

SECTION 05520
ALUMINUM RAILING

PART 1 - GENERAL

1.01 SCOPE OF WORK

The Contractor shall design, furnish, fabricate, and install aluminum railing and appurtenances as indicated on the Drawings, complete, all in accordance with the requirements of this section.

1.02 QUALITY ASSURANCE

Standards: Unless otherwise specified, all materials, workmanship and practices shall conform to the following Standards:

- A. South Florida Building Code, latest edition.
- B. Aluminum Construction Manual, latest edition, by the Aluminum Association.
- C. Applicable OSHA requirements
- D. Rail and fittings shall be clear anodized, as specified below. Railing shall be plastic wrapped for protection. Wrap shall be removed only after erection.

1.03 SUBMITTALS

- A. The Contractor shall submit to the Engineer of Record detailed shop drawings, prior to fabrication, for review and approval. The drawings shall be complete, covering all aluminum railing members, fastenings, connections, means of galvanic protection, etc., which for part of a finished structure.
- B. Where written certification are called for below, it shall be submitted to the Engineer of Record.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURING

- A. Wesrail: Moultrie Manufacturing Co.
- B. Thompson Railing Systems: Thompson Fabricating Co.
- C. Approved equals.

2.02 ALUMINUM RAILING SYSTEM

- A. General: Where indicated on the Drawings, pipe handrailing shall be provided. Pipe handrailing shall be supplied as required by the South Florida Building Code and OSHA whether indicated on the Drawings or not, including stair railings.

- B. Prior to fabrication, verify all dimensions by actual measurement, so that the finished ladder will fit accurately and provide a neat appearance, with no part out of line and grade by more than 1/8 inch.
- C. Handrailing system, including rails, stanchions and attachments, shall be designed and constructed to resist a load of not less than 200 pounds applied in any direction and at any point on the rails.
- D. The handrailing shall be of welded construction design, with field splices where required between sections. All exposed welds shall be continuous fillets, watertight, and ground smooth. Bends, warps and ramps in the rails shall be made by bending the pipe to true and even curves, without kinks.
- E. Vertical pipe supports to be set in concrete shall be set in built-in pipe sleeves, or concrete may be cored, minimum 5-inches in length. Removable posts shall be sleeved. The joint between upright and sleeve shall be cemented with epoxy grout.
- F. Wall brackets for handrail shall be as manufactured by Mouitrie Manufacturing Company, J.G. Braun Company, Fulton Metal Products Company, or equal. Wall brackets shall be fabricated of metal compatible with handrail metal. End all wall mounted railings at the line of the first nosing.
- G. Provide chain gates across all openings in railings. Chain shall be welded, stainless steel, close link hoisting chain, 1/4-inch by 1-5/16 inch links. One end of each chain gate shall be attached by a stainless steel shackle to a 1/4-inch round stainless steel stock eye bolted to the pipe stanchion and the other end connected to a heavy stainless steel snap hook. A 1/4-inch stainless steel eye shall be provided in the opposite stanchion or concrete wall, installed at the height of the center lines of the top rail.
- H. Aluminum Railing: Stanchions and rails shall be nominal 2 inch diameter minimum, Schedule 80 aluminum alloy 6061-T6 with clear anodized finish. Railing posts must be adequately reinforced to meet the specified design loads. Handrailing shall be 42 inches in height. In no case shall the spacing of handrail posts exceed five (5) feet on center. Stainless steel railings may be used in lieu of aluminum railing at the CONTRACTOR's option.
- I. Kickplates: Kickplates where not specifically called for in the Drawings shall be furnished and installed typically at the edges of all metal walkways and at other handrail installations. Kickplates shall be 1/4-inch thick, must meet OSHA requirements, shall project 4-inches above walkway surface, may not infringe on minimum required walkway width and material must be the same as that of handrail construction. Kickplates shall be connected to handrail posts as detailed on the drawings.

2.03 FINISHES

- A. Finish shall be natural anodized after forming, and before assembly. Each piece of aluminum to be anodized shall be finished (anodized) in accordance with the following Aluminum Association Designations:
 - 1. Sheet: AA-M10C11c21A31, with minimum 0.4 mil coating

2. Structural shapes, plates, bars and pipe: AA-M10C11C21A41, with minimum 0.8 mil coating.
- B. All fabricated aluminum items of the railing shall be anodized after fabrication. No touch-up paint will be accepted.
 - C. A written certification stating compliance with the aluminum finish (anodizing) as specified above shall be furnished for all aluminum material and/or items furnished and installed by the Contractor.
 - D. Protect all aluminum by a factory applied coating of water-tight clear methacrylate lacquer having a minimum thickness of 0.008" minimum capable of withstanding the action of lime and mortar for a period of at least one week in an atmosphere of 100% relative humidity at 100°F.; the action of 10% by weight muriatic acid for a period of six hours at 70°F.; and the action of the atmospheric weather for a period of 12 months. The coating shall be sprayed on, after anodizing and sealing procedures have been followed. Submit written certification indicating that the coating meets or exceeds the requirements of the Aluminum Association Mortar Test for Clear Lacquers on Anodized Aluminum.

2.04 EXPANSION BOLTS

Stainless steel type 316 wedge bolts furnished by handrail manufacturer.

PART 3 -- EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Beginning of installation means erector accepts existing conditions.

3.02 PREPARATION

- A. Clean and strip primed items to bare metals where site welding is required.
- B. Supply items required to be cast into concrete with setting templates, to appropriate sections.

3.03 FABRICATION

Fabricate railings in shop, made and erected square, plumb, straight and true, designed for adjustment to field variations, accurately fitted with tight joints and intersections.

3.03 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.

- B. Provide anchors and plates required for connecting railings to structure.
- C. Aluminum Railings: Aluminum railing fabrication shall be performed by craftsmen experienced in the fabrication of architectural metal work. Exposed surfaces shall be free from defects or other surface blemishes. Dimensions and conditions shall be verified in the field. All joints, junctions, miters and butting sections shall be precision fitted with no gaps occurring between sections, and with all surfaces flush and aligned. Electrolysis protection of materials shall be provided.
- D. After satisfactory installation, all coating shall be removed leaving the clean undamaged surface. In locations where aluminum may come in contact with dissimilar metals or masonry, the surfaces shall be given a heavy brush coat of alkali-resistant bituminous paint or separated with a non-absorptive tape or gasket.

3.04 EXPANSION BOLTS

Expansion bolts shall be spaced 10d apart and 5d edge distance for no reduction in pull out strength. A safety factor of four shall be provided on expansion bolt pull out values published by the manufacturer.

3.05 ALUMINUM SURFACES

Aluminum surfaces in contact with concrete, grout (except epoxy grout), dissimilar metals (except stainless steel), or buried in the ground shall be protected with a heavy coat of Bitumastic No. 300, as manufactured by Kop-Coat, Inc., or approved equal.

END OF SECTION