

LIVESTOCK CONTROL NON-ELECTRIC FENCE DESIGNS

Introduction

A wire fence design refers to the physical description and spacings of the wire, line post and dropper components for a particular fence. The following specifications are typically required for an electric wire fence:

- description of wire
- number of wires
- wire spacings (from the ground)
- post spacing
- dropper spacing (if used)

These specifications must be chosen taking into account the various planning points, the three main ones being fence purpose, type of animal and site conditions. The other details of the fence such as post size, brace design, dropper type, etc. are set by construction practice once the above specifications have been selected.

Four all-wood fence designs and eighteen wire designs are outlined, each having their unique specifications.

NON-ELECTRIC FENCE DESIGNS FOR LIVESTOCK CONTROL

Non-Electric Cattle Fences

The majority of non-electric agricultural fences constructed in B.C. are cattle fences either around hay fields, pastures or rangeland. These fences must control a variety of cattle including range bulls, pasture cows, cows with small calves and large breeds under conditions from native range to irrigated pasture. No one non-electric design is used, however the designs on pages 5 to 15 (or variations thereof) have been proven effective. Exact wire spacings given are not critical in most cases and are often adjusted to suit the particular animal size and behavior.

For Crown range wire fences, the top wire is to be not more than 42 inches and the bottom wire not less than 18 inches from the ground as measured at the post. This is considered the most suitable for cattle while allowing wildlife passage.

Most all-wood fence construction is for corrals and feedlot use or for windbreak situations. Where sufficient material is available along the fence right-of-way, rail fence designs are occasionally used. However, with the increased value of timber, these fences are seldom being built.

For Crown range log fences, the height at the time of construction should not be greater than 54 inches. To allow fawns to move under the fence, use an oversized bottom block (minimum 15 inches) every 1,600 feet. To allow ungulate movement, create a wildlife jump every 1,600 feet by leaving one end of the top log on the ground.

For Crown range Russell fences, the top rail should be no more than 54 inches and the bottom rail at least 18 inches from the ground, measured at the center of the panel at the time of construction. To allow ungulate movement, create a wildlife jump every 1,600 feet by leaving one end of the top rail on the ground.

Non-Electric Sheep Fences

The control of sheep with non-electric fences can be achieved with either individual wire strands (barbed or smooth) or woven wire. Individual strands can be more effective when electrified. Barbed wire may not be suitable for sheep fences because the barbs will pull the fleece.

Non-Electric Horse Fences

Many horse injuries are fence related and may be as a result of fence design, materials, workmanship or combinations of these. While a horse fence may simply be a modified cattle design, the most successful horse fences are designed and built with specific horse habits in mind:

- the tendency to get hooves and legs caught in wires or brace assemblies
- the habit of chewing wooden boards
- the need for good fence visibility

Non-electric horse fences may be all wood, all steel wire, polymer, polyvinyl chloride (PVC) or combinations of these materials. Designs may be for low pressure pastures or high pressure corrals. Barbed wire may be a poor material for some horse fences (i.e., high value animals) and should not be electrified. Self-supporting steel fence panels linked together may be used in high-pressure situations when temporary or movable containment is required.

Chewing of wooden boards may be reduced or stopped by using electrified wires.

Woven wire should be chosen by the size of the openings. Some horses will put their hooves through openings or “walk down” a fence. A diamond weave material, a 2-inch by 4-inch rectangle opening or a polymer grid fabric (all “no climb” materials) can be used in these cases.

Special “estate” type materials are available for horse fencing which offer superior aesthetics and visibility. These include polymer coated steel wire (as a strand or rail), all polymer strand, all polymer grid fabric or polyvinyl chloride (PVC) posts and rails. Some of these are beyond the normal “farm fence.”

Refer to Factsheet No. 307.260-3 entitled ***Pasture Fencing for Horses*** for details of horse fencing and a comparison of various materials used for horse fences.

Non-Electric Game Fences

The *Game Farm Regulation* under the *Animal Health Act* in B.C. identifies bison, reindeer and fallow deer as permitted species that may be farmed. The perimeter fencing must be approved to obtain a game farm licence. This is a unique requirement in B.C. agriculture and recognizes the concern of escapements possibly establishing in the wild. Interior fencing is not regulated.

Bison Fences. Statements such as “Bison will respect any fence they want to” may give fence builders little faith in their work. However, bison are not generally considered to be a problem with fences given good management and sufficient space. Therefore cattle fence designs for medium or greater pressure can be modified for bison grazing areas.

Bison perimeter fencing should be at least 54 inches and may be up to 72 inches high (it is said if bison can get their nose over the fence they will attempt to push through or jump over it). These fences may be 5 to 8 individual strands or woven wire (a 10-strand, 60-inch-high wire is marketed as bison wire).

In bison calving areas, fence designs should be modified to reduce the space between wires for the smaller young animals with the addition of an extra wire strand or two. Bison corral fences are generally constructed much stronger than equivalent cattle corral fences that are shown on page 6. This is in respect for the bison size, strength and quickness as well as their temperament when confined in corrals or alleyways. If bison are confined for feeding (especially if mixed herd animals are together) use a corral grade fence not a low pressure grazing design.

Fallow Deer Fences. Two distinct fence designs are used: perimeter fences (permit design required) and interior fences (at the producers choice). The perimeter fence requirement of the game farm permit is:

- 7 feet total height, all of which must be woven wire
- knotted joint construction (for security)
- 6-inch vertical wire spacing (fawn proof)

All other design details are at the discretion of the producer as long as the ability to contain the deer is maintained. Refer to Factsheet No. 307.271-1 entitled **Deer Farm Perimeter Fence** for design details.

While a 7-foot height is specified, this is for the 'openness' of a woven wire fence. If deer can see a very distinct line at the top of fence (such as a top rail) they can jump 7 feet. Fences constructed of more solid material such as boards (i.e., holding yards at the barn) must be a minimum 8 feet in height, preferably 9 feet. Also, the snow pack should be considered if it may significantly reduce the effective fence height.

Reindeer Fences. Experience with fencing requirements to control reindeer is limited but suggests they are not a jumping deer. However, the initial perimeter fencing of reindeer in B.C. has been to fallow deer standards. This may change in the future with more experience. The small openings in some woven wire game fence will also help repel predators and as such the fence is serving a dual purpose.

Polymer or Plastic Fences

These materials are relatively new to agricultural fencing but offer some unique advantages. For livestock control, the main use has been for horse fencing, especially where aesthetics is important. Some of the more expensive options could be considered “estate” fences.

These materials weather well, can be coloured, offer good visibility, are easy to handle and may require low maintenance. Polymer materials are also used in crop protection and special fences.

Guide to Non-Electric Fence Designs for Livestock Control

Detailed designs and specifications are located on the following pages for the main agricultural non-electric fences as listed below. The designs shown in this Factsheet are on the page numbers given. Other designs are on the factsheets listed.

Table 1 Guide to Non-Electric Fence Designs for Livestock Control								
	All-Wood		Barbed Wire		High Tensile Smooth Wire		Woven Wire	
Cattle	Post & Rail	pg. 5	4-strand	pg. 9	4-strand	pg. 11	Woven	pg.15
	Snake Rail	pg. 6	5-strand	pg. 10	5-strand	pg. 12		
	Log & Block	pg. 7			6-strand	pg. 13		
	Russell	pg. 8			6-&8-strand	pg. 14		
Horses	Post & Rail	pg. 5			6-strand	pg. 16	Woven	pg. 17
	Snake Rail	pg. 6						
	Log & Block	pg. 7						
	Russell	pg. 8						
Sheep					6-strand	pg. 18	Woven	pg. 19
Bison			5-strand	pg. 20	7-strand	pg. 21	Woven	pg.22
Fallow Deer					5-strand	pg.23	Woven-Perimeter (see also details in Factsheet 307.271-1 <i>Deer Farm Perimeter Fence</i>)	pg. 24
							Woven-Interior	pg. 25
Reindeer					5-strand	pg.23	Woven-Perimeter Woven-Interior	pg. 24 pg. 25

Comments on the Following Fence Design Information

The material description of wooden posts indicates a diameter range which is the smallest diameter acceptable (usually the post top). For example '3–4 inch' notation describes a post requiring a minimum (top) diameter between 3 and 4 inches.

The following materials description and the amount of material required per mile of fence are calculated for level terrain. Rough or rolling terrain may require more materials.

Note that the brace materials are based on the basic single span, horizontal brace consisting of two driven posts and one horizontal rail (refer to Factsheet No. 307.220-2 entitled *Brace Assemblies for Wire Fences – End, Inline, and Change-of-Direction Braces*). Braces are spaced up to the maximum recommended tie-off distances for the type of fence wire used (refer to Factsheet No. 307.100-2 entitled *Fence Wire – Dispensing, Stapling, Joining, Tying, Tensioning and Grounding*).

NOTE: The following design information suggests minimum post, rail and brace member sizes, etc. Larger sizes or modifications to the designs may be chosen where the added cost and installation labour is considered worthwhile for improved benefits.

ALL-WOOD FENCE DESIGNS FOR CATTLE OR HORSES

- USE:** cattle, horses;
pasture, corral or feedlot
- RAILS:** 4 boards or 5 round
Rails overlapped joints
- POSTS:** spaced 6 to 12 feet
(depending on rail length)
- HEIGHT:** up to 60 inches
- NOTES** This is the basic
all-wood fence. Used
from pastures to feedlots.
See Factsheet 307.600-2
Wood Fence Construction.

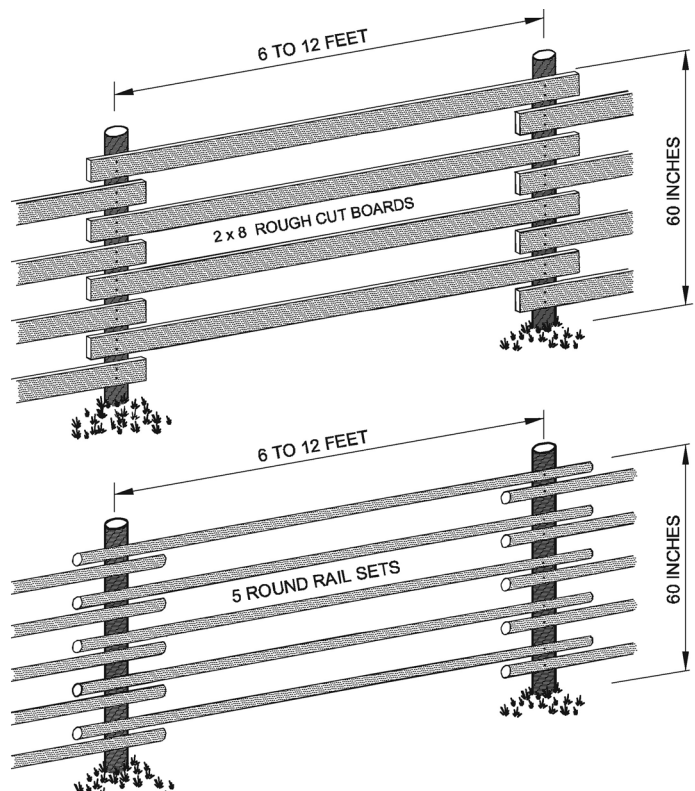


Figure 1 Post and Rail Fence for Cattle or Horses

Materials Required per Panel*		Description
Rails	4 boards or 5 rails	- 2 inch x 8 inch rough boards, or - 3 inch diameter round rails, peeled - use 4 boards or 5 round rails for corral or feedlot - less for pasture
Posts		- 4 to 5 inch diameter x 8 feet long; pasture - 5 to 6 inch diameter x 8 feet long; corral, feedlot - pressure-treated, pointed, domed - driven 2½ feet (min)
Nails	boards - 16 nails rails - 10 nails	- 5 inch ardox (spiral shank) - use 4 per board or 2 per rail

- Notes
1. Boards may be butt joined if they are twice the length of post spacing and the ground is level.
 2. Joints are alternated on posts.
 3. Place boards or rails on pressure (animal) side of posts.
If this is not possible, wire tie and/or nail an upright board over the joints.
 4. Bolts can be used in place of nails in high pressure situations such as feedlots.
 5. Flat steel washers (galvanized) may be used on nail heads for a larger surface contact area.

* A panel coverage of the right-of-way depends on post spacing - from 6 to 12 feet

USE: cattle, horse;
rangeland, pasture

RAILS: 3 or 4 logs

**PANEL
LENGTH:** 12 to 14 feet

HEIGHT: 42 to 50 inches

***WIDTH:** 6 to 7 feet

NOTES: This is the basic log
Fence design. It requires
a wide right-of-way.
See Factsheet 307.600-2
Wood Fence Construction

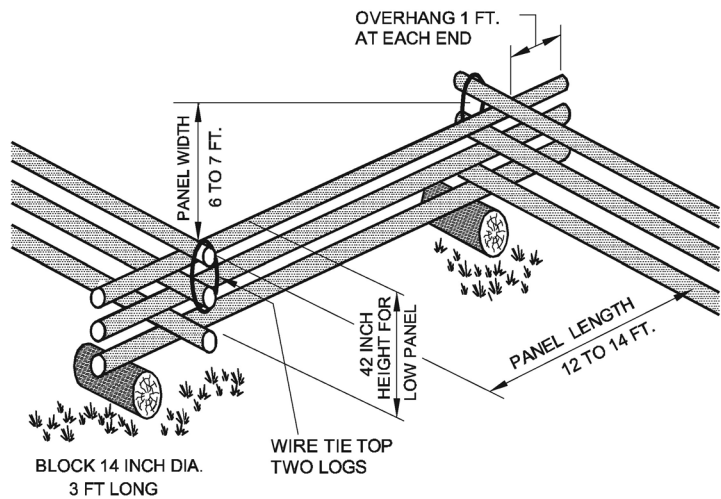


Figure 2 Snake Rail Fence

Materials Required per Panel* Description

Rails 3 or 4 - 6-inch diameter/4-log fence; 7-inch diameter/3-log fence
x 14–16 feet long (lodgepole pine preferred)
- three sides scored (min) or peeled
- 1-foot overhang each end
- notched on underside to fit rail or block below

Block 1 - 10-inch diameter/4-log fence; 14-inch diameter/3-log fence
x 3 feet - peeled (pressure-treated preferred)
- use flat rocks instead of wooden blocks where available

Tie Wire 5 feet - #10 black wire

Crown range fences note: maximum height of 54 inches at the time of construction; create a fawn pass every 1,600 feet (use 15 inch blocks); create a wildlife jump every 1,600 feet (leave one end of the top log on the ground).

* Panel coverage: - a 12 ft panel (14 ft rails) will cover 9 ft along the right-of-way; a 14 ft panel (16 ft rails) covers 12 ft

* Panel width = panel length ÷ 2 (i.e., 12 ft panel length: $12 \div 2 = 6$ ft panel width). Or refer to Figure 3, below.

Design Options: To reduce the panel width, and increase the coverage, use either of the following modifications:

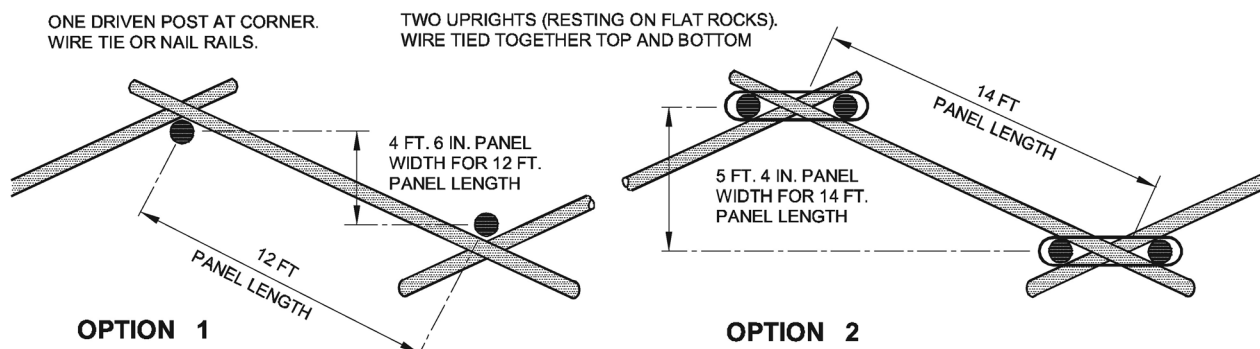


Figure 3 Reduced Panel Width Snake Rail Fences

USE:	cattle, horse; rangeland, pasture
RAILS:	3 or 4 logs
PANEL LENGTH:	12 to 14 feet
HEIGHT:	42 to 50 inches
WIDTH:	3 or 4 foot block length
NOTES:	This log fence design has a narrow width compared to the snake rail fence. See Factsheet 307.600-2 <i>Wood Fence Construction</i>

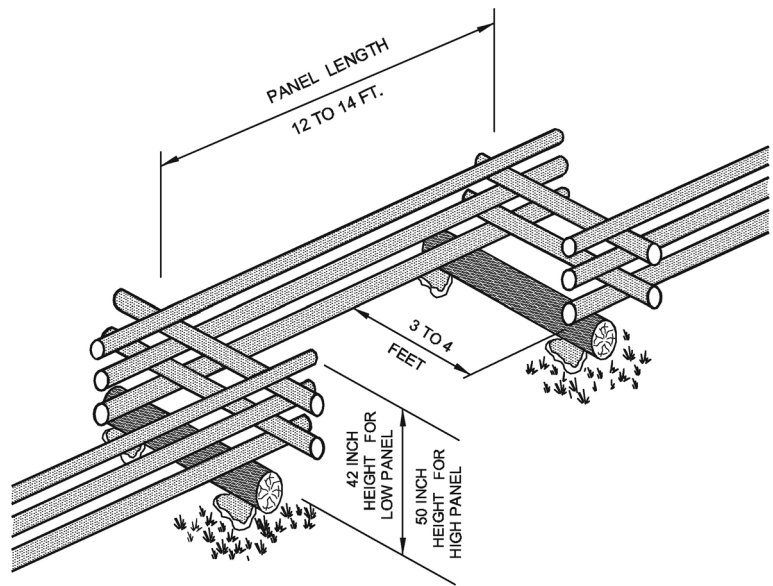


Figure 4 Log and Block Fence



Materials Required per Panel Description

Rails	3 or 4	<ul style="list-style-type: none"> - 6 to 7 inch diameter x 14 to 16 feet long - three sides scored (min) or peeled - 1 foot overhang each end. - notch on underside to fit block
Blocks	3 or 4	<ul style="list-style-type: none"> - 10-inch diameter/4-log fence; 14-inch diameter/3-log fence x 4 feet - other blocks 6–7 inch diameter x 3–4 feet long - three sides scored (min) or peeled - set bottom block on flat rocks, or treat the ground contact area (pressure-treated block preferred)

Crown range fences note: maximum height of 54 inches at the time of construction; create a fawn pass every 1,600 feet (use 15 inch blocks); create a wildlife jump every 1,600 feet (leave one end of the top log on the ground).

USE: cattle, horses;
rangeland, pasture

RAILS: 4 or 5 rails

**PANEL
LENGTH:** 12 feet

HEIGHT: 42 to 54 inches

WIDTH: 4 or 5 feet at supports

NOTES: A less used design that is labour intensive. Small diameter rails are used instead of logs. Untreated stake and tie poles will rot at ground contact points. Construction method requires practice. See Factsheet 307.600-2
Wood Fence Construction

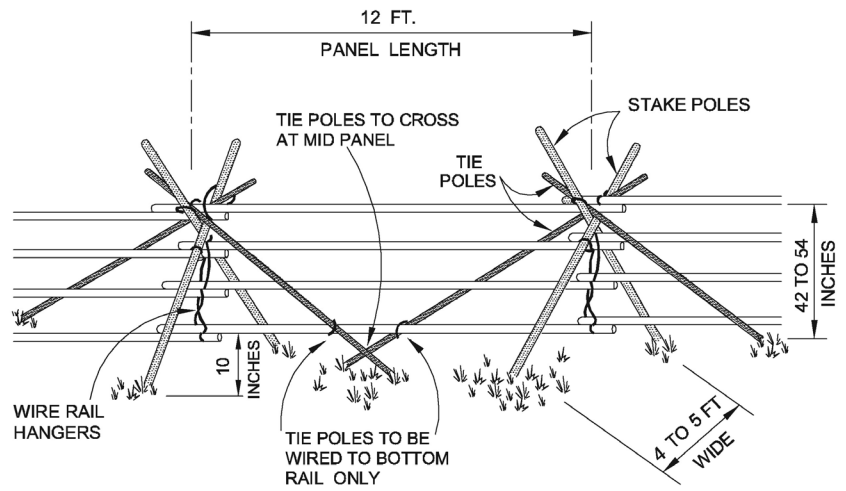


Figure 5 Russell Fence



Materials Required per Panel Description

Stake poles	2	- 2 @ 4 inch diameter x 6 ft long - 4 to 5 feet spread (to act as legs) - peeled, lodge pole pine preferred
Tie poles	2	- 2 @ 2 inch diameter x 10 feet long - to meet each other at mid panel - wired to bottom rail only - peeled, lodge pole pine preferred
Rails	4	- 4 @ 4 inch diameter x 14 feet long - may use 5 smaller diameter rails - may use split rails - peeled, lodge pole pine preferred
Tie Wire	approx. 20 feet	- #10 black wire to wire rail hangers, support and tie pole ties

Crown range fences note: maximum height of 54 inches and the bottom rail at least 18 inches from the ground, measured at the centre of the panel at the time of construction; create a wildlife jump every 1,600 feet (leave one end of the top rail on the ground).

NON-ELECTRIC WIRE FENCE DESIGNS FOR CATTLE

- USE:** cattle, rangeland;
low pressure
- WIRE:** 4 strands, barbed
- *POSTS:** spaced 15 feet
- HEIGHT:** 42 inches
- DROPPERS:** none
- *BRACES** spaced up to 660 feet
(8 per mile)
- NOTES:** This is the basic barbed
wire cattle design.

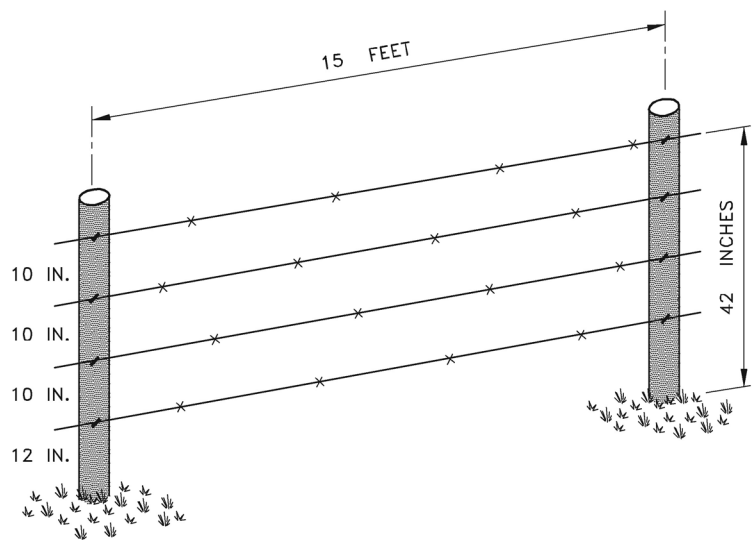


Figure 6 Four-Strand Barbed Wire Cattle Fence



Materials Required per Mile*		Description
Wire	16 rolls	<ul style="list-style-type: none">- double strand barbed wire, 1,320 feet per roll- 12½ ga, 4-point barbs- Class 1 galvanizing (min.)- 950-lb breaking strength (min)- prestretch to 600 lb then relax to 250-lb tension when installing
Line Posts	*352	<ul style="list-style-type: none">- 3 to 4 inch diameter x 7 feet long- pressure treated, pointed, domed- driven 2½ feet (min)
Brace Posts	*16	<ul style="list-style-type: none">- 4 to 5 inch diameter x 8 feet long (2 per brace)- pressure treated, pointed, domed- driven 3½ feet (min)
Brace Rails	*8	<ul style="list-style-type: none">- 4 to 5 inch diameter x 10 ft long (1 per brace)- optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1 <i>Brace Assemblies for Wire Fences-What they Are, How They Work</i>)
Staples	½ box	<ul style="list-style-type: none">- 1¾ inch, slash point, hot dip galvanized (2 in preferred)- angled across post grain by rotating away from the slash point- not driven home on line posts

* per mile of level terrain—rough terrain may require more posts and braces

USE: cattle;
medium pressure

WIRE: 5 strands, barbed

***POSTS:** spaced 20 feet

HEIGHT: 44 inches

DROPPERS: 1 spaced 10 feet
between posts

***BRACES:** spaced up to 660 feet
(8 per mile)

NOTES: Similar to Cattle 4-Strand
Barbed but with 25% fewer
posts, 25% more wire, and
droppers. The Cattle 4- and 5-Strand
Barbed designs have the same material costs.

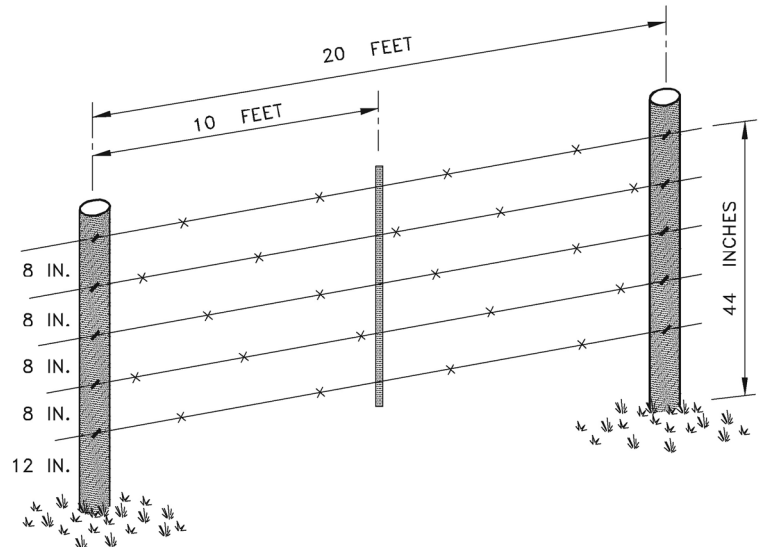


Figure 7 Five-Strand Barbed Wire Cattle Fence



Materials Required per Mile*

Wire 20 rolls

Line Posts *264

Brace Posts *16

Brace Rails *8

Droppers 264

Staples ½ box

Description

- double strand barbed wire, 1,320 feet per roll
- 12½ ga, 4-point barbs
- Class 1 galvanizing (min)
- 950-lb breaking strength (min)
- prestretch to 600 lb then relax to 250-lb tension when installing
- 3 to 4 inch diameter x 7 feet long
- pressure treated, pointed, domed
- driven 2½ feet (min)
- 4 to 5 inch diameter x 8 feet long (2 per brace)
- pressure treated, pointed, domed
- driven 3½ feet (min)
- 4 to 5 inch diameter x 10 feet long (1 per brace)
- optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1 *Brace Assemblies for Wire Fences-What they Are, How They Work*)
- 1½-inch diameter wood or equivalent
- wire tied to fence wires with low tensile steel wire
- 1¾-inch, slash point, hot dip galvanized (2 inch preferred)
- angled across post grain by rotating away from the slash point
- not driven home on line posts

* per mile of level terrain—rough terrain may require more posts and braces

USE:	cattle, rangeland; low pressure
WIRE:	4 strand, htsw
*POSTS:	spaced 20 feet
HEIGHT:	42 inches
DROPPERS:	1 spaced 10 feet between posts
*BRACES:	spaced up to 1320 feet (4 per mile)
NOTES:	This is the basic htsw cattle design. A 24% savings in material costs over the Cattle 4- and 5-Strand Barbed designs.

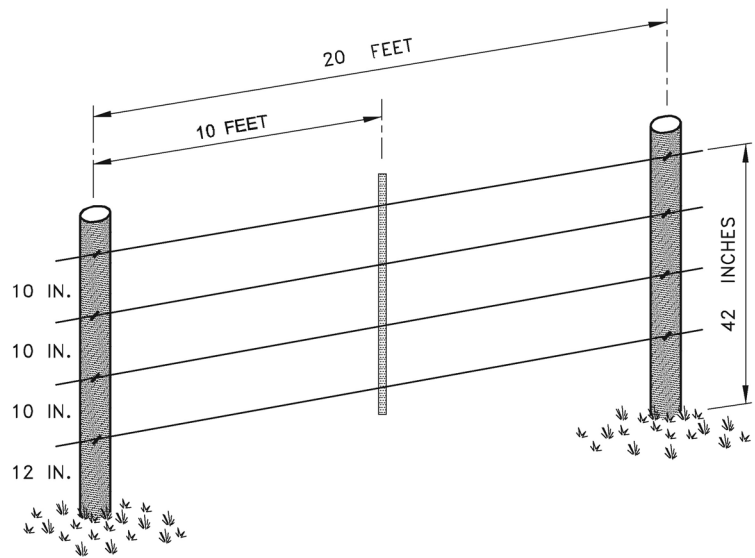


Figure 8 Four-Strand High Tensile Smooth Wire Cattle Fence

Materials Required per Mile*		Description
Wire	5.7 rolls	<ul style="list-style-type: none"> - single-strand htsw, 3,750 feet per 100 lb roll - 12½ ga, Class 3 galvanizing (standard) - 1350 lb breaking strength (min) - tensioned to 250 lb
Line Posts	*264	<ul style="list-style-type: none"> - 3 to 4 inch diameter x 7 feet long - pressure treated, pointed, domed - driven 2½ feet (min)
Brace Posts	*8	<ul style="list-style-type: none"> - 4 to 5 inch diameter x 8 feet long (2 per brace) - pressure treated, pointed, domed - driven 3½ feet (min)
Brace Rails	*4	<ul style="list-style-type: none"> - 4 to 5 inch diameter x 10 feet long (1 per brace) - optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1 <i>Brace Assemblies for Wire Fences-What they Are, How They Work</i>)
Droppers	264	- suitable for htsw (Factsheet 307.100-3 <i>Droppers for Wire Fences</i>)
Staples	½ box	<ul style="list-style-type: none"> - 2-inch, slash point, hot dip galvanized - angled across post grain by rotating away from the slash point - not driven home on line posts
Tensioners	16	<ul style="list-style-type: none"> - 1 per strand per brace section - suitable for htsw

* per mile of level terrain—rough terrain may require more posts and braces

USE:	cattle, rangeland, pasture medium pressure
WIRE:	5 strands, htsw
*POSTS	spaced 30 feet
HEIGHT:	44 inches
DROPPERS:	2 spaced 10 feet between posts
*BRACES	spaced up to 1320 feet (4 per mile)
NOTES:	Most popular htsw design. Similar to Cattle 4-Strand Smooth design but with 33% fewer posts, 25% more wire, and 33% more droppers. Same material cost as Cattle 4- and 6-Strand Smooth designs.

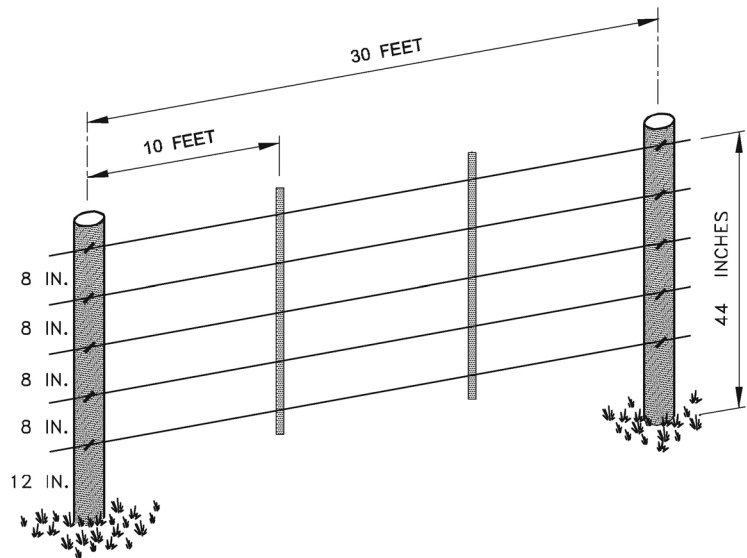


Figure 9 Five-Strand High Tensile Smooth Wire Cattle Fence

Materials Required per Mile*		Description
Wire	7.1 rolls	<ul style="list-style-type: none"> - single strand htsw, 3,750 feet per 100 lb roll - 12½ ga, Class 3 galvanized (standard) - 1350 lb breaking strength (min) - tensioned to 250 lb
Line Posts	*176	<ul style="list-style-type: none"> - 3 to 4 inch diameter x 7 feet long - pressure treated, pointed, domed - driven 2½ feet (min)
Brace Posts	*8	<ul style="list-style-type: none"> - 4 to 5 inch diameter x 8 feet long (2 per brace) - pressure treated, pointed, domed - driven 3½ feet (min)
Brace Rails	*4	<ul style="list-style-type: none"> - 4 to 5 inch diameter x 10 feet long (1 per brace) - optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1 <i>Brace Assemblies for Wire Fences-What they Are, How They Work</i>)
Droppers	352	- suitable for htsw (Factsheet 307.100-3 <i>Droppers for Wire Fences</i>)
Staples	1/3 box	<ul style="list-style-type: none"> - 2 inch, slash point, hot dip galvanized - angled across post grain by rotating away from the slash point - not driven home on line posts
Tensioners	20	<ul style="list-style-type: none"> - 1 per strand per brace section - suitable for htsw

* per mile of level terrain—rough terrain may require more posts and braces

USE: cattle; medium pressure

WIRE: 6 strands, htsw

***POSTS:** spaced 40 feet

HEIGHT: 44 inches

DROPPERS: 3 spaced 10 feet
between posts

***BRACES** spaced up to 1320 feet
(4 per mile)

NOTES: Suitable for level terrain.
Similar to Cattle 5-Strand Smooth
design but with 25% fewer posts,
20% more wire, 13% more droppers.
Same material cost as Cattle 4- and
5-Strand Smooth designs.

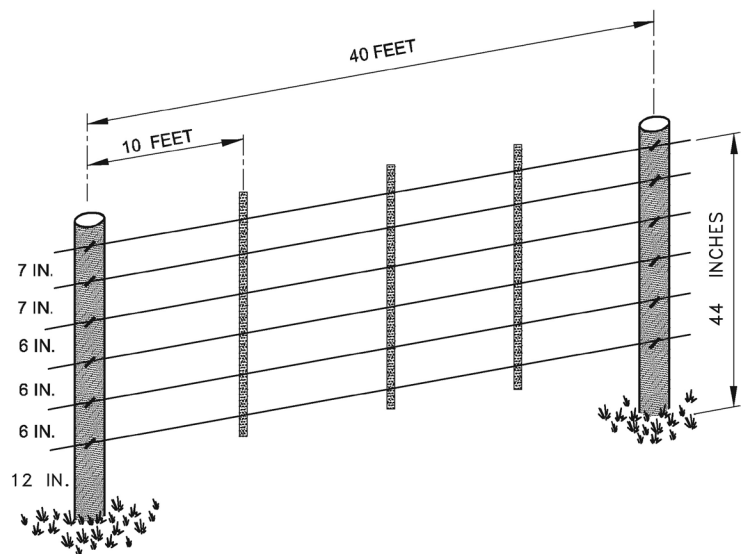


Figure 10 Six-Strand High Tensile Smooth Wire Cattle Fence

Materials Required per Mile*		Description
Wire	8.5 rolls	<ul style="list-style-type: none">- single strand htsw, 3,750 feet per 100 lb roll- 12½ ga, Class 3 galvanized (standard)- 1350 lb breaking strength (min)- tensioned to 250 lb
Line Posts	*132	<ul style="list-style-type: none">- 3 to 4 inch diameter x 7 feet long- pressure treated, pointed, domed- driven 2½ feet (min)
Brace Posts	*8	<ul style="list-style-type: none">- 4 to 5 inch diameter x 8 feet long (2 per brace)- pressure treated, pointed, domed- driven 3½ feet (min)
Brace Rails	*4	<ul style="list-style-type: none">- 4 to 5 inch diameter x 10 feet long (1 per brace)- optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1 <i>Brace Assemblies for Wire Fences-What they Are, How They Work</i>)
Droppers	396	<ul style="list-style-type: none">- suitable for htsw (Factsheet 307.100-3 <i>Droppers for Wire Fences</i>)
Staples	1/3 box	<ul style="list-style-type: none">- 2 inch, slash point , hot dip galvanized- angled across post grain by rotating away from the slash point- not driven home on line posts
Tensioners	24	<ul style="list-style-type: none">- 1 per strand per brace section- suitable for htsw

* per mile of level terrain—rough terrain may require more posts and braces

USE: cattle; high pressure

WIRE: 6 or 8 strands, htsw

***POSTS** spaced 20 or 30 feet

HEIGHT: 44 or 45 inches

DROPPERS: 3 spaced 5 or 7 ½ feet between posts

***BRACES** spaced up to 1320 feet (4 per mile)

NOTES: Suitable for intensive feeding cows or calves. No wind protection as with wood board fencing but lower cost.

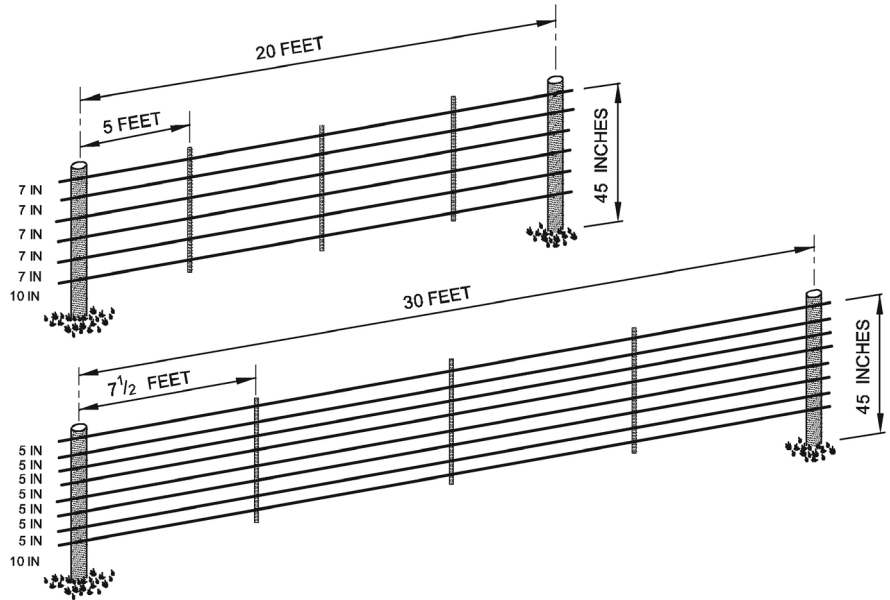


Figure 11 Six-and Eight-Strand High Tensile Smooth Wire Cattle Fences

Materials Required per Mile*		Description
Wire	6 strand - 8.5 rolls 8 strand - 11.3 rolls	- single strand htsw, 3,750 feet per 100 lb roll - 12½ ga, Class 3 galvanized (standard) - 1350 lb breaking strength (min) - tensioned to 250 lb
Line Posts	6 strand -*264 8 strand -*176	- 3 to 4 inch diameter x 7 feet long - pressure treated, pointed, domed - driven 2½ feet (min)
Brace Posts	*8	- 5 to 6 inch diameter x 8 feet long (2 per brace) - pressure treated, pointed, domed - driven 4 feet (min)
Brace Rails	*4	- 4 to 5 inch diameter x 10 feet long (1 per brace) - optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1 <i>Brace Assemblies for Wire Fences-What they Are, How They Work</i>)
Droppers	6 strand – 792 8 strand - 528	- suitable for htsw (Factsheet 307.100-3 <i>Droppers for Wire Fences</i>)
Staples	6 strand -½ box 8 strand - ¾ box	- 2 inch, slash point , hot dip galvanized - angled across post grain by rotating away from the slash point - not driven home on line posts
Tensioners	6 strand –24 8 strand –32	- 1 per strand per brace section - suitable for htsw

Notes

1. For very high pressure situations (such as feedlot) use 8 strands with posts at 20 feet.
2. For high pressure on both sides of a fence, posts can be drilled and the wire threaded through the post rather than stapled on one side. Or alternate the wires from side-to-side of posts.
3. Double span braces may be required.

* per mile of level terrain—rough terrain may require more posts and braces

USE:	cattle; medium to high pressure
WIRE:	woven 9 or 10 horizontals 6 or 12 inch spaced verticals
*POSTS	spaced 20 feet
HEIGHT:	42 to 53 inches
DROPPERS:	none
*BRACES:	spaced up to 660 feet (8 per mile)
NOTES:	Higher security but more material costs than either barbed or htsw.

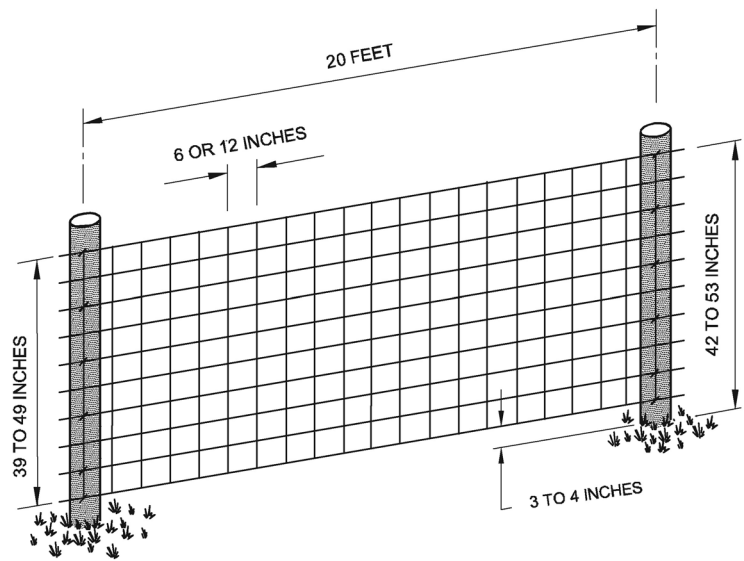


Figure 12 Woven Wire Cattle Fence

Materials Required per Mile*		Description
Wire	16 rolls	<ul style="list-style-type: none"> - woven; 9/49 knotted joint or 9/39, 10/47 hinged joint - 6 or 12 inch spacing on vertical wires - 12½ ga,(some have heavier top and bottom wire) - galvanized, 330 feet per roll, 115 to 183 lb
Line Posts	*264	<ul style="list-style-type: none"> - 3 to 4 inch diameter x 7 feet long - pressure treated, pointed, domed - driven 2½ feet (min)
Brace Posts	*16	<ul style="list-style-type: none"> - 4 to 5 inch diameter x 8 feet long (2 per brace) - pressure treated, pointed, domed - driven 3½ feet (min)
Brace Rails	*8	<ul style="list-style-type: none"> - 4 to 5 inch diameter x 10 feet long (1 per brace) - optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1 <i>Brace Assemblies for Wire Fences-What they Are, How They Work</i>)
Staples	½ box	<ul style="list-style-type: none"> - 1¾ inch, slash point , hot dip galvanized - angled across post grain by rotating away from the slash point - not driven home on line posts

* per mile of level terrain—rough terrain may require more posts and braces

NON-ELECTRIC WIRE FENCE DESIGNS FOR HORSES

- USE:** horses; low to medium pressure
- WIRE:** 6 strands, htsw
- *POSTS** spaced 20 feet
- HEIGHT:** 52 inches
- DROPPERS:** 1 spaced 10 feet between posts
- *BRACES:** spaced up to 1320 feet (4 per mile)
- NOTES:** Some concern about horses catching hooves in individual strand wire fences.
See Factsheet 307.260-3
Pasture Fencing for Horses

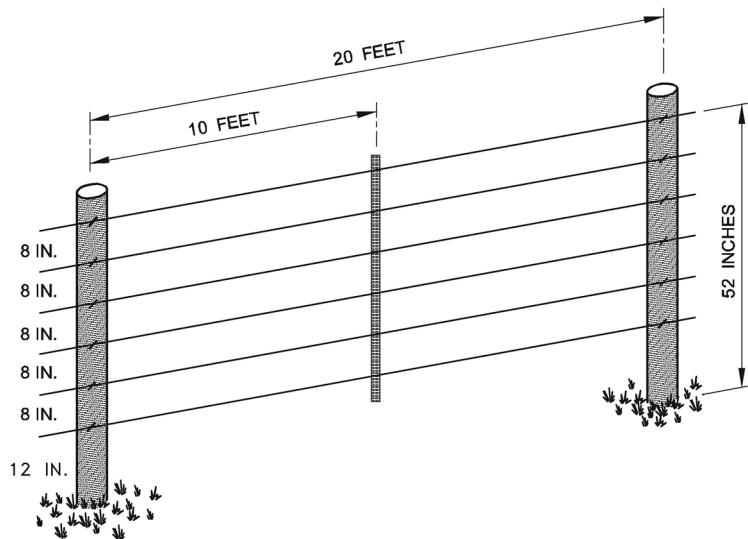


Figure 13 Six-Strand High Tensile Smooth Wire Horse Fence



Materials Required per Mile*		Description
Wire	8.5 rolls of htsw	<ul style="list-style-type: none">- single strand htsw, 3,750 feet per 100 lb roll- 12½ ga, Class 3 galvanizing (standard)- 1350 lb breaking strength (min)- tensioned to 250 lb
Line Posts	*264	<ul style="list-style-type: none">- 3 to 4 inch diameter x 7 feet long- pressure treated, pointed, domed- driven 2½ feet (min)
Brace Posts	*8	<ul style="list-style-type: none">- 4 to 5 inch diameter x 8 feet long (2 per brace)- pressure treated, pointed, domed- driven 3½ feet (min)
Brace Rails	*4	<ul style="list-style-type: none">- 4 to 5 inch diameter x 10 feet long (1 per brace)- optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1 <i>Brace Assemblies for Wire Fences-What they Are, How They Work</i>)
Droppers	264	<ul style="list-style-type: none">- suitable for htsw (Factsheet 307.100-3 <i>Droppers for Wire Fences</i>)
Staples	½ box	<ul style="list-style-type: none">- 2 inch, slash point , hot dip galvanized- angled across post grain by rotating away from the slash point- not driven home on line posts
Tensioners	24	<ul style="list-style-type: none">- 1 per strand per brace section- suitable for htsw

* per mile of level terrain—rough terrain may require more posts and braces

USE: horses; high pasture

WIRE: woven
9 or 10 horizontals
6 or 12 inch spaced
verticals

***POSTS** spaced 20 feet

HEIGHT: 52 to 59 inches

DROPPERS: none

***BRACES** spaced up to 660 feet
(8 per mile)

NOTES: For horse fencing
materials information,
see Factsheet 307.260-3
Pasture Fencing for Horses.

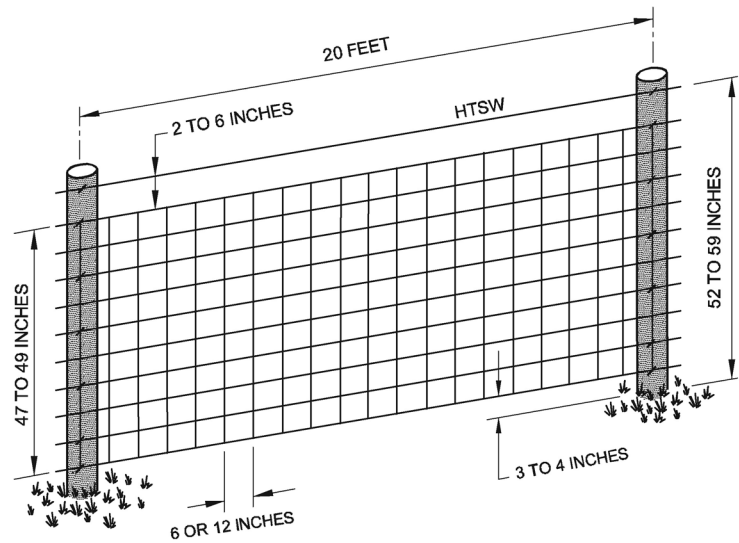


Figure 14 Woven Wire Horse Fence

Note, that this fence design materials description and required amounts are the same as for the *Woven Wire Cattle Fence* design, page 15, except for the following:

- woven wire choices are 9/49 or 12/48 knotted joint, or 10/47 hinged joint, at either 6 or 12 inch spaced vertical wires.
- choose knotted joint wire in high pressure applications.
- some horses may catch hooves in the 12 inch spaced vertical woven wire; choose either the 6 inch spacing or special “diamond” weave wire.
- use one or more top strands of htsw (possibly electrified) for added height (requires 1.4 rolls htsw per mile for each extra top wire).
- refer to Factsheet 307.260-3 *Pasture Fencing for Horses*, for horse fence materials information.

NON-ELECTRIC WIRE FENCE DESIGNS FOR SHEEP

USE:	sheep interior; low pressure
WIRE:	6 strands htsw
POSTS:	spaced 20 ft
HEIGHT:	36 inches
DROPPERS:	3 spaced 5 feet between posts
*BRACES:	spaced up to 1320 feet (4 per mile)
NOTES:	Nonelectric htsw is only suitable for sheep in low pressure nonperimeter fences. See electric designs in Factsheet 307.260-2

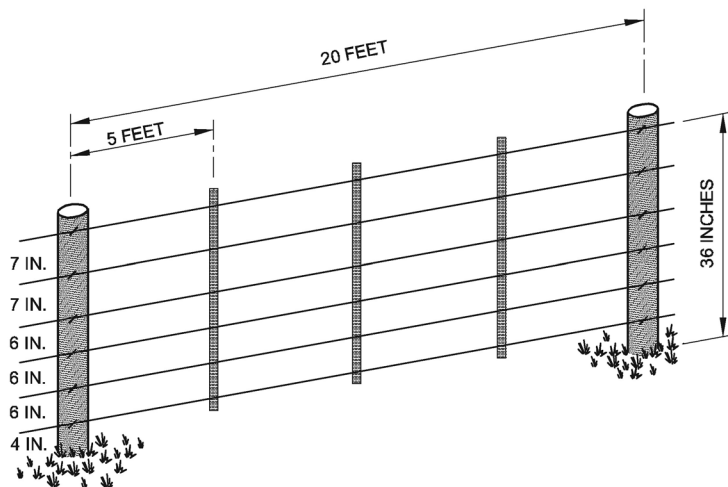


Figure 15 Six-Strand High Tensile Smooth Wire Sheep Fence

Materials Required per Mile* Description

Wire	8.5 rolls	- single strand htsw, 3,750 feet per 100 lb roll - 12½ ga, Class 3 galvanized (standard) - 1350 lb breaking strength (min) - tensioned to 250 lb
Line Posts	*264	- 3 to 4 inch diameter x 7 feet long - pressure treated, pointed, domed - driven 2½ feet (min)
Brace Posts	*8	- 4 to 5 inch diameter x 8 feet long (2 per brace) - pressure treated, pointed, domed - driven 3½ feet (min)
Brace Rails	*4	- 4 to 5 inch diameter x 10 feet long (1 per brace) - optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1 <i>Brace Assemblies for Wire Fences-What they Are, How They Work</i>)
Droppers	792	- suitable for htsw (Factsheet 307.100-3 <i>Droppers for Wire Fences</i>)
Staples:	½ box	- 2 inch, slash point, hot dip galvanized - angled across post grain by rotating away from the slash point - not driven home on line posts
Tensioners	24	- 1 per strand per brace section - suitable for htsw

* per mile of level terrain—rough terrain may require more posts and braces



USE: sheep perimeter;
medium to high pressure

WIRE: woven
7 to 10 horizontals
6 inch spaced verticals

***POSTS:** spaced 15 feet

HEIGHT: 34 to 41 inches

DROPPERS: none

***BRACES** spaced 660 feet
(8 per miles)

NOTES: This is the standard
perimeter fence for sheep

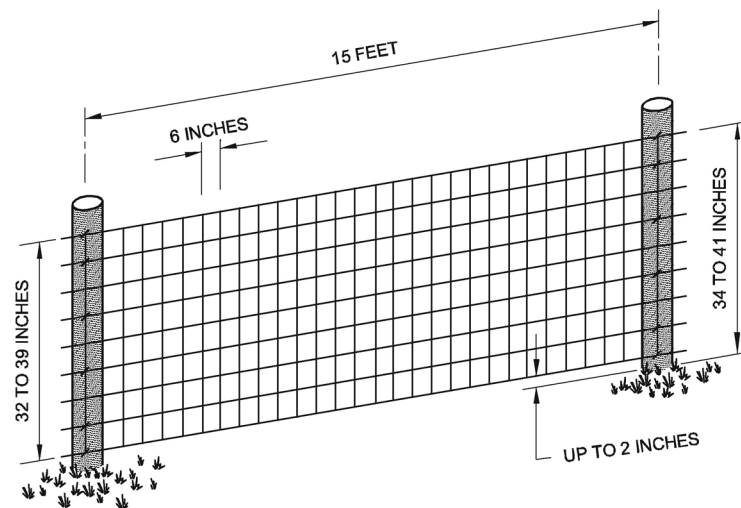


Figure 16 Woven Wire Sheep Fence

Materials Required per Mile*		Description
Wire	16 rolls	<ul style="list-style-type: none">- woven; 8/32 or 9/39 hinged joint (9/49 knotted joint available)- 6 in spacing on vertical wires- 12½ ga, (some have heavier top & bottom wires)- galvanized, 330 feet per roll, 132–153 lb
Line Posts	*352	<ul style="list-style-type: none">- 3 to 4 inch diameter x 7 feet long- pressure treated, pointed, domed- driven 2½ feet (min)
Brace Posts	*16	<ul style="list-style-type: none">- 4 to 5 inch diameter x 8 feet long (2 per brace)- pressure treated, pointed, domed- driven 3½ feet (min)
Brace Rails	*8 brace rails	<ul style="list-style-type: none">- 4 to 5 inch diameter x 10 feet long (1 per brace)- optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1 <i>Brace Assemblies for Wire Fences-What they Are, How They Work</i>)
Staples	½ box	<ul style="list-style-type: none">- 1¾ inch, slash point , hot dip galvanized- angled across post grain by rotating away from the slash point- not driven home on line posts

Note - Woven wire suitable for sheep is available in heights from 26 to 39 inch. To obtain the required total height use one or more strands of barbed or htsw above the woven wire and/or set the bottom of the wire 2 inch. about the ground.

* per mile of level terrain—rough terrain may require more posts and braces

NON-ELECTRIC WIRE FENCE DESIGNS FOR BISON

USE: farmed bison; perimeter

WIRE: 5 strands barbed
6 strands optional¹

***POSTS:** spaced 18 feet

HEIGHT: 54 inches
66 inches optional

DROPPERS: 2 spaced 6 feet
between posts

***BRACES** spaced up to 660 feet
(8 per miles)

NOTES: May be extended to 66 inches high with one extra strand¹ at 12 inches and longer posts² or pole extensions. See also hts. and woven wire design.

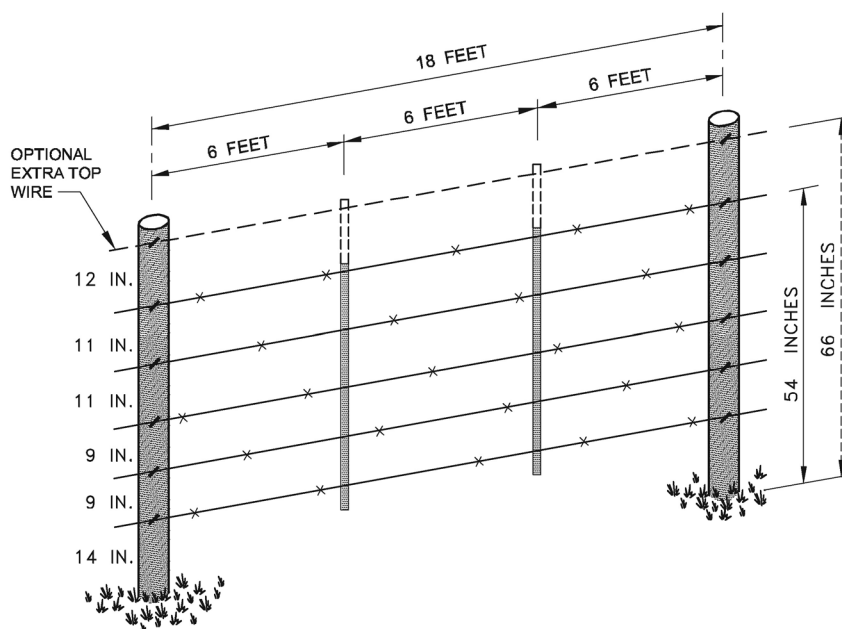


Figure 17 **Five-Strand Barbed Wire Bison Perimeter Fence**

Materials Required per Mile*		Description
Wire	20 rolls ¹	<ul style="list-style-type: none"> - double strand barbed wire, 1,320 feet per roll - 12½ ga, 4 point barbs - Class 1 galvanizing, 950 lb breaking strength (min) - prestretch to 600 lb then relax to 250 lb when installing
Line Posts	*294	<ul style="list-style-type: none"> - 3 to 4 inch diameter x 7 feet long² - pressure treated, pointed, domed - driven 2½ feet (min)
Brace Posts	16	<ul style="list-style-type: none"> - 5 to 6 inch diameter x 8 feet long (2 per brace)³ - pressure treated, pointed, domed - driven 3½ feet (min)
Brace Rails	8	<ul style="list-style-type: none"> - 4 to 5 inch diameter x 10 feet long (1 per brace) - optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1 <i>Brace Assemblies for Wire Fences-What they Are, How They Work</i>)
Droppers	588	<ul style="list-style-type: none"> - 1½ inch dia wood or equivalent
Staples	½ box	<ul style="list-style-type: none"> - 2 inch, slash point, hot dip galvanized (barbed staples optional) - angled across post grain by rotating away from slash point - not driven home on line posts

Notes

1. If extra top wire is used (for 6 strands total) require 24 rolls barbed wire total per mile.
2. 8 ft line posts required if extra top wire used
3. 9 ft brace posts required if extra top wire used

* per mile of level terrain—rough terrain may require more posts and braces

Diagram illustrating the dimensions of a 6-foot high chain-link fence section:

- Overall Height:** 66 INCHES
- Main Fence Body Height:** 54 INCHES
- Post Spacing:** 6 FEET (between posts)
- Total Length:** 18 FEET
- Wire Spacing (from bottom to top):**
 - 8 IN.
 - 6 IN.
 - 6 IN.
 - 8 IN.
 - 8 IN.
 - 10 IN.
 - 12 IN.
- Optional Extra Top Wire:** Indicated by a dashed line above the main fence body.

Materials Required per Mile*		Description
Wire	9.9 rolls ¹	<ul style="list-style-type: none"> - single strand htsw, 3,750 feet per roll - 12½ ga, Class 3 galvanized (standard) - 1350 lb breaking strength (min) - tensioned to 250 lb
Line Posts	294	<ul style="list-style-type: none"> - 3 to 4 inch diameter x 7 fet long² - pressure treated, pointed, domed - driven 2½ feet (min)
Brace Posts	8	<ul style="list-style-type: none"> - 5 to 6 inch diameter x 8 feet long (2 per brace)³ - pressure treated, pointed, domed - driven 3½ feet (min)
Brace Rails	4	<ul style="list-style-type: none"> - 4 to 5 inch diameter x 10 feet long (1 per brace) - optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1 <i>Brace Assemblies for Wire Fences-What they Are, How They Work</i>)
Droppers	588	<ul style="list-style-type: none"> - suitable for htsw (Factsheet 307.100-3 <i>Droppers for Wire Fences</i>)
Staples	½ box	<ul style="list-style-type: none"> - 2 inch, slash point, hot dip galvanized (barbed staples optional) - angled across post grain by rotating away from the slash point - not driven home on line posts
Tensioners	28	<ul style="list-style-type: none"> - 1 per strand per brace section - suitable for htsw

USE: farmed bison perimeter;
high pressure

WIRE: woven
10 horizontals
12 inch spaced verticals

***POSTS:** spaced 15 feet

HEIGHT: up to 64 inches

DROPPERS: none

***BRACES:** spaced up to 660 feet
(8 per mile)

NOTES: A high grade perimeter
bison fence. Choose for
high pressure areas, along
public roads, etc. See also
barbed and htsw designs.

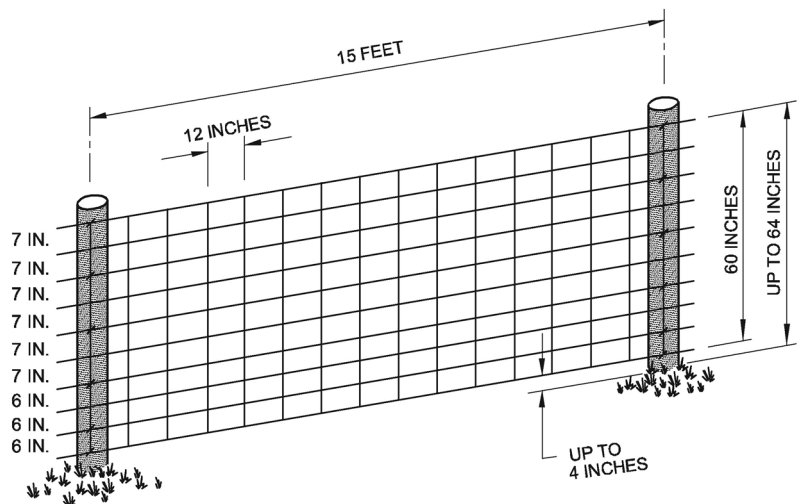


Figure 19 Woven Wire Bison Perimeter Fence



Materials Required per Mile*

Wire 8 rolls

Line Posts *352

Brace Posts *16

Brace Rails 8

Staples 5/8 box

Description

- 10/60/12, knotted joint
- 10 horizontals, 60 in high,
- 12 in spacing on verticals
- 12½ ga high tensile horizontals
- medium tensile verticals
- galvanized, 660 feet per roll, 290 lb

- 3 to 4 inch diameter x 8 feet long
- pressure treated, pointed, domed
- driven 2½ feet (min)

- 5 to 6 inch diameter x 9 feet long (2 per brace)
- pressured treated, pointed, domed
- driven 3½ feet (min)

- 4 to 5 inch diameter x 10 feet long (1 per brace)
- optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1
Brace Assemblies for Wire Fences-What they Are, How They Work)

- 2 inch, slash point, hot dip galvanized
- angled across post grain by rotating away from the slash point
- not driven home on line posts

* per mile of level terrain—rough terrain may require more posts and braces

NON-ELECTRIC WIRE FENCE DESIGNS FOR GAME FARM DEER

USE: reindeer, cross fence;
low pressure, pasture division fence

Wire: 5 strands, htsw

***POSTS:** spaced 15 feet

HEIGHT: 48 inches

DROPPERS: 2 spaced 5 feet
between posts

***BRACES:** spaced up to 1320 feet
(4 per mile)

NOTES: Also for bison. May be used for
fallow deer. NOT FOR FAWNS.
This can be electrified for greater stock
control. See electric designs in Factsheet 307.260-2

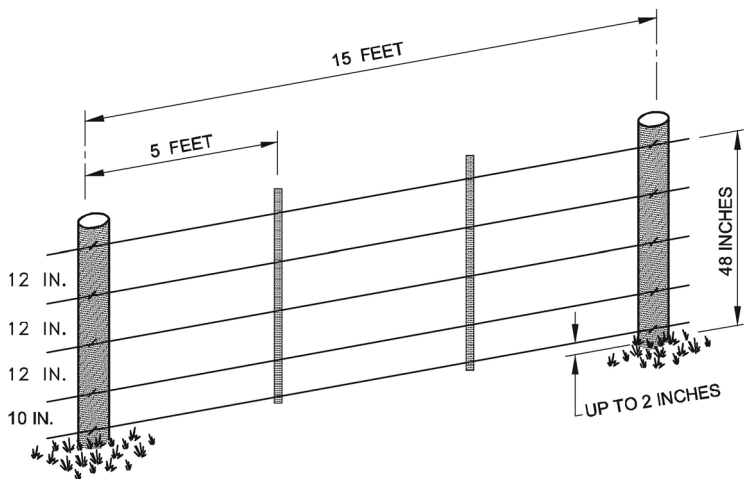


Figure 20 Five-Strand High Tensile Smooth Wire Game Farm Deer Interior Fence

Materials Required per Mile*		Description
Wire	8.5 rolls	- single strand htsw, 3,750 feet per 100 lb roll - 12½ ga Class 3 galvanized (standard) - 350 lb breaking strength (min) - tensioned to 250 lb
Line Posts	*352	- 3 to 4 inch diameter x 7 feet long - pressure treated, pointed domed - driven 2½ feet (min)
Brace Posts	*8	- 4 to 5 inch diameter x 8 feet long (2 per brace) - pressure treated, pointed, domed - driven 3½ feet (min)
Brace Rails	*4	- 4 to 5 inch diameter x 10 feet long (1 per brace) - optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1 <i>Brace Assemblies for Wire Fences-What they Are, How They Work</i>)
Droppers	704	- suitable for htsw (Factsheet 307.100-3 <i>Droppers for Wire Fences</i>)
Staples	¾ box	- 2 inch, slash point, hot dip galvanized - angled across post grain by rotating away from the slash point - not driven home on line posts
Tensioners	20	- 1 per strand per brace section - suitable for htsw

* per mile of level terrain—rough terrain may require more posts and braces

USE:	farmed fallow deer, reindeer perimeter (permit standards)
WIRE:	woven; 17 or 18 horizontals 6 inch spaced verticals for fallow, or 12 inch spaced verticals for reindeer
*POSTS:	spaced 20 feet
HEIGHT:	84 inches minimum
DROPPERS:	none
*BRACES:	spaced up to 660 feet (8 per mile)
NOTES:	Perimeter fence for game farm licence. See Factsheet 307.271-1 <i>Deer Farm Perimeter Fencing</i>

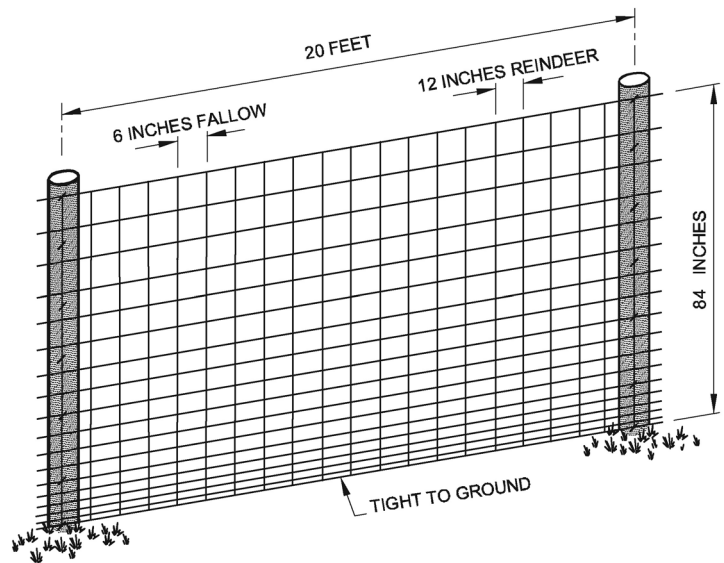


Figure 21 Woven Wire Game Deer Perimeter Fence

Materials Required per Mile* Description

Wire	16 rolls	<ul style="list-style-type: none"> - knotted joint required for perimeter fence permit - horizontal wire spacing is graduated - high tensile wire horizontals, medium tensile verticals - 18/86 for full height, all woven - 6 in spaced verticals (fallow deer) -12 in spaced verticals (reindeer) - galvanized, 330 feet per roll; 237 to 358 lb roll weight
Line Posts	*264	<ul style="list-style-type: none"> - 4 to 5 inch diameter x 10 feet long - pressure treated, pointed, domed - driven 3 feet.
Brace Posts	*16	<ul style="list-style-type: none"> - 5 to 6 inch diameter x 11 feet long (2 per brace) - pressure treated, pointed, domed - driven 4 feet
Brace Rails	*8	- 4 to 5 in. diameter x 10 feet long (1 per brace) set at $\frac{3}{4}$ brace height
Staples	$\frac{3}{4}$ box	<ul style="list-style-type: none"> - 2 inch slash point, hot dipped galvanized - angled across post grain by rotating away from the slash point - not driven home on line posts



Note - do not use any material that is “bolder” than wire (i.e., a wood plank) along the top of the fence as deer can jump 7 feet if they can clearly see the top of the fence.

* per mile of level terrain—rough terrain may require more posts and braces

USE: farmed fallow deer,
reindeer interior;
medium to high pressure

WIRE: woven
15 horizontals
6 or 12 inch spaced verticals

***POSTS:** spaced 20 feet

HEIGHT: 60 inches or greater

DROPPERS: none

***BRACES:** spaced up to 660 feet
(8 per mile)

NOTES: Pasture division fence.
The 6 inch vertical spaced
woven wire is fawn proof.

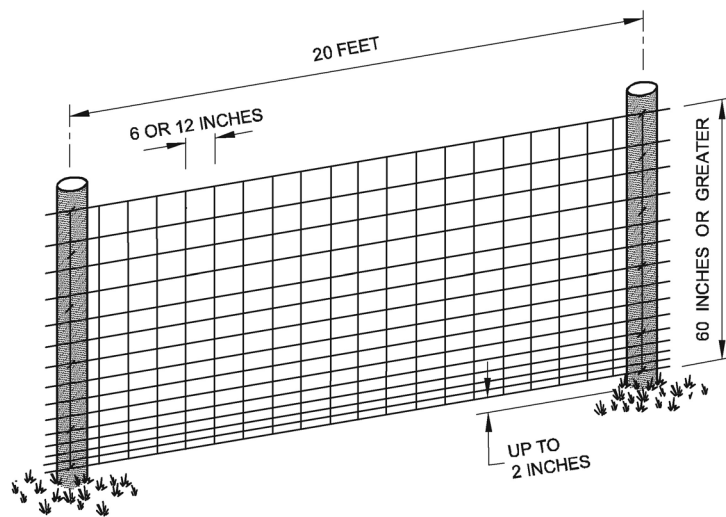


Figure 22 Woven Wire Game Deer Interior Fence



Materials Required per Mile*

Description

Wire	16 rolls	<ul style="list-style-type: none"> - horizontal wire spacing is graduated - high tensile wire horizontals, medium tensile verticals - 15/61 knotted joint preferred, or 11/62 hinged joint and 10/60 knotted joint available - 6 in or 12 in spaced verticals - galvanized, 330 feet per roll; 150 to 282 lb roll weight
Line Posts	*264	<ul style="list-style-type: none"> - 3 to 4 inch diameter x 8 feet long - pressure treated, pointed domed - driven 2½ feet
Brace Posts	*16	<ul style="list-style-type: none"> - 4 to 5 inch diameter x 9 feet long (2 per brace) - pressure treated, pointed, domed - driven 3½ feet minimum
Brace Rails	8	<ul style="list-style-type: none"> - 4 to 5 inch diameter by 10 ft long (1 per brace) - optional 8 feet long set at ¾ of brace height (Factsheet 307.220-1 <i>Brace Assemblies for Wire Fences - What They Are, How They Work</i>)
Staples	½ box	<ul style="list-style-type: none"> - 2 inch slash point, hot dip galvanized - angled across post grain by rotating from the slash point - not driven home on line posts

* per mile of level terrain—rough terrain may require more posts and braces

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