

# Ohio River Trail Council

Bicycle Friendly Community Initiative



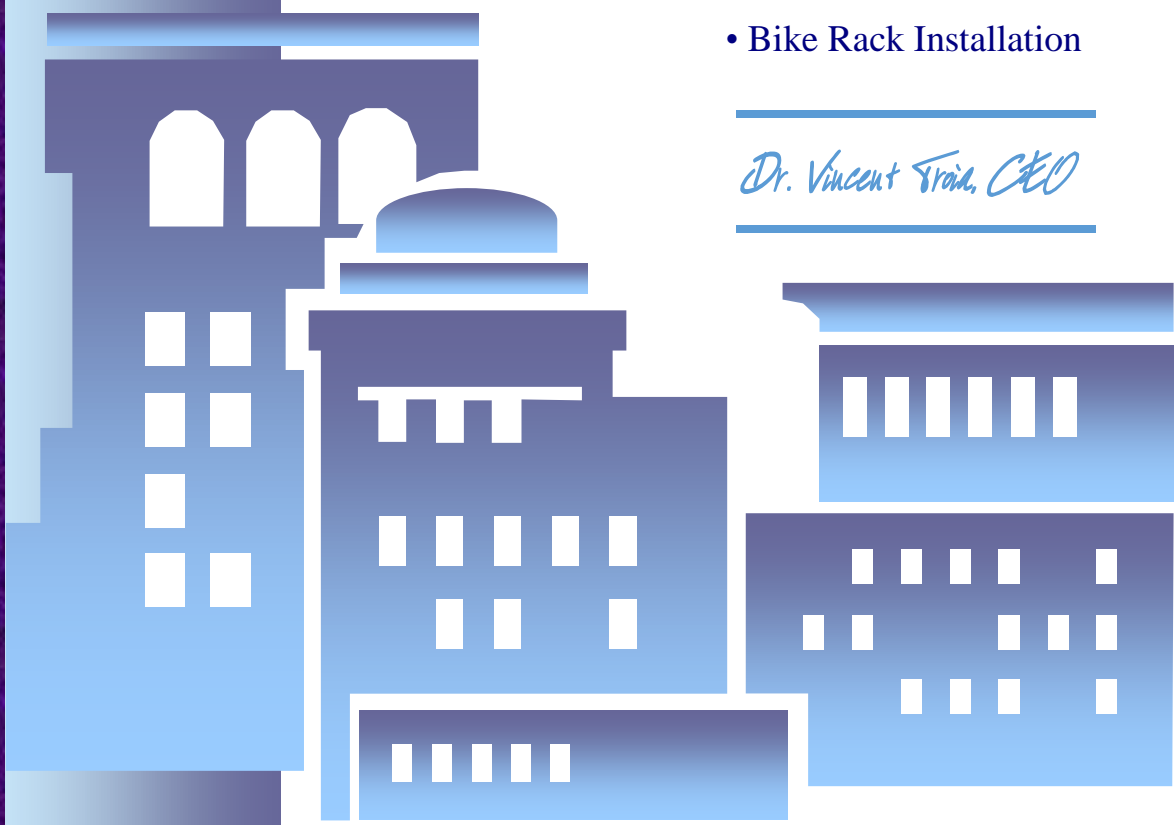
## BIKE RACK PROGRAM

- Bike Rack Planning
- Type of Bike Rack
- On-street Bike Parking
- Bike Rack Installation

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*Dr. Vincent Traia, CEO*

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# BIKE RACK PLANNING

The Ohio River Trail Council (ORTC) works with government, businesses, community advocates, and individuals in determining the best location and design to meet their needs, 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 Planning Guide reviews bicycle parking 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. Publicize the availability and location of bicycle parking in marketing, advertising and informational pamphlets. It is essential, that these criteria are attained, otherwise the majority of cyclists will not use what is provided and will park where they deem their bike will be safe and it will deter many people from using their bikes for basic transportation.



## Type of Rack

The ORTC recommends that the Inverted U type bike rack or one of its derivatives as the best bicycle parking rack, although other racks may be proposed for specific performance requirements.

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 anchored to concrete
- 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.

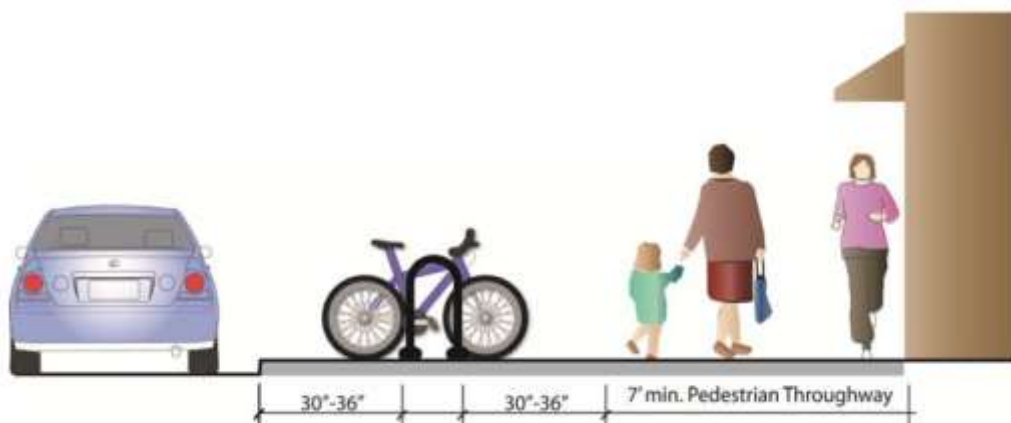


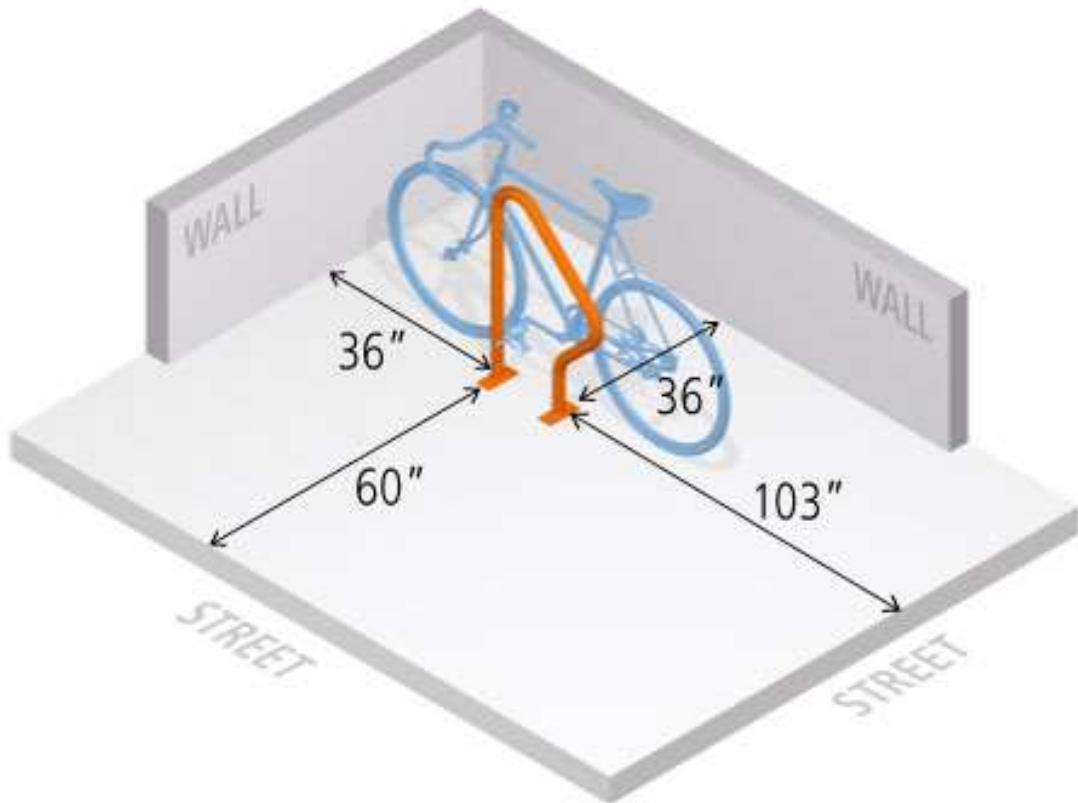
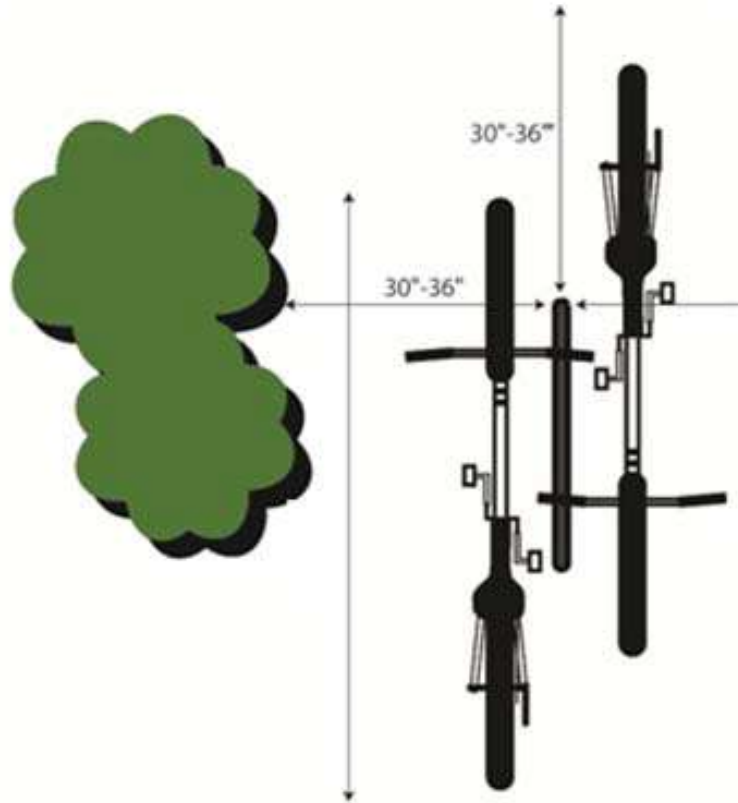
## Short-Term Rack Locations

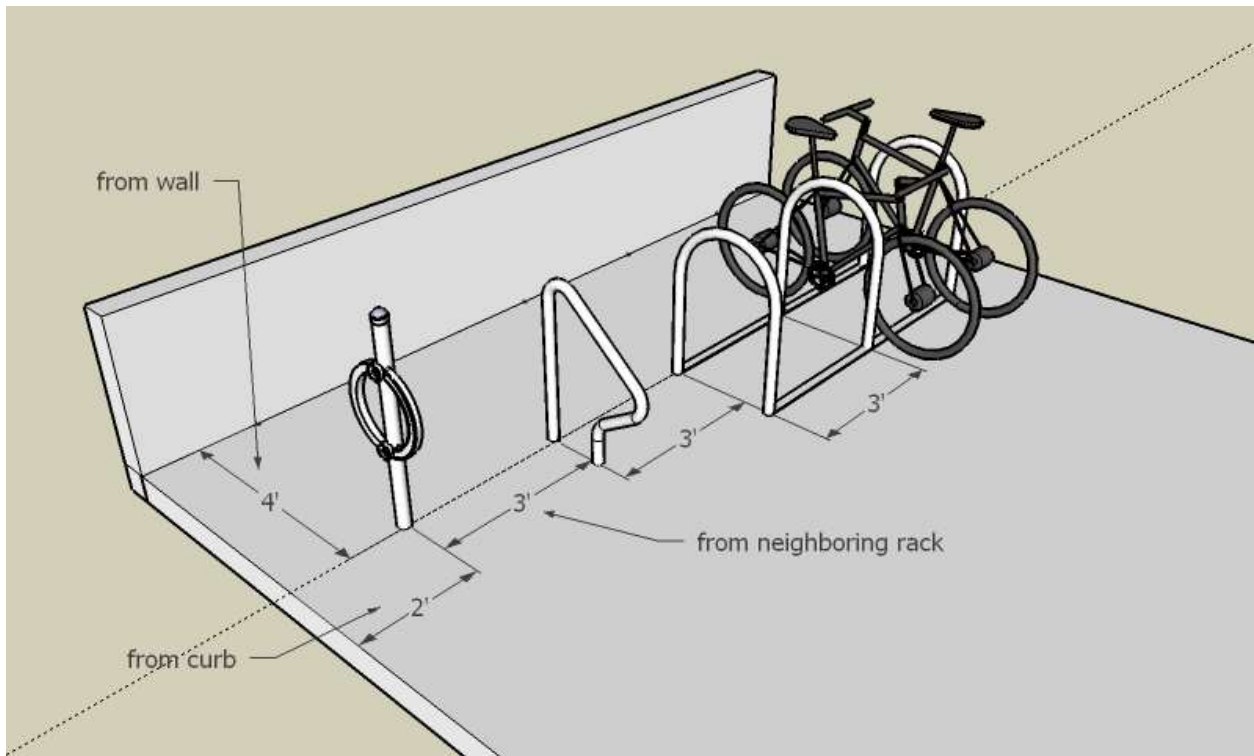
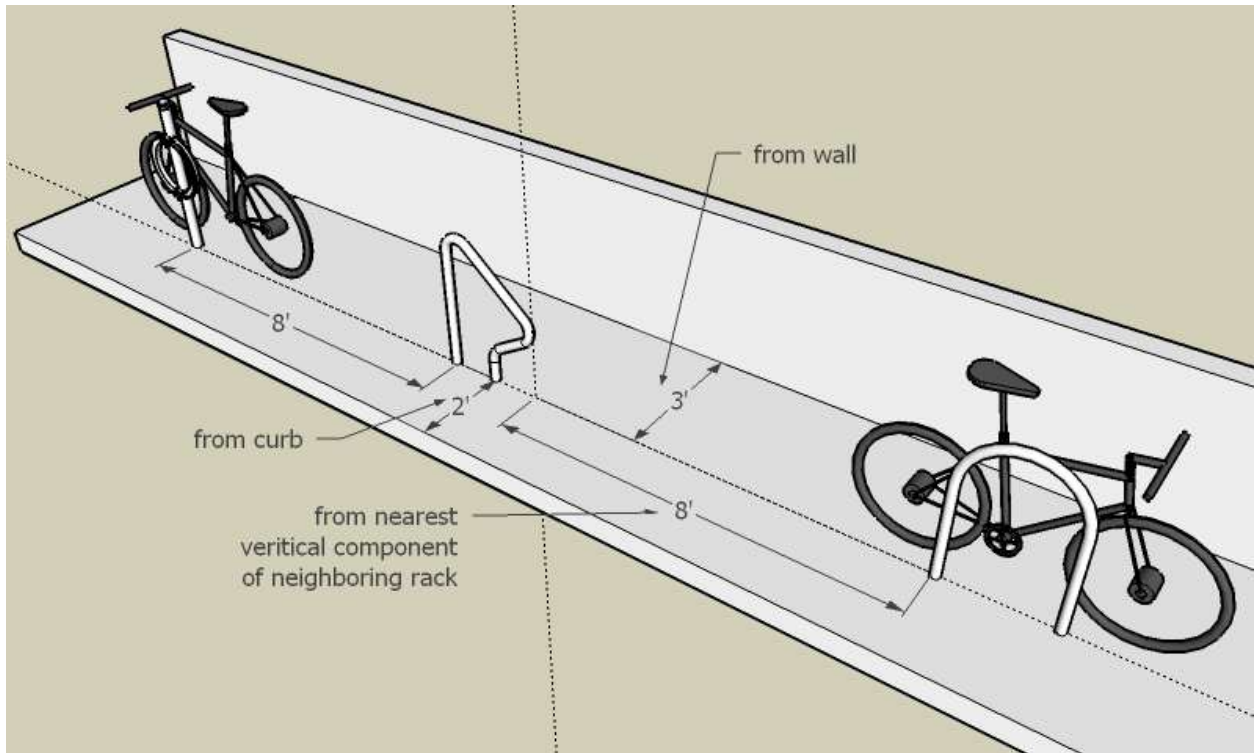
Short-term bicycle parking accommodates visitors, customers, messengers and others expected to depart within two hours. The location of the rack should provide easy, independent bike access. The location of a rack area in relationship to the building it serves is very important. The best location for 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. Inverted "U" rack elements mounted in a row should be placed on 30" to 36" centers. 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 as shown. If the racks are placed too close together, it becomes difficult to attach two bikes to the same element. If it is too inconvenient and time consuming to squeeze the bikes into the space and attach a lock, cyclists will look for an alternative place to park or use one rack element per bike and reduce the projected parking capacity by 50 percent.





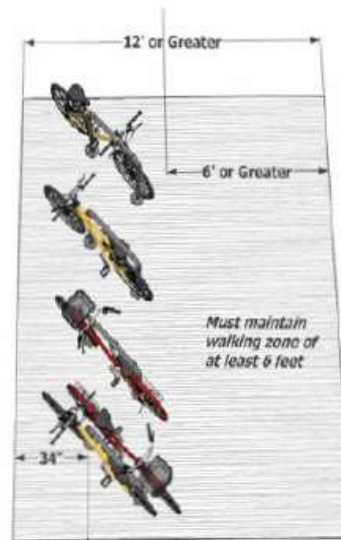
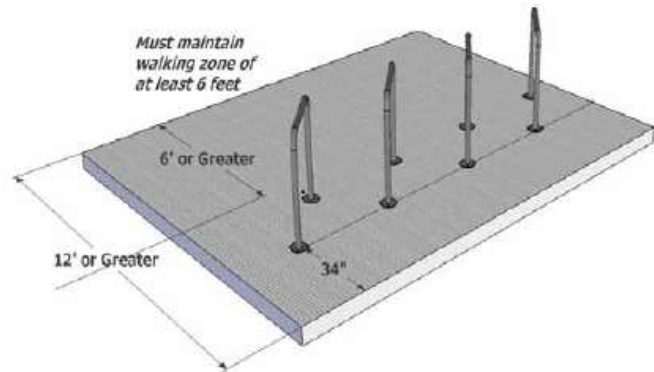


### Example: U-racks placed on an angle

An example of an alternative installation for a bike rack is the U-rack placed on an angle. This type of installation has proven successful at various locations including at 1515 Arch Street.

### Important considerations for this type of installation include:

- Racks placed at 45 degrees from perpendicular to the curb line require at least 42 inches between each rack on installation
- Racks must be moved further back from curb line to 34" setback
- Sidewalk walking zone space should not be reduced to less than 6 feet. This should be calculated with bicycles parked on the rack.
- Parked bicycles occupy 6 feet of linear space along the long axis of the rack. This should be used as a baseline for calculating the remaining walking space.

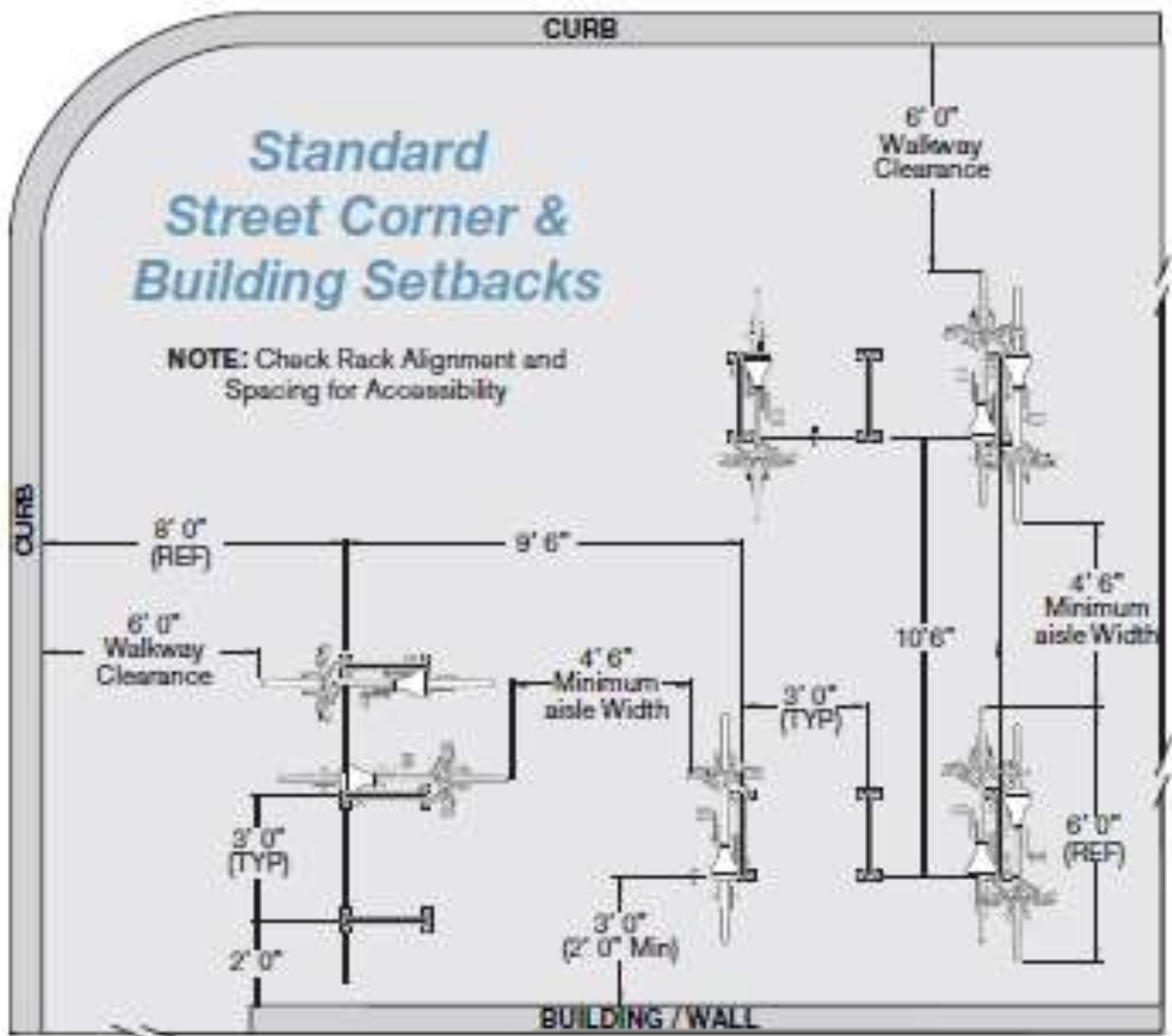


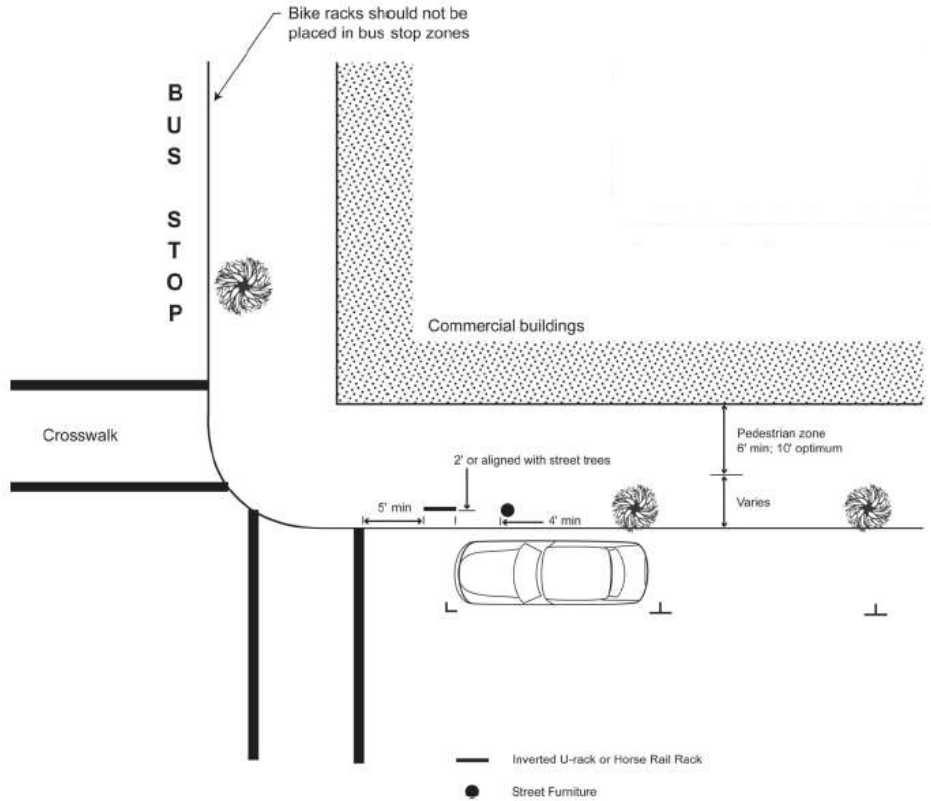
The minimum space between each rack is 3'0", more if possible to allow for ease of access. Aisles separate the rows of racks, with a minimum between aisles to be 4'-6", to allow one person to walk one bike.

In high traffic areas, the recommended aisle 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 less than 72 inches long, with handlebar widths varying from 22" - 27", which can be easily accommodated with the spacing recommendations.





## Clear Space

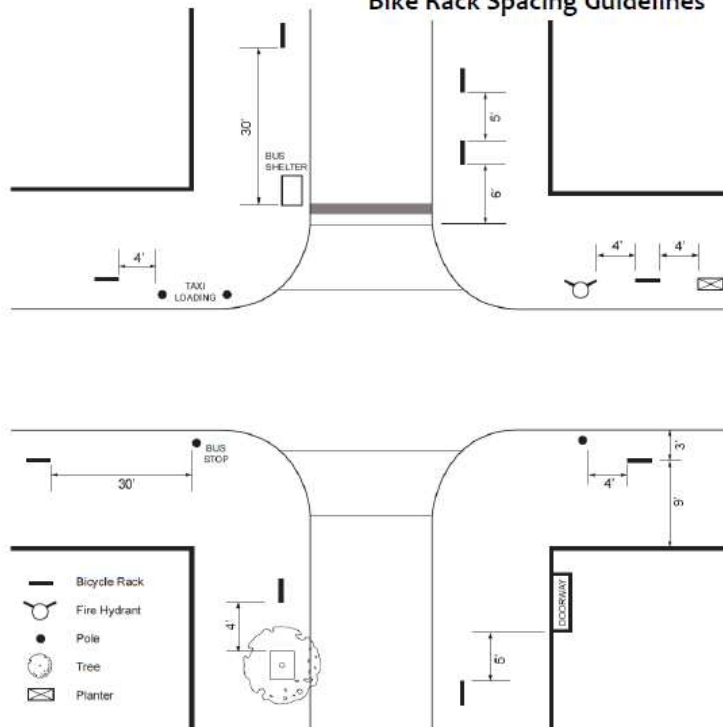
The minimum clear space for foot or wheelchair traffic required by the City of Philadelphia Complete Streets Handbook is 6 feet though in high-traffic areas, the minimum clearance may be 8 feet or greater.

Clearance measurements are taken with a standard bicycle parked against the rack. Practically, this means that most sidewalks 9 feet wide or less are unsuitable for bike parking in the public right of way. On busy sidewalks, this requirement for clear space may be increased depending on other factors such as commercial uses, pedestrian flows and adjacent features. Please refer to the attached diagram for illustrations of many of these obstructions. Bike racks must provide 4' clearance to utility access, trees, fire hydrants, street poles, bus stops etc. Racks should not be placed within 5' from the center line of any doorways.

Refer to information provided in the Complete Streets handbook if you have questions about the suitability of your location for a bike rack.

<http://philadelphiastreet.com/handbook.aspx>

## Bike Rack Spacing Guidelines



\* All dimensions identified are expressed as minimums  
 \*\* Bicycle racks are a standard 2'6" in length  
 \*\*\* Clearance for bicycle racks is 45' for articulated bus routes.

# BICYCLE PARKING RACK PLACEMENT

## RACK PLACEMENT

### RULES;

5' from:

Fire hydrant  
Crosswalk

4' from:

Loading zone  
Bus stop  
Bus shelter  
Bus bench

Min. 2', Rec. 3' from:

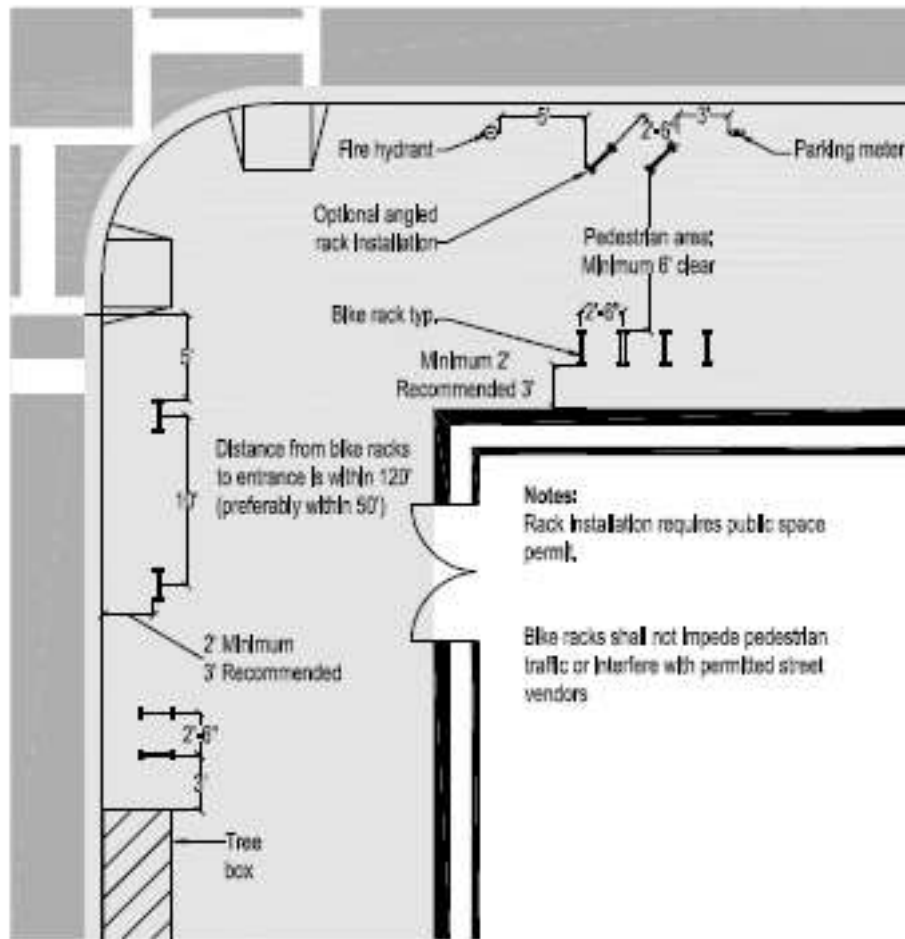
Curb

3' from:

Parking meter  
Newspaper rack  
US mailbox  
Light pole  
Sign pole  
Driveway  
Tree space  
Trash can  
Utility meter  
Manhole  
Other street furniture  
Other sidewalk obstructions

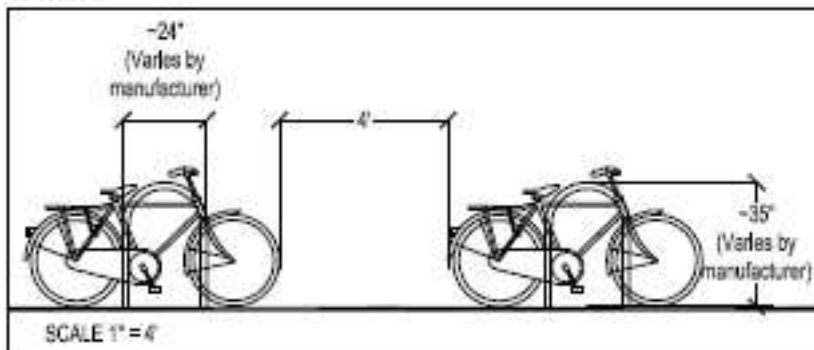
### WALL SETBACKS

For racks set parallel to a wall:  
Min. 24", Rec. 36"  
For racks set perpendicular to a wall:  
Min. 28", Rec. 36"

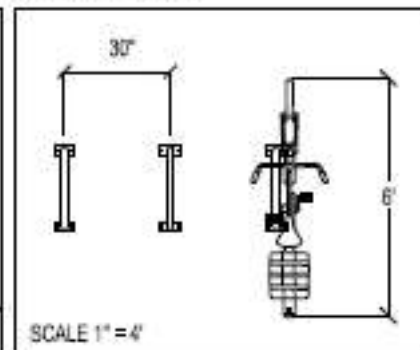


SCALE 1" = 10'

### SIDE VIEW



### SIDE BY SIDE RACKS:



# On-Street Bike Parking

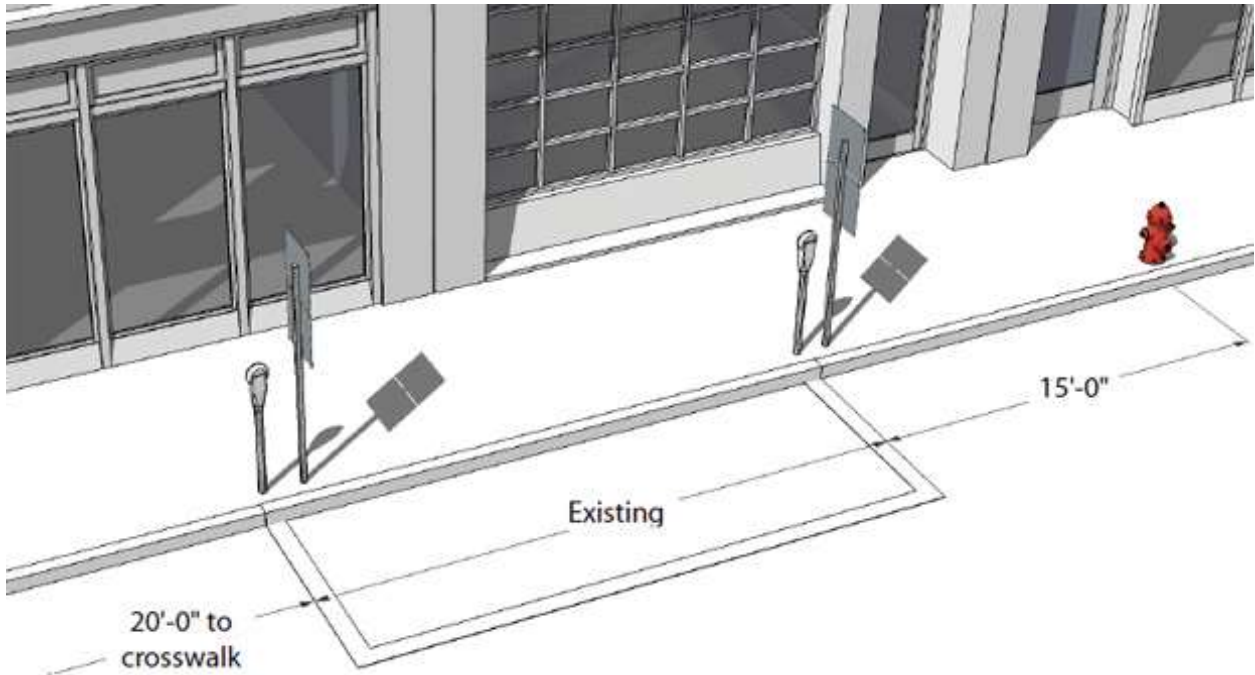
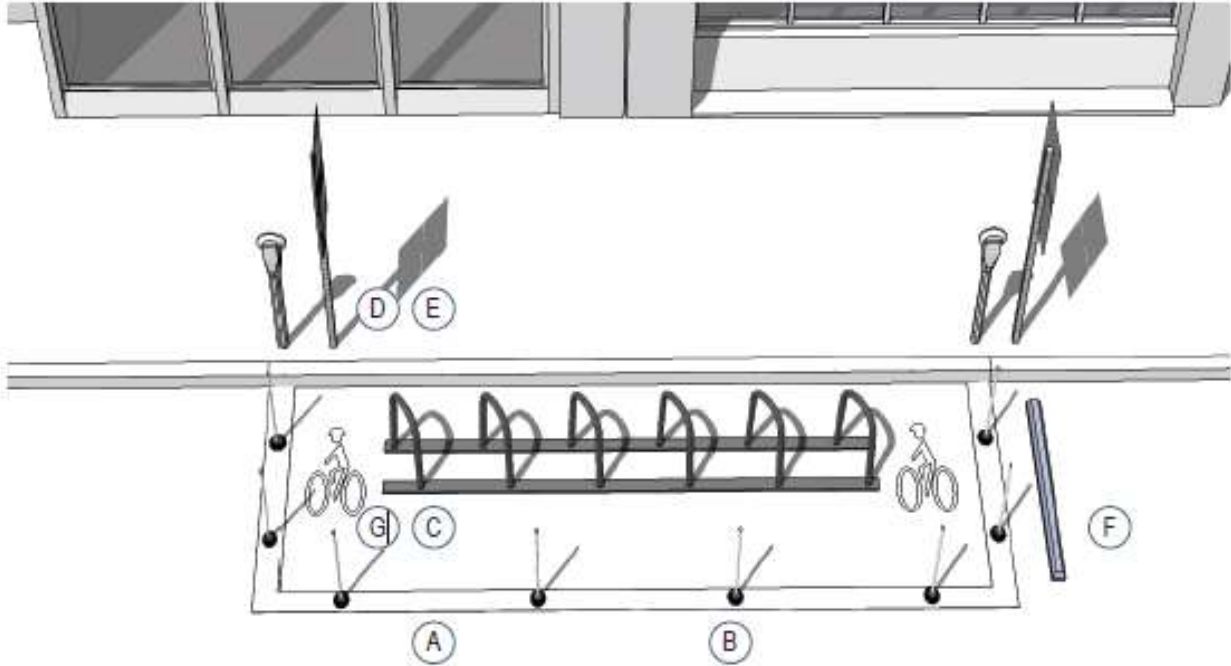
On-Street Bike Parking (also known as Bicycle Corrals) consist of bicycle racks grouped together in a common area within the public right-of-way traditionally used for automobile parking. Bicycle corrals are reserved exclusively for bicycle parking and provide a relatively inexpensive solution to providing 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:

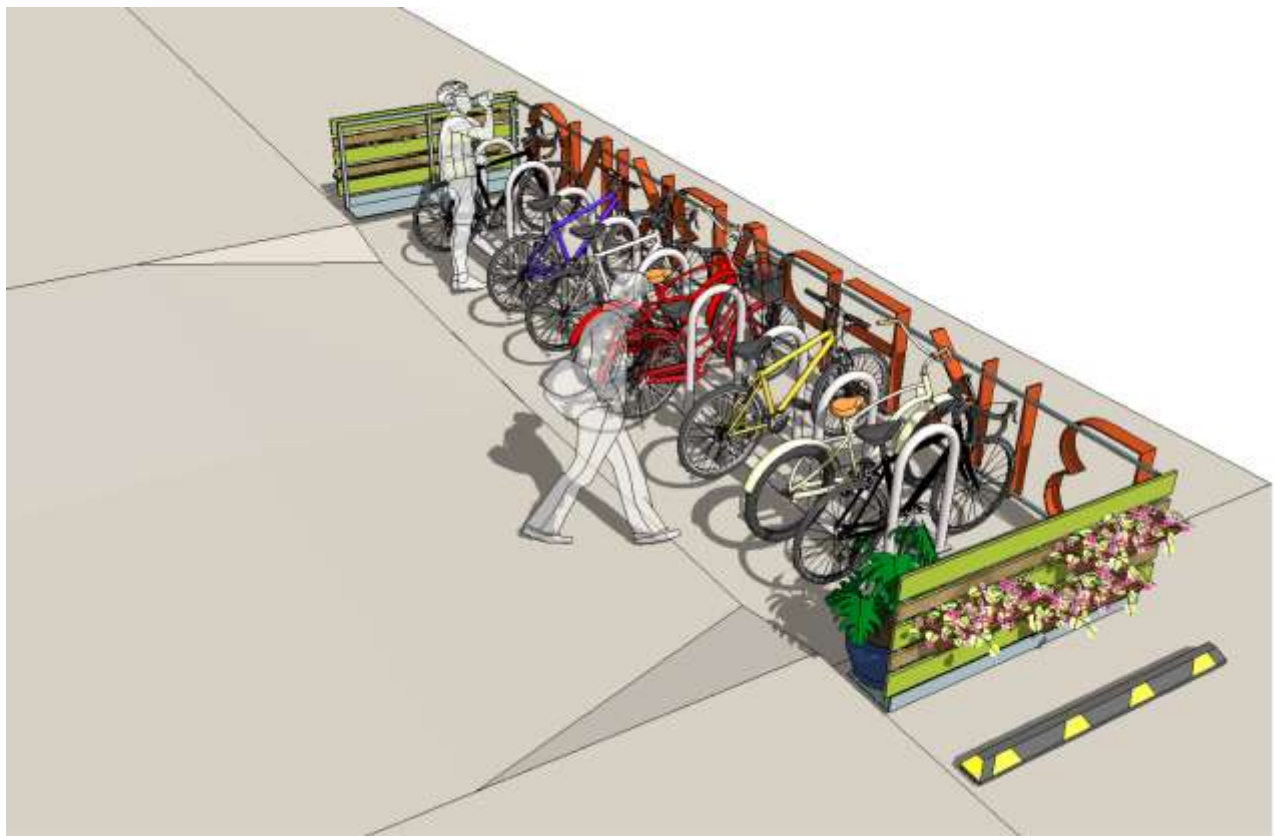
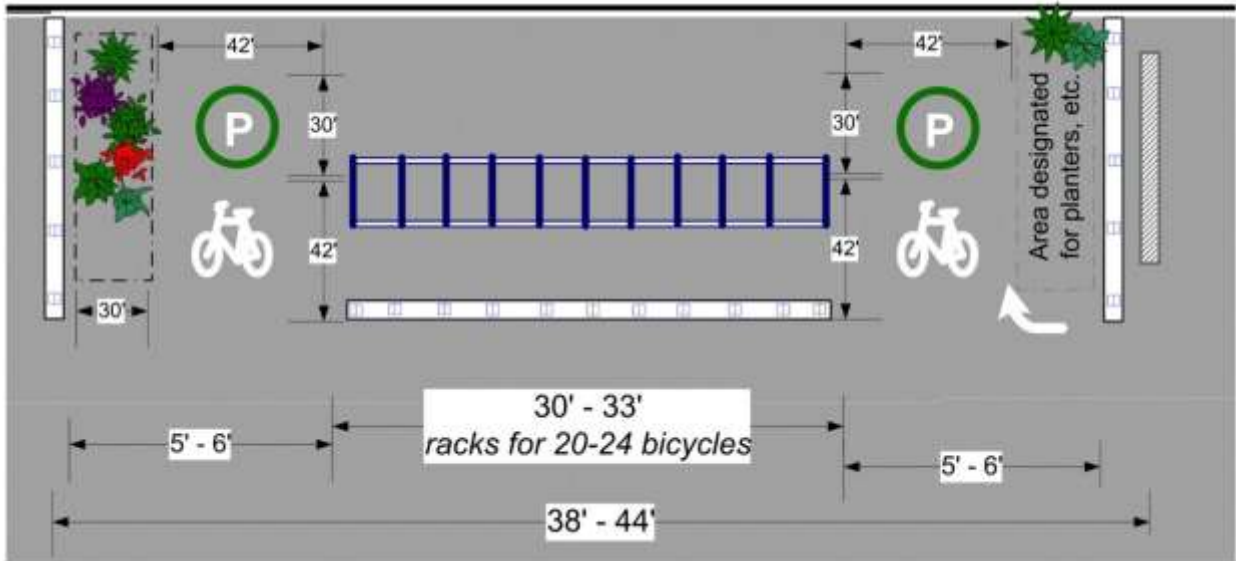
- Can be used with parallel or angled automobile parking.
- Protect bicycles from motor vehicles with physical barriers such as curbs or bollards and through application of other unique surface treatments (e.g. green thermoplastic markings) as needed.
- Establish maintenance responsibility when facility 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 Thermo Plastic 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
- Corral dimension is 20-feet by 7-feet (or area of existing on-street parking space)
- 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 finish on racks is 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.



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.

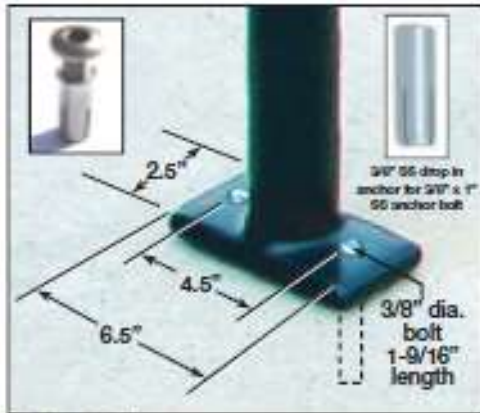


# Design Summary for Bicycle Parking

Design Issue	Recommended Guidance
Rack Spacing	Position racks so there is enough room between parked bicycles. Racks should be situated on 36" recommended centers. A five-foot aisle for bicycle maneuvering should be provided and maintained beside or between each row of bicycle racks. For sidewalks with heavy pedestrian traffic, at least seven feet of unobstructed right-of-way is required.
Minimum Rack Height	To increase visibility to pedestrians, racks should have a minimum height of 33 inches or be indicated or cordoned off by visible markers.
Signing	Where bicycle parking areas are not directly visible and obvious from the right-of-way, signs at least 12 inches square should direct them to the facility. The sign should include the name, phone number, and location of the person in charge of the facility, if applicable.
Lighting	Lighting of not less than one foot-candle illumination at ground level should be provided in all bicycle parking areas.
Frequency of Racks on Streets	In popular retail areas, two or more racks should be installed on each side of each block. This does not eliminate the inclusion of requests from the public which do not fall in these areas. Areas officially designated or used as bicycle routes may warrant the consideration of more racks.
Location and Access	Access to facilities should be convenient; where access is by sidewalk or walkway, ADA-compliant curb ramps should be provided where appropriate. Parking facilities intended for employees should be located near the employee entrance, and those for customers or visitors near main public entrances. (Convenience should be balanced against the need for security if the employee entrance is not in a well traveled area). Bicycle parking should be clustered in lots not to exceed 16 spaces each. Large expanses of bicycle parking make it easier for thieves to be undetected.
Locations within Buildings	Provide bike racks within 50 feet of the entrance. Where a security guard is present, provide racks behind or within view of a security guard. The location should be outside the normal flow of pedestrian traffic.
Locations near Transit Stops	To prevent bicyclists from locking bikes to bus stop poles, which can create access problems for transit users, particularly those who are disabled, racks should be placed in close proximity to transit stops where there is a demand for short-term bike parking.
Retrofit Program	In established locations, such as schools, employment centers, and shopping areas, the City should conduct bicycle audits to assess bicycle parking availability and access, and add additional bicycle racks where necessary.



# Bike Rack Installation



Hardware Kit-G  
(Part #12716)



Set Tool (Part #12723)



## ◀ SURFACE INSTALLATION - U/2 Rack:

### Common Tools Needed:

- Hammer Drill Motor
- Impact Wrench or Socket Wrench with 1/2" drive
- 1/2" concrete drill bit
- T-45 Torx Bit (#12721 provided)
- 3/8" Set Tool (#12723 provided)
- 2 LB. Hammer
- Concrete Adhesive
- Tape Measure
- Chalk Line
- Safety Goggles

**Step 1:** Determine desired placement of all bike racks before drilling any holes; avoiding concrete expansion joints. (Recommended spacing is 3 foot centers.)

**Step 2:** Using predetermined center lines from step 1, mark 4-hole locations for drilling using rack flange as template.

**Step 3:** Using the 1/2" drill bit, drill holes in the concrete - 2" deep. Do not damage the rack pipe surface or flange with the hammer drill or drill bit.

**Step 4:** Clean out the hole using a blow-out bulb, vacuum, or compressed air. Do not use water. It is very important to clean out the hole to ensure correct holding of the anchor.

**Step 5:** Insert concrete adhesive into the hole. Drop the anchor in the hole. Insert the set tool (Part #12723) into each anchor. Using a hammer, pound the set tool until the shoulder reaches the lip of the anchor. This will assure proper anchor expansion. Let the concrete adhesive cure according to mfg instructions before mounting the U-rack.

**Step 6:** Place rack over anchors. Place flat washer on security screw and thread into the anchor using the Torx bit (Part #12721 - provided). Wrench until flush with the flange plate.

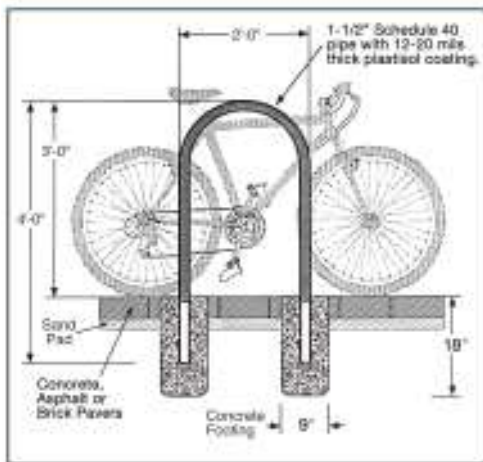
**Step 7:** Check the installation to make sure it is tight to the concrete. Dispose of packaging.

**Step 8:** Fill in the Torx hole on the anchor with concrete adhesive.

## ◀ RAIL MOUNT INSTALLATION - U/2 Rack:

The CycleSafe Rail-Mount inverted-U modular design can be placed in areas where permanent anchoring is not desired. Simply use the 6 foot C-rail and place racks on top, securing with supplied tamper resistant hardware, 3/8" x 1-1/2" SS screw with washer and clamping nut.

**Tools needed:** T-45 Torx Bit (12721) or W/32" hex bit, and a power drill.



## ◀ IN-GROUND INSTALLATION - U/2 Rack:

### Recommended installation methods for in-ground style rack:

If installing on existing concrete, CycleSafe® U/2 Bike Racks can be anchored with a non-shrink grout poured into a 4" or 6" diameter by 12" deep core drilled holes. In-ground installations for new improved surfaces 8" Sonotube forms can be put in place to create 18" footings. U/2 inverted-U racks come in optional square pipe or in two-bend configurations.

This is the standard for new construction and the most secure type of inverted-U installation. Existing concrete surface may be core drilled with a 3'-4" hole saw and filled with quikrete or a construction adhesive.

For further information contact CYCLESAFE INC.  
Customer Service 888-950-6531

## 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

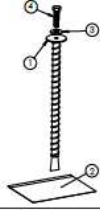
**NOTE:** These instructions are for installation of strike anchors in ASPHALT ONLY.

**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"

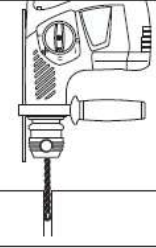
Quantity depends on which kit was purchased.



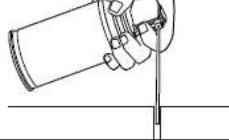
1. Place the rack on the surface where it is to be mounted, checking for set backs to walls, curbs, pedestrian walkways and wheelchair accessible areas.



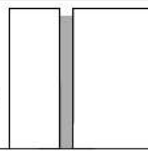
2. Use the flange as a template to mark the placement of the holes- removing the flange once the holes are marked. Wearing eye and ear protection, insert a 7/8" bit and drill the hole to a 14" depth.



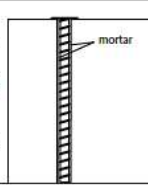
3. Clean out and around the holes with a small blast of air.



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.



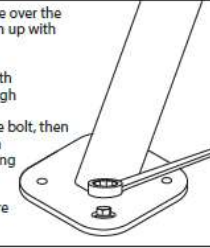
5. Drop in the anchor, making sure it's aligned and flush with the top of the hole. Use a soft face mallet to drive the anchor into the hole if necessary. Remove any excess mortar and wait 15 mins before proceeding to the next step.



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

