Practice Specification
Fence (Code 382)
Permanent / Temporary Electric Power

Application of Fence (382) shall adhere to the New Mexico NRCS Conservation Practice Standard

Client / Operating Unit:		Tract:		Farm No.:	
Program:		County:		Field No.:	
Length:		Contract Item #:		Date:	

Electric Fence

For construction details, see **APPENDIX A, FIGURES AND ILLUSTRATIONS FOR ELECTRIC FENCES.** Power fences erected in areas of potential high public use should be properly signed.

WIRE

A. Type:

1. Permanent Electric Fence- Use smooth, single-strand, 12.5 gauge high-tensile strength (minimum 165,000 psi), type III galvanized or better. Due to electrolysis, and loss of electric current at barbs, **barbed wire will not be used on power fence.**
2. Temporary Electric Fence-polywire may be used **for temporary electric fence only**

B. Placement:

1. Two-wire power fences will have the top wire (hot wire) at least 26 inches above ground line and the bottom wire (ground wire) 8 to 12 inches below the top wire. The bottom (ground) wire will be connected either directly to the negative side of the energizer or to the same grounding rod(s) as the energizer. In situations where the earth provides an adequate ground to complete the circuit, both wires may be energized.
2. Three-wire power fences will have the top wire (hot wire) at least 26 inches above ground line. The remaining two wires will be spaced 8 to 12 inches apart. The middle wire (ground wire) will be connected either directly to the negative side of the energizer or to the same grounding rod(s) as the energizer. In situations where the earth provides an adequate ground to complete the circuit, all three wires may be energized.

C. Tension:

1. Tension on each wire shall be enough to maintain proper wire spacing between line posts. In-line strainers will be installed on each wire to maintain correct tension on each wire between all brace corners and gate assemblies. Tension springs may be used on each wire to maintain proper tension.

LINE POSTS

A. Material

1. Fiberglass or other compound type posts will be a composite of polypropylene, marble, wood fiber, fiberglass, and/or polymer resin that has been treated by thermosetting (heat treatment) and UV protected. Posts will be a minimum of 7/8 inch x 7/8 inch T-shape or 7/8 inch diameter round, with notches or holes located for proper wire spacing. Posts will be set to a minimum depth of 16

inches, except in sand there 24 inches may be required.

2. Step in style fiberglass posts with 7/8 inch x 7/8 inch minimum diameter, and/or 3/8 inch rebar posts may be used may be used **for temporary electric fence only.**
3. Wood posts will have a diameter of 2 inches or larger. Posts must be treated or made from rot-resistant wood. Eucalyptus wood (ironwood) and Insultimber posts are not recommended due to excessive breakage.
4. Steel posts will weigh one pound per foot, excluding anchor plate, and have a firmly attached anchor plate.

B. Placement requirements

1. Posts will be driven a minimum depth of 16 inches for permanent electric fence, except in sand where 24 inches may be required.
2. Step in style posts with 7/8 inch x 7/8 inch minimum diameter may be used for **temporary electric fence only** and driven to the top of metal spike.
3. For three-wire power fences, line posts are not to exceed 75-foot centers without stays, or 100-foot centers with stays on 50-foot centers between line posts.
4. For two-wire power fences, line posts are not to exceed 100-foot centers. Stays should not be used on two-wire power fences.

CORNER, GATE and BRACE ASSEMBLIES

A. Materials and design will meet the same requirements as general-purpose fence.

1. For two, or three-wire permanent electric fences, the diagonal style state highway corner may be used in place of the standard H-style brace assembly found in NM FOTG Section IV Conservation Practice Standards & Support Documents titled 382 NM SD Fence-9) State highway corner assembly 2016.
2. Brace timbers will measure minimum of 4 inch by 4 inch by 5 feet, 4 inch diameter by 5 feet, or 2 inch diameter by 6 feet steel pipe galvanized or painted.
3. In-line brace assemblies will be spaced at intervals no greater than 4,000 feet on level terrain.
4. Over uneven terrain, provide additional bracing as needed between corner, gate, end, and brace assemblies. Use properly anchored posts of adequate size with attached deadman in low spots. On rises, use wood posts of 4-inch diameter or larger to counteract downward pull.
5. **For Temporary Electric Fence Only,** the Steel T-Post Diagonal Corner Post shown in Figure 11 can be used.

FENCE ALIGNMENT

Construction should be as straight as possible between corners or turns. Construction along curved lines should be done in straight segments with in-line bracing at appropriate angles. Sound railroad ties or 5” x 7’ posts set at a depth of 2.5 feet are usually adequate for bracing these turns, especially where the angles are wide, and the fence segment is short.

FENCE FASTENERS and INSULATORS

A. Materials

1. On wood posts and steel posts, use porcelain, ceramic, or high-quality, UV-stabilized polypropylene insulator to which the wire can be attached. Polypropylene insulators shall be of the type that provides adequate spacing from the post to prevent current leakage.

2. Use only manufacturer's recommended insulators at all points where tension from the wire is transferred to corner, gate, end, and brace posts.

B. Attachment

1. Attach wire to porcelain and ceramic insulators with the appropriate manufacturer's clip or use 12.5 gauge, galvanized wire.
2. Attach wire to fiberglass posts with the specifically designed manufacturer's fastener or "clip" or use 15 gauge galvanized wire tied in a loop to attach wire to post. Instead of using "clips" or wire ties, holes may be drilled in fiberglass posts. Holes should be drilled at the proper spacing. The line wire is not to be threaded through pre-drilled holes but will be attached with wire or proper fasteners. High-tensile strength wire is attached to the post using a short length of galvanized wire that is looped around the line wire, threaded through the hole in the post, and wrapped back around the line wire on either side of the post ("Cotter key" style fastener).

C. Stays:

1. Only fiberglass stays will be used. They will be a composite of marble, fiberglass, and polymer resins that have been treated by thermosetting.

D. Energizers:

1. Electronic energizers or power-fence controllers shall be UL (Underwriters Laboratory) listed. Installation shall be according to manufacturer's recommendations. Additional requirements include:
   a. High output, low-impedance type
   b. Minimum output of 1 joule
   c. High-impact, weather-resistant case or otherwise adequately protected from weather.
   d. Solid-state circuitry (snap-in circuit panels).e. Any of the following power requirements;
      1. 110-volt
      2. 220-volt
      3. 12-volt battery (with or without solar charger)

2. The minimum accepted fence voltage for livestock control is shown below. Vegetation loads and electrical shorts will reduce the voltage resulting in the need for a higher output energizer. These figures are for guidance purposes only.

   cattle - 1600 volts

   sheep and hair goats - 2000 volts

   hogs, horses and meat goats - 1200 volts

F. Electrical Grounding:

1. All power fences must be properly grounded as per the energizer manufacturer's recommendation. **Inadequate grounding is the leading cause of power fences' failure to control livestock.**

G. Insulated cable:

1. To cross gates and other areas where the power fence is located some distance away from the energizer or controller, use insulated cable. Use galvanized wire with two layers of insulation for underground burial or overhead transmission. Where feasible use overhead transmission to reduce the incidence of short-circuiting, which can occur with underground burial. Do not use insulated copper wire due to corrosion factor and lack of tensile strength.

APPENDIX A FIGURES AND ILLUSTRATIONS FOR ELECTRIC FENCES

Construction Details — Any deviation from the shown design requires prior NRCS approval

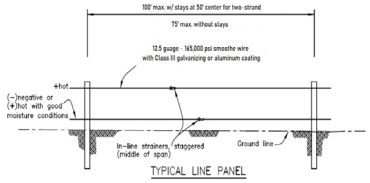

Figure 1: Typical 2 Stranded Line Panel

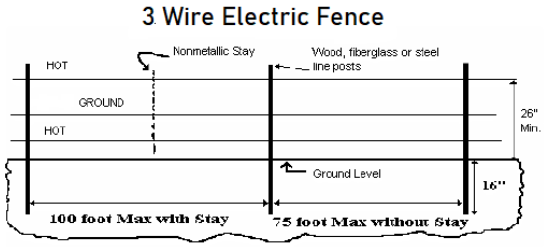

Figure 2: Typical 3 Stranded Line Panel

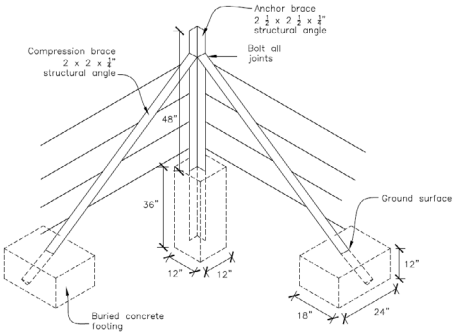

Figure 3: State Highway Angle Iron Corner Assembly

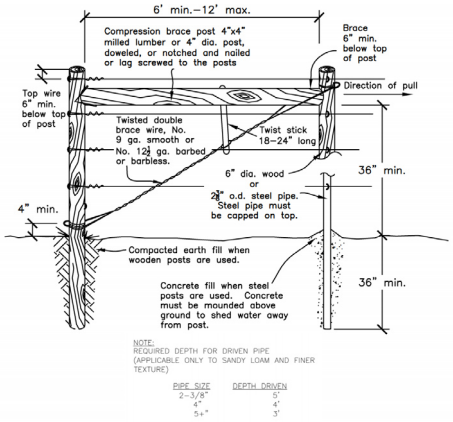

Figure 4: H-Brace Assembly

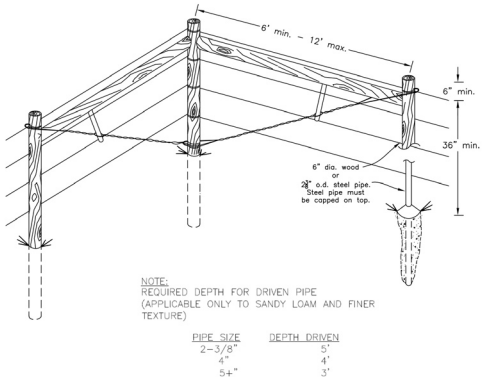

Figure 5: Single Span Corner Brace Assembly

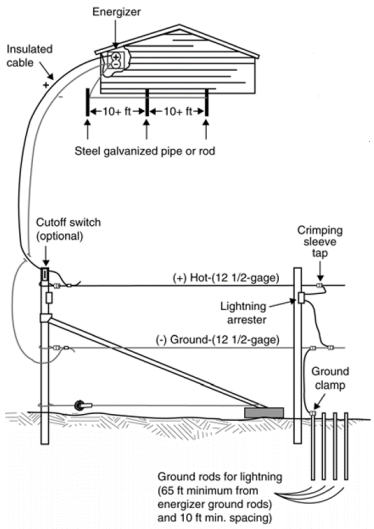

Figure 6: Typical set up of Enegrizer and Grounding System

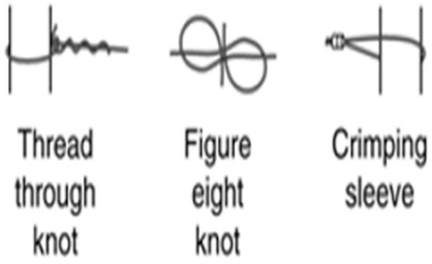

Figure 7: Methods of Tying HTS Wire

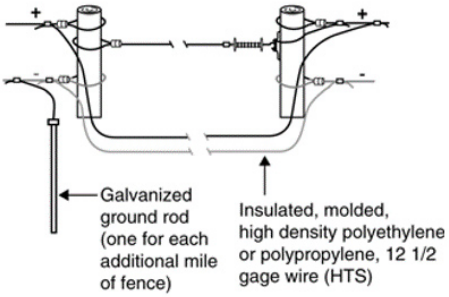

Figure 8: Typical Gate Assembly

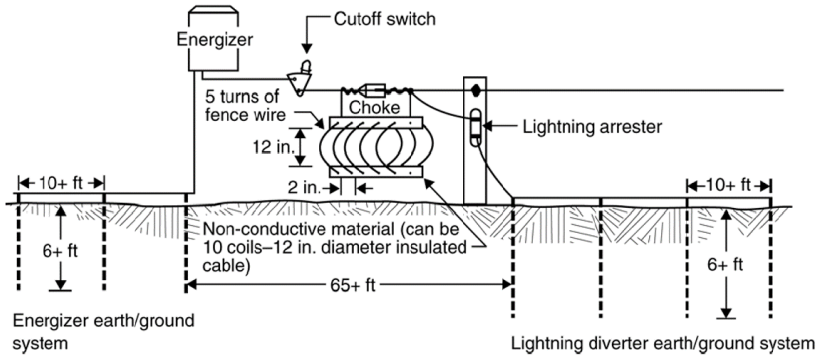

Figure 9: Typical set up of Enegyzer with cuttoff Cutoff Switch and Lightning Arrester

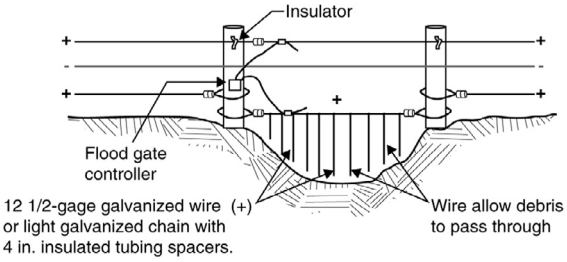

Figure 10: Electric Fence Flood Gate (Only

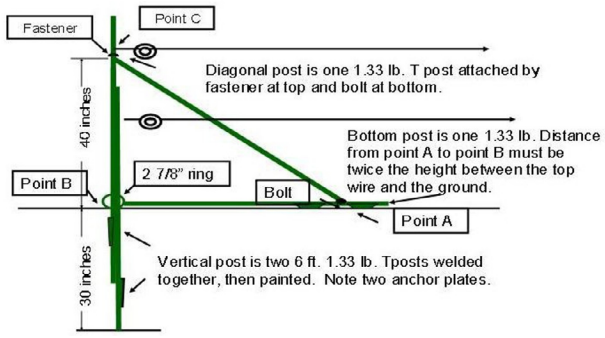

Figure 11: Steel T-Post Diagonal Corner Post

For Temporary Electric Fence)

Specific Site Requirements