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SECTION 02871 OR MASTERFORMAT (2004) SECTION 129313 – BICYCLE RACKS

PART1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Ground mounted bicycle racks.
- B. Related Sections include the following:
 - 1. Division 2 Section "Bicycle Storage Lockers" for enclosed bike storage lockers.
 - 2. Division 3 Section "Cast-in-Place Concrete" for concrete mounting pads.
 - 3. Division 5 Section "Metal Fabrications" for pipe bollards to protect bicycle racks.
 - 4. Division <Insert Division number> Section "<Insert Section Name>" for <Insert description of related work>.
- C. Alternates: Work of this Section is affected by Alternates. Refer to Division 1 Section "Alternates" for description of Work in this Section affected by alternates.

1.03 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Provide bicycle racks that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, finishes, field-assembly requirements, and installation details.
- B. Shop Drawings: Show fabrication and installation details, and attachments to other work. Include parking area plans and bicycle rack elevations.
- C. Samples for Initial Selection: For units with factory-applied color finishes for each type of finish indicated.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples in manufacturer's standard size.
 - 1. Full size bicycle rack, including inverted loop **[with [specified] [custom] infill panel]**. Show method of finishing members at intersections. Samples need not be full height.

- E. Warranties: Special warranties specified in this Section.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual with sufficient trained staff to install manufacturer's products according to specified requirements.
- B. Manufacturer Qualifications: Company specializing in manufacturing Products specified in this Section with minimum **[five]** <Insert Number> years experience
- C. Source Limitations: Obtain bicycle racks through one source from a single manufacturer.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of bicycle racks and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect finishes on exposed surfaces from damage by applying a temporary protective covering or wrapping before shipping.
- B. Store materials to comply with manufacturer's directions to prevent deterioration from moisture, heat, cold, direct sunlight, or other causes.

1.07 PROJECT CONDITIONS

- A. Field Measurements: Indicate measurements on Shop Drawings.

1.08 WARRANTY

- A. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes fail within specified warranty period. Warranty does not include normal weathering.
 - 1. Warranty Period: One (1) year from date of Substantial Completion.

PART2 - PRODUCTS

- A. Basis-of-Design Product: The design for bicycle racks is based on **[U/2 Inverted-U Rack]** **[Vintage Racks]** by Cycle-Safe, Inc., 4630 Ada Drive, Suite B, Ada, MI 49301, (888)-950-6531; fax (616) 954-0290, <http://www.cyclesafe.com>. Subject to compliance with requirements, provide the named product or **[a comparable product by]** one of the following:
 - 1. Creative Pipe, Inc.; **[Model SU]**.
 - 2. Dero Bike Rack Co.; **[Hoop Rack]**.
 - 3. American Bicycle Security; Model **[Viper 1000 Series]**.
 - 4. Madrax, Inc.; Dura-Locker **['U' Rack]** **['U'-Two]**.
 - 5. Saris Parking Products, Div. of Graber Products, Inc.; **[Bike Docks]**.

2.02 MATERIALS

- A. Steel: Free from surface blemishes and complying with the following:
 - 1. Plates, Shapes, and Bars: ASTM A 36/A 36M.
 - 2. Steel Pipe: Standard-weight Schedule 40 steel pipe complying with ASTM A 53, or electric-resistance-welded pipe complying with ASTM A 135.
 - 3. Structural Tubing: Cold-formed **[round]** **[square]** steel tubing complying with ASTM A 500.
 - 4. Sheet: Commercial steel sheet complying with ASTM A 569/A 569M.
- B. Stainless Steel: Free from surface blemishes and complying with the following:
 - 1. Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type **[304]** **[316L]**.
 - 2. Pipe: Schedule 40 steel pipe complying with ASTM A 312/A 312 M, Grade TP **[304]** **[316L]**.
 - 3. Tubing: ASTM A 554, Grade MT **[304]** **[316L]**.
- C. Anchors, Fasteners, Fittings, and Hardware: **[Stainless steel]** **[Galvanized steel]** **[Manufacturer's standard, corrosion-resistant-coated or noncorrodible materials]**; commercial quality; **[tamperproof, vandal and theft resistant;]** concealed, recessed, and capped or plugged. Provide as required for bicycle rack assembly, mounting, and secure attachment.
 - 1. Tamper-Resistant Concrete Expansion Anchors: **[Carbon steel mushroom head, 3/8 by 3 inch (10 by 76 mm); provide "Spike" #5550 fasteners as manufactured by Powers Fasteners or approved equal.] [3/8 x 4 inch Torx button head with tamper resistant pin.]**
- D. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.
- E. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer for exterior applications.
- F. Galvanizing: Where indicated for steel and iron components, provide the following protective zinc coating applied to components after fabrication:
 - 1. Hot-Dip Galvanizing: According to ASTM A 123/A 123M, ASTM A 153/A 153M, or ASTM A 924/A 924M.
- G. Concrete Pads: Refer to **[Division 2 Section "Cement Concrete Pavement."]** **[Division 3 Section "Cast-in-Place Concrete."]**

2.03 BICYCLE RACKS

- A. Frame: **[Steel]** **[Stainless steel]** **<Insert description>**.
- B. Style: **[Arched inverted U-shaped loop]** **[As indicated on Drawings]** **<Insert style>**.
- C. Pipe **[or]** **[Tube]** **[Diameter]** **[Size]**: **[Manufacturer's standard]** **[As indicated on Drawings]** **[As indicated in a bicycle rack schedule]** **<Insert diameter>**.
- D. Overall Installed Height: **[36 inches (914 mm)]** **[38 inches (965 mm)]** **[As indicated on Drawings]** **[As indicated in a bicycle rack schedule]** **<Insert height>**.
- E. Overall Width: **[24 inches (610 mm)]** **[As indicated on Drawings]** **[As indicated in a bicycle rack schedule]** **<Insert width>**.

- F. Overall Depth: **[As indicated on Drawings] [As indicated in a bicycle rack schedule] <Insert depth>**.
- G. Capacity: Designed to accommodate not less than **[two] [four] [six] [eight] [ten] [12] <Insert number>** bicycles set as **[individual rack units] [ganged groups of <Insert Number>]**.
- H. Artistic Infill Artwork: **[Match] [The Pearl] [The Plymouth] [The Madison] [The Lafayette] [The Rapid] [The Paris] [The Breton] [The Fulton] [The Cascade] [The Bridge] [The Greenwich] [The Monroe] [Insert Other Rack Name] [by Cycle-Safe, Inc.] [Custom design as indicated] <Insert description>**.
 - 1. Fabricate artistic infill artwork panels from 1/4 inch (6 mm) thick steel plate. Cut shapes with computer-guided laser beam.
- I. Horizontal Bar: Manufacturer's standard flat 3 inch (76.2 mm) wide by 1/4 inch (6 mm) thick steel plate **<Insert description>** installed between uprights with bottom edge 18 inches (457 mm) above grade.
- J. Accessories: **[Logo signage] [Bike Parking ID Sticker] <Insert description>**.
- K. Installation Method: **[Cast in concrete] [Surface flange anchored at finished grade to substrate indicated on Drawings] [Rail-mounted and anchored at finished grade to substrate indicated on Drawings] [Freestanding rail-mounted] [As indicated on Drawings]**.

2.04 FABRICATION

- A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.
- B. Welded Connections: Weld connections continuously. Weld solid members with full-length, full-penetration welds and hollow members with full-circumference welds. At exposed connections, finish surfaces smooth and blended so no roughness or unevenness shows after finishing and welded surface matches contours of adjoining surfaces.
- C. Pipes **[and Tubes]**: Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.
- D. Baseplates: **[2-1/2 by 6-1/2 inch (190 mm) square]** baseplates of 3/8 inch (10mm) thick steel in accordance with ASTM A 36, with two 5/8 inch (15 mm) diameter mounting holes on each base plate, spaced equidistant between the upright pipe and edge of the baseplate.
- E. Baseplate Rails: 1/2 by 3 inch (12.7 by 76.2 mm) inverted steel channels in 6 foot (1828 mm) **[Insert Optional Dimension]** length. Fabricate baserails with 7/16 inch (11 mm) diameter mounting holes.
- F. Steel and Iron Components: Color coated. Bare metal steel or iron components are not permitted.
- G. Exposed Surfaces: Polished, sanded, or otherwise finished; smooth all surfaces, free from burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.
- H. Factory Assembly: Assemble components in the factory to the greatest extent possible to minimize field assembly. Ship rail mounted racks knocked-down for field assembly. Clearly mark units for assembly in the field.

2.05 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.06 STEEL FINISHES

- A. Steel Finish: Color coated.
 - 1. Color: **[As indicated by manufacturer's designation] [Match Architect's samples] [As selected by Architect from manufacturer's full range] [As indicated in a bicycle rack schedule] <Insert color>**.
- B. Plastisol Finish: Manufacturer's standard, UV-light stabilized, mold-resistant, slip-resistant, matte-textured, dipped, plastisol finish, with flame retardant added; complying with coating manufacturer's written instructions for pretreatment and application.
 - 1. Blast steel surfaces clean as recommended by paint system manufacturer and according to SSPC-SP 10/NACE No. 2 "Near White Metal Blast Cleaning."
 - 2. Apply manufacturer's standard primer.
 - 3. Apply finish at coating manufacturer's recommended thickness [030 in. min.].
- C. Baked-Enamel, Powder-Coat Finish: Manufacturer's standard, baked, copolymer-based thermoplastic powder coating designed for maximum mechanical performance, impact resistance and UV-stability, comply with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness.
 - 1. Coating Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Polyarmor; Innotek Powder Coatings, LLC Group.
 - b. **<Insert product and manufacturer>**

2.07 STAINLESS-STEEL FINISHES

- A. Stainless-Steel Finish: **[Satin No. 4] <Insert finish>**.
- B. Remove tool and die marks and stretch lines or blend into finish.

PART3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas[, **with Installer present,**] for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

- A. Comply with manufacturer's written installation instructions, unless more stringent requirements are indicated. Complete field assembly of bicycle racks, where required.
- B. Install bicycle racks level, plumb, true, and **[securely anchored] [positioned]** at locations indicated on Drawings.
- C. Post Setting: Set cast-in posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.
- D. Posts Set into Voids in Concrete: Form or core-drill holes for installing posts in concrete to depth recommended in writing by manufacturer of bicycle racks and 3/4 inch (20 mm) larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with **[nonshrink, nonmetallic grout] [or] [anchoring cement]**, mixed and placed to comply with anchoring material manufacturer's written instructions, with top smoothed and shaped to shed water.
- E. Baseplate Mounting: Where required, install steel tapered shims prior to anchoring in place. Fill gaps between baseplate and substrate greater than 3/8 inch with non-shrink, non-metallic grout.
- F. Rail Mounting: Fasten rails to concrete to create a free-standing array with anchors at each rail end. Shim and level as required to maintain installation tolerances.
- G. Installation Tolerances: Install bicycle racks to comply with the following maximum tolerances:
 - 1. Location: Plus or minus 1/2 inch.
 - 2. Height: Plus or minus 1/4 inch.
 - 3. Alignment of Adjacent Units: Plus or minus 1/2 inch in ten feet; 1 inch over total length.
 - 4. Plumb: Plus or minus 1/4 inch.
 - 5. Level: Plus or minus 1/4 inch.

3.03 CLEANING AND PROTECTION

- A. After completing bicycle rack installation, inspect components. Remove spots, dirt, and debris. Repair damaged finishes to match original finish or replace component.

END OF SECTION 02871