



# Fences

Alabama Job Sheet No. AL-382-1



## Definition

Fences are a constructed barrier to livestock, wildlife, or people.

## Purposes

This practice may be applied as part of a conservation management system to facilitate the application of conservation practices that treat the soil, water, air, plant, animal, and human resource concerns.

Locate fences to help facilitate management of different land uses and special management areas within land uses such as ecological sites, pasture types, riparian areas, and critical eroding areas, etc.

For domestic livestock, install fences in areas that will best facilitate the handling, feeding, watering, and movement of livestock managed.

For horses, consider avoiding the use of barbed wire and steel Tee (T) posts when possible in order to minimize potential injury, especially when areas of confinement are small.

Consider introducing animals to electric fencing in a designated training facility. Normally, a minimum 12 hour exposure to the electric

fence is required. Most animals will be trained in 48 hours.

When installing fences in areas of heavy wildlife activity (such as riparian areas), consider wire types and spacing that may benefit wildlife.

In order to minimize maintenance and installation costs, where practical, avoid areas such as rough and irregular terrain, excessive trees and brush, areas with long-standing water, and water crossings.

Consider fencing along the contour to minimize livestock trailing and subsequent erosion. When installing interior fences to facilitate livestock movement, temporary fences should be considered in order to minimize costs and allow for system flexibility.

## Fence Types

There are several types of fences that can be used. They can be designed and installed as permanent or temporary. The overall effectiveness of each type of fence and the costs for installation and maintenance depends on the type of animal controlled, the number and size of wires used, post types, and spacing.

**Permanent fence types** are designed to be in place for a period of many years with minimal maintenance requirements. Therefore, components are designed for a life span of about 20 years. Permanent fences are used for exterior (boundary) fencing of property and fencing of specific land uses (such as cropland) as well as for interior division fencing.

**Temporary or moveable fences** are designed to be in place for short periods of time. Temporary fences are best used as division fences for controlled grazing and fencing of areas where livestock exclusion is needed for short periods.

**Standard post (treated wood posts or metal "T" posts) and wire fences (smooth barbed wire or high-tensile)** are the most common fence type used for controlling all types of livestock. They are suitable as permanent fences in areas that receive moderate to heavy pressure from livestock. They are typically barbed wire or high tensile smooth wire.

**Suspension fences** are a low cost variation of the standard post and wire fence and can be used as either boundary or interior cross fencing. They are typically used on large pastures with level terrain. They can be either barbed wire or smooth wire. The fence design allows it to sway (move) in the wind and when contacted by animals.

**Both hi-tensile and non hi-tensile woven, net, and mesh wire fences** are best suited in areas where tight control is necessary such as with sheep, goats, horses, hogs, people, or predator control. These fences consist of multiple rows of horizontal smooth wires held apart by vertical wires, usually of different sizes and configurations. Space between wires varies depending on designated use.

**Permanent energized (electric) fences** provide a low cost alternative and more flexibility to the other types of fences. They are mostly used for interior cross fencing but can also be used for boundary fences. They can be powered by a variety of types of energizers. Livestock must be trained to respect electric fences if they are to be effective.

**Temporary electric fences** are only used for interior cross fencing and areas where pressure from livestock is not heavy. They can be easily attached to permanent fences and can be of high tensile smooth wire, or polyethylene twine and/or tape.

**High tensile, non-energized fences** are suitable as permanent fence in areas that receive moderate to heavy pressure from livestock but require more strands of wire than barbed wire to maintain the same level of control. These fences are safer for domestic animals, especially horses, and wildlife, than are the barbed wire fences.

**Other fence types** include chain link, pipe, vinyl, galvanized panel, and cable fences. These fences are generally more expensive to install and maintain and are typically used around corrals and homesteads. They may be used to restrict access to unsafe areas such as lagoons, abandoned mines, and other unsafe or sensitive areas. They are not addressed in this job sheet or the fence standard.

## References

- [NRCS AL Conservation Practice Standard: Fence \(382\)](#)
- [Construction Specifications](#)
- [Fence Drawings](#)

"The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer."

07-07

Table 1. Barbed Wire and Electric Fence Minimum Requirements for Cattle or Horses

Type	Gauge	Description	Minimum # of Strands	Maximum Post Spacing With Stays	Maximum Post Spacing Without Stays	Minimum Height of Top of Wire	Notes
Barbed	12 1/2	Galvanized double strand	3 for cross fencing otherwise 4	30'	16'	48"	All fences: Bottom wire set a minimum of 14" above the ground with middle wires at 10" to 14" apart. For four or more strands: top wire set at least 48" above the ground. Maximum stay spacing is 15'. Barbed wire may be used for horses, but smooth wire is recommended.
	15 1/2	High tensile steel class III galvanized, double strand	Same	30'	16'	48"	
Barbed (suspension)	See above	See above	See above	100'	na	48"	Stays should be placed every 33' to 50'. Place stays so that they do not touch the ground, allowing the fence to sway. Fences are typically located where ground is nearly level for long distances.
Woven (net/mesh)	12 1/2 top and bottom strands, 14 1/2 intermediate, and stay wires not more than 12" apart	Galvanized coating		16'	na	42"	At a minimum 32" woven wire set at ground level with one strand of barbed wire set 3" to 4" above the woven wire, and one set 10" above the first wire. Barbed wire spacing may be closer if woven wire height is higher. Total height of the woven wire and wire strands should be at least 42".
	14 1/2	High tensile steel class III galvanized		25'	na	42"	

Table 1  
(continued)

Type	Gauge	Description	Minimum # of Strands	Maximum Post Spacing With Stays	Maximum Post Spacing Without Stays	Minimum Height of Top of Wire	Notes
Smooth high tensile electric or non electric	12 1/2	High tensile steel with tensile strength of 170,000 psi and class III galvanized or aluminum coating	2	150'	50'	30" to 40"	Bottom wire should be 14" to 24" above the ground. One wire should be hot and the other the ground. If additional wires are used, then evenly space wires between the bottom wire and the top set at 48". One or more wires should be grounded. Where moist conditions prevail, one strand of hot wire may be used. For boundary fences, use at least 5 strands with the top wire set at 50" to 60" above ground and the bottom wire set 10" to 20" above the ground.
Temporary	Electroplastic twine or tape	Twine or tape will be woven with at least 6 strands of aluminum or stainless steel strands.	1	na	na	See notes	Electroplastic twine or tape with 6 strands of wire may be run up to 1/2 mile. If 9 strands are used, the wire may be run up to a mile. Two strands will be needed under dry conditions. One strand should be positive (+) and the other strand negative (-) or the ground. Place posts as needed and for the intended purpose. Place at least one wire at nose height.
Temporary	14 gauge	Smooth steel or aluminum	1	na	na	See notes	

Table 2. Barbed wire, woven wire and electric fence requirements for hogs, goats and sheep.

Type	Gauge	Description	Minimum # of Strands	Maximum Post Spacing With Stays	Maximum Post Spacing Without Stays	Minimum Height of Top of Wire	Notes
Barbed	12 1/2	Galvanized double strand	5	30'	16'	36"	All fences: Bottom wire set 4 to 6 inches above the ground with middle wires at 12", 18", and 26" above ground. Maximum stay spacing is 10'.
	15 1/2	High tensile steel class III galvanized, double strand	5	30'	16'	36"	
Woven (net/mesh)	12 1/2 top and bottom strands, 14 1/2 intermediate and stay wires not more than 12" apart	Galvanized coating	na	16'	16'	39"	At a minimum 39" woven wire set at ground level.
	14 1/2	High tensile steel class III galvanized	na	25'	25'	39"	
Electric smooth	12 1/2	High tensile steel with tensile strength of 170,000 psi and class III galvanized or aluminum coating	5	150'	50'	36"	Bottom wire should be no higher than 6" above the ground. Wires should alternate between ground and hot. Remaining wires should be spaced at 12", 18", and 26" above ground. Stays should be evenly spaced 50 feet apart or closer.

Table 3. Posts

Type	Use	Minimum Requirements	Minimum Depth	Notes
Wood	Corner/ gate	5" diameter	30"	<p>Must be sufficient length needed to meet fence requirements. Wooden posts must be treated with creosote coal tar, pentachlorophenol, acid copper chromate, amoniacal copper arsenate, chromated copper arsenate or alkaline copper quat (ACQ). Do not allow aluminum components to contact ACQ treated posts due to corrosion. Posts may also be made from red cedar heartwood, pine heartwood, Osage orange, black and honey locust, catalpa or mulberry. Red cedar heartwood posts shall be at least 3" in diameter. Corner/gate/pull posts will be set 30" deep in concrete in 12" wide hole or set 36" deep without concrete.</p> <p>Note: For a 5" post set 30" in the ground in a 12" wide hole, approximately 2.7 (80 lb.) bags of concrete will be needed.</p>
	Pull	4" diameter	30"	
	Line	3" diameter	24"	At least 2" of wood post will extend above the last wire strand.
Metal	Line	Standard "T" or "U" high carbon steel.	18"	Posts will have an anchor plate and be studded, embossed, or punched for wire attachment. Posts will be galvanized, enameled and baked, or painted with weather resistant steel paint. Posts will weigh at least 1.25 lbs. per linear foot. In sandy soil drive posts deeper than 18".
	Corner/ gate	2.5" nominal diameter	30"	Steel pipe must weigh at least 7 lbs. per linear foot and have a water tight end cap. Posts will be set in concrete in 12" wide hole. Concrete must be slightly rounded on top. Posts will be galvanized or painted with a rust-resistant coating and repainted if rusting occurs.
Temporary	Line			Must have good insulation, be easily moved. Space posts to keep the fence at the desired height and provide reasonable support. The proper height should be about 2/3 the animals height or nose height.
Trees	Line, corner, gate, pull			Only to be used in rocky or wet areas where post holes are impossible to dig or in frequently flooded areas where fences are difficult to maintain. Trees should be of sufficient size to minimize swaying and properly aligned. A buffer or treated board will be used between the wire and the tree, or when a buffer cannot be attached to the tree, staples will be driven into the tree and must completely penetrate the sapwood below the outer bark. Where trees are used as corner posts, thread wire through a 6" lag bolt instead of wrapping wire around the tree.

### Fence Construction Check Sheet (Electric)

Landowner: \_\_\_\_\_ **Planned** **Installed**  
 Field No: \_\_\_\_\_ Tract No: \_\_\_\_\_ By: \_\_\_\_\_  
 Fence No. \_\_\_\_\_ Length: \_\_\_\_\_ Date: \_\_\_\_\_

		<u>Unit</u>	<u>Minimum</u>		
<b>I.</b>	<b>Wire</b>	Total Footage	_____	_____	_____
	A. Size	Gauge	_____	_____	_____
	B. Strands	Number	_____	_____	_____
	C. Nominal wire height	Inches	_____	_____	_____
<b>II.</b>	<b>Brace Assemblies (See NRCS Drawings)</b>	Number	_____	_____	_____
	A. Post				
	1. Kind <sup>1</sup>	Material	_____	_____	_____
	2. Length	Feet	_____	_____	_____
	3. Nominal top diameter	Inches	_____	_____	_____
	4. Depth to set	Inches	_____	_____	_____
	5. Concrete (80 lb. bag)	Number	_____	_____	_____
	6. Amount	Number	_____	_____	_____
	B. Cross-member (when required)				
	1. Kind <sup>1</sup>	Material	_____	_____	_____
	2. Length	Feet	_____	_____	_____
	3. Nominal top diameter	Inches	_____	_____	_____
	4. Amount	Number	_____	_____	_____
<b>III.</b>	<b>Line Posts</b>				
	A. Wood posts and fiberglass posts				
	1. Kind <sup>1</sup>	Material	_____	_____	_____
	2. Length	Feet	_____	_____	_____
	3. Nominal diameter	Inches	_____	_____	_____
	4. Spacing	Feet	_____	_____	_____
	5. Amount	Number	_____	_____	_____
	B. Steel Posts				
	1. Kind <sup>1</sup>	Coating	_____	_____	_____
	2. Length	Feet	_____	_____	_____
	3. Weight per foot	Pounds	_____	_____	_____
	4. Spacing	Feet	_____	_____	_____
	5. Amount	Number	_____	_____	_____
<b>IV.</b>	<b>Accessories (all conducting materials will be galvanized)</b>				
	1. Strainers or wire tighteners	Number	_____	_____	_____
	2. Pull post insulators	Number	_____	_____	_____
	3. Line post insulators	Number	_____	_____	_____
	4. Ground rods	Number	_____	_____	_____
	5. Lightning arrestors	Number	_____	_____	_____
	6. Insulated cable	Feet	_____	_____	_____
	7. Offset brackets	Number	_____	_____	_____
	8. Warning signs	Number	_____	_____	_____
	9. Cut off switches	Number	_____	_____	_____
	10. Digital volt meter	Number	_____	_____	_____
	11. _____	_____	_____	_____	_____
	12. _____	_____	_____	_____	_____
<b>V.</b>	<b>Power Unit</b>	Type	_____	_____	_____

A. The energizer selected must be high voltage/low impedance, short pulse which can produce at least 4,000 volts. Output with all livestock containment fences charged (on) when under maximum anticipated load.

<sup>1</sup> Certificate required for new treated posts and metal pipe must be permanently capped and painted or galvanized.

**Vicinity Map/Diagram:** \_\_\_\_\_  
 Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**This practice meets or exceeds USDA/NRCS specifications:**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### Fence Construction Check Sheet (Non-Electric)

Landowner: \_\_\_\_\_ **Planned** **Installed**  
 Field No: \_\_\_\_\_ Tract No: \_\_\_\_\_ By: \_\_\_\_\_  
 Fence No. \_\_\_\_\_ Length: \_\_\_\_\_ Date: \_\_\_\_\_

I.	<b>Wire</b>	<u>Unit</u>	<u>Minimum</u>		
A.	Barbed wire (galvanized)	Total Footage		_____	_____
	1. Size	Gauge		_____	_____
	2. Strands	Number		_____	_____
	3. Height of top wire	Inches		_____	_____
B.	Net Wire (galvanized)	Total Footage		_____	_____
	1. Size (top and bottom strand)	Gauge		_____	_____
	(intermediate and stay strands)	Gauge		_____	_____
	2. Spacing of stay wire	Inches		_____	_____
	3. Height of net wire	Inches		_____	_____
	4. Height of fence (top wire)	Inches		_____	_____
	5. Strands above/below net wire	Number		_____	_____
II.	<b>Corner, End/Gate, and H-Brace Posts (See NRCS Drawings)</b>				
B.	Corner and End/Gate Post				
	1. Kind <sup>1</sup>	Material		_____	_____
	2. Length	Feet		_____	_____
	3. Nominal top diameter	Inches		_____	_____
	4. Depth to set	Inches		_____	_____
	5. Amount	Number		_____	_____
B.	Cross-member				
	1. Kind <sup>1</sup>	Material		_____	_____
	2. Length	Feet		_____	_____
	3. Nominal top diameter	Inches		_____	_____
	4. Amount	Number		_____	_____
C.	H-Brace post				
	1. Kind <sup>1</sup>	Material		_____	_____
	2. Length	Feet		_____	_____
	3. Nominal top diameter	Inches		_____	_____
	4. Depth to set	Inches		_____	_____
	5. Amount	Number		_____	_____
III.	<b>Line Posts (2)</b>				
B.	Wood posts				
	1. Kind <sup>1</sup>	Material		_____	_____
	2. Length	Feet		_____	_____
	3. Nominal diameter	Inches		_____	_____
	4. Spacing	Feet		_____	_____
	5. Amount	Number		_____	_____
B.	Steel Posts				
	1. Kind	Coating		_____	_____
	2. Length	Feet		_____	_____
	3. Weight per foot	Pounds		_____	_____
	4. Spacing	Feet		_____	_____
	5. Amount	Number		_____	_____

<sup>1</sup> Certificate required for new treated posts and metal pipe must be permanently capped and painted or galvanized.

**All gates used must meet or exceed standard for type of fence constructed.**

Vicinity Map/Diagram:

Remarks: \_\_\_\_\_

**This practice meets or exceeds USDA/NRCS specifications:**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_