

SECTION 32 31 19
DECORATIVE FENCING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fence, Framework, and Accessories.
 - 2. Manual Gates and Related Hardware.
- B. Requirements:
 - 1. Furnish all materials, labor, and equipment required to provide fence for project area.
- C. Related Requirements:
 - 1. Section 03 05 00 – Concrete.

1.2 REFERENCE STANDARDS

- A. Standard References in this Section are:
 - 1. ASTM B221 – Standard Specification for Aluminum and Aluminum – Alloy Extruded Bars, Rods, Wires, Profiles and Tubes.
 - 2. ASTM B633 - 11 Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
 - 3. ASTM D6577 - 00 Standard Guide for Testing Industrial Protective Coatings
 - 4. ASTM F2814 - 09 Standard Guide for Design and Construction of Ornamental Steel Picket Fence Systems for Security Purposes
 - 5. ASTM F2957 - 13 Standard Specification for Ornamental Aluminum Fence Systems.

1.3 SYSTEM DESCRIPTION

- A. Aluminum Picket Fence
 - 1. Basic Uses:
 - a. Provides attractive, maintenance free security for residential, commercial, industrial, and recreational applications.
 - b. Prevents rusting and corrosion, even when exposed to moisture.
 - 2. Composition and Materials:
 - a. Manufactured from aluminum extrusions, having a minimum tensile strength of 35,000 psi, using 6005 T5 alloy for structural components.
 - b. All screws are stainless steel with a plating of zinc and yellow dichromate to ensure corrosion resistance under the harshest conditions.
 - c. The screw heads are painted to match the color of the fence, with a polyurethane finish.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Erector/Installer:

- a. Engage a single erector that is skilled and trained, and possesses successful and documented experience installing fencing, and employs only workers with specific skill and successful experience in the type of Work required.
- b. Erector shall be acceptable to fencing manufacturer,

B. Component Supply and Compatibility:

1. Provide fencing as complete system with all gates, hardware, appurtenances, and other components produced by a single manufacturer, including custom erection accessories, fittings, clamps, and fastenings as required for complete system.

1.5 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures.

B. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components.

C. Product Data: Submit data on posts, accessories, fittings, and hardware.

D. Manufacturer's Installation Instructions: Submit installation requirements.

E. Closeout Submittals: Submit the following:

1. Section 01 70 00 – Execution and Closeout Requirements.
2. Project Record Documents: Accurately record actual locations of property perimeter posts relative to property lines and easements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 – Product Requirements.

B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

C. Store materials according to manufacturer instructions.

D. Protection:

1. Protect materials from damage by storing in a location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Ornamental Aluminum Picket Fence:
 - 1. Manufactured from aluminum extrusions, having a minimum tensile strength of 35,000 psi, using 6005 T5 alloy for structural components in accordance with ASTM F2957 – 13. Fence shall have exposed pickets.
- B. Ornamental Horizontal Rails:
 - 1. Rails shall be C-Channels or Hollow Square Extrusions.
 - 2. Square holes shall be punched in the top of the rails to allow the pickets to pass through.
 - 3. Because aluminum extrusions allow metal to be placed where it is needed most, the top shall be designed for additional strength.
- C. Ornamental Posts:
 - 1. Posts shall be hollow square extrusions with holes pre-punched to allow the rails from the fence sections to slide into them.
- D. Ornamental Gates:
 - 1. Matching gates.

2.2 COMPONENTS

- A. Ornamental Fence Dimensions
 - 1. Fence Height:
 - a. Fence height shall be 8' high.
 - 2. Pickets:
 - a. Pickets shall be $\frac{3}{4}$ " square x .050" thick and shall be exposed at the top.
 - 3. Horizontal Rails:
 - a. The number of rails used in a section varies with the height and strength of the fence.
 - 1) Rails shall be $1\text{-}\frac{3}{8}$ " x $1\text{-}\frac{1}{4}$ " with .088" sides and .065" top thickness.
 - 4. Posts:
 - a. Line Post Spacing shall be as indicated on the drawings.
 - 1) Posts shall be 2" square x .125" thick.
 - 5. Gates:
 - a. Gates shall be 14' wide with a double gate unless otherwise directed.
 - b. Gates shall be fabricated with 2" square ends, $1\text{-}\frac{3}{8}$ " x $1\text{-}\frac{1}{4}$ " rails and $\frac{3}{4}$ " pickets.
 - c. Gates shall fit openings inside-to-inside of the posts.
 - 6. Or as outlined in Project Drawings.
- B. Screws
 - 1. All screws shall be stainless steel with a plating of zinc and yellow dichromate to ensure corrosion resistance under the harshest conditions.
 - 2. The screw heads shall be painted to match the color of the fence, with a polyurethane finish.

2.3 GATES

- A. General:

1. Gate Types, Opening Widths and Directions of Operation: As indicated on the drawings.
 2. Gates shall be designed for operation by one person.
 3. Gates shall be factory assembled prior to delivery.
 4. Gates finish shall match fence. The powder coat finish shall be black.
 5. Gates shall match fence styles.
 6. Gates shall include a stopping mechanism per CFPUA Standard Details.
- B. Hinges, Springs, and Latches:
1. Hinges shall be made from aluminum extrusions with a 3/8" stainless steel pin that may be attached to either a post or a wall.
 2. Self-closing springs and self-latching latches are available for all gates.

2.4 FINISHES

- A. Colors:
1. The powder coat finish shall be black.
- B. Styles:
1. Typical rail cross sections:
 - a. Ornamental rail with exposed pickets.
 - b. Heavy Industrial Top snaps over bottom closure to conceal screw heads.
- C. Pretreatment:
1. A three stage non-chrome pretreatment shall be applied.
 - a. The first step shall be a chemical cleaning.
 - b. The second step shall be a water rinse.
 - c. The final step shall be a dry-in-place activator which produces a uniform chemical conversion coating for superior adhesion.
 2. Screws shall be plated with yellow and zinc dichromate to ensure corrosion resistance.
- D. Coating:
1. Fence materials shall be coated with a polyester powder-coat finish system.
 - a. The finish shall have a cured film thickness of at least 2.0 mils.
 2. The screw heads shall be painted to match the color of the fence.
- E. Finish:
1. The cured finish shall meet the following:
 - a. Humidity resistance of 1,000 hours using ASTM D2247.
 - b. Alt spray resistance of 1,000 hours using ASTM B117.
 - c. Accelerated weathering for 500 hours under Method 6152 of Federal Test Method 141 shall show no adhesion loss, with only slight fading, chalking and water staining.
 - d. Outdoor weathering shall show no adhesion loss, checking or crazing, with only slight fade and chalk when exposed for one year.
 - e. Minimum hardness of 2H using ASTM D3363.

2.5 CONCRETE

- A. See Section 03 05 00 – Concrete.

2.6 SOURCE QUALITY CONTROL

- A. Fabrication Tolerances:
 - 1. Fabric, posts, rails, and other supports shall be straight or uniformly curved to provide the profiles shown, to dimensional tolerance of 1/16-inch in 10 feet without warp or rack in the finished Work.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 70 00 – Execution and Closeout Requirements.
- B. Examine conditions under which the Work will be erected and notify Engineer in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. General:
 - 1. Do not begin installation and erection of fencing until final grading is completed.
- B. Pickets:
 - 1. The hollow pickets pass through the rails and are attached using stainless steel screws. By using this method of attachment, the pickets are always parallel regardless of the pitch of the terrain.
- C. Set intermediate, terminal, gate, and corner posts plumb, in concrete footings 33" depth recommended with top of footing 2 inches above finish grade. Slope top of concrete for water runoff.
- D. Install fence in accordance with manufacturer's recommendations.

3.3 WARRANTY

- A. Fencing shall be guaranteed for 1 years. This guarantee shall cover, at minimum, defects in workmanship and materials, as well as the powder finish of the fence. The paint shall be guaranteed to not peel, crack, or chip.

3.4 ADJUSTMENT AND CLEANING

- A. Repair coatings damaged in the shop or at the Site by recoating with manufacturer's recommended repair compound, applied in accordance with manufacturer's directions.
- B. Lubricate and clean exposed operating surfaces.

- C. Repair and replace broken or bent components.

3.5 ERECTION TOLERANCE

- A. Maximum Variation from Plumb: $\frac{1}{4}$ inch.
- B. Maximum Offset from Indicated Position: 1 inch.
- C. Minimum distance from property line: 6 inches.

END OF SECTION