

13 DESIGN GUIDELINES

13.1 Introduction

Champaign County Trails Design Guidelines were created to facilitate development of all non-motorized paths throughout Champaign County, including sidewalks, bike lanes, shared use trails, and nature trails. Existing trails in the area are of varying widths and materials. No standard facilities or design features moreover, show users they are using a trail that is part of an overall countywide system. Once implemented, these design guidelines will help create a recognizable and consistent system of greenways and trails of which Champaign County can be proud.

These guidelines were developed using a collection of resources to ensure that the end product meets the needs of municipalities, special use districts, grant-funding agencies, and trail users, while maintaining accessibility requirements. In compiling these guidelines, best practices already in use in counties across the nation were combined with guidelines tailored to Champaign County's specific needs.

13.1.1 Goals and Objectives

The creation of countywide greenway, trail, and bikeway design guidelines is a first step in implementing the Champaign County Greenways & Trails Plan adopted in February 2004. This relates directly to this Plan's Goal #2, that "all Champaign County residents will be provided with a greenways and trails system that emphasizes safety and user-friendliness."

These guidelines seek to create a system of greenways and trails capturing Champaign County's community character and history, and serving as an educational and recreational resource for trail and bikeway users. It also seeks to maintain the greenways and trails' environmental integrity.

13.1.2 General Standards

- All facilities shall meet or exceed Americans with Disabilities Act (ADA) standards.
- All paved surfaces shall meet or exceed all applicable Illinois Department of Transportation (IDOT) standards for the installation of surface type.
- All paved surfaces shall meet or exceed all applicable local codes.
- All paved surfaces shall meet or exceed current American Association of State Highway and Transportation Officials (AASHTO) standards for trail and bikeway type.
- All guidelines shall comply with the most recent versions of the Americans with Disabilities Act (ADA), IDOT, and AASHTO standards as applicable.

13.1.3 Methodology

Staff from the Champaign County Regional Planning Commission interviewed participating agencies, including representatives from Champaign County, cities and villages, park districts, the University of Illinois, the Champaign-Urbana Mass Transit District, IDNR and IDOT, and several local developers. Questions included what they wanted addressed in the design guidelines, what format they preferred, what practices the agencies currently followed, and the process their agency would go through to adopt the design guidelines into practice if they chose to do so. Many of the representatives were on the Greenways & Trails Plan Steering Committee, so they were familiar with the Greenways & Trails Plan and were interested in its implementation.

Interviewees

The Champaign County Regional Planning Commission conducted interviews with the following organizations and individuals:

City of Champaign

- Public Works: Steve Wegman
- Planning: Rob Kowalski, Danielle Rideout

City of Urbana

- Public Works: Bill Gray, Doug Miller
- Planning: Libby Tyler, Paul Lindahl, Matt Wempe

Village of Savoy

- Public Works: Frank Rentschler
- Parks & Grounds: Joshua Mikeworth

Village of Rantoul

- Public Works: Pete Passarelli

Village of Mahomet

- Village Administrator: Teri Legner

Champaign County Highway Department

- Jeff Blue

Champaign Park District

- Bobbie Herakovich, Terri Gibble

Urbana Park District

- Facilities Planning: Tim Bartlett

Champaign County Forest Preserve District

- Facilities Planning: Sally Prunty

Champaign-Urbana Mass Transit District

- Planning: Cynthia Hoyle, Bill Volk

University of Illinois

- Facilities Planning: Kevin Duff
- Facilities Engineering: Gary Biehl

Champaign County

- Planning & Zoning: Frank DiNovo
- CUUATS: Rita Black, Susan Chavarria

Champaign County Board

- Chair: Barb Wysocki

Illinois Department of Natural Resources

- Marla Gursh (Springfield)

Illinois Department of Transportation

- Bureau of Design & Environment: Todd Hill

Several Local Developers

Support for countywide trails design guidelines was generally high, although many agencies stressed the importance of keeping the guidelines flexible for different settings and circumstances. They wanted a short document that would be user-friendly and easy to understand, and they wanted more pictures and diagrams and less text. Safety and practicality were top priorities for each agency, with separation of pedestrians and bicyclists from vehicular traffic and low-cost construction frequently mentioned.

After compiling the information from the interviews, the Champaign County Regional Planning Commission determined the design guidelines' format. Keeping in mind suggestions the different agencies made and the formats other regions used, the Champaign County Regional Planning Commission organized the document by facility type: off-street trails (shared-use trails, nature trails, and sidewalks) and on-street bikeways (bike lanes, bike routes, shared bike/parking lanes, sharrows, and Share the Road). They also included sections on connections and crossings, facilities at trailheads and rest areas.

Each section begins with a description of the feature's use, followed by a cross-section with dimensions and engineering specifications. All design guidelines for Champaign County follow the Illinois Department of Transportation and the Illinois Department of Natural Resources' recommended guidelines for grant funding and accessibility.

13.2 Off-Street Facilities

13.2.1 Shared-Use Trails

A shared-use trail is a recreational pathway that pedestrians, bicyclists, rollerbladers, strollers, and skateboarders may use. They may connect parks, employment centers, shopping centers, and public places. Shared-use trails should not be located immediately adjacent to interstate highways.

Dimensions

Width

- The desired surface width of a shared-use trail is 10 feet. The minimum width should not be less than 8 feet.
- Transitions between existing narrower trails and the 10 foot wide shared-use trail should be created using tapers.

Clear Zone

- A 3-foot wide clear zone should be maintained adjacent to both sides of all shared-use trails for the use of joggers and for keeping vegetation from erupting through the trail surface.
- Where a roadway runs adjacent to or near a shared-use trail, the roadway should be separated from the shared-use trail with a 5 foot wide clear zone.
- When separation of five feet cannot be achieved, a physical barrier of at least 4.5 feet high between the trail and the roadway is recommended.
 - Smooth rub rails should be attached to the barriers at handlebar height of 3.5 feet.
- The vegetative distance between the trail edge and any water body (stream, wetland, or lake) is recommended to be at least 10 feet. This will reduce water pollution potential from runoff and chemicals associated with paved surfaces.

Vertical Clearance

- The vertical clearance should be at least 8 feet high (or higher to accommodate maintenance vehicles).

Subgrade, Subbase, and Trail Surface

Subgrade

- The trail and shoulders should be cleared of organic materials. Soil sterilants should be used where necessary to prevent vegetation from erupting through the pavement.

Subbase

- The sub-base should be a 6-inch compacted crushed rock.

Trail Surface

- The following are acceptable surface types for shared-use trails:
 - Asphalt,
 - Concrete, and
 - Compacted crushed rock.
- The paved surface should be a minimum of 4 inches thick or follow the applicable agency's specifications, whichever is greater.
- Shared-use trails should be designed to sustain without damage wheel loads of occasional emergency, patrol, maintenance, and other motor vehicles that are expected to use or cross the path.
- Edge support to accommodate vehicles can be in the form of stabilized shoulders or in additional pavement width.
- Shared-use trails should be machine laid, using the appropriate machines and tools to smooth and compact the trail surface.



Engineering

- Refer to the most recent adopted edition of the AASHTO "Guide for the Development of Bicycle Facilities" and the Illinois Department of Transportation (IDOT)'s "Bureau of Local Roads & Streets Manual" Chapter 42 - Bicycle Facilities for engineering specifications, including design speed, sight distances, horizontal alignment, and superelevation.

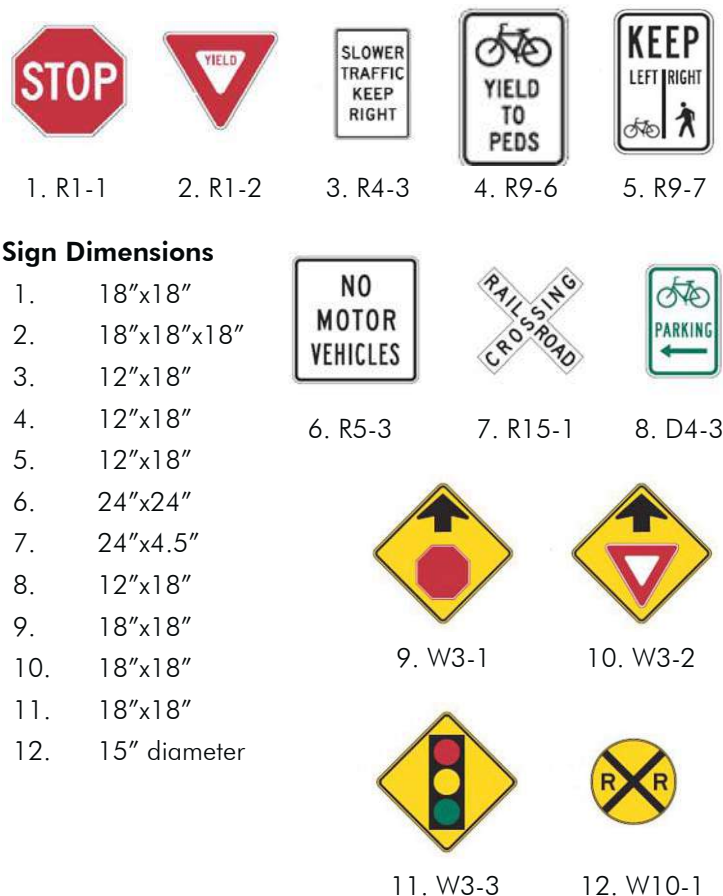
Shared-Use Trail Signage

Shared-use trail signage (see right), especially Signs 1 and 2, should be shielded from road user visibility to decrease confusion. Sign 6 should be installed at the entrance to a shared-use trail. The trail should be signed at cross streets and vice versa so trail users know where they are and motorists recognize that they are crossing a trail. Stop signs should not be used where Yield signs would be acceptable.

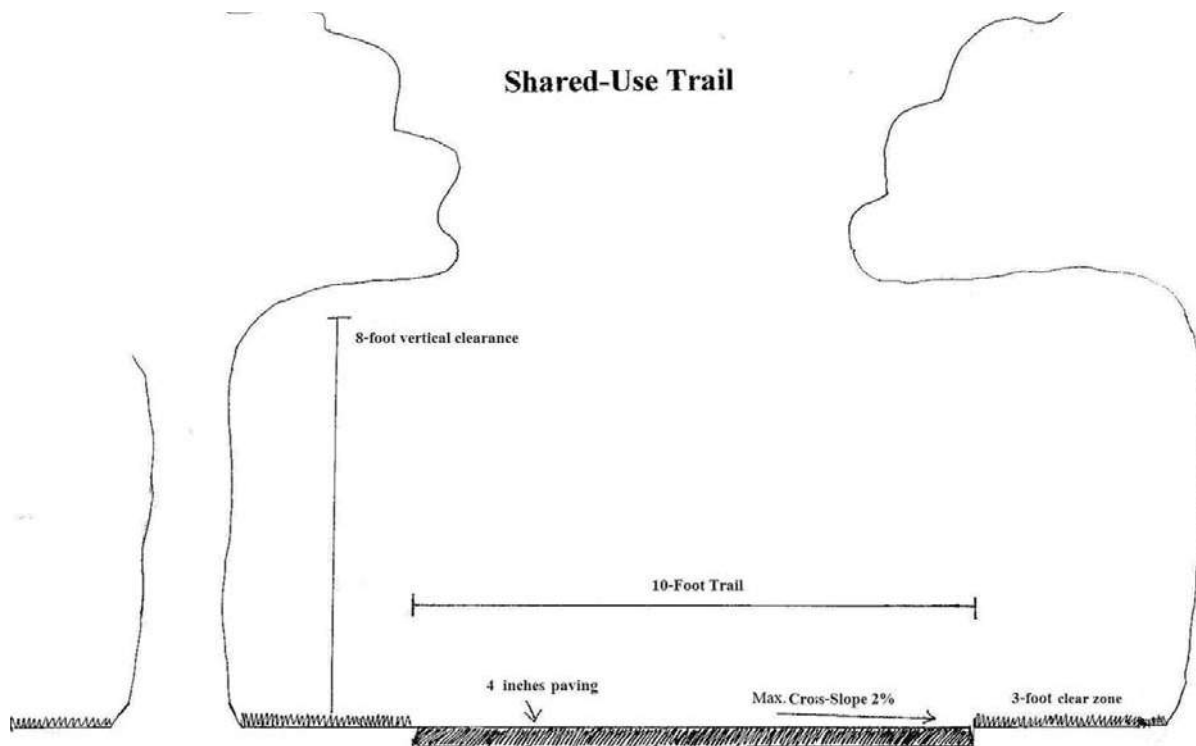
Lateral sign clearance should be a minimum of 2 feet from the near edge of the sign to the near edge of the path. The mounting height for ground-mounted signs should be a minimum of 4 feet, measured from the bottom edge of the sign to the near edge of the path surface. Overhead signs should have a clearance of 8 feet from the bottom edge of the sign to the path surface directly under the sign (or higher to accommodate maintenance vehicles).

Shared-Use Trail Markings

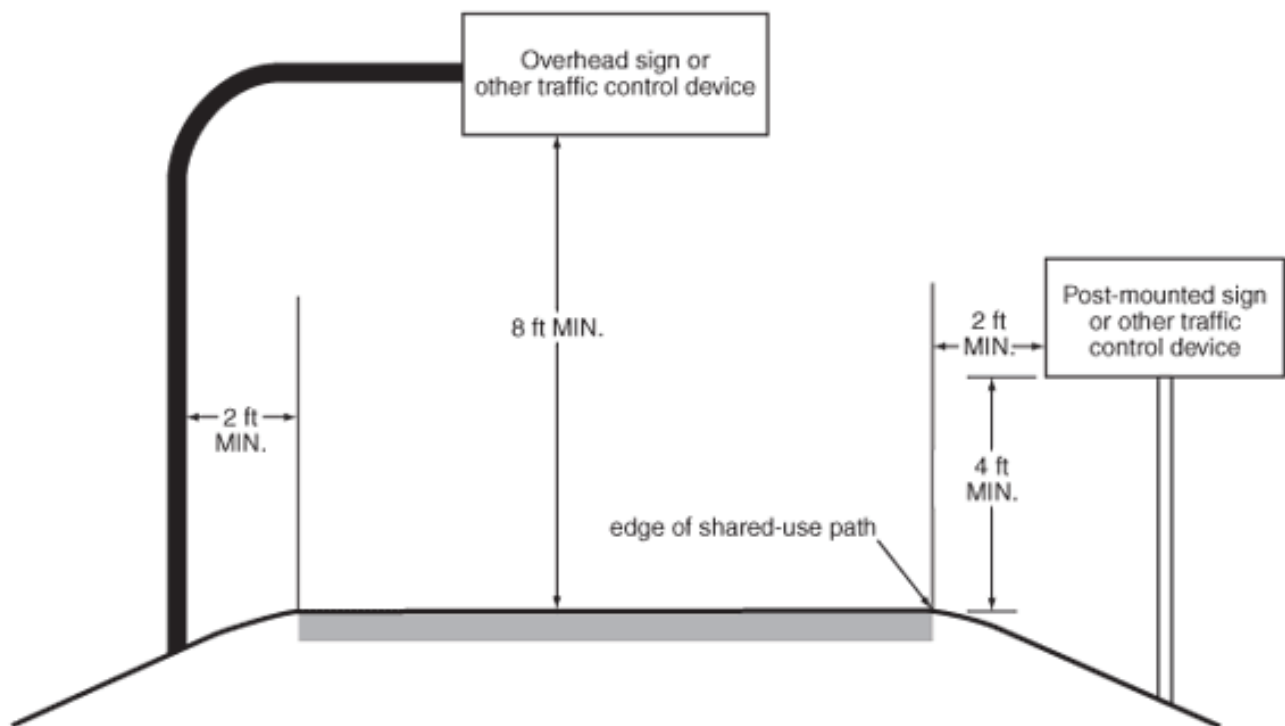
All surface markings on shared-use trails should be retroreflectorized and made of skid-resistant material for safety. Obstructions in the traveled way of a shared-use trail should be marked with retroreflectorized material. Striping should not be used on shared-use trails to separate directions; yield signage should be used instead. Where there are curves with restricted sight distance, a 4 inch wide yellow centerline stripe may be used to separate opposite directions of travel.



Regulatory and Warning Signs and Plaques for Bicycle Facilities
 Source: Manual on Uniform Traffic Control Devices
 (MUTCD) 2009, Figures 9B-2 and 9B-3



Shared-Use Trail Dimensions Diagram



Sign Placement Diagram on Shared-Use Paths

Source: MUTCD 2009, Figure 9B-1



13.2.2 Nature Trails

Nature trails are a form of shared-use path, although they typically run through environmentally sensitive areas. The surfacing and width specifications are more flexible than for shared-use paths; for example, nature trails may have a soft, permeable surface, such as bark, wood chips, or crushed aggregate in lieu of asphalt. Therefore, nature trails are not designed to be ADA accessible. The width of the nature trail may be as narrow as 18 inches to allow for passage through densely vegetated areas and hilly terrain.

Dimensions

Width

- Nature trails should maintain a width of no less than 18 inches.

Clear Zone

- Where a roadway runs adjacent to or near a nature trail, the roadway should be separated from the nature trail with a 5 foot wide mowed shoulder or vegetation.
 - When separation of five feet cannot be achieved, an approved, crash-tested physical barrier of at least 4.5 feet high between the trail and the roadway is recommended.
 - Smooth rub rails should be attached to the barriers at handlebar height of 3.5 feet.
- The vegetative distance between the trail edge and any water body (stream, wetland, or lake) should be maintained at a minimum distance of 10 feet to reduce water pollution potential from runoff and chemicals associated with paved surfaces.

Vertical Clearance

- The vertical clearance should be a minimum of 8 feet high (or higher to accommodate maintenance vehicles).
- Tunnels and other undercrossings should have a vertical clearance of at least 10 feet.

Subgrade, Subbase, and Trail Surface

In general, earthen trails do not require a subbase. If soils are particularly wet, a layer of geotextile fabric covered with a layer of aggregate may be placed between the ground and trail surface to provide a moisture barrier.

Trail Surface

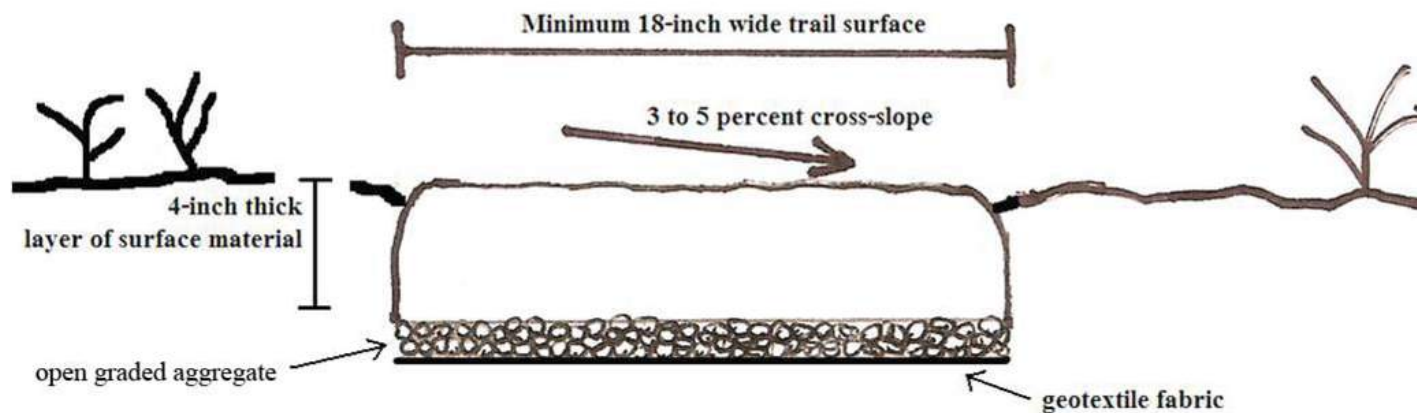
Nature trails may use a variety of alternative surfacing, some of which are listed below:

- Bark or wood chips
 - A 4-inch layer of bark or wood chips is recommended.
 - Bark or wood chips should be replaced every year due to compaction and dislocation.
 - Bark or wood chips should not be used near streams or wetlands or on portions of the trail with cross-drainage.
- Crushed Aggregate
 - Open-graded, crushed rock of 1 inch or smaller diameter is recommended.
 - A 4-inch thick layer of crushed rock compacted to 95 percent is recommended.
 - The sub-grade should be prepared and compacted to prevent vegetation encroachment.
- Plastic lumber
 - Plastic lumber is suitable for boardwalks in wet areas.
 - Plastic lumber may be colored or painted to blend in with the surroundings.

Engineering

- Due to their often-varied topographic setting, nature trails are not designed to be universally accessible.
- Design Speed should be 15 mph for unpaved trails.
- The trail should be sloped to drain at 3 to 5 percent.

Nature Trail



Nature Trail Dimensions Diagram



13.2.3 Sidewalks

Pedestrians primarily use sidewalks. Sidewalks in Champaign County should be accessible to all users. It is important that sidewalks be provided extensively throughout the transportation network to provide pedestrians with a safe place to travel. It should be noted that all bicyclists who choose to travel on sidewalks have the same rights as pedestrians, except where prohibited, and must yield to pedestrians. Accessible sidewalk facilities should be provided on all new right-of-way projects in Champaign County.

Dimensions

Width

- The recommended minimum width of all sidewalks is 5 feet. Sidewalks in high traffic areas, including the commercial, downtown, and campus districts, may require a width of 6 feet or greater as determined by the appropriately designated person.
- Transitions from existing narrower sidewalks may be made using tapers.

Buffer

- Sidewalks should have at minimum a 2 foot wide mowed shoulder on both sides of the paved surface.

Vertical Clearance

- Sidewalks should have a vertical clearance of at least 8 feet.

Miscellaneous

- The vegetative distance between the concrete surface and any water bodies (stream, wetland, lake) is recommended to be a minimum of 10 feet to reduce water pollution potential from runoff and chemicals associated with paved surfaces.
- Maximum distances for expansion joints should not exceed 75 feet.

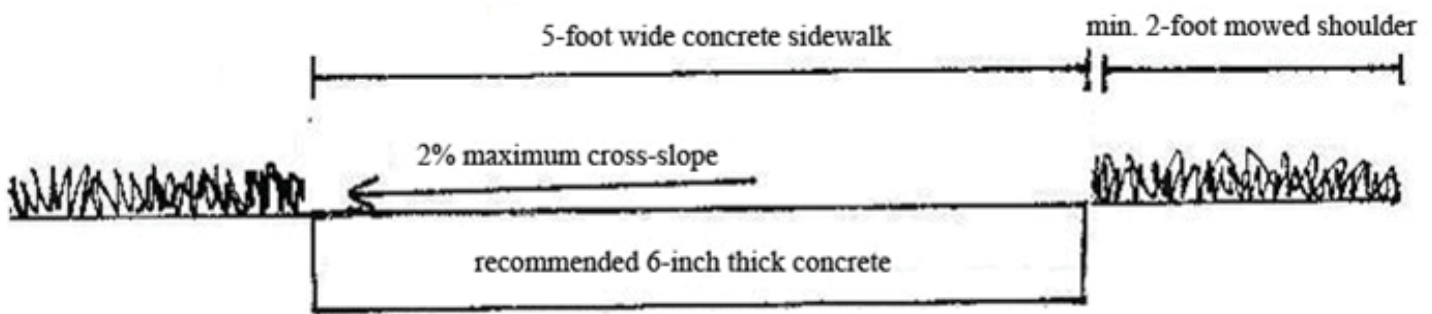
Engineering

General

- All engineering of sidewalks shall meet the applicable agency's accepted engineering design standards.
- All newly constructed sidewalks shall comply with ADA accessibility guidelines.

Slope

- The longitudinal slope of all sidewalks shall be a maximum of 5% to maintain accessibility.
- The cross-slope of all sidewalks shall be a maximum of 2.0% to maintain accessibility and should slope in one direction or be crowned.



Sidewalk Dimensions Diagram

Ramps

- Ramp specifications shall follow the Illinois Accessibility Code:
 - The least possible slope should be used for any ramp.
 - The maximum slope of a ramp in new construction shall be 8.3%.
 - The maximum rise for any run shall be 30 inches.
- The minimum clear width of a ramp shall be 48 inches.
- The recommended clear width of a ramp is 60 inches.
- If a ramp has a rise greater than 6 inches, or a horizontal projection greater than 72 inches, it shall have handrails on both sides.

Curb Ramps

- Curb ramps shall be installed in all new sidewalk construction projects wherever an accessible route crosses a curb, as well as where existing sidewalks cross a curb or other barrier.
- The maximum running slope of a curb ramp in new construction shall be 8.3%.
- The minimum width of a curb ramp shall be 48 inches, exclusive of flared sides.
- A 4 foot by 4 foot minimum landing shall be provided at the top of a perpendicular curb ramp.
- A 5 foot by 5 foot landing is recommended to be provided at the top of a perpendicular curb ramp.
- The maximum slope of flared sides of a perpendicular ramp shall be 10.0%.
- A 4 foot by 4 foot minimum landing shall be provided at the bottom of a parallel curb ramp.
- A 5 foot by 5 foot landing is recommended to be provided at the bottom of a parallel curb ramp.
- Running slopes and cross slopes at landings shall

be 2.0% maximum. No portion of the curb ramp shall exceed this maximum.

- Diagonal curb ramps should not be used because they do not allow pedestrians to properly align with crosswalks.
- Handrails are not required on curb ramps.

Detectable Warning Surface

- A detectable warning surface shall be provided where curb ramps, blended transitions or landings provide a flush pedestrian connection to the street.
- A detectable warning surface shall be provided at commercial driveways provided with traffic control devices.
- Detectable warnings shall consist of a surface of truncated domes.
- Truncated domes shall provide color contrast with adjacent surfaces.
- Detectable warning surfaces shall extend a minimum of 2 feet in the direction of travel and the full width of the curb, exclusive of flares.

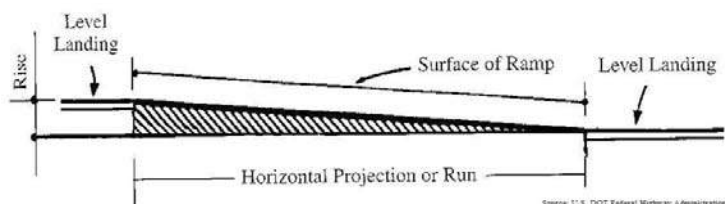
Subgrade and Sidewalk Surface

Subgrade

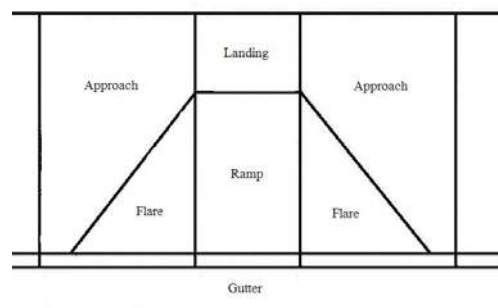
- Vegetation should be cleared from the 5-foot wide sidewalk path.

Sidewalk Surface

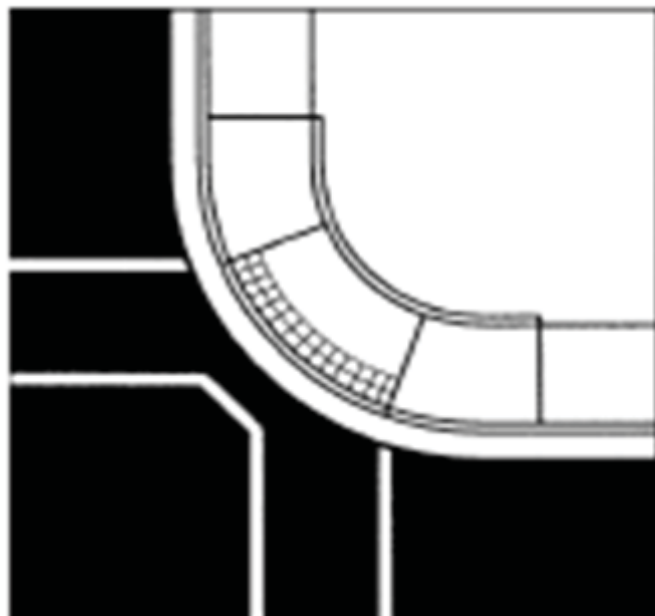
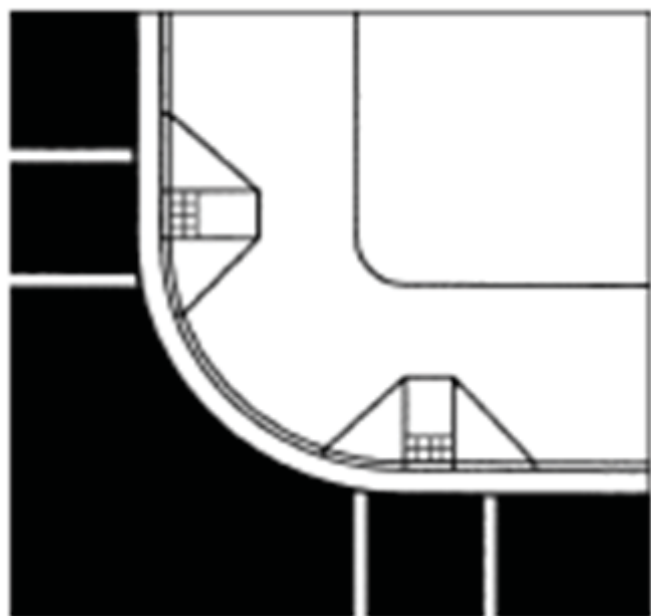
- The sidewalk surface should be concrete.
- The concrete surface should be 6 inches thick.
- The sidewalk surface should be jointed to control cracking.
- A rough brushed surface is recommended to increase traction.



Ramp Cross-Section

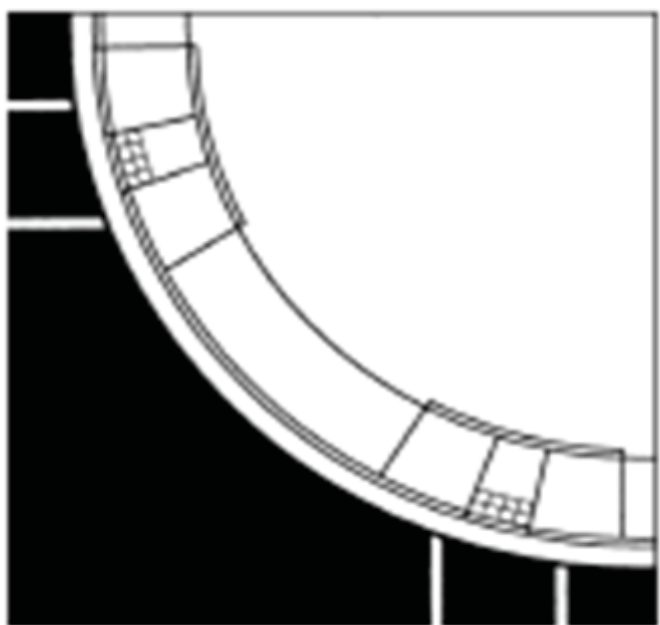


Components of a Curb Ramp



Above left: Perpendicular Curb Ramp

Above right: Diagonal Curb Ramp
(this type of curb ramp is not recommended, but may be used if situation provides no alternative)



Left: Parallel Curb Ramp

Source: Designing Sidewalks and Trails for Access

Part II of II: Best Practices Design Guide, Chapter 7: Curb Ramps



13.3 On-Street Facilities

13.3.1 Bike Lanes

An on-road bike lane is a one-way path that carries bicyclists in the same direction as the adjacent motorized travel lane. Bike lanes should be located on the right side of the roadway, between the parking lane (if one exists) and the travel lane. Bicycles traveling in bike lanes have the same rights and responsibilities as motorized vehicles.

Dimensions

Width

Varies based on roadway cross-section:

- For roadways with no curb and gutter, the minimum width should be 4 feet.
- For roadways with curb and gutter and where parking is permitted, the minimum width should be 5 feet.

- For roadways with curb and gutter and where parking is prohibited, the minimum width should be 5 feet from the face of the curb.

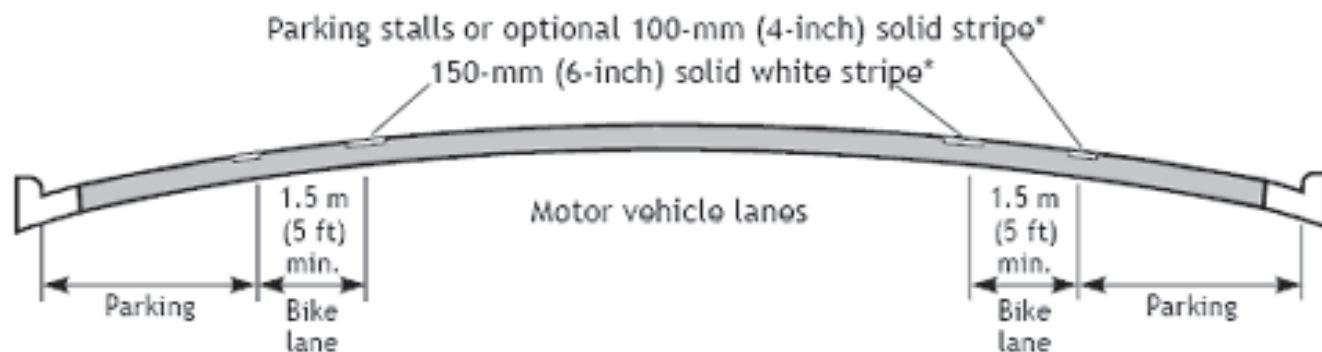
Slope/Drainage

- To follow the road engineering standards adopted by each agency.
- Drainage grates and utility covers should be adjusted flush with the road surface and be bike-proof.
- Curb inlets should be used to eliminate exposure of bicyclists to grates.

Subgrade, Subbase, and Bikeway Surface

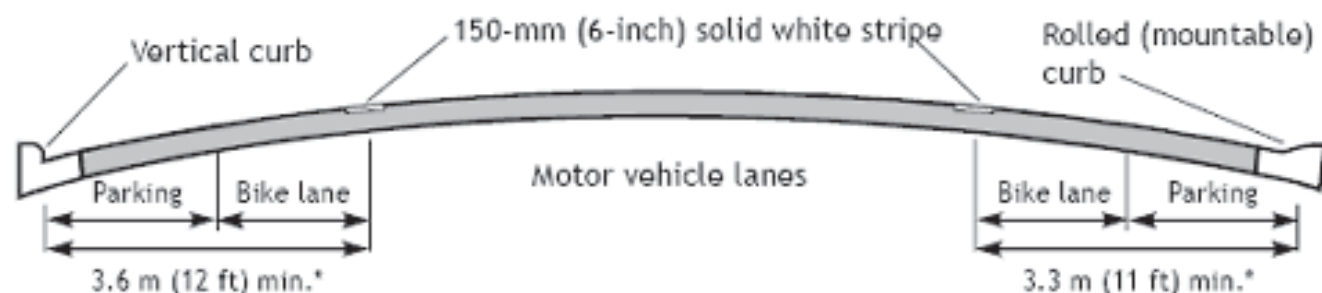
- To follow the road engineering standards adopted by each agency.
- Paved shoulders marked as bike lanes should be smooth and maintained to provide a desirable riding surface.

(1) On-Street Parking



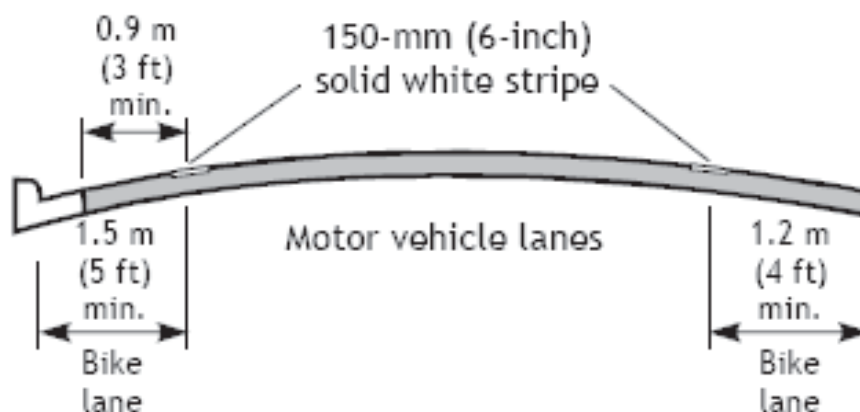
* The optional solid stripe may be advisable where stalls are unnecessary (because parking is light) but there is concern that motorists may misconstrue the bike lane to be a traffic lane.

(2) Parking Permitted without Parking Stripe or Stall



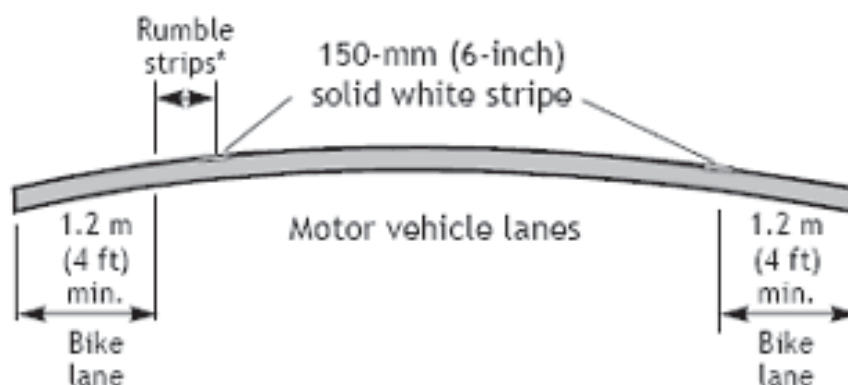
* 3.9 m (13 ft) is recommended where there is a substantial parking or turnover of parked cars is high (e.g., Commercial areas).

(3) Parking Prohibited



Source: American Association of State Highway and Transportation Officials (AASHTO)

(4) Typical Roadway in Outlying Areas Parking Protected

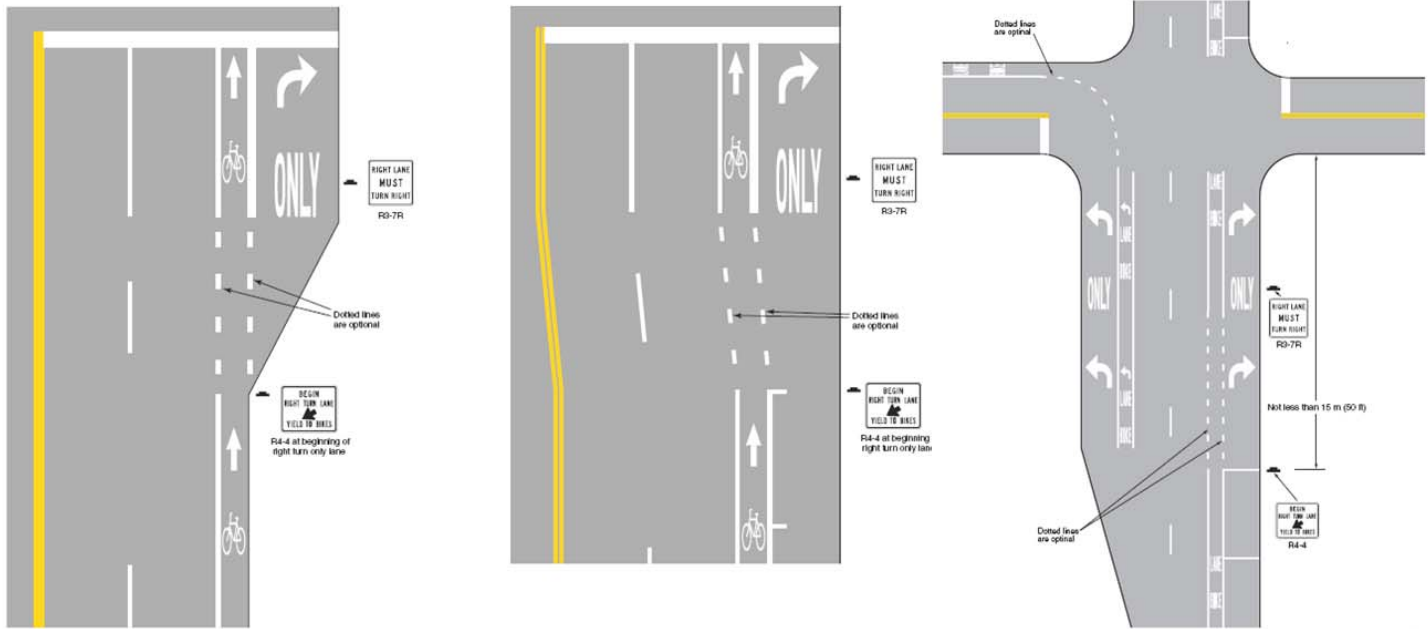


* If rumble strips exist there should be 1.2 m (4 ft) minimum from the rumble strips to the outside edge of the shoulder.

Source: AASHTO

Markings

- A bike lane should be delineated from the motor vehicle lanes with a 6 inch minimum solid white line.
- A bike lane may be delineated from the parking lanes with a 4 inch minimum solid white line.
- At intersections with a bus stop or right-turning motor vehicles, the solid white bicycle lane shall be replaced with a broken line for a distance of 100-200 feet.
- At other designated bus stops (including far-side intersection stops) the solid white line shall be replaced with a broken line for a distance of at least 80 feet.
- A broken line shall consist of 2 foot dashes with 6 foot spaces.
- A bike lane should be painted with standard pavement symbols to inform bicyclists and motorists of the presence of the bike lane.
- Bike lane symbols shall be white.
- Bike lane symbols shall be placed immediately after an intersection and at other locations as needed.
- When bike lane symbols are used, bike lane signs (R3-17, R3-17aP, R3-17bP) shall also be used.
- In areas where a sidewalk runs adjacent to or near a bike lane, such as on the University of Illinois campus, the bike lane should have a "Bike Only" sign painted on the surface to discourage pedestrians from using the bike lane as a walkway. Surface markings should be consistent throughout the community.
- Intersections approaches with bicycle lanes:
 - A through bicycle lane shall not be positioned to the right of a right turn only lane.
 - When the right through lane is dropped to become a right turn only lane, the bicycle lane markings should stop at least 100 feet before the beginning of the right turn lane. Through bicycle lanes should resume to the left of the right turn only lane.
 - No markings should be painted across pedestrian crosswalks or in the intersections.
 - If used, the bicycle lane symbol marking should be placed immediately after intersections and as appropriate.



Source: MUTCD

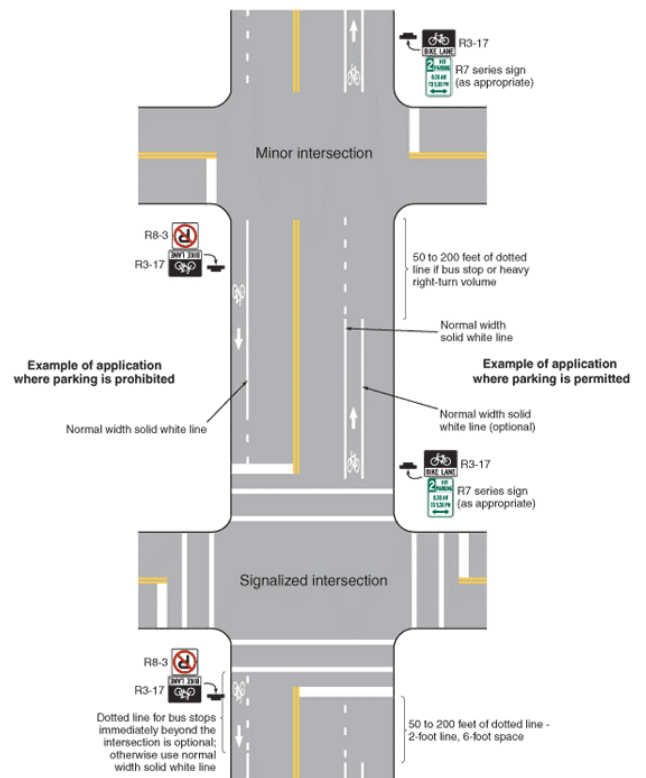
Above left: Example of bicycle lane treatment at a right-turn only lane

Above center: Example of bicycle lane treatment at parking lane into a right turn only lane

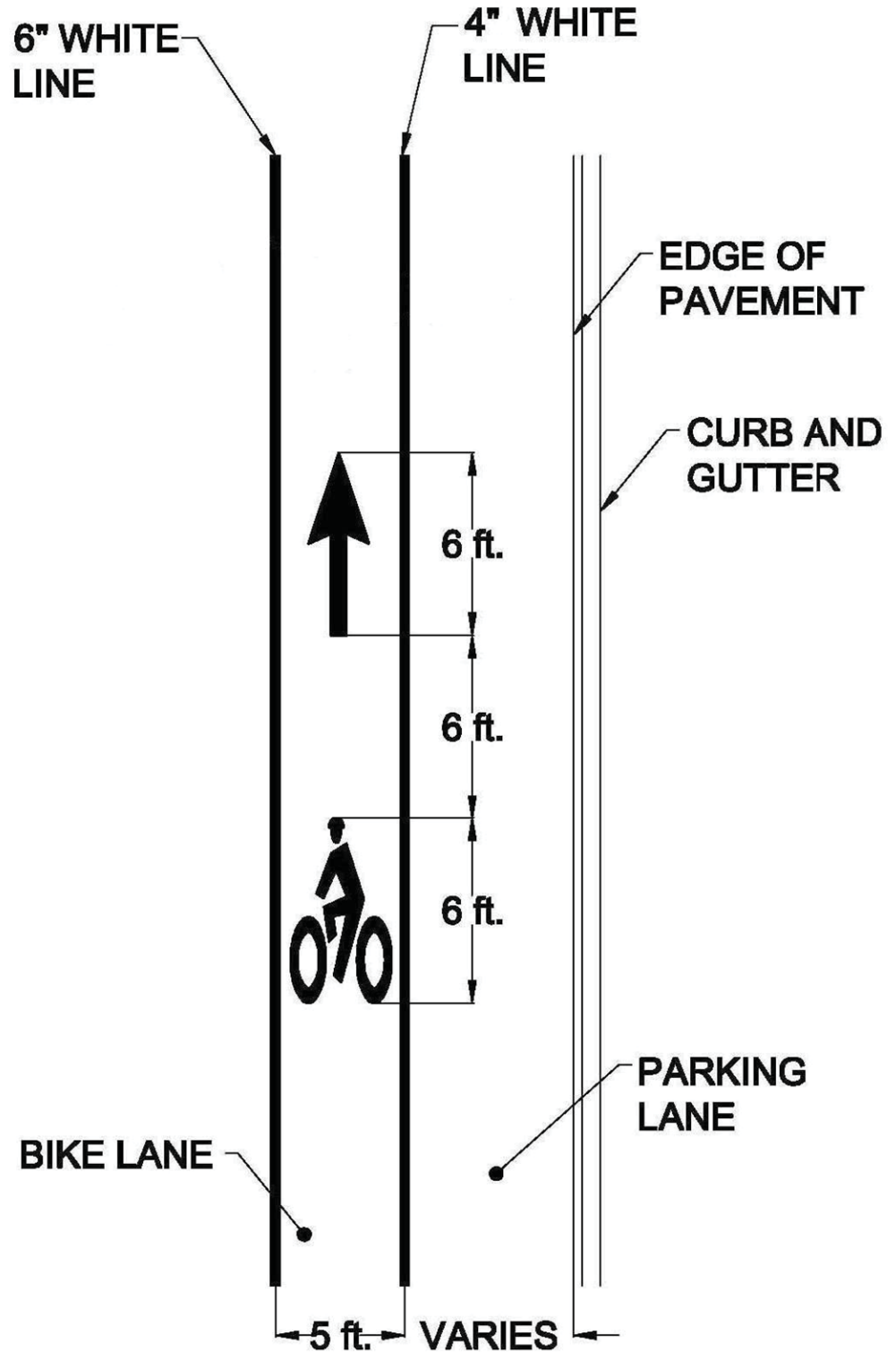
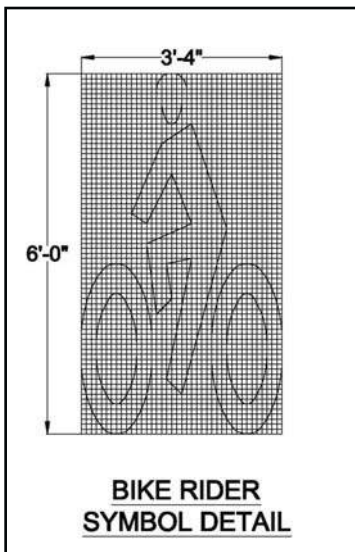
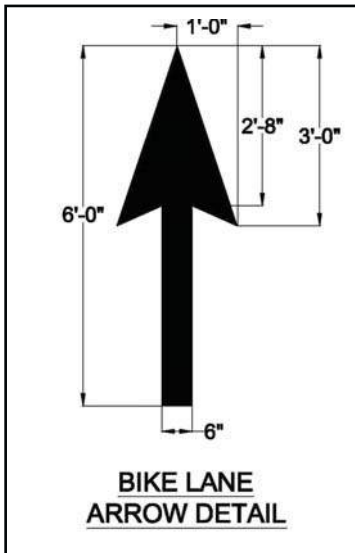
Above right: Example of intersection pavement markings—designated bicycle lane with left-turn area, heavy turn volumes, parking, one-way traffic, or divided highway

Right: Typical pavement markings for bike lane on two-way street

Source: MUTCD 2009; Figures 9C-4, 9C-5, 9C-1, and 9C-6



Bicycle Lane Symbol Layout



Signage

Signs along bike lanes are intended to inform both bicyclists and motorists of the rules associated with roads with bike lanes. All signage should follow the U.S. Department of Transportation (US DOT) Federal Highway Administration (FHWA) *Manual on Uniform Traffic Control Devices (MUTCD)*.

- Sign 1 shall be used in conjunction with marked bicycle lanes and be placed at periodic intervals along the marked bike lane.
- Sign 2 should be mounted directly below Sign 1 in advance of the beginning of a marked bike lane.
- Sign 3 should be mounted directly below Sign 1 at the end of a marked bike lane.
- Sign 4 may be used when motor vehicles must cross a bike lane to enter an exclusive right-turn lane.
- Sign 5 should be installed if it is necessary to restrict parking, standing or stopping in a bicycle lane.
- Sign 6 may be installed when it is desirable to show the direction to a designated bicycle parking area.
- Sign 8 should be used only in conjunction with Sign 7, and shall be mounted directly below Sign 7.
- Signs 9 and 10 may be installed where there is insufficient width for a designated bike lane.



1. R3-17



2. R3-17aP



3. R3-17bP



4. R4-4



5. R7-9a



6. D4-3



7. R5-1b



8. R9-3cP



9. W11-1



10. W16-1P

Sign Dimensions

1. 30" x 24"
2. 30" x 12"
3. 30" x 12"
4. 36" x 30"
5. 12" x 18"
6. 12" x 18"
7. 12" x 18"
8. 12" x 12"
9. 24" x 24"
10. 18" x 24"

Source: MUTCD

13.3.2 Shared Lane Markings (sharrows)

Bicycle positioning on the roadway is key to avoiding crashes with cars turning at intersections. Shared lane markings, also known as “sharrows,” are included in the 2009 version of the Federal Highway Administration’s Manual on Uniform Traffic Control Devices (MUTCD).

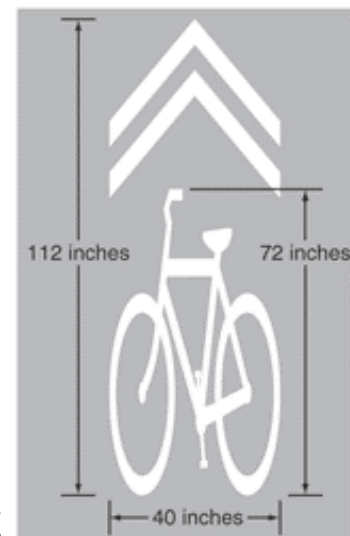
Shared lane markings are used to indicate correct straight-ahead bicycle position at intersections with turn lanes, and at intersections where bike lanes are temporarily discontinued due to turn lanes or other factors. Shared lane markings will be installed where deemed appropriate. The following is information regarding shared lane markings from the 2009 version of the Manual on Uniform Traffic Control Devices.

The Shared Lane Marking may be used to:

- Help bicyclists with lateral positioning in a shared lane with on-street parallel parking. This will reduce the chance of a bicyclist’s impacting the open door of a parked vehicle.
- Help bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane.
- Alert road users of the lateral location bicyclists are likely to occupy within the traveled way.
- Encourage motorists’ safe passing of bicyclists.
- Reduce the incidence of wrong-way bicycling.

Dimensions

The shared lane marking consists of two chevron markings above a bicycle symbol. The entire marking is 40 inches wide and 112 inches tall. The bicycle symbol is 72 inches high, from the top of the handlebars to the bottom of the tires.



Source: MUTCD 2009

Markings

- Shared lane markings should not be placed on roadways that have a speed limit above 35 mph.
- Shared lane markings shall not be used on shoulders or in designated bicycle lanes.
- On shared lanes with on-street parallel parking, shared lane markings should be placed so that the centers of the markings are at least 11 feet from the face of the curb, or from the edge of the pavement where there is no curb.
- On a street without on-street parking with an outside travel lane less than 14 feet wide, the centers of the shared lane markings should be at least 4 feet from the face of the curb, or from the edge of the pavement where there is no curb.
- Shared lane markings should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter.

Signage

A *Bicycles May Use Full Lane* sign may be used in addition to or instead of the shared lane marking to inform road users that bicyclists may occupy the travel lane. This sign may be used on roadways where no bicycle lanes or adjacent shoulders usable by bicyclists are present, and where travel lanes are too narrow for bicyclists and motor vehicles to operate side by side.



Sign Dimensions:
30" x 30"

Source: MUTCD 2009

Some agencies may choose to use the *Bicycles May Use Full Lane* sign on urban streets, and *Share The Road* signs on rural roads (see page 150). Other agencies may choose to only use *Bicycles May Use Full Lane* signs or *Share The Road* signs for its roads.

13.3.3 Bike Route

Bike routes are specially designated shared roadways that are preferred for bicycle travel for certain recreation or transportation purposes. These “signed shared roadways” may be appropriate where there is not enough room or less of a need for dedicated bike lanes.

The 2012 *AASHTO Guide for the Development of Bicycle Facilities* lists the following uses for bicycle route and guide signs:

- Designate a system of routes in a city, county, region, or state that is likely to generate bicycle trips, because it connects important origins and destinations.
- Designate a continuous route that may be composed of a variety of facility types and settings, or located wholly on local neighborhood streets.
- Provide wayfinding guidance and connectivity between two or more major bicycle facilities, such as a street with bike lanes and a shared use path.
- Provide guidance and continuity in a gap between existing sections of a bikeway, such as a bike lane or shared use path.
- Provide location-specific guidance for bicyclists such as:
 - How to access and cross a bridge.
 - How to navigate through an area with a complex street layout.
 - Where the route diverges from a way motorists use.
 - How bicyclists can navigate through a neighborhood to an internal destination, or to a through route that would otherwise be difficult to find.
- Provide bicyclists wayfinding guidance along a shared use path or other bicycle facility.



The 1999 *AASHTO Guide for the Development of Bicycle Facilities* also lists the following reasons for designated shared bike routes:

- The road is a common route for bicyclists through a high-demand corridor.
- The route extends along local neighborhood streets and collectors that lead to internal neighborhood destinations, such as a park, school, or commercial district.

A road does not require a specific geometry to be signed as a Bike Route. Generally, a road’s Bicycle Level of Service (BLOS) grade should be High C or better in order to be designated a Bike Route. Bike routes can be signed using the D11, D1, M1-8, or M1-9 signs from the *Manual on Uniform Traffic Control Devices*, depending on the route distance and information the agency wants to express to cyclists.

Bike route signs should be provided at decision points along the bike route. Bike route signs should be installed at periodic intervals so that bicyclists entering from side streets know they are on a bike route.

Generally, bike route signs should be placed every 1/4 mile, at turns in the route, and at signalized intersections. Adherence to a spacing standard helps create a legible network and a degree of predictability for bicyclists.

Regardless of the type of facility or roadway on which they are used, the Champaign County Regional Planning Commission recommends that Bike Route signs always include destination, direction, and distance information. For Bike Route signs to provide wayfinding assistance at turns, supplemental destination plates (MUTCD D1-1) and arrows (MUTCD M5 and M6 series) should be placed beneath them. Key destinations or the cross street at the end of the bike route designation are suggested for wayfinding signage.

Pedestrian Facilities

All on-street bike routes should have an adjacent pedestrian path (e.g. sidewalk) constructed or already existing.

13.3.4 Shared Bike/Parking Lanes

Bike/parking lanes are recommended on streets with low parking occupancy. They are designated with Bike Route signage and a continuous white line to separate the parking lane from travel lanes. Shared bike/parking lanes should be used for each travel direction, with each lane typically 7'-8' wide (including gutter pans).

Roads are signed with Bike Route signs, but do not include any bike lane signage or pavement markings. Cyclists in this space would pass parked cars just as they do on road shoulders and unstriped roads. The benefits include:

- The cyclist's increased perception of comfort,
- Lower likelihood of a car hitting an occasional parked car, and
- Traffic-calming from narrower lanes.



13.3.5 Share the Road

Share the Road signage is used to alert motorists of the presence of cyclists in a normal, shared lane. Wayfinding signage is not to be included on these roads. These roadways are not considered part of the bicycle network.

Share the Road signage is recommended for the following conditions:

- Where traffic volumes and speeds are low.
- At intersections where bike lanes do not continue on the other side of the intersection.
- On roads popular with more advanced cyclists, but not meeting criteria for inclusion in the designated bicycle network. These roads have Bicycle Level of Service (BLOS) grades of Low C or High D.



The Manual on Uniform Traffic Control Devices signs in the figures below on urban streets should be installed no less than every 1/2 mile. On rural roads, signs should be installed every 1/4 to 1/2 mile.



MUTCD Sign W11-1
Sign Dimensions: 24" x 24"



MUTCD Sign W16-1P
Sign Dimensions: 18" x 24"

13.4 Connections & Crossings

Tunnels

- An engineer should inspect existing tunnels.
- Tunnels should have a 10 foot vertical clearance.
- Tunnels should be 14 feet wide to accommodate maintenance and emergency vehicles.
- Long tunnels should have postings to use flashlights and dismount bikes.
- Please see the tunnel cross section diagram on the next page.

Bridges

General

- Newly constructed bridges on trails should be engineered based on use and span.
- If the trail corridor contains an existing bridge, the bridge may have architectural or historic features that an engineer, architect, or historian should evaluate.
- Please see the bridge crossing's cross section diagram on the next page.

Decking

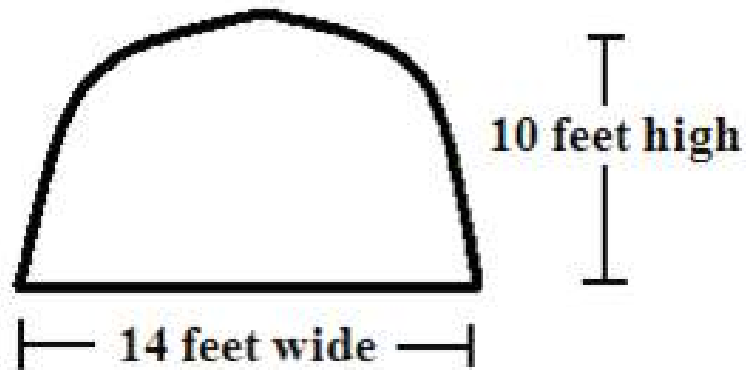
- The decking should be made of 4-inch thick pressure-treated planks (2 inches thick for pedestrian-only bridges).
- Planks should be laid perpendicular to the substructure's beams.
- Planked should be laid with gaps of 1/8 to 1/4 inch between planks for drainage and to maintain accessibility.

Railings

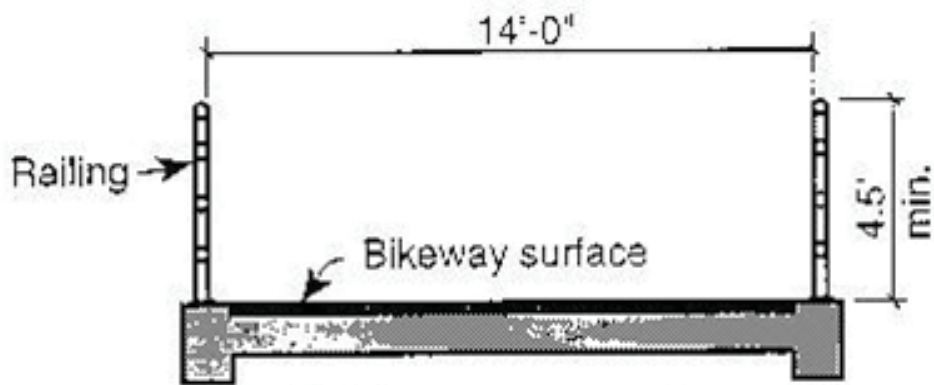
- Vertical posts should be evenly spaced, no more than 6 feet apart.
- Railings should support a vertical load of 50 pounds per linear foot of rail height.
- Top rail height should be at least 54 inches above the deck surface for bicyclists (at least 42 inches for pedestrian-only bridges).
- Middle rail height should be 33 to 36 inches from the deck surface and no wider than 1 ½ inches.
- Bottom rail height should be no higher than 15 inches from the deck surface.
- There should be no more than 15 inches of vertical opening between railings.

Approaches

- Approach railings should be constructed the same as the bridge railings.



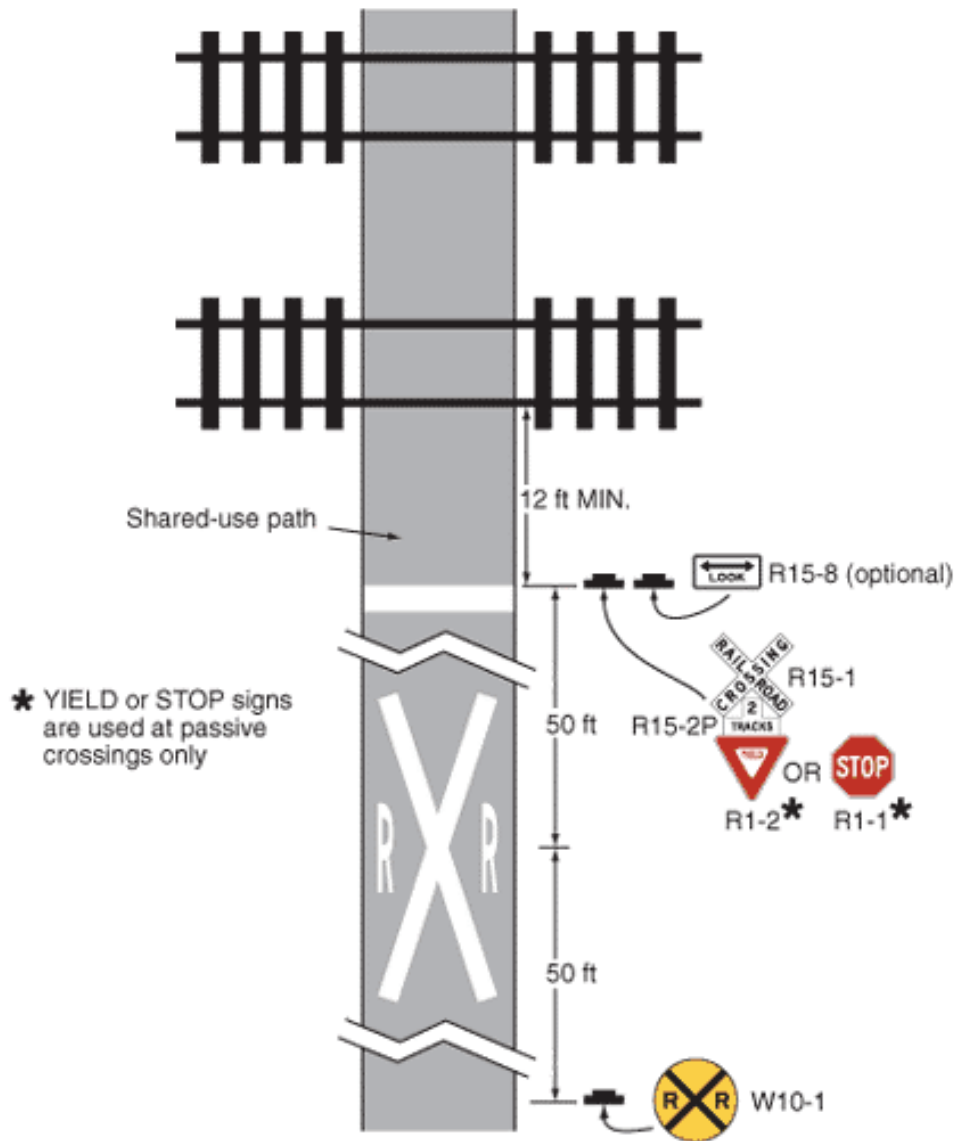
Cross Section: Tunnel Crossing



Cross Section: Bridge Crossing

Railroad Crossings

- Trail should cross railroad at no less than a 75-degree angle.
- Gates should be installed at all trail crossings where feasible to increase train crossing safety and awareness.
- At railroad crossings, path users should yield and watch for trains. A Yield or Stop sign may be used to facilitate this behavior.



Example of signing and markings for a shared-use trail railroad grade crossing
Source: MUTCD 2009, Figure 8D-1

13.5 Facilities at Trailheads and Rest Areas

A trailhead is a public access point at the beginning of a trail or at designated access points along a trail. Trailheads will usually have varying service levels for trail users, depending on anticipated trail use, proximity to other developments, and site inventories. Rest stops are areas adjacent to the trail corridor that typically have a seating area, whether a bench or a gathering of boulders. Rest areas are also appropriate locations for trail art.

The following are a list of trail support facilities that may be included at trailheads and rest stops in Champaign County.

Information Kiosks

All trailheads should have an information kiosk with the following:

- Trail system maps and brochures,
- Trail Rules and Regulations,
- Distances between rest areas along the trail, and
- Interpretive information.

Trail Art

- To highlight an important trailhead in the Champaign County trail system, trail art may be displayed.
- Preferably, the trail art will depict something of local significance or be designed by a local artist.
- Care should be taken to ensure that vandalism is minimized, including securing the art to a heavy base.

Bicycle Parking

Bike parking should be located at trailheads and destinations along trails, employment centers, schools, and public buildings (e.g. libraries, post offices, and shops). Bicycle storage facilities may be used in high traffic areas where users will be away from their bicycles for long time periods (e.g. employment centers, shopping malls, and schools) to protect bicycles from weather.

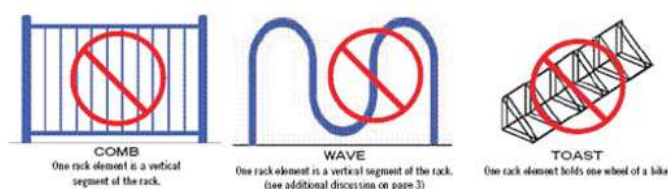
Recommended Bike Rack Placement

- Located no more than 50 feet from the building entrance or trail entrance.
- A minimum of 24 inches from a parallel wall and 30 inches from a perpendicular wall.
- A minimum of 4 feet from curb ramps, fire hydrants, building entrances, etc.
- Facilities should not interfere with pedestrian flow. If located on sidewalks, racks and the bicycles linked to them should provide sufficient clearance around them for all types of pedestrians, including wheelchair users.
- Bicycle racks should be mounted on a 6-inch thick concrete slab.
- Bike racks should support both wheels to prevent bent rims.
- Bike racks should be fabricated of pipe or other durable material.



Recommended Bicycle Parking Facilities

Source: Federal Highway Administration (FHWA)



NOT Recommended Bicycle Parking Facilities

Source: FHWA

Motorized Vehicle Parking

- At major trail access points, motorized vehicle parking may be provided.
- Parking lot specifications should follow the agency's adopted parking specifications.

Landscaping

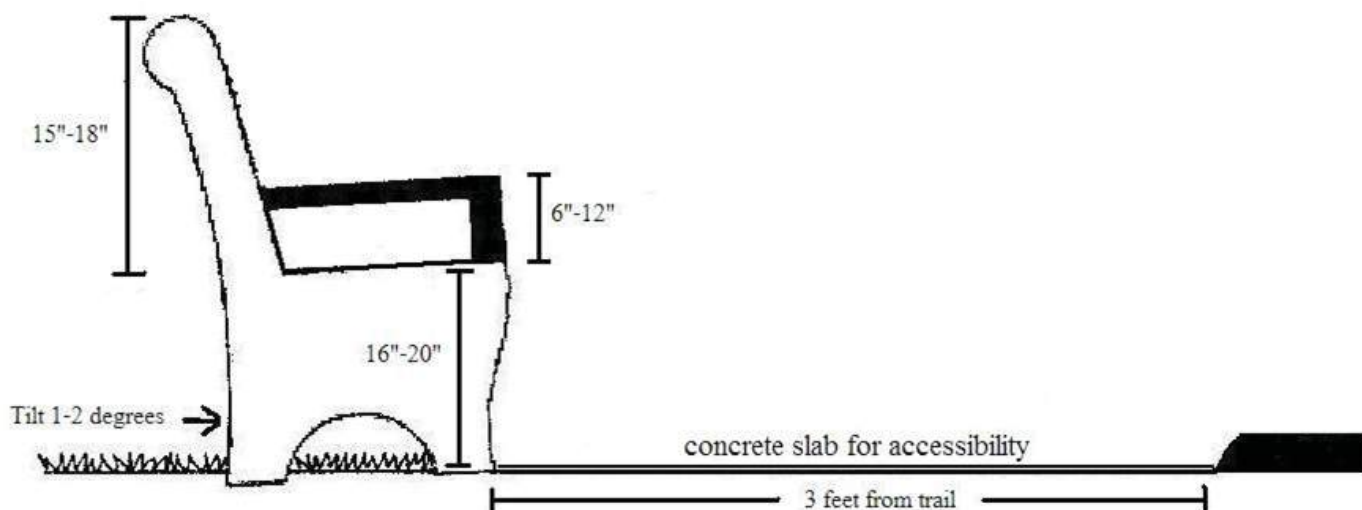
- Landscaping at trailheads and along trail corridors should be in reference to the agency's landscaping ordinance.
- Wherever feasible, use noninvasive native plant species without invasive roots.
- Vegetation may be planted beyond the grading area to discourage users from wandering beyond the trail boundary.
- Trees and shrubs should be set back at least 5 feet from the trail's edge.
- Where trail users would be exposed to increased wind, sun exposure, or snow, it is recommended to plant evergreens on the north side of the trail and deciduous trees on the south side of the trail (Evergreens will serve as a windbreak year-round, and deciduous trees will provide shade).
- Trees and shrubs may be planted in clusters and groves rather than in straight lines to break up the viewshed and add visual interest.

Benches

- Benches may be placed at rest areas along the trail and at trailheads.
- All benches should meet or exceed Americans with Disabilities Act (ADA) accessibility requirements.
- Benches should be set back three feet from the trail edge.
- Bench back should be tilted at a slope of 1 to 2 degrees to prevent standing water.
- Bench Dimensions:
 - Length should be 72 to 90 inches.
 - Seat should be 16-20 inches above the ground.
 - Back supports should be 15 to 18 inches high and extend the bench's full length.
 - Armrests should be provided on both ends of the bench, 6 to 12 inches above the seat.

Lighting

- Pedestrian level lighting may be used on Champaign County trails where nighttime accessibility is desired.
- The average maintained horizontal illumination level should be 0.5 foot-candle to 2 foot-candles.
- Lighting should be at pedestrian scale.
- Lighting is recommended for long overpasses and tunnels.

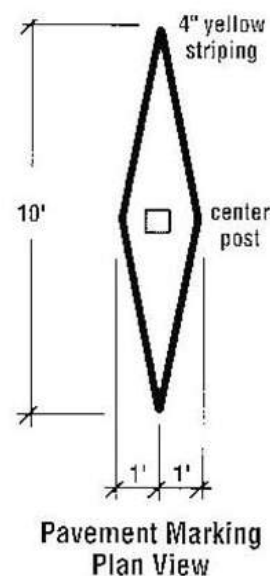
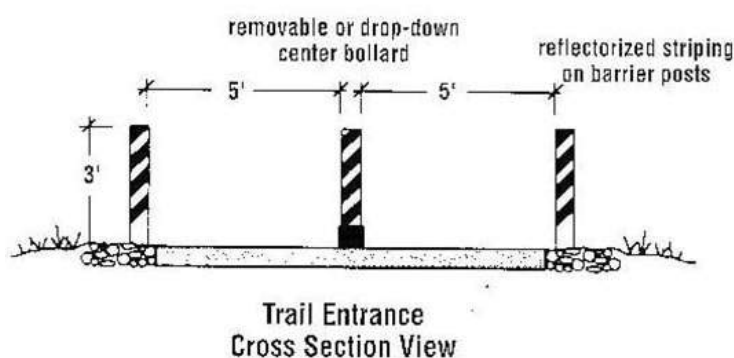


Cross Section: Benches

Bollards

Bollards are posts or other forms of barricades that prevent unauthorized vehicles from entering a trail.

- Bollards should be placed 10 feet from the road.
- The bollard post should be permanently reflectorized for nighttime visibility and painted a bright color for improved daytime visibility.
- A clearance of at least 32 inches wide should be provided for wheelchair access.
- When more than one post is used, 5-foot spacing is recommended.
- The recommended height for bollards is 3 feet.
- Bollards should be designed to be removable for maintenance and emergency vehicle access.



Source: APA PAS

Cross Section: Bollards and Pavement Markings

Drinking Fountains

- Adults: spigot height should be 42 inches above the ground.
- Children: steps should be provided for children to access adult spigot. Considerations should be made for children with disabilities.
- Accessible: spigot should be no higher than 36 inches, with at least 27 inches below the basin.

Trash Receptacles

- Trash receptacles may be located at trail entrances and bench seating areas.
- Trash receptacles should be set back at least 3 feet from the trail edge.
- The container should be secured to a buried concrete slab.
- Dog cleanup facilities should be located at trailheads.

Accessible Bathroom

- Accessible bathrooms may be located at major trailheads for trail users' convenience.
- Bathrooms should meet or exceed Americans with Disabilities Act (ADA) accessibility requirements.

13.6 Logos and Signage

Creating a countywide logos and signage system is another step toward implementing the 2004 Champaign County Greenways & Trails (G&T) Plan. Once implemented, the logos and sign types will help create a recognizable and consistent greenways and trails system of which Champaign County can be proud.

Methodology

The Champaign County Regional Planning Commission worked with all Greenways & Trails agencies through the Greenways & Trails Technical and Policy Committees to update the Champaign County Greenways & Trails Logos and to determine uses for those logos. The Champaign County Regional Planning Commission also researched sign types from other greenways and trails plans and systems throughout the country, and worked with the Committees to create cost-efficient and long-lasting signage types for different uses.

Approval and Amendment to Design Guidelines

The Greenways & Trails Technical Committee in January 2009 and the Greenways & Trails Policy Committee in April 2009 approved the Greenways & Trails Logos and Signage Guidelines. Both committees also amended the Greenways & Trails Design Guidelines document in April 2009 to include the final Logos and Signage as part of the document.

Logos

The Greenways & Trails logo should be used as so for the following purposes:

- Logo should include borderlines for letterhead usage.
- Logo should have no borderlines for signage usage.
- Logo should have white border when placed on green signage.

Signage

Dimensions

Dimensions for each Greenways & Trails sign type is listed in height by width format in each image caption.

13.6.1 Logo Images



Greenways and Trails Letterhead Logo



Greenways and Trails Signage Logo

Note: Logo should have white border when placed on green signage.

13.6.2 Stamp Logo on Oval Sign

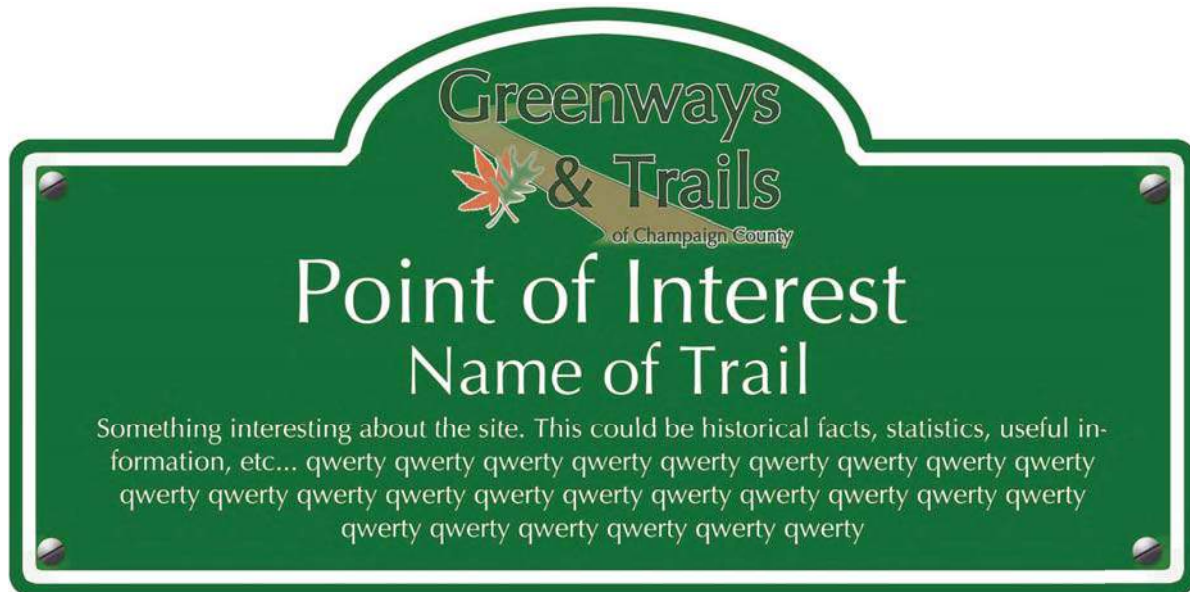


Oval Sign: 15" x 11"
Logo: Stamp

13.6.3 All Other Sign Images

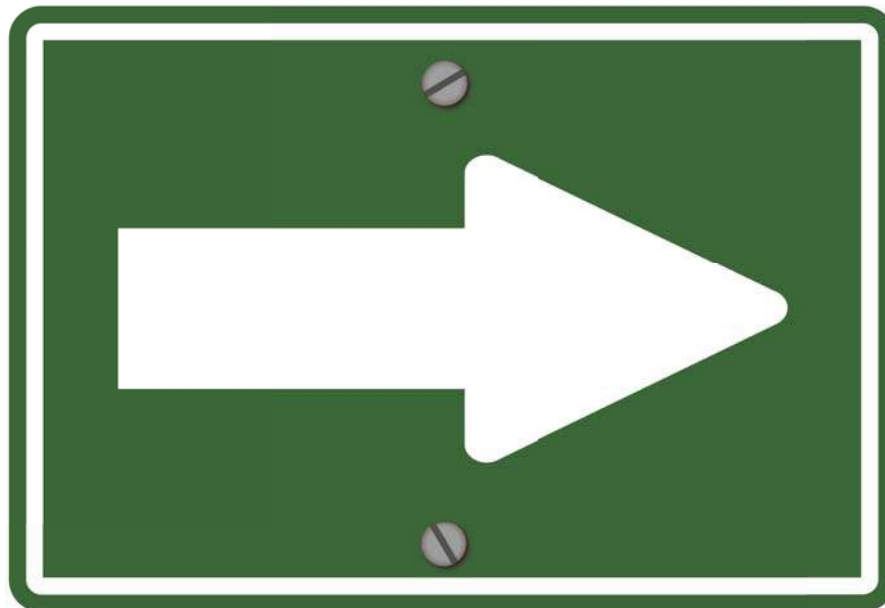


Mile Marker Sign: 18" x 9"
Logo: Stamp

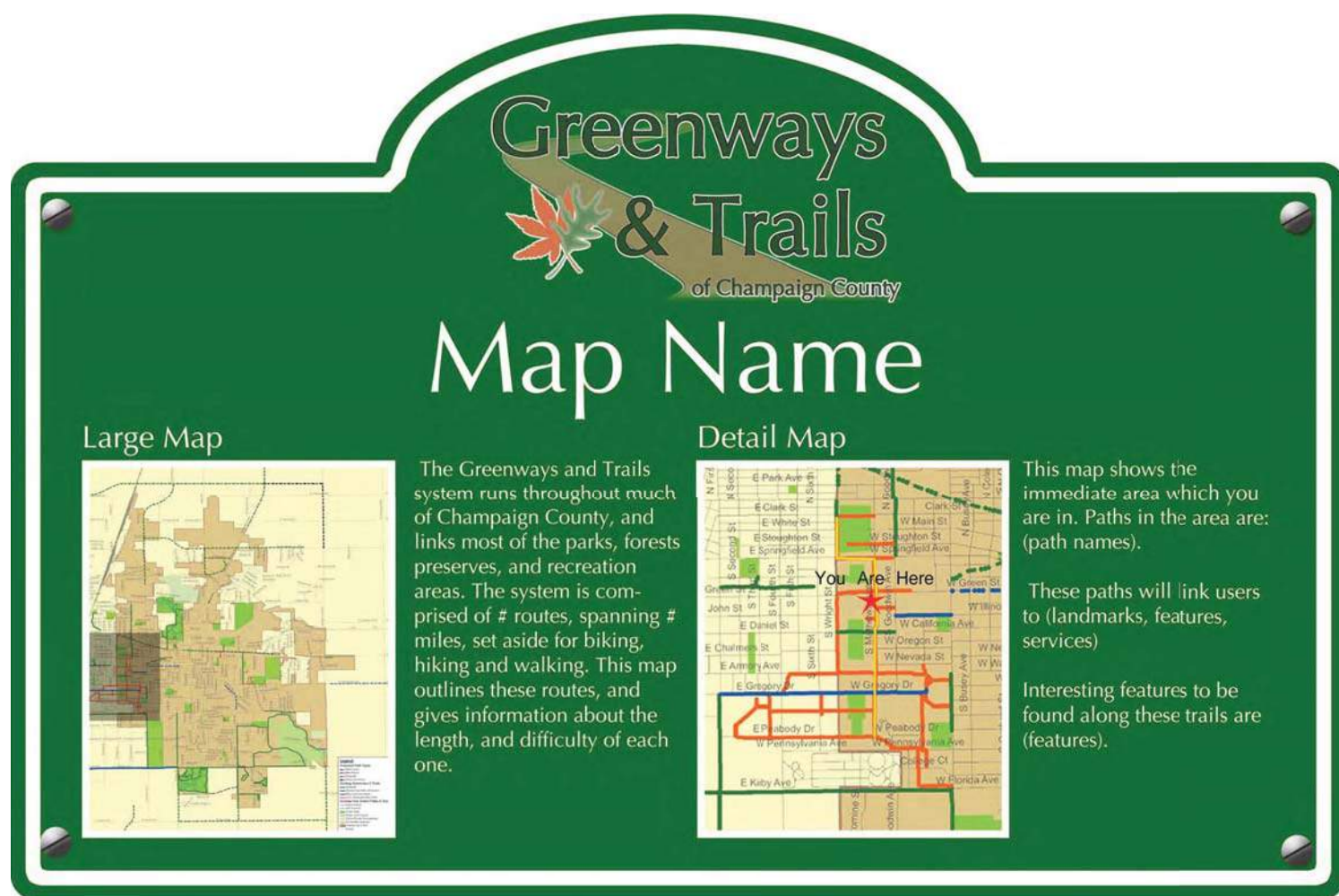


Point of Interest Sign: 18" x 36"

Logo: Signage

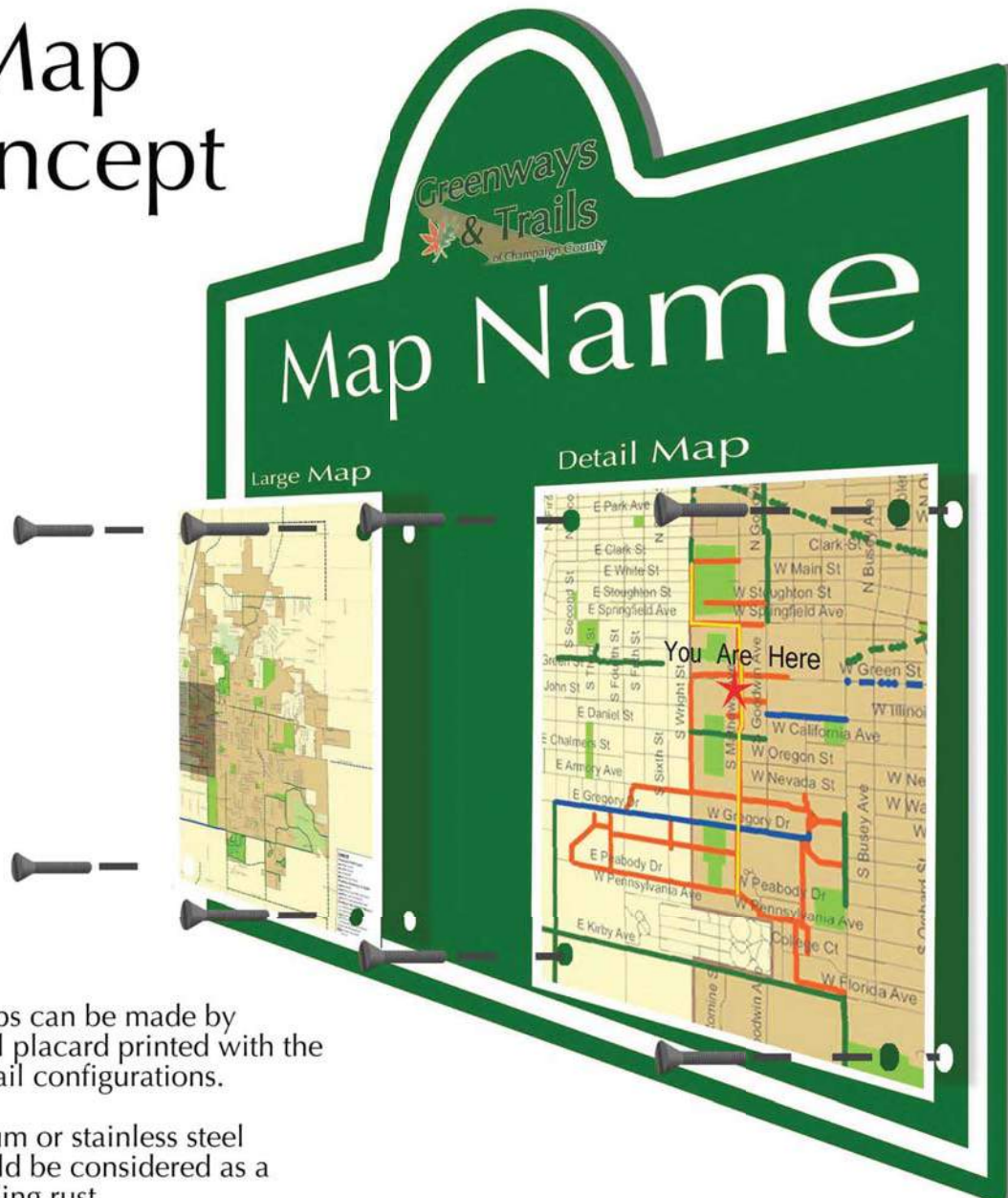


Arrow Sign: 7.5" x 11"



Map Sign: 24" x 36"
Logo: Signage

Removable Map Concept



Updates to maps can be made by replacing metal placard printed with the most current trail configurations.

Use of aluminum or stainless steel hardware should be considered as a means of avoiding rust.