

SECTION 05520
HANDRAILS AND RAILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Aluminum pipe handrails, balusters, and fittings

1.2 REFERENCES

- A. ASTM B211 - Aluminum-Alloy Bars, Rods, and Wire
- B. ASTM B221 - Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
- C. ASTM B241 - Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube
- D. ASTM B483 - Aluminum and Aluminum-Alloy Drawn Tubes for General Purpose Applications
- E. ASTM E935 - Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings
- F. ASTM E985 - Permanent Metal Railing Systems and Rails for Buildings

1.3 DESIGN REQUIREMENTS

- A. Railing assembly, wall rails, and attachments shall conform to the Florida Building Code.
- B. Design stairs and handrails to conform with ASCE 7-98.

1.4 SUBMITTALS FOR REVIEW

- A. Section 01300 - Submittals: Procedures for submittals
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
- C. Samples: Submit 1' long samples of handrail. Submit samples of elbow, tee, wall bracket, escutcheon and end stop.
- D. Certification: Submit written certification prepared and signed and sealed by a Professional Engineer, registered to practice in the State of Florida verifying that the metal handrail system design meets indicated loading requirements and codes of authorities having jurisdiction.

PART 2 PRODUCTS

2.1 ALUMINUM RAILING SYSTEM

- A. Rails and Posts: 1½" outside diameter, excluding tubing conforming to ASTM B211.
- B. Fittings: Elbows, T-shapes, wall brackets, escutcheons; cast aluminum.
- C. Mounting: Adjustable brackets and flanges, with aluminum inserts for casting in concrete with aluminum brackets for embedding in masonry. Prepare backing plate for mounting in wall.
- D. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.
- E. Splice Connectors: Concealed spigots; cast aluminum.
- F. Exterior Aluminum Surfaces: Exterior anodized to clear color.
- G. Interior Aluminum Surfaces: Interior anodized to clear color.
- H. Apply one coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.

2.2 FABRICATION

- A. Fit and shop assemble components in largest practical sizes for delivery to site.
- B. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.
- C. Provide anchors, plates and angles required for connecting railings to structure.
- D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
- F. 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.
- G. Interior Components: Continuously seal joined pieces by continuous welds.
- H. 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.
- I. Accurately form components to suit stairs and landings to each other and to building structure.
- J. Accommodate for expansion and contraction of members and building movement without damage to connections or members.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

- A. Clean and strip aluminum where site welding is required.
- B. Supply items required to be cast into concrete and embedded in masonry or placed in partitions with setting templates to appropriate sections.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install components plumb and level, accurately fitted, free from distortion or defects.
- C. Anchor railings to structure with anchors, plates and angles.
- D. Field weld anchors as indicated on shop drawings, grind welds smooth and touch-up with primer.
- E. Conceal bolts and screws whenever possible, if cannot, use flush countersunk fastenings.
- F. Assemble with spigots and sleeves to accommodate tight joints and secure installation.

3.4 ERECTION TOLERANCES

- A. Maximum Variation From Plumb: $\frac{1}{4}$ " per story, non-cumulative.
- B. Maximum Offset From True Alignment: $\frac{1}{4}$ ".
- C. Maximum Out-of-Position: $\frac{1}{4}$ ".

END OF SECTION