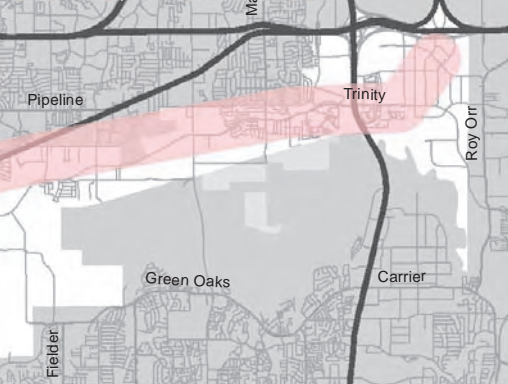
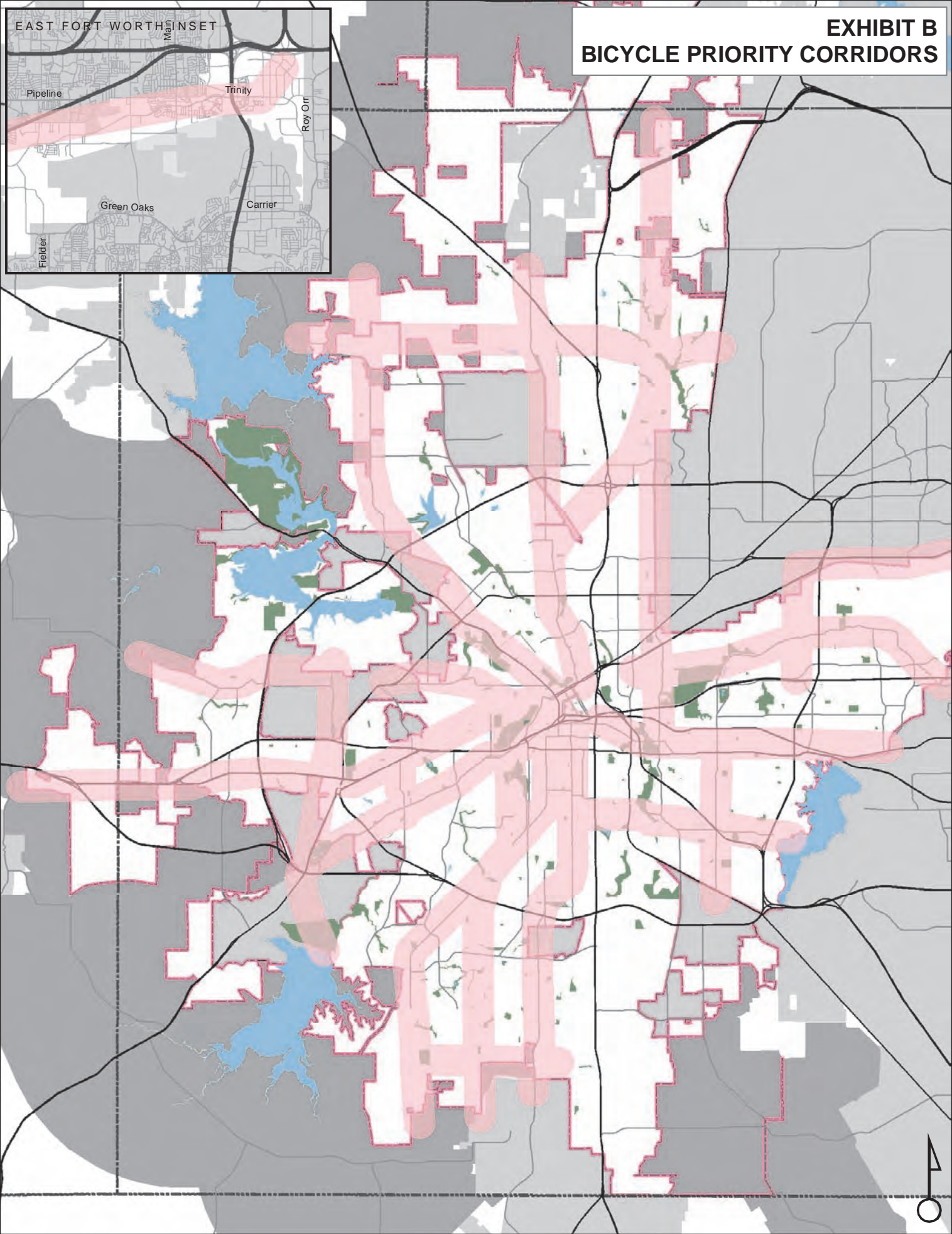


EAST FORT WORTH INSET



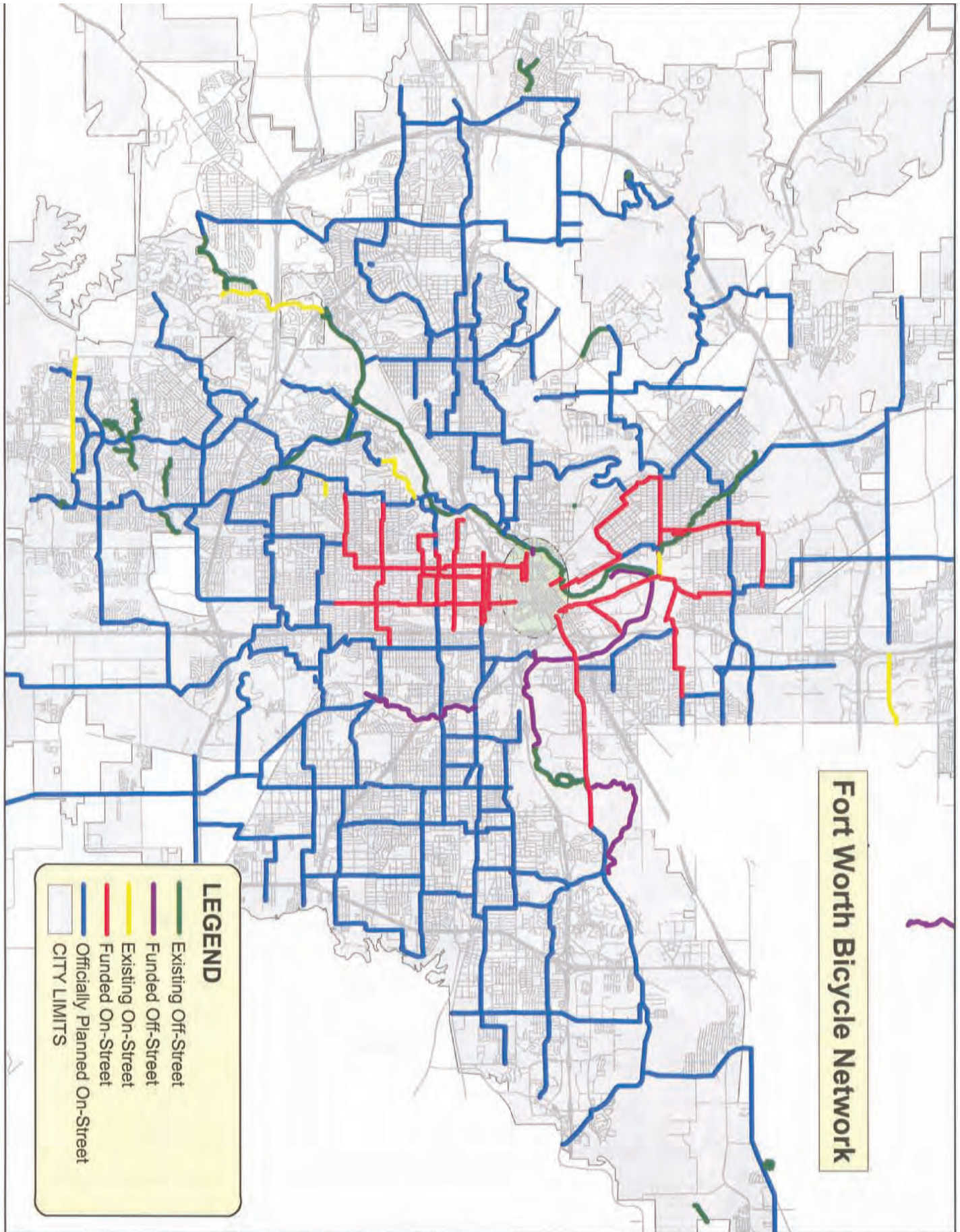
**EXHIBIT B**  
**BICYCLE PRIORITY CORRIDORS**



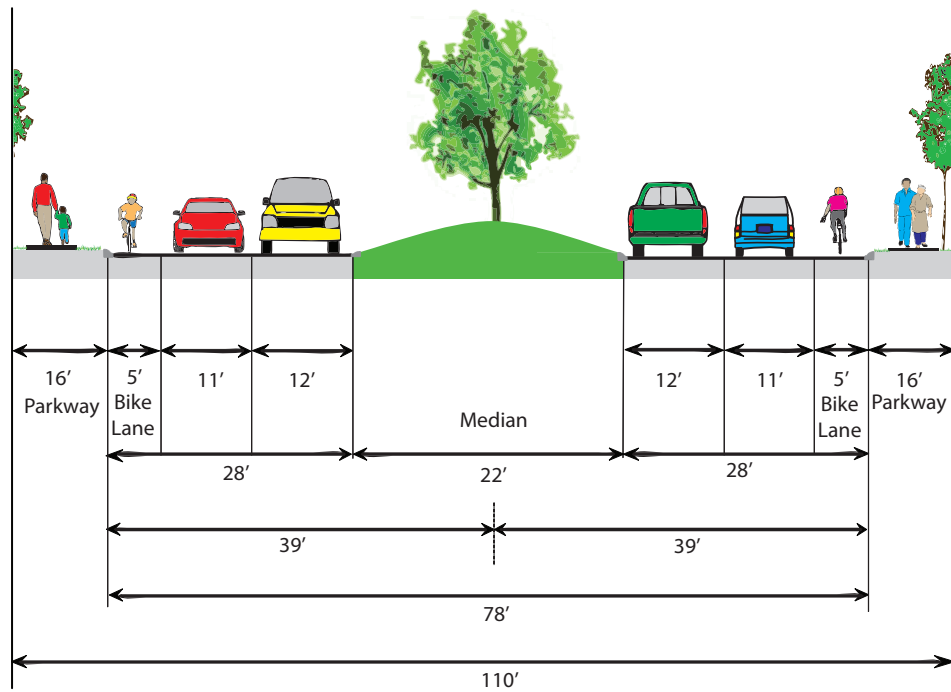


# APPENDIX C

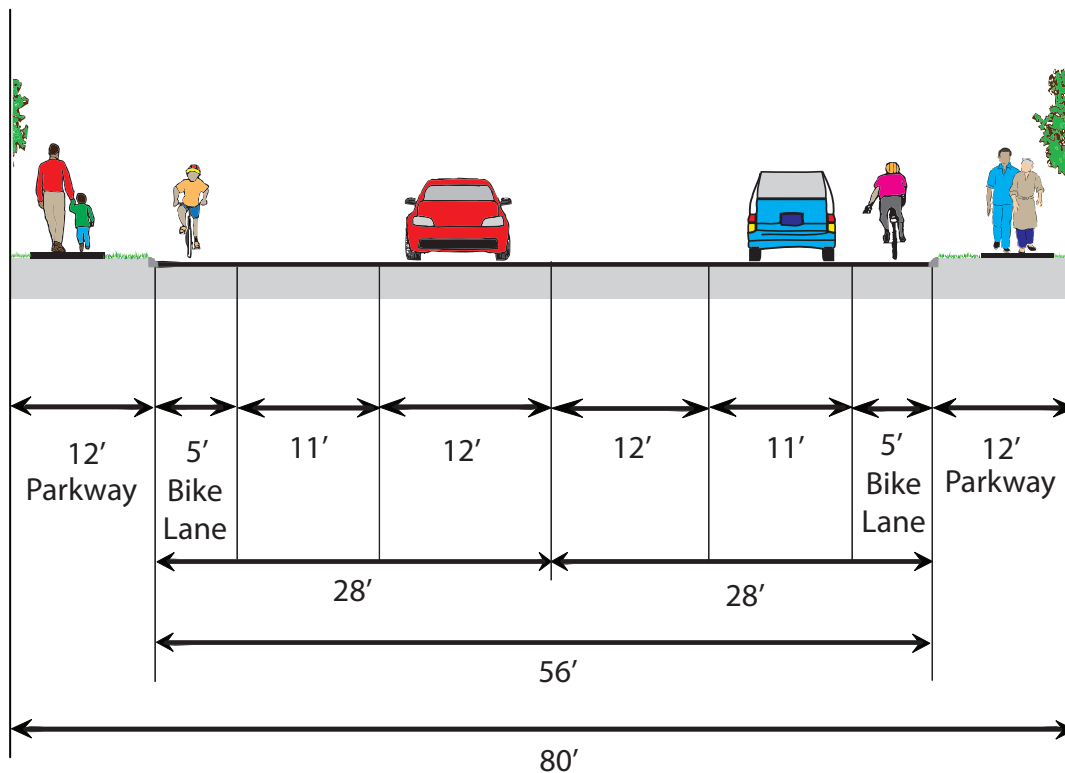
## 1999 BICYCLE BLUEPRINT



APPENDIX D  
ON-STREET BICYCLE  
CROSS-SECTIONS



SAMPLE CROSS SECTION - MAJOR ARTERIAL w/ BIKE LANE



SAMPLE CROSS SECTION - MINOR ARTERIAL w/ BIKE LANE

\* BIKE LANE CROSS SECTIONS ARE ALSO BEING DEVELOPED FOR PRINCIPAL ARTERIALS AND COLLECTORS

## CITY OF FORT WORTH STREET STANDARDS

PROPOSED URBAN  
DESIGN STANDARDS

MINOR ARTERIAL w/BIKE LANE  
MAJOR ARTERIAL w/BIKE LANE

Date 3/4/2008

Sheet No.  
FIGURE 4

**APPENDIX E**  
**SAMPLE BIKE PARKING STANDARDS**  
**SOURCE: [APBP.ORG](http://APBP.ORG)**



# BICYCLE PARKING



# GUIDELINES

*A set of recommendations from the Association of Pedestrian and Bicycle Professionals [apbp]*



**"I would ride to work if there was a safe place to lock my bike."**

# INTRODUCTION

The lack of a secure parking space keeps many people from using their bikes for basic transportation. Leaving a bicycle unattended, even for short periods, can easily result in damage or theft. Finding a bike rack that doesn't work or isn't conveniently located makes for a frustrating experience.

The purpose of this document is to assist with the selection and placement of appropriate bicycle racks for short-term parking. Four major components will be discussed.

1. The rack element. This device supports the bicycle.
2. The rack. It is important to understand how bikes interact with each other when rack elements are assembled together.
3. Combining of multiple racks into a bicycle parking lot.
4. Locating the rack, and the relationship of the rack to the building entrance it serves and the cyclists' approach to that entrance.

The discussion will focus on outdoor installations. The racks are intended to accommodate conventional, upright, single-rider bicycles. It is assumed the cyclist will use a solid, U-shaped lock, or a cable lock, or a combination of the two.

The apbp Task Force that developed this guide is also developing recommendations for other important bicycle parking-related issues including:



- a. Assessing the appropriate number of bicycle parking spaces for different buildings and land uses, including the use of bicycle parking ordinances.
- b. Long-term bicycle storage facilities such as lockers and bicycle parking garages.
- c. Indoor bicycle parking and the carriage of bicycles in transit vehicles.



# 1. THE RACK ELEMENT

**Definition:** the rack element is the part of the bike rack that supports one bicycle.

The rack element should:

- Support the bicycle upright by its frame in two places
- Prevent the wheel of the bicycle from tipping over
- Enable the frame and one or both wheels to be secured
- Support bicycles without a diamond-shaped frame with a horizontal top tube (e.g. a mixte frame)
- Allow front-in parking: a U-lock should be able to lock the front wheel and the down tube of an upright bicycle
- Allow back-in parking: a U-lock should be able to lock the rear wheel and seat tube of the bicycle



Comb, toast, school-yard, and other wheel-bending racks that provide no support for the bicycle frame are NOT recommended.

The rack element should 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.



**INVERTED "U"**

One rack element supports two bikes.



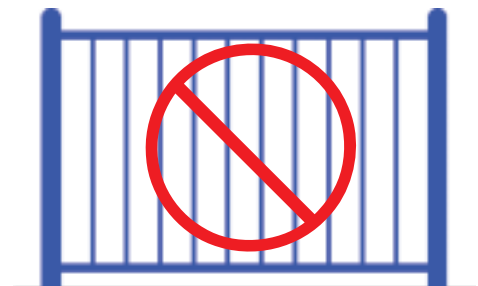
**"A"**

One rack element supports two bikes.



**POST AND LOOP**

One rack element supports two bikes.



**COMB**

One rack element is a vertical segment of the rack.

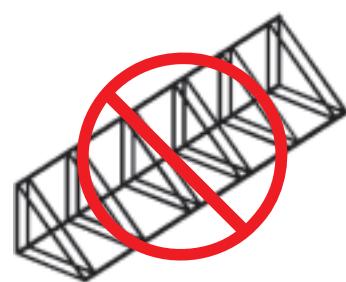


**Not recommended**



**WAVE**

One rack element is a vertical segment of the rack.  
(see additional discussion on page 3)



**TOAST**

One rack element holds one wheel of a bike.



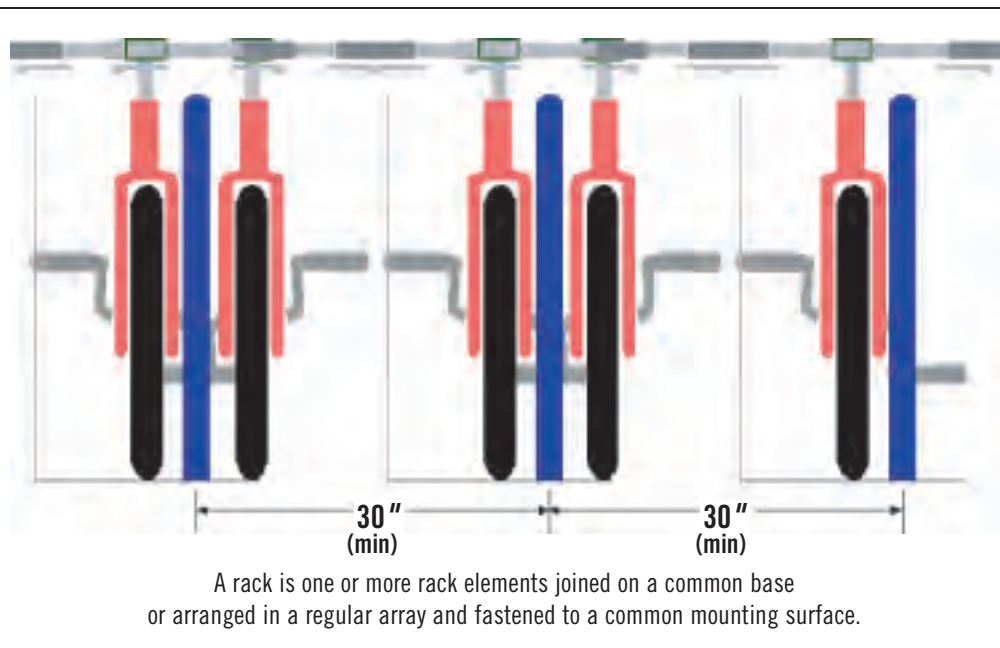
## 2. THE RACK

**Definition:** a rack is 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 consist of a grouping of rack element. The rack elements may be attached to a single frame or remain single elements mounted within close proximity to each other. The rack elements should not be easily detachable from the rack frame or easily removed from the mounting surface. The rack should be anchored so that it cannot be stolen with the bikes attached—vandal-resistant fasteners can

be used to anchor a rack in the ground. An exception is a rack that is so large and heavy that it cannot be easily moved or lifted with the bicycles attached.

The rack should provide easy, independent bike access. Inverted “U” rack elements mounted in a row should be placed on 30” 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 elements 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.

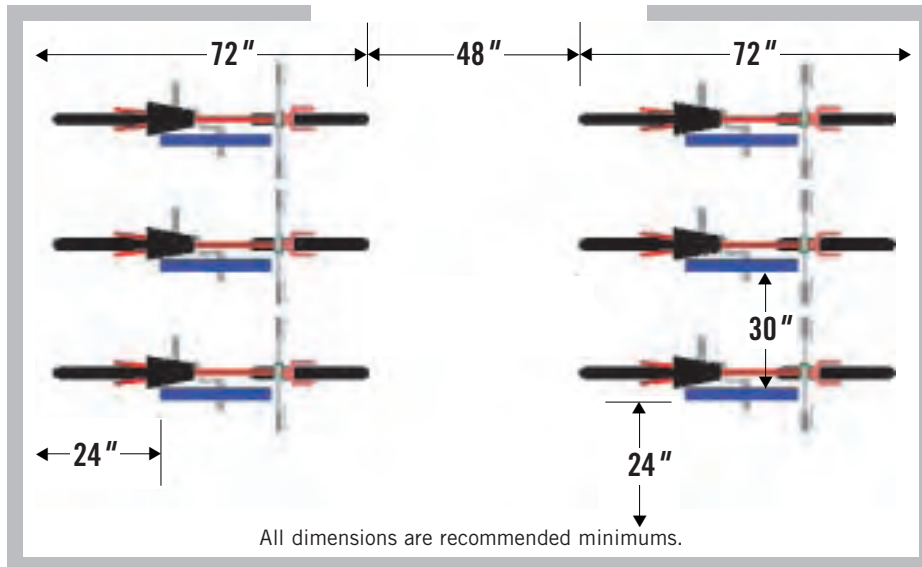
Wave style racks are not recommended. Bicyclists commonly use a “wave” rack as if it were a single inverted “U.” This limits the actual capacity of the rack to two bikes regardless of the potential or stated capacity. Bicycles parked perpendicular to a wave rack (as intended by the manufacturer) are not supported in two places and are more likely to fall over in the rack. The advertised capacity of a wave rack is usually much higher than the practical capacity.

An empty rack should not create a tripping hazard for visually impaired individuals.



# 3 . THE RACK AREA

**Definition:** the rack area is a bicycle parking lot where racks are separated by aisles.



The rack area is a bicycle parking lot where racks are separated by aisles.

A rack area or “bicycle parking lot” is an area where more than one rack is installed. Aisles separate the racks. The aisle is measured from tip to tip of bike tires across the space between racks. The minimum separation between aisles should be 48 inches. This provides enough space for one person to walk one bike. In high traffic areas where many users park or retrieve bikes at the same time, such as a college classroom, the recommended minimum aisle width is 72 inches.

72 inches (six feet) of depth should be allowed for each row of parked bicycles. Conventional upright bicycles are just less than 72 inches long and can easily be accommodated in that space. Some rack types will allow the racks to be mounted closer to the wall. This will not change the space required by the bicycles or the aisles.

Large rack areas with a high turnover rate should have more than one entrance. This will help facilitate the arriving and departing of cyclists and pedestrians.

If possible, the rack area should be protected from the elements. Racks along building walls can be sheltered by an awning. Even though cyclists are exposed to sun, rain, and snow while en route, covering the rack area keeps the cyclist more comfortable while parking, locking the bike, and loading or unloading cargo. An awning will also help keep the bicycle dry, especially the saddle.



# 4. THE RACK AREA SITE

**Definition:** the rack area site is the relationship of the rack area to a building entrance and approach.

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.

It is important to understand the transition a cyclist makes from vehicle to pedestrian. The cyclist approaches the building mounted on the bicycle. At some point, the cyclist stops, dismounts, and walks the bike to a rack. The bicycle is attached to the rack and any cargo is removed. The cyclist now walks into the building carrying the cargo. Adequate space must be provided to allow for this transition.

The rack area site is the relationship of a rack area to the building entrance and approaches.



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 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.



## 5. CREATIVE DESIGNS



The recommended practices above are not intended to stifle creativity. There are many creative, three-dimensional bicycle parking racks that work very well. Whether the rack is a type of “hanger”, “helix” or another

configuration, the critical issue is that the rack element supports the bike in two places and allows the bicycle to be securely locked.

Creative designs should carefully balance form with function. For example, the distinctive “croquet

set” rack shown here likely has a smaller effective capacity than might be immediately apparent because one or more of the rack elements is not accessible. Similarly, the “hanger” racks shown below must be carefully manufactured and maintained to prevent weaknesses at the joints of the hanger and rack—such weakness might compromise the security of bicycles locked to the rack. In addition, the “coat hanger” elements should be spaced at least 30” apart.

## CONCLUSION

More information about bicycle parking is available from a wide variety of sources. Visit [www.bicyclinginfo.org](http://www.bicyclinginfo.org) to access many of those sources, and to find a list of bicycle parking manufacturers.

More information about the Association of Pedestrian and Bicycle Professionals is available at [www.apbp.org](http://www.apbp.org).



# BICYCLE PARKING GUIDELINES

Adopted by the Association of Pedestrian and Bicycle Professionals  
Spring 2002

## ACKNOWLEDGMENTS

apbp wishes to acknowledge and thank Reed Kempton, Bicycle/Multi-modal Planner with the Maricopa County Department of Transportation, for his work as the primary author of the recommended practice. Members of the Best Practices Task Force ably assisted Reed in this task.

John Ciccarelli, Bicycle Facilities Consultant  
TransSight LLC/Bicycle Solutions

Michelle DeRobertis, P.E. Assistant Traffic engineer  
City of Alameda, CA

Joe Gallagher, Transportation Planner

Daphne Hope, Program Manager—Cycling/Walking  
City of Ottawa, Canada

Christopher Johnson, Assistant Deputy Secretary  
Pennsylvania Department of Transportation

Jim Lazar  
Microdesign Northwest

James Mackay, P.E. Bicycle Planner  
City of Denver, CO

Heath Maddox, Transportation Planner  
Santa Cruz County Regional Transportation Commission

Arthur Ross, Pedestrian/Bicycle Coordinator  
City of Madison, WI

Timothy Witten, Transportation Planner

For additional information contact:

Andy Clarke  
Executive Director, apbp  
P.O. Box 23576  
Washington, DC 20026  
pedbike@aol.com



ASSOCIATION OF PEDESTRIAN  
AND BICYCLE PROFESSIONALS