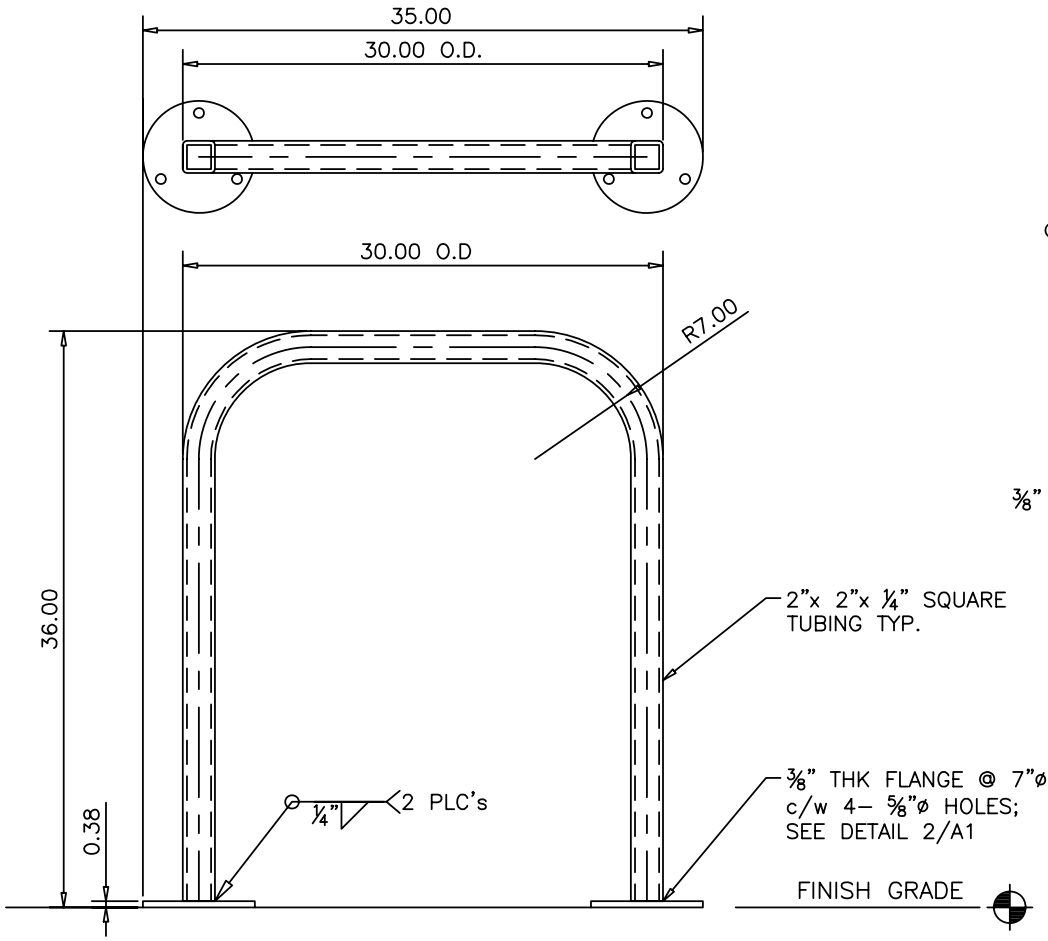
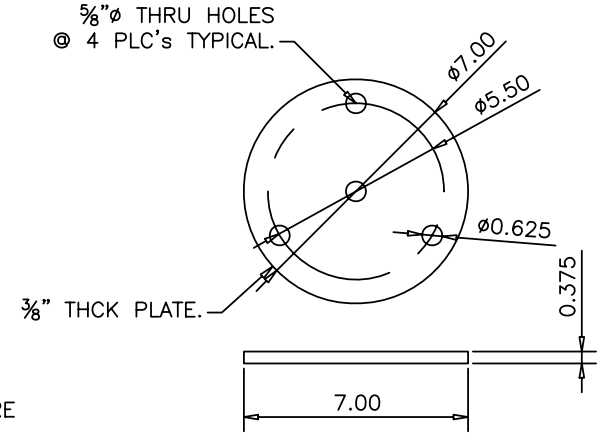


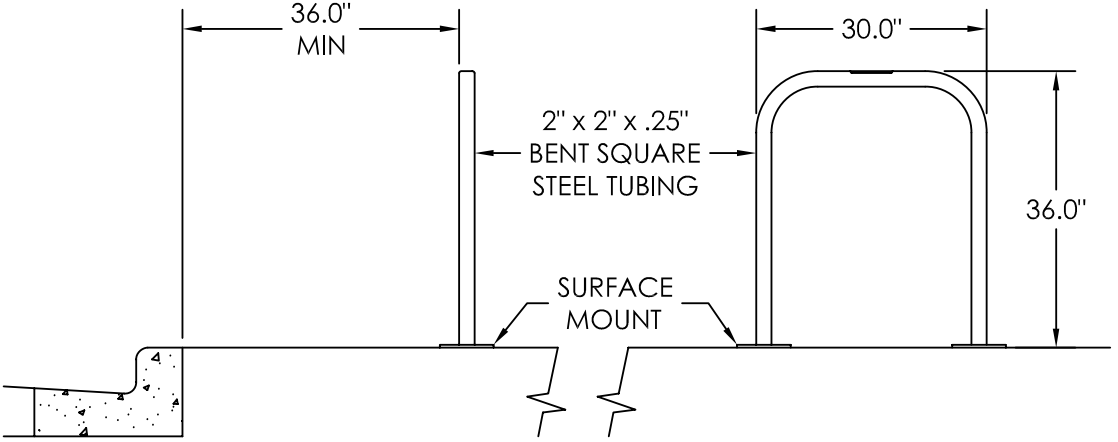
1 / A1 **"TYPE B" BICYCLE RACK**
SCALE: 1"=1'–0"

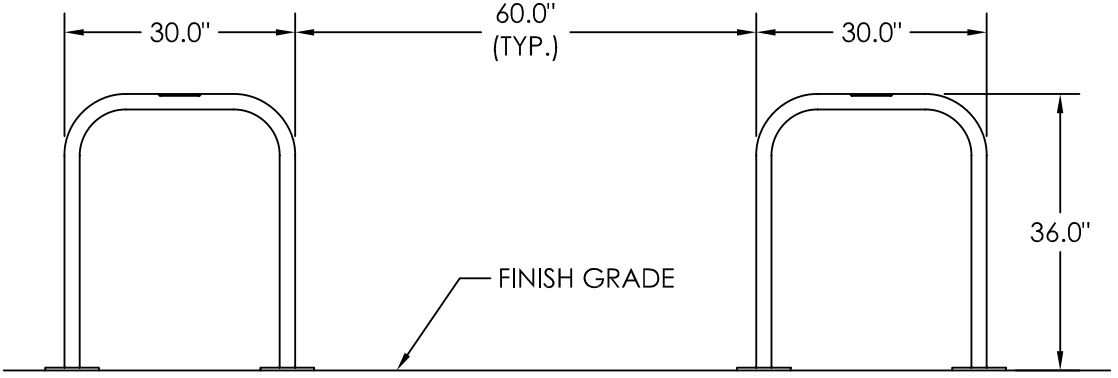


2 / A1 **FLANGE DETAIL**
SCALE: NTS

CITY of CHICAGO DEPARTMENT OF TRANSPORTATION	BICYCLE RACK DETAILS		Project No.
	"TYPE B" BICYCLE RACK		Sheet No.
	Drawn	Scale 1" = 1'-0"	Date

TYPE "B" BICYCLE RACK





SPACE REQUIREMENTS

CITY of CHICAGO DEPARTMENT OF TRANSPORTATION	BICYCLE RACK DETAILS			Project No.
	TYPE "B" BICYCLE RACK			Sheet No.
	Drawn	Scale 1:20	Date	

The following are the detailed specifications for Type B (or inverted U) bike racks used by the City of Chicago, Illinois, Department of Transportation.
Published on September 11, 2008.

DETAILED SPECIFICATIONS

The following sections provide detailed specifications for the furnishing and installation of bicycle racks and associated hardware and components that will be part of the work needed to complete the project.

ITEM 1 CODE NO. [removed] "TYPE B" BICYCLE RACK

Description: This item shall consist of furnishing and installing "TYPE B" BICYCLE RACK.

Materials:
Bicycle Rack - The bicycle rack shall be fabricated from square Domestic (U.S. manufactured) Steel tubing, in accordance with ASTM A500 Grade B, 2" X 2" in size with 0.25" wall mechanical and structural mild steel tubing. The tubing shall be bent in a one piece width as shown on the contract documents. The bicycle racks shall not be welded in sections. Only the base plate shall be welded to the steel tubing by using stainless steel A.C.D.C. 309L 16 or 17 electrode rod for welding. Color of the coating shall be Black.

"TYPE B" BICYCLE RACK shall be fabricated following the specifications included in Appendix I of this contract.

The coating shall be applied only after the bicycle rack has been fabricated.

The final product will be rejected if the coating cracks, ripples in the curved areas or is otherwise damaged due to the fabrication and/or shipping.

Fastener-Expansion anchor to be stainless steel mushroom head spike, 1/2" X 4", as manufactured by Powers Fastening, Inc., (11 Doansburg Road Brewster, NY 10509, P: (914) 235-6300) or another acceptable substitute approved by the Department.

Base plates - Base plates shall be fabricated from Domestic (U.S. manufactured) Stainless Steel, 3/8" thick, in accordance with ASTM-T-304.

Coating of Bicycle Rack:

A. Steel:
    a. grit blasted to white metal with minimum 1.5 mils. etch.
B. Iron phosphate pre-treatment.
C. Primer:
    a. Thermosetting epoxy powder coating (DuPont raven EFB504S0 or approved equal).
    b. Electrostatic application, cure schedule approximately 6 minutes at 250 degrees.

c. Thickness 2 - 3 mils.

D. Topcoat:
   a. Triglycidyl Isocyanurate (TGIC) Polyester powder coating.
   b. Electrostatic application cured in oven forapproximately 20 minutes at 250 degrees.
   c. Total coatings: 8-10 mils.
   d. Finish color to be black.

Submittals:

Bicycle Rack- Shop drawings or catalog cut.
Fastener - Catalog cut.
Certifications -

1. Submit manufacturer's certification that the tubing and coatings meet the project specifications.
2. Prior to production, the manufacturer of the bicycle racks is to submit certification that the steel to be used is in compliance with the "Steel Products Procurement Act," 30ILCS 565/1 *et seq*.

Samples: Submit 3-12" long samples of the tubing with finish coat and 3 fasteners.

Installation: Bicycle Racks shall be located according to the "Proposed Bicycle Rack Locations" and as designated by the Commissioner. Locations of racks to be verified by the city. Drilling through rebar, furnishing electricity, traffic control and shims are incidental to bicycle rack installation.

Special Requirements: The contractor will furnish the decal stickers. The decal sticker shall be applied during installation to each bicycle rack.

Basis of Payment: This work will be paid for at the contract unit price for each "*TYPE B" BICYCLE RACK*" and shall include the cost of furnishing, installing, mounting hardware, and attaching the decal sticker.

ITEM 2 CODE NO. [removed] BICYCLE RACK DECAL

Description: This item shall consist of furnishing a decal in accordance with the drawing contained herein and in accordance with this specification. The installation of the decal is included in the contract unit prices for the various bicycle racks.

Pressure Sensitive Polyester Film

GENERAL DESCRIPTION: Reflective polyester film coated with permanent acrylic pressure sensitive adhesive.

APPLICATION: This film is intended for use as quality markings requiring clarity, high temperatures and dimensional stability.

MINIMUM APPLICATION TEMPERATURE: +60 degrees F

SERVICE TEMPERATURE RANGE: -50 degrees F to +200 degrees F

EXPECTED EXTERIOR LIFE TIME: Three (3) years

PHYSICAL PROPERTIES:

Thickness: Without adhesive 2.7 $\pm$ 0.5 Mils.

Transparency: Water clear

Dimensional Stability: Excellent. No measurable shrinkage on applied parts

CHEMICAL PROPERTIES

WATER RESISTANCE - Good

HUMIDITY RESISTANCE - Good

SUNLIGHT RESISTANCE - Good

SOLVENT RESISTANCE - Good for most petroleum solvents and aliphatic alcohols.

ADHESION - GOOD

STORAGE STABILITY - Shelf life of three (3) years when stored under conditions of 21 degrees C (70 degrees F) and 50% relative humidity.

Enclosed Lens Reflective Sheeting

DESCRIPTION: The reflective sheeting shall consist of enclosed glass spherical lens elements embedded within a transparent plastic having a smooth, flat outer surface. The sheeting shall be weather resistant and have a protected precoated adhesive backing. The enclosed lens sheeting shall conform to Federal Specification LS-300C and Federal Highway FP-85 Specification.

REQUIREMENTS:

A. Photometric- The reflective sheeting shall have a minimum brightness values as listed in TABLE 1. Measurements shall be conducted in accordance with standard

testing procedures for reflex-reflectors of Federal Specification LS-300C, March 20, 1979.

The brightness of the reflective sheeting, totally wet by rain, shall not be less than 90% of the above values. Wet performance measurements shall be conducted in conformance with Standard Rainfall Test specified in Federal Specification LS-300C, Paragraph 3.6.4.

B. Color - The sheeting shall conform to the color requirements of TABLE II and shall be determined by instrumental method specified in Federal Specification LS-300C, Paragraph 3.5. The colors shall be matched visually and be within the limits shown on the Color Tolerance Charts issued by the Office of Traffic Operations, Federal Highway Administration.

C. Adhesive

1. The reflective sheeting shall include a precoated pressure Avery R-400 sensitive adhesive, or approved equivalent, which may be applied without the necessity of additional adhesive coats on either the reflective sheeting or application surface.

2. The adhesive shall form a durable bond to smooth corrosion and weather resistant surfaces. The reflective sheeting applied to cleaned and etched aluminum panels shall adhere securely 48 hours after application at temperatures of - 30 degrees F to 200 degrees F. The adhesive bond shall be sufficient to render the applied sheeting vandal resistant and prevent it from shocking off when jabbed with spatula at -10 degrees F.

The sheeting shall resist peeling from the application surface when a 5 lb./in. width force is applied as outlined in ASTM D-903-49 or the sheeting shall conform to the Adhesion Test as specified in LS-300C, Paragraph 3.4.3.

3. The protective liner attached to the adhesive shall be removed by peeling without soaking in water or other solvents and shall be easily removed after accelerated storage for four hours at 160 degrees F and a pressure of 2.5 pounds per square inch.

D. Film

1. The reflective sheeting with the liner removed shall have a tensile strength of not less than five pounds per inch of width, or more than 25 pounds per inch of width. Elongation shall be not less than 10 per cent. This method is outlined in the Federal Test Method Standard No. 141 in accordance with Methods 6224 and 6225.

2. Following liner removal, the reflective sheeting shall not shrink more than 1/32 inch in 10 minutes nor more than 1/8 inch in 24 hours in any dimension per 9 inch square at 23 degrees C (73.4 F) and a relative humidity of 50 per cent.

3. The sheeting when applied according to the manufacturer's recommendation shall be tested in accordance with Federal Test Method 141/6221 using a 3/4 inch diameter

mandrel. The specimen shall be applied to aluminum test panels 3 inches wide by 9 inches long by 0.020 inch thick, conditioned 24 hours and tested at 23 degrees C (73.4 degrees F) and a relative humidity of 50 percent. The sheeting shall be sufficiently flexible to show no cracking when bent.

4. The sheeting surface shall be smooth and flat, facilitate cleaning and wet performance and exhibit 85-degree specular gloss of not less than 40 as specified in FED-STD-141 6103 or ASTM D523-62T. The sheeting surface shall be readily processed and compatible with recommended transparent and opaque process inks and show no loss of color coat with normal handling, cutting and application. The sheeting surface shall have a 1 millimeter clear polyester overlam.

5. The sheeting shall permit cutting and color processing at normal temperatures and relative humidities. The sheeting shall be heat resistant and permit force curing of the process coatings and unapplied sheeting at temperatures up to 150 degrees F and up to 200 degrees F on applied sheeting. The sheeting surface shall be solvent resistant and may be cleaned with gasoline, VM&P, Naphtha, Mineral Spirits, Turpentine, and Xylol.

E. Durability

1. Processed and applied in accordance with recommended procedures, the reflective material shall be weather resistant and following cleaning, shall show no appreciable discoloration, cracking, crazing, blistering or dimensional change and no less than 50% of the specified minimum brightness values when subjected to accelerated weathering for 1200 hours in accordance FED STD Method 141/6151 or ASTM D822-60 and ASTM D822-60 and ASTM G-23-69 Type weatherometer.

F. General Characteristics

1. The reflective sheeting as supplied shall be of good appearance, free from ragged edges, cracks and extraneous materials and shall be furnished in both rolls and sheets.

2. Stored under normal conditions, the reflective sheeting as supplied, shall be suitable for use for a period of at least one year.

Measurement and Payment: The work as herein specified shall be measured and paid for at the contract unit price per each *BICYCLE RACK DECAL* which price shall include manufacturing and furnishing to the bicycle rack fabricator the decal as herein specified and shown in the details.

TABLE I
MINIMUM REFLECTIVE INTENSITY VALUES

Divergence Angle (o)	Incidence Angle (o)	White	Yellow	Red	Orange	Green	Blue
0.2	-4	70	50	14.5	25	9	4.0
0.2	+30	30	22	6	7	3.5	1.7
0.5	-4	30	25	7.5	13.5	4.5	2.0
0.5	+30	15	13	3	4	2.2	0.8

TABLE II
COLOR SPECIFICATION LIMITS AND REFERENCE STANDARDS
CHROMATICITY COORDINATES

	1		2		3		4		Reflectance Limit		Ref. Std. Munsell	
	x	y	x	y	x	y	x	y	Min. Y.	Max.	Papers	
White	.305	.290	.350	.342	.321	.361	.276	.308	35		6.3GY	6.77/08
Yellow	.482	.450	.532	.465	.505	.494	.475	.486	29.0	45.0	1.25Y	6/12
Red	.602	.317	.664	.336	.644	.356	.575	.356	8.0	12.0	8.2R	3.78/14.0
Orange	.535	.375	.607	.393	.582	.417	.535	.399	18.0	30.0	2.5YR	5.5/14.0
Green	.130	.369	.180	.391	.155	.460	.107	.439	3.5	9.0	.65BG	2.84/8.4
Blue	.147	.075	.176	.091	.176	151	.106	.113	1.0	4.0	5.8 PB	1.32/6.0