

**NATURAL RESOURCES CONSERVATION SERVICE**  
**KENTUCKY CONSERVATION PRACTICE STANDARD**

**FENCE**

(Feet)

Code 382

**DEFINITION**

A constructed barrier to animals or people.

For permanent containment fence construction, refer to Table 1 of this standard. For permanent deterrent fence refer to Table 2. For temporary (portable) fence systems see Table 3.

**PURPOSE**

This practice facilitates the accomplishment of conservation objectives by providing a means to control movement of animals and people, including vehicles.

Fences shall be positioned to facilitate management requirements. Ingress/egress features such as gates and cattle guards shall be planned. The fence design and installation should have the life expectancy appropriate for management objectives and shall follow all federal, state and local laws and regulations.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice may be applied on any area where management of animal or human movement is needed.

Height, size, spacing and type of materials used will provide the desired control, life expectancy, and management of animals and people of concern.

Gates installed or constructed must equal or exceed the fence construction materials and workmanship with regard to livestock control and durability.

**CRITERIA**

**General Criteria Applicable to All Purposes**

Fencing materials and type and design of fence installed shall be of high quality and durability. The type and design of fence installed will meet the management objectives and topographic challenges of the site. Based on management and site location needs, fences may be:  
 Permanent containment fence (contain all target livestock classes), Permanent deterrent fence (principal barrier for select livestock classes), or Temporary portable fence (feasible to re-locate when needed).

Bracing is required at all corners, gates, ends and at all angles greater than 20 degrees. (In an 8-foot long section, 20 degrees is approximately 3 feet off the straight line).

**CONSIDERATIONS**

Improve resource management by locating fences where they separate areas with differences in forage seasons of growth and palatability, land use, topography, or production potential.

Pasture/paddock divisions shall be consistent with grazing needs as projected by a grazing plan developed under Kentucky Conservation Practice Standard *Prescribed Grazing, (Code 528A)*.

Locate fences to allow livestock access to water and handling facilities.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

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The fence design will consider topography, soil properties, aesthetics, human access type, safety, management of livestock, moisture conditions, wildlife movement, durability of materials, flooding, and stream crossings.

Fences across gullies or streams require special braces and designs. Breakaway fences or swinging water gaps allow debris and water to flow past the fence line without destroying the fence adjacent to the stream or gully. Swinging or floating water gaps should span running streams.

Place wood line posts in dips and on rises, then follow recommended spacing for different fence types.

Post spacing in shallow soils may vary with additional stays installed to maintain wire spacing. Use a probe to locate desirable post sites.

A double-brace assembly may be required at ends and corners for fences in poorly drained soils.

Electric fences must be adequately grounded to ensure proper flow of electricity. Typically that would mean utilizing three ground rods a minimum of six feet long, at least ten feet apart, with continuous wire run through the ground rod clamps to the fence charger. Use "like materials" in grounding systems.

Lightning arrestors or spark gap shall be installed as needed to limit damages to energizer; and avoid causing injury or death to animals and people.

Electric fences must have access to a dependable power supply, main line, solar power panel, or easily exchanged and properly sized deep cycle batteries. Electric fences must have adequate voltage, at all points along the fence, to repel the animals being controlled. A ground rod should be installed at electric company's transformer pole (primary ground) and another ground rod installed at the electrical circuit breaker box (secondary ground), if they do not already exist. Contact the electric company for service.

Where applicable, cleared rights-of-way may be established that would facilitate fence construction and maintenance. All necessary erosion control measures will be applied to any cleared areas.

When possible, install fences in locations that will minimize maintenance, avoiding floodprone areas, irregular terrain such as gullies and/or water

crossings, and locations susceptible to damage from tree or limb fall.

When planning and constructing a fence on steep slopes, locate fence where soil erosion from livestock trailing will be minimized.

When planning and constructing a fence in flood prone areas, consider using high tensile electric fence. Construct the fence with the fewest posts and wires as needed to control the animals of concern. Place the bottom wire as high as practical.

Consider wildlife movement needs when locating fences.

When using trees in lieu of fence posts, anchor a pressure treated 2X6 to the tree with galvanized screws or nails. Attach wire to the 2X6 instead of directly to the tree so the tree will not grow around the wire. Do not utilize high-value trees planned for harvest. Utilize trees for no more than 20% of line post needs in any fence.

## PLANS AND SPECIFICATIONS

Plans and specifications are to be prepared for specific sites. Plans and specifications for installing fences shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve all of its intended purposes. See attached Construction Specifications for: Containment Woven Wire Fence, Containment Barbed Wire Fence, Containment High Tensile Smooth Fence (electric), Containment High Tensile Smooth Fence (non-electric), and Alternatives to Conventional Wire Fencing.

## DOCUMENTATION AND VARIATIONS

The completed work is to be checked and documented to verify that the practice is complete according to NRCS standards and specifications. Supporting data for documentation included those features of this practice that can be measured and observed such as: length of fence installed, type of fence and materials installed and signature of the performance checker

Variations from the above materials and installation specifications may be approved by the

responsible technician provided it is determined that such variation would result in an installation that would equal or exceed a fence installed according to this specification.

Such variations will be recorded with the reasons why it will result in an installation that will meet or exceed one installed in accordance with the specifications.

## OPERATION AND MAINTENANCE

Regular inspection of fences should be part of an on-going management program. Inspection of fences after storm events is needed to facilitate the function of the intended use of the fence. For electrified fence, use a voltage tester to ensure adequate charge is being discharged along the entire fence span. Keep heavy vegetation away from fences, especially electric fences to avoid loss of charge. Installation of cut-off switches will assist in maintenance and repair of electric fences.

Maintenance and repairs will be performed as needed. Retain and properly discard all broken fencing material and hardware to prevent ingestion by animals or injury to equipment, people, or animals. Precautions should be taken to ensure the safety of construction and maintenance crews.

## REFERENCES

Gallagher Power Fence Systems, Quality Down the Line.

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**TABLE 1: CONTAINMENT FENCE (PERMANENT)**

TYPE FENCE	TYPICAL WIRE STRANDS 1/	TYPICAL TYPE OF WIRE	MAXIMUM DISTANCE BETWEEN PULL ASSEMBLIES 2/	MAXIMUM LINE POST SPACING 3/	MINIMUM LINE POST DIAMETER (D) POST LENGTH (L) AND DEPTH (d)
Barbed Wire	5 or More Wires, Min. 42" high	15.5 Gauge Type III Galvanized or ZA Class 20 or higher	<= 1,320' Apart 3 1/2" Horizontal Brace 6-8" Brace and Corner Posts, 8' L	14' Apart 18' with Stays on 9' Spacing	Wood 3-4" D, 6' L, 24" d Steel 5.5' L, 18" D
Woven Wire	>=32" High Woven + (1 or 2 Barbed Wires or Electric High Tensile Min.42" High	12.5 Top and Bottom-others 14.5 Gauge or H.T. Woven – Type III Galv. or ZA class 20 or higher	<= 330' Apart 3 1/2" Horizontal Brace 6-8" Brace and Corner Posts, 8' L	14' Apart Conventional w.w. 25' Apart High Tensile w. w.	Wood 3-4" D, 6' L, 24" d Steel 5.5' L, 18" D
High Tensile Electric or H.T. Woven	4 or More Wires, Min. 42" High	12.5 Gauge 170,000 psi Type III Galv. or ZA class 20 or higher	<= 2,000' Apart 3 1/2" Horizontal Brace 6-8" Brace and Corner Posts, 8' L	75' Apart with battens every 35'	Wood 3-4" D, 6' L, 24" d Steel, High Density Wood, Fiberglass 5.5' L, 18" D
High Tensile Non-electric	7 or More Wires, Min. 42" High	12.5 Gauge 170,000 psi – Type III Galv. or ZA class 20 or +	<= 2,000' Apart 3 1/2" Horizontal Brace 6-8" Brace and Corner Posts, 8' L	12' Apart or 15' with Light Post or Stays Between	Wood 3-4"D, 6' L, 24" d Steel, High Density wood, Fiberglass 5.5' L, 18" D

1/ Installed wire spacing will be as needed to contain the livestock. 2/ Corner and brace posts shall be 6" minimum and driven or set in the ground and tamped around 36" deep or set in 30" of concrete. 3/ Closer post spacing may be needed to accommodate certain situations such as steep landscapes, fragile soils, deer crossings and other concerns.

**TABLE 2: DETERRENT FENCE (PERMANENT)**

TYPE FENCE	TYPICAL WIRE SPACING 1/	TYPICAL TYPE OF WIRE	MAXIMUM DISTANCE BETWEEN PULL ASSEMBLIES 1/	MAXIMUM LINE POST SPACING 2/	MINIMUM LINE POST DIAMETER (D) POST LENGTH (L) AND DEPTH (d)
Barbed Wire	3-4 Wires, 42" High	15.5 Gauge Type III Galvanized or ZA class 20 or higher	<= 1,320' Apart 3 1/2" Horizontal Brace 6-8" Brace and Corner Posts, 7' L	14' apart / 18' apart w/ stays for conventional wire. 30' w/ stays for h.t.	Wood 3-4"D, 6' L, 24" D Steel 5.5' L, 18" D
High Tensile Electric	1-3 Wires, Min. Ht. of Animal's nose at rest (Cows 26" to 32")	12.5 Gauge 170,000 psi Type III Galvanized or ZA class 20 or higher	<= 4,000' Apart 3 1/2" Horizontal Brace 6-8" Brace and Corner Posts, 8' L	75' Apart	Wood 3-4"D, 6' L, 24" d Steel, High Density wood, Fiberglass 5.5' L, 18" D

1/ Actual installed wire spacing will be as needed to control the livestock. 2/ Corner and brace posts shall be 6" minimum and driven or set in the ground and tamped around 36" deep or set in 30" of concrete. 3/ Closer post spacing may be needed to accommodate certain situations such as steep landscapes, fragile soils, deer crossings and other concerns.

**TABLE 3: TEMPORARY FENCE (PORTABLE)**

<b>TYPE FENCE</b>	<b>TYPICAL WIRE SPACING</b>	<b>TYPICAL TYPE OF WIRE</b>	<b>MAXIMUM DISTANCE BETWEEN PULL ASSEMBLIES</b>	<b>MAXIMUM LINE POST SPACING</b>	<b>MINIMUM LINE POST DIAMETER (D) POST LENGTH (L) AND DEPTH (d)</b>
Polytape or Polywire	1-3 wires/tapes, Ht. of Animal's nose at rest (Cows 26" to 32")	Poly and wire braided strands or tape. Must carry sufficient charge to deter animals.	No brace assemblies or permanent posts required unless site conditions warrant.	Tread-in posts or permanent as terrain dictates.	Tread-in posts or permanent as terrain dictates.
High Tensile Electric	1 Wire, Ht. of Animal's nose at rest (Cows 26" to 32")	12.5 Gauge 170,000 psi Type III Galvanized or ZA class 20 or higher	No Brace Required Unless Site Conditions Warrant, However, Tie off Wire Every 4,000' or less.	75' Apart	Wood 3-4"D, 6' L, 24" d Steel, High Density wood, Fiberglass 5.5' L, 18" D