

**SECTION 32 31 53**  
**PERIMETER SECURITY FENCES AND GATES**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This work consists of all labor, materials, and equipment necessary for furnishing and installing perimeter security fences, gates and accessories in conformance with the lines, grades, and details as shown.

**1.2 RELATED WORK**

- A. Temporary Construction Fence: Section 01 00 00, GENERAL REQUIREMENTS.
- B. Finish Grading: Sections 31 20 00, EARTH MOVING (SHORT FORM).
- C. Chain link enclosures and barbed wire barriers: Section 32 31 13, CHAIN LINK FENCES AND GATES.

**1.3 MANUFACTURER'S QUALIFICATIONS**

- A. Fence, gates, and accessories shall be products of manufacturers regularly engaged in manufacturing items of type specified.

**1.4 SUBMITTALS**

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES, furnish the following:
  - 1. Manufacturer's Literature and Data: Fencing, gates and all accessories.
  - 2. Manufacturer's Certificates:
    - a. Zinc-coating complies with specifications.
    - b. Structural characteristics comply with indicated and criteria.
    - c. Connections comply with requirements indicated.
- B. Shop Drawings for sliding fence gate.
- C. Certification that fence alignment meets requirements of contract documents.

**1.5 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
  - A853-04.....Steel Wire, Carbon, for General Use
  - C94/C94M-07.....Ready-Mixed Concrete
  - F626-96a(2003).....Fence Fittings

F1083-06.....Pipe, Steel, Hot-Dipped Zinc-Coated  
(Galvanized) Welded, for Fence Structures.

## **PART 2 - PRODUCTS**

### **2.1 GENERAL**

- A. Materials shall conform to ASTM F1083 ferrous metals, zinc-coated; and detailed specifications forming the various parts thereto; and other requirements specified herein. Zinc-coat metal members (including fabric, gates, posts, rails, hardware and other ferrous metal items) after fabrication shall be reasonably free of excessive roughness, blisters and sal-ammoniac spots.

### **2.2 PERIMETER SECURITY FENCE**

- A. The perimeter security fence shall be a metal palisade style fence system, other system to be specified by the specifications writer. The system shall include all components such as pickets, pales, mesh, fabric, rails, posts, gates and hardware required.
1. Metal palisade style fence system.
  2. Other system.
- B. Material:
1. Strength requirements for the wire shall conform to ASTM A 853 Grade AISI 1006, minimum tensile strength of TENSILE STRENGTH PSI (MPa.)
- C. Heights:
1. Horizontal members that might be used as foot- or hand-holds shall be spaced at a minimum 8 feet (2400 mm) apart.
  2. Extend fence 4' below grade.
- D. Framework:
1. Framework strength shall provide structural members or other fence framework.
  2. Fence shall withstand the Wind Load Requirement.
  3. Fence panels shall be capable of supporting a 400 LB. (882 KG) LOAD APPLIED AT MIDSPAN, without permanent deformation.
- E. Gates:
1. Gates shall be designed to meet the same forced entry and anti-climb characteristics as the other portions of the fence.
  2. Provide motorized sliding gates for vehicle access.
  3. Provide hinged pedestrian gates with electric strike and card reader.
- F. Finishes:

## **2.3 ACCESSORIES**

Accessories as necessary caps, rail and brace ends, wire ties or clips, braces and tension bands, tension bars, truss rods, and miscellaneous accessories conforming to ASTM F626

## **2.4 CONCRETE**

ASTM C94/C94M, using 3/4 inch (19 mm) maximum-size aggregate, and having minimum compressive strength of 3000 psig (25 mPa) at 28 days. Non-shrinking grout shall consist of one part Portland cement to three parts clean, well-graded sand, non-shrinking grout additive and the minimum amount of water to produce a workable mix.

# **PART 3 - EXECUTION**

## **3.1 INSTALLATION**

- A. Install fence by properly trained crew, on previously prepared surfaces, to line and grade as shown. Install fence in accordance with the manufacturer's printed installation instructions, except as modified herein or as shown. Maintain all equipment, tools, and machinery while on the project in sufficient quantities and capacities for proper installation of posts, pickets,, rails, pales, and accessories.
- B. Engage the services of a Registered Professional Land Surveyor or Registered Civil Engineer specified in Section 01 00 00, GENERAL REQUIREMENTS, to stake out and certify that the fence alignment meets the requirements as shown.

## **3.2 EXCAVATION**

Excavation for concrete-embedded items shall be of the dimensions shown, except in bedrock. If bedrock is encountered before reaching the required depth, continue the excavation to the depth shown or 18 inches (450 mm) into the bedrock, whichever is less, and provide a minimum of 2 inches (50 mm) larger diameter than the outside diameter of the post. Clear loose material from post holes. Grade area around finished concrete footings as shown and dispose of excess earth as directed by the COR.

## **3.3 POST SETTING**

Install posts plumb and in alignment. Set post in concrete footings of dimensions as shown, except in bedrock. Thoroughly compact concrete so as it to be free of voids and finished in a slope or dome to divert water running down the post away from the footing. Straight runs between braced posts shall not exceed 500 feet (150 m). Install posts

in bedrock with a minimum of one inch (25 mm) of non-shrinking grout around each post. Thoroughly work non-shrinking grout into the hole so as to be free of voids and finished in a slope or dome. Cure concrete and grout a minimum of 72 hours before any further work is done on the posts.

### **3.4 POST CAPS**

Fit all exposed ends of post with caps. Provide caps that fit snugly and are weathertight. Where top rail is used, provide caps to accommodate the top rail. Install post caps as recommended by the manufacturer and as shown.

### **3.5 SUPPORTING ARMS**

Design supporting arms, when required, to be weathertight. Where top rail is used, provide arms to accommodate the top rail. Install supporting arms as recommended by the manufacturer and as shown.

### **3.6 TOP RAILS AND BOTTOM RAILS**

Install rails before installing pickets. Provide suitable means for securing rail ends to terminal and intermediate post. Top rails shall pass through intermediate post supporting arms or caps as shown. The rails shall have expansion couplings (rail sleeves) spaced as recommended by the manufacturer. Where fence is located on top of a wall, install expansion couplings over expansion joints in wall.

### **3.7 ACCESSORIES**

Supply accessories (post braces, truss rods, and miscellaneous accessories), as required and recommended by the manufacturer, to ensure complete installation.

### **3.8 GATES**

Install gates plumb, level, and secure for full opening without interference. Set keepers, stops and other accessories into concrete as required by the manufacturer and as shown. Test gates, hardware, locking mechanisms and releases for proper operation. Adjust and lubricate as necessary.

### **3.9 REPAIR OF GALVANIZED SURFACES**

Use galvanized repair compound, stick form, or other method, where galvanized surfaces need field or shop repair. Repair surfaces in accordance with the manufacturer's printed directions.

### **3.10 FINAL CLEAN-UP**

Remove all debris, rubbish and excess material from the station.

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