

SECTION 607 - FENCES

607.01 Description. This work includes constructing fences and gates according to the contract.

607.02 Materials. Materials shall conform the following:

Barbed Wire	710.01
Woven Wire	710.02
Chain Link Fencing	710.03
Fence Posts	710.06

Concrete for fence footings shall be Class D and shall conform to Section 601 - Structural Concrete.

When the location of manufacturing plants allows, the Engineer may inspect the plants periodically for compliance with specified manufacturing methods. The Engineer may get samples of materials for laboratory testing for compliance with material quality requirements. This may be the basis for acceptance of manufacturing lots regarding quality.

The condition of materials will be subject to inspection for acceptance before or during incorporation of materials into the work.

607.03 Construction Requirements.

(A) General. The Contractor shall clear, grade and grub as may be necessary to construct the fence to the required grade and alignment.

The Contractor shall make appropriate adjustment in post spacing to conform to the type of closure shown at locations requiring breaks in a run of fencing or at intersections with existing fences.

The Contractor shall install temporary guys or braces until the concrete has set sufficiently to hold the posts when the contract requires embedding posts, braces, or anchors in concrete. The Contractor shall not install materials on posts or strain placed on guys and bracing set in concrete until seven (7) days have elapsed from the time of placing of the concrete.

The Contractor shall crown concrete fence footings at the top to shed water.

The Contractor shall set the tops of posts to the required grade and alignment. The Engineer will allow cutting of the tops of the posts only under the written request and the conditions specified.

The Contractor shall firmly attach wire or fencing of the size and type required to the posts and braces according to the contract. The Contractor shall stretch taut and install the wires to the required elevations.

The Contractor shall furnish and install a ground conforming to Section 9 of the National Electric Safety Code at each location where an electric transmission, distribution, or secondary line crosses the fences covered by the contract.

(B) Chain Link Fence. The Contractor shall fabricate posts from pipes conforming to Table 607-I. The Contractor shall space line posts at not more than ten (10) foot intervals, measured from center to center of posts. In general, the Contractor shall make measurement parallel to the slope of the natural ground in determining the post spacing. The Contractor shall place posts in a vertical position.

The depths of footing are as follows:

Type of Post	Fabric Height inch	Footing Depth (Minimum) Feet
Line Post	36	2
End, Corner, and Gate Post	36	2-1/2
Line Post	48	2-1/2
Other Post	-	3

In cross section, the minimum dimension of footings shall not be less than three (3) times the maximum cross-sectional dimension of the post. Also the minimum dimension of footings shall not be less than eight (8) inches.

The Contractor shall brace end, corner, and gate posts for fencing of a height of six (6) feet or more to the nearest line post with horizontal braces used as compression members and truss rods with turnbuckles used as tension members. The Contractor shall brace and truss pull post, at intervals of three hundred (300) feet, in both directions as specified above.

The Contractor shall consider changes in line where the angle of deflection is thirty (30) degrees or more as corners. The Contractor shall install corner posts.

In cross section, the minimum dimension of footings shall not be less than three (3) times the maximum cross-sectional dimension of the post. Also the minimum dimension of footings shall not be less than eight (8) inches.

TABLE 607-I - SCHEDULE OF CHAIN LINK FENCE POSTS								
ZINC-COATED PIPE - NOMINAL								
Height of Fence - Feet	Line Posts		End, Corner & Pull Posts		Braces		Top Rails	
	OD Inches	Wt #/ft	OD Inches	Wt #/ft	OD Inches	Wt #/ft	OD Inches	Wt #/ft
3	1-7/8	2.72	1-7/8	2.72	1-5/8	2.27	1-3/8	1.68
4	1-7/8	2.72	1-7/8	3.65	1-5/8	2.27	1-3/8	1.68
5	1-7/8	2.72	2-3/8	3.65	1-5/8	2.27	1-5/8	2.27
6	2-3/8	3.65	3	5.79	1-5/8	2.27	1-5/8	2.27
ALUMINUM PIPE - NOMINAL								
Height of Fence - Feet	Line Posts		End, Corner & Pull Posts		Braces		Top Rails	
	OD Inches	Wt #/ft	OD Inches	Wt #/ft	OD Inches	Wt #/ft	OD Inches	Wt #/ft
3	2	1.264	3	2.621	1-1/4	0.786	1-1/4	0.786

In cross section, the minimum dimension of footings shall not be less than three (3) times the maximum cross-sectional dimension of the post. Also the minimum dimension of footings shall not be less than eight (8) inches.

The Contractor shall brace end, corner, and gate posts for fencing of a height of six (6) feet or more to the nearest line post with horizontal braces used as compression members and truss rods with turnbuckles used as tension members. The Contractor shall brace and truss pull post, at intervals of three hundred (300) feet, in both directions as specified above.

The Contractor shall consider changes in line where the angle of deflection is thirty (30) degrees or more as corners. The Contractor shall install corner posts.

The top rail or top tension wire shall pass through the base of line post tops or extension arms and form a continuous brace from end to end of each stretch of fence.

The Contractor shall furnish top rails in approximately twenty (20) foot lengths. The Contractor shall provide with accepted outside couplings or expansion sleeves. The Contractor shall fasten the top rail or top tension wire securely to terminal posts by rail ends and brace bands.

The Contractor shall furnish brace rails in the required lengths.

The Contractor shall fasten chain link fabric on the designated side of the posts. Also, the Contractor shall mount chain link fabric on the posts so that the bottom of the fabric shall be two (2) inches above ground.

Chain link fences shall have knuckled finish on the bottom edge. Chain link fences with fabric width over sixty (60) inches shall have a twisted and barbed finish on the top edge projecting over the top rail or top tension wire of the fence. Chain link fences with fabric widths sixty (60) inches or less shall have knuckled finish on the top edge.

The Contractor shall weave chain link fence fabric into approximately two (2) inch mesh except around tennis courts. The Contractor shall weave chain link fence fabric into approximately one and three-quarter (1-3/4) inches mesh around tennis courts.

The Contractor shall fasten between posts, the top edge of the fabric to a top rail or top tension wire and the lower edge fastened to a tension wire. The Contractor shall install the tension wire on a straight grade between posts by excavating the high points of ground. The Engineer will not permit filling of depressions.

The Contractor shall fasten the fabric to end, corner, and gate posts with stretcher bars and stretcher bar bands spaced at one (1) foot intervals; and to line posts and tension wires with tie wires or metal bands. The Contractor shall space tie wires or metal bands on line posts at intervals of approximately fourteen (14) inches, and on top rails and tension wires at approximately twenty-four (24) inches.

Drive gates shall be of the widths designated in the contract. Walk gates shall be four (4) foot wide.

The Contractor shall fabricate gate frames and posts from pipes conforming to of Table 607-II, or if accepted, from shapes of equivalent structural strength. Drive gate shall be cross-trussed with accepted adjustable truss rods. The Contractor shall assemble by the use of properly designed fittings or by accepted welding techniques.

Fabric for the gate shall be the same as that used for the fence. The Contractor shall attach the fabric for the gate to the gate frame by stretcher bars and tie wires as specified for fence construction, and suitable tension connectors spaced at approximately one (1) foot intervals.

The Contractor shall hang the gates by at least two (2) hinges designed to clamp securely to the gate post and permit the gate to swing back against the fence.

TABLE 607-II - GATES (3 feet to 6 feet Height)						
ZINC-COATED PIPE						
GATE FRAMES			GATE OPENING	GATE POSTS		
O.D. Inch	Nominal Weight lbs/ft			O.D. Inch	Nominal Weight lbs/ft	
1-7/8	2.72		Single to 6' or Double to 12'	3	5.79	
1-7/8	2.72		Single over 6' to 13' or Double over 12' to 26' inclusive	4	9.11	
1-7/8	2.72		Single over 13' to 18' or Double over 26' to 36' inclusive	6-5/8	18.97	
1-7/8	2.72		Single over 18' or Double over 36'	8-5/8	24.70	
ALUMINUM PIPE						
GATE FRAMES			GATE OPENING	GATE POSTS		
Nominal Size inch	O.D. inch	Weight lbs/ft		Nominal Size inch	Nominal O.D. inch	Weight lbs/ft
1-1/2	1.9	0.940	Single to 6' or Double to 12'	3	3-1/2	2.621
1-1/2	1.9	0.940	Single over 6' to 13' or Double over 12' to 26' inclusive	3-1/2	4	3.151
1-1/2	1.9	0.940	Single over 13' to 18' or Double over 26' to 36' inclusive	6	6.625	6.564
1-1/2	1.9	0.940	Single over 18' or Double over 36'	8	8.625	9.878

The Contractor shall provide gates with a combination catch and locking attachment of acceptable design. The Contractor shall provide stops to hold gates open and a center rest with catch where required.

(C) **Wire Fences.** The Contractor shall stretch the wires tightly with an accepted fence wire stretcher and stapled to each wooden post with zinc-coated staples or wired to each concrete post with several turns of tie wire. The Contractor shall staple or wire wood spreaders, if required by the contract, to each strand of the fence wires. The wire shall always be on the side of the fence that faces this pasturage when the fence impounds animals.

The Contractor shall brace the fence at corners and angles and anchor against pull according to details shown in the contract.

The Contractor shall dip wood posts before use in creosote as required on the plans. The Contractor shall set posts vertically in the ground to the approximate depth shown on the plans. The Contractor shall tamp posts thoroughly into place.

607.04 Method of Measurement. The Engineer will measure fence by the linear foot. Measurement will be along the top of the fence from outside to outside of end post for each continuous run of fence.

The Engineer will measure gates as complete units of the size and type specified in the proposal, complete in place.

607.05 Basis of Payment. The Engineer will pay for the accepted quantities of fence for at the contract unit price per linear foot of the types and sizes specified in the proposal, complete in place.

The Engineer will pay for the accepted quantities of gate at the contract unit price per each types and sizes specified in the proposal, complete in place.

The Engineer will make payment under:

Pay Item	Pay Unit
____ - Feet, _____ Fence	Linear Foot
____ -Gate, _____ Feet high and _____ Feet wide	Each
_____ Fence with _____ Posts	Linear Foot