

# **OHIO RIVER TRAIL COUNCIL**



## **Bicycle Parking Program**

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# Bicycle Parking Planning

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The Ohio River Trail Council (ORTC) works with government, businesses, non-profit organizations, community advocates, and individuals in determining the best bike rack location and design to meet their requirements, and the needs of bike commuters, customers, and visitors they want to serve. More than 1.5 million bicycles are reported stolen every year in the United States, and fear of bicycle theft is recognized as a significant deterrent to bicycle use. The availability of safe and convenient parking is as critical to bicyclists in the design and operation of shops, offices, schools, and other buildings. This ORTC Bike Rack Program Guide reviews bicycle parking planning, design, location, and installation requirements.

Bicycle parking facilities are classified into Class 1 and Class 2 facilities. Class 1 consists of lockers or racks in enclosed areas that provide security for long term. Class 2 includes stands or racks that provide protection from theft for the short term in unsupervised areas like outside a store, or for visitors to an office building, park, or Government service center.

Bicycle parking needs to be visible, accessible, easy to use, convenient, and plentiful. Racks need to support the whole bike (not just one wheel) and enable the user to lock the frame and wheels of the bike with a cable or U-shaped lock. Ideally, bike parking is located in a covered area (to protect the bike from rain, snow and other elements) by using an existing overhang or covered walkway or by constructing a canopy or roof -- either freestanding or attached to an existing building. Bike parking areas need to be well lit, and in plain view (highly visible location discourages theft and vandalism) without being in the way of pedestrians or motor vehicles.

The Manual on Uniform Traffic Control Devices bicycle parking guide sign (D4-3) should be used to inform bicyclists of parking areas. It is essential, that these criteria are attained, otherwise the majority of cyclists will not use improperly installed bike racks and will park where they deem their bike will be safe and it will deter many people from using their bikes for basic transportation.

The ORTC highly recommends the installation of on-street Bike Corrals, which are a low-cost way to provide parking for 10 or more bicycles in the same space typically occupied by a car.

Why install a bike corral?

- Bike corrals provide an opportunity to promote local business with bike accessibility while enhancing street and neighborhood identity.
- Bike corrals make it more convenient and inviting for people to ride a bike to a business.
- Bike corrals make the walking environment more welcoming by removing bicycles from the sidewalk in addition to increasing bike traffic in a neighborhood.
- Bike corrals increase the visibility of bicycling as a transportation choice and show that a business community is “bike friendly”—that it cares about its customers who ride bicycles.

- When installed adjacent to sidewalk cafes, corrals provide an additional buffer between people and passing vehicles. And when installed near crosswalks, corrals can shorten the crossing distance for pedestrians.

Two municipal studies conducted in Toronto and San Francisco showed that “while motorists may spend more per visit, cyclists tend to visit [local merchants] more often, are more numerous, and spend more per month.”

These are some of the findings from a Portland State University study done on the economic benefits of bike corrals in Portland, Oregon:

- Eighty-four percent of business owners strongly agreed or agreed that bike corrals enhance the street and neighborhood for residents and patrons.
- Two-thirds of the businesses surveyed said the bike corrals increased foot and bike traffic in the area.
- Businesses observed that on average one out of every four of their customers are bicyclists.

What do business’s and customers think about bicycle parking corrals?

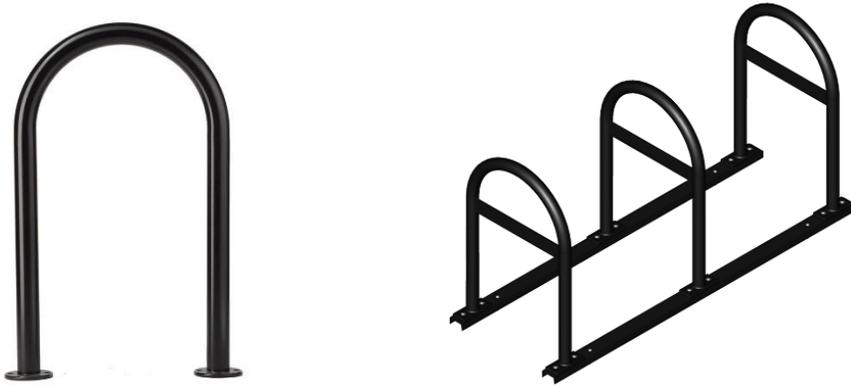
The presence of many bicycles parked in front of a business sends a message that an establishment is busy—and popular. People on bikes enjoy parking at—or close to—their destination. Customers who walk to businesses enjoy the increased availability of space on busy sidewalks with heavy foot traffic.



# Bicycle Parking Rack Design

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The Ohio River Trail Council (ORTC) highly recommends the Inverted U rack (Hoop) or one of its derivatives as the best designed bicycle parking rack.



Inverted U racks are designed to hold two bikes (counts as 2 spaces), one on each side, with middle of the bike leaning against the rack. A contractor often installs bike racks wrongly so that only one side is useful. Incorrectly installed bike racks can reduce bike storage capacity by 50%. The Rail-Mount Bike Rack or gangs of racks design (multiple racks on a common base) are easier to install as they have preset elements and need fewer anchors.

Bicycle Racks should:

- support the bicycle upright by its frame in two places
- permit the frame and one or both wheels to be locked to the rack with either a cable or U-shaped lock
- prevent the wheel of the bicycle from tipping over
- be securely affixed to concrete with tamper-proof expansion anchors
- be usable by bikes with water bottle cages
- be usable by a wide variety of sizes and types of bicycle
- resist being cut or detached using common hand tools, especially those that can be concealed in a backpack. Such tools include bolt cutters, pipe cutters, wrenches, and pry bars.

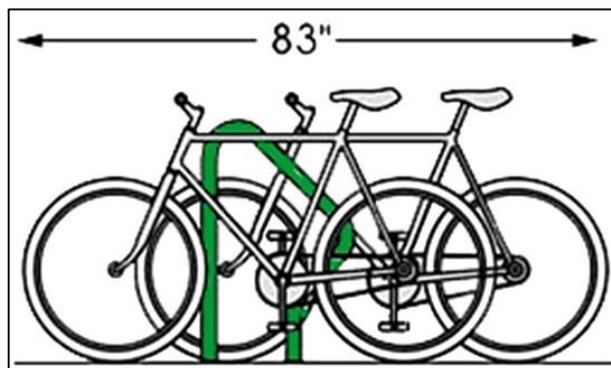


## Bicycle Parking Rack Location

Short-term bicycle parking (Class II) accommodates visitors, customers, messengers and others expected to depart within two hours. It requires a high degree of convenience (as close to destinations as possible). At least some short-term bicycle parking should be protected from the weather (a portion can be unprotected, since demand tends to increase during dry weather). The location of the rack should provide easy, independent bike access. The location of a rack area in relationship to the building it serves is very important. The best location for a rack area is immediately adjacent to the entrance it serves. Racks should not be placed so that they block the entrance or inhibit pedestrian flow in or out of the building. Racks that are far from the entrance, hard to find, or perceived to be vulnerable to vandalism will not be used by most cyclists. Empty racks should not pose a tripping hazard for visually impaired pedestrians. Position racks out of the walkway's clear zone.

The rack area should be located along a major building approach line and clearly visible from the approach. The rack area should be no more than a 30-second walk (120 feet) from the entrance it serves and should preferably be within 50 feet. A rack area should be as close as or closer than the nearest car parking space. A rack area should be clearly visible from the entrance it serves. A rack area should be provided near each actively used entrance. In general, multiple buildings should not be served with a combined, distant rack area. It is preferred to place smaller rack areas in locations that are more convenient.

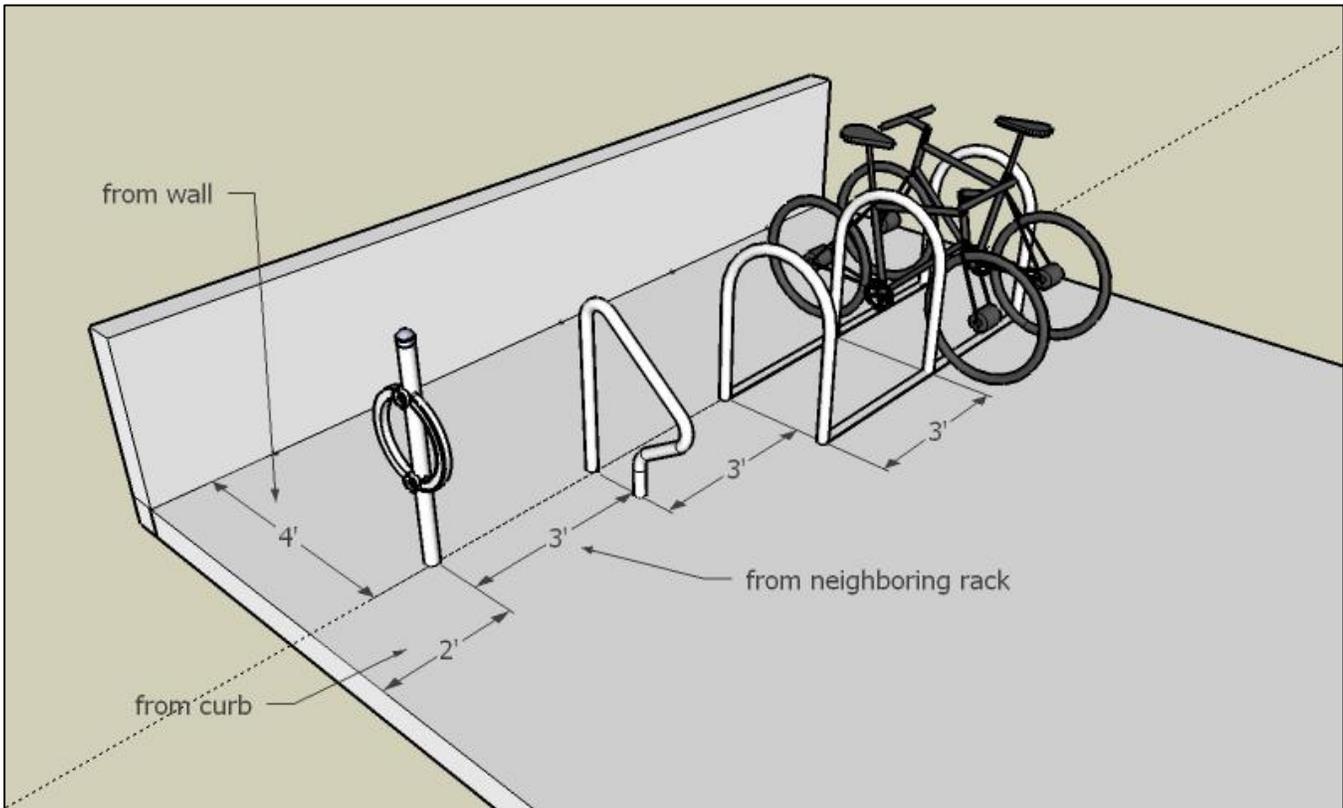
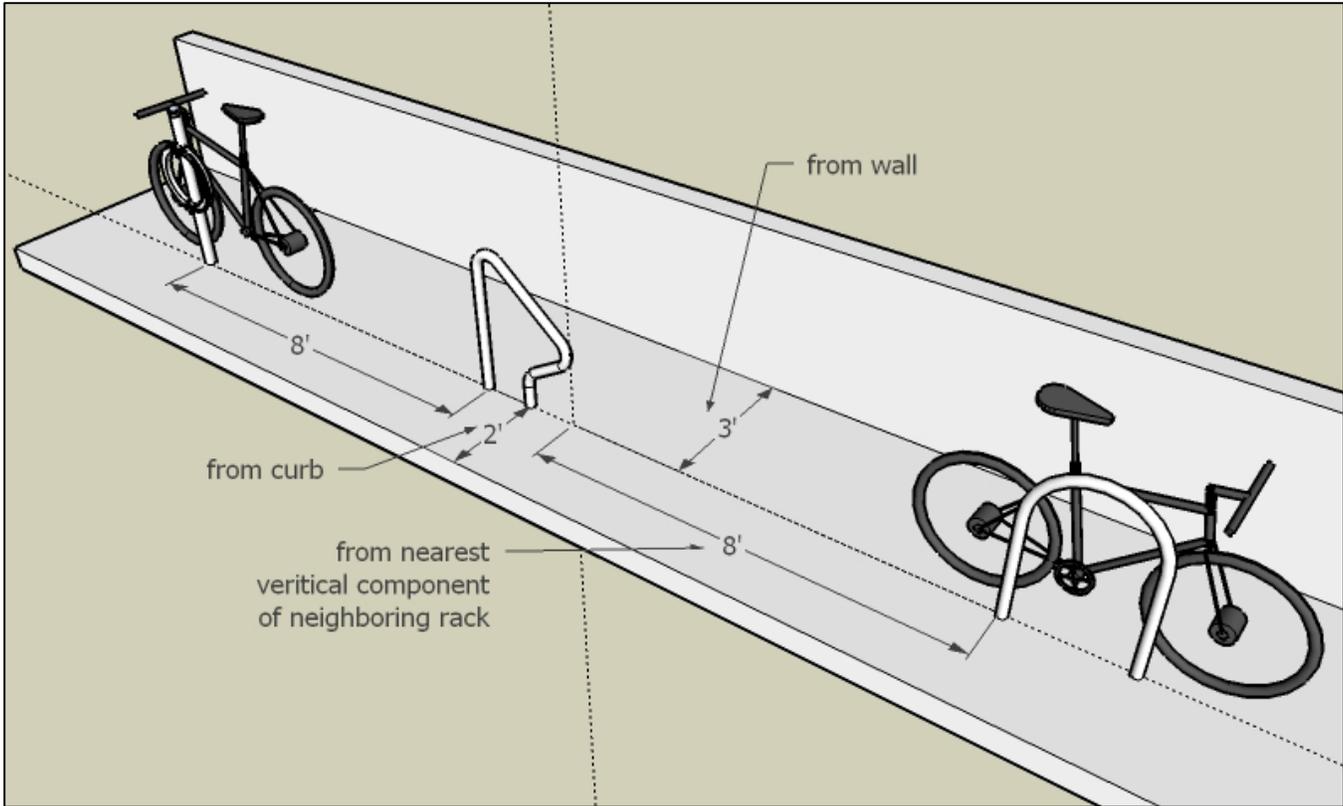
A bike rack is defined as one or more rack elements joined on any common base or arranged in a regular array and fastened to a common mounting surface. The rack should be installed in an area highly visible to an entrance used by building/site visitors. Inverted "U" rack elements mounted in a row should be placed on 36" centers. A minimum of 30" of clear space, free of all fixed objects such as walls and fences, must be provided in all directions of the rack. Racks should not be installed in locations that may obstruct expected pedestrian paths. This allows enough room for two bicycles to be secured to each rack element. Normally, the handlebar and seat heights will allow two bicycles to line up side-by-side if one of them is reversed. When there is a conflict, the bikes can be placed slightly offset from one another. If the racks are placed too close together, the cyclists will look for an alternative place to park or use one rack per bike and reduce the projected parking capacity by 50 percent. A standard bike takes up about 6 feet in length; however, when offset the combined length is 8' 3".



The minimum space between each rack is 3'0", more if possible, to allow for ease of access. The minimum aisle width that separate rows of racks is a distance of 4'-6", which allows one person to walk one bike. In high traffic areas, the suggested width is 6'-0". Aisle widths are measured tip to tip of bike tires between the rows of racks. Six feet should be allowed for each row of parked bicycles. Conventional upright bicycles are just under than 6'-0" long, with handlebar widths varying from 22"- 27", which is easily accommodated by these spacing recommendations.

Locate racks in well-lit areas, where lighting increases security of property and personal safety. To add weather protection, take advantage of existing overhangs or awnings - this is a creative, low-cost way of providing some weather shelter. Cover that is too high will not protect bicycles from rain and sun as well as protect cyclists from rain when they are locking or unlocking their bicycle. In areas where there is limited opportunity to provide weather protection, building a roof is a good best solution.





# Bicycle Parking Corrals

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A Bicycle Corral is on-street bike parking which consists of bicycle racks grouped together in a common area within the public right-of-way traditionally used for automobile parking. Bicycle corrals are reserved exclusively for bicycle parking and provide a relatively inexpensive solution to providing high-volume bicycle parking. Bicycle corrals can be implemented by converting one or two on-street motor vehicle parking spaces into on-street bicycle parking. Bicycle corrals move bicycles off the sidewalks, leaving more space for pedestrians, sidewalk café tables, etc. Because bicycle parking does not significantly block sightlines, it may be possible to locate bicycle parking in 'no-parking' zones near intersections and crosswalks. Bicycle corrals may also be located on the sidewalk where roadway paving and development projects allow for large curb extensions into the parking zone, although a curb ramp, rolled curb or other device should be used to ensure bicycle access from the street is maintained.

## Bicycle Corrals Benefits:

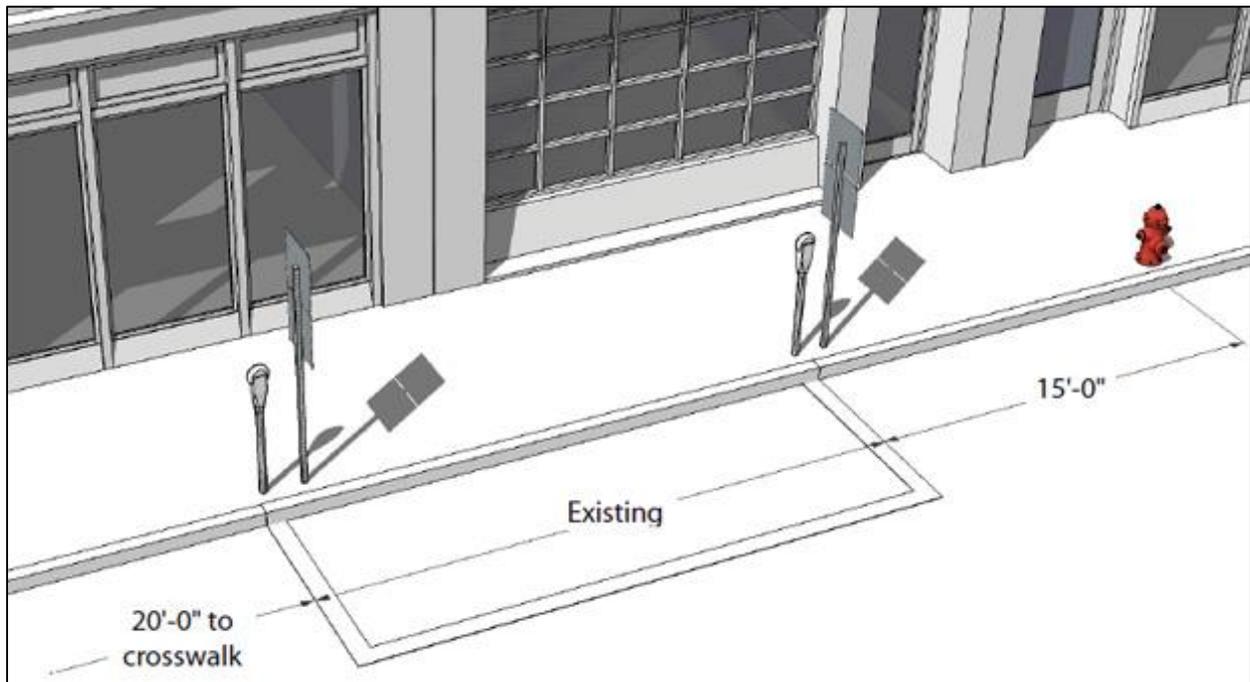
- Can be used with parallel or angled automobile parking.
- Protect bicycles from motor vehicles with physical barriers such as curbs or bollards and through application of other unique surface treatments (e.g. green thermoplastic markings) as needed.
- Establish maintenance responsibility when facility is built, particularly regarding street sweeping.
- Provide access to the bike parking from both the sidewalk and the roadway.
- Locations nearest to street corner may provide advantages to both pedestrians and motorists.

## Bicycle Corrals Design Specifications:

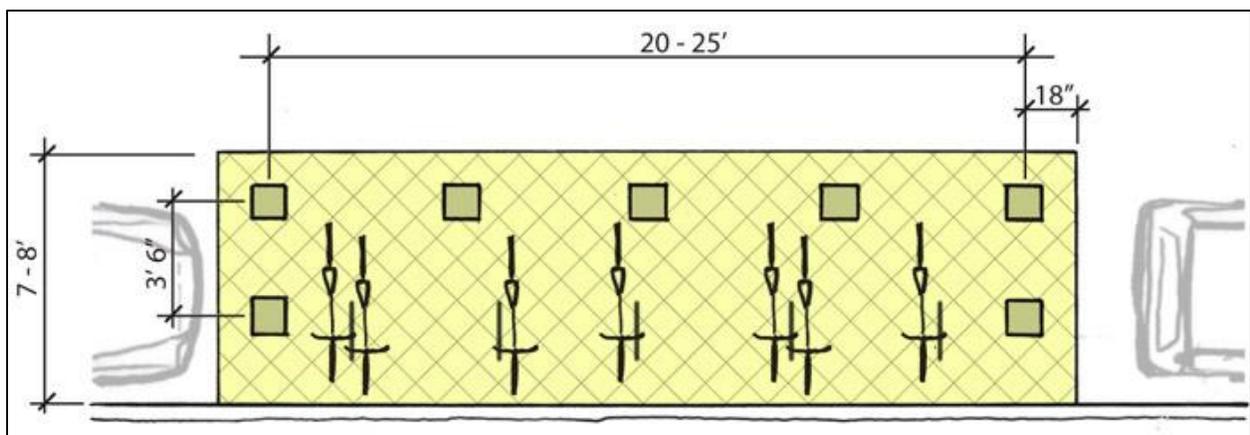
- Solid White Thermoplastic Reflective Tape/Paint
- 28-inch Fluorescent White Flexible Bollards with Reflective Band
- U-Shaped Bike Racks, angled 60 or 90 degrees to curb
- Bicycle Parking Sign
- Curb Painting
- 5-foot Concrete Parking Block, Painted
- On-street Bicycle Decal, Painted
- Minimum dimension is 20-feet by 7-feet (or area of existing on-street parking space)
- Five U-Shaped Racks per corral to provide 10 bike parking spaces
- Six U-Shaped Racks per corral to provide 12 bike parking spaces
- Minimum 30-inches clearance from the curb to centerline of rack
- Minimum 30-inches clearance between inline racks
- 48-inches clearance at access aisles, marked with painted bike decal, optional
- Galvanized, Powder Coated, or Stainless Steel finish on racks are recommended
- The Bike Corral must not extend into travel lane
- Inline locations should be chosen in front of businesses with a high degree of customer turnover.

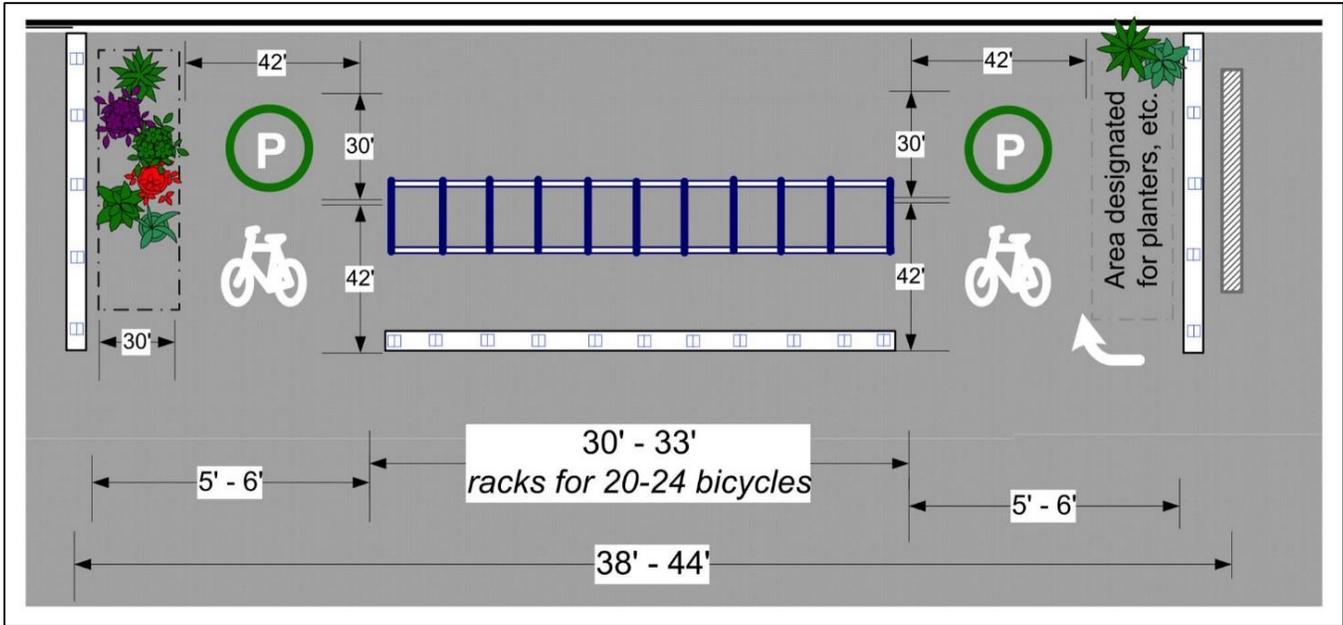
- Additional pavement markings and buffers such as rubber parking blocks, bollards, or planters are recommended to delineate bike parking area.
- Local codes and ordinances must be referenced prior to placement, with visibility for night-time use to be considered.

Do not install Bike Corrals within 3-feet of public or private driveway, 15-feet of a fire hydrant on the street, 5-feet of fire hydrant on a sidewalk, 20-feet of a crosswalk at an intersection, 30-feet upon approach of stop sign or other traffic control signal, 5-feet of any electrical, water or sewer utility, and at any place where official signs prohibit standing. Below is the design for a 10-bike corral. (Five inverted U-racks)



A bike corral transforms a standard parking lane or sidewalk area into bike parking for 4-8 bikes per five-foot section. Bikes can be placed at 45° angles to increase pathways between pedestrian or traffic lanes.





# Bike Corrals

## LOCAL BUSINESS IMPACTS, BENEFITS, AND ATTITUDES (S306)

Beginning in 2004, the City of Portland began an ambitious program designed to increase bicycle parking capacity, further promote utilitarian bicycling, and encourage healthy living. By reallocating one or more on-street auto parking spaces in dense commercial areas, room was created to provide on-street bike corrals, each capable of accommodating 12 to 24 bicycles. These bike corrals were placed in the parking lane at roadway grade. Six to twelve standard staple racks provide parking capacity, while paint, small flexible bollards, and/or rubber bumpers demarcate the exclusive bike parking area from the rest of the street. Bike corrals quickly caught on with both bicyclists and business owners—the latter clamoring for more. A preliminary study, conducted in 2010, sought to identify the perceived benefits of having a business located within a half-block of a bike corral. The key results are illustrated below.

For more information please contact:  
 Drew Messel, AIA Planning + Design  
 d.messel@portlandplanning.com  
 503.575.2775

### WHAT ARE LOCAL BUSINESS OWNERS SAYING ABOUT BIKE CORRALS? THE TOP 5 CITED BENEFITS ARE THAT BIKE CORRALS:



**70% OF BUSINESSES**  
 AGREE THAT DEMAND FOR BIKE  
 PARKING HAS INCREASED OVER TIME.

**97 TOTAL**  
 CORRALS  
 IN 2013

NEARLY ONE HUNDRED  
 BIKE CORRALS ARE CURRENTLY  
 ON THE STREETS OF PORTLAND.  
 AN ADDITIONAL 50 BUSINESSES ARE ON THE WAIT LIST.

**1/3 OF BUSINESSES ESTIMATE THAT**  
**6 OUT OF EVERY 10**  
 CUSTOMERS ARRIVES BY BIKE.

**AN 800% INCREASE IN**  
**PARKING CAPACITY**  
 IS ACHIEVED BY REPLACING TWO MOTOR  
 VEHICLE PARKING SPACES WITH ROOM FOR  
 18 BICYCLES.

SOURCE: Drew Messel, Bike Corrals: Local Business Impacts, Benefits, and Attitudes, Portland State University School of Urban Studies and Planning (2010)





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# Bicycle Parking Rack Installation

## PARK A BIKE Asphalt Anchor Installation Instructions

### TOOLS NEEDED FOR INSTALLATION

1. Safety glasses and ear plugs
2. Hammer drill w/ 7/8" x 16" carbide masonry bit
3. Soft face mallet
4. 9/16" box wrench
5. Compressed air
6. 4 oz. water

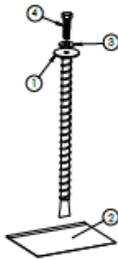
**NOTE:** These instructions are for installation of strike anchors in ASPHALT ONLY.

**CAUTION:** Be sure to wear eye and ear protection when drilling holes.

### In the Kit:

1. Asphalt anchor assembly, 3/8" X 16UNC
2. Quick set anchor mix
3. Galvanized steel washer
4. Hex head bolt 3/8" X 16UNC -1-1/2"

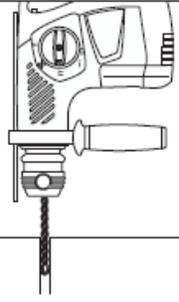
Quantity depends on which kit was purchased.



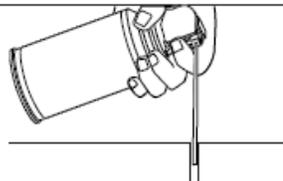
1. Place the rack on the surface where it is to be mounted, checking for set backs to walls, curbs, pedestrian walkways and wheelchair accessible areas.



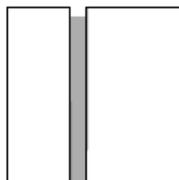
2. Use the flange as a template to mark the placement of the holes- removing the flange once the holes are marked. Wearing eye and ear protection, insert a 7/8" bit and drill the hole to a 14" depth.



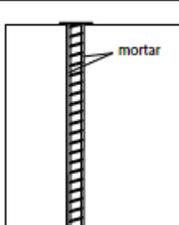
3. Clean out and around the holes with a small blast of air.



4. Add 4 oz. of water to every 16 oz. of anchor mix, stirring the mix as water is added. The mortar should be a thick paste. Pour the mortar to fill the hole.



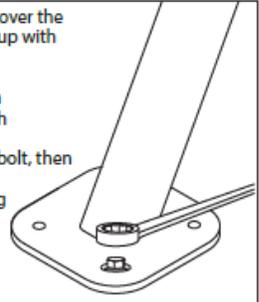
5. Drop in the anchor, making sure it's aligned and flush with the top of the hole. Use a soft face mallet to drive the anchor into the hole if necessary. Remove any excess mortar and wait 15 mins before proceeding to the next step.



6. Place the flange over the holes, lining them up with the anchors.

Insert the bolt with the washer through the flange and finger-tighten the bolt, then use a box wrench to finish tightening 3-4 full turns.

Wait 1 hour before using the rack.



For questions or concerns regarding installation using asphalt anchors, please call Park A Bike at 800-630-7225 or email us at [info@parkabike.com](mailto:info@parkabike.com).

These installation instructions are intended for the install of asphalt anchors in asphalt only. For instructions on installing a bike rack in other surface materials, please contact Park A Bike or download our installation instructions for our concrete anchors.

**Park A Bike**  
smart racks | smart solutions  
[www.parkabike.com](http://www.parkabike.com)  
[info@parkabike.com](mailto:info@parkabike.com)  
800-630-7225

Rochester Riverfront Park Bike Rack  
Concrete Pad Specifications  
Concrete depth: 6 inches  
Mix: 4000-psi mix  
Base: Two inches of reclaimed 2B Gravel  
Fibers: Fiber Super Net  
Total depth: concrete (6") + base (2") = 8"

