

SECTION 057313 ORNAMENTAL GLASS RAIL SYSTEM

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the ornamental glass rail system as shown on the drawings and/or specified herein, including, but not limited to, the following:

- 1. Post and panel glass rail system.

1.3 RELATED SECTIONS

- A. Ornamental Metals - Section 057000.
- B. Glass and Glazing - Section 088000.

1.4 QUALITY ASSURANCE

- A. General: Work of this section shall be fabricated and installed by an experienced fabricator or manufacturer who has been engaged in work of equivalent scope and fabrication standards for at least five (5) years. Materials, methods of fabrication, fitting, assembly, bracing, supporting, fastening, operating devices, and erection shall be in accordance with drawings, specifications, and approved shop drawings, and be of highest quality practices of the industry, using new and clean materials as specified, having structural properties sufficient to safely sustain or withstand stresses and strains to which materials and assembled work will be subjected. All work shall be accurately and neatly fabricated, assembled, and erected.
- B. Single-Source Responsibility: Obtain railing systems of each type and material from a single manufacturer.
- C. Engineer Qualifications: Professional engineer legally authorized to practice in the State of New Jersey and experienced in providing engineering services of the kind indicated for railing systems similar to this Project in material, design, and extent.
- D. Exterior Glass Design: Glass thicknesses indicated on drawings and/or specified herein are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites for various size openings in nominal thicknesses indicated, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:
 - 1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:
 - a. Specified Design Wind Loads: 60 psf, unless greater required by Code.

1.5 SUBMITTALS

- A. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer licensed in the State of New Jersey responsible for their preparation.
- B. Shop Drawings: Submit for all items of work, at full scale as far as practical, showing metal and glass thicknesses, arrangement of components, of joining, of jointing, details of all field connections and anchorages, diagrams and details explaining provisions for thermal movement, fastening and sealing methods, glazing methods, and support methods, metal finishes and all other pertinent information.
 - 1. Engineering design and calculations for glass railing assembly - see Article 1.7 herein.
- C. Samples - Submit
 - 1. Glass, 12" x 12" for each type and thickness indicated.
 - 2. Metal Finishes
 - a. Submit finish samples, 6" x 6", for finish system specified.
 - b. The samples submitted shall be representative of the workmanship and finishes of all work of this Section to be incorporated in the completed project.

1.6 PRODUCT HANDLING

- A. Glass: At all times during transport, storage and handling of glass, provide cushions at glass edges to prevent damage. Protect glass faces from scratches and abrasion. Protect glass edges from chipping or other damage. Deliver each piece of glass with factory labels (indicating glass type, quality and thickness) and do not remove labels until installation has been approved.
- B. Glazing Materials: Deliver glazing materials in manufacturer's unopened containers, fully identified with trade name, color, size, hardness, type, class and grade. Store glazing materials where they will be free from damage in accordance with manufacturer's recommendations.
- C. Finished Materials: Protect finishes against soiling, staining or damage from scratches and abrasion. Maintain protection during construction until project completion or as otherwise directed by Architect.
 - 1. Provide wrappings, strippable coatings or other means approved by Architect.
 - 2. During construction, remove protection for visual observation of finish as directed by Architect and replace to maintain protection.

1.7 PERFORMANCE STANDARDS (UNLESS GREATER REQUIRED BY CODE)

- A. Glass rail assembly shall be designed and installed to resist the simultaneous application of a lateral force of 50 PLF and a vertical load of 100 PLF, both applied to the top of the railing. Railing shall resist a total lateral force and total vertical load of at least 200 lbs. each.
- B. Wind Load (for Exterior Glass Railings): 60 psf.
- C. Submit calculations and drawings signed and sealed by a Professional Engineer licensed in the State of New Jersey indicating that glass rail system can meet these performance criteria.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Provide materials that have been selected for their surface flatness, smoothness, and freedom from surface blemishes where exposed to view in the finished unit. Surfaces exposed to view that exhibit pitting, seam marks, roller marks, oil-canning, stains, discolorations, or other imperfections on the finished units will not be acceptable.
- B. Manufacturer: C.R. Laurence Co., Inc., or equivalent product of Blumcraft, Livers Bronze Co. Inc., or approved equal.
 - 1. Provide pre-engineered, component-based, point-supported ornamental railing system with glass infill as detailed on the drawings.
- C. Aluminum: Comply with the following standards for the forms and types of aluminum for the required items of work:
 - 1. Alloy and Temper: Provide alloy and temper as indicated or as otherwise recommended by the aluminum producer or finisher for type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM B 221 for 6063-T5; minimum thickness of 0.125".
 - 2. Finish: Aluminum to have mill finish with bituminous coating to separate it from dissimilar metals.
- D. Stainless Steel: Comply with the following standards for the forms and types of stainless steel for the required items of work:
 - 1. Type: AISI Type 302/304, unless otherwise indicated.
 - 2. Tubing: ASTM A 554; minimum wall thickness of 0.050"; thicker if required to meet performance standards specified herein.
 - 3. Finish: All stainless steel shall have No. 6 satin directional polish finish.
- E. Glass: Provide, as indicated, the following glass types:
 - 1. Laminated, Tempered Glass: ASTM C 1172, Condition A (uncoated), Type I (transparent flat glass), Kind LT (laminated tempered), Class 1 (clear), Quality-Q3 with clear, non-PVB interlayer not less than 0.060" thick. Tempering of glass shall be in accordance with ASTM C 1048. Refer to Section 088000.
 - a. Thickness shall be 27/32".
 - b. Exposed Edges: Arrised edge (1/16"), ground smooth and polished.
 - c. Sealed Edges: Arrised edge (1/16") and ground.
 - 2. Tempered Glass: ASTM C 1048, Condition A (uncoated), Type I (transparent flat glass), Kind FT (fully tempered), Class 1 (clear), Quality-Q3. Tempered glass must be certified by SGCC to meet applicable standards. Refer to Section 088000.
 - a. Thickness shall be 3/4".
 - b. Exposed Edges: Arrised edge (1/16"), ground smooth and polished.
 - c. Sealed Edges: Arrised edge (1/16") and ground.

F. Glazing and Sealing Materials

1. Neoprene Setting Blocks: Solid 70 to 90 Shore A hardness, size to suit condition.
2. Neoprene Wedges and Spacers: Solid 50 Shore A hardness, size to suit condition.
3. Neoprene Cushions and Gaskets: Closed cell sponge, 20 to 30 Shore A hardness, size to suit condition.
4. Epoxy Adhesive: Pourable, non-shrinking, 70 to 80 Shore A hardness, formulated to suit glazing conditions and stress conditions.
5. Sealant: One-part silicone, sealant, 20 to 30 Shore A hardness, clear or custom color as selected by Architect. "Silicone Sealant 1200" or General Electric. Sealant primers and backing as and if recommended by sealant manufacturer.
6. Ensure compatibility of glazing sealants with laminated glass interlayers and with any other surfaces in contact.

G. Protection for Metals: Bituminous paint conforming to FS TT-C-494.

H. Welding Electrodes and Filler Metal: Type and alloy of filler metal and electrodes as recommended by producer of the metal to be welded, and as required for color match, strength and compatibility in the fabricated items.

I. Fasteners: Furnish of basic metal and alloy, matching finished color and texture as the metal being fastened, unless otherwise indicated. Unless otherwise shown, provide Phillips flat-head screws for exposed fasteners.

2.2 FABRICATION

A. Fabricate railings in accordance with approved Shop Drawings.

B. Fabricate railings with joints located symmetrically, tightly fitted and secured. Furnish fittings to accommodate site assembly and installation.

C. Supply components required for anchorage of railings. Fabricate anchors and related components of same material and finish as railing.

D. Use welds for permanent connections where possible.

1. Grind exposed welds smooth.
2. Tack welds prohibited on exposed surfaces.

E. Accommodate for expansion and contraction of members and building movement without damage to connections or members.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine the areas and conditions where ornamental rail assemblies are to be installed and notify the Architect of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 INSTALLATION

- A. General: Install work of this Section square, plumb, straight, true to line or radius, accurately fitted and located, with flush, tight hairline joints (except as otherwise indicated or to allow for thermal movement), with provisions for other trades, with provisions to allow for thermal movement, and with attachment devices as required for secure and rigid installation. It is the responsibility of the architectural metal erector to assure himself that shop fabricated architectural metal items will properly fit the field condition. In cases where the shop fabricated architectural metal items do not fit the field condition, the item shall be returned to the shop for correction.
- B. Attachments
1. Unless otherwise indicated, work to be built into concrete or masonry shall be anchored with shop welded on galvanized steel strap anchors; work to be attached to concrete or masonry shall be anchored by bolts into embedded non-corrosive metal inserts or expansion shields; work attached to structural steel shall be anchored by welds or bolts; work attached to metals other than structural steel shall be anchored by bolts or screws. Power actuated fasteners not permitted unless approved by Architect.
 2. All attachment devices shall be of type, size and spacing to suit condition and as approved by Architect. Provide shims, slotted holes, or other means necessary for leveling, plumbing and other required adjustments. Attachment devices for work exposed to view shall be concealed, unless indicated otherwise.
 3. Do all necessary drilling, tapping, cutting or other preparations of surrounding construction in the field accurately, neatly and as necessary for the attachment and support of work of this Section, but obtain Architect's approval prior to such preparation to work of others.
- C. Post-Supported Glass Railings: Install assembly to comply with railing manufacturer's written instructions. Erect posts and other metal railing components, then set factory-cut glass panels. Do not cut, drill, or alter glass panels in field. Protect edges from damage.
1. Install railing system in accordance with approved Shop Drawings.
 2. Install components plumb and level, accurately fitted, free from distortion and defects.
 3. Provide anchors for connecting railings to supporting construction.
 4. Fit joints tight, flush, and hairline.
 5. Installation Tolerances
 - a. Maximum Variation from Level or From Indicated Slopes: 1/4 inch in 10 feet, noncumulative.
 - b. Maximum Offset from True Alignment of Abutting Members: 1/16 inch.

3.3 CLEANING, PROTECTION AND ADJUSTMENT

- A. Cleaning and Protection: The Contractor shall protect all work for misuse or damage after installation has been completed. Work which is scratched, etched or damaged will not be accepted by Owner, and shall be replaced with acceptable work. Work shall also be protected against soiling, etching or other contamination. This work shall be done at no additional cost to Owner.
1. The Subcontractor shall be responsible for all breakage of glass whatever the cause until the building is turned over to the Owner. He shall replace all broken glass and deliver the entire building with all glazing intact and clean.

2. Acceptance of building by the Owner shall not take place until all glass has labels removed, is washed and polished, both sides, by a window cleaner specializing in such work.

END OF SECTION 057313