

SECTION 057311 – Aluminum Railings and Accessories

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Aluminum Railings.

1.2 RELATED DOCUMENTS

- A. Drawings, including General and Supplementary Conditions.
- B. Comply with all Local and State Building Codes/International Building Code (IBC).
- C. Comply with Americans with Disabilities Architectural Guidelines and ICC/ANSI A117.1 - Latest edition.

1.3 REFERENCES

- A. AAMA 2604-5 – Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
- B. ASTM B117 – Practice for Operating Salt Spray (Fog) Apparatus
- C. ASTM D2247 – Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity
- D. ASTM D1654-08 - Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
- E. ASTM D714 - Test Method for Evaluating Degree of Blistering of Paints
- F. ASTM B221 – Specification for Aluminum Alloy Extruded Bars, Shapes, and Tubes
- G. ASTM B85 – Standard Specification for Aluminum-Alloy Die Castings

1.4 PERFORMANCE REQUIREMENTS

- A. Structural Performances for Top Rails. Must provide railing assemblies which, when installed comply with the following requirements.
 - 1. Hand rails and Top rails: Capable of withstanding:
 - a. A concentrated load of 200 pounds applied at any point and in any direction at the top of the rail.
 - b. A uniform load of 100 pounds per linear foot applied horizontally and concurrently with a uniform load of 100 pounds per linear foot applied vertically downward.
 - 2. Concentrated and uniform loads above need not be assumed to act concurrently.
 - 3. A 125-pound load applied to balusters over a one (1) square foot area normal to the infill.

1.5 SUBMITTALS

- A. Submit under the provisions of Section 01 33 00.
- B. Manufacturer's Product Data sheets on each product to be used.
 - 1. Installation instructions.
 - 2. Storage and handling requirements.
 - 3. Installation methods.
 - 4. Standard Color Samples.
 - 5. Cleaning Instructions.
 - 6. Warranty Documentation.
- C. Test Reports; performed by qualified, independent testing laboratories.
 - 1. Structural tests: Submit structural performance test report from manufacturer for Aluminum Railings.
 - 2. Coatings: Submit certification that manufacturer is compliant with AAMA 2604 and 2605 specifications.

- D. Submit manufacturer's shop drawings, including plans, elevations, sections, and details, indicating dimensions, tolerances, materials, components, fasteners, hardware, finish, options, and accessories.
- E. Submit Samples as required of each profile used.
- F. Submit Standard Color Samples.

1.6 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Company specializing in manufacturing products specified in this section with minimum five (5) years documented experience.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Transport, handle, store and protect materials in original unopened containers and packaging.
- B. Store components in a dry and clean area protected from the elements.

1.8 WARRANTY

- A. 10 year warranty covering defects in workmanship, materials, and the polyester powder-coat finish.
- B. Provide a copy of manufacturer's written warranty.
- C. Insure registration requirements for the warranty are complied with.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer:
 AVCON, 1915 Swarthmore Avenue, Lakewood, NJ 08701
 Toll Free (800) RAILING. Phone (732)286-9496 Web Site www.AVCON.com
 Email: info@avcon.com

2.2 MATERIALS; ALUMINUM RAILING AND COMPONENTS

- A. Material: 6005-TS or 6063-T6 aluminum.
- B. Specifications:
 - 1. Horizontal Rails: two-part extrusions specifically designed to conceal all internal fasteners.
 - 2. Rail sizes and thicknesses shall be as follows:
 - a. Top Cap Profile:
 - i. Profile– Round 2.050"h x 2.500" w x .080" wall thickness.
 - i. {OR}
 - ii. Profile – Traditional 1.700"h x 2.250" w x .080" wall thickness.
 - b. Lower/Intermediate rail – 1.305"h x 1.352" w x .070" wall thickness.
 - 3. Pickets: 3/4" x 3/4" x 0.055" wall thickness.
 - 4. Screws: Stainless steel with 0.003 zinc plating and coated with yellow chromate.
 - 5. Posts: 2" x 2" x .125" wall thickness x height.
 - 6. Accessories: Aluminum sand and die castings shall be used for all brackets, flange covers, scrolls, post caps, finials and miscellaneous hardware. Die castings shall be made from Alloy 360.0 as per ASTM B85 for superior corrosion resistance. Alloy A380.0 is not acceptable.

2.3 MISCELLANEOUS MATERIALS

- A. Concrete: Normal –weight, air-entrained, ready-mix concrete complying with requirements in Division 03 Section "Cast-in-Place Concrete".
- B. Non-shrink Grout: Factory packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C 1107 and specifically recommended by manufacturer for external application.

2.4 TECHNICAL DATA

- A. Provide assembled railing sections with:
 - 1. Horizontal and vertical members.
 - 2. $\frac{3}{4}$ " x $\frac{3}{4}$ " pickets, 3-5/8" (nominal) spacing between pickets (4.375" on center).
 - 3. Picket Height: 36" {OR} 42" as measured from finished surface or as required.
 - 4. Factory assembled.
 - 5. Maximum horizontal length 96".
- B. Provide gates with:
 - 1. Hinge and latch post.
 - 2. Horizontal and vertical members using same material components and of like design of railing sections.
 - 3. Gate frame: 2-1/2" square.
 - 4. Factory assembled and welded at all connections and joints.
 - 5. Hardware:
 - a. Aluminum Hinge with 2" legs. Color – Black.
 - b. Provide gate latch of style and type approved for application. Color-Black.
- C. Posts
 - 1. End and corner posts to be 2-1/2" square w/ .100" wall thickness. Posts will have extruded internal screw splines for mechanical attachment of system components. 3" square posts w/ .125" wall thickness are available. Posts to include cast aluminum caps.
 - 2. Line posts are 2.0" square w/.125" wall thickness. Posts will have extruded internal screw splines for mechanical attachment of system components.
 - 3. Posts for gates to be 2-1/2" square w/ .100" wall thickness.
 - 4. Surface mounted posts to utilize a 3/8" thick aluminum base plate attached to interior of post with four (4) – $\frac{1}{4}$ -20 x 2" Phillips Flat Head Type F, Stainless Steel Screws. Flanges will also have a continuous $\frac{1}{4}$ " fillet weld on all four sides where post and flange meet.
- D. Finish:
 - 1. TGIC-Polyester Powder Coated. The coating is to be applied by electrostatic spraying and cured at 400°F for 10 minutes. Finish shall pass the following standards and tests:
 - a. Salt spray resistance test ASTM D 1654 – 3000 hours.
 - b. Humidity resistant test ASTM D 714 - 3000 hours.
 - c. Meets or exceeds AAMA 2604-5 – Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
 - 2. Color: Select from one of manufacturers' standard colors.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive aluminum railings.
- B. Notify Architect or Authority of conditions that would adversely affect performance and/or installation.
- C. Insure any unacceptable conditions are corrected prior to installation.

3.2 INSTALLATION

- A. Install units in accordance with the manufacturer's written instructions. Keep perimeter lines straight, plumb, rigid and level.
- B. All material to be inspected upon receipt and prior to installation, checking for any damage that may have occurred during shipping.
- C. Factory pre-assembled railing sections to be installed 2" above finish grade to achieve top rail finish height of 36", 42", or as required to meet specific conditions or applicable code(s).
- D. Attach all components using only anchors supplied or otherwise approved by the manufacturer.
- E. Ensure all surfaces are smooth with no sharp, rough, or uneven areas.
- F. Posts are to be mounted (Option 1) using welded flange plates onto decking, curb, concrete or other structural surface, (Option 2) core drilled (no plate) into concrete and set with non-shrink, nonmetallic, non- gypsum based quick set grout or (Option 3), Side (fascia) mounted using method approved by manufacturer and architect and suitable for project specific application.
 - 1. Core drilled holes are a minimum of 4" deep and with a diameter one (1) inch larger than the outside diameter of the post. After inserting post fill void with non-shrink, non-metallic hydraulic grout. All posts grouted in concrete shall have a ¼" diameter weep hole field drilled, ½" above grout line on one face of post.
 - 2. Flange plate installation shall use fasteners of proper size and embedment into substrate to meet design loads.
- G. Gates are to be fully assembled and match railing using same components. Gates to be installed 2" above finish grade to achieve top rail finish height of 36", 42", or as otherwise specified.

3.2 CLEANING

- A. Contractor shall clean aluminum railings promptly after installation.
- B. Clean site of debris and excess materials resulting from installation.
- C. Do not use harsh cleaning materials or methods that could damage finish.

3.3 PROTECTION

- A. After completion of installation, protect installed work from damage until acceptance of work.

END