

ARCHITECTURAL ORNAMENTAL HANDRAIL AND RAILING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish and install [aluminum] [brass] [bronze] [stainless steel] [pipe] [tube] railings and components.

1.02 REFERENCE

- A. American Architectural Manufacturers Association (AAMA)
 - 1. AAMA 2605-98 Specification for Superior Performing Organic Coatings on Architectural Extrusions and Panels.

- B. American National Standards Institute (ANSI)
 - 1. A21.1 Safety Requirements for Floor and Wall Openings, Railings and Toe Boards.
 - 2. A58.1 Minimum Design Loads in Buildings and Other Structures.
 - 3. A117.1 Accessible and Usable Buildings and Facilities.
 - 4. Z97.1 Safety Performance Specifications and Methods of Test for Safety Glazing Materials Used in Buildings.

- C. American Society for Testing and Materials (ASTM)
 - 1. E 985 Specifications for Permanent Metal Railing Systems and Rails for Buildings.

- D. Standard Building Code (S.B.C.)

- E. Americans with disabilities act accessibility guidelines (ADA)

- F. National Association of Architectural Metal Manufacturers (NAAMM)
 - 1. Metal Finishes Manual
 - 2. Pipe Railing Manual
 - 3. Stair Manual

- G. American Welding Society D1.2 (AWS)

1.03 STRUCTURAL REQUIREMENTS

- A. Handrail, wall rail and Guardrail assemblies and attachments shall withstand a minimum concentrated load of 200 pounds applied horizontally or vertically down at any point on the top rail. Infill area of guardrail system capable of withstanding a horizontal concentrated load of 200 pounds applied to one square foot at any point in the system. Load not to act concurrently with loads on top rail of system in determining stress on guardrail.

1.04 SUBMITTALS

- A. Shop drawings reflecting welding, fabrication and installation of handrails including all plans, typical elevations, sections, details of components, anchor details, and attachment to adjoining units of work. Submittal data shall be in accordance with provisions of applicable specification section.
- B. Samples of manufacturers standard color chart. For custom colors 2 chips will be submitted for color match and approval by architect or owner.

1.05 QUALITY ASSURANCE

- A. Railings shall be all welded aluminum railings as manufactured by Architectural Railings & Grilles, Inc. located at 5912 Shumard Oak Lane, Charlotte, NC 28226, Phone: 704-365-5152, Fax: 704-365-3742. Railings shall comply with all the structured load and design requirements of the local codes and other requirements noted in this specification.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Materials to be delivered to the job site in good condition and adequately protected against damage as handrails are a finished product.
- 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 and masonry. Any protection on the railings during transportation should remain until installed.
- C. Keep handling on site to a minimum. Exercise caution to avoid damage to finishes of material.

1.07 PROJECT CONDITIONS

- A. Field Measurements: Where handrails and railings are indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Where field measurements cannot be made without delaying the railing fabrication and delivery, obtain guaranteed dimensions in writing by the contractor or architect and proceed with fabrication of products so as not to delay fabrication, delivery and installation.
- B. Coordinate fabrication and delivery schedule of handrails with construction progression and sequence to avoid delay of railing installation.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers: As a benchmark of the highest caliber railings and components railings shall be fabricated by Architectural Railings & Grilles, Inc. located at 5912 Shumard Oak Lane, Charlotte, NC, 28226, Phone: 704-365-5152, Fax: 704-365-3742.

2.02 MATERIALS AND FINISHES (Choose from applicable material specification below)

A. Aluminum:

1. Extrusions: Alloy 6063-T6, 6036-T5, 6005-T5 or 6061-T6 meeting ASTM B 221
2. Extruded Bars, Shapes and Mouldings: Alloy 6063-T52 or Alloy 6063-T6 meeting ASTM B 221
3. Castings: Almag 35 meeting ASTM B 26
4. All components shall be as detailed on the architectural drawings.
5. All components shall be factory welded one to another by AWS certified welders, except where splices are required.
6. Finish (refer to NAAMM Metal Finishes Manual).
7. Grout and anchoring cement are to be Bonsal Anchor Cement.

B. Finishes:

1. **Painted finish shall be Kynar 500 [or Kynar 500 XL] type and _____ color and shall meet the requirements of AAMA 2605-98 specification for high performance organic coatings. Finish Designations prefixed by "AA" conform to the system established by The Aluminum Association for designating aluminum finishes. Chemical Pretreatment (AA-C12C42R1x): Aluminum shall be cleaned with inhibited chemicals and the surface chemically converted to amorphous chromium phosphate to conform to ASTM 1730, Type B, Method 5, prior to coating. High Performance Organic Coating: Apply manufacturer's standard 3-coat [2-coat if XL clear coat is omitted] thermo-cured system composed of specially formulated inhibited primer, a fluoropolymer color coat [and a clear fluoropolymer top coat if XL Clear Coat is required] with both the color coat [and the clear 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 the finish, and without chalking in excess of 8 (ASTM D 659) and without fading in excess of 5 NBS units. Finish to be provided by Windsor Metal Finishing or equivalent.**
2. Baked enamel meeting AAMA 2603-98 requirements. Color to be selected by the architect from manufacturer's standard colors.
3. Anodized finish shall be AA-M10-C22-A31 (204R1) provided in accordance with AA -M___ -C ___ -A___ and shall meet requirements of AAMA (606.1) (607.1) (608.1).
4. Mill finish.

C. Glass Railing Systems: (Choose One)

1. Structural Glass: shall be ½" tempered with the vertical edges ground smooth and polished. Specify top rail as: aluminum, stainless steel or brass, or wood caps using hard maple, oak, mahogany, and cherry per sections detailed. All non-ferrous finishes available as above and including #4 through #8 polish. All wood finishes to be by others.
2. Post Supported Aluminum and Glass: Either 3/8" or ½" tempered glass mounted within the rail system. Specify top rail as: aluminum, stainless steel or brass, or wood caps using hard maple, oak, mahogany, or cherry per sections detailed. All non-ferrous finishes available as above and including #4 through #8 polish. All wood finishes to be by others.

2.03 FASTENERS

1. All mechanical fasteners used shall be manufactured from stainless steel.

2.04 FABRICATION

1. All mitered and welded corners shall be ground down smooth before finishing unless otherwise noted.
2. Make exposed joints butt tight and flush.
3. Interior sleeves shall be of used for typical splices.
4. Fasteners are allowed at splice connection.
5. Verify dimensions on site prior to shop fabrication.
6. Horizontal Channels shall be punched to receive pickets and welds in this application shall be concealed from view.
7. End connections required to fasten to the building structure requires a slide wallmount bracket.
8. Provide weep holes when necessary to drain closed sections from pretreatment immersion and finishes. Provide weep holes when necessary for moisture from condensation to escape.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Coordinate post setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as sleeves, concrete inserts, anchor bolts, and miscellaneous items having integral anchors, that are to be embedded in concrete as masonry construction. Coordinate delivery of such items to project site. Should railings require wallmounting, wood blocking will be provided by the contractor to secure to.

3.02 INSTALLATION

- A. Fit exposed connections accurately together to form tight joints, except as necessary for expansion.
- B. Perform cutting, drilling, and fitting required for installation of handrails. Set handrails and accurately in location, alignment, and elevation, measured from established lines and levels.
- C. Leave anchoring material down approximately 1/2" allowing for final topping with a waterproof material matching the surrounding areas by others.
- D. Set posts plumb within a tolerance of 1/8".
- E. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing handrails and railings to in-place construction.

3.03 ANCHORING POSTS

- A. Anchor post in concrete by means of preset sleeves into concrete. After posts have been inserted into sleeves, fill space between post and sleeve solid with Bonsal Anchor Cement material.
- B. Anchor posts in concrete by core drilling holes not less that 3" deep and 1" greater than outside diameter of post. Clean holes of all loose material, insert posts, and fill space between post and concrete with Bonsal Anchor Cement.

3.04 CLEANING AND PROTECTION

- A. Upon delivery railing will have protective wrapping over cap only. Immediately upon completion of installation of railing installer shall remove cap cover and clean all work for inspection and approval.
- B. After installation the General Contractor or Owner shall be responsible for protecting the railings during the balance of construction.
- C. When cleaning painted aluminum surfaces use plain water containing a mild soap or detergent. No abrasive agents or harsh chemicals are to be used.

End of Specification