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.

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