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**SECTION 32 31 13 – CHAIN LINK FENCES AND GATES**

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**SECTION 32 31 13****CHAIN LINK FENCES AND GATES****PART 1 – GENERAL****1.1 SECTION INCLUDES**

- A. Fence framework, fabric, and accessories.
- B. Excavation for post bases; concrete foundation for posts, and center drop for gates.
- C. Manual gates and related hardware.

**1.2 RELATED SECTIONS**

- A. Section 03 00 00 – Concrete

**1.3 MEASUREMENT AND PAYMENT**

- A. Fencing and Gates: Payment for chain-link fence, complete, will be included in the contract lump sum price for the job.
- B. In addition, Contractor shall include unit price costs for 42" Tall Black Chain Link Fence.

**1.4 REFERENCES (Latest Revision)**

- A. ASTM A 90/A 90M – Weight (Mass) of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
- B. ASTM A 116 – Metallic-Coated, Steel Woven Wire Fence Fabric.
- C. ASTM A 121 – Metallic-Coated Carbon Steel Barbed Wire.
- D. ASTM A 123/A 123M – Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- E. ASTM A 153/A 153M – Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- F. ASTM A 392 – Zinc-Coated Steel Chain-Link Fence Fabric.
- G. ASTM A 1011 – Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
- H. ASTM A 653/A 653M – Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- I. ASTM A 491 – Aluminum-Coated Steel Chain-Link Fence Fabric.

- J. ASTM F 668 – Polyvinyl Chloride (PVC) and Other Organic Polymer-Coated Steel Chain-Link Fence Fabric.
- K. ASTM A 428/A 428M – Weight (Mass) of Coating on Aluminum-Coated Iron or Steel Articles.
- L. ASTM C 94/C 94M – Ready-Mixed Concrete.
- M. ASTM F 567 – Installation of Chain-Link Fence.
- N. ASTM F 1043 – Strength and Protective Coatings on Steel Industrial Chain Link Fence Framework.
- O. ASTM F 1083 – Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.
- P. Chain Link Fence Manufacturers Institute (CLFMI) – Product Manual.

### **1.5 SYSTEM DESCRIPTION**

- A. Fence Height: as indicated on Drawings.
- B. Line Post Spacing: At intervals not exceeding 10 feet.
- C. Fence Post and Rail Strength: Conform to ASTM F1043 Light Industrial Fence quality.

### **1.6 SUBMITTALS FOR REVIEW**

- A. Section 01 33 00 – Submittal Procedures.
- B. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.
- C. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components.

### **1.7 SUBMITTALS FOR INFORMATION**

- A. Section 01 33 00 – Submittal Procedures.
- B. Manufacturer's Installation Instructions: Indicate installation requirements.

### **1.8 SUBMITTALS FOR CLOSEOUT**

- A. Section 01 78 23 – Operation and Maintenance Data, Section 01 78 33 – Bonds, and Section 01 78 36 – Warranties.
- B. Project Record Documents: Accurately record actual locations of property perimeter posts relative to property lines and easements.

## 1.9 QUALITY ASSURANCE

- A. Perform Work in accordance with ASTM F567 and manufacturer's instructions.

## 1.10 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

## PART 2 – PRODUCTS

### 2.1 OMITTED

### 2.2 MATERIALS

- A. Framing (Steel): ASTM F1083 Schedule 40 galvanized steel pipe, welded construction, minimum yield strength of 25 ksi; coating conforming to ASTM F1043 Type A on pipe exterior and interior.
- B. Fabric Wire (Steel): ASTM A392 zinc coated wire fabric.
- C. Concrete: Type specified in Section 03 00 00.

### 2.3 COMPONENTS

- A. Line Posts: 1.9 inch diameter.
- B. Corner and Terminal Posts: 2.38.
- C. Gate Posts: 3.5 inch diameter.
- D. Top and Brace Rail: 1.66 inch diameter, plain end, sleeve coupled.
- E. Gate Frame: 1.66 inch diameter for fabrication.
- F. Fabric: 2 inch diamond mesh interwoven wire, 6 gage thick, black vinyl coated, top selvage knuckle end closed bottom selvage twisted tight.
- G. Tension Wire: 6 gage thick steel, single strand.
- H. Tie Wire: Aluminum alloy steel wire.

### 2.4 ACCESSORIES

- A. Caps: Molded rigid vinyl; sized to post diameter, set screw retainer.
- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.
- C. Gate Hardware: Center gate stop and drop rod Mechanical keepers; 180 degree gate hinges per manufacturer's recommendations.

## 2.5 FINISHES

- A. Components and Fabric: Vinyl coating, black color over coating of 1.8 oz/sq ft galvanizing.
- B. Vinyl Components: black color as selected.
- C. Hardware: Galvanized to ASTM A153, 1.8 oz/sq. ft coating.
- D. Accessories: Same finish as framing.

## PART 3 – EXECUTION

### 3.1 INSTALLATION

- A. Install framework, fabric, accessories, in accordance with manufacturer's instructions.
- B. Place fabric on outside of posts and rails.
- C. Set intermediate, [terminal, gate, and posts plumb, in concrete footings with top of footing 6 inches below finish grade. Slope top of concrete for water runoff.
- D. Line Post Footing Depth Below Finish Grade: ASTM F567 feet.
- E. Corner, Gate and Terminal Post Footing Depth Below Finish Grade: ASTM F567 feet.
- F. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gate posts.
- G. Provide top rail through line post tops and splice with 6 inch long rail sleeves.
- H. Install brace rails on corner gate leaves.
- I. Do not stretch fabric until concrete foundation has cured 28 days.
- J. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.
- K. Position bottom of fabric 2 inches above finished grade.
- L. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.

- M. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.
- N. Install bottom tension wire stretched taut between terminal posts.
- O. Do not attach the hinged side of gate from building wall; provide gate posts.
- P. Install gate with fabric to match fence. Install hinges per leaf, latch, catches, drop bolt foot bolts and sockets.
- Q. Provide concrete center drop to footing depth and drop rod retainers at center of double gate openings.

### **3.2 ERECTION TOLERANCES**

- A. Maximum Variation from Plumb: ¼ inch.
- B. Maximum Offset from True Position: 1 inch.
- C. Components shall not infringe on adjacent property lines.

END OF SECTION