ITEM 607.9112 11 - PIPE RAIL FENCE
ITEM 607.9113 11 - HANDRAIL

DESCRIPTION

This work shall consist of furnishing and installing PIPE RAIL FENCE or HANDRAIL in accordance with the contract documents and as directed by the Engineer.

MATERIALS

Fabrication: Fence or Handrail shall be completely shop fabricated prior to delivery to the site and shall be fabricated in strict accordance with the plans, details, and approved shop drawings. All welding shall be in conformance with State Standards. All welds shall be ground smooth and spot primed immediately after welding in the shop with a protective zinc-rich metal primer. After welding is completed, all components, except stainless steel dowels, shall receive phosphate and chromatizing treatments and flame spray coating to improve the adhesion of the powder coating. All components, except stainless steel dowels, shall then be powder coated on all surfaces. Powder coatings shall be applied to the galvanized surfaces in such a manner that the coating will not peel off. Surfaces to be coated shall be clean, dry, free of grease, dust, rust, etc.

Laboratory Test for TGIC - Powder Coating: At the discretion of the Engineer in Charge, a sample of the TGIC - Polyester powder coated handrail shall be laboratory tested for bonding of the powder coating to the metal. The test shall be the Cross Hatch test per ASTM D3359; method B. Failure to satisfactorily pass this test will be a basis for rejection.

Concrete Grouting Material: Shall be as specified in Section 701-05.

Epoxy Polysulfide Grout: This grout shall be applied in accordance with Section 721-03.
The color of the grout shall match surrounding pavement, curb, or wall or as approved by Engineer.

Posts: Posts and vertical members shall be ASTM A-53 Schedule 40 pipe and have dimensions as specified on the plans.

Railings and Fixtures: railings and fixtures shall be ASTM A-53 Schedule 40 pipe. Tubing shall meet ASTM F1487-Latest Rev., Section 12.5.

Stainless Steel Dowels: Stainless Steel Dowels for Pipe Rail Splice, shall meet the requirements of ASTM 269.

Cover Plates, Connection Plates, End Cups: Shall meet the requirements of ASTM A36M.

Hardware: All hardware including nuts, screws, bolts, and washers shall meet the requirements of ASTM A307.

Flame Spray Coating System: All posts, rails, and metal castings shall be flame spray coated as specified as per Section 719-01(Type V). All fabrication and welding shall be completed prior to application of this corrosion resistant coating. Metal pieces shall be cleaned of all weld spatters, mill scale, varnish, rust, grease, and the like and the surface mechanically or chemically prepared

to receive the coating. The corrosion resistant coating shall be a thermal spray zinc coating, known as flame spray coating or metalizing, with a minimum thickness of 0.0254 mm and conform to Section 719-01(Type V). All material as delivered shall be in condition for erection without field fitting or cutting.

TGIC -Polyester Powder Coating: This Coating shall be applied to the flame spray galvanized steel components in such a manner that the coating will not peel off. The TGIC-Polyester shall be applied at a film thickness of 0.075mm to 0.15mm by electrostatic spray process and bake finished per manufacturer's directions. The TGIC-Polyester shall be applied without voids, tears or cuts that reveal the substrate and shall thoroughly adhere to the metal without peeling when scratched with a pick device or knife blade point. No lacquer, urethane or other coatings that prevent adhesion of powder coating shall be applied to the pipe. Color shall be specified in contract documents or directed otherwise by the Regional Landscape Architect.

Organic zinc repair paint: Shall be 65% zinc by weight and meet the requirements of ASTM A780.

CONSTRUCTION DETAILS

Installation: Holes shall be drilled in masonry by approved core drilling methods and equipment and paid for under this item. Holes will be the size and depth indicated on the plan, required by local conditions or as directed by the engineer. Care shall be taken that no damage will be done to posts or masonry. The contractor, at their own costs and expense, will repair damage caused by drilling operations.

Posts and wall anchors shall be set as shown in the contract documents or as directed by the Engineer. Posts and anchors shall be properly supported in their holes to hold them plumb and level and to the intended line and grade prior to neatly filling the remaining space with grout. Connections shall be as shown in the contract documents or the approved shop drawings. No pipe shall be cut on site.

Touch-up & Repair: will be required for minor damage at field welds, bolted connections, and at abrasions sustained during transportation and installation.

The Contractor shall apply organic zinc repair paint to damaged galvanized surfaces. Thickness of repair paint shall be not less than that required by ASTM A123. The repair shall not visible from a distance of 1.8 meters.

Submittals

Shop Drawings: The Contractor shall submit duplicate shop drawings to the Engineer in Charge for approval. Shop drawings shall include complete details of fence or handrail construction including dimensions, layout, height, post and anchor spacing, and connections between rails, posts, anchors and footings.

Samples: The Contractor shall submit one 300-millimeter long section of powder coated, flame spray galvanized pipe of each specified color to the Engineer in Charge for approval.

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METHOD OF MEASUREMENT

This work will be measured along the top rail as the number of linear meters of PIPE RAIL FENCE OR HANDRAIL satisfactorily furnished and installed.

BASIS OF PAYMENT

The unit price bid shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work.