NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE SPECIFICATION

FENCE

(feet)

CODE 382

DIAGONAL FLOATING BRACE

SCOPE

This specification establishes the technical details, workmanship, quality and extent of materials required to install the brace in accordance with the Conservation Practice Standard. Specifications for other braces and line assemblies are contained in separate documents.

The appropriate NRCS Washington Jobsheet for standard post and wire, woven wire, or electric fence shall be used to document the site-specific requirements for installing, operating, and maintaining the practice on a specific field or treatment unit. The work shall consist of furnishing and installing materials for the specified design at the location(s) shown on the plan map, drawings, or as staked in the field.

Fencing includes brace assemblies, line assemblies, gates, cattle guards, and other components required for meeting site conditions and achieving the objectives of the practice application. Other documents (worksheets, maps, drawings, and narrative statements in the conservation plan) may be used to document site specifications, plan or design the practice. If a fence is being planned that is not provided for in the following specifications, contact the Washington State Range Management Specialist for approval at the beginning of the planning process and prior to construction.

The fence will be installed in accordance with proper safety procedures. The completed job shall be workmanlike and present a good appearance.

If brush or rock clearing, grading or other land work is to be done in conjunction with the fence installation, appropriate grading and erosion control measures shall be undertaken or installed. Specifications for all measures to be installed in conjunction with the fence should be attached to the Jobsheet.

TYPES OF FENCES

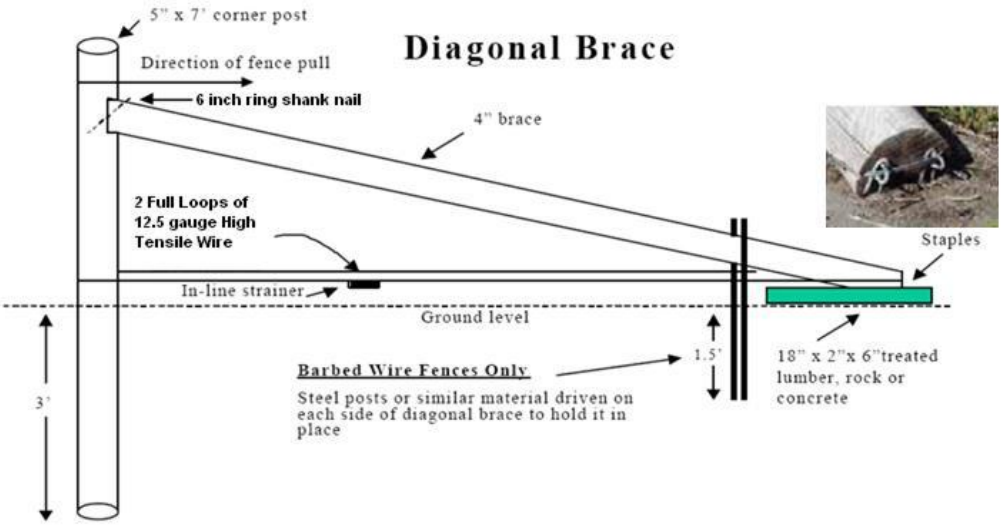
Diagonal Floating Brace

Diagonal braces are structurally equal to the horizontal fence brace. The diagonal brace requires one less post, is 8% more resistant to overturn, 25% less expensive, and requires only about half the labor to install.

Diagonal Floating Braces are suitable for all applications of post and wire fences, electric fences, and net wire fences.

NRCS, WA

September 2011



MATERIAL SPECIFICATIONS

All materials used in the construction of fences shall have a minimum life expectancy of ten (10) years. Fences will be constructed that equal or exceed the strength and durability of one built in accordance with the materials specifications in the following tables.

If a brace is to have improved longevity and reduced maintenance use one of more of the following concepts:

a. Larger diameter wooden posts

b. Deeper setting of longer posts, and/or

c. Closer spacing braces

All posts shall be placed to the required depth and shall be firmly embedded. Posts shall be set to the minimum depths listed in **Diagonal Floating Brace Material and Installation Requirements**.

Wood posts shall be driven or set in holes and backfilled with compacted earth or poured concrete. Where postholes are dug, the holes shall be at least six (6) inches larger than the diameter of side dimensions of the posts. Earth backfill around posts shall be thoroughly tamped in layers not thicker than 4 inches and shall completely fill the posthole to the ground surface. Concrete backfill around posts shall be rodded into place in layers not thicker than 12 inches and shall completely fill the posthole to ground surface. Backfill, either earth or concrete shall be crowned up around posts at the ground surface.

Concrete shall be class 3000 in accordance with Washington NRCS Construction Specification CS-42, Concrete for Minor Structures. Concrete shall be allowed to set for ten days before tension is applied to the brace assemblies through tightening of wire.

ANCHOR POSTS (WHERE WIRE IS TIED OFF)

Anchor posts need not be new materials, (Railroad Ties and Power Poles are adequate); however, all posts shall meet the minimum criteria for durability and protective coating and be sound and free from decay, with all limbs trimmed substantially flush with the body. Lengths listed below are based on a 42-inch top wire height. Steel pipe needs to be free from corrosion and pitting.

Diagonal Floating Brace Material and Installation Requirements

COMPONENT	MATERIAL TYPE	MINIMUM DIAMETER/ WEIGHT	MINIMUM SETTING DEPTHS	MINIMUM LENGTHS	OTHER
Anchor Post	Wood-juniper, cedar	5 inches	3 feet	7 feet	None
Brace & Anchor Post	Wood-pine or similar woods				Complete penetration of the sapwood with approved treatment materials. Pressure-treated, entire length of post (see Note).
Compression Brace	Wood, horizontal	4 inch nominal		8 feet if notched at 2/3 (32 inches) post height, other wise 10 ft. The angle between the brace wire and the compression brace must be between 20-25 degrees	None

NOTE: Chromated Copper Arsenate (CCA)-treated wood posts should not be used where treated wood may come into contact with water sources (wetlands, streams, high water tables, etc.). Other chemically-treated and pressure-treated wood posts may be used in these areas. (EPA 2002)

INSTALLATION SPECIFICATIONS DIAGONAL FLOATING BRACE

Brace posts shall not be set in muck, peat, or soils on which water stands.

COMPRESSION BRACE

Wood compression braces shall be at least 8 feet if notched at 2/3 (32 inches) post height, other wise 10 ft.

The anchor posts are notched (1/2 inch deep) with a saw and the brace is placed in the notch.

After the post is notched then the brace needs to be cut to fit into the notch. But before cutting the brace to fit in the notch it first needs to have the end that sits on the brace pad smoothed so that it sits flat on the pad. Now cut the brace so it fits into the notch on the brace. Start by setting the brace on the post pad and into the notch. Next, use a straight edge to mark the proper angle to cut the brace at. Cut along the mark, set it back into the notch and then fasten it with a 6 inch tempered and galvanized ring shank nail, commonly called a pole barn nail. Once the brace is set into place and lined up along the fence line then it's time to tie the whole thing together with the brace wire.

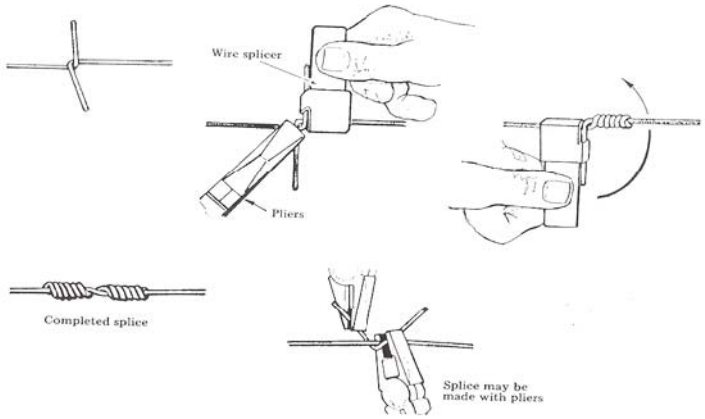
The process begins by installing two staples in the end of brace assembly and in the anchor post being braced to help keep the brace wire in place. The brace wire is then fed through the staples two times. The brace wire is cut so the ends just run past each other about halfway between the post and the end of the brace. Next a fence strainer is installed. But before the wire is tightened slip staples over the staples placed in the brace and the post between the wire and the wood. These staple help keep the wire from cutting into the wood. Once the staples are in place, slowly tighten up the brace wire by turning the ratchet on the fence strainer and pulling up on the brace wire to make sure the tension is even along the entire length of the wire. Only tighten until the top of the post is pushed back slightly. Finish the brace off by tamping the soil around the post one more time.

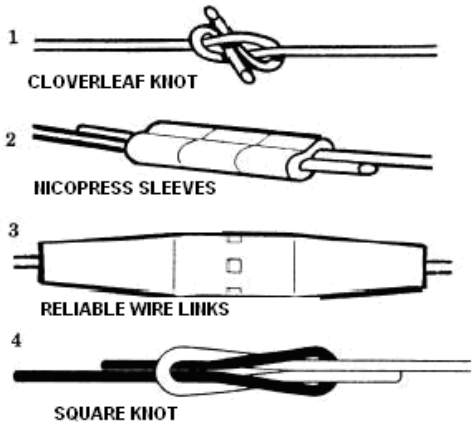
DO NOT ATTACH FENCE WIRES TO THE BRACE ASSEMBLY

BRACING WIRE

Brace wires (or guy wires) shall be formed from **<u>two complete loops</u>** of:

1. No. 9 gauge smooth wire, single strand;
2. No. 12-1/2 gauge double-strand smooth or barbed wire.
3. A single strand - No. 12-1/2 gauge high-tensile smooth wire.



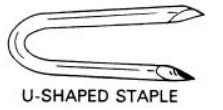


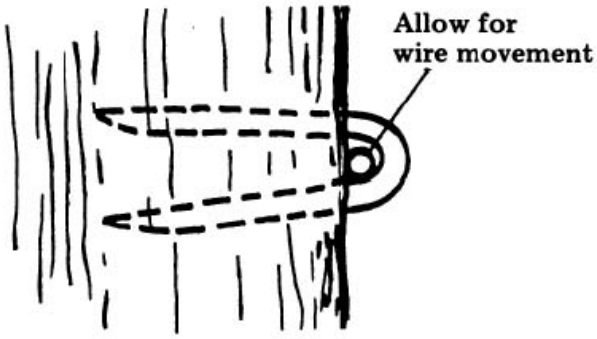
STAPLES AND FASTENER REQUIREMENTS

Staples shall be driven into the anchor post at a 45-degree angle. Staples shall be driven just deep enough to snug the line wire without bending it.

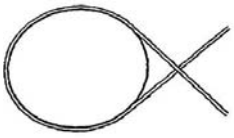
U-shaped staple, conventional wire: No. 9 gauge galvanized wire or bright hard wire; at least 1 and 3/4-inchlong.
L-shaped deformed shank staple: No. 9 gauge galvanized wire or bright hard wire; at least 1 and 1/2-inch long.
Fence wire shall be fastened to steel posts using steel clips manufactured for the purpose of attaching wires, or 9 gauge smooth wires.
Other post types will use fasteners and methods recommended by the manufacturer.

* Reference Standard Drawing LSK-0001 Staples and Wire Attachment





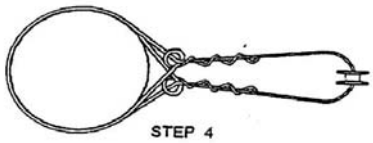
Staples should hold wire close to fence, but allow for expansion and movement of the wire.



STEP 1

STEP 2

STEP 3



STEP 4

WHEN TYING-OFF A GROUND WIRE AROUND A STRAINER POST WE SUGGEST YOU FOLLOW STEPS 1, 2, & 3. IF YOU ARE TYING-OFF A HOT WIRE, SIMPLY GO THROUGH STEPS 1, 2, & 3, THEN STRING AN INSULATOR ON THE TIE-WIRE, GO BACK AROUND THE STRAINER POST AND FOLLOW STEPS 1, 2, & 3 AGAIN AS ILLUSTRATED IN STEP 4. TIE-OFF FENCE WIRE AROUND THE INSULATOR BY FOLLOWING STEPS 1, 2, & 3.