

## 02832 STEEL FENCES AND GATES

\*\*\*\*\*  
*SPECIFIER:*

*CSI MasterFormat 2004 number 32 31 19*

\*\*\*\*\*  
*NOTE TO SPECIFIER: When the project is located within one mile from a saltwater coastline, an aluminum picket fence shall be specified instead of steel.*

### PART 1 GENERAL

#### 1.1 SECTION INCLUDES

- A. Ornamental picket fencing and accessories.

#### 1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM) Publications, latest edition:
  - 1. A500 Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
  - 2. A513 Specification for Electric-Resistance-Welded Carbon and Alloy Mechanical Tubing.
  - 3. A653 Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-iron Alloy-Coated (Galvannealed) by the Hot-dip Process.
  - 4. A924 Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
  - 5. A1011 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability and Ultra-High Strength.
  - 6. B695 Specifications for Coatings of Zinc Mechanically Deposited on Iron and Steel.

#### 1.3 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.

#### 1.4 QUALITY ASSURANCE

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

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

#### A. Ornamental Picket Fencing:

1. Ameristar, Tulsa, OK.
2. Monumental Iron Works, Baltimore, MD.
3. Other A/E accepted equivalent.

### 2.2 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.
- c. All picket gates that require a "panic" exiting device shall be constructed with heavy duty steel hinges and hardware. The exit device shall be mounted on a protective steel plate in accordance with M-DCPS Design Standards. Steel security mesh shall be welded for a minimum of 3 feet distance, above and below the exit device, and on all adjacent side panels, to prevent access to the panic device from the exterior side of the gate.

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

### 3.1 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.

### 3.2 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 1/4-inch bolt and lock nut, ensuring panels and posts remain plumb.

### 3.3 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.

### 3.4 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