

SECTION 02832

STEEL FENCES AND GATES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Ornamental picket fencing and accessories.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM) Publications:

1. A500-93 Specification for Cold-formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
2. A513-92 Specification for Electric-resistance-welded Carbon and Alloy Mechanical Tubing.
3. A653-96 Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-iron Alloy-coated (Galvannealed) by the Hot-dip Process, Structural (Physical) Quality.
4. A924-96a Specification for General Requirements for Steel Sheet, metallic-coated by the Hot-dip Process.
5. A1011-02 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
6. B695-91 Specifications for Coatings of Zinc Mechanically Deposited on Iron and Steel.

1.03 SUBMITTALS

- A. Product Data: Manufacturer's catalog cuts indicating material compliance and specified options.
- B. Shop drawings: Layout of fence and gates with dimensions, details, and finishes of component accessories and post foundations.
- C. Samples: Color sections for polyester finishes. If requested, samples of materials for finials, caps, and accessories.

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1.04 QUALITY ASSURANCE

- A. Manufacturer shall have a minimum of 5 years experience manufacturing ornamental picket fencing.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Ornamental Picket Fencing:
 - 1. Ameristar, Tulsa, OK.
 - 2. Monumental Iron Works, Baltimore, MD.
 - 3. Accepted equivalent.

2.02 COMPONENTS

- A. Ornamental Picket Fence:
 - 1. Style and heights as shown on drawings.
 - 2. Pickets:
 - a. Square tubular members.
 - b. Minimum Size Pickets: 1 inch.
 - c. Picket Spacing: 3-15/16" maximum face to face.
 - d. Thickness: 14 gauge.
 - e. Attach each picket to each rail with #4 - 1/4" industrial drive rivets.
 - 3. Rails:
 - a. "U" channels formed from hot-rolled structural steel having no pockets or shelves to hold water or moisture.
 - b. Size: 1-1/8" wide x 1-1/2" deep.
 - c. Wall Thickness: 11 gauge.
 - d. Punch rails to receive pickets and rivets and attach rails to all brackets with 2 each, 1/4" industrial drive rivets.
 - 4. Posts:
 - a. Square tubular members.
 - b. Minimum Post Size: 3 inches x 3 inches.
 - c. Wall Thickness: 12 gauge.

5. Accessories:

- a. Assembled panels with ornamental accessories attached using industrial drive rivets to prevent removal and vandalism.

6. Finish:

- a. Steel material, galvanized after forming shall comply with ASTM A1011 with a minimum yield strength of 50,000 psi. The exterior shall be hot dipped galvanized with a 0.45 oz/sq.ft. Minimum zinc weight. The interior surface shall be coated with a minimum 81 percent nominal zinc pigmented coating 0.3 mils minimum thickness.
- b. Steel material, galvanized before forming, shall comply with ASTM A924 with a minimum yield strength of 50,000 psi and have G90 hot dipped galvanized coating according to ASTM A653.
- c. After steel components have been galvanized, clean and prepare surfaces of components to assure complete adhesion of finish coat.
- d. Apply 2.5 mil thickness of polyester resin based powder coating by electrostatic spray process.
- e. Bake finish for 20 minutes at 450 degrees F (232 degrees C) metal temperature.

7. Gates:

- a. Ornamental picket swing gates.
- b. Ornamental picket cantilever slide gates.

B. Accessories:

1. Rail Attachment Brackets:

- a. Die cast of zinc (Zamak #3 Alloy).
- b. Ball and socket design capable of 30 degrees swivel (up/down-left/right).
- c. Bracket to fully encapsulate rail end for complete security.

2. Industrial Drive Rivets:

- a. Of sufficient length to attach items in a secure nonrattling position.
- b. Rivet with minimum of 1,100 lbs. holding power and

shear strength of 1,500 lbs.

3. Ornamental Picket Fence Accessories:

- a. Provide indicated items required to complete fence system.
- b. Galvanize each ferrous metal item according to ASTM B695 and finish to match framing.

4. Post Caps:

- a. Formed steel, cast of malleable iron or aluminum alloy, weather tight closure cap.
- b. Provide post cap for each post.

5. Picket Tops: Square edged or rounded. Points are not allowed.

C. Setting Material:

- 1. Concrete: Minimum 28 day compressive strength of 3,000 psi.
- 2. Flanged Posts: Provide flange type base plates with 4 holes for surface mounting of posts where indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify areas to receive fencing are completed to final grades and elevations.
- B. Ensure property lines and legal boundaries of work are clearly established.

3.02 INSTALLATION

- A. Install fence according to manufacturer's instructions.
- B. Space posts uniformly at 8'-0" maximum face to face unless otherwise indicated.
- C. Concrete Set Posts:
 - 1. Drill hole in firm, undisturbed or compacted soil.
 - 2. Holes shall have diameter 4 times greater than nominal

outside dimension of post, and depths of approximately 6 inches deeper than post bottom.

3. Excavate deeper as required for adequate support in soft and loose soils, and for posts with heavy lateral loads.
 4. Set post bottom 36 inches below surface when in firm, undisturbed soil.
 5. Place concrete around post in continuous pour.
 6. Trowel finish around posts and slope direct water away from posts.
- D. Gate Posts and hardware: Set keepers, stops, sleeves and other accessories into concrete.
- E. Surface mount (wall mount) posts with mounting plates where indicated. Fasten with lag bolts and shields.
- F. Check each post for vertical and top alignment, and maintain in position during placement and finishing operation.
- G. Align fence panels between posts. Firmly attach rail brackets to posts with $\frac{1}{4}$ inch bolt and lock nut, ensuring panels and posts remain plumb.
- 3.03 GATE INSTALLATION
- A. Install gates plumb, level and secure for full opening without interference.
 - B. Attach hardware with tamper resistant fasteners.
 - C. Adjust hardware for smooth operation.
- 3.04 ACCESSORIES
- A. Install post caps and other accessories to complete fence.
 - B. Clean up debris and unused material and remove from site.

END OF SECTION

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