

SECTION 05500

PEDESTRIAN EXIT GATES AND GUARDRAIL

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Section includes specifications for pedestrian exit gates and guardrailing for installation at at-grade crossings. The locations of this installation include vehicular grade crossings, and pedestrians only at passenger stations crossings and at rail crossings.
- B. The proper functioning of the exit gates requires high level of workmanship in fabrication and installation of hinges and gates.

1.02 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM International):
 - 1. A36 Specification for Carbon Structural Steel
 - 2. A53 Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
 - 3. A123 Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - 4. A780 Practice for Repair of Damaged Hot-Dip Galvanized Coatings
- B. American Welding Society (AWS):
 - 1. D1.1 Structural Welding Code Steel

1.03 SUBMITTALS

- A. Submit shop drawings showing member sizes, details of fabrication and construction, methods of assembly, and installation details. Guardrailing shall allow for slope variation on sidewalk.
- B. Submit shop drawings for the fabricator's hinges and gates.
- C. Submit manufacturers product data. Include application instructions for galvanizing repair product.

1.04 DELIVERABLES

- A. Welders Certificates: Submit certification of personnel employed on the work to satisfy the requirements of Part 4 of AWS D1.1.

1.05 QUALITY ASSURANCE

- A. Welding including shielded arc process shall conform to the requirements in AWS D1.1 Structural Welding Code.
- B. All components (hinges, posts, gates, guardrailing) in this Section shall be fabricated in shop for desired quality. Use only well experienced welders and fitters.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Hinges: DOM (Drawn Over Mandrel) steel with minimum yield strength of 60 ksi.
- B. Steel Plate and Miscellaneous Items: ASTM A36, except as otherwise indicated on the Contract Drawings.
- C. Steel Pipe for posts, gates and guardrailing: Seamless steel pipe, conforming to ASTM A53, Type S, Grade A, standard weight, nominal size as shown on the Contract Drawings.
- D. Brackets, Bolts, Threaded Studs, Nuts, Washers and Other Fittings: Galvanized, commercial quality structural steel, except that standard steel pipe fittings may be used where shown on the Contract Drawings. For mounting of signage to the gates: use only SS 316 hardware as shown on the Caltrain Standard Drawing.
- E. Mechanical expansion anchors for attaching the railing to supporting concrete members: Concrete anchorage devices as specified in Section 75-1.03, "Miscellaneous Bridge Metal."
- F. Non-Shrink Grout: Master Builders "Embeco," Sonneborn Bldg Products, Inc "Ferrolith G," Halemite Manufacturing Company "Por Rok," or Engineer approved equal.
- G. Hot Process Field Galvanizing (for repairs): Galv, Galvalloy, Galvweldalloy, or Engineer approved equal.

2.02 FABRICATION

- A. Workmanship: Accurately fabricate hinges, gates and posts neat and rigid in shop for desired quality. Set components accurately in position, leveled, squared and aligned. The dimensions and other details are in the Caltrain Standard Drawing or Contract Documents.
- B. Mock-up Set: Fabricate in shop a complete mock-up set for Engineer's approval. Approved set serves as the standard of quality for other sets.
- D. Guardrailing: Weld railings, continuous as detailed. Fabricate welded pipe items with flush welded construction throughout, except where sleeve joints or other mechanical joints for field connection or job requirements are necessary.

- E. Heat railing and make radius bends to produce uniform curvature without distortion. Shape curved sections on true radius without buckle, dent, kinks or flattened sections. Cope intersections; continuously weld and grind welds smooth. Return rail ends to 1/4 inch clearance and weld plug over open end.
- F. Sleeves for Anchoring Railing Posts in Concrete: Galvanized standard pipe sleeves with welded-on bottom plates or 24 gage galvanized sheet metal sleeves with bottoms. Sleeve diameter shall be at least 3 times the outside diameter of the rail posts.
- G. Grind off excess metal and make smooth surface welds which will be exposed to view.

2.03 WELDING

- A. Use electric shielded arc process conforming to the requirements of AWS D1.1.
 - 1. Use E7018 low hydrogen electrodes for A36 steel.

2.04 GALVANIZING

- A. Fabricate units complete or in largest practical sections before galvanizing. Thoroughly clean welded areas prior to galvanizing. Remove weld spatter, burrs, oil, grease and any other deleterious matter that would interfere with the adherence of the zinc.
- B. Hot dip galvanize exterior railing, gates, and attached metal components after fabrication (including shearing, punching, bending, forming, or welding) in accordance with ASTM A123.
- C. The weight of zinc coating shall be not less than 2.0 ounces per square foot of surface area.
- D. After galvanizing, all elements of the railing shall be free of fins, abrasions, rough or sharp edges and other surface defects and shall not be kinked, twisted or bent. If straightening is necessary, straighten using methods approved by the Engineer. Kinks, twists, or bends in railing elements may be cause for rejection of the railing elements.

2.05 FINISHES

- A. Gates, gate posts and hinges and all attached metal components shall be painted in accordance with Section 09900, Paints and Coatings. Color shall be Federal Safety yellow FS 33538.
- B. Guardrailing shall be painted in color as specified in the Contract Documents.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install work straight and plumb with members anchored, secure and fasten together in accurate position, neat, rigid, level, square, straight and plumb.
- B. Keep field joints to a minimum and concealed to greatest practical extent. Make field joints strong, rigid, watertight and flush with hairline fit. Ease sharp corners.
- C. Securely posts set in sleeves with non-shrink grout in accordance with grout manufacturer's instructions.
- D. Where posts are not set in sleeves, mechanically secure posts to wood or steel surfaces with fasteners as shown on the Contract Drawings or in accordance with approved shop drawings.
- E. Repair abraded or damaged galvanized surfaces with hot process field galvanizing in accordance with ASTM A780 and manufacturer's published instructions.

3.02 SITE TOLERANCES

- A. Gates shall swing open freely and close return such that the gate stops meet tightly.
- B. Install guardrailing posts vertical within a tolerance not to exceed 0.02-foot in 10 feet.

END OF SECTION