

SECTION 32 31 13
CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This work consists of all labor, materials, and equipment necessary for furnishing and installing chain link fence, gates and accessories in conformance with the lines, grades, and details as shown.

1.2 MANUFACTURER'S QUALIFICATIONS

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

1.3 SUBMITTALS

- A. SHOP DRAWINGS, PRODUCT DATA AND SAMPLES, furnish the following:
1. Manufacturer's Literature and Data: Chain link fencing, gates and all accessories.
 2. Manufacturer's Certificates: Zinc-coating complies with specifications.
 - a. Statement(s) signed by an official authorized to certify on behalf of the manufacturer(s) of the products provided, attesting that the chain link fence and component materials meet the minimum specified requirements referred to in these specifications and drawings. The products provided shall only be acceptable from qualified manufacturers having a minimum of five years experience manufacturing thermally fused chain link fencing of the design, size gauge of metal parts and fabrication as specified herein.
 3. Shop Drawings for Chain Link Fence and all components of functional fence system.
 - a. Layout of fences and gates with dimensions, elevations, details, and finishes of components, accessories, and post foundations.
 - b. Manufacturer's catalog cuts indicating materials compliance and specified options.
 4. Operation and Maintenance Manuals.
 5. Certification that fence alignment meets requirements of contract documents

6. Samples: For each polymer-coated product and for each color and texture specified, in 150 mm (6-inch) lengths for components and on full-sized units for accessories.
7. Sample of special warranty.

1.4 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer and/or Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, deterioration of metals, metal finishes, and other materials beyond normal weathering.
 2. Warranty Period: Five years from date of Substantial Completion.

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):
 - A392-07.....Zinc-Coated Steel Chain-Link Fence Fabric
 - A817-07.....Metal-Coated Steel Wire for Chain-Link Fence
Fabric and Marcellled Tension Wire
 - C94/C94M-09.....Ready-Mixed Concrete
 - F567-07.....Installation of Chain-Link Fence
 - F626-08.....Fence Fittings
 - F668-07.....Polyvinyl Chloride (PVC) and other Organic
Polymer-Coated Steel Chain-Link Fence Fabric
 - F900-05.....Industrial and Commercial Swing Gates
 - F934-96 (R2008).....Standard Colors for Polymer-Coated Chain Link
Fence Materials
 - F1043-08.....Strength and Protective Coatings on Metal
Industrial Chain-Link Fence Framework
 - F1083-08.....Pipe, Steel, Hot-Dipped Zinc-Coated
(Galvanized) Welded, for Fence Structures.

PART 2 - PRODUCTS

2.1 GENERAL

Materials shall conform to ASTM F1083 and ASTM A392 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. The chain link fencing system (fence fabric, post, rails tension wire, etc) for the project shall be provided with the specified PVC coating system of the color indicated.

2.2 CHAIN-LINK FABRIC

ASTM A392 9 gauge wire woven in a 50 mm (2 inch) mesh. Top and bottom selvage shall have selvage knuckle finish. Zinc-coating weight shall be 570 grams/m² (2.0 ounces per square foot).

2.3 POST, FOR GATES AND FENCING

Provide members with minimum dimensions and wall thickness according to ASTM F1083, Grade SK-40A, round, zinc-coated steel, or as indicated in these specifications or as shown in the contract drawings, whichever results in the heavier or larger member. Minimum dimensions and weights of posts shall conform to the tables in the ASTM Specification, based upon the size and type of fence material. Provide post braces and truss rods for each gate, corner, pull or end post. Provide truss rods with turnbuckles or other equivalent provisions for adjustment.

2.4 TOP RAIL AND BOTTOM RAIL

ASTM F1083, Grade SK-40A, round, zinc-coated steel. Dimensions and weights of posts shall conform to the tables in the ASTM Specification; fitted with suitable expansion sleeves and means for securing rail to each gate, corner, and end posts.

2.5 TOP AND BOTTOM TENSION WIRE

ASTM A817 and ASTM F626, zinc-coated, having minimum coating the same as the fence fabric.

2.6 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

2.7 GATES

ASTM F900, type as shown. Gate framing, bracing, latches, and other hardware zinc-coating weight shall be the same as the FABRIC. Gate leaves more than 2400 mm (8 feet) wide shall have either intermediate members and diagonal truss rods, or shall have tubular members as necessary to provide rigid construction, free from sag or twist. Gates

less than 2400 mm (8 feet) wide shall have truss rods or intermediate braces. Attach gate fabric to the gate frame by method standard with the manufacturer, except that welding will not be permitted. Arrange latches for padlocking so that padlock will be accessible from both sides of the gate regardless of the latching arrangement.

2.8 PVC COATING SYSTEM

All fence fabric, post, rails tension wire, accessories, caps, hinges, etc, shall be PVC Vinyl Coated 250 microns (10 mils) thick thermally fused, ASTM Class-2b, black color, or as approved during the submittal process.

2.9 GATE HARDWARE

- A. Manufacturer's standard products, installed complete. The type of hinges shall allow gates to swing through 180 degrees, from closed to open position. Hang and secure gates in such a manner that, when locked, they cannot be lifted off hinges.
- B. Provide stops and keepers for all double gates. Provide keepers for all gates over 8 feet in width. Latches shall have a plunger-bar arranged to engage the center stop. Arrange latches for locking. Center stops shall consist of a device arranged to be set in concrete and to engage a plunger bar. Keepers shall consist of a mechanical device for securing the free end of the gate when in full open position.

2.10 CONCRETE

ASTM C94/C94M, using 19 mm (3/4 inch) maximum-size aggregate, and having minimum compressive strength of 25 mPa (3000 psi) 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 ASTM F567 and 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, chain links and accessories.

3.2 POST SETTING

Install posts plumb and in alignment. Set post in concrete footings. 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. Cure concrete a minimum of 72 hours before any further work is done on the posts.

3.3 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.

3.4 TOP RAILS AND BOTTOM RAILS

Install rails before installing chain link fabric. Provide suitable means for securing rail ends to terminal and intermediate post. Top rails shall pass through intermediate post supporting arms or caps. The rails shall have expansion couplings (rail sleeves) spaced as recommended by the manufacturer.

3.5 TOP AND BOTTOM TENSION WIRE

Install and pull taut tension wire before installing the chain-link fabric.

3.6 ACCESSORIES

Supply accessories (posts braces, tension bands, tension bars, truss rods, and miscellaneous accessories), as required and recommended by the manufacturer, to accommodate the installation of a complete fence, with fabric that is taut and attached properly to posts, rails, and tension wire.

3.7 FABRIC

Pull fabric taut and secured with wire ties or clips to the top rail or bottom rail and tension wire close to both sides of each post and at intervals of not more than 600 mm (24 inches) on centers. Secure fabric to posts using stretcher bars and ties or clips.

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. Adjust hardware for smooth operation and lubricate where 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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