled lumber slats
Mounting: Surface Mount
Bench Application: Rest nodes and trailheads in certain natural areas
Available Manufacturers: Dumor, Jayhawk Plastics

TYP. STEEL BENCH (WITH OR WITHOUT BACKREST)

Size: 6'-0"
Color: Black Powdercoat
Construction: Solid steel slats
Mounting: Surface Mount
Backless Application: Limit use, utilize only where access is required from both sides of the bench
Standard Application: Rest nodes and trailheads
Available Manufacturers: Dumor, Victor Stanley, Thomas Steele

TYP. TRASH RECEPTACLE

Capacity: 32-36 Gallon
Color: Black Powdercoat
Construction: 3/8" Solid steel bars, side opening
Mounting: Surface Mount
Application: Trailheads and access points
Available Manufacturers: Victor Stanley, Thomas Steele, Dumor
Notes: Side-opening

TYP. RECYCLING RECEPTACLE

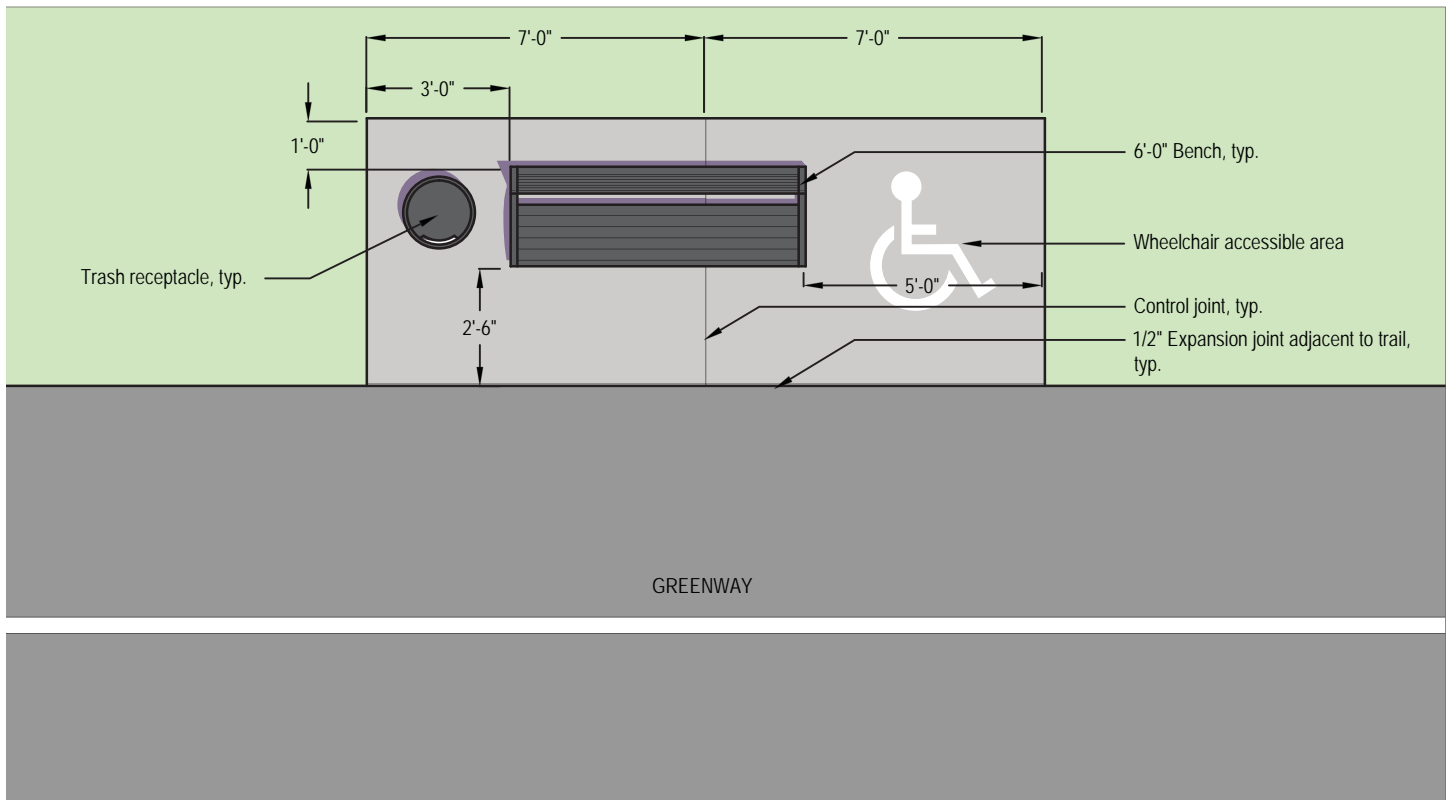
Capacity: 32-36 Gallon
Color: Black Powdercoat
Construction: 3/8" Solid steel bars, side opening
Mounting: Surface Mount
Application: Trailheads and access points
Available Manufacturers: Victor Stanley, Thomas Steele, Dumor
Notes: Side-opening, customized "recycling" graphics and color to discourage non-recyclables

TYP. COMPACTING TRASH RECEPTACLE

Capacity: 50 Gallon
Color: Black
Mounting: Surface Mount
Application: Trailheads
Available Manufacturers: Big Belly Solar
Notes: Customizable graphics and donor recognition graphics available

TYP. BICYCLE RACK

Capacity: 2 bicycles
Color: Black Powdercoat
Mounting: Surface Mount
Application: Trailheads
Available Manufacturers: Victor Stanley, Ultra-Site, Madrax

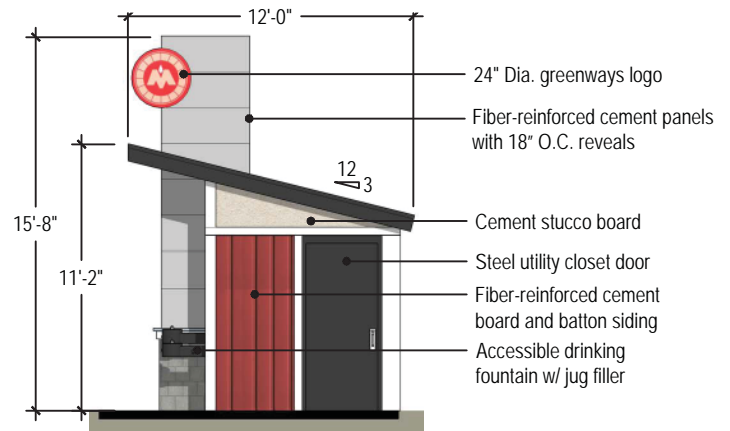
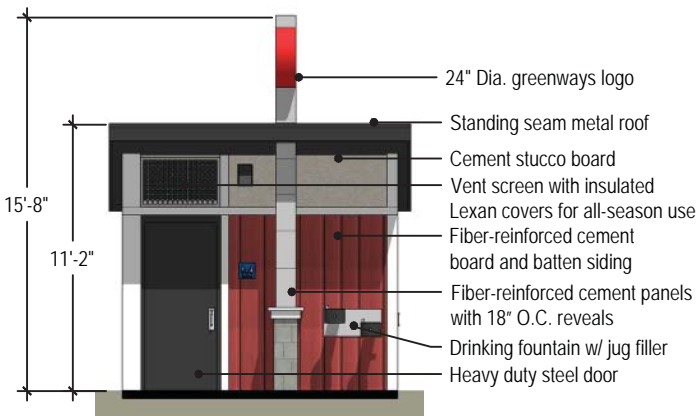
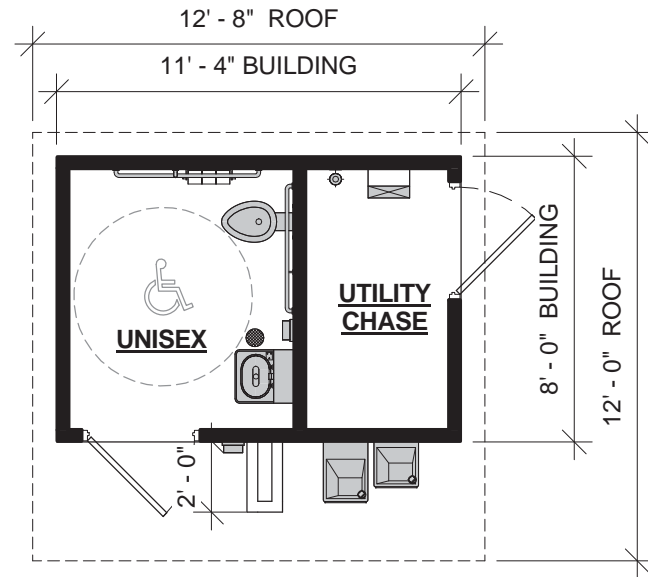


typical bench pad

Where benches and trash receptacles are used along the greenways, bench pads should be designed to reduce maintenance and provide greater accessibility for those wishing to rest along the trail. This standard illustrates the typical spatial requirements for bench pads.

DESIGN STANDARDS:

- Bench pads should be used for the placement of benches and trash receptacles along the greenways. Benches and trash receptacles shall be as identified in the site furnishing standards and shall be surface mounted to pads.
- Bench pads should be constructed of concrete.
- Benches and trash receptacles shall be placed no closer than 1' from the edge of the concrete pads.
- A 5' clear area should be open on one side of the bench (minimum) for wheelchair use. This area shall be clearly marked on the pavement with the wheelchair symbol.
- Joint between trail surface and bench pad should be level and accessible.



single-user restroom facility

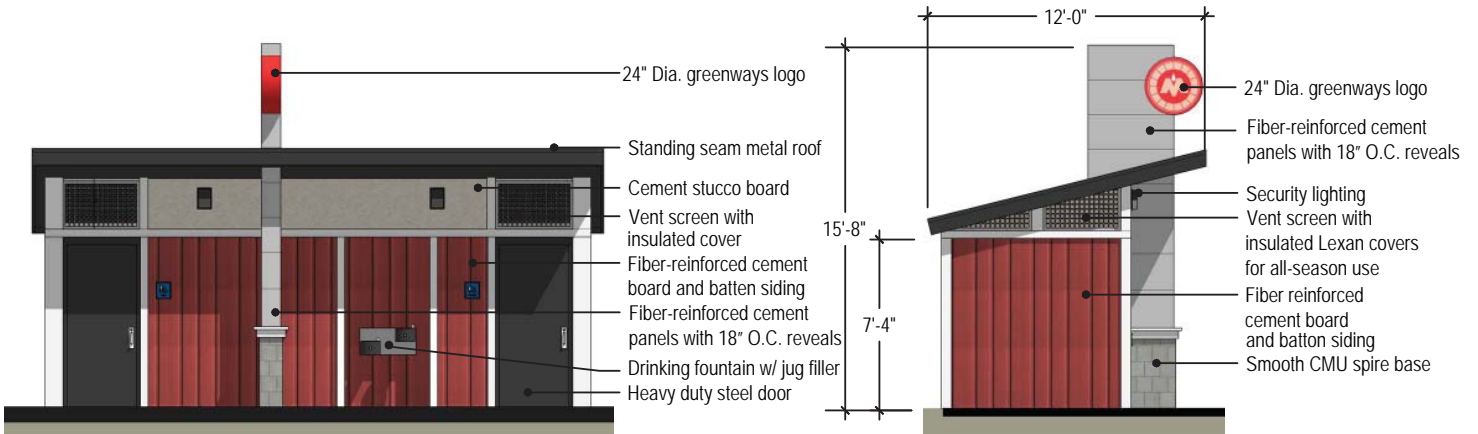
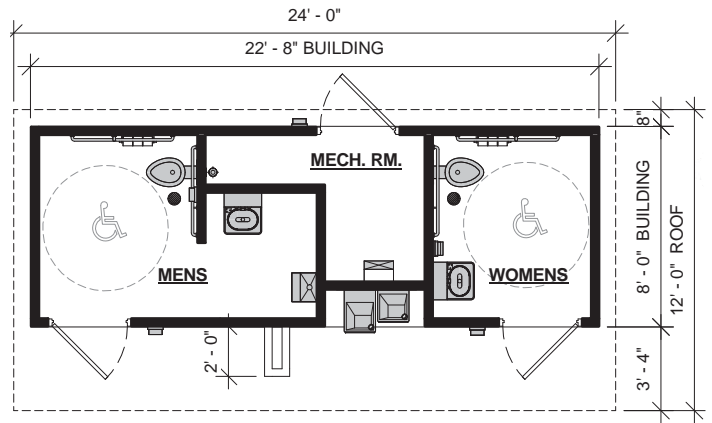


restrooms

Restroom facilities should be provided at all major trailheads where feasible. Restrooms should serve multiple users where possible by locating facilities near splash parks, sports fields, playgrounds or other park amenities. Partnerships with adjacent facilities such as schools, private recreation centers (such as the YMCA), community centers and libraries are encouraged to share in the capital and ongoing expenses incidental to providing restrooms for greenway users. Existing public restrooms near the trail should be adequately marked with signage so that they can be utilized by greenway users. When construction of new restrooms is warranted, they should meet the following standards:

DESIGN STANDARDS:

- Restrooms shall meet all applicable building codes and ADA standards.
- Location:** Restroom facilities should be sited at major trailheads (where feasible) and along heavily traveled commuter greenways. Restrooms should be sited in a prominent location to deter vandalism and be visible to greenway users.



dual-user restroom facility

restrooms (continued)

- Restrooms should be designed and constructed for all-season use. Seasonal closure of restroom facilities is discouraged, but at a minimum the facilities should be open from April to October.
- Lighting:** Restrooms should include basic security lighting to promote safety and deter vandalism.
- Capacity:** Single or double user facilities may be selected based upon the anticipated level of use.
- Design / Materials:** Restroom design and construction materials should adhere to the drawings shown above. Automated door-locks to operate on a timer are encouraged to limit access. Restroom construction should include water fountains to take advantage of shared utility infrastructure costs.
- Colors:** Paint and material colors should be selected to compliment greenway logos or adjacent park facilities.



4. signage standards

For the last two years, Indy Parks has worked with RLR Associates to develop a new sign package for the Pleasant Run Greenway. The purpose of that project was to create a new sign palette that could then be applied to all of the greenways in the system.

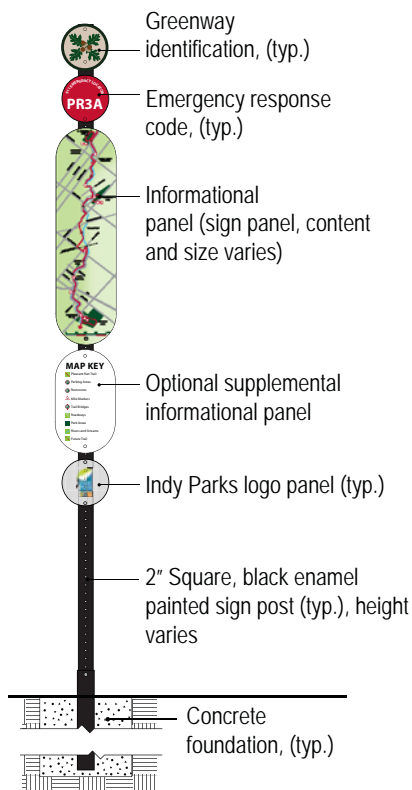
The development of the new sign package was designed with the following considerations in mind:

- Creating a standardized system of signs that centralized the amount of information at specific sign stations.
- Reducing the cost of production of the signage, moving from custom designed panels to a more standardized format that can be produced within the city's sign shop.
- Streamlining maintenance by developing a system that uses materials already stocked by city maintenance crews, creating more efficient and timely repair and maintenance of the signs.
- Developing a more intimate user interface that increases the amount of trail user information throughout the trail system as opposed to focusing the user information at trailheads.
- Increasing safety through the development of a unique emergency location and response system.

These main points formed the core principles of the sign package that was developed. Those standards are now being included in the overall design guidelines for the entire system.

SIGN CONCEPT

The new sign packages for Indy Greenways is a component system that centralizes user information onto a single post. Informational panels are grouped onto a single post providing different layers of information depending on the location and purpose of the signs. Graphic information is intended to be processed by users at a much more intimate scale than previous signs developed for the system. A hierarchy of information is dictated by the purpose and location of the sign.



Example of Zionsville Rail-trail signage which utilizes a similar system to the proposed Indy Greenways signage.

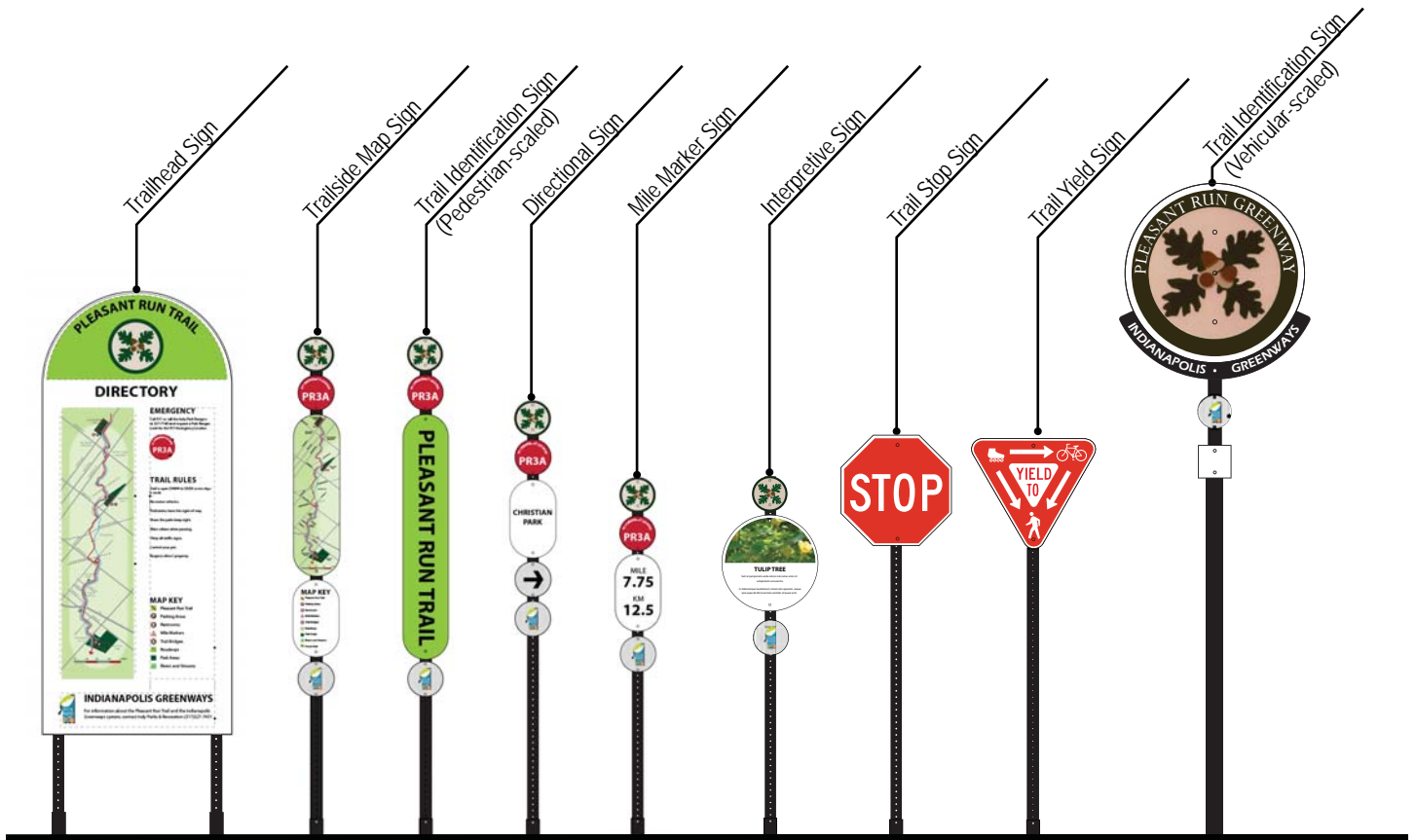


Certain information, such as trail branding, parks logo, and emergency response locations are used consistently on most signs. Other information, such as trail rules, route maps, destinations, or distance markers, are incorporated onto the post as dictated by the sign location.

The sign package is made of nine different types of signs:

1. **Trailhead signs**-Includes user information such as a trail map, rules of the greenway, and emergency information.
2. **Trailside maps**- Smaller signs that illustrate the greenway map and directions along the greenway.
3. **Trail Identification sign (pedestrian scale)**- Signs that identify the greenway system for users.
4. **Trail Identification sign (vehicular scale)**- Signs that identify the greenway to vehicles and other users along but outside the greenway.
5. **Directional Signs**- Signs that provide directions to key destinations along the greenway.
6. **Mile Markers**- Signs that measure the overall distance of the trail, measured in quarter-mile increments.
7. **Interpretive Signs**- Informational signs that provide educational information at key places along the greenway.
8. **Emergency Locator Signs**- Emergency location points along the greenways.
9. **Regulatory Signs**- Signs that control actions and use on the greenway.

Each sign type is detailed further as part of these guidelines.



panel sign system

Indy Greenways has developed a new standard for all signage to be placed on its greenway system. The sign concept establishes a totem system that incorporates several informational pieces onto a single post. Graphics and information is determined by the placement and location of the sign. The system includes smaller graphical elements and common materials allowing for the placement of more signs along the trail system than previously used on Indy Greenways with a significant shift to the individual-user scale. The size and shape of the signage panel also helps to reduce the confusion between motorists and trail users in locations where a trail will parallel a street. The system includes several different components:

- Trailhead signs
- Trailside maps
- Trail Identification signs- pedestrian scaled
- Trail identification signs- vehicular scaled
- Directional signs
- Interpretive signs
- Regulatory signs

DESIGN STANDARDS:

Specific design standards and requirements for each sign are included on the following pages. Additional regulatory signs may be warranted and should follow MUTCD signage standards.



Indy Parks & Recreation



Pleasant Run Greenway



Central Canal Towpath



Fall Creek Greenway



Little Buck Creek Greenway



Monon Trail



Penny Trail



Pogues Run Greenway



Eagle Creek Greenway



White River Greenway



B & O Trail



Buck Creek Greenway



Grassy Creek Greenway



Interurban Trail



Lick Creek Greenway



Monon-Pogues Connector



Northtown Trail



Southeast Trail



Southwest Trail



Vandalia Trail



White Lick Creek Greenway



86th-82nd Street Commercial



signage colors, fonts & symbology

A specific series of colors, fonts, and symbology has been developed for the signage system for Indy Greenways. The color, font, and symbology guidelines, as well as the use of consistent signage, graphics, and sizes, help ensure consistent placement and character across the system.

DESIGN STANDARDS:

- All signs and sign panels used along the greenways shall be consistent with the color, font, and symbology guidelines of this section.
- Additional branding or logos not illustrated shall conform to standard sign disk sizes and shapes on the following pages.
- All sign panels shall be approved by Indy Parks prior to placement.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
 abcdefghijklmnopqrstuvwxyz
 1234567890




















Myriad Bold

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890




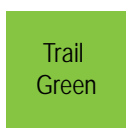

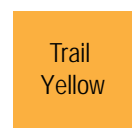

Myriad Italic

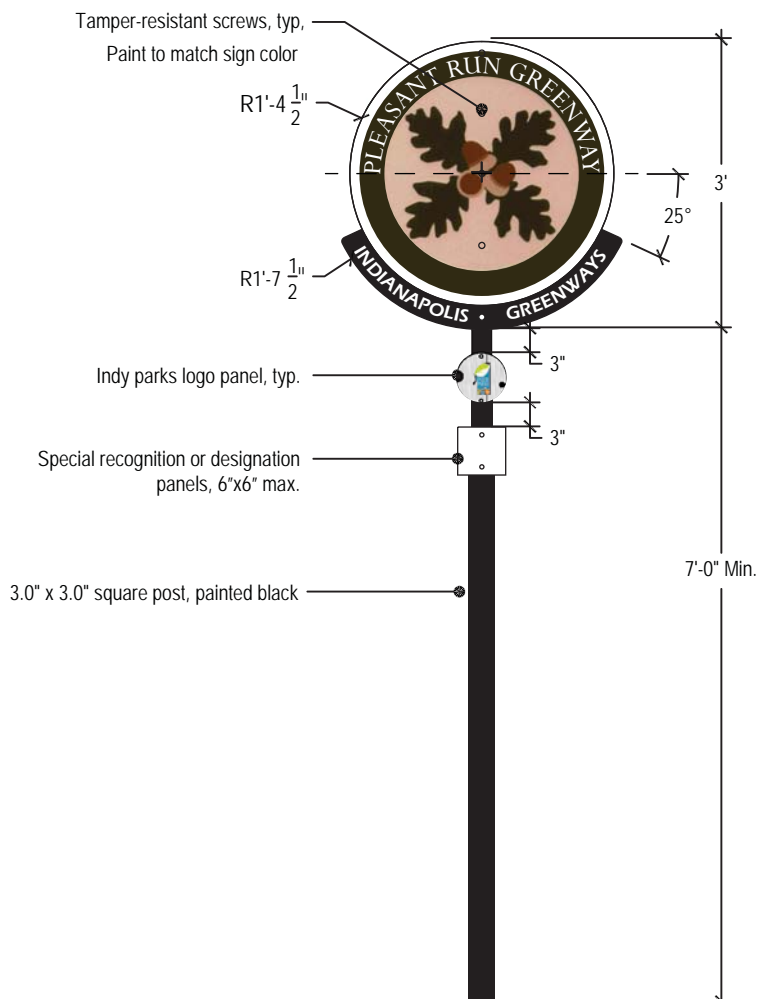
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

Pictograms

							
(NHK)	(NMV)	(ROL)	(HIK)	(BIK)			
							
(UPP)	(RHT)	(DWN)	(LFT)	(YLD)	(911)		
							
(TRL)	(PKN)	(RS T)	(MRK)	(BR G)	(RD W)	(PRK)	(RIV)

Colors

	A0	V1	V2	V3	V4	V5	V6
Vinyl		Avery TM 900 Supercast Black SC 900-190-O SC90900	Avery TM 900 Supercast White SC 900-101-O SC90020	Avery TM 900 Supercast Apple Green SC 900-760-O SC96600	Avery TM 900 Supercast Luminous Red SC 900-481-O SC93180	Avery TM 900 Supercast Dark Yellow SC 900-250-O SC91500	3M TM Scotchlite Reflective Ruby Red 680-82, 680CR, 5100-82, 5100R-82
Color							
Paint		Mathews Paint TM 103 - Black LRV 5.2	Mathews Paint TM 951 - White LRV 79.9	Mathews Paint TM MP26749 Spring Green LRV 28.3	Mathews Paint MP 24069 Fire Red LRV 17.2	Mathews Paint MP55149 Schoolbus Yellow LRV 39.3	
	A0	P1	P2	P3	P4	P5	



post-mounted application



greenway ID sign - bridge application

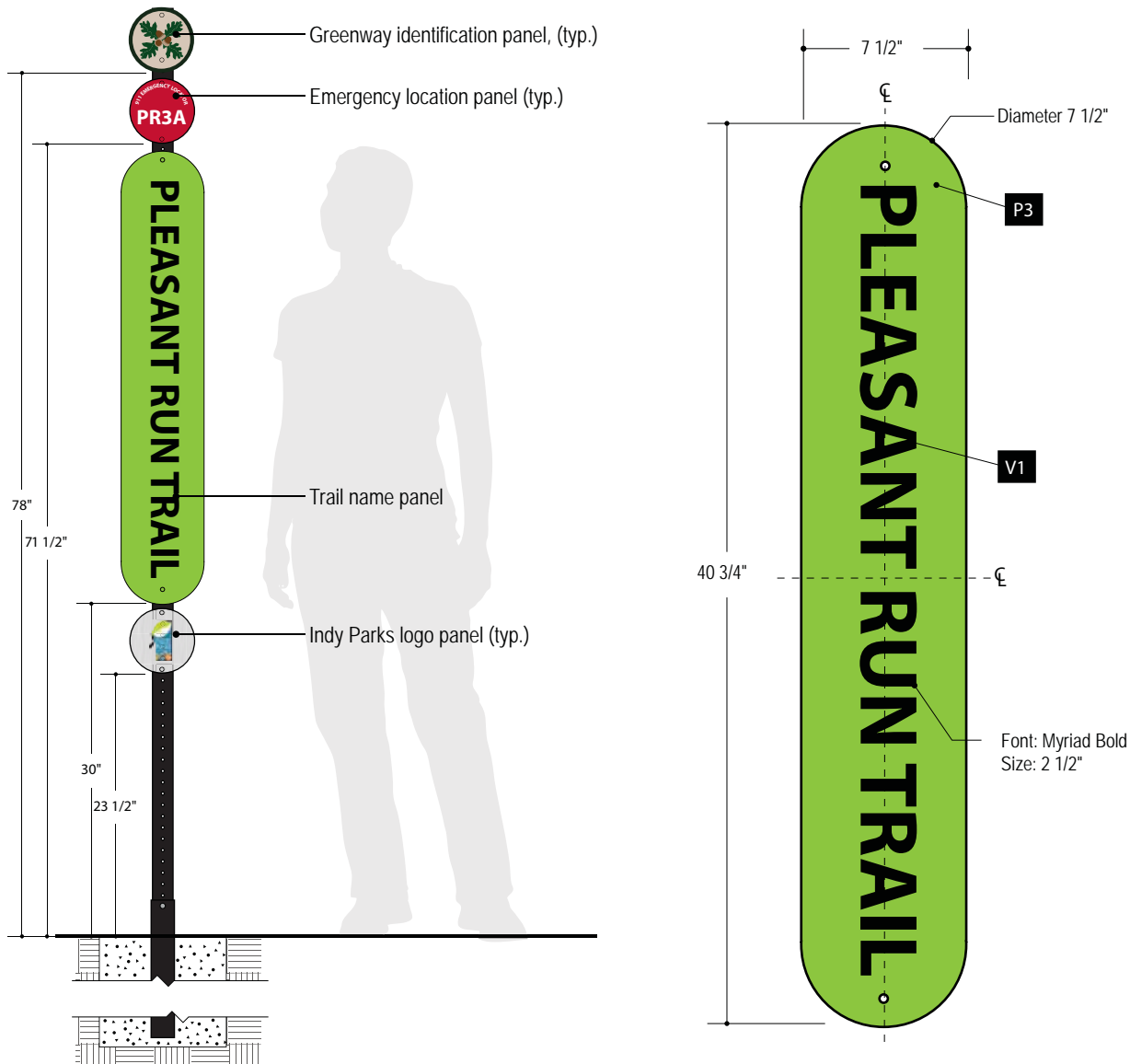


greenway ID sign: vehicular scaled

The Vehicular-scaled Greenway Identification sign is intended to identify the particular greenway segment to non-trail users in situations where the trail crosses or parallels a street or other mode of transportation. Signs shall be of a scale and orientation to alert motorists or vehicles that they are within a greenway zone or that there is a potential for interaction with greenway users.

DESIGN STANDARDS:

- **Placement:** Vehicular-scaled Greenway Identification signs shall be placed where a greenway crosses or parallels a street or other mode of transportation (transit route). Placement shall be on posts, or in conditions where the crossing is on a bridge or separate structure, the sign may be posted on the structure. When placed on a post, no portion of the sign or post shall be placed within 2' of the edge of the trail pavement.
- **Orientation:** Sign panel shall be oriented to be clearly visible to the adjoining street or the street being crossed.
- **Materials:** Posts shall be 3.0" square black-painted aluminum posts placed at the heights indicated. Posts shall be breakaway compliant. Sign panels shall be aluminum blanks with applied vinyl graphics, cut to the shapes indicated in these standards.
- **Post Attachments:** All post attachments shall be as designated in the sign post standard later in this chapter.

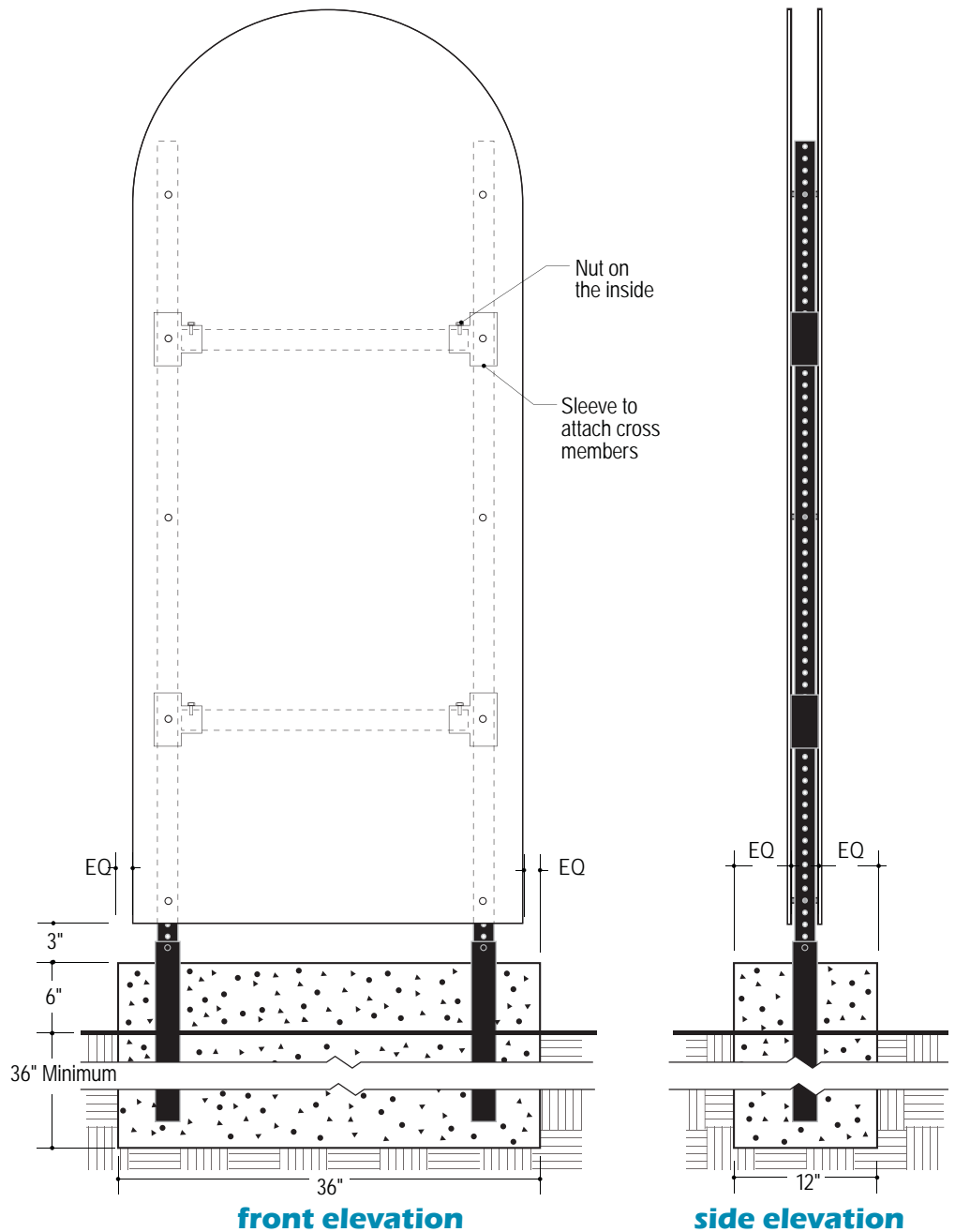


greenway ID sign: pedestrian scaled

The Pedestrian-scaled Greenway Identification sign is intended to identify the particular greenway segment to trail users. It is scaled to be read from the trail.

DESIGN STANDARDS:

- **Placement:** Pedestrian-scaled greenway ID signs should be placed at major intersections, neighborhood access points, or other minor locations where users enter the greenway, but where the number of users doesn't merit the development of a full trailhead or access point. Signs shall be placed so that the outside edge nearest the trail is 2' minimum and 4' maximum from the edge of trail pavement.
- **Panel Information:** Pedestrian-scaled greenway ID signs shall include the logo of the particular greenway segment, the Indy Parks logo, a panel with the greenway name, and the emergency location code.
- **Materials:** Posts shall be 2" square black enamel-painted steel posts placed at the heights indicated. Sign panels shall be aluminum blanks with applied vinyl graphics, cut to the shapes indicated in these standards.
- **Post Attachments:** All post attachments shall be as designated in the sign post standard later in this chapter.

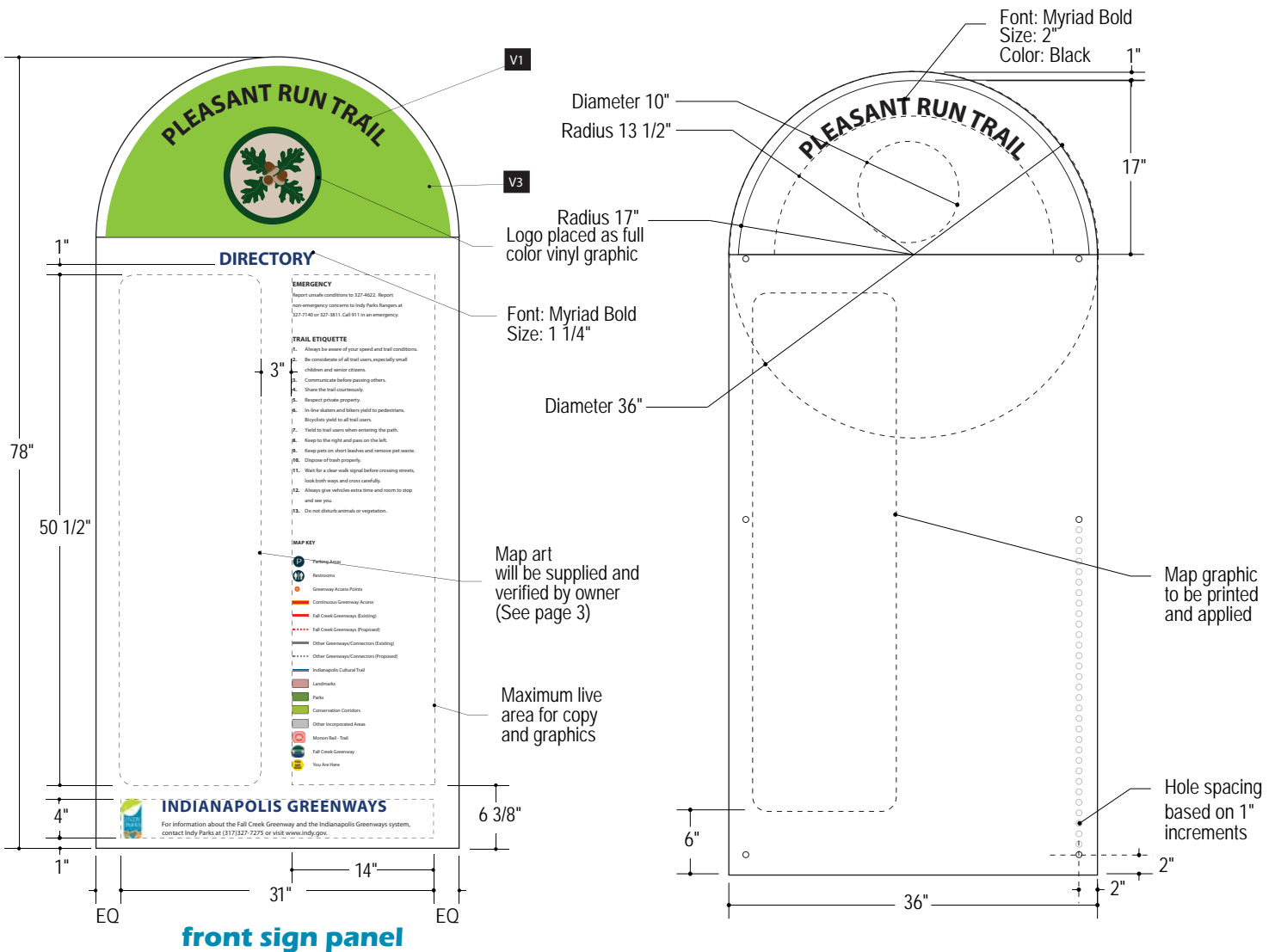


trailhead signs

Trailheads provide the front door to the Indy Greenways system and provide the first impression of the system to greenway users. As the main entrance to the greenways, the trailheads provide a central location for users to enter the system. Trailhead signage is intended to provide critical information to users entering the system and should be simple, concise, and user-friendly. The signage and its materials should be consistent with the overall look and aesthetic of the other signage and the greenway system as a whole.

DESIGN STANDARDS:

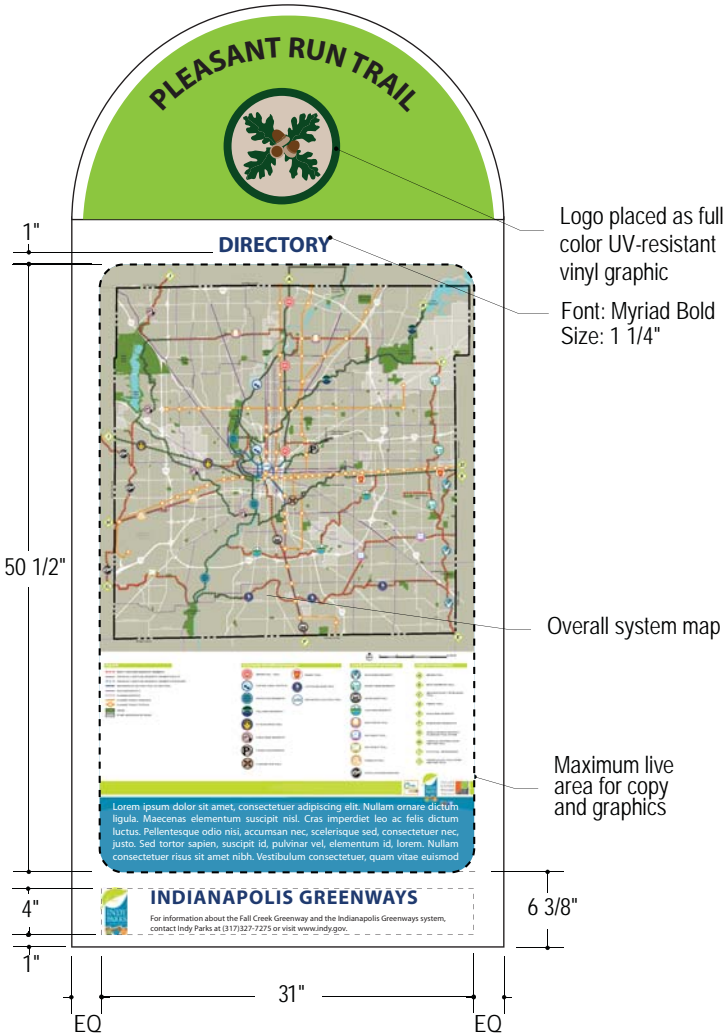
- **Placement:** Trailhead signs should be included at each designated trailhead and access point on Indy Greenways.
- **Panel Information:** Trailhead signage shall include the Indy Parks logo, the logo and name of the specific greenway, greenway rules, and a map of the greenway. The signs should also include emergency contact information and should explain the system employed for emergency response to incidents along the greenway.
- **Front Sign Panel:** The front sign panel shall include the greenway logo and name, a map of the system that includes the trailhead location, greenway rules, and emergency response location information.



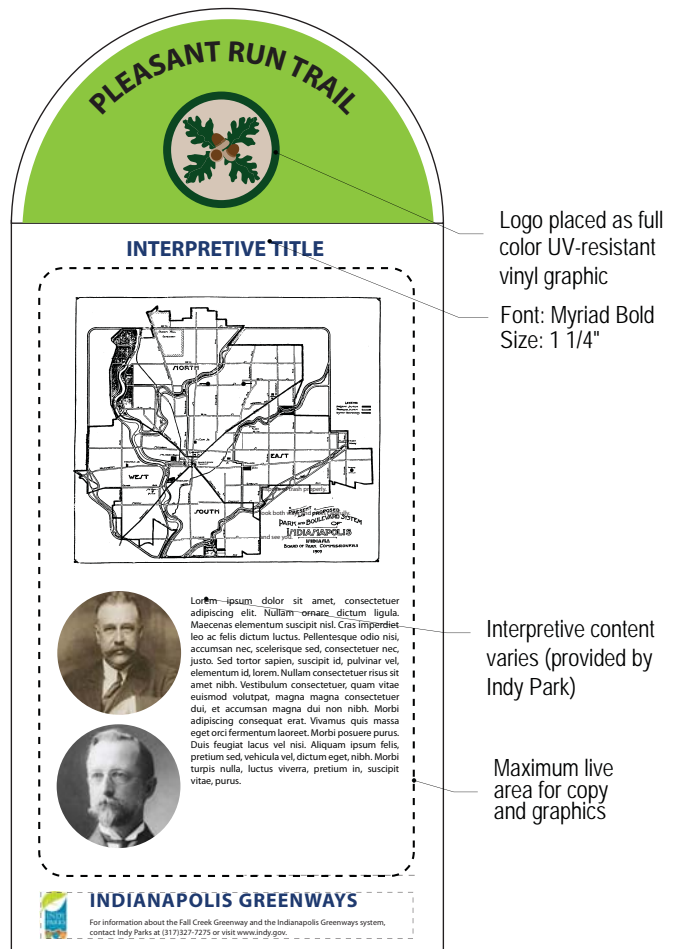
trailhead sign construction

trailhead signs (continued)

- **Back Sign Panel:** The back sign panel should include a map of the entire system where two greenways come together at a trailhead. In some specific locations, the back side of the sign panel may be used for interpretive educational material.
- **Materials:** Posts shall be 2" square black enamel-painted steel posts placed at the heights indicated. Sign panels shall be aluminum blanks with applied UV-resistant vinyl graphics, cut to the shapes indicated in these standards.
- **Post Attachments:** All post attachments shall be as designated in the sign post standard later in this chapter.



**back panel option:
overall system map**

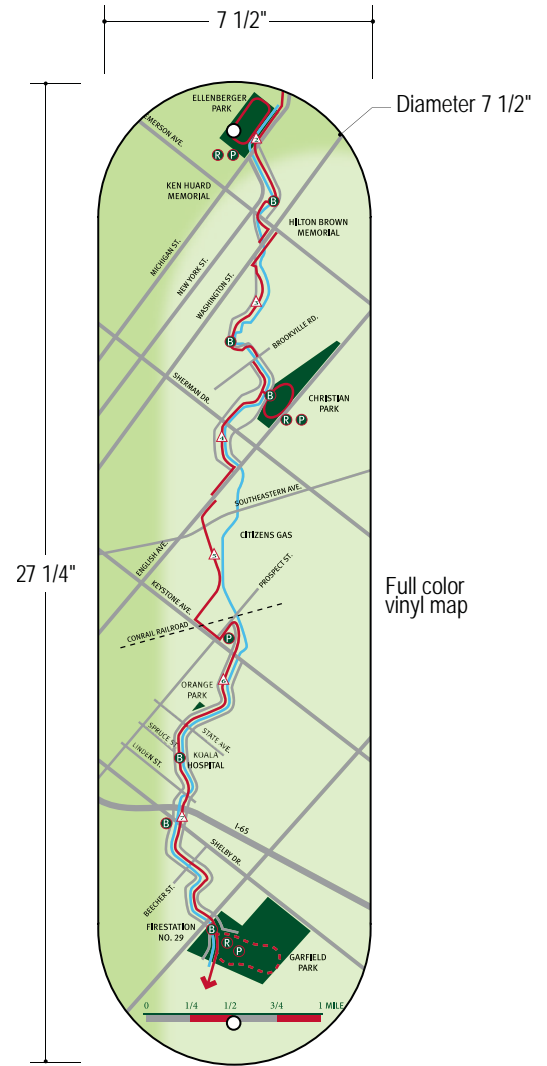
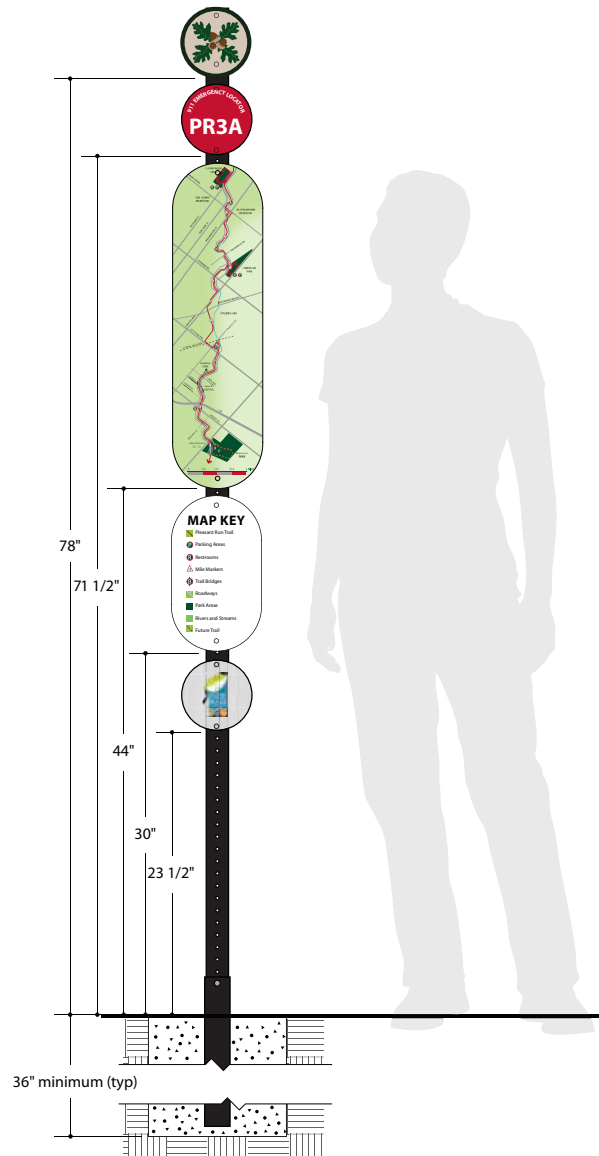


**back panel option:
interpretive**



trailhead signs (continued)



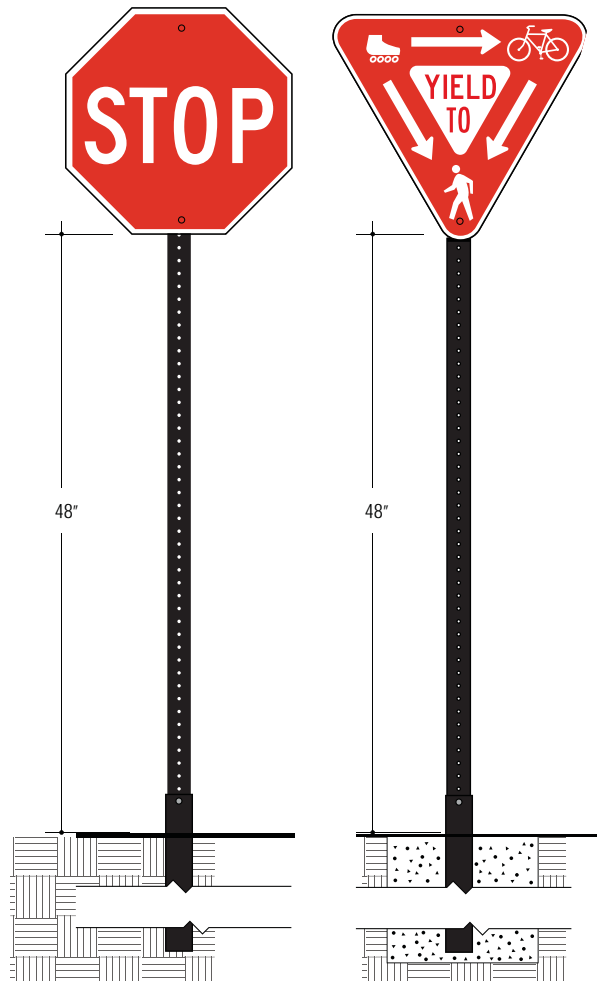


trailside map sign

The trailside map sign is a user-scaled orientation sign and is intended to provide users with greenway information between major trailheads or access points. The signs provide users with a map of the greenway and their location along the greenway.

DESIGN STANDARDS:

- **Placement:** Trailside maps should be placed at major street intersections, neighborhood access points, or other minor public access locations where users enter the greenway, but where the number of users doesn't merit the development of a full trailhead or access point. Signs shall be placed so that the outside edge nearest the trail is 2' minimum and 4' maximum from the edge of trail pavement.
- **Panel Information:** Trailside maps shall include the logo of the particular greenway segment, the Indy Parks logo, a map with key, and the emergency location code.
- **Materials:** Posts shall be 2" square black enamel-painted steel posts placed at the heights indicated. Sign panels shall be aluminum blanks with applied UV-resistant vinyl graphics, cut to the shapes indicated in these standards.
- **Post Attachments:** All post attachments shall be as designated in the sign post standard later in this chapter.



typical regulatory signage

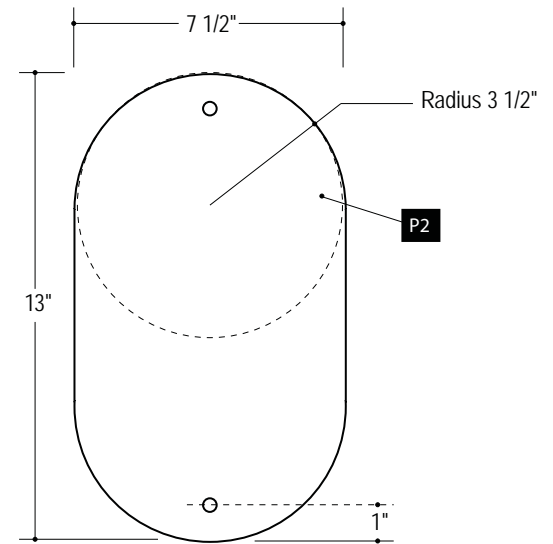
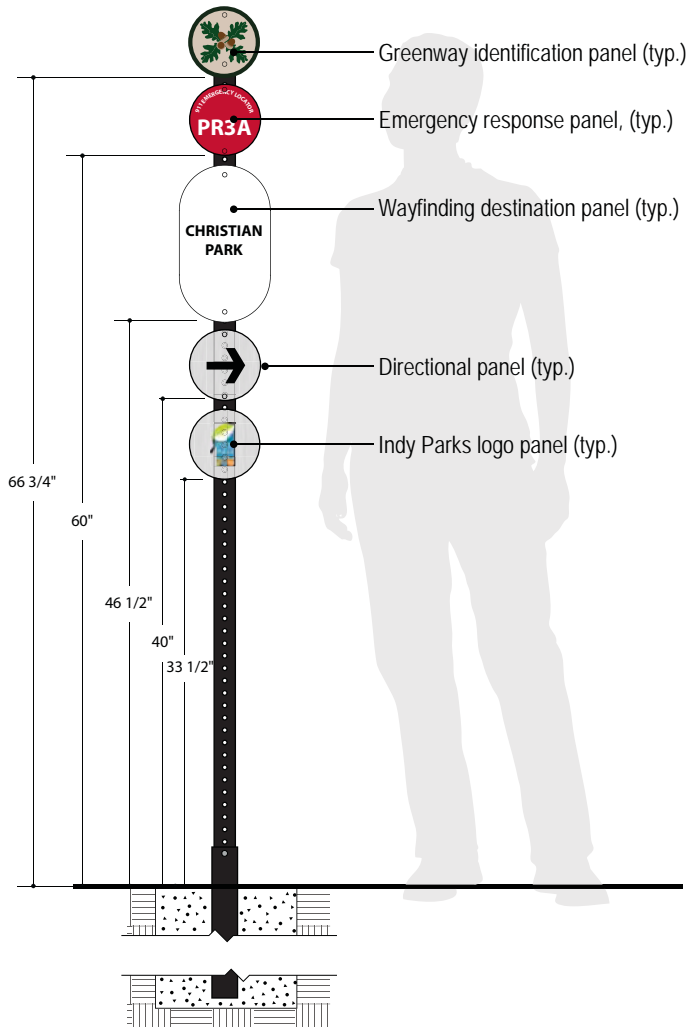


regulatory signs

Regulatory signs along the greenways serve to give direction to users and ensure safe use of the trail. Regulatory signs help to ensure users are made aware of dangerous areas such as intersections and provide cues to what is expected of those using the trail or greenway. Regulatory signs are required to follow the standards of the Manual of Uniform Traffic Devices (MUTCD) on all federally-funded trail projects. Indy Greenways has established a system of regulatory signage that will comply with all MUTCD requirements. This section provides those guidelines.

DESIGN STANDARDS:

- **Design Criteria:** All regulatory signage shall comply with the MUTCD-required sizes, heights, and placement along the greenways.
- **Materials:** Posts shall be 2" square black enamel-painted steel posts placed at the heights indicated. Sign panels shall be aluminum blanks with applied UV-resistant vinyl graphics, cut to the shapes indicated in these standards.
- **Placement:** Signs shall be placed a minimum of 2' and a maximum of 4' from the edge of trail pavement. The distance shall be calculated from the closest edge of the sign panel.
- **Sign Height:** The bottom of the sign panel shall be a minimum of 4' and a maximum of 5' above the adjacent trail surface. Greater heights are not permitted to eliminate confusion with vehicular signage.
- **Sign Panel Information:** Regulatory sign panels, shapes, and sizes shall be consistent with the MUTCD Traffic Controls for Bicycle Facilities standards to ensure consistent recognition of the signage throughout the system. Variances from these requirements are not permitted.
- **Post Attachments:** All post attachments shall be as designated in the sign post standard later in this chapter.



directional signs

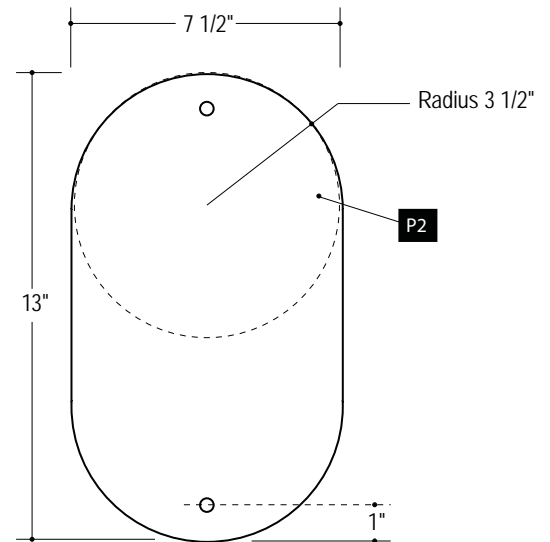
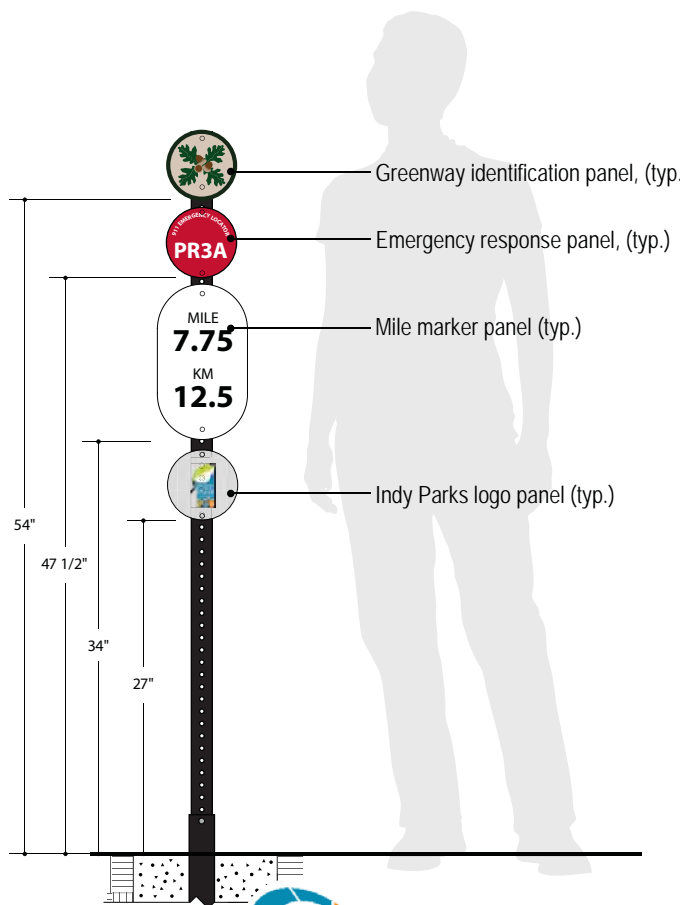
Directional signs are provided throughout the greenways system to provide orientation, wayfinding, and to communicate directions to potential destinations.

DESIGN STANDARDS:

- **Placement:** Directional signs should be placed at key decision points along the greenway to provide directional information for users to reach key destinations. Signs shall be placed so that the outside edge nearest the trail is 2' minimum and 4' maximum from the edge of trail pavement.
- **Sign Panels:** Directional signs shall include the logo of the particular greenway segment, the Indy Parks logo, a panel that identifies the destination being highlighted, a directional arrow, and the emergency location code.
- **Destinations:** Destinations shall include only public-owned destinations such as parks, community centers, libraries, schools, cultural districts, or other facilities that are open to the public. Sign panel may include restroom symbols to indicate facilities where there are public restroom facilities. No commercial enterprises or advertising is permitted on the destination signs.
- **Materials:** Posts shall be 2" square black enamel-painted steel posts placed at heights indicated. Sign panels shall be aluminum blanks with applied vinyl graphics, cut to the shapes indicated in these standards.
- **Post Attachments:** All post attachments shall be as designated in the sign post standard later in this chapter.

POLICY STATEMENTS:

- Directional information shall address only publicly-owned destinations such as parks, community centers, or other facilities. Sign panel may include restroom symbols to indicate facilities where public restrooms are available. No commercial enterprises or advertising is permitted on the destination signs.

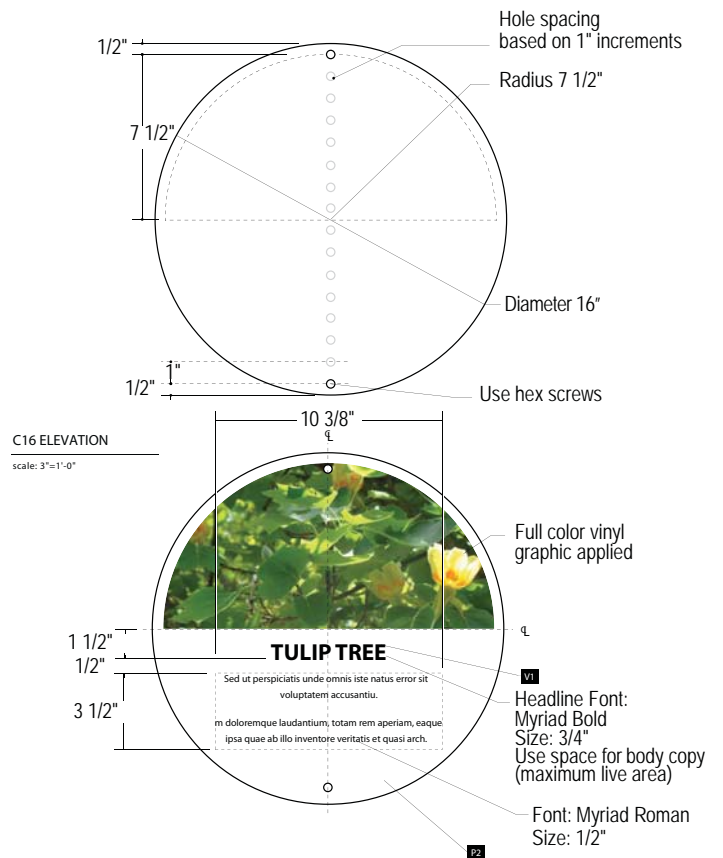
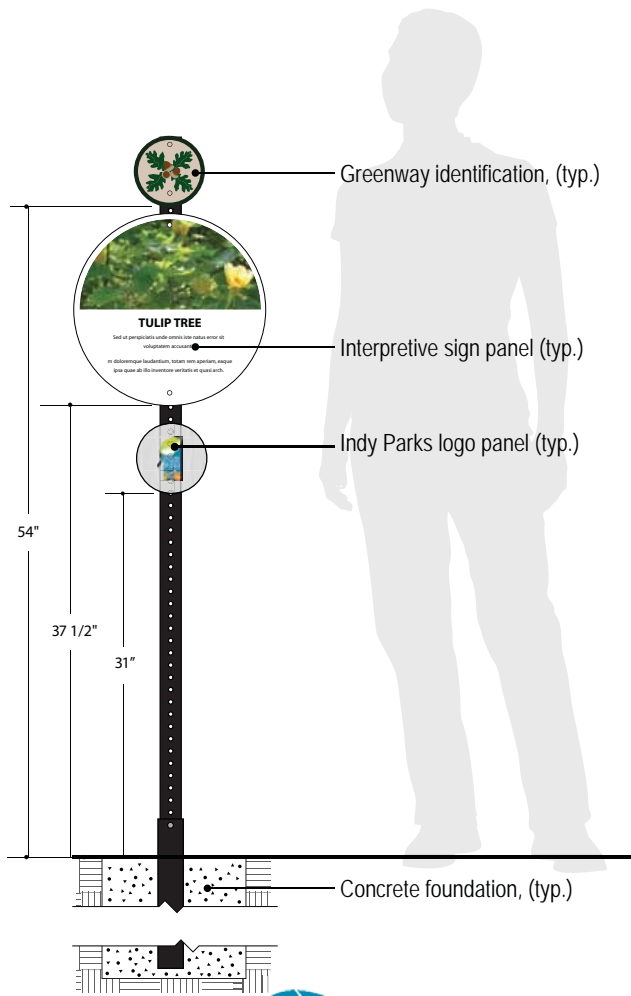


mile markers

Mile marker signs are used to assist users with identifying distances, locations, and to calculate their use. The mile markers also assist emergency responders by providing more precise geographic information for each greenway segment. Each greenway is calculated separately and some existing greenways have multiple systems in place. These standards describe not only a new physical design standard, but also a new methodology of distance calculation along the greenways.

DESIGN STANDARDS:

- Distance Calculations:** Distance and mileage shall be calculated individually for each greenway. Distances shall be calculated in quarter miles. For trails running from downtown, distance calculations should begin at the downtown end of the trail and calculate outward. For segments that run east and west or north and south around the city and do not go towards the downtown, distance calculations should begin at one end and run consecutively in one direction. The final decision of where to begin the distance calculation on these segments shall be approved by Indy Parks.
- Distance Calculations for the Circle:** Although each greenway segment is calculated individually and the Circle is not sequentially marked in its entirety, it is important that the distances run in the same direction as users navigate the circle. For this reason, distances around the circle are calculated counterclockwise around the circle:
 - Northern circle: (Grassy Creek, Northtown Trail)- numbered east to west
 - Western circle: (Eagle Creek, White Lick Creek)- numbered north to south
 - Southern circle: (Southwest Trail, Little Buck Creek)- numbered west to east
 - Eastern circle: (Buck Creek, Grassy Creek)- numbered south to north.
- Placement:** Mile marker signs shall be located at every quarter mile. Signs shall be placed so that the outside edge nearest the trail is 2' minimum and 4' maximum from the edge of trail pavement. Mile marker signs shall be placed in highly visible areas with sign panel parallel to trail (to be read from trail).
- Sign Panels:** Mile marker signs shall include the logo of the particular greenway segment, the Indy Parks logo, a panel that identifies the distance in both miles and kilometers, and the emergency location code.
- Materials:** Posts shall be 2" square black enamel-painted steel posts placed at the heights indicated. Sign panels shall be aluminum blanks with applied UV-resistant vinyl graphics, cut to the shapes indicated in these standards.
- Post Attachments:** All post attachments shall be as designated in the sign post standard later in this chapter.



interpretive sign

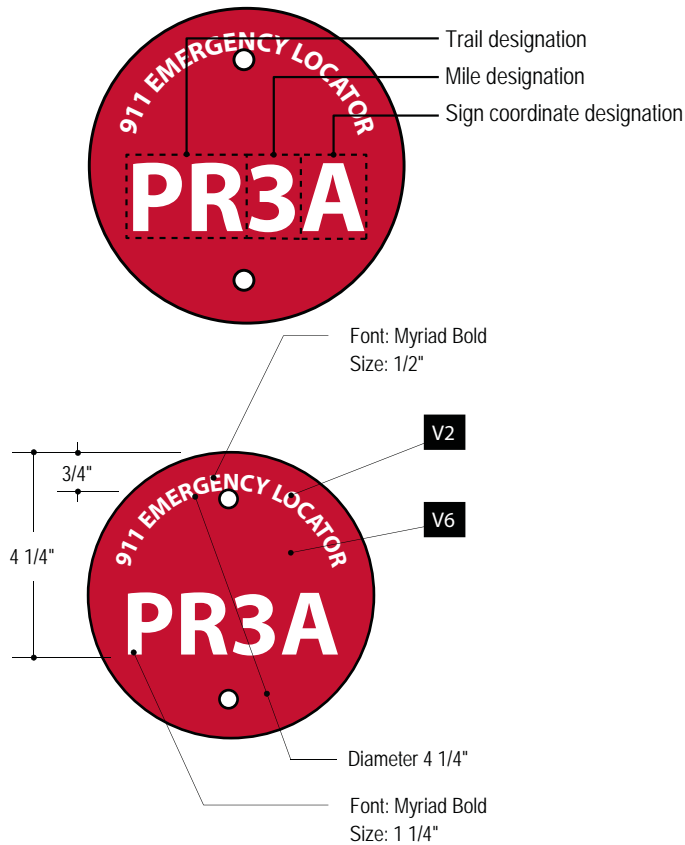
Interpretive signs shall be used along Indy Greenways to highlight significant natural, cultural, environmental, historical, or distinctive features.

DESIGN STANDARDS:

- **Placement:** Interpretive signs may contain general information concerning the greenway or can provide explanation about specific features along the greenway. When signs are general in nature, they should be included into the design of trailheads, access points, rest areas, overlooks, or other areas along the greenway. If the information concerns a specific location or feature along the greenway, the signs shall be placed within sight of the feature. No portion of the sign or post shall be placed within 2' of the edge of the trail pavement. Ground surface shall be paved under signs to ensure that the signs are accessible.
- **Sign Panels:** Interpretive signs shall include the logo of the particular greenway segment, the Indy Parks logo, the interpretive images and text, and may include the emergency location code.
- **Orientation:** Sign panel shall be oriented to be read from the greenway.
- **Sign content:** All content shall be informational and educational in content. No commercial enterprises or advertising is permitted on the interpretive signs. Should financing for signs be provided by a private entity, the sign may include a reference such as "funding for this interpretive sign provided by ____ (company name) ____" but no further advertising or promotion may be included on the signs.
- **Materials:** Posts shall be 2" square black enamel-painted steel posts placed at the heights indicated. Sign panels shall be aluminum blanks with applied vinyl graphics, cut to the shapes indicated in these standards.
- **Post Attachments:** All post attachments shall be as designated in the sign post standard later in this chapter.

POLICY STATEMENTS:

- Indy Greenways shall include an educational component through the use of interpretive signage.
- All content shall be informational and educational in content. No commercial enterprises or advertising is permitted on the interpretive signs.



Code	Greenway Name
BC	Buck Creek Greenway
BO	B & O Trail
CT	Central Canal Towpath
EC	Eagle Creek Greenway
EI	86/82nd St. Connector
FC	Fall Creek Greenway
GC	Grassy Creek Greenway
IT	Interurban Trail
LB	Little Buck Creek Greenway
LC	Lick Creek Greenway
MP	Monon Pogues Connector
MT	Monon Trail
NT	Northtown Trail
PE	Pennsy Trail
PO	Pogues Run Greenway
PR	Pleasant Run Greenway
SE	Southeast Trail
SW	Southwest Trail
VT	Vandalia Trail
WR	White River Greenway

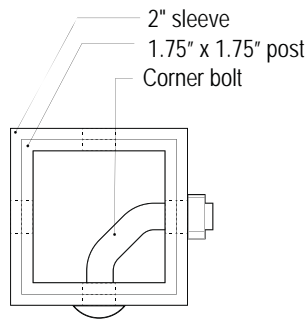


emergency location system

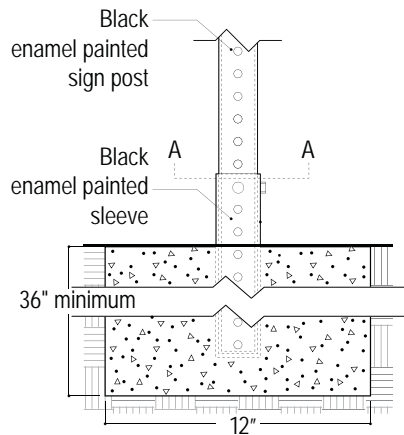
An emergency location system has been developed as part of the new signage standards with the purpose of assisting emergency responders and maintenance crews in locating precise locations along the greenways. Each sign along the greenway that includes a red “emergency locator” panel that be georeferenced to provide precise GPS coordinates for each location. Placed across the system, this new sign will be highly visible and will provide detailed information for local emergency responders.

DESIGN STANDARDS:

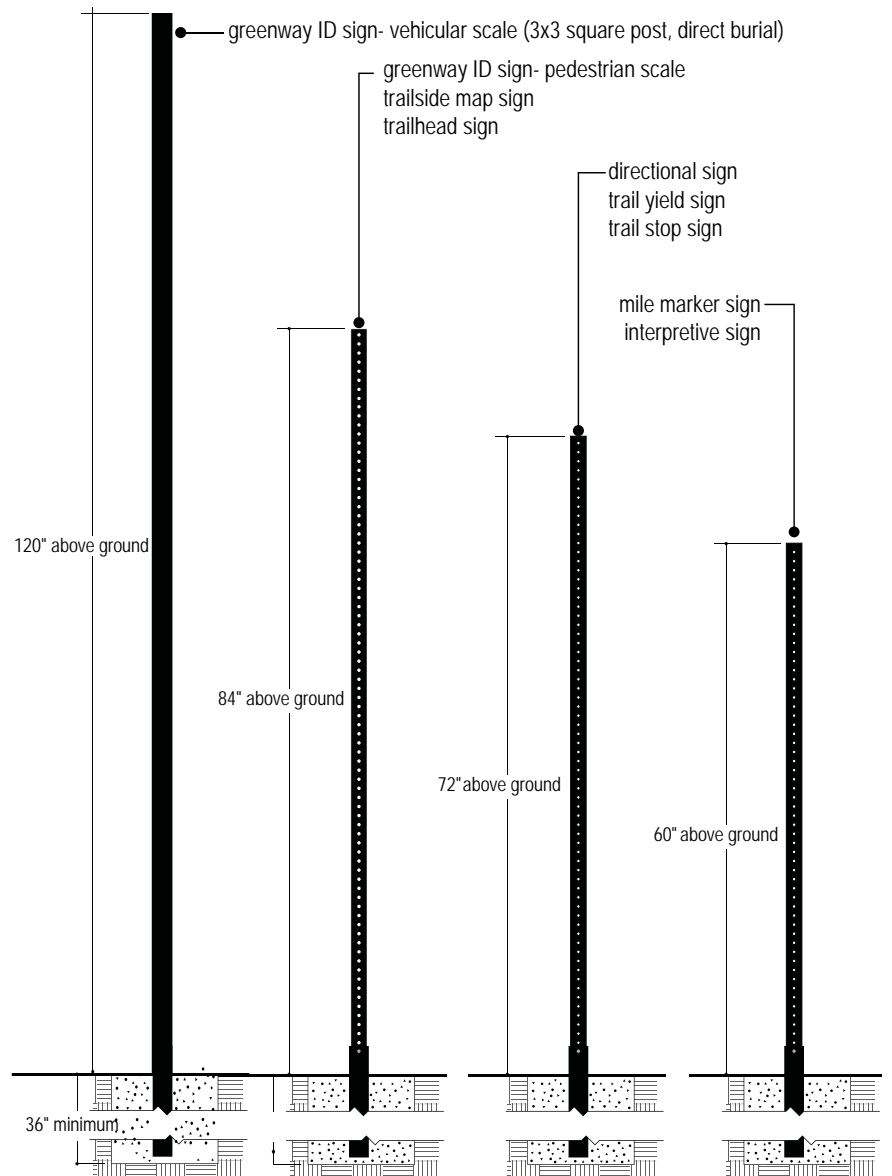
- **Placement:** Emergency location system signs can be placed on every sign along the greenway except for regulatory signs and the vehicular identification signs. This will result in a minimum of four of these sign panels per mile of trail given that mile markers will be installed every quarter mile.
- **Graphic Information:** Each sign panel will include a code. The first two letters of the code refer to the specific greenway. A list of greenway codes is included above. The number following the greenway code references the trail mile. The final character references the sign coordinate designation. Sign coordinate designations should be coded alphabetically in sequential order in the same direction as the mile marker calculations.
- All sign coordinates shall be coordinated and recorded with the appropriated emergency response agencies prior to placement. No signs shall be installed until approved and georeferenced by emergency dispatchers and Indy Parks. Indy Parks shall be responsible for all coordination and recording of emergency location codes.
- All final sign panel designs should be approved by Indy Parks prior to installation.
- **Placement:** Panels shall be placed onto sign posts as indicated in the Panel Sign System standard of this document.
- **Materials:** Sign panels shall be aluminum blanks with applied UV-resistant vinyl graphics, cut to the shapes indicated in these standards.
- **Post Attachments:** All post attachments shall be as designated in the sign post standard later in this chapter.



sleeve connection



footing interface



post heights



sign posts

Sign posts shall be consistent across the Indy Greenways system. Post types shown have been chosen to simplify installation, maintenance and replacement of signs throughout the system.

DESIGN STANDARDS:

- **Materials:** Vehicular scaled Greenway ID signs shall utilize a 3.0"x 3.0" square aluminum breakaway compliant, black-painted post. All other greenway signage shall utilize a 2.0" square, black enamel-painted post. Vinyl coatings shall be UV-resistant.
- **Footings:** Footings shall be a minimum of 12" width and 36" depth. Embedment sleeves shall be used in all 2" post applications to facilitate simple replacement or removal of sign posts. 3" square posts used on the Vehicular-scaled Greenway ID signs shall be installed in a direct burial method.



5. sustainable practices

World-class cities are sustainable cities. While once just an industry buzzword, the most successful cities have come to understand and put in place practices that lead to more sound environmental solutions that have a huge impact on quality of life in their communities. Indianapolis is no exception. In 2008, the city created the Office of Sustainability and the SustainIndy initiative that is now having an impact on every aspect of life in Indianapolis. The concept of sustainability is not just a single treatment or application. True sustainability encompasses a broader understanding of the many factors that improve quality of life in a community. Today, in Indianapolis, sustainability is embedded into the planning and decision-making process on every project. It has resulted in new management techniques to our city's environmental issues, and it has reshaped the way we are constructing projects in the City. The city has made sustainable practices a consideration in everything they do whether it is stormwater management, energy conservation, recycling, land use decisions, green infrastructure, new bike lanes, or new street construction. In a broader sense, a wider range of options are brought to the table during all levels of project implementation with the singular goal of improving the quality of life in Indianapolis, and this greenways master plan has the potential of expanding on the city's efforts in this area.

Because of the size of the greenway system in Indianapolis and because of the numerous different environments through which the greenways will pass, it is difficult to set a precise standard that can be applied across the system. However, there are several sustainable practices that should be considered throughout the system as it continues to be developed.

Storm water planters along the Cultural Trail.



Native prairie plantings along Eagle Creek Greenway.



Use of boardwalks through sensitive areas.



SUSTAINABLE PRACTICES ALONG THE GREENWAY

Project Planning and Coordination

Many segments of the Indy Greenways system occur in areas where other city projects are underway or planned. These areas of overlaps include future street projects and CSO projects. In all of these projects, planning efforts should be coordinated so that greenway routes and facilities are appropriately incorporated into these other planning efforts as a means of maximizing resources.

Connectivity

The greenways provide not only recreation, but also an alternative means of transportation in the community. Efforts should be made to incorporate the greenways into other infrastructure projects and to provide key connections to adjoining neighborhoods, commercial centers, bicycle facilities, and transit.

Preservation of Cultural Resources

The greenways also should be sustainable in that they protect and preserve the city's cultural resources. From the historic Kessler Parkways, to built cultural resources such as the Taggart Memorial in Riverside Park, the greenways should help to protect and connect users to these significant sites.

Native Landscape Restoration & Meadows

Greenway corridors should seek to utilize native plant material whenever possible. In situations where native plant material cannot meet the desired design requirement, adapted non-native plant material may be used as long as it is not deemed invasive.

Natural greenway corridors shall seek to maximize native meadow plantings where possible. Lawn should be limited to the 10'-0" maintained zone adjacent to the greenway, areas where natural greenway corridors travel through or adjacent to a park, street corridors where visibility or aesthetics are a primary concern, historic greenway properties where lawn areas are part of the original design intent or other areas where native meadows may not be compatible with adjacent development. Other greenway corridor types including standard, suburban, urban and active rail are not subject to limits on the application of lawn due to their more urban context.

Storm Water Management / Green Infrastructure

To the greatest extent possible, the Indy Greenways system shall seek to minimize the amount of runoff created from its facilities. In addition, where runoff is created, it should be treated and infiltrated back into the ground as close to the source as possible. Strategies such as rain gardens, bioswales and vegetated buffers are just a few of the ways the Indy Greenway system can efficiently and responsibly manage storm water.

Water Conservation

Seek ways to conserve and limit water use along the greenways. Employ low-flow toilets and faucets in all new restroom facilities. Ensure that drinking fountains along the greenways are low-flow and are properly serviced throughout their lifecycle.

Energy Conservation

Design solutions in the Indy Greenways system should seek to implement energy conservation where feasible. Examples could include:

- Use of sensors such as photocells to control lighting for restrooms and any potential parking lot lighting at trailheads.
- Use of energy efficient fixtures for lighting.
- Use of solar-powered enhancements along the greenways.
- Use of native meadows in place of lawn where appropriate to minimize maintenance

Erosion Control and Stream Bank Stabilization

Many greenway corridors follow streams and waterways in the Indy Greenway system. While this provides an excellent greenway experience for users, special design considerations need to be taken to ensure water quality and riparian habitat are not compromised. When designing in riparian corridors, greenways should be set back far enough from stream banks to allow proper filtration of trail runoff. Buffer plantings, such as native meadows, help improve removal of pollutants and infiltrate runoff from the trail. In some scenarios, pervious trail surfaces such as crushed gravel fines, should be used to further decrease the amount of runoff generated by the trail. Innovative materials such as pervious asphalt or pervious concrete should be considered in the future. When considering paving surfaces other than traditional asphalt or concrete, careful consideration needs to be given the durability and on-going maintenance requirements of the chosen paving treatment.

Preservation of Habitat

In many areas, the greenways will pass through wildlife habitats. In these areas, trail construction activities should be used that minimizes disturbance to the habitat. Trail construction should not occur where it is known that sensitive habitat exists. Where feasible, ecological restoration and programatic elements should be introduced that will encourage and improve upon the habitat.

Sustainable Amenities

There is the opportunity to use sustainable amenities along the greenways. An example is the “Big Belly” trash compactors. These compactors are solar powered and more than double the amount of trash that can be collected at any given location. The compactor allows the container to hold more refuse, reducing the number of times it has to be emptied each week. Sustainability should be examined in all of the amenities included along the greenways.

Recycling

Users should be encouraged to recycle through provision of recycling stations at trailheads and major access points. While recycling pickup is not currently offered at all greenway or park facilities, efforts should continue to attempt to expand the recycling program within the Indy Greenways system.

CREATING A MORE SUSTAINABLE GREENWAY SYSTEM

Indy Greenways are a part of creating a more sustainable city and efforts should be made to employ the environmental best practices throughout the system. Efforts should be coordinated through the Department of Public Works Land Stewardship division and the Office of Sustainability to make sure that appropriate efforts are being included on all new greenway development in Indianapolis.



Bat box along the Fall Creek Greenway.



Recycling containers along the Cultural Trail.



“Big Belly” solar-powered trash compactor.





6. blueway standards

The concept of formal “blueways” is new to the Indianapolis Park system. Several of Indianapolis’ waterways are used for recreational purposes and Indy Parks has even recognized the importance of water access with the design of access points and formal canoe launches in several of its parks and greenways, although a formal blueways plan has never been completed for the city.

Water recreation and transport, however, is not new. Originally, planners for the city envisioned the White River becoming a major hub of trade for the new city, but that vision never materialized largely due to the river’s lack of depth and sandy bottom. Mostly, the city’s waterways have had limited and localized use. In most cases, the waterways have served more utility purposes and the city is only starting to realize the importance of reconnecting to the waterways.

There are recreational users for some of the waterways, but the use has been limited by several factors in the city:

- **Limits on navigability-** Water depths and flow are limited in the topography resulting in low flows or the use of dams along some waterways, interrupting any continual user experience. Some channels provide needed depths for navigation only during seasonal events.
- **Storm water runoff-** Past storm-water practices have led to greater non-point source pollution with man-made contaminants and chemicals being introduced to the waterways.
- **Combined Sewer Overflows-** Historically, several waterways were used for sewer discharge, and while some of those conditions have been changed, there are still some combined sewer overflow discharges in some of the streams during rain events. Warnings are posted along several of the waterways to limit contact and not to eat fish caught from the waterway.
- **Property Ownership-** Property ownership of and along the river, and whether the definition of river or stream can be classified as “navigable” also has imposed limits on the use of some waterways.

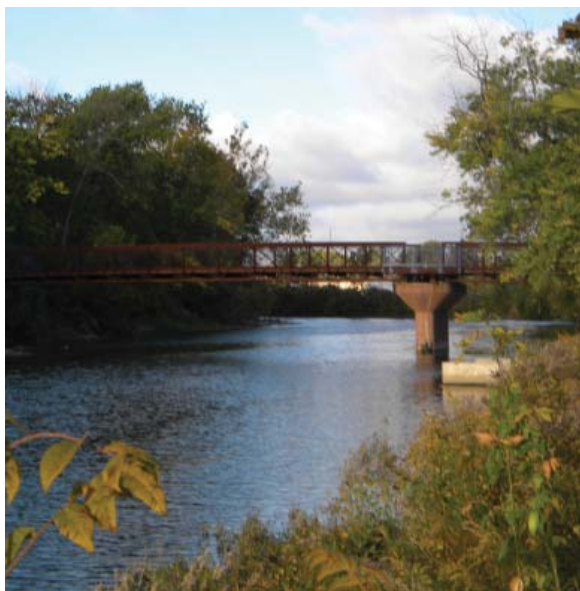
White River Greenway.



White River.



Fall Creek.



However there is a resurgence of understanding about the importance of the waterways that is occurring in Indianapolis. More sustainable storm water management processes, removal of CSOs, and other steps are being taken to once again connect the city to its waterways and that includes resurgence in water-based recreation.

Recognizing that many of Indy Greenways run parallel or connect to these waterways, this master plan seeks to identify potential connections and to further the recreational possibilities associated with the waterways and their connections with Indy Greenways.

INDIANAPOLIS' BLUEWAYS

So what exactly is a blueway? A blueway is simply a water route used for recreational purposes such as canoeing, paddle boarding or kayaking. Blueways are typically designated by some sort of oversight group whether it is a local, state or national organization. Ideally, blueway routes include special access enhancements, points of interest, or other types of facilities that can be used by those on the blueway. Blueways also have huge potential in terms of ecological and environmental preservation and education.

There currently is not a blueways plan for the city of Indianapolis, and there are no formal blueway designations used in the city. Primarily, users are dependent on organizations such as the National Organization of Rivers or Friends of the White River, local sources such as *FallCreekIndiana.com*, or commercial outfitters such as *Indianaoutfitters.com* for information regarding recreational opportunities on local rivers and streams.

While many of the waterways in the city have some portions that can be used for water recreation, there are generally two identified and recognized blueways active in the city: the White River and Fall Creek. Both of these waterways have limitations, but both provide some length in use.

White River. The White River, the city's largest natural waterway, is generally broke up by several dams through the city, requiring several portages. Most of these portages are designated and some are managed and controlled by Indy Parks. Three major segments are included within Marion County:

- County line to Broad Ripple Park
- Broad Ripple to Riverside Park
- Riverside Park to Henderson Ford Bridge

Several portages are required throughout the stretch of the river to navigate around dams and other obstructions. Formal Indy Parks' access points currently exist at Broad Ripple Park, Riverside Park, and Southwestway Park. Only Riverside Park (Lake Indy) and Broad Ripple Park have parking and other access point facilities.

Fall Creek. Fall Creek is limited on the north by Geist Reservoir and to the south at Keystone Avenue. Between these termini, though, Fall Creek offers recreational opportunities, and since the Fall Creek Greenway parallels this waterway, Indy Parks has constructed a series of access points to encourage recreational use. Formal Indy Parks' access points/canoe launches exist at Fall Creek Corridor Park at Fall Creek Road and the Fall Creek Trailhead at Keystone Avenue. While additional put-in areas are identified along the route, these two locations are the only formal trailheads with constructed launch facilities on the creek.



NEEDED STANDARDS FOR BLUEWAYS

In the absence of a designated master plan for Indy’s blueways, this chapter is intended to outline the development of blueway facilities as they relate to or interface with the Indy Greenway system. Because many of the greenways parallel these waterways, the standards and design for these facilities should be consistent with the character and requirements of the greenway system. These standards provide some of the basic guidelines to give direction to how the blueways can be better integrated with the greenway system.

Access Points

Access points should be carefully considered along each blueway. Access points should be located at key trailheads and areas where

it is safe for users to enter the waterway. When possible, the access points should coincide with areas of portage. Each access point should include the following amenities:

- Parking facilities.
- Universally accessible route between parking and launch area .
- Constructed launch area including paved areas at launch for ADA accessibility.
- Informational signage illustrating the blueway, the user’s current location, and location of up and downstream facilities. Signage should indicate direction and mileage and should also note where expected portages occur.
- Restroom facilities.

Fisherman along Fall Creek.



White River Blueway access point.



Portage location along White River.



Portages

Portages should be clearly marked from the water body and signage should occur at the location of the portage. Portage should be on public-owned property if possible, and should be accessible for all users. Additional signage can be included at the portage to describe the obstruction in the waterway from an educational standpoint. Re-entry points should be clearly marked.

Distances and Wayfinding

Typical rivers and streams use “river miles” designations to measure the length of navigable streams and rivers. The mile numbers typically begin with zero at the mouth of the waterway and increase with each mile traveled upstream. This designation allows users to locate places along the river. Currently, both the White River and Fall Creek have river mile designations, but neither are marked along their courses. The other method of wayfinding then is to make sure users have information on where their location is in relation to the surrounding areas. By providing navigational clues, users can pinpoint their location within the watershed.

Navigational aids should include:

- Identification of trailheads and access points
- Identification on bridge structures
- Identification of permanent portages

BLUEWAY RECOMMENDATIONS

As of the writing of this report, Indianapolis does not have an official blueway designation, system, or program in place. Most of the information that exists or guides recreational users comes from independent sources such as local outfitters, water recreation organizations, or the department of natural resources. The guidelines developed here are intended solely to develop design standards in locations where the blueways connect to, or interface with, the Indy Greenways system.

Further evaluation and discussion is required to determine whether the city should undertake a specific blueways program. Part of that decision includes determination of who will oversee development, operation, and maintenance of the system. That determination ultimately might provide recommendations that will supersede the guidelines identified here.

Blueway recommendations include:

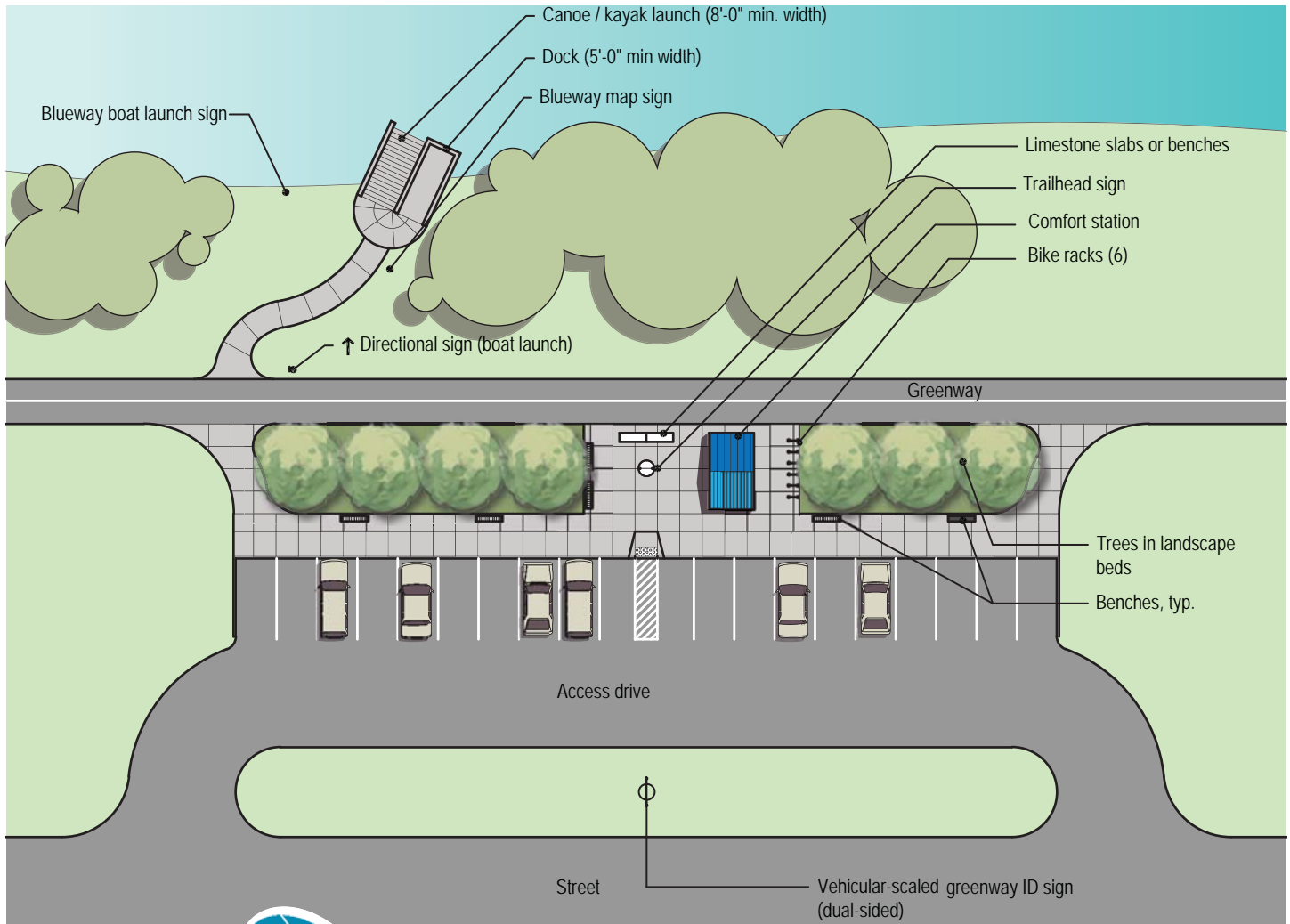
1. Indy Parks and the City of Indianapolis should identify whether to initiate a blueways system and identify oversight, operation, management, and maintenance responsibilities of the system.
2. Create a Blueways Master Plan to identify existing and future blueways, design standards, and implementation of recommendations. Coordinate with Citizen’s Energy Group, DPW Stormwater Engineering and the Marion County Health Department on this plan.
3. Complete scoping studies for individual blueway segments identified in the master plan.

BLUEWAY STANDARDS

The following design standards are being incorporated into the Indy Greenways Master Plan:

- Blueway Access Points
- Portages
- Blueway Informational Signage
- Blueway Portage Signs
- Blueway Wayfinding and Distances
- Blueway Warning signage

Specific design standards are included on the following pages.



blueway access points

Blueway access points include constructed areas where canoeist, kayakers, fisherman, or other recreational users have formal access to blueways. The access points in this section refers only to those access areas that are located within the Indy Greenways system.

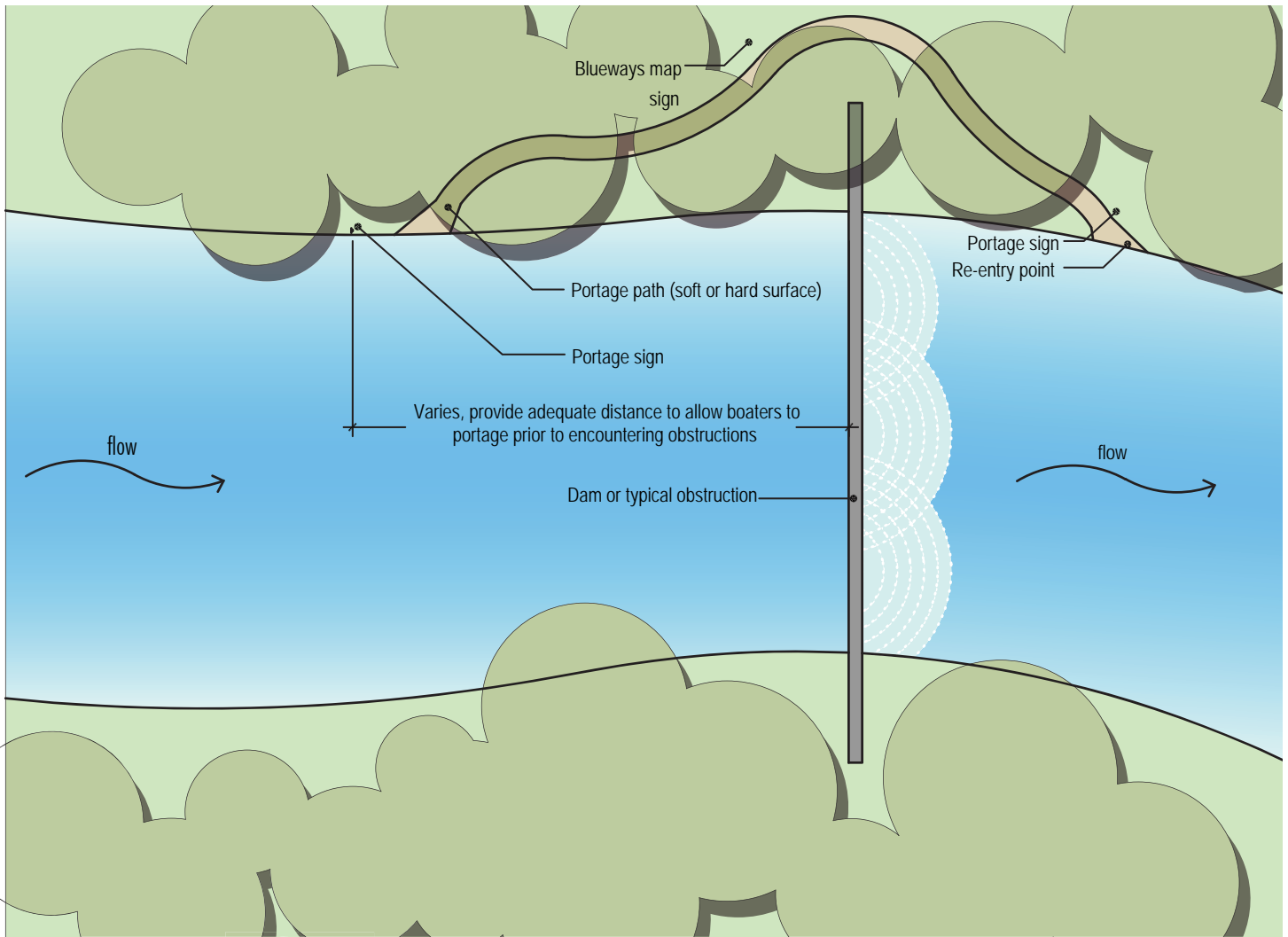
DESIGN STANDARDS:

For Indy Greenways, blueway access points should include the following:

- Blueway access points should be clearly marked and should be developed every five miles unless conditions warrant a different spacing. Where feasible, constructed access points should be combined with trailheads along the greenway.
- Blueway access points should include parking areas.
- All blueway access point facilities shall be ADA-accessible.
- Blueway access points shall include an ADA-accessible path between parking facilities and the constructed shoreline access point or canoe launch.
- Because requirements may vary depending upon the water course, the design requirements of canoe and kayak launches may vary.
- Blueway access points should include informational signage that illustrates the blueway course, location of up and downstream facilities, distance and mileage, and should also note where expected portages occur.
- Blueway access points should be clearly marked for users in the waterway, as outlined in this section.
- Where feasible, restroom facilities should be included at blueway access points.



Fall Creek Blueway access point.



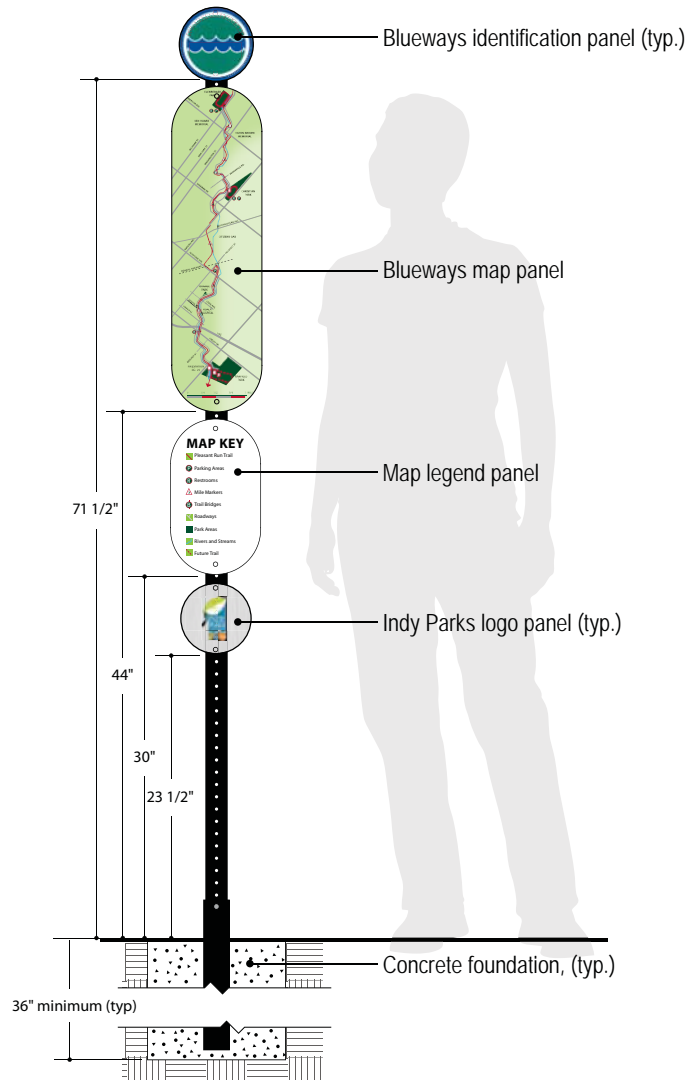
portages on park property

Portages are locations where recreational users must exit and re-enter the water course to traverse some obstruction in the water. These obstructions could include dams, navigational hazards, debris, or other types of hazards. The condition of specific portages makes it difficult to identify specific design standards. Shoreline grade, depth, steepness, vegetation and other natural conditions are unique to specific portages. These guidelines provide a means for providing identification of portage areas that within a greenway.

DESIGN STANDARDS:

For Indy Greenways, blueway portages should include the following:

- Where feasible, portages shall be accessible. If specific conditions limit accessible design, all efforts should be made to include design features that will assist in the use of the portage.
- Portages should be identified on all blueway map signage as well as signage placed along the water course. Signs shall be of sufficient scale and height to be visible for users on the water.
- Portage signage should include the river mile location of the portage, and that river mile designation should be included on the overall blueway map sign.
- Portage signs shall be placed at both the point of egress and ingress of the water to clearly identify to users where they should enter and leave the water.
- All portages shall include a map sign that clearly indicates the user's location within the blueway.
- If there is a connection between the portage and one of the greenway trails, the standard Indy Greenways directional signage shall be used.



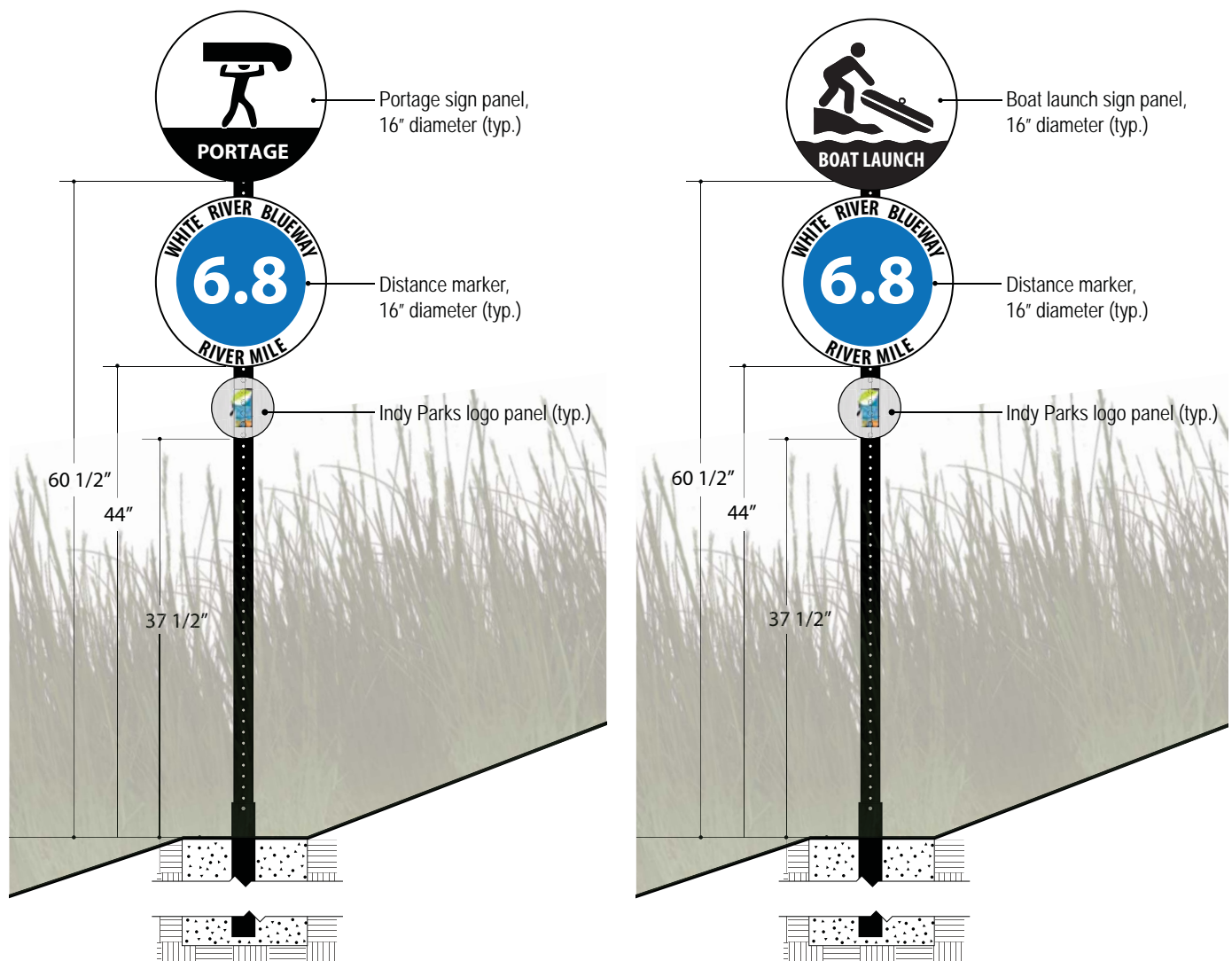
blueway informational signs

Blueway informational signs are the blueway equivalent of the trailside map signs along the greenway. These signs are intended to provide users of the blueways with information about the route, access points, portages, and other destinations along the water course.

DESIGN STANDARDS:

For Indy Greenways, blueway informational sign standards should include the following:

- **Placement:** Blueway informational signs shall be placed at all blueway access points and portages. At blueway access points (greenway trailheads), the blueway informational sign shall be placed at the actual launch area for the blueway. At portages, the blueways informational sign shall be placed on the shore between the egress and ingress points of the portage.
- **Sign Panel Information:** Blueway informational signs shall include the logo of the particular greenway segment, the Indy Parks logo and a map with key.
- **Materials:** Posts shall be 2" square black enamel-painted steel posts placed at the heights indicated. Sign panels shall be aluminum blanks with applied UV-resistant vinyl graphics, cut to the shapes indicated in these standards.
- **Post Attachments:** All post attachments shall be as designated in the sign post standard earlier in this chapter.



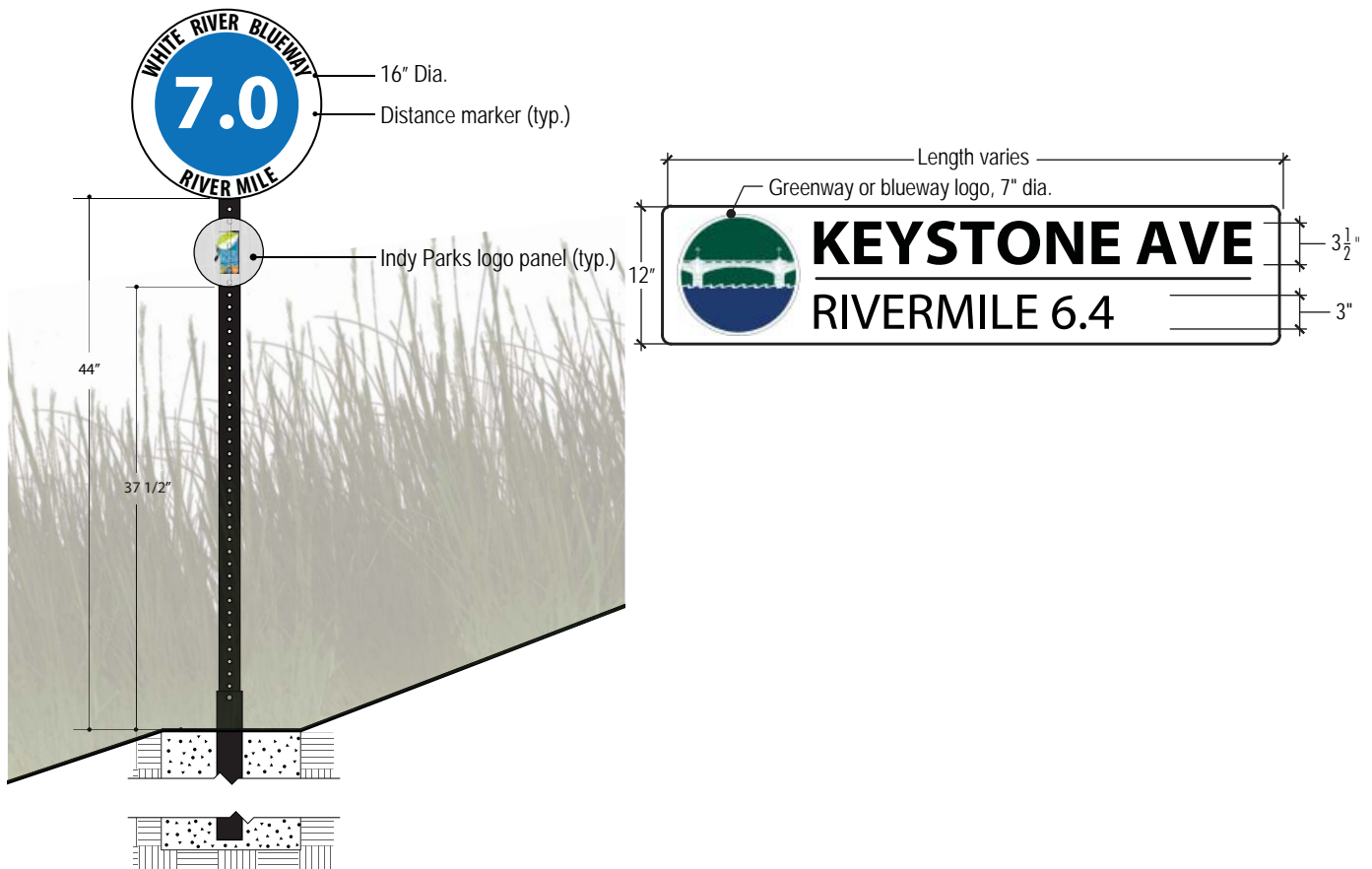
portage & boat launch signs

Blueway portage and boat launch signs are used to mark the ingress and egress locations along the blueways.

DESIGN STANDARDS:

For Indy Greenways, blueway portage sign standards should include the following:

- **Placement:** Blueway portage signs shall be placed at all ingress and egress locations at a portage. Signs shall be placed along the shore line no closer than 3' from the edge of normal water pool elevation and shall face the water. Boat Launch signs shall be placed at each boat launch to identify boat launch areas. Boat launch signs shall be two-sided to be read from both the water and the land.
- **Sign Panel Information:** Blueway portage signs shall include the logo of the particular greenway segment, the Indy Parks logo, and a map with key.
- **Materials:** Posts shall be 2" square black enamel-painted steel posts placed at the heights indicated. Sign panels shall be aluminum blanks with applied UV-resistant vinyl graphics, cut to the shapes indicated in these standards.
- **Post Attachments:** All post attachments shall be as designated in the sign post standard earlier in this chapter.



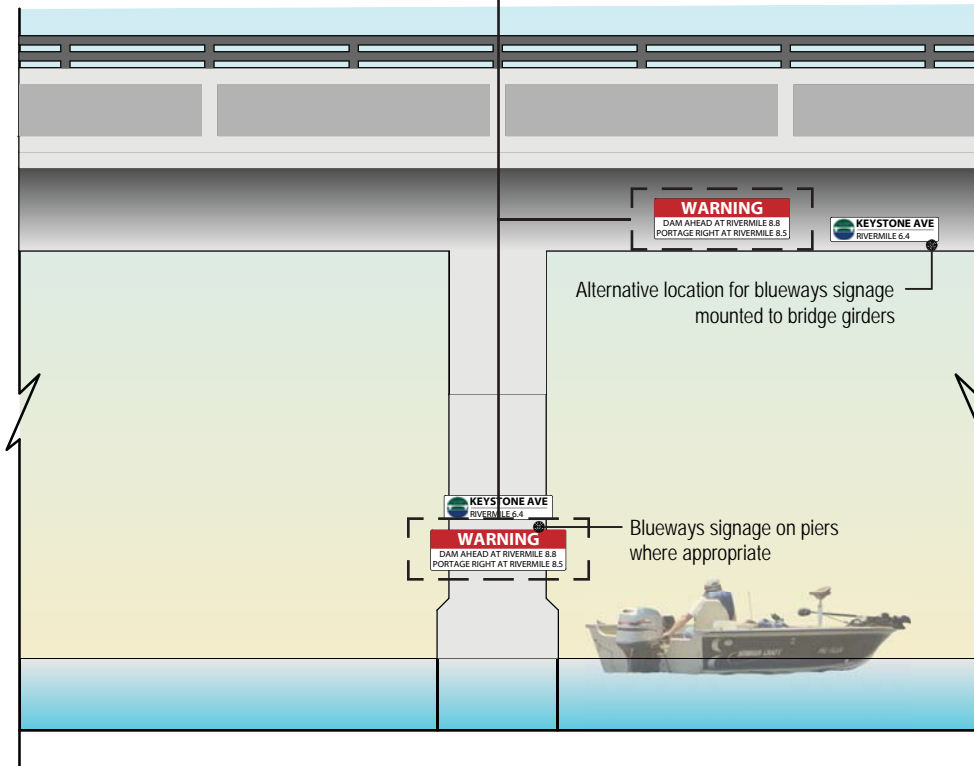
blueway wayfinding & distances

Signage has been developed to assist blueway users with navigation along the blueways.

DESIGN STANDARDS:

For Indy Greenways, blueway wayfinding signs include the following:

- **Distant Calculation:** All distance calculations shall be done in river mile designations as measured from it's downstream confluence.
- **Placement:** Mile marker signs shall be placed at every full mile along the water course. Mile marker signs shall also be placed at each access point and at each portage. Mile marker signs shall be placed on the shore line no closer than 3' from the edge of normal water pool elevation and shall be two-sided to be read from both directions.
- **Mile marker sign materials:** Posts shall be 2" square black enamel-painted steel posts placed at the heights indicated. Sign panels shall be aluminum blanks with applied UV-resistant vinyl graphics, cut to the shapes indicated in these standards.
- **Post Attachments:** All post attachments shall be as designated in the sign post standard earlier in this chapter.
- **Bridge signs:** Signs shall be placed on all bridges along the water course that identifies the blueway, the street crossing, and the river mile designation of the bridge.
- Bridge signs shall be designed at a scale and with font sizes clearly readable from the water course.
- **Bridge sign materials:** Sign panels shall be aluminum blanks with applied vinyl graphics, cut to the shapes indicated in these standards.



blueway warning signs

Signage has been developed to alert blueway users or navigational hazards along the blueway.

DESIGN STANDARDS:

For Indy Greenways, blueway warning signs should include the following:

- **Placement:** Signage shall be placed in advance of navigational hazards to alert users of hazards and the need to portage. Signs may be included on bridges or bridge abutments prior to hazard area.
- **Sign Panel Information:** Warning signs shall be designed at a scale and with font sizes clearly readable from the water course. Red warning banner with white letters shall be used.
- **Warning sign materials:** Sign panels shall be aluminum blanks with applied vinyl graphics, cut to the shapes indicated in these standards.



The Design Standards

Enacting deEstablishing an appropriate approach to greenway development that results in a high-quality user experience, continuity of character, durability of facilities, and a reasonable approach to trail maintenance.