

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR.	#	VARIOUS	9	1
FED. ROAD DIST. NO.	ILLINOIS	CONTRACT NO. 46040		
* D3 GUARDRAIL UPGRADE 2009				

**INDEX OF SHEETS**

- 1 COVER SHEET
- 2 STANDARDS AND GENERAL NOTES
- 3 SUMMARY OF QUANTITIES
- 4-5 SHOULDER WIDENING FOR TYPE 1 (SPECIAL) GUARDRAIL TERMINALS
- 6-9 PRE-MGS GUARDRAIL STANDARDS EFFECTIVE APRIL 1, 2006

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**

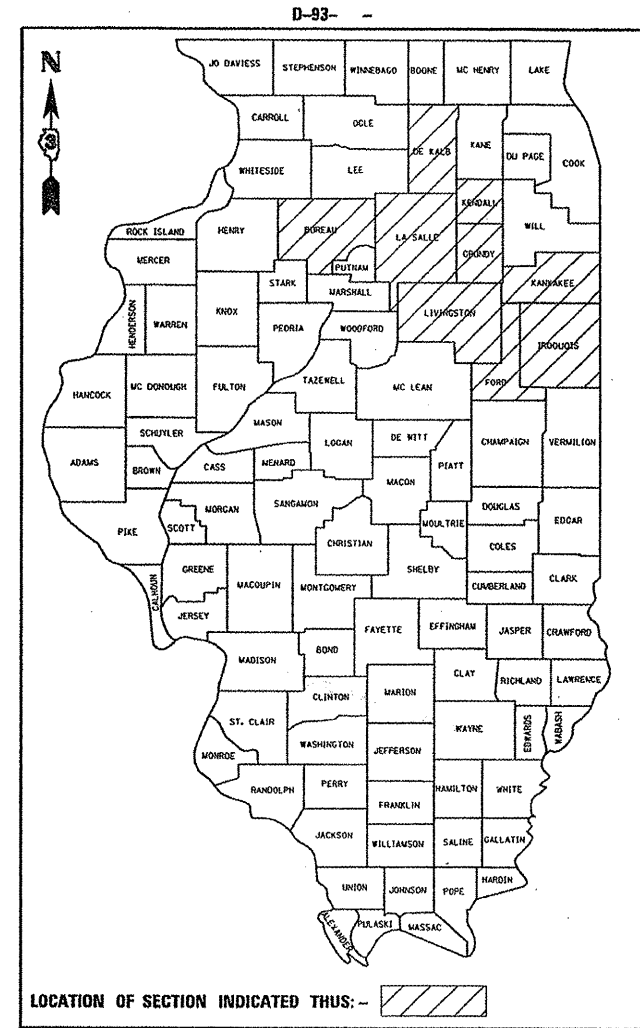
**PROPOSED**  
**HIGHWAY PLANS**

**VARIOUS ROUTES**  
**D3 GUARDRAIL UPGRADE 2009**  
**VARIOUS COUNTIES**

PROJECT : ESP-0005 (648)

C - 30 - 034 - 09

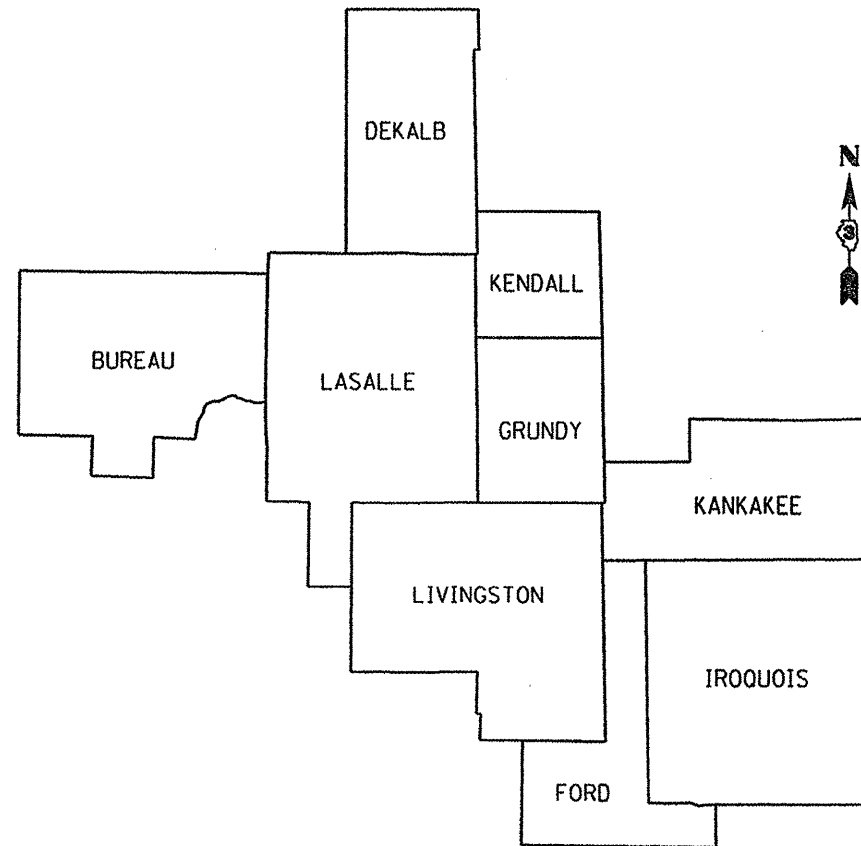
**UPGRADING GUARDRAIL TERMINALS AT VARIOUS LOCATIONS**



**HIGHWAY STANDARDS**

**SEE PAGE 2 FOR LIST OF HIGHWAY STANDARDS**  
EFFECTIVE JANUARY 1, 2009

MICROFILMED \_\_\_\_\_  
REEL NUMBER \_\_\_\_\_  
AWARDED \_\_\_\_\_  
RESIDENT ENGINEER \_\_\_\_\_  
AS BUILT CHANGES WERE MADE  
ON THE FOLLOWING SHEETS \_\_\_\_\_



LOCATION MAP  
NOT TO SCALE

**J.U.L.I.E.**  
**JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION**  
1-800-892-0123  
OR 811

**PROJECT ENGINEER: CRAIG REED**  
**UNIT CHIEF : MARK JONES**

**DISTRICT 3 NO. (815) 434-6131**

**CONTRACT NO. 46040**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

SUBMITTED \_\_\_\_\_ 20\_\_\_\_

*George Ryan*  
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER

May 8, 20 09  
*Charles J. Ingersoll*  
ENGINEER OF DESIGN AND ENVIRONMENT

May 8, 20 09  
*Christine M. Reed*  
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

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**OF THE STATE OF ILLINOIS**

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**HIGHWAY STANDARDS**

EFFECTIVE JANUARY 1, 2009

- 630101-08 GUARDRAIL MOUNTED ON EXISTING CULVERTS
- 630201-06 PCC/HMA STABILIZATION AT STEEL PLATE BEAM GUARDRAIL
- 630301-05 SHOULDER WIDENING FOR TYPE 1 (SPECIAL) GUARDRAIL TERMINALS
- 635006-03 REFLECTOR AND TERMINAL MARKER PLACEMENT
- 635011-02 REFLECTOR MARKER AND MOUNTING DETAILS
- 701001-02 OFF-ROAD OPERATIONS 2L, 2W, MORE THAN 15' (4.5 m) AWAY
- 701006-03 OFF-ROAD OPERATIONS 2L, 2W, 15' (4.5 m) TO 24" (600 mm) FROM PAVEMENT EDGE
- 701101-02 OFF-ROAD OPERATIONS MULTILANE, 15' (4.5 m) TO 24" (600 mm) FROM PAVEMENT EDGE
- 701106-02 OFF-ROAD OPERATIONS, MULTILANE, MORE THAN 15' (4.5 m) AWAY
- 701201-03 LANE CLOSURE, 2L, 2W, DAY ONLY, FOR SPEEDS ≥ 45 MPH
- 701301-03 LANE CLOSURE, 2L, 2W, SHORT TIME OPERATIONS
- 701501-05 URBAN LANE CLOSURE, 2L, 2W, UNDIVIDED
- 701502-03 URBAN LANE CLOSURE 2L, 2W, WITH BIDIRECTIONAL LEFT TURN LANE
- 701901-01 TRAFFIC CONTROL DEVICES

THE FOLLOWING RATE OF APPLICATION HAS BEEN USED IN CALCULATING PLAN QUANTITIES:

GRANULAR MATERIALS	2.05	TONS / CU YD
--------------------	------	--------------

**GENERAL NOTES**

THE REMOVAL OF DAMAGED GUARDRAIL AND DAMAGED POSTS SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCLUDED IN THE COST OF THE VARIOUS REPLACEMENT PAY ITEMS.

VERTICAL OR HORIZONTAL ALIGNMENT OF GUARDRAIL SHALL BE ACCOMPLISHED AS PART OF THE PAY ITEM: REMOVE AND REERECT STEEL PLATE BEAM GUARDRAIL.

REMOVED GUARDRAIL THAT IS NOT REPLACED ON THE SAME DAY MUST BE DELINEATED WITH LIGHTED BARRICADES. NO LOCATIONS WILL BE LEFT WITHOUT EITHER LIGHTED BARRICADES OR COMPLETED GUARDRAIL UPGRADE AT ANY TIME. NO MATERIAL SHOULD BE LEFT ON OR NEAR THE ROADWAY DURING NON-WORKING HOURS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING UTILITY PROPERTY FROM CONSTRUCTION OPERATIONS AS OUTLINED IN ARTICLE 107.31 OF THE STANDARD SPECIFICATIONS. THE J.U.L.I.E. NUMBER IS 1-800-892-0123. A MINIMUM OF FORTY-EIGHT HOURS ADVANCE NOTICE IS REQUIRED.

GUARDRAIL MARKERS SHALL NOT BE ATTACHED TO TERMINAL SECTIONS.

BITUMINOUS SHOULDERS ARE INCLUDED FOR LOCATIONS WHERE THE ENGINEER SPECIFIES USE OF STANDARD 630201.

AGGREGATE SHOULDERS ARE INCLUDED TO REPAIR LOCATIONS OF DEFECTIVE SHOULDERS AS DETERMINED BY THE ENGINEER.

<b>MIXTURE TABLE</b>
PG GRADE = 58-22
RAP (MAX) _____
DESIGN AIR VOIDS = 2@N30
FRICTION AGG _____
DENSITY TEST METHOD = CORES

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DISTRICT THREE

PREPARED BY: *Ed Paul*  
DISTRICT STUDIES & PLANS ENGINEER

DATE: 2-19-09

EXAMINED BY: *Harbert K. Long*  
DISTRICT CONSTRUCTION ENGINEER

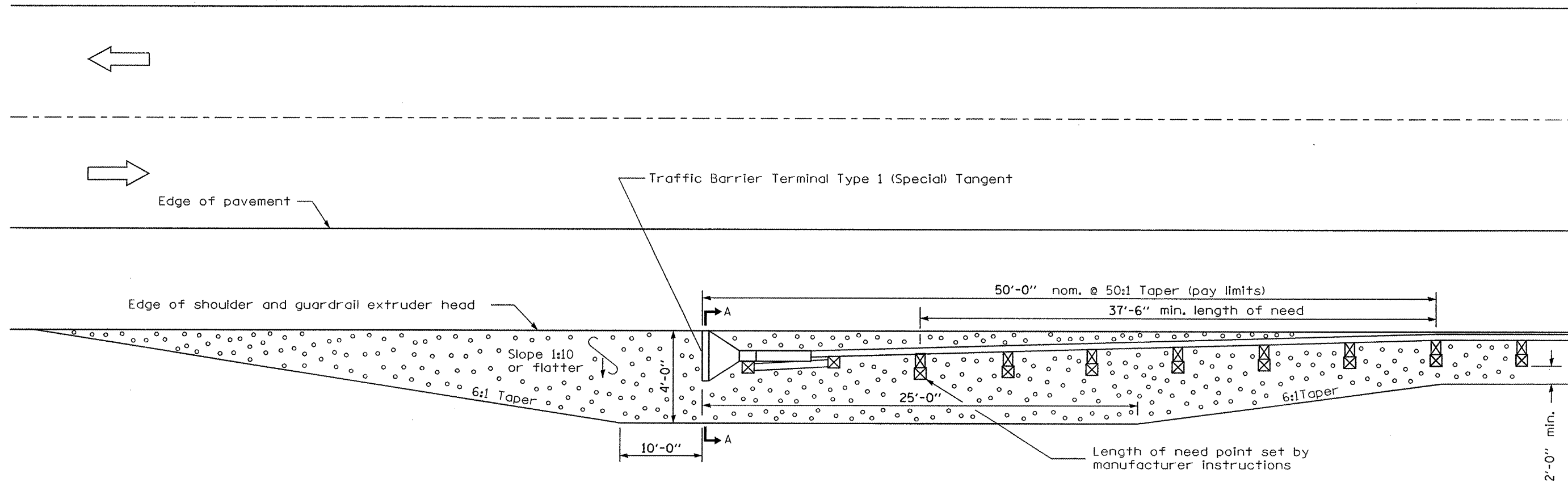
*Wayne Phillips*  
DISTRICT MATERIALS ENGINEER

*Bruce A. Anderson*  
DISTRICT OPERATIONS ENGINEER

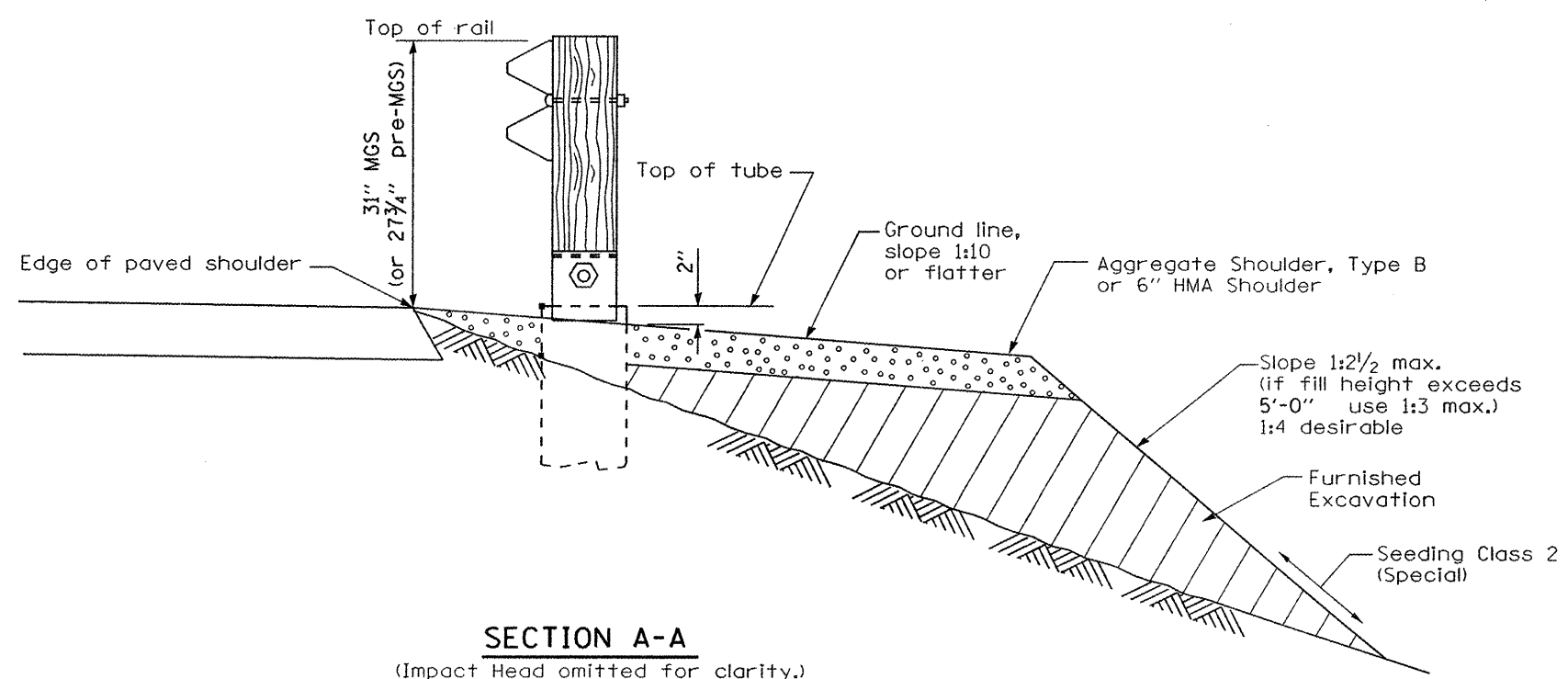
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SCALE: SHEET NO. OF SHEETS STA. TO STA.										

• D3 GUARDRAIL UPGRADE 2009

SUMMARY OF QUANTITIES				
CODE NO.	ITEM	CONSTRUCTION CODE TYPE:		100% FEDERAL SFTY-3J ROADWAY
		UNIT	TOTAL QUANTITY	
20400800	FURNISHED EXCAVATION	CU YD	1650	1650
25001000	SEEDING, CLASS 2 (SPECIAL)	ACRE	1.75	1.75
25100630	EROSION CONTROL BLANKET	SQ YD	8400	8400
48101200	AGGREGATE SHOULDERS, TYPE B	TON	750	750
48203100	HOT-MIX ASPHALT SHOULDERS	TON	1650	1650
63000130	STEEL PLATE BEAM GUARD RAIL, TYPE A (SPECIAL)	FOOT	1875	1875
63100045	TRAFFIC BARRIER TERMINAL, TYPE 2	EACH	30	30
63100167	TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT	EACH	120	120
63100169	TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) FLARED	EACH	30	30
63200310	GUARDRAIL REMOVAL	FOOT	3750	3750
63301000	REMOVE AND RE-ERECT STEEL PLATE BEAM GUARDRAIL	FOOT	7500	7500
67100100	MOBILIZATION	L SUM	1	1
X7012610	TRAFFIC CONTROL AND PROTECTION, STANDARD 701201	EACH	150	150
70103815	TRAFFIC CONTROL SURVEILLANCE	CAL DA	90	90
78200410	GUARDRAIL MARKERS, TYPE A	EACH	100	100
78201000	TERMINAL MARKER - DIRECT APPLIED	EACH	150	150
X6333500	TRAFFIC BARRIER TERMINAL REMOVAL	EACH	150	150



**SHOULDER WIDENING TRANSITION  
FOR TANGENT TERMINAL**



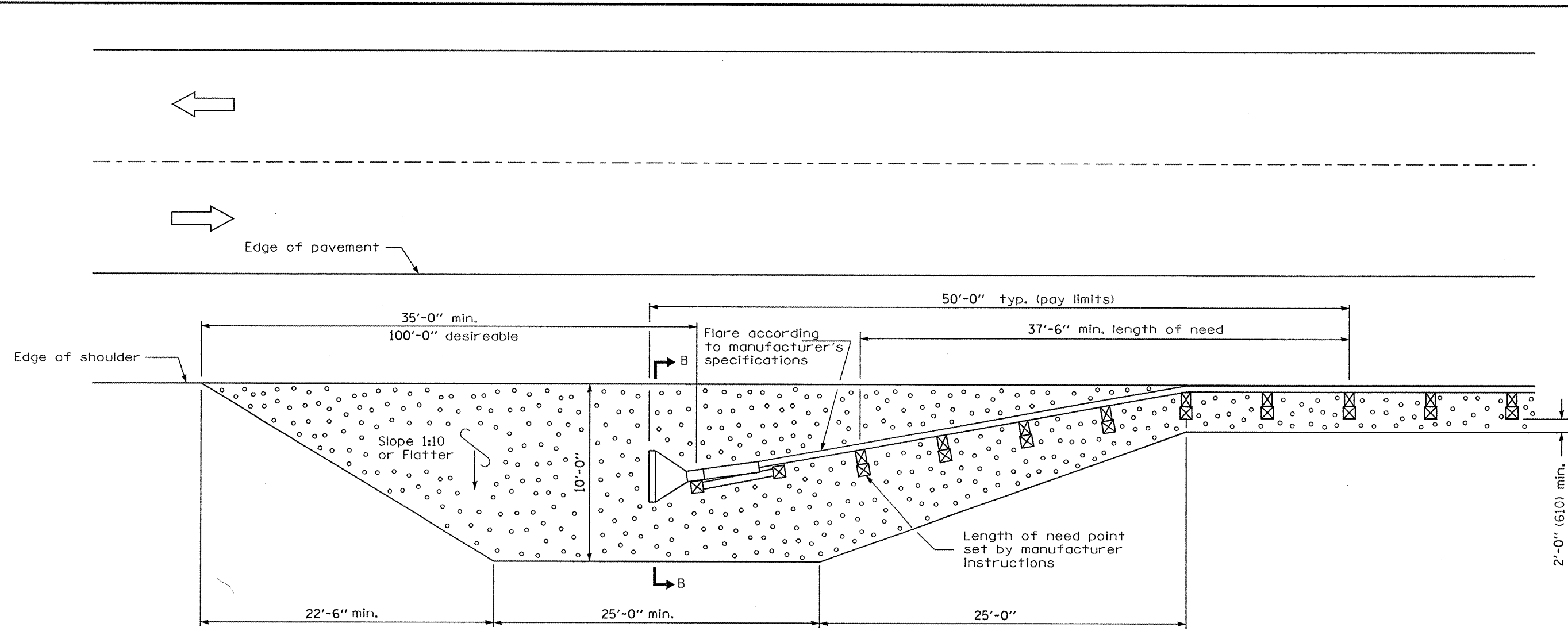
**SECTION A-A**  
(Impact Head omitted for clarity.)

**GENERAL NOTES**

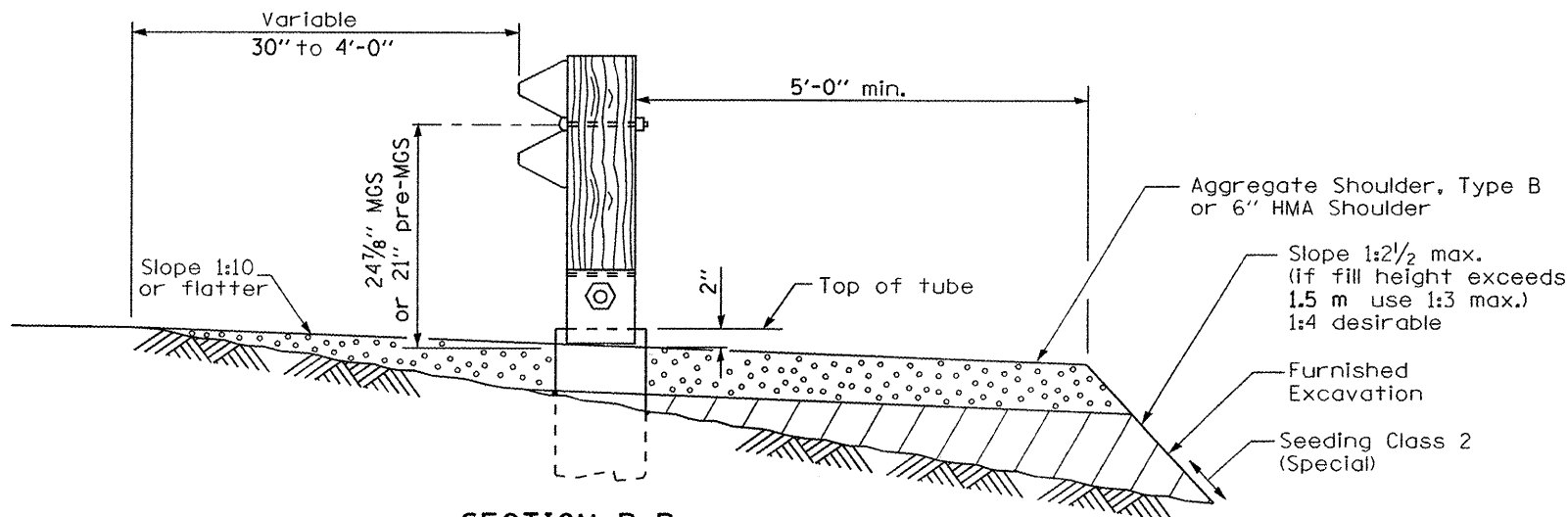
50:1 Taper required so the guardrail head will not encroach on the shoulder.  
  
Work at each location shall be determined by the engineer and shown on the work order.

FILE NAME =	USER NAME = schwankeg	DESIGNED -	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>SHOULDER WIDENING FOR TYPE 1 (SPECIAL) GUARDRAIL TERMINALS</b>			RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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• 03 GUARDRAIL UPGRADE 2009



**SHOULDER WIDENING TRANSITION  
FOR FLARED TERMINAL**



**SECTION B-B**

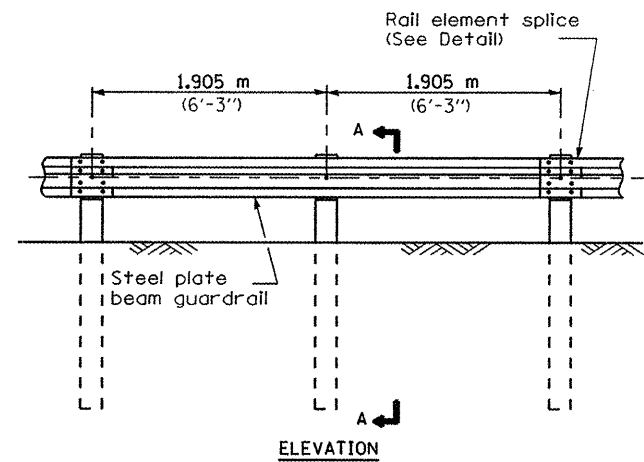
(Impact Head omitted for clarity.)

**GENERAL NOTES**

Work at each location shall be determined by the engineer and shown on the work order.

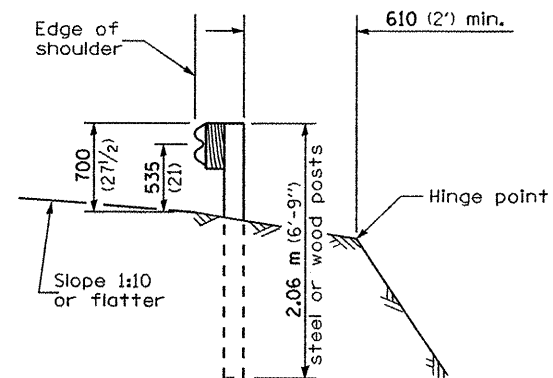
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• D3 GUARDRAIL UPGRADE 2009

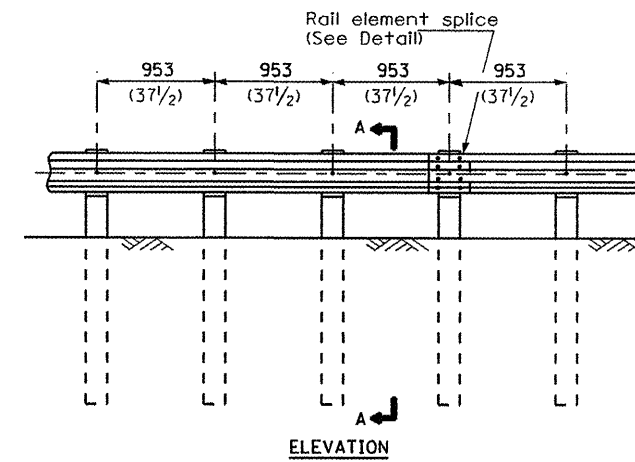


**TYPE A**

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

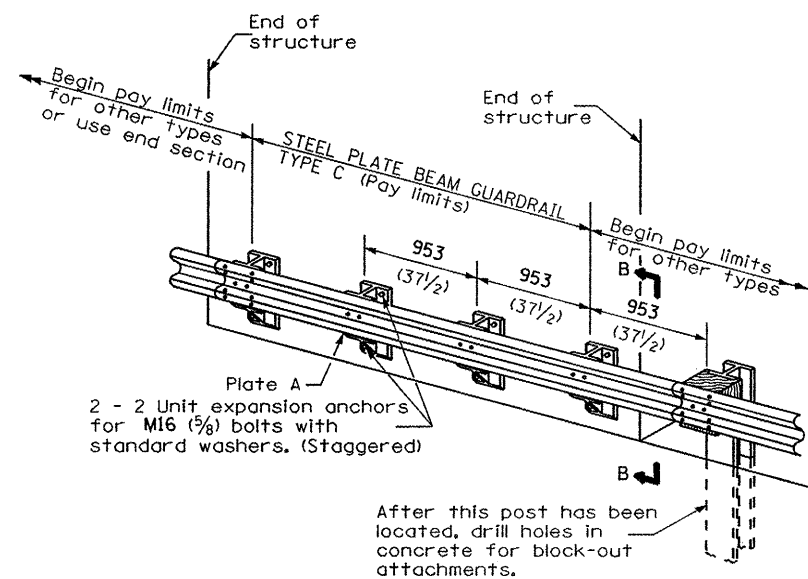


**SECTION A-A**



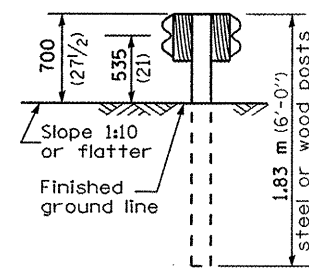
**TYPE B**

953 (37 1/2) Closed post spacing

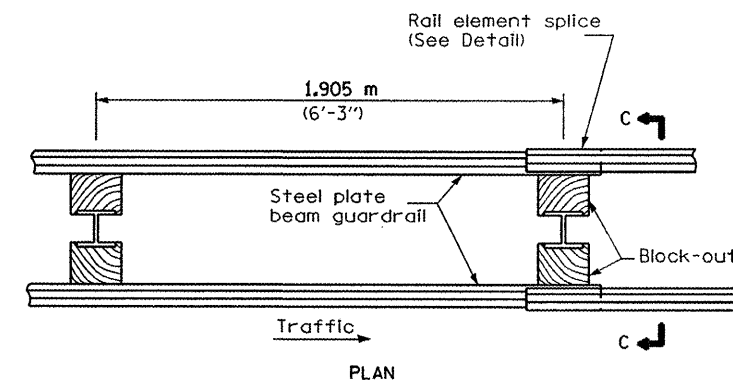


**TYPE C**

953 (37 1/2) Block-out spacing

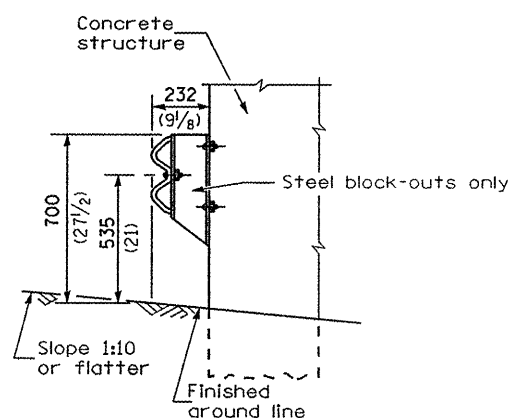


**SECTION C-C**



**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).

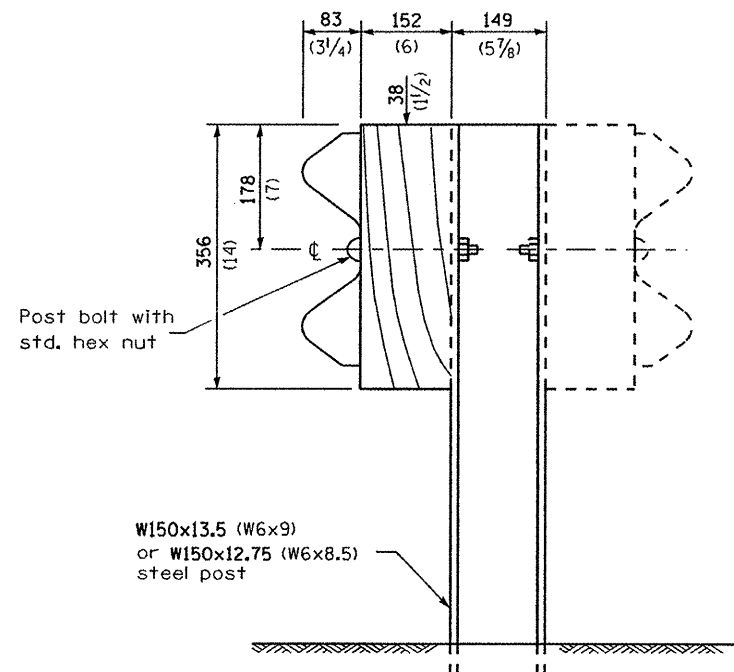
All dimensions are in millimeters (inches) unless otherwise shown.

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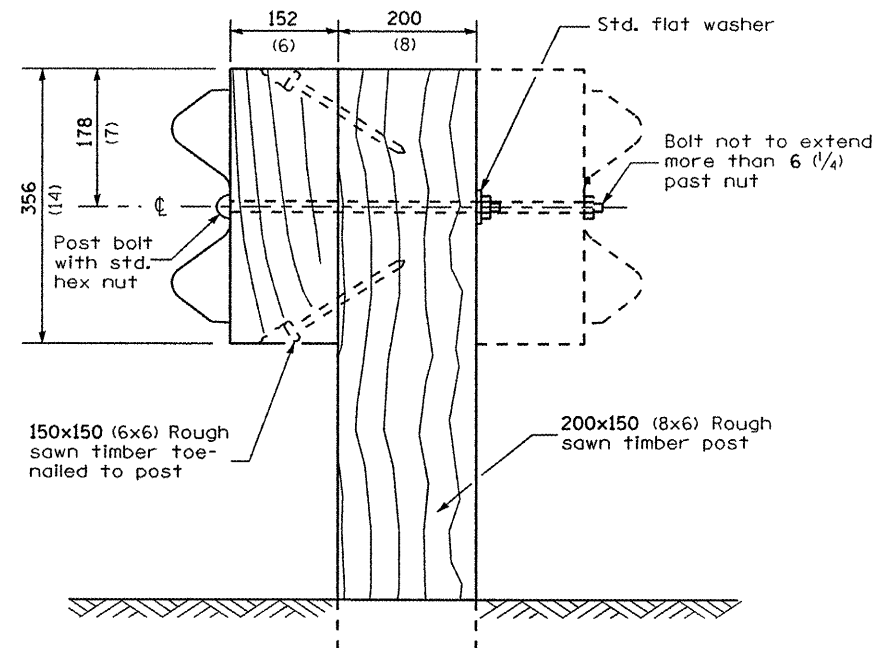
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

<b>PRE-MGS EFFECTIVE 4-1-06 STEEL PLATE BEAM GUARDRAIL STANDARD 630001-06</b>			
(Sheet 1 of 4)			
SCALE:	SHEET NO. OF SHEETS	STA. TO STA.	

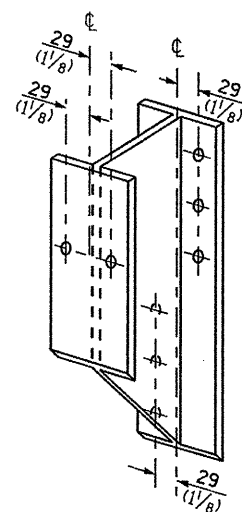
• D3 GUARDRAIL UPGRADE 2009				
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<b>CONTRACT NO. 46040</b>				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				



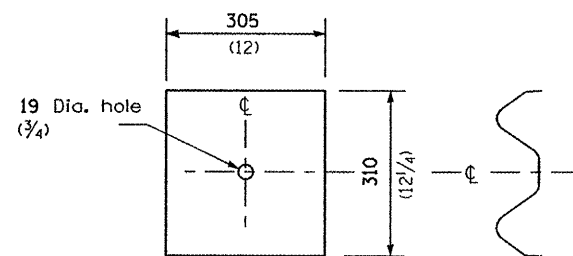
**STEEL POST CONSTRUCTION**



**WOOD POST CONSTRUCTION**



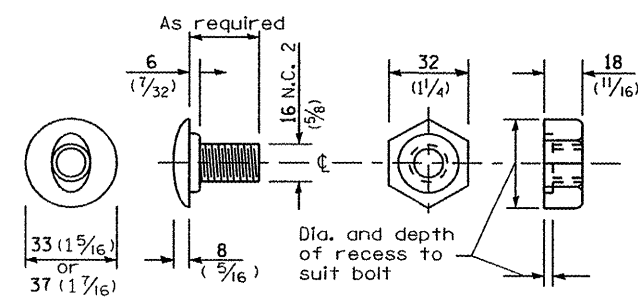
**STEEL BLOCK-OUT DETAIL**



**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**

• 03 GUARDRAIL UPGRADE 2009

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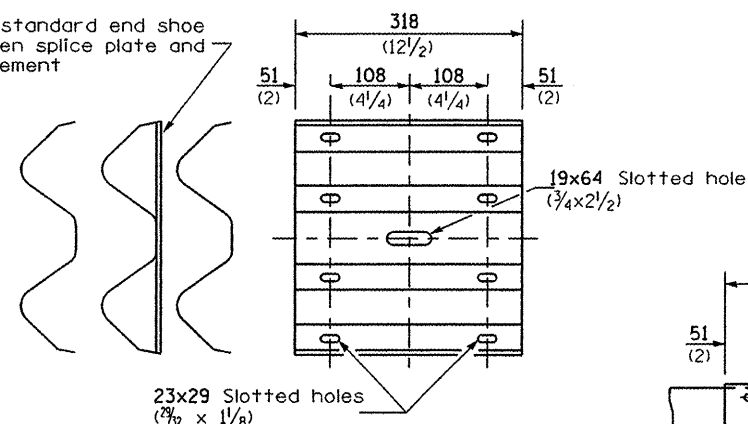
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

PRE-MGS EFFECTIVE 4-1-06  
STEEL PLATE BEAM GUARDRAIL  
STANDARD 630001-06

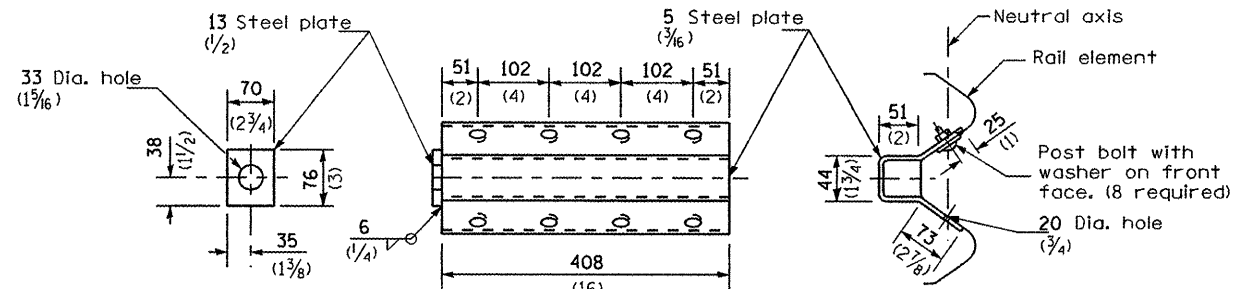
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SCALE:	SHEET NO. OF SHEETS	STA. TO STA.	RTE. VAR.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
					VARIOUS	9	7
						CONTRACT NO. 46040	
			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				

Place standard end shoe between splice plate and rail element

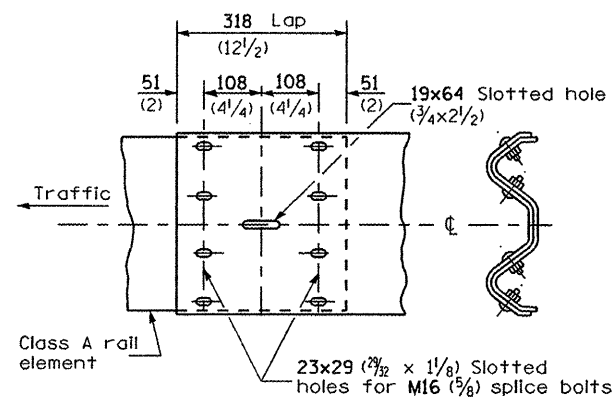


**SPLICE PLATE**

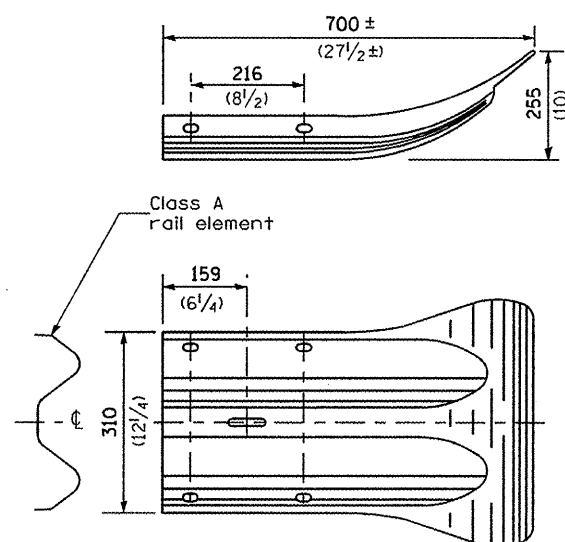


**NOTE**  
Anchor plate T shall be used to attach cable assembly to guardrail when required on traffic barrier terminals.

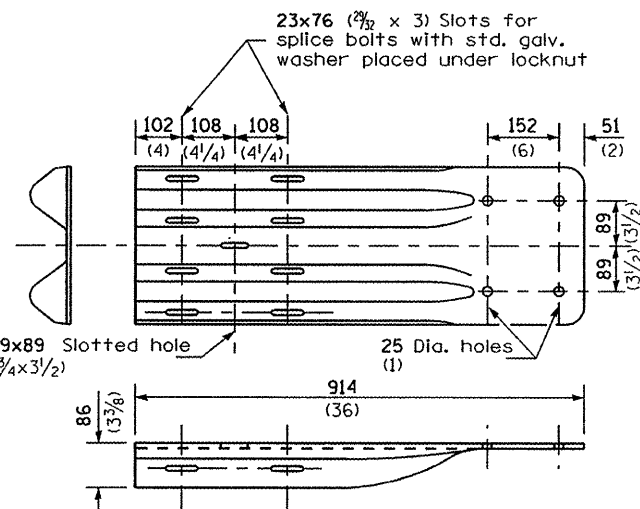
**ANCHOR PLATE T DETAILS**



**RAIL ELEMENT SPLICE**



**END SECTION**



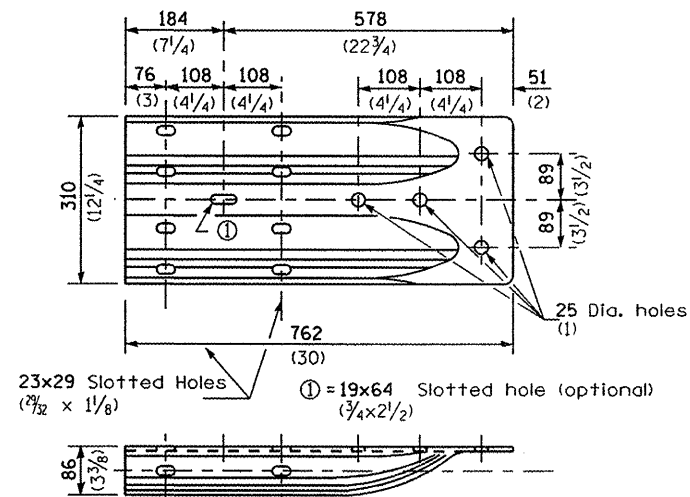
**NOTE**

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**

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		DATE -	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**PRE-MGS EFFECTIVE 4-1-06  
STEEL PLATE BEAM GUARDRAIL  
STANDARD 630001-06**

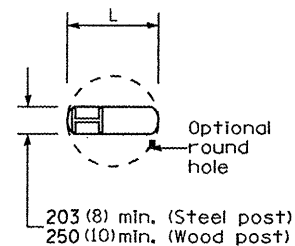
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VAR.	*	VARIOUS	9	8
<b>CONTRACT NO. 46040</b>				

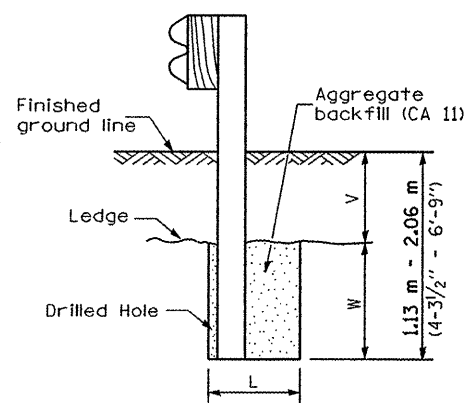
• 03 GUARDRAIL UPGRADE 2009

SCALE: SHEET NO. OF SHEETS STA. TO STA. FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT





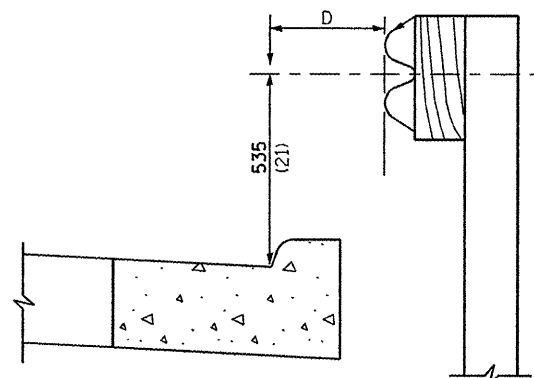
**PLAN**



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

**ELEVATION**

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



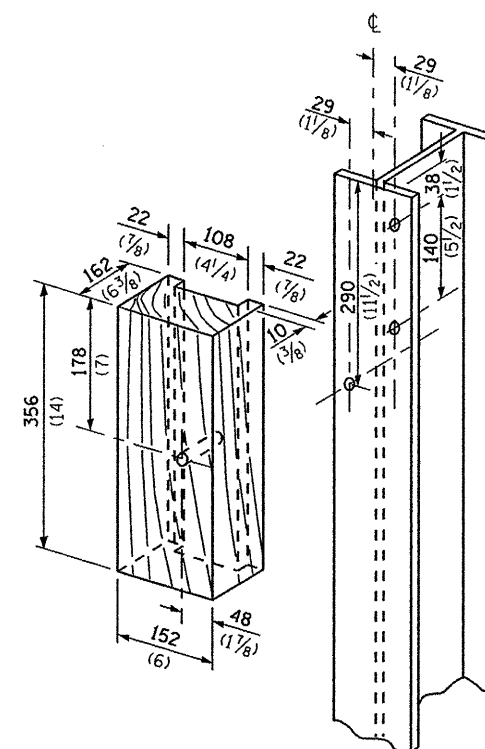
Note:

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. 606001) shall be used in front of and in advance of the guardrail.

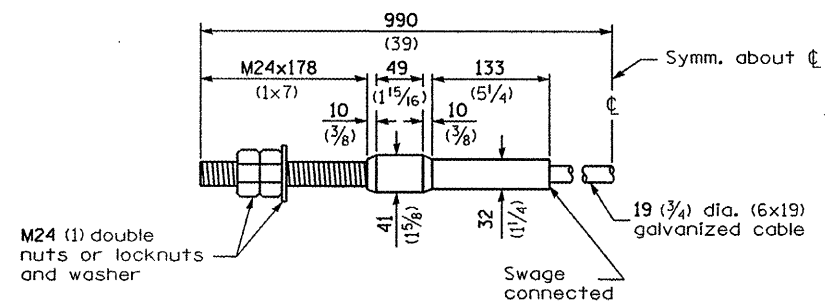
**GUARDRAIL PLACED BEHIND CURB**

(D = 0 desirable to 300 (12) maximum)

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**

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

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

PRE-MGS EFFECTIVE 4-1-06  
STEEL PLATE BEAM GUARDRAIL  
STANDARD 630001-06

(Sheet 4 of 4)

SCALE: SHEET NO. OF SHEETS STA. TO STA.

RTE.		SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR.			VARIOUS	9	9
CONTRACT NO. 46040					
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

• D3 GUARDRAIL UPGRADE 2009