United States Department of Agriculture

Natural Resources Conservation Service

Permanent Barbed Wire Fence

Alabama Fence Job Sheet No. 382D

The barb wire fence is well suited for the restraint and management of large livestock, particularly cattle. When constructed in accordance with NRCS specifications and quality materials, the barbed wire fence provides quality fencing with a life of about twenty or more years. In addition to its relatively long service the barbed wire fence has advantages in its feasibility on most sites, the relative ease of construction, and the relative low cost and feasibility of repairs. The barbed wire fence is not well suited for the restraint of smaller species/classes of livestock. It is not recommended for horses.

Purposes

This practice is applied to facilitate the application of conservation practices by providing a means to control movement of animals and people.

Specific purposes may include:

- Exclusion of livestock for natural resource benefits
- Exclusion of animals or humans for safety concerns
- Cross fencing for prescribed grazing
- Fencing to establish pastures in a grazing system

Following are basic specifications for construction. Additional information is located within the attached drawings and in the Alabama NRCS Construction Specifications or Fence Job Sheet number AL382. Use the following link to navigate to the AL NRCS conservation practices: (http://efotg.sc.egov.usda.gov/treemenuFS.aspx). This job sheet may be used in conjunction with Barbed Wire Fence practices identified in the Environmental Quality Incentives Program (EQIP).

<table>
<tr><th>Component</th><th>Specifications</th></tr>
<tr><td>Barbed Wire</td><td>The barbed wire shall be new, double strand steel, 12 ½ gauge; or 15 ½ gauge high tensile (Galvanized Class III) barbed wire. For cattle set top wire at least 42 inches above ground. Minimum number of wire strands for EQIP customers (circle one) Three / Four</td></tr>
<tr><td>Line Posts</td><td>• Metal posts shall be new standard steel “T” or “U” posts (≥ 1.25 lbs./linear ft.); or,
• New wooden posts with nominal diameter of 3” in diameter;
o preservative treated wooden posts (meet federal TT-W-571 or the AWPA specifications, see below),
o untreated posts of red cedar heartwood with one-half diameter made of heartwood, pine heartwood, Osage orange, black and honey locust, catalpa or mulberry
• Used utility poles must meet requirements in the associated attachment.
• Posts spacing: ≤16 feet and no stays; or, up to 30 ft. with stays evenly spaced between posts
• Wood posts will be placed ≥ 2 ft. in the ground and steel posts will be driven ≥ 18 in. into the ground.
• Receive approval from NRCS before using trees as fence posts.</td></tr>
<tr><td>Brace Units</td><td>• Line brace or pull assembly units: High tensile 15.5 gauge wire - ≤ 1320 feet, otherwise ≤ 660 feet.
Closer spacing will be needed for major changes in slope and/or changes in direction > 30°.
• Brace units will follow the attached drawings.
• Wooden anchor posts shall be ≥ 5” in diameter and cross members ≥ 4” in diameter. Steel anchor posts shall be 2.5 inches (nominal) in diameter. Steel cross members will be 2.0 inches (nominal) in diameter. Steel members will be high quality galvanized or painted. Tops will be capped.
• Used utility poles must meet requirements in the associated attachment.
• Corner or gate brace assembly anchor posts, and in-line brace units will be set 30" deep in concrete in 12" diameter hole or set 36" deep.
• Brace horizontal cross members will be at least 8’ long, placed 8’ – 12’ below post top, between top two wires. Use 9 gauge galvanized , 12.5 gauge high tensile smooth or 15.5 gauge high tensile barbed wire for brace tensioning.</td></tr>
<tr><td>Required New Wood Posts Preservative Treatment Levels, AWPA- U1-015, UC4A or later standard.</td><td>
<table>
<tr><th></th><th>Retention (lb/ft3)</th></tr>
<tr><th>Wood Preservative Treatment</th><th>UC4A (general use)</th></tr>
<tr><td>Creosote coal tar</td><td>8</td></tr>
<tr><td>Pentachlorophenol</td><td>0.4</td></tr>
<tr><td>Copper naphthenate</td><td>0.055</td></tr>
<tr><td>Ammoniacal copper zinc arsenate*</td><td>0.4</td></tr>
<tr><td>Chromated Copper Arsenate</td><td>0.4</td></tr>
<tr><td>Alkaline copper quat (ACQ)*</td><td>0.4</td></tr>
<tr><td>Copper azole, type B (CA-B)*</td><td>0.21</td></tr>
<tr><td>Copper azole, type C (CA-C)*</td><td>0.15</td></tr>
<tr><td>Dispersed copper azole (ESR reports)</td><td>0.15</td></tr>
</table>
UC4A: General use, agricultural posts, cross bracing.
</td></tr>
</table>

*Do not use aluminum staples with ACQ treated wood due to corrosion.
Do not use landscape wood products as they typically do not meet wood preservative requirements.

Attachments:

Drawing - AL-ECS-382-01 Single Corner Post or Angle Brace Assembly with Sliding Plate
Drawing - AL-ECS-382-05 H-Brace Pull Assembly
Drawing - AL-ECS-382-06 Wire Fence Braces (Floating In-Line Corner and H-braces)
Drawing - AL-ECS-382-08 3, 4, or 5 Strand Barbed Wire Fence
Drawing - AL-ECS-382-20 Double Panel (H + N Brace) Corner Brace Assembly
Job Sheet No. AL382A Selection and Use of Wood Utility Poles in Fence Systems

All substitutions in materials or modifications in the design from those contained herein must receive written approval by NRCS prior to beginning construction.

Practice Design (planning process) and Construction Certification

Landowner/Cooperator: _____

Field Office: _____

Farm/Tract Number: _____

All substitutions in materials or modifications in design from those given under specifications must be approved by NRCS prior to beginning construction.

Planned Fence Amounts and Construction Approval*

Farm No.	Tract Number	Field Number	Fence Run Number	Planned Length	Applied Length	Meets Standards and Specifications/Approved by:	Date Fence Construction Approved

Additional Planning Notes:

***Attach drawings or maps that identify planned fence run identification, locations, length and constructed location and lengths**.

Approved Modifications:

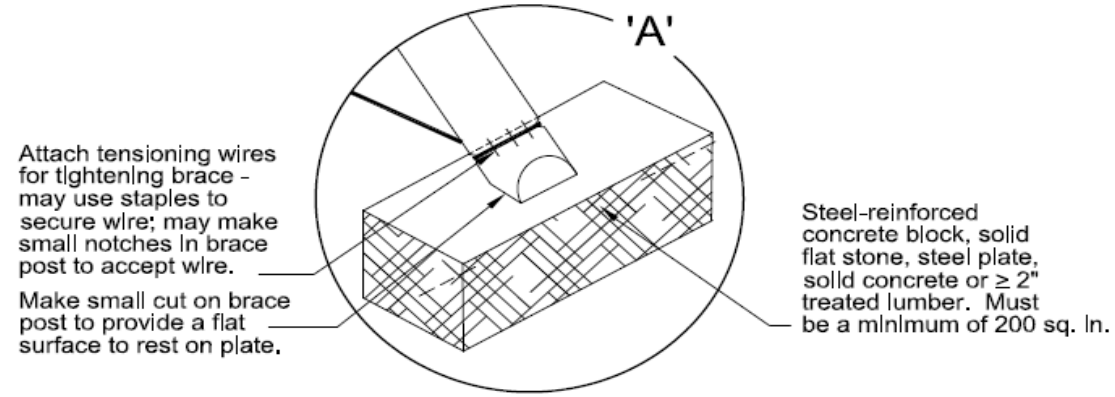
Prepared By: _____ **Date:** _____

Landowner signature: _____ **Date:** _____

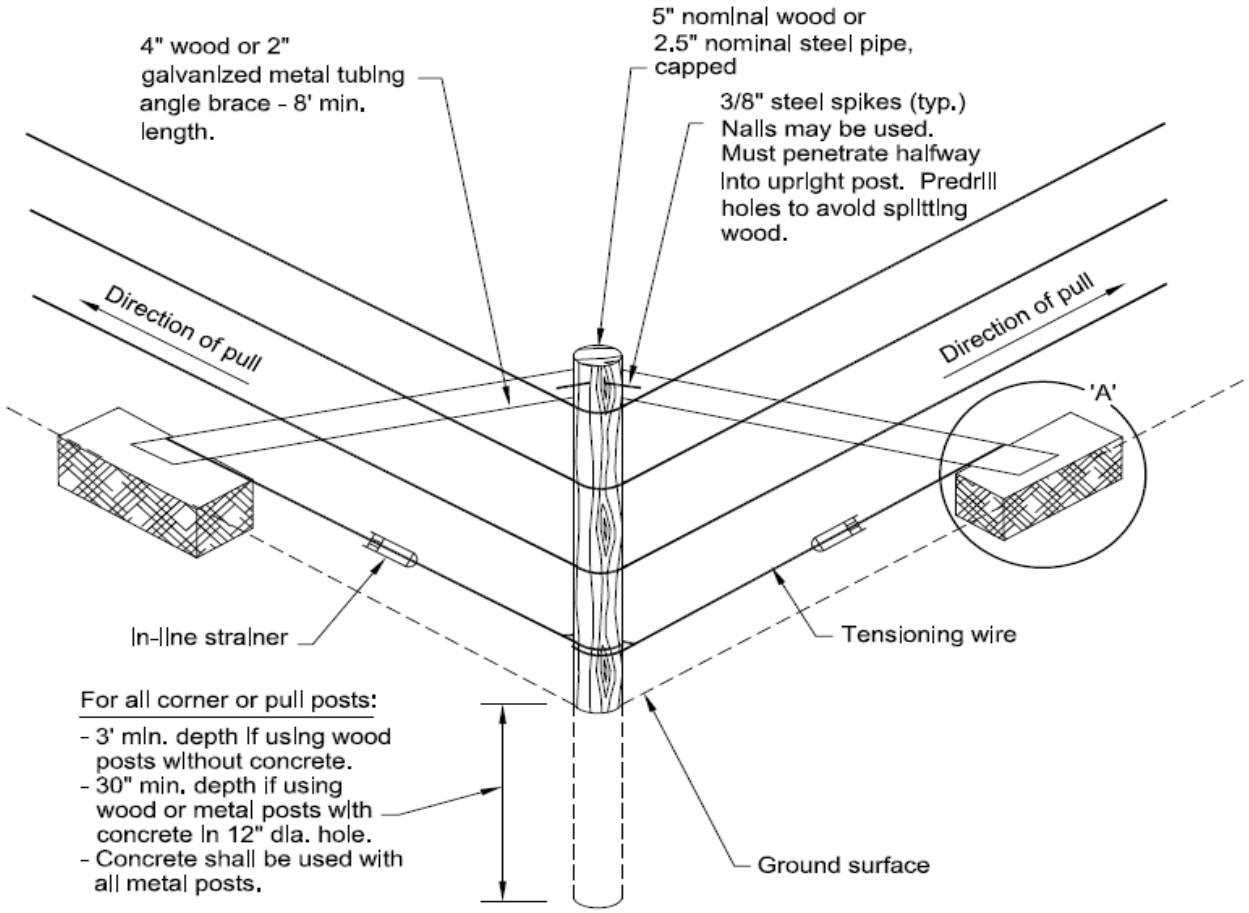
Post Fence Construction Notes:

Prepared By:_____ **Date:**_____

Landowner signature:_____ **Date:**_____



DETAIL 'A'



SINGLE POST CORNER OR ANGLE BRACE ASSEMBLY WITH SLIDING PLATE

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United States Department of Agriculture

Designed Date
Drawn
Checked
Approved 5/12

File Name
Drawing Name AL-ECS-382-01
Rev. 2/16
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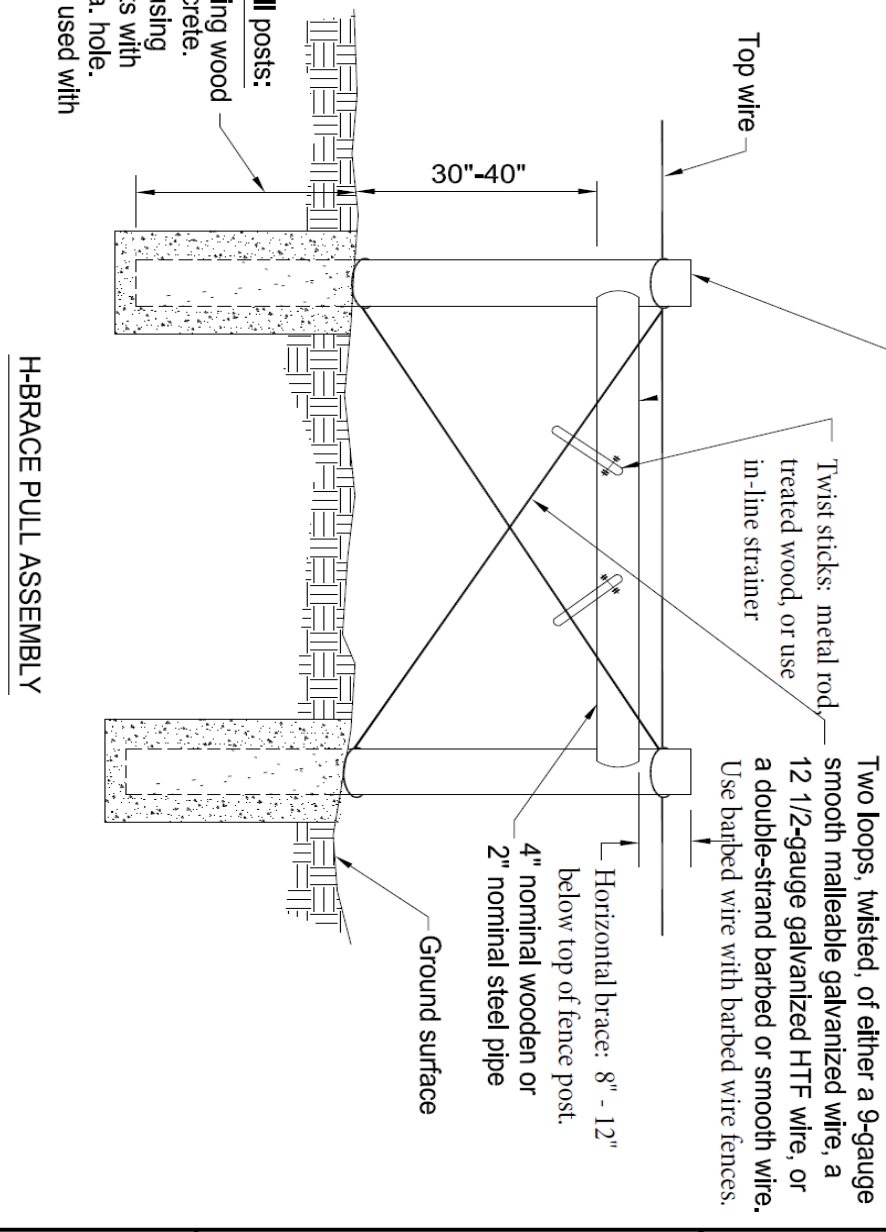

For all corner or pull posts:

- 3' min. depth if using wood posts without concrete.
- 30" min. depth if using wood or steel posts with concrete in 12" dia. hole.
- Concrete shall be used with all steel posts.

H-BRACE PULL ASSEMBLY

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

Designed	Date
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Checked	
Approved	5/12

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Drawing Name	AL-ECS-382-05
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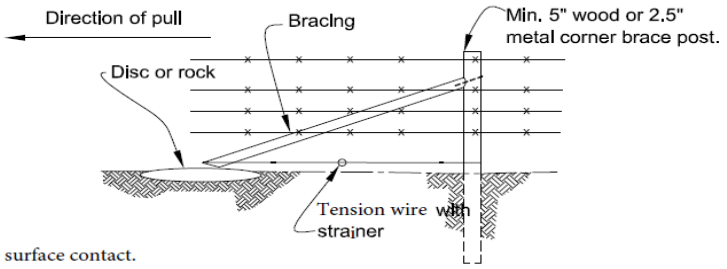
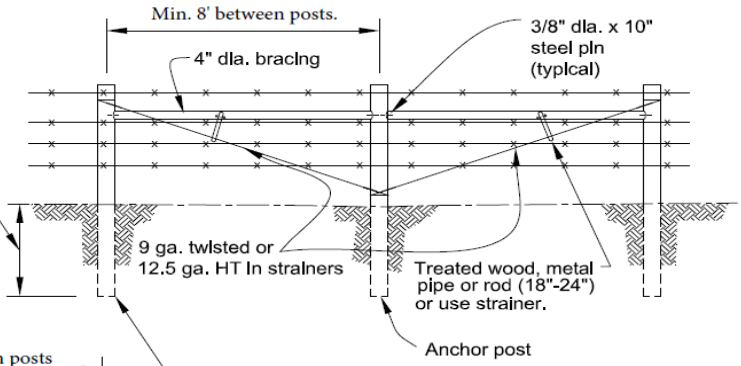
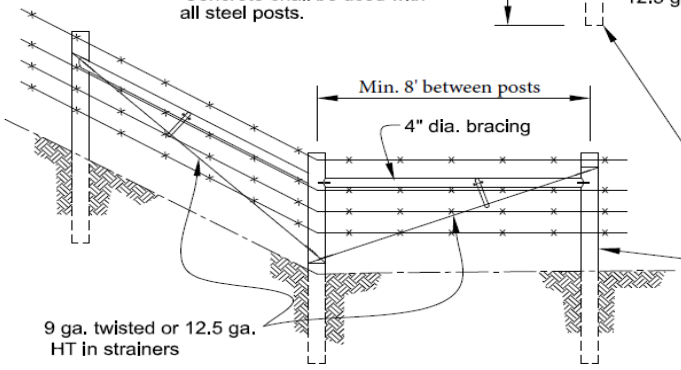
Notes for floating brace:
1. Use 2" dia. steel pipe or 4" dia. wood cross-member. Landscape timbers are not permitted.
2. Use 8" spike nail or brace pin at connection to post.
3. Use 15" min. disc blade or flat stone as shown. Min. 200 sq. in. surface area. Do not use cinder blocks.
4. Notch brace member 3/8" at lower end to accept tension wire. Make slight cut on lower side of angle brace to provide more surface contact.
5. Cinch tension wires both directions with wire or crimping sleeve.
6. Set posts in ground at least 36" deep (or 30" deep in concrete) in 12" dia. hole.
7. Steel reinforced solid concrete block or treated board min. of 2 inches thick may also be used to support the angle brace.



FLOATING BRACE



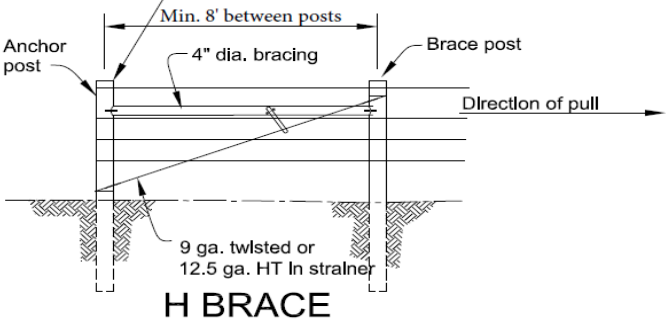
IN-LINE BRACE



CORNER BRACE

5" dia. in-line brace, non-corner wood post or 2.5" nominal steel post.

5" dia. wood corner posts or 2.5" nominal steel post, capped.



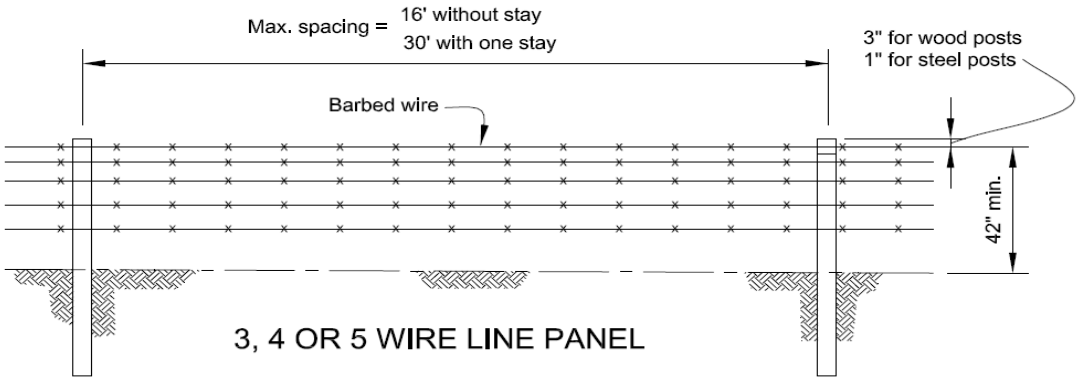
H BRACE

For all horizontal brace members:
Min. of 8' long
Min. 4" diameter treated wood or 2" diameter steel pipe
Place 8" - 12" below top of fence post.

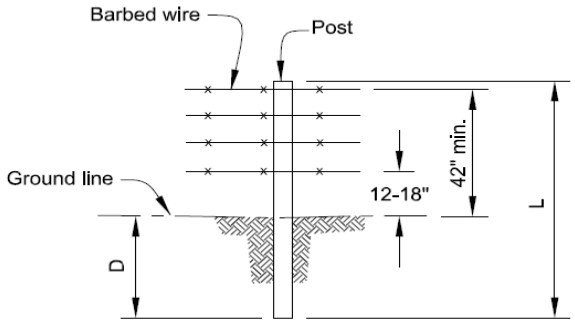
Drawing not to scale. Standardized drawing must be adapted to the specific site.

NRCS Natural Resources Conservation Service United States Department of Agriculture	WIRE FENCE BRACES (Floating, In-line, Corner and H-braces)	Designed / Drawn / Checked / Approved (Date: 5/12)	File Name; Drawing Name AL-ECS-382-06; 00/00/00 00:00; Sheet of

USDA-NRCS ALABAMA STANDARD DRAWING	FOTG SECTION IV CONSERVATION PRACTICE CODE 382 - FENCE 3, 4 or 5 STRAND BARBED WIRE FENCE	STANDARD DRAWING NO. AL-ECS-382-08 APPROVED: 5/12 DRAWN BY: REVISED: 2/15



3, 4 OR 5 WIRE LINE PANEL



BARBED WIRE DETAIL

BARBED WIRE

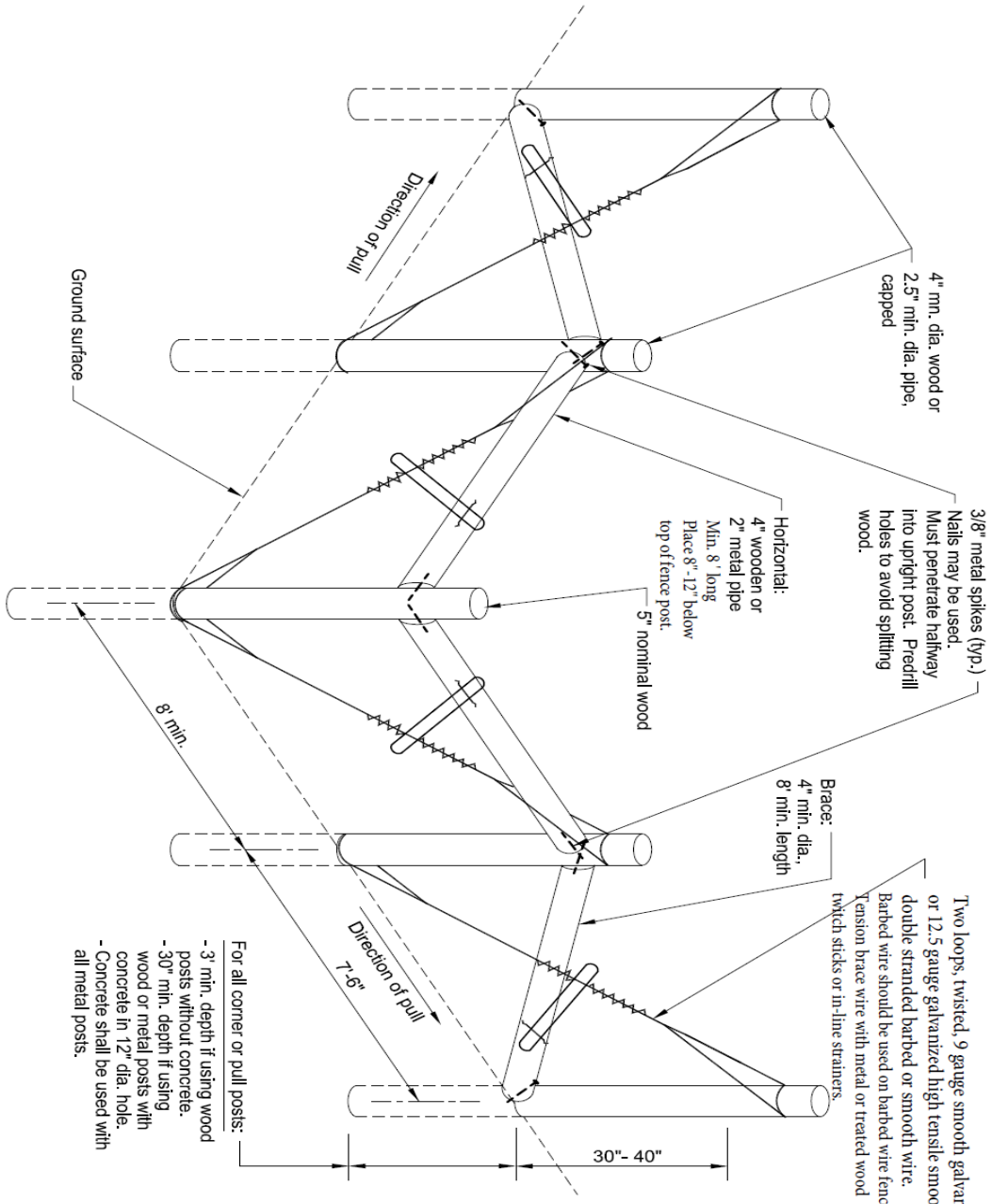
12 1/2 gauge conventional or
15 1/2 gauge high-tensile non-electric

LINE	Wood:	L = 6 ft. min. D = 24 in. min. Diameter = 3 in. min. *Do not use landscape timbers	Steel:	L = 5.5 ft. min. D = 18 in. min. Standard "T" or "U" > 1.25 lbs/ft
CORNER OR GATE	Wood:	L = 7 ft. min. D = 3 ft. min./30" w/concrete Diameter = 5 in. min.	Steel:	L = 7 ft. min. D =30 in. min. (set in concrete) Diameter = Round 2-1/2 in. O.D. (capped)
FASTENERS:	Porcelain or UV stabilized plastic Insulators			
STAPLES:	9 gauge (min) , 1 1/2" w/barbs for softwoods and 1" for hardwoods			
STAYS:	5/8" min. fiberglass, 9.5 gauge wire twist or 1"x1.5" high density wood			

EXCEPTIONS:

1. See construction specification (382) for further details and options.
2. Place strands of barbed wire closer to ground when goats, sheep or hogs are fenced.
3. For use as a suspension fence, see construction specification for barbed wire.

Drawing not to scale. Standardized drawing must be adapted to the specific site.



DOUBLE PANEL (H & N BRACE) CORNER BRACE ASSEMBLY

NRCS
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Date
Designed
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USDA United States Department of Agriculture

Natural Resources Conservation Service

Selection and Use of Wood Utility Poles in Fence Systems

Alabama Guide Sheet No. AL382A

In order to meet the national and state NRCS conservation practice standards (CPS), fencing materials shall be durable and of high quality. Wood utility poles may be used in fencing in limited circumstances and primarily for gate posts, pull assemblies, and bracing.

The section from the wood utility pole (called utility fence post) used in fencing must be of high quality, without rot, structural damage or damage from insects or woodpeckers. Additionally, it must be free of drilled holes, non-fence related appurtenances, or visible cracks into the heart wood of the post.

To check the utility posts for internal rot strike the post in question with a hammer to detect voids or rot in the wood. Voids will make “hollow sounds” when the post is struck by the hammer. Typically hammers will rebound more from a solid post than when hitting a section with an internal decay pocket. The internal decay pocket may also cause a sound that is dulled compared to the crisp sound of a solid pole section.

When internal rot is detected in the utility pole, either replace the pole or trim the pole as needed to ensure the section used for the post is rot free.

Due to their high risk of rot, sections of older utility poles that have previously been used at ground level and below shall not be used as a fence post.

The heartwood of the utility fence post must equal or exceed the diameter of the planned post in the NRCS Fence standard. See examples in Figures 1 and 2. The non-heartwood or outer shell of the post must be of sufficient quality to properly hold appurtenances needed in fencing, such as staples, nails, stand-off insulators or gates.

Used wooden utility fence posts will be a minimum of class 10 American National Standards Institute (ANSI) or about 12 inches in diameter.

Utility fence posts shall be installed according to instructions in Alabama CPS, Fence, Code 382, and related guidance documents. For example, the length of the utility fence post must equal or exceed the designed post length. In addition, all installed posts will have an impervious barrier placed on top of post to keep water from entering into the post.

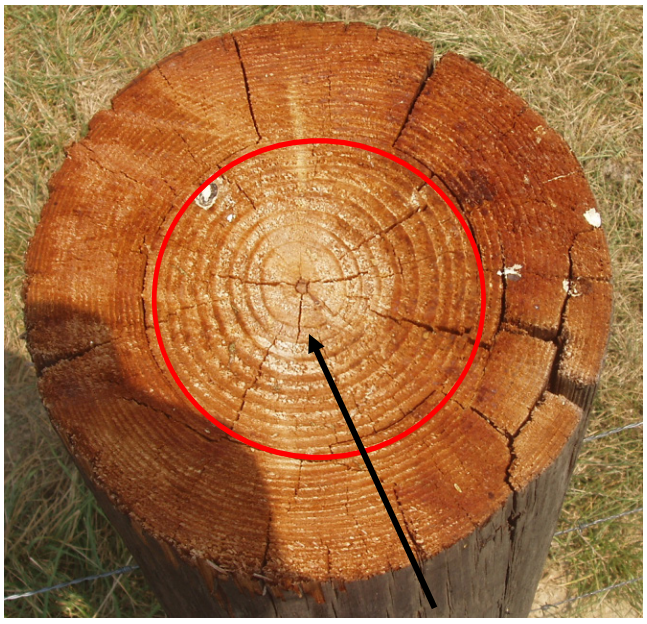

Figure 1. Suitable Utility Post. The red circle shows the approximate boundary of heartwood. Wood splits are mostly from outer edge of post to the edge of the heartwood.

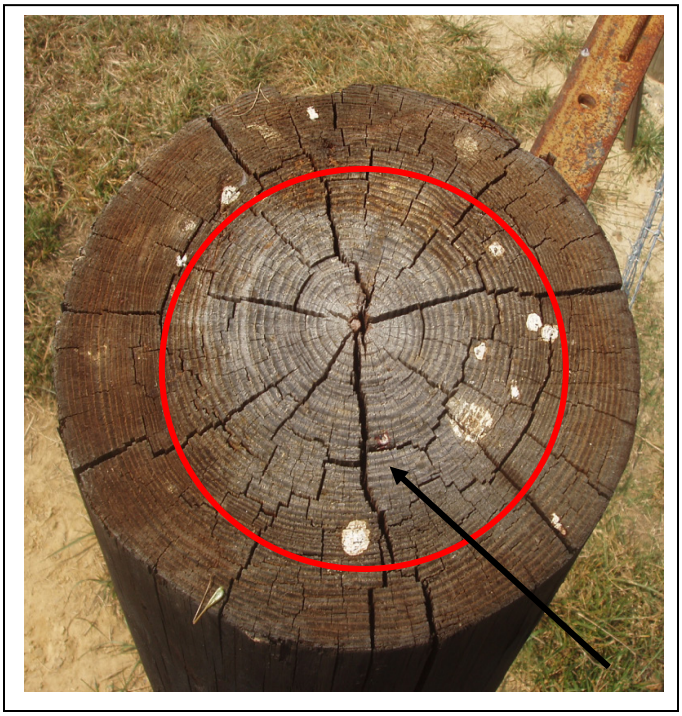

Figure 2. Non-suitable Utility Post. The red circle depicts the approximate boundary of heartwood. Numerous cracks penetrate into the center.

References

USDA RUS Bulletin, 1730B-121, Wood Pole Inspection and Maintenance, http://www.rd.usda.gov/files/UEP_Bulletin_1730B-121.pdf

Standard Specifications for Wood Poles, USDA Forest Service, http://www.fpl. fs.fed.us/documnts/pdf1997/wolfe97b.pdf