

Fence

Woven Wire Fence

Conservation Practice Specification Sheet

RI - 382

Definition

A constructed barrier to livestock, wildlife, or people.

Purpose

This job sheet is provided as a component of a resource conservation plan. This practice may be applied to contain and control livestock and wildlife movement, facilitate a prescribed grazing system, protect sensitive areas from grazing livestock, and to eliminate access to unsafe areas.



Conditions where Practice Applies

This practice may be used on any area where a fence is needed to control access, movement and containment of livestock and wildlife, and where people safety and movement is of concern. Conservation plan maps showing the approximate fence location, complementary conservation practices, grazing schedule, other relevant information, and additional specifications may be included.

General Criteria and Specifications

All fence construction shall comply with federal, state and local fencing codes. Practice Lifespan is 20 years.

Fence line clearing

Fence lines will be cleared of brush and trees; gullies and steep banks may require grading. Clearing along stream banks will be held to a minimum and no vegetation may be removed within the buffer area, except as required for stream crossings.

Fencing materials shall be of a quality and durability that meets the intended management objectives. Construction shall be performed in a manner that meets the intended management objective. Wire and hardware will be new, galvanized material.

Setting Posts

Earth backfilled material shall be thoroughly tamped in 4" layers. Post holes shall be at least 6" larger than the diameter or side dimension of the posts. Synthetic posts, if approved by the Resource Conservationist, are to be installed as specified by the manufacturer.

Concrete around posts if posts cannot be set to the required depth due to rock or densic layer. If concrete backfill is used, the concrete must be pre-mixed and worked into place up to the ground surface. No stress shall be applied to posts set in concrete for at least 24 hours after the concrete has set.

Line posts

Maximum spacing between line posts is 16.5 feet. All wooden line posts shall be set at least 30 inches into the ground.

Suitable line posts:

3½" diameter wooden posts of black locust, red cedar (mostly heartwood), redwood, and pressure treated pine or other wood of equal life and strength. Pressure treatment shall meet the requirements for ground contact. All wooden line posts shall be set at least 30" into the ground.

Note: Landscaping timbers should not be used for post or brace assemblies.

Wire

Wire shall have a minimum Class 3 zinc coating and shall meet the requirements of ASTM A116 or Class I zinc coating with 0.27 ounces of zinc per ft² meeting the requirements of ASTM A116.

Woven wire fences consist of smooth horizontal (line) wires held apart by vertical (stay) wires. Spacing between line wires may vary from 1 1/2 inches at the bottom for small animals to 9 inches at the top for large animals. Wire spacing generally increases with fence height. Stay width shall be between 4" – 12" in width depending on the size of livestock with 4" - 6" spacing for smaller livestock and 6" - 12" spacing for larger livestock.

Fence top Deterrent

Barbed wire: At least one strand of barbed wire is to be placed no more than 6" above the woven wire. Additional strands may be added above the first at the same spacing. The barbed wire shall consist of 2 strands of wire with class 3 galvanized 4-point barbs spaced not more than 5" apart. Galvanized barbed wire shall be fabricated from 12½ gauge class 1 galvanized or high tensile class 3 barbed 15 ½ gauge galvanized strand wire or meeting the requirements of ASTM A121.

Barbed wire should not be electrified.

Electrified Wire: In lieu of barbed wire, the same number of 12½ gauge galvanized wires may be installed electrified on the spacing needed for barbed wire. The wire must be mounted and energized as required by the high tensile electric fence job sheet. Electric and barbed wire fence top deterrents may not be combined.

Wood Rail: A wood top rail may be installed no more than 6" above the woven wire to strengthen the fence in lieu of top wires, or a single electric wire with stand-off insulators may be included. The fencing may be stapled to the rail for added stiffness. With top rails, no post bracing assemblies are needed, but gate posts must be 5" in diameter and be set 3 feet in the ground.

Wire stretching

Woven wire shall be stretched tight with no sags or waves in the material when viewed along the fence line. Wire at the end posts and corner posts shall be wrapped and attached to itself with 3 twists.

For barbed wire at the fence top, pull taut. A stretch of 100 feet (prior to attachment to posts) should sag no more than in the middle 4" in warm weather and not more than 2" in cold weather.

Wire placement

All wires are to be spaced according to Table 1 located at the end of the job sheet.

Attaching fencing to post

The fencing wire shall be placed on the livestock side of line posts and on the outside of corners and posts in bends and braces in bends.

Woven wire fencing shall be attached to post on alternate horizontal strands as a minimum. Each strand of barbed wire used shall be attached to each post using a 9-gauge galvanized 1½" staple driven diagonally with the grain of the wood and at a slight downward angle (except in dips). Staples shall be driven tight to the post.

Gates

Each gate must be hung from an opposing brace assembly. See drawings for details.

Brace posts

Posts shall be set and maintained in a vertical position. All wooden brace posts are to be 6" min. diameter and set 3 feet into the ground. Horizontal brace rails are to be 4" min. diameter wooden or 2" steel by 8 feet long and be installed 8"–12" below the top of the vertical brace post.

Note: Landscaping timbers should not be used for post or brace assemblies.

Single H braces: Single H Brace corners and end braces may only be installed at the ends of straight fence spans of 660 feet or less.

Double H braces: All corners, fence line ends, and gate openings require Double H Brace assemblies, except that Single H Braces may be substituted in straight fence spans of 660 feet to 1320 feet.

Double H brace pull assemblies: In-Line Double H Brace Pull Assemblies are required as wire-pull breaks in straight fence spans longer than 1320 feet. Spans between braces should be shorter over undulating or soft ground. Pull assemblies should be evenly spaced along the fence span. Fence wires must terminate from the farthest brace post in each direction as shown on the drawings.

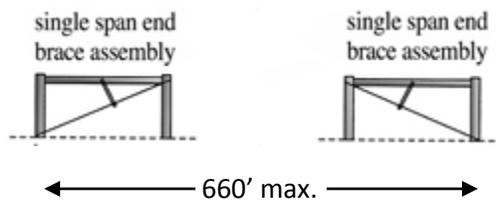
Adjoining fences: A fence adjoining an existing fence must terminate in a brace assembly as required above.

Corners: Corner assemblies shall be installed at all points where the fence alignment changes 20 degrees or more. (In an 8-foot long brace section, 20 degrees is approx. 3 feet off the straight line. Refer to drawings). The above H brace rules apply to corners, considering each wire-pull direction from the corner post.

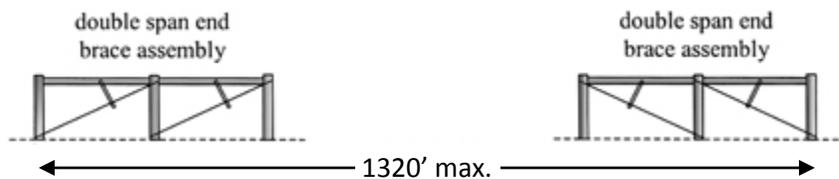
Note: Combination single and double H corners are permitted.

BRACE ASSEMBLIES

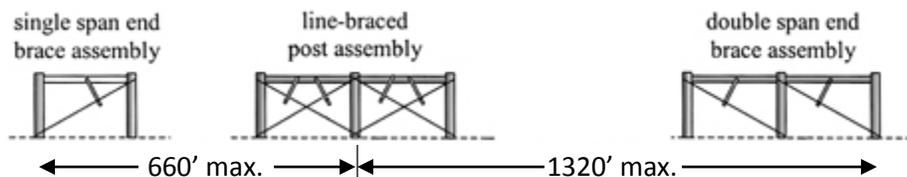
1. Use single span brace (Single H brace) assembly for runs of fence that are less than 660 feet between corner, end and/or gate posts.



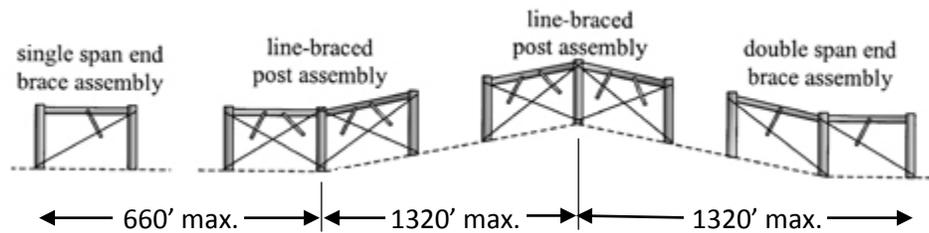
2. Use double span brace (Double H brace) assembly for runs of fence that are 660 to 1320 feet between corner, end and/or gate posts.



3. Use line braces to divide fence lengths where runs of fence are more than 1320 feet long. A run is the distance between a corner, end or gate post and the next corner, end or gate post.



4. On uneven terrain, locate line braces at the top and bottom of each hill.



Other considerations

Alternative fencing and bracing systems: Alternative fence systems include “Common Sense Fence” or other equivalent fencing systems. Alternative fencing and bracing systems must be pre-approved by an NRCS Resource Conservationist (RC) and installed according to manufacturer’s requirements.

Fences across gullies or streams require special braces and design. Breakaway fences or swinging water gaps allow debris and water to flow past the fence line without destroying the adjacent fence.

Any permanent fencing for grazing livestock should allow flexibility to facilitate implementation of the grazing plan and permit land management activities such as nutrient application, pest control, forage harvest, and other appropriate practices.

Follow all manufacturers’ safety precautions for handling and installing fencing materials.

Locate fences to facilitate maintenance. Where applicable, clear right of ways should be established and maintained to facilitate fence construction and maintenance.

When possible, install fences across slopes to improve grazing distribution, rainfall infiltration and reduce soil erosion.

Locate fences to facilitate livestock management, handling, watering and feeding.

Consider placing riparian stream fencing at the edge of the protected buffer or at least 2 times the active channel width from the top of the stream bank but never less than 35 feet. It is recommended that the stream fence have a maintenance gate installed.

Operation and Maintenance

Inspections and maintenance are required to achieve the intended function, benefits, and life of the practice. The landowner/operator is responsible to establish and implement an inspection and maintenance program. Regular inspection of fences should be part of an ongoing maintenance program. Items to inspect and maintain during the 20-year design life of the practice include, but are not limited to, the following:

1. Inspection of fences after storm events is necessary to ensure the continued proper function of the fence. Promptly repair or replace damaged or broken fencing.
2. Retain and properly discard all broken fencing material and hardware to prevent ingestion by animals or injury to equipment, people, or animals.
3. Remove debris collected in the fencing.
4. Clear the brush from fence lines to reduce voltage loss. Vegetative control can be achieved by herbicides applied per the manufacturer's label.
5. Remove fallen limbs and maintain proper tension on the fence wires. Overhanging trees and limbs should be trimmed or removed as needed.
6. Maintain proper tension on the fence wires.
7. Follow your grazing plan, where appropriate.
8. All necessary precautions should be taken to ensure the safety of construction and maintenance crews.

Other:
