

SECTION 02822

CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. The work included in this Section consists of furnishing and installing a galvanized steel chain link fence, complete with gates and "V" arms with barbed wire, where permitted, to be constructed as shown on the Plans.
- B. Minimum fence height shall be six (6) feet, with a double leaf entry gate having a minimum ten foot clear opening; except that if building and zoning codes permit, the fence and gate height shall be eight (8) feet.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Fabric:

The chain-link fence fabric shall meet the requirements of ASTM Standard A392, "Zinc-Coated Steel Chain-Link Fence Fabric", latest edition. Zinc coating of the fabric shall be not less than 2 ounces per square foot of wire surface (Class 2 coating). Fabric shall be one-piece fabric height as shown on the Plans, with 2-inch by 2-inch mesh of No. 9 gauge wire, unless otherwise specified. Top and bottom selvages shall be twisted. The fence shall have a single strand of 7 gage galvanized coil spring wire at the bottom, fastened at each post, and at 2 foot centers, with hog rings, extending to within 1-inch of the ground.

B. Posts and Other Appurtenances:

All tubular members including gate members shall comply with ASTM Standard A 53-90b, "Pipe, Steel, Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless, for Ordinary Uses", Type S Grade A or B, and shall be plain-end steel pipe, with zinc coating applied inside and out by the hot-dip process. Zinc coating shall be not less than 1.8 ounces per square foot of pipe area. Gate frames shall be hot-dip galvanized after fabrication. All fence posts shall have weather proof caps which shall conform with the specifications detailed elsewhere in this section. Fence components shall be as follows:

<u>Components</u>	<u>Nominal Pipe Size</u>	<u>Outside Diameter</u>	<u>Weight Per Foot</u>
Top rail and braces	1 1/4 inches	1.660 inches	2.27 pounds
Gate frames	1 1/2 inches	1.900 inches	2.72 pounds
Line posts	2 inches	2.375 inches	3.65 pounds
Corner posts	2 1/2 inches	2.875 inches	5.79 pounds
Gate posts (less Than 10 ft. leaf)	3 inches	3.500 inches	7.56 pounds
Gate posts (greater than 12 ft. leaf)	6 inches	6.625 inches	18.97 pounds

- C. Top Rail: The top rail shall be provided with couplings approximately every 20 feet. Couplings are to be the outside sleeve type, at least 6 inches long.
- D. Concrete: Concrete shall have a minimum compressive strength of 3,000 psi at 28 days.
- E. Barbed Wire: Where permitted by building and zoning codes, the fence shall have six strands of barbed wire mounted on "V" arm post top extensions, as shown on the Plans. Barbed wire shall meet the requirements of ASTM Standard A121, "Zinc-Coated (Galvanized) Steel Barbed Wire", latest edition, for wire gage No. 12-1/2 (2 strands) with a minimum zinc coating of 0.5 ounce per square foot of wire surface (Class 2 coating), applied before fabrication. The individual barb shall be four points, twisted around both wires, with the barbs spaced no more than 5 inches apart.
- F. Gates:
1. The gate frames shall be assembled by welding and shall be hot-dip galvanized after fabrication. The gate shall be installed complete with all hardware, including hinges, locking devices, drop bars, center stops, holdbacks and other items, as required. Padlock will be furnished by the Department.
 2. The gate frame shall be made of 1-1/2 inch diameter Schedule 40 pipe and shall be welded at all corners so as to form a rigid one piece unit for each leaf. Fabric shall be securely stretched and held in the center of the tubing by use of hooks, bolts and tension rods on all four sides of the gate opening frame.
 3. If permitted, the gate shall have three strands of barbed wire mounted on frame top extensions and barbed wire shall be as specified above.
 4. Gates shall have a center stop and drop rod with padlock hardware and padlock. Gate stops and latches shall all be hot-dip galvanized.
 5. Gate post shall be equipped with caps designed to exclude moisture from the post.
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- G. Accessories: Miscellaneous hardware shall be of steel, malleable iron or ductile iron of standard design and conform to the requirements of the Chain Line Fence Manufacturer's Institute. All parts shall be galvanized except ties and clips may be of aluminum. The Contractor shall install all of the hardware necessary for a complete and working installation, and shall include the following:
1. "V" Arms or Single Arm Post Extensions for Barbed Wire:

Barbed wire supporting arms shall form an angle of approximately 45 degrees with the vertical fence and be fitted for attaching three strands of barbed wire. The top wire shall project approximately 12-inches horizontally from the fence line. The other wires shall be spaced uniformly between the top of the fence

fabric and the outside strand. The barbed wire supporting arm shall be manufactured from pressed steel or malleable iron capable of withstanding 200 pounds applied at outer strand of barbed wire. It shall be designed as a combination weather-tight closure cap and a barbed wire supporting arm, where barbed wire is required.

2. Padlocking Device shall be a fulcrum type latch assembly for double gates.
 3. Post Caps shall be of cast steel or cast iron and shall be designed to provide a drive fit over the top of the post to exclude moisture.
 4. Tension Bars shall be one piece for the fence height of the fabric with a minimum cross-section of 3/16" x 3/4". Provide one tension bar for each end post, and 2 for each corner and pull post. The gate shall have tension bars as shown on the Plans.
- H. Tension bars, the tension bar bands, post caps, V-arms, brace rods, top rail clamps, turnbuckles, nuts and bolts, all gate hardware and remaining accessories shall be zinc coated in accordance with the ASTM Standard A153 "Zinc Coating (Hot Dip) On Iron and Steel Hardware", latest edition.
- I. Hardware: Miscellaneous hardware shall be of steel, malleable iron or ductile iron of standard design and conform to the requirements of the Chain Link Fence Manufacturer's Institute. All parts shall be galvanized except ties and clips, which may be aluminum.

PART 3 - EXECUTION

3.01 ARRANGEMENT

- A. Posts: Post shall be uniformly spaced, not to exceed 10-feet on centers. Intermediate post shall have waterproof tops which have integrally cast openings through which the top rails shall pass.. Terminal posts shall consist of one end, corner and pull posts.
- B. Braces: Braces shall be provided at each gate, corner, pull and end post.
- C. Ties and Clips: Fabric shall be fastened to all intermediate posts with 9 gauge tie wires, spacing not to exceed 14-inches apart. Fabric shall be tied to top rail with 9 gauge tie wires, spacing not to exceed 24-inches on centers.

3.02 INSTALLATION

- A. All posts shall be installed in accordance with ASTM F567, "Practice for Installation of Chain Link Fence", latest edition. Where conflict between said standard and these specifications exists, the more stringent shall apply.
- B. Post Setting: Line posts shall be set in holes 12 inches in diameter, 38 inches deep with 36-inch post embedment. Terminal posts shall be set in holes 15 inches in diameter, 38 inches deep with 36-inch post embedment. Gate posts for double swing gates shall be set in holes 18 inches in diameter, 38 inches deep with 36-inch post

embedment. Gate posts for single swing gates shall be set in holes 15 inches in diameter, 38 inches deep with 36-inch post embedment. After the post has been set and plumbed, the hole shall be filled with concrete. The exposed surface of the concrete shall be crowned to shed water.

- C. Terminal and Gate Posts: Terminal and gate posts shall be set as specified above and shall be braced to the nearest post with a galvanized horizontal brace used as a compression member and a galvanized 3/8-inch steel truss rod and truss tightener used as a tension member.
- D. Fabric: Fabric shall not be stretched until concrete footings have cured a minimum of three days. Chain link fabric shall be placed on the side designated by the Engineer of Record and shall be stretched taut approximately 1-inches above finish grade and securely fastened to all posts. Rolls of wire fabric shall be joined by weaving a single strand into the ends of the rolls to form a continuous mesh.

END OF SECTION