

SECTION 323113 - CHAIN LINK FENCES AND GATES

Scope:

The work under this Section consists of furnishing all labor, equipment and materials required to install galvanized coated chain link fencing and accessories as shown on drawings and as specified.

Submittals:

- A. **Specifications:** Changes in specifications may not be made after the bid date.
- B. **Shop drawings:** Layout of fences and gates with dimensions, details, and finishes of components, accessories, and post foundations.
- C. **Product data:** Manufacturer's catalog cuts indicating material compliance and specified options.

Warranty:

Provide Manufacturer's standard 12 year limited warranty.

Products:

A. **Manufacturer:**

- (1) Products from qualified manufacturers having a minimum of five years experience manufacturing galvanized coated chain link fencing will be acceptable by the Owner as equal, if approved in writing, fourteen days prior to bidding, and if they meet the following specifications for design, size gauge of metal parts and fabrication.
- (2) Obtain chain link fences and gates, including accessories, fittings, and fastenings, from a single source.
- (3) Approved Manufacturer: Master Halco, Inc., or approved equal.

Master Halco, Inc.
1321 Greenway Drive
Irving, Texas 75038
Phone (800) 883-8384

B. **Chain Link Fence Fabric:**

- (1) Galvanized wire: Zinc coated Wire, ASTM A 392 – 2.0 oz/sf. [Wire Spec-A817-83, Class 1 or Class 2]
- (2) Size: Helically wound and woven to height of 8-feet as indicated on drawings with 2-inch diamond mesh, 9 gauge, with a wire diameter of 0.148-inches and a break load of 1000 lbf.
- (3) Selvage of fabric shall be twisted at one selvage and knuckled at other selvage.

C. **Steel Fence Framing:**

- (1) Steel pipe - Type I: ASTM F 1083, standard weight schedule 40; minimum yield strength of 30,000 psi (205 MPa); sizes as indicated. Hot-dipped galvanized with minimum average 1.8 oz/ft² (550 g/m²) of coated surface area.

- (2) Steel pipe - Type II: Cold formed and welded steel pipe complying with ASTM F 1043, Group IC, with minimum yield strength of 50,000 psi (344 MPa), sizes as indicated. Protective coating per ASTM F 1043, external coating Type B, zinc with organic overcoat, 0.9 oz/ft² (270 g/m²) minimum zinc coating with chromate conversion coating and verifiable polymer film. Internal coating Type B, minimum 0.9 oz/ft² (270 g/m²) zinc or Type D, zinc pigmented, 81% nominal coating, minimum 3 mils (0.08 mm) thick.
- (3) Formed steel ("C") sections: Roll formed steel shapes complying with ASTM F 1043, Group II, 45,000 psi (310 MPa) minimum yield strength steel; sizes as indicated. External coating per ASTM F 1043, Type A, minimum average 2.0 oz/ft² (601 g/m²) of zinc per ASTM A 123, or 4.0 oz/ft² (1220 g/m²) per ASTM A 525.
- (4) Steel square sections: [ASTM A 500, Grade B] Steel having minimum yield strength of 40,000 psi (275 MPa); sizes as indicated. Hot-dipped galvanized with minimum 1.8 oz/ft² (550 g/m²) of coated surface area.
- (5) End and Corner Post:
 - a. Outside Diameter: 2.875-inches
 - b. Wall Thickness: 0.203-inches
 - c. Weight: 9.11 lbs/ft
- (6) Line Post:
 - a. Outside Diameter: 2.375-inches
 - b. Wall Thickness: 0.154-inches
 - c. Weight: 3.65 lbs/ft
- (7) Rails and Braces:
 - a. Outside Diameter: 1.660-inches
 - b. Wall Thickness: 0.140-inches
 - c. Weight: 2.27 lbs/ft

D. Gates: Gates shall be installed where shown on the Drawings. The barbed wire supporting arms shall be extra long, galvanized pressed steel sleeve clamped to the top of each line post so as to incline outward at a 45° angle. Arms shall be formed with tongue for permanently attaching barbed wire topping. Arms shall be of sufficient strength to withstand a weight of 200 lbs. applied at the outer barbed wire strand.

E. Accessories:

- (1) Chain link fence accessories: [ASTM F 626] Provide items required to complete fence system. Galvanize each ferrous metal item and finish to match framing. Fittings should match Master Halco specifications.
- (2) Gates which are not a part of the card access control system shall be equipped with heavy-duty latches, keepers, gate stop for double gates, and heavy duty hardened bronze padlocks with duplicate master keys.
- (3) Card operated slide gates shall be cantilever type full width of the road. The gates shall be aluminum enclosed roller bearing type, factory lubricated with sealed bearings. The gate shall be supported entirely at the top. The one-piece track/frame member shall be a thick

walled extrusion of corrosion resistant aluminum alloy, welded to the all aluminum gate frame. Fabric shall be secured on all sides with tension rods and clips. The gate operator shall be Stanley Model ASJH or equal with card reader and magnetic vehicle detector, control system as shown on the Drawings. The gate motor shall be sized to properly operate the gate. The gate and operator shall be furnished by and be the responsibility of the same manufacturer and the operator must be compatible with existing operators. Furnish arms and three strands of barbed wire for the top of the gate.

- (4) The gate operator shall be arranged with an exterior hand-automatic-off switch enclosed in a lockable NEMA 4 control box located at the gate operator. On automatic, the sliding gate shall operate as follows:
- a. Entry:
 - 1. Open from remote signal if specified.
 - 2. Open with card reader on pedestal.
 - 3. Close with loop detector. (Loop wiring in asphalt drive.)
 - 4. Close with time delay relay. (When vehicle does not pass over loop.)
 - b. Exit:
 - 1. Open with loop detector. (Loop wiring in asphalt drive.)
 - 2. Close with loop detector. (Loop wiring in asphalt drive.)
 - 3. Gate operator shall have local disconnect as required by electrical specifications.
- (5) Post caps: Formed steel or cast malleable iron weather tight closure cap for tubular posts. Provide one cap for each post. Cap to have provision for barbed wire when necessary. "C" shaped line post without top rail or barbed wire supporting arms do not require post caps. (Where top rail is used, provide tops to permit passage of top rail.)
- (6) Top rail and rail ends: Pressed steel per ASTM F626, for connection of rail and brace to terminal posts.
- (7) Top rail sleeves: 7" (178 mm) expansion sleeve with a minimum .137" wire diameter and 1.80" length spring, allowing for expansion and contraction of top rail.
- (8) Wire ties: 9 gauge [0.148" (3.76 mm)] galvanized steel wire for attachment of fabric to line posts. Double wrap 13 gauge [0.092" (2.324 mm)] for rails and braces. Hog ring ties of 12-1/2 gauge [0.0985" (2.502 mm)] for attachment
- (9) Brace and tension (stretcher bar) bands: Pressed steel, minimum 300 degree profile curvature for secure fence post attachment. At square post provide tension bar clips.
- (10) Tension (stretcher) bars: One piece lengths equal to 2 inches (50 mm) less than full height of fabric with a minimum cross-section of 3/16" x 3/4" (4.76 mm x 19 mm). Provide tension (stretcher) bars where chain link fabric meets terminal posts.
- (11) Tension wire: Galvanized coated steel wire, 6 gauge, [0.192" (4.8 mm)] diameter wire with tensile strength of 75,000 psi (517 MPa).
- (12) Truss rods & tightener: Steel rods with minimum diameter of 5/16" (7.9 mm). Capable of withstanding a tension of minimum 2,000 lbs.

- (13) Barbed wire: [ASTM A 121] Class 3, zinc coated steel wire double-strand, 12-1/2 gauge [0.099”(2.51mm)] twisted line wire with galvanized steel, 4 point barbs spaced approximately 5” (127mm) on center.
- (14) Barbed wire supporting arms: Pressed steel arms with provisions for attaching 3 rows or barbed wire. Arms shall withstand 250 lb. (113.5kg) downward pull at the outermost end of arm without failure.
 - a. Provide 45°, 3 strands, single arm and 6 strands, double “V” arms.
 - b. Provide intermediate arms with hole for passage of top rail.
- (15) Nuts and bolts are galvanized.

F. Setting Materials:

- (1) Concrete: Minimum 28 day compressive strength of 3,000 psi (20 MPa).
- (2) Drive Anchors: Galvanized angles, ASTM A 36 steel 1” x 1” x 30” (25 mm x 25 mm x 762 mm) galvanized shoe clamps to secure angles to posts.

Execution:

A. Examination:

- (1) Verify areas to receive fencing are completed to final grades and elevations.
- (2) Ensure property lines and legal boundaries of work are clearly established.

B. Chain Link Fence Framing Installation:

- (1) Install chain link fence in accordance with ASTM F 567 and manufacturer’s instructions.
- (2) Locate terminal post at each fence termination and change in horizontal or vertical direction of 30° or more.
- (3) Space line posts uniformly at 10’ (3048 mm) on center.
- (4) Concrete set terminal and gate posts: Drill holes in firm, undisturbed or compacted soil. Holes shall have diameter 4 times greater than outside dimension of post, and depths approximately 6” (152 mm) deeper than post bottom. Excavate deeper as required for adequate support in soft and loose soils, and for posts with heavy lateral loads. Set post bottom 36” (914 mm) below surface when in firm, undisturbed soil. Place concrete around posts in a continuous pour. Trowel finish around post. Slope to direct water away from posts.
- (5) Drive Anchor Line posts: With protective cap, drive post 36” (914 mm) into ground. Slightly below ground level install drive anchor shoe fitting. Install 2 diagonal drive anchors and tighten in the shoe.
- (6) Check each post for vertical and top alignment, and maintain in position during placement and finishing operations.

- (7) Bracing: Install horizontal pipe brace at mid-height for fences 6' (1829 mm) and over, on each side of terminal posts. Firmly attach with fittings. Install diagonal truss rods at these points. Adjust truss rod, ensuring posts remain plumb.
- (8) Tension wire: Provide tension wire at bottom of fabric [and at top, if top rail is not specified]. Install tension wire before stretching fabric and attach to each post with ties. Secure tension wire to fabric with 12-1/2 gauge [0.0985" (2.502 mm)] hog rings 24" (610 mm) oc.
- (9) Top rail: Install lengths, 21' (6400 mm). Connect joints with sleeves for rigid connections for expansion/contraction.
- (10) Center Rails (for fabric height 12' (3658 mm) and over): Install mid rails between posts with fittings and accessories.
- (11) Bottom Rails: Install bottom rails between posts with fittings and accessories.

C. Chain Link Fabric Installation

- (1) Fabric: Install fabric on security side and attach so that fabric remains in tension after pulling force is released. Leave approximately 2" (50 mm) between finish grade and bottom selvage. Attach fabric with wire ties to line posts at 15" (381 mm) on center and to rails, braces, and tension wire at 24" (600 mm) on center.
- (2) Tension (stretcher) bars: Pull fabric taut; thread tension bar through fabric and attach to terminal posts with bands or clips spaced maximum of 15" (381 mm) on center.

D. Accessories

- (1) Tie wires: Bend ends of wire to minimize hazard to persons and clothing.
- (2) Fasteners: Install nuts on side of fence opposite fabric side for added security.
- (3) Barbed wire: Uniformly space parallel rows of barbed wire on security side of fence. Pull wire ~~t~~ taut and attach in clips or slots of each extension.

Clean Up:

Clean up debris and unused material, and remove from the site.

Payment:

No separate payment will be made for the work of this Section unless specifically noted. The cost of the work, and all cost incidental thereto, shall be included in the Proposal.

END OF SECTION