SECTION 910 -- RIGHT-OF-WAY AND BARBED WIRE FENCE

910.01 -- Description

The Contractor shall furnish materials and build the right-of-way fence or barbed wire fence, including gates, channel crossings, floodgates, private fence terminal installations, drainage structure terminal installations, concrete foundations, and other appurtenances as prescribed in the plans.

910.02 -- Material Requirements

1. All materials shall conform to the requirements in Table 910.01.

Table 910.01

Material Requirements	
Applicable Materials	**Section**
Fence	1064
Structural Timer and Lumber	1075

2. a. The concrete for use in fence post anchors and footings shall be a concrete mixture capable of achieving a minimum unit compressive strength of 1,450 psi at 28 days.

b. The aggregate shall be from acceptable sources.

c. The equipment used to mix, place, and finish concrete foundations for fences need not be calibrated.

910.03 -- Construction Methods

1. General.

a. The Engineer may designate certain portions or lengths of the right-of-way fence and barbed wire fence as essential to the beginning or continuation of other operations on the project. The Contractor shall conduct all operations so as to give priority to the erection of those portions or lengths of fence that are designated most essential by the Engineer.

b. (1) Where a fence is to be constructed parallel to the right-of-way lines, it shall be erected on the public right-of-way with the center of the posts 1 foot from the right-of-way line.

(2) Fencing materials shall be attached on the field side (private side) of the posts, except that on curves, the fencing materials shall be attached on the outside of the curves.

(3) The location of the fence shall be graded to a minimum width of 2 feet on each side of the fence so that the fence will conform to the general contour of the ground.

2. a. Concrete footing construction shall be performed in accordance with the requirements of Section 704.

b. Excavations shall be free of standing water before concrete is placed.

c. Where the concrete can be placed in dry excavation without the use of cribs or cofferdams and the nature of the soil is such that it will not slough or cave in, forms may be omitted at the discretion of the Engineer.

d. Care shall be exercised to prevent dirt, mud, or foreign material from becoming mixed with the concrete which is being placed.

e. Any excavation and backfilling work necessary in connection with the concrete footings shall be in accordance with the applicable requirements of Section 702, except that any excavation and backfilling will not be paid for directly, but shall be considered subsidiary to the posts, fence, or floodgates, as applicable.

3. a. All posts shall be set plumb.

b. Concrete shall be allowed to cure for at least 24 hours before wire or fabric is placed.

c. (1) Wood line posts may be driven or set in prebored holes and backfilled in layers not to exceed 6 inches and consolidated with approved hand or mechanical tampers.

(2) Should the Contractor elect to drive posts, rather than set them in prebored holes, then all responsibilities and risks, including the posts splitting or breaking, are assumed by the Contractor.

(3) Posts damaged by driving shall be rejected, removed, and replaced with acceptable materials.

d. Braces for wood posts shall be placed as indicated in the plans in 1 inch notches cut into the posts and nailed securely with at least 2 galvanized 20d (0.2 inch x 4 inch) common steel nails in each end.

e. Cross ties shall be placed as indicated in the plans and shall consist of 4 strands of 0.146 inch diameter galvanized wire tightly wrapped at least twice around each post and the tie tightened by twisting the strands.

f. The ties shall be fastened to the post with staples.

g. Pull-posts shall be used at sharp breaks in vertical grades and approximately every 330 feet on straight runs or as directed by the Engineer.

h. Where the fence intersects or joins an existing fence, terminal installations shall be made in accordance with the details shown in the plans.

i. Fence at stream crossings or drainage ways shall be installed in accordance with the details shown in the plans.

j. (1) When indicated in the plans, terminal installations shall be made at drainage structures.

(2) The terminal installations shall consist of furnishing and erecting the end posts, complete with diagonal braces, and placing the 3 single strands of barbed wire as prescribed in the plans.

(3) The eyebolts shall not be considered as a part of the drainage structure terminal installation.

(4) Each strand of barbed wire shall be tightly wrapped at least twice around the post and threaded at least once through the eyebolt.

(5) The loose ends, which shall be at least 4 inches in length, shall be tightly wrapped around the wire stretched between the eyebolt and the end post.

(6) The barbed wire shall be fastened to wood posts with staples.

k. (1) The tension for stretching the fence material shall be applied by the use of mechanical fence stretchers designed for that purpose.

(2) Splices in the fabric and barbed wire shall be securely made with metal sleeves that have been approved by the Engineer before their installation.

(3) Fence fabric shall be fastened to all steel posts with wire ties at the top and bottom 2 wires and 3 other intermediate lateral wires, and to wood posts with staples on the same wires.

(4) Barbed wire shall be fastened to wood posts with staples and to steel posts with wire ties.

l. (1) When a power line runs parallel to and above the fence, the fence shall be grounded at 2,000 feet intervals. When a power line crosses over the fence, the fence shall be grounded at the point where the power line crosses it.

(2) The ground shall include:

(i) A hard drawn, high conductivity, electrolytic copper or copper covered steel ground rod at least 8 feet in length and having a minimum diameter of 0.56 inch, driven vertically until the top is approximately 6 inches below the top of the ground.

(ii) A solid copper conductor securely fastened to the rod and to the fence with approved clamps so each element of the fence is grounded in accordance with *NEC* requirements.

4. a. Gates shall be constructed as prescribed in the plans.

b. The wire fabric, barbed wire, and arrangement of the fence material shall be the same as used in the remainder of the fence.

c. The pipe shall be of the size shown in the plans.

d. The cinch fence stays shall be galvanized in accordance with Section 1063. The stays shall be twisted wire, 0.142 inch in diameter and 58 inches in length.

e. The chains shall be galvanized common or proof coil chains with each link 1/4 inch in diameter and 12 links per foot.

f. The top and bottom chains shall be furnished with a galvanized metal grab hook on one end.

g. Connections between the fabric and barbed wire and the posts and the installation of the cinch fence stays shall be securely made in accordance with the best industry practice and the fence manufacturer's recommendations.

5. The Contractor shall furnish padlocks as shown in the plans. They shall be 1 3/4 inch laminated type padlocks with one master key to open all padlocks. The Contractor shall deliver the keys and padlocks to the Engineer.

910.04 -- Method of Measurement

1. Private fence terminal installations, gates, floodgates, channel crossings, end posts, corner posts, pull posts, and drainage structure terminal installations will be measured by the each.

2. The quantity of "Right-of-Way Fence" is measured at the bottom of the fence fabric from center to center of posts in linear feet. The lengths occupied by gates will not be included.

3. The quantity of "Barbed Wire Fence" is measured from center to center of posts in linear feet. The lengths occupied by gates will not be included.

910.05 -- Basis of Payment

1. Pay Item — Pay Unit

Pay Item	Pay Unit
Private Fence Terminals	Each (ea)
Floodgates, Type _____	Each (ea)
Channel Crossings, Type _____	Each (ea)
End Posts	Each (ea)
Pull Posts	Each (ea)
Corner Posts	Each (ea)
Gates	Each (ea)
Drainage Structure Terminals	Each (ea)
Right-of-Way Fence	Linear Foot (LF)
Barbed Wire Fence	Linear Foot (LF)

2. Padlocks are subsidiary to the gate.

3. Direct payment will not be made for concrete footings, excavation, and backfill. These items shall be considered subsidiary to the associated fence pay item.

4. Direct payment will not be made for electrical grounds, but they shall be considered subsidiary to the fence pay item attached to the electrical ground.

5. Payment is full compensation for all work prescribed in this Section.