

**000I-252, 000I-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**

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ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	0001-252	0001-253	TOTAL	
		PCN I0RV QUANTITY	PCN I0RW QUANTITY	QUANTITY	UNIT
009E0197	Mobilization 1 <i>(Mitchell Area, On or West of US281)</i>	-	5	5	Each
009E0198	Mobilization 2 <i>(Mitchell Area, East of US281)</i>	5	-	5	Each
120E0600	Contractor Furnished Borrow	50	50	100	CuYd
629E0100	3 Cable Guardrail	50	50	100	Ft
629E0300	3 Cable Guardrail Slip Base Anchor Assembly	<----- 1 ----->		1	Each
629E0400	3 Cable Guardrail Anchor Assembly	<----- 1 ----->		1	Each
629E0450	Retension 3 Cable Guardrail	10	10	20	Each
629E1000	Repair 3 Cable Guardrail	1250	1250	2500	Ft
629E1100	3 Cable Guardrail End Post <i>(1 Beam)</i>	5	5	10	Each
629E1102	3 Cable Guardrail Intermediate Post <i>(Flanged)</i>	50	50	100	Each
629E1102	3 Cable Guardrail Intermediate Post <i>(1 Beam)</i>	25	25	50	Each
629E1103	3 Cable Guardrail Slip Base Anchor Post	2	2	4	Each
629E1104	3 Cable Guardrail Post, Winter	20	20	40	Each
629E1110	Cable Anchor Bracket	1	1	2	Each
629E1112	Cable Splice	3	2	5	Each
629E1114	3 Cable Guardrail J Hook Bolt	250	250	500	Each
629E1116	Steel Turnbuckle Cable End Assembly	5	5	10	Each
629E1118	Spring Cable End Assembly with Turnbuckle	5	5	10	Each
629E1120	W Beam to 3 Cable Transition Bracket	5	5	10	Each
629E1122	3 Cable Guardrail End Post Cap	5	5	10	Each
630E0200	Straight Class A Thrie Beam Rail <i>(12 Gauge)</i>	12.5	12.5	25	Ft
630E0210	Straight Class B Thrie Beam Rail <i>(10 Gauge)</i>	12.5	12.5	25	Ft
630E1200	Straight Class A W Beam Rail <i>(12 Gauge)</i>	150	150	300	Ft
630E1210	Straight Class B W Beam Rail <i>(10 Gauge)</i>	12.5	12.5	25	Ft
630E2000	W Beam to Thrie Beam Guardrail Transition <i>(6.25')</i>	1	1	2	Each
630E2015	W Beam Guardrail Flared End Terminal	<----- 1 ----->		1	Each
630E2020	W Beam Guardrail Tangent End Terminal	<----- 1 ----->		1	Each
630E2030	W Beam Guardrail Breakaway Cable Terminal	<----- 1 ----->		1	Each
630E2050	Beam Guardrail Trailing End Terminal <i>(W or Thrie Beam)</i>	<----- 1 ----->		1	Each
630E2100	Beam Guardrail Post <i>(6" x 8" x 6', 6.5' or 7')</i>	2	3	5	Each
630E2105	Beam Guardrail Block <i>(6" x 8" x 14" or 22.5")</i>	2	3	5	Each
630E2110	Beam Guardrail Post and Block <i>(6', 6.5' or 7' Post)</i>	20	20	40	Each
630E2120	Beam Guardrail Post and Block, Winter	10	10	20	Each
630E2205	Breakaway Cable Terminal End Post	1	1	2	Each
630E2210	Breakaway Cable Terminal End Rail	<----- 1 ----->		1	Each
630E2215	W Beam Guardrail End Section Buffer	<----- 1 ----->		1	Each
630E2220	Tangent End Terminal Extruder Head	<----- 1 ----->		1	Each
630E2225	Tangent End Terminal Wood Post	1	1	2	Each
630E2230	Tangent End Terminal Wood Post and Block	1	1	2	Each
630E2235	Tangent End Terminal Rail	12.5	12.5	25	Ft
630E5550	Reset Beam Guardrail Post and Block	10	10	20	Each
634E0010	Flagging	5	5	10	Hour
634E0100	Traffic Control	221	221	442	Unit
634E0120	Traffic Control, Miscellaneous	<----- Lump Sum ----->		Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	<----- 1 ----->		1	Each

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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

The contract will become effective on date of award and will expire on October 31, 2008.

LOCATION

Guardrail repair will be limited to all Interstate and State Highways within the Mitchell Area.

ESTIMATED QUANTITIES

The Contractor shall furnish and install new guardrail material as per the Contract Proposal. The quantities for each item are estimated. The actual amount of work required may vary greatly from the Estimate of Quantities. There will be NO negotiation for overruns or underruns on this contract.

MOBILIZATION

Mobilization 1 - is the cost for mobilization per each time the Contractor is called in by the Area Engineer to perform guardrail repair within the Mitchell Area, On or West of US 281.

Mobilization 2 - is the cost for mobilization per each time the Contractor is called in by the Area Engineer to perform guardrail repair within the Mitchell Area, East of US 281.

The maximum allowable contract unit price submitted for Mobilization 1 or Mobilization 2 shall not exceed \$1000.

Mobilization 1 or Mobilization 2 will be paid for once each time the Contractor is called to the Area, regardless of the number of sites requiring repair within that Area.

EMBANKMENT AND SURFACING FOR GUARDRAIL INSTALLATIONS

When a guardrail end terminal is ordered to be repaired, and the new end terminal installation requires embankment and surfacing modification, payment will be made at contract unit price for Contractor Furnished Borrow for the fill material.

It is not anticipated that surfacing will be required as a part of this contract. However, if surfacing material (base material and/or asphalt concrete) is required, it will be:

1. Furnished by the State and a placement price will be negotiated, or
2. Furnished and placed by the Contractor and a price will be negotiated, or
3. It will be accomplished by other means approved by the Engineer.

CONTRACTOR FURNISHED BORROW

The Contractor may be required to furnish borrow material on this project. When borrow material is required it shall be furnished in accordance with the Standard Specifications.

RESTORATION OF DISTURBED AREAS

Areas disturbed as a result of work necessary under this Contract shall be reshaped and/or restored to the satisfaction of the Engineer.

Slopes and berms disturbed shall be leveled, excess material removed, area tilled to the minimum depth of three inches, seeded with Intermediate Wheatgrass at the rate of 18 Pounds P.L.S. per acre and fertilized with a commercial fertilizer with a minimum guaranteed analysis of 18-46-0 applied at the rate of 100 pounds per acre.

Cost for reshaping, leveling, removal of excess material, tilling, seeding and fertilizing disturbed areas on the slopes and berms shall be incidental to the contract unit prices for the various items.

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GUARDRAIL COMPLETION REQUIREMENTS

At such time as repairs are required, the Contractor will be notified. The Contractor will have 21 days to complete the repairs. In the event that the Contractor has other guardrail work scheduled on another South Dakota State contract, the Contractor may contact the Engineer to work out a reasonable schedule to accomplish the work. The Engineer will consider extending the completion time based on traffic volume, possible accident severity and probability.

Once the existing guardrail is removed from any item of concern (bridge end, box culvert, bridge column, etc.), the Contractor shall place drums or Type II Barricades at 25 foot intervals at each location where existing guardrail is removed. These devices shall extend 175 feet beyond the item of concern for each direction of traffic.

Drums or Barricades shall remain in place until new guardrail has been installed. Cost for furnishing, installing and maintaining drums or barricades shall be incidental to the contract lump sum price for Traffic Control Miscellaneous.

Post end, beam, and end terminal sections shall be erected in a continuous operation within each individual run of guardrail. Incomplete guardrail installations shall be marked by delineation as noted in the previous paragraph.

If the Contractor fails to complete the required work within the time allowed, the Contractor shall install an approved safety treatment that complies with NCHRP 350, level 3, to protect the site.

Failure to comply with this requirement will necessitate liquidated damages being assessed at a rate of \$500 for each calendar day that the guardrail work remains incomplete for the item of concern. This provision applies up to the contract completion date. After the contract completion date, liquidated damages will be assessed in accordance with Section 8.7 or \$500, whichever is greater.

GUARDRAIL

1. Should some guardrail items be required that are not in the Contract Proposal, the Contractor shall furnish the items and will be paid invoice cost plus shipping, taxes and ten percent for profit. Prior approval of the Engineer will be required for these purchases. Installation cost for these items shall be incidental to the contract unit prices for the various items.

Contract unit prices for the various Beam Guardrail Post and Block items shall include the appropriate size wood block.

Cost to furnish and install new bolts, nuts, washers, nails, misc. shall be incidental to the contract unit prices for the various items.

Cost to remove and dispose of guardrail items shall be incidental to the contract unit prices for the various items.

2. Removed guardrail items that are not reused shall become the property of the Contractor.
3. Beam Guardrail Post and Block, Winter - Includes the additional cost for removal and installation of wood posts and blocks when there is in excess of one ft of solid frozen ground at the work site. This contract unit price will be an additional payment for each post and block installed under these conditions.
4. Reset Beam Guardrail Post and Block - Includes removal of wood guardrail post and block and resetting it to proper alignment with the beam guardrail. Payment for this work will be the same in frozen or unfrozen ground.
5. Outside Shoulder Installations - Whenever an outside shoulder beam end terminal is significantly damaged, the entire end terminal (25' to 50') shall be removed and replaced with an approved end terminal from the SDDOT Approved List of W Beam Guardrail Terminals. The Contractor may select from any of the terminals specified. Installation of these terminals shall be as per Standard Plate Nos. 630.45 and/or 630.46.
6. Median Installations at Twin Bridges – Whenever a median beam end terminal is significantly damaged, the entire length of beam guardrail (except for the 43.75' closest to the bridge, if this portion of the guardrail is not damaged) shall be replaced as per Standard Plate No. 630.99. This may involve cutting the existing guardrail. Whether the existing installation is W Beam or Thrie/W Beam, the total length of the newly completed installation shall be 81.25'.

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GUARDRAIL (CONTINUED)

At full roadway width bridges the beam & cable guardrail shall be flared at a 16:1 flare rate. At narrow bridges the beam & cable shall be flared at a flare rate (no sharper than 32:1) that will locate the last post of the 100' W Beam to 3 Cable Transition on the shoulder line. From this point the guardrail shall be flared at a 16:1 flare rate out to the end of the 3 Cable Guardrail Slip Base Anchor Assembly. The length of 3 Cable Guardrail beyond the 100' W Beam to 3 Cable Transition shall be 195' (12 spaces at 16' plus 3' across the Slip Base).

When an obsolete median installation is replaced with the above standard, the existing guardrail (if present) in the median, protecting the opposite direction traffic from the back of obsolete guardrail, shall be removed.

The entire beam portion of the guardrail shall be installed within the allotted time as described in the Guardrail Completion Requirement notes. The cable portion may be installed in early spring after the ground has thawed, however, the Department, for safety, may order installation of the cable portion within the allotted time as described in the Guardrail Completion Requirements notes.

7. If the ground condition at the site is frozen or has large snow amounts, then the portion of embankment and surfacing modification that does not affect guardrail installation may be done the following spring.

8. SDDOT Approved List of W Beam Guardrail Terminals:

Product Name:

- **ET-2000 (Tangent Terminal)**
- **SRT-350 (Flared Terminal)**

Produced By:

SYRO, Inc., a Trinity Industries Co.
2525 Stemmons Freeway
Dallas, Texas 75207
1-800-644-7976 (214) 589-8814
Fax: (214) 589-8423

- **SKT 350 (Tangent Terminal)**
- **FLEAT 350 (Flared Terminal)**

Road Systems, Inc.
1507 East 4th Street
Big Spring, Texas 79720
(915) 263-2435
Fax: (915) 267-4039

9. W Beam Guardrail Breakaway Cable Terminal – Includes the cost for removing damaged components of the existing terminal (including rail), furnishing and installing new Wood Breakaway End Posts (2), W Beam End Section (Buffer) 11" +/- radius, the Modified W Beam Connector, related items and all hardware to attach. Any other BCT items that are required will be paid for at invoice cost plus shipping, taxes and ten percent profit (labor will be incidental to other items). The BCT will only be installed at locations where a W Beam to 3 Cable Transition is required.

10. 3 Cable Guardrail Post, Winter - Includes the additional cost for removal and installation of 3 Cable Guardrail Posts (I Beam and Flanged Channel) when there is in excess of one ft of solid frozen ground at the work site. This contract unit price will be an additional payment for each post installed under these conditions.

11. Repair 3 Cable Guardrail - Includes the cost for putting existing 3 cable guardrail back into its original position and, if required, realigning posts within the displaced length of three cable guardrail. Payment for this item is applicable only when the existing cable rail requires being put back in place and posts require realigning. Payment length shall be:

- From the first existing post that does not need replacing on each end of the repair area,
- From the first existing post that does not need replacing to the anchor if the anchor post, end posts or transition bracket are replaced or,
- From the first existing post that does not need replacing to the transition bracket if the transition bracket is not replaced.

If multiple areas require repair within a cable installation, the areas shall be measured separately.

12. Retension 3 Cable Guardrail – Includes the cost for tensioning of the entire run of three cable guardrail. Payment will be made once per each installation retensioned, regardless of whether one, two or all three cables require retensioning.

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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.

Sufficient traffic control devices have been included in these plans to sign one workspace. If the Contractor elects to work on additional sites simultaneously, the cost for additional traffic control devices shall be incidental to the contract unit price per unit for Traffic Control.

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ITEMIZED LIST FOR TRAFFIC CONTROL

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
E5-1	36" x 32"	EXIT GORE SIGN		24	
G20-2a	36" x 18"	END ROAD WORK	2	17	34
R1-1	48" x 48"	STOP		34	
R1-2	48" x 48"	YIELD		34	
R2-1	30" x 36"	SPEED LIMIT __		23	
R2-5a	30" x 36"	REDUCED SPEED AHEAD		23	
R4-7	24" x 30"	KEEP RIGHT (SYMBOL)		18	
R5-1	48" x 48"	DO NOT ENTER		34	
R5-1a	48" x 36"	WRONG WAY		29	
R10-6	24" x 36"	STOP HERE ON RED		20	
R11-2	48" x 30"	ROAD CLOSED		27	
R11-3a	60" x 30"	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY		30	
R11-4	60" x 30"	ROAD CLOSED TO THRU TRAFFIC		30	
SW12-1b	120" x 60"	HIGHWAY WORKERS GIVE'EM A BRAKE		80	
W1-1	48" x 48"	LEFT OR RIGHT TURN ARROW		34	
W1-2	48" x 48"	LEFT OR RIGHT CURVE ARROW		34	
W1-3	48" x 48"	REVERSE TURN SIGN (LEFT OR RIGHT)		34	
W1-4a	48" x 48"	REVERSE CURVE SIGN (LEFT OR RIGHT)		34	
W3-1a	48" x 48"	STOP AHEAD (SYMBOL)		34	
W3-2a	48" x 48"	YIELD AHEAD (SYMBOL)		34	
W3-3	48" x 48"	SIGNAL AHEAD (SYMBOL)		34	
W3-5	48" x 48"	SPEED REDUCTION (__ MPH)		34	
W4-1	48" x 48"	MERGE (SYMBOL)		34	
W4-2	48" x 48"	LEFT OR RIGHT LANE ENDS (SYMBOL)	2	34	68
W5-2	48" x 48"	NARROW BRIDGE		34	
W5-3	48" x 48"	ONE LANE BRIDGE		34	
W7-3a	30" x 24"	NEXT __ MILES		18	
W8-1	36" x 36"	BUMP		27	
W8-6	48" x 48"	TRUCK CROSSING		34	
W8-7	36" x 36"	LOOSE GRAVEL		27	
W8-9a	48" x 48"	SHOULDER DROP-OFF		34	
W8-11	48" x 48"	UNEVEN LANES		34	
W13-1	24" x 24"	ADVISORY SPEED PLATE		16	
W20-1	48" x 48"	ROAD WORK AHEAD	2	34	68
W20-2	48" x 48"	DETOUR AHEAD		34	
W20-3	48" x 48"	ROAD CLOSED AHEAD		34	
W20-4	48" x 48"	ONE LANE ROAD AHEAD	2	34	68
W20-5	48" x 48"	LT. OR RT. LANE CLOSED AHEAD	2	34	68
W20-7a	48" x 48"	FLAGGER	2	34	68
W20-7b	48" x 48"	BE PREPARED TO STOP		34	
W21-1a	48" x 48"	WORKERS (SYMBOL)		34	
W21-2	36" x 36"	FRESH OIL		27	
W21-3	48" x 48"	ROAD MACHINERY AHEAD		34	
W21-5	48" x 48"	SHOULDER WORK	2	34	68
W21-5a	48" x 48"	RIGHT SHOULDER CLOSED		34	
W21-5b	48" x 48"	RIGHT SHOULDER CLOSED AHEAD		34	
SPECIAL	30" x 24"	FINES DOUBLED		18	
****	12" x 36"	TYPE III OBJECT MARKER		15	
****	****	TYPE III BARRICADE - 8 FT. SINGLE SIDED		40	
****	****	TYPE III BARRICADE - 8 FT. DOUBLE SIDED		56	
TOTAL UNITS					442

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Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45 - 50	500	600	50
55	750	660	50
60 - 65	1000	780	50

■ Channelizing Device

END ROAD WORK
G20-2

The channelizing devices shall be drums or type II barricades if traffic control must remain overnight or longer.

For short duration operations (1 hour or less) all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

WORK SPACE

WORK SPACE

July 1, 2005

SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES WORK ON SHOULDERS	PLATE NUMBER 634.03
		Sheet 1 of 1

Published Date: 3rd Qtr. 2007

Username - TRMIINT15

Plotting Date: 18-JUL-2007

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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

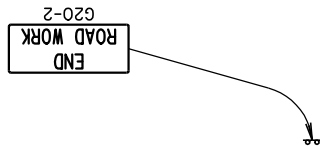
For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

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 type II barricades if traffic control must remain overnight or longer. During daylight hours, 42" cones may be used in lieu of drums or type II barricades along the centerline.

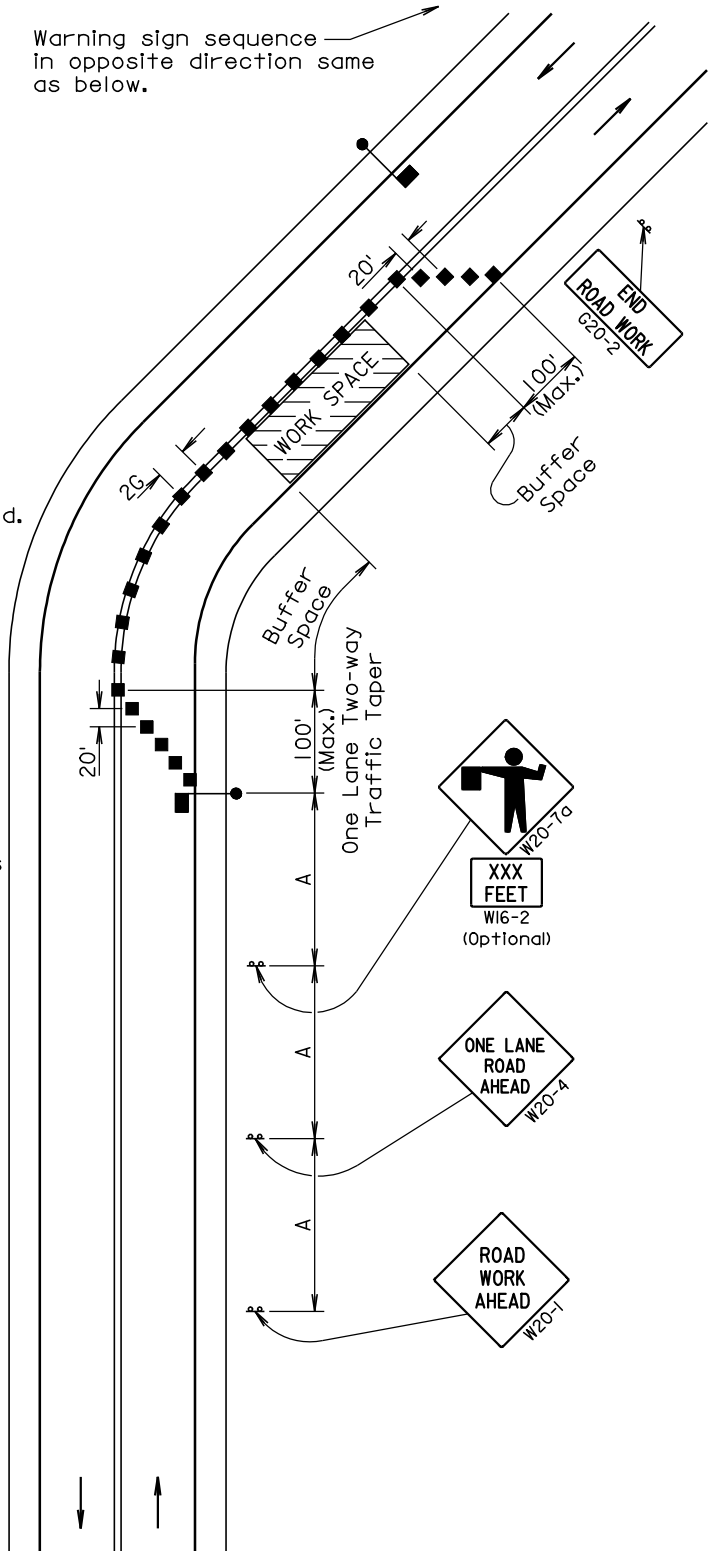


Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

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

The buffer space shall be a sufficient length so that the channelizing devices are visible to approaching traffic.

Warning sign sequence in opposite direction same as below.



June 26, 2006

SDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
		Sheet 1 of 1

Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

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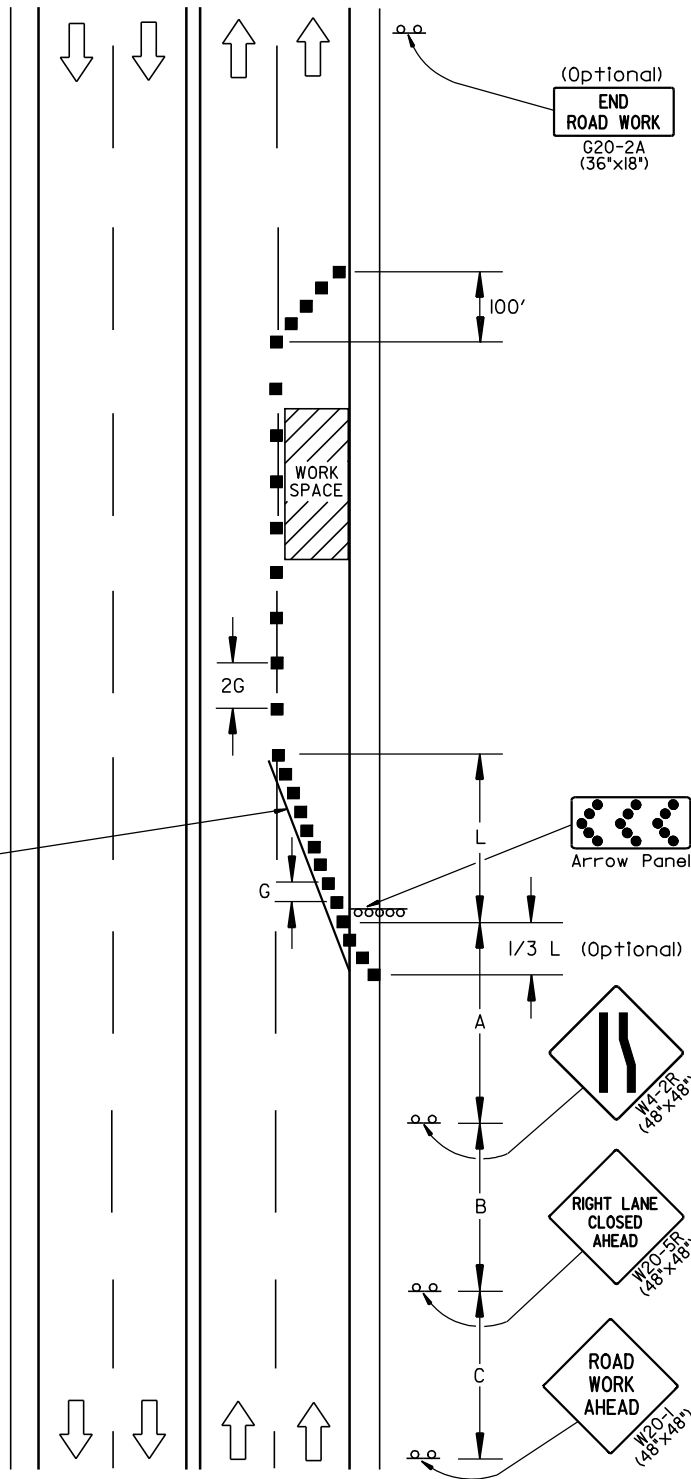
Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45 - 50	500	600	50
55	750	660	50
60 - 65	1000	780	50

■ Channelizing Device

The Channelizing Devices shall be drums or type II barricades if traffic control must remain overnight or longer, however, 42" cones may be used in lieu of drums or type II barricades only along the centerline.

Longitudinal dimensions may be adjusted to fit project conditions such as horizontal curves, vertical curves, and other site restrictions.

Four inch white temporary pavement marking shall be used if traffic control must remain overnight or longer.



December 23, 2003

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES 4-LANE UNDIVIDED, RIGHT LANE CLOSED	PLATE NUMBER 634.47
		Sheet 1 of 1

Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

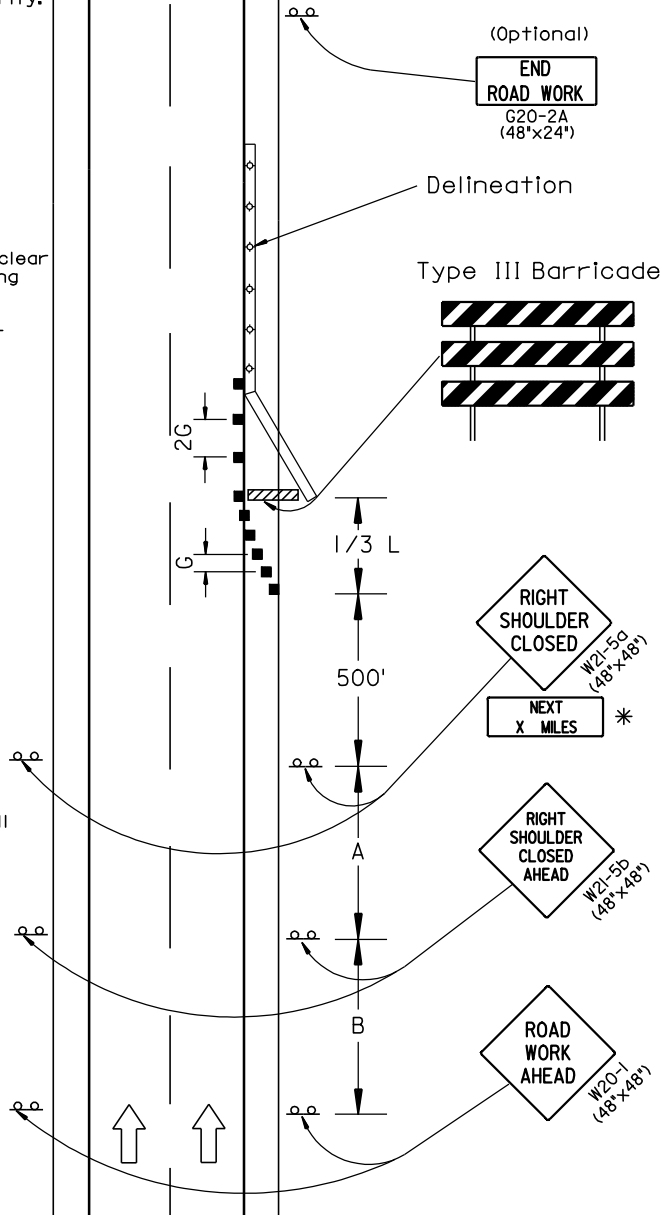
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1. The barrier in this diagram shows one method that may be used to close a shoulder of a long term project. The use of a barrier should be based on the need determined by the Highway Authority.

2. Barriers should be flared beyond the clear zone to prevent vehicles from impacting their leading ends. Flare rate shall be 11:1. An alternative procedure is to place an impact attenuator to protect traffic from the end of the barrier.

- - Channelizing Devices
Drums or Type II Barricades shall be used.
- ▬ - Concrete Barrier
- * - For distances 1/2 mile or greater.

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet)			Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
	(A)	(B)	(C)		
0 - 30	200			180	25
35 - 40	350			320	25
45 - 50	500			600	50
55	750			660	50
60 - 65	1000			780	50
	(A)	(B)			
75	1000	1600		1125	50



March 31, 2000

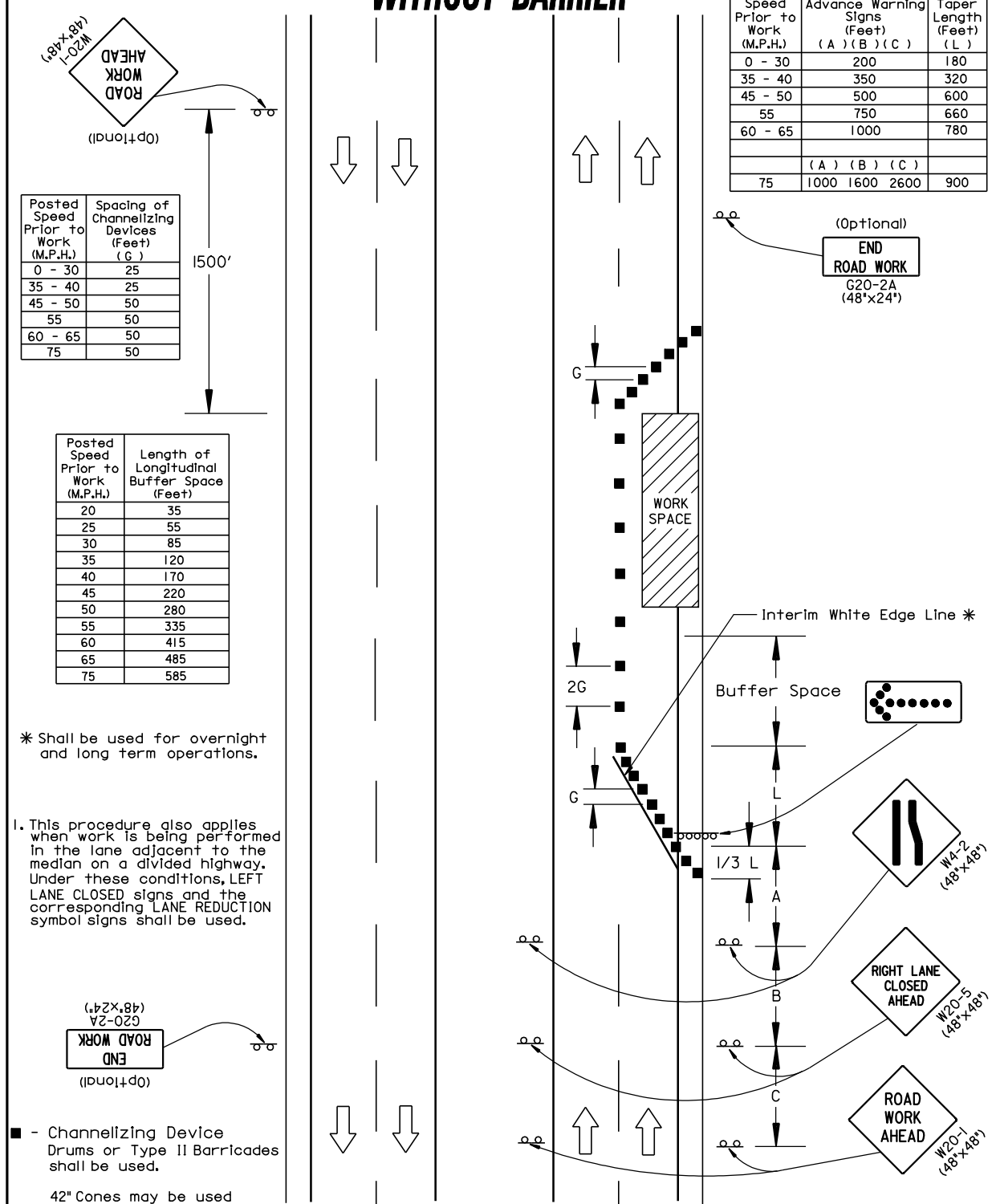
Published Date: 3rd Qtr. 2007	S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES SHOULDER CLOSED	March 31, 2000 PLATE NUMBER 634.61
			Sheet 1 of 1

Plotting Date: 18-JUL-2007

Username - TRMIINT15

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**

WITHOUT BARRIER



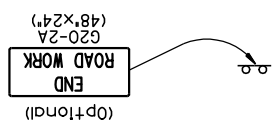
Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet)			Taper Length (Feet) (L)
	(A)	(B)	(C)	
0 - 30	200			180
35 - 40	350			320
45 - 50	500			600
55	750			660
60 - 65	1000			780
	(A)	(B)	(C)	
75	1000	1600	2600	900

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 40	25
45 - 50	50
55	50
60 - 65	50
75	50

Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	35
25	55
30	85
35	120
40	170
45	220
50	280
55	335
60	415
65	485
75	585

* Shall be used for overnight and long term operations.

1. This procedure also applies when work is being performed in the lane adjacent to the median on a divided highway. Under these conditions, LEFT LANE CLOSED signs and the corresponding LANE REDUCTION symbol signs shall be used.



- - Channelizing Device Drums or Type II Barricades shall be used.
- 42" Cones may be used along centerline.

September 14, 2002

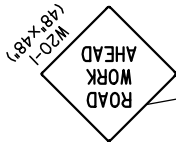
SDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITHOUT BARRIER	PLATE NUMBER 634.64
		Sheet 1 of 1

Published Date: 3rd Qtr. 2007
Plotting Date: 18-JUL-2007

Username - TRMIINT15

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**

WITH BARRIER

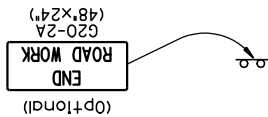


Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 40	25
45 - 50	50
55	50
60 - 65	50
75	50

1500'

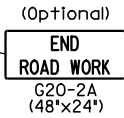
Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	35
25	55
30	85
35	120
40	170
45	220
50	280
55	335
60	415
65	485
75	585

- An interim white edge line should be installed from the start of the taper to a point beyond the work area, rejoining the permanent edge line.
- The barrier shall not be placed along the merging taper. The lane shall first be closed using channelizing devices and pavement markings.



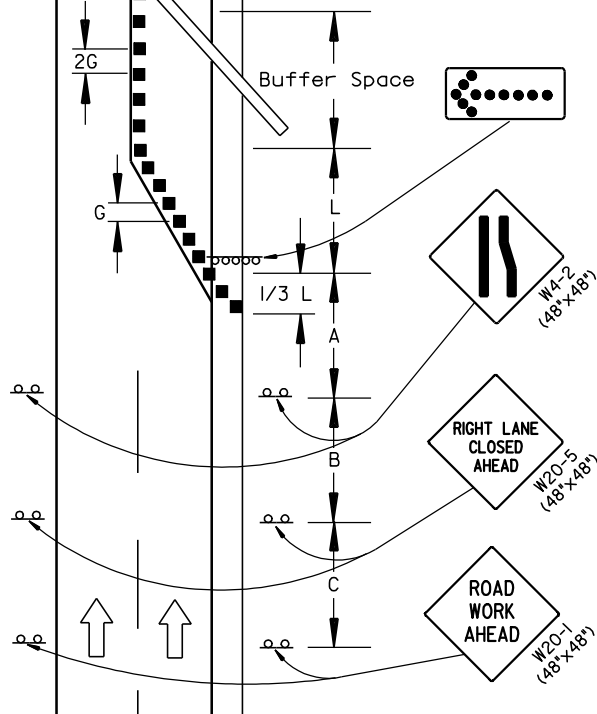
■ - Channelizing Device Drums or Type II Barricades shall be used.

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet)			Taper Length (Feet) (L)
	(A)	(B)	(C)	
0 - 30	200			180
35 - 40	350			320
45 - 50	500			600
55	750			660
60 - 65	1000			780
	(A)	(B)	(C)	
75	1000	1600	2600	900



Interim White Edge Line

1. Flare rate of the barrier shall be 11:1.



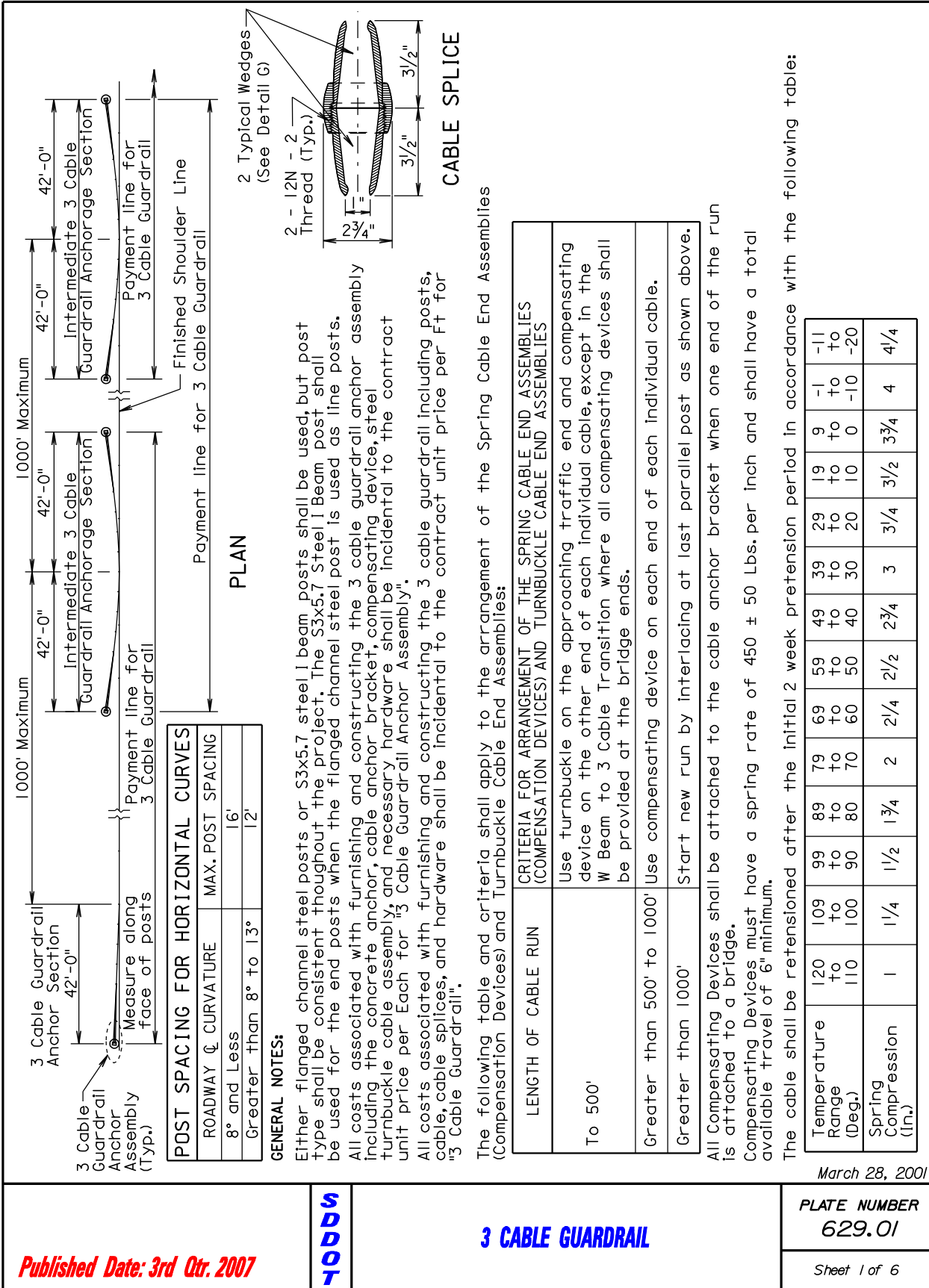
March 31, 2000

SDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH BARRIER	PLATE NUMBER 634.65
		Sheet 1 of 1

Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**



Published Date: 3rd Qtr. 2007

100000

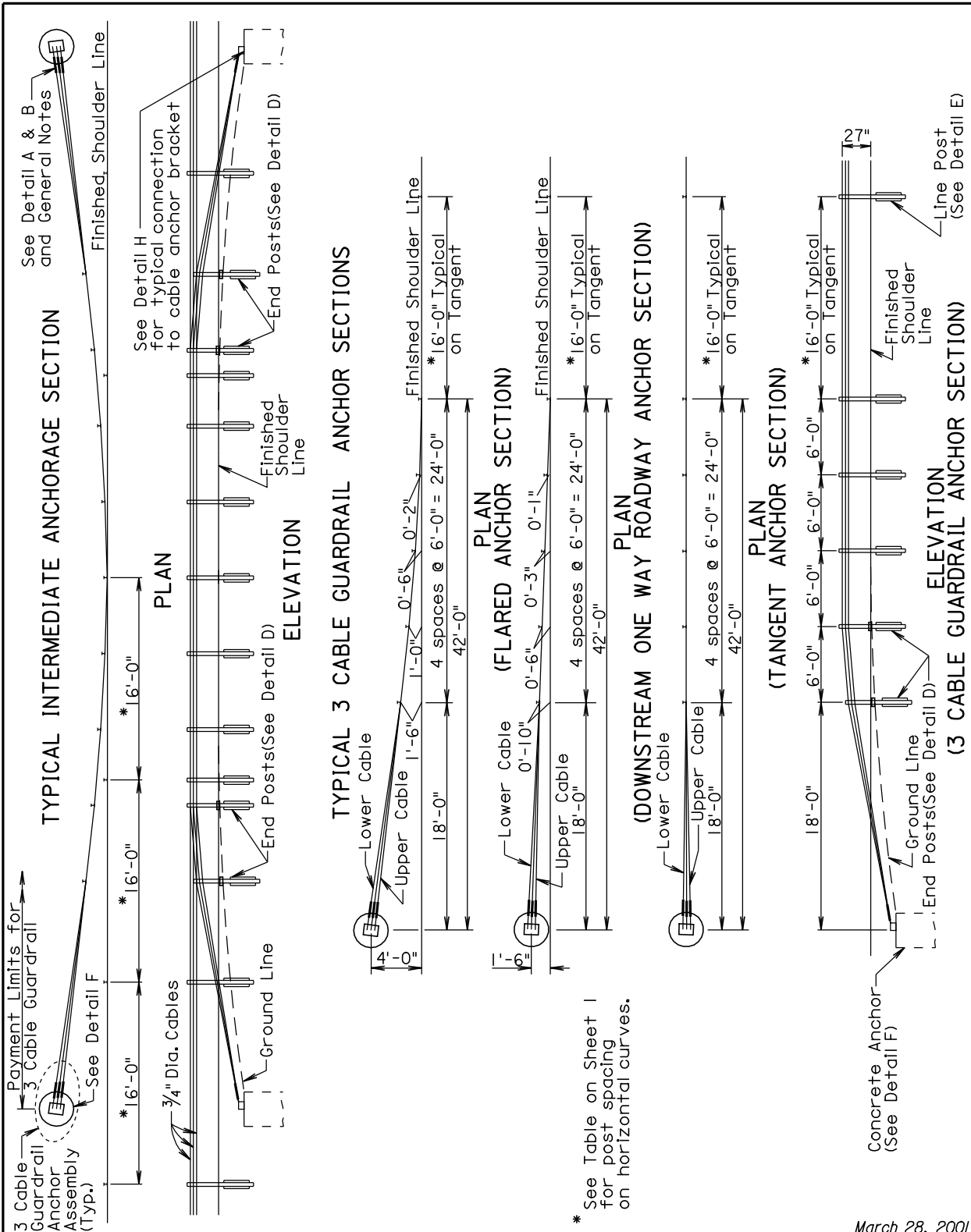
3 CABLE GUARDRAIL

**PLATE NUMBER
629.01**

Sheet 1 of 6

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**



* See Table on Sheet 1 for post spacing on horizontal curves.

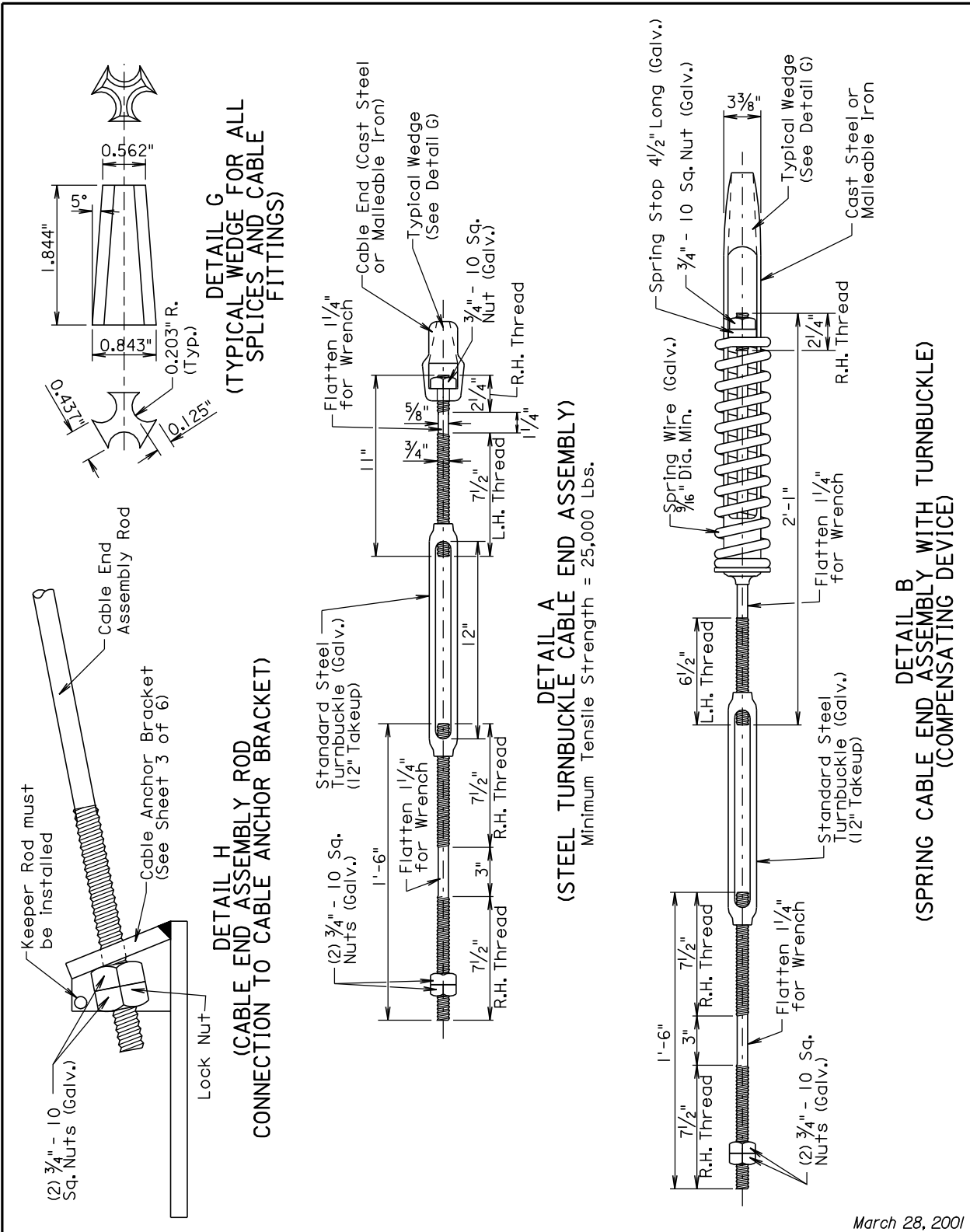
March 28, 2001

<p>100000</p> <p>3 CABLE GUARDRAIL</p>	<p>PLATE NUMBER 629.01</p>
	<p>Sheet 2 of 6</p>

Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**



Published Date: 3rd Qtr. 2007

10000

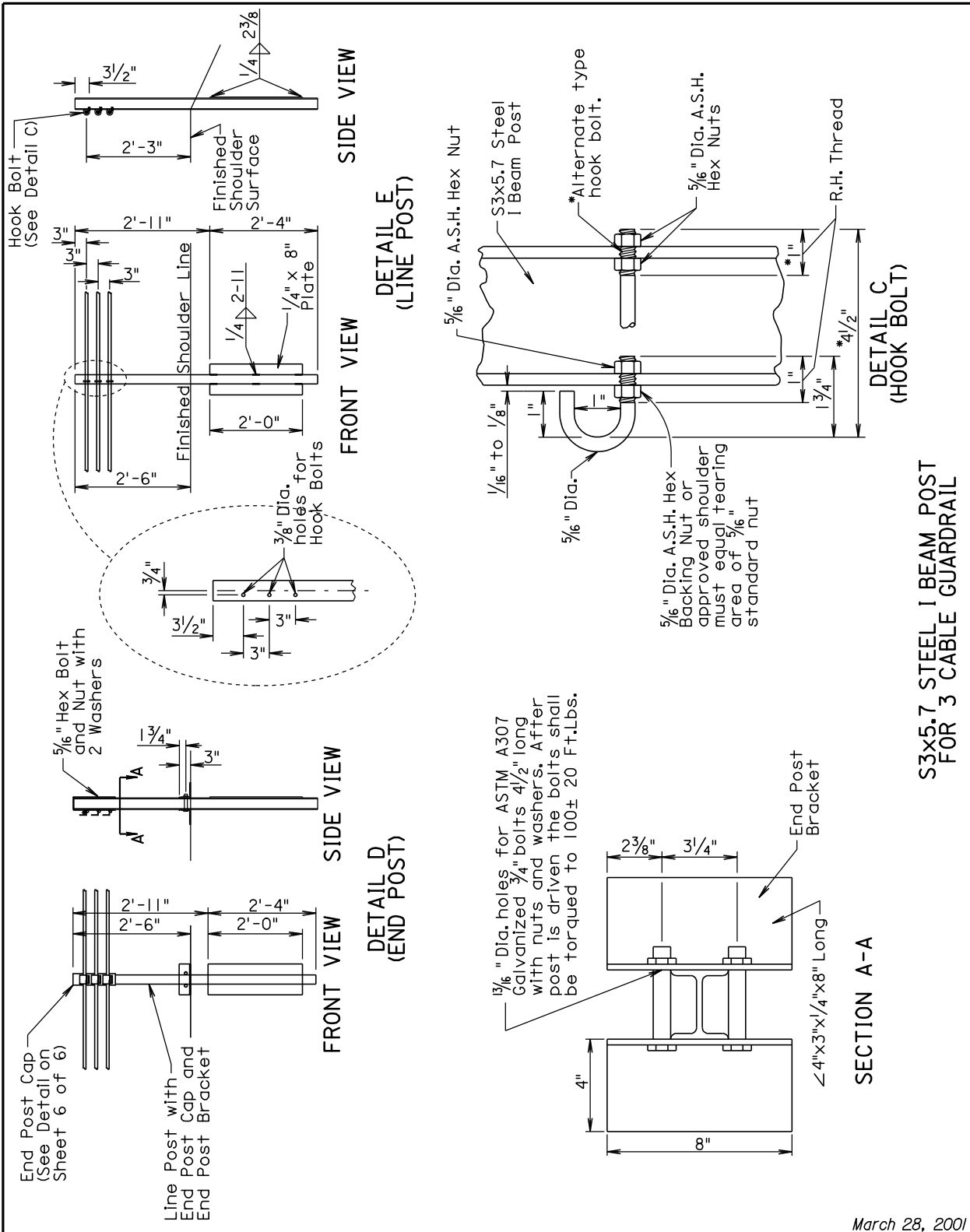
3 CABLE GUARDRAIL

**PLATE NUMBER
629.01**

Sheet 4 of 6

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**



**S3x5.7 STEEL I BEAM POST
 FOR 3 CABLE GUARDRAIL**

March 28, 2001

Published Date: 3rd Qtr. 2007

10000

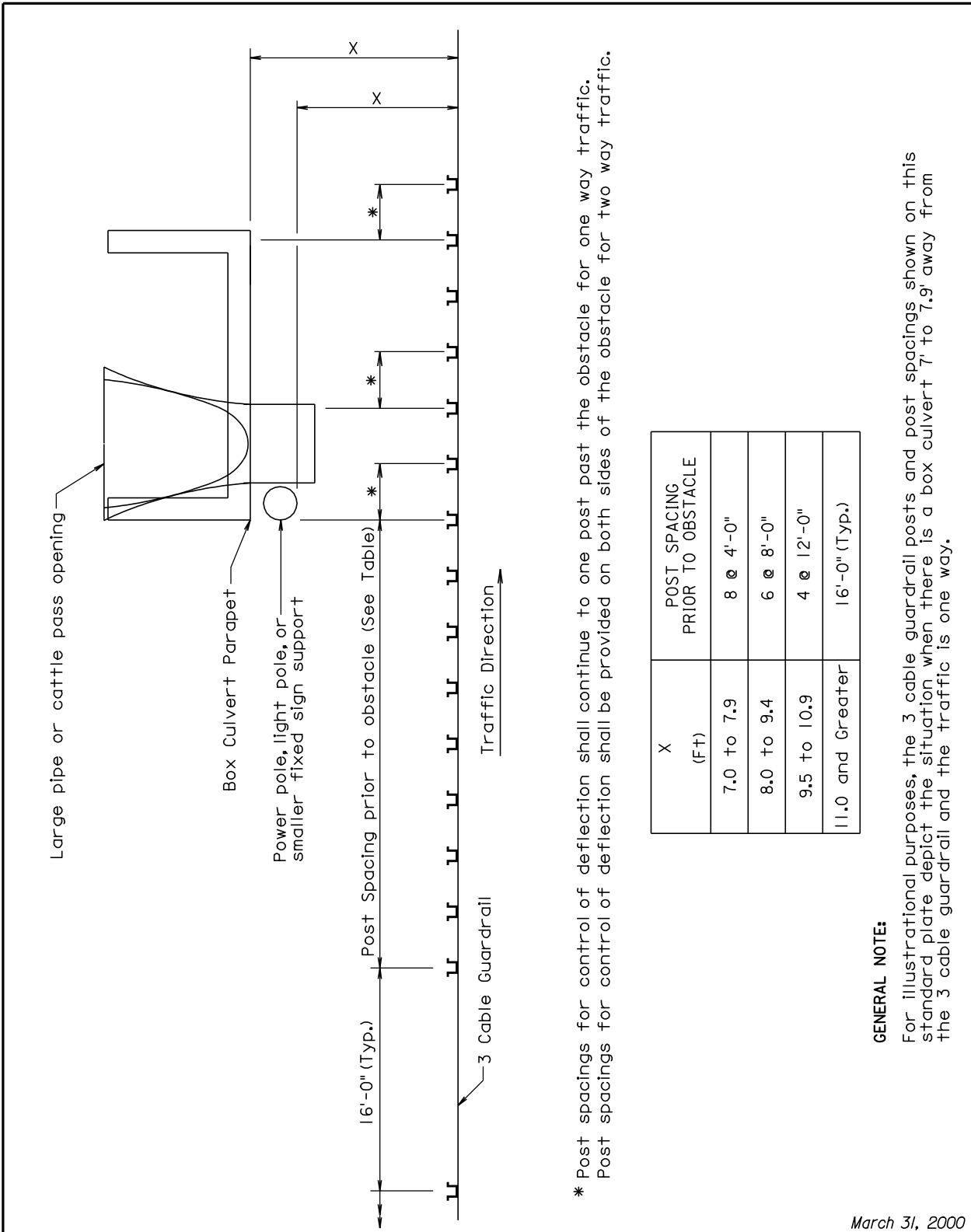
3 CABLE GUARDRAIL

**PLATE NUMBER
 629.01**

Sheet 5 of 6

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**



* Post spacings for control of deflection shall continue to one post past the obstacle for one way traffic.
 Post spacings for control of deflection shall be provided on both sides of the obstacle for two way traffic.

X (Ft)	POST SPACING PRIOR TO OBSTACLE
7.0 to 7.9	8 @ 4'-0"
8.0 to 9.4	6 @ 8'-0"
9.5 to 10.9	4 @ 12'-0"
11.0 and Greater	16'-0" (Typ.)

GENERAL NOTE:

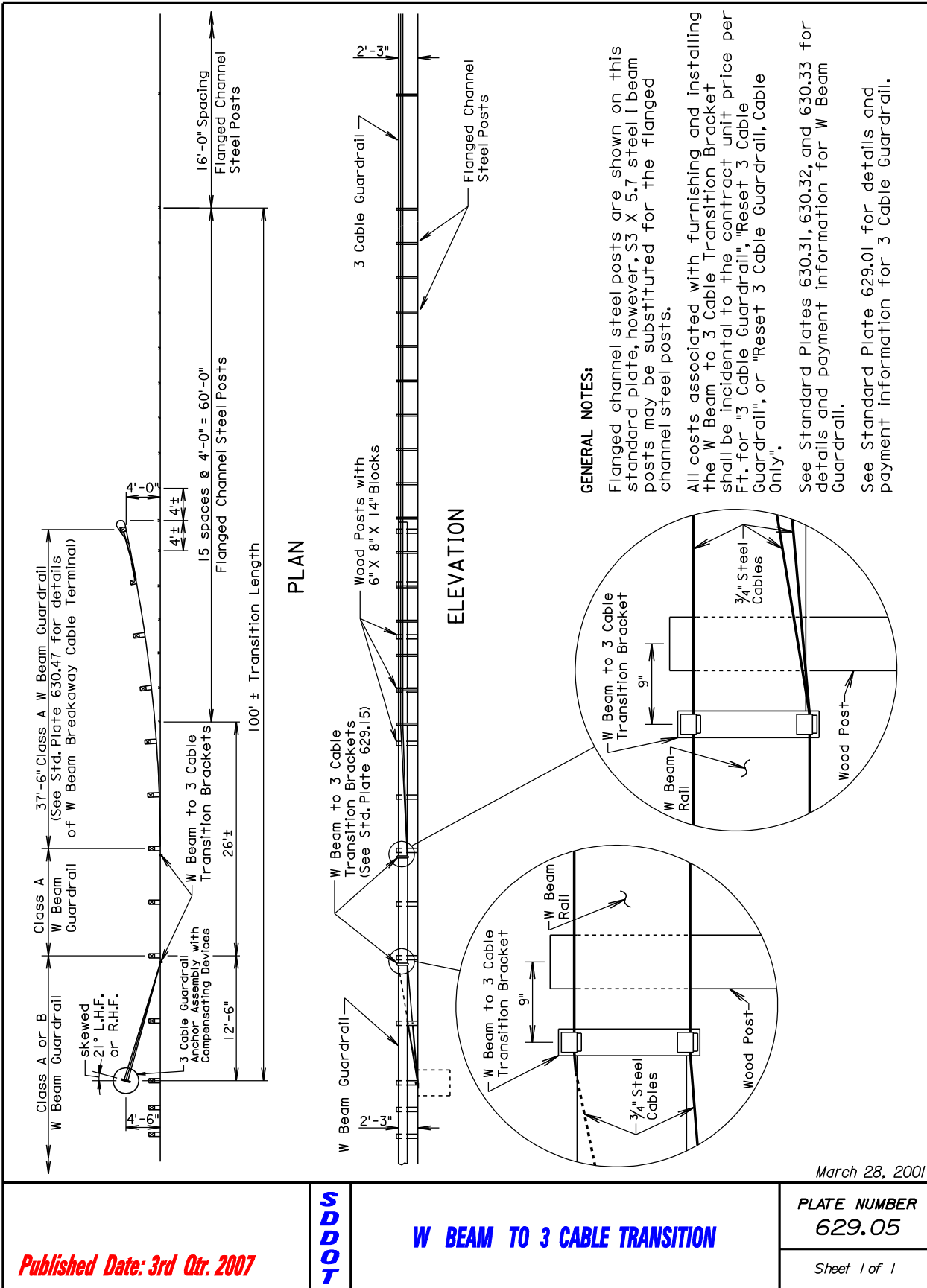
For illustrational purposes, the 3 cable guardrail posts and post spacings shown on this standard plate depict the situation when there is a box culvert 7' to 7.9' away from the 3 cable guardrail and the traffic is one way.

March 31, 2000

<p>Published Date: 3rd Qtr. 2007</p>	<p>SS DD OT</p>	<p>3 CABLE GUARDRAIL POST SPACING FOR DEFLECTION CONTROL</p>	<p>PLATE NUMBER 629.02</p>
			<p>Sheet 1 of 1</p>

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**



March 28, 2001

Published Date: 3rd Qtr. 2007

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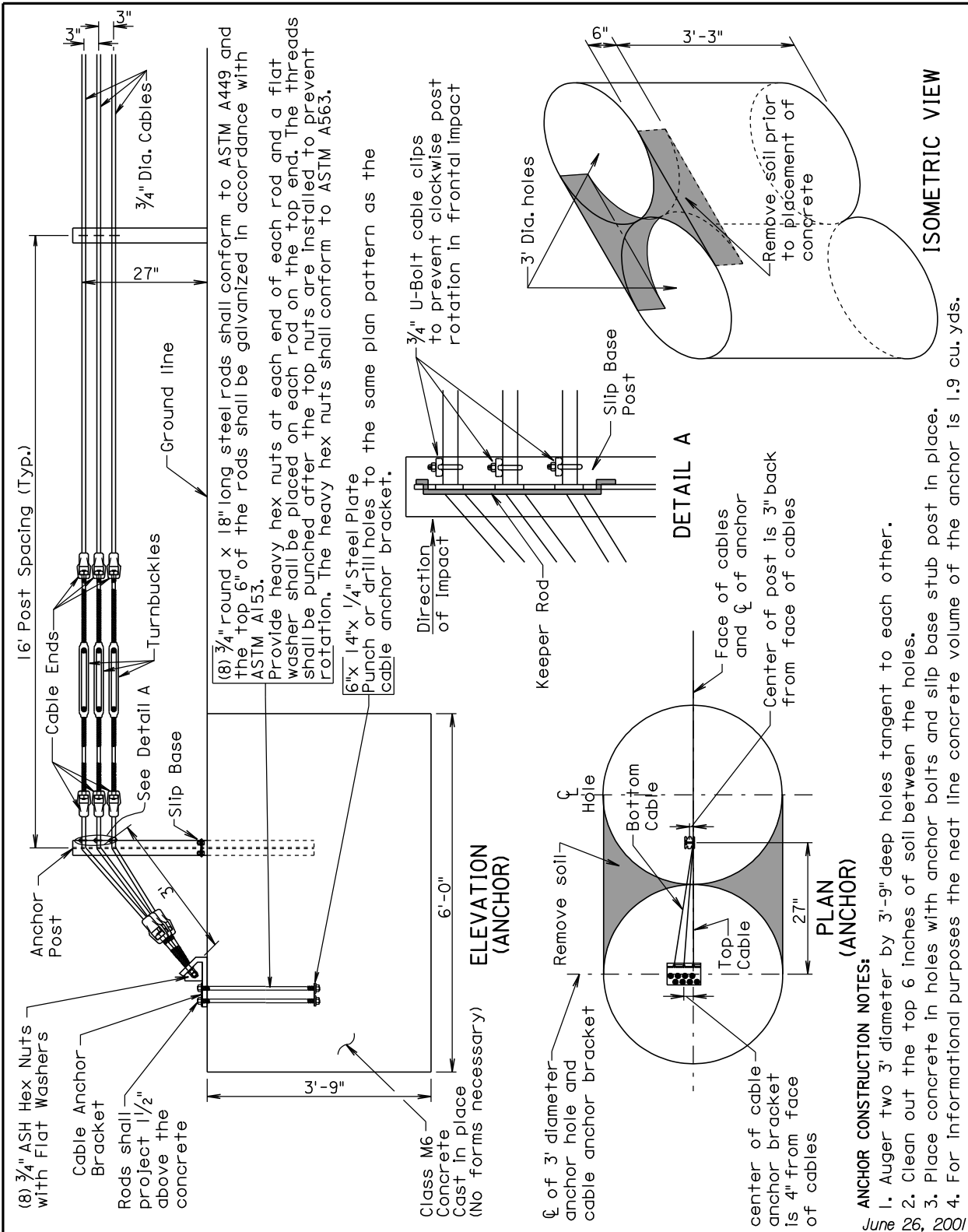
W BEAM TO 3 CABLE TRANSITION

**PLATE NUMBER
629.05**

Sheet 1 of 1

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**



Published Date: 3rd Qtr. 2007

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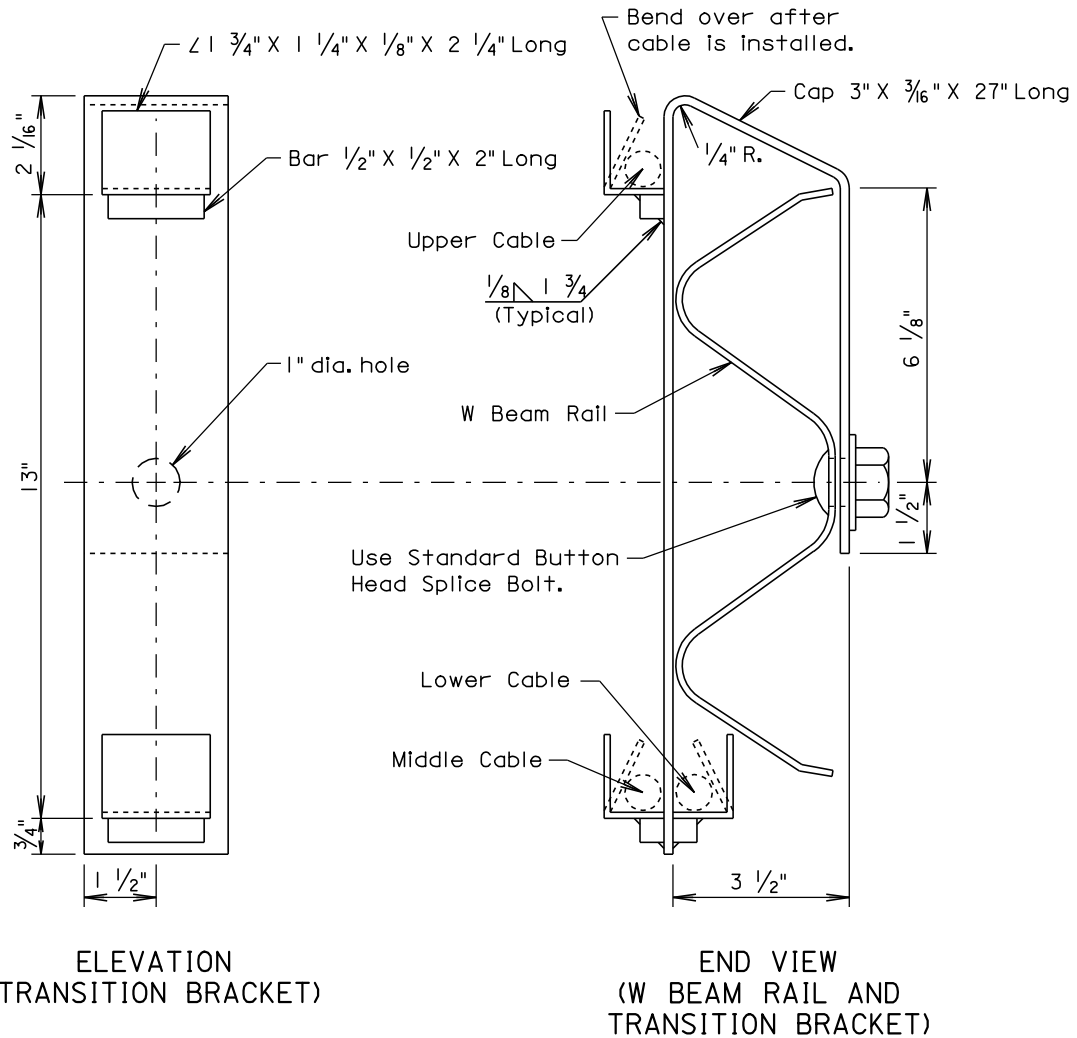
**3 CABLE GUARDRAIL SLIP BASE
 ANCHOR ASSEMBLY**

**PLATE NUMBER
 629.10**

Sheet 1 of 3

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**



GENERAL NOTES:

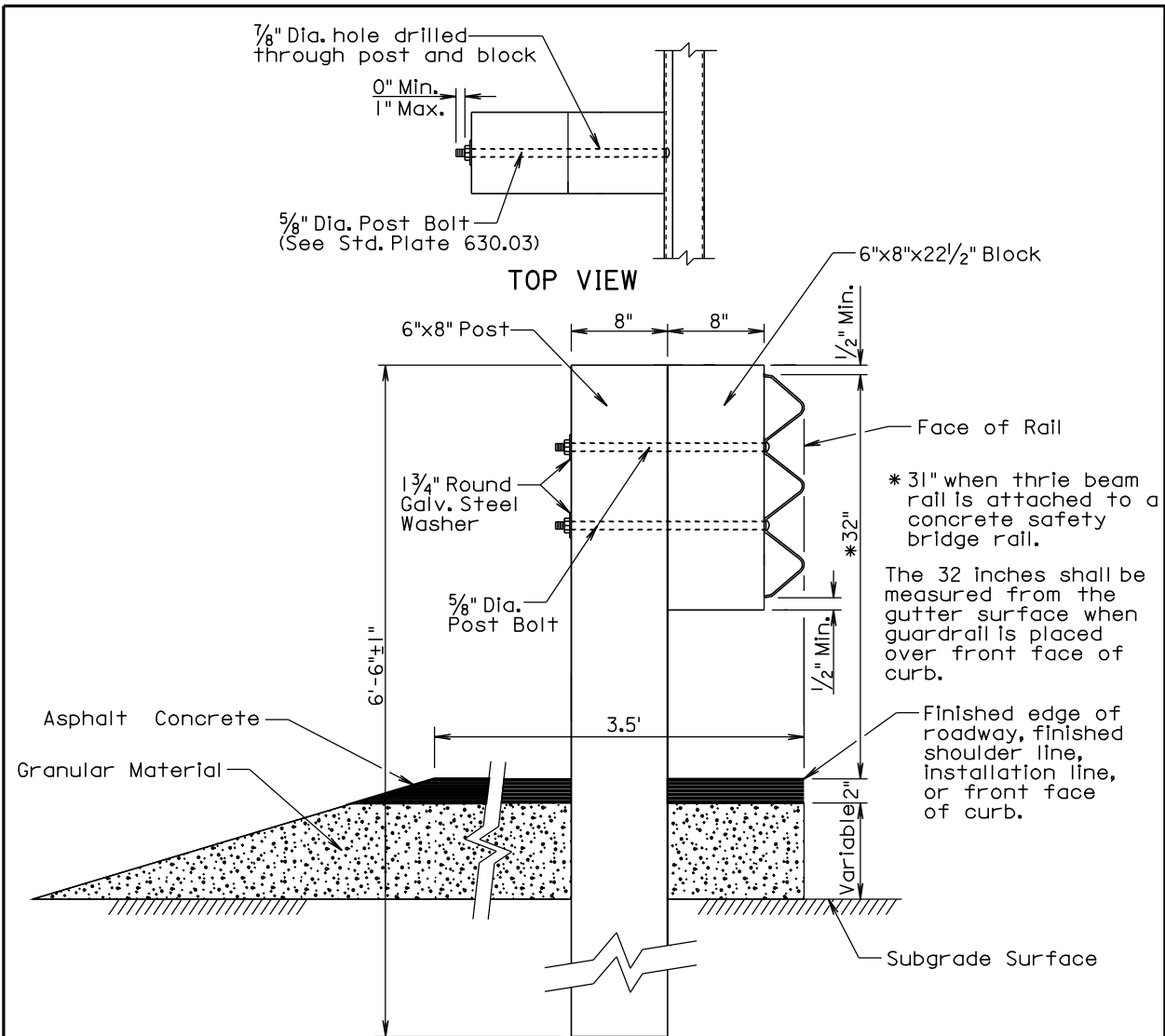
Steel used in the fabrication of the bracket shall conform to ASTM A36 and the bracket shall be galvanized after fabrication in accordance with ASTM A123.

March 31, 2000

Published Date: 3rd Qtr. 2007	SDDOT	W BEAM TO 3 CABLE TRANSITION BRACKET	PLATE NUMBER 629.15
			Sheet 1 of 1

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN 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 granular 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 "Thrie 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.

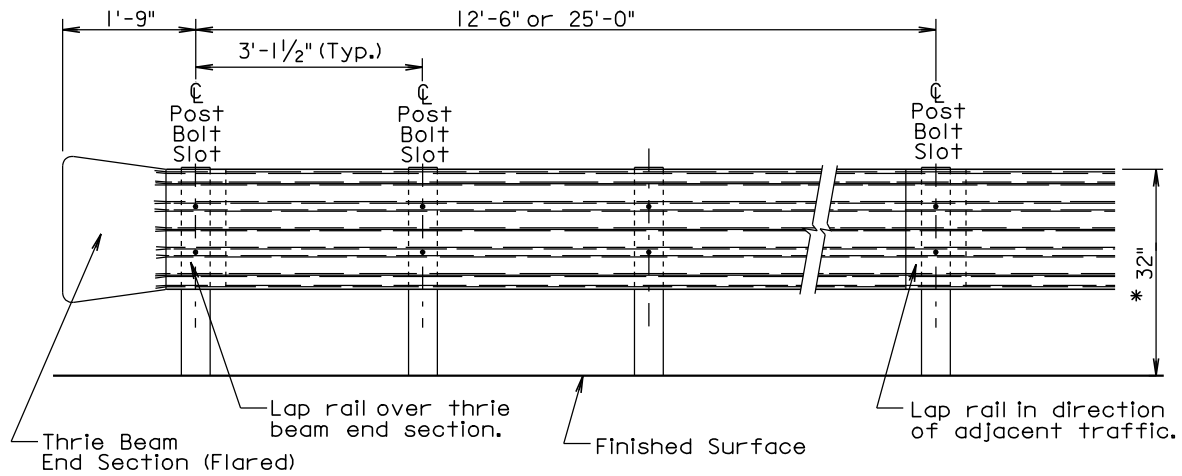
March 31, 2000

SD DOT	THRIE BEAM GUARDRAIL POST INSTALLATION	PLATE NUMBER 630.01
		Sheet 1 of 1

Published Date: 3rd Qtr. 2007

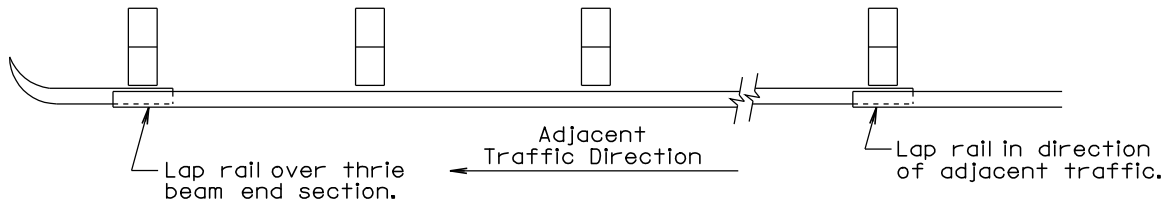
Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**



* 31" when thrie beam is attached to a concrete safety bridge rail.

ELEVATION



PLAN

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

For Informational Purposes Only

GENERAL NOTES:

All thrie beam rail shall be Type I.

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.

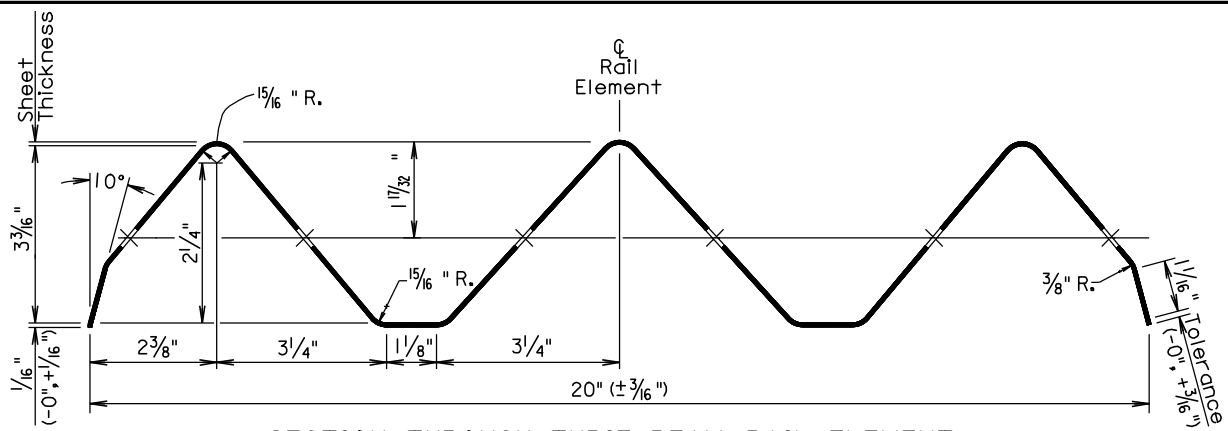
March 28, 2001

SDOT	THRIE BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.02
		Sheet 1 of 1

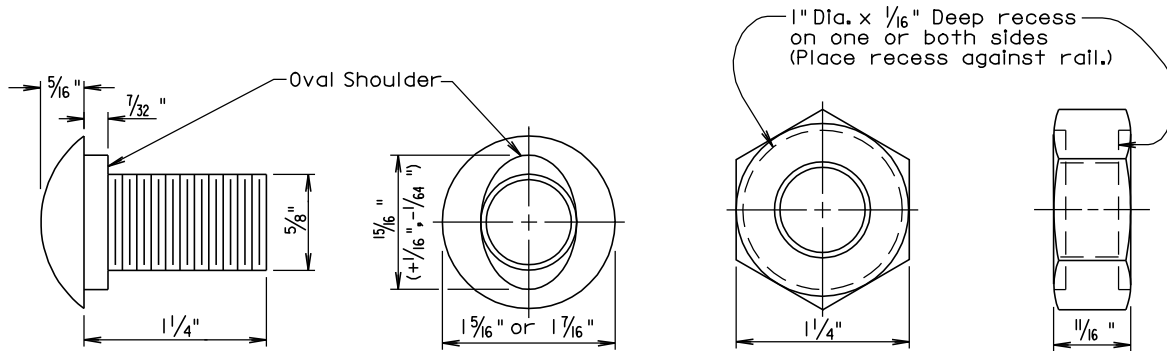
Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**

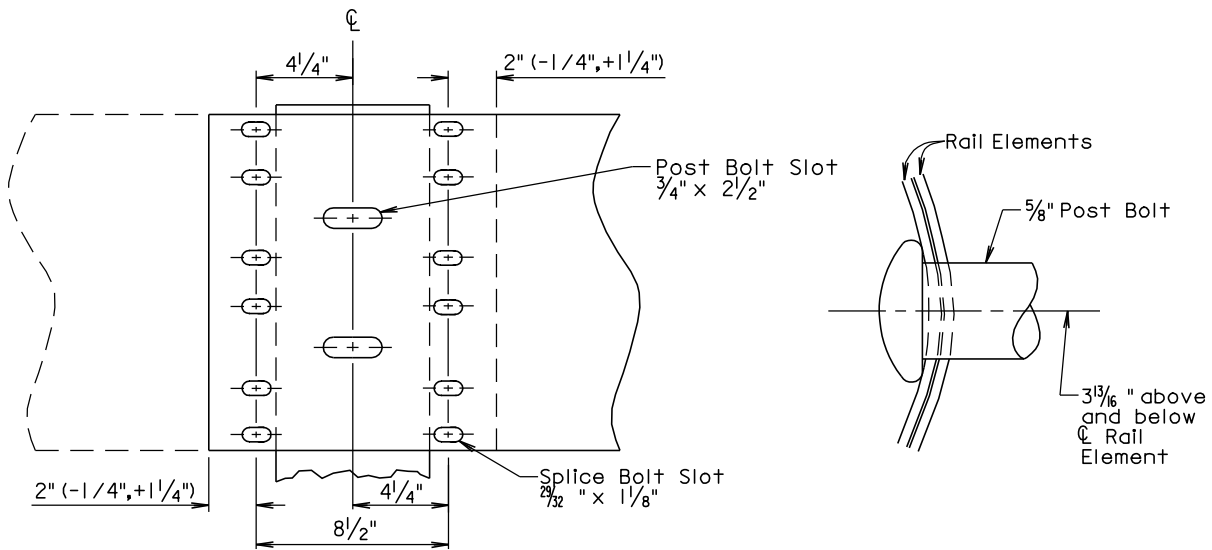


SECTION THROUGH THRIE BEAM RAIL ELEMENT



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

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



Lap in direction of traffic.

RAIL SPLICE

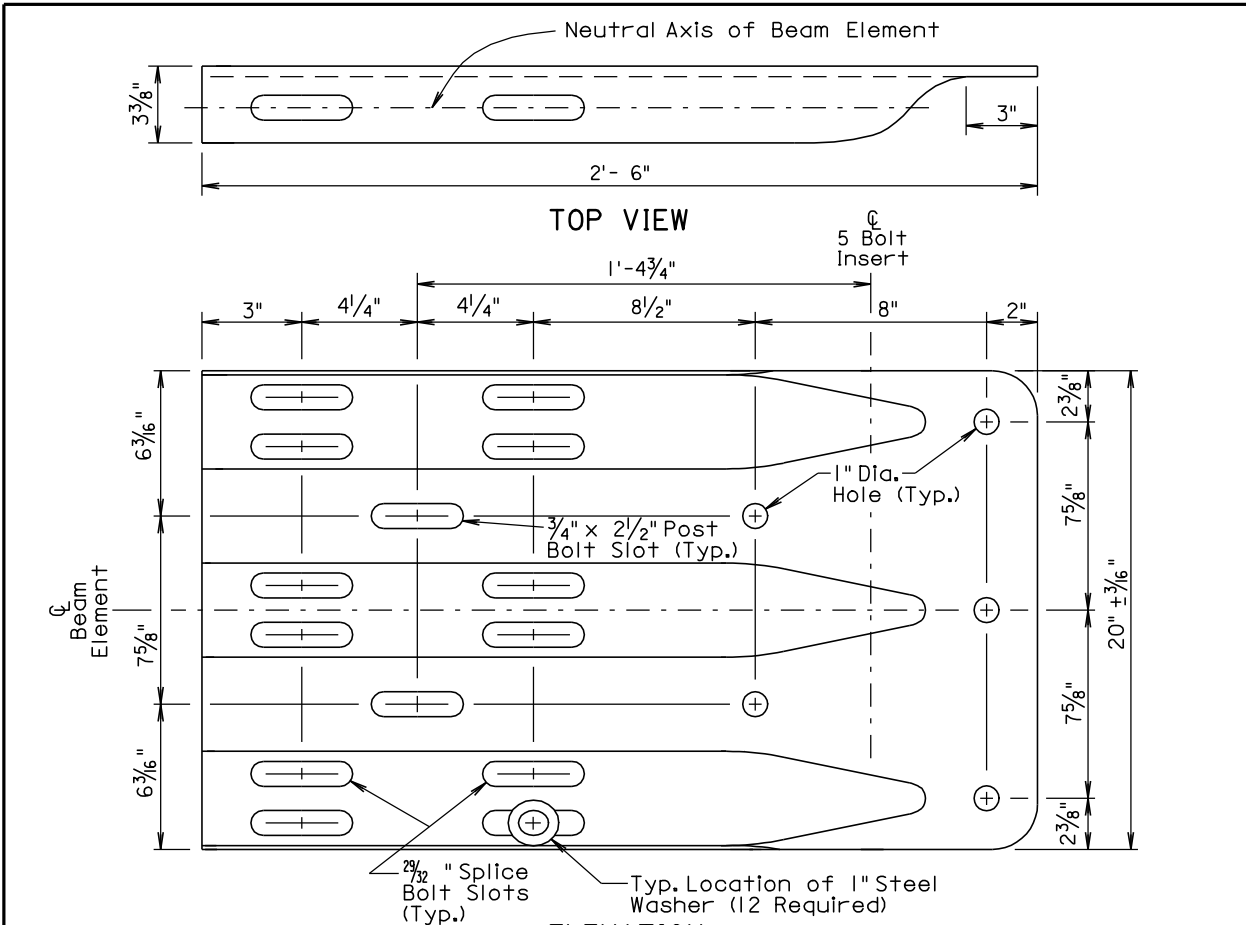
March 31, 2000

SDDOT	THRIE BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER 630.03
		Sheet 1 of 1

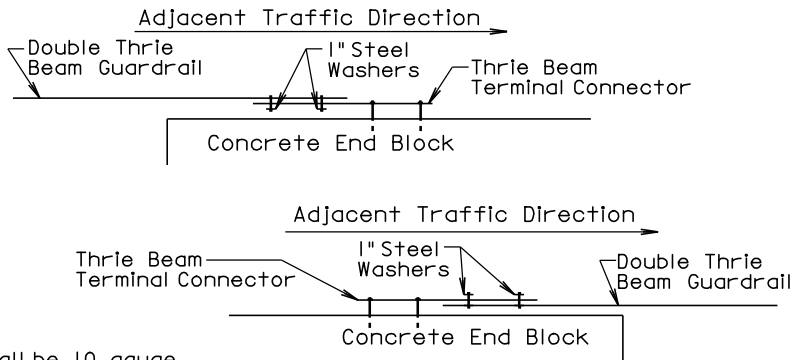
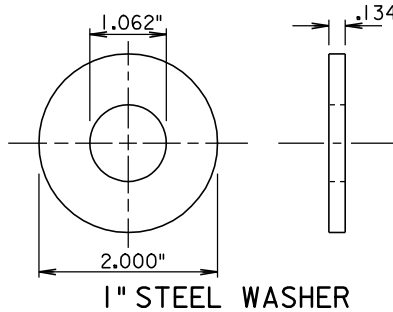
Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN 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

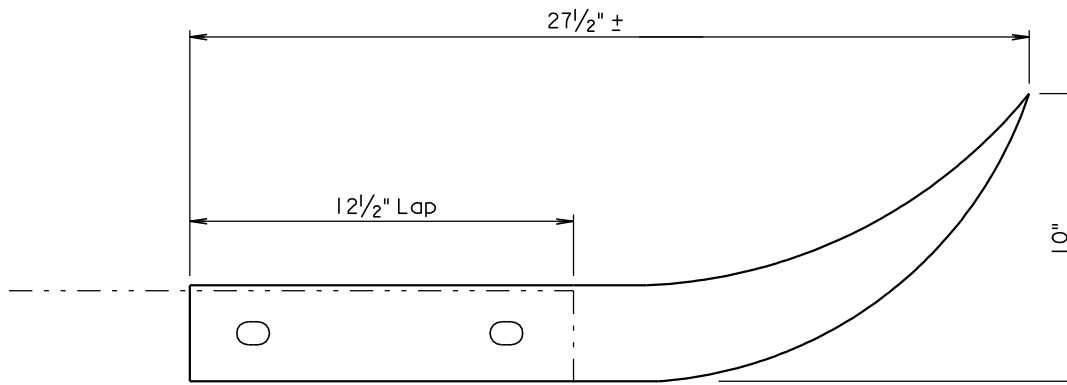
SDDOT	THRIE BEAM TERMINAL CONNECTOR AND 1" STEEL WASHER	PLATE NUMBER 630.05
		Sheet 1 of 1

Published Date: 3rd Qtr. 2007

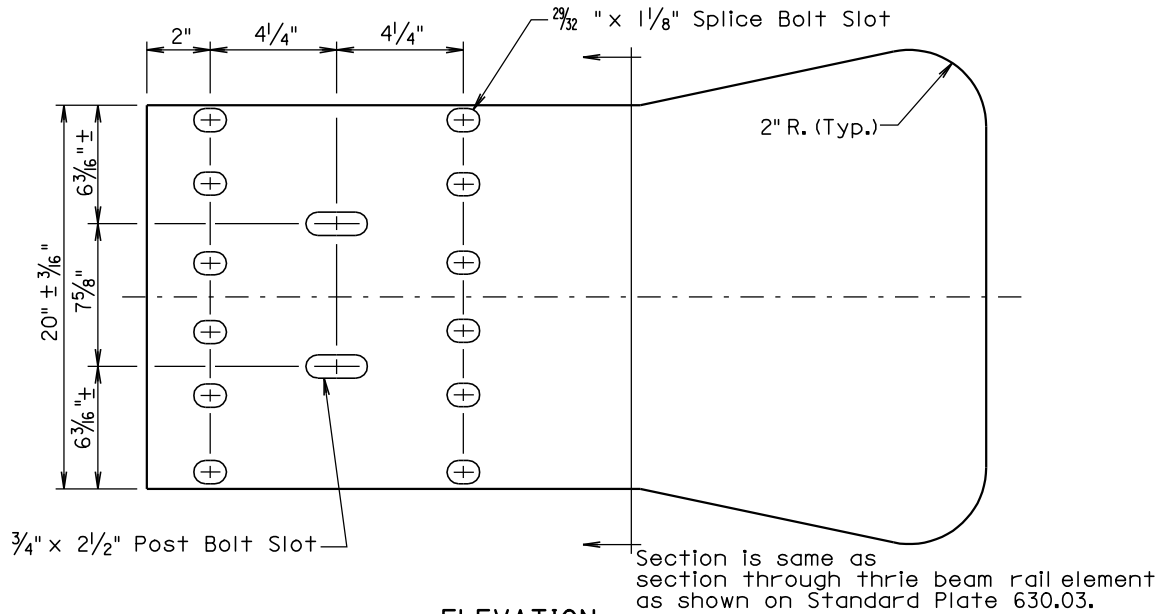
Plotting Date: 18-JUL-2007

Username - TRMIINT15

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**



TOP VIEW



ELEVATION

GENERAL NOTES:

Thrie Beam End Sections (Flared) shall be 12 gage.

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

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.

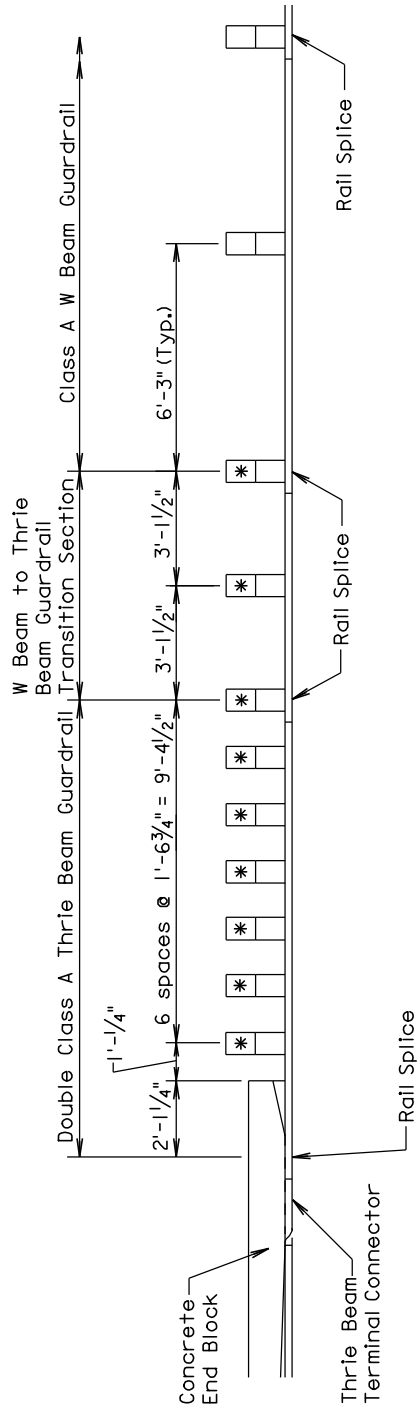
March 31, 2000

SDDOT	THRIE BEAM END SECTION (FLARED)	PLATE NUMBER 630.10
		Sheet 1 of 1

Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**



POST SPACING ARRANGEMENT FOR THRIE BEAM GUARDRAIL AT BRIDGE END

* 6" x 8" x 7' posts shall be used at these locations.

December 23, 2002

Published Date: 3rd Qtr. 2007

**SDS
101**

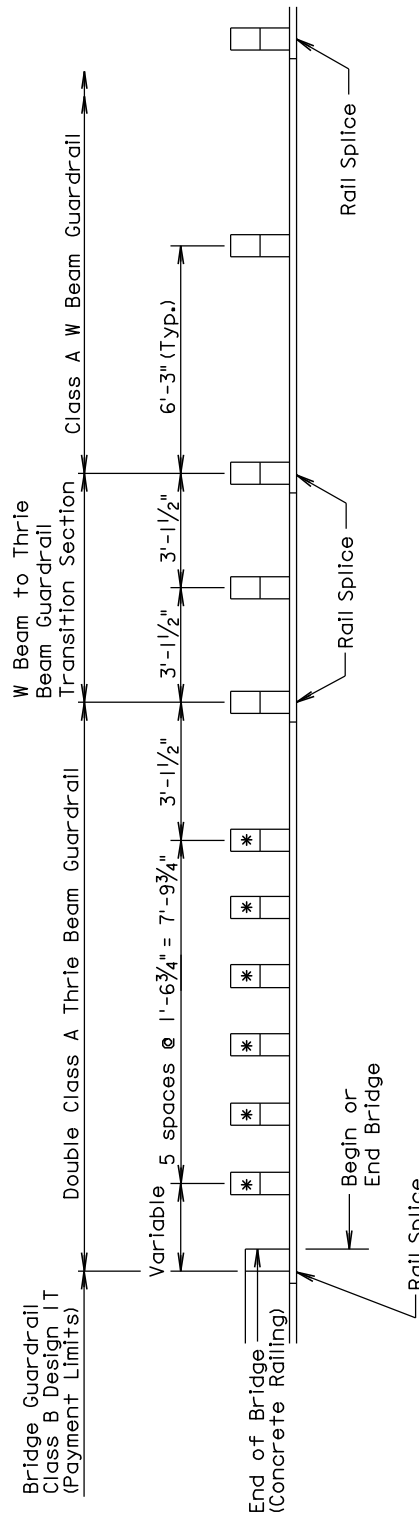
**POST SPACING ARRANGEMENT FOR
 THRIE BEAM GUARDRAIL AT BRIDGE END**

PLATE NUMBER
 630.15

Sheet 1 of 1

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**



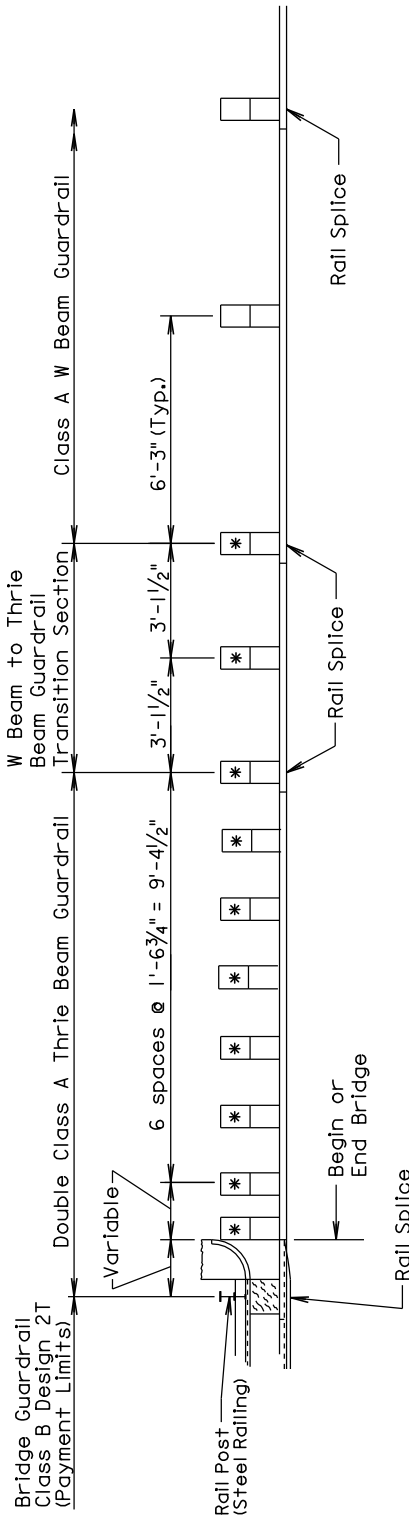
POST SPACING ARRANGEMENT FOR THRIE BEAM GUARDRAIL AT BRIDGE END

March 31, 2000

Published Date: 3rd Qtr. 2007	SDS TOT	POST SPACING ARRANGEMENT FOR THRIE BEAM GUARDRAIL AT BRIDGE END (BRIDGE GUARDRAIL DESIGN 1T)		PLATE NUMBER 630.20
				Sheet 1 of 1

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**



* 6" x 8" x 7' posts shall be used at these locations.

POST SPACING ARRANGEMENT FOR THRIE BEAM GUARDRAIL AT BRIDGE END

December 23, 2002

Published Date: 3rd Qtr. 2007

**SDS
101**

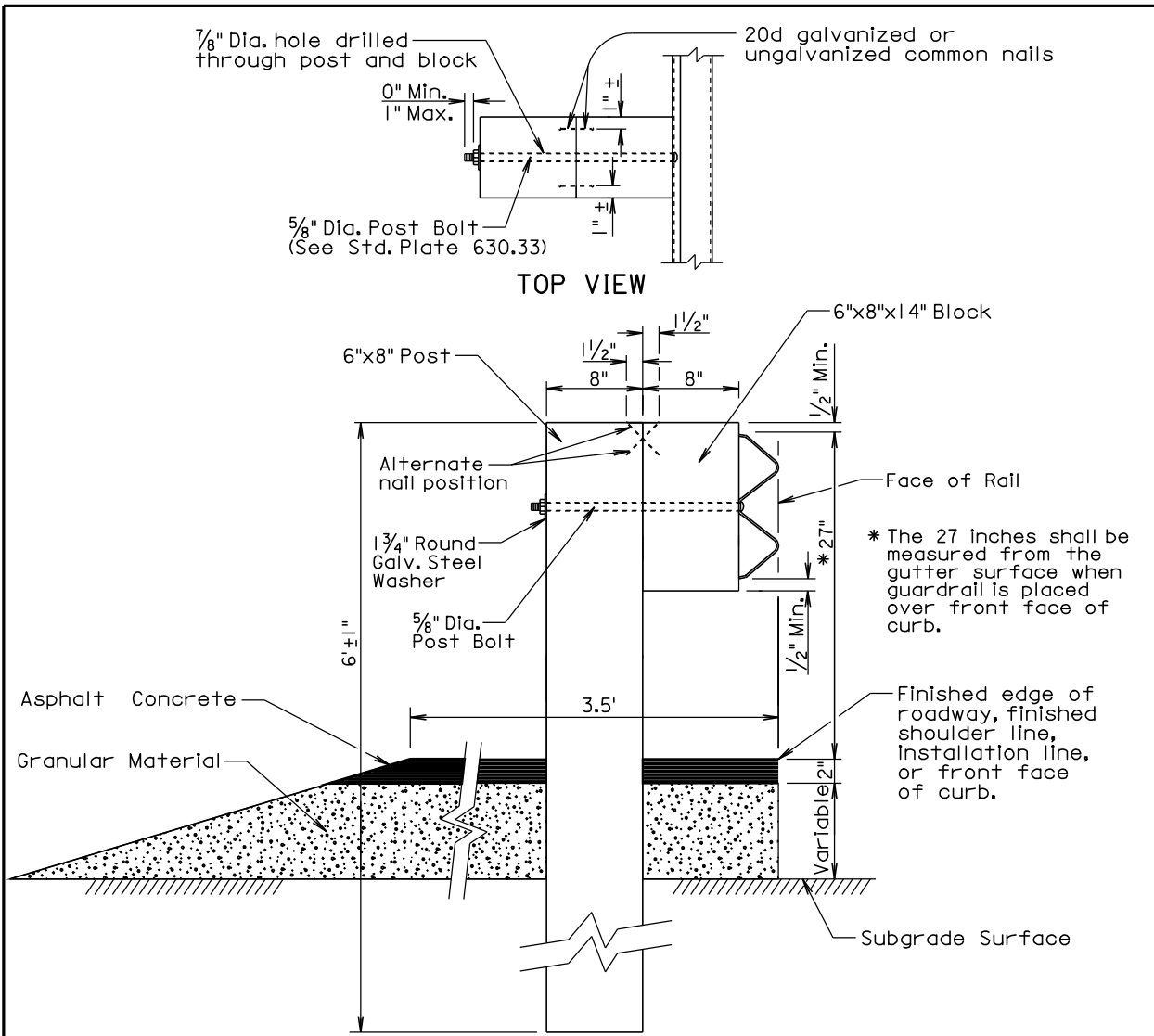
**POST SPACING ARRANGEMENT FOR
 THRIE BEAM GUARDRAIL AT BRIDGE END
 (BRIDGE GUARDRAIL DESIGN 2T)**

**PLATE NUMBER
 630.21**

Sheet 1 of 1

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
 HUTCHINSON, JERAULD, LYMAN, McCOOK, MINER & SANBORN COUNTIES**



TRANSVERSE SECTION

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.

September 20, 2000

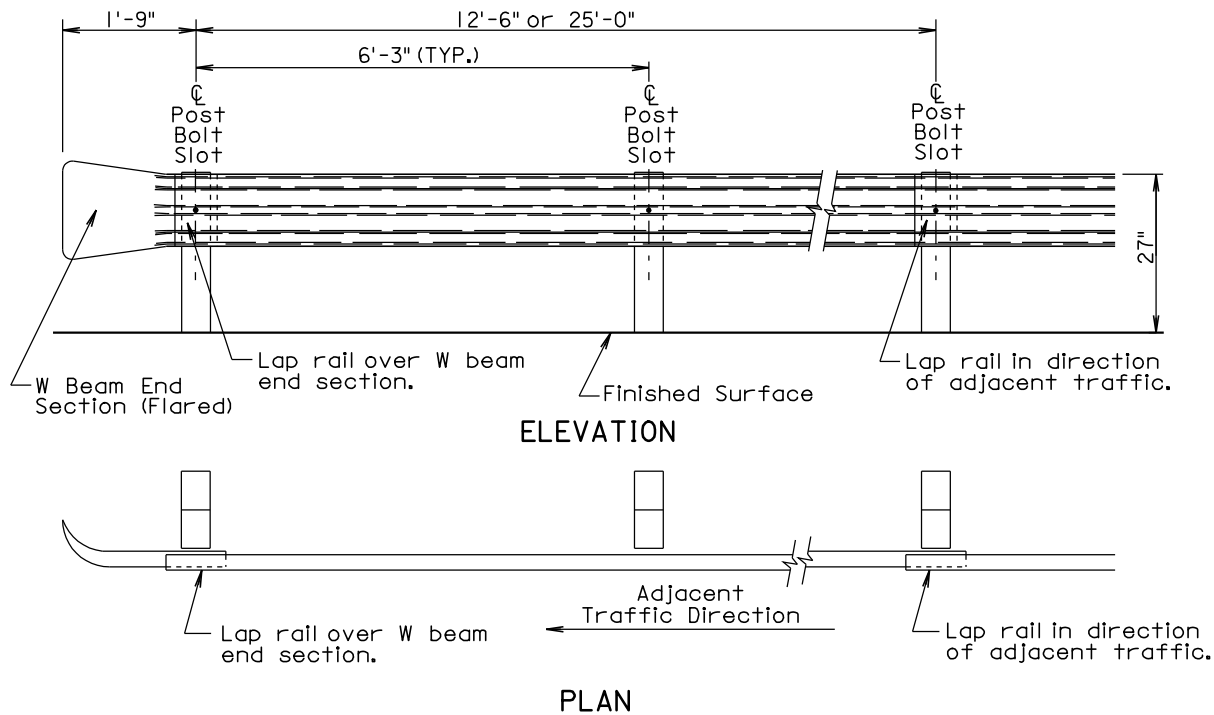
SD DOT	W BEAM GUARDRAIL POST INSTALLATION	PLATE NUMBER 630.31
		Sheet 1 of 1

Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

Username - TRM11NT15

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
 AURORA, BRULE, BUFFALO, CHARLES MIX, DAVISON, DOUGLAS, GREGORY, HANSON,
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W BEAM GUARDRAIL DEFLECTION CRITERIA	
POST SPACING	MAXIMUM DEFLECTION
6'-3"	3'-3"
3'-1 1/2"	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.

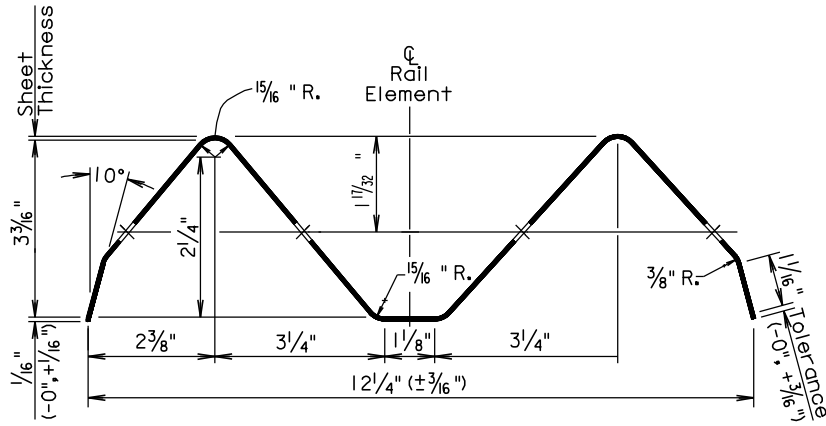
March 28, 2001

SDOT	W BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.32
		Sheet 1 of 1

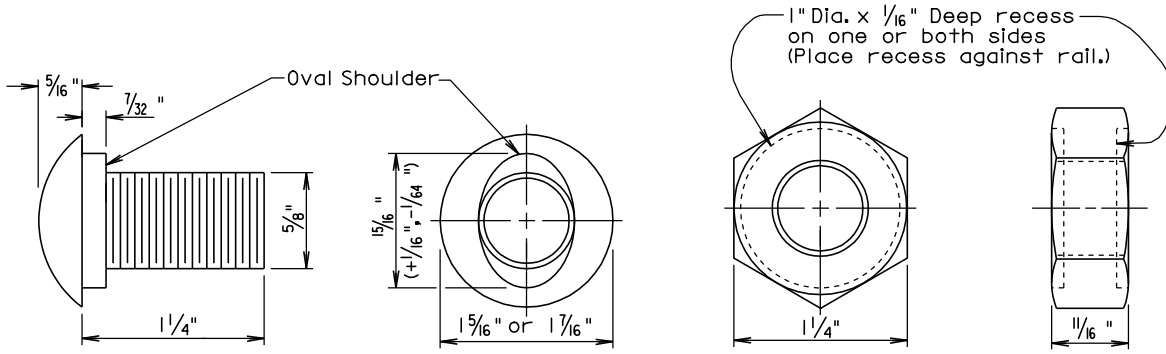
Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

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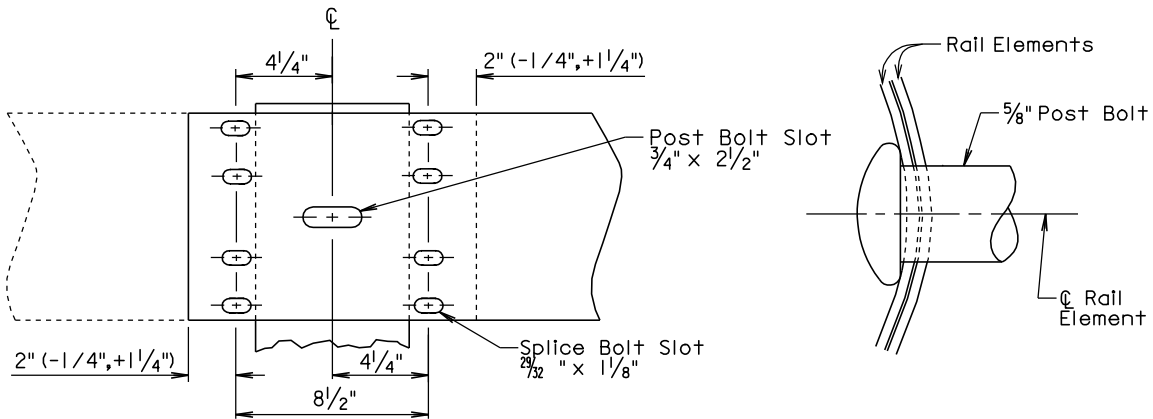


SECTION THROUGH W BEAM RAIL ELEMENT



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

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



Lap in direction of traffic.

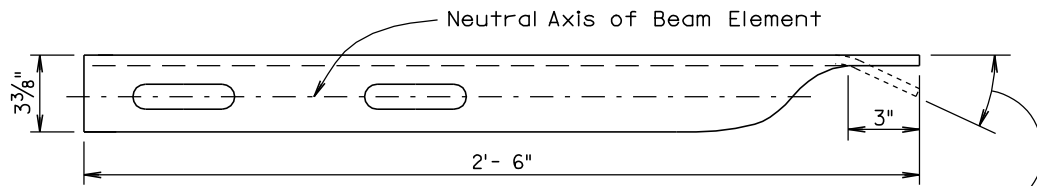
RAIL SPLICE

December 23, 2004

Published Date: 3rd Qtr. 2007	S D D O T	W BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER 630.33
			Sheet 1 of 1

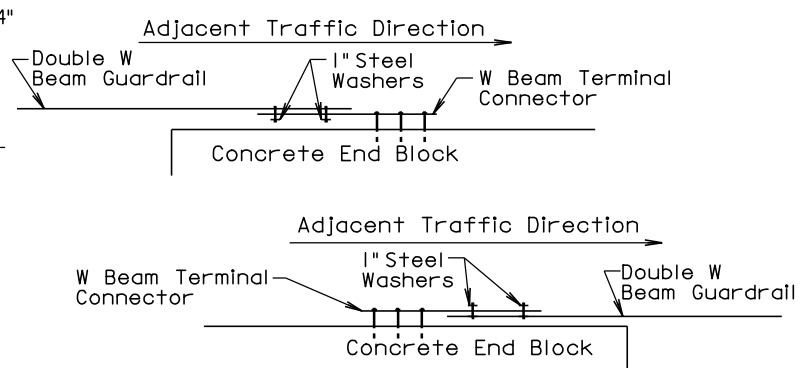
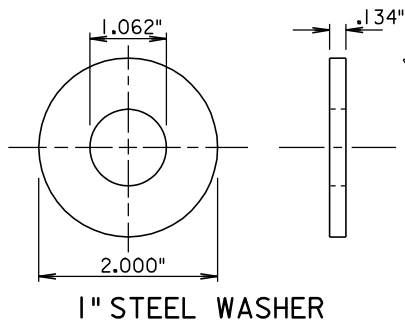
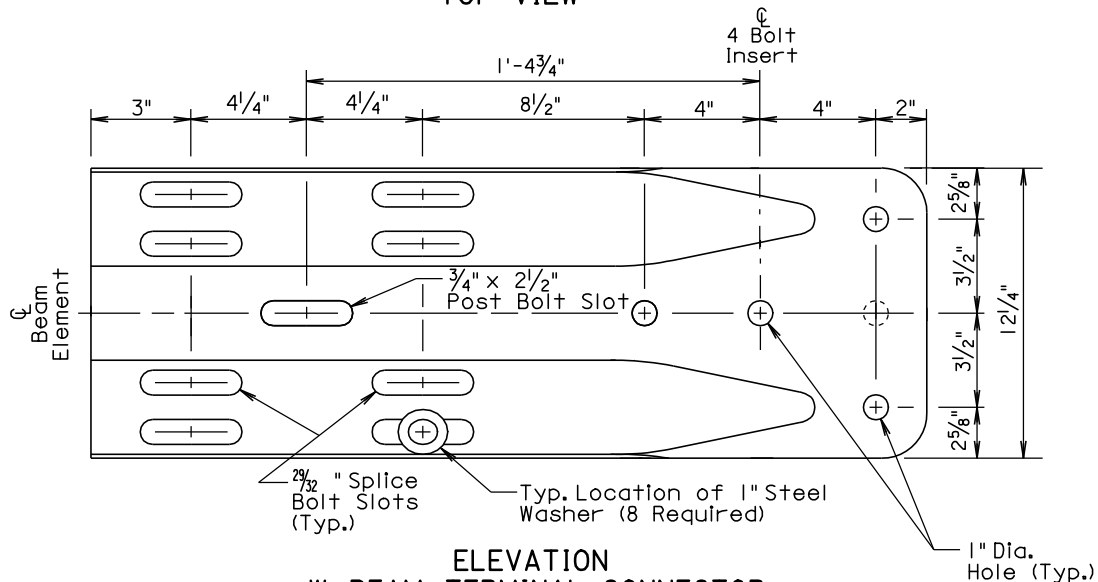
Plotting Date: 18-JUL-2007

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An extra hole and an approximate 26° bend shall be required only for the Breakaway Cable Terminal. The Modified W Beam Terminal Connector placement detail is shown on Standard Plate 630.47.

TOP VIEW



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.

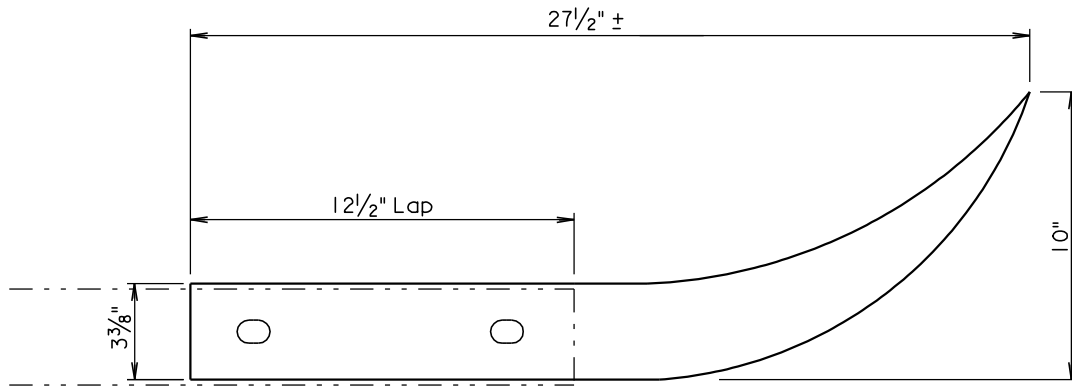
September 14, 2001

SDOT	W BEAM TERMINAL CONNECTOR AND 1" STEEL WASHER	PLATE NUMBER 630.35
		Sheet 1 of 1

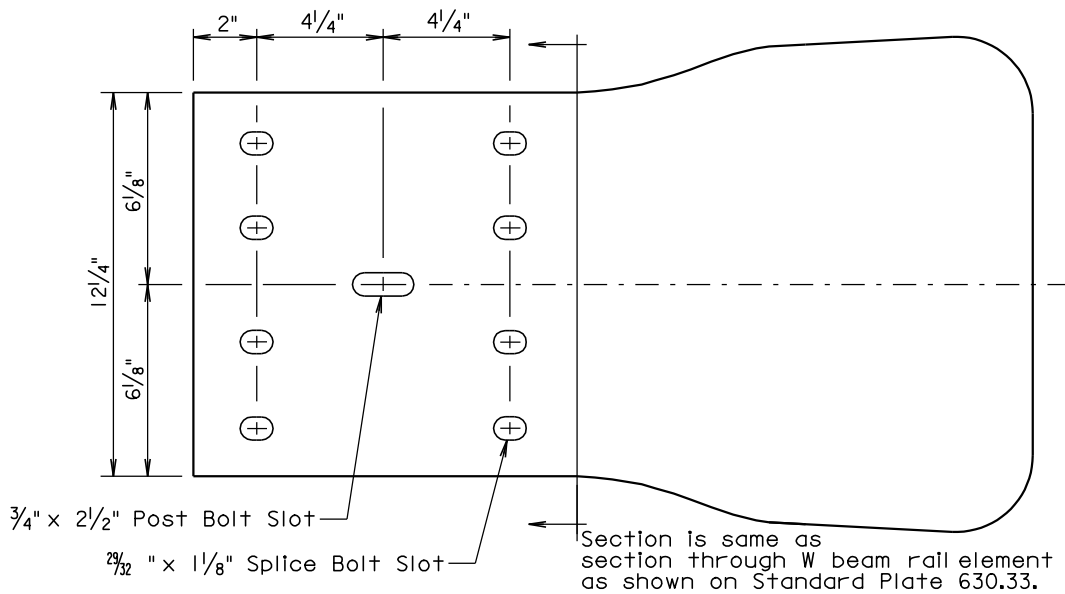
Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

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TOP VIEW



ELEVATION

GENERAL NOTES:

W Beam End Sections (Flared) shall be 12 gage.

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

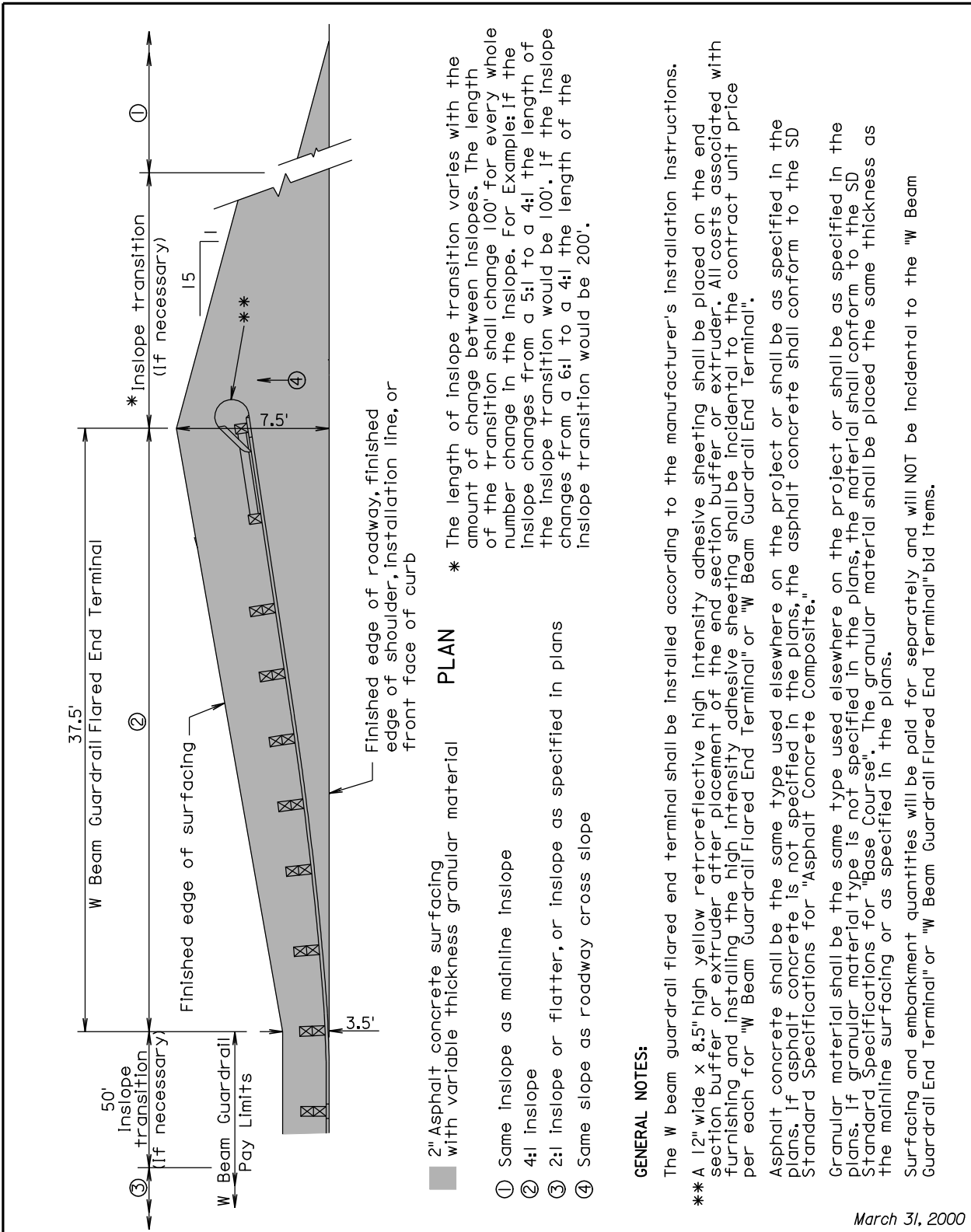
W Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for W Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

March 31, 2000

<i>Published Date: 3rd Qtr. 2007</i>	S D D O T	W BEAM END SECTION (FLARED)	PLATE NUMBER 630.40
			Sheet 1 of 1

Plotting Date: 18-JUL-2007

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PLAN

- ① Same inslope as mainline inslope
- ② 4:1 inslope
- ③ 2:1 inslope or flatter, or inslope as specified in plans
- ④ Same slope as roadway cross slope

GENERAL NOTES:

The W beam guardrail flared end terminal shall be installed according to the manufacturer's installation instructions.

** A 12" wide x 8.5" high yellow retroreflective high intensity adhesive sheeting shall be placed on the end section buffer or extruder after placement of the end section buffer or extruder. All costs associated with furnishing and installing the high intensity adhesive sheeting shall be incidental to the contract unit price per each for "W Beam Guardrail Flared End Terminal" or "W Beam Guardrail End Terminal".

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".

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.

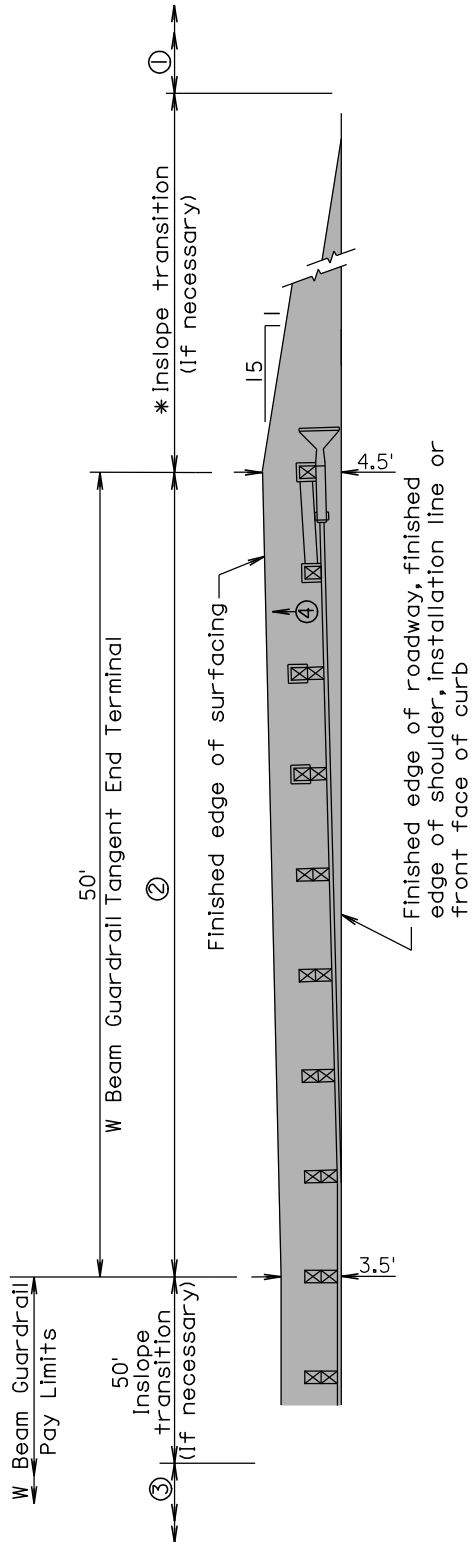
Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "W Beam Guardrail End Terminal" or "W Beam Guardrail Flared End Terminal" bid items.

March 31, 2000

<p>Published Date: 3rd Qtr. 2007</p>	<p>SD DD OT</p>	<p>EMBANKMENT AND SURFACING FOR W BEAM GUARDRAIL FLARED END TERMINAL</p>	<p>PLATE NUMBER 630.45</p>
			<p>Sheet 1 of 1</p>

Plotting Date: 18-JUL-2007

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PLAN

■ 2" Asphalt concrete surfacing with variable thickness granular material

- ① Same inslope as mainline inslope
- ② 4:1 inslope
- ③ 2:1 inslope or flatter, or inslope as specified in plans
- ④ Same slope as roadway cross slope

* The length of inslope transition varies with the amount of change between inslopes. The length of the transition shall change 100' for every whole number change in the inslope. For Example: If the inslope changes from a 5:1 to a 4:1 the length of the inslope transition would be 100'. If the inslope changes from a 6:1 to a 4:1 the length of the inslope transition would be 200'.

GENERAL NOTES:

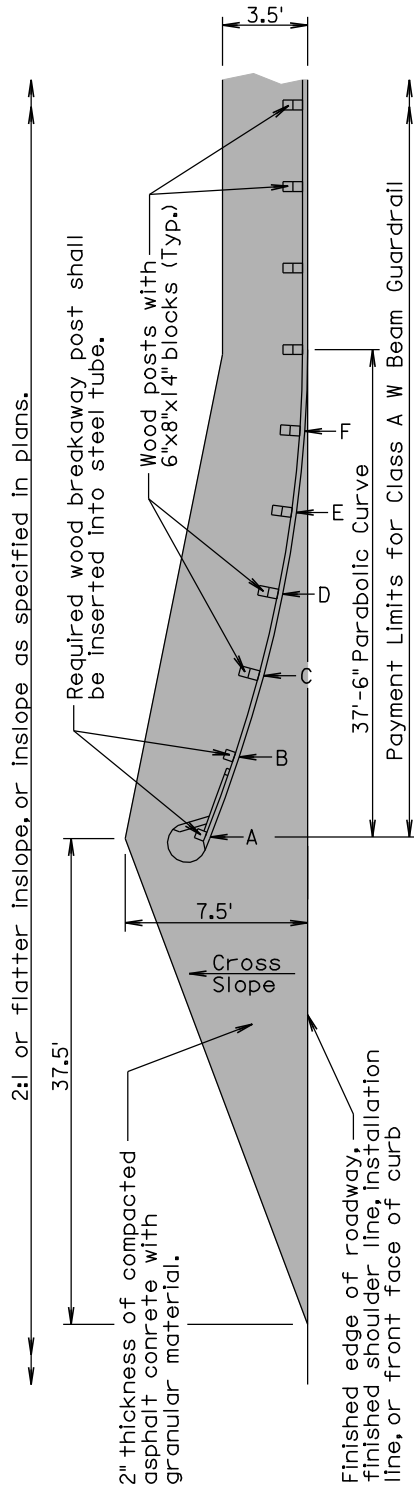
The W beam guardrail tangent end terminal shall be installed according to the manufacturer's installation instructions. Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the SD Standard Specifications for "Asphalt Concrete Composite."
 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 End Terminal" or "W Beam Guardrail Tangent End Terminal" bid items.

March 28, 2001

Published Date: 3rd Qtr. 2007	SD DD OT	EMBANKMENT AND SURFACING FOR W BEAM GUARDRAIL TANGENT END TERMINAL		PLATE NUMBER 630.46
				Sheet 1 of 1

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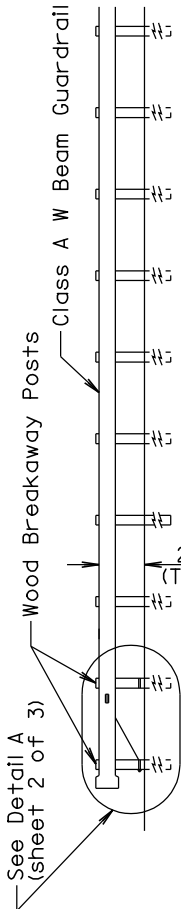


PLAN

POST	OFFSET
A	4.00'
B	2.79'
C	1.79'
D	1.01'
E	0.45'
F	0.11'

OFFSETS FOR BREAKAWAY CABLE TERMINAL

Offsets shall be measured from the installation line to the face of the W beam guardrail.



ELEVATION

GENERAL NOTES:

The finished embankment surfacing cross slope shall match the roadway cross slope; however, if a steeper cross slope is necessary the steepest allowable cross slope is 10:1. Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "W Beam Guardrail Breakaway Cable Terminal" or "Class A W Beam Guardrail with Wood Posts" bid items. Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the Standard Specifications for "Asphalt Concrete Composite." 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. Costs for constructing the W Beam Guardrail Breakaway Cable Terminal including labor, equipment, and materials including the anchor bracket, cable assembly, steel tubes, soil plates, soil plates, bearing plate, pipe sleeve, W beam end section(buffer), modified W beam terminal connector, and all necessary hardware shall be incidental to the contract unit price per each for "W Beam Guardrail Breakaway Cable Terminal".

December 23, 2006

Published Date: 3rd Qtr. 2007

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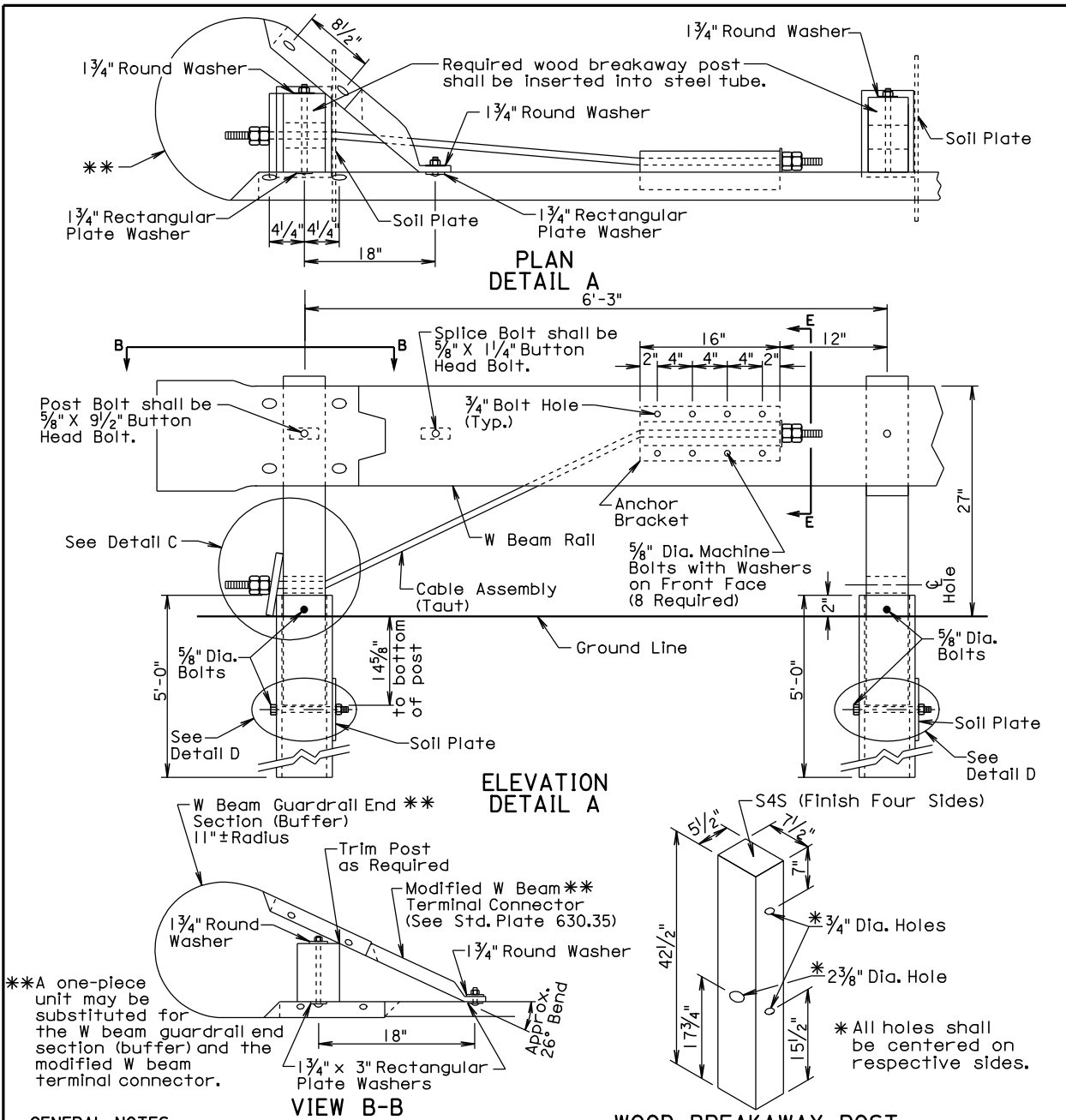
**W BEAM GUARDRAIL
BREAKAWAY CABLE TERMINAL**

**PLATE NUMBER
630.47**

Sheet 1 of 3

Plotting Date: 18-JUL-2007

**0001-252, 0001-253 & STATE HIGHWAY ROUTES - GUARDRAIL REPAIR
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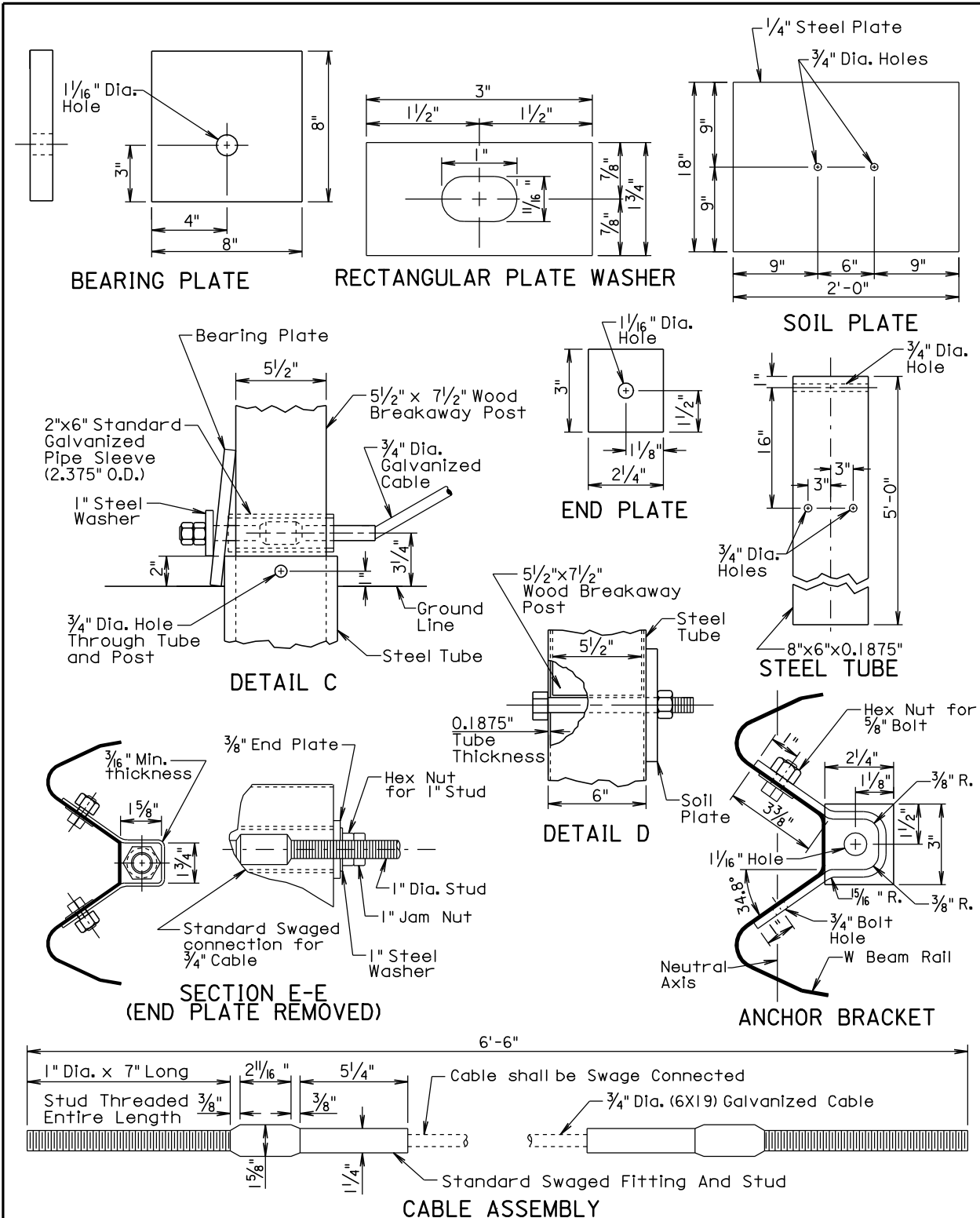
December 23, 2006

SDOT	W BEAM GUARDRAIL BREAKAWAY CABLE TERMINAL	PLATE NUMBER 630.47
		Sheet 2 of 3

Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

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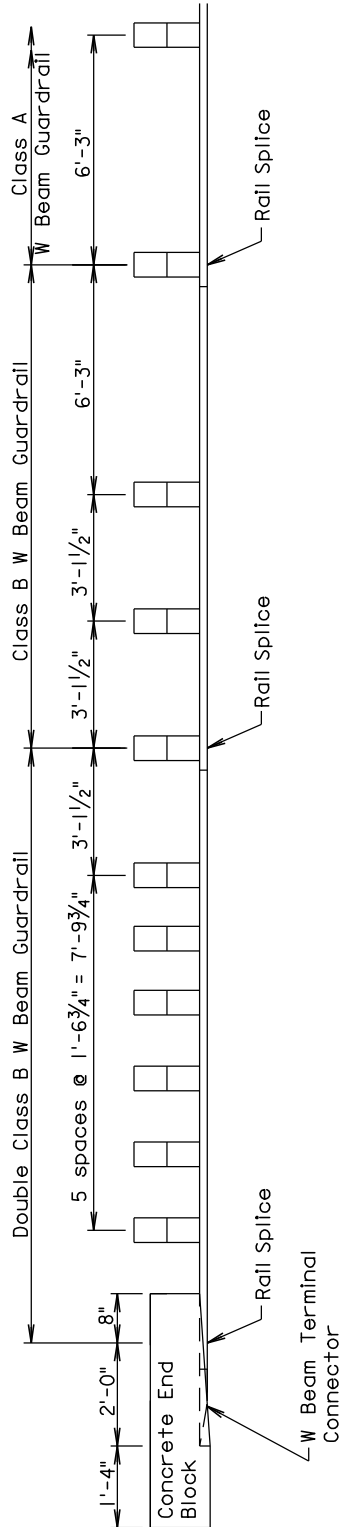
December 23, 2006

SSDOT	W BEAM GUARDRAIL BREAKAWAY CABLE TERMINAL	PLATE NUMBER 630.47
		Sheet 3 of 3

Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

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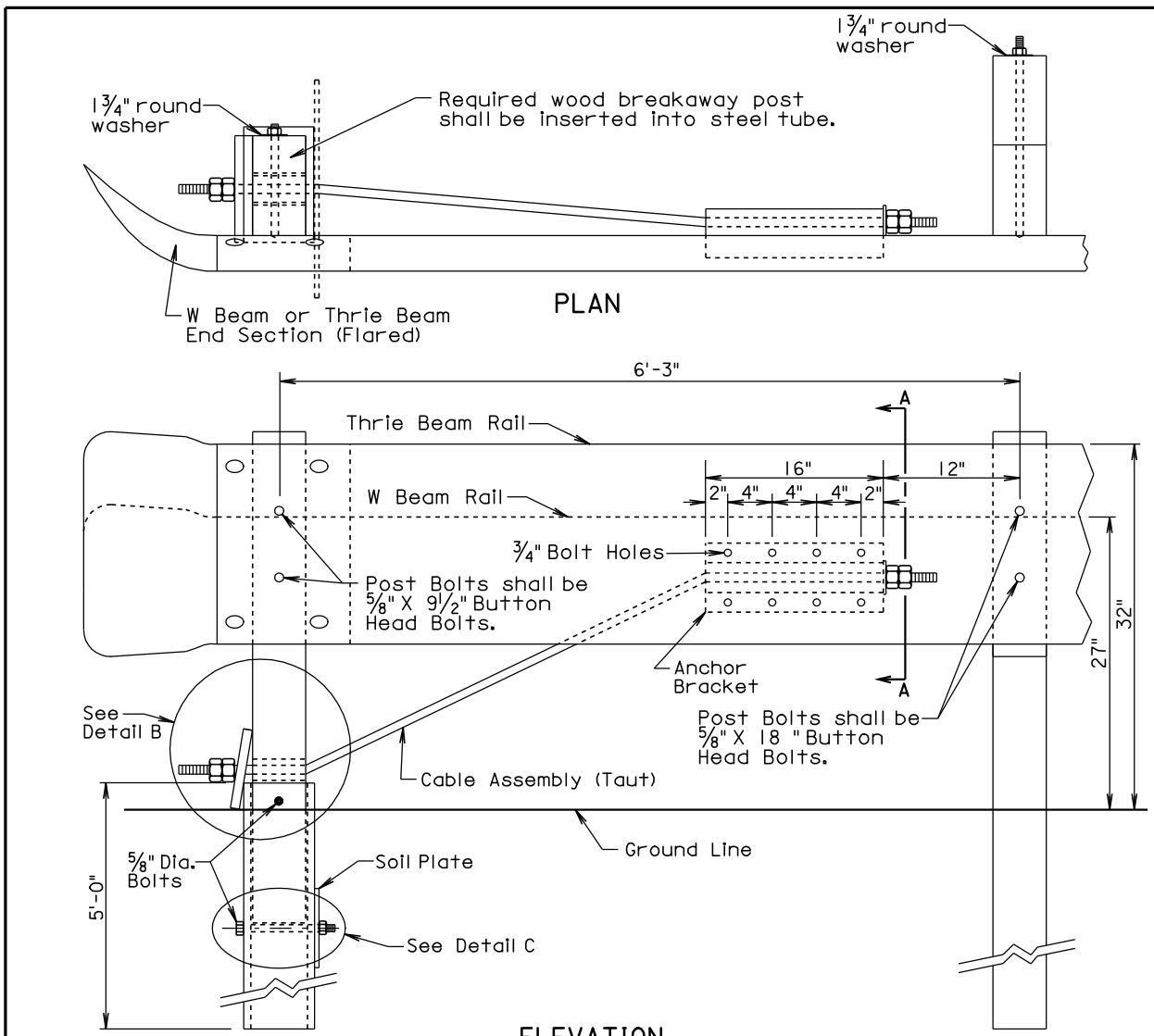
POST SPACING ARRANGEMENT FOR W BEAM GUARDRAIL AT BRIDGE END

March 31, 2000

Published Date: 3rd Qtr. 2007	SDDOT	POST SPACING ARRANGEMENT FOR W BEAM GUARDRAIL AT BRIDGE END	PLATE NUMBER 630.50
			Sheet 1 of 1

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GENERAL NOTES:

All hardware shall be galvanized in accordance with ASTM A153.

The cable shall be 3/4", Type II, with Class A coating in conformance with AASHTO M30.

The steel tube 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.

Costs for constructing the beam guardrail trailing end terminal and furnishing the anchor bracket, cable assembly, steel tube, soil plate, bearing plate, pipe sleeve, wood breakaway post, and all hardware necessary to attach anchor bracket, cable assembly, steel tube, soil plate, bearing plate, pipe sleeve, and wood breakaway post shall be incidental to the contract unit price per each for "Beam Guardrail Trailing End Terminal".

Costs for the thrie beam or W beam guardrail and the thrie beam or W beam end sections (Flared) shall be incidental to the contract unit price per foot for the respective "Thrie Beam Guardrail" or "W Beam Guardrail" bid items.

March 31, 2000

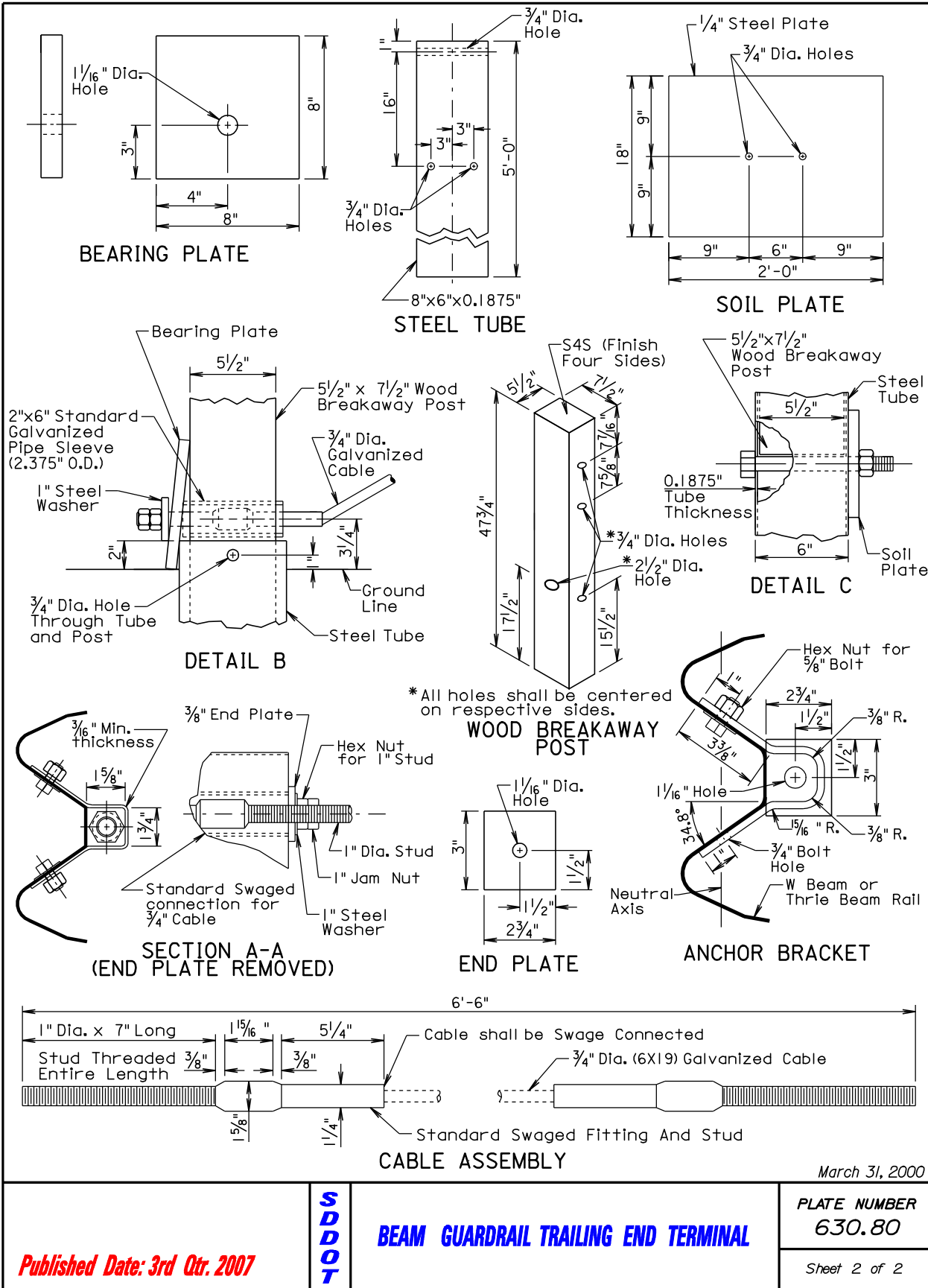
SDOT	BEAM GUARDRAIL TRAILING END TERMINAL	PLATE NUMBER 630.80
		Sheet 1 of 2

Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

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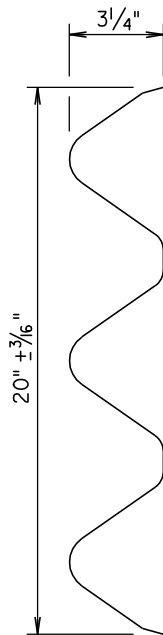
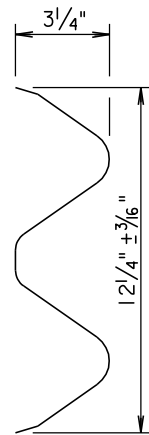
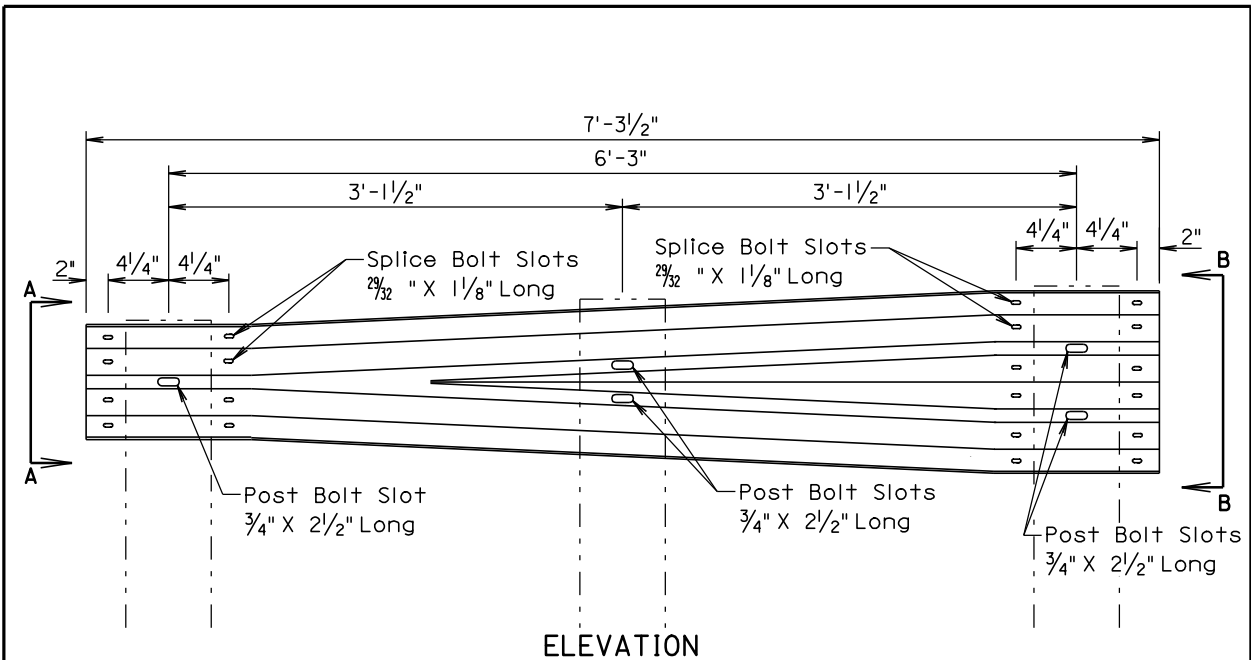
March 31, 2000

SSDOT	BEAM GUARDRAIL TRAILING END TERMINAL	PLATE NUMBER 630.80
		Sheet 2 of 2

Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

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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".

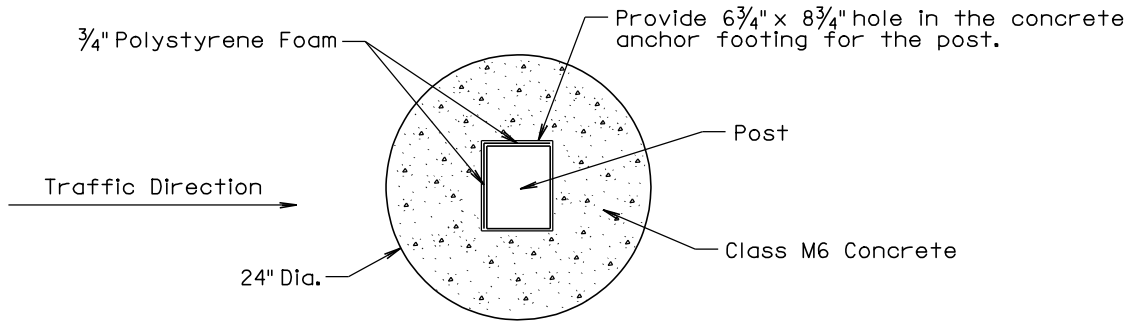
March 31, 2000

S D D O T	W BEAM TO THRIE BEAM GUARDRAIL TRANSITION SECTION	PLATE NUMBER 630.82
		Sheet 1 of 1

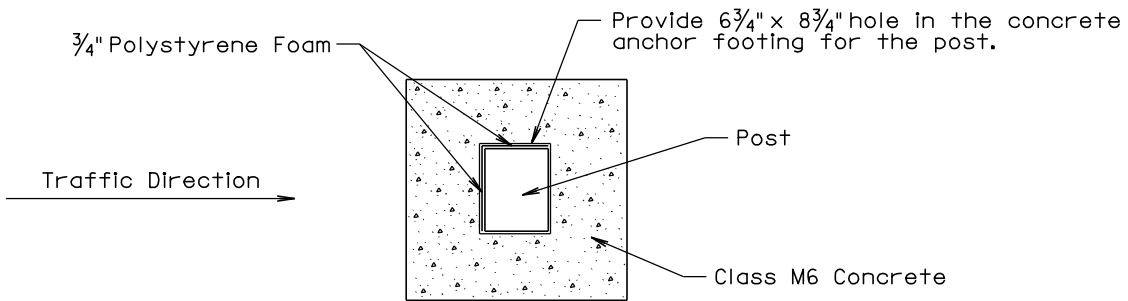
Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

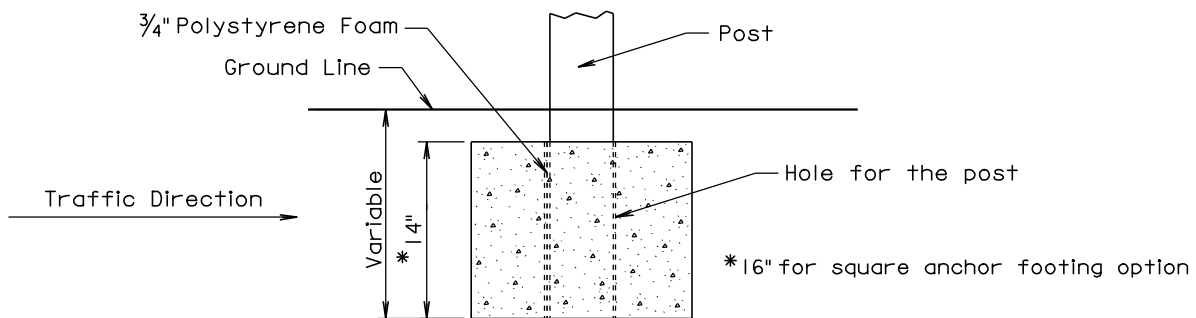
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**PLAN
(PREFERRED 24" DIA. ROUND
CONCRETE ANCHOR FOOTING)**



**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

SDOT	CONCRETE ANCHOR FOOTING FOR SHORT GUARDRAIL POST	PLATE NUMBER 630.84
		Sheet 1 of 1

Published Date: 3rd Qtr. 2007

Plotting Date: 18-JUL-2007

