Practice Specification
Fence (Code 382)
Electric Fence Specifications

SCOPE

Work must consist of constructing the fence, including any associated gates, water gaps, electrical system and other related items as required by the construction plans or job sheets.

LOCATION

Fence location is the responsibility of the landowner/user. Legal surveys may be needed for proper fence location.

The location of the fence must be as shown on the Fence Job Sheet (JS382e) or identified on a project map, and as staked in the field.

SITE PREPARATION

Remove all trees, stumps, brush and debris from the fence construction site and dispose of properly so that they will not interfere with construction or proper functioning of the fence. Removed material must not be deposited or buried in a draw.

Remove and properly discard all broken fencing material and hardware. All necessary precautions should be taken to ensure the safety of construction and maintenance crews.

Livestock Management

When using electric fences, use training areas to condition livestock to fences. Select a well-fenced area and construct an electric fence across or around the area to allow animals to come in contact with the electric fence. Normally, a minimum of 12 hours of exposure to the electric fence is required. Most animals will be fully trained in 48 hours. When animals approach the fence with caution, they are trained.

When using electric fence with sheep or goats, they must be clean shorn prior to being introduced to the fence.

MATERIALS

Fence Wire (Energized) and Fasteners

All wire must have, as a minimum, Class III galvanization.

Wire must be 12½ gauge, single strand, minimum tensile strength of 140,000 PSI, and 1,078 lbs. with minimum breaking strength.

All fasteners for insulators, etc. will be Class III galvanized or stainless steel.

Barbed wire is not to be electrified or insulated for electrification.

Wire Insulation

All wire installed underground must be double insulated, Class III galvanized, Hi-tensile strength steel 12½ gauge or larger wire.

Insulators for steel and other conductive material posts must be high-density polyethylene with ultraviolet stabilizer, and high-density polypropylene with ultraviolet stabilizer. Porcelain insulators must not to be used with electric fencing.

Insulators for end, corner, and angle braces must be high-density polyethylene with ultra-violet stabilizer or high-density polypropylene with ultra-violet stabilizer.

The use of insulated galvanized wire, Tube Insulator, or reinforced tubing/Wraparound Insulator for attaching fence wires around post of brace assembly is prohibited.

Red insulators must not be used due to their attractiveness to hummingbirds.

Posts and Stays

Used pipe such as ‘drill stem’ pipe and used railroad ties or utility poles may be used as posts if they are whole, sound, free of decay, have not been previously used as fence material, and so long as minimum diameter and length requirements are met for the type of fence to be constructed.

Used red cedar, black locust and Osage orange can be used as long as the posts are whole, sound, free of decay, and one inch larger in diameter than designated in Table A, for these species.

Wood posts will be treated with the materials and treatment levels as required in Table B and untreated wood used for post will consist of black locust, red cedar, Osage orange and red wood. These untreated wood posts will be referred to as, “native wood” posts in this standard.

Posts and stays must conform to size and material specifications in Table A, except as noted below.

Use of landscape timbers is prohibited in any part of a fence.

Metal pipe posts of equivalent strength to wood posts specified for corner, gate, end or pull assemblies, and brace posts may be substituted if a suitable means of attaching wires and braces to the posts is available.

Six (6) foot, or longer, fiberglass posts may be used in exterior fences; however, if the depth of placement is less than the depth required in Table A, every sixth post must be wood and the wood posts must meet size and depth placement specifications for exterior fences.

Manufactured fiberglass brace assemblies that contain fiberglass posts (minimum of 2 inches outside diameter and 1.5 inches inside diameter) and are attached to screw-in anchors in the ground are acceptable if installed according to manufacturer’s recommendations, and if the fiberglass component is guaranteed to last for 20 years without flaking, peeling, rotting, abnormally discoloring, splintering or deteriorating from sunlight and weather.

Live trees will be allowed for bracing or line posts only when application of standard wooden posts or steel posts is impractical because of restrictive soil depths due to parent material (rock, shale, etc.) and cannot be set or driven to the minimum depths required by the standard and specification. At no time will live trees constitute more than 10 percent of the line posts used.

Live trees used for bracing and line posts must have a diameter breast height (DBH) equal to or greater than those prescribed for normal wooden posts.

CONSTRUCTION

Wire Placement

The top wire of the fence must be 2 to 4 inches below the top of all wooden posts to prevent splitting when attaching insulators.

The top wire of the fence must be at least 1 inch below the top of all post materials other than wood.

Fence height will be defined as the average height from ground to top of wire at each fence post. Fence height of exterior/property line fences must be at least 54 inches, unless a lower height is allowed by law and is shown on the Fence Job Sheet (JS-382e). In no case will the height of the exterior/property line fences be lower than 48 inches.

Fence height of interior fences must be at least 2/3 of the shoulder height of the grazing animals.

Wire must be attached to line posts by a method that allows the wire to slip. Attach wire to fiberglass posts by loose clips or by running through holes in post. For wood or steel posts, attach wire to posts by insulators. Attach to stays with tight clips to hold stays in place.

Wires must be placed on the side of the post located closest to the livestock. Wires must be placed on the outside of the post(s) in a curve in the fence for structural stability.

All sections of fence must be started and ended at all corners, ends, braces, and pull assemblies.

- For dug corners/ends only one (1) corner may be pulled around using Hi-tensile single strand wire,

not to exceed 1320 feet.

- For driven corners/ends, fence less than 500 feet from end to end, a maximum of four (4) driven corners may be pulled around using Hi-tensile single strand wire.

Splicing of Hi-tensile wire will be accomplished by using a lap splice with 3 crimping sleeves or equivalent, “figure eight knot,” “square knot,” “Western-Union splice” or other acceptable tying methods.

Tying of Hi-tensile wire to end post will be accomplished using “thread through method” or an eye splice with two crimping sleeves with appropriate insulators as needed. (Reference standard drawing: Methods of Tying Hi-tensile Strength Wire).

Positive charged wires must be insulated when coming into contact with conductive material (i.e. posts, brace wires, trees, etc.).

When using live trees as posts, protection will be provided between the tree, wire and insulator by:

1. Use strips of treated wood, red cedar, Osage orange, black locust, fiberglass or rigid plastic. Strips should be at least 3½ inches wide and 6 inches in length and placed 3 inches above top and 3 inches below bottom of wire to prevent splitting or cracking; or
2. Use a 3/8 inch by 8-inch eye or “J” screw fastened directly to the tree to the depth of the threads. Then install an end or corner insulator assembly to the eye or “J” screw.

Number and Spacing of Wires

Exterior/property line fences must be constructed of at least five wires. Interior cross fences must be constructed of one or more wires, with the interior fence height being at least 2/3 of the shoulder height of the grazing animals.

Table C. suggests wire spacing and electrical polarity for different kinds and classes of grazing animals. When multiple wire systems are used, spacing of wires should be designed to ensure head electrical contact when an animal attempts to place head between the wires.

Exterior fence for small ruminants will be a minimum of 6 high tensile single strand wires.

In instances where ground moisture is high, an all-positive charged fence will normally suffice. If experience shows that the soil on site will dry to the point of not causing a shock to the animal, then a combination of positive (+) and negative (-) wires should be used.

One- and two-wire electric fences may be used for interior uses such as streamside fencing and subdividing pastures, but must not be used for property line or roadside fencing.

Wire Tension

In-line strainers/wire tighteners will be installed on each wire to obtain/maintain the correct tension. In-line strainers/wire tighteners will be installed in the center of wire pull sections when wire pulls are greater than 600 feet in length.

The tension on each wire must be maintained according to type of grazing animal or season. A tension spring, attached to the in-line strainer/wire tightener, will be used on at least one wire strand as a guide in maintaining proper tension. Tension of wires will be approximately 200 – 250 pounds.

Where electrified exterior/property line fences come into proximity of trees/woods, all wire strands will be installed with tension springs. Interior fences with 4 wires or greater that are located in proximity of trees/woods must have springs installed on the top 2 wires.

Post Placement

In undulating terrain, space post and stays so fence height is maintained.

Posts in depressions will be constructed so that they will not pull out of the soil. Two-inch diameter or smaller posts will be anchored or wooden posts set to 3 feet and tamped with CA-6 or driven posts.

Where topography in a section of fence abruptly changes, additional bracing may be needed where installed line posts may lean or pull. Install a double “H” pull assembly with wires tied off on middle post, single 7-inch diameter post driven 5 feet in the ground with wires tied off in each direction, or install end brace assembly at beginning and end of each land slope change.

Set or drive posts to depth as specified on plans or as outlined for the type of post in Table A.

Backfill around posts must consist of earth or Illinois Department of Transportation Gradation No. CA-6 coarse aggregate. The backfill must be placed in layers no thicker than 4 inches; each layer must be thoroughly tamped, and the posthole must be completely filled up to the ground surface on set posts.

Spacing of line posts and stays for permanent electric fence depends on terrain and number of wires. Maximum spacing are as follows (Refer to Table D):

Corners and Braces

Bracing is required at all corner, gate, pull, and end assembles in a fence. Notching of treated wood posts to retain wires or braces is prohibited in any part of a fence and is discouraged on native wood posts.

Brace assembly will be installed for water gaps separate from end assembly bracing for exterior fence.

“H” Braces, Double “H” Braces, or Angle Braces must be used in all fences. Refer to applicable IL NRCS Fence standard drawings for specifications on corners, angles, or brace assemblies.

Double “H” assemblies are required for all fences that have greater than six strands of Hi-Tensile wire.

Double “H” assemblies are required where sandy loams and coarser textured soils, or sites with restricted soil depth of less than 36 inches exist, a “dead-man,” or a screw-in anchor applied against the direction of pull. Refer to Web Soil Survey: soil reports, soil physical properties, and engineering properties.

In corrosive soils, screw anchors may be used in place of a dead-man, looping brace wire through eye of installed screw anchor. Refer to Web Soil Survey: soil reports, soil qualities and features, soil features.

Pull assemblies with brace (H assembly), wire must be tied off at pull assembly to the post opposite the direction of pull. (Refer to standard pull assembly drawing, IL ENG-810.)

Pull assemblies must be spaced at intervals not to exceed 1,320 feet (80 rods). Tie off all wires at pull assemblies and start new wires for the next section of fence.

Dug brace assemblies that are supporting gates must have an additional brace wire to support the gate, resulting in brace wires making an “X.”

The horizontal brace member must (as a minimum) be the equivalent of a 4-inch diameter post or standard weight (Schedule 40) galvanized steel pipe of at least 2 3/8-inch outside diameter installed in the upper 1/3 of the posts and below the top wire.

The horizontal brace member length must be between 8-foot and 2.5 times the height of the top fence wire. As a minimum, 3/8-inch diameter, Class I, Class II or Class III galvanized pins will be used to hold horizontal brace in place.

Schedule 40 galvanized steel pipe 2⅜ –inch (OD) diameter, can be used for end, corner and braces posts, and follow standard drawings.

Steel pipe will be primed and painted as an alternative to galvanizing.

A tension member (brace wire) composed of two complete loops of Class III galvanized 9-gauge smooth wire or Class III galvanized 12½ gauge Hi-tensile strength smooth wire may be used. Methods to tighten brace wires are strainer/wire tightener, twist stick, or the use of a lap splice with three crimping sleeves.

A single driven 7-inch minimal diameter post may be substituted for single “H” end, corner, vertical change bracing, and pull assembly. The posts must be driven a minimum of 5 feet into the ground. A single 7-inch minimum diameter post driven 5 feet deep will **not** be substituted for double H bracing.

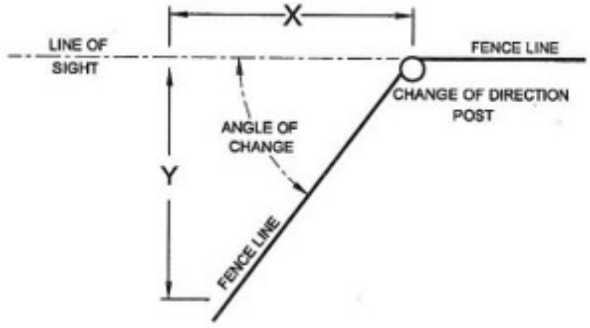
A single 6 inch diameter X 8 foot post may be substituted for 3-wire Hi-tensile fence corner, gate, end, and brace post assemblies. The post must be driven a minimum of 48 inches into the ground.

A single “H” brace assembly consisting of 7-inch diameter posts driven 5 feet in the ground with a 4-inch wood or 2 3/8 inch OD pipe by 9 ft. minimum cross member may be substituted for double “H” brace assembly.

Corner, gate, end, and brace post assemblies for 1- and 2-wire fences may use the options listed in Table A.

Changes in fence directions greater than 20 degrees, but less than 60 degrees require change of direction bracing as shown in standard drawing, IL ENG-823.The diagram below illustrates the angle of change concept and provides a table that can be used to determine/plan angles of change. Example: measure along fence line (X) 10 feet from post where direction changes, then measure out to fence line (Y). If distance to Y is 4 feet, then according to Figure 1, change of direction is slightly over 20 degrees.

Figure 1 Estimating Fence Line Angle of Change



FOR X = 10 FEET	
Y	ANGLE
1 FT. 9 IN.	10°
3 FT. 8 IN.	20°
5 FT. 9 IN.	30°
8 FT. 5 IN.	40°
11 FT. 11 IN.	50°
17 FT. 4 IN.	60°

Changes in fence directions from 60 to 90 degrees require a standard corner brace assembly.

Driven series of single posts should be used on a maximum of 10-foot centers when rounding a long, gradual fence curve greater than 20 degrees. Driven single posts must have a minimum diameter of 6 inches and be driven at least 4 feet into the ground with a 4 inch lean toward the outside of the curve.

Temporary Fence Materials

Products such as poly-wire/twine, poly-tape/ribbon, poly-rope, or net fence may be used; however their life span is too short to be considered permanent. Follow manufacturer’s directions for construction, use, and operation.

Posts such as pig-tail, step-n posts, and fiberglass posts with a diameter less than those listed in Table A may be used, for the temporary fencing purposes. Follow manufacturer’s directions for construction, use, and operation.

The number of wires and spacing will be designed to accomplish the desired result of the fence, with a fence height at least 2/3 of the shoulder height of the grazing animal. When multiple wire systems are used, spacing of wires should be designed to ensure head electrical contact when animal attempts to place head between wires.

Temporary fences may be attached to permanent fences to further subdivide pastures.

Electrical Grounding System

All electric fences must be grounded. The two type of systems are:

Earth-Return System – An energizer grounding system is used that relies on livestock’s contact with the earth for a ground and the resulting shock.

Wire-Return System – An energizer ground is used and at least one non-energized fence wire is connected to the non-energized side of the energizer, ensuring that a circuit is completed when an animal comes in contact with an energized wire and a grounded wire.

Non-electrified fence wires need to be attached to a ground rod at intervals between 1,300 to 1,500 feet, or according to manufacturer's recommendations.

Install at least one ground rod at all breaks in the fence such as gates, gaps, and flood control sections, or according to manufacturer's recommendations, Keep ground rods at least 25 feet from water lines, well casings, or other grounding systems. Do not use the grounding system for other existing applications. Do not connect the energizer into any existing ground system.

For best results, ground rods (galvanized pipe or rod ½ inch or larger in diameter) should be buried where soil remains moist. Drive sufficient 6- to 8-foot rods into the ground at least 10 feet apart and 6 to 8 feet deep to provide the required amount of grounding. Connect a continuous ground wire (12½ gauge, Class III galvanization) from the energizer to each pipe or rod with a galvanized steel or bronze clamp. Do not bury the clamps and ground connection wire below ground since that will cause it to corrode prematurely. Steel posts are not to be used as ground rods.

- Copper clad ground rods with copper wire may be used if the energizer terminals are stainless steel.
- If energizer terminals are not stainless steel, do not use copper due to corrosion at the connections and subsequent loss of electrical continuity.
- Use a copper clamp only with copper wire and copper clad ground rod.

For electric fences that cross high voltage transmission lines, fences must cross as close to perpendicular as possible and keep top fence wire below 6 feet. A single ground rod will be driven directly under the transmission power line, 6-8 feet deep. The ground rod will be connected to all of the ground wires in the fence. Additionally a lightening arrester will be added to the fence, at least, 100 feet from the ground rod location under the transmission power line. The arrester will be connected to all of the energized wires in the fence and to a single ground rod that will be driven at that location. These ground rods are to pick up any stray voltage from the transmission lines on the towers and avoid injury to people or livestock.

Energizer

Electronic energizers or power fence controllers must be installed according to manufacturer's recommendations and will meet the following minimum specifications:

- High voltage, low impedance that produces at least 5,000-volt peak output and a short pulse that is less than 300mAmps in intensity, finished within 0.0003 of a second and a rate of 35-65 pulses per minute.
- High impact, weather resistant case.
- Solid-state circuitry. Snap in service modules provides for fast field repair.
- Safety pace fuse, to prevent over-pulsing.
- 110-volt or 220-volt mains.
- 12-volt battery powered system capable of charging fence adequately for three weeks before replacing or re-charging battery.
- On fences electrified by battery-powered energizers requiring more energy than can be supplied by a dry-cell battery, a properly sized solar battery charger or solar array will be required.
- Suggested least voltage to control cattle is 1600, for sheep and goats is 2000, horses and hogs is 1200, and for deer, dogs and coyotes is 2500-3000.

All energizers must be properly grounded. Normally, three ground rods at the energizer are a minimum. Follow energizer manufacturer's recommendations for minimum grounding requirements. More ground rods may be needed for system to function properly. During dry weather, ground rods may need water applied to soil around them.

All energizers require an external lightning arrestor. Attach lightning arrestor to the fence wires. Install more ground rods for the lighting arrestor than for the energizer/charger. Lightning arrestor ground rods

must be placed at least 50 feet from the energizer ground rods. For additional lightening protection, you may install an induction loop type lightning choke in the fence line immediately between the energizer and lightning arrestor/fence. (Refer to Illinois NRCS Fence standard drawings for lightning protection and grounding.)

Surge/ Spike Protection

For protection of 120- or 240-volt energizers, a voltage surge/spike protector must be installed between the energizer and power supply. In addition, ground rod(s) should be installed at electric company's transformer pole (primary ground) and ground rod(s) installed at the electrical circuit breaker box (secondary ground), if they do not exist. **Check with local power supply company to ensure applicability and installation.**

Power Supply Cable

To cross gates and areas where electrical shocks to humans and livestock should be prevented (e.g. working facilities), use 12½ gauge double insulated Class III galvanized wire (insulation rated at 20,000 volts minimum).

For underground burial, place buried wire inside plastic pipe to decrease incidence of grounding.

When installing electric supply line wire overhead of openings for gates etc., height should be sufficient so as not to impede livestock or equipment movement. Wire for overhead transmission does not require insulation. **Do not use household insulated copper wire.**

Wire connections will be made with crimping sleeves, wire-crimping taps, split bolt, tap line, or flexible spring connector.

Gates and Water Gaps

On hinged gates, set hinge pins to hold gate in place so gate cannot be lifted off pins. When using gates of substantial weight, provide support to the free end of gates, when open or closed, to relieve constant pressure applied to post on hinged end of gate.

Electrified gates may be constructed of a single straight wire with a spring loaded insulated handle, or an expandable, coiled, Hi-Tensile, 12½ gauge wire attached to an insulated handle. Electrified braided cable, with gate handles attached, can also be used for gates.

The number of wires, or cable strands, must be determined by the fence objective and be at least equal to the number of wire strands in the fence. All exterior gates must be non-electrified when open. Overhead or underground transmission lines will carry electricity past the gate to the remainder of the fence.

For interior gates, it is recommended the gates must be non-electrified when open. Overhead or underground transmission lines will carry electricity past the gate to the remainder of the fence.

Fencing across areas of concentrated flow should include water gaps or flood gates. For areas with very little water and only occasional flooding, a breakaway fence or water gap will be sufficient. Areas with regular flooding will require floating gates or panels, or water gates. Refer to applicable IL NRCS Fence standard drawings for water gaps and floodgates.

For depressions less than 16 feet wide, install fence across the depression with no braces.

For depressions over 16 feet wide, construct a fence that will breakaway only in the depression and leave the rest of the fence undamaged. Construct a brace assembly on each side of the depression. Construct a fence in the depression with the brace 6-inches from the brace assembly for the fence, which allows the depression fence to breakaway without damaging the main fence. Attach breakaway fence section to the main fence with light gauge wire. Refer to applicable Illinois NRCS Fence standard drawings for more details about fencing across depressions.

If the depression has regular flooding, use a swinging or floating panel. The panel must be free to swing when water comes through. Construct horizontal cross braces on the down-stream side of the vertical

panel(s) in order to provide for a smooth edge for debris to slide by on the upstream side. Using only wire panels will result in debris catching on the panel and clogging the panel, resulting in failure. Refer to applicable Illinois NRCS Fence standard drawings for more details about floodgates or picket fences across a stream.

An electrified floodgate may be used in lieu of a non-electrified gate if desired. The electrified floodgate is constructed by stretching an electrified wire across the drainage above high water flow level. Attach droppers of 12½-gauge Hi-Tensile fence wire, 9-gauge wire class III galvanized, or drop chains from the electrified wire at a horizontal spacing of 6-inches, stopping above average normal water level. Use crimping sleeves or spacers to ensure drops stay in position. Connect gate to electric fence with double-insulated cable through a cut-off switch and floodgate controller. Refer to applicable IL NRCS Fence standard drawings for more details about electric floodgate.

UTILITIES

The landowner and/or contractor must be responsible for locating all buried utilities in the project area, including drainage tile and other structural measures.

Prior to all digging and soil disturbance landowner and/or contractor will call JULIE.

Check with appropriate utilities prior to erecting electrified wires or ground wires near overhead power lines, telephone wires, or radio antennas. Refer to the section Electrical Grounding System in the CONSTRUCTION SPECIFICATION FENCE (Electric Fence).

SAFETY

Use of tools specifically designed for handling and constructing Hi-Tensile fence is recommended for safety and ease of installation. Consider all safety recommendations and cautions from suppliers, distributors, manufacturers, installers, dealers, power companies, electricians, and other professionals, when constructing fences.Remove and properly discard all broken fencing materials and hardware. All necessary precautions should be taken to ensure the safety of construction and maintenance crews.

TABLE A: Acceptable post materials and installation depths for electrified fence.

Function	Material Type	Min. Dia. in Inches	Notes

Line Posts and Stays (Posts must be set or driven at least 24 inches in the ground, except 18 inches for 1 and 2 wire fence posts in soil which is not sandy loam or coarse textured. See note for depth of T posts). Except for 8 foot deer fence.	Australian ironwood (eucalyptus)	2	
	Fiberglass reinforced solid round rod	2/3	With UV inhibitors
	70% polypropylene/30% wood	1 1/8	With UV inhibitors, color pigments
	Reinforced PVC T-post	1 1/2" cross-section minimum	With UV inhibitors
	Black locust, red cedar or redwood[1,2]	3	At least one-half of the diameter of the red cedar or redwood post must be heartwood.
	Osage orange 2		
		3	
		*	
Posts for 3 to 6 wire corners, gates, end or pull assemblies, and brace post assemblies	Wood posts, including black locust, red cedar, redwood, Osage orange, or pressure-treated pine or other wood of equal life and strength.[1,2]	5 (3 wires) 6 (4 – 6 wires)	Posts for "H" assemblies must be driven or set at least 36 inches deep or below the frost line.
		6 (3 wires)	Single post driven 4 foot into the ground.
		7 (4 - 6 wires)	Single post driven 5 foot into the ground.
Double H bracing required for all 8 foot deer fence. Corner, gate, end, pull assembly and brace post assemblies	Wood posts, including black locust, red cedar, redwood, Osage orange, pressure-treated pine or other wood of equal life and strength with appropriate knee, deadman, angle, or "H" brace.[1, 2]	6 (7 or more wires)	All wood posts need set or driven 4 foot into the ground. This includes both line and brace posts.
Posts for 4+ wire fence corner, gate, end, and brace post assemblies	Manufactured fiberglass brace assemblies that contain fiberglass posts (minimum of 2 inches outside diameter and 1.5 inches inside diameter) and attached to screw in anchors with appropriate angle bracing.	2	Must be installed per manufacturer's recommendations, fiberglass component guaranteed to last for 20 years without flaking, peeling, rotting, abnormally discoloring, splintering, or deteriorating from sunlight and weather.

Posts for 3 wire fence corner, gate, end, and brace post assemblies	Manufactured fiberglass brace assemblies that contain fiberglass posts (minimum of 2 inches outside diameter and 1.5 inches inside diameter or 2-inch diameter) and attached to screw in anchors with appropriate angle bracing.	2	Must be installed per manufacturer's recommendations, fiberglass component guaranteed to last for 20 years without flaking, peeling, rotting, abnormally discoloring, splintering, or deteriorating from sunlight and weather.
Posts for 1 and 2 wire corners, gates, end or pull assemblies, and brace post assemblies	Standard "T", "Y", or "U" shaped steel posts (hot dip galvanized, painted with high-grade weather resistant steel paint, or enameled and baked) with appropriate knee, deadman, angle, or "H" brace.	*	*** Weight must be at least 1.33 pounds per foot of length with the weight of the anchor plate.** Posts must be new. Posts must be set solidly in the ground so that the top of the anchor plate is below the ground surface.
	Wood posts, including black locust, red cedar, redwood, Osage orange, pressure-treated pine or other wood of equal life and strength, with appropriate knee, deadman, angle, or "H" brace.[1,2]	3 1/2	Posts must be set at least 36 inches in the ground.
		5	Posts must be set to a depth in the ground at least equal to the height of the post above the ground.
	Wood posts, including black locust, red cedar, redwood, Osage orange, or pressure treated pine or other wood of equal life and strength, without any bracing.[1, 2]	4	Driven to a depth of 48 inches
	Steel pipe without any bracing.	2 3/8	Posts must be set to a depth in the ground at least equal to the height of the post above the ground.
	Manufactured fiberglass brace assemblies that contain fiberglass posts (minimum of 2 inches outside diameter and 1.5 inches inside diameter or 7/8 inch diameter) and attached to screw-in anchors with appropriate angle bracing.	2	Must be installed per manufacturer's recommendations, fiberglass component guaranteed to last for 20 years without flaking, peeling, rotting, abnormally discoloring, splintering, or deteriorating from sunlight and weather.

[1]At least one-half of the diameter of the red cedar or redwood post must be heartwood. Pressure treatment will be according to Table B.

[2]Used red cedar, black locust and Osage orange can be used as long as the posts are whole, sound and free of decay and 1 inch larger in diameter than designated in Table A.

TABLE B. Allowable pressure treatment for wood posts. Pressure treatment will conform to American Wood Preservers Association (AWPA) Standard U1, Use Category 4 (UC4) or higher

Treatment Type	Pressure Treatment Level
Pentachlorophenol (PCP)	UC4 = 0.4 lbs/ft^3
Creosote and creosote solutions	UC4 = 6.0 – 8.0 lbs/ft^3
Chromated Copper Arsenate (CCA)	UC4 = 0.4 lbs/ft^3
Alkaline Copper Quat (ACQ)	0.4 lbs/ft^3
Micronized Copper Quaternary (MCQ)	UC4 = 0.34 lbs/ft3
Micronized Copper Azole (MCA)	UC4 = 0.15 lbs/ft3
UC4 = A – Ground contact or fresh water. B – Ground contact, fresh water or important construction components. C – Ground contact, fresh water or critical structural components.	

TABLE C: Suggested number of wires, animals, fence height, wire spacing and wire charge

Wires	Animal	Fence Height in Inches*	Spacing from Ground in Inches
1	Cattle	26 to 32	26 to 32+
	Hogs	12	12+
2	Cattle	24 to 36	18 to 24+/-, 24 to 36+
	Cattle,Sheep,Goats	20 to 30	8 to 10+, 20 to 30+
	Sheep,Hogs	18 to 20	8 to 10+, 18 to 20-
		18	6+, 18+
3	Cattle w/calves, Division Fences	34 to 44	11 to 18-/+, 23 to 30-, 34 to 44+
	Sheep, Goats	32	10+, 20+/-, 32+
	Cattle, Horses	46	20+, 34+/-, 46+
	Hogs	18	6+, 12+, 18+
4	Cattle, Sheep	30 to 35	5 to 7-, 12 to 15+, 18 to 24-, 30 to 35+
	Cattle	40	8+/-, 18+, 28+/-, 40+
	Sheep, Goat	30 to 38	6 to 16+/-, 12 to 22+, 18 to 30+/-, 30 to 38+
5	Cattle	50*	10+, 20+/-, 30+, 40+/-, 50+
	Horses	54	12+, 22-, 32+, 42-, 52 to 54+
	Sheep, Goats	48*	6 to 7+, 11 to 13-, 18 to 21+, 26 to30-, 35 to 40+
6	Sheep, Goats	48*	5 (neutral), 10 to 11+, 15 to 17-, 21 to 24+, 28 to 32-, 36 to 46+
7	Sheep, Goats (predator)	54*	6+, 12-, 18+, 26-, 34+, 44-, 54+
8-14	Deer, Elk	96*	12+, 18-, 24+, 30-, 36+, 42-, 48+, 54-, 60+, 66-, 72+, 78-, 84+, 90-, 96+

Wires	Animal	Fence Height in Inches*	Spacing from Ground in Inches
+ = positive charged wire, - = ground wire, and +/- = positive or ground wire * exterior/property line fences = 54 inches, unless a lower height is allowed by law and as shown on the Fence Job Sheet (JS-382e). * Exterior fence for small ruminants will be a minimum of six hi-tensile single strand wires.			

Table D. Spacing of fence posts and stays relative to the number of line wires

Electric Fences, Erected in Straight Lines Over Level Terrain			
Number of line wires	Maximum Spacing of Primary Line Posts		Maximum Stay Spacing
	Without Stays	With Stays	
1	90’	-	-
2	50’	100’	50’
3	50’	100’	50’
4	30’	90’	30’
5	30’	-	-
6	30’	-	-

Specific Site Requirements