

## SECTION 620 RIGHT-OF-WAY FENCING

### 620.1 DESCRIPTION

This work consists of furnishing and erecting fence, brace panels and gates, salvaging of existing fence, and erection of temporary fence and incidental work.

### 620.2 MATERIALS

Right-of-way fence materials shall conform to Section 920, except material for temporary fence Types I and IA may consist of any approved new or used fencing material.

### 620.3 CONSTRUCTION REQUIREMENTS

- A. Right-of-Way Fence:** Wood posts may be either hand set or power driven. If hand set, the posts shall be placed in the centers of the post holes and the backfill shall be thoroughly tamped around the posts. The post holes shall be a minimum of two inches (50 mm) larger in diameter than the nominal diameter of the post.

If posts are sharpened, they shall be sharpened on the small end, to a blunt point approximately  $\frac{3}{4}$  inch (20 mm) wide prior to treatment.

The fencing shall be fastened to the sides of the posts facing the private property adjacent to the highway right-of-way. Fence on curves shall be fastened to the side of the post which will allow the wire to be pulled tight against the post.

Woven wire fence fabric shall be placed by securing or fastening one end and applying sufficient tension to remove all slack before making permanent attachments elsewhere. The fabric shall be stretched until the tension curves in the line wires are approximately one half their original depths, keeping stay wires vertical.

The bottom of the woven wire fabric shall be placed a normal distance of two inches (50 mm) above the ground line. Over irregular ground a minimum clearance of one inch (25 mm) and a maximum clearance of six inches (300 mm) will be permitted for a distance of not to exceed eight feet (2.5 meters).

The Contractor shall remove debris and perform necessary excavation and backfilling prior to erecting the fence.

Woven and barbed wire shall be cut and wrapped at each panel encountered. In two post and three post brace panels, each line wire shall be wrapped one around the last post and twisted back on itself with a minimum of four twists. If a three post panel has any angle to it, each line wire shall be wrapped once around the middle post and twisted back on itself. Barbed wire shall be fastened to brace panels by wrapping it twice around the last post and twisting it back on itself.

Woven wire fabric splices shall be made by the "wrap" splice method - placing the two end vertical stay wires next to each other and twisting all of the free line wires four times around the line wires beyond these vertical stays. Barbed wire splice shall be made by

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interlocking three barbs and twisting the loose ends four times around the main strands beyond these interlocked barbs. Splices securely made with commercial splicing devices, acceptable to the Engineer, may be used in lieu of the above splice methods.

Diagonal brace wires shall be fabricated with four strands of 9 gage (3.77mm) galvanized wire, one strand of which shall completely encircle each post, be twisted back on itself and firmly stapled to the posts. The brace wires shall be tightened by twisting until the entire assembly is rigid. Brace wires shall be installed in accordance with the direction of pull, two being installed on a panel that will pull in both directions.

Staples shall be used to fasten woven wire and barbed wire to the wooden line posts. The top and bottom wires of the woven wire fabric shall always be stapled to each post. The remaining line wires shall be alternately stapled. Staples shall be set diagonally and shall be sloped downward on level ground and over knolls and upward in depressions. The staples shall be driven only deep enough to hold the wire close to the posts. The staple shall not cause a deformation of the surface of the wood or kink the wire.

Wire ties or clips shall be used to fasten woven wire and barbed wire to steel posts. The wire ties or clips shall prevent the fence from slipping either up or down the post.

At grade depressions, where stresses tending to pull the posts from the ground are created, the fencing shall be snubbed or guyed at the critical points by means of double strands of 9 gage (3.77 mm) diameter galvanized wire connected to each horizontal line of barbed wire and to the top and bottom horizontal lines of the woven wire fabric. The ends of the combined strands shall be firmly attached to a deadman located at the point which will resist the pull of the wire fence. A deadman shall weigh at least 100 pounds (45 kg) and shall be buried, with a ground cover of at least two feet (600 mm). The deadman may be a single rock, a concrete block, or other object acceptable to the Engineer.

**B. Temporary Fence:** Temporary fence shall not be attached to right-of-way fence.

Temporary fence Type I shall be erected in a manner to insure that livestock will be confined. Electric fence shall not be used for temporary fence. Following completion of grading operations and construction of right-of-way fence, the Contractor shall remove temporary fence Type I. Temporary fence Type I shall remain the property of the Contractor.

Temporary fence Type IA shall meet all the requirements of temporary fence Type I. Temporary fence Type IA shall remain in place and become the property of the landowner.

Temporary fence Types II and III shall be constructed in accordance with Section 620.3 A. Temporary fence Type II and III shall remain in place and become the property of the landowner. Type II shall consist of four strands of barbed wire fastened to steel posts spaced 20 feet (six meters) center to center. Type III shall consist of a 26 inch (660 mm) width of woven wire with two strands of barbed wire fastened to steel posts spaced 20 feet (six meters) center to center.

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- C. **Salvaging or Removing Fence:** When a bid item for salvaging fence is provided, the fence shall be removed from the locations designated. Salvaged fence shall be placed adjacent to the right-of-way and shall remain the property of the original owner. The wire shall be carefully removed from the posts and placed in rolls of at least 300 feet (100 meters) in length. Care shall be taken not to tangle the wire. Posts shall be carefully pulled to minimize damage. Posts shall be placed in neat piles. Gates shall be carefully removed and stockpiled.

When a bid item for **remove** fence is provided in the contract, fence removed shall become the property of the Contractor. Since landowners are permitted to salvage and keep fence they remove, no guarantee can be made that all fence shown on the plans will require removal by the Contractor.

### 620.4 METHOD OF MEASUREMENT

- A. **Right-of-Way Fence:** Right-of-way fence will be measured by the linear foot (meter) parallel to the ground, including lengths of brace panels and wire gates.
- B. **Brace Panels:** Quantities of brace panels will be determined from count of each type.
- C. **Tubular-Frame Gates:** Quantities of tubular frame gates will be determined from a count of each size.
- D. **Temporary Fence:**
1. **Type 1:** Temporary fence Type I will be measured by the linear foot (meter) complete in place parallel to the ground, including any necessary brace panel and gate construction.
  2. **Type 1A:** Temporary fence Type IA will be measured by the linear foot (0.1 meter) complete in place parallel to the ground, including any necessary brace panel and gate construction.
  3. **Type II and III:** Temporary fence Types II and III will be measured as specified in Section 620.4 A.
- E. **Salvaging Fence and Remove Fence:** Salvaging fence and **remove** fence will be measured by the linear foot (meter) parallel to the ground, including brace panels and gates.

### 620.5 BASIS OF PAYMENT

- A. **Right-of-Way Fence:** Right-of-way fence will be paid for at the contract unit price per linear foot (meter) for the respective types and classes, inclusive of anchors. Payment will be full compensation for furnishing materials, labor, equipment, and incidentals, except brace **panels and tubular** frame gates. Payment will include clearing the line for fence and satisfactory disposal of debris, smoothing the irregularities of the ground at the fence site, and necessary excavation and backfill. **Any deadmen ordered by the Engineer described**

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under 620.3A will be paid for under the item Extra Work.

- B. Brace Panels:** Brace panels will be paid for at the contract unit price per panel for the respective types. Payment will be full compensation for furnishing labor, materials, equipment, and incidentals required.
- C. Tubular Frame Gates:** The tubular frame gates will be paid for at the contract unit price per gate for the respective size. Payment for this item will be full compensation for furnishing labor, materials, equipment, and incidentals, except brace panels, required to install the tubular frame gate.
- D. Temporary Fence:**

  - 1. Type I:** Temporary fence Type I will be paid for at the contract unit price per linear foot (meter). Upon installation 90 percent of the contract unit price will be paid. Upon removal the remaining 10 percent of the contract unit price will be paid. Payment will be full compensation for furnishing necessary materials, labor, equipment, and incidentals required to construct, remove and salvage the temporary fence. There will not be separate payment for this work under the items of salvaging fence or remove fence.
  - 2. Type IA:** Temporary fence Type IA will be paid for at the contract unit price per linear foot (meter). Payment will be full compensation for furnishing materials, labor, equipment, and incidentals required to construct the fence.
  - 3. Type II and III:** Temporary fence Types II and III will be paid for at their respective contract unit prices per linear foot (meter). Payment will be full compensation for material, labor, equipment, and incidentals except brace panels and tubular frame gates. Separate payment will not be made for clearing the fence line, disposal of debris, smoothing the ground, excavation, or backfill necessary to install the fence.
- E. Salvaging Fence:** Salvaging fence will be paid for at the contract unit price per linear foot (meter). Payment will be full compensation for labor, equipment, and incidentals required.
- F. Remove Fence:** Remove fence will be paid for at the contract unit price per linear foot (meter). Payment will be full compensation for labor, equipment, and incidentals required.
- G. Remove and Reset Fence:** If the Contractor is required to remove and reset brace panels, temporary fence, or right-of-way fence as the result of changes ordered on construction, payment for the work involved in removing and resetting will be made at the contract unit price for the type of fence or panel involved. Separate payment will not be made under the items salvaging or remove fence.