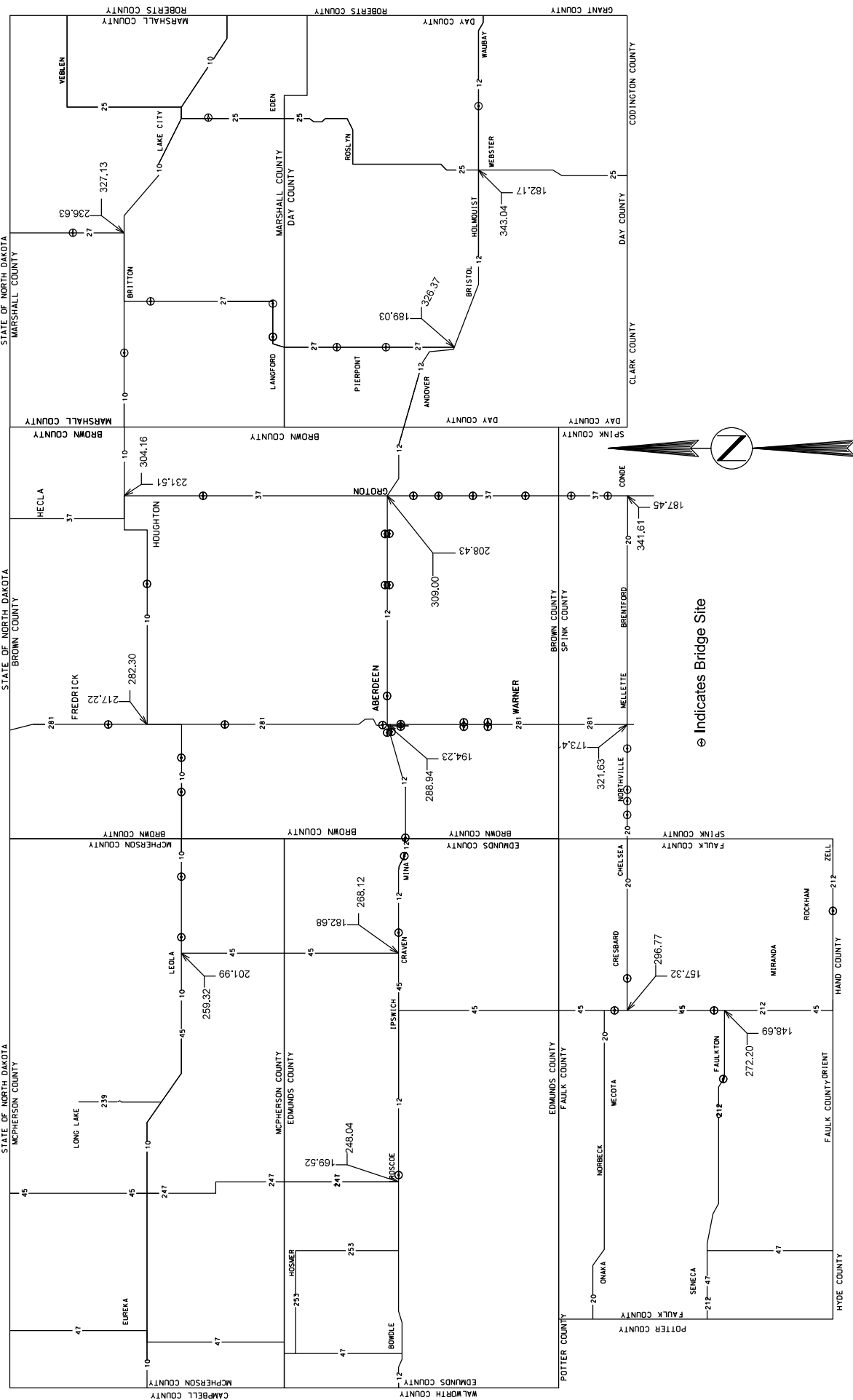


UPDATED 5/4/09



GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES

CONTRACT PROVISIONS

1. The Contract will become effective beginning July 1, 2012 and will expire on June 30, 2013.
2. Guardrail repairs will be limited to Interstate and State Highways located in the Aberdeen Region within the boundaries of Beadle, Brookings, Brown, Buffalo, Clark, Codington, Day, Deuel, Edmunds, Faulk, Grant, Hamlin, Hand, Hyde, Kingsbury, McPherson, Marshall, Moody, Roberts, and Spink Counties.
3. Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal shall apply to this contract. Guardrail repair shall conform to current Department of Transportation Standards or as directed by the Engineer.
4. The quantities shown on the SDDOT CONTRACT PROPOSAL are estimated quantities only, based upon previous years quantities. The actual amount of work accomplished may vary greatly from the quantities shown. There will be NO negotiation of contract unit bid prices for over-runs or under-runs.
5. All repair items shall be furnished new by the Contractor. Should some guardrail items be required that are not bid, the Contractor will be paid for invoice cost of the item(s) plus shipping charges, taxes and ten percent for profit. Approval from the Area Engineer will be required prior to the purchase of non-bid item materials.

All costs to furnish and install new bolts, nuts, washers, nails, and other miscellaneous items shall be incidental to the various other bid items.

All damaged and replaced materials shall become the property of the Contractor for his disposal.

The Contractor shall remove broken stub posts protruding from the ground when installing new posts. Any holes left after replacement of the guardrail shall be backfilled with material furnished by the Contractor.

6. Any damage to the roadway surfacing, embankment, vegetation, signing, etc. which occurs during guardrail repair operations shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.
7. The Contractor will be notified at such time as repairs are required. The Contractor shall complete all necessary repairs within twenty-one (21) calendar days after notification. For each day after the 21 calendar day limitation, the Contractor will be assessed liquidated damages at the rate of \$200.00 per day.

The Contractor shall inform the Engineer of the work schedule for guardrail repairs and any changes in the work schedule shall be provided per Section 5.11 of the Standard Specifications.

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES

8. Definition of Contract Items:

- A. **Mobilization 1:** Mobilization 1 (Aberdeen Area) shall include all costs of mobilization within the Aberdeen Area to and from the project and will be paid on a per each basis each time the Contractor is called in by the Area Engineer to perform guardrail accident damage repair. The Aberdeen Area includes the following counties: Brown, Day, Edmunds, Faulk, McPherson, and Marshall Counties.
- B. **Mobilization 2:** Mobilization 2 (Huron Area) shall include all costs of mobilization within the Huron Area to and from the project and will be paid on a per each basis each time the Contractor is called in by the Area Engineer to perform guardrail accident damage repair. The Huron Area includes the following counties: Beadle, Buffalo, Clark, Hand, Hyde, Kingsbury, and Spink Counties.
- C. **Mobilization 3:** Mobilization 3 (Watertown Area) shall include all costs of mobilization within the Watertown Area to and from the project and will be paid on a per each basis each time the Contractor is called in by the Area Engineer to perform guardrail accident damage repair. The Watertown Area includes the following counties: Brookings, Codington, Deuel, Grant, Hamlin, Moody and Roberts Counties.
- D. **Retension 3 Cable Guardrail:** Retension 3 Cable Guardrail shall include all costs to adjust the tension in a length of 3 Cable Guardrail. The tension shall be as shown on Standard Plate 629.01 (1 of 6). Measurement for payment will be per each run of 3 Cable Guardrail and shall include all 3 cables and both anchor ends that make up a run of 3 Cable Guardrail. Retension 3 Cable Guardrail may include cutting and shortening of cables at the anchors to allow for the proper retensioning.
- E. **Repair 3 Cable Guardrail:** Repair 3 Cable Guardrail shall include replacement of damaged cable. The Contractor shall furnish any J Hook Bolts needed as shown on Standard Plate 629.01 (5 of 6). Measurement for payment will be per each single cable and for the actual length requiring replacement. Cable Splices required shall be incidental to this contract item. All costs for retensioning of cables shall be incidental to the contract unit price per foot for "Repair 3 Cable Guardrail".
- F. **Repair 3 Cable Guardrail Slip Base Anchor Assembly:** Repair 3 Cable Guardrail Slip Base Anchor Assembly shall include full compensation for repair of the damaged Slip Base Anchor Assembly. This work will be performed if it is determined that the Slip Base Anchor Assembly can be repaired without total footing removal. The work will consist of coring a 12" diameter section into the existing footing, centered over the existing slip base anchor stub post, to a depth of 22". The core will then be broke off and disposed of. The sides of the hole in the footing shall be roughened to the satisfaction of the Engineer. A rapid-setting, non-shrink, non-metallic grout shall be used (in accordance with the manufacturer's recommendations) to anchor the new slip base anchor stub post in the footing. The grout shall reach a compressive strength of over 5000 PSI.
- G. **3 Cable Guardrail End Post:** 3 Cable Guardrail End Post shall include all costs for removal of damaged end post and installation of 3 cable guardrail end post. 3 Cable Guardrail End Post shall also include a new end post cap. All costs incurred for removal and replacement of the existing cable on the new post shall be incidental to this contract item.

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES

- H. **3 Cable Guardrail Intermediate Post:** 3 Cable Guardrail Intermediate Post shall include all costs for removal of damaged post and installation of 3 cable guardrail intermediate line post. All costs incurred for removal and replacement of the existing cable on the new post, including J Hook Bolts shall be incidental to this contract item.
- I. **3 Cable Guardrail Slip Base Anchor Post:** 3 Cable Guardrail Slip Base Anchor Post shall include all costs for removal of damaged post and installation of 3 cable guardrail slip base anchor post. All costs incurred for removal and replacement of the existing cable on the new post, shall be incidental to this contract item.
- J. **3 Cable Guardrail Post, Winter:** 3 Cable Guardrail Post, Winter shall include all costs for removal of the damaged post and installation of cable guardrail post when there is in excess of one foot of frozen ground at the work site. When this condition exists, the contract unit price per each for "3 Cable Guardrail Post, Winter" will be the pay unit rather than the contract unit price per each for "3 Cable Guardrail Intermediate Post" and/or "3 Cable Guardrail End Post". The Contractor shall furnish any J Hook Bolts needed as shown on Standard Plate 629.01 (5 of 6).

All costs incurred for removal and replacement of the existing cable on the new post, including J Hook Bolts shall be incidental to this contract item.

- K. **Drive Down 3 Cable Guardrail Post:** Drive Down 3 Cable Guardrail Post shall include all costs for adjusting the height of a Cable Rail Post. All costs to disassemble the cable rail to do this work shall be incidental to this contract item.
- L. **Reset 3 Cable Guardrail Post:** Reset 3 Cable Guardrail Post shall include all costs incurred for the realignment and/or removal and resetting of a cable guardrail post to properly align cable guardrail section. The Contractor shall furnish any J Hook Bolts needed as shown on Standard Plate 629.01 (5 of 6).

Work under this item may require straightening of in place bent cable guardrail posts to bring them into alignment with cable guardrail section. Payment for "Reset 3 Cable Guardrail Post" will be the same whether in frozen or unfrozen ground. All costs incurred for removal and replacement of the existing cable on the new post shall be incidental to this item.

- M. **Cable Anchor Bracket:** Cable Anchor Bracket shall include furnishing and installing the Cable Anchor Bracket as shown on Standard Plate 629.01 (3 of 6).
- N. **Cable Splice:** Cable Splice shall include all costs incurred for cutting existing cable and for furnishing and installing the necessary cable splice.
- O. **3 Cable Guardrail J Hook Bolt:** 3 Cable Guardrail J Hook Bolt shall include furnishing & installing J hook bolts when no other work is required to the 3 cable guardrail other than missing or broken J hook bolts.
- P. **Steel Turnbuckle Cable End Assembly:** Steel Turnbuckle Cable End Assembly shall include all costs for furnishing and installing the Steel Turnbuckle Cable End Assembly as shown on Standard Plate 629.01 (4 of 6).
- Q. **Spring Cable End Assembly with Turnbuckle:** Spring Cable End Assembly with Turnbuckle shall include all costs for furnishing and installing the Spring Cable End Assembly with Turnbuckle as shown on Standard Plate 629.01 (4 of 6).

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES

- R. **W Beam to 3 Cable Transition Bracket:** W Beam to 3 Cable Transition Bracket shall include all costs incurred for removing the damaged transition bracket and installing a transition bracket in accordance with the details on Standard Plates 629.05 & 629.15.
- S. **3 Cable Guardrail End Post Cap:** 3 Cable Guardrail End Post Cap shall include all costs for furnishing and installing an end post cap as shown on Standard Plate 629.01 (6 of 6).
- T. **Straight Class A Thrie Beam Rail:** Straight Class A Thrie Beam Rail shall include all costs for removing damaged Thrie Beam rail and replacing with Class A Thrie Beam rail.
- U. **Straight Class A W Beam Rail:** Straight Class A W Beam Rail shall include all costs for removing damaged W Beam rail and replacing with Class A W Beam rail.
- V. **Straight Class B W Beam Rail:** Straight Class B W Beam Rail shall include all costs for removing damaged W Beam rail and replacing with Class B W Beam rail.
- W. **W Beam to Thrie Beam Guardrail Transition:** W Beam to Thrie Beam Guardrail Transition shall include all costs for removing damaged rail and replacing with a W Beam to Thrie Beam Guardrail Transition.
- X. **W Beam Guardrail Flared End Terminal:** W Beam Guardrail Flared End Terminal shall include all costs incurred for furnishing and installing an approved flared end terminal in accordance with details on Standard Plate 630.45. At some locations of W Beam Guardrail Flared End Terminal damage, the Area Engineer may decide to replace the existing W Beam Guardrail Flared End Terminal in lieu of replacing the various components of the W Beam Guardrail Flared End Terminal.

The Flared End Terminal shall be on the approved products list on Sheet [11](#) of [46](#).

The contract unit price per each for "W Beam Guardrail Flared End Terminal" shall include all costs incurred for furnishing and installing one (1) end section as shown on Standard Plate 630.45 including removal of the existing end terminal.

- Y. **W Beam Guardrail Tangent End Terminal:** W Beam Guardrail Tangent End Terminal shall include all costs incurred for furnishing and installing an approved tangent end terminal in accordance with details on Standard Plate 630.46. At some locations of W Beam Guardrail Tangent End Terminal damage, the Area Engineer may decide to replace the existing W Beam Guardrail Tangent End Terminal in lieu of replacing the various components of the W Beam Guardrail Tangent End Terminal.

The Tangent End Terminal shall be on the approved products list on Sheet [11](#) of [46](#).

The contract unit price per each for "W Beam Guardrail Tangent End Terminal" shall include all costs incurred for furnishing and installing one (1) end section as shown on Standard Plate 630.46 including removal of the existing end terminal.

- Z. **Beam Guardrail Block:** Beam Guardrail Block shall include all costs for removing the broken block and installing a block.

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES

- AA. **Beam Guardrail Post & Block:** Beam Guardrail Post & Block shall include all costs for removing the broken post and installing a post and block. Any holes required to be drilled in the posts, such as the 3 1/2" diameter holes for the MELT end posts as per Standard Plate SPECIAL - A (3 of 3), shall also be included. Beam Guardrail Post & Block shall include replacement of post and blocks located within the limits of the Tangent and Flared End Terminals.
- BB. **Beam Guardrail Post & Block, Winter:** Beam Guardrail Post & Block, Winter shall include all costs incurred for replacement of a steel beam guardrail post when there is in excess of one foot of frozen ground at the work site. When this condition exists, the contract unit price per each for "Beam Guardrail Post & Block, Winter" will be the pay unit rather than the contract unit price per each for "Beam Guardrail Post & Block". The Contractor shall field drill 3 1/2" diameter holes in posts as per Standard Plate SPECIAL - A (3 of 3) when placing MELT ends. Beam Guardrail Post & Block, Winter shall include replacement of post and blocks located within the limits of the Tangent and Flared End Terminals.
- CC. **End Terminal Wood Breakaway Post:** End Terminal Wood Breakaway Post shall include all costs incurred for removal of a broken wood end post and installing a replacement wood end post in a steel tube sleeve. This bid item shall include replacement of wood posts on various end terminals including Breakaway Cable Terminals (BCT), Modified Eccentric Loader Terminals (MELT), Trailing End Terminals, Tangent End Terminals and Flared End Terminals. The Contractor shall be responsible for making sure the wood post matches the appropriate Standard Plate or end terminal manufacturer's requirements.
- DD. **End Terminal Hinged Breakaway Post:** End Terminal Hinged Breakaway Post shall include all costs incurred for removal of a hinged breakaway end post and installing a replacement hinged post on a post bottom base. This bid item shall include replacement of hinged breakaway posts on various end terminals including Tangent End Terminals and Flared End Terminals. The Contractor shall be responsible for making sure the hinged breakaway post matches the end terminal manufacturer's requirements.
- EE. **Breakaway Cable Terminal End Rail:** Breakaway Cable Terminal (B.C.T) End Rail shall include all costs incurred for removing the 12.5 ft. or 25 ft section of damaged B.C.T. W beam adjacent to the Radius Terminal Element and replacing with new guardrail. The Contractor shall field drill holes in the guardrail for installation.
- FF. **W-Beam Guardrail End Section Buffer:** W-Beam Guardrail End Section Buffer shall include all costs incurred for installing a buffer assembly. Removal of the existing end section buffer shall be incidental to this contract item.
- GG. **Tangent End Terminal Extruder Head:** Tangent End Terminal Extruder Head shall include all costs incurred for removing the damaged extruder head and installing a new extruder head on the Tangent End Terminal.
- HH. **Tangent End Terminal Rail:** Tangent End Terminal Rail shall include all costs incurred for removing 12.5 ft. or 25 ft. section(s) of damaged beam guardrail and replacing new beam guardrail on the Tangent End Terminal.
- II. **Rubrail:** Rubrail shall include all costs to install rubrail. The Contractor shall provide the necessary wood blocks and bolts to attach the rubrail to the wood posts.

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES

JJ. **Drive Down Beam Guardrail Post:** Drive Down Beam Guardrail Post shall include all costs for adjusting the height of a steel beam guardrail post. All costs to disassemble the steel beam guardrail shall be incidental to this bid item.

KK. **Reset Beam Guardrail Post & Block:** Reset Beam Guardrail Post & Block shall include all costs for removing and resetting post to properly align the steel beam section. Payment for "Reset Beam Guardrail Post & Block" shall be the same in frozen or unfrozen ground.

LL. **2.0 LB/FT Flanged Channel Post:** 2.0 LB/FT Flanged Channel Post shall be used to replace damaged delineator posts in a guardrail installation area. 2.0 LB/FT Flanged Channel Post will also be the pay item for the 3.5 ft long base post if it is required. The retainer-spacer strap and other miscellaneous hardware required shall be incidental to the contract unit price per foot for 2.0 LB/FT Flanged Channel Post. Delineators themselves will be paid for separately as 4" x 4" White Delineator Reflector.

MM. **4" x 4" White Delineator Reflector:** 4" x 4" White Delineator Reflector shall be used to replace damaged and/or missing delineator heads on existing delineator posts in a guardrail installation area. Any post straightening or realignment of posts shall be incidental to the contract unit price per each for 4" x 4" White Delineator Reflector. 4" x 4" White Delineator Reflector will also be the pay item for delineator heads when installing a new 2.0 LB/FT Flanged Channel Post. A typical installation will require 2 delineator heads. Delineator heads shall be fastened to the post with pop rivets.

9. Traffic Control shall be installed by the Contractor in accordance with the details on Sheets [12](#) thru [14](#) of the Contract. All signs, channelizing devices, and arrow boards shall conform to the requirements of the Manual of Uniform Traffic Control Devices. All costs for furnishing, installing, and maintaining the traffic control shall be incidental to the contract unit prices bid for the various contract items. Separate measurement and payment will not be made.

When work is being performed on two way traffic roadways, flagging shall be furnished by the Contractor in accordance with the standard plate included in this contract. All costs associated with furnishing flagging shall be incidental to the contract unit prices bid for the various contract items. Separate measurement and payment will not be made.

Portable sign supports shall be constructed to yield upon impact to minimize hazards to motorists. The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas and one foot above the pavement in rural areas.

It shall be the responsibility of the Contractor to ensure that all devices meet the applicable NCHRP 350 or MASH crash-worthy requirements.

Equipment and vehicles entering or exiting the roadway, traveling on the shoulders or driving lanes at low speeds or working within the right-of-way shall display a flashing amber light visible for a minimum distance of 1/4 mile in all directions.

10. When the Contractor is called in to work at more than one site within an Area, Mobilization will only be paid once. In the event that Mobilization is required in two or more Areas at one time, the Contractor will be paid Mobilization into each one of the specific Areas. The cover sheets show where bridges are located within the Areas. There may be additional locations that have guardrail such as box culverts, large pipe, and steep inslopes which are not indicated on the cover sheets. Long runs of 3 Cable Guardrail exist on several water hazard sites. These include:

SD 25 from MRM 175.5 to MRM 177.8 in Day County
US 212 from MRM 350.6 to MRM 351.7 in Clark County

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES

11. The Standard Plates included in this contract are provided for information purposes on how the various guardrail items are to be constructed and the materials required to do the work. Plan notes contained on Sheets [4](#) thru [10](#) of this contract shall take precedence over notes contained on the Standard Plates.

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES

Approved W Beam Guardrail End Terminals		
Product Type:	Product Name:	Manufacturer:
W Beam Guardrail Flared End Terminal	Fleat 350	Road System, Inc. Big Spring TX (432) 263-2435 http://www.roadsystems.com
W Beam Guardrail Flared End Terminal	SRT-350 (6-Post System)	Trinity Industries Co. (SYRO Inc.) Dallas TX (800) 644-7976 http://www.trinitycpge.com
W Beam Guardrail Tangent End Terminal	ET-2000 Plus	Trinity Industries Co. (SYRO Inc.) Dallas TX (800) 644-7976 http://www.trinitycpge.com
W Beam Guardrail Tangent End Terminal	SKT 350	Road System, Inc. Big Spring TX (432) 263-2435 http://www.roadsystems.com

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45 - 50	500	50
55	750	50
60 - 65	1000	50

- Flagger
- Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices shall be drums or 42" cones.

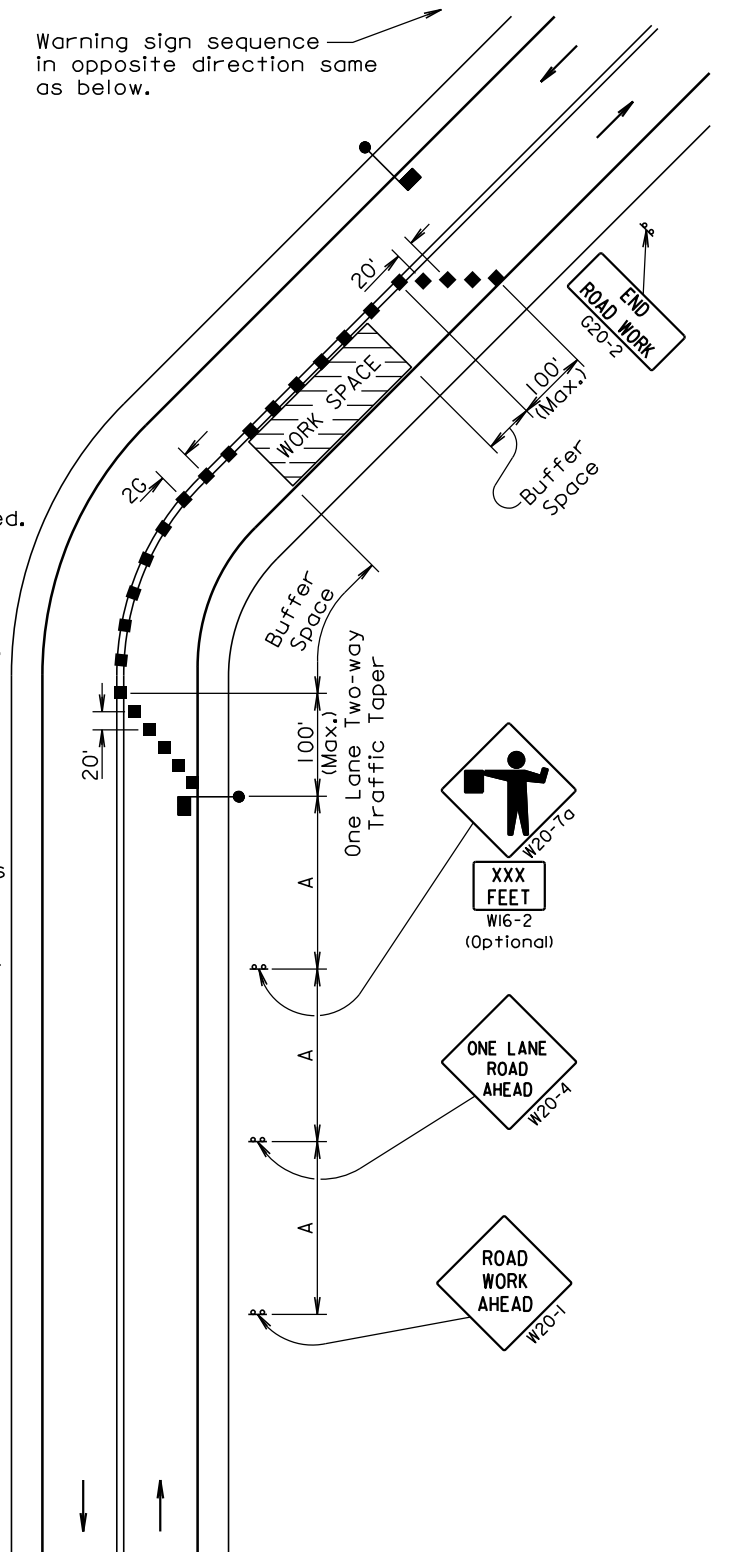
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

END ROAD WORK
G20-2

Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

Warning sign sequence in opposite direction same as below.



February 14, 2011

Published Date: 2nd Qtr. 2012

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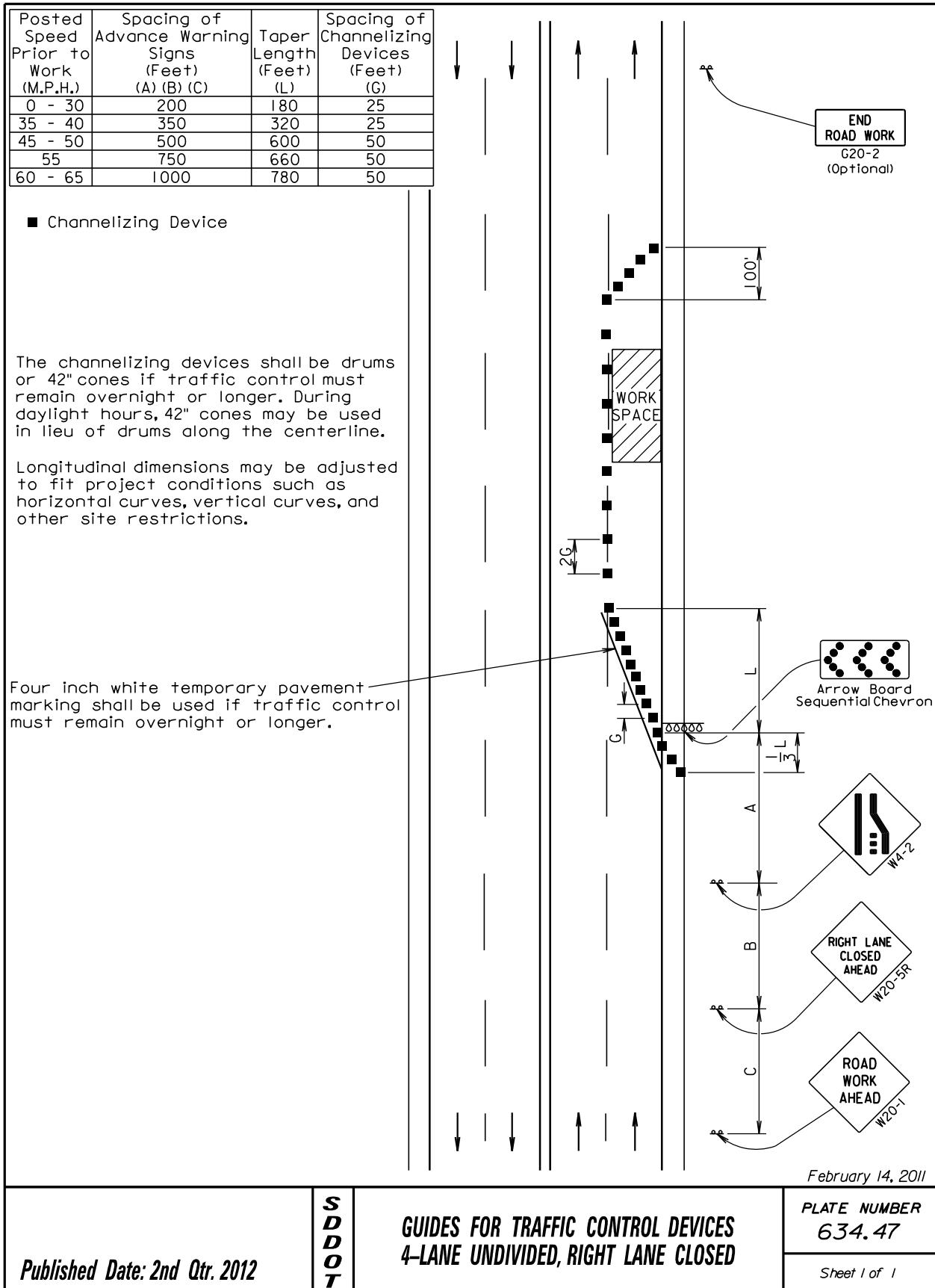
**GUIDES FOR TRAFFIC CONTROL DEVICES
LANE CLOSURE WITH FLAGGER PROVIDED**

PLATE NUMBER
634.23

Sheet 1 of 1

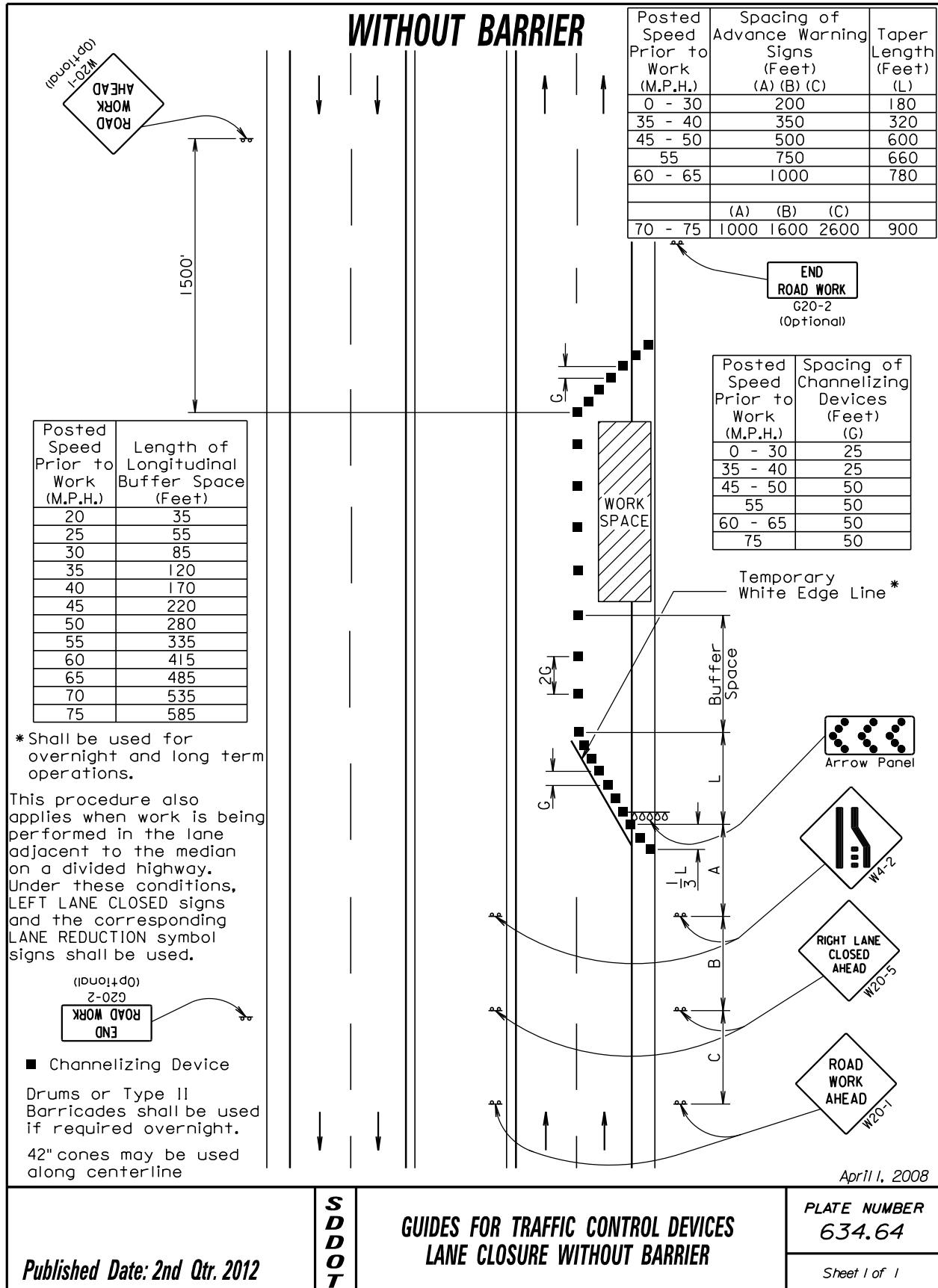
GUARDRAIL ACCIDENT DAMAGE REPAIR

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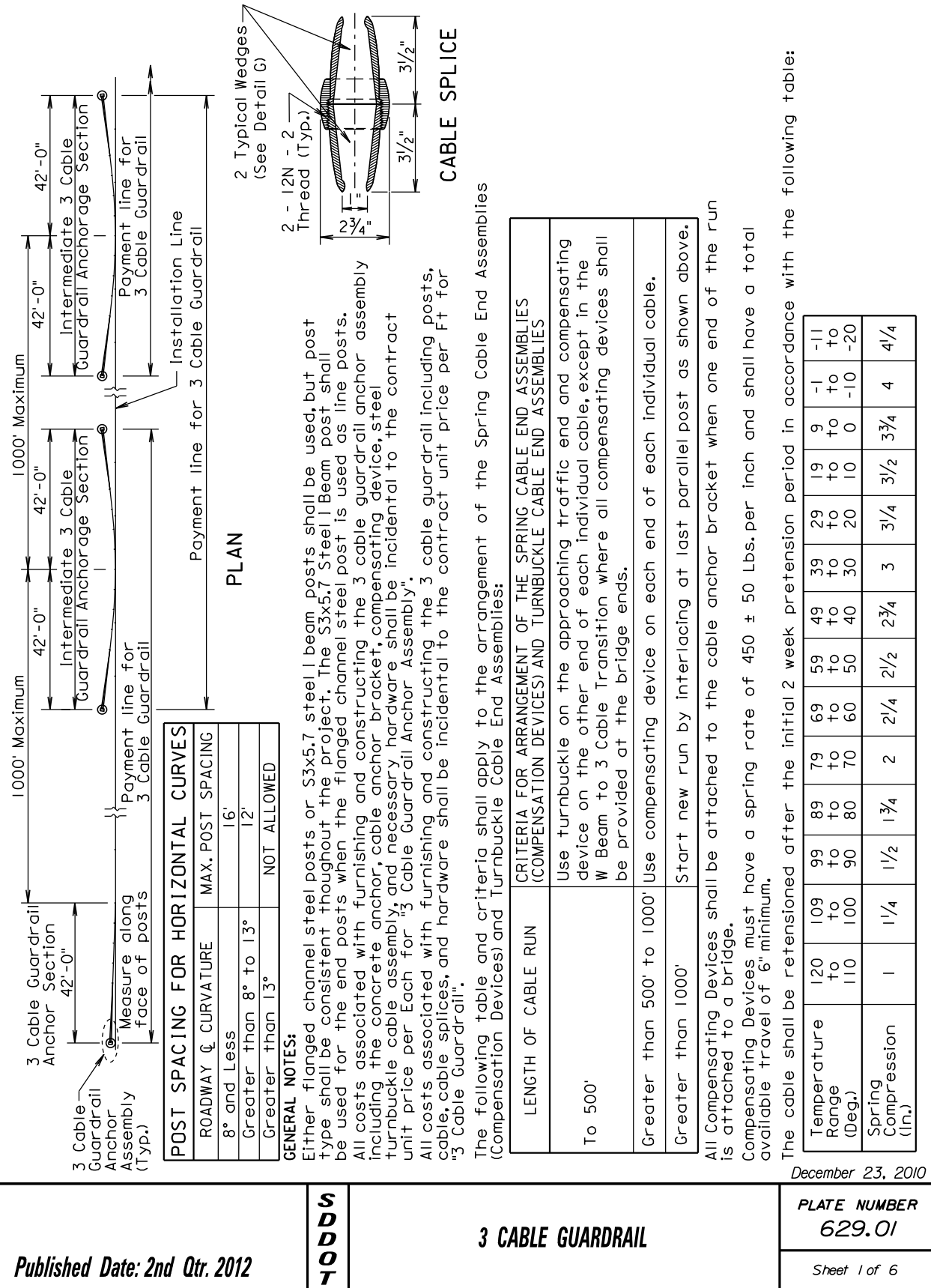


GUARDRAIL ACCIDENT DAMAGE REPAIR

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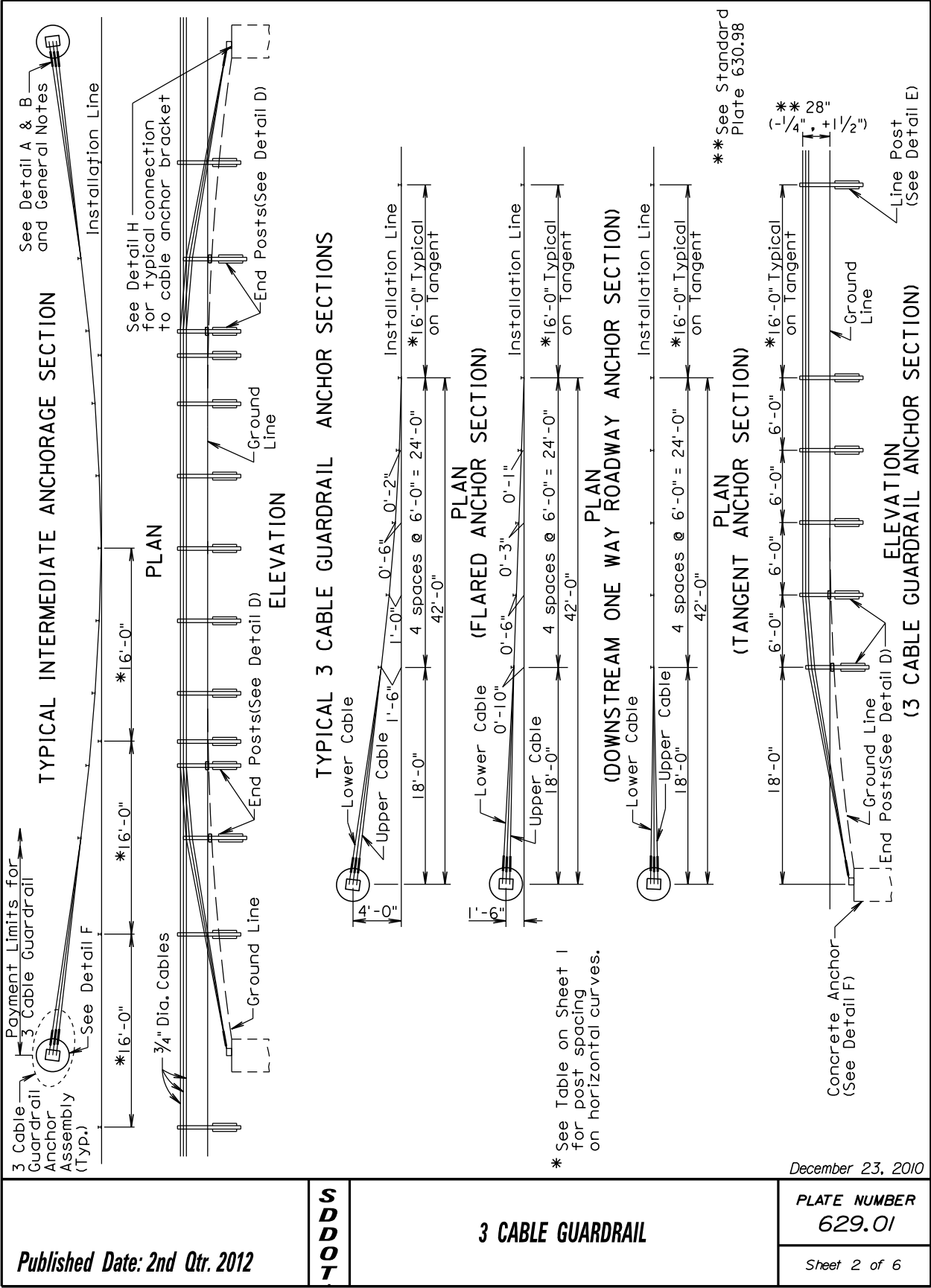


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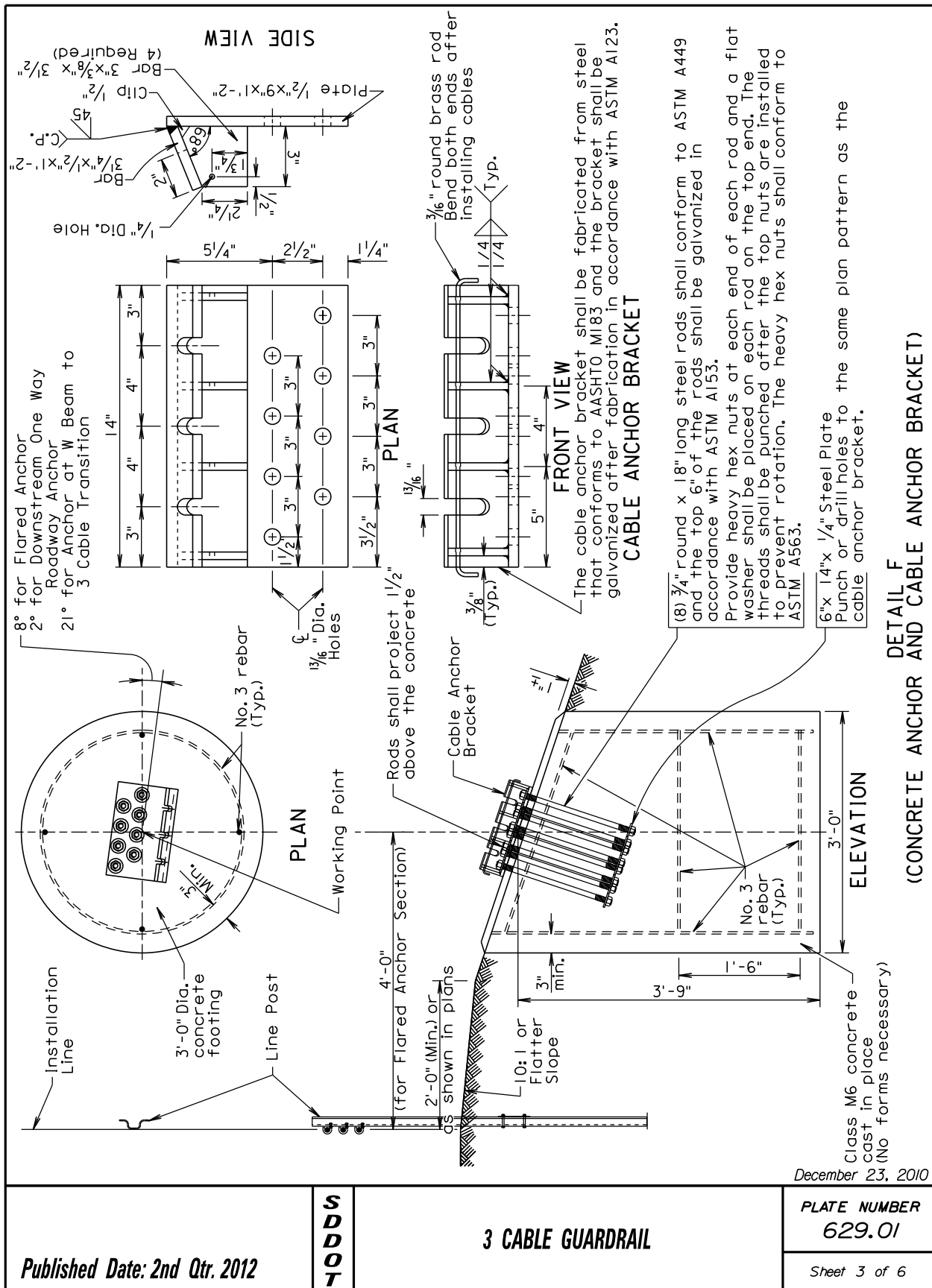


GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES

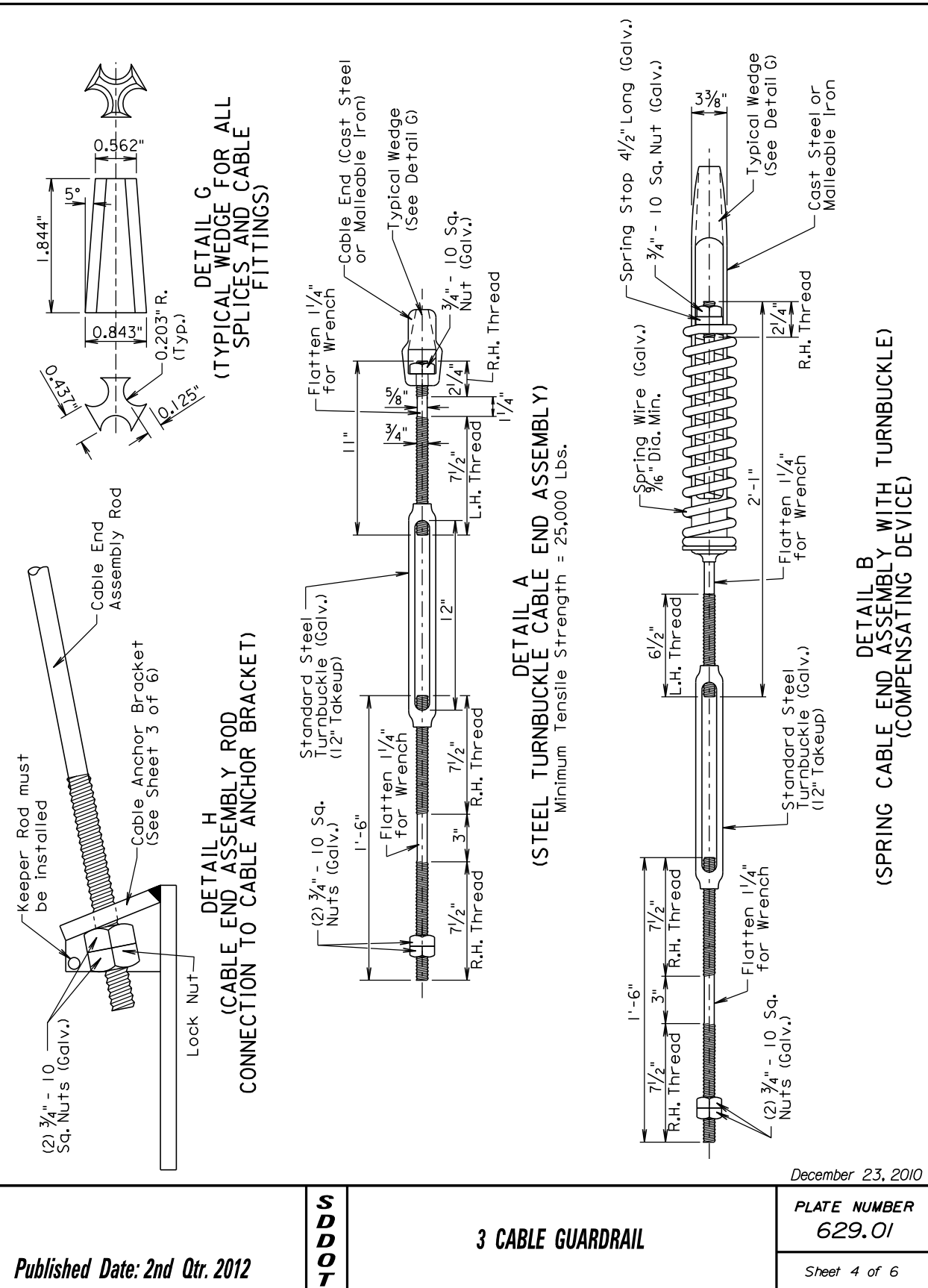


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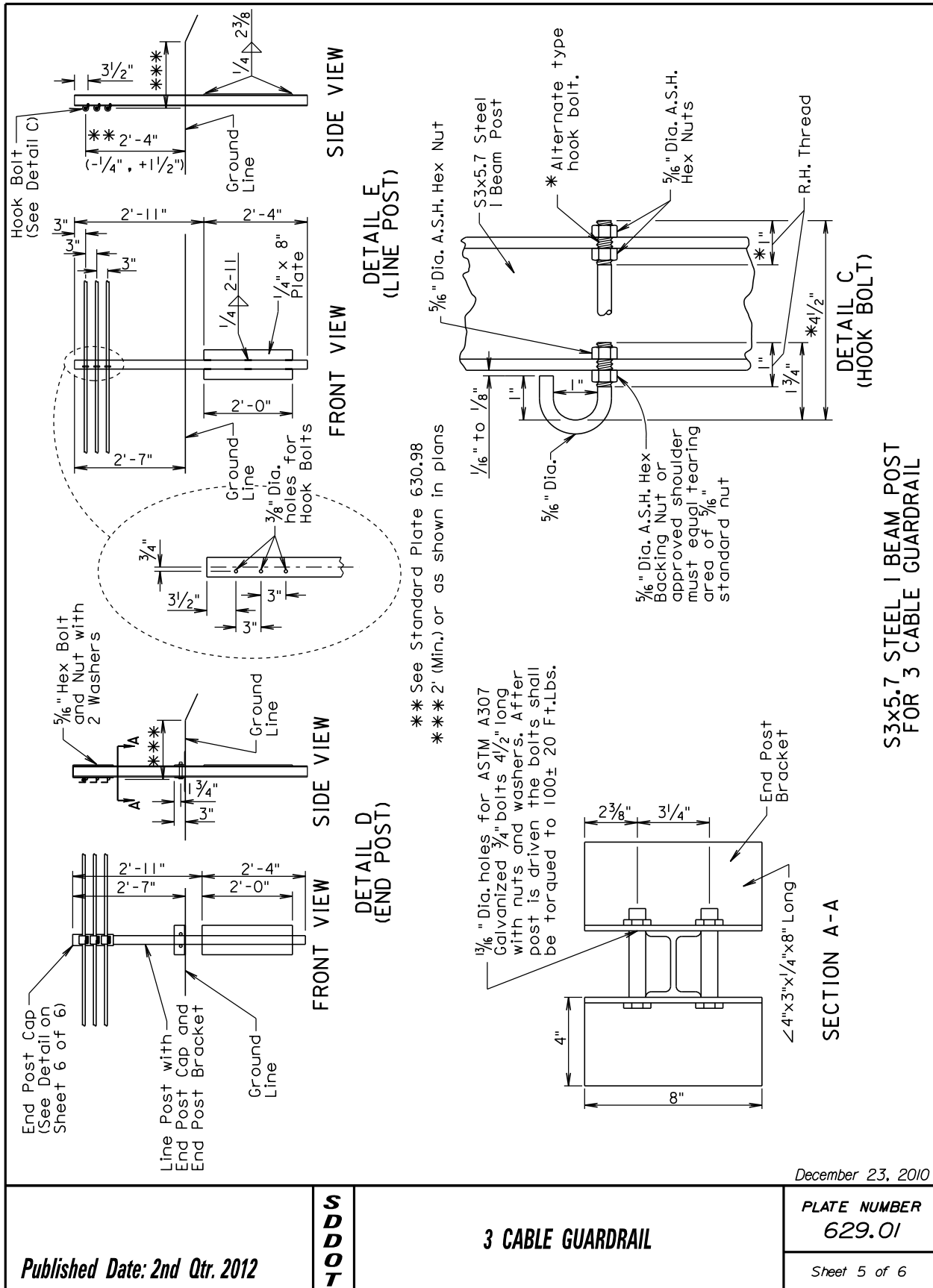


GUARDRAIL ACCIDENT DAMAGE REPAIR

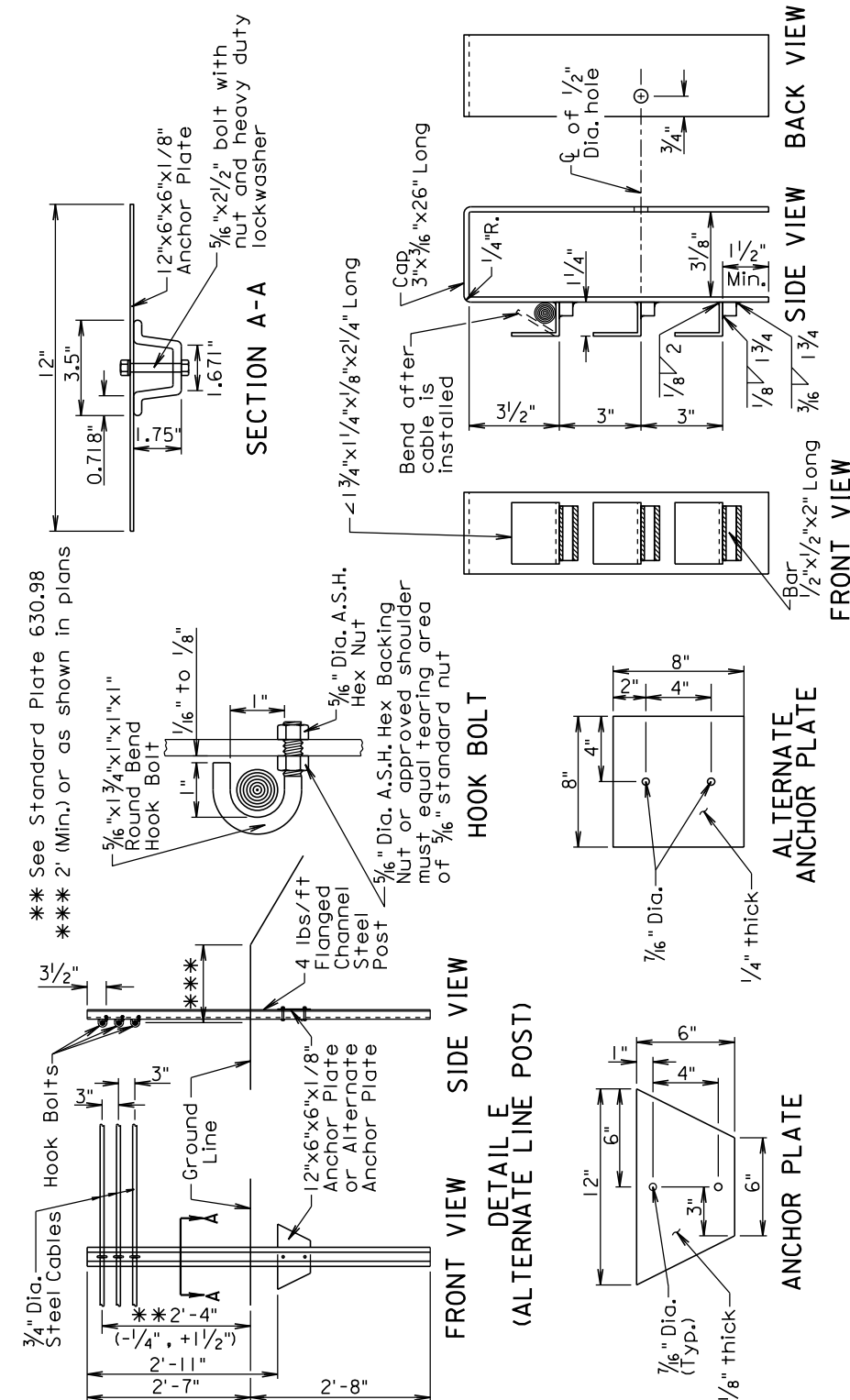
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BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



FLANGED CHANNEL STEEL POST
FOR 3 CABLE GUARDRAIL

END POST CAP

GENERAL NOTES:

Flanged channel steel posts shall be produced from high strength steel in accordance with ASTM A499 Grade 60.

Anchor plate shall be carbon steel sheet.

Alternate anchor plate shall be ASTM A36 steel.

Bolt shall be in conformance with ASTM A354 Grade BD or BC. Nut shall be in conformance with ASTM A563 Grade DH. Bolt shall be Cadmium plated per ASTM A165-80 Type OS except using clear chromate.

Finish for the post and anchor plate shall be a high quality dark green outdoor acrylic enamel.

Alternate anchor plate may be unfinished.

December 23, 2010

PLATE NUMBER
629.01

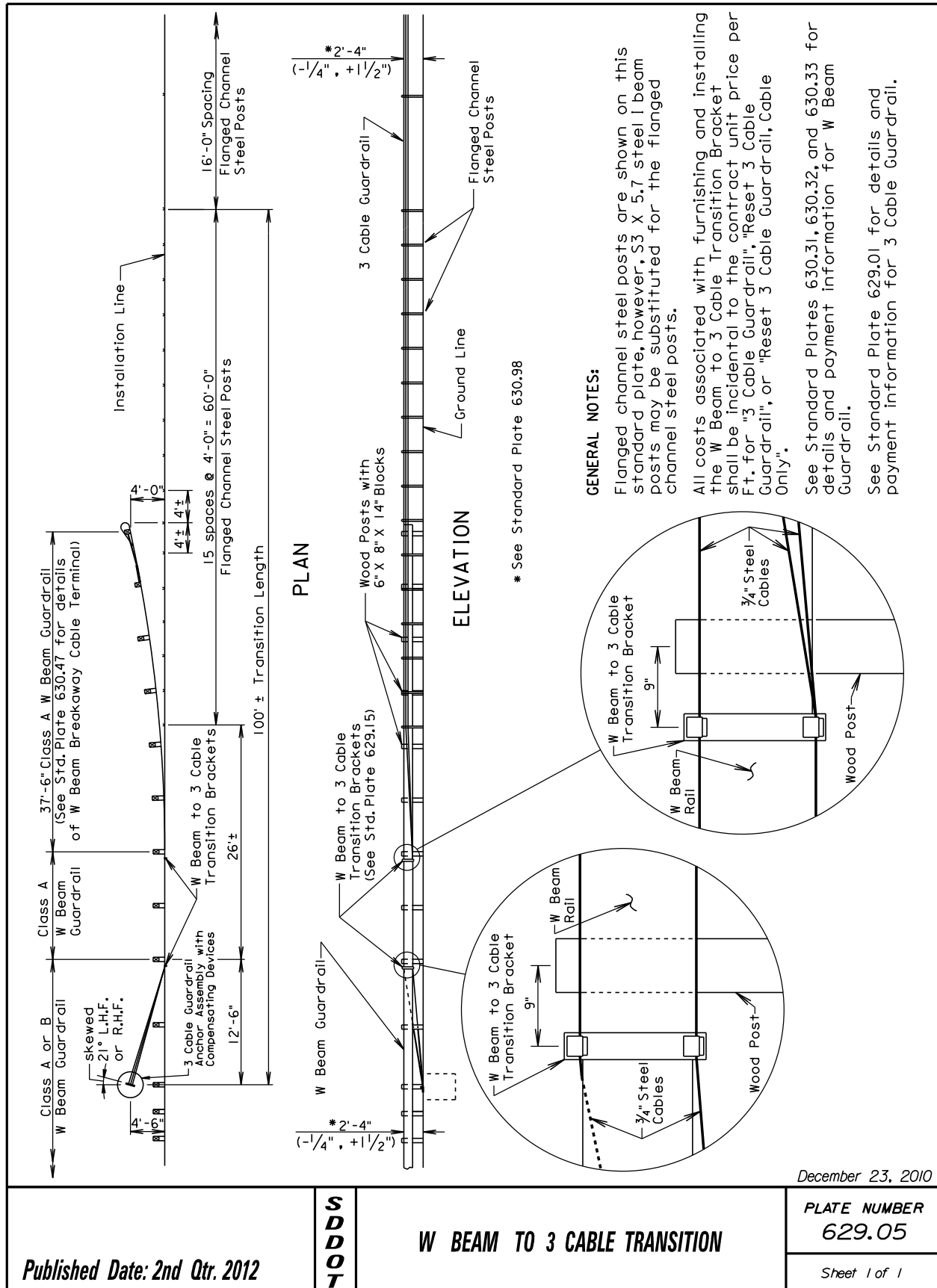
Sheet 6 of 6

Published Date: 2nd Qtr. 2012

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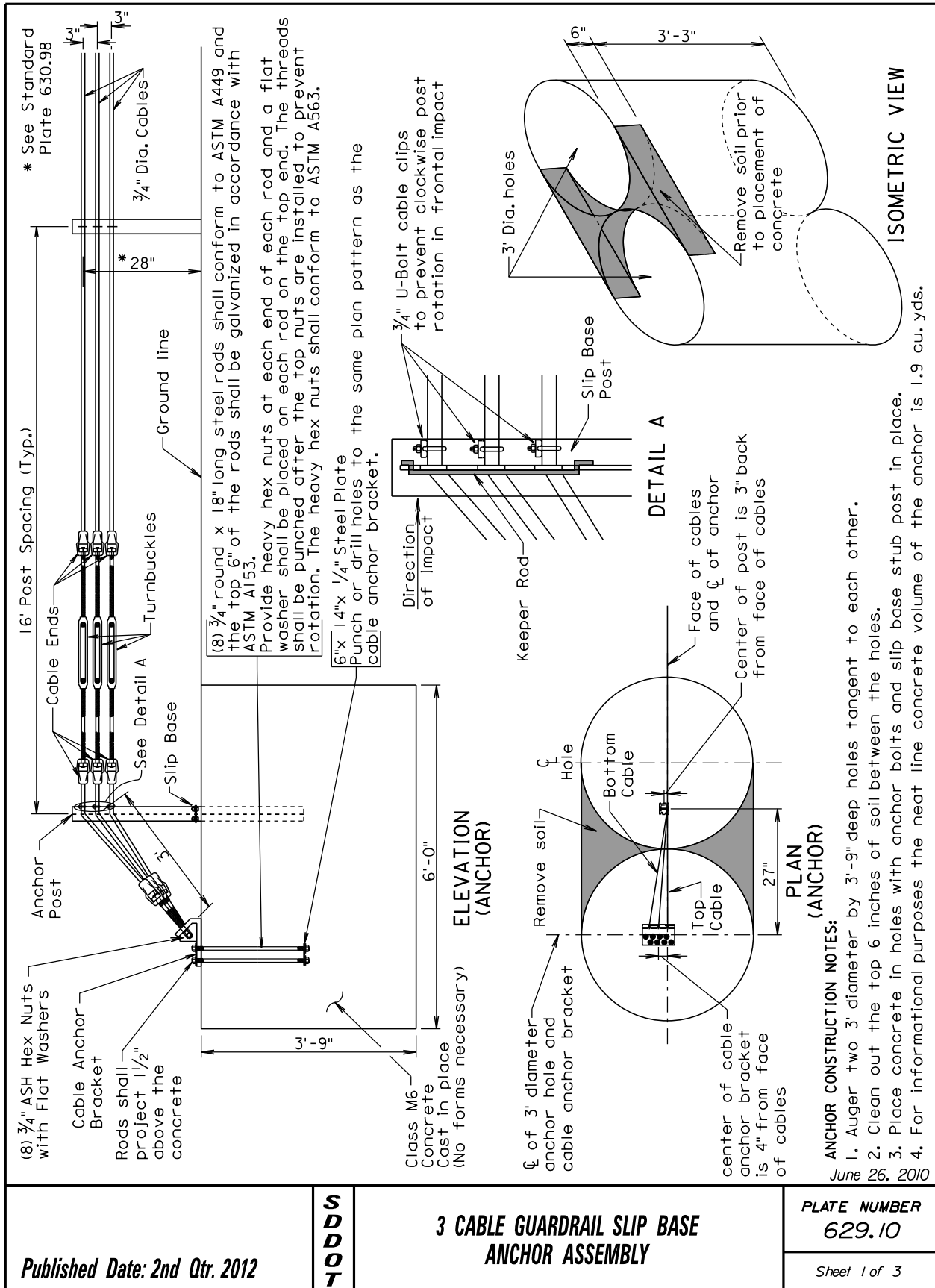
3 CABLE GUARDRAIL

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



Published Date: 2nd Qtr. 2012

SDOT

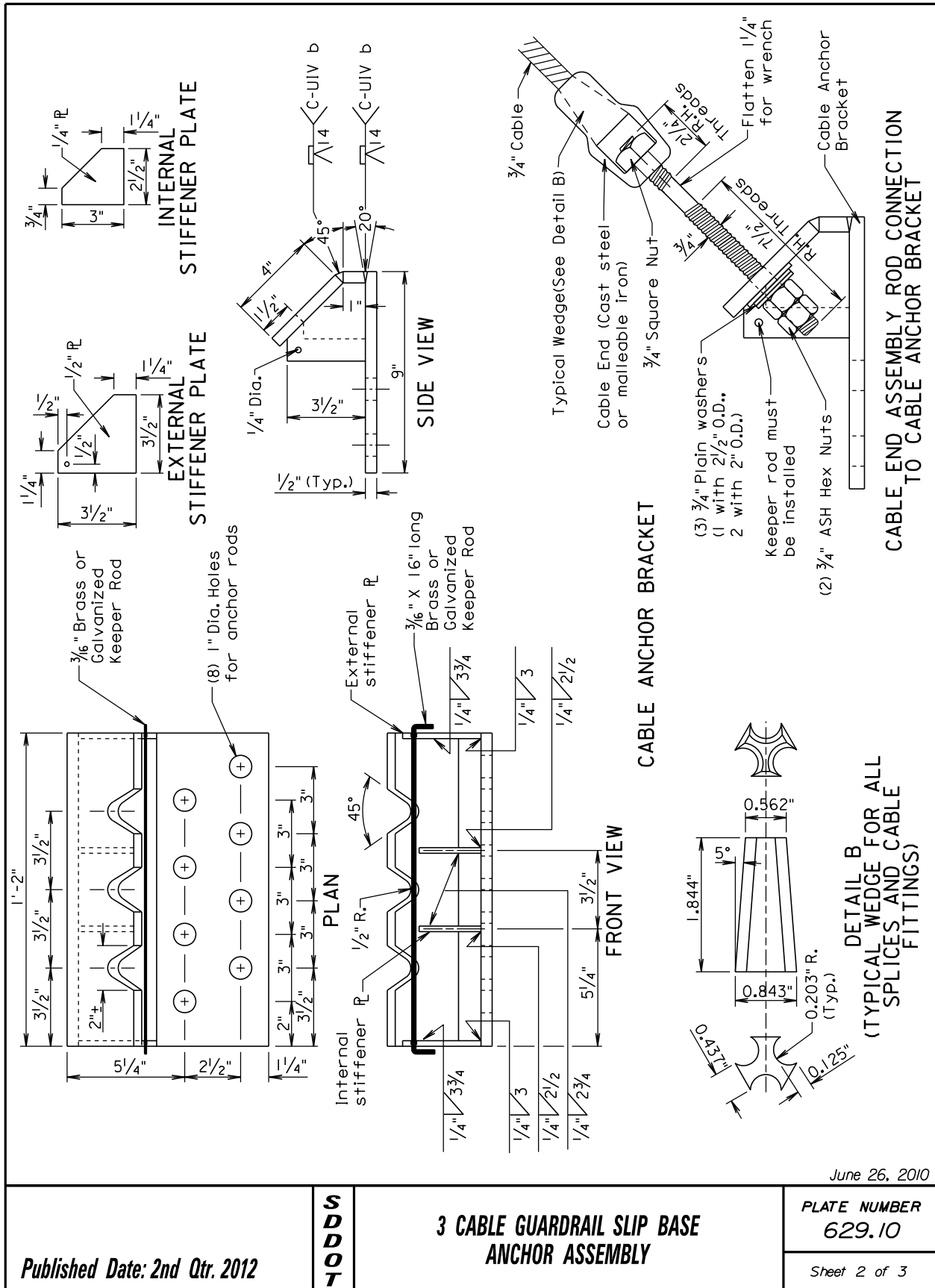
3 CABLE GUARDRAIL SLIP BASE
ANCHOR ASSEMBLY

PLATE NUMBER
629.10

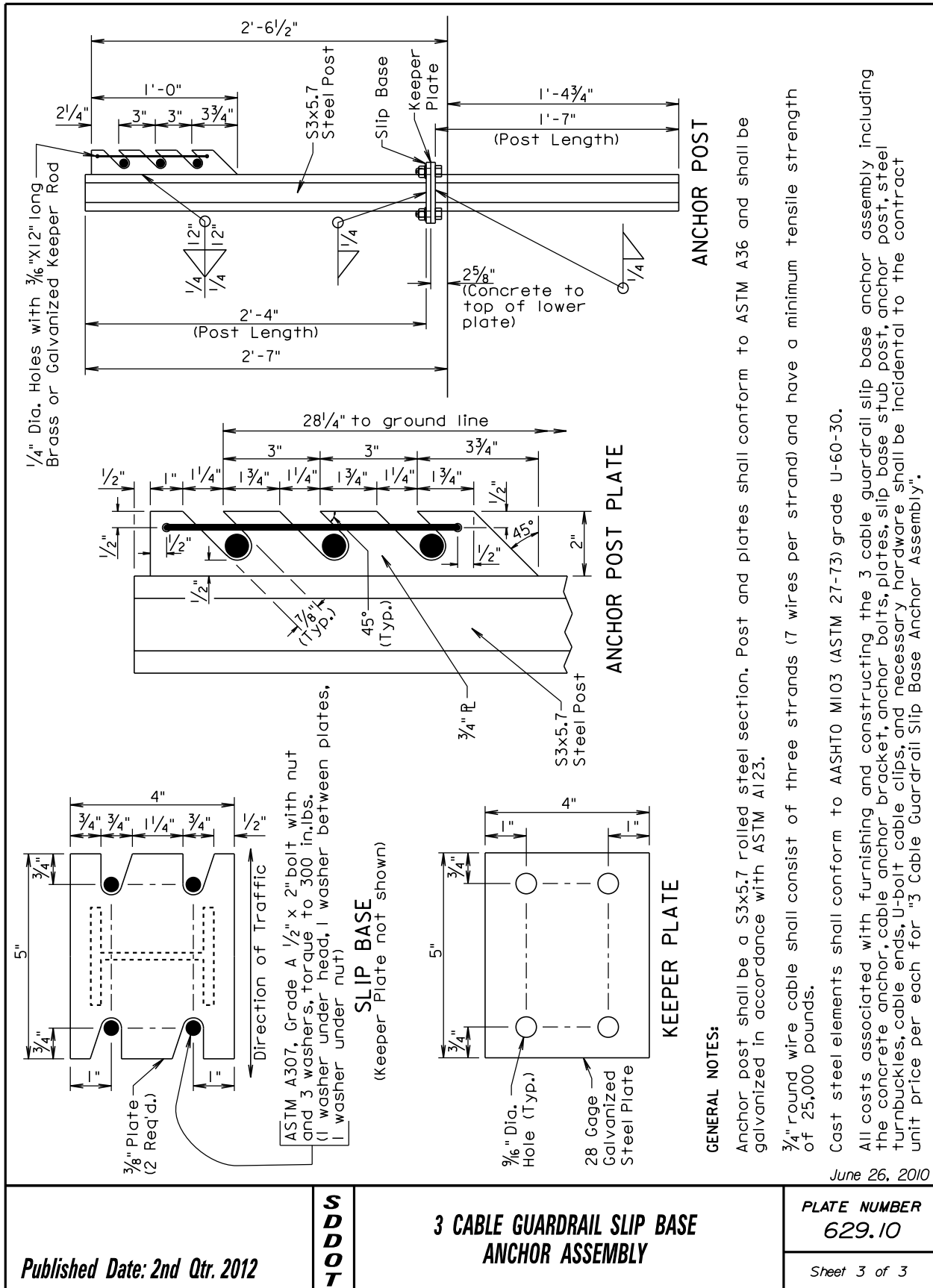
Sheet 1 of 3

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES

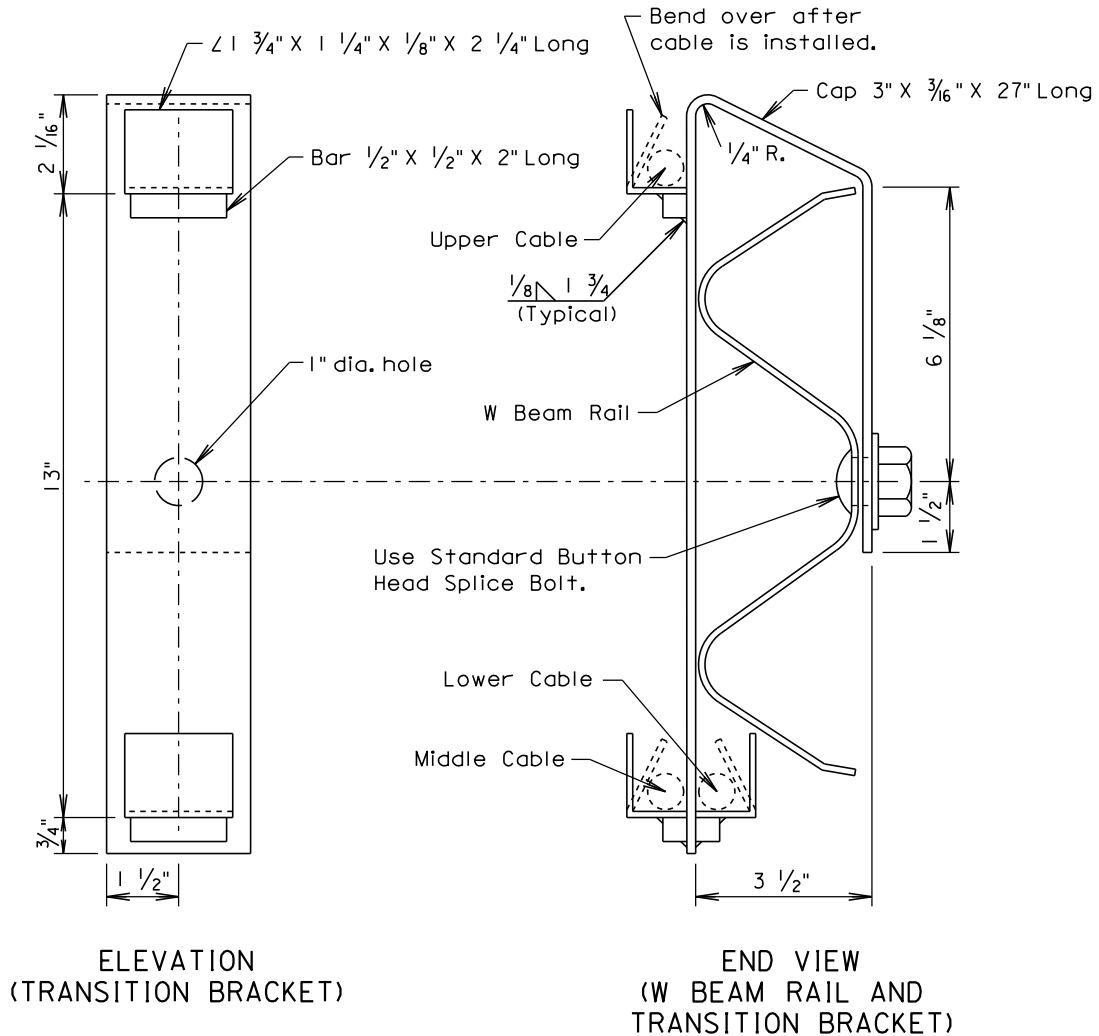


BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT,
HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



GENERAL NOTES:

Steel used in the fabrication of the bracket shall conform to ASTM A36 and the bracket shall be galvanized after fabrication in accordance with ASTM A123.

March 31, 2000

Published Date: 2nd Qtr. 2012

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W BEAM TO 3 CABLE TRANSITION BRACKET

**PLATE NUMBER
629.15**

Sheet 1 of 1

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



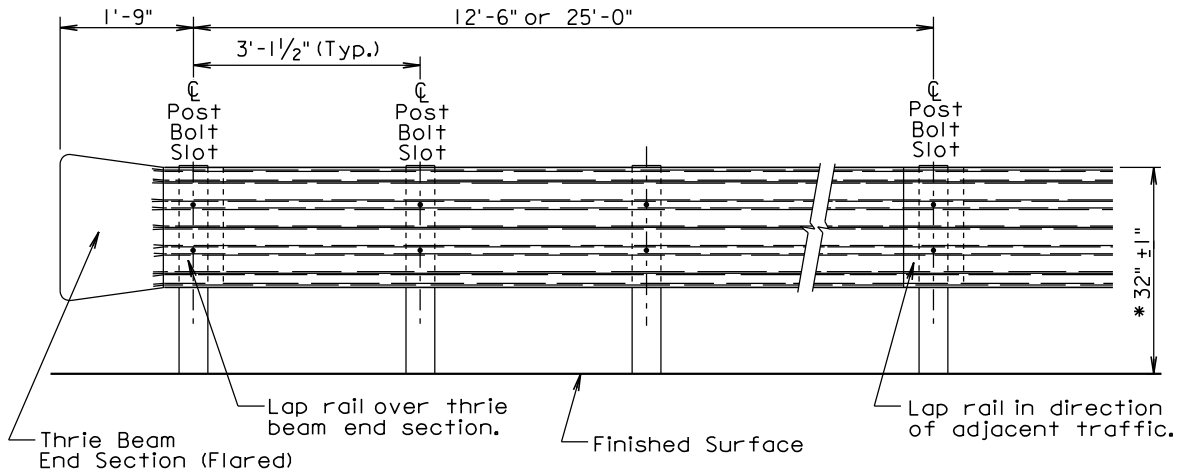
December 23, 2010

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Sheet 1 of 1

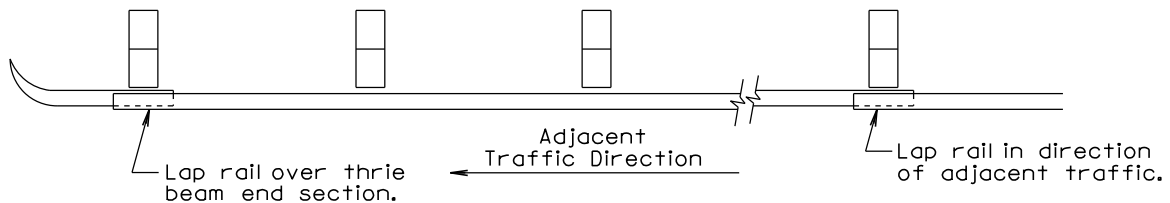
GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT,
HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



ELEVATION

* See Standard Plate 630.98 and the height shall be 31" when double (nested) thrie beam guardrail is attached to a concrete bridge rail.



PLAN

THRIE BEAM GUARDRAIL DEFLECTION CRITERIA	
POST SPACING	MAXIMUM DEFLECTION
6'-3"	2'-6"
3'-1 1/2"	1'-9"

For Informational Purposes Only

GENERAL NOTES:

All thrie beam rail shall be Type 1.

There will be no separate payment for furnishing and installing Thrie Beam End Sections (Flared) and Thrie Beam Terminal Connectors. All costs for the Thrie Beam End Sections (Flared) and Thrie Beam Terminal Connectors shall be incidental to the contract unit price per foot for the respective "Thrie Beam Guardrail" bid item.

Thrie beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used shall be compatible with the total length of rail per site as shown in the plans.

Thrie Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for Thrie Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

All costs for constructing thrie beam guardrail including labor, equipment, and materials including all posts, blocks, steel beam rail, and hardware shall be incidental to the contract unit price per foot for the respective "Thrie Beam Guardrail" bid item.

Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "Thrie Beam Guardrail" bid item.

December 23, 2010

Published Date: 2nd Qtr. 2012

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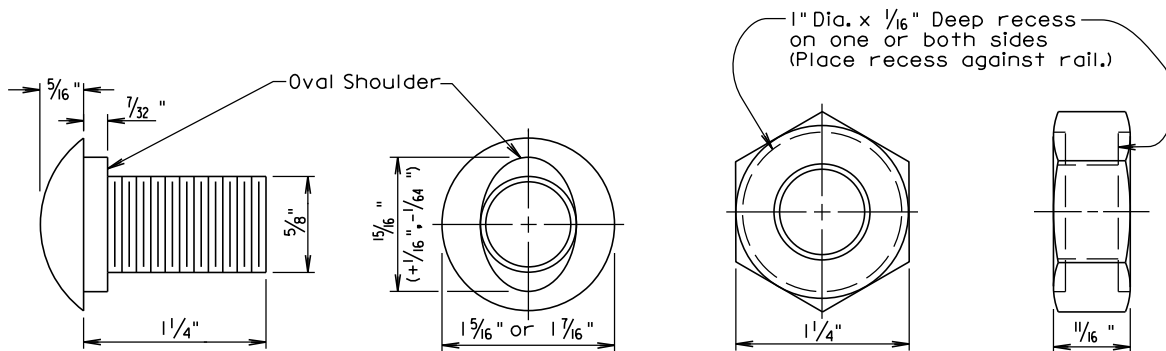
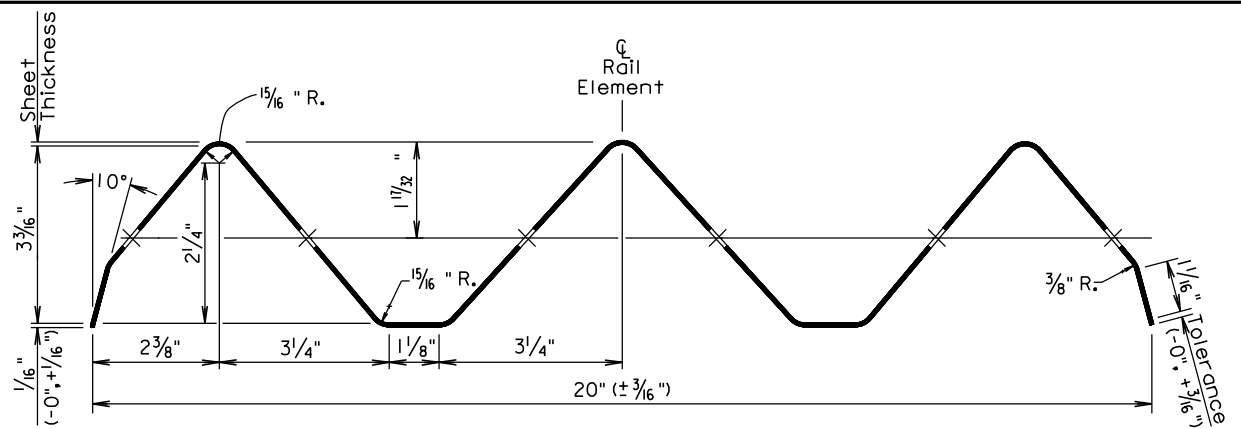
THRIE BEAM GUARDRAIL INSTALLATION

**PLATE NUMBER
630.02**

Sheet 1 of 1

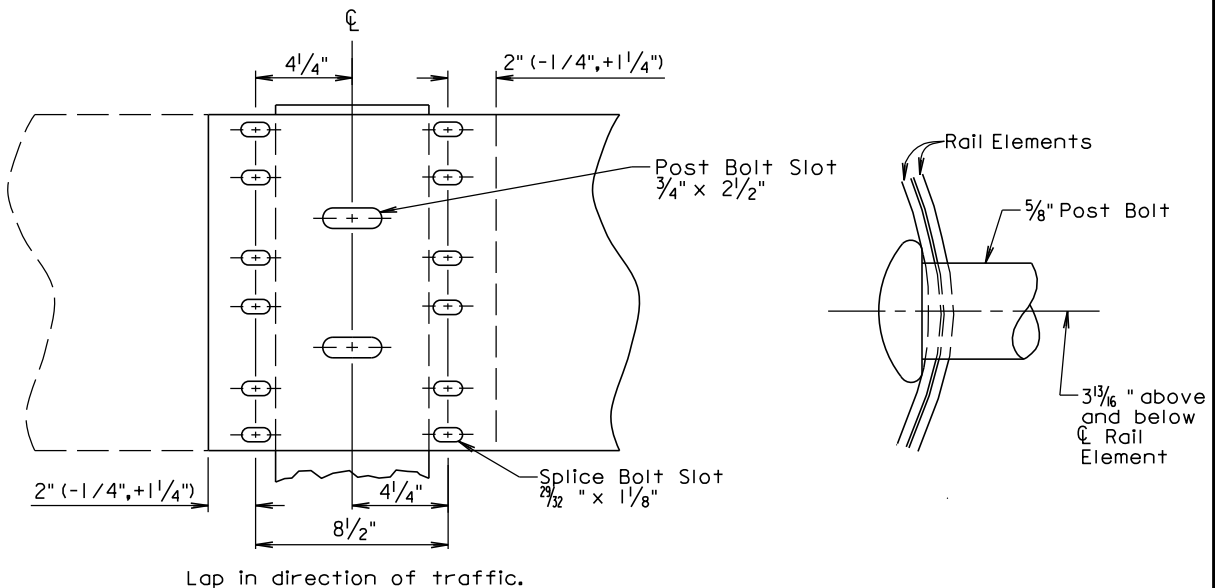
GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



The Post Bolt is similar except the post bolt is 18" long.

SPLICE BOLT (5/8" BUTTON HEAD BOLT AND RECESS NUT)



March 31, 2000

Published Date: 2nd Qtr. 2012

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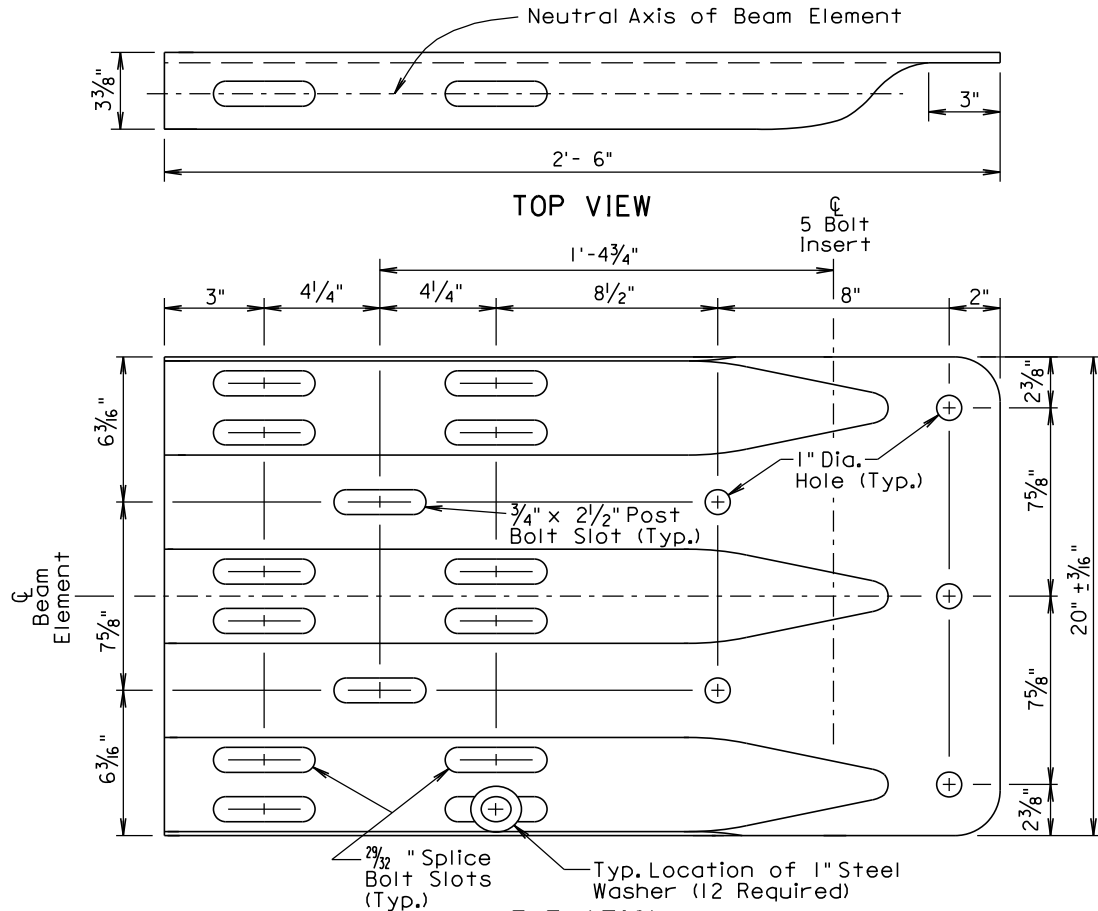
THRIE BEAM RAIL, RAIL SPLICE, AND HARDWARE

**PLATE NUMBER
630.03**

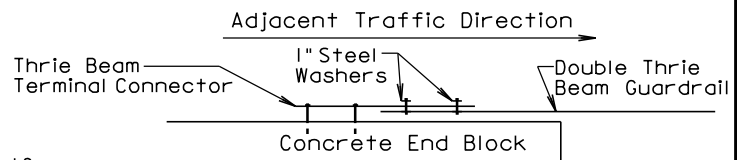
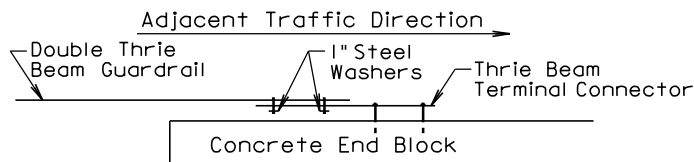
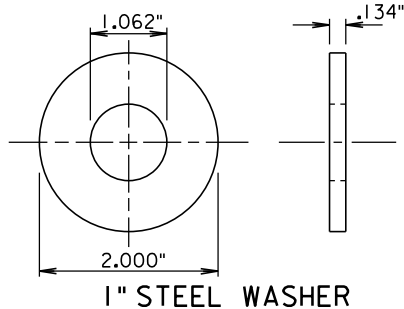
Sheet 1 of 1

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



ELEVATION THRIE BEAM TERMINAL CONNECTOR



GENERAL NOTES:

Thrie Beam Terminal Connectors shall be 10 gauge.

When the thrie beam terminal connector is used to connect the rail to the bridge, 1" steel washers shall be used at the lap splice and the washers shall be in direct contact with the 3" slots of the thrie beam terminal connector. See the drawings above for the typical locations of the 1" steel washers.

There will be no separate payment for furnishing and installing the Thrie Beam Terminal Connector. All costs for the Thrie Beam Terminal Connector shall be incidental to the contract unit price per foot for the respective "Thrie Beam Guardrail" bid item.

September 14, 2001

Published Date: 2nd Qtr. 2012

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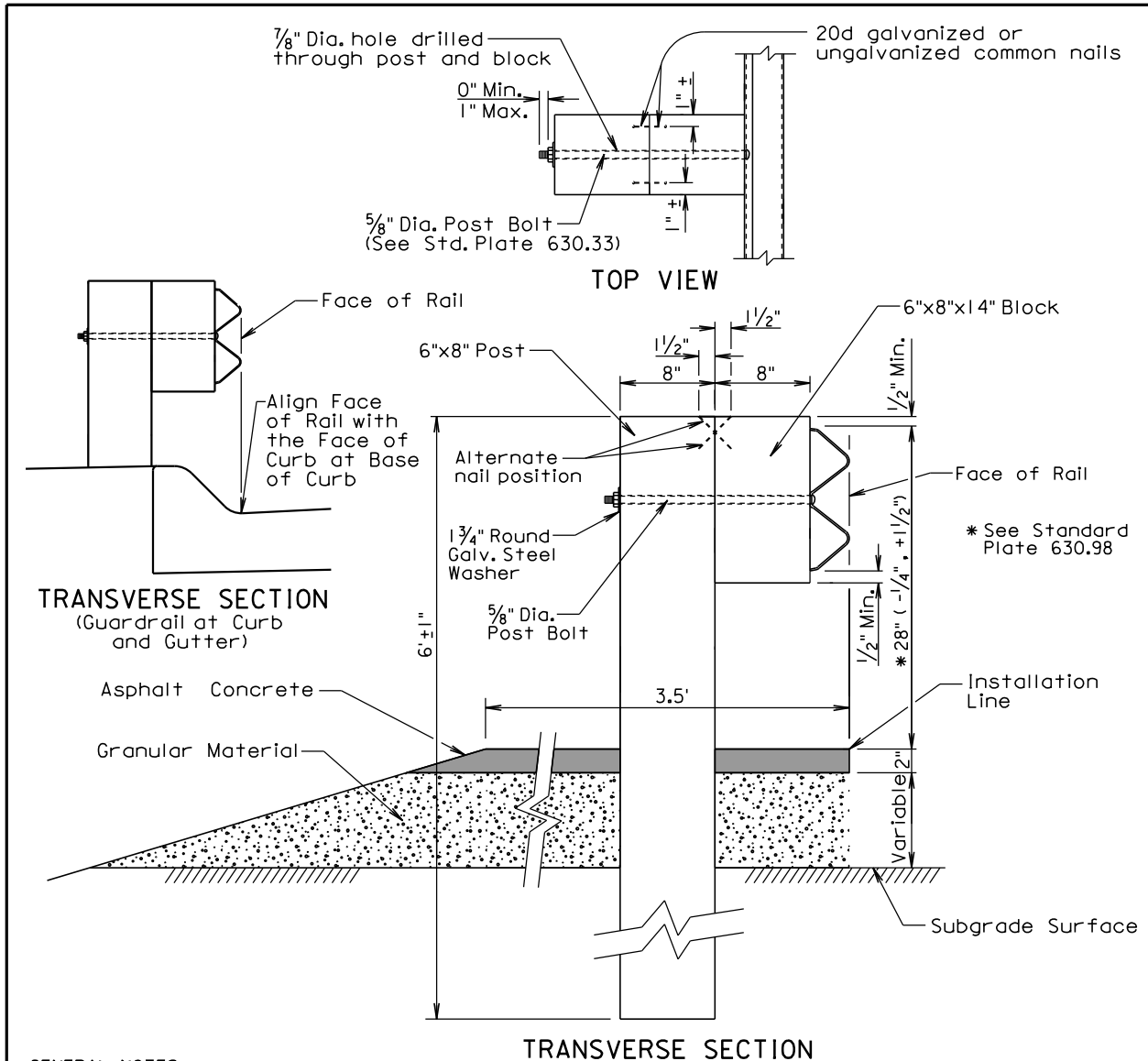
**THRIE BEAM TERMINAL CONNECTOR
AND 1" STEEL WASHER**

**PLATE NUMBER
630.05**

Sheet 1 of 1

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT,
HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



GENERAL NOTES:

Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the SD Standard Specifications for "Asphalt Concrete Composite." For informational purposes, the Rate of Materials for the 3.5' wide section of asphalt concrete as shown above shall be 4.80 Tons per Station.

Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the SD Standard Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline surfacing or as specified in the plans.

Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "W Beam Guardrail" bid item.

The cross slope for the surfacing and subgrade surface shall be as specified in the plans (See Typical Sections and/or Cross Sections).

The top of posts and top of block shall have a true square cut. The top of post and top of block shall be flush.

December 23, 2010

Published Date: 2nd Qtr. 2012

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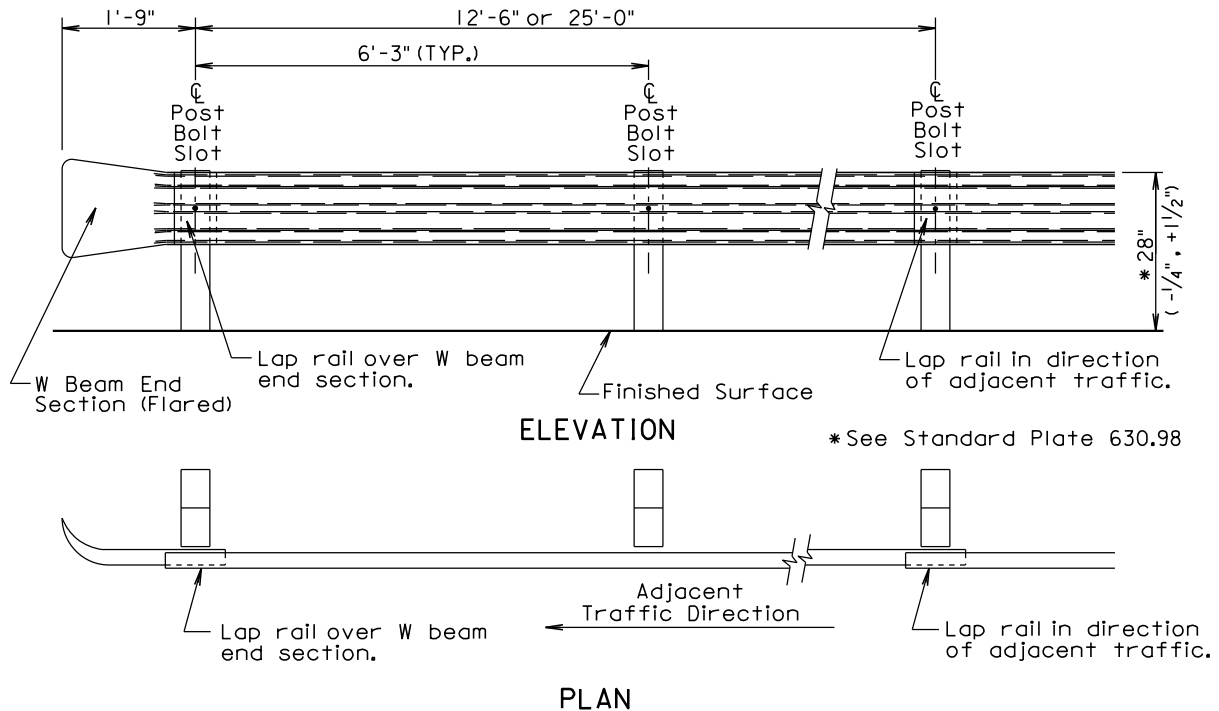
W BEAM GUARDRAIL POST INSTALLATION

**PLATE NUMBER
630.31**

Sheet 1 of 1

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT,
HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



W BEAM GUARDRAIL DEFLECTION CRITERIA	
POST SPACING	MAXIMUM DEFLECTION
6'-3"	3'-3"
3'-1½"	2'-0"

For Informational Purposes Only

GENERAL NOTES:

All W beam rail shall be Type I.

There will be no separate payment for furnishing and installing W Beam End Sections (Flared) and W Beam Terminal Connectors. All costs for the W Beam End Sections (Flared) and W Beam Terminal Connectors shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used shall be compatible with the total length of rail per site as shown in the plans.

W Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for W Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

All costs for constructing W beam guardrail including labor, equipment, and materials including all posts, blocks, steel beam rail, and hardware shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "W Beam Guardrail" bid item.

December 23, 2010

Published Date: 2nd Qtr. 2012

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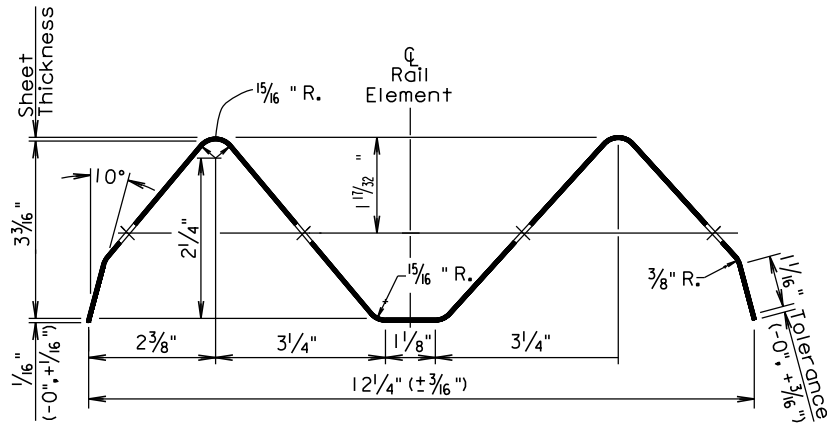
W BEAM GUARDRAIL INSTALLATION

**PLATE NUMBER
630.32**

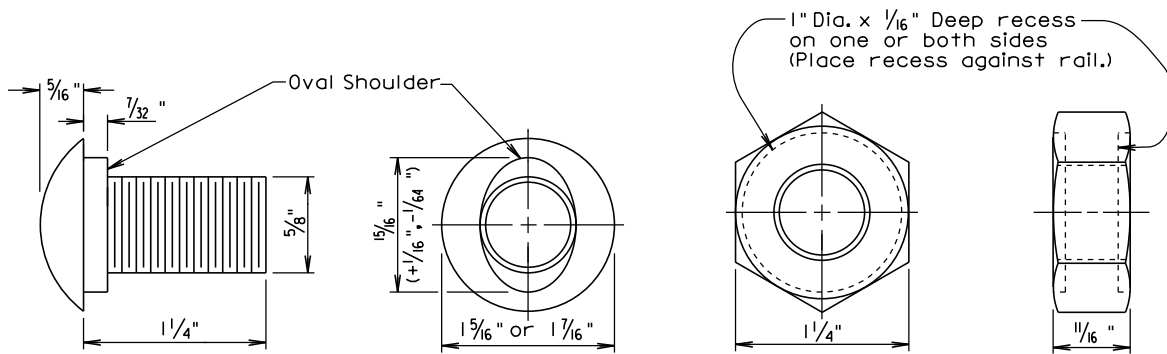
Sheet 1 of 1

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES

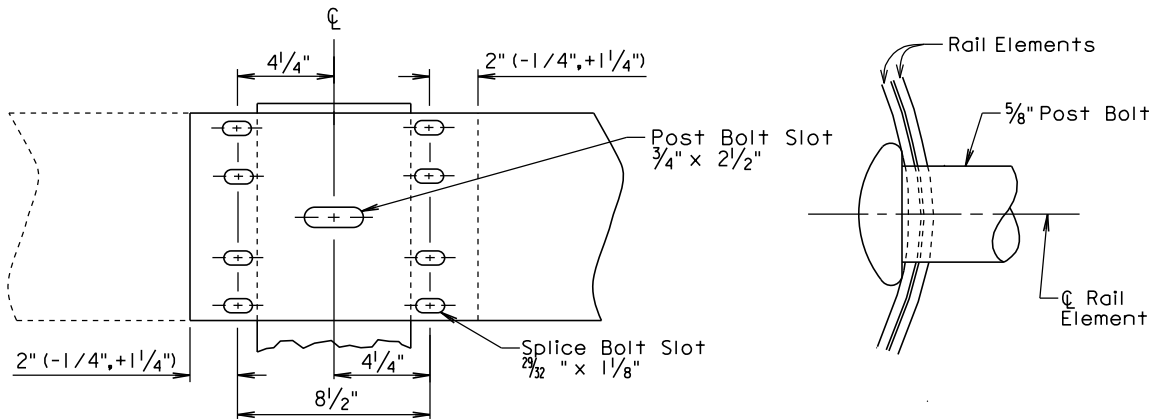


SECTION THROUGH W BEAM RAIL ELEMENT



The Post Bolt is similar except the post bolt is 18" long.

SPICE BOLT
(5/8" BUTTON HEAD BOLT AND RECESS NUT)



Lap in direction of traffic.

RAIL SPLICE

December 23, 2004

Published Date: 2nd Qtr. 2012

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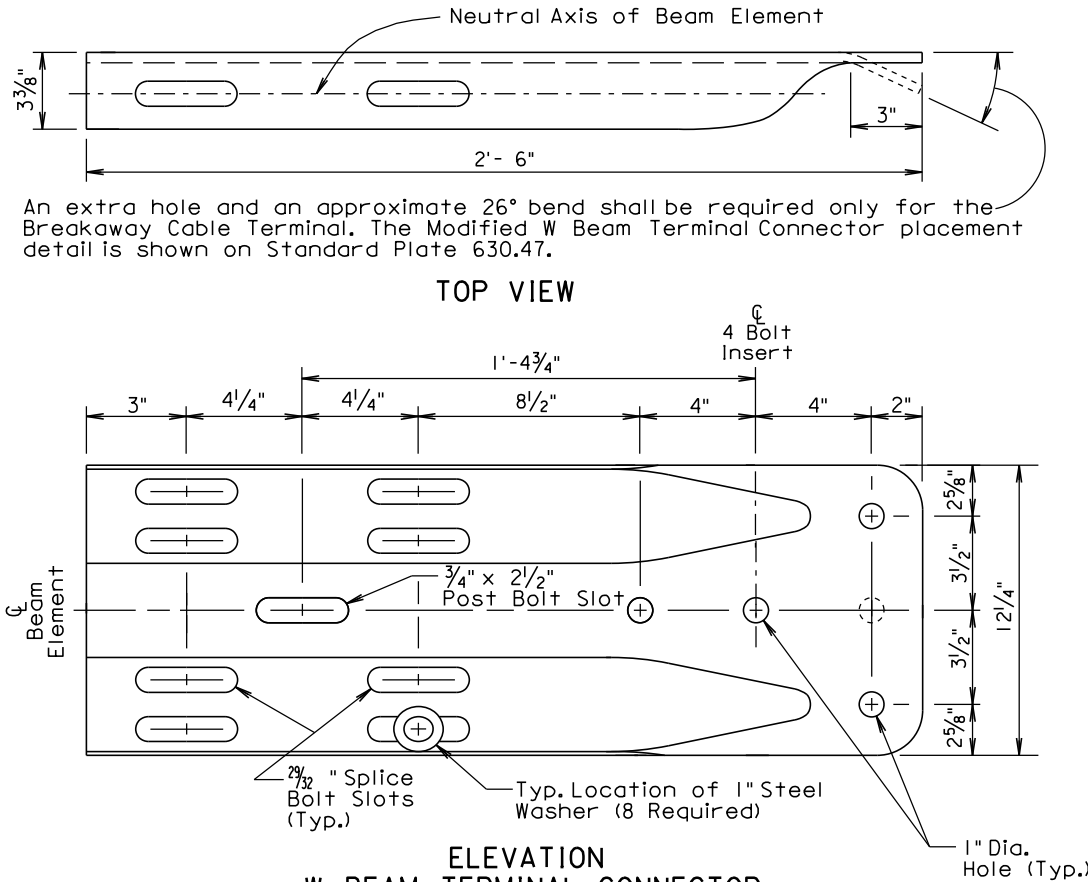
W BEAM RAIL, RAIL SPLICE, AND HARDWARE

**PLATE NUMBER
630.33**

Sheet 1 of 1

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



GENERAL NOTES:

W Beam Terminal Connectors shall be 10 gauge.

When the W beam terminal connector is used to connect the rail to the bridge, 1" steel washers shall be used at the lap splice and the washers shall be in direct contact with the 3" slots of the W beam terminal connector. See the drawings above for the typical locations of the 1" steel washers.

There will be no separate payment for furnishing and installing the W Beam Terminal Connector. All costs for the W Beam Terminal Connector shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

September 14, 2001

Published Date: 2nd Qtr. 2012

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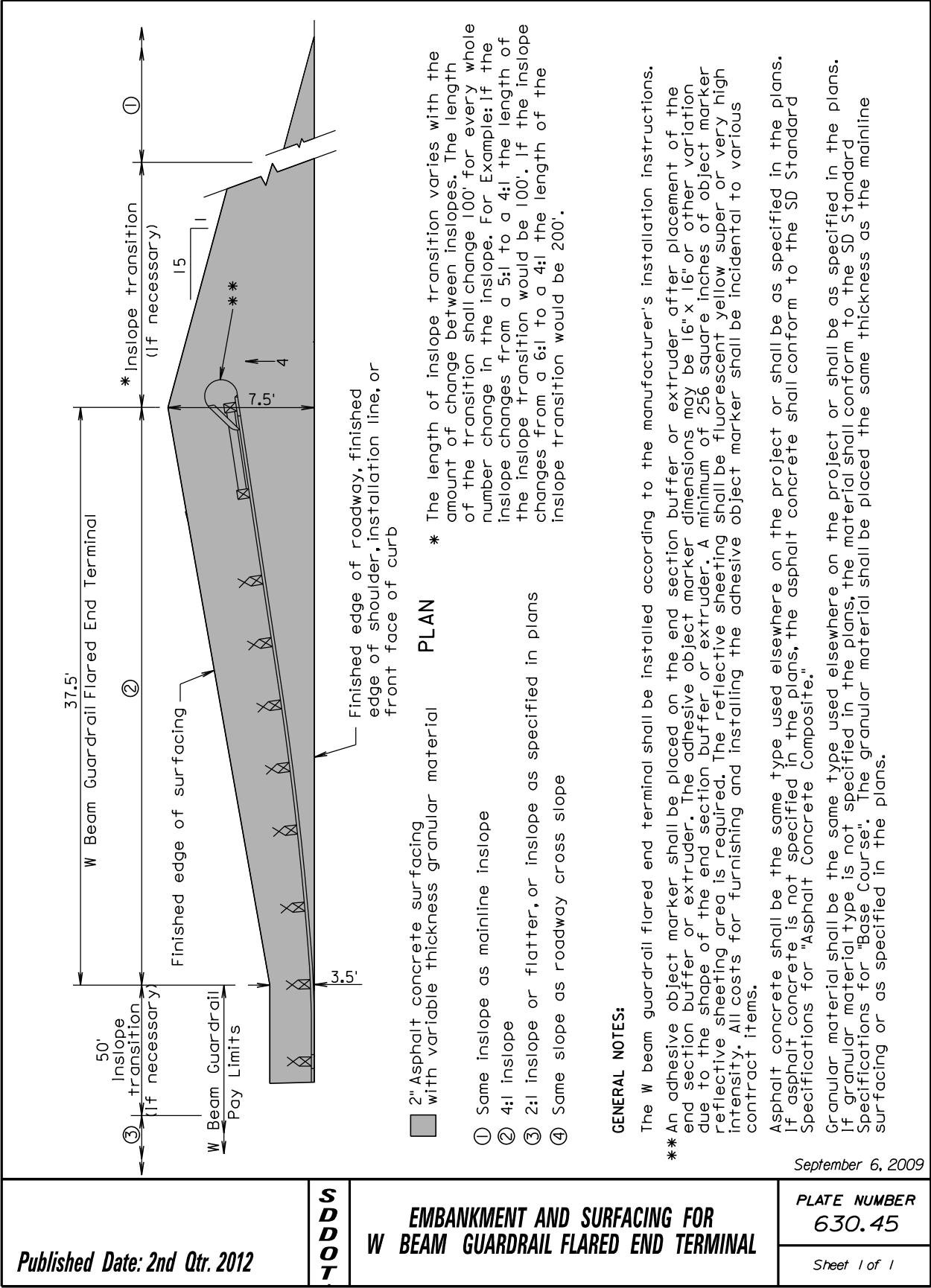
**W BEAM TERMINAL CONNECTOR
AND 1" STEEL WASHER**

**PLATE NUMBER
630.35**

Sheet 1 of 1

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



September 6, 2009

Published Date: 2nd Qtr. 2012

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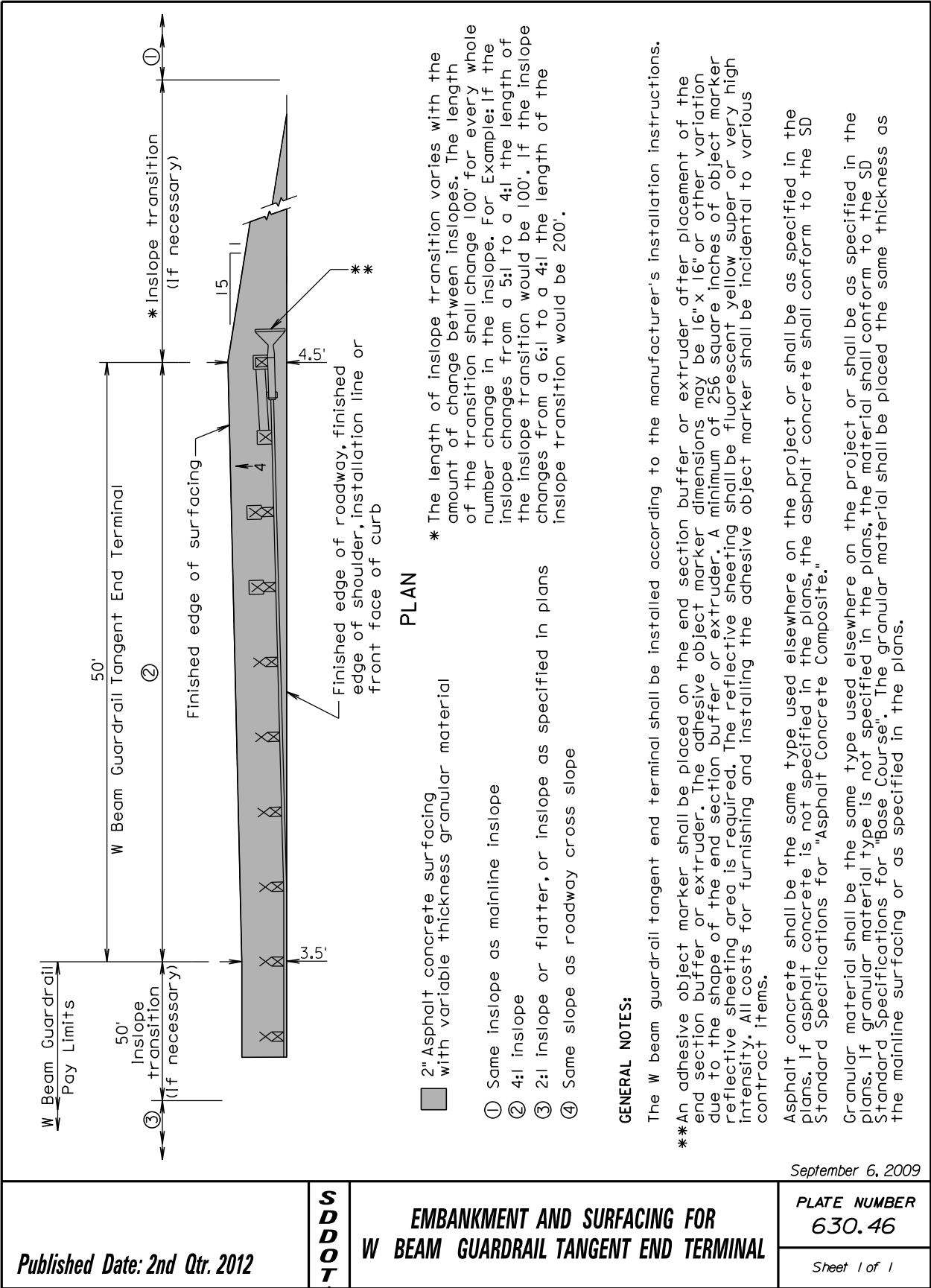
EMBANKMENT AND SURFACING FOR
W BEAM GUARDRAIL FLARED END TERMINAL

PLATE NUMBER
630.45

Sheet 1 of 1

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



September 6, 2009

Published Date: 2nd Qtr. 2012

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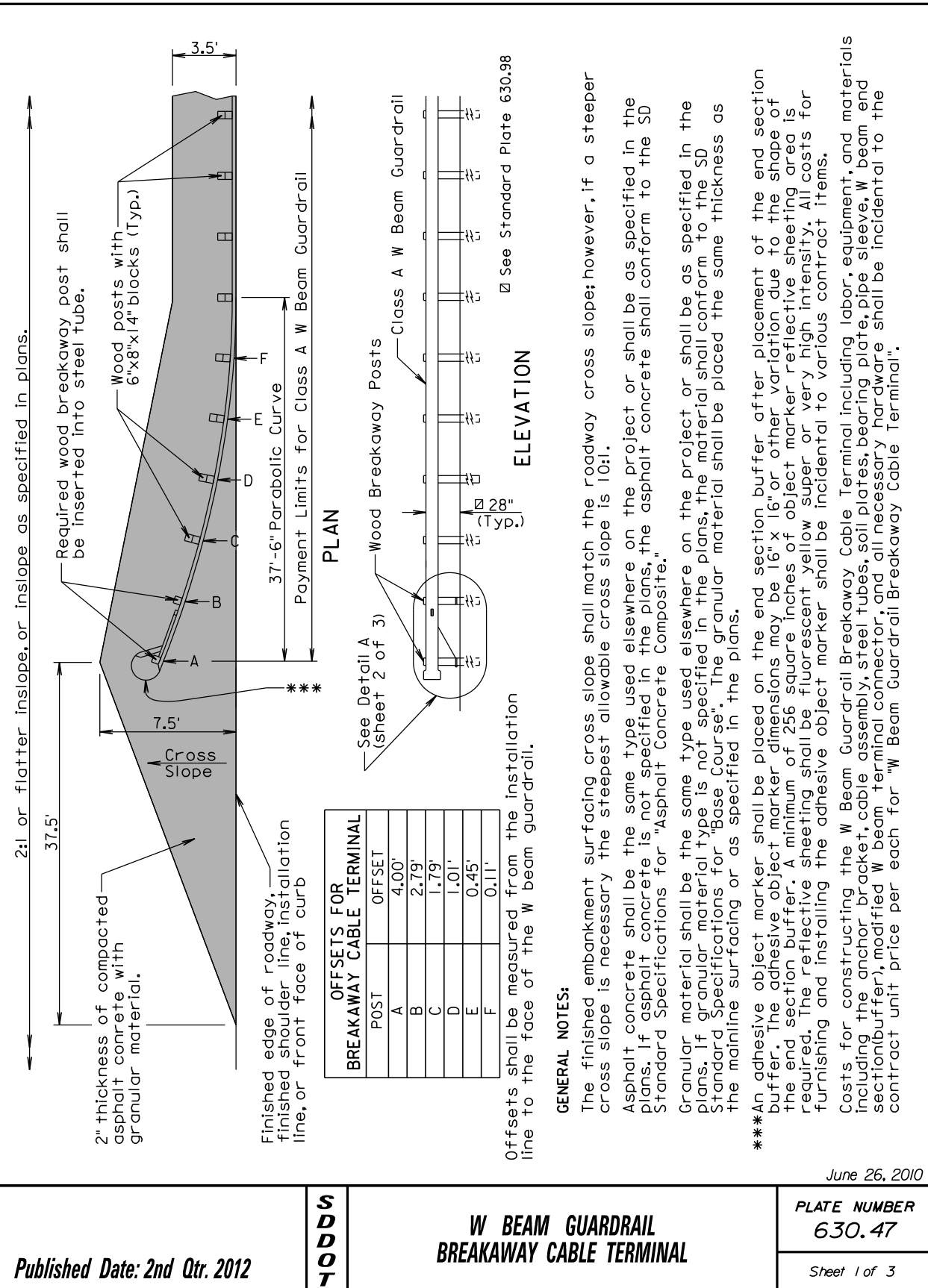
EMBANKMENT AND SURFACING FOR
W BEAM GUARDRAIL TANGENT END TERMINAL

PLATE NUMBER
630.46

Sheet 1 of 1

GUARDRAIL ACCIDENT DAMAGE REPAIR

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June 26, 2010

Published Date: 2nd Qtr. 2012

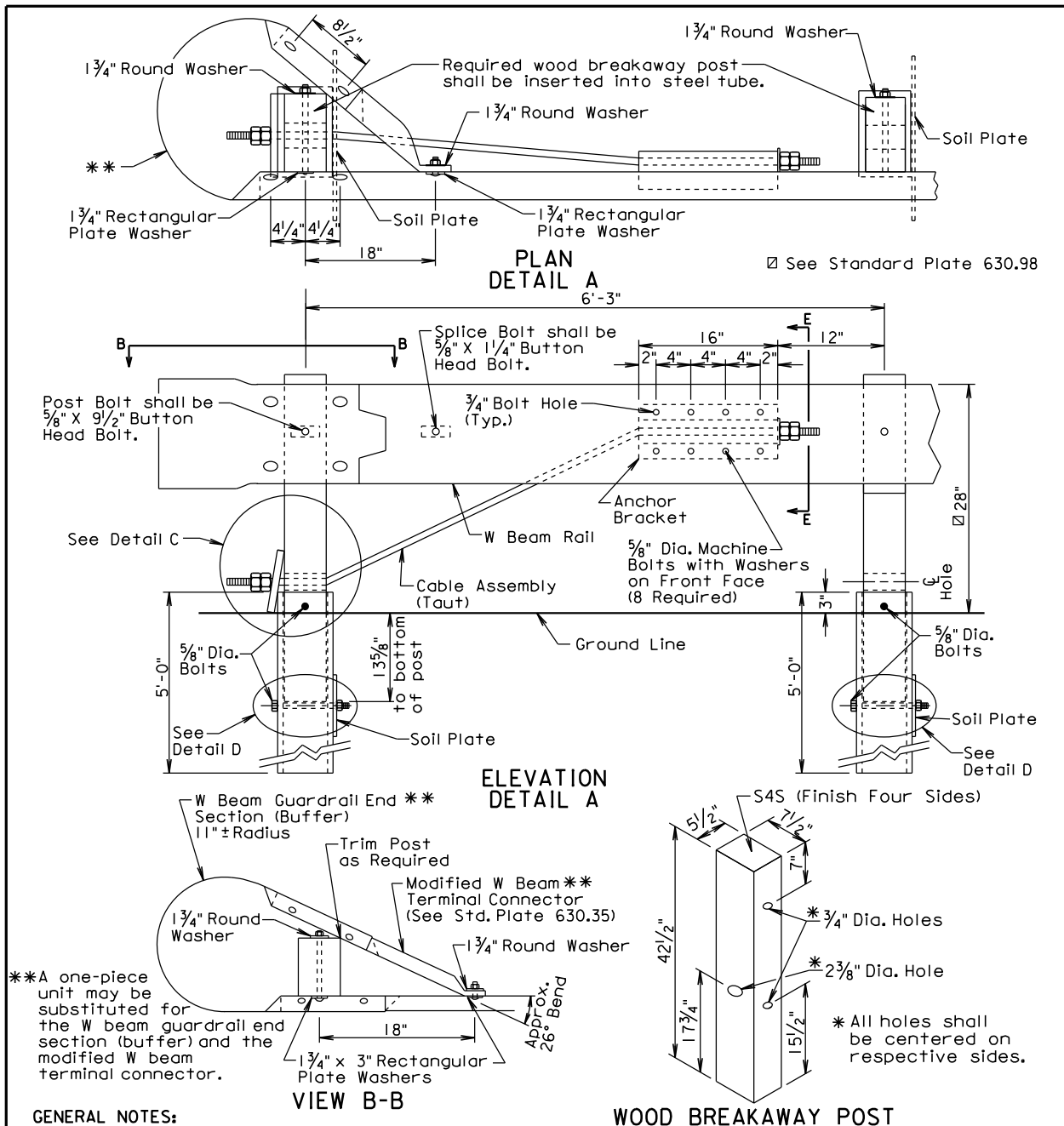
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W BEAM GUARDRAIL
BREAKAWAY CABLE TERMINAL

PLATE NUMBER
630.47

Sheet 1 of 3

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



GENERAL NOTES:

All hardware shall be galvanized in accordance with ASTM A153.

The steel tubes shall meet the requirements of ASTM Specification A500, Grade B, and shall be galvanized after fabrication in accordance with the requirements of AASHTO Specification M111.

The anchor bracket, soil plate, and bearing plate shall be fabricated from steel that meets ASTM A36 Specifications. They shall be galvanized after fabrication in accordance with ASTM A123.

The W Beam End Section (Buffer) shall be 12 gage galvanized steel.

The cable shall be $\frac{3}{4}$ ", Type II, with Class A coating in conformance with AASHTO M30.

June 26, 2010

Published Date: 2nd Qtr. 2012

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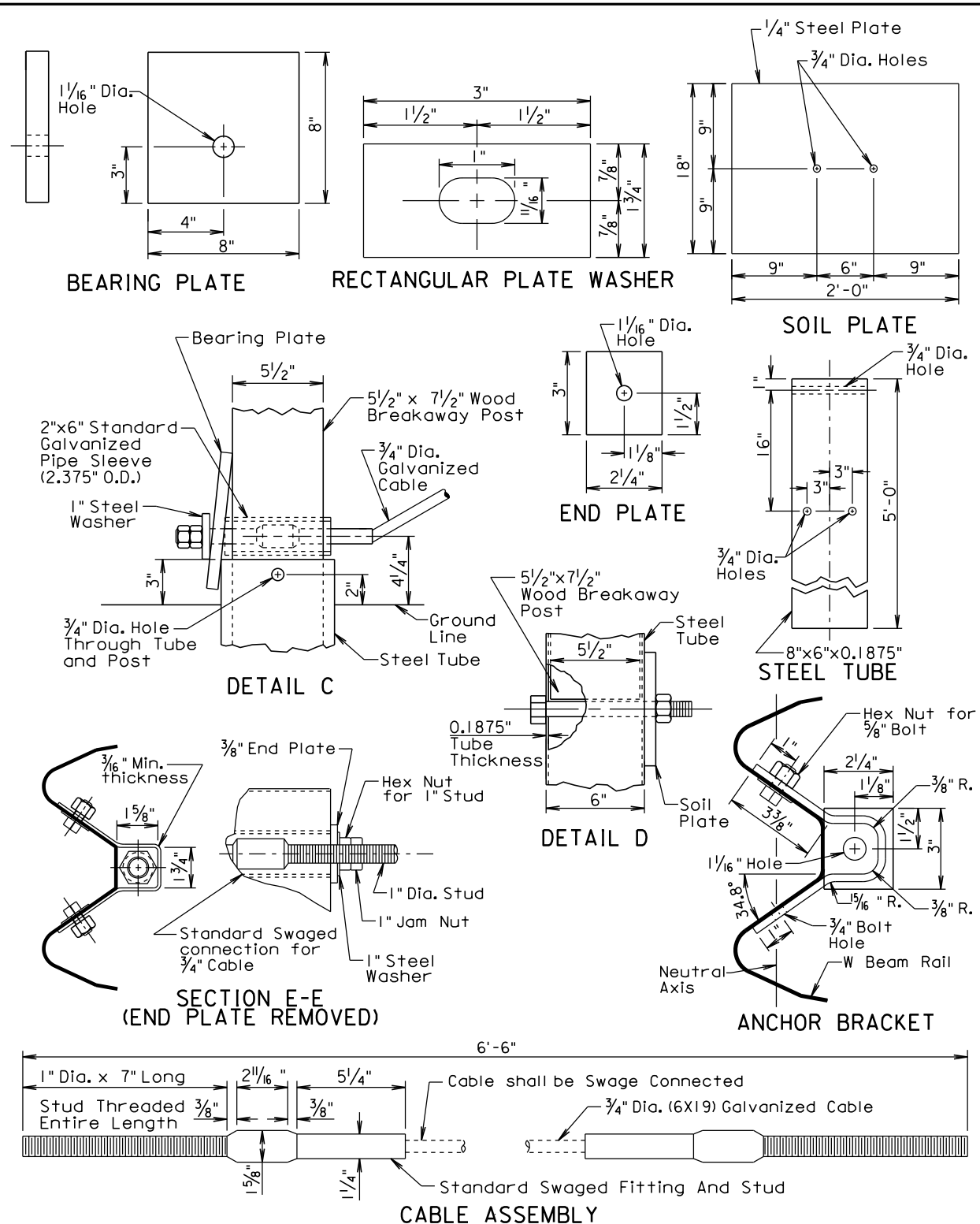
**W BEAM GUARDRAIL
BREAKAWAY CABLE TERMINAL**

PLATE NUMBER
630.47

Sheet 2 of 3

GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



June 26, 2010

Published Date: 2nd Qtr. 2012

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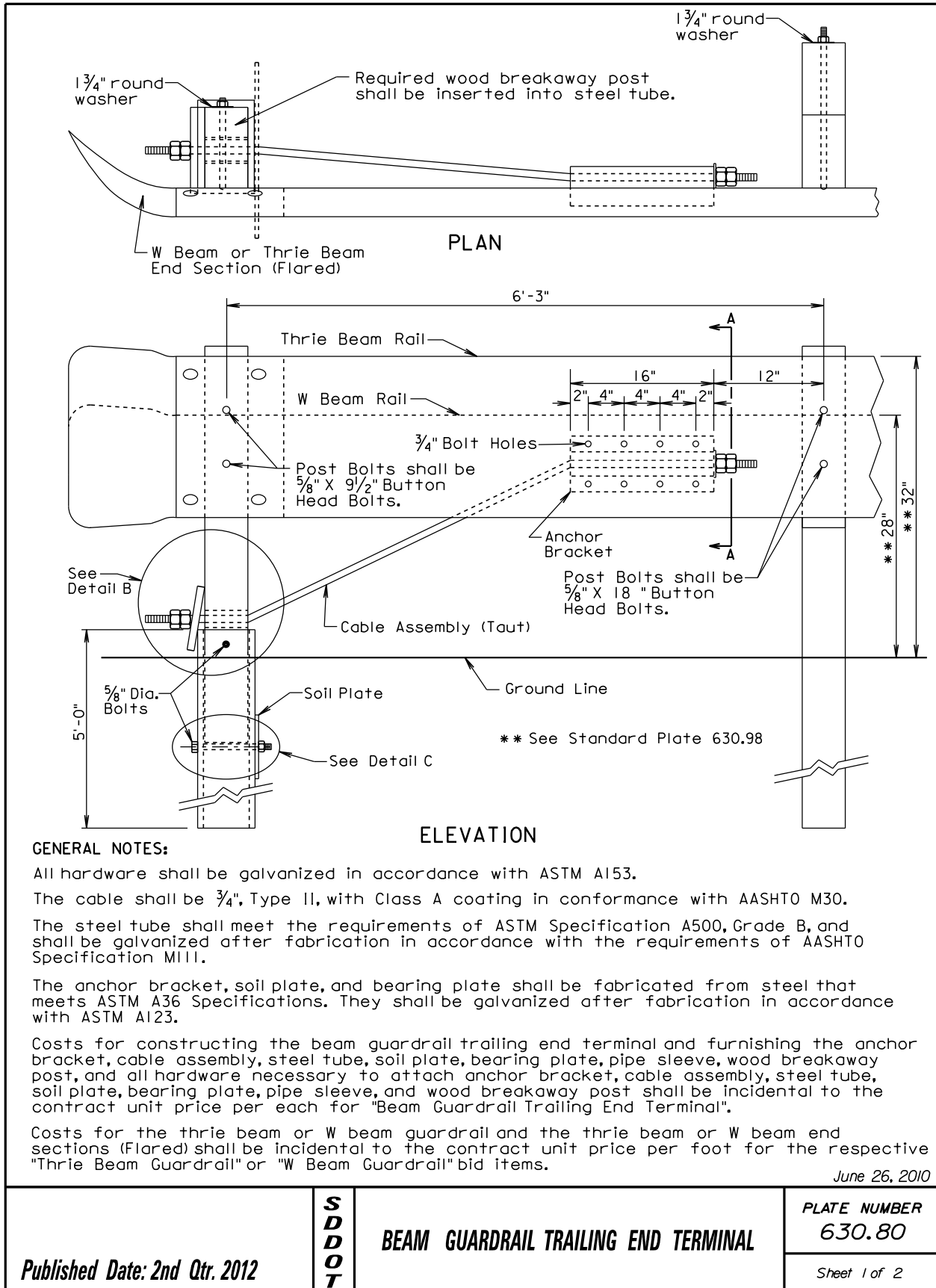
**W BEAM GUARDRAIL
BREAKAWAY CABLE TERMINAL**

**PLATE NUMBER
630.47**

Sheet 3 of 3

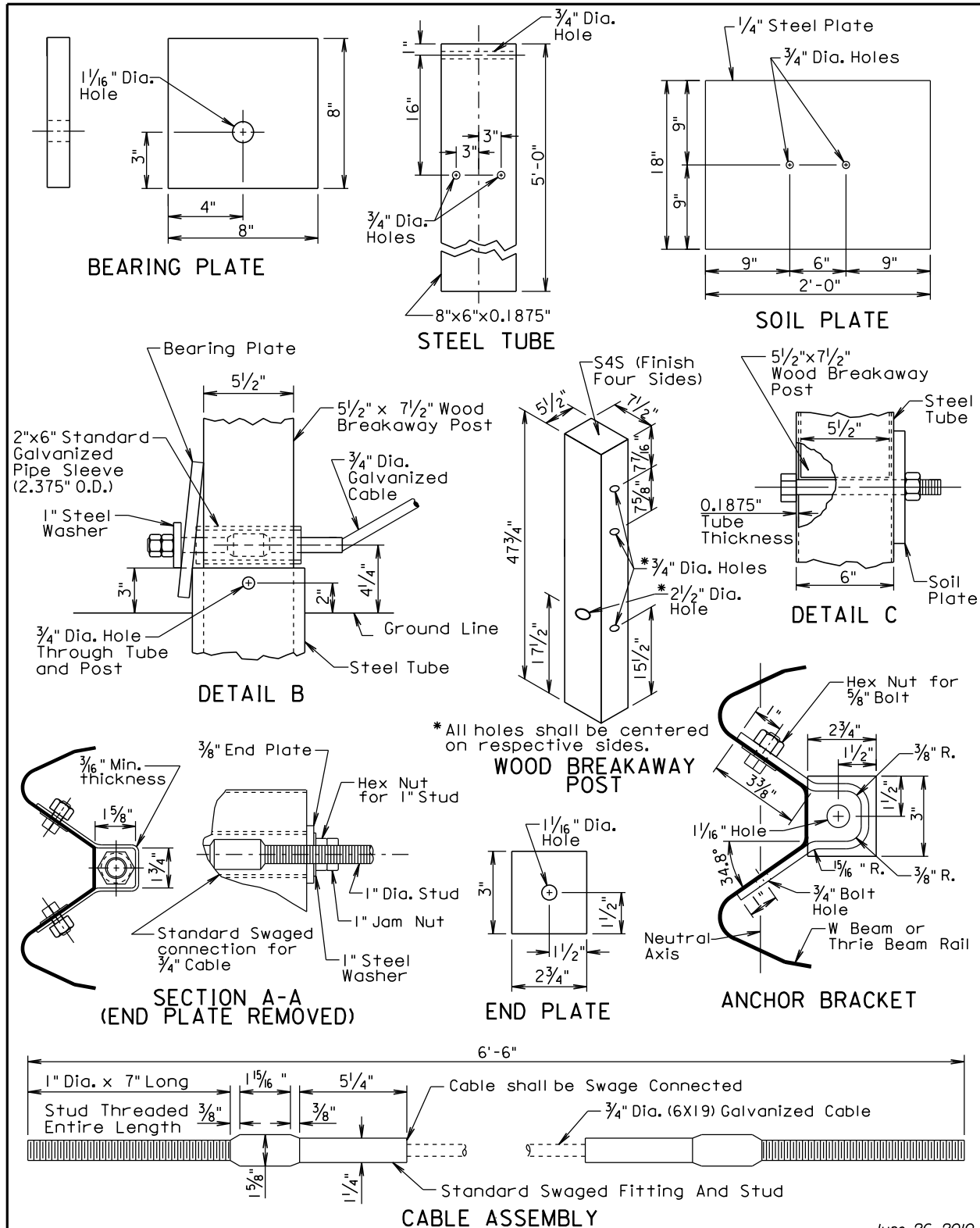
GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



June 26, 2010

Published Date: 2nd Qtr. 2012

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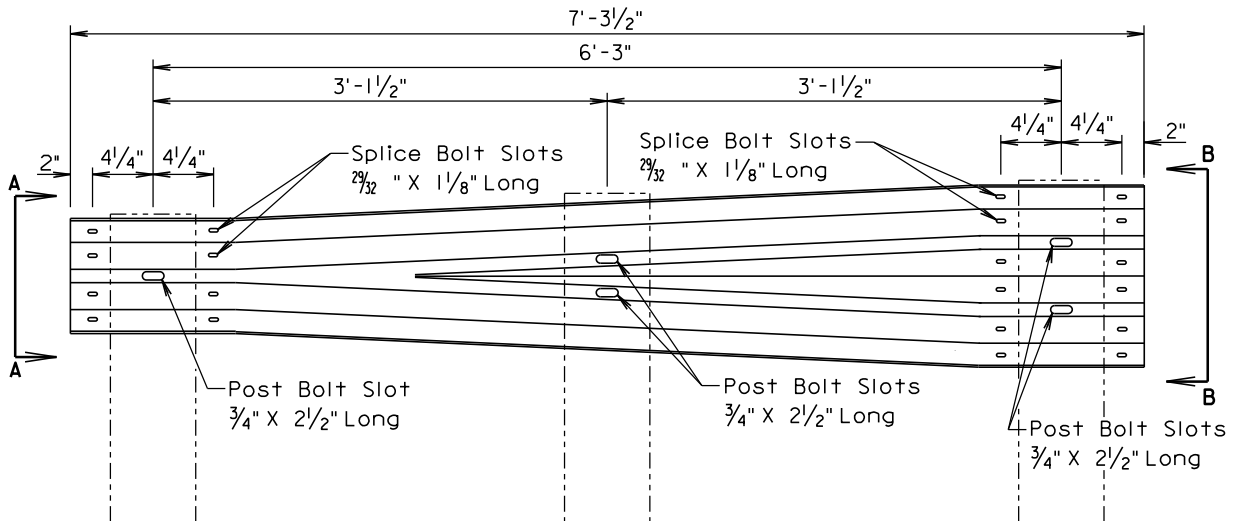
BEAM GUARDRAIL TRAILING END TERMINAL

PLATE NUMBER
630.80

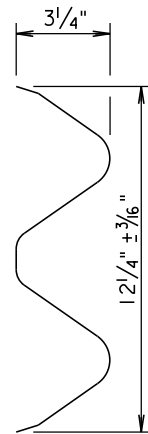
Sheet 2 of 2

GUARDRAIL ACCIDENT DAMAGE REPAIR

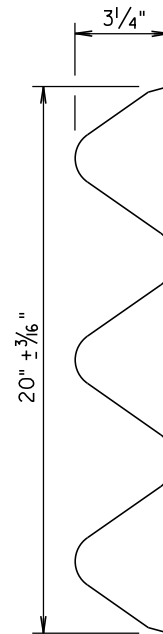
BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



ELEVATION



VIEW A-A



VIEW B-B

GENERAL NOTE:

All costs for constructing the W Beam to Thrie Beam Guardrail Transition including labor, equipment, and materials including two posts, two blocks, W beam to thrie beam transition section, and hardware shall be incidental to the contract unit price per each for "W Beam to Thrie Beam Guardrail Transition".

March 31, 2000

Published Date: 2nd Qtr. 2012

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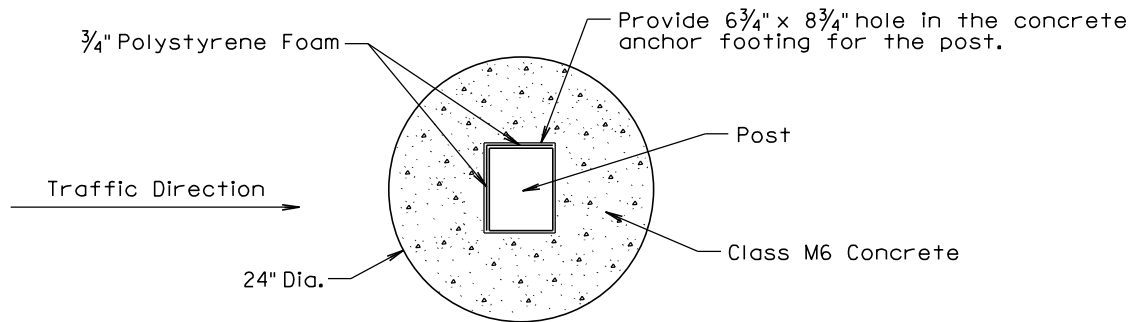
**W BEAM TO THRIE BEAM GUARDRAIL
TRANSITION SECTION**

**PLATE NUMBER
630.82**

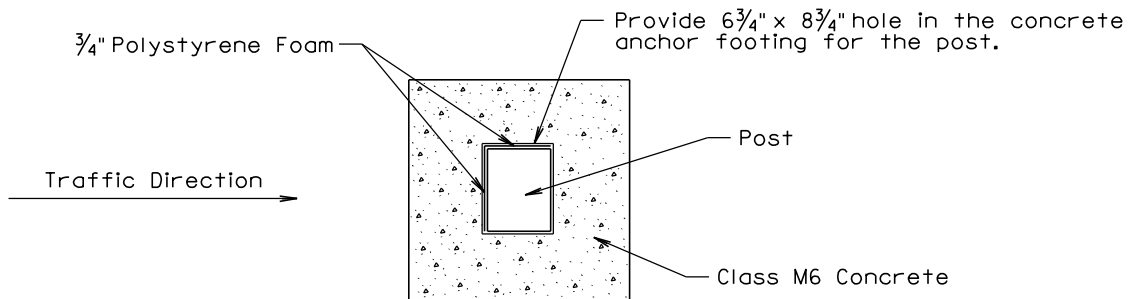
Sheet 1 of 1

GUARDRAIL ACCIDENT DAMAGE REPAIR

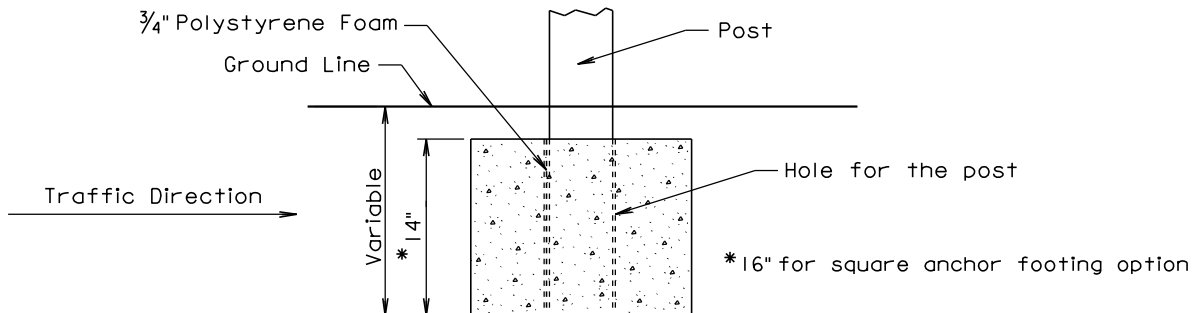
BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT,
HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



**PLAN
(PREFERRED 24" DIA. ROUND
CONCRETE ANCHOR FOOTING)**



**PLAN
(20" x 20" SQUARE
CONCRETE ANCHOR FOOTING)**



ELEVATION

GENERAL NOTES:

In areas where the required guardrail wood post depth is not obtainable, shorter posts may be used and shall be anchored in concrete in accordance with the details shown on this standard plate.

A 20" x 20" square concrete anchor footing may be used in lieu of the 24" diameter round anchor footing.

Forms for the concrete anchor footing hole is not required.

Concrete for the concrete anchor footing shall be Class M6.

Three quarter inch polystyrene foam shall be attached to two sides of the posts. See details above for placement position of the polystyrene foam.

There will be no separate payment for furnishing and installing the concrete anchor footing for short guardrail post. All costs for concrete anchor footings shall be incidental to the contract unit price per foot for the respective "Thrie Beam or W Beam Guardrail" bid item.

March 31, 2000

Published Date: 2nd Qtr. 2012

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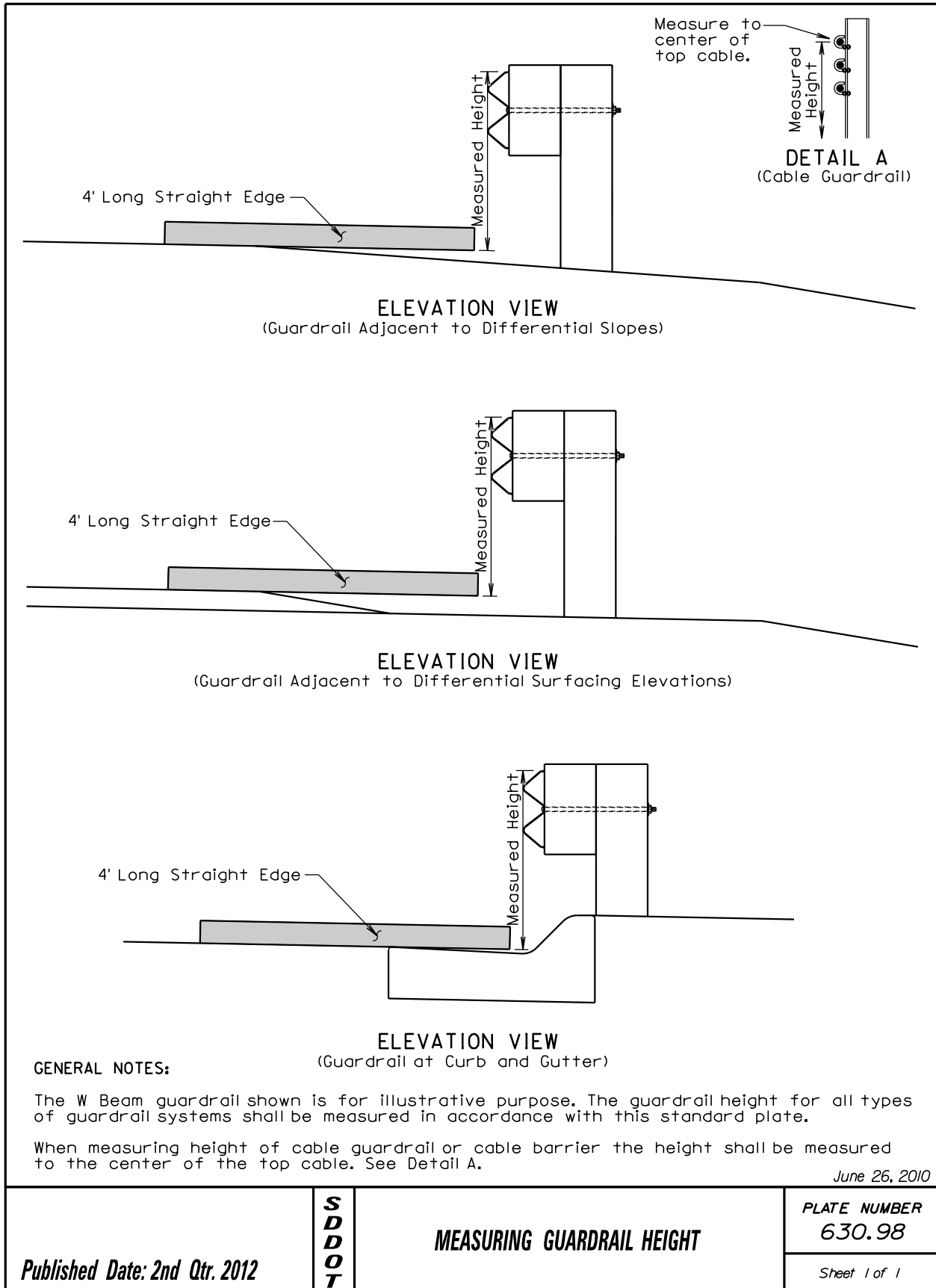
**CONCRETE ANCHOR FOOTING
FOR SHORT GUARDRAIL POST**

**PLATE NUMBER
630.84**

Sheet 1 of 1

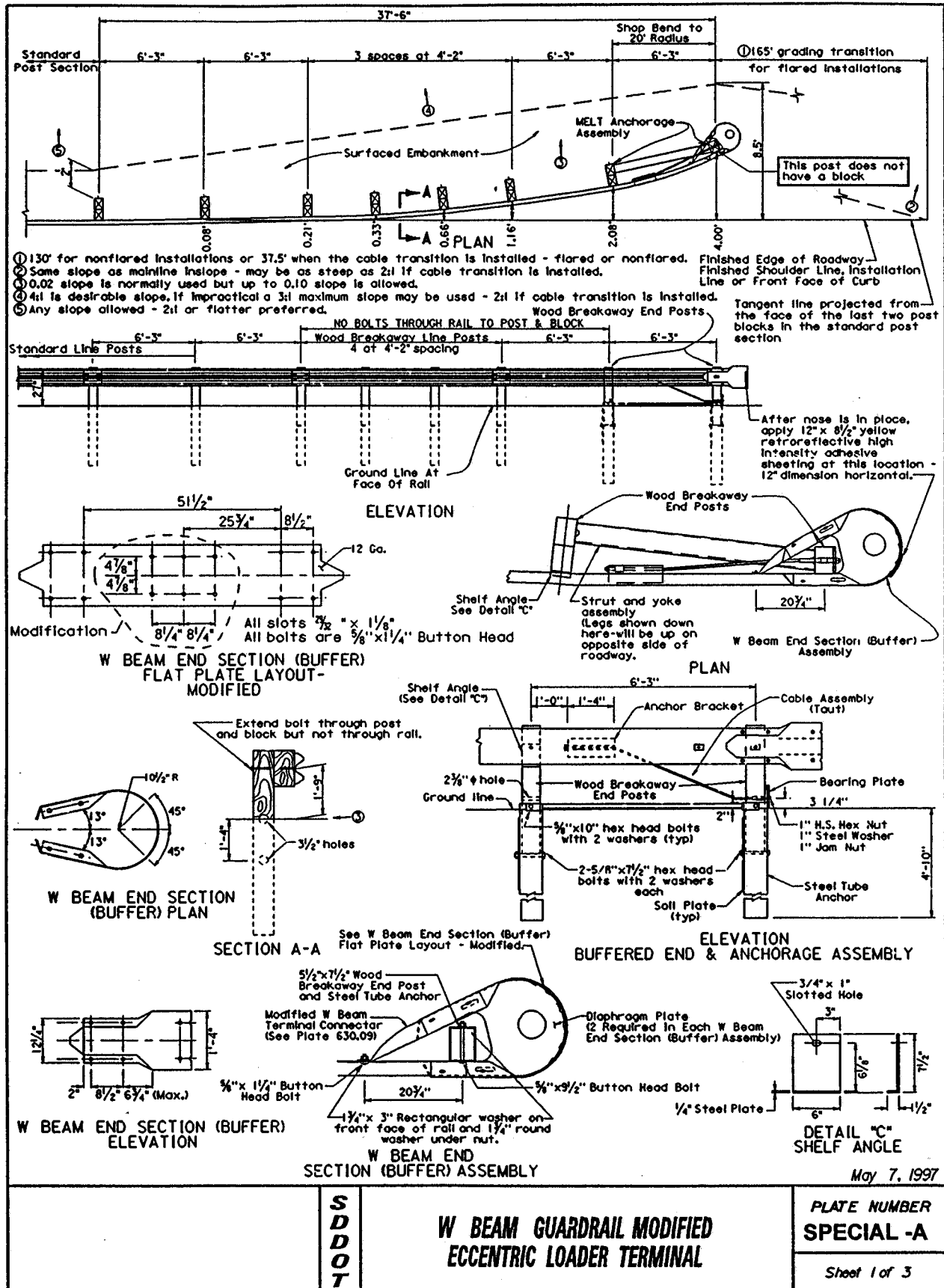
GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



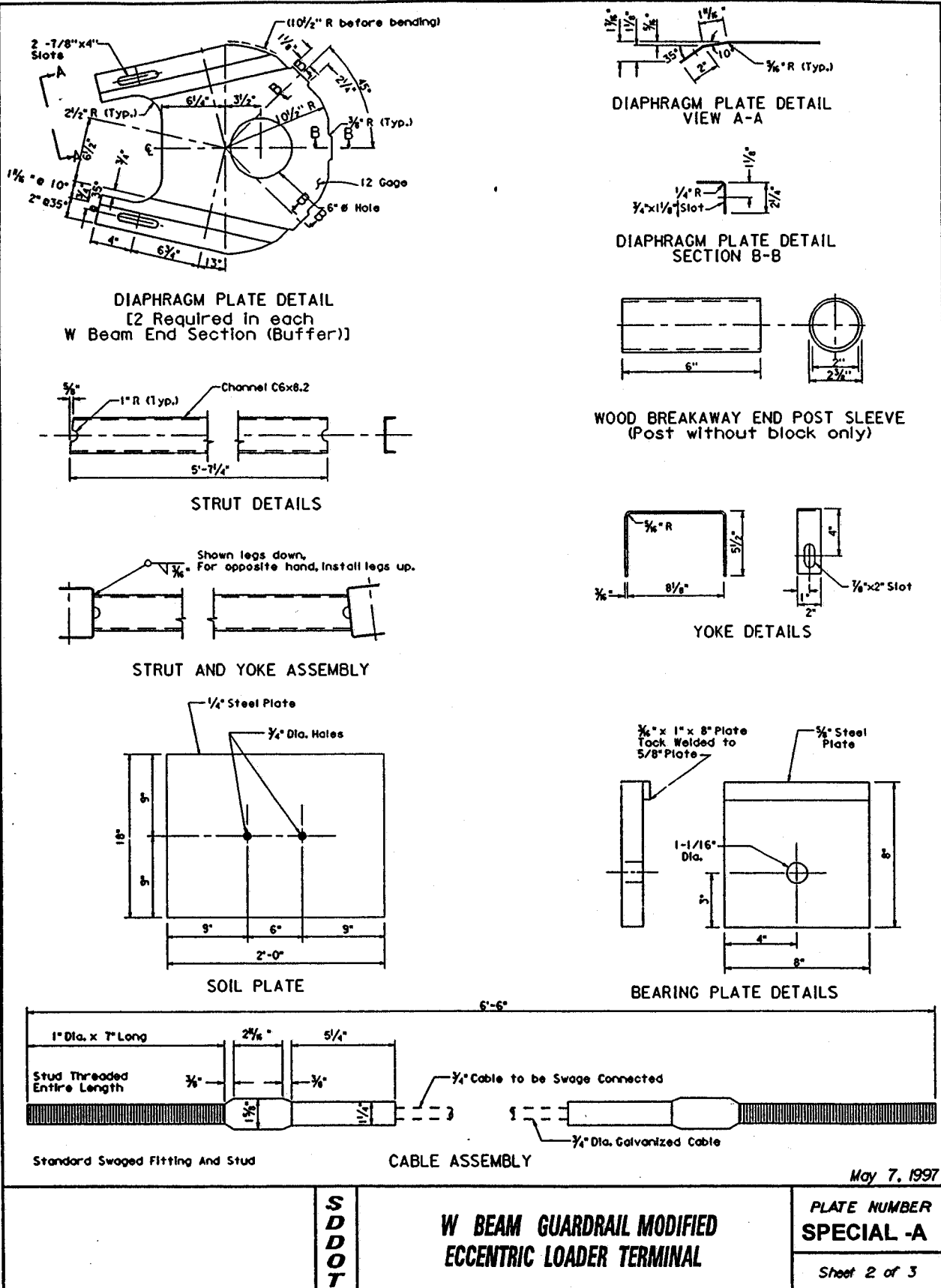
GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES



GUARDRAIL ACCIDENT DAMAGE REPAIR

BEADLE, BROOKINGS, BROWN, BUFFALO, CLARK, CODINGTON, DAY, DEUEL, EDMUNDS, FAULK, GRANT, HAMLIN, HAND, HYDE, KINGSBURY, MCPHERSON, MARSHALL, MOODY, ROBERTS, AND SPINK COUNTIES

