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**INNOVATION™ PLUS SERIES**

**COMMERCIAL GRADE**

**3-PART SPECIFICATION**

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**GENERAL NOTES TO SPECIFIER:**

THIS SPECIFICATION SECTION HAS BEEN PREPARED TO ASSIST DESIGN PROFESSIONALS IN THE PREPARATION OF PROJECT OR OFFICE MASTER SPECIFICATIONS. IT FOLLOWS GUIDELINES ESTABLISHED BY THE CONSTRUCTION SPECIFICATIONS INSTITUTE, AND THEREFORE MAY BE USED WITH MOST MASTER SPECIFICATION SYSTEMS WITH MINOR EDITING.

EDIT CAREFULLY TO SUIT PROJECT REQUIREMENTS. MODIFY AS NECESSARY AND DELETE ITEMS THAT ARE NOT APPLICABLE. VERIFY THAT REFERENCED SECTION NUMBERS AND TITLES ARE CORRECT. (NUMBERS AND TITLES REFERENCED ARE BASED ON *MASTERFORMAT*, 2004 EDITION).

THIS SECTION ASSUMES THE PROJECT MANUAL WILL CONTAIN COMPLETE DIVISION 1 DOCUMENTS INCLUDING SECTIONS 01 25 13–PRODUCT SUBSTITUTION PROCEDURES, 01 33 00–SUBMITTAL PROCEDURES, 01 62 00–PRODUCT OPTIONS, 01 66 00–PRODUCT STORAGE AND HANDLING REQUIREMENTS, 01 74 00–CLEANING AND WASTE MANAGEMENT, 01 77 00–CLOSEOUT PROCEDURES, AND 01 78 00–CLOSEOUT SUBMITTALS. CLOSE COORDINATION WITH DIVISION 1 SECTIONS IS REQUIRED. IF THE PROJECT MANUAL DOES NOT CONTAIN THESE SECTIONS, ADDITIONAL INFORMATION SHOULD BE INCLUDED UNDER THE APPROPRIATE ARTICLES.

THIS IS AN OPEN PROPRIETARY SPECIFICATION ALLOWING USERS THE OPTION OF APPROVING OTHER MANUFACTURERS THAT COMPLY WITH THE CRITERIA SPECIFIED HEREIN.

NOTES TO THE SPECIFIER ARE CONTAINED IN BOXES AND SHOULD BE DELETED FROM FINAL COPY.

OPTIONAL ITEMS REQUIRING SELECTION BY THE SPECIFIER ARE ENCLOSED WITHIN BRACKETS, E.G. [35] [40] [45]. MAKE APPROPRIATE SELECTIONS AND DELETE OTHERS.

ITEMS REQUIRING ADDITIONAL INFORMATION ARE UNDERLINED BLANK SPACES, E.G. \_\_\_\_\_ .

**BOLD FACE TYPE** IDENTIFIES OPTIONAL PARAGRAPHS AND FEATURES THAT MAY BE INCLUDED OR DELETED DEPENDING ON PROJECT REQUIREMENTS. CONVERT THE BOLD FACE TYPE TO REGULAR TYPE WHEN INCLUDING THESE PARAGRAPHS OR FEATURES. WHEN DELETING A PARAGRAPH, BE CERTAIN THAT ALL SUBPARAGRAPHS ARE ALSO DELETED.

REVISE FOOTER TO SUIT PROJECT/OFFICE REQUIREMENTS.

ELECTRONIC VERSIONS OF THIS SPECIFICATION UTILIZE AUTOMATIC PARAGRAPH NUMBERING.

WHEN EDITING IS COMPLETE, DELETE ALL TEXT ON THIS PAGE, THEN REMOVE THE SECTION BREAK AT THE TOP OF THE NEXT PAGE TO REMOVE THIS PAGE FROM THE DOCUMENT.

**SPECIFICATION BEGINS ON THE FOLLOWING PAGE.**

SECTION 32 31 19

(MasterFormat, 1995 Edition, 02825/C)

ORNAMENTAL STEEL FENCE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Pre-finished decorative metal picket fence **including personnel and vehicle gates**.
- B. Related Sections:
  - 1. \_\_\_\_\_–Grading
  - 2. \_\_\_\_\_–Cast-in-Place Concrete.
  - 3. \_\_\_\_\_–**Gate Operators**.

INCLUDE APPROPRIATE LANGUAGE BELOW IF PRODUCTS SPECIFIED IN THIS SECTION ARE TO BE BID AS ALTERNATES. OTHERWISE DELETE FOLLOWING PARAGRAPH.
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- C. Alternates:
  - 1. Reference Section 01 23 00–Alternates.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
  - 1. ASTM [A653](#), Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 2. ASTM [A787](#), Standard Specification for Electric-Resistance-Welded Metallic-Coated Carbon Steel Mechanical Tubing.
  - 3. ASTM [B117](#), Standard Practice for Operating Salt Spray (Fog) Apparatus.
  - 4. ASTM [D523](#), Standard Test Method for Specular Gloss.
  - 5. ASTM [D822](#), Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
  - 6. ASTM [D1654](#), Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
  - 7. ASTM [D2244](#), Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
  - 8. ASTM [D2794](#), Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
  - 9. ASTM [D3359](#), Standard Test Methods for Measuring Adhesion by Tape Test.

1.03 PERFORMANCE REQUIREMENTS

- A. Fence panels shall be capable of supporting a 400 pound (1780 N) load applied vertically at the center of the top rail without permanent deformation.

1.04 SUBMITTALS

- A. Reference Section 01 33 00–Submittal Procedures; submit following items:
  - 1. Product Data including manufacturer's standard color samples.
  - 2. Shop Drawings:
    - a. Manufacturer's typical detail and installation drawings.
    - b. Dimensioned plan showing fence location relative to property lines, location of gates, gate swing, and details of post anchorage.

- 3. Quality Assurance/Control Submittals:
  - a. Qualifications: Proof of manufacturer and Installer qualifications.
  - b. Certificates: Proof of ISO certification.
- B. Closeout Submittals: Reference Section 01 78 00–Closeout Submittals; submit following items:
  - 1. Maintenance Instructions.
  - 2. Special Warranties.

1.05 QUALITY ASSURANCE

- A. Qualifications:
  - 1. Manufacturer Qualifications:
    - a. Minimum five years experience in producing fences of the type specified.
    - b. Member American Fence Association, Inc.
  - 2. Installer Qualifications: Minimum one year experience in installation of similar type fences.
- B. Certifications:
  - 1. Production facilities certified to ISO 9001.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Reference Section 01 66 00–Product Storage and Handling Requirements.
- B. Follow manufacturer’s instructions.

1.07 WARRANTY

- A. Special Warranty: Prorated 21-year limited warranty against defects in material and workmanship and against cracking, chipping, peeling, corroding, and blistering.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>A. XCEL Fence, Inc.<br/>910 E. Cedar St.<br/>Ontario, CA 91761</li> </ul> | <ul style="list-style-type: none"> <li>Tel: (909) 392-0808</li> <li>Fax: (909) 392-0999</li> <li>E-mail: <a href="mailto:info@xcelfence.com">info@xcelfence.com</a></li> <li>Website: <a href="http://www.xcelfence.com">www.xcelfence.com</a></li> </ul> |
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INSERT NAME, ADDRESS AND CONTACT INFORMATION OF LOCAL DISTRIBUTOR/DEALER BELOW.

- 1. \_\_\_\_\_
- B. Model: Innovation™ Plus Series, Commercial Grade.
- C. Substitutions: Reference Section 01 25 13–Product Substitution Procedures.

2.02 MATERIALS

- A. Galvanized Steel Sheet: ASTM A653, G90 coated.
  - 1. Tensile Strength: 58,000 psi (400 MPa) minimum.
  - 2. Yield Strength: 50,000 psi (344 MPa) minimum.

INSERT CAST-IN-PLACE CONCRETE SECTION NUMBER BELOW.

- B. Concrete: Reference Section \_\_\_ \_\_\_ \_\_\_ ; 3,000 psi (20.7 MPa) minimum.

## 2.03 COMPONENTS

- A. Line, Corner, End, and Gate Posts: 2-1/2 by 2-1/2 inches (64 by 64 mm), 12 gauge (2.8 mm) ASTM A787 steel tubing. Include formed steel cap.
- B. Rails: 1-1/2 by 1-1/2 inches (38 by 38 mm), 14 gauge (2.0 mm) ASTM A787 steel tubing with pre-punched square picket **and ring** holes and factory installed grommets in the rail tops.
- C. Pickets: 3/4 by 3/4 inches (19 by 19 mm), 16 gauge (1.6 mm) ASTM A787 steel tubing with factory installed, stainless steel, spring clips to secure pickets to rails.

DELETE FOLLOWING SUBPARAGRAPH IF PICKETS ARE TO TERMINATE INSIDE TOP RAIL (SEE FOLLOWING ARTICLE — STYLE).

- 1. Top of Picket Decoration: [Pressed steel point] [Sealed square top] [Cast aluminum Fleur-de-Lis finial] [Cast aluminum Quad Flair finial] [Cast aluminum Triton finial].
- D. **Decorative Inserts: [3-3/4 inch (95 mm) diameter by 1/4 inch (6 mm) thick cast aluminum ring with short picket-like rise at top and bottom to secure ring into horizontal rails] [Picket mounted cast aluminum Butterfly].**
- E. **Flanges: Manufacturer's standard fabricated galvanized steel flange for mounting posts on concrete surfaces.**
  - 1. Size and shape flange such that post fits over flange with compression fit.
  - 2. Provide manufacturer recommended number, size, and type of anchor bolts.
- F. Provide manufacturer's standard brackets, stainless steel fasteners including non-removable bolts and nuts for rail attachment to posts, spring clips, PVC grommets to seal picket in rail holes, and other accessories required to complete installation.

## 2.04 STYLE

- A. Height – ground to top of picket: [4] [5] [6] [7] [8] foot ([1200] [1500] [1850] [2100] [2450] mm).

FOR 7 FEET AND 8 FEET, SELECT ONLY WITH "4-Rail with top and bottom rings..." or "4-Rail with top and bottom butterflies..."

- B. [2-Rail] [3-Rail] [3-Rail with top rings between each picket] [4-Rail with top and bottom rings between each picket] [3-Rail with top Butterflies on each picket] [4-Rail with top and bottom Butterflies on each picket].
- C. Picket Termination:
  - 1. Top: [Projected pickets] [Flat rail—pickets terminate inside top rail].
  - 2. Bottom: [Projected pickets] [Flat rail—pickets terminate inside bottom rail].

IF "AS SHOWN ON DRAWINGS" IS SELECTED BELOW, MAXIMUM SPACING PERMITTED IS 8 FEET ON CENTER.

- D. Post Spacing: [8 feet (2440 mm) on center] [6 feet (1830 mm) on center] [As shown on Drawings].

## 2.05 FABRICATION

SELECT "25 PERCENT" BELOW FOR PANELS WITHOUT DECORATIVE INSERTS; "12.5 PERCENT" FOR PANELS WITH DECORATIVE INSERTS.

- A. Fence Panels: Fabricate components in a manner that allows panel sections to be installed on a [25 percent] [12.5 percent] change in grade over the length of the panel.
- B. **Personnel Gates: Fabricate using same components and style as fence panels.**

1. Use rail sections for vertical frame members and secure to horizontal rails with rigid corner brackets and stainless steel non-removable bolts and nuts.
2. Hardware:
  - a. Hinges: Aluminum, self-closing type, powder coated to match fence color; 2 per leaf.
  - b. Latch: Universal gate latch, zinc plated and powder coated to match fence color.
  - c. **Cane Bolt: 18 by 1/2 inch (455 by 13 mm), zinc plated and powder coated to match fence color.**

**C. Swing Vehicle Gates: Fabricate using same components and style as fence panels.**

1. Use rail sections for vertical frame members and secure to horizontal rails with rigid corner brackets and stainless steel non-removable bolts and nuts.
2. Hardware:
  - a. Hinges: 6 inch (150 mm) long round barrel body, zinc plated and powder coated to match fence color, 2 per leaf.
  - b. Latch: Universal gate latch, zinc plated and powder coated to match fence color.
  - c. **Cane Bolt: 36 by 5/8 inch (910 by 16 mm), zinc plated and powder coated to match fence color.**

2.06 FINISH

- A. Finish metal components individually prior to assembly.
- B. Preparation: 6 stage pretreatment including an alkaline wash, and zinc phosphate surface treatment.
- C. Shop Priming: Electrostatic applied zinc-rich epoxy coating, minimum 2 mils (0.0508 mm) thick.
- D. Shop Finishing: Electrostatic applied polyester color coat, minimum 2 mils (0.0508 mm) thick.
- E. Finished Coating Performance Requirements:
  1. Adhesion: ASTM D3359, Method B.
  2. Corrosion Resistance: ASTM B117 and D1654.
  3. Impact Resistance: ASTM D2794.
  4. Weathering Resistance: ASTM D822, D2244, and D523, 60 Degree Method.
- F. Color: [Black] [White] [Green] [Brown] [Blue] [Bronze] [Standard color as selected by Architect] [Custom color as selected by Architect].

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine earthwork and paved surface conditions where fencing is to be installed.
  1. Verify that soil is either firm undisturbed or properly compacted at post locations.
  2. Verify that sloped grades do not exceed manufacturer's biasable panel limitations.
  3. **Verify property line locations, legal boundaries, and relative post placement.**
- B. Coordinate with responsible entity to correct unsatisfactory conditions.
- C. Commencement of work by installer is acceptance of conditions.

3.02 PREPARATION

- A. Stake fence layout including posts, gates, and terminal posts to be inside property lines. Note locations of underground utilities, irrigation systems, benchmarks, property monuments and other underground structures.

3.03 INSTALLATION

- A. Install posts, rails, and pickets in accordance with manufacturer's installation drawings.
- B. Post Hole Excavation: Excavate holes to diameter and depth shown on shop drawings. Dispose of excavated soil off site unless otherwise approved by Architect.
- C. Post Setting:
  - 1. Set posts in holes and verify that posts are plumb, aligned, and at correct height and spacing. Brace to maintain position until concrete is sufficiently cured.
  - 2. Protect post exposed above finished concrete line from concrete spatter.
  - 3. Place concrete in holes and tamp or vibrate to consolidate. Top of concrete at post shall be 2 inches (50 mm) above finished grade. Smooth top of footing and slope to grade.
- D. Post Setting with Flanges: Secure flange to surface in accordance with manufacturer's instructions and mount post over flange assuring a tight compression fit.**
- E. Fence Installation:
  - 1. Rails: Secure to posts using manufacturer's standard brackets and fasteners.
  - 2. Pickets: Insert pickets into rails and verify that spring clips engage rails.
  - 3. Install decorative Inserts.**
- F. Gate Installation: Assemble and install in accordance with manufacturer's instructions.**
  - 1. Lubricate to assure smooth operation.
- G. Finish Installation Procedures:
  - 1. Remove concrete spatter protection from posts.
  - 2. Install post caps.
  - 3. Install finials.**
  - 4. Touch-up damaged color coatings using galvanizing compound spray paint on bare metal surfaces followed by manufacture supplied color touch-up kit.

### 3.04 ADJUSTING

- A. Gates: Adjust to operate smoothly and quietly. Verify that latches engage securely.**

### 3.05 CLEANING

- A. Reference Section 01 74 00–Cleaning and Waste Management.

END OF SECTION<sup>1</sup>

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<sup>1</sup> This specification was prepared specifically for XCEL Fence, Inc. by ASC Specification Consultants. Comments or suggestions for improvement should be addressed to: ASC; 8687 Great Horned Owl Lane; Blaine, WA 98230-6306; Tel: (360) 371-5487. E-mail: specifier@asc-specs.com

Issue Date: March 7, 2006