Thompson Fabricating, LLC
1411 Commerce Place
PO Box 170160
Tarrant, AL 35217
1-800-824-6182 205-841-0441

SPECIFICATIONS: **Architectural Aluminum Railings**

PART ONE: GENERAL

1.1 SUMMARY

A. Work in this section includes custom and standard Interior and Exterior aluminum railings and guardrails.

1.2 PERFORMANCE REQUIREMENTS

A. Design, fabricate and install **guardrails (LEVEL RAIL AND BALCONY RAIL)** to withstand the following loads applied separately;

1. A uniformly distributed load of 50 lbs./ L.F. applied horizontally at the required guardrail height and a simultaneous load of 100 lbs./L. F. applied vertically downward at the top of the guardrail.

2. A concentrated load of 200 lbs. applied horizontally on a one sq. ft. area at any point in the system including intermediate rails, pickets, infill panels or other elements serving this purpose.

3. A concentrated load of 200 lbs. applied at any point and in any direction at top of guardrail.

B. Design, fabricate and install **handrails (STAIR RAIL)** to withstand a uniformly distributed load of 50 lbs/ L.F. applied in any direction and a concentrated load of 200 lbs. applied at any point and in any direction, loads shall be applied separately.

1.3 SUBMITTALS

A. Shop drawings: Indicate sizes, shapes, configuration, sections, locations, fabrication and installation details. Indicate fabricated sizes. Certify that railings and guardrails meet code requirements for vertical and horizontal loading.

B. Product data: Provide product data for specified coating system.

C. Samples:

1. Color and finish samples: Indicating each color and finish to be expected in completed work.

2. Railings: Submit 2’-0” long sample of each type railing with post and rails indicating construction, welded joints, rail end cap closure and finish.

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D. Documentation: Shop drawings, as detailed above, accompanied by all engineering calculations required to indicate that the drawings shall meet all requirements of State and Local Building codes, including wind load calculations appropriate to building height and location. All drawings and calculations shall be signed and sealed by an engineer registered in the State for which work is to be done.

E. Maintenance data: Submit for finished aluminum components including cleaning materials, methods and precautions.

1.4 DELIVERY, STORAGE AND HANDLING:

A. Materials to be delivered to the job site in good condition and adequately protected against damage.

B. Store on site in a location and manner to avoid damage. Stacking should be done in a manner that will prevent bending. Store material in a clean, dry location away from uncured concrete or masonry. Any protection on the railings during transportation should remain until railing is installed.

C. Keep handling on site to a minimum. Exercise caution to avoid damage to railing finish.

1.5 QUALITY ASSURANCE:

A. Allowable tolerances:
   1. Shop assembled mechanical joints shall fit within 1/16”.
   2. Sizes of each element of an assembly shall be correct within 1/8”; total size of a freestanding assembly shall be correct within ½”.
   3. Install railings and guardrails plumb and aligned within ¼” in 12 feet and parallel with adjacent surfaces to within ¼”.

B. Applicable standards:
   1. Aluminum association (AA), standards as referenced herein.
   2. American Architectural Manufacturers Association (AAMA), standards as referenced herein.
   3. American Society for Testing and Materials (ASTM), standards as referenced herein.
   4. American Welding Society (AWS)

      a. AWS D1.2-90, Structural Welding Code-Aluminum.
      b. AWS B2.1-84, Welding Procedure and Performance Qualification.

C. Field measurements: Take field measurements prior to preparation of shop drawings and fabrication.

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1.6 WARRANTY:

A. Provide owner with manufacturer's warranty for materials and installation (1 year standard).

B. Endorse and forward to Owner The Manufacturer's appropriate finish warranty. (5 years standard)

PART TWO: PRODUCTS

2.0 MANUFACTURERS:

A. Acceptable manufacturers:

THOMPSON ARCHITECTURAL RAILINGS, Tarrant, Alabama 1-800-824-6182

2.1 GENERAL REQUIREMENTS:

A. Materials shall be free from defects impairing strength, durability or appearance. Exposed surfaces throughout project shall have the same inherent texture and color for like locations.

B. Fasteners: Fasteners shall be of high grade stainless steel and hidden from view whenever possible.

2.2 MATERIALS

A. Shapes, configurations and sizes: As shown on the drawings.

B. Materials: Railings and guardrails shall be fabricated from extruded and plate aluminum.

1. Extrusions: 6063 alloy, T5 or T6 temper, meeting ASTM B221-96; **channel .0937 minimum wall thickness; all picket .0937 minimum wall thickness.**

2. Posts shall be 6061 T6 alloy, meeting ASTM B221-96; 0.250 minimum wall thickness.

3. Sheet (5005-H34 alloy) & plate (6061/6063 alloy) meeting ASTM B209-96; minimum 0.050 thickness for sheet; 0.125 thickness for plate.

2.3 FINISHES: OPTIONS

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A. Kynar coating (all requirements on separate page).

B. Anodized coating

2.4 RAILING AND GUARDRAIL FABRICATION:

A. Fabricate aluminum railings and guardrails in accordance with approved shop drawings, using mitered and welded joints and radius bends and returns as indicated on the drawings.

B. Shop fabricate to maximum extent possible. Fabricate railings and guardrails up to 20'-0" long lengths.

C. Form bends to uniform radius, free of buckles, twists, cracks, grain separation or distortion of cross section or surface.

D. Fabricate top rails continuous over posts except as required for expansion control. Fit posts to continuous top rail and intermediate rails to post. **(MAX. 4'-0 POST CENTERS BASED ON MOST CRITICAL LOADING CONDITIONS USING A 2"x2"x1/4" POST.)**

E. Cap end plates for the top rail shall be constructed of mill finish aluminum plate, welded all around, and ground smooth.

F. Reinforce joints and splices with tight fitting internal sleeve connectors.

G. Ends of handrails shall be rounded or returned to floor, wall or post as indicated on drawings. Ends of wall returns shall be closed and ground smooth.

H. All section splices to be "off post", located approximately 2" from splice post.

I. Continuously weld components all around in accordance with AWS standards to fuse materials without undercut, overlap or distortion of rail material.

J. Grind exposed welds smooth and flush, matching and blending adjacent contours and surfaces without weakening base metal.

K. Remove burrs and roughness from exposed cut edges of fabricated elements.

L. After substantial fabrication, lightly sand top cap with vibrating sander to enhance coating adhesion.

M. Provide protected pressure relief and weep holes in exterior railings and guardrails.

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PART THREE: EXECUTION

3.1 INSTALLATION:

A. Block Outs or Core drill holes for rail posts.
4. Core drill holes clean and straight, to minimum depth and distance from slab edge, as required by engineer's sealed calculations.

B. Install in accordance with approved shop drawings.
1. Set work in location, alignment and elevation, plumb and level, true and free of rack; measured from established lines and levels.

2. Set railings and guardrails within specified installation tolerances as specified.

3. Fit exposed connections together to form hairline joints.

C. Setting posts:
1. Clean and moisten concrete block outs, or cored holes.

2. Place, align and brace railing and guardrail systems; shim post at bottom of permanent block out or oversized sleeve.

3. Grout posts solid with a high quality grout such as: Hard-Rok by Adhesive Technologies, Sonopost by Sonocrete or brand approved by Architect / Engineer. Cement flush with holes edge and sloped up 1/8" onto post for drainage

D. Wall handrails:
1. Support wall handrails on brackets spaced uniformly not more than 5'-0" o/c and within 1'-0" of rail ends.

2. Install brackets with expansion or adhesive anchors to concrete.

E. Expansion control: Provide ½" minimum expansion control joints at 30'-0" o/c maximum. Secure internal connectors at expansion joints securely to one side, extending not less at expansion joints securely to one side, extending not less than 2" on each side of joint. Locate within 2" of posts.

F. Prior to date of substantial completion, examine railings and guardrails for damage. Repair or replace rails damaged by subsequent trades.

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PART FOUR : FINISHES

4.1 SPECIFICATIONS: **KYNAR 500 or Hylar 5000 PAINT**

A. Finish for exposed aluminum components:

1. Minimum three - coat, shop - applied, baked-on 70% fluoropolymer coating system based on Kynar 500 XL or Hylar 5000 resin (polyvinylidene fluoride, PVDF), formulated by a licensed manufacturer and applied by manufacturer's approved applicator to meet **AAMA 2605.**

2. Coating system shall provide **minimum 1.3 to 1.5 mil dry film thickness.**

3. Color: To be determined

B. Powder Coat Paint Meeting AAMA 2605 "superior performing organic coatings."

1. U.V. resistance and scratch & mar resistance formula shall consist of super durable TGIC polyester resin system with flocked and color stable full pigmentation.

2. Chemical pretreatment:

   a. Alkaline cleaner applied at 160 degrees F. for duration of 3 to 5 minutes.
   b. D.I. water rinse.
   c. Conversion phosphate coating applied at 140 degrees F. for 3 to 5 minutes.
   d. D.I. water rinse.
   e. Application on non-chromate, chrome sealer amorphous chromium phosphate that meets or exceeds ASTM D1730, Type B, Method 5.
   f. D.I. water rinse, and dry in place.

3. Coating Application:

   a. Electrostatic application of super TGIC system powder with a minimum dry film thickness of 3.5 to 5.5 mils cured coating.