

SECTION 32 31 13

CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fence framework, fabric, and accessories.
 - 2. Excavation and anchorages for post bases.
 - 3. Manual gates and related hardware.

1.2 SUBMITTALS

- A. Submit the following under provisions of Section 01 33 00.
- B. Product Data: Include descriptive literature and installation instructions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with specifications, use products of one of the following:
 - 1. American Fence and Supply Company, Geotown, TX Phone 512-930-4000
 - 2. Wheatland Tube, 700 South Dock Street, Sharon, PA 16146 phone: 800.257.8182
 - 3. Richard's Fence Company, 1600 Firestone Parkway, Akron, OH 44301
Phone (800) 624-5520
 - 4. Approved alternate manufacturer.

2.2 MATERIALS

- A. Framework:
 - 1. End, Corner, and Pull Posts: Galvanized steel, Schedule 40; minimum sizes and weights as follows:
 - a. Up to 6 foot fabric height: 2.375 inch outside diameter pipe, 3.65 lbs/lin ft or 3.5 x 3.5 inch roll formed section, 4.85 lbs/lin ft.
 - b. Over 6 foot fabric height: 2.875 inch outside diameter pipe, 5.79 lbs/lin ft; or 3.5 x 3.5 inch roll formed section, 4.85 lbs/lin ft. .
 - 2. Line Posts: Galvanized steel, Schedule 40; minimum sizes and weights as follows:
 - a. Up to 6 foot fabric height: 1.90 inch outside diameter pipe, 2.70 lbs/lin ft; or 1.875 x 1.625 inch C-section, 2.78 lbs/lin ft.
 - b. 6 foot to 8 foot fabric height: 2.375 inch outside diameter pipe, 3.65 lbs/lin ft; or 2/25 x 1.875 inch H-section, 2.64 lbs/lin ft.
 - c. Over 8 foot fabric height: 2.875 inch outside diameter pipe, 5.79 lbs/lin ft; or 2.25 x 1.70 H-section, 3.26 lbs/lin ft. .

3. Gate Posts: Galvanized steel; for single gate or one leaf of double gate, as follows:
 - a. Up to 6 foot height; 2.875 inch outside diameter pipe, 5.79 lbs/lin ft; or 3.5 x 3.5 roll formed section, 4.85 lbs/lin ft.
 - b. 6 foot to 13 foot height: 4 inch outside diameter pipe, 9.11 lbs/lin ft.
4. Top Rail and Intermediate Rails: Galvanized steel, manufacturer's longest lengths.
 - a. Typical: 1.66 inch outside diameter pipe, 2.27 lbs lin ft; or 1.625 x 1.25 inch roll formed section, 1.35 lbs/lin ft.
 - b. Couplings: Expansion type, approximately 6 inches long.
 - c. Attaching Devices: Means of attaching top rail securely to each gate, corner, pull, and end post.

B. Accessories:

1. Sleeves: Galvanized steel pipe not less than 6 inches long and with inside diameter not less than 1/2 inch greater than outside diameter of pipe. Provide steel plate closure welded to bottom of sleeves of width and length not less than 1 inch greater than outside diameter of sleeve.
2. Tension Wire: 7 gage galvanized steel, coated coil spring wire, located at bottom of fence fabric.
3. Wire Ties: 11 gage galvanized steel. Aluminum ties are not acceptable.
4. 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 materials as top rail for brace, and truss to line posts with 0.375 inch diameter rod and adjustable tightener.
5. Post tops: Galvanized steel, weathertight closure cap for tubular posts, one cap for each post. Furnish cap with openings to permit passage of top rail.
6. Stretcher bars: Galvanized steel, one piece lengths equal to full height of fabric; with minimum cross section of 3/16 x 3/4 inch. Provide one stretcher bar for each gate and end post, and two for each corner and pull post.
7. Stretcher bar bands: Manufacturer's standard.
8. Gate cross-bracing: 3/8 inch diameter galvanized steel adjustable length truss rods.

C. Gate Hardware:

1. Swinging gate hardware:
 - a. Hinges: Size and material to suit gate size; offset to permit 180 gate opening. Provide 1-1/2 pair of hinges for each leaf over 6'-0" nominal height.
 - b. Latch: Forked type or plunger-bar type to permit operation from both sides of gate, with padlock eye.

2. Double gate hardware: In addition to the above, provide gate stops for double gates, consisting of mushroom type flush plate with anchors set in concrete to engage center drop rod or plunger bar. Configure for use of one padlock to lock both gate leaves.

D. Fabric: No. 9 gage (0.148 nominal) galvanized steel wire in 2 inch mesh, with both top and bottom selvages knuckled.

2.3 SETTING MIXES

A. Concrete: ASTM C94.

B. Grout: Premixed, factory-packaged, non-staining, non-corrosive grout. See Section 03 30 00. Provide type especially formulated for exterior application.

2.4 GATE FABRICATION

A. Fabricate swing gate perimeter frames of 1.90 inch outside diameter galvanized steel pipe. Provide horizontal and vertical members to ensure proper gate operation and for attachment of fabric, hardware, and accessories. Space frame members maximum 8'-0" apart.

B. Assemble gate frames rigidly by welding or with special fittings and rivets. Use same fabric as for fence. Install fabric with stretcher bars at vertical edges. Bars may also be used at top and bottom edges. Attach stretchers to frame at not more than 15 inches on center. Install diagonal cross-bracing on gates as required to ensure frame rigidity without sag or twist.

C. Attach hardware to provide security against removal or breakage.

2.5 FINISH

A. Galvanize as follows:

1. Fabric: Not less than 1.2 oz zinc/sq ft.
2. Framing: Not less than 1.8 oz zinc/sq ft.

PART 3 EXECUTION

3.1 INSTALLATION

A. Space line posts 10'-0" on center maximum.

B. Grade-set Posts:

1. Drill or hand excavate.
2. Excavate each post hole to 12 inch diameter, or not less than four times diameter of post. Excavate approximately 3 inches lower than post bottom; set post bottom not less than 36 inches below finish grade.
3. Hold post in position while placing, consolidating, and finishing concrete.

- C. Sleeve-set Post: Anchor posts in concrete by means of pipe sleeves preset and anchored into concrete. After posts have been inserted into sleeves, fill annular space between post and sleeve solid with grout, mixed and placed to manufacturer's recommendations.
- D. Top Rails: Run rail continuous through post caps, bending smoothly for curved runs. Provide expansion couplings as recommended by fencing manufacturer.
- E. Center Rails: Provide center rails where indicated. Install in one piece between posts and flush with post on fabric side, using offset fittings where necessary.
- F. Brace Assemblies: Install braces so posts are plumb with rod tension.
- G. Tension Wire: Install tension wires through post cap loops before stretching fabric and tie to each post cap with not less than 6 gage galvanized wire. Fasten fabric to tension wire using 11 gage galvanized steel hog rings spaced 24 inches on center.
- H. Fabric: Leave approximately 2 inches between finish grade and bottom selvage. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on security side of fence, and anchor to framework so fabric remains in tension after pulling force is released.
- I. Stretcher Bars: To secure end, corner, pull, and gate posts, thread through or clamp to fabric 4 inches on center and secure to posts with metal bands spaced 15 inches on center.
- J. Tie Wires:
 - 1. Use U-shaped wire conforming with diameter of pipe to which attached, clasping pipe and fabric firmly with ends twisted at least two full turns. Bend ends of wire to minimize hazards to persons or clothing
 - 2. Tie fabric to line posts with wire ties spaced 12 inches on center. Tie fabric to rails and braces with wire ties spaced 24 inches on center. Manufacturer's standard procedure will be accepted if of equal strength and durability.
- K. Fasteners: Install nuts for tension bands and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.
- L. 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.

END OF SECTION