

SECTION 028370
BARBED WIRE FENCE

1. DESCRIPTION

This specification shall govern all work required for furnishing and installing all barbed wire fences and gates required to complete the project.

2. GENERAL

Barbed wire fences shall be Class D four-strand barbed wire in accordance with FAA Item F-161 (10/24/74).

3. MATERIALS

Wire.

- a. Woven Wire (Zinc-coated). The woven wire fencing shall be 7-bar, 26-inch field fence with top and bottom wires No. 10 ASW gauge, and filler and stay wire No. 12 ½ ASW gauge. Stay wires shall be spaced 6 inches apart. All wire shall be smooth galvanized steel wire conforming to Fed. Spec. RR-F-221, Type B. All wires shall be two-dip and spaced to match existing fencing.
- b. Barbed Wire (Zinc-coated). Zinc coated barbed wire shall be two-strand twisted No. 12 ½ ASW gauge galvanized steel wire with 4-point barbs of No. 14 ASW gauge galvanized steel wire. All wire shall conform to Fed. Spec. RR-F221, Type A. The barbs shall be spaced approximately 4 inches apart. The wire will be placed in the same number and at the same heights as the existing adjoining fence
- c. Barbed Wire (Copper-covered). Copper-covered steel barbed wire shall conform to Fed. Spec. RR-F221, Type A.
- d. Barbed Wire (Aluminum-coated). Aluminum-coated steel barbed wire shall be two strand twisted No. 12 ½ ASW gauge. The 4-point barbs of No. 14 ASW gauge aluminum-coated steel wire shall be spaced approximately 5 inches apart. The steel wire shall have a tensile strength of between 60,000 and 80,000 pounds per square inch and the aluminum coating shall have a minimum weight of 0.30 ounce per square foot of wire surface on the No. 12 ½ ASW gauge line wire and 0.25 ounce per square foot of wire surface on the No. 14 ASW gauge barbs. The wire will be placed in the same number and at the same heights as the existing adjoining fence

- e. Bracing Wire (Zinc-coated). Wire used for cable for bracing shall be No. 9 smooth galvanized soft wire.

Fence Posts, Gates, Rails, Braces and Accessories. These items, when specified, shall conform to the requirements of Fed. Spec. RR-F-183 and shall be zinc coated.

Concrete. Concrete shall be Class B in accordance with City Standard Specification Section 030020.

4. CONSTRUCTION METHODS

General. The fence shall be constructed in the locations shown on the plans and as specified herein using new materials, and all work shall be performed in a workmanlike manner satisfactory to the Engineer. The route of the fence is indicated on the drawings. The existing fence with the exception of gates shall become property of the Contractor and shall be removed from the site. The new fence shall be placed along the right-of-way or easement line. The Contractor shall span the opening below the fence with barbed wire fastened to stakes of the required length at locations of small natural or drainage ditches where it is not practical to conform the fence to the general contour of the ground surface. The new fence shall be permanently tied to terminals of existing fences whenever required by the Engineer. The finished fence shall be plumb, taut, true to line and ground contour, and complete in every detail.

When directed, in order to keep stock on adjoining property enclosed at all times, the Contractor shall arrange the work so that construction of the new fence will immediately follow the removal of existing fences. The length of unfenced section at any time shall not exceed 300 feet or such length that the stock can be kept in the proper field. The work shall progress in this manner and at the close of the working day the newly constructed fence shall be tied to the existing fence. Any openings in the fence shall be guarded when stock is using the adjoining property.

Clearing Fence Line. The site of the fence shall be sufficiently cleared of obstructions, and surface irregularities shall be grades so that the fence will conform to the general contour of the ground. The fence line shall be cleared to minimum width of 10 feet on each side of the centerline of the fence. This clearing shall consist of the removal of all stumps, brush, rocks, trees, or other obstructions which will interfere with proper constructions of the fence. The area shall be mowed. Stumps within the cleared area of the fence shall be removed. When shown on the plans or as directed by the Engineer, the existing fences, which coincide with or are in a position to interfere with the new fence locations shall be removed by the Contractor as part of the construction work unless such removal is listed as a separate item in the bid schedule. All holes remaining after post and stump removal shall be refilled with suitable soil, gravel, or other material acceptable to the Engineer and shall be compacted properly with tampers.

The work shall include the handling and disposal of all material cleared, excavated or removed, regardless of the type, character, composition, or condition of such material encountered.

Installing Posts. All posts shall be spaced at 16'-6" maximum spacing. Corner, brace, anchor, end, and gate posts shall be set in concrete bases as shown on the plans. The top of the base shall be slightly above the ground surface, trowel finished, and sloped to drain. Holes of full depth and size for the concrete bases for posts shall be provided even if blasting of rock or other obstructions is necessary. All line posts may be either driven or set in dug holes to a penetration of 3 feet. All post setting shall be done carefully and to true alignment. Dirt removed for placing posts, anchor bars, flanges, etc., shall be replaced, tamped, and leveled. When posts are driven, care shall be exercised to prevent marring or buckling of the posts. Damaged posts shall be replaced at the Contractor's expense. No extra compensation will be made for rock excavation. Rock excavation shall not be grounds for extension of time.

Bracing. All corner, anchor, end, and gateposts shall be braced. Anchor posts shall be set at approximately 500-foot intervals and braced to the adjacent posts.

Installing Wire. All barbed wire and woven wire shall be placed on the same side of the posts as the existing adjoining fence, or as directed, at the same height and number as the existing adjoining fence. The woven wire shall be carefully stretched and hung without sag and with true alignment. Care shall be taken not to stretch the wire so tightly that it will break in cold weather or pull up corner and/or brace posts. All horizontal wires shall be fastened securely to each post by fasteners or clips designed for use with the posts furnished. The woven wire shall be wrapped around all end posts, corner posts and gate posts, and the ends of all horizontal wires shall be tied with snug, tight twists. The wire shall be secured to prevent slipping up and down the post. Barbed wire strands shall be stretched and each strand secured to each post to prevent slipping out of line or becoming loose. At all end posts, corner posts and gate posts, the barbed wire shall be securely wrapped and anchored once about the post from the outside and secured against slipping by tying the ends with snug, tight twists. However, on spans of less than 100 feet, both ends of the span need not be wrapped around the posts. The bottom wire of the woven wire fencing shall clear the ground by not more than 4 inches or less than 1 inch at any place.

Splicing Wire. Splicing in barbed wire and woven wire will be permitted if made with an approved galvanized bolt-clamp splice or a wire splice made as follows: The ends of each wire shall be carried 3 inches past the splice tool and wrapped around the other wire for at least six turns in opposite directions. After the tool is removed, the space occupied by it shall be closed by pulling the ends together. The unused ends of the wire shall be cut close to make a neat, workmanlike job.

Existing Fence Connections. Wherever the new fence joins an existing fence, either at a corner or at the intersection of straight fence lines, a corner post or anchor post shall be set at the junction and braced and anchored the same as herein described for corner posts.

If the connection is made at other than the corner of the new fence, the last span of the old fence shall contain a brace span.

Gates. See the gate schedule in the drawings for location, size and description of proposed gate work where new gates are required. Gates will typically be cantilever type roller gates. The Contractor shall submit shop drawings of the gate and assembly for pre-approval by the Engineer prior to bid openings. The gate and assembly shall meet the following general requirements: Gates shall be of the double gate type with a combined clear opening of 30 feet. Roller assembly shall be of a type designed to support the gate without ground rollers. Rollers shall be mounted on steel gatepost with a minimum diameter of 4 inches. Gatepost shall be placed in 12" diameter post holes excavated to a minimum depth of 48 inches. Gatepost shall be embedded in a hole a minimum of 36" with the remainder of the hole being filled with Class B concrete. The gate frame shall be constructed of galvanized steel pipe with a minimum diameter of 2 inches for exterior member and 1-5/8 inches for internal braces. The size of the gate frame shall be approximately 3'-6" x 22'-0". The gate barrier wire shall be NE 6 gauge 2" wire. The gate shall be installed with a lock assemble located at the center of the 30 foot opening. The lock assemble shall provide lateral support and be doveled into concrete at mid-opening and shall not obstruct traffic when the gate is open.

5. MEASUREMENT AND PAYMENT

Unless otherwise specified on the Bid Form, Barbed Wire Fence shall be measured and paid for under City Standard Specification Section 028300 "Fence Relocation", and shall be full compensation for furnishing all materials and for all preparation, erection, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.