

**SECTION 32 31 13.10****CHAIN-LINK FENCES AND GATES****PART 1 GENERAL****1.1 DESCRIPTION**

- A. The Work of This Section Includes, but is not limited to:
  - 1. Chain-Link Fencing; 8-foot high
  - 2. Zinc-coated (Galvanized) steel fabric
    - a. Top rail, bottom tension wire
    - b. Three strands of barbed wire
    - c. Gates: Size and swing as indicated on the Contract Drawings

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. American Society for Testing and Materials (ASTM):
    - a. A120 Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless
    - b. A121 Zinc-Coated (Galvanized) Steel Barbed Wire
    - c. A123 Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip
    - d. A392 Zinc-Coated Steel Chain-Link Fence Fabric

**1.3 SUBMITTALS**

- A. Manufacturer's Product Data: Submit manufacturer's latest publications of descriptive literature and product data.
- B. Shop Drawings: Submit shop drawings of fence layout including details of gates, fittings, hardware, and anchoring.
- C. Compliance Statement: Submit a Statement of Compliance from the materials supplier(s), together with supporting data, attesting that the products provided meet or exceed specification requirements.

**PART 2 PRODUCTS****2.1 CHAIN-LINK FABRIC**

- A. Zinc-Coated (Galvanized) Steel; ASTM A392, Class 1. Hot-dip galvanized after weaving. One-piece full height of fabric.
- B. 2 Inch Diamond Mesh; 9 gage (0.148 inches) wire, 1290 pound-feet minimum breaking strength
- C. Selvages:
  - 1. Selvages barbed and barbed

**2.2 FRAMEWORK**

- A. Galvanized Steel Pipe; ASTM A120, Schedule 40. Hot-dip galvanized inside and outside. Provide post caps.
- B. Fence Posts:
  - 1. Corner, Terminal and Pull Posts: 2.875" O.D.
  - 2. Line Posts: 2.375" O.D.
  - 3. Top Rail, Brace Rails: 1.660" O.D.

4. Truss Rods: 0.313" Rod, w/Turnbuckles

C. Gate Posts:

<u>Single Gate</u>	<u>Double Gate</u>	<u>Post Size</u>
Up to 6 feet	Up to 12 feet	2.875 Inches O.D.
7 to 12 feet	13 to 25 feet	4 Inches O.D.
13 to 17 feet	26 to 35 feet	6.625 Inches O.D.

## 2.3 GATES

A. Framework:

- 1.66 inches O.D. galvanized steel pipe, with diagonal truss rods. Provide horizontal center rail on gates over 6 feet high; vertical center upright on gate leaves over 8 feet wide.

B. Hinges: Non-lift-off, 180 degree swing offset type, of size to accommodate gate frame and post.

## 2.4 FITTINGS

A. Rail ends, rail sleeves, tension bars, brace ends, post tops and caps, latch forks, lock keepers, and other appurtenances, including gate hinges and barbed wire support arms:

- Malleable, pressed or cast steel. Hot-dip galvanized after fabrication, ASTM A123.

## 2.5 TENSION WIRE

A. #6 gage Galvanized Coil Spring Tension Wire; #9 gage Hog Rings and Tie Wire.

## 2.6 BARBED WIRE

A. Double-Strand, Twisted, #12.5 gage Galvanized Steel Wire; ASTM A121 Class 3. #14 gage round 4-point barbs spaced 5" apart.

B. Barbed Wire Support Arms:

- Carry three parallel strands of barbed wire at 45 degree angle, the topmost strand approximately 12 inches from the fence line, on the side away from the enclosure.
- Capable of withstanding a 200 pound load applied vertically where the outer strand of barbed wire passes over the arm.

## PART 3 EXECUTION

### 3.1 INSPECTION

- A. Verify that final grading in fence location is completed without irregularities which would interfere with fence installation. Do not commence work until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

A. Measure and layout complete fence line; measure parallel to surface of ground.

- B. Locate and mark position of posts. Locate corner posts at each horizontal angle point; locate line posts at equal distant spacing on not more than 10 feet nor less than 8 feet centers, unless otherwise indicated on the Contract Drawings.

**3.3 POST INSTALLATION**

- A. Encase posts in concrete to minimum 3 feet depth. Extend concrete at least 6 inches below bottom of posts.
  - 1. 10 inches diameter encasement for line posts,
  - 2. 12 inches diameter encasement for end, corner, pull, and gate posts.
  - 3. Extend concrete 2 inches above finished grade, crowned to drain water away from the posts.
- B. Provide corner, end, and pull posts with a horizontal brace and tie rod on each side of the posts, extending and connecting to adjacent line posts.

**3.4 FABRIC INSTALLATION**

- A. Remove slack from fabric by means of mechanical fence stretchers before making attachment to posts.
- B. Cut fabric to form one continuous piece between terminal posts.
- C. Hold bottom of fabric 1 to 2 inches above finished grade.
- D. Attach fabric to terminal posts with vertical tension bars threaded through fabric and held by tension bands spaced maximum 12 inches off center.
- E. Fasten fabric to line posts with #9 gage ties, or by integral fabric lock loops as applicable, at maximum 12 inch intervals.
- F. Fasten fabric to top rail and intermediate rail with #9 gage ties at maximum 18 inch intervals.
- G. Fasten fabric to tension wire with hog rings and ties at maximum 18 inch intervals.

**3.5 GATES**

- A. Install gates of the size and swing as indicated on the Contract Drawings.
- B. Fill gate frame with same fabric as fence.
- C. Attach fabric to gate frame vertical end members with tension bars threaded through fabric and held by tension bands spaced maximum 12 inch intervals; attach to horizontal rails, center upright, and brace rails with #9 gage ties at maximum 12 inch intervals.
- D. Fasten barbed wire to gate frame upright extensions.
- E. Provide latch forks, lock keepers, catches, plungerbars and stop holders. Latches and plungerbars operable from either side of gate. Padlock hasp integral part of latch.
- F. Locate gate stops, set in concrete, so that plungerbar fully engages. Adjust hardware to provide smooth operation.

**3.6 FIELD QUALITY CONTROL**

- A. Remove and replace fencing which is improperly located or is not true to line and grade, and posts which are not plumb.
- B. Adjust brace rails and tension rods for rigid installation.
- C. Tighten hardware, fasteners and accessories.

- D. Remove excess and waste materials from the project site.

**END OF SECTION 32 31 13.10**