SECTION 02831 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General Conditions and Clauses and Division 1 Specification Sections, apply to this section.

SUMMARY

This section includes the following:

Galvanized steel chain link fence and gates.

Related Sections: The following sections contain requirements that relate to this section:

Division 2 Section "Earthwork" for filling and grading work.

SUBMITTALS

General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

Product data in the form of manufacturer's technical data, specifications, and installation instruction for fence and gate posts, fabric, gates, and accessories.

Shop drawings showing location of fence, gates, each post, and details of post installation, extension arms, gate swing, hardware, and accessories.

QUALITY ASSURANCE

Single-Source Responsibility: Obtain chain link fences and gates as complete units, including necessary erection accessories, fittings, and fastenings from a single source or manufacturer.

Referenced manufacturer is Privacy Link of Hyde Park, Utah and is named to establish standards of quality. Equal products of other manufacturers may be provided upon approval of the Commission’s Engineer.

PART 2 - PRODUCT

FABRIC

Selvage: All fabric shall be knuckled at bottom selvage and twisted at the top.

Steel Fabric:

Provide 3 ½" x 5" mesh by 9 gauge (0.148") galvanized before weaving per ASTM A392 & A817, 2 oz. Type II Class 5.

Provide fabric in one piece width of 72"

Provide privacy slats pre-inserted during manufacture:
Double-wall, self-locking 2.85" wide
98% Privacy
Manufactured from virgin high-density polyethelene
Color to be selected by the Commission

FRAMING

Strength requirements for posts and rails conforming to ASTM F 669.

Pipe shall be straight, true to section, material, and sizes specified, and shall conform to the following weights per foot:

NPS in inches	Outside Diameter (OD) in inches	Type I Steel (lbs/ft)
1	1.315	1.68
1¼	1.660	2.27
1½	1.900	2.72
2	2.375	3.65
2½	2.875	5.79
3	3.500	7.58
3½	4.000	9.11
4	4.500	10.79
6	6.625	18.97
8	8.625	28.55

Steel Framework, General: Posts, rails, braces and gate frames.

Type I Pipe: Hot-dipped galvanized steel pipe conforming to ASTM F 1083, plain ends, standard weight (schedule 40) with not less than 1.8 ounces zinc per square foot of surface area coated.

Type II Pipe: Manufactured from steel conforming to ASTM A 569 or A 446, grade D,

cold formed, electric welded with minimum yield strength of 50,000 psi and triple coated with minimum 0.9 ounces zinc per square foot after welding, a chromate conversion coating and a clear polymer overcoat. Corrosion protection on inside surfaces shall protect the metal from corrosion when subjected to the salt spray test of ASTM B 117 for 300 hours with the end point of 5 percent Red Rust.

End, corner, and pull posts for following fabric heights:

Up to 6 feet: 2.375-inch OD Type I or II steel pipe.

Over 6 feet: 2.875-inch OD Type I or II steel pipe.

Line or intermediate posts for following fabric heights:

Up to 6 feet: 1.90-inch OD Type I or II steel pipe.

Over 6 feet: 2.375-inch OD Type I or II steel pipe.

Gate Posts: Furnish posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:

Up to 6 feet: 2.875-inch OD Type I or II steel pipe.

Over 6 feet to 13 feet: 4.00-inch OD Type I or II steel pipe.

Top Rail: Manufacturer's longest lengths, with expansion-type couplings, approximately 6-inches long, for each joint. Provide means for attaching top rail securely to each gate corner, pull, and end post.

Galvanized Steel: 1¼-inch NPS (1.66-inch OD) Type I or II steel pipe.

Intermediate and Bottom Rail:

Galvanized Steel: 1¼-inch NPS (1.66-inch OD) Type I or II steel pipe.

FITTINGS AND ACCESSORIES

Tension Wire: 0.177-inch diameter metallic-coated steel marcelled tension wire conforming to ASTM A 824 with finish to match fabric.

Type II Zinc Coated in following class:

Class 2, with a minimum coating weight of 1.20 ounces per square foot of uncoated wire surface.

Tie Wires: 12-gage (0.106-inch diameter) galvanized steel with a minimum of 0.80 ounce per square foot of zinc coating of surface area in accordance with ASTM A 641, Class 3 to match fabric core material.

Post Brace Assembly: Manufacturer's standard adjustable brace at end and gate posts and at both sides of corner and pull posts, with horizontal brace located at mid-height of fabric. Use same material as top rail for brace, and truss to line posts with 3/8-inch diameter rod and adjustable tightener. Provide manufacturers standard galvanized steel or cast iron cap for each end.

Post and Line Caps: Provide weathertight closure cap for each post. Provide line post caps or top rail.

Tension or Stretcher Bars: Hot-dip galvanized steel with minimum length 2-inches less than full height of fabric, minimum cross-section of 3/16-inch by 3/4-inch and minimum 1.2 ounces zinc coating per square foot of surface area. Provide one bar for each gate and end post, and two for each corner and pull post, except where fabric is integrally woven into post.

Tension and Brace Bands: Minimum 3/4-inch wide hot-dipped galvanized steel with minimum 1.2 ounce zinc coating per square foot of surface area.

Tension Bands: Minimum 14 gage (0.074 inch) thick.

Tension and Brace Bands: Minimum 12 gage (0.105 inch) thick.

GATES

Fabrication: Fabricate perimeter frames of gates from metal and finish to match fence framework. Assemble gate frames by welding. Provide horizontal and vertical members to ensure proper gate operation and attachment of fabric, hardware, and accessories. Space frame members maximum of 8-feet apart unless otherwise indicated.

Provide same fabric as for fence unless otherwise indicated. Install fabric with tension bars and bands at vertical edges and at top and bottom edges.

Install diagonal cross-bracing consisting of 3/8-inch diameter adjustable length truss rods on gates to ensure frame rigidity without sag or twist. After adjusting, make rod non-removable by welding or other acceptable means.

Hardware and accessories shall be securely attached by welding.

Swing Gates: Comply with ASTM F 900.

Steel:

Fabricate perimeter frames of minimum 1.90-inch OD Type I or II steel pipe.

Gate Hardware: Provide hardware and accessories for each gate, galvanized per ASTM A 153, and in accordance with the following:

Hinges: Size and material to suit gate size, non-lift-off type,

offset to permit 180-degree gate opening. Provide 2 pair of hinges for each leaf.

Latch: Forked type or plunger-bar type to permit operation from either side of gate, with padlock eye as integral part of latch, permanently affixed by welding.

Keeper: Provide keeper for vehicle gates, which automatically engages gate leaf and holds it in open position until manually released.

Gate Stops: Provide gate stops for double gates, consisting of mushroom-type flush plate with anchors, set in concrete, and designed to engage center drop rod or plunger bar that cannot be removed. Include locking device and padlock eyes as integral part of latch, permitting both gate leaves to be locked with single padlock.

PART 3 - EXECUTION

INSTALLATION

General: Install fence in compliance with ASTM F 567. Do not begin installation and erection before final grading is completed, unless otherwise permitted.

Apply fabric outside of framework. Install fencing where indicated on drawings.

Excavation: Drill or hand-excavate (using post-hole digger) holes for posts to diameters and spacings indicated, in firm, undisturbed or compacted soil.

If not indicated on drawings, excavate holes for each post to minimum diameter recommended by fence manufacturer, but not less than 4 times largest cross-section of post.

Unless otherwise indicated, excavate hole depths approximately 6-inches lower than post bottom, with bottom of posts set not less than 36-inches below finish grade surface.

Settings Posts: Center and align posts in holes 3-inches above bottom of excavation. Space maximum 10 feet o.c,; unless otherwise indicated.

Protect portion of posts above ground from concrete splatter. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment, and hold in position during placement finishing and operations.

Unless otherwise indicated, extend concrete footings 2-inches above grade and trowel to a crown to shed water.

Top Rails: Run rail continuously through line post caps, bending to a radius for curved runs and at other posts terminating into rail end attached to posts or post caps fabricated to receive rail. Provide expansion couplings as recommended by fencing manufacturer.

Intermediate and Bottom Rails: Provide intermediate and bottom rails as indicated on the drawings. Install in one piece between posts and flush with post on fabric side, using rail ends and special offset fittings where necessary.

Brace Assemblies: Install braces so posts are plumb when diagonal rod is under proper tension.

Bottom Tension Wire: Install tension wire within 6-inches of bottom of fabric before stretching fabric and tie to each post with not less than same gage and type of wire. Pull wire taut, without sags. Fasten fabric to tension wire with 11 gage hog rings of same material and finish as fabric wire, spaced maximum 24 inches o.c.

Fabric: Leave approximately 2-inches between finish grade and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on security side of fence, and anchor to framework so that fabric remains in tension after pulling force is released.

Tension or Stretcher Bars: Thread through or clamp to fabric 4-inches o.c., and secure to end, corner, pull, and gate posts with tension bands spaced not over 15-inches o.c.

Tie Wires: Use U-shaped wire of proper length to secure fabric firmly to posts and rails with ends twisted at least 2 full turns. Bend ends of wire to minimize hazard to persons or clothing. Wiring shall be of equal gage of fabric or larger.

> Maximum Spacing: Tie to fabric to line posts 12-inches o.c. and to rails and braces 24-inches o.c.

Fasteners: Install nuts for tension bands and hardware bolts on side of fence opposite fabric side. Peen or tack-weld ends of bolts to prevent removal of nuts.

Gates: Install gates plumb, level, and secure for full opening without interference. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

Barbed Wire: Shall not be installed unless specified.

END OF SECTION 02831