

196

FOR INDEX OF SHEETS & STATE STANDARDS  
SEE SHEET NO. 2

03-08-2019 LETTING ITEM 186

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

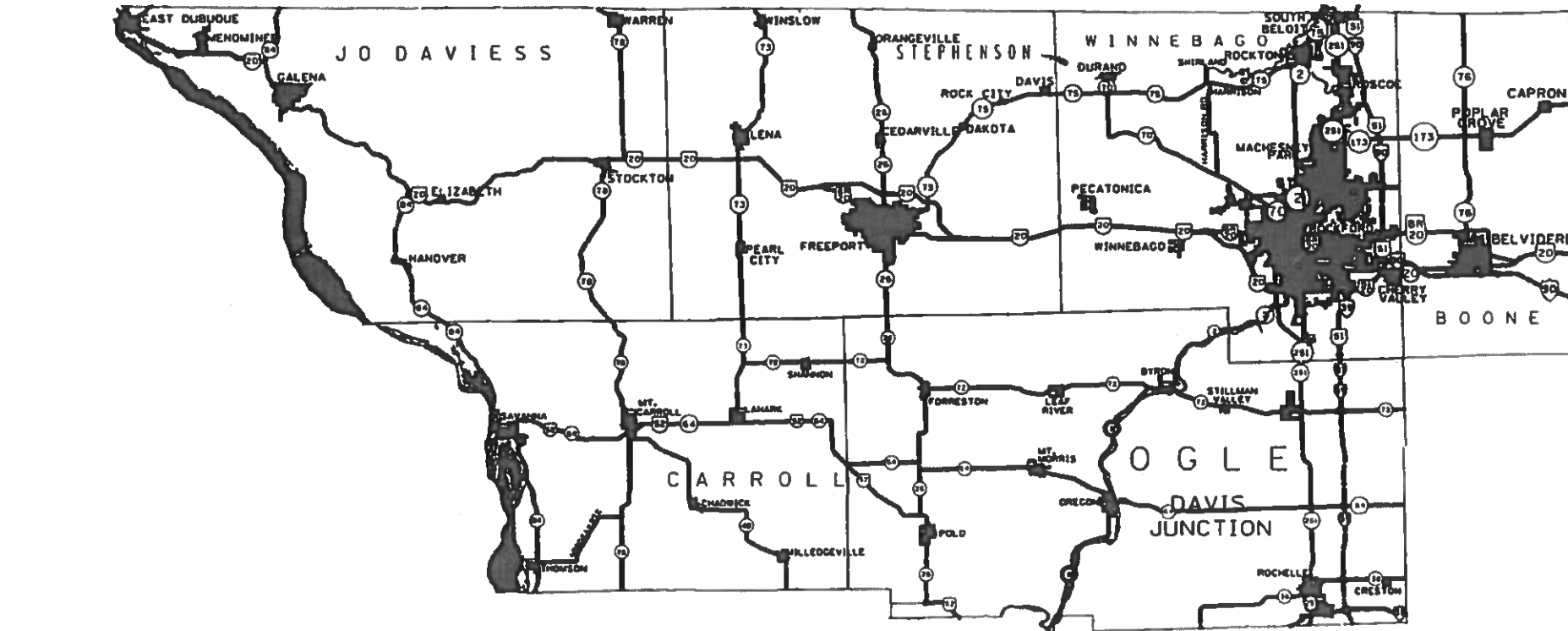
# PROPOSED HIGHWAY PLANS

VARIOUS ROUTES  
SECTION D2 GR (NORTH) 2019  
VARIOUS COUNTIES  
C-92-007-19

F.A. R.T.E. VAR	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
**	**	VARIOUS	21*	1
**D2 GR (NORTH) 2019			*21 + 5 = 26 TOTAL SHEETS	
<b>CONTRACT NO. 64N16</b>				
<b>D-92-062-18</b>				

PROJECT ENGINEER: SCOTT KULLERSTRAND

SQUAD LEADER: LANCE NICKLAUS 815-284-5407



J.U.L.I.E.  
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION  
1-800-892-0123

CONTRACT NO. 64N16

VARIOUS ROUTES      SECTION D2 GR (NORTH) 2019      VARIOUS COUNTIES



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

SUBMITTED 10-10-2018  
*[Signature]*  
REGION ENGINEER

Dec 7 2018  
*[Signature]*  
ENGINEER OF DESIGN AND ENVIRONMENT

Dec 7 2018  
*[Signature]*  
DIRECTOR OF HIGHWAYS, PROJECT IMPLEMENTATION

PRINTED BY THE AUTHORITY  
OF THE STATE OF ILLINOIS

REV. 11/20/18

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**STANDARDS**

630001-12	Steel Plate Beam Guardrail
630101-10	Guardrail Mounted on Existing Culverts
630301-09	Shoulder Widening for Type 1 (Special) Guardrail Terminals
631011-10	Traffic Barrier Terminal, Type 2
631026-06	Traffic Barrier Terminal, Type 5
631031-15	Traffic Barrier Terminal, Type 6
631032-09	Traffic Barrier Terminal, Type 6A
631033-07	Traffic Barrier Terminal, Type 6B
631046-04	Traffic Barrier Terminal, Type 10
635001-02	Delineators
664001-02	Chain Link Fence
665001-02	Woven Wire Fence
701001-02	Typical Application of Traffic Control Devices
701006-05	Typical Application of Traffic Control Devices
701101-05	Typical Application of Traffic Control Devices
701106-02	Typical Application of Traffic Control Devices
701201-05	Typical Application of Traffic Control Devices
701301-04	Typical Application of Traffic Control Devices
701400-09	Typical Application of Traffic Control Devices
701401-12	Typical Application of Traffic Control Devices
701406-12	Typical Application of Traffic Control Devices
701411-09	Typical Application of Traffic Control Devices
701421-08	Typical Application of Traffic Control Devices
701426-09	Typical Application of Traffic Control Devices
701428-01	Traffic Control, Setup and Removal, Freeway/Expressway
701501-06	Typical Application of Traffic Control Devices
701502-09	Typical Application of Traffic Control Devices
701601-09	Typical Application of Traffic Control Devices
701602-10	Typical Application of Traffic Control Devices
701606-10	Typical Application of Traffic Control Devices
701701-10	Typical Application of Traffic Control Devices
701901-08	Traffic Control Devices
720011-01	Metal Posts For Signs, Markers, & Delineators
725001-01	Object and Terminal Markers
728001-01	Telescoping Steel Sign Support
729001-01	Application of Type A and B Metal Posts
782006	Guardrail and Barrier Wall Reflector Mounting Details

**SUMMARY OF QUANTITIES**

VARIOUS ROUTES  
SECTION D2 GR (NORTH) 2019  
VARIOUS COUNTIES  
CONTRACT # 64N16  
SHEET 3 OF 26

100% State  
0021

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	MCHD FUND	CONTRACT MAINT
20400800	FURNISHED EXCAVATION	CU YD	150	100	50
63100045	TRAFFIC BARRIER TERMINAL, TYPE 2	EACH	3	2	1
63100085	TRAFFIC BARRIER TERMINAL, TYPE 6	EACH	3	2	1
63100105	TRAFFIC BARRIER TERMINAL, TYPE 10	EACH	3	2	1
63100167	TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT	EACH	30	20	10
63100169	TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) FLARED	EACH	9	6	3
63301210	REMOVE AND RE-ERECT STEEL PLATE BEAM GUARDRAIL, TYPE A	FOOT	75	50	25
63500105	DELINEATORS	EACH	9	6	3
66400105	CHAIN LINK FENCE, 4'	FOOT	75	50	25
66400305	CHAIN LINK FENCE, 6'	FOOT	75	50	25
66500105	WOVEN WIRE FENCE, 4'	FOOT	750	500	250
70200100	NIGHTTIME WORK ZONE LIGHTING	L SUM	1	0.67	0.33
78200005	GUARDRAIL REFLECTORS, TYPE A	EACH	12	8	4

**SUMMARY OF QUANTITIES**

VARIOUS ROUTES  
SECTION D2 GR (NORTH) 2019  
VARIOUS COUNTIES  
CONTRACT # 64N16  
SHEET 4 OF 26

100% State  
0021

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	MCHD FUND	CONTRACT MAINT
X6320310	LONG POST FOR STEEL PLATE BEAM GUARDRAIL	EACH	30	20	10
X6330725	STEEL PLATE BEAM GUARDRAIL (SHORT RADIUS)	FOOT	75	50	25
X6331101	TUBULAR THRIE BEAM	FOOT	75	50	25
X6331110	STEEL POSTS SPECIAL	EACH	30	20	10
X6432110	REPLACE IMPACT ATTENUATORS (NON-REDIRECTIVE), TEST LEVEL 3	EACH	20	15	5
X6640594	CHAIN LINK FENCE POST 4'	EACH	12	8	4
X6640601	CHAIN LINK FENCE POST 6'	EACH	12	8	4
X7010216	TRAFFIC CONTROL AND PROTECTION (SPECIAL)	L SUM	1	0.5	0.5
Z0008760	EMERGENCY WORK CALL OUT	EACH	10	5	5
Z0012752	CONCRETE STRUCTURE REPAIR	CU FT	24	16	8
Z0020210	PULL POST ARRANGEMENT	EACH	3	2	1
Z0029658	REPAIR TRAFFIC BARRIER TERMINAL TYPE 1 SPECIAL - POST	EACH	80	20	60
Z0052000	REPAIR STEEL PLATE BEAM GUARDRAIL, TYPE A	FOOT	1700	1000	700
Z0052100	REPAIR STEEL PLATE BEAM GUARDRAIL, TYPE B	FOOT	50	25	25



## GENERAL NOTES

When posts are required to be placed through bituminous shoulders, all costs to do so shall be considered included in the contract unit cost of the work being done. The final top 3 inches of the area around the post shall be capped with either bituminous material or grout.

Standard 631021 (Traffic Barrier Terminal, Type 4) is obsolete and can no longer be installed. Typically, a Type 4 Terminal was used in the median of multi-lane divided highway. They are, however, still in use and when damage to one occurs, it is to be removed and replaced with a Traffic Barrier Terminal, Type 1, Special, that is to be at least 12 feet off the edge of the pavement. To obtain the 12 foot distance, the existing SPBGR Type A will have to be removed and re-erected with a flair rate of 1:30 until the face of the guardrail is 12 feet out from the edge of the pavement. At this point, (where the SPBGR Type A is 12 feet off the edge of pavement), a new Traffic Barrier Terminal Type 1, Special (Tangent or Flared) is to be installed

The Contractor shall supply the Resident Engineer with the manufacturer's installation requirements for the Traffic Barrier Terminal Type 1, Special to be used on this contract, both tangent and flared.

Wood blockouts on wood posts shall be connected with one nail to prevent the blockout from moving.

All disturbed areas in the right of way, caused by the Contractors operations, shall be seeded with class 2A salt tolerant roadside mixture as stated in Section 250, Article 250.07 of the Standard Specifications for Road and Bridge Construction. All costs for seeding shall be considered included in the unit cost of the work being performed.

If the Contractor would like the work location listed with GPS coordinates on the work orders, we can do that with units provided by the Contractor. We would require five (5) units for this contract, one for each of our field engineers and field technicians. The Contractor would be responsible for all costs to keep the units in operational condition. Please note that if the same contractor wins both guardrail repair contracts for our District, the total number of GPS units required would be ten (10).

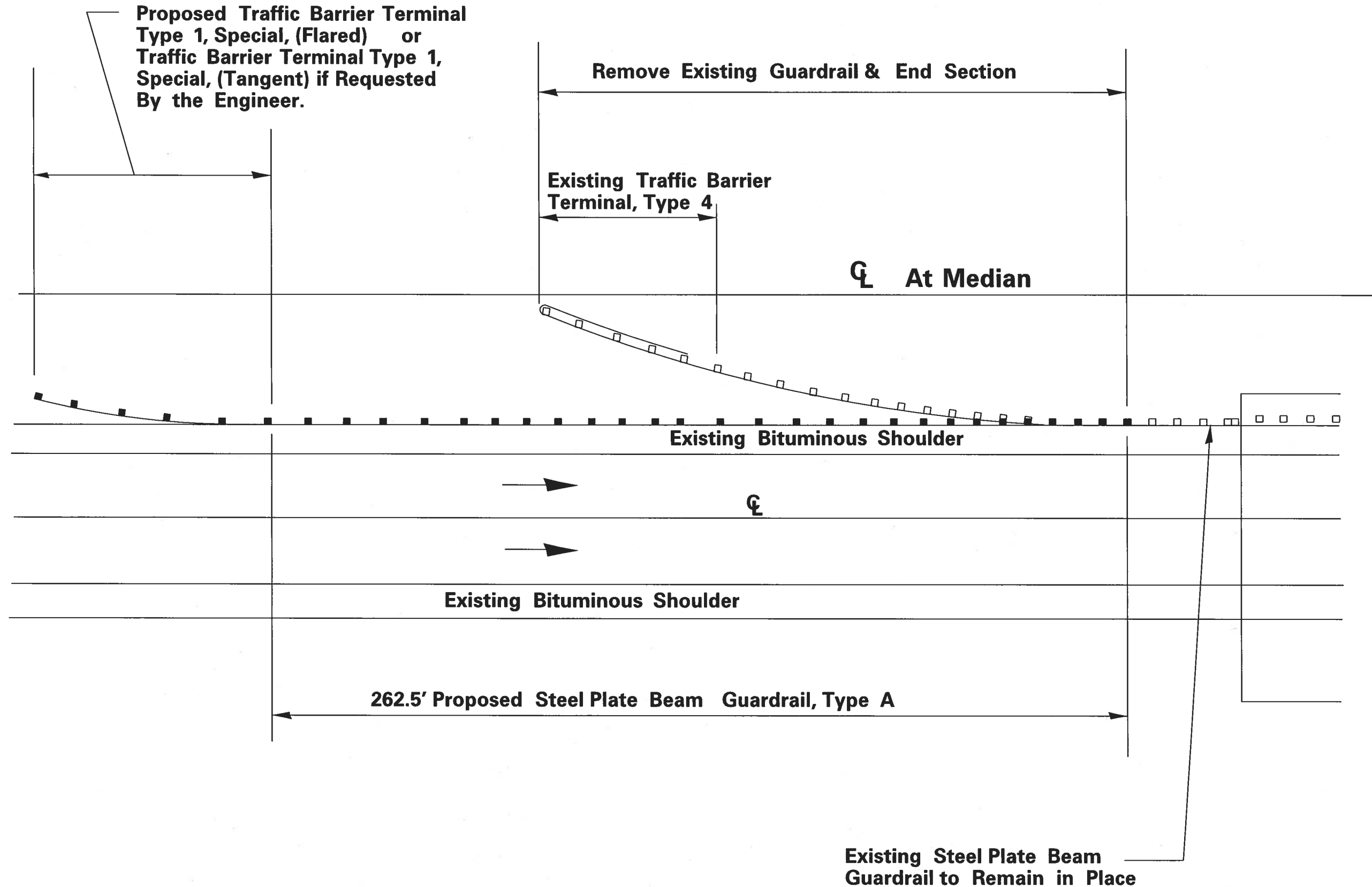
Delineators shall be installed as shown in Standard 635001, except that the post shall be rotated 180° and only metal-backed delineators shall be permitted. Delineators shall be placed at the ends of approach guardrail terminal sections. This work will be paid for at the contract unit price each for DELINEATORS.

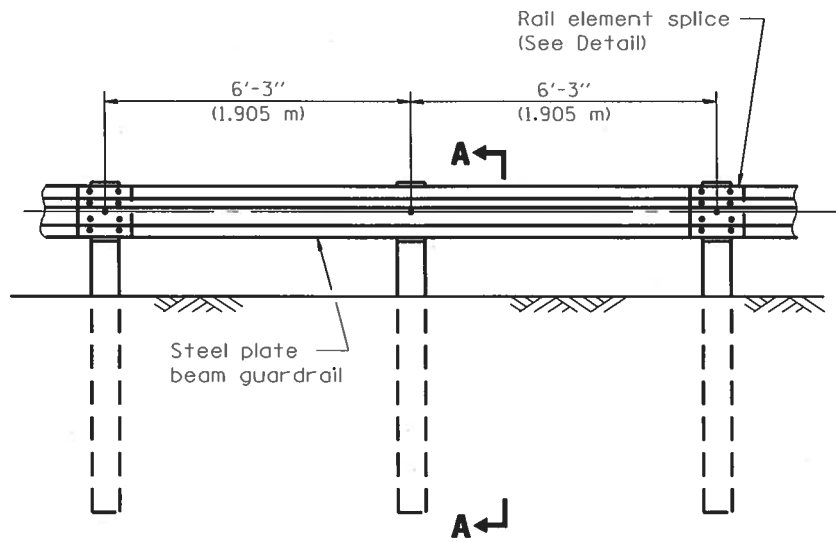
The Contractor shall be responsible for protecting utility property during construction operations as outlined in Article 107.31 of the Standard Specifications. A minimum of 48 hours advance notice is required for non-emergency work. The JULIE number is 800-892-0123.

IDOT is not a member of JULIE. If you are near any overhead lighting, intersection lighting or traffic signals, contact the IDOT Traffic Office at 815/284-5469 at least 48 hours prior to work.

# Additional Options for Repair to Damaged Obsolete Traffic Barrier Terminal Type 4

Various Routes  
D2 GR (North) 2019  
Various Counties  
Sheet 7 of 26  
Contract Number: 64N16

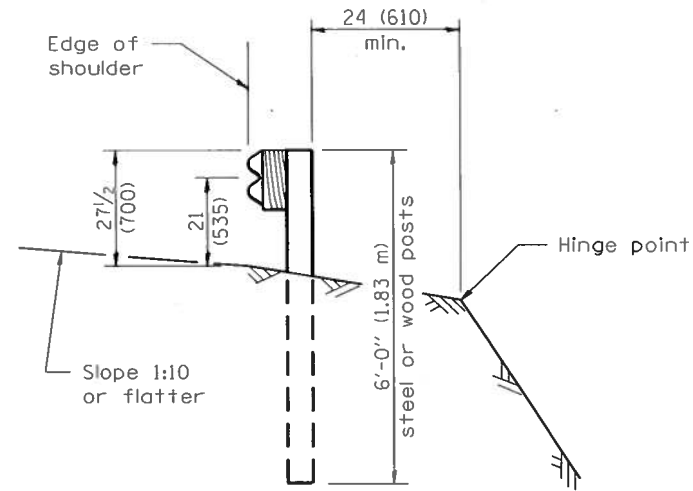




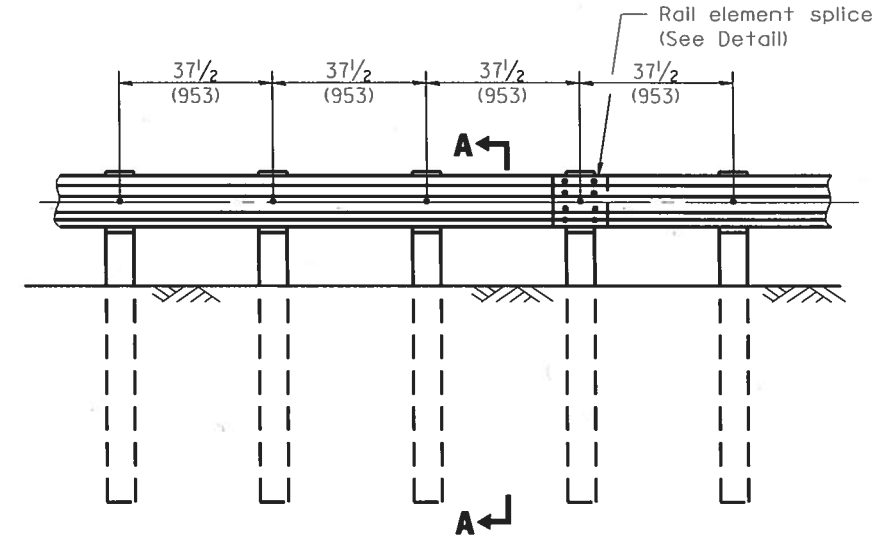
**ELEVATION**

**TYPE A**

6'-3" (1.905 m) Typical post spacing



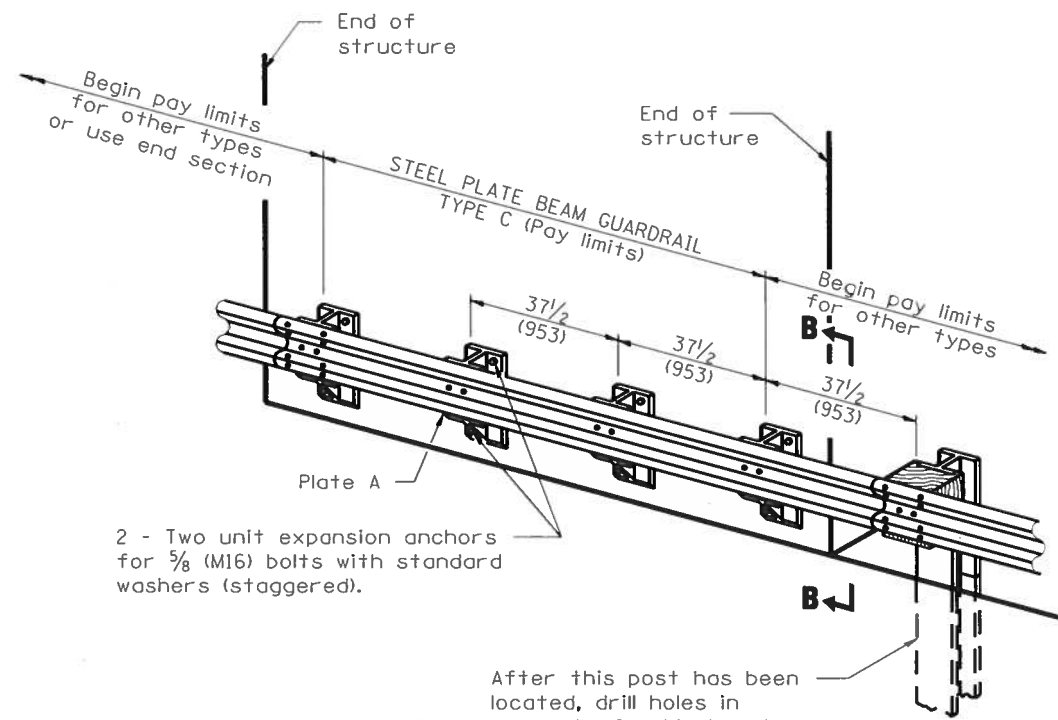
**SECTION A-A**



**ELEVATION**

**TYPE B**

37 1/2 (953) Closed post spacing

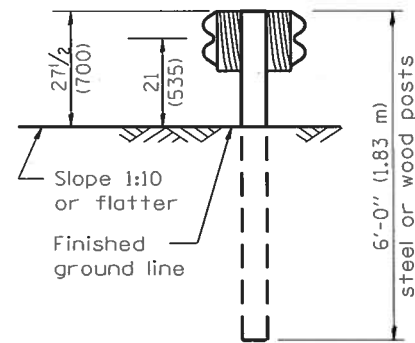


**TYPE C**

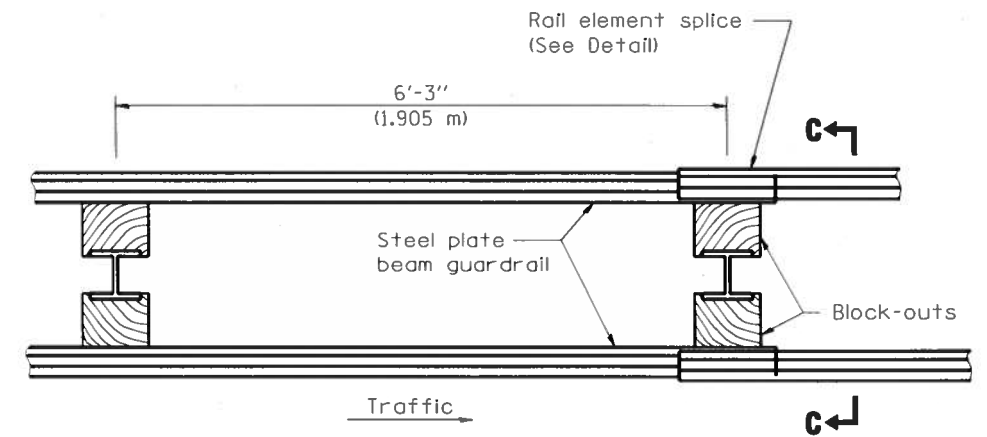
37 1/2 (953) Block-out spacing

2 - Two unit expansion anchors for 5/8 (M16) bolts with standard washers (staggered).

After this post has been located, drill holes in concrete for block-out attachments.



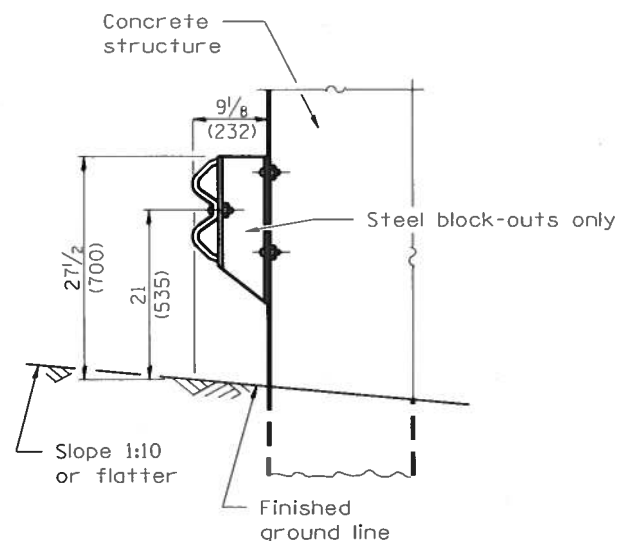
**SECTION C-C**



**PLAN**

**TYPE D**

Double steel plate beam guardrail  
6'-3" (1.905 m) typical post spacing



**SECTION B-B**

**GENERAL NOTES**

All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

All dimensions are in inches (millimeters) unless otherwise shown.

Various Routes  
D2 GR (North) 2019  
Various Counties  
Sheet 8 of 26  
Contract #64N16

**STEEL PLATE BEAM GUARDRAIL**  
**27 1/2" (700mm) HEIGHT**

(Sheet 1 of 4)

**STANDARD B.L.R. 26-2**

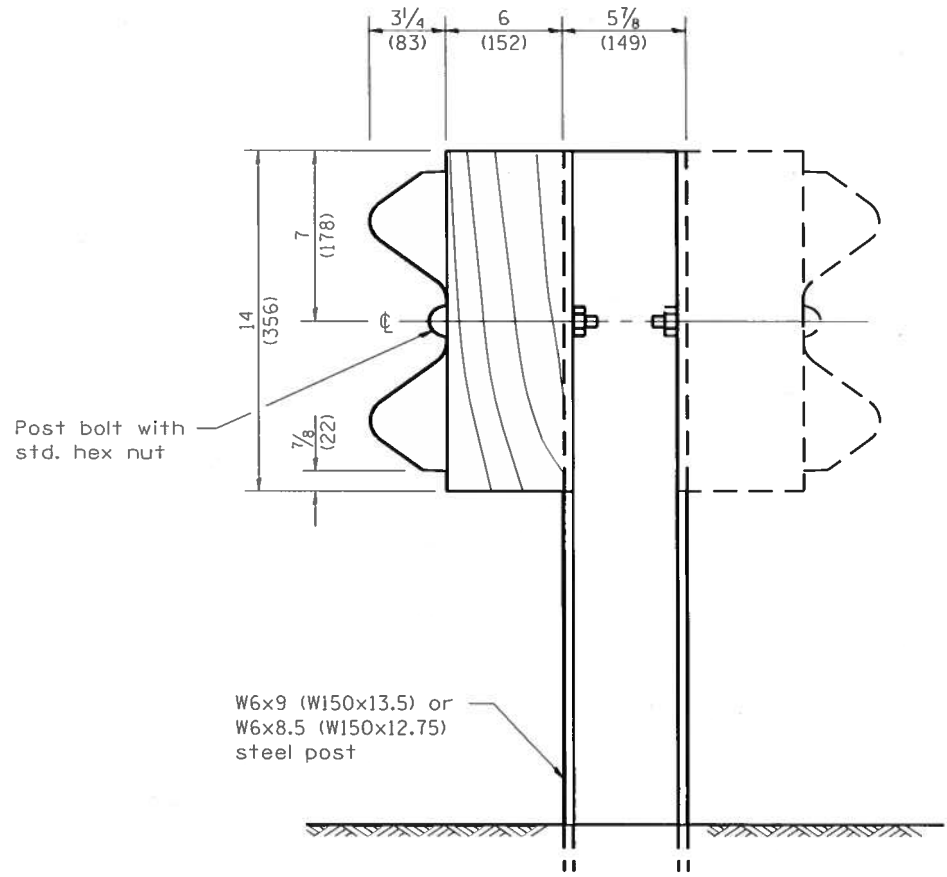
Illinois Department of Transportation

APPROVED January 1, 2010  
*Donnell Zivis*  
ENGINEER OF LOCAL ROADS AND STREETS

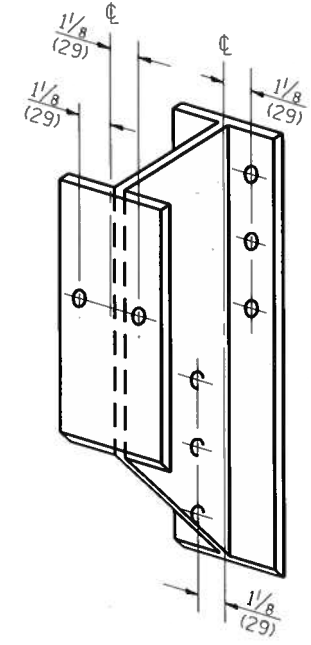
APPROVED January 1, 2010  
*Charles L. Dingsell*  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-08

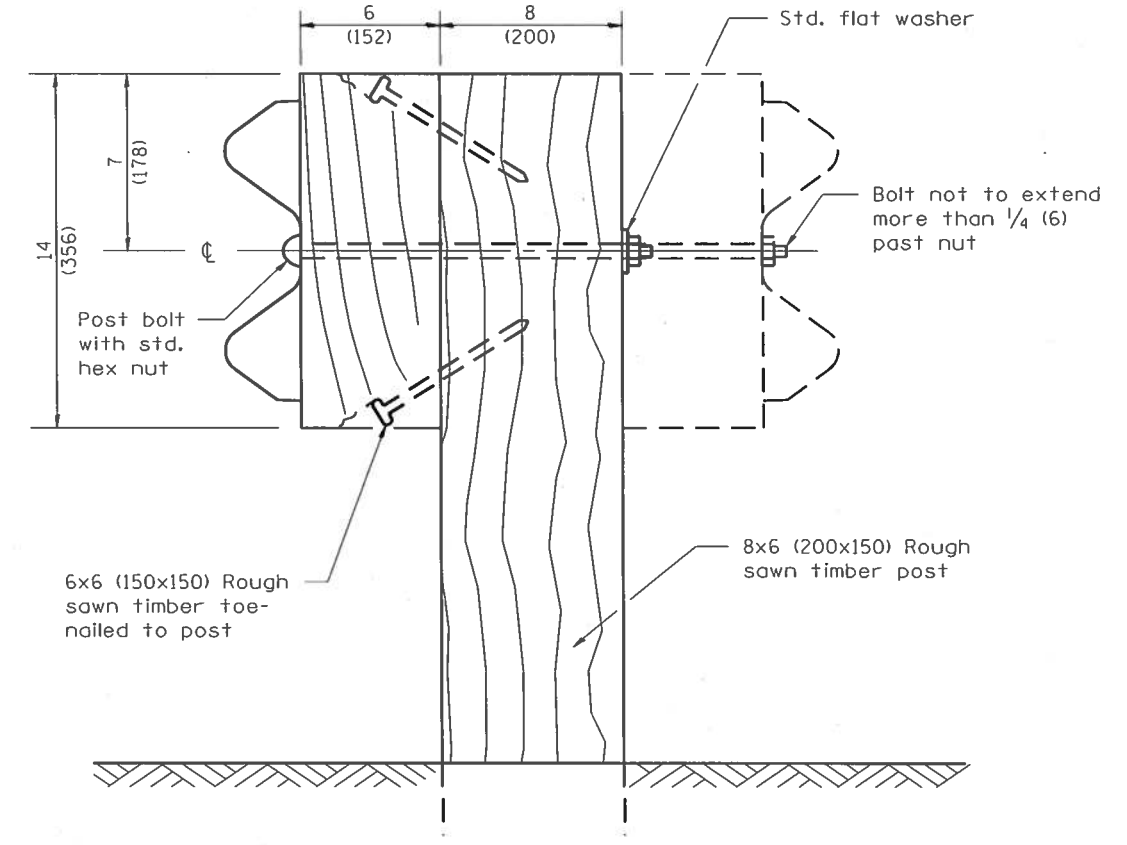




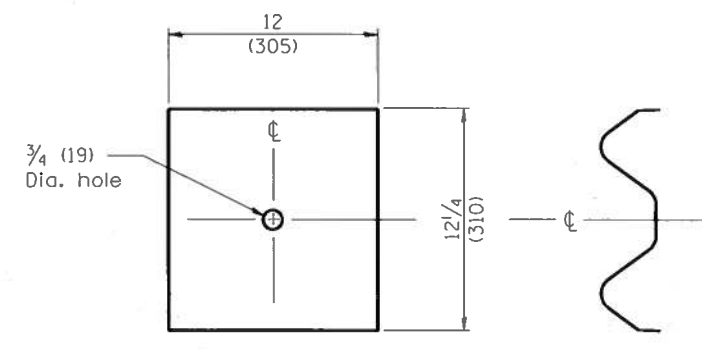
**STEEL POST CONSTRUCTION**



**STEEL BLOCK-OUT DETAIL**

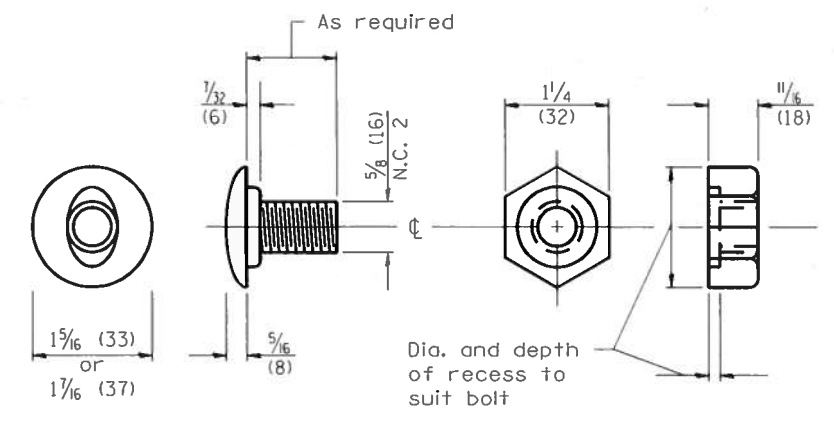


**WOOD POST CONSTRUCTION**



NOTE  
Plate A shall be placed between rail element and block-out at non-splice mounting points only when steel block-outs are used.

**PLATE A**



**POST OR SPLICE BOLT & NUT**

Illinois Department of Transportation

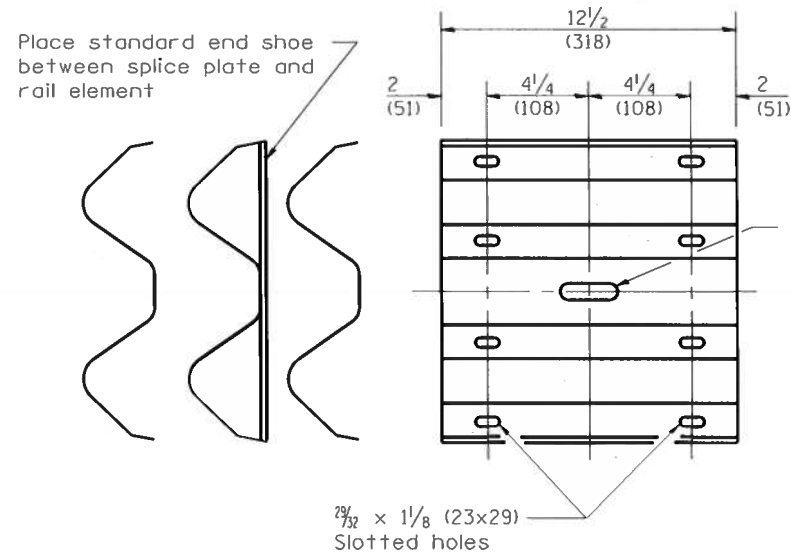
APPROVED January 1, 2010  
*Daniel Zeiss*  
ENGINEER OF LOCAL ROADS AND STREETS

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*Charles L. D'Amore*  
ENGINEER OF DESIGN AND ENVIRONMENT

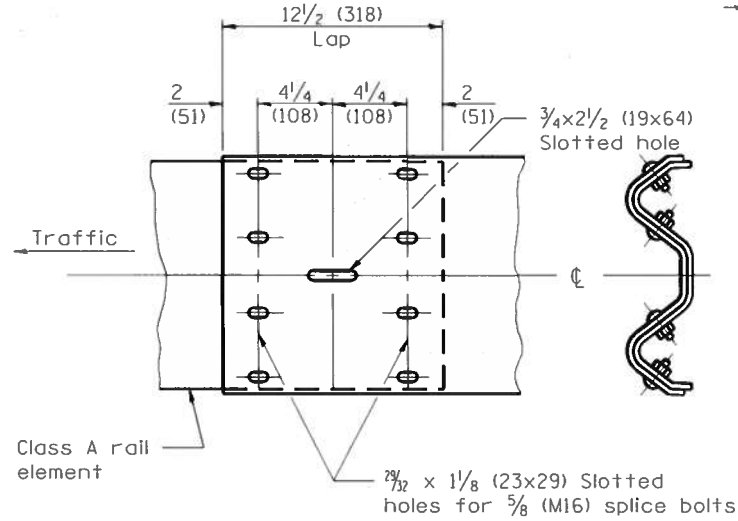
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Various Routes  
D2 GR (North) 2019  
Various Counties  
Sheet 9 of 26  
Contract #64N16

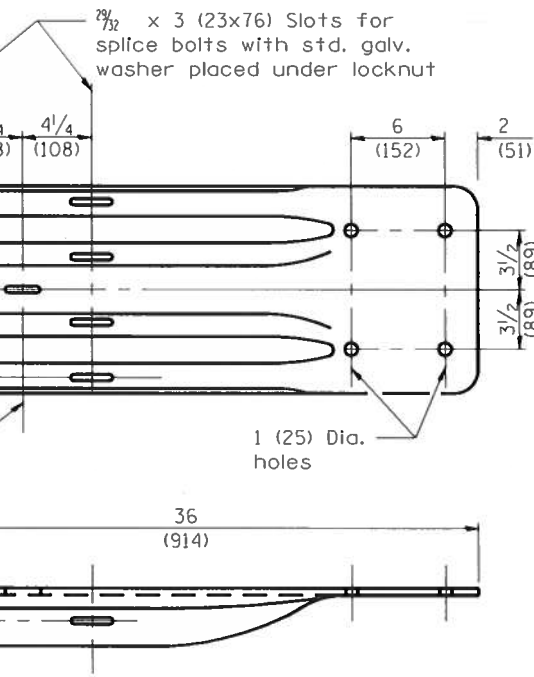
**STEEL PLATE BEAM GUARDRAIL**  
**27 1/2" (700mm) HEIGHT**  
(Sheet 2 of 4)  
**STANDARD B.L.R. 26-2**



**SPLICE PLATE**



**RAIL ELEMENT SPLICE**

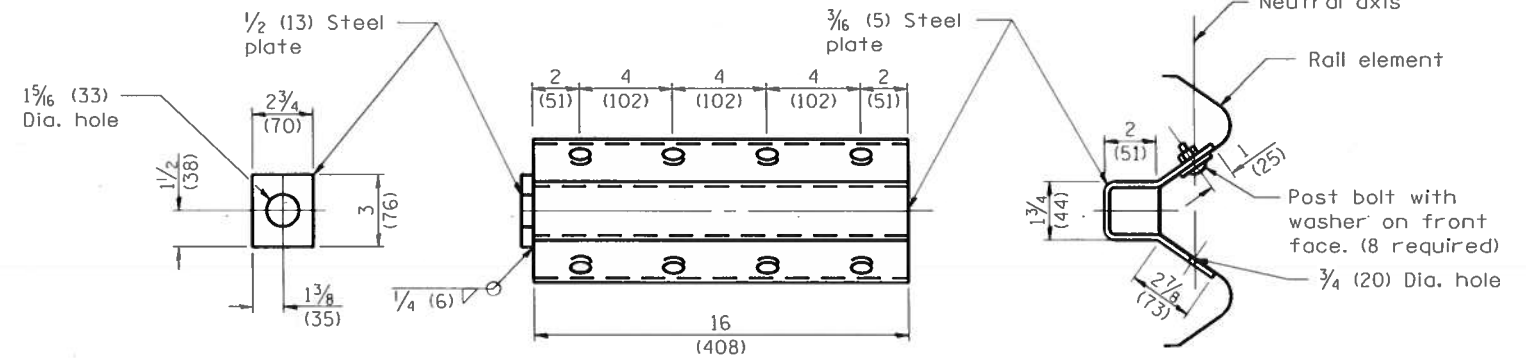


NOTE  
When end shoe is attached to a bridge parapet which has an expansion joint, the bolts shall be provided with a locknut or double nut and shall be tightened only to a point that will allow guardrail movement.

The standard end shoe shall be attached to the concrete with pre-drilled or self-drilling anchor bolts. The anchor cone shall be set flush with the surface of the concrete.

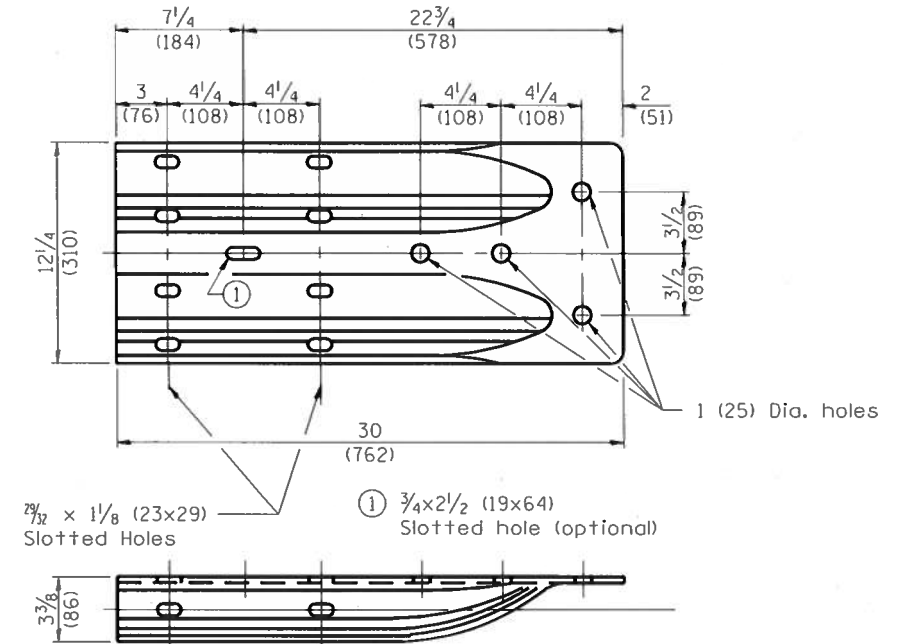
Externally threaded studs protruding from the surface of the concrete will not be permitted.

**END SHOE**

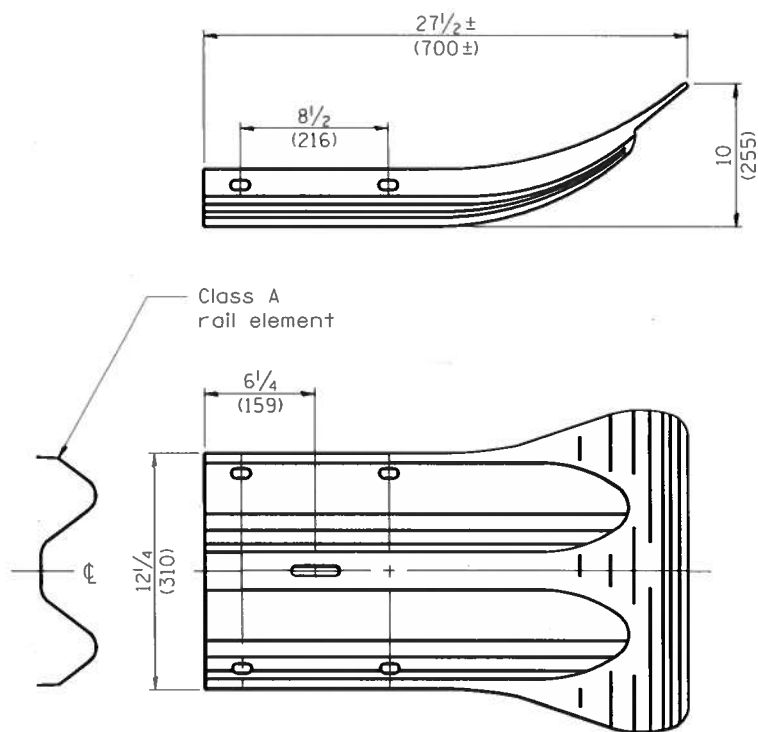


NOTE  
Anchor plate T shall be used to attach cable assembly to guardrail when required on traffic barrier terminals.

**ANCHOR PLATE T DETAILS**



**ALTERNATE END SHOE**



**END SECTION**

Illinois Department of Transportation

APPROVED January 1, 2010  
*Donnell Zeiss*  
ENGINEER OF LOCAL ROADS AND STREETS

APPROVED January 1, 2010  
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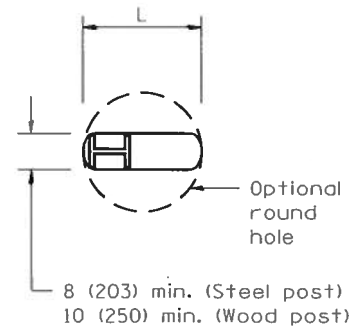
ISSUED 1-1-08

Various Routes  
D2 GR (North) 2019  
Various Counties  
Sheet 10 of 26  
Contract #64N16

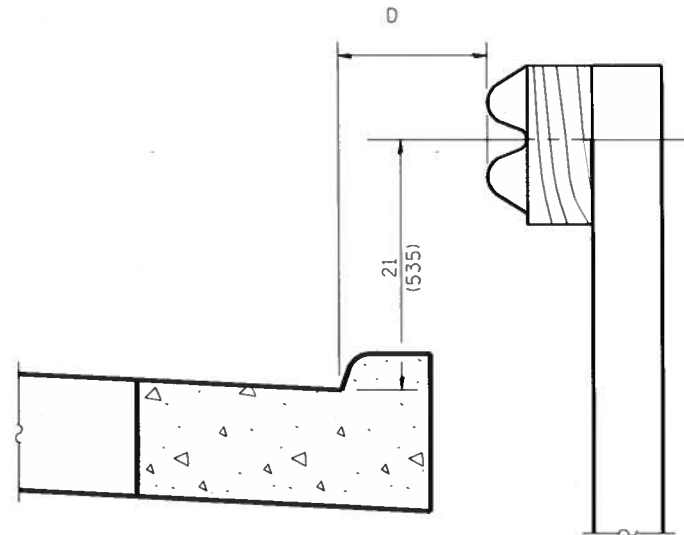
**STEEL PLATE BEAM GUARDRAIL**  
**27 1/2" (700mm) HEIGHT**

(Sheet 3 of 4)

**STANDARD B.L.R. 26-2**

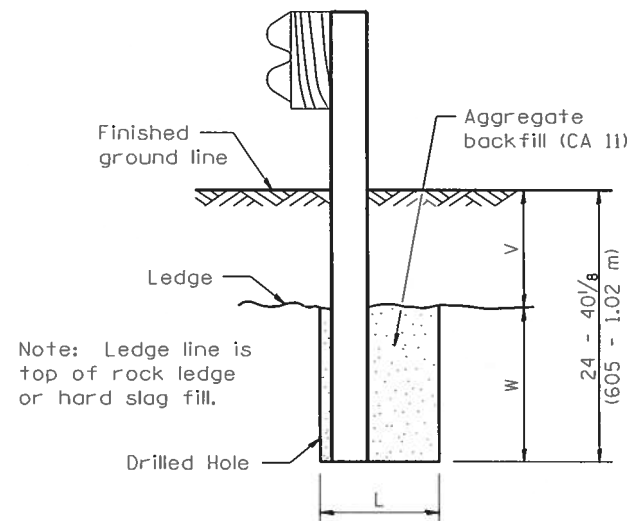


**PLAN**



Note:  
If it is necessary for D to be more than 12 (300) and less than 10'-0" (3.0 m) Type M-2 (M-5) curb and gutter (Std. 606001) shall be used in front of and in advance of the guardrail.

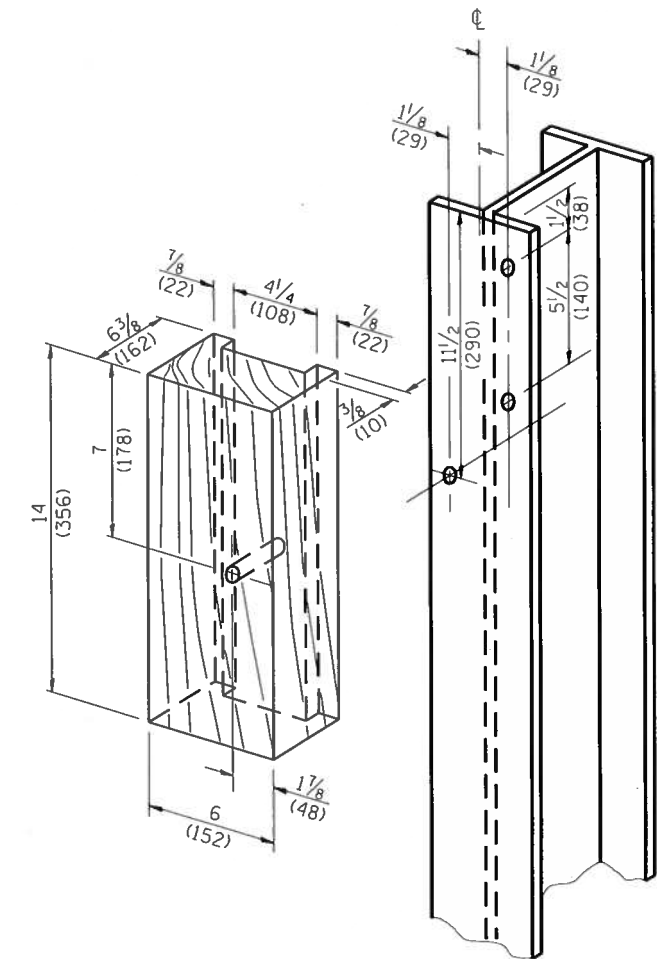
**GUARDRAIL PLACED BEHIND CURB**  
(D = 0 desirable to 12 (300) maximum)



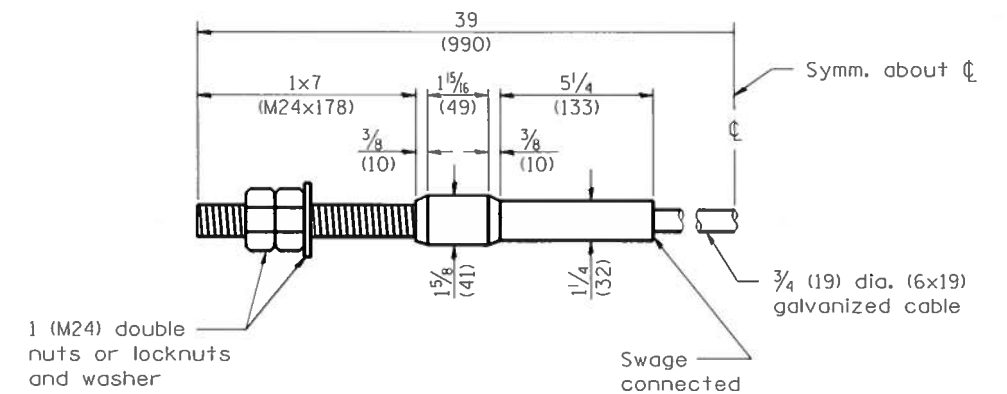
**ELEVATION**

**FOOTING FOR POST WHEN IMPERVIOUS MATERIAL IS ENCOUNTERED**

V	W	L	
		Steel Post	Wood Post
0 - 16/8 (0 - 410)	24 (610)	21 (530)	23 (580)
>16/8 - 28/8 (>410 - 714)	12 (305)	8 (203)	10 (250)
>28/8 - 40/8 (>714 - 1.02 m)	12 - 0 (305 - 0)	8 (203)	10 (250)



**WOOD BLOCK-OUT AND STEEL POST DETAILS**



**CABLE ASSEMBLY**

(40,000 lbs. (18,100 kg) min. breaking strength)  
Tighten to taut tension.

Illinois Department of Transportation

APPROVED January 1, 2010

*Donnell Zeiss*  
ENGINEER OF LOCAL ROADS AND STREETS

APPROVED January 1, 2010

*Charles L. Dingsell*  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-08

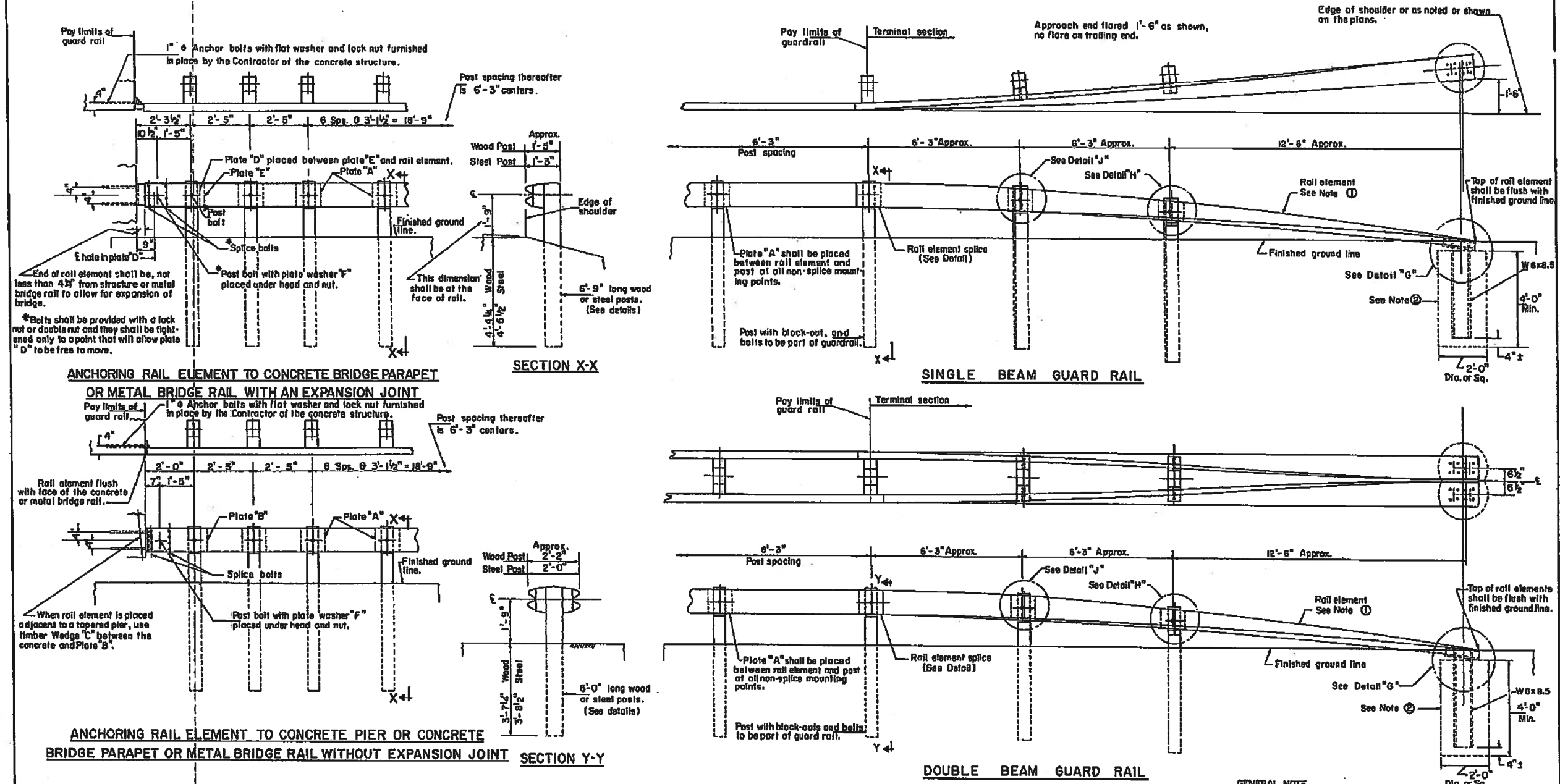
Various Routes  
D2 GR (North) 2019  
Various Counties  
Sheet 11 of 26  
Contract #64N16

**STEEL PLATE BEAM GUARDRAIL**  
**27 1/2" (700mm) HEIGHT**

(Sheet 4 of 4)

**STANDARD B.L.R. 26-2**

STANDARD DESIGN  
STEEL PLATE BEAM GUARD RAIL



**GENERAL NOTE**

① Rail element shall be twisted 90° in 25 feet. Care shall be exercised to provide a smooth curve with no kinks.

② Rail element and post may be assembled and positioned to proper alignment prior to placing concrete around post.

Rail element, steel post, and all the steel supports, fastenings and accessories shall be galvanized.

Steel brackets Detail "H" and "J", steel block-outs, and steel posts may be provided with additional holes so that these items will not be required to be made right and left handed.

Steel brackets Detail "H" and "J" may be fabricated from W 6 x 8.5 beam in lieu of the 3/8" plate specified, by cutting web of beam as shown dotted and welding together on both sides.

All concrete, reinforcement bars, and accessories used in the placing of the guard rail shall be incidental to the contract.

At the option of the Contractor, the rail elements may be furnished in either 12'-6" or 25'-0" nominal length.

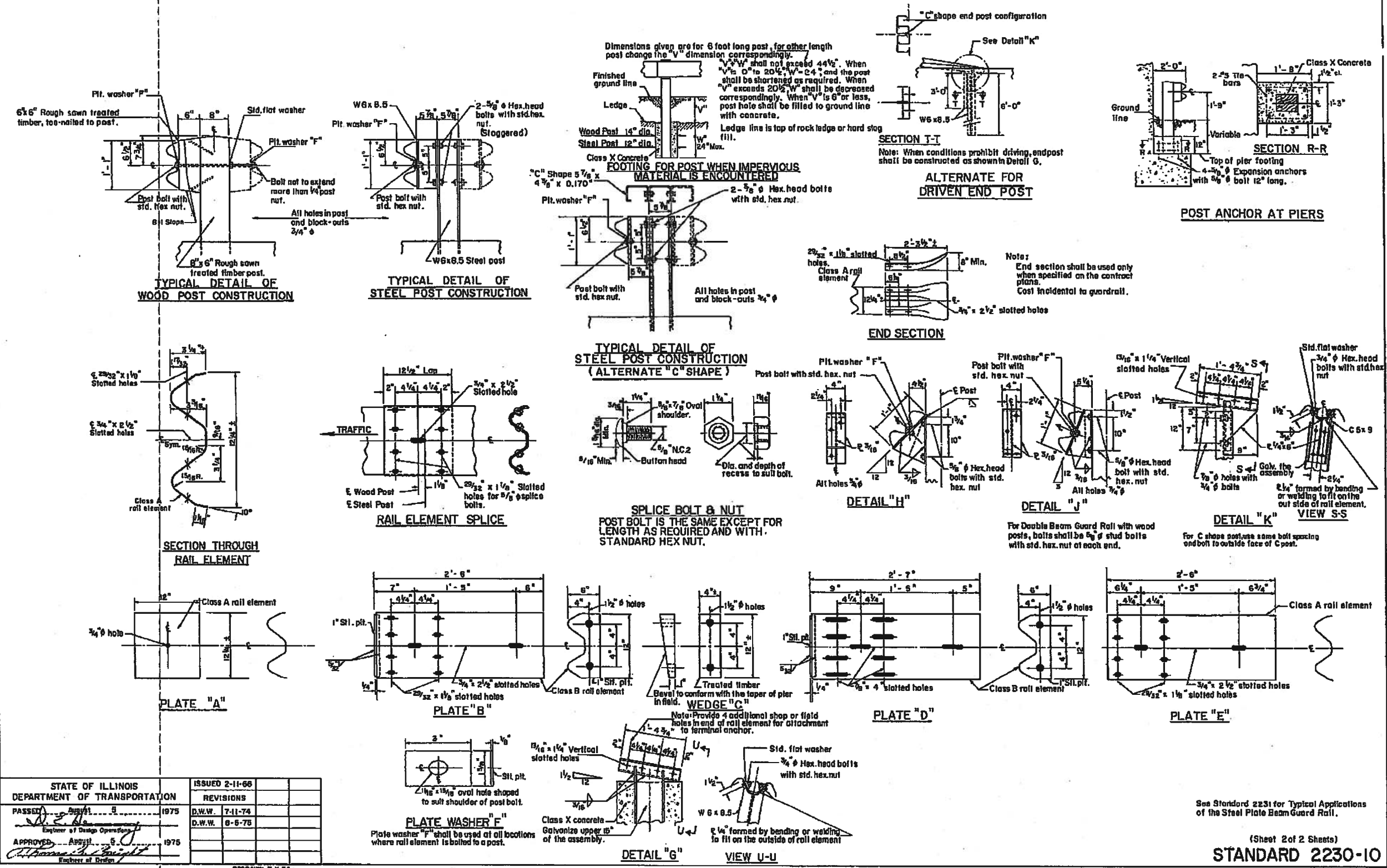
See Standard 223i for Typical Applications of the Steel Plate Beam Guard Rail.

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION		ISSUED 2-11-66	REVISIONS
PASSED	August 6, 1975	D.W.W. 7-11-74	
APPROVED	August 6, 1975	D.W.W. 8-5-75	

REDRAWN 7-11-74

E-3111

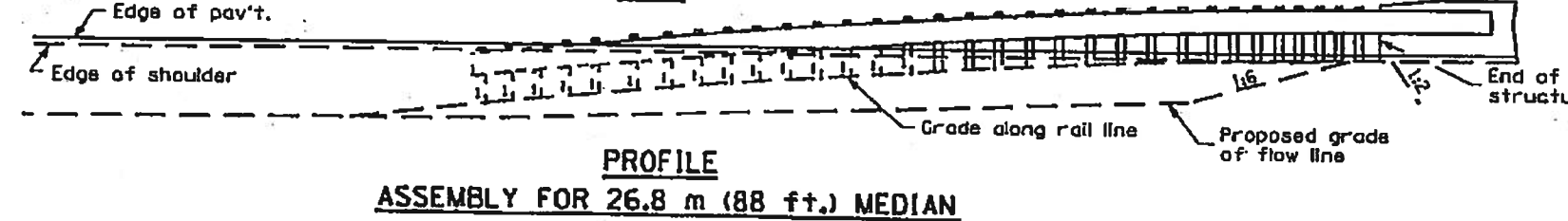
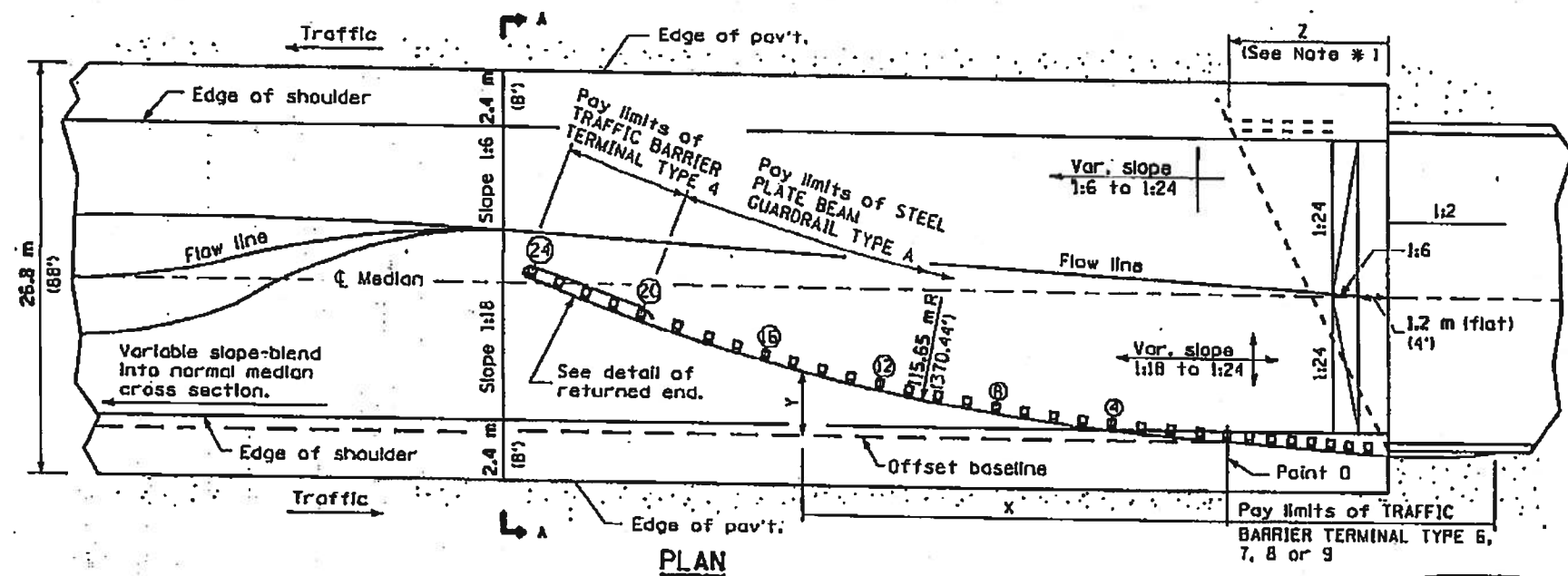
**STANDARD DESIGN  
STEEL PLATE BEAM GUARD RAIL**



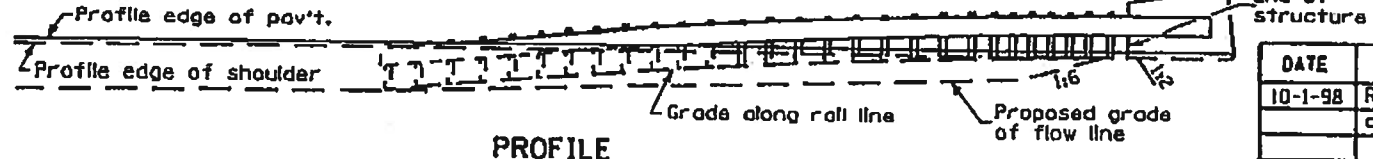
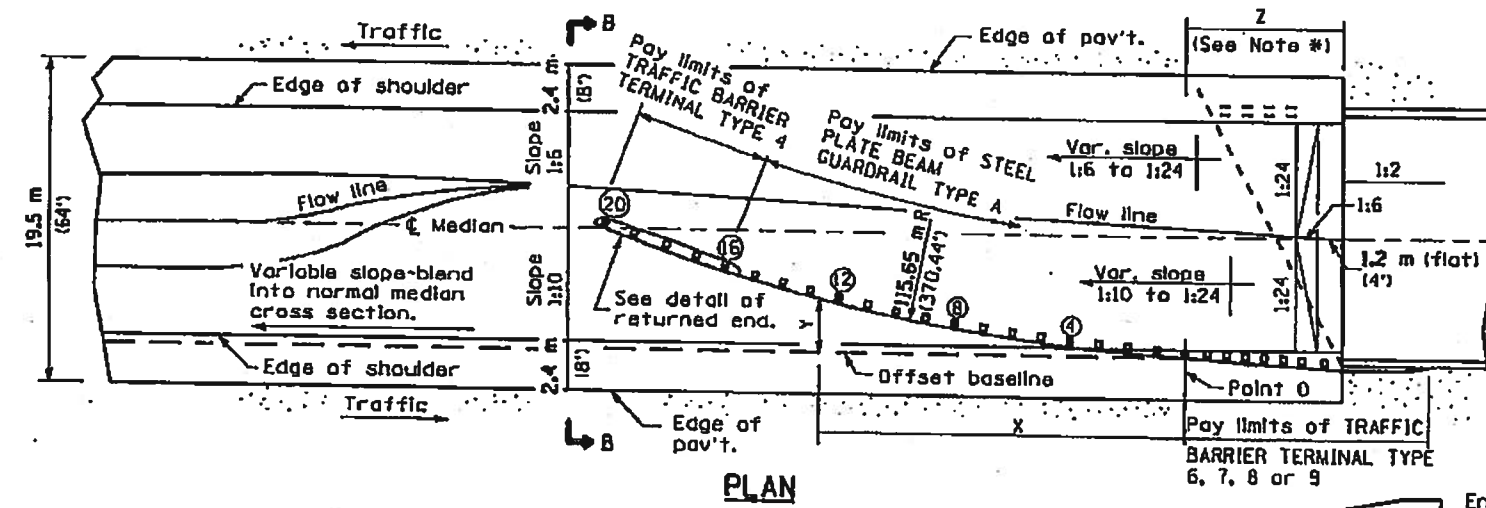
STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION		ISSUED 2-11-66	
PASSED	8/11/71	REVISIONS	
APPROVED	8/11/71	D.W.W.	7-11-74
		D.W.W.	8-6-75

REDRAWN 7-8-78

F-3.20



**PROFILE**  
**ASSEMBLY FOR 26.8 m (88 ft.) MEDIAN**



**PROFILE**  
**ASSEMBLY FOR 19.5 m (64 ft.) MEDIAN**

OFFSETS TO FACE OF RAIL		
POST	DISTANCE X m (ft.)	OFFSET Y m (ft.)
POINT 0	0 (0)	0 (0)
④	7.60 (24.93)	0.56 (1.83)
⑧	15.14 (49.68)	1.60 (5.28)
⑫	22.60 (74.16)	3.16 (10.37)
⑯	29.94 (98.23)	5.20 (17.05)
⑳	37.13 (121.83)	7.71 (25.31)
㉔	44.14 (144.83)	10.70 (35.09)

Offsets (Y) are measured between the face of rail and the offset baseline, which is parallel to the pavement edge and passes through point 0.

The location of point 0 will vary, being dependent on structure details and the type of traffic barrier terminal utilized.

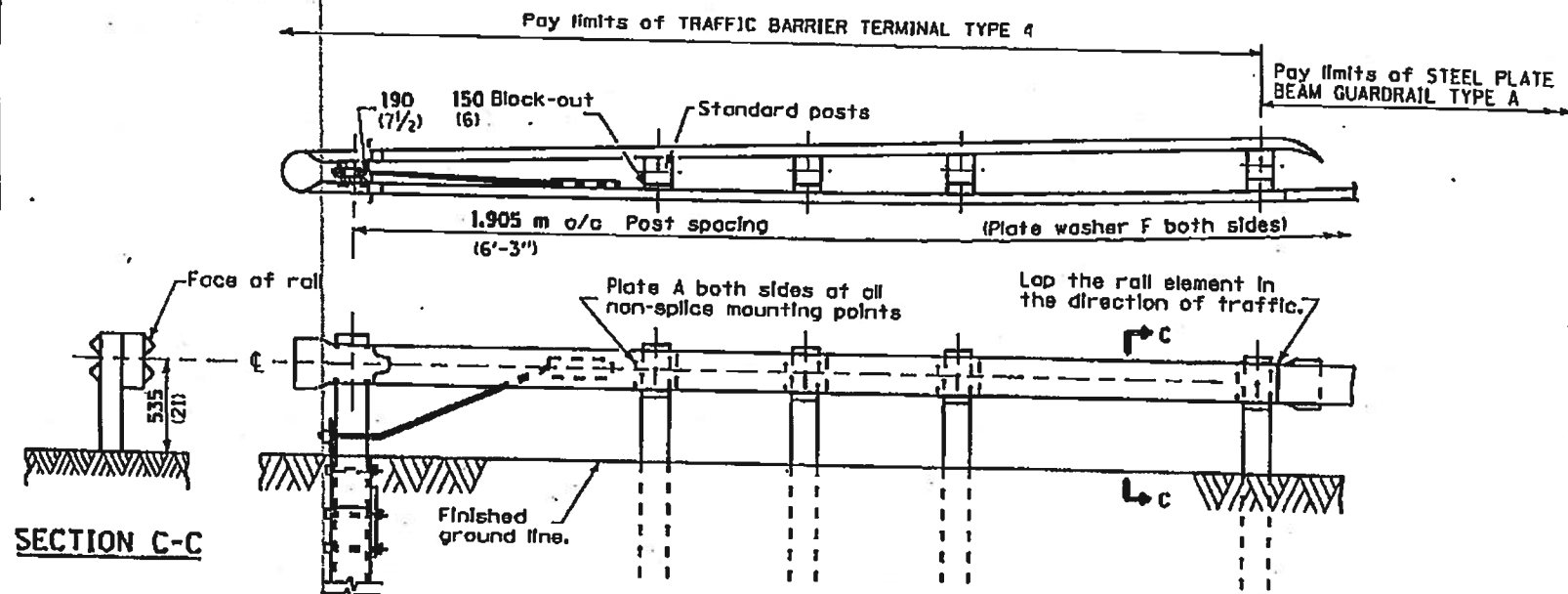
**GENERAL NOTES**

- See Standard 630001 for details of guard-rail not shown.
- \* For dual structures skewed right forward, the nose of the Type 4 terminal shall be positioned longitudinally away from the structure for a distance equal to dimension Z. Appropriate adjustments to the length of the Type A guardrail and its offsets (Y) shall be calculated and used. All additional lengths of guardrail shall be in increments of 3.87 m (12'-6").
- For dual structures that are 90° or skewed left forward, the length of guardrail is appropriate.
- The bearing plate K shall be held in position by (2) two eight penny nails driven into the post and bent over the top of the plate.
- All slopes are expressed as units of vertical displacement to units of horizontal displacement (V:H).
- All dimensions are in millimeters (inches unless otherwise shown).

Illinois Department of Transportation  
PASSED October 1, 1998  
Charles K. Kellerman  
ENGINEER OF POLICY AND PROCEDURES  
APPROVED October 1, 1998  
Bill Swanson  
ENGINEER OF DESIGN AND ENVIRONMENT

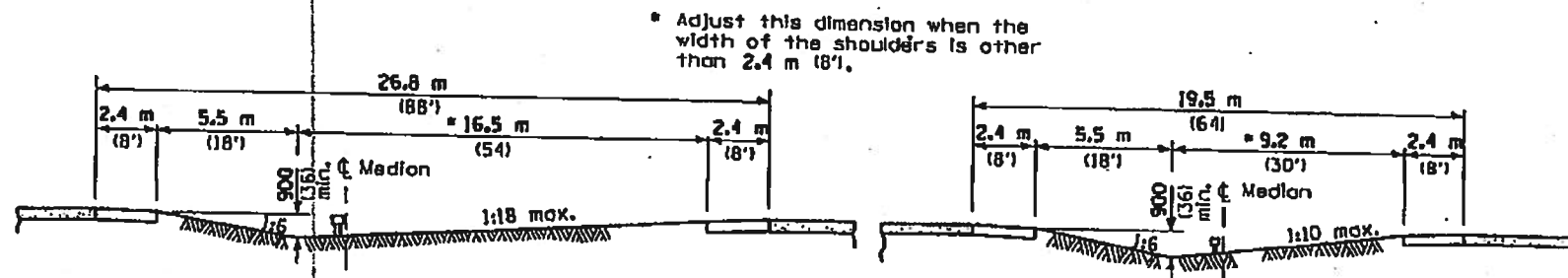
DATE	REVISIONS
10-1-98	Revised distance in offset table.
1-1-97	Renum. Standard 2339-4.

**TRAFFIC BARRIER  
TERMINAL TYPE 4**  
(Sheet 1 of 2)  
**STANDARD 631021-01**



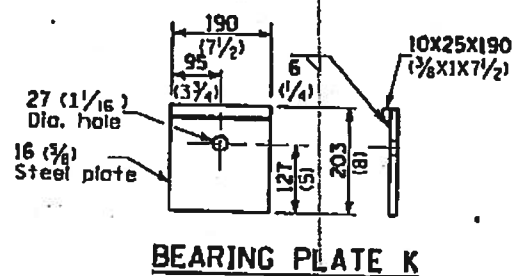
SECTION C-C

RETURNED END DETAIL

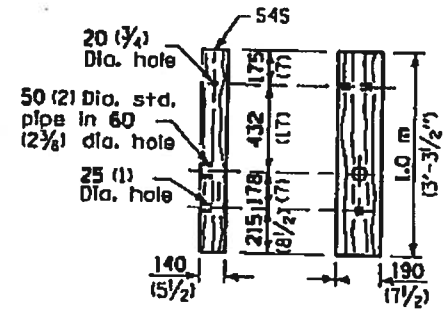


SECTION A-A

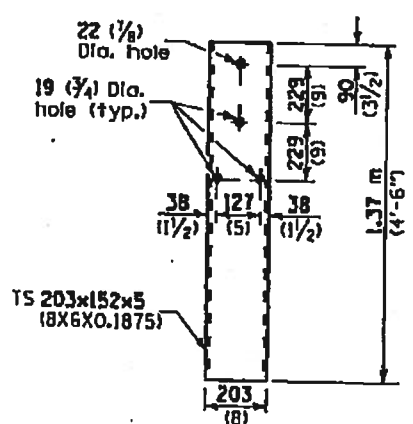
SECTION B-B



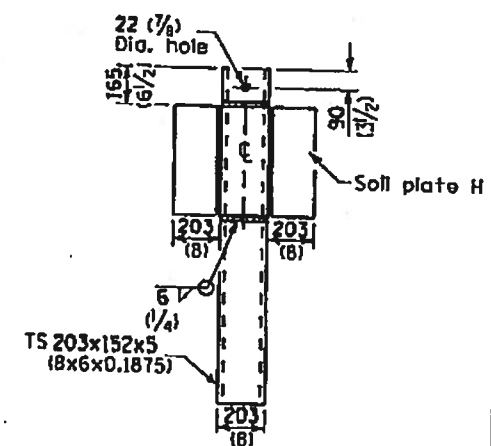
BEARING PLATE K



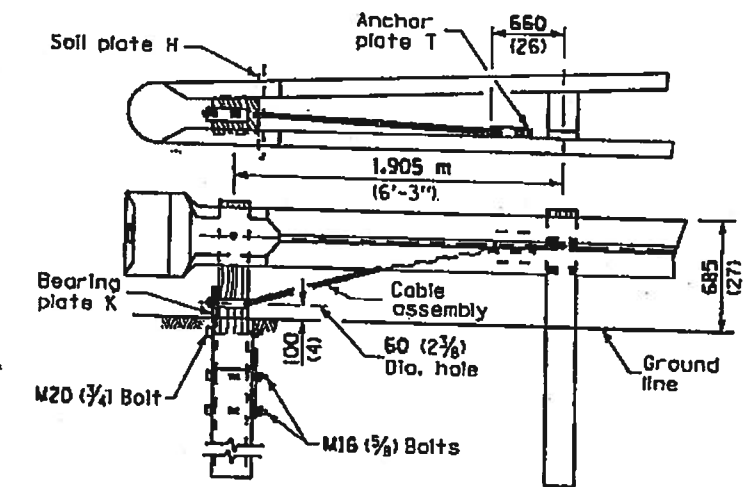
WOOD BREAKAWAY POST



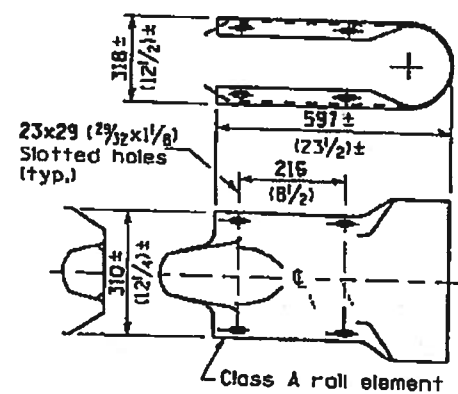
STEEL TUBE



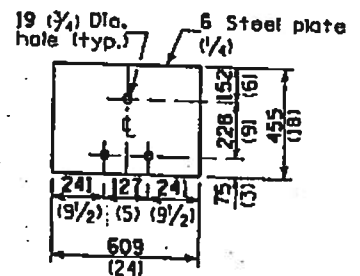
ALTERNATE SOIL PLATE CONNECTION



WOOD POST TUBULAR STEEL FOUNDATION



RETURN END SECTION



SOIL PLATE H

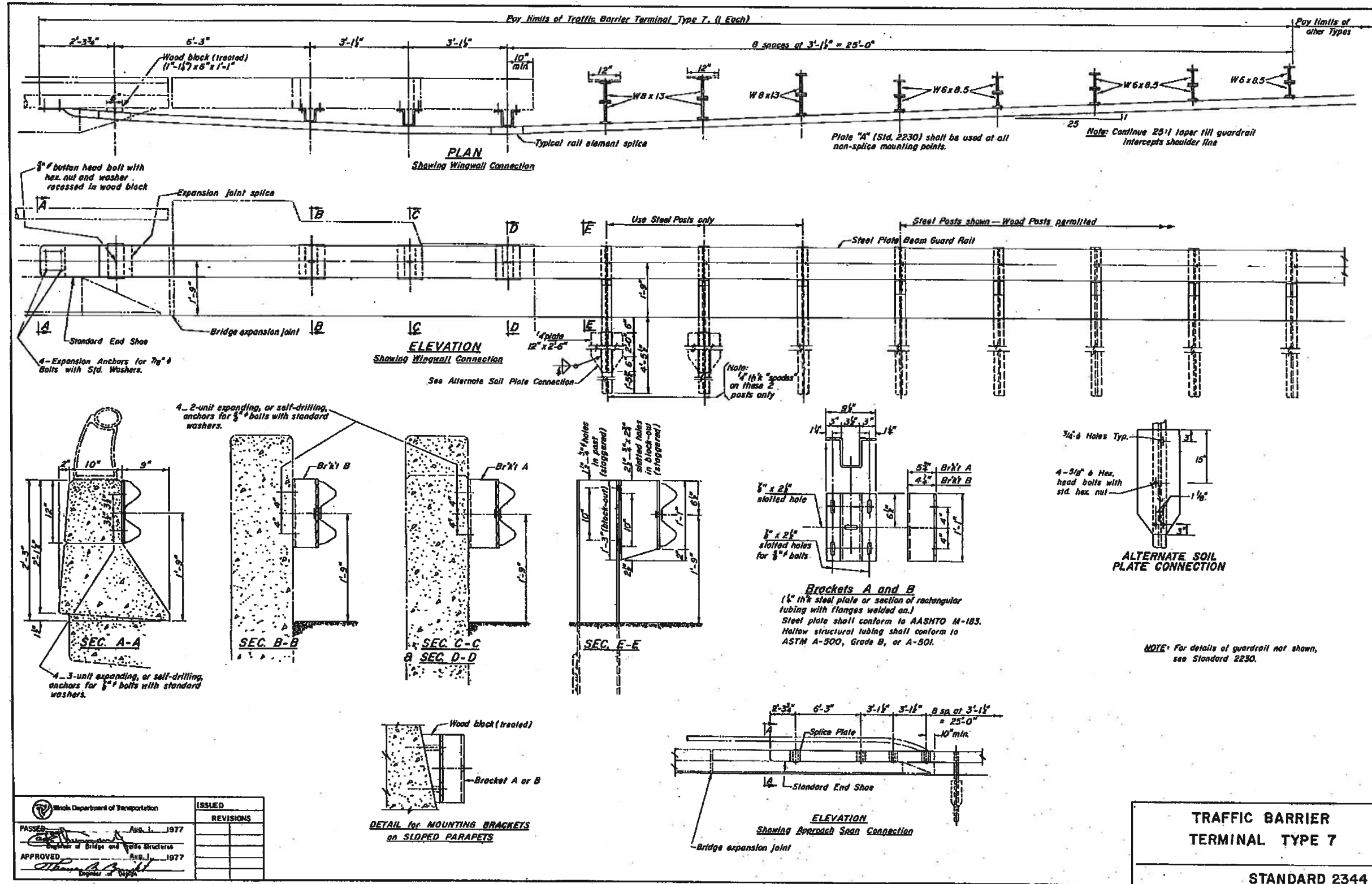
All dimensions are in millimeters (inches) unless otherwise shown.

**TRAFFIC BARRIER TERMINAL TYPE 4**  
(Sheet 2 of 2)  
**STANDARD 631021-01**

Illinois Department of Transportation  
PASSED October 1, 1998  
*Charles Kallfleck*  
ENGINEER OF POLICY AND PROCEDURES  
APPROVED October 1, 1998  
*Bill Hummer*  
ENGINEER OF DESIGN AND ENVIRONMENT

Various Routes  
D2 GR (North) 2019  
Various Counties  
Sheet 15 of 26  
Contract #64N16

Various Routes  
 D2 GR (North) 2019  
 Various Counties  
 Sheet 16 of 26  
 Contract #64N16



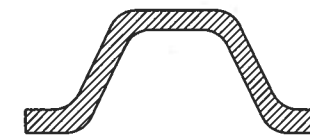
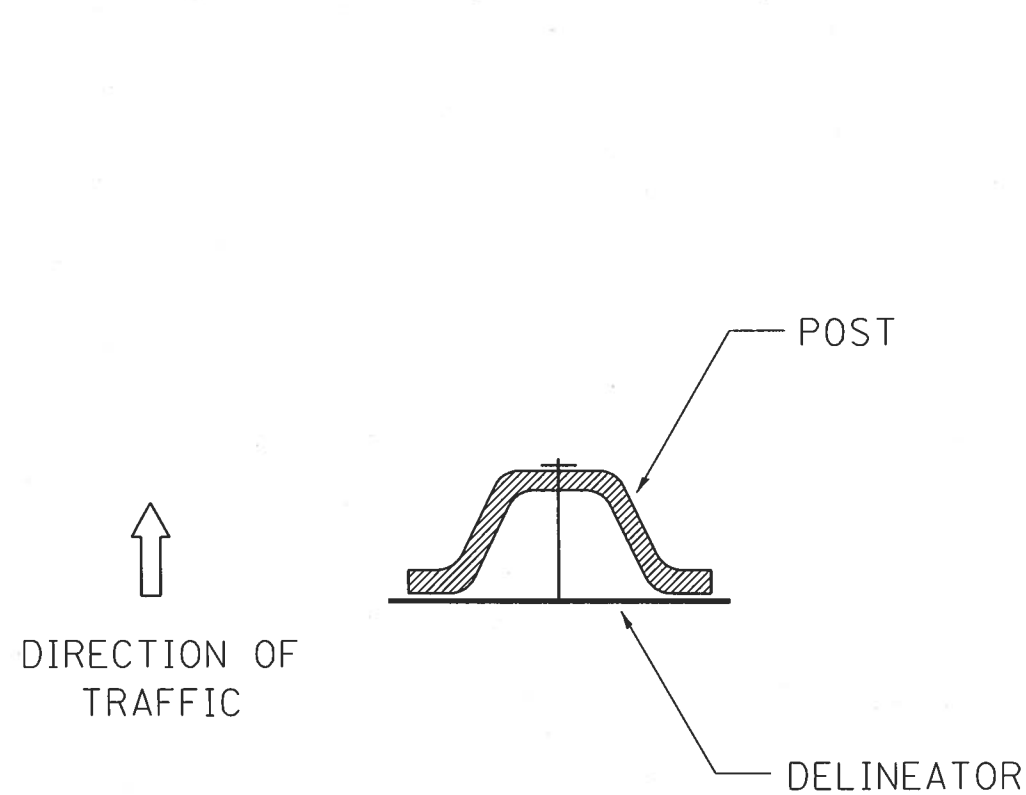
Illinois Department of Transportation PASSED: [Signature] Aug. 1, 1977 Engineer of Bridge and Road Structures APPROVED: [Signature] Aug. 1, 1977 Inspector of Traffic	ISSUED
	REVISIONS

TRAFFIC BARRIER  
 TERMINAL TYPE 7  
 STANDARD 2344  
 (Full Size)

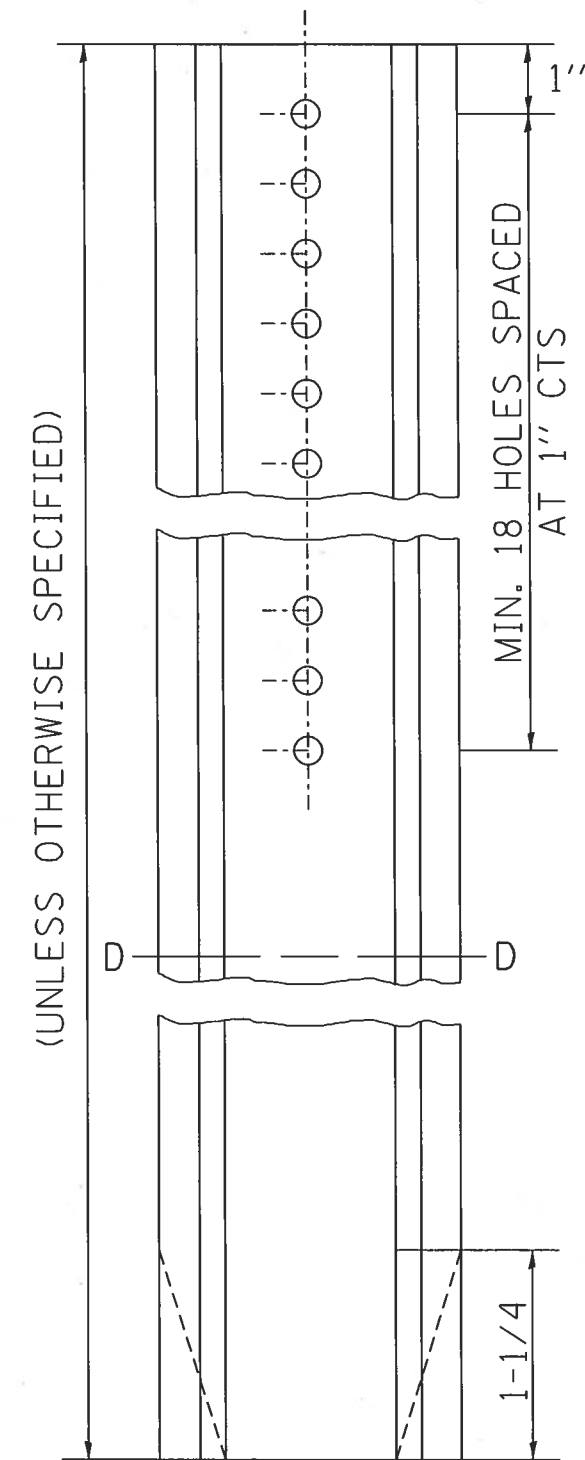
F-331



# DELINEATOR AND POST ORIENTATION



SECTION D-D

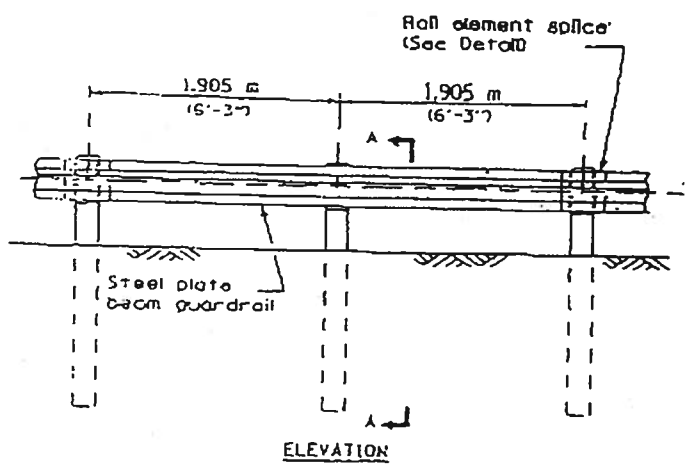


DELINEATORS SHALL BE INSTALLED ACCORDING TO STANDARD 635001 EXCEPT THAT THE POST SHALL BE ROTATED 180°. THE POST WILL HAVE THE WIDE SIDE FACING TRAFFIC AND THE DELINEATOR ATTACHED AS SHOWN ABOVE.

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.

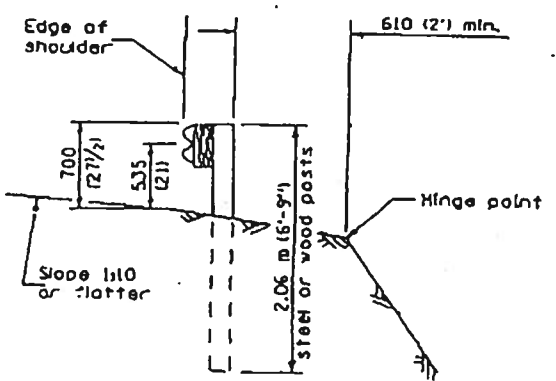
REVISED - 10-3-11	<b>REGION 2 / DISTRICT 2 STANDARD</b>				F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
REVISED -					VAR	D2 GR (NORTH) 2019	VARIOUS	26	17
REVISED -					CONTRACT NO. 64N16				
REVISED -	SCALE: 51.4981' / 1in.	SHEET NO.	OF	SHEETS	STA.	TO STA.	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT

PLOT DATE = Sep-05-2018 01:24:10 PM

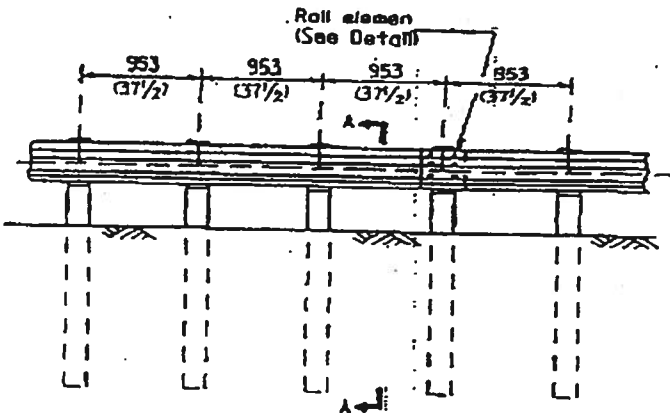


**TYPE A**

1.905 m (6'-3") Typical post spacing

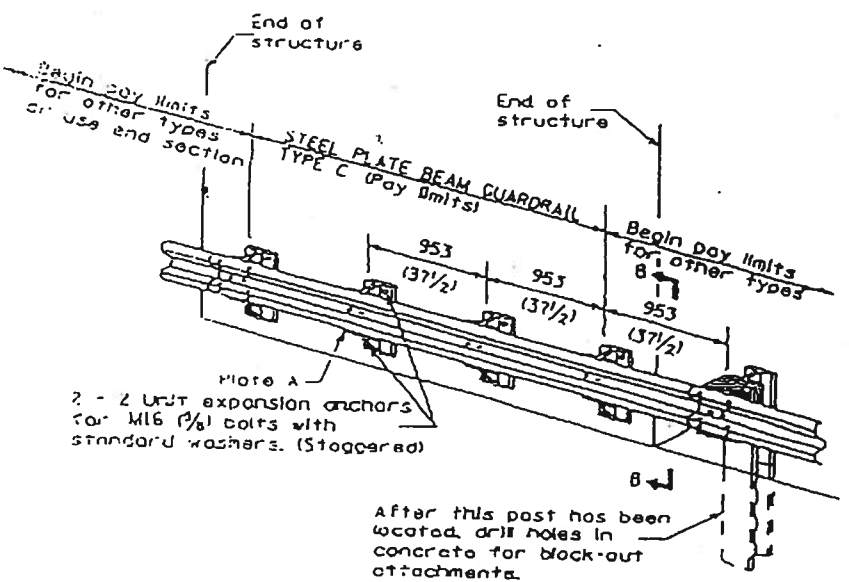


**SECTION A-A**



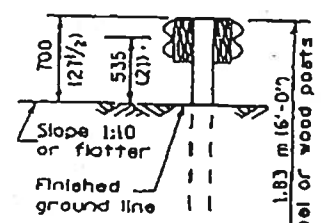
**TYPE B**

953 (37 1/2) Closed post spacing

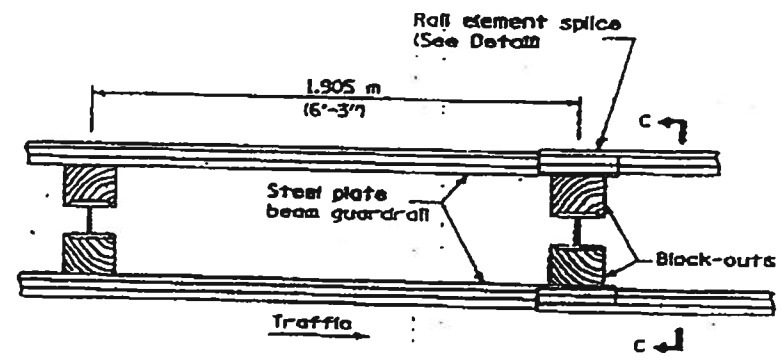


**TYPE C**

953 (37 1/2) Block-out spacing

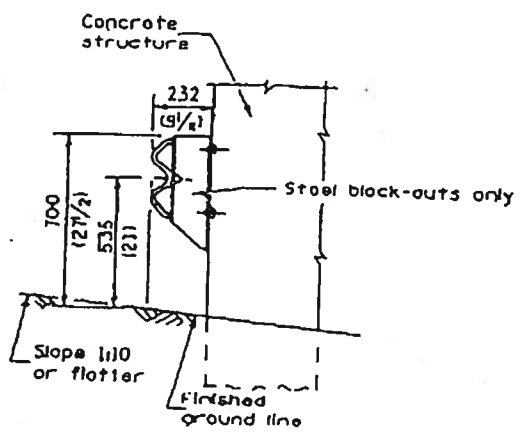


**SECTION C-C**



**TYPE D**

Double steel plate beam guardrail  
1.905 m (6'-3") typical post spacing



**SECTION B-B**

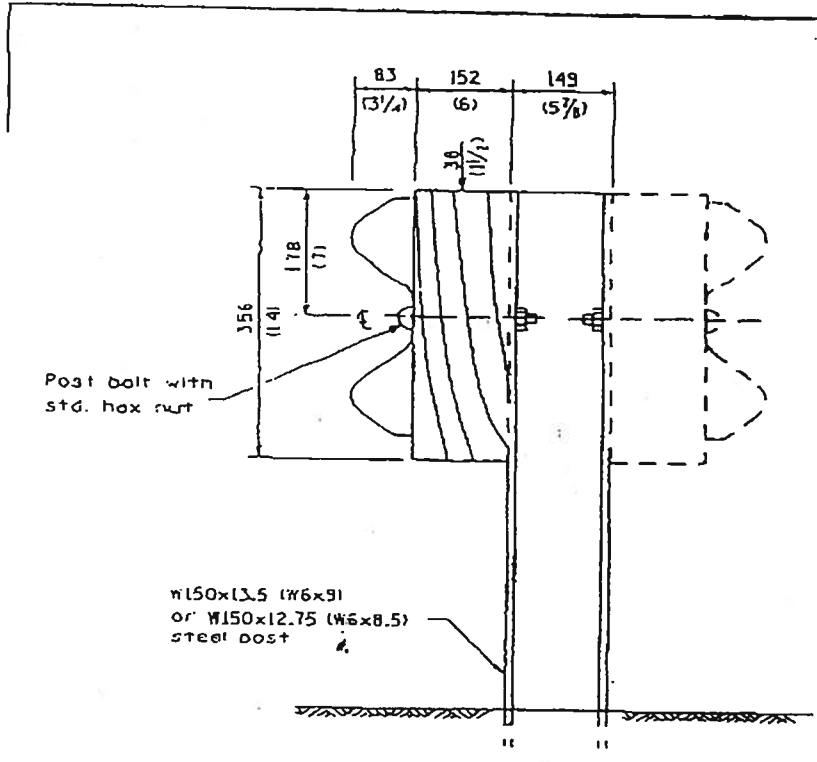
**GENERAL NOTES**

All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).  
All dimensions are in millimeters (inches) unless otherwise shown.  
The existing steel posts may be drilled to match the bolt pattern shown herein for the wood block-out, or a new steel post shall be provided.  
This detail is applicable to the guardrail system used prior to January 1, 2007. For details on the Midwest Guardrail System, see Standard 630001.

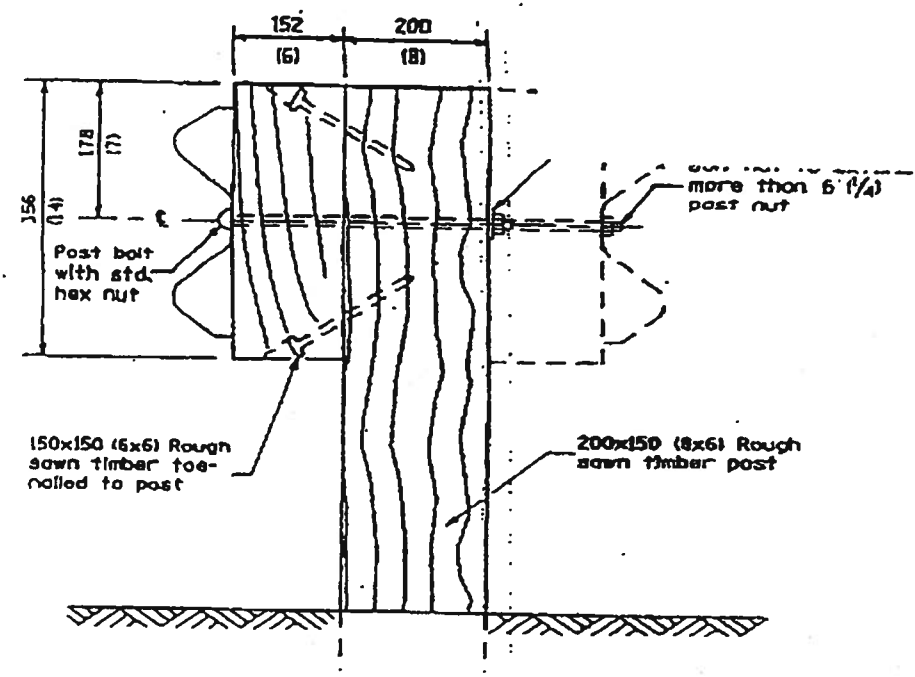
**REMOVE AND REERECT  
STEEL PLATE BEAM GUARDRAIL**

(Sheet 1 of 4)

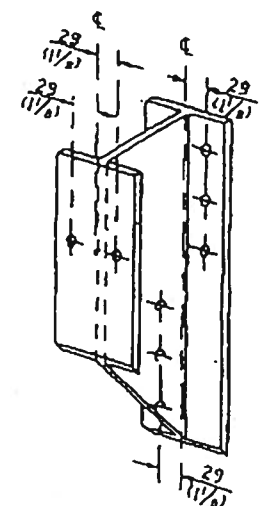
**DETAIL**



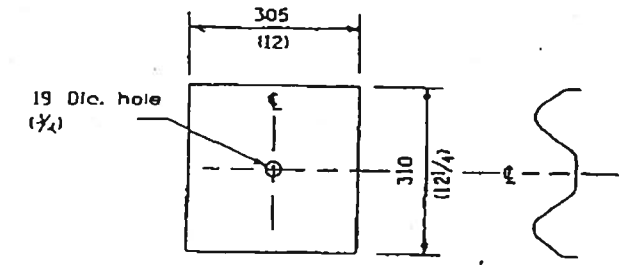
STEEL POST CONSTRUCTION



WOOD POST CONSTRUCTION



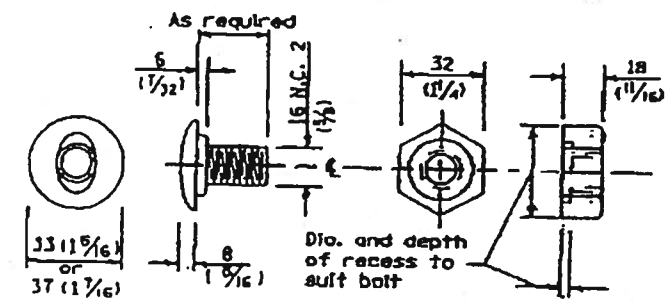
STEEL BLOCK-OUT DETAIL



NOTE

Plate A shall be placed between rail element and block-out at non-splice mounting points only when steel block-outs are used.

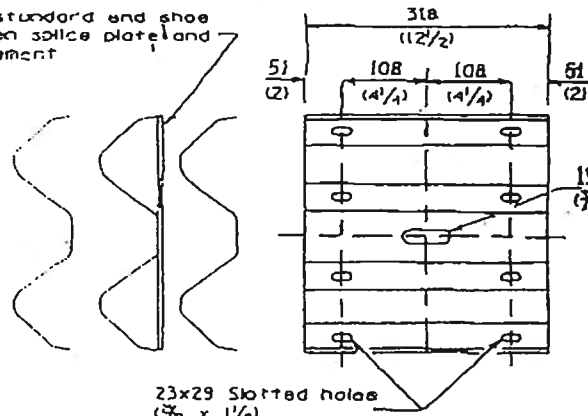
PLATE A



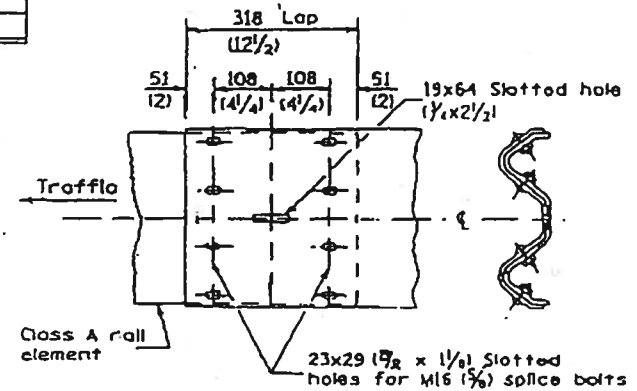
POST OR SPLICE BOLT & NUT

REMOVE AND REERECT  
 STEEL PLATE BEAM GUARDRAIL  
 (Sheet 2 of 4)  
 DETAIL

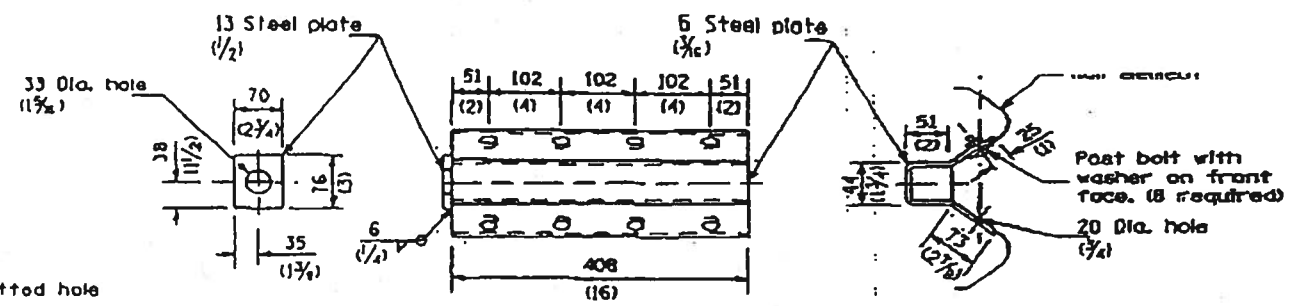
Place standard end shoe between splice plate and rail element



SPLICE PLATE

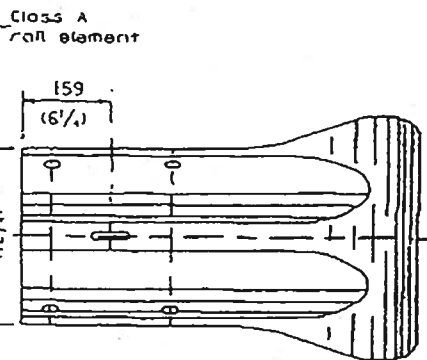
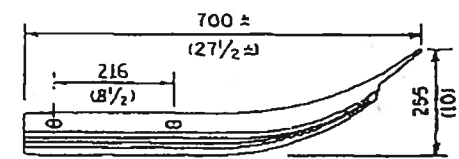


RAIL ELEMENT SPLICE

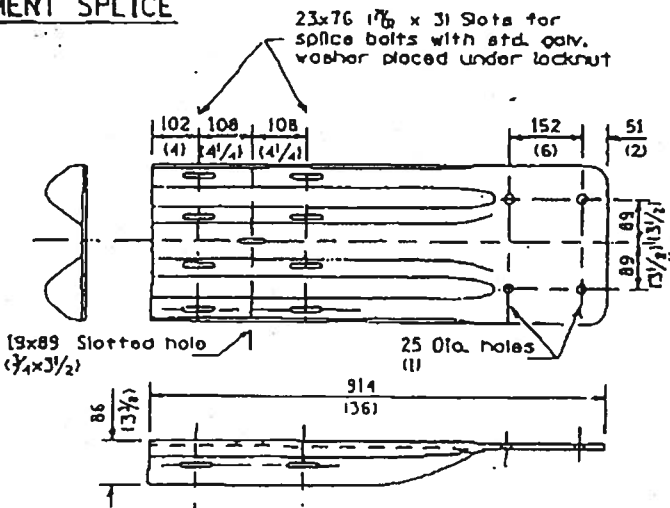


NOTE  
Anchor plate T shall be used to attach cable assembly to guardrail when required on traffic barrier terminals.

ANCHOR PLATE T DETAILS



END SECTION



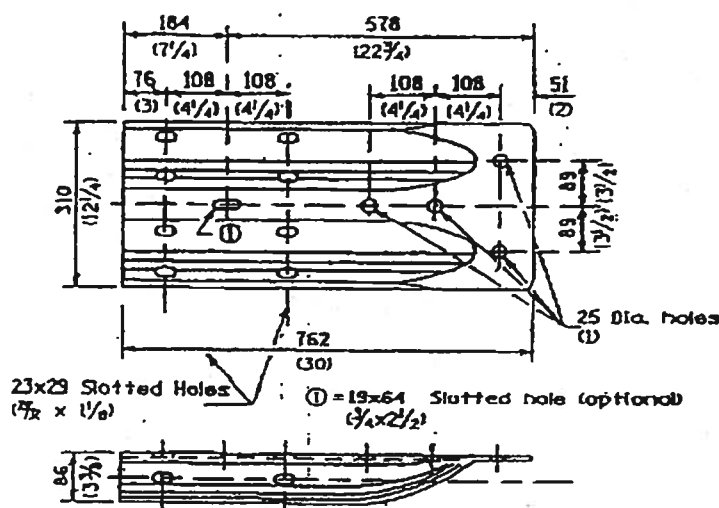
NOTE

When end shoe is attached to a bridge parapet which has an expansion joint, the bolts shall be provided with a locknut or double nut and shall be tightened only to a point that will allow guardrail movement.

The standard end shoe shall be attached to the concrete with pre-drilled or self-drilling anchor bolts. The anchor cone shall be set flush with the surface of the concrete.

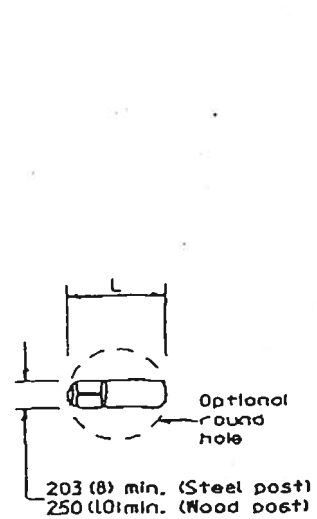
Externally threaded studs protruding from the surface of the concrete will not be permitted.

END SHOE

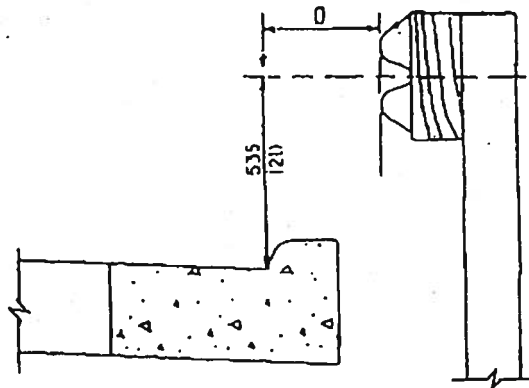


ALTERNATE END SHOE

REMOVE AND REERECT  
STEEL PLATE BEAM GUARDRAIL  
(Sheet 3 of 4)  
DETAIL



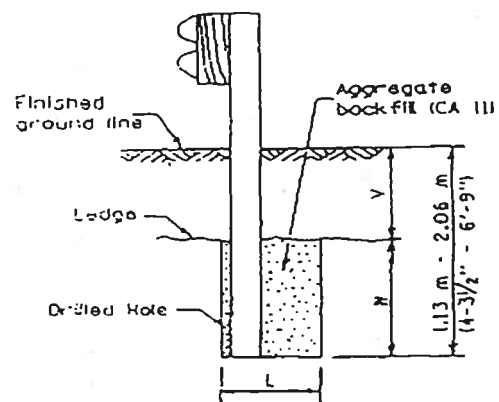
PLAN



Notes  
If it is necessary for D to be more than 300 (12) and less than 3.0 m (10'-0") type M-5 (M-2) curb and gutter (Std. 60600) shall be used in front of and in advance of the guardrail.

GUARDRAIL PLACED BEHIND CURB

D = 0 desirable to 300 (12) maximum

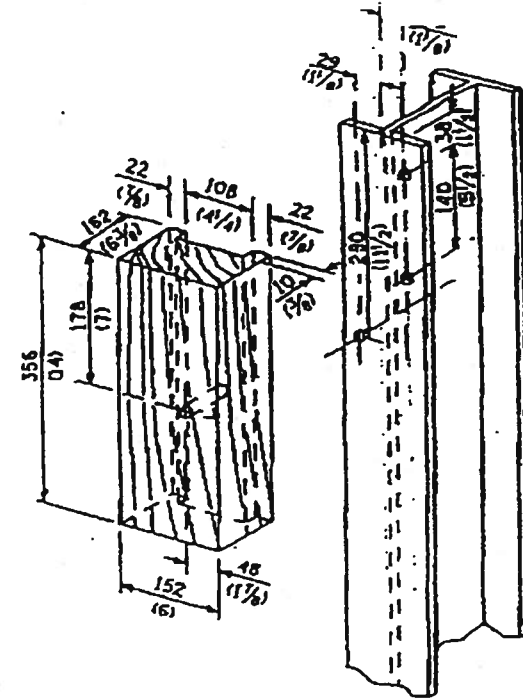


Note:  
Ledge line is top of rock ledge or hard slag fill.

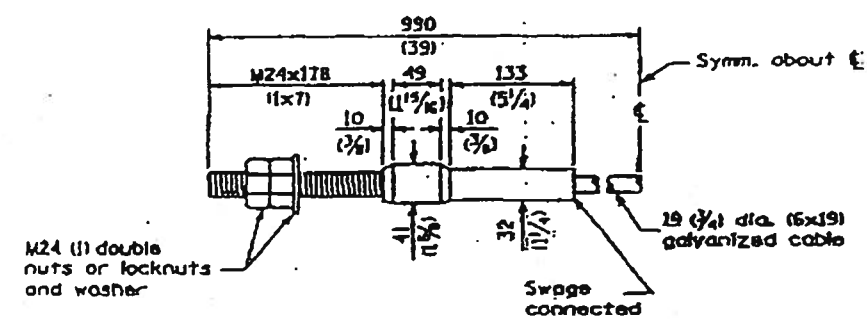
ELEVATION

FOOTING FOR POST WHEN IMPERVIOUS MATERIAL IS ENCOUNTERED

V	W	L	
		Steel Post	Wood Post
0 - 460 (0 - 18)	610 (24)	530 (21)	580 (23)
>460 - 825 (18 - 41.5)	305 (12)	203 (8)	250 (10)
>825 - 1.13 m (41.5 - 53.5)	305 - 0 (12 - 0)	203 (8)	250 (10)



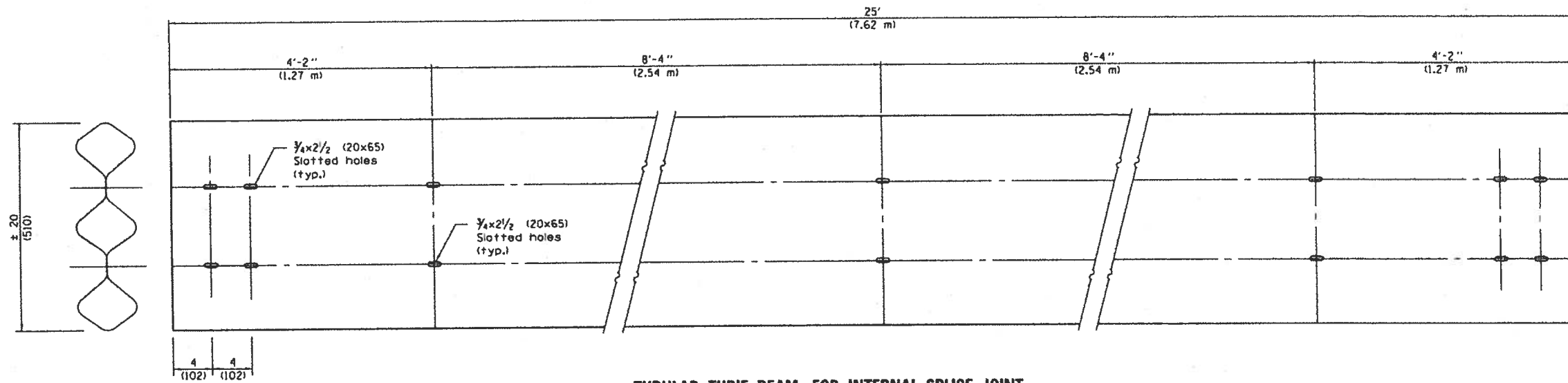
WOOD BLOCK-OUT AND STEEL POST DETAILS



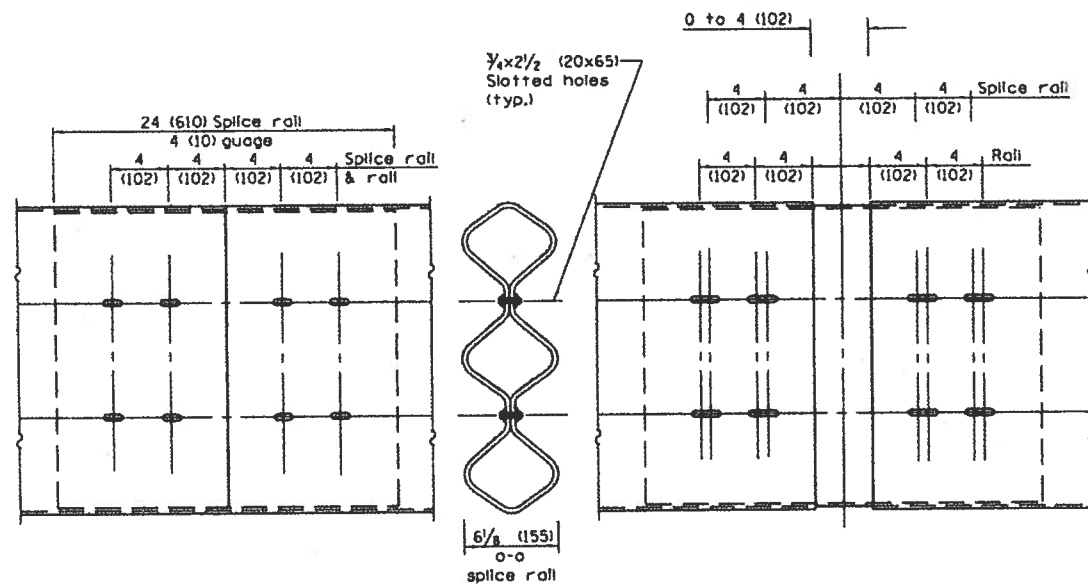
CABLE ASSEMBLY

118,100 kg (40,000 lbs) min. breaking strength  
Tighten to full tension.

REMOVE AND REERECT  
STEEL PLATE BEAM GUARDRAIL  
(Sheet 4 of 4)  
DETAIL

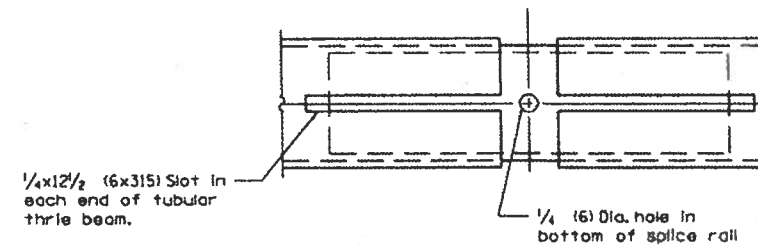


**TUBULAR THRIE BEAM FOR INTERNAL SPLICE JOINT**



**INTERNAL SPLICE JOINT**

**INTERNAL EXPANSION SPLICE JOINT**



**BOTTOM VIEW OF INTERNAL EXPANSION SPLICE JOINT**

**GENERAL NOTES**

Plate Washers B are to be placed under both heads and nuts of splicing bolts for internal splice and internal expansion splice joint.

Plate Washers C are to be placed under both heads and nuts of splicing bolts for lap expansion and internal lap splice joint.

See Standard 630001 for details of guardrail not shown.

All dimensions are in inches (millimeters) unless otherwise shown.

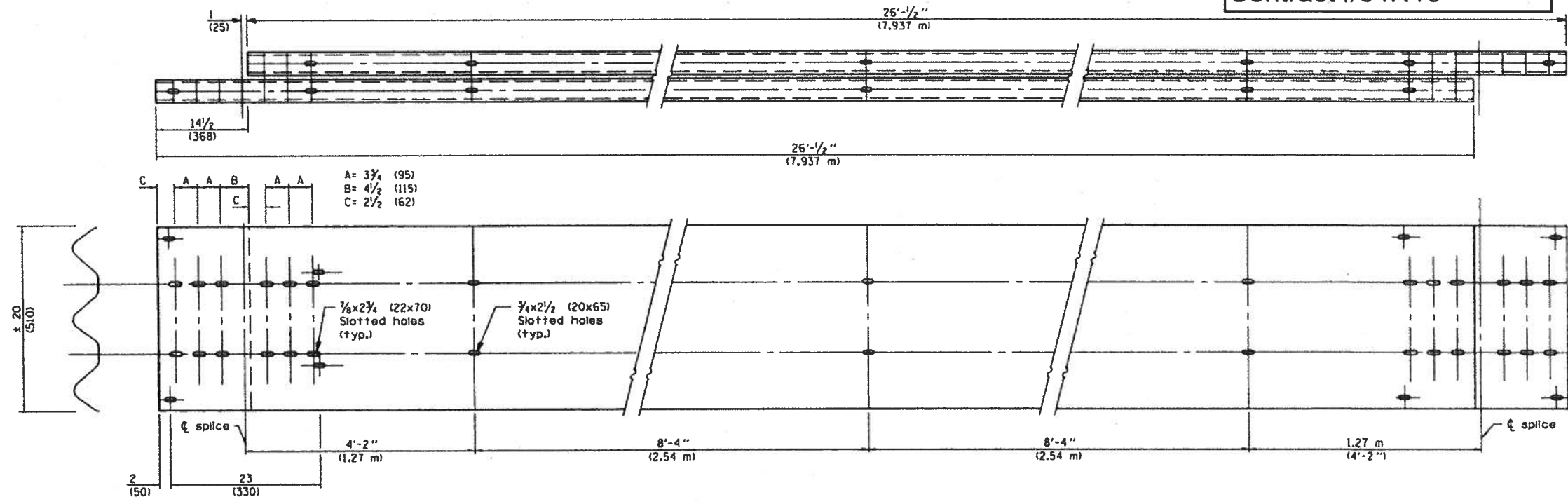
Illinois Department of Transportation	
PASSED	January 1, 2011
ENGINEER OF POLICY AND PROCEDURES	
APPROVED	January 1, 2011
ENGINEER OF DESIGN AND ENVIRONMENT	

DATE	REVISIONS
1-1-11	Corrected note on "Plate Washer B" detail.
1-1-09	Switched units to English (metric). Added Plate Washer F detail.

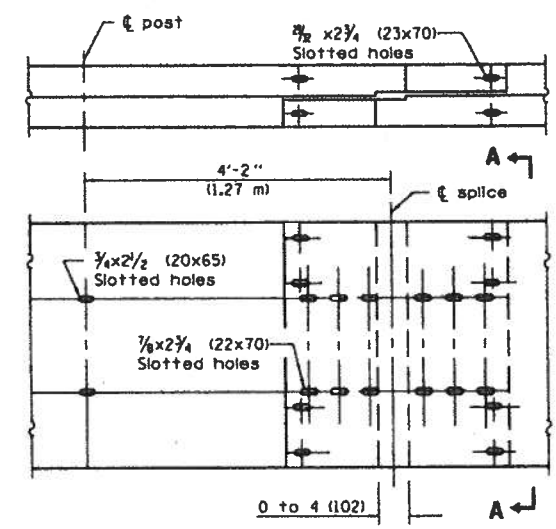
**TUBULAR THRIE BEAM RETROFIT RAIL FOR BRIDGES**

(Sheet 1 of 3)

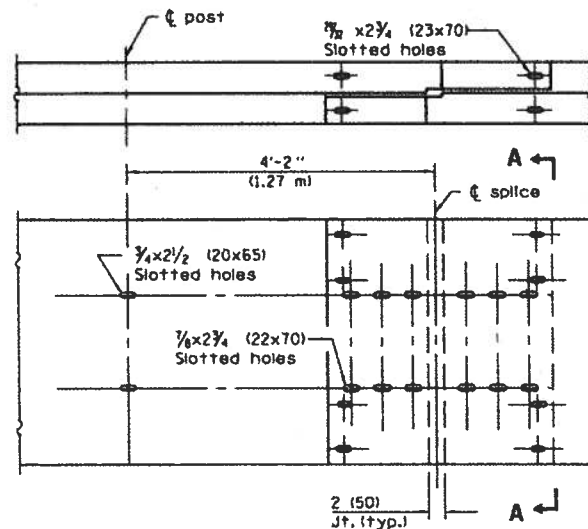
**STANDARD 509001-02**



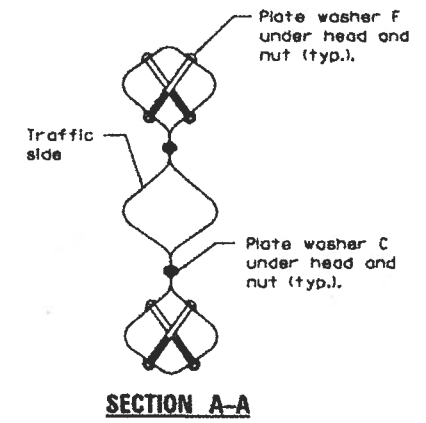
**TUBULAR THRIE BEAM FOR LAP SPICE JOINT**



**LAP EXPANSION SPICE JOINT**



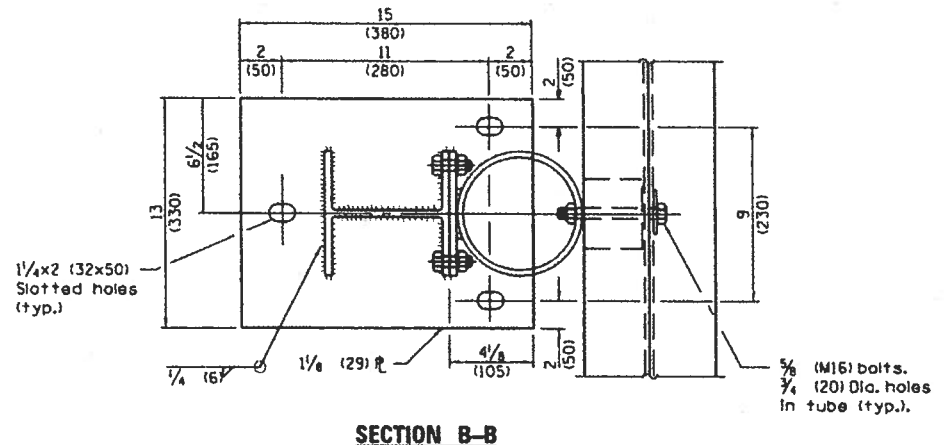
**LAP SPICE JOINT**



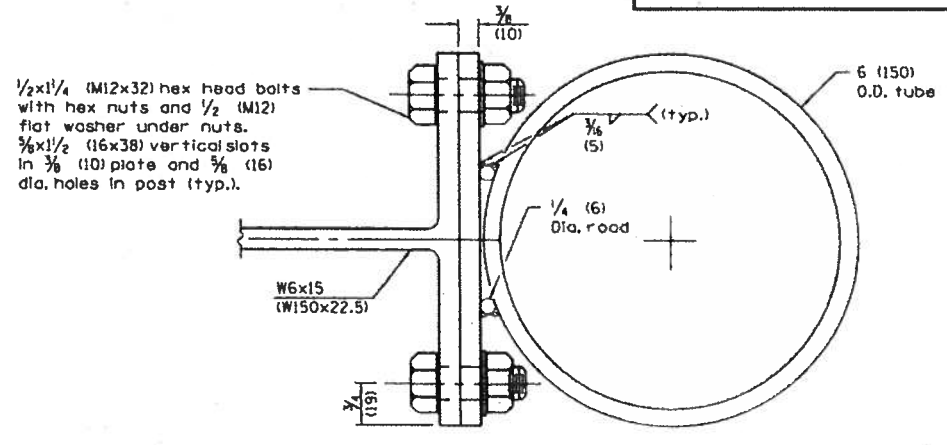
**SECTION A-A**

Illinois Department of Transportation  
 PASSED January 1, 2011  
 ENGINEER OF POLICY AND PROCEDURES  
 APPROVED January 1, 2011  
 ENGINEER OF DESIGN AND ENVIRONMENT

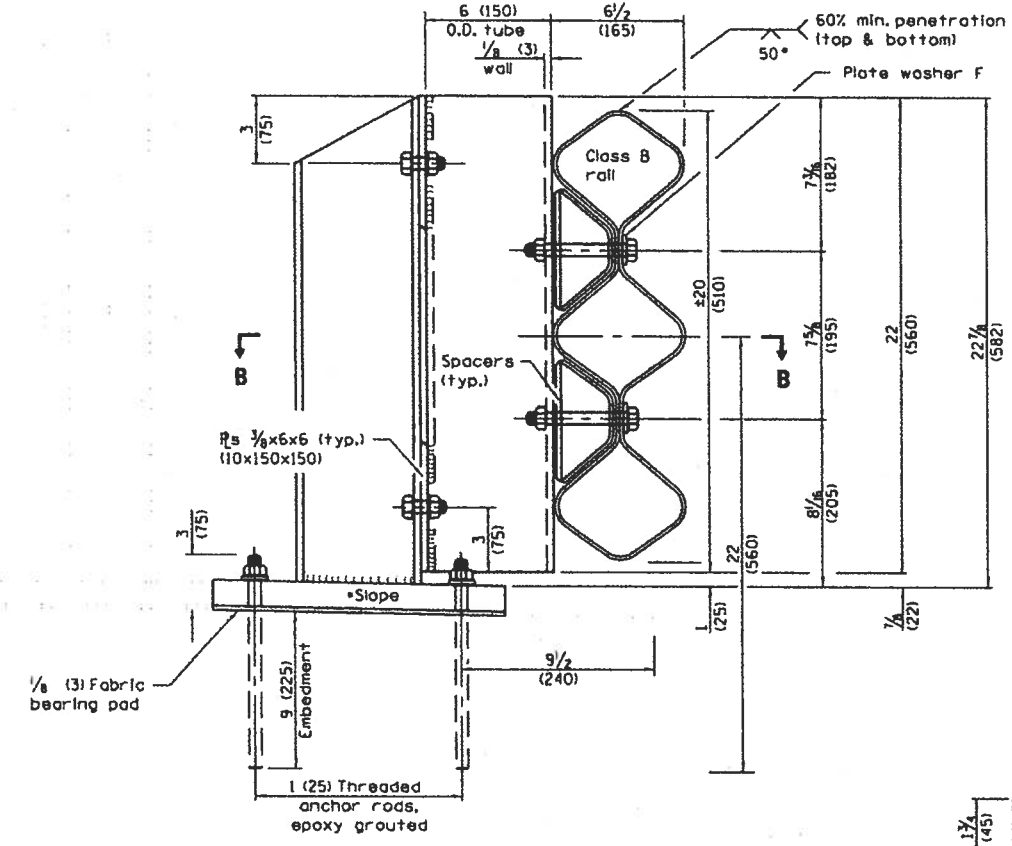
**TUBULAR THRIE BEAM  
 RETROFIT RAIL FOR BRIDGES**  
 (Sheet 2 of 3)  
 STANDARD 509001-02



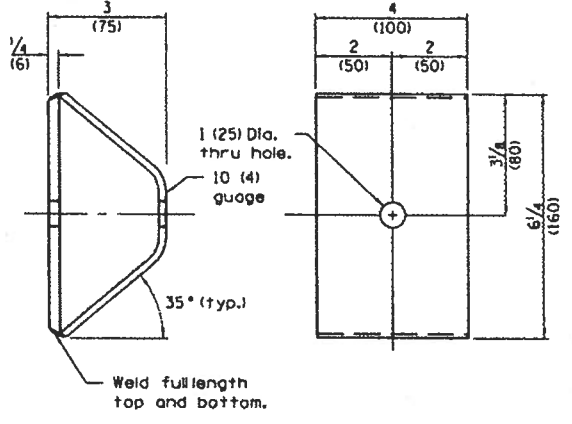
**SECTION B-B**



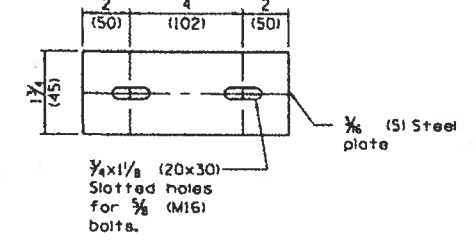
**TUBE TO POST ATTACHMENT**



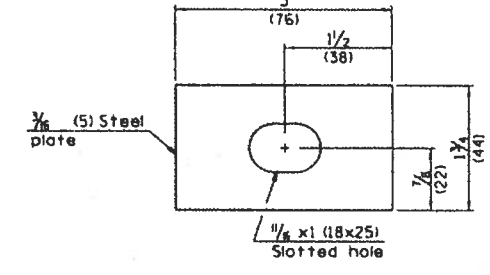
**POST**



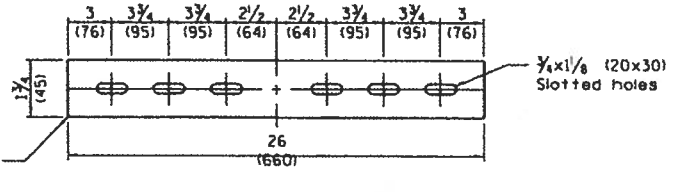
**SPACER**



**PLATE WASHER B**



**PLATE WASHER F**



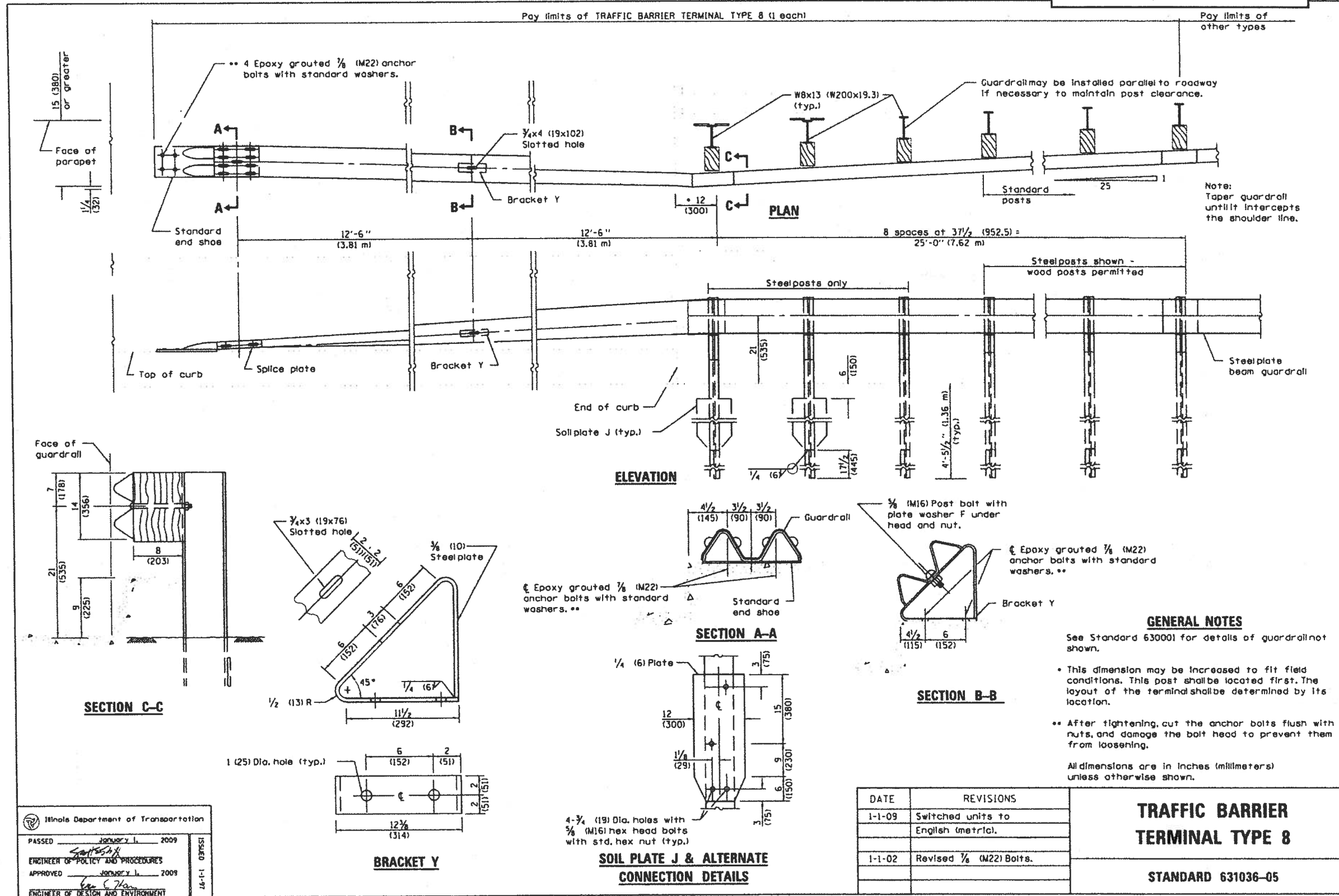
**PLATE WASHER C**

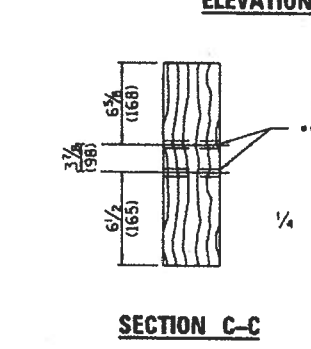
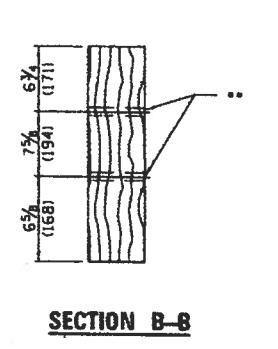
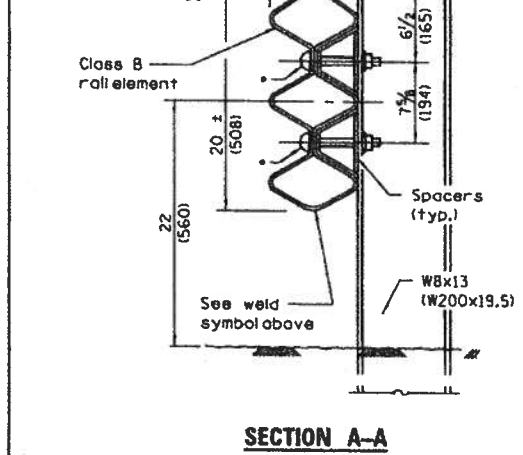
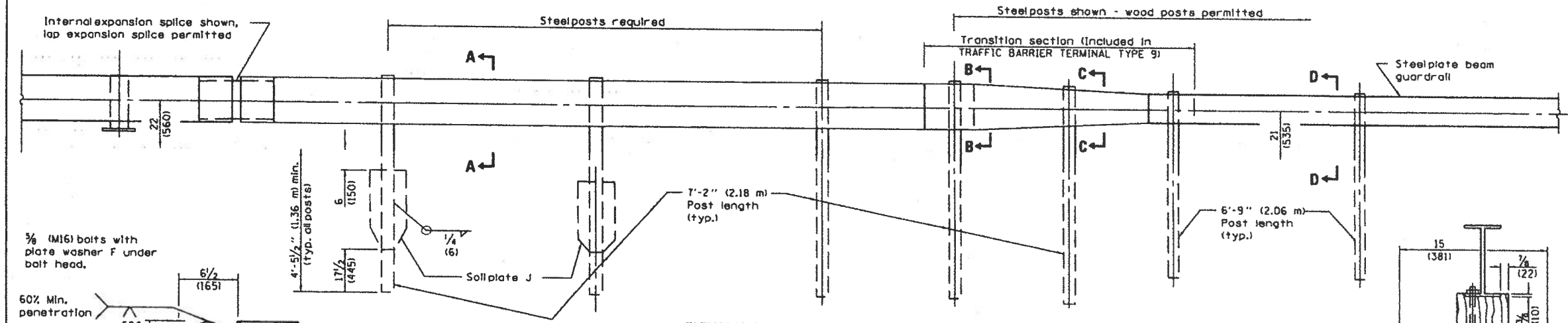
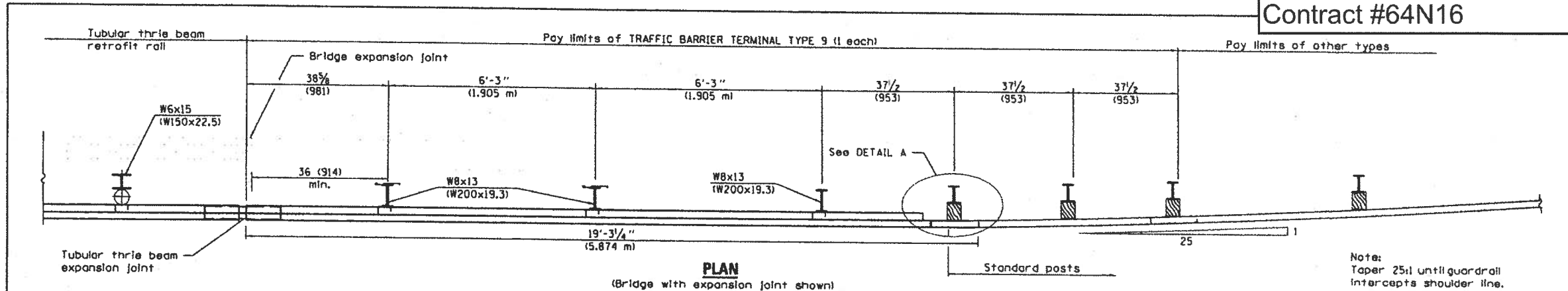
12 1/4  
• Cut bottom of post to slope

Illinois Department of Transportation  
PASSED January 1, 2011  
ENGINEER OF POLICY AND PROCEDURES  
APPROVED January 1, 2011  
ENGINEER OF DESIGN AND ENVIRONMENT

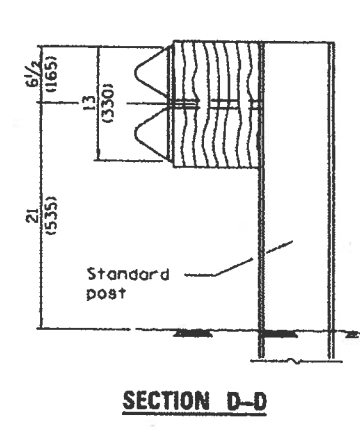
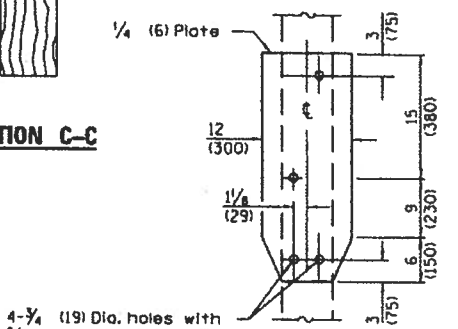
**TUBULAR THRIE BEAM  
RETROFIT RAIL FOR BRIDGES**  
(Sheet 3 of 3)  
STANDARD 509001-02







**DETAILS of BLOCK-OUTS**  
•• ⌀ 3/4 (19) Dia. hole



**GENERAL NOTES**

See Standards 509001 and 630001 for details of guardrail elements not shown.

The Type 9 terminal shall be installed after the posts for the bridge retrofit rail have been located as shown on Standard 509001.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

PASSED January 1, 2011

ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2011

ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-07

DATE	REVISIONS
1-1-11	Omitted 5/8 (149) dimension from Section D-D.
1-1-09	Switched units to English (metric).

**TRAFFIC BARRIER TERMINAL TYPE 9**

STANDARD 631041-03