

**SECTION 055213**  
**PIPE AND TUBE RAILINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A Wall mounted handrails.
- B Free-standing railings at steps.

**1.02 RELATED REQUIREMENTS**

- A Section 033000 - Cast-in-Place Concrete: Placement of anchors in concrete.
- B Section 099123 - Interior Painting: Paint finish.

**1.03 REFERENCE STANDARDS**

- A AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2020.
- B ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2022.
- C ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings 2020.
- D ASTM B241/B241M - Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube 2022.
- E ASTM B429/B429M - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube 2020.
- F ASTM B483/B483M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Tube and Drawn Pipe for General Purpose Applications 2021.
- G ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings 2021.
- H AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2020.
- I AWS D1.1/D1.1M - Structural Welding Code - Steel 2020, with Errata (2022).
- J SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer 2004.

**1.04 SUBMITTALS**

- A Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
  - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

**PART 2 PRODUCTS**

**2.01 RAILINGS - GENERAL REQUIREMENTS**

- A Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.
- B Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 75 pounds per linear foot applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935
- C Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935

- D Dimensions: See drawings for configurations and heights.
  - 1. Two pipe rail system: 1-1/2 inches diameter, round.
  - 2. Handrails: 1-1/2 inches diameter, round.
  - 3. Handrail Wall Bracket: Provide handrail mounting bracket to wall similar to Julius Blum & Co 622 or Approved Equal.
- E Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
  - 1. For anchorage to concrete, provide inserts to be cast into concrete, for welding anchors.
  - 2. For anchorage to stud walls, provide backing plates, for bolting anchors.
- F Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.
- G Welded and Brazed Joints: Make visible joints butt tight, flush, and hairline; use methods that avoid discoloration and damage of finish; grind smooth, polish, and restore to required finish.
  - 1. Ease exposed edges to a small uniform radius.
  - 2. Welded Joints:
    - a. Carbon Steel: Perform welding in accordance with AWS D1.1/D1.1M.

## **2.02 ALUMINUM MATERIALS**

- A Aluminum Pipe: Schedule 40; ASTM B429/B429M, ASTM B241/B241M, or ASTM B483/B483M.
- B Welding Fittings: No exposed fasteners; cast aluminum.
- C Exposed Fasteners: No exposed bolts or screws.

## **2.03 STEEL RAILING SYSTEM**

- A Steel Pipe: ASTM A53/A53M Grade B Schedule 80, black finish.
- B Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.
- C Exposed Fasteners: No exposed bolts or screws.
- D Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- E Field Finish Painting: Field finish paint steel railing components per Specification Section 099123 Interior Painting.

## **2.04 FABRICATION**

- A Accurately form components to suit specific project conditions and for proper connection to building structure.
- B Fit and shop assemble components in largest practical sizes for delivery to site.
- C Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.
- D Welded Joints:

1. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
  2. Interior Components: Continuously seal joined pieces by continuous welds.
  3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E Weld connections that cannot be shop welded due to size limitations.
1. Weld in accordance with AWS D1.1/D1.1M.
  2. Match shop welding and bolting.
  3. Clean welds, bolted connections, and abraded areas.
  4. Touch up shop primer and factory-applied finishes.
  5. Repair galvanizing with galvanizing repair paint per ASTM A780/A780M.

## **2.05 ALUMINUM FINISHES**

- A Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A Verify that field conditions are acceptable and are ready to receive work.

### **3.02 PREPARATION**

- A Clean and strip primed steel items to bare metal where site welding is required.
- B Supply items required to be cast into concrete with setting templates, for installation as work of other sections.
- C Apply one coat of bituminous paint to concealed aluminum surfaces that will be in contact with cementitious or dissimilar materials.

### **3.03 INSTALLATION**

- A Install in accordance with manufacturer's instructions.
- B Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- C Anchor railings securely to structure.
- D Field weld anchors as indicated on shop drawings. Touch-up welds with primer. Grind welds smooth.
- E Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

### **3.04 TOLERANCES**

- A Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.
- B Maximum Offset From True Alignment: 1/4 inch.
- C Maximum Out-of-Position: 1/4 inch.

**END OF SECTION**