

Instructions for South Dakota Job Plan 21.1-21.5

Fabricated Windbreaks

Fill in the blue data fields on this page to automatically fill in the title block areas on the drawings. Left click blue data fields to type in required information.

Title block

Producer

1/4 Section

Section

Township

Range

County

Conservation District

Who / When

Who (initials)

When (MM/DD/YY)

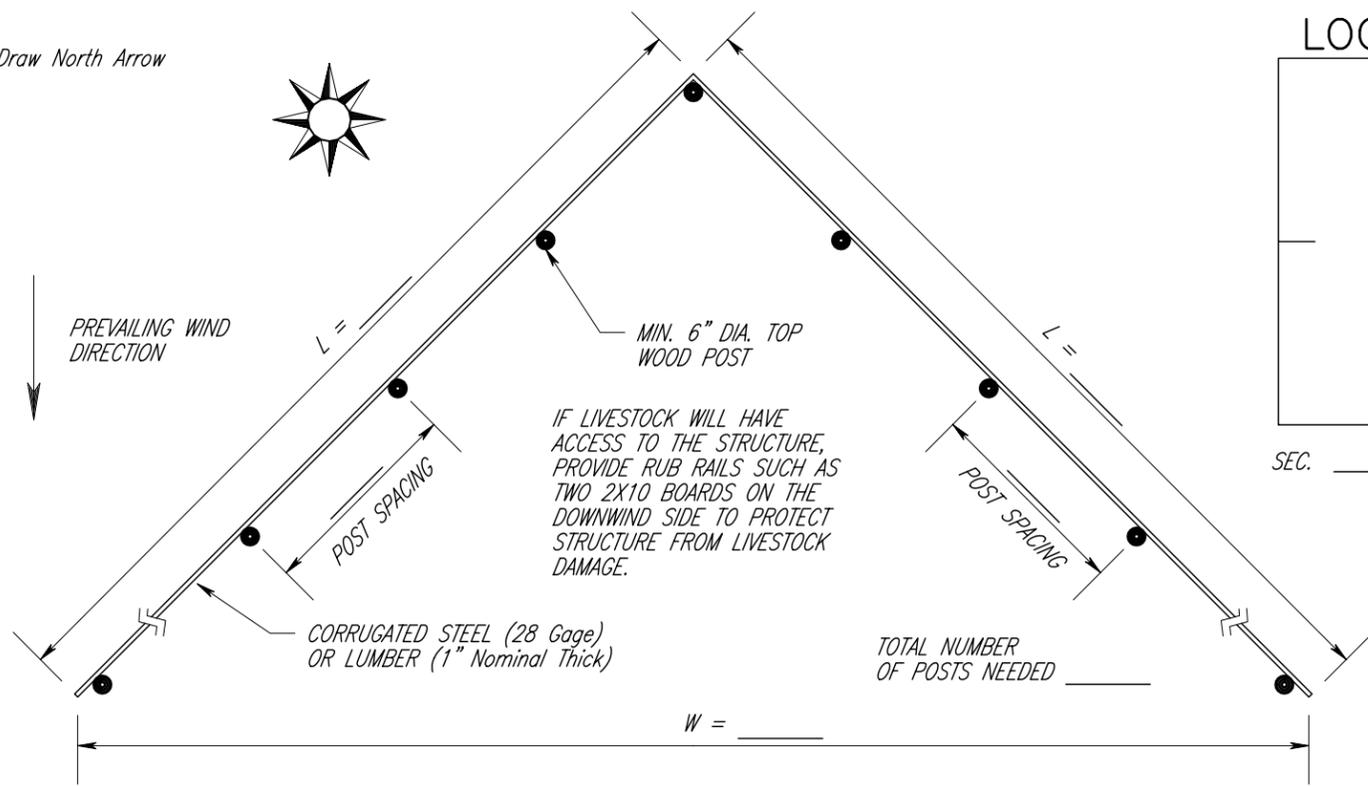
Designed

Drawn

Checked

Approved

Draw North Arrow



FABRICATED WINDBREAK PLAN VIEW

NOT TO SCALE

LOCATION MAP

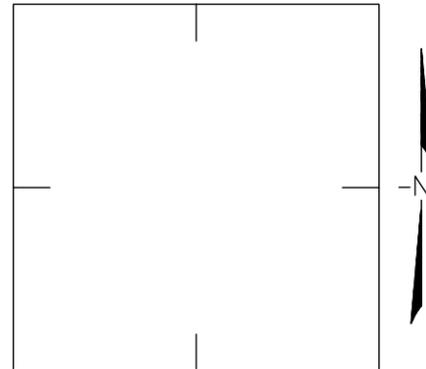


TABLE 1: AREA NEEDED FOR FABRICATED WINDBREAK.

	LIVESTOCK NUMBERS	FT ² / ANIMAL	AREA (FT ²)
YEARLING		35	
BEEF COW		50	
SHEEP		10-15	
TOTAL AREA NEEDED (FT ²)			

TABLE 2: DIMENSIONS FOR PROTECTED AREA.

BARRIER HEIGHT H (FT)	WING L (FT)	WIDTH W (FT)	DRIFT FREE AREA (FT ²)
6	60	84.8	3,964
8	80	113.1	7,047
10	105	148.5	11,823
12	125	176.8	16,828

AS-BUILTS:

DRIFT FREE AREA = $0.5 L^2 + 4.25 W H$

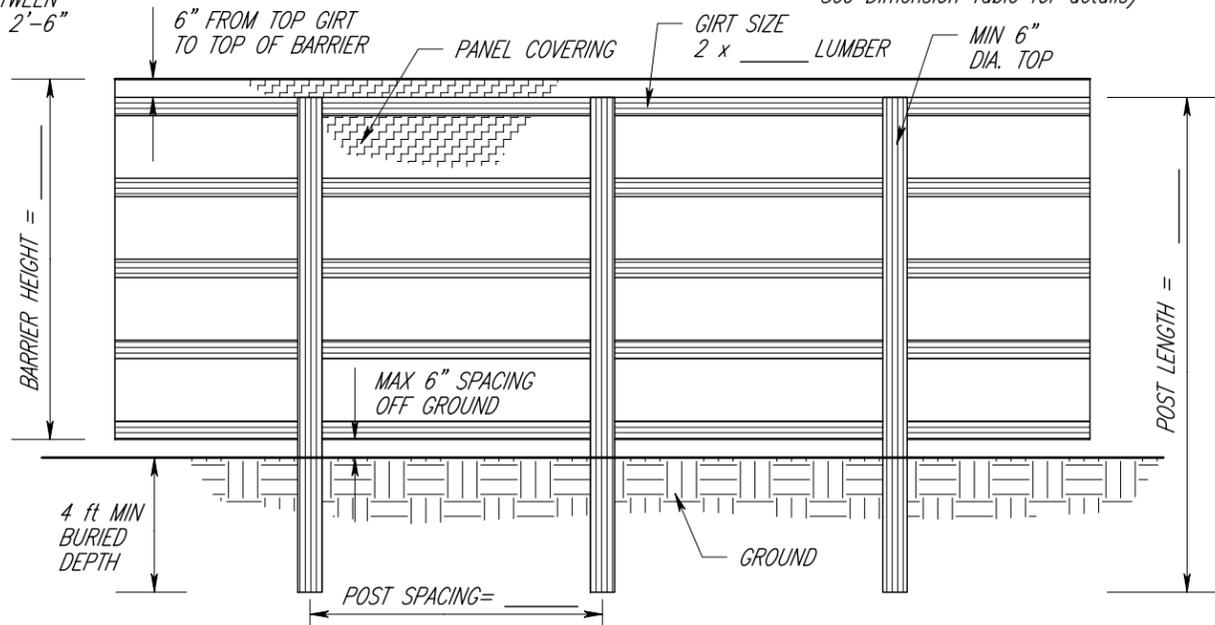
WIDTH (W) = $\sqrt{2L^2}$

TABLE 3: DIMENSIONS FOR FABRICATED WINDBREAK.

BARRIER HEIGHT (FT)	POST LENGTH (FT)	MIN. BURIED DEPTH (FT)	POST SPACING (FT)	NUMBER OF POSTS	GIRT NUMBER & SIZE
6	10	4	10	13	3, 2x8
8	12	4	10	17	4, 2x8
10	14	4	8	27	5, 2x6
12	16	4	6	43	6, 2x4

AS-BUILTS:

SPACE REMAINING GIRTS EVENLY BETWEEN 2'-3" AND 2'-6"



FABRICATED WINDBREAK DETAIL

NOT TO SCALE

NUMBER OF GIRTS NEEDED _____
(drawing may not show correct number, See Dimension Table for details)

OPERATION & MAINTENANCE: INSPECT FABRICATED WINDBREAK AND REPAIR ANY DAMAGE TO STRUCTURE ANNUALLY.

SOUTH DAKOTA CONSTRUCTION AND MATERIAL SPECIFICATIONS

CONSTRUCTION SPECIFICATION SD-14 WOOD AND STEEL STRUCTURES IS INCORPORATED BY REFERENCE. FOR A FULL TEXT VERSION SEE http://www.sd.nrcs.usda.gov/technical/SD_Engineering.html

"STATEMENT OF COMPLIANCE"
Construction (was) (was not) completed in accordance with approved construction plans and specifications.

JAA Date

CONSTRUCTION NOTES AND SPECS

- UNINTERRUPTED SHELTER WIDTH "W" SHOULD BE 10 TO 15 TIMES SHELTER HEIGHT "H".
- PREVAILING WIND DIRECTION CAN BE DETERMINED FROM THE WEB SITE [HTTP://CLIMATE.SDSTATE.EDU/WINDROSE/WINDROSE.SHTM](http://CLIMATE.SDSTATE.EDU/WINDROSE/WINDROSE.SHTM) OR FROM NRCS.
- PANEL COVERING SHALL BE A MINIMUM NOMINAL 1 INCH LUMBER, 28 GAGE COATED CORRUGATED STEEL, OR SIMILAR DURABILITY MATERIAL AS APPROVED BY NRCS ENGINEER. BOARDS OR PANELS SHOULD BE ATTACHED TO THE WINDWARD SIDE OF THE SHELTER.
- ALL WOOD MATERIAL SHALL BE SOUND, NEW WOOD FREE FROM DECAY AND DISEASE DAMAGE, AND SHALL BE STRAIGHT AND NOT CRACKED. ALL POLES, POSTS, AND GIRTS SHALL BE STRUCTURAL GRADE OR BETTER. ALL POLES, POSTS, AND GIRTS SHALL BE PRESSURE TREATED BY ONE OF THE FOLLOWING PRESERVATIVES: CREOSOTE, PENTACHLOROPHENOL, OR WATERBORNE PRESERVATIVES (ARSENICALS) TREATED TO 0.4 POUNDS PER CUBIC FOOT RETENTION. WOOD FOR USE IN PERMANENT CONTACT WITH EARTH SHALL BE TREATED TO A RETENTION LEVEL OF AT LEAST 0.6 POUNDS PER CUBIC FOOT.
- STEEL SHALL BE MALLEABLE, WELDABLE, CARBON STEEL. STEEL SHALL BE GALVANIZED ACCORDING TO ASTM A123. BOLTS, RODS, NUTS, WASHERS AND OTHER HARDWARE SHALL BE AN APPROPRIATE GRADE OF STEEL, AND BE GALVANIZED.
- STRUCTURES SHALL BE INSTALLED ACCURATELY TO THE DIMENSIONS SHOWN ON THE DRAWINGS. NAILS AND SPIKES SHALL BE DRIVEN IN WOOD WITH JUST SUFFICIENT FORCE TO SET THE HEADS FLUSH WITH THE SURFACE OF THE WOOD. BOLT HOLES SHALL BE DRILLED FOR SNUG FIT. HOLES FOR LAG SCREWS SHALL BE BORED WITH A BIT NOT LARGER THAN THE BODY OF THE SCREW AT THE BASE OF THE THREAD. WASHERS SHALL BE USED IN CONTACT WITH ALL BOLT HEADS AND NUTS THAT WOULD OTHERWISE BE IN CONTACT WITH WOOD. STEEL WELDS SHALL BE HEAVY DUTY WITH OBVIOUS STRENGTH EQUAL TO THE STRENGTH OF THE STRUCTURAL STEEL.

"V" SHAPED SOLID FABRICATED WINDBREAK

JOB PLAN 21.1 8/2007

REVISIONS		
DATE	APPROVED	TITLE
10/16/2007	Jay B. Cobb	State Conservation Engineer

File Name: Fab_Windbreak_IP_8_07.pro
Drawing No. 10/17/2007 8:49AM
Sheet 1 of 1

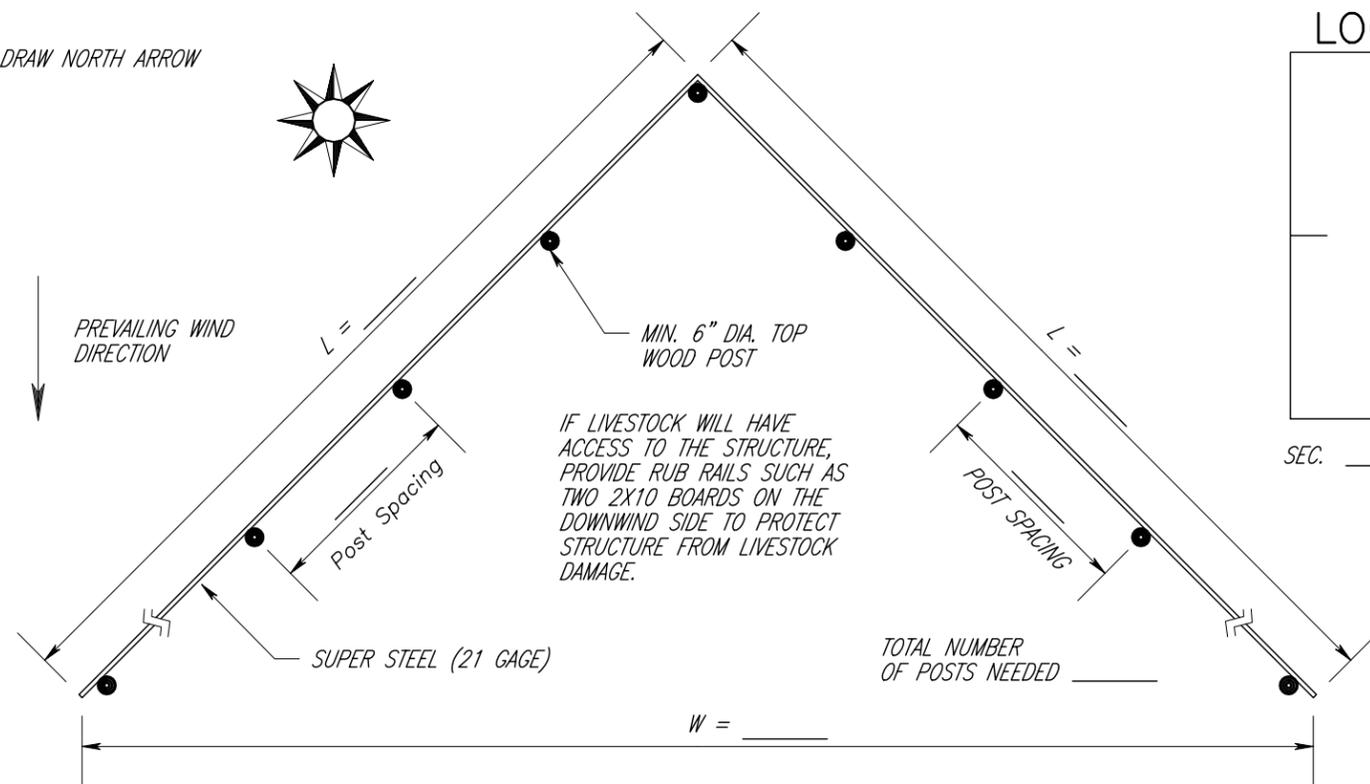
Date _____
Designed _____
Drawn _____
Checked _____
Approved _____

PRODUCER _____
SECTION _____ T. _____ R. _____
COUNTY _____
CONSERVATION DISTRICT _____

USDA - NRCS
State Office Engineering Staff
200 Fourth Street SW
Huron, South Dakota 57350



DRAW NORTH ARROW



FABRICATED WINDBREAK PLAN VIEW
NOT TO SCALE

LOCATION MAP

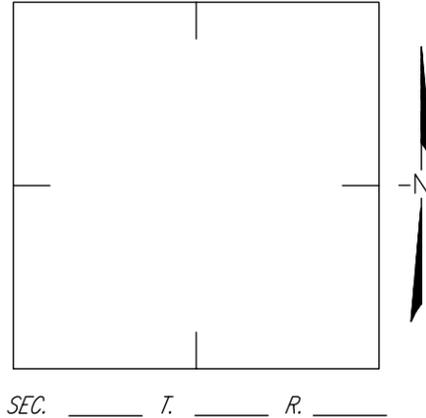


TABLE 1: AREA NEEDED FOR FABRICATED WINDBREAK.

	LIVESTOCK NUMBERS	FT ² / ANIMAL	AREA (FT ²)
YEARLING		35	
BEEF COW		50	
SHEEP		10-15	
TOTAL AREA NEEDED (FT ²)			

TABLE 2: DIMENSIONS FOR PROTECTED AREA.

BARRIER HEIGHT H (FT)	WING L (FT)	WIDTH W (FT)	DRIFT FREE AREA (FT ²)
6	60	84.8	3,964
8	80	113.1	7,047
10	105	148.5	11,823

AS-BUILTS:

DRIFT FREE AREA = $0.5 L^2 + 4.25 W H$

WIDTH (W) = $\sqrt{2L^2}$

TABLE 3: DIMENSIONS FOR FABRICATED WINDBREAK.

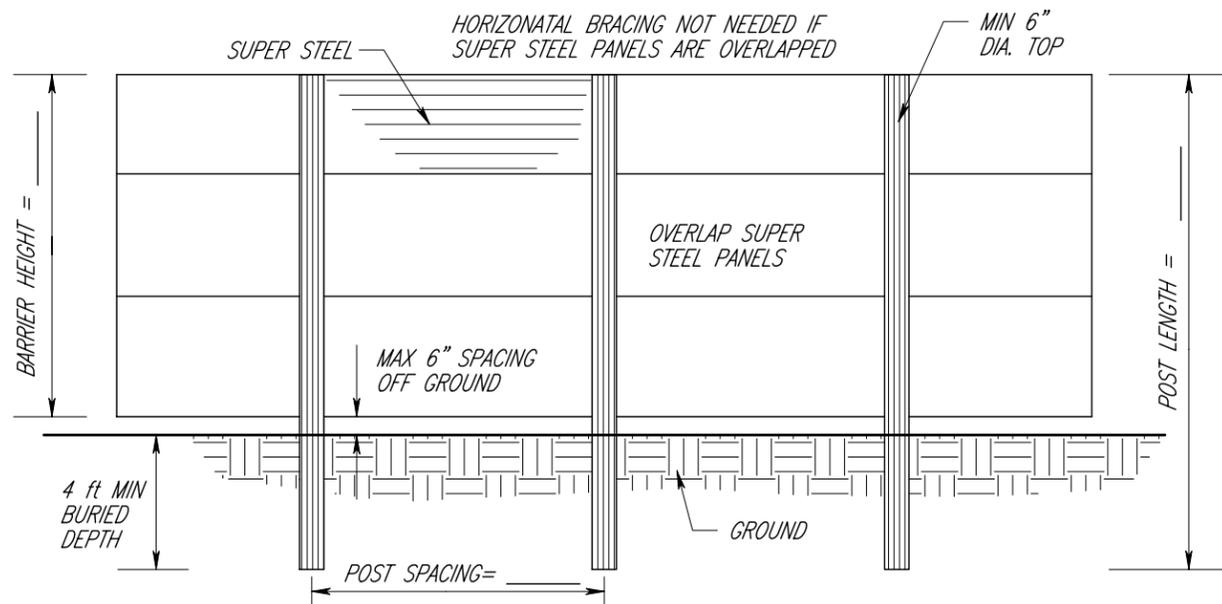
BARRIER HEIGHT (FT)	POST LENGTH (FT)	MIN. BURIED DEPTH (FT)	POST SPACING (FT)	NUMBER OF POSTS	GIRT** NUMBER & SIZE
6	10	4	10	13	3, 2x8
8	12	4	10	17	4, 2x8
10	14	4	8	27	5, 2x6

AS-BUILTS:

** GIRTS ARE NOT NEEDED IF SUPER STEEL IS OVERLAPPED. IF SUPER STEEL IS NOT OVERLAPPED USE GIRT NUMBERS AND SIZE LISTED IN TABLE 3.

CONSTRUCTION NOTES AND SPECS

- 1) UNINTERRUPTED SHELTER WIDTH SHOULD BE 10 TO 15 TIMES SHELTER HEIGHT.
- 2) PREVAILING WIND DIRECTION CAN BE DETERMINED FROM THE WEB SITE [HTTP://CLIMATE.SDSTATE.EDU/WINDROSE/WINDROSE.SHTM](http://climate.sdstate.edu/windrose/windrose.shtm) OR FROM NRCS.
- 3) PANEL COVERING IS 21 GAGE CORRUGATED SUPER STEEL. SUPER STEEL SHOULD BE ATTACHED TO THE WINDWARD SIDE OF THE SHELTER.
- 4) ALL WOOD MATERIAL SHALL BE SOUND, NEW WOOD FREE FROM DECAY AND DISEASE DAMAGE, AND SHALL BE STRAIGHT AND NOT CRACKED. ALL POLES, POSTS, AND GIRTS SHALL BE STRUCTURAL GRADE OR BETTER. ALL POLES, POSTS, AND GIRTS SHALL BE PRESSURE TREATED BY ONE OF THE FOLLOWING PRESERVATIVES: CREOSOTE, PENTACHLOROPHENOL, OR WATERBORNE PRESERVATIVES (ARSENICALS) TREATED TO 0.4 POUNDS PER CUBIC FOOT RETENTION. WOOD FOR USE IN PERMANENT CONTACT WITH EARTH SHALL BE TREATED TO A RETENTION LEVEL OF AT LEAST 0.6 POUNDS PER CUBIC FOOT.
- 5) STEEL SHALL BE MALLEABLE, WELDABLE, CARBON STEEL. STEEL SHALL BE GALVANIZED ACCORDING TO ASTM A123. BOLTS, RODS, NUTS, WASHERS AND OTHER HARDWARE SHALL BE AN APPROPRIATE GRADE OF STEEL, AND BE GALVANIZED.
- 6) STRUCTURES SHALL BE INSTALLED ACCURATELY TO THE DIMENSIONS SHOWN ON THE DRAWINGS. NAILS AND SPIKES SHALL BE DRIVEN IN WOOD WITH JUST SUFFICIENT FORCE TO SET THE HEADS FLUSH WITH THE SURFACE OF THE WOOD. BOLT HOLES SHALL BE DRILLED FOR SNUG FIT. HOLES FOR LAG SCREWS SHALL BE BORED WITH A BIT NOT LARGER THAN THE BODY OF THE SCREW AT THE BASE OF THE THREAD. WASHERS SHALL BE USED IN CONTACT WITH ALL BOLT HEADS AND NUTS THAT WOULD OTHERWISE BE IN CONTACT WITH WOOD. STEEL WELDS SHALL BE HEAVY DUTY WITH OBVIOUS STRENGTH EQUAL TO THE STRENGTH OF THE STRUCTURAL STEEL.



FABRICATED WINDBREAK DETAIL
NOT TO SCALE

"STATEMENT OF COMPLIANCE"
Construction (was) (was not) completed in accordance with approved construction plans and specifications.

OPERATION & MAINTENANCE: INSPECT FABRICATED WINDBREAK AND REPAIR ANY DAMAGE TO STRUCTURE ANNUALLY.

SOUTH DAKOTA CONSTRUCTION AND MATERIAL SPECIFICATIONS

CONSTRUCTION SPECIFICATION SD-14 WOOD AND STEEL STRUCTURES IS INCORPORATED BY REFERENCE. FOR A FULL TEXT VERSION SEE http://www.sd.nrcs.usda.gov/technical/SD_Engineering.html

JAA Date

SUPER STEEL "V" SHAPED
SOLID FABRICATED WINDBREAK
JOB PLAN 21.3 8/2007

REVISIONS		
DATE	APPROVED	TITLE
10/16/2007	Jay B. Cobb	State Conservation Engineer

Date
Designed
Drawn
Checked
Approved

PRODUCER
SECTION T. R.
COUNTY
CONSERVATION DISTRICT

USDA - NRCS
State Office Engineering Staff
200 Fourth Street SW
Huron, South Dakota 57350



File Name: Fab_Windbreak_IP_8_07.pro
Drawing No.
10/17/2007 8:52AM
Sheet 1 of 1

DRAW NORTH ARROW



PREVAILING WIND DIRECTION

IF LIVESTOCK WILL HAVE ACCESS TO THE STRUCTURE, PROVIDE RUB RAILS SUCH AS TWO 2X10 BOARDS ON THE DOWNWIND SIDE TO PROTECT STRUCTURE FROM LIVESTOCK DAMAGE.

TOTAL NUMBER OF POSTS NEEDED _____

L = _____

CORRUGATED STEEL (28 GAGE) OR LUMBER (1" NOMINAL THICK)

MIN. 6" DIA. TOP WOOD POST

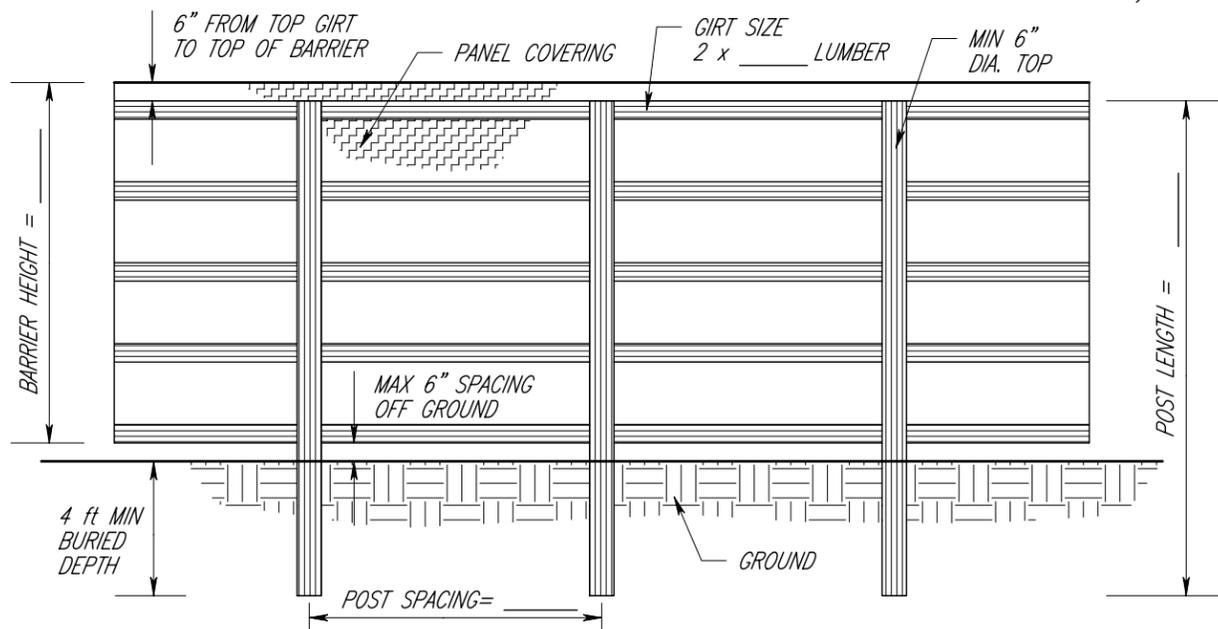
POST SPACING

FABRICATED WINDBREAK PLAN VIEW

NOT TO SCALE

SPACE REMAINING GIRTS EVENLY BETWEEN 2'-3" AND 2'-6"

NUMBER OF GIRTS NEEDED _____
(drawing may not show correct number, See Dimension Table for details)



FABRICATED WINDBREAK DETAIL

NOT TO SCALE

EXACT LOCATION SHOWN ON DRAWING _____

DIMENSIONS FOR FABRICATED WINDBREAK.

BARRIER LENGTH (FT)	BARRIER HEIGHT (FT)	POST LENGTH (FT)	MIN. BURIED DEPTH (FT)	POST SPACING (FT)	NUMBER OF POSTS	GIRT NUMBER & SIZE
	6	10	4	10		3, 2X8
	8	12	4	10		4, 2X8
	10	14	4	8		5, 2X6
	12	16	4	6		6, 2X4

AS-BUILTS:

CONSTRUCTION NOTES AND SPECS

- 1) SNOW DEPOSIT ZONE WILL EXTEND 5 X HEIGHT DOWNWIND OF THE FABRICATED WINDBREAK. WIND PROTECTION ZONE WILL EXTEND 15 X HEIGHT DOWNWIND OF THE FABRICATED WINDBREAK.
- 2) PREVAILING WIND DIRECTION CAN BE DETERMINED FROM THE WEB SITE [HTTP://CLIMATE.SDSTATE.EDU/WINDROSE/WINDROSE.SHTM](http://climate.sdstate.edu/windrose/windrose.shtm) OR FROM NRCS.
- 3) PANEL COVERING SHALL BE A MINIMUM NOMINAL 1 INCH LUMBER, 28 GAGE COATED CORRUGATED STEEL, OR SIMILAR DURABILITY MATERIAL AS APPROVED BY NRCS ENGINEER. BOARDS OR PANELS SHOULD BE ATTACHED TO THE WINDWARD SIDE OF THE SHELTER.
- 4) ALL WOOD MATERIAL SHALL BE SOUND, NEW WOOD FREE FROM DECAY AND DISEASE DAMAGE, AND SHALL BE STRAIGHT AND NOT CRACKED. ALL POLES, POSTS, AND GIRTS SHALL BE STRUCTURAL GRADE OR BETTER. ALL POLES, POSTS, AND GIRTS SHALL BE PRESSURE TREATED BY ONE OF THE FOLLOWING PRESERVATIVES: CREOSOTE, PENTACHLOROPHENOL, OR WATERBORNE PRESERVATIVES (ARSENICALS) TREATED TO 0.4 POUNDS PER CUBIC FOOT RETENTION. WOOD FOR USE IN PERMANENT CONTACT WITH EARTH SHALL BE TREATED TO A RETENTION LEVEL OF AT LEAST 0.6 POUNDS PER CUBIC FOOT.
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- 6) STRUCTURES SHALL BE INSTALLED ACCURATELY TO THE DIMENSIONS SHOWN ON THE DRAWINGS. NAILS AND SPIKES SHALL BE DRIVEN IN WOOD WITH JUST SUFFICIENT FORCE TO SET THE HEADS FLUSH WITH THE SURFACE OF THE WOOD. BOLT HOLES SHALL BE DRILLED FOR SNUG FIT. HOLES FOR LAG SCREWS SHALL BE BORED WITH A BIT NOT LARGER THAN THE BODY OF THE SCREW AT THE BASE OF THE THREAD. WASHERS SHALL BE USED IN CONTACT WITH ALL BOLT HEADS AND NUTS THAT WOULD OTHERWISE BE IN CONTACT WITH WOOD. STEEL WELDS SHALL BE HEAVY DUTY WITH OBVIOUS STRENGTH EQUAL TO THE STRENGTH OF THE STRUCTURAL STEEL.

OPERATION & MAINTENANCE: INSPECT FABRICATED WINDBREAK AND REPAIR ANY DAMAGE TO STRUCTURE ANNUALLY.

"STATEMENT OF COMPLIANCE" Construction (was) (was not) completed in accordance with approved construction plans and specifications.

SOUTH DAKOTA CONSTRUCTION AND MATERIAL SPECIFICATIONS

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JAA

Date

STRAIGHT LINE SOLID FABRICATED WINDBREAK FOR FEEDLOT USE

JOB PLAN 21.4 8/2007

REVISIONS		
DATE	APPROVED	TITLE
10/16/2007	Jay B. Cobb	State Conservation Engineer

Date _____
Designed _____
Drawn _____
Checked _____
Approved _____

PRODUCER _____
SECTION _____ T. _____ R. _____
COUNTY _____
CONSERVATION DISTRICT _____

USDA - NRCS
State Office Engineering Staff
200 Fourth Street SW
Huron, South Dakota 57350



File Name: Fab_Windbreak_IP_8_07.pro
Drawing No. _____
10/17/2007 9:02AM
Sheet 1 of 1

DRAW NORTH ARROW



PREVAILING WIND DIRECTION

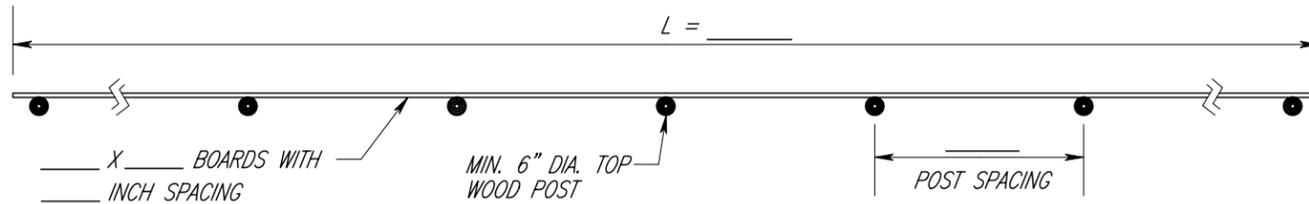
IF LIVESTOCK WILL HAVE ACCESS TO THE STRUCTURE, PROVIDE RUB RAILS SUCH AS TWO 2X10 BOARDS ON THE DOWNWIND SIDE TO PROTECT STRUCTURE FROM LIVESTOCK DAMAGE.

80% SOLID AND 20% POROUS SURFACE AREA

1"X10" BOARDS - 2 1/2" SPACING
 1"X 8" BOARDS - 2" SPACING
 1"X 6" BOARDS - 1 1/2" SPACING

TOTAL NUMBER OF POSTS NEEDED _____

L = _____

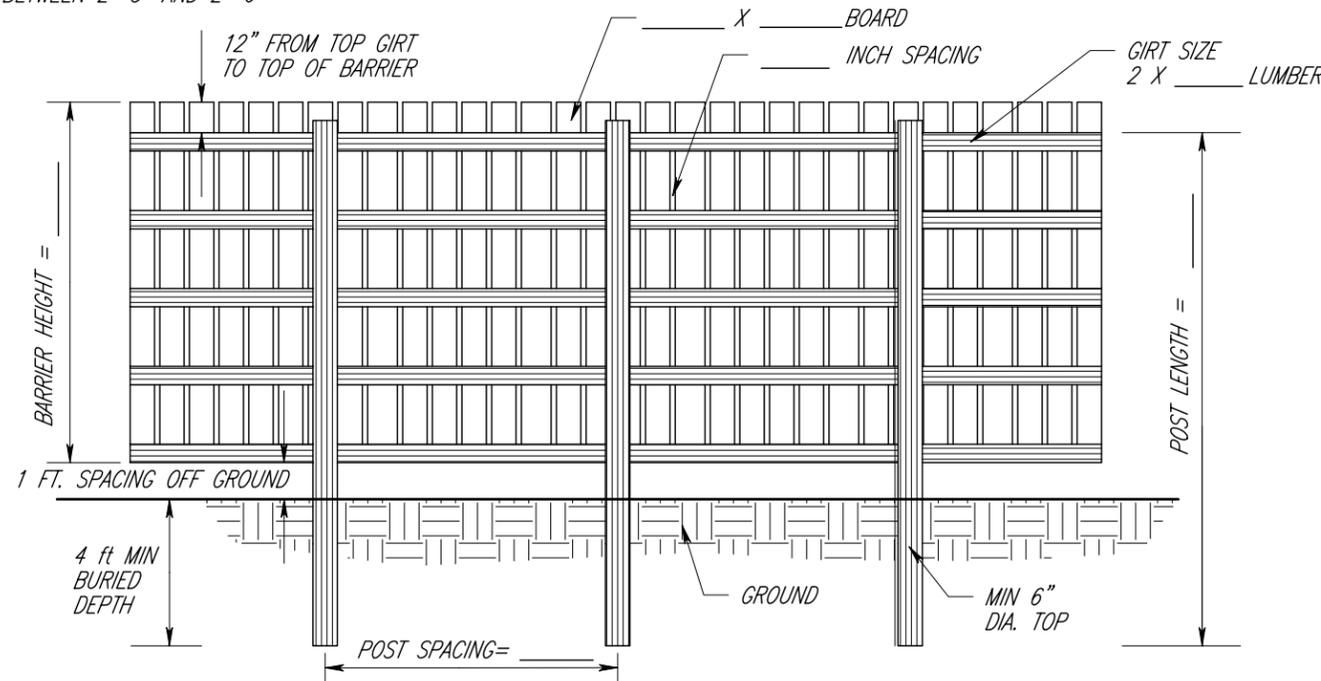


FABRICATED WINDBREAK PLAN VIEW

NOT TO SCALE

SPACE REMAINING GIRTS EVENLY BETWEEN 2'-3" AND 2'-6"

NUMBER OF GIRTS NEEDED _____
 (drawing may not show correct number, See Dimension Table for details)



FABRICATED WINDBREAK DETAIL

NOT TO SCALE

EXACT LOCATION SHOWN ON DRAWING _____

DIMENSIONS FOR FABRICATED WINDBREAK.

BARRIER LENGTH (FT)	BARRIER HEIGHT (FT)	POST LENGTH (FT)	MIN. BURIED DEPTH (FT)	POST SPACING (FT)	NUMBER OF POSTS	GIRT NUMBER & SIZE
	6	10	4	10		3, 2X8
	8	12	4	10		4, 2X8
	10	14	4	8		5, 2X6
	12	16	4	6		6, 2X4

AS-BUILTS:

CONSTRUCTION NOTES AND SPECS

- 1) WINDBREAK SHOULD BE LOCATED A DISTANCE OF 10 X HEIGHT UPWIND OF FEEDLOT FENCE OR AREA TO BE PROTECTED.
- 2) SNOW DEPOSIT ZONE WILL EXTEND 10 X HEIGHT DOWNWIND OF THE FABRICATED WINDBREAK. WIND PROTECTION ZONE WILL EXTEND 20 X HEIGHT DOWNWIND OF THE FABRICATED WINDBREAK.
- 3) PREVAILING WIND DIRECTION CAN BE DETERMINED FROM THE WEB SITE [HTTP://CLIMATE.SDSTATE.EDU/WINDROSE/WINDROSE.SHTM](http://climate.sdstate.edu/windrose/windrose.shtm) OR FROM NRCS.
- 4) PANEL COVERING SHALL BE A MINIMUM NOMINAL 1 INCH LUMBER, 28 GAGE COATED CORRUGATED STEEL, OR SIMILAR DURABILITY MATERIAL AS APPROVED BY NRCS ENGINEER. BOARDS OR PANELS SHOULD BE ATTACHED TO THE WINDWARD SIDE OF THE SHELTER.
- 5) ALL WOOD MATERIAL SHALL BE SOUND, NEW WOOD FREE FROM DECAY AND DISEASE DAMAGE, AND SHALL BE STRAIGHT AND NOT CRACKED. ALL POLES, POSTS, AND GIRTS SHALL BE STRUCTURAL GRADE OR BETTER. ALL POLES, POSTS, AND GIRTS SHALL BE PRESSURE TREATED BY ONE OF THE FOLLOWING PRESERVATIVES: CREOSOTE, PENTACHLOROPHENOL, OR WATERBORNE PRESERVATIVES (ARSENICALS) TREATED TO 0.4 POUNDS PER CUBIC FOOT RETENTION. WOOD FOR USE IN PERMANENT CONTACT WITH EARTH SHALL BE TREATED TO A RETENTION LEVEL OF AT LEAST 0.6 POUNDS PER CUBIC FOOT.
- 6) STEEL SHALL BE MALLEABLE, WELDABLE, CARBON STEEL. STEEL SHALL BE GALVANIZED ACCORDING TO ASTM A123. BOLTS, RODS, NUTS, WASHERS AND OTHER HARDWARE SHALL BE AN APPROPRIATE GRADE OF STEEL, AND BE GALVANIZED.
- 7) STRUCTURES SHALL BE INSTALLED ACCURATELY TO THE DIMENSIONS SHOWN ON THE DRAWINGS. NAILS AND SPIKES SHALL BE DRIVEN IN WOOD WITH JUST SUFFICIENT FORCE TO SET THE HEADS FLUSH WITH THE SURFACE OF THE WOOD. BOLT HOLES SHALL BE DRILLED FOR SNUG FIT. HOLES FOR LAG SCREWS SHALL BE BORED WITH A BIT NOT LARGER THAN THE BODY OF THE SCREW AT THE BASE OF THE THREAD. WASHERS SHALL BE USED IN CONTACT WITH ALL BOLT HEADS AND NUTS THAT WOULD OTHERWISE BE IN CONTACT WITH WOOD. STEEL WELDS SHALL BE HEAVY DUTY WITH OBVIOUS STRENGTH EQUAL TO THE STRENGTH OF THE STRUCTURAL STEEL.

OPERATION & MAINTENANCE: INSPECT FABRICATED WINDBREAK AND REPAIR ANY DAMAGE TO STRUCTURE ANNUALLY.

SOUTH DAKOTA CONSTRUCTION AND MATERIAL SPECIFICATIONS

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"STATEMENT OF COMPLIANCE"
 Construction (was) (was not) completed in accordance with approved construction plans and specifications.

JAA Date

STRAIGHT LINE POROUS FABRICATED WINDBREAK FOR FEEDLOT USE

JOB PLAN 21.5 8/2007

REVISIONS		
DATE	APPROVED	TITLE
10/16/2007	Jay B. Cobb	State Conservation Engineer

Date _____
 Designed _____
 Drawn _____
 Checked _____
 Approved _____

PRODUCER _____
 SECTION _____ T. _____ R. _____
 COUNTY _____
 CONSERVATION DISTRICT _____

USDA - NRCS
 State Office Engineering Staff
 200 Fourth Street SW
 Huron, South Dakota 57350



File Name: Fab_Windbreak_IP_8_07.pro
 Drawing No. _____
 10/17/2007 8:47AM
 Sheet 1 of 1