

SECTION 05720

ORNAMENTAL METAL

PART 1 – GENERAL

1.01 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM):
 - 1. A36-91 Structural Steel.
 - 2. A307-94 Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - 3. A368-92 Stainless and Heat-Resisting Steel Wire Strand.
 - 4. A480-92c General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
 - 5. A563-94 Carbon and Alloy Steel Nuts.
 - 6. A6656-96b Annealed or Cold-Worked Austenitic Stainless Steel, Sheet, Strip, Plate and Flat Bar.
 - 7. B209-96 Aluminum and Aluminum-Alloy Sheet and Plate.
 - 8. B221-92a Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes.

- B. American Welding Society (AWS)
 - 1. A5.1-91 Covered Carbon Steel Arc Welding Electrodes.
 - 2. D1.1-96 Structural Welding Code – Steel.
 - 3. D1.2-90 Structural Welding Code – Aluminum.

- C. Architectural Aluminum Manufacturers Association (AAMA):
 - 1. 611-98 Voluntary Specifications for Anodized Architectural Aluminum.
 - 2. 2605.2-98 Superior Performing High Performance Organic Coatings on Architectural Extrusions and Panels.

- D. Federal Specifications (FS):
 - 1. FF-S-92B (1) Screw, Machine: Slotted, Cross Recessed or Hexagon Head.
 - 2. FF-S-325 Shield, Expansion; Nail, Expansion; And Nail, Drive INT AMD 3 Screw (Devices, Anchoring, Masonry).

1.02 SUBMITTALS

- A. General: In compliance with General Specifications as specified herein.

- B. Shop Drawings: Complete shop fabrication and installation drawings for Engineer's review prior to fabrication.

1. Indicate each individual item member sizes, material thicknesses, temper, alloy, finishes, attachment, and shop and field connections.
 2. Indicate erection plans, locations where items are to be installed, and complete installation details.
- C. Samples: Engineer will review Samples for color and texture only, compliance with other requirements is Contractor's responsibility.
1. One, 42-inch high x 5'-0" long sample of rail reflecting a finished product with Kynar XL 500 finish in a color selected by the Owner, materials and attachment devices.
 2. Two, 6 inch long top cap samples of rail connected with an internal splice reflecting a finished product with Kynar XL 500 finish in a color selected by the Owner showing a splice joint not exceeding 1/32".
- D. Calculations; (FIO): For installed products indicated to comply with design loads, include structural computations, materials properties, and other information needed for structural analysis, signed and sealed by qualified professional engineer licensed in the State of _____.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Protect finishes during shipment, storage and handling. Restore damaged finishes to original condition or replace item if finish cannot be restored.
- B. Store components in location where protected from inclement weather.
- C. Leave protective coating on finishes until just prior to Date of Substantial Completion.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Aluminum:
 1. Extrusions: ASTM B221 extruded aluminum alloy 6061-T6, or alloy and temper best suited for finish and bending requirements.
 2. Sheet: ASTM B209, alloy 6061-T6, or best suited for finish.
 - a. Panels: 0.125-inch thick-formed aluminum sheet with applied stiffeners.
 3. Aluminum Finish:
 - a. Factory Finish: Three coat shop-applied, baked on fluropolymer coating system based on minimum 70% Kynar XL 500 resin, formulated by licensed manufacturer and applied by manufacturer's approved applicator to meet

AAMA Publication 2605.

1. General: Coatings shall be compliant with the performance standards set forth in AAMA Specifications 2605-98. "Superior Performing Organic Coatings on Aluminum Extrusions and Panels."
2. Finish designations prefixed by "AA conform to the system established by the Aluminum Association for designating aluminum finishes. Color: Custom color selected by Engineer.
3. Chemical Pretreatment (AA-C12C42R1x): Aluminum railings shall be cleaned with inhibited chemicals and the surface chemically converted to amorphous chromium phosphate to conform with ASTM D 1730. Type B, Method 5, prior to coating.
4. High Performance Organic Coating: Apply manufacturers standard 3-coat thermocured system composed of specially formulated inhibited primer, fluopolymer color coat and clear fluoropolymer top coat, with both color and top coat containing not less than 70% polyvinylidene fluoride resin by weight. Provide coating which has been field tested under normal range of weathering conditions for a minimum of 20 years without significant peel, blister, flake, chip, crack or check in finish, and without chalking in excess of 8 (ASTM D 659) and without fading in excess of 5 NBS units.

B. Stainless Steel Sheet, Strip, Plate: ASTM A666, Type 302/304, with No. 4 satin (long grain) finish in compliance with ASTM A480.

C. Stainless Steel Wire Strand Cable: ASTM A368, 7-wire strand, 5/16-inch diameter, Type 316, stainless steel.

- (1.1) 43" high aluminum rail to the following specifications:
- a) TOP CAP: 6063-T52
 - b) POSTS: 6061-T6
 - c) PICKETS: 6063-T52
 - d) BOTTOM RAIL: 6063-T52
 - e) ANCHORING CEMENT: Sonopost by Sonneborn

2.02 ACCESSORIES

A. Fasteners:

1. Concrete: 316 Stainless Steel Wedge anchors, Hilti “KWIK-Bolt”, or similar anchors, with minimum 2400 lbs, pullout for 3/8” inch machine bolts.
2. Drywall: Toggle bolts or sheet metal screws into studs or sheet metal reinforcing thru gypsum wallboard.
3. Bolts: ASTM A307.
4. Nuts: ASTM A563, Grade A, hex.
5. Threaded Rods: ASTM A36 material with threads conforming to ASTM A307.

D. Ornamental Metal Fasteners: #316 Stainless Steel.

1. Expansion Bolts: FS FF-S325, Group III, expansion shield self-drilling tubular expansion shell bolt anchors; Type 1 or 2, unless otherwise shown.
2. Machine Screws: FS FF-S-92, #316 Stainless Steel, Type III, cross-recessed, design 1 or 2 recess, Style 2C flat head.

E. Sealants: Specified in Section _____.

F. Shop Primer Paint: Compatible with required finish coats of paint. Coordinate selection of metal primer with finish paint specified in Section _____.

G. Welding Electrodes: AWS A5.1 low hydrogen arc welding electrodes.

H. Bituminous Coating: Cold-applied asphalt mastic complying with SSPC Paint 12; minimum 15 mil dry film thickness.

2.03 FABRICATION

A. General:

1. Fabricate units to design and dimensions indicated and in compliance with best shop practice. Take field measurements where coordination with adjoining work is necessary.
2. Make units strong, rigid, neat in appearance and free from defects. Reinforce as required to prevent twisting, sagging or deformation.
3. Form exposed surface free from warp, wave and buckle; with corners square, unless otherwise indicated. Units shall not deviate from flat more than 1/16-inch between any two points. Make arises straight and true. Dress welded joints on exposed surfaces so they are invisible after

finishing. Miter all corners.

1. Accurately machine, file and fit joints, corners and miters. Metal in contact shall have hairline joints, unless otherwise indicated.
2. Conceal fastenings in exposed surfaces. Make threaded connections tight so that threads are entirely concealed by fittings. Provide fiber shims or washers where required to prevent dimpling of face metal.
3. Make welds of adequate strength and durability. Continuously weld construction joints their full length.
4. Insofar as practicable, fabricate, assemble and fit work in shop, with various parts or assemblies ready for erection at building. Trial fit work that cannot be completely shop assembled at shop to ensure proper field assembly.
5. Provide metal backup plates at joints so as to provide perfect alignment. Provide all angle brackets, bent plate clips and angles, framing, stiffeners, supports and fasteners as shown or required for complete installation.

B. Stainless Steel and Aluminum Panels:

1. Fabricate panels of 0.125-inch thick formed stainless steel or aluminum in finish specified herein.
2. Laminate face sheet to front of core to provide smooth surface for stainless steel.
3. Laminate balance sheet to back of core to prevent warping.
4. Adhere stainless steel or aluminum sheet to face sheet.
 - a. Wrap around edges, form square corners.
 - b. No joints in stainless steel or aluminum sheet face of panel.
5. Provide hangers, anchoring devices, fasteners and clips as required.

C. Where fastenings other than welds, i.e., mechanical fastenings, are used for connection work exposed to view, countersink and finish flush with finish surface.

1. Make exposed mechanical fastening joints hairline butt type.

D. Supply components required for proper anchorage of metal fabrications. Fabricate anchorage and related components of same material and finish as metal fabrication, unless specified otherwise.

PART 3 – EXECUTION

3.01 ERECTION

A. General:

1. Anchor and brace work as indicated.
2. Do not attach nameplates or other identification markings on exposed surfaces.

B. Aluminum Railing Panels:

1. Anchor and brace railings as indicated.
2. Install Railings panels with joints as indicated.
3. Install Rails with tight joints using concealed fasteners where possible.
4. Fill all cored holes flush to top of concrete slab.

3.02 MANUFACTURERS

- A. Gelande Industries, Inc. 611 Southridge Industrial Dr. Tavares, FL
32778 352-343-3100
- B. Or Approved Equal

3.03 PROTECTION AND CLEANING

- A. Factory apply strippable Blue Max film or other approved removable protective coating on ornamental handrail and support surfaces exposed in finished work.
- B. Upon completion of installation, leave protective coatings on ornamental metal surfaces.
- C. Immediately prior to acceptance by Owner, remove protective coatings, thoroughly clean aluminum railing system.

END OF SECTION