

# RULES AND REGULATIONS ESTABLISHING THE DIMENSIONAL AND EQUIPMENT STANDARDS FOR BICYCLE PARKING AREAS

Effective 12/23/1998

## I. Objectives for Bicycle Parking Areas.

- 1) To encourage the use of bicycles for personal transportation as an alternative to motor vehicles.
- 2) To provide for bicycle access to employment, commercial, and other transportation and travel destinations.

## II. Bicycle Parking Standards.

Per the 1993 Denver Bicycle Master Plan, the "Inverted U" type bike rack is the required bicycle parking rack.

Any other type proposed rack would be subject to approval by the Transportation Office.



*The Denver standard inverted U type bike rack supports the bike frame at two locations and allows users to secure their bikes with either a cable or U type lock.*



Detail of baseplate - note the vandal resistant fasteners used to anchor the rack



Detail of the vandal resistant fastener - Rawlplug #5550

### III. Required Provision of Bicycle Parking Areas (Refr: Section 59-582(e) Denver Revised Mun.Code)

For proposed non-residential sites having an off-street parking requirement of fifteen (15) spaces or more, a number of off-street bicycle parking spaces shall be provided equal to five (5) percent of the automobile parking space requirement. Each Inverted-U provided will count as two (2) bicycle parking spaces.

Subject to the approval by the Transportation Office of the proposed parking area design, location and security features, required automobile parking spaces

may be reduced at the ratio of one (1) automobile parking space for each six (6) bicycle parking spaces provided, except that under no circumstances may the required number be reduced by more than five (5) percent.

### IV. Description - The "Inverted U" Type Bicycle Rack

The Inverted U's shall be fabricated from 1 ½" Schedule 40 Pipe, in accordance with ASTM F 1083, 48.26 mm O.D. x 3.683 mm wall (1.90" x 0.145" wall).

The U's shall measure 914.4 mm high x 457.2 mm wide (36" high, 18" wide). The bicycle racks shall not be

welded in sections. Only the base plate shall be welded to the steel pipe with two (2) 3mm (1/8") vent holes - one on the inside of each upright where the pipe is welded to the baseplate. After fabrication, the rack shall be coated with a Thermoplastic (polyethylene copolymer based) powder coating (polyarmor) to a thickness 200-250 micrometers (8 - 12 mils). Racks installed Downtown must be "Federal Green"- Color #14056 as specified in the Federal Paint Specifications 595B. Racks shall be mounted to concrete via 190 mm (7 1/2") diameter baseplates 10mm (3/8") thick steel in accordance with ASTM A 36, with three 11 mm diameter (7/16") mounting holes on each base plate, spaced equidistant between the upright pipe and edge of the baseplate. Expansion anchor to be carbon steel mushroom head, 10 mm x 76 mm (3/8" x 3") "spike" #5550 as manufactured by Rawl or approved equal manufactured in the U.S. made from grade 8.2 materials exhibiting equivalent theft-proof performance. Racks shall be set firm and aligned with a tolerance of plus or minus 1/4" from plumb. Where required, steel tapered shims shall be installed prior to anchoring in place. Any departure of base plate from grade by more than 3/8" shall require the separation to be filled with high-strength epoxy non-shrinking grout and made level.

#### **V. Description - "Inverted U" (Baserail Array) Alternate.**

Inverted U bike racks shall consist of two to five inverted U's as specified above, mounted 30" on-center via baseplate rails. Racks shall be mounted to concrete via baseplate rails 12.7 mm x 76.2 mm (1/2" x 3") steel in accordance with ASTM A 36 to create a free-standing array.

Only the base rails shall be welded to the steel pipe. The baserails shall have 11 mm diameter (7/16") mounting holes located as shown on the city bicycle rack details (mounted via the same expansion anchors as described above.)

#### **VI. Location of Bicycle Parking Racks.**

Racks should either be installed in the public Right-Of-Way, or on private sites in conformance with front setback requirements. Whenever possible, the racks should be placed within 50' of building entrances where bicyclists would naturally transition to pedestrian mode. The rack placement would ideally allow for visual monitoring by people within the building and/or people entering the building. The placement of the racks should minimize conflicts with both pedestrians and motorized traffic. All bicycle parking provided should be on concrete, and located a minimum of 24" from a parallel wall, and 30" from a perpendicular wall (as measured to the closest inverted U.)



*Installing inverted U type racks 30" on center allows for all bicyclists to use them, including parents carrying their children in child seats."*



*The Denver standard inverted U type bike rack solves contemporary bicycle parking"*

## **VII. Use of Alternative (Non-Inverted U) Bicycle Parking Racks.**

As stated above, the Inverted U is the required rack for all applications. At the discretion of the City Transportation Office, other bicycle security devices may be approved for use in unusual circumstances.



*Wave type racks are commonly used "broadside" because they offer so little stability to a parked bike. The City of Denver specifies inverted U type bike racks.*



*Wave type bike racks commonly have the uprights spaced too closely to provide the capacity stated by the manufacturer. Denver specifications require that inverted U type racks be used no closer than 30" on center.*



*Wave type bike racks are not accepted in the City of Denver. These racks do not support the bicycle frame at two locations and are commonly used "broadside."*



*Examples of Acceptable Alternative Bicycle Parking Racks*

Any such alternate security device submitted for approval must provide for:

- 1) Supporting the bike frame at two locations (not just a wheel);
- 2) Allowing both the frame and at least one wheel to be locked to the rack (without requiring that the lock be placed near the bicycle chain);
- 3) Allowing the use of either a cable or "U-type" lock;
- 4) Bicycles which are equipped with water bottle cages;
- 5) Bicycles which are not equipped with kickstands; and
- 6) All types and sizes of bicycles, including various types and sizes of frames, wheel sizes, and tire widths.

#### **VIII. Availability of Bicycle Parking Racks:**

These racks can be produced by local fabricators, or supplied by vendors listed in the Metro-Denver telephone directory yellow pages:  
see "Bicycle Racks and Security Systems".

#### **IX. Bicycle Parking Lockers.**

Bicycle parking lockers are specifically encouraged for assigned use by employees and bicycle commuters. Bicycle parking capacity provided via lockers will be considered as being in compliance with these rules. Lockers are to be placed in accordance with site setback requirements.

#### **X. Additional Bicycle Parking Information**

For additional information on all bicycle parking topics, including bicycle parking lockers, contact James Mackay, P.E. Bicycle and Pedestrian Planner at (720) 865-BIKE(865-2453).