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. Anchors 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: ¼” per story, non-cumulative.
B. Maximum Offset From True Alignment: ¼”.
C. Maximum Out-of-Position: ¼”.

END OF SECTION