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SECTION 05 52 00

ALUMINUM RAILING

For best results, display hidden notes to specifier.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Extruded aluminum railing system with aluminum picket infill.

B. Extruded aluminum railing system with tempered glass infill.

C. Extruded aluminum railing system with cable infill.

1.2 RELATED SECTIONS

A. Section 03 30 00 - Cast-In-Place Concrete: Placement of anchors or sleeves in concrete.

B. Section 04 20 00 - Masonry Assemblies: Placement of anchors in masonry.

C. Section 05 51 00 - Metal Stairs: Metal Handrails

D. Section 06 20 00 - Finish Carpentry: Wood handrails.

E. Section 06 43 00 - Wood Stairs and Railings

1.3 REFERENCES

A. ASTM A 492 - Specification for Stainless Steel Rope Wire.

B. ASTM B 209 (ASTM B 209M) - Aluminum and Aluminum-Alloy Sheet and Plate.

C. ASTM B 221 (ASTM B 221 M) - Aluminum-Alloy Extruded Bar, Rod, Wire, Shape and Tube.

D. ASTM B 429 - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube

E. ASTM C 1048 - Standard Specification for Heat-Treated Flat Glass -- Kind HS, Kind FT Coated and uncoated Glass; 1997b.

F. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Pipe.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide handrails and railings that meet all applicable codes pertaining to the top rail of the guards, handrails not serving as top rail, and guard infill area.

B. Corrosion Resistance: Separate incompatible materials to prevent electrolytic corrosion.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Shop Drawings: Indicate materials, sizes, styles, fabrication, anchorage and installation details for railing system and infill.

D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

E. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic checking and adjustment of cable tension and periodic cleaning and maintenance of all railing and infill components.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum five years experience in producing aluminum railing systems.

B. Mock-Up: Provide a mock-up for evaluation of preparation techniques and application workmanship.
   1. Finish one complete railing section with infill in area designated by Architect.
   2. Do not proceed with remaining work until workmanship is approved by Architect.
   3. Reconstruct mock-up as required to produce acceptable work.
   4. Accepted mock-ups shall be comparison standard for remaining Work

1.7 Installation Meetings: Conduct meetings including Contractor, Architect, fabricator, installer and other subcontractors whose work involves the railing system to verify project requirements, framing and support conditions, mounting surfaces, and manufacturer's installation instructions

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver to site and store materials in manufacturer's original containers and packaging, with labels clearly identifying product name and manufacturer.

B. Store products in clean, dry area indoors until ready for installation. Store materials in accordance with manufacturer's instructions.

C. Protect materials and finish from damage during handling and installation.

1.9 SEQUENCING

A. Ensure that shop drawings and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.

B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.10 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Verify actual openings by field measurements before fabrication; show recorded measurements on shop drawings.

C. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.11 PRE-INSTALLATION MEETING

A. Convene a pre-installation meeting approximately two weeks before start of construction of railing frame component mounting surfaces. Require attendance of parties directly affecting work of this section, including Contractor, Architect, fabricator, and installer. Review the following:
   1. Specific method of installation of components into mounting surfaces.
   2. Installation, adjusting, cleaning, and protection of railing system.
   3. Coordination with other work.

1.12 COORDINATION

A. Coordinate work with other operations and installation of adjacent materials to avoid damage.

1.13 WARRANTY

A. Warranty:
   1. Infill Cables and Connectors: 10 year limited warranty against defects in materials and workmanship.
   2. Powder Coat Finish on Aluminum Extrusions and Components: 10 year limited warranty against cracking, flaking, blistering, and peeling.

1.14 EXTRA MATERIALS

A. See Section 01 60 00 - Product Requirements, for additional provisions.

B. Provide one, approximately 3 ounce (85 grams) can of touch-up paint per 100 feet (30 m) of each color railing.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: American Metal Specialties (Prism AMS Holdings Inc., cablerailings.com), which is located at: 2511 S. Holgate St.; Tacoma, WA 98402; Tel: 253-272-9344; Fax: 253-627-3843; Email: paul@cablerailings.com; Web: www.cablerailings.com

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than strength and durability properties of alloy and temper designated below for each aluminum form required.
   1. Extruded Bar and Tube: ASTM B 221 (ASTM B 221 M), alloy 6063-T5/T52
   2. Extruded Structural Pipe and Tube: ASTM B 429, alloy 6063-T832.
   3. Plate and Sheet: ASTM B 209 (ASTM B 209M), alloy 6061-T6.

B. Glass: Fully tempered ASTM C 1048 Kind FT Quality q3.
   1. Tint: Clear.
   2. Tint: _____.
   3. Thickness: 1/4 inch (6.4 mm).
   4. Thickness: _____.

C. Cables: 1/8 inch (3.2 mm) diameter, 1 by 19 construction, ASTM A 492, Type 316 stainless steel, polished finish, commercial, dry grade cable with fittings specified below.
   1. Fittings:
      a. Cable Terminals: Button or beveled end terminals attached to end fitting.
      b. Cable Terminals: Swivel deck mount flange with two screw holes, attached to end fitting.
      c. Turnbuckles: 4-1/4 inch (108 mm) long stainless steel Threaded Terminal threaded.
      d. Turnbuckles: Threaded connection each end, minimum 3 inches (75 mm) adjustment.
      e. Turnbuckles: Threaded connection at one end, allen head socket at other end, minimum 1-1/2 inches (38 mm) adjustment.
      f. Include washers, nuts, end caps and any accessory items as recommended by manufacturer for installation conditions shown on Drawings.

2.2 COMPONENTS

A. Posts: 2-3/8 inch (61 mm) square by 3/32 inch (2.4 mm) thick extruded aluminum tube.
   1. Surface mount as shown on Drawings.
   2. Fascia mount as shown on Drawings.
   3. Stanchion mount as shown on Drawings.

B. Cap Rail:
   1. Series 100: 2 by 1-3/4 inch (51 by 45 mm) by 1/16 inch (1.6 mm) thick extruded aluminum graspable profile.
   2. Series 200: 3-1/2 inch by 1-1/4 inch (89 by 32 mm) by 3/32 inch (2.4 mm) thick extruded aluminum rectangular profile.
   3. Series 999: 3-1/2 inch by 1-1/4 inch (89 by 32 mm) by 3/32 inch (2.4 mm) thick extruded aluminum elliptical profile.

C. Cap Infill Channel: Extruded aluminum profile configured to secure specified infill.

D. Foot Rail: Extruded aluminum profile configured to secure specified infill.

E. Infill:
   1. Pickets: 5/8 inch (15.9 mm) square extruded aluminum tubes.
   2. Glass panel.
   3. Horizontal Cable

F. Fasteners for Interconnecting Railing Components: Stainless steel screws of type and size recommended by railing manufacturer.

G. Fasteners for Connecting Components to Other Construction: Type and size as shown on Drawings.

H. Aluminum end caps for exposed open ends of rails, tubes, and profiles.

2.3 ACCESSORIES

A. Grab Rail: 1-1/2 (38.1 mm) to 1-5/8 inch (41 mm) diameter extruded aluminum tube. Provide where shown on Drawings.

B. Brackets: Cut from extruded aluminum profile.

C. Gate: Custom design as shown on Drawings with welded extruded aluminum frame.
   1. Gate Infill:
      e. Match railing system infill.
      f. Pickets.
      g. Glass.
      h. Horizontal cables.

D. Provide complete with hardware including hinges, latch, and drop bolt for double gates.

2.2 FINISH

A. Shop Finish: Powder coat, baked on wet coat, or clear anodized aluminum components.

B. Color:
   1. White.
   2. Black.
   3. Bronze.
   4. Clear Anodized
   5. Standard color as selected by Architect.
   6. Custom color as selected by Architect.
   7. As shown on Drawings.

2.3 FABRICATION

A. Fabricate members and assemblies in accordance with approved shop drawings.

B. Assemble items to largest extent practical to minimize field splicing. Disassemble as required for shipping. Clearly identify each unit for installation

C. Conceal fasteners and welds as much as design will allow.

D. Connect non-welded members using manufacturer's standard concealed fasteners and fittings unless otherwise indicated.

E. Close exposed ends of railing members with manufacturer's standard end fittings.

F. Provide manufacturer's standard brackets, fittings, flanges, and anchors for connection to other work unless otherwise indicated on the approved shop drawings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. Verify mounting conditions are in accordance with manufacturer's recommendations.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Provide anchorage devices and fittings to secure railings to in-place construction, including threaded fittings for concrete inserts, toggle bolts and through-bolts.

C. Install railing system plumb, level, square, and rigid.

D. Separate dissimilar materials with bushings, gaskets, grommets, washers or coatings where required to prevent electrolytic corrosion.

E. Use manufacturer's supplied cable and hardware.

F. Terminate and tension cables in accordance with manufacturer's instructions.

G. Ensure cables are clean, parallel to each other, and without kinks.

H. ADJUSTING

I. Adjust cable tension with connecting hardware in accordance with manufacturer's instructions.

3.4 CLEANING

A. Remove temporary coverings and protection of adjacent work areas. Clean installed products in accordance with manufacturer's instructions before owner's acceptance.

B. Remove from project site and legally dispose of construction debris associated with this work

3.5 PROTECTION

A. Protect installed products until completion of project.

B. Replace defective or damaged components as directed by Architect.

C. Touch-up, repair or replace damaged products before Substantial Completion.

3.6 SCHEDULES

A. :

B. :

END OF SECTION