

SECTION 02840

BARBED WIRE FENCING AND GATES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope

1. Furnish and install new barbed wire fencing, gates, and appurtenances at locations indicated on the Drawings

B. Additional Requirements Specified Elsewhere

1. Section 01010: Summary of Work
2. Section 01340: Shop Drawings, Product Data, and Samples
3. Section 01500: Construction Facilities and Temporary Controls
4. Section 01600: Materials and Equipment

C. Related Requirements Specified Elsewhere

1. Section 02200: Earthwork
2. Section 03300: Cast-In-Place Concrete

1.2 QUALITY ASSURANCE

A. Reference Standards

1. ASTM A120: Pipe, Steel, Blade and Hot-Dipped Zinc Coated (Galvanized) Welded and Seamless for Ordinary Uses
2. ASTM A121: Zinc Coated (Galvanized) Steel Barbed Wire
3. ASTM A500: Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
4. ASTM A501: Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
5. ASTM A585: Aluminum-Coated Steel Barbed Wire
6. Colorado Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition
7. Colorado Department of Transportation M Standards, Standard Plan M-607-1

1.3 SUBMITTALS

- A. Shop Drawings and Product Data: Submit complete detail drawings and product data for fence, gates, and accessories in accordance with Section 01340

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel Fencing

1. Posts
 - a. Gate posts
 - 1) Leaf 13 feet or less: Conform to Colorado Department of Transportation (CDOT) M Standard M-607-1, Sheet 1 of 3; 2½" x 2½" x ¼" structural steel angle
 - b. Line posts: Steel, 6'-6" long, studded tee post with stabilizing below-grade flange
 - c. Corner posts: Conform to Colorado Department of Transportation (CDOT) M Standard Plan M-607-1, Sheet 1 of 3; 2½"x2½"x¼" structural steel angle
2. Fabric or barbed wire ties: Galvanized steel, 11 gauge for tying to line posts
3. Barbed wire: Galvanized, ASTM A121, Class II, or aluminum coated, ASTM A585, Class II, two 12½ gauge steel wires with 4-point barbs
4. Gate frames: Steel tubing, 1⅞" O.D., 2.09 lb/ft; or 2" sq., 2.10 lb/ft
5. All materials galvanically compatible
6. Concrete as specified in Section 03300 for all corner posts

B. Wood Post Fencing - Alternative

1. Gate posts: 5" diameter, 7 foot length
2. Conform to Standard Specifications, Paragraph 710.07, for surface preparation and preservative treatment
 - a. Corner posts: 5" diameter, 7 foot length
 - b. Line posts: Refer to CDOT M Standard Plan M-607-1
 - c. Corner and line post bracing: Refer to CDOT M Standard Plan M-607-1

2.2 FABRICATION AND MANUFACTURE

A. Steel Fencing: Hot dip galvanized or aluminum coat all steel or malleable iron parts and accessories after fabrication

B. Gates

1. Swing type, hinge to swing 180° from close to open
2. Complete with frames, latches, stops, keepers, hinges, fabric, braces
3. Provide intermediate members and diagonal truss rods as required for rigid construction free of sag and twist
4. Joints between frame members
 - a. Welded or heavy fittings
 - b. Rigid and watertight
5. Fabric
 - a. Same as fence
 - b. Attach to frame ends with stretcher bars, bolt hooks or other mechanical means

- 6. Hinges
 - a. Heavy patterns with large bearing surfaces
 - b. Twisting or turning of hinges under the gate action is unacceptable
- 7. Latches
 - a. Single leaf gates less than 10' wide: Forked latches or as specified for other gates
 - b. All others
 - 1) Plunger bar type
 - 2) Full gate height
 - 3) Arranged to engage gate stop
 - 4) Stops: Roadway plates with anchors arranged to engage plunger
 - c. Latched padlockable with lock accessible from both sides of gate
 - d. Keepers: Mechanical devices for securing and supporting free end of gates in the open position

PART 3 - EXECUTION

3.1 PREPARATION

- A. Final Grading: Grade ground surface irregularities to uniform slopes

3.2 ERECTION

A. General

- 1. Install to alignment and finish grade indicated on drawings

B. Posts

- 1. Line posts
 - a. Set plumb
 - b. Spacing: Equally spaced, maximum 16'-0" on center
 - c. Layout to configuration shown on Drawings
 - d. Locate and mark position of posts in straight line between corner posts, end posts or brace posts
 - e. Embedded 2'-4" into ground and tamped, aligned and plumbed
- 2. Corner, end, gate and brace posts
 - a. Set plumb
 - b. Set in concrete full depth in ground, if steel posts are used
 - 1) Provide 38" deep concrete foundations
 - c. Hand tamp soil embedded wood posts with appropriate tamping tools
 - 1) Wood posts do not require concrete embedment
 - d. Concrete foundations
 - 1) Terminal and gate posts diameter: Post O.D. plus 9"
 - 2) Diameter of all others: 10"
 - 3) Extend concrete above grade surface and crown 1"
 - 4) Cure foundations 72 hours minimum before doing further work on post

C. Bracing

1. Brace each terminal, gate, and pull post
2. Brace corner posts in both directions
3. Brace line posts so straight run between braced posts is not more than 500'

D. Barbed Wire

1. Fasten barbed wire to line/corner/end posts by external wire ties
2. Stretch wire at each gate, terminal, and pull post
3. Adjust fence grade to fit ground contours
4. Stretch wires taut
5. Equalize tension on either side of posts

E. Gates

1. Install plumb and level in $\frac{1}{4}$ " in 10 feet
2. Adjust hardware to provide smooth operation and rigid security when closed and padlocked
3. Score or peen hardware attachments to make gates difficult to remove

3.3 SCHEDULE

A. Fence and Gates

1. Galvanized steel
2. 3'-8" high
3. 5 strands of barbed wire
4. All steel corner, end, pull, and gate posts set in concrete
5. All wood corner, end, pull, brace and gate posts shall be set in tamped earth in augered holes

END OF SECTION