

Natural Resources Conservation Service (NRCS)  
Des Moines, IA

Iowa Conservation Practice 382  
March 2011

### Definition

A constructed barrier to animals or people.

### Purpose

Facilitate the application of conservation practices by providing a means to control movement of animals and people.

### Conditions Where Practice Applies

This practice may be applied on any area where management of animal or people movement is needed. Fences are not needed where natural barriers will serve the purpose.

### General Criteria and Specifications

#### A. Barbed Wire

Barbed wire fences shall have a minimum of 4 wires for farm borders. A minimum of three wires shall be used for interior fencing, cross fencing, or excluding livestock from special areas such as wildlife areas, forested tracts, or other special use areas. Wires shall be placed approximately an equal distance apart. The top wire shall be at least 42 inches high and 2 inches below the top on wood posts and 1 inch below the top on steel posts. The bottom wire shall be 18 inches or less above the ground level. Wire shall be spaced no more than 12 inches apart.

Each barbed wire shall consist of 2 twisted strands of either 12 – ½ gauge wire or 15 – ½ gauge high tensile strength wire. The barbs shall be either 2-point barb or 4-point barb. Wire shall be stretched taut and attached after the posts are properly set and backfilled. Attached wire to the side of the post closest to the livestock, except on corners and curves where the wire should be placed on the outside of the corner or curve.

Barb wire fences shall not be electrified.

#### A. Woven Wire

Top and bottom strands of woven wire shall be a minimum of 12 – ½ gauge. Wire for intermediate strands shall be 14 – 1/3 gauge or heavier. Woven wire fences 32 inches or less in height shall have at least 2 barbed wires above the woven wire spaced 8 to 12 inches apart. Fences constructed with woven wire higher than 32

inches shall have at least 1 barbed wire 8 to 12 inches above the woven wire. The base of the woven wire shall be placed near the ground surface. The top wire shall be at least 42 inches above the ground level and 2 inches below the top of wood posts and 1 inch below top of steel posts. All wire shall be galvanized (Class 3). Wire shall be stretched and attached after the posts are properly set and backfilled. Attach wire to the side of the post closest to the livestock, except on corners and curves where the wire should be placed on the outside of the corner or curve.



Photo: Virginia NRCS

#### B. Staples

Staples shall be 9 gauge steel or heavier with a minimum length of 1 – ½ inches for soft woods and a minimum length of 1 inch for close grained hardwoods. Drive staples diagonal to the grain of the wood and at a slight downward angle. Space should be left between the staple and the post to permit free movement of the wire. Wires may be attached to steel posts by use of manufacturer's clips or by 14 gauge galvanized wire twisted at least two turns.

#### C. Posts

All wooden posts (except red cedar, osage orange, or black locust) shall be treated with pentachlorophenol, or

chromate copper arsenate (CCA) by a method that ensures complete penetration of the sapwood. Quality of treated wood shall provide sufficient strength and quality to last for the expected life of the fence. At least half of the diameter of red cedar shall be heartwood.

#### **D. Corner, Gate, Brace, and End Posts**

Corner posts, gate posts, end posts, pull posts and brace posts shall be wood with sufficient length for the construction of at least a 42 inch high fence and permit setting the post at least 36 inches deep. Earth backfill shall be thoroughly tamped. Where soil depth is restricted to less than 36 inches, additional anchors or deadman applied against the direction of pull may be needed. Wood posts shall have a minimum top diameter of 5 inches. A 2 – ½ inch steel pipe with appropriate bracing or set in concrete of sufficient depth also may be used. Reinforced concrete or metal posts of equivalent strength may be substituted if they have suitable means of attaching wires and braces.

#### **E. Line Posts**

The maximum spacing of line posts shall be one rod (16.5 feet). Wood line posts shall have a minimum 3 inch top diameter. Wood line posts shall have a minimum length of 6 – ½ feet and shall be set or driven to a minimum depth of 24 inches where conditions permit. When posts are set, earth backfill shall be thoroughly tamped. Steel line posts shall not weigh less than 1.33 pounds per foot and shall have a steel anchor plate securely fastened to the plate. The posts shall be “T”, “U”, or “Y” shaped and have corrugations, knobs, studs, or grooves suitable for fastening fencing to the posts. Steel posts shall be rolled from high carbon steel and shall have a protective coating; either galvanized by the hot dip process, or painted with one or more coats of high grade weather resistant paint for steel, or enameled and baked. Steel line posts shall be at least 6 feet in length and shall be set in the ground a minimum of 20 inches. Steel posts shall be used as line posts at least once every 6 rods (99 feet) to act as a ground for lightning protection. If steel posts are the primary post, every 4<sup>th</sup> post shall be wood.

#### **F. Bracing**

End bracing will be installed at locations where the fence ends and on both sides of gate openings. Corner bracing should be installed where fence alignment changes 15 degrees or more. Bracing is required at all

corner, gate, pull and end assemblies in a fence. The brace member shall be the equivalent of a wood post with a 4.0 inch diameter at the top or 4”x4” timber or standard weight 2-1/2 inch diameter galvanized steel pipe. The brace shall be at least 3 feet above the ground and at least 8 inches below the top of the post. The brace member shall be 6 to 8 feet in length. A brace wire consisting of 2 complete loops of 9 gauge smooth wire, 2 loops of barbed wire or a single loop of 12 – ½ gauge high tensile strength wire shall be installed. “H” braces or angle braces will be used in standard fences.

Pull post assemblies consisting of three posts with braces shall be installed in straight reaches of fence at intervals of 660 feet (40 rods), at any point where the vertical angle described by two adjacent reaches of wire is upward and exceeds 10 percent and at the beginning and end of each curve.

#### **G. Crossings**

For a narrow ditch or draw crossing with slopes steeper than 8 feet horizontal to 1 foot vertical, the fence shall be anchored with a concrete anchor weighing at least 150 pounds and buried with at least 18 inches of cover or a commercial screw-in type metal anchor 5 inches in diameter and not less than 48” long to position the fence to the contour of the ditch or draw.

#### **H. Gates**

Wire gates shall be made of the same materials as used for the fence. Panel gates shall be equivalent in quality to the fencing material and shall be fitted with at least two hinges and a latch or galvanized chain for fastening.

#### **Other Considerations**

##### **A. Alternative Fencing and Bracing Systems**

Alternative fencing and bracing systems must meet NRCS expected life span of the practice, be pre-approved by an NRCS Area Resource Conservationist (ARC) or Area Engineer (AE), and must be installed according to manufacturer’s recommendations as approved by the ARC or AE.

##### **B. Temporary Fence**

Barbed wire and woven wire shall not be used as temporary fence.

**Specifications**

Site-specific requirements are listed on the specifications sheet. Additional provisions are entered on the job sketch. Specifications are prepared in accordance with the NRCS Field Office Technical Guide. See Conservation Practice Standard – Fence (382).

<b>Client:</b>		<b>Farm #:</b>	
<b>Field(s):</b>		<b>Tract #:</b>	
<b>Planned By:</b>		<b>Location:</b>	
<b>Date:</b>		<b>Length of Fence (ft):</b>	
<b>Landowner Objectives:</b>			
<b>Purpose:</b> (check all that apply)			
<input type="checkbox"/> Reduce erosion and improve water quality by controlling livestock access to streams, springs, wetlands, and ponds.		<input type="checkbox"/> Protect sensitive environmental areas and flora from vehicular, pedestrian, or animal traffic use.	
<input type="checkbox"/> Protect newly planted areas from disturbances until established.		<input type="checkbox"/> Protect the safety of people, livestock, and wildlife by limiting or denying access to hazardous areas.	
<input type="checkbox"/> Facilitate handling, movement, and feeding of livestock in the pasture environment.		<input type="checkbox"/> Improve distribution and timing of livestock grazing	
<input type="checkbox"/> Other (specify)			
<b>Type of Fence – Barbed</b> (check all that apply)			
<input type="checkbox"/> 3-strand barbed wire		<input type="checkbox"/> 4-strand barbed wire	<input type="checkbox"/> 5-strand barbed wire
<input type="checkbox"/> 6-strand barbed wire		<input type="checkbox"/> 8-strand barbed wire	<input type="checkbox"/> Other: _____
<b>Wire Gauge and Barbs</b>			
<input type="checkbox"/> 12 – ½ gauge wire		<input type="checkbox"/> 2-point barbs on 4" or 5" centers	
<input type="checkbox"/> 15 – ½ gauge wire		<input type="checkbox"/> 4-point barbs on 5" centers	
<b>Type of Fence – Woven Wire</b>			
Woven Wire Ht (ft): _____	# of Wire(s): _____	Top/Bottom Wire Gauge: _____	Wire Spacing (in): _____
		Intermediate Wire Gauge: _____	
Woven Wire Type: _____		Top Deterrent Type: _____	
<b>Attachment to Posts</b>			
Staple Gauge: _____	Staple length (in): _____	<input type="checkbox"/> Manufacturer clips	<input type="checkbox"/> 14 gauge wire
<b>Line Posts</b> (circle all that apply)			
<b>Type:</b> <input type="checkbox"/> Red Cedar or Osage Orange or Black Locust or pressure treated or other preservative wood. <b>or</b> <input type="checkbox"/> Standard steel line posts (1.33 lb/ft posts), minimum every 4 <sup>th</sup> post wooden.	<b>Size:</b> <input type="checkbox"/> Line posts are wood 6 – ½ feet or longer 3" minimum top diameter. <b>or</b> <input type="checkbox"/> 6' - Standard steel line post with anchor plate.	<b>Spacing:</b> <input type="checkbox"/> Wood line posts spaced a maximum of 16 – 1/2 feet apart set 2 ft deep minimum with a steel post every 99 ft for lightning protection <b>or</b> <input type="checkbox"/> Steel line posts spaced a maximum of 16 – ½ ft apart set to top of anchor plate or 20" and every 4 <sup>th</sup> post wooden.	
<b>Braces, Corners, Ends, &amp; Gates</b> (circle all that apply)			
<b>Corners, Ends, &amp; Gates:</b> (6 - 8 ft minimum length) <input type="checkbox"/> 5" top diameter wood post or <input type="checkbox"/> 2-1/2" galvanized steel pipe. <b>Braces</b> <input type="checkbox"/> 4" top diameter wood post or <input type="checkbox"/> 4"x4" timber or <input type="checkbox"/> 2-1/2" galvanized steel pipe. <input type="checkbox"/> Horizontal brace rails 3' above ground and 8" below top of post.		<b>Brace Wire</b> <input type="checkbox"/> 2 complete loops of 9 gauge smooth wire <b>or</b> <input type="checkbox"/> 2 loops of barbed wire <b>or</b> <input type="checkbox"/> single loop of 12 – ½ gauge high tensile, galvanized steel	

