

PRACTICE SPECIFICATION
STRUCTURAL PROTECTION FENCE

GENERAL

Structural Protection fences are used around ponds, embankments, ag waste storage structures or other structures.

Plans and specifications for construction shall be in keeping with the standard for this type of fence and shall describe the requirements for proper installation of the practice to achieve its intended purpose.

Structural protection for embankment structures shall be at least 4 barbed wires.

Use NE-CPA-1 Fence Construction Job Sheet to document practice design and certification.

Applicable Nebraska Construction and Materials Specifications will be used in accordance with the following:

FENCE DRAWINGS

11" x 17" Standard Fence drawings:

TYPE 4N FENCE WITH STUB FENCE CATTLE BARRIER - NE500-70-001
(<http://efotg.nrcs.usda.gov/references/public/NE/NE500-70-001.pdf>)

TYPE 4N FENCE WITH HOG PANEL CATTLE BARRIER - NE500-70-002
(<http://efotg.nrcs.usda.gov/references/public/NE/NE500-70-002.pdf>)

TYPE 4N FENCE WITH PASS THROUGH GATE - NE500-70-003
(<http://efotg.nrcs.usda.gov/references/public/NE/NE500-70-003.pdf>)

The following 12 page size drawings are included in file at this link.

PAGE SIZE FENCE DRAWINGS (FOTG 382)
(http://efotg.nrcs.usda.gov/references/public/NE/TG382_Fence_Drawings.pdf)

- NE500-10-002 4 Strand Standard Post and Wire Fence
- NE500-40-001 Wire Fence Braces
- NE500-40-002 Wire Fence Braces
- NE500-40-003 Wire Fence Braces
- NE500-50-001 Barbed Wire Fence Crossings
- NE500-60-001 Staples and Wire Attachment
- NE500-60-002 Metal Gate Closer
- NE500-60-003 Metal Gate Closer

(Note: The gate opener design examples shown on drawings (NE500-60-002 Metal Gate Closer and NE500-60-003 Metal Gate Closer) are optional and other appropriate designs may be used)

STRUCTURAL PROTECTION POST AND WIRE FENCES

I. Post

Notch gate posts, brace posts and corner posts 1 inch for the horizontal 3 inch diameter by 6.5 foot wood post.

All line posts shall be steel tee type, with triangular shaped ground pressure plate. Posts shall be painted in accordance with construction specifications.

All corner, brace gate posts and gate bars shall be wood and treated in accordance with construction specifications

Wood posts, minimum of 3 ½ inch diameter and 6.5 feet long, may be used in lieu of steel posts in line fence.

A. Kind

- i) Wood posts shall be redcedar, Juniper, *osage orange (Bois d'Arc)*, *black or honey locust*, *mulberry*, redwood, pressure-treated pine, or other wood of equal life or strength. All posts except osage orange, black or honey locust, redwood, and pressure treated pine shall be treated with creosote, pentachlorophenol or chromated copper arsenate (CCA) by a method such that complete penetration of the sapwood will be obtained. At least half the diameter of diagonal dimension of redcedar, juniper or redwood posts shall be heartwood.
- ii) The wood posts shall be sound and free from decay with all limbs trimmed substantially flush with the body. They shall be substantially straight throughout their length.
- iii) Steel line posts shall be "tee" type with suitable corrugations, knobs, studs, or grooves for fastening line wires with attached anchor plate. They shall be painted or galvanized and have a minimum weight of 1.33 pounds per foot exclusive of anchor plate.

B. Size

- i) Wood line posts shall have a minimum top diameter of approximately 3.5 inches. Minimum length of wood line posts shall be 6.5 feet and shall be set to a minimum depth of 2.5 feet in the ground. Minimum length of steel line posts shall be 6.5 feet and shall be set to a minimum depth of 1.5 feet or 1 or more inches over the anchor plate. Fiberglass posts shall have a minimum top diameter of approximately 1.25 inches. Minimum length of fiberglass line posts shall be 6 feet and shall be set to a minimum depth of 1.5 feet in the ground.
- ii) All corner gate and brace posts shall be wooden, structural metal or of other material of equal strength and durability. All wood shall be treated as described for wood posts. Wood corner or gate posts shall have a minimum top diameter of approximately 5 inches. Minimum length of wood corner or

gate posts shall be 8 feet and shall be set to a minimum depth of 3.5 feet in the ground. Minimum length of steel corner or gate posts shall be 7 feet and shall be set to a minimum depth of 3 feet and set in concrete. Corner brace posts shall have a minimum top diameter of 4 inches for pasture standard fences or 5 inches whenever there is a 15 degree or more change in direction of fence. Minimum length of corner and gate posts shall be 8 feet and be set to a minimum depth of 3.5 feet in the ground

- iii) The horizontal bracing between the corner and brace posts shall be a post with a minimum diameter of 3 inches and a minimum length of 6.5 feet and should be placed approximately 3 feet above the ground level.
- iv) Brace wire shall be double strand No. 9 gauge galvanized, smooth wire, or a double strand of barbed wire.

II. Wire

Fences shall be constructed of "barbed," wire to consist of two strands of 12 ½ gauge galvanized wire with 2-point, 14 gauge barbs spaced on about 4" centers.

All wires and/or barbs shall be coated with Type 2, Class I zinc coating (minimum or equivalent) as per ASTM A-121.

A barbed wire fence shall have a minimum of 4 barbed wires. The strands shall be spaced approximately an equal distance apart with the top wire between 40 to 48 inches above the ground level at each post. The bottom wire shall be approximately 14 to 18 inches above the ground level.

III. Wire Attachment to Posts

- A. Fasteners for ACQ or CA treated wood posts should be galvanized in accordance with ASTM A-153. Stainless steel can be used for maximum service life on ACQ or CA treated posts.
- B. The wire shall be stretched and attached to posts as follows:
 - i) The wire shall be placed on the side of the post opposite the area being protected, except on curves.
 - ii) The wire shall be placed on the outside of curves.
 - iii) Each wire shall be fastened to each end post, corner post, and pull post by wrapping each horizontal strand around the post and tying it back on itself with not less than three tightly wound wraps.
 - iv) Each wire shall be fastened to wooden line posts by means of staples or tie wire. Staples to be No. 9 gauge, 1.5 inches long (1 inch for hardwoods). At corner and gate posts, staple each wire at quarter points of posts. At brace posts and gate bars double-staple each wire. Staples shall be driven diagonally with the grain of the wood at a slight downward angle and shall not be driven so tightly as to bind the wire against the post.

Structural Protection Fence S-382d-4

- v) Each wire shall be fastened to steel or wood line posts with either two turns of 14-gauge galvanized steel or soft iron wire or the post manufacturer's special wire fasteners.
- vi) Wire shall be spliced by means of a Western Union splice or by suitable splice sleeve applied with a tool designed for the purpose. The Western Union splice shall have not less than 8 wraps of each end about the other. All wraps shall be tightly wound and closely spaced. Splices made with splice sleeve shall have a tensile strength no less than 80 percent of the strength of the wire.

IV. Construction Guidelines

- A. Applicable Nebraska Construction and Material Specifications are found in Appendix 2 of the Engineering Field Handbook and include:
 - i) NE500-70-001, TYPE 4N FENCE WITH STUB FENCE CATTLE BARRIER
 - ii) NE500-70-002, TYPE 4N FENCE WITH HOG PANEL CATTLE BARRIER
 - iii) NE500-70-003, TYPE 4N FENCE WITH PASS THROUGH GATE
- Available online at:
http://efotg.nrcs.usda.gov/references/public/NE/TG382_Fence_Drawings.pdf.
- B. Refer to NE-CPA-1: Fence Construction Job Sheet
 - C. Fasten each horizontal brace with 3/8 inch x 4 inch steel dowel, 2 inches into each post.
 - D. Brace wires used with horizontal bracing shall be double stand, 9-gauge galvanized, smooth wire.
 - E. All posts, except driven steel or wood posts, shall be back filled with suitable materials and thoroughly tamped. Wire shall be stretched and attached after all the posts and anchors (if used) are properly set and back filled.

V. Gates

Gates shall be constructed in accordance with the specifications and to the dimensions shown on the drawings. The materials shall conform to the kinds, grades, and sizes specified for fences and shall include the necessary fittings and stays. The gate opener design shown on drawings is optional, and other appropriate designs may be used.

Wire gates shall be the appropriate types shown on drawing 5, E-22, 500.2-4, entitled type 4N Fence Details in Appendix 2 of the Engineering Field Handbook. They shall be constructed in accordance with the specifications and to the dimensions shown on this drawing. The materials shall conform to the kinds, grades, and sizes specified for fences, and shall include the necessary fittings and stays.