

ARCHITECTURE

SECTION 05521

HANDRAILS AND RAILINGS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Summary: Provide painted steel railings at all exterior and interior stairways, exterior retaining walls, guardrails at mezzanines, and other misc. guardrails.
 - 1. Guardrails – 42” above finish floor – typical.
 - 2. Handrails – 36” above finish floor or nose of tread – typical.
- B. Structural Performance: Design, engineer, fabricate, and install handrails and railings to withstand structural loads required by ASCE 7 and as noted in Section 05511 Metal Stairs.
- C. Submittals: Product Data, Shop Drawings, structural analysis data signed and sealed by a qualified professional engineer registered in the state where Project is located, and manufacturer's color charts showing the full range of colors available for factory-applied finishes.

PART 2 - PRODUCTS

2.1 METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M or A992.
- B. Steel Tube: ASTM A 500.
- C. Iron Castings: ASTM A 47, Grade 32510 or ASTM A 48, Class 30.
- D. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails, unless otherwise indicated.

2.2 OTHER MATERIALS

- A. Non-shrink, Nonmetallic Grout: ASTM C 1107; recommended by manufacturer for exterior applications.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same material and finish as supported rails.
- C. Welding Electrodes and Filler Metal: Provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items. Level 2 weld finish.
- D. Fasteners: Same basic metal as fastened metal; concealed unless otherwise indicated or unavoidable and standard with systems indicated. When concealed is unavoidable flush fasteners should be used. Fasteners exposed to view shall be appropriate and consistent.
- E. Anchors: Fabricated from corrosion-resistant materials with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined per ASTM E 488.

2.3 FABRICATION

- A. Assemble railing systems in shop to the greatest extent possible. Use connections that maintain structural value of joined pieces.
- B. Form changes in direction of railing members by bending and by mitering at elbow bends.
- C. Fabricate railing systems and handrails for connecting members by welding.

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- D. Provide manufacturer's standard wall brackets, flanges, miscellaneous fittings, and anchors to connect handrail and railing members to other construction.
- E. Provide wall returns at ends of wall-mounted handrails.

2.4 FINISHES

- A. Steel Railings: Hot-dip galvanized after fabrication for exterior applications, ASTM A 123, Cleaned and shop primed at interior applications.
- B. Prepare all rails for finish coating per section 09900 - Painting.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Fit exposed connections accurately together to form tight, hairline joints.
- B. Set handrails and railings accurately in location, alignment, and elevation and free from rack.
- C. Coat concealed surfaces of dissimilar metals with a heavy coat of bituminous paint.
- D. Anchor posts in concrete by forming or core-drilling holes 5 inches deep and 3/4 inch greater than OD of post. Fill annular space between post and concrete with non-shrink, nonmetallic grout.
- E. Attach handrails to wall with wall brackets.
- F. Finish grinding all exposed welds to a smooth uniform finish, level 2 finish, as outlined in the National Association of Architectural Metal Manufacturers publication "Pipe Railing Systems Manual" – ANSI/NAAMM AMP 521-95.

END OF SECTION 05520