

000I-291 UNION COUNTY FENCE REPLACEMENT PCN IOLV

R 50 W



TO VERMILLION

T 92 N

T 91 N

R 50 W

R 49 W

END PROJECT
MRM 31.28 + 0.000 NBL
MILEAGE 31.193

BEGIN PROJECT
MRM 18.30 NBL
MILEAGE 18.216

DESIGN DESIGNATION

Interstate 29 NBL

ADT(2006)	5195
ADT(2026)	10035
DHV	1355
D	100%
T DHV	11.6%
T ADT	25.5%
V	75 MPH

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UNION COUNTY**

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ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0600	Remove Fence	69230	Ft
620E0230	Modified Type 3 Right-of-Way Fence	69230	Ft
620E0260	Modified Type 6 Right-of-Way Fence	2600	Ft
620E1020	2 Post Panel	92	Each
620E1030	3 Post Panel	20	Each
634E0120	Traffic Control Miscellaneous	Lump Sum	LS

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TABLE OF FENCE QUANTITIES

LANE	INTERSTATE 29 MRM TO MRM (LOCATION)	REMOVE FENCE Ft	MODIFIED TYPE 3 R/W FENCE Ft	MODIFIED TYPE 6 R/W FENCE Ft	2 POST PANEL Each	3 POST PANEL Each	WIDE DEPRESSION & STREAM CROSSINGS N.A.B.I. Each	GATES BARB WIRE 24' N.A.B.I. Each	(NOTE)
NB	Exit 18 On Ramp to RR Crossing	685	685		4	0			RR Crossing at MRM 18.41
NB	RR to 19.00	2450	2450		5	1			
NB	19.00 to 20.0	5717	5717		5	1	1	1	MRM 19.33 Depression MRM 19.40 Wire Gate
NB	20.00 to 20.49	2603	2603		4	1			
NB	20.49 to 21.00	2541	2541		7	1	1	1	MRM 20.52 Depression & Wire Gate
NB	21.00 to 22.00	5362	5362		6	1	1		MRM 21.87 Depression
NB	22.00 to 23.00	5218	5218		3	1			
NB	23.00 to 24.00	5375	5375		7	1	2	1	MRM 23.28 & 23.99 Depression/ MRM 23.34 Wire Gate
NB	24.00 to 24.72	3750	3750		9	1	2		MRM 24.02, 24.69 Depression
NB	24.72 to 25.00	1460	1460		4	1	1		MRM 24.74 Depression
NB	25.00 to 26.00	5295	5295		5	1	1		MRM 25.65 Depression
NB	26.00 to Exit 26 Off Ramp	2850	2850		2	1			
NB	Exit 26 Off Ramp	637	637		1	1			
NB	Exit 26 Off Ramp to SD50 Control of Access	325	325		2				
NB	SD50 Control of Access to Exit 26 On Ramp	164	164		2				
NB	Exit 26 On Ramp	1058	1058		1	1			
NB	Exit 26 On Ramp to 27.00	694	694		1	1			
NB	27.00 to 28.00	5164	5164		4	1	1	1	MRM 27.99 Depression/ MRM 27.26 Wire Gate
NB	28.00 to 29.00	5390	5390		4	1	1		MRM 28.29 Depression
NB	29.00 to 30.00	5301	5301		4	1	1	1	MRM 29.28 Depression/Wire Gate
NB	30.00 to 31.00	5286	5286		8	1	2		MRM 30.26 & MRM 30.87 Depression
NB	31.00 to Exit 31 Off Ramp	380	380		1	1			
NB	Exit 31 On Ramp	1055	1055		1	1			
NB	Exit 31 Off Ramp to SD48 Control of Access	470	470		2				
TOTALS:		69230	69230	*2600	92	20	14	5	

* Modified Type 6 Woven Wire Fence to be installed at locations directed by the Engineer.

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SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

COMPLETION DATE

All work shall be completed on or before November 30, 2007.

UTILITIES

The Contractor shall contact the involved utility companies through South Dakota One Call (Phone 1-800-781-7474) prior to starting work. It shall be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

WASTE DISPOSAL SITE

The Contractor will be required to furnish a site(s) for the disposal of construction/demolition debris generated by this project.

Construction/demolition debris may not be disposed of within the State (right-of-Way) ROW

All construction/demolition debris generated by this project shall be cleaned up and disposed of by the Contractor.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Highway, Road, and Railway Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

1. Construction/demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction/demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. Seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating No Dumping Allowed.
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

Cost for furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates & signs) and reclamation of the waste disposal site(s) shall be incidental to the contract unit prices for the various items.

RESTORATION OF INSLOPES AND DITCHES

Any slope area or ditch that is rutted or otherwise unduly disturbed during fencing operations shall be restored and seeded by the Contractor, at no expense to the State. Cost for this work shall be incidental to the contract unit prices for the various items.

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REMOVE FENCE

The Contractor shall remove the existing right-of-way fence that is to be replaced as designated in the plans and/or as ordered by the Engineer.

Limited Access Security - All fence removed during any one working day is to be replaced during the same day if livestock are being restrained.

FENCE ALIGNMENT

Where fence is being removed and replaced, fence shall be installed on the same alignment as existing. It shall be the Contractor's responsibility to preserve the fence alignment.

CLEARING

Prior to installing right-of-way fence, the fence alignment shall be cleared of all trees, tree branches, tree stumps, brush, vegetation, debris, bladed and leveled to the satisfaction of the Engineer. Sod cleared from the fence alignment may be disposed on the Interstate ditch back slope. Lumps or clods over 3 inches in diameter shall be broken up.

Clearing will be paid for at the contract lump sum price. Payment shall be full compensation for labor and equipment necessary to clear the entire line for fence and smooth ground irregularities.

RIGHT-OF-WAY FENCE

New woven and barbed wire shall be used in the fence construction. The Contractor shall furnish all new posts. Install alternate wood and steel posts at 14' spacing for both types of Right-of-Way Fence.

The 2600 lineal feet of the Modified Type 6 Woven Wire Fence has been included in the plans for installation at locations directed by the Engineer. The payment shall be full compensation for furnishing materials, labor, equipment and incidentals necessary to construct the Right-of-Way Fence.

Note specification change for Modified Type 6 Woven Wire Fence to Design No. 832-6-11.

NEW POST PANELS

Existing post panels shall be replaced. Existing 5 Post and 4 Post Panels shall be replaced with a combination of 2 Post and 3 Post Panels as determined by the Engineer.

The number of 2 Post and 3 Post Panels will be the actual number installed and will be paid for at the contract unit price per each. Payment shall be full compensation for furnishing material, (including posts, brace post, diagonal brace wire, and dowels), labor, equipment and incidentals necessary to construct the post panels.

GENERAL MAINTENANCE OF TRAFFIC

Removing, relocating, covering, salvaging and resetting of permanent traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Storage of vehicles and equipment shall be outside the clear zone and as near as possible to the right-of-way line. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work.

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP 350 crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

Cost for traffic control, including signs, shall be included in the contract lump sum price for Traffic Control Miscellaneous.

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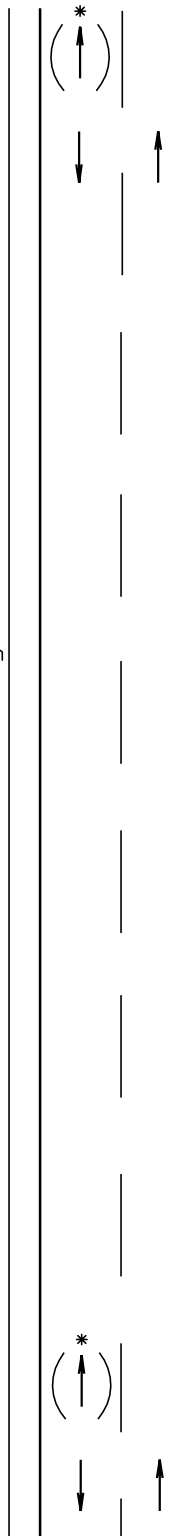
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated shall be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 75	1000



A



July 1, 2005

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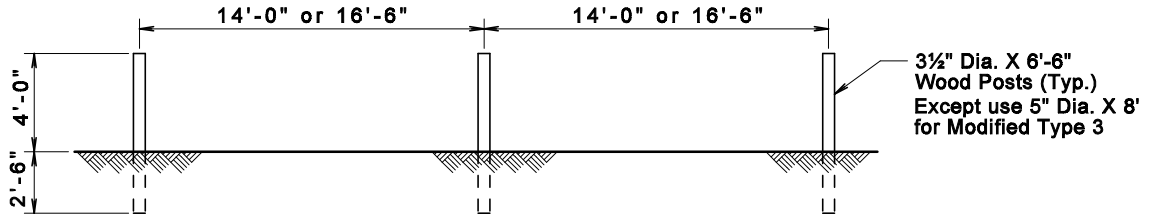
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**GUIDES FOR TRAFFIC CONTROL DEVICES
WORK BEYOND THE SHOULDER**

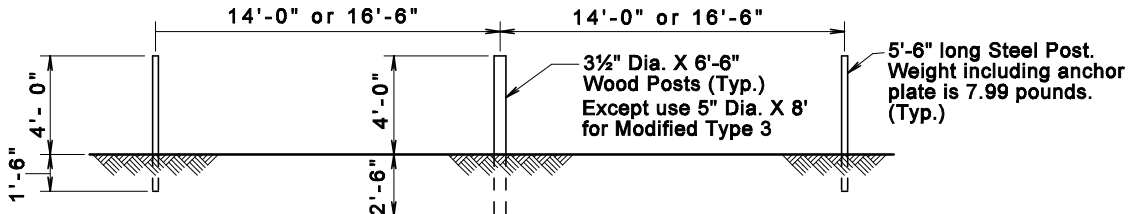
**PLATE NUMBER
634.01**

Sheet 1 of 1

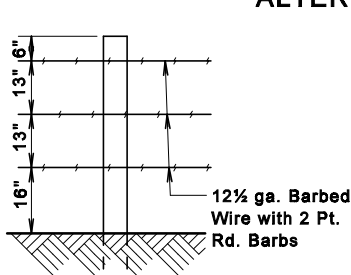
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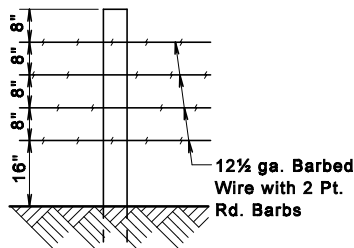
ALL WOOD POSTS



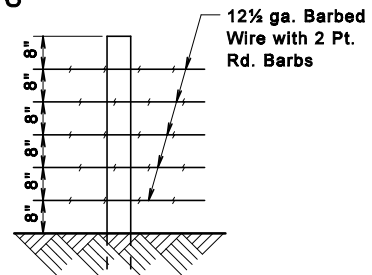
ALTERNATE WOOD AND STEEL POSTS



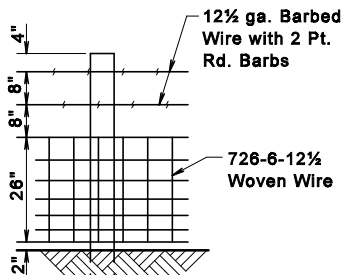
**TYPE 1
3 BARBED WIRES**



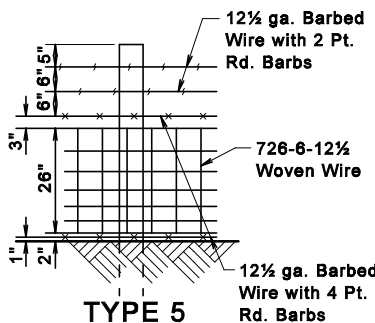
**TYPE 2
4 BARBED WIRES**



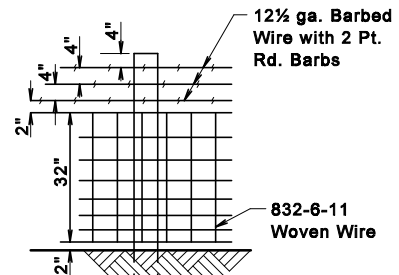
**TYPE 3 / MODIFIED TYPE 3
5 BARBED WIRES**



**TYPE 4
26" WOVEN WIRE
WITH 2 BARBED WIRES**



**TYPE 5
26" WOVEN WIRE
WITH 4 BARBED WIRES**



**MODIFIED TYPE 6
32" WOVEN WIRE
WITH 3 BARBED WIRES**

TYPE OF FENCE		LINE POST SPACING	BARBED WIRE		WOVEN WIRE
			WIRE GAGE	NUMBER AND SHAPE OF BARBS	STYLE OR DESIGN NO.
TYPE	DESCRIPTION				
1	3 Barbed Wires	16'-6"	12½	2 Point Round	—
2	4 Barbed Wires	16'-6"	12½	2 Point Round	—
3	5 Barbed Wires	16'-6"	12½	2 Point Round	—
MOD 3	5 Barbed Wires	14'-0"	12½	2 Point Round	—
4	26" Woven Wire with 2 Barbed Wires	14'-0"	12½	2 Point Round	726-6-12½
5	26" Woven Wire with 4 Barbed Wires	14'-0"	12½	2 wires with 2 Pt. Rd. 2 wires with 4 Pt. Rd.	726-6-12½
MOD 6	32" Woven Wire with 3 Barbed Wires	14'-0"	12½	3 wires with 2 Pt. Rd.	832-6-11

GENERAL NOTES:

Fence types designated on the plans that are followed by the letter S shall have smooth (barbless) wires.

When type 5S or 6S is designated the bottom wire may be barbed, smooth, or left off.

All degrees of curvature stated for fence are at centerline of roadway.

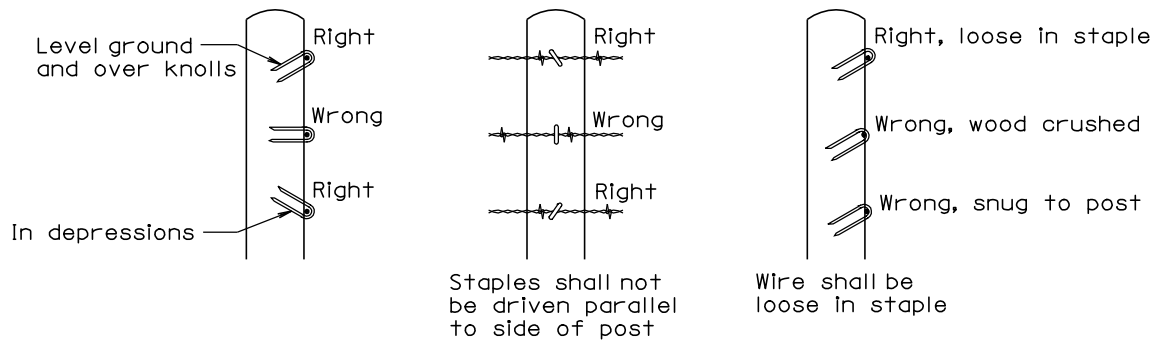
Rev April 20, 2005

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RIGHT-OF-WAY FENCE

**PLATE NUMBER
SPECIAL**

Sheet 1 of 1



STAPLE INSTALLATION

GENERAL NOTES:

The Right-of-Way fence shall consist of barbed wire or a combination of woven wire and barbed wire. The barbed wire and/or woven wire shall be fastened to all wood posts or fastened to alternating wood and steel posts. Only wood posts shall be used for brace panels. Gates shall be of the type designated in the plans or as otherwise directed by the Engineer. Fence shall be constructed conforming to the details on the standard plates and in the plans unless otherwise directed by the Engineer.

Right-of-Way fence on Interstate Projects shall be constructed one foot within the Interstate Right-of-Way lines except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

Right-of-Way fence other than on Interstate Projects shall be constructed within one foot of the Right-of-Way on the Landowner's side except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

Barbs shall be fabricated from zinc coated 14 ga. wire. Two point barbs shall be wrapped twice around one main strand at 4" spacings and the four point barbs shall be interlocked and wrapped around both main strands at 5" spacings.

The gages of wire and wood post lengths and sizes are the minimum acceptable unless otherwise specified in the plans. The tolerances for steel posts shall be as stated in AASHTO M281. Woven wire shall conform to design and specifications of ASTM A116 and barbed wire shall conform to ASTM A121.

December 23, 2004

Published Date: 1st Qtr. 2007

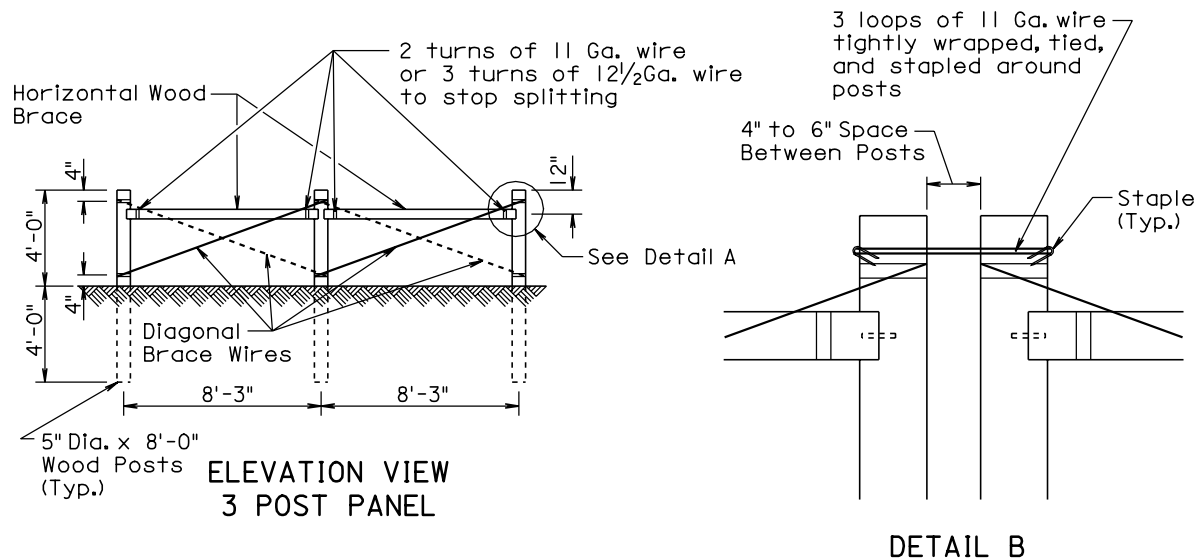
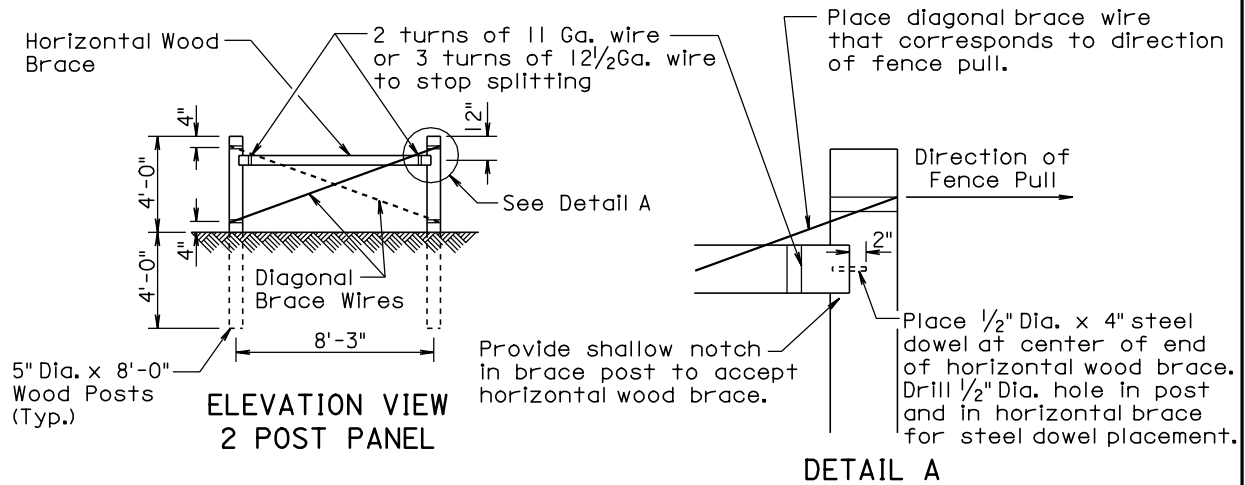
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**STAPLE INSTALLATION AND GENERAL
RIGHT-OF-WAY FENCE NOTES**

**PLATE NUMBER
620.02**

Sheet 1 of 1

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GENERAL NOTES:

Two Post Panels shall be installed at least every 1320' between corners.

Two Post Panels shall be installed at any sharp vertical angle crest points and as directed by the Engineer.

Horizontal wood braces shall consist of 4" dia. x 8' wood posts or rough 4" x 4" x 8' timbers.

Diagonal brace wires shall be fabricated with 4 strands of 9 Ga. galvanized wire twisted tight. The diagonal brace wires shall be installed in accordance with the direction of the fence pull. Two diagonal brace wires are required if fence pull is in both directions.

December 23, 2004

Published Date: 1st Qtr. 2007

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**BRACE PANELS
AND APPLICATIONS OF BRACE PANELS**

**PLATE NUMBER
620.03**

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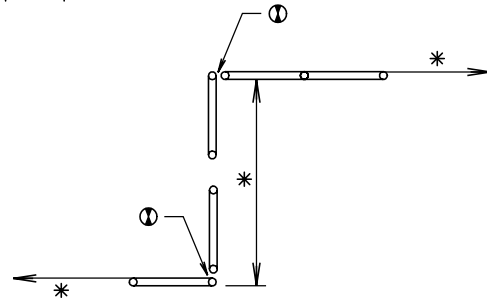
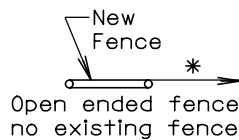
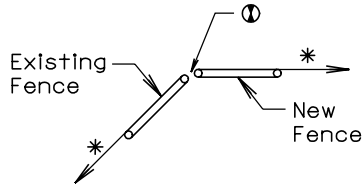
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SPACING OF 2 POST PANELS WITHIN CURVES	
DEGREE OF CURVE	SPACING OF 2 POST PANEL
less than 3°15'	** 1320'
3°15' and greater	**At P.C., P.T., and at every 1320' between P.C. and P.T.

GENERAL NOTE:

All degrees of curvature stated for fence are at centerline of roadway.

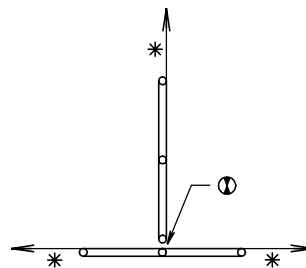
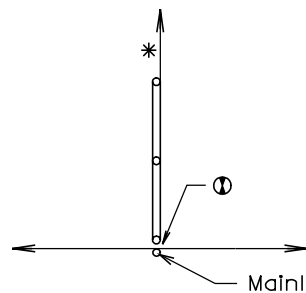
- * If fence length is less than 600' to next corner use a 2 post panel.
- If fence length is greater than 600' to next corner use a 3 post panel.
- ** Fence lengths greater than 1320' and less than 2640' place 2 Post Panel approximately at midpoint.
- ① See Detail B on Sheet 1 of 3.



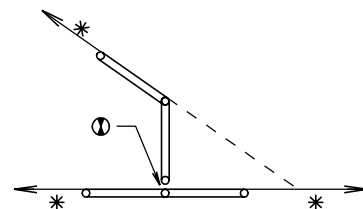
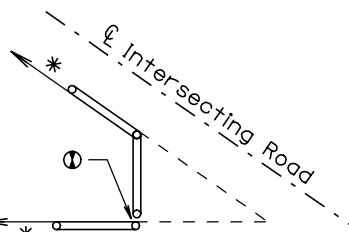
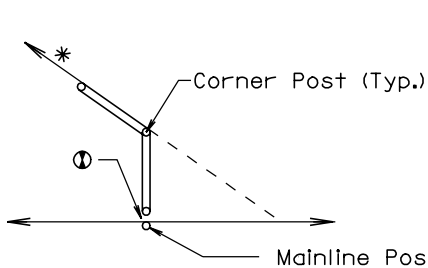
BEGIN OR END FENCE

(where new fence ties into existing fence)

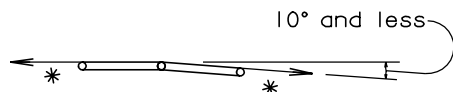
SHORT JOGS IN FENCE



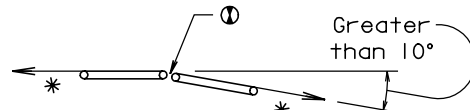
CROSS FENCE



SHARP ANGLES IN CROSS FENCE



Additional fence panel is NOT required when an angle in the mainline fence is 10° and less.



Additional fence panel is required when an angle in the mainline fence is greater than 10°.

ANGLES IN MAINLINE FENCE

December 23, 2004

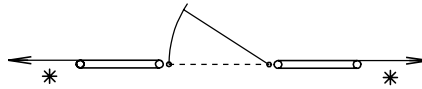
Published Date: 1st Qtr. 2007

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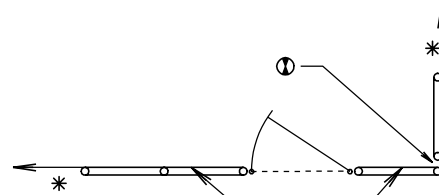
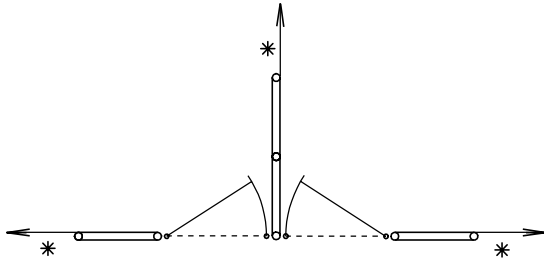
**BRACE PANELS
AND APPLICATIONS OF BRACE PANELS**

**PLATE NUMBER
620.03**

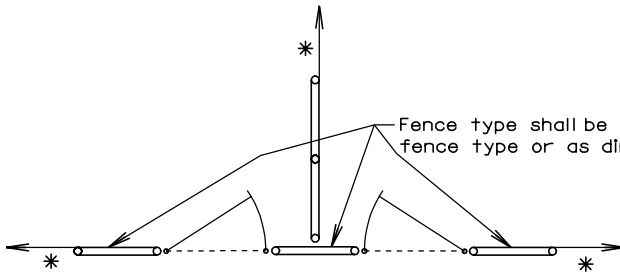
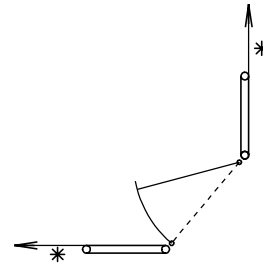
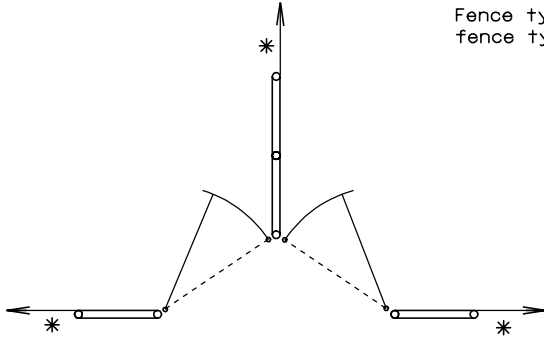
Sheet 2 of 3



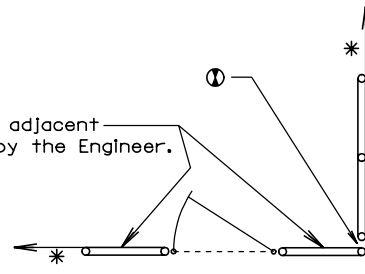
ENTRANCE
(NOT ON CORNER)



Fence type shall be same as adjacent
fence type or as directed by the Engineer.



DOUBLE ENTRANCES



ENTRANCES AT CORNERS

GATES

- * If fence length is less than 600' to next corner use a 2 post panel.
- If fence length is greater than 600' to next corner use a 3 post panel.

① See Detail B on Sheet 1 of 3.

December 23, 2004

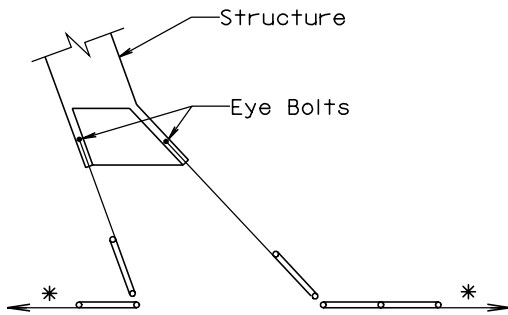
Published Date: 1st Qtr. 2007

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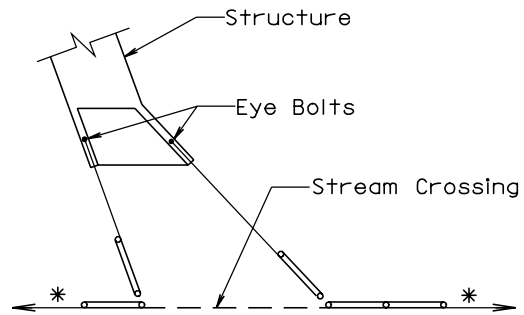
**BRACE PANELS
AND APPLICATIONS OF BRACE PANELS**

**PLATE NUMBER
620.03**

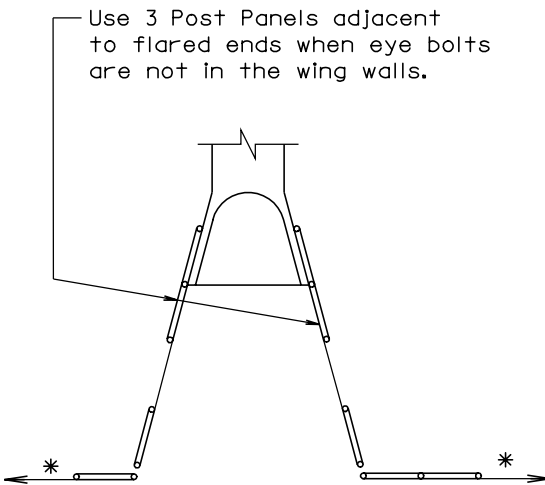
Sheet 3 of 3



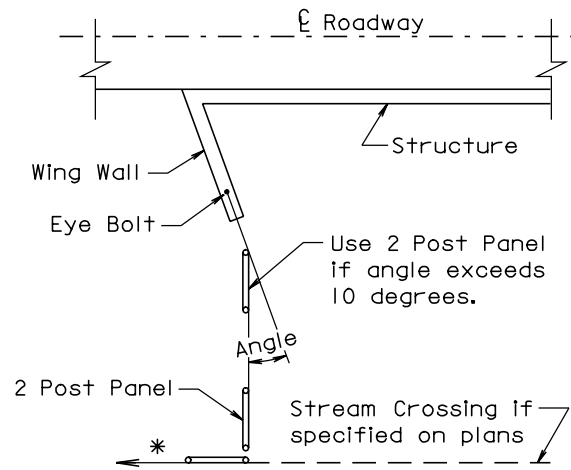
R.C. BOX CULVERT
OR CATTLE PASS



STRUCTURE WITH STREAM
CROSSING FENCE



R.C. BOX CULVERT
OR CATTLE PASS



BRIDGE

* If fence length is less than 600' to next corner use a 2 post panel.
If fence length is greater than 600' use a 3 post panel.

March 31, 2000

Published Date: 1st Qtr. 2007

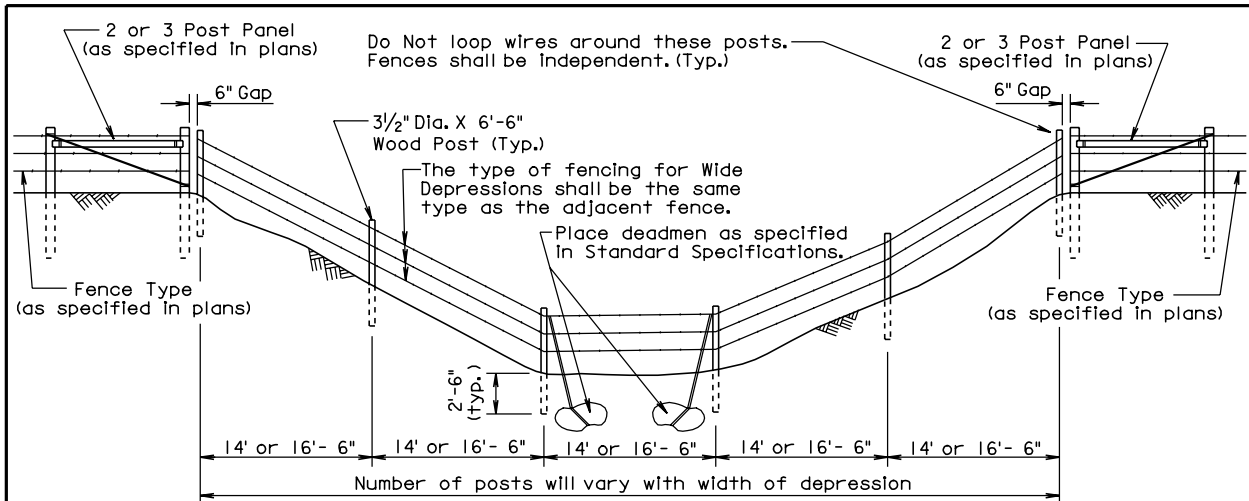
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BRACE PANEL APPLICATIONS AT STRUCTURES

PLATE NUMBER
620.04

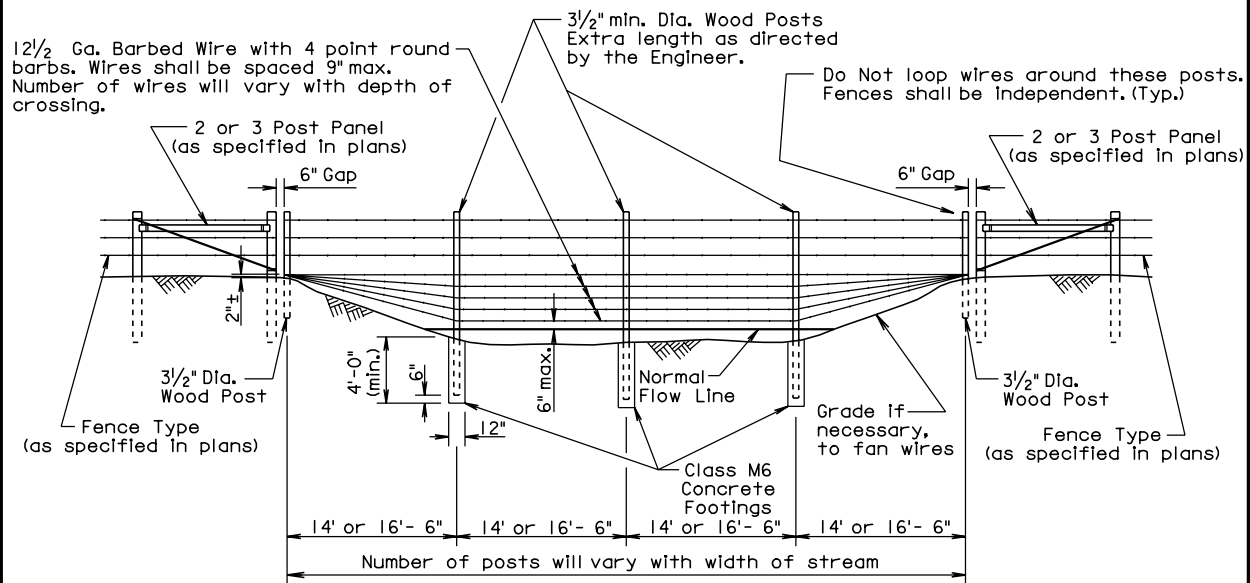
Sheet 1 of 1

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This installation shall be made when requested by the Engineer.

**FENCING AT WIDE DEPRESSION
(SUBJECT TO FLOODING)**



This installation shall be made only when stated in the plans.

FENCING AT STREAM CROSSING

GENERAL NOTES:

There will be no extra payment for the additional work and materials required to construct the fencing at the wide depression(s) and/or the fencing at the stream crossing(s).

Measurement and payment for the fencing at the wide depression(s) and/or the fencing at the stream crossing(s) shall be at the contract unit price per foot for the corresponding Right-of-Way fence bid item.

December 23, 2004

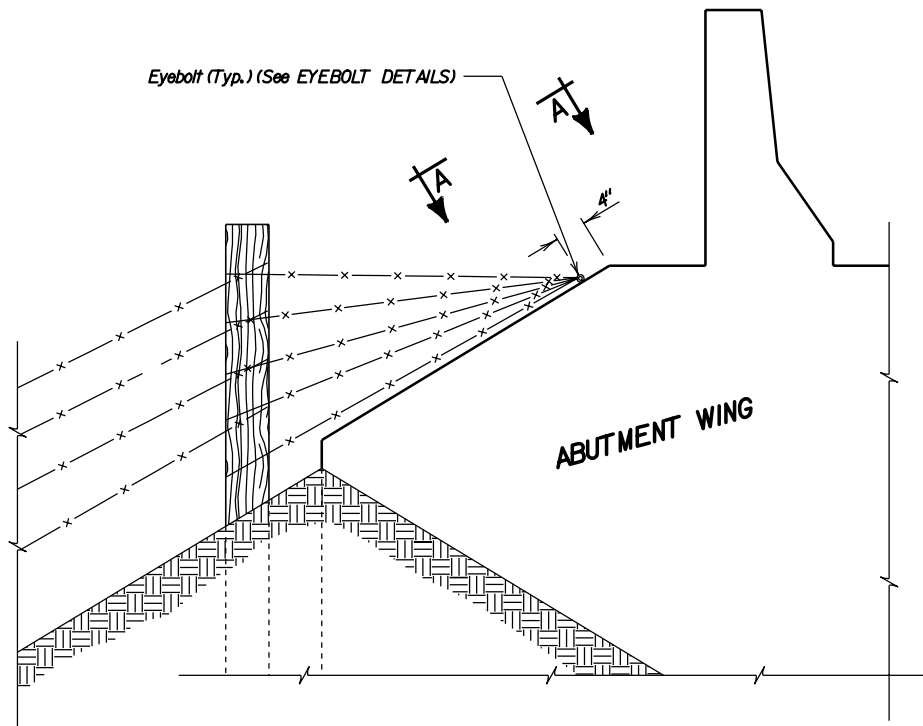
Published Date: 1st Qtr. 2007

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**FENCING AT WIDE DEPRESSION(S)
AND STREAM CROSSING(S)**

**PLATE NUMBER
620.10**

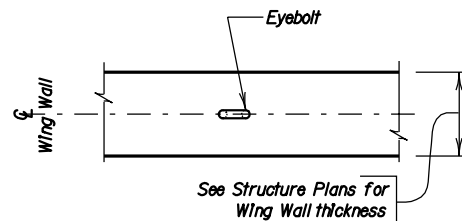
Sheet 1 of 1



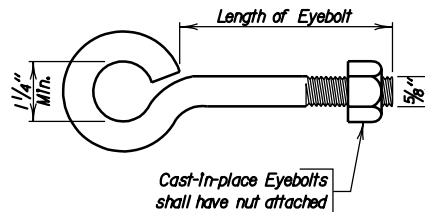
DETAILS FOR FENCE ANCHORS

GENERAL NOTES:

1. The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
2. Eyebolts shall be placed on all of the bridge abutment wings.
3. Eyebolts shall be $\frac{5}{8}$ " dia. and shall conform to ASTM A307.
4. Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
5. Cast-in-place eyebolts shall have a nut attached, be $4\frac{1}{2}$ " (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the $\frac{5}{8}$ " diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
6. The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to the contract unit price per pound for "Reinforcing Steel".



VIEW A - A



EYEBOLT DETAILS

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**FENCE ANCHORS FOR BRIDGE ABUTMENT WINGS
(WINGS 6' AND SHORTER)**

PLATE NUMBER
620.18

Sheet 1 of 1