

SECTION 32 31 19 - DECORATIVE METAL FENCES AND GATES

Ornamental Aluminum Picket Fence System

Commercial Grade – Concealed Fasteners

PART 1 GENERAL

1.01 WORK INCLUDED

Work under this item shall consist of furnishing and installing an ornamental aluminum picket fence system, complete with all hardware, posts, and all factory furnished parts as per the manufacturer's written installation instructions. This shall be done in accordance with the locations, dimensions, lines, grades, and design specified in the contract documents, approved drawings, and this written specification.

1.02 RELATED SECTIONS

Section 03 06 30 Cast-In-Place Concrete

Section 31 00 00 Earthwork

Section 32 13 00 Paving and Surfacing

Section 32 31 00 Fencing and gates

1.03 SYSTEM DESCRIPTION

The ornamental aluminum picket fence system is a factory assembled fence panel that shall include all components (i.e., pickets, rails, posts, gates and hardware) required. System is to be manufactured by a single source and supplied to properly function as a complete system. Design, style, and dimensions as shown on the drawings.

1.04 QUALITY ASSURANCE

During manufacturer each component is thoroughly inspected for specification compliance and consistent manufacture per the specifications below. Once on site, the product installers must have experience installing these products or similar products and provide similar inspection to ensure compliance with this specification.

1.05 STANDARDS AND REFERENCES

ASTM A36 – Carbon Structural Steel

ASTM B85- Specification for Aluminum Die Castings.

ASTM D7803 – Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Powder Coating

ASTM A500 – Steel Structural Tubing in Rounds and Squares

ASTM F900 – Industrial and Commercial Steel Swing Gates

AAMA 2604- Performance Requirements and Test Procedures for coating on aluminum extrusions.

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AAMA 2603- Performance Requirements and Test Procedures for coating on aluminum extrusions.

1.06 SUBMITTALS

- A. Preconstruction Submittals
 - a. Standard product drawings post along with specification are readily available in various formats. Be sure to include all dimensions, details, and finishes. Drawings must include recommended post foundations as well.
 - b. Custom details available upon design review and engineering input on special height, color, or configurations.
- B. Shop Drawings
 - a. Site specific drawings of a single unit are included along with detailed installation instructions to accommodate any site condition.
 - b. Product data or manufacturer's cut sheet indicating materials and all conditions of the plans and specifications have been met.
 - c. As-Built Drawings are recommended to show any field modifications or adjustments.
- C. Test Reports / Certificates
 - a. AAMA 2604 Performance Results.
 - b. Other reports required, must be requested prior to bid and additional charges may apply depending on certification or stamp requirements.
- D. Samples (if required)
 - a. Samples available upon request. Color Chips are readily available.

1.07 PRODUCT HANDLING AND STORAGE

- A. Handling
 - a. Product to be handled with care to avoid breakage or damage.
- B. Storage
 - a. Proper storage shall be a dry secure area that includes ventilation, drainage, as well as protection from weather, vandalism, theft, corrosive elements (salt, glycol, solvents, etc.) and any other mitigating factors present.
- C. Delivery and Acceptance
 - a. Delivery to be done by authorized hauler and properly secured load. Upon receipt of material, visual inspection to ensure no damage or defects occurred during shipping.

1.08 WARRANTY

Manufacturer's standard lifetime limited warranty from date of purchase and delivery from the factory. Warranty shall include the finish in that it will not crack, chip, peel, or lose adhesion in any way. Gloss and color retention per AAMA standards. Please refer to manufacturer's warranty for complete warranty information. Warranty does not cover extreme weather, vandalism, corrosive

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elements (excessive salt, glycol, solvents, etc.), erosion of coating due to heavy use, and any other mitigating factors present. Special warranty requirements for saltwater and corrosive environments. Refer to written warranty for coverage limitations. Warranty only offered to the purchaser / owner of the property. Does not cover accessories, screws, or other external parts. Warranty is non-transferable.

Gate products include a 5-year warranty with limitations as detailed in the manufacturer's warranty statement. Manufacturer shall provide a limited warranty against failure for the gate, hardware, rollers and other parts for a period of 5 years. Failure being any manufacturing defect that prohibits normal operation.

PART 2 PRODUCT DETAILS and MATERIALS

2.01 MANUFACTURER

Basis of Design and Known Manufacturer(s)

Elite Fence Products Inc.

Phone: (800) 783-1331 or (586) 468-4448 Fax: (586) 468-4884

info@elitefence.com / www.elitefence.com

Products from other qualified manufacturers who have five years or more experience manufacturing ornamental aluminum fence systems and gates will be considered by the architect as equal if approved in writing 10 days prior to bidding, and they meet all specifications for design, size, gauge of metal parts and fabrication. All fencing and gates, including accessories, fittings, and fastenings, shall be obtained from a single source.

2.02 MATERIAL COMPONENTS

A. Grade

- a. Aluminum material for fence framework (i.e., tubular pickets, rails and posts) shall conform to the requirements of ASTM B221. The aluminum extrusions for posts, pickets, and rails Alloy and Temper Designation 35,000-psi strength aluminum alloy 6063-T5 or 6005-T5 as shown below.

B. Coating

- a. Preparation for coating shall include –
 - i. Heated alkaline cleaner.
 - ii. Clean water rinse.
 - iii. Reverse osmosis rinse.
 - iv. Virgin reversed osmosis halo rinse.
 - v. Final pretreatment coating shall be chrome, zinc, and iron phosphate free

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- b. The fence system shall have an electrostatically applied super durable polyester powder coat finish that meets or exceeds AAMA 2604. Factory applied and baked at a temperature of 400°F to 425°F.
 - c. Available Colors: Black, Textured (Matte) Black, Quaker Bronze, Textured (Matte) Quaker Bronze, White, Textured (Matte) White, Walnut Brown, Beige, Hartford Green, Sandstone and Textured (Matte) Sandstone. 2" square .060 wall post not available in Walnut Brown, Beige, Sandstone or Hartford Green. COLOR AS SHOWN ON DETAILS.
 - d. Please check with manufacturer prior to design on color availability and lead times
 - e. Custom Colors available upon request and review.
- C. Pickets - $\frac{3}{4}$ " x $\frac{3}{4}$ " square x 0.050" wall thickness weighing .167 pounds per foot, extruded tubing Alloy and Temper Designation 35,000-psi strength aluminum alloy 6063-T5 mechanically fastened to rails.
- a. Picket spacing- 3 $\frac{3}{4}$ " or 1 $\frac{1}{2}$ " as shown on the detail drawings.
- D. Rails - Horizontal rail is 1-1/8" x 1 3/4" (.062 top wall and .082 side wall). Rails to have aluminum extruded side plate inserted into rail to provided concealed fasteners. Bottom of rail is still open. Alloy and Temper Designation 35,000-psi strength aluminum alloy 6005-T5
- a. Spacing and placement as shown on the detail drawings.
- E. Picket to Rail Fasteners
- a. #8 – $\frac{3}{4}$ " Phillips panhead 410 stainless steel corrosion resistant screws. The heads are coated with zinc and yellow chromate and then painted to match the color of fence.
 - b. For concealed fasteners a #8 – $\frac{1}{2}$ " Screw is used.
- F. Posts – Size as shown on the details and site layout. NOTE: Different post sizing is used at different locations depending upon usage, which is project specific.
- a. Posts are form fitting to rail profile, pre-punched aluminum posts available in:
 - i. 2" x 2" x .060 wall - .559 Pounds per foot
 - ii. 2" x 2" x .080 wall - .737 Pounds per foot
 - iii. 2" x 2" x .125 wall - 1.106 Pounds per foot
 - iv. 2 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ " x .075 wall - .873 Pounds per foot
 - v. 2 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ " x .100 wall - 1.151 Pounds per foot
 - vi. 3" x 3" x .125 wall - 1.696 Pounds per foot
 - vii. 4" x 4" x .125 wall – 2.325 Pounds per foot
 - viii. 4" x 4" x .250 wall – 4.5 Pounds per foot
 - ix. 6" x 6" x .125 wall – 9.7 Pounds per foot
 - x. 6" x 6" x .250 wall – 6.9 Pounds per foot
 - xi. Refer to site layout for sizing and placement.
- G. Rail to Post Fasteners
- a. Phillips panhead 410 stainless steel corrosion resistant screws. The heads are coated with zinc and yellow chromate and then painted to match the color of fence.
- H. Accessories

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- a. Aluminum castings shall be used for all rings, post caps, finials, and miscellaneous adornments.
- I. Height
 - a. Available in standard height of 3', 3 ½', 4', 5', 6'
 - b. Not to exceed 6' high, for higher fence upgrade to Industrial Grade
 - c. Custom height available upon request
- J. Style Configuration
 - a. Various styles and configuration available refer to drawing for detail.
- K. Country of Origin
 - a. All material is American extruded and assembled. Meets and exceeds BUY AMERICAN ACT. Reference Section 1605 of the ARRA.

2.03 Fabrication and Assembly

- A. Pickets, rails and posts pre-cut to specified lengths. Rails pre-punched to accept pickets. Posts are factory punched to accept rails.
- B. Panels are factory assembled and packaged with screws as specified.
- C. Gates
 - a. Fabricated with mechanical fastening with 410 stainless steel screws of pickets with the frame with optional welding of picket to frame available. Frame is fully welded. Internal panel matches fence. Uprights are 1 ½" x 1 ½" square.
 - b. Finish polyester coated in color to match fence.
 - c. Gate posts sizing as indicated on the drawings.
 - d. Standard manual gate hinges and gravity style latch is included. Hinges and latch shall be factory coated to match fence.
- D. Special hardware requirements such as self-closers or special latching devices are shown on the details or specified on separate sections.

2.04 PERFORMANCE CRITERIA / QUALITY CONTROL

- A. Testing
 - a. The following tests are performed in the plant by a qualified employee:
 - i. Continuous Automated Chemical Monitoring
 - ii. System Titration Testing every 2 hours
 - iii. Cure Oven Temperature Testing every 4 hours
 - iv. Coating Thickness Testing every lot run
 - v. ASTM D 3359 Cross Hatch Adhesion Testing every lot run
 - vi. PCI #8 Solvent Cure Test every lot run
 - vii. Gloss and Color Match Testing every lot run
- B. Inspection and Rejection

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- a. The quality of materials, the process of manufacture, and the finished units shall be subject to inspection by the Factory Foreman prior to shipment. All manufactured products may be subject to rejection on account of failure to conform to the specification requirements. Inspection per lot run of each profile and color as it comes off the line. Rejection includes –
 - i. Variations that substantially deviate from the approved model.
 - ii. Failed coating
 - iii. Any Defects, which would affect the structural integrity of the unit.
- C. Packaging
 - a. Factory Packing includes –
 - i. Corrugated Box
 - ii. Closed foam cell Separation
 - iii. Projects shrink wrapped per project for shipping
- D. Handling and Storage
 - a. Care shall be taken during storage, transporting, and handling of all products to avoid damage to items and packaging.
 - b. Recommend indoor or protected storage to preserve integrity of cardboard packaging.
- E. Shipment
 - a. Palletized and Wrapped

PART 3 EXECUTION

3.01 PREPARATION

- A. Site Grading and Preparation
 - a. Grading associated with the fence installation shall be completed prior to installation. All new installation shall be laid out by the contractor in accordance with the construction plans. The contractor shall clean the jobsite of excess materials; post-hole excavations shall be scattered uniformly away from posts unless otherwise directed by the site engineer.

3.02 INSTALLATION AND SETUP

- A. Post Installation
 - 1. Install posts per manufacturer’s recommendation. Set posts in concrete. Concrete footings shall be cast entirely against undisturbed soil. In the event of unstable or loose soils and the footings need to be formed, the excavation shall be backfilled with granular materials and compacted to at least 95% Proctor density when tested in accordance with ASTM D 1557. The concrete in the footings shall be cured for a minimum period of 3 days before work which places stress on the posts may be carried out. The depth and diameter of the footings shall be constructed in accordance with the approved shop drawings. Concrete to be 3000 PSI minimum 28-day compressive strength.

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2. Dig holes having a diameter 4 times the width of the post, and 6" (152 mm) deeper than the bottom of the post. Check with local requirements and engineer to verify soils conditions and other site-specific conditions to insure performance. Weights and measures will be provided upon request. Check each post for vertical and top alignment.
3. Fence posts set at O.C. spacing depending on the nominal span specified and shown on the drawings. Gate posts spaced according to the gate openings specified in the construction plans. Panels attached to pre-punched posts using mechanically fastened 410 stainless steel corrosion resistant screws supplied by the manufacturer. Other fasteners not permitted.

B. Gate Installation

1. Install posts per manufacturer's recommendation. Set gate posts plumb and level for gate openings specified in construction drawings. Check each post for vertical and top alignment.
2. Install gates to allow full opening without interference after concrete has hardened around gate posts.
3. Adjust hardware for smooth operation. Install one drop rod for double gates
4. ASTM F2200 requires installation of "Safety Post" on all cantilever gates. Concrete footings shall be cast entirely against undisturbed soil. In the event of unstable or loose soils and the footings need to be formed, the excavation shall be backfilled with granular materials and compacted to at least 95% Proctor density when tested in accordance with ASTM D 1557.

C. Tolerances

1. Vertical alignment in plane and level and plumb in all directions.
2. Horizontal alignment for barriers shall be in reasonably close alignment to that shown on Plans.
3. Post spacings shall be set – 0 + 1/2 inch of their intended location
4. Make sure the surfaces are clear from any obstacles, and grade is consistent, relative to post-to-post placement.

3.03 FIELD REPAIRS AND QUALITY CONTROL

A. FIELD REPAIRS

1. Severely damaged product including mistaken cuts, gouges, or other significant breaches to the coating shall be discarded and replace with new factory inspected product.
2. Minor touch up such as scratches, abrasions, or cuts to be done in accordance with manufacturers requirements to uphold warranty requirements
 1. This includes –
 1. Factory supplied touch up paint – Spray – Marker and brush

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2. Use of other touch up products voids the warranty

B. FIELD QUALITY CONTROL

1. The product Installers must have experience installing these products or similar products and provide inspection to ensure compliance with this specification.

3.04 CLEANING AND MAINTENANCE

A. Ornamental aluminum Fence Systems require minimal maintenance. Make sure product is free from external debris to ensure an extended life span, this includes animal droppings, tree sap, and other environmental factors. Also making sure and vegetation is not growing underneath, immediately adjacent to, or upon the fence and posts. Make sure to clean up debris and remove from the site. Annual inspection and cleaning are recommended to prolong product lifespan, including simple washing with a mild household detergent and clean water. DO NOT use a power washer.

END OF SECTION