

SECTION 32 31 13**CHAIN LINK FENCE AND GATES****PART 1 GENERAL****1.1 RELATED DOCUMENTS**

- A. DIVISION 01 - GENERAL REQUIREMENTS: Drawings, quality, product and performance requirements, general and supplemental conditions apply as applicable to the project and project documents.

1.2 SUMMARY

- A. This Section includes industrial/commercial chain link fence and gates specifications:
 1. Polymer coated steel chain link fabric
 2. Polymer coated galvanized steel framework and fittings
 3. Gates: swing
 4. Installation

1.3 REFERENCES

- A. ASTM F552 Standard Terminology Relating to Chain Link Fencing
- B. ASTM F567 Standard Practice for Installation of Chain Link Fence
- C. ASTM F626 Specification for Fence Fittings
- D. ASTM F900 Specification for Industrial and Commercial Swing Gates
- E. ASTM F934 Specification for Standard Colors for Polymer-Coated Chain Link
- F. ASTM F1043 Specification for Strength and Protective Coatings of Steel Industrial Chain Link Fence Framework

1.4 SUBMITTALS

- A. Shop drawings: Site plan showing layout of fence location with dimensions, location of gates and opening size, cleared area, elevation of fence, gates, footings and details of attachments. Comply with the provisions of Section 01 33 23.
- B. Material samples: When required, provide representative samples of chain link fabric, framework and fittings.
- C. Specification Changes: May not be made after the date of bid.

PART 2 – PRODUCTS

2.1 FABRIC

A. General: Provide fence fabric manufactured from wire meeting the requirements of ASTM A 817. Use No. 9 gauge wire woven in a 2 inch mesh. Construct knuckled selvedge at the top and bottom of the fabric.

B. PVC-coated Fabric: Comply with ASTM F 668, Class 2b.

1. Apply PVC coating to zinc or aluminum-coated wire prior to weaving fabric.

2. PVC coating color black, complying with ASTM F 934.

2.2 ROUND STEEL PIPE FENCE FRAMEWORK

A. Round steel pipe, rail and braces: Schedule 40 standard weight pipe, in accordance with ASTM F1083, 1.8 oz/ ft² hot dip galvanized zinc exterior and 1.8 oz/ft² hot dip galvanized zinc interior coating.

Regular Grade: Minimum steel yield strength 30,000 psi

B. Typical post and rail size for normal Commercial / Industrial applications

****Refer to drawings, Sheet A4, for specified pipe diameters based on fence height and presence of acoustical panels.****

Post Use	Fence Height		
	48" and under (nominal diameter)	48" to 96" (nominal diameter)	Greater than 96" (nominal diameter)
Line Post	2"	2 1/2"	3"
Terminal Post*	2 1/2"	3"	4"
Top/intermediate Rail Braces	1 1/4"	1 1/4"	1 1/4"
Gate Post	Refer to contract documents and ASTM F 900		
*Includes corner, angle, end, and pull posts.			

C. Polymer coated posts, rails, braces shall have a PVC coating fused and adhered to the exterior zinc coating of the galvanized pipe in accordance with ASTM F1043. The minimum thickness of the PVC coating shall be 10-mils. Color black per ASTM F934.

- D. Ensure all posts, rails, and braces provided for a given section of fence have similar coatings and shapes.
- E. Provide caps for all posts. Comply with ASTM F 626.

2.3 FITTINGS

- A. Comply with ASTM F 626.
- B. Provide attachments to connect braces to posts by fittings that will hold both post and brace rigidly.
- C. Provide 3/8 inch diameter round steel diagonal tension rods with an appropriate commercial means for tightening. Provide a locknut or other device to hold the tightening device in place.
- D. Provide a suitable sleeve or coupling device, recommended by the manufacturer, to connect sections of top rail and provide for expansion and contraction.
- E. Use stretcher (tension) bars of the size specified in ASTM F 626 with suitable bands for attaching fabric to corner, end, or gate posts.
- F. Polymer Coated Color Fittings: In compliance with ASTM F626, minimum coating thickness 0.006 in. fused and adhered to the zinc coated fittings. Match color to fence system

2.4 TIE WIRE and HOG RINGS

- A. Basic commercial- specify 9 gauge core aluminum alloy ties and hog rings per ASTM F626.
- B. Polymer coated, match the coating, class and color to that of the chain link

2.5 SWING GATES

- A. Swing Gates: Galvanized steel pipe welded fabrication in compliance with ASTM F900. Gate frame members 1.900 in. OD ASTM F 1083 schedule 40 galvanized steel pipe. Frame members spaced no greater than 8 ft. apart vertically and horizontally. Welded joints protected by applying zinc-rich paint in accordance with ASTM Practice A780. Positive locking gate latch, pressed steel galvanized after fabrication. Galvanized malleable iron or heavy gauge pressed steel post and frame hinges. Provide lockable drop bar and gate holdbacks with double gates. Gateposts per ASTM F1083 schedule 40 galvanized steel pipe. Polymer coated gate frames and gateposts; match the coating type and color to that specified for the fence framework. Moveable parts such as hinges, latches and drop rods may be field coated using a liquid polymer touch up.

B. Gateposts: Regular Grade ASTM F1083 Schedule 40 pipe

Gate fabric height up to and including 6 ft.		
Gate leaf width	Post Outside Diameter	Weight
up to 4 ft.	2.375 in.	3.65 lb/ft
over 4 ft. to 10 ft.	2.875 in.	5.79 lb/ft
over 10 ft. to 18 ft.	4.000 in.	9.11 lb/ft
Gate fabric height over 6 ft. to 12 ft.		
Gate leaf width		
up to 6 ft.	2.875 in.	5.79 lb/ft
over 6 ft. to 12 ft.	4.000 in.	9.11 lb/ft
over 12 ft. to 18 ft.	6.625 in.	18.97 lb/ft
over 18 ft. to 24 ft.	8.625 in.	28.58 lb/ft

2.6 CONCRETE

Concrete for post footings shall have a 28-day compressive strength of 2,500 psi and comply with Concrete Specification.

PART 3 EXECUTION

3.1 CLEARING FENCE LINE

Clearing: Surveying, clearing, grubbing, grading and removal of debris for the fence line or any required clear areas adjacent to the fence is not included in the earthwork contractor’s contract and is the responsibility of the fence contractor. The contract drawings indicate the extent of the area to be cleared and grubbed.

3.2 FRAMEWORK INSTALLATION

- A. Posts: See Contract Documents. Line posts installed at intervals not exceeding 10 ft. on center.
- B. Top rail: When specified, install 21 ft. lengths of rail continuous thru the line post or barb arm loop top. Splice rail using top rail sleeves minimum 6 in. long. Rail shall be secured to the terminal post by a brace band and rail end. Bottom rail or intermediate rail shall be field cut and secured to the line posts using boulevard clamps or brace band with rail end.
- C. Terminal posts: End, corner, pull and gate posts shall be braced and trussed for fence 6 ft. and higher and for fences 5 ft. in height not having a top rail. The horizontal brace rail and diagonal truss rod shall be installed in accordance with ASTM F567.

3.3 CHAIN LINK FABRIC INSTALLATION

Chain Link Fabric: Install fabric to outside of the framework maintaining a ground clearance of no more than 2 inches. Attach fabric to the terminal post by threading the tension bar through the fabric; secure the tension bar to the terminal post with tension bands and 5/16 in. carriage bolts spaced no greater than 12 inches on center. Small mesh fabric less than 1 in. attach to terminal post by sandwiching the mesh between the post and a vertical 2 in. wide by 3/16 in. galvanized steel strap using carriage bolts, bolted thru the bar, mesh and post spaced 15 in. on center. Chain link fabric to be stretched taut free of sag. Fabric to be secured to the line post with tie wires spaced no greater than 12 inches on center and to horizontal rail spaced no greater than 18 inches on center. Aluminum alloy tie wire shall be installed following ASTM F567: Wrap the tie around the post or rail and attached to a fabric wire picket on each side of the post or rail by twisting the tie wire around the fabric wire picket two full turns, cut off excess wire and bend over to prevent injury. Secure the fabric to the tension wire by crimping hogs rings around a fabric wire picket and tension wire.

3.4 GATE INSTALLATION

- A. Swing Gates: Installation of swing gates and gateposts in compliance with ASTM F 567. Direction of swing shall be outward. Gates shall be plumb in the closed position having a bottom clearance of 3 in., grade permitting. Hinge and latch offset opening space shall be no greater than 3 in. in the closed position.

3.5 NUTS AND BOLTS

Bolts: Carriage bolts used for fittings shall be installed with the head on the secure side of the fence. All bolts shall be peened over to prevent removal of the nut.

3.6 CLEAN UP

Clean Up: The area of the fence line shall be left neat and free of any debris caused by the installation of the fence.

END OF SECTION