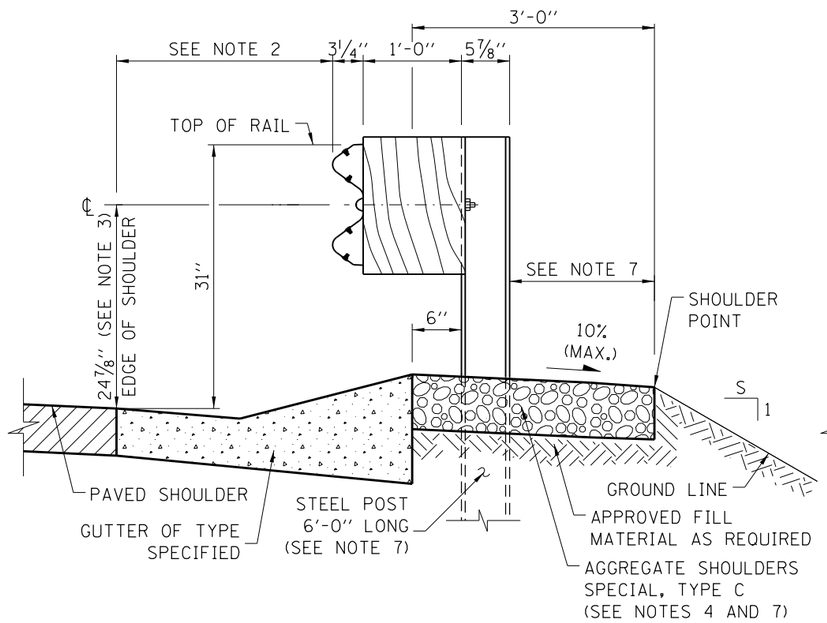
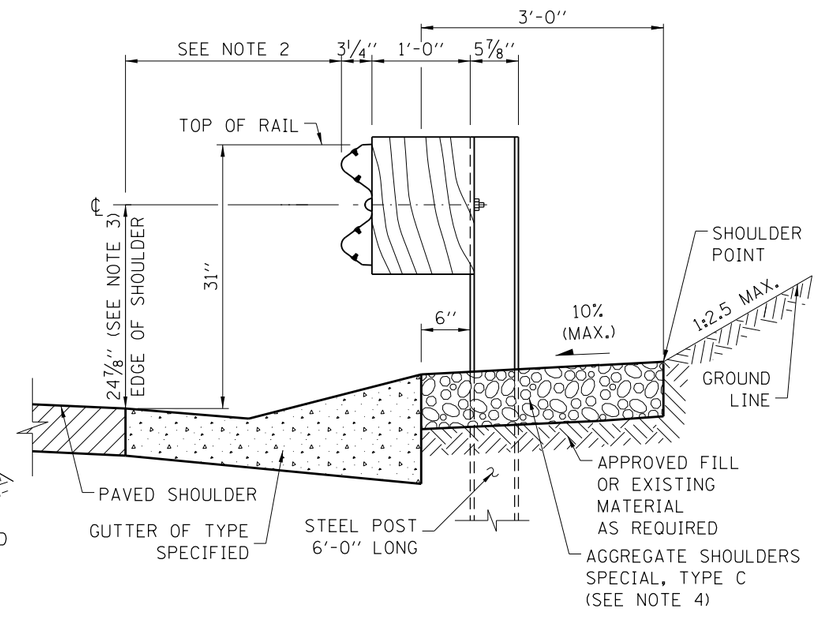
Illinois Tollway Standard Drawing Revisions

Section C	Guardrail & Concrete Barrier	
	Standard	**Modification Summary** **Effective: 03-01-2020**
	C1-11	**GALVANIZED STEEL PLATE BEAM GUARDRAIL**
		Revised Note 11 on sheet 1 to reference MASH crashworthiness for standard post spacing.
		Revised the Table 2B headers on sheet 4 to read Existing Guardrail and All New Guardrail.
	C3-08	**CONCRETE BARRIER SINGLE FACE, REINFORCED TL-4, 44 INCH**
		Revised standard named to include TL-4 and notes on sheet 1.
		Barrier height has been revised from 42" to 44" and base thickened. Reinforcement has been adjusted.
		Modified the polyurethane sealant note in Section B-B to remove the reference to the backer rod.
	C4-09	**CONCRETE SHOULDER BARRIER TRANSITION, TYPE V-SF**
		Single face barrier height revised to 44" and base thickened. Reinforcement has been adjusted.
		Clarified note that downstream structure shall be crashworthy.
		Modified the polyurethane sealant note in Section B-B to remove the reference to the backer rod.
	C5-07	**CONCRETE BARRIER BASE, AND CONCRETE BARRIER, DOUBLE FACE, 44 INCH AND VARIABLE HEIGHT**
		Revise maximum vertical differential for variable height barrier from 9" to 12"
		Clarified Note 3, that it is the overall height of the barrier that can vary, by varying the gutter slope, to maintain drainage.
	C6-11	**SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT**
		Corrected Plan view and Table 1 on sheet 2 to reference modified G-3 and G-2 Gutter
		Also on Table 1, clarified location of Impact Head to be 1'-0" when on the outside of curve
	C9-10	**TRAFFIC BARRIER TERMINAL, TYPE T6**
		Shortened terminal by reducing the length of the upstream thrie beam rail. Revised number, spacing and lengths of posts.
		Added nested W-beam rail to first rail section upstream of transition section on sheets 1 through 4.
		Revised taper rate of terminal. Rail taper extends past terminal on sheets 1 and 2.
	C10-09	**TRAFFIC BARRIER TERMINAL, TYPE T6B**
		Shortened terminal by reducing the length of the upstream thrie beam rail. Revised number, spacing and lengths of posts.
		Revised taper rate of terminal.
	C12-10	**SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)**
		Corrected Plan view and Table 1 on sheet 2 to reference modified G-3 and G-2 Gutter
		Also on Table 1, clarified location of Impact Head to be 1'-0" when on the outside of curve
	C14-04	**CONCRETE MEDIAN BARRIER TRANSITION, TYPE V AT BRIDGE PIERS**
		Corrected height to 44" in Section A-A. Corrected 5' stub to show it is not part of the height transition.
	C15-01	**CONCRETE BARRIER SINGLE FACE, REINFORCED TL-5, T-SHAPE 44 INCH**
		Revised standard name to include TL-5 and modified barrier reinforcing.
		Modified the polyurethane sealant note in Section B-B to remove the reference to the backer rod.
	C16-01	**CONCRETE BARRIER SINGLE FACE, REINFORCED TL-5, L-SHAPE 44 INCH**
		Revised name to include TL-5, increased barrier stem thickness and revised reinforcement.
		Reduced moment slab length and adjusted cross slope, added cross slope theoretical gutter note.
		Modified the polyurethane sealant note in Section B-B to remove the reference to the backer rod.
	C17-01	**CONCRETE BARRIER SINGLE FACE, REINFORCED TL-5, 54 INCH**
		Revised name to include TL-5, adjusted moment slab cross slope and added theoretical gutter note.
		Modified drainage structure opening diagonal reinforcement.
		Modified the polyurethane sealant note in Section B-B to remove the reference to the backer rod.

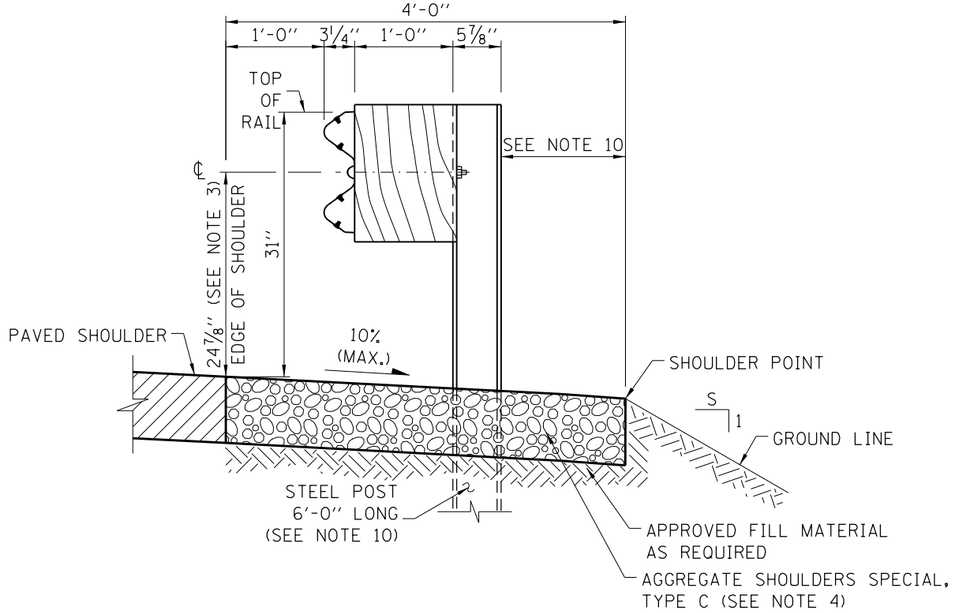
New Sheet Retired Standard



FILL SECTION WITH GUTTER



CUT SECTION WITH GUTTER



SECTION WITHOUT GUTTER

GUARDRAIL INSTALLATION DETAILS

NOTES:

1. 1'-0" OFFSET FROM EDGE OF PAVED SHOULDER TO FACE OF RAIL IS TYPICAL FOR ALL INSTALLATIONS WITHOUT GUTTER EXCEPT AS OTHERWISE DETAILED IN THE PLAN DRAWINGS.
2. WHERE GUTTERS SUCH AS TYPE G-2, G-3 ARE REQUIRED IN FRONT OF THE GUARDRAIL, THE POSTS SHALL BE LOCATED 6" BEHIND THE GUTTER, OR AS OTHERWISE DETAILED IN THE PLANS. THE OFFSET FROM THE EDGE OF SHOULDER TO THE FACE OF THE GUARDRAIL SHALL BE AS SHOWN ON STANDARD B28.
3. THE 24 7/8" TYPICAL RAIL HEIGHT IS MEASURED FROM EXISTING SURFACE 1'-0" IN FRONT OF RAIL, OR FROM EDGE OF SHOULDER/EDGE OF GUTTER WHEN EDGE IS MORE THAN 1'-0" IN FRONT OF RAIL TO CENTER OF RAIL.
4. WHERE GUTTER IS PROPOSED WITH GUARDRAIL, A 6" MINIMUM THICKNESS OF AGGREGATE SHOULDERS SPECIAL, TYPE C SHALL BE PLACED BEHIND GUTTER. FOR GUARDRAIL WITHOUT GUTTER, AGGREGATE SHOULDER, TYPE C, OF THE SAME THICKNESS AS PAVED SHOULDER SHALL BE PLACED FROM THE EDGE OF PAVED SHOULDER SLOPING AWAY TO A 6" MIN. THICKNESS.
5. GUARDRAIL POSTS SHALL NOT BE ATTACHED TO ANY STRUCTURE.
6. PLASTIC BLOCK-OUTS SHALL NOT BE ALLOWED AS A SUBSTITUTE FOR WOOD BLOCK-OUTS ON NEW INSTALLATIONS.
7. WHEN S IS LESS THAN OR EQUAL TO 3 AND 3'-0" AGGREGATE SHOULDER WIDTH CANNOT BE MET, THE POST LENGTH SHALL BE 9'-0" AND THE AGGREGATE SHOULDER WIDTH SHALL BE 1'-0" MIN. BEHIND THE POST TO THE SHOULDER POINT.
8. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENTS (V:H).
9. UNDER NO CIRCUMSTANCES SHALL AN EXISTING GUARDRAIL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE EXTENDED, ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
10. WHEN S IS LESS THAN OR EQUAL TO 3, THE POST LENGTH SHALL BE 9'-0" AND 4'-0" AGGREGATE SHOULDER WIDTH MAINTAINED.
11. THE MGS GUARDRAIL SYSTEM WITH STANDARD POST SPACING HAS BEEN PERFORMANCE-TESTED FOR TL-3 CRASHWORTHINESS UNDER PROCEDURES DEFINED IN THE AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE (MASH). OTHER VARIATIONS OF THE MGS GUARDRAIL SYSTEM HAVE BEEN PERFORMANCE-TESTED FOR TL-3 CRASHWORTHINESS UNDER PROCEDURES OUTLINED IN THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350. NO MODIFICATION TO THIS STANDARD DRAWING SHALL BE PERMITTED.
12. GUARDRAIL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENT. WHEN NECESSARY USE LEAVE-OUT DETAIL ON SHEET 3 OF 4 OF THIS SERIES.

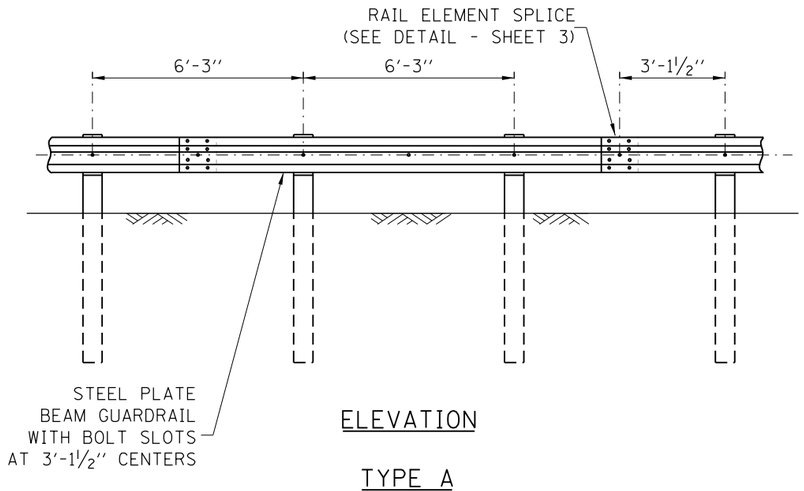
Paul Kovacs
APPROVED . . . . . DATE 5-1-2009
CHIEF ENGINEERING OFFICER

DATE	REVISIONS
03-31-14	REMOVED SECONDARY HOLE
	FROM POST AND UPDATED
	NOTES.
03-31-16	ADDED SECTION, REV'D SHLDR
03-31-17	REVISED NOTES
03-01-18	CORRECTED NOTES, ADDED
	TABLES 2A AND 2B.
03-01-20	MODIFIED NOTE 11 AND
	HEADING OF TABLE 2B

Illinois Tollway

GALVANIZED STEEL PLATE BEAM GUARDRAIL

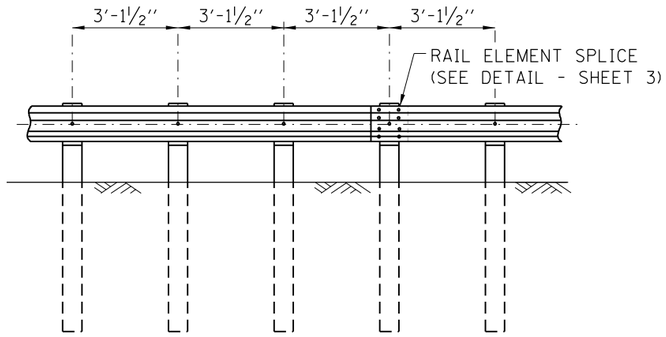
STANDARD C1-11



ELEVATION

TYPE A

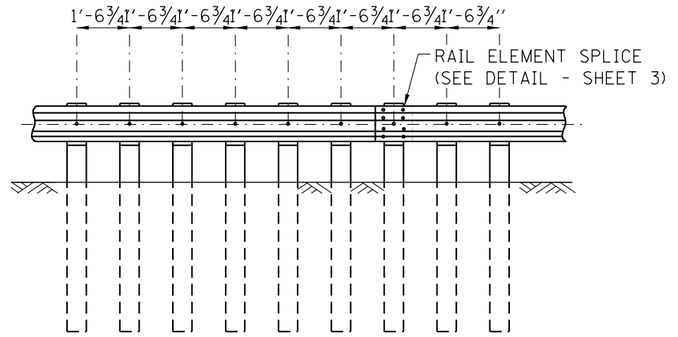
6'-3" TYPICAL POST SPACING



ELEVATION

TYPE B

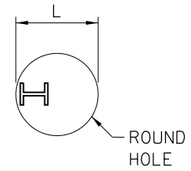
3'-1½" ½ POST SPACING



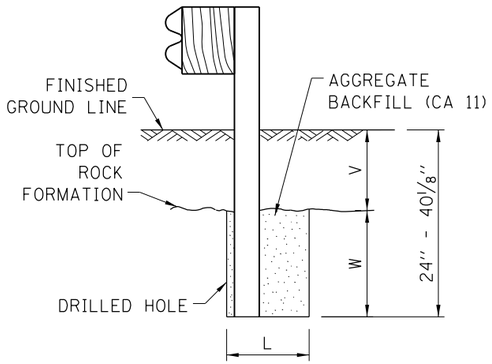
ELEVATION

TYPE C

1'-6¾" ¼ POST SPACING



PLAN

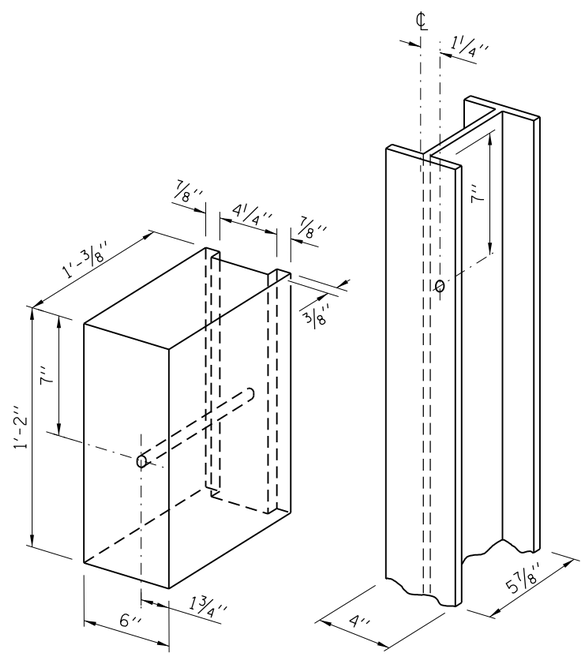


ELEVATION

FOOTING FOR POST WHEN ROCK FORMATION IS ENCOUNTERED

TABLE 1		
V	W	L
0 - 16⅛"	24"	21"
> 16⅛" - 28⅛"	12"	8"
> 28⅛" - 40⅛"	12" - 0 (*)	8"

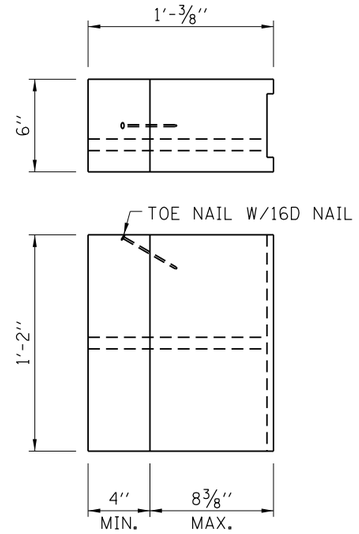
* V + W = 40⅛"



NOTES:

ALL HOLES 3/4" DIA.

WOOD BLOCK-OUT AND STEEL POST DETAILS



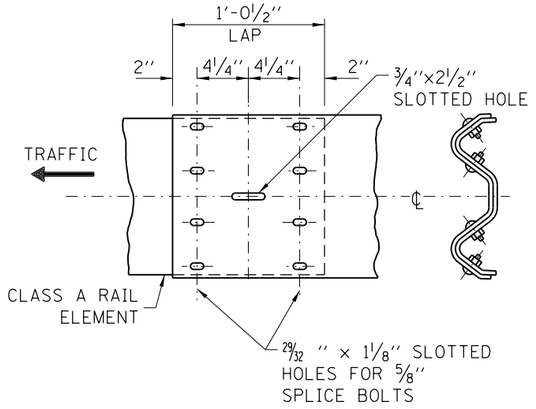
TWO-PIECE WOOD BLOCK-OUT OPTION

Paul Kovacs
APPROVED. . . . . DATE 5-1-2009
CHIEF ENGINEERING OFFICER

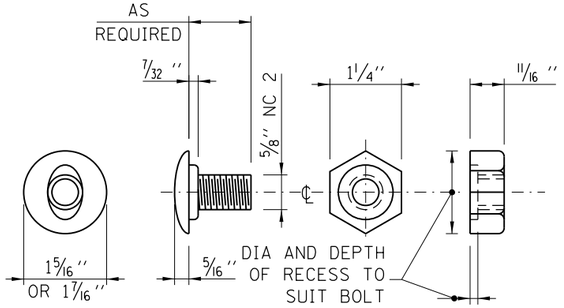
Illinois Tollway

GALVANIZED STEEL PLATE BEAM GUARDRAIL

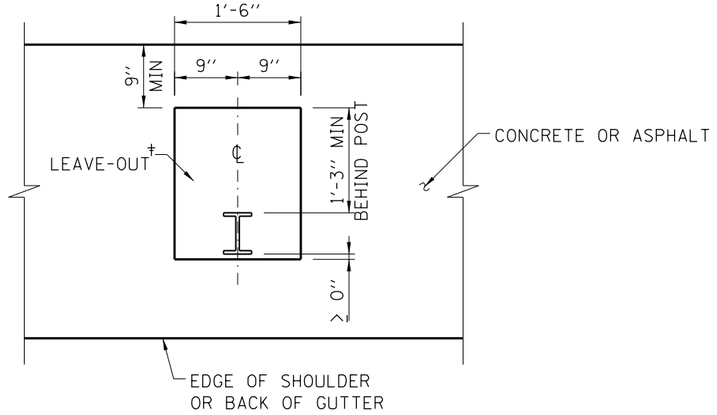
STANDARD C1-11



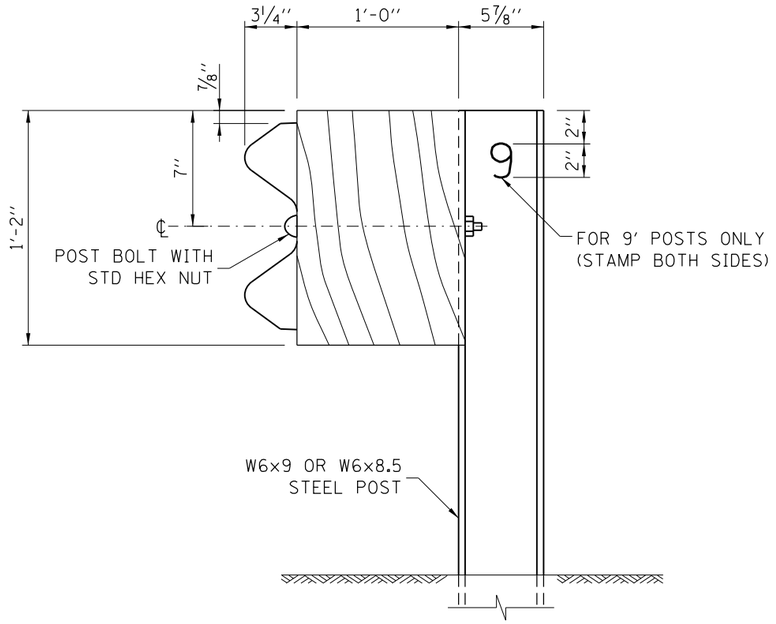
RAIL ELEMENT SPLICE



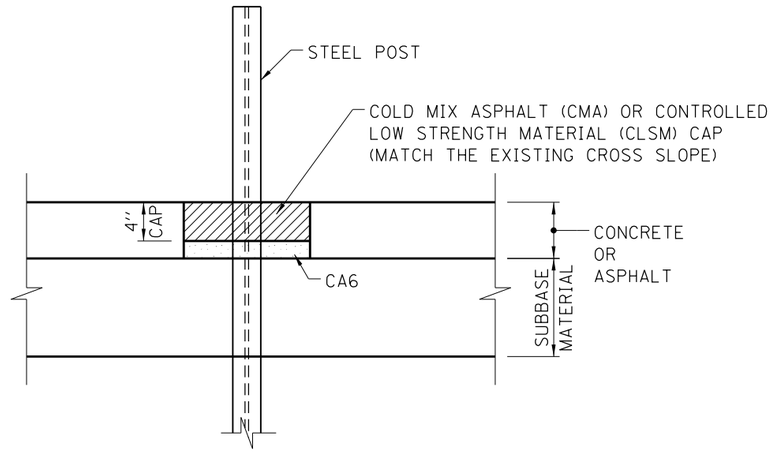
POST OR SPLICE BOLT & NUT



PLAN



STEEL POST CONSTRUCTION



ELEVATION

LEAVE-OUTS

‡ THE AREA AROUND THE POST THAT IS EITHER OMITTED FROM THE NEW CONSTRUCTION OR REMOVED FROM THE EXISTING CONCRETE OR ASPHALT.

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APPROVED . . . . . DATE 5-1-2009
CHIEF ENGINEERING OFFICER

Illinois Tollway

GALVANIZED STEEL PLATE BEAM GUARDRAIL

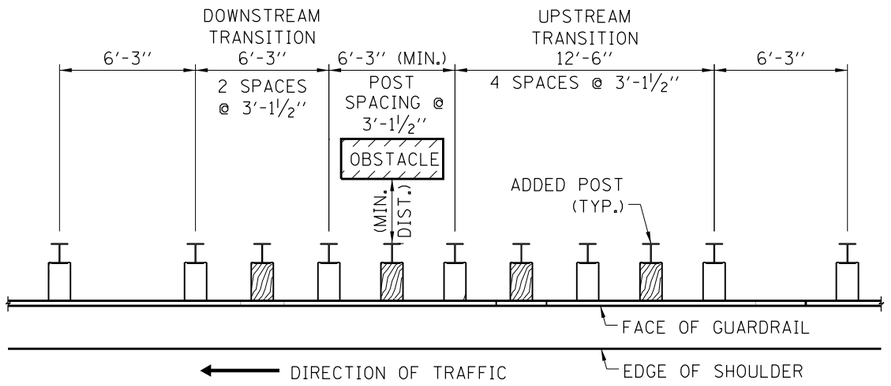
STANDARD C1-11

TABLE 2A
BARRIER CLEARANCE DISTANCE (MGS)
NEW CONSTRUCTION/RECONSTRUCTION

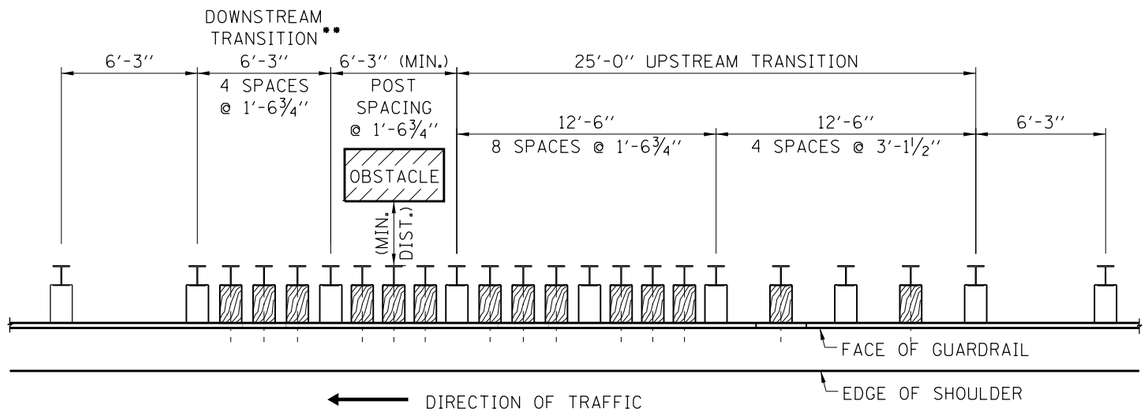
GUARDRAIL SYSTEM	POST SPACING	MINIMUM DISTANCE
TYPE A	6′-3″	39″
TYPE B ½ POST SPACING	3′-1 ½″	34″
TYPE C ¼ POST SPACING	1′-6 ¾″	26″

TABLE 2B
BARRIER CLEARANCE DISTANCE (MGS)
REHABILITATION

GUARDRAIL SYSTEM	POST SPACING	MINIMUM DISTANCE		
		EXISTING BREAKAWAY LIGHT POLES	ALL OTHER OBSTACLES	
			EXISTING GUARDRAIL	ALL NEW GUARDRAIL
TYPE A	6′-3″	20″	28″	39″
TYPE B ½ POST SPACING	3′-1 ½″	N/A	23″	34″
TYPE C ¼ POST SPACING	1′-6 ¾″	N/A	14″	26″



TRANSITION TO ½-POST SPACING



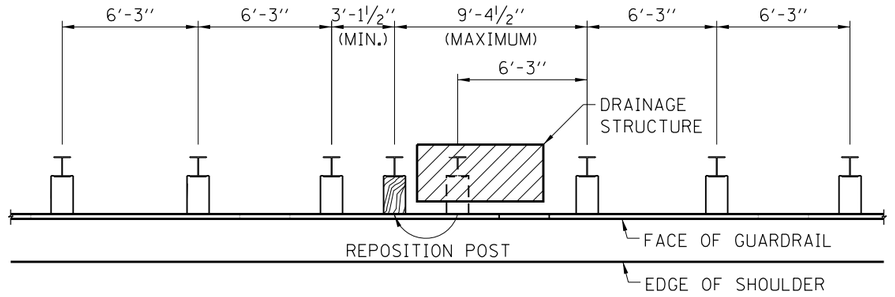
TRANSITION TO ¼-POST SPACING

** WHEN LENGTH OF OBSTACLES IS 1′-3″ OR LESS, THE DOWNSTREAM TRANSITION SHALL BE OMITTED.

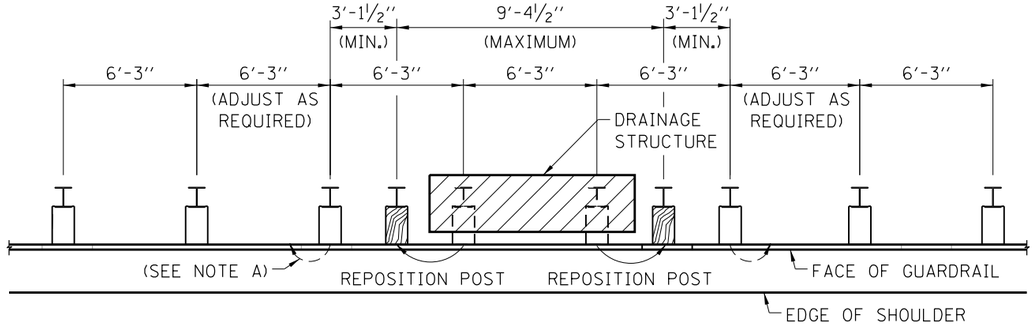
POST SPACING TRANSITIONS

NOTE: NO MODIFICATIONS OF ANY KIND TO THE TRANSITION POST SPACING ARE ALLOWED.

Paul Kovacs
APPROVED . . . . . DATE 5-1-2009
CHIEF ENGINEERING OFFICER



TYPE A GUARDRAIL-DRAINAGE STRUCTURE CONFLICT
ONE POST



TYPE A GUARDRAIL - DRAINAGE STRUCTURE CONFLICT
TWO POSTS

DRAINAGE STRUCTURE CONFLICTS

NOTES:

A. GUARDRAIL POSTS SHALL NOT BE ELIMINATED; ALL POSTS MUST BE USED. POSTS ADJACENT TO REPOSITIONED POSTS MAY NEED TO BE MOVED TO KEEP 3′-1½″ MINIMUM SPACING.

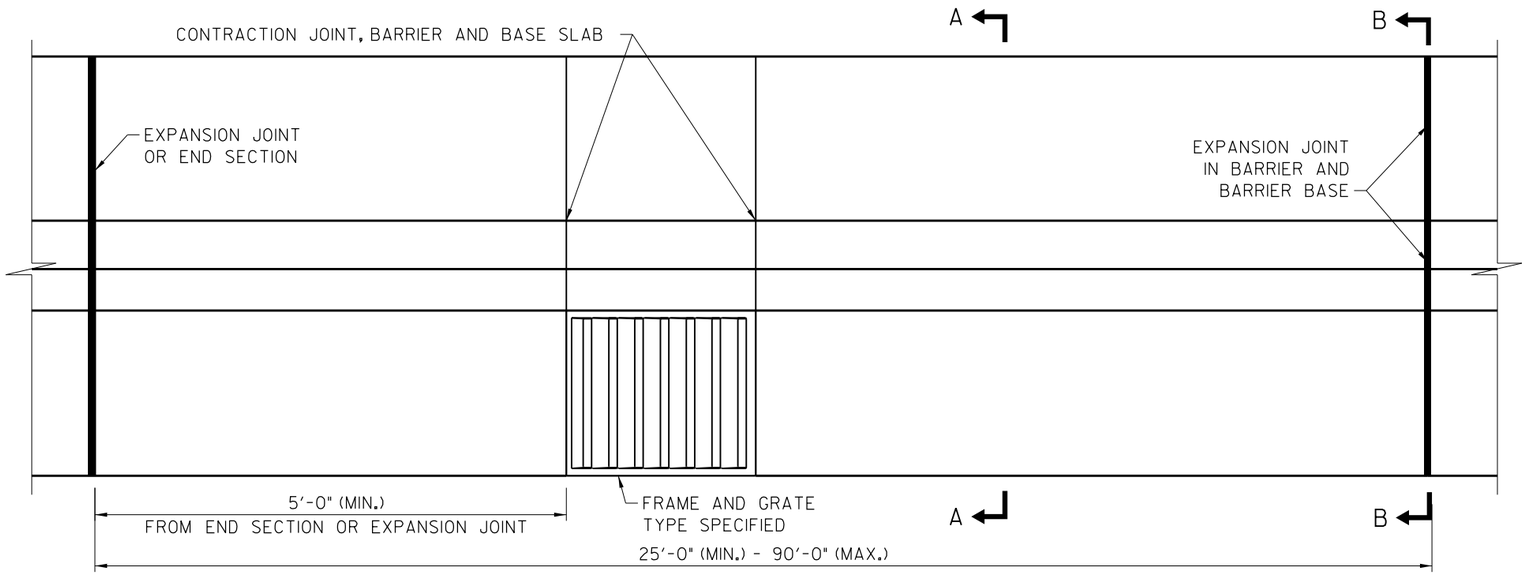
B. GUARDRAIL POSTS SHALL NOT BE SET BACK TO AVOID CONFLICTS WITH A DRAINAGE STRUCTURE.

C. THIS DETAIL ALSO APPLIES TO OTHER UNDERGROUND CONFLICTS.

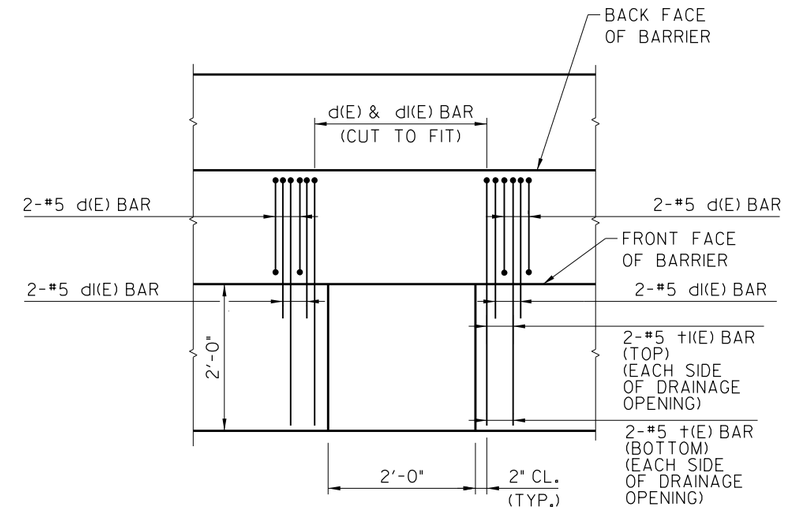
Illinois Tollway

GALVANIZED STEEL PLATE BEAM GUARDRAIL

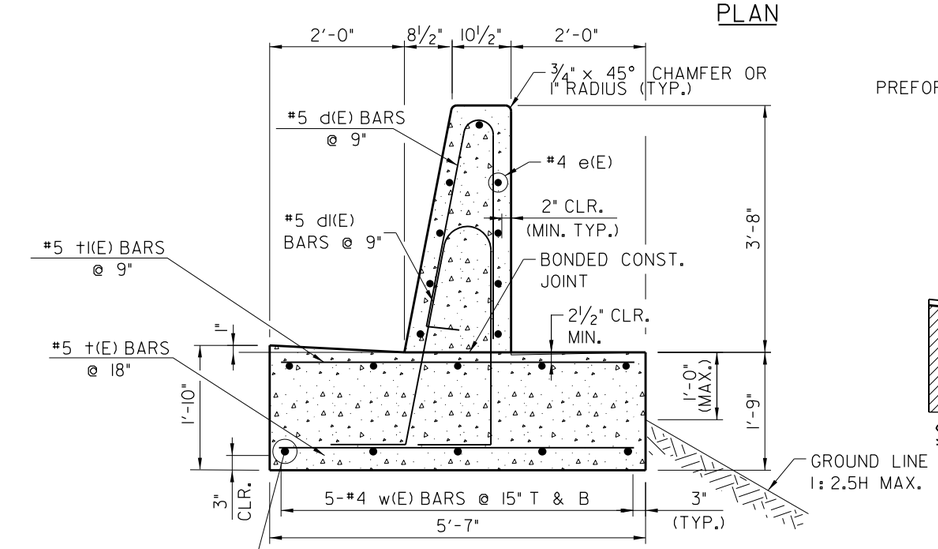
STANDARD C1-11



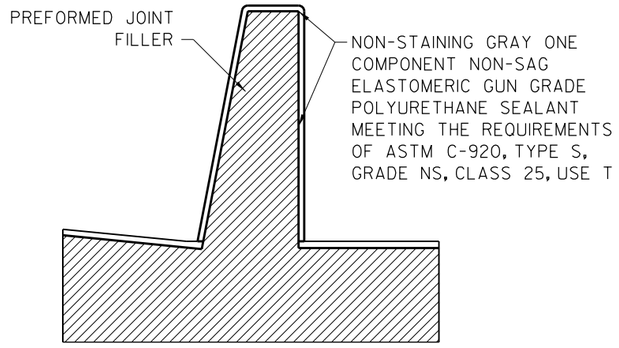
PLAN



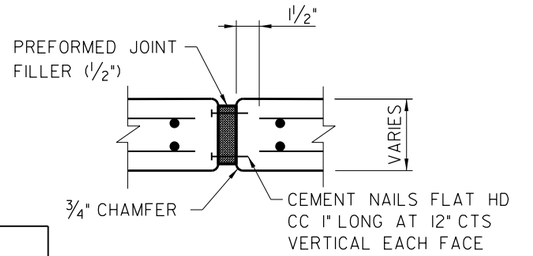
PLAN
REINFORCEMENT AROUND DRAINAGE STRUCTURE



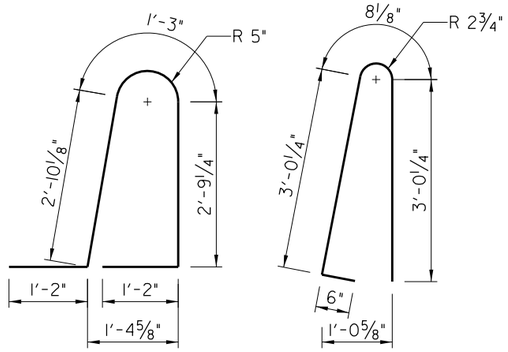
SINGLE FACE TL-4 BARRIER
SECTION A-A



SINGLE FACE TL-4 BARRIER
EXPANSION JOINT
SECTION B-B



EXPANSION JOINT



BAR dl(E) BAR d(E)

BENDING DIAGRAMS

NOTES:

1. THIS IS A REINFORCED CONCRETE TL-4 ROADSIDE BARRIER USED TO SHIELD ROADWAY APPURTENANCES. THE MINIMUM LENGTH OF INSTALLATION SHALL BE 25'-0". BASIS OF DESIGN: IL TOLLWAY STRUCTURE DESIGN MANUAL.
2. TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
3. 1" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE REINFORCED CONCRETE BARRIER WALL AND BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".
4. THE FORMING OF CONTRACTION JOINTS SHALL BE DONE WITH AN APPROVED FINISHING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.
5. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
6. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
7. AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD AN ADDITIONAL PAIR OF d, dl, †, AND †l BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE.
8. EXPANSION JOINTS SHALL BE CONSTRUCTED IN BARRIER WALL AT A MAXIMUM JOINT SPACING OF 90'-0" AND A MINIMUM JOINT SPACING OF 25'-0". SEE SECTION B-B FOR DETAILS.

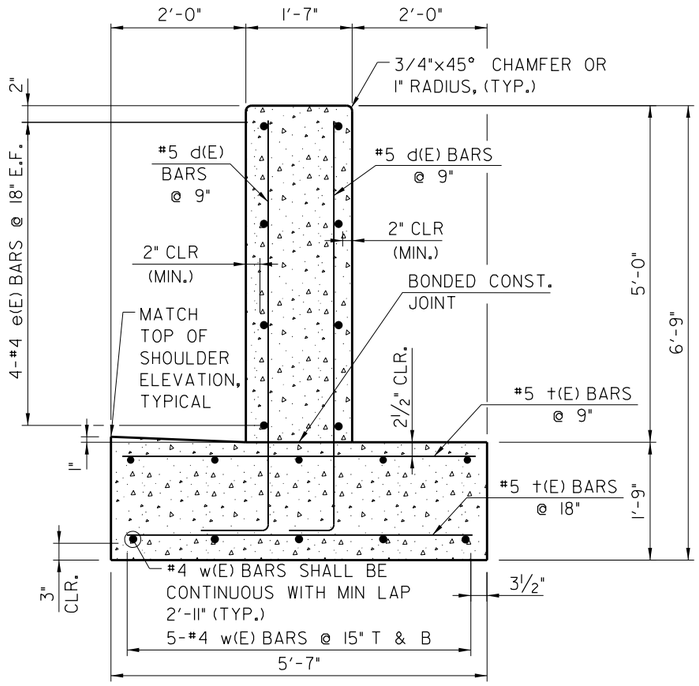
Paul Kovacs
APPROVED CHIEF ENGINEERING OFFICER
DATE 2-7-2012

DATE	REVISIONS
10-01-13	REVISED REINFORCEMENT
	BARS AND GUTTER WIDTH
03-31-14	REDESIGNED FOR TL-4 LOADING
3-11-2015	REVISED BENDING DIAGRAM
3-31-2016	ADDED MAX. EXPOSED BASE,
	REVISED EXP. JT. NOTE
3-01-2019	REVISED TO CONSTANT SLOPE
3-01-2020	REVISED TO 44" HEIGHT & RENAMED

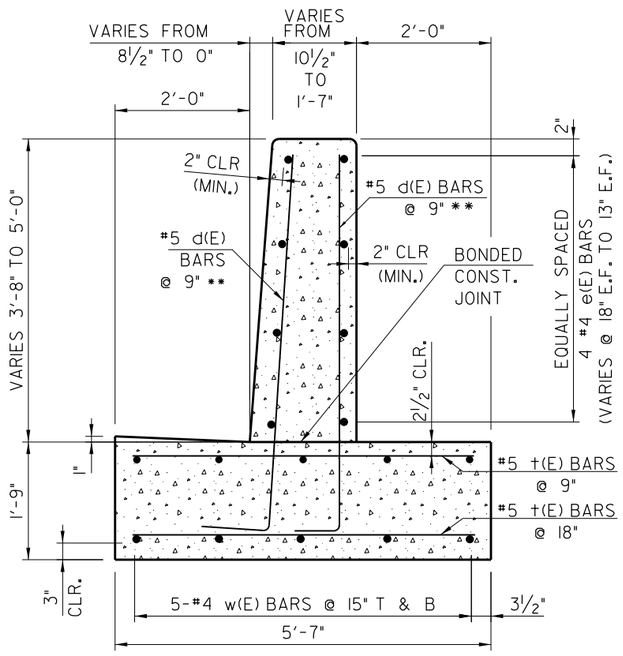
Illinois Tollway

CONCRETE BARRIER SINGLE FACE, REINFORCED TL-4, 44 INCH

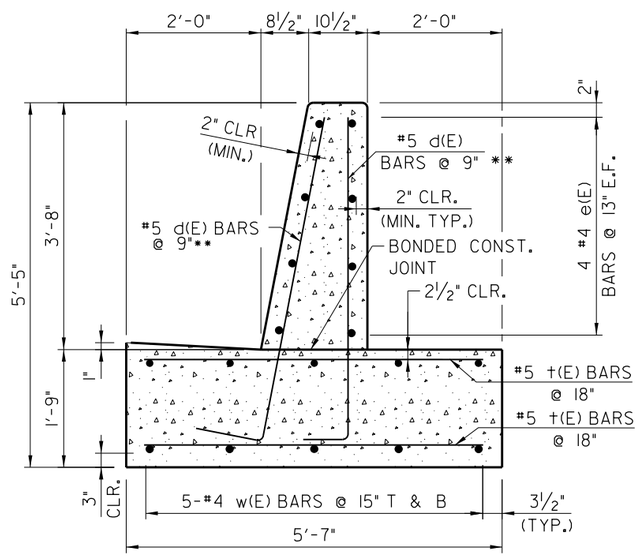
STANDARD C3-08



SECTION C-C

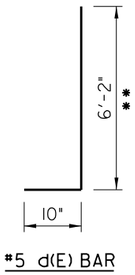


SECTION B-B



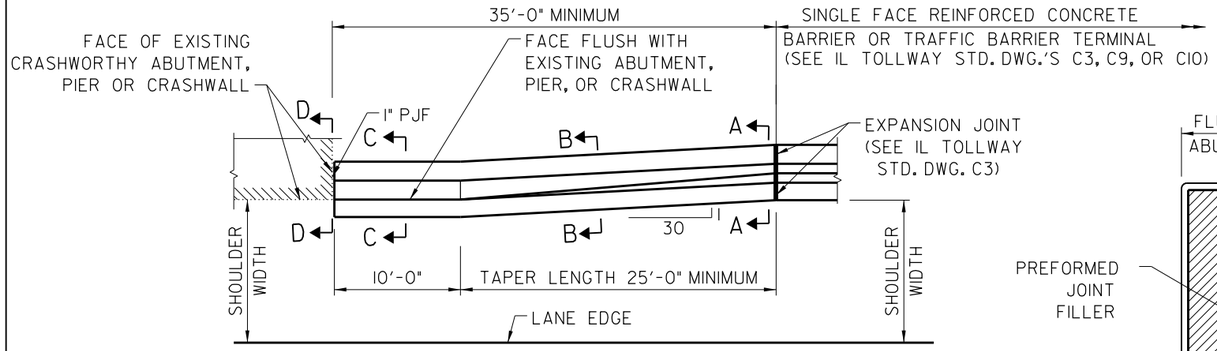
SECTION A-A

** CUT TO FIT IN FIELD
2" MIN. VERTICAL CLR.

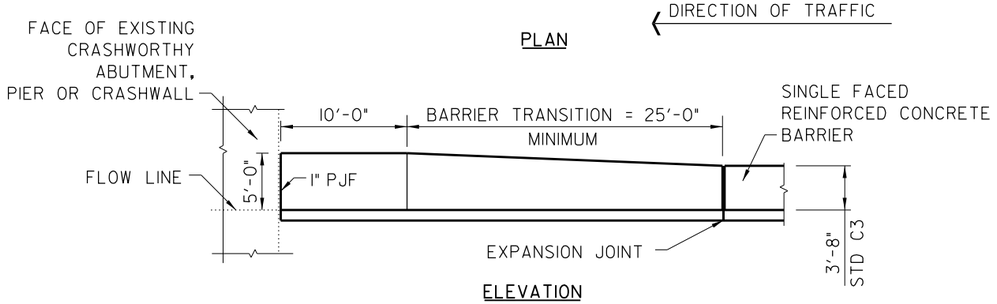


#5 d(E) BAR

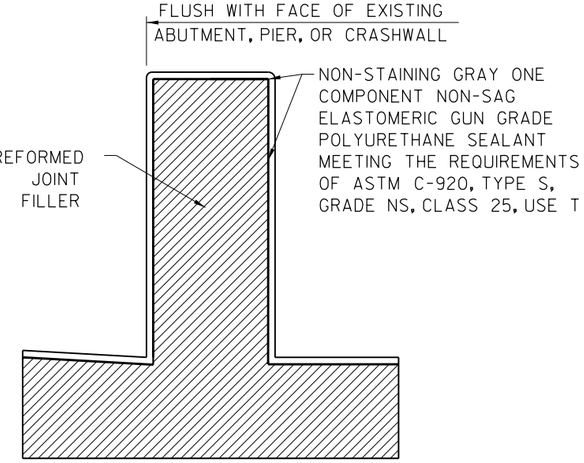
BENDING DIAGRAM



PLAN



ELEVATION



SECTION D-D

CONCRETE SHOULDER BARRIER TRANSITION, V-SF

NOTES:

1. TAPER LENGTH REQUIRED FOR THE SHOULDER WIDTH TRANSITION SHALL BE 25'-0" MINIMUM. INCREASE TAPER RATE AS REQUIRED TO OBTAIN THE LENGTH OF 25'-0".
2. TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
3. 1" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE REINFORCED CONCRETE BARRIER WALL AND BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".
4. THE FORMING OF CONTRACTION JOINTS SHALL BE DONE WITH AN APPROVED FINISHING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.
5. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
6. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICES FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION.
7. REINFORCEMENT BARS BENDING DIMENSIONS ARE OUT TO OUT.
8. CONSTANT-SLOPE BARRIER SHALL BE USED WITH ALL NEW CONSTRUCTION, OR RECONSTRUCTION OF EXISTING BARRIERS.
9. E.F. DENOTES EACH FACE
10. MINIMUM EXPANSION JOINT SPACING SHALL BE 25'-0".

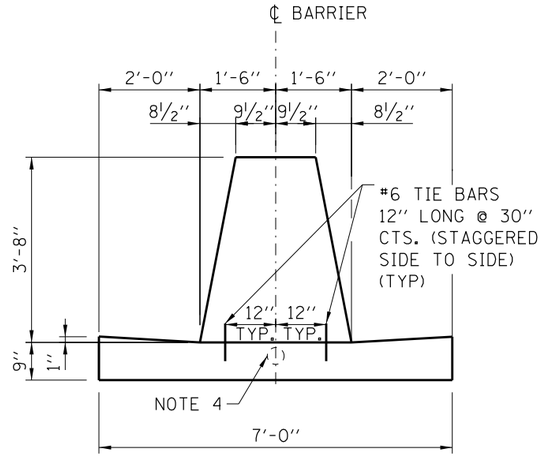
DATE	REVISIONS
3-31-14	REDESIGNED FOR TL-4
	LOADING
3-11-2015	MODIFIED PREFORMED JOINT
	FILLER DETAIL
3-31-2016	REVISED SECT. B-B TO D-D
3-31-2017	ADDED CALLOUT TO SEC D-D
3-01-2019	REVISED TO CONSTANT SLOPE
	RENAMED DRAWING
3-01-2020	REVISED BARRIER AND BASE
	DIMENSIONS AND REINFORCING

Illinois Tollway

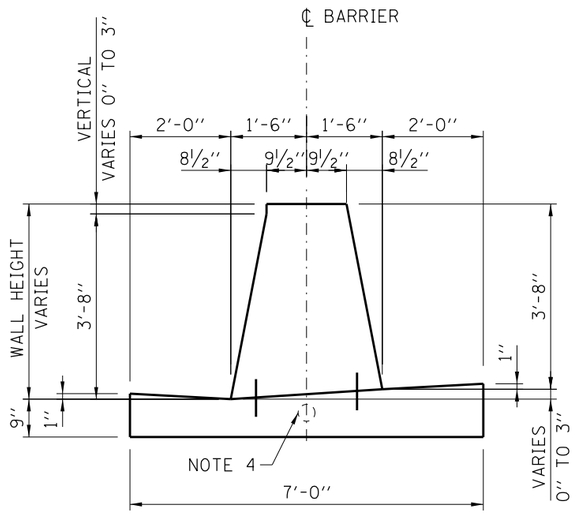
CONCRETE SHOULDER BARRIER TRANSITION TYPE V-SF

STANDARD C4-09

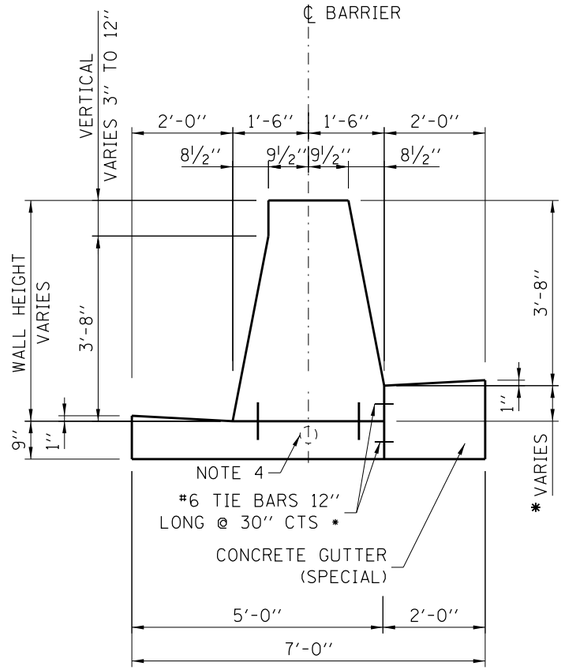
Paul Kovacs
APPROVED
CHIEF ENGINEERING OFFICER
DATE 2-7-2012



CONCRETE BARRIER, DOUBLE FACE, 44''
CONCRETE BARRIER BASE, 7'-0''



CONCRETE BARRIER, DOUBLE FACE, VARIABLE HEIGHT
CONCRETE BARRIER BASE, VARIABLE HEIGHT, 7'-0''
(BARRIER HEIGHT VERTICAL DIFFERENTIAL VARIES 0'' TO 3'')



CONCRETE BARRIER, DOUBLE FACE, VARIABLE HEIGHT
CONCRETE BARRIER BASE, 5'-0''
(BARRIER HEIGHT VERTICAL DIFFERENTIAL VARIES 3'' TO 12'')
* WHEN 6'' OR GREATER ADD TOP TIE BAR.

NOTES:

1. 2'' DEEP CONTRACTION JOINTS SHALL BE DONE BY SAWING AND SHALL BE CONSTRUCTED IN THE CONCRETE BARRIER WALL, CONCRETE BARRIER BASE, AND CONCRETE GUTTER (SPECIAL). CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0''. THE MINIMUM DISTANCE BETWEEN CONTRACTION JOINTS IN THE MEDIAN BARRIER WALL SHALL BE 2'-0''. WHEN A DRAINAGE STRUCTURE FALLS WITHIN 2'-0'' FROM AN EXPANSION JOINT (OR) CONTRACTION JOINT, THE NEAREST CONTRACTION JOINT SHALL BE OMITTED.

2. GUTTER PROFILE IN THE VICINITY OF SAG VERTICAL CURVES, ALONG FLAT GRADES AND AT THE MEETING OF PROPOSED AND EXISTING GUTTER, SHALL BE CAREFULLY CONTROLLED AND FIELD ADJUSTED IF NECESSARY TO ENSURE POSITIVE DRAINAGE AND AVOID PONDING.

3. IN AREAS OF RELATIVELY FLAT LONGITUDINAL PROFILE GRADES, THE VERTICAL DIMENSION TO THE TOP OF THE BARRIER CAN VARY (BY VARYING THE GUTTER SLOPE) FROM 43'' TO 44.5'' TO CREATE AN ACCEPTABLE LONGITUDINAL GRADE IN THE GUTTER.

4. REFERENCE PLAN SHEET FOR TYPE, SIZE AND NUMBER OF CONDUITS. PROVIDE 1½'' (MIN.) CLEARANCE TO THE TOP OF CONDUIT AND 2'' (MIN.) CLEARANCE TO THE BOTTOM OF THE CONDUIT.

5. TIE BARS SHALL BE INCLUDED IN THE COST OF THE VARIOUS BARRIER AND GUTTER ITEMS AND SHALL BE EPOXY COATED. TIE BARS BETWEEN THE BARRIER AND BASE SHALL BE ON 30'' CENTERS AND ALTERNATE LEFT AND RIGHT OF THE BARRIER CENTERLINE.

6. WHEN VARIABLE HEIGHT VERTICAL DIFFERENTIAL EXCEEDS 12'' SEE STRUCTURAL PLANS FOR DETAILS.

7. GUTTER SLOPE SHALL BE 4.17% SLOPED TOWARD THE MEDIAN UNLESS OTHERWISE NOTED. GUTTER SLOPE IS REVERSE PITCHED WHEN THE SHOULDER/FLEX LANE DRAINS AWAY FROM THE GUTTER. TRANSITION GUTTER SLOPE OVER 30'-0''. GUTTER SLOPE TRANSITIONS ARE INCLUDED IN THE COST OF CONCRETE BASE AND/OR CONCRETE GUTTER (SPECIAL). SEE ROADWAY PLANS FOR LIMITS OF REVERSE PITCHED GUTTER AND TRANSITIONS.

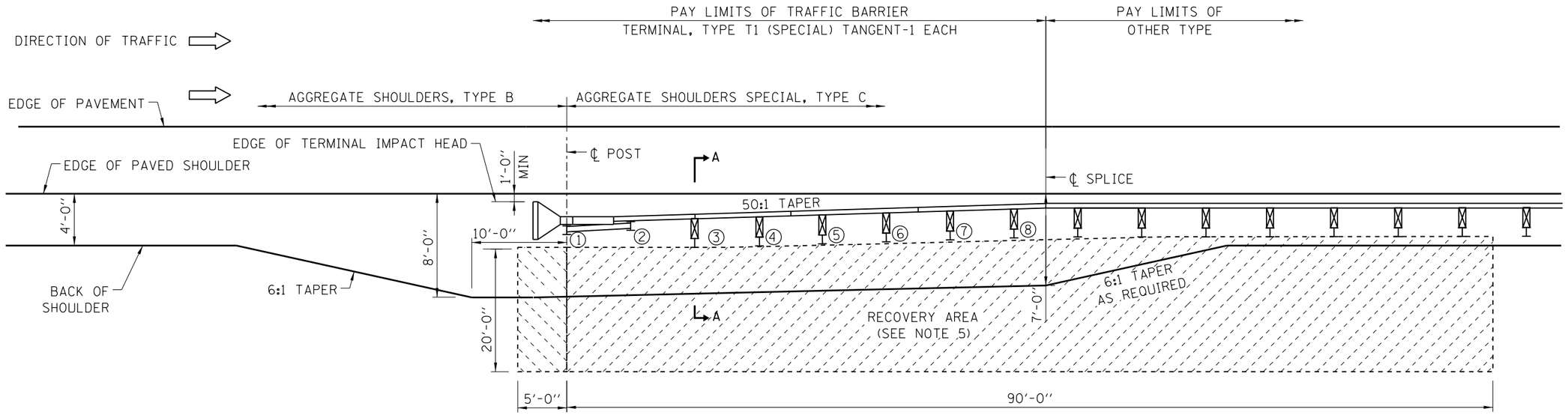
Paul Kovacs
APPROVED ..... DATE 2-7-2012
CHIEF ENGINEERING OFFICER

DATE	REVISIONS
3-31-2014	MODIFIED BARRIER BASE
3-11-2015	REVISED NOTES
3-31-2016	REVISED NOTES
3-01-2019	REVISED TO CONSTANT SLOPE
	ADDED TIE BARS
3-01-2020	CHANGED MAX. VERTICAL
	DIFFERENTIAL TO 12''

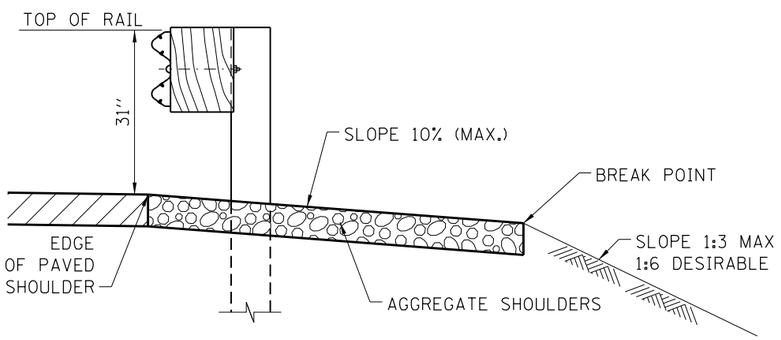
Illinois Tollway

CONCRETE BARRIER BASE, AND CONCRETE BARRIER, DOUBLE FACE, 44 INCH AND VARIABLE HEIGHT

STANDARD C5-07



SHOULDER WIDENING TRANSITION-WITHOUT GUTTER FOR
TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT



SECTION A-A

GENERAL NOTES:

1. ALL SLOPE RATIOS ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).

2. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING B28 FOR GUTTER TRANSITION, AND MINIMUM DISTANCE FROM EDGE OF PAVED SHOULDER TO FACE OF RAIL.

3. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANY WAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.

4. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S DETAILS AND SPECIFICATIONS.

5. NO ABOVE-GROUND ROADSIDE OBSTACLE OF ANY TYPE-FIXED OR BREAKAWAY, EITHER TEMPORARY OR PERMANENT SHALL BE ALLOWED WITHIN THIS RECOVERY AREA.

6. ON TANGENT ROADWAY: TRAFFIC BARRIER TERMINAL SHALL BE INSTALLED AT A 50:1 TAPER MEASURED FROM EDGE OF TRAVELED WAY.
ON CURVED ROADWAY: THE EDGE OF THE TERMINAL IMPACT HEAD SHALL BE OFFSET A DISTANCE FROM A POINT ON THE BACK OF THE CURVED EDGE OF PAVED SHOULDER AS SHOWN IN TABLE 1. NO CURVED W-BEAM SECTIONS ARE PERMITTED WITHIN THE TERMINAL PAY LIMITS. THE TERMINAL SHALL BE LAID OUT IN A STRAIGHT LINE.

7. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT. WHEN NECESSARY USE LEAVE-OUT DETAIL SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING C1.

8. THE TERMINAL SYSTEM HAS BEEN PERFORMANCE-TESTED FOR CRASHWORTHINESS UNDER PROCEDURES DEFINED IN AASHTO MASH. NO MODIFICATION TO THIS STANDARD DRAWING SHALL BE PERMITTED.

9. WHEN GUTTER IS PRESENT, DRAINAGE STRUCTURES SHALL NOT BE INSTALLED WITHIN THE TERMINAL LIMITS, BUT SHALL BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE TERMINAL AS REQUIRED.

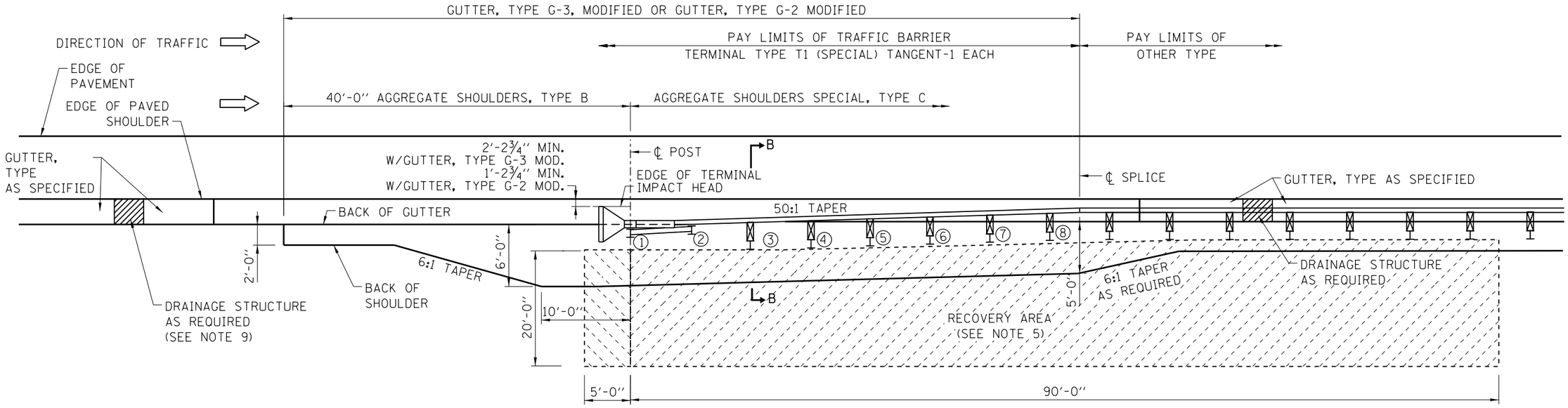
Paul Kovacs
APPROVED ..... DATE 7-1-2009
CHIEF ENGINEERING OFFICER

DATE	REVISIONS
03-31-14	REVISED RECOVERY AREA
	DIMENSION
3-11-2015	REVISED NOTES
3-31-2016	COMBINED G-3 & G-2
3-31-2017	REVISED NOTES
3-01-2019	REVISED NOTES FOR MASH
3-01-2020	ADDED MOD. TO TABLE 1
	& PLAN NOTE

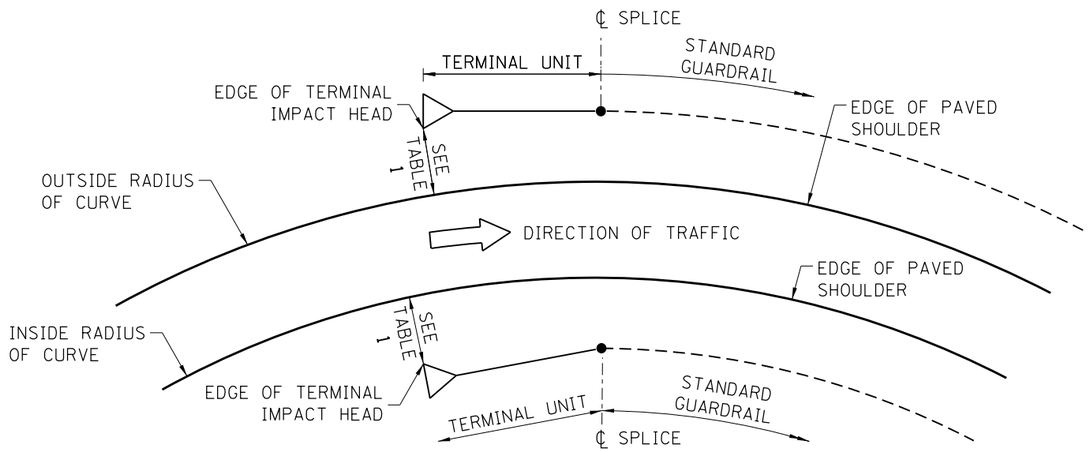
Illinois Tollway

SHOULDER WIDENING FOR
TRAFFIC BARRIER TERMINAL,
TYPE T1 (SPECIAL) TANGENT

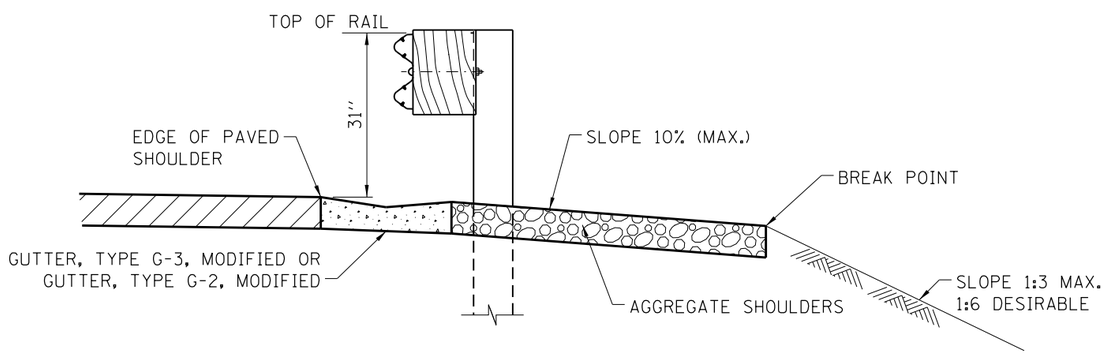
STANDARD C6-11



SHOULDER WIDENING TRANSITION-WITH GUTTER, TYPE G-3 OR TYPE G-2 FOR TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT



CURVED ROADWAY
TRAFFIC BARRIER TERMINAL PLACEMENT



SECTION B-B

TABLE 1		
LATERAL OFFSET DIMENSION TO EDGE OF TERMINAL IMPACT HEAD		
	INSIDE RADIUS OF CURVE	OUTSIDE RADIUS OF CURVE
NO GUTTER	1'-0"	1'-0" *
GUTTER, TYPE G-2, MOD.	1'-2¾"	1'-2¾" MIN. *
GUTTER, TYPE G-3, MOD.	2'-2¾"	2'-2¾" MIN. *

(*) OFFSET DISTANCE WILL VARY BASED ON RADIUS OF HORIZONTAL CURVE AND THE TERMINAL BEING INSTALLED IN A STRAIGHT LINE.

NOTES:

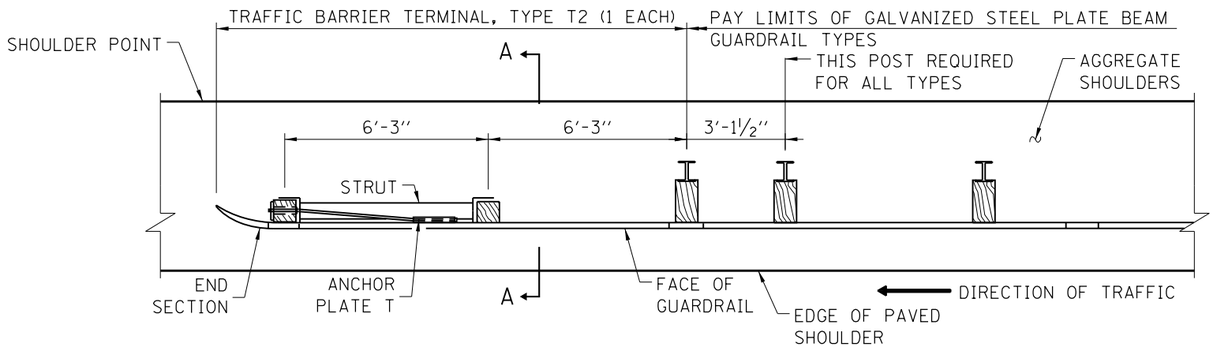
SEE SHEET 1 OF THIS SERIES FOR NOTES.

Paul Kovacs
APPROVED ..... DATE 7-1-2009
CHIEF ENGINEERING OFFICER

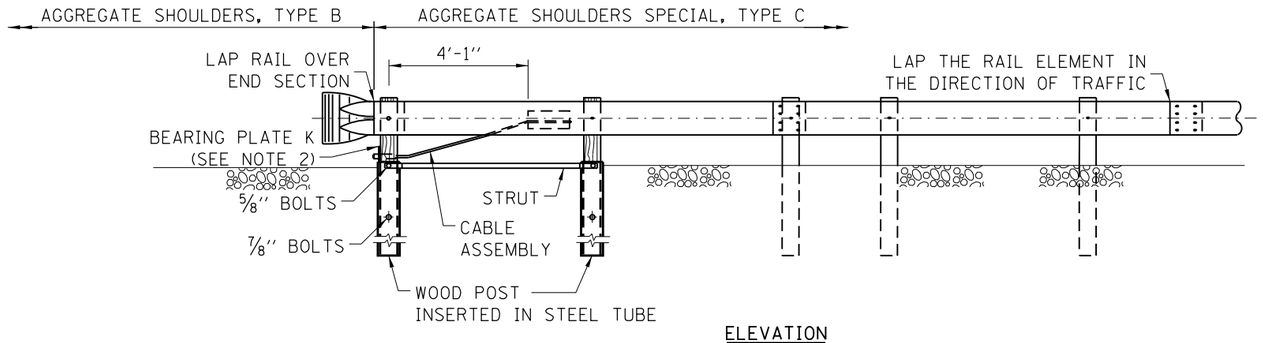
Illinois Tollway

SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT

STANDARD C6-11

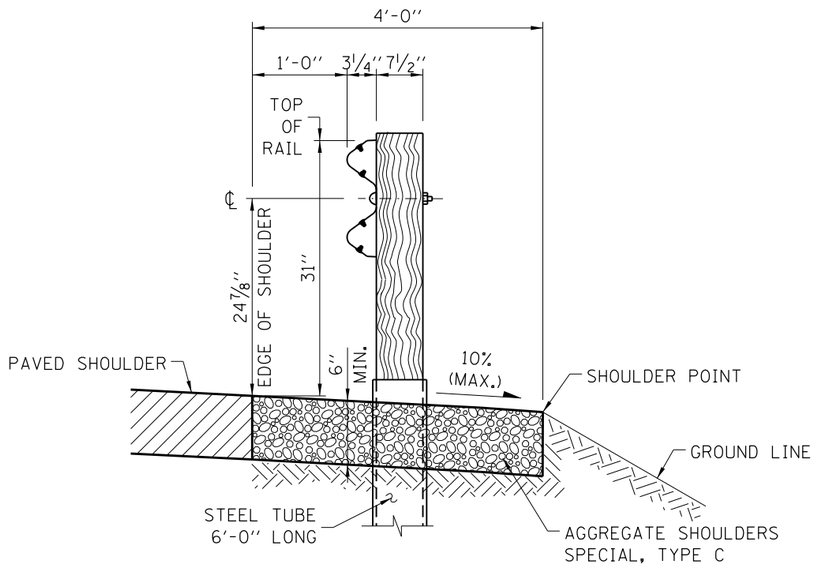


PLAN



ELEVATION

TRAFFIC BARRIER TERMINAL, TYPE T2-WITHOUT GUTTER



SECTION A-A

NOTES:

1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
2. THE BEARING PLATE K SHALL BE HELD IN POSITION BY TWO 8D NAILS DRIVEN INTO THE POST AND BENT OVER THE TOP OF THE PLATE.
3. THE TRAFFIC BARRIER TERMINAL, TYPE T2 IS TYPICALLY UTILIZED FOR THE DEPARTING END SECTION OF A GALVANIZED STEEL PLATE BEAM GUARDRAIL BARRIER SYSTEM.
4. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
5. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY'S DETAILS AND SPECIFICATIONS. NO MODIFICATIONS SHALL BE PERMITTED.
6. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENT. WHEN NECESSARY USE LEAVE-OUT DETAIL PER ILLINOIS TOLLWAY STANDARD DRAWING C1.
7. WHERE GUTTER, TYPE G-2 OR GUTTER, TYPE G-3 ARE REQUIRED IN FRONT OF THE GUARDRAIL, THE POSTS SHALL BE LOCATED 6" BEHIND THE GUTTER, OR AS OTHERWISE DETAILED IN THE PLANS. THE OFFSET FROM THE EDGE OF SHOULDER TO THE FACE OF THE GUARDRAIL SHALL BE AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING B28.

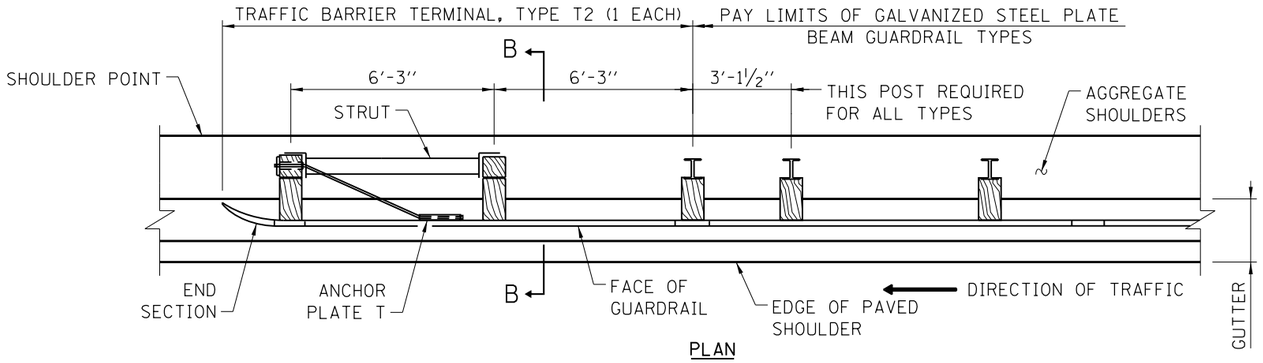
Paul Kovacs
APPROVED ..... DATE 7-1-2009
CHIEF ENGINEER

DATE	REVISIONS
2-07-2012	REVISED DIMENSIONS OF BEARING PLATE,
	POST, CABLE STRUT AND TUBE AND NOTES
11-01-2012	MODIFIED AGGREGATE SHOUILDERS,
	REVISED WOOD POST DIMENSION
3-31-2014	REVISED NOTES
3-11-2015	REVISED NOTES
3-31-2016	REVISED SECTION A-A SHOULDER
3-31-2017	REVISED SECT A-A SHOULDER SLOPE TO %

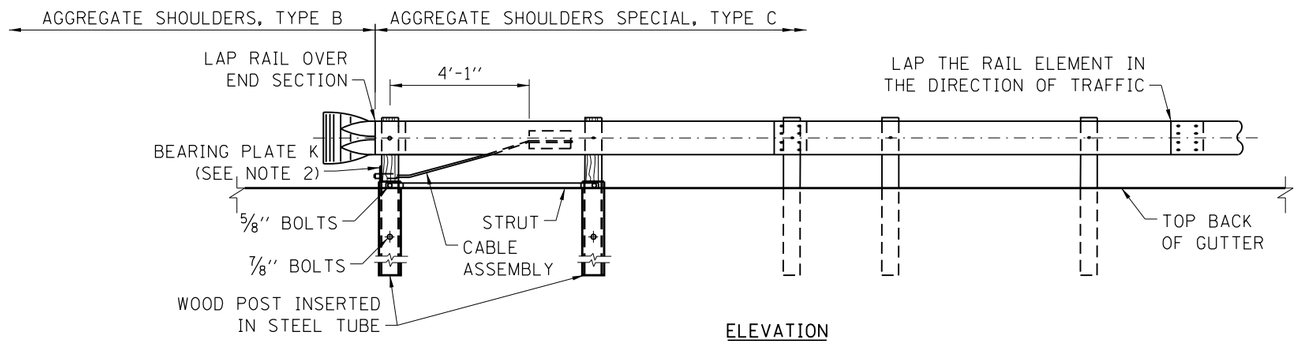
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T2

STANDARD C7-08

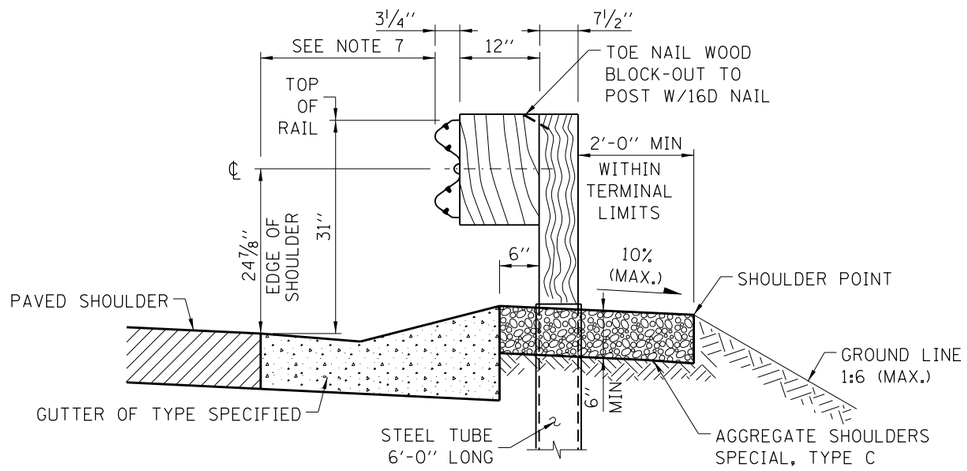


PLAN



ELEVATION

TRAFFIC BARRIER TERMINAL, TYPE T2-WITH GUTTER



SECTION B-B

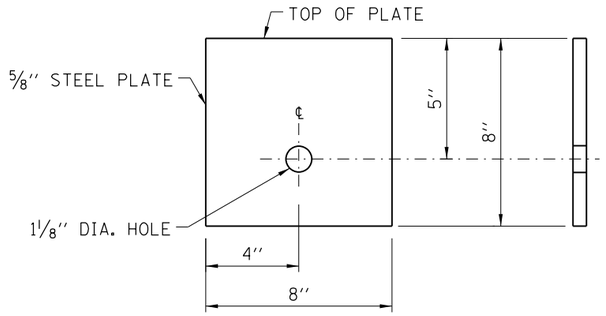
APPROVED Paul Kovacs CHIEF ENGINEER DATE 7-1-2009

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

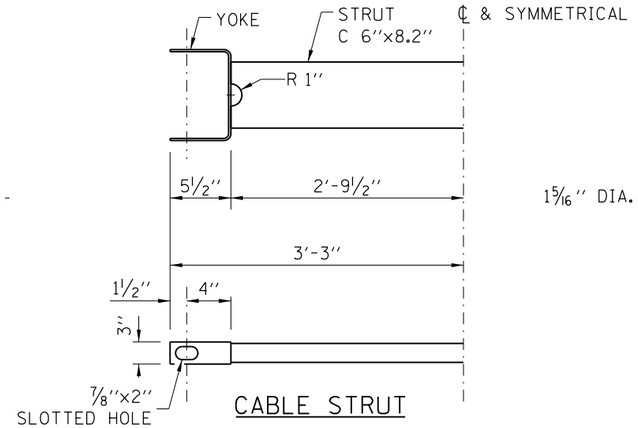
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T2

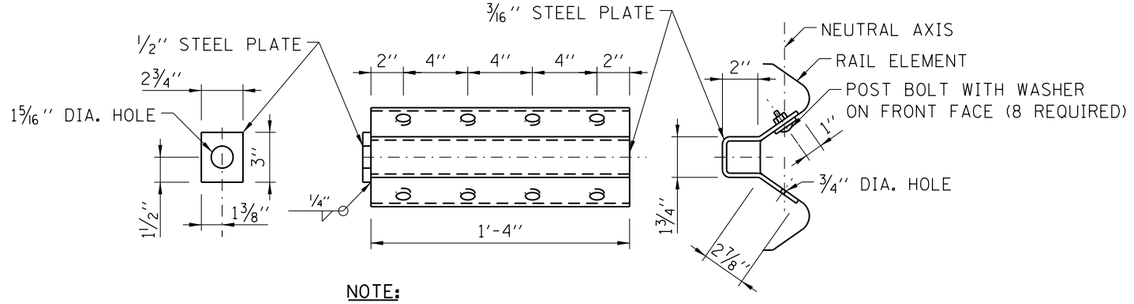
STANDARD C7-08



BEARING PLATE K

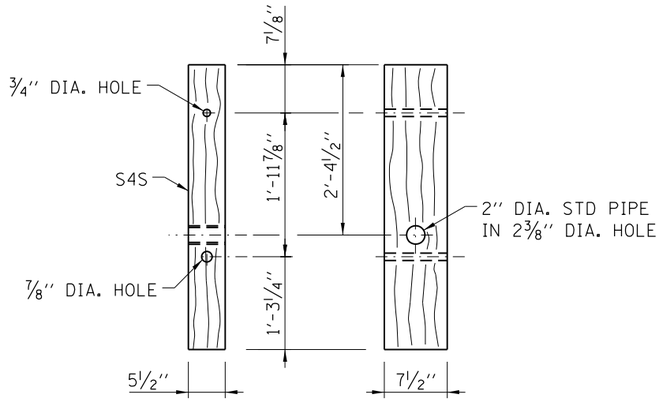


CABLE STRUT

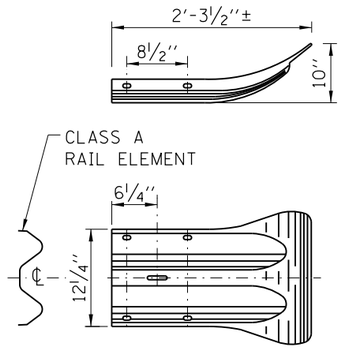


NOTE:
ANCHOR PLATE T SHALL BE USED TO ATTACH CABLE ASSEMBLY TO GUARDRAIL WHEN REQUIRED ON TRAFFIC BARRIER TERMINALS.

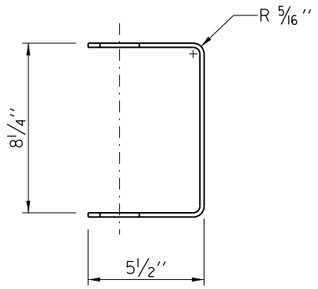
ANCHOR PLATE T DETAILS



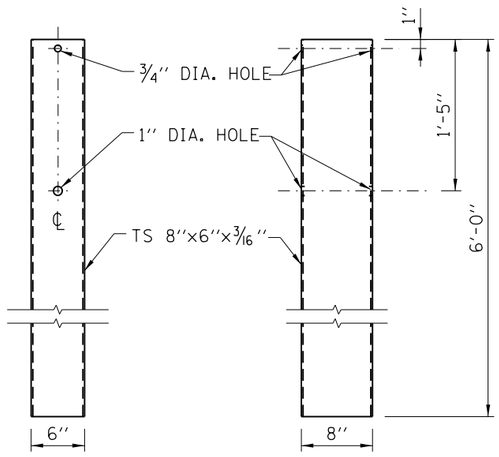
WOOD POST



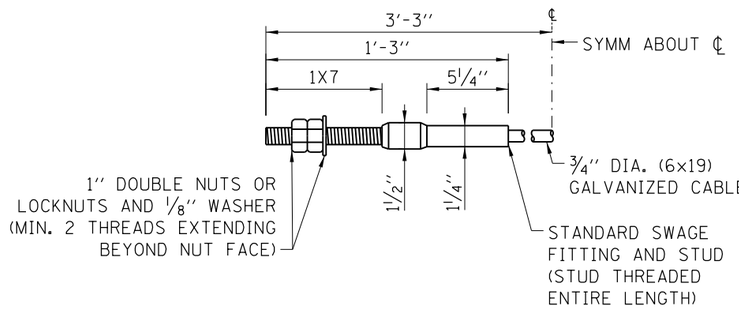
END SECTION



YOKE
3/16'' THICK STEEL



STEEL TUBE



CABLE ASSEMBLY
(40,000 LBS.) MIN. BREAKING STRENGTH)
TIGHTEN TO TAUT TENSION

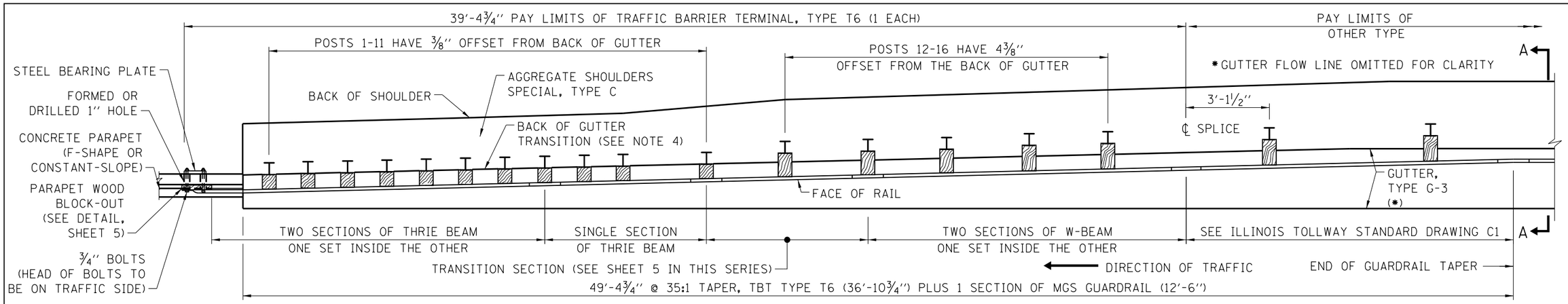
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

Illinois Tollway

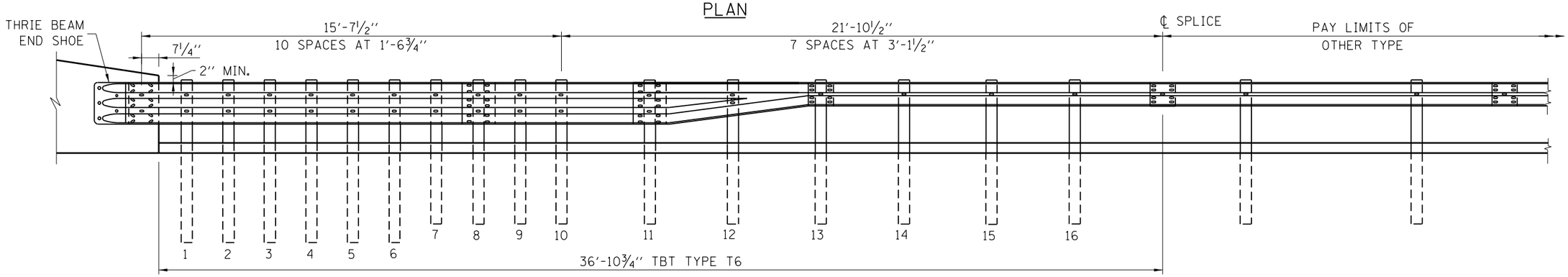
TRAFFIC BARRIER TERMINAL, TYPE T2

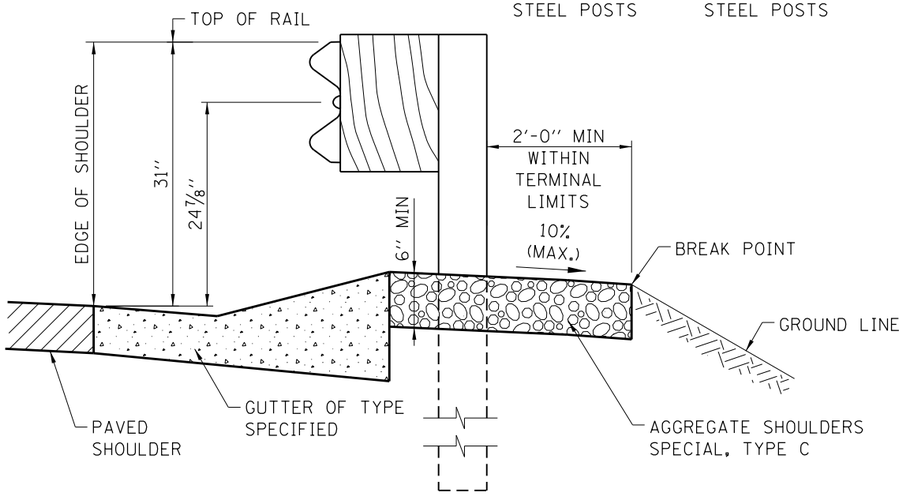
STANDARD C7-08

Paul Kovacs
APPROVED ..... CHIEF ENGINEER
DATE 7-1-2009



PLAN





WITH GUTTER,TYPE G-3

SECTION A-A

ELEVATION

NOTES:

1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
2. THRIE BEAM RAIL SHALL BE BOLTED TO BLOCK-OUT AT ALL POSTS.
3. THE TRAFFIC BARRIER TERMINAL, TYPE T6 IS TYPICALLY UTILIZED TO ATTACH GALVANIZED STEEL PLATE BEAM GUARDRAIL AT THE UPSTREAM END OF THE BRIDGES CONCRETE PARAPET, WHERE A ROADSIDE GUTTER IS TO BE INSTALLED.
4. SEE ILLINOIS TOLLWAY STANDARD DRAWING B3 FOR GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6.
5. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
6. TRAFFIC BARRIER TERMINAL, TYPE T6 SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY'S DETAILS AND SPECIFICATIONS. NO MODIFICATIONS SHALL BE PERMITTED.
7. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENTS. WHEN NECESSARY USE LEAVE-OUT DETAIL PER ILLINOIS TOLLWAY STANDARD DRAWING C1.
8. TERMINAL POSTS TO BE INSTALLED PERPENDICULAR TO BACK OF GUTTER.
9. THE TERMINAL SYSTEM HAS BEEN PERFORMANCE-TESTED FOR CRASHWORTHINESS UNDER PROCEDURES DEFINED IN AASHTO MASH. NO MODIFICATION TO THIS STANDARD DRAWING SHALL BE PERMITTED.
10. TERMINAL BARRIER CLEARANCE DISTANCE SHALL CONFORM WITH TABLE 2 ON ILLINOIS TOLLWAY STANDARD DRAWING C1.
11. LEAVE-OUT DIMENSION BEHIND POSTS 1-6, SHALL BE A MINIMUM OF 4''.
12. WHEN GUTTER IS PRESENT, DRAINAGE STRUCTURES SHALL NOT BE INSTALLED WITHIN THE TERMINAL LIMITS, BUT SHALL BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE TERMINAL AS REQUIRED.

DATE	REVISIONS
3-31-2014	REVISED NOTES.
3-11-2015	REVISED NOTES AND ADDED DETAIL.
3-31-2016	REVISED SHOULDER SECTION
3-31-2017	ADDED DRAINAGE STRUCTURE NOTE
3-01-2019	UPDATED NOTES FOR CONSTANT-SLOPE CONCRETE BARRIER
3-01-2020	REVISED LENGTH OF THRIE BEAM
	REVISED LENGTH OF POSTS

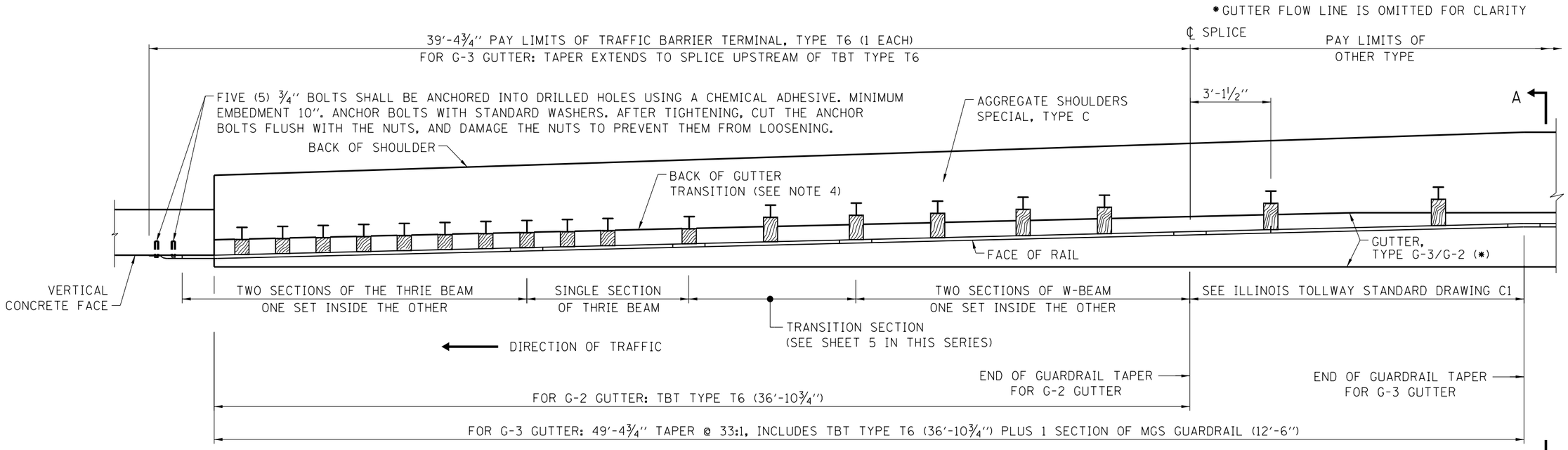
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T6

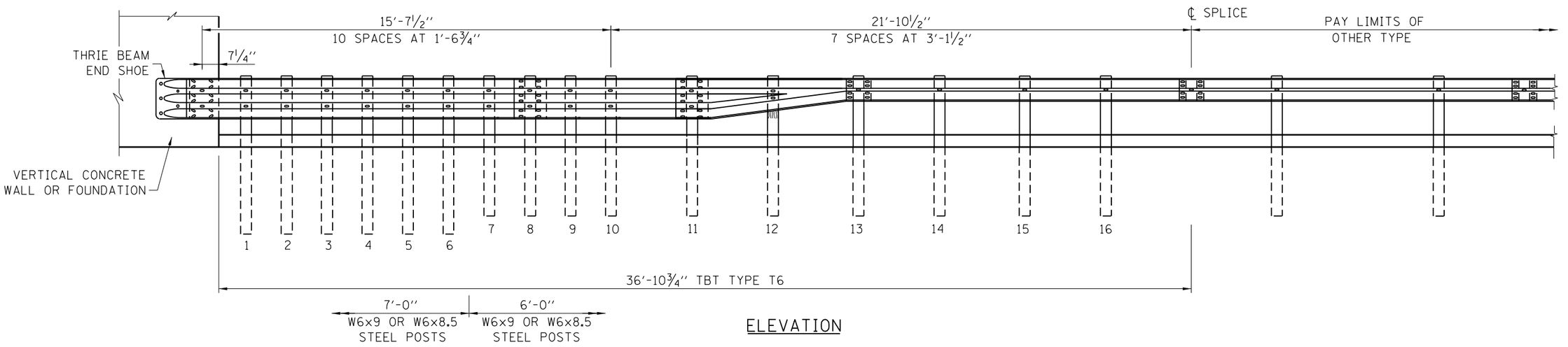
STANDARD C9-10

Paul Kovacs
APPROVED ..... DATE 7-1-2009
CHIEF ENGINEERING OFFICER

FOR PARAPET (SAFETY SHAPE) WITH GUTTER, TYPE G-3



PLAN



ELEVATION

FOR OTHER VERTICAL CONCRETE WALL/FOUNDATION WITH GUTTER

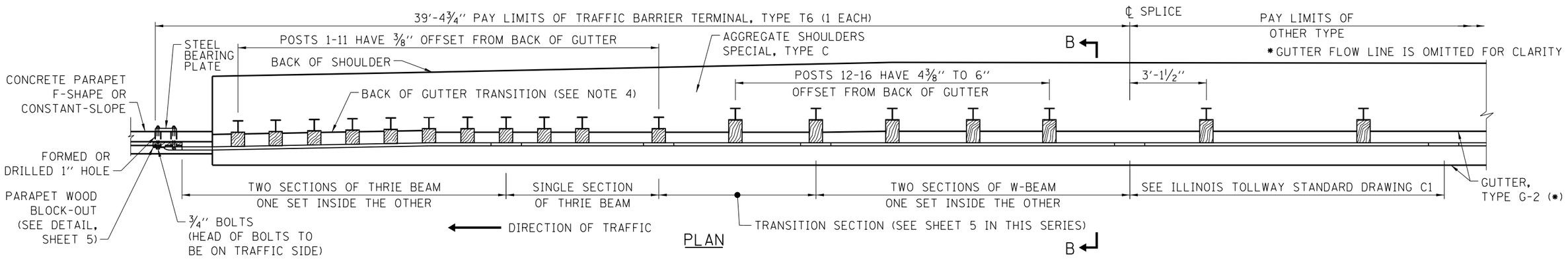
Paul Kovacs
APPROVED ..... DATE 7-1-2009
CHIEF ENGINEERING OFFICER

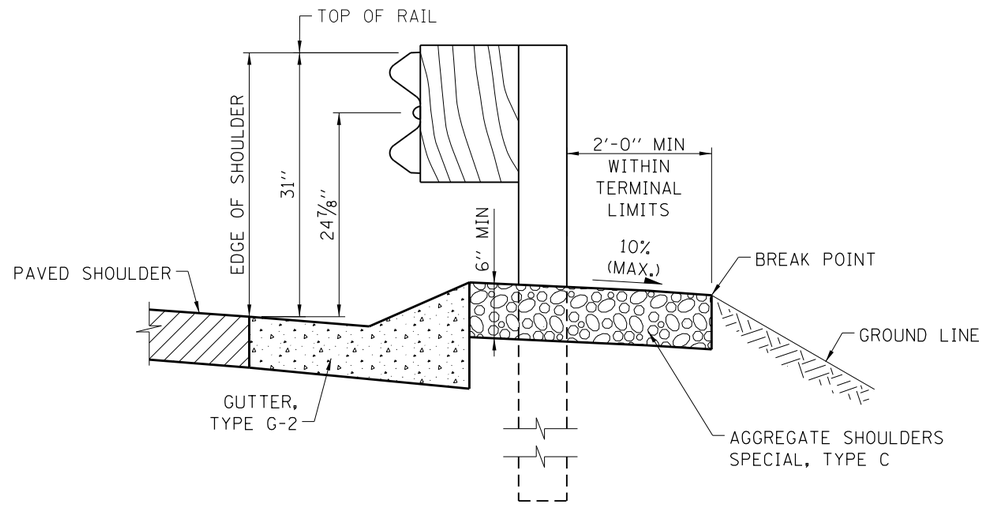
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES AND SECTION A-A.

Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T6

STANDARD C9-10





SECTION B-B
WITH GUTTER, TYPE G-2

FOR PARAPET (SAFETY SHAPE)
WITH GUTTER, TYPE G-2

Paul Kovacs
APPROVED ..... DATE 7-1-2009
CHIEF ENGINEERING OFFICER

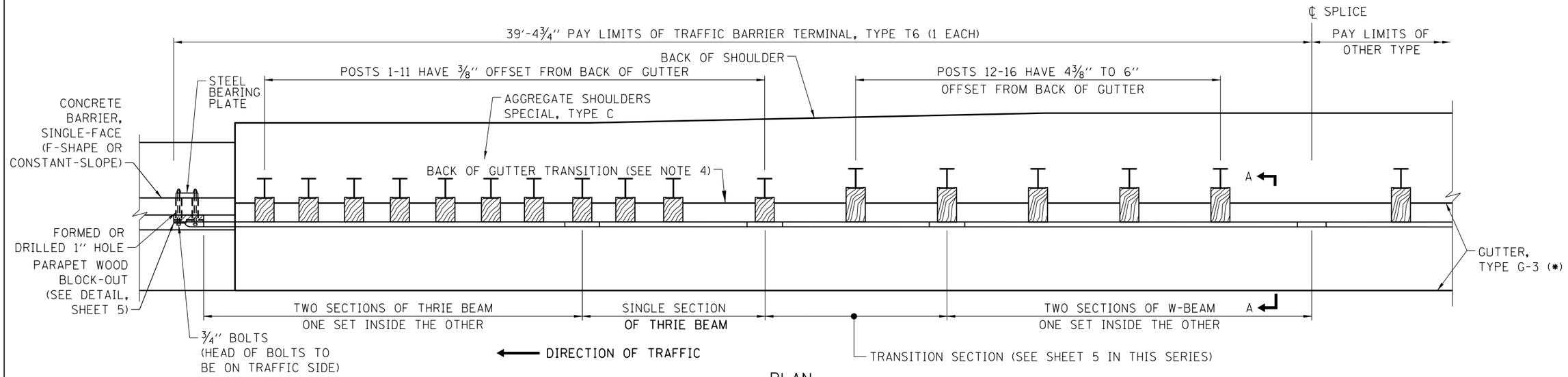
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

Illinois Tollway

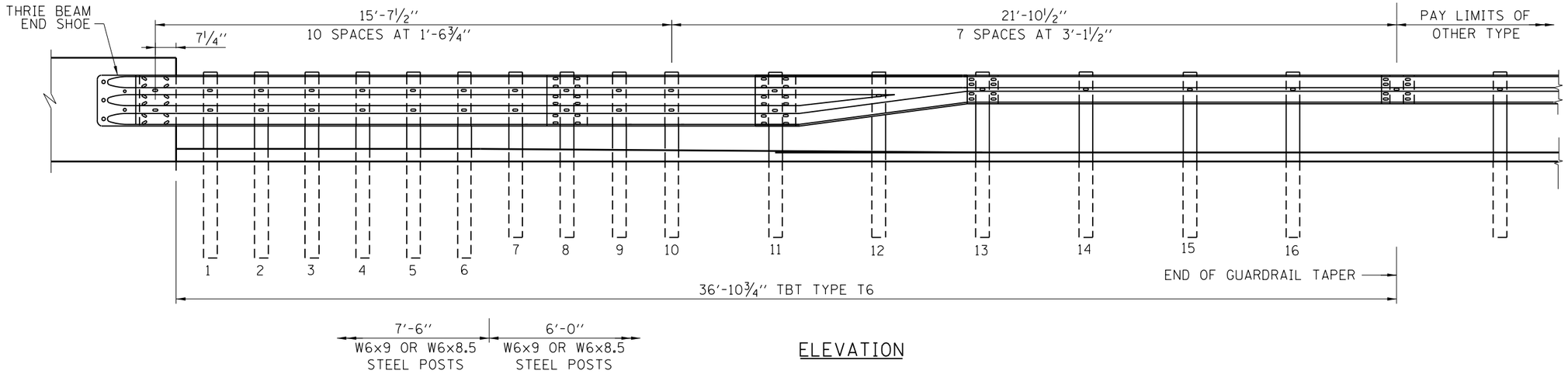
TRAFFIC BARRIER TERMINAL TYPE T6

STANDARD C9-10

*GUTTER FLOW LINE IS OMITTED FOR CLARITY



PLAN



ELEVATION

FOR CONCRETE BARRIER, SINGLE-FACE W/ GUTTER, TYPE G-3

Paul Kovacs
APPROVED ..... DATE 2-7-2012
CHIEF ENGINEERING OFFICER

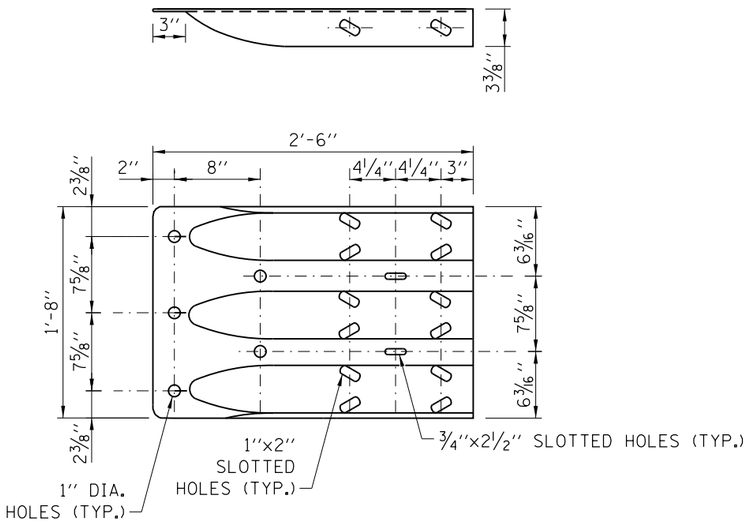
NOTE:

SEE SHEET 1 OF THIS SERIES FOR GUTTER TRANSITION NOTES AND SECTION A-A.

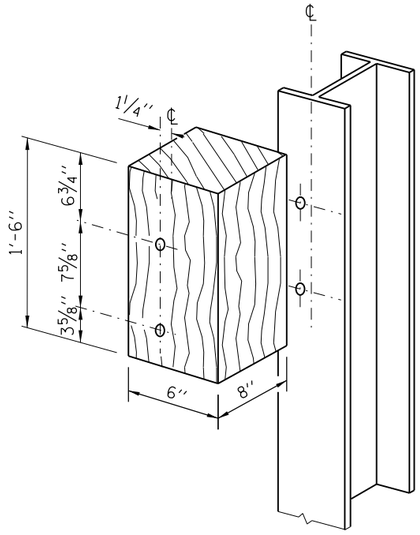
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T6

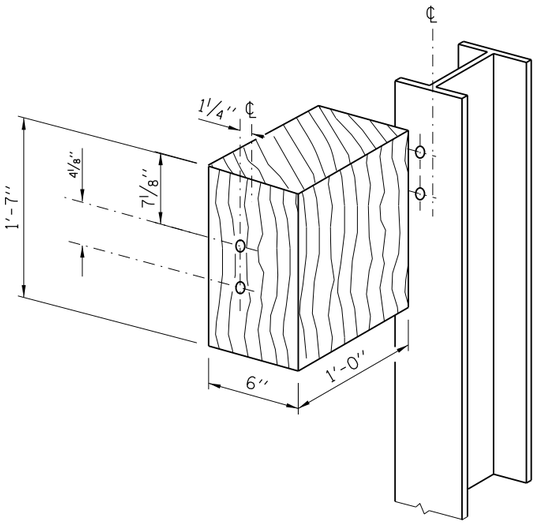
STANDARD C9-10



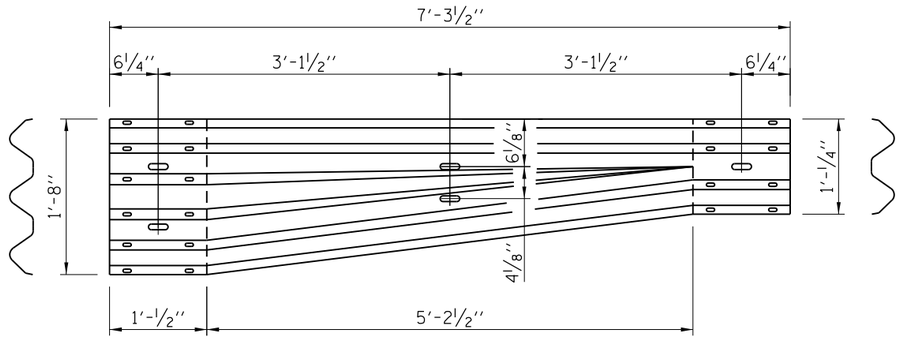
THRIE BEAM END SHOE DETAIL



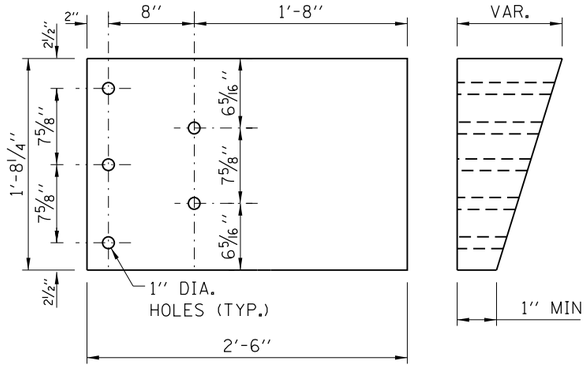
POSTS 1-11 WOOD BLOCK-OUT DETAIL



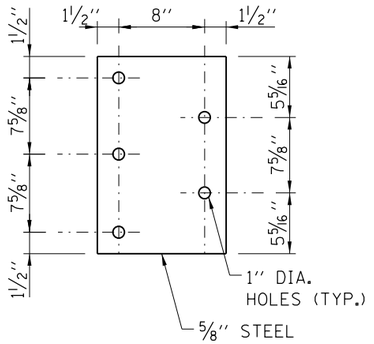
POST 12 WOOD BLOCK-OUT DETAIL
(SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR POST 13-16 BLOCKOUTS)



TRANSITION SECTION
(10 GAUGE RAIL ELEMENT)



PARAPET WOOD BLOCK-OUT DETAIL



PARAPET STEEL BEARING PLATE DETAIL
(5 EACH INDIVIDUAL 5''x5''x5/8'' STEEL PLATES WITH CENTERED 1'' HOLES MAY BE SUBSTITUTED FOR THE PLATE SHOWN.)

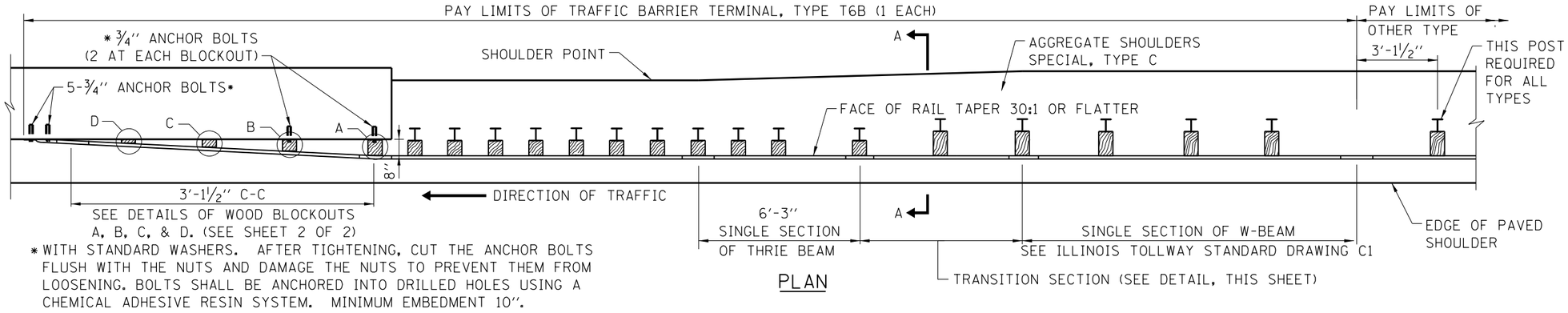
Paul Kovacs
APPROVED. . . . . DATE 7-1-2009
CHIEF ENGINEERING OFFICER

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

Illinois Tollway

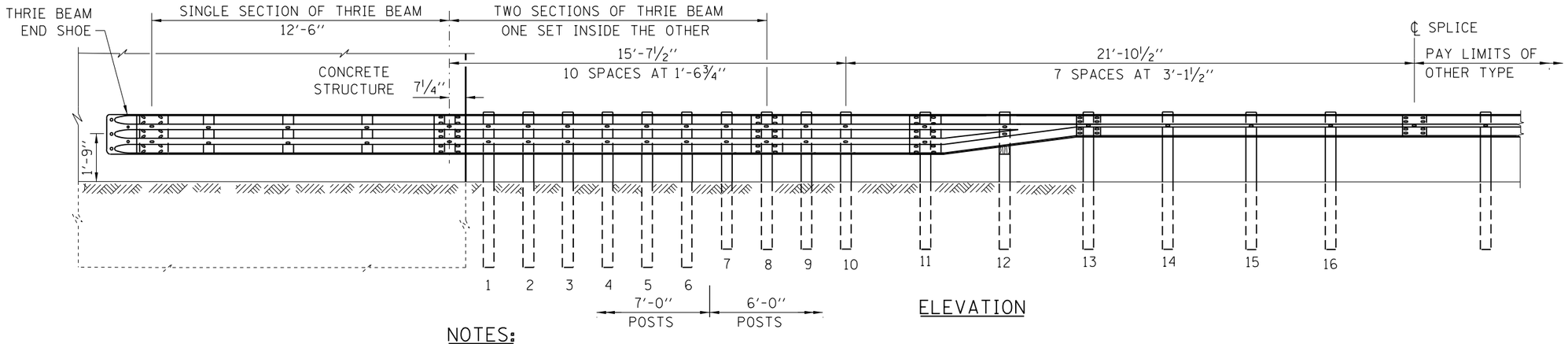
TRAFFIC BARRIER TERMINAL, TYPE T6

STANDARD C9-10

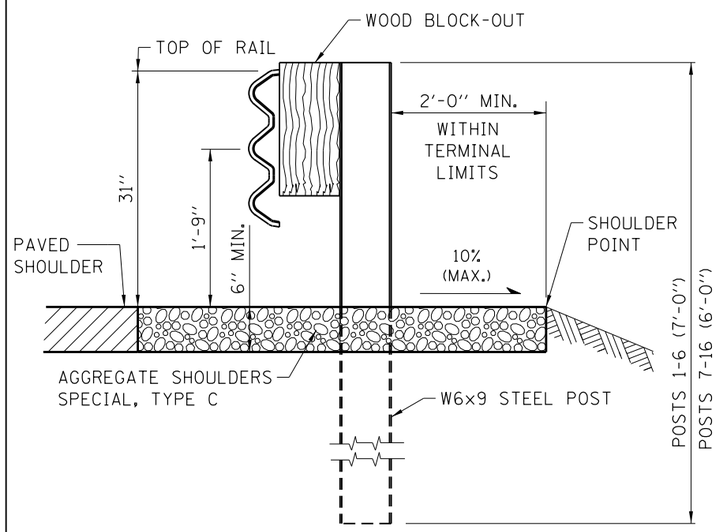


PLAN

* WITH STANDARD WASHERS. AFTER TIGHTENING, CUT THE ANCHOR BOLTS FLUSH WITH THE NUTS AND DAMAGE THE NUTS TO PREVENT THEM FROM LOOSENING. BOLTS SHALL BE ANCHORED INTO DRILLED HOLES USING A CHEMICAL ADHESIVE RESIN SYSTEM. MINIMUM EMBEDMENT 10".



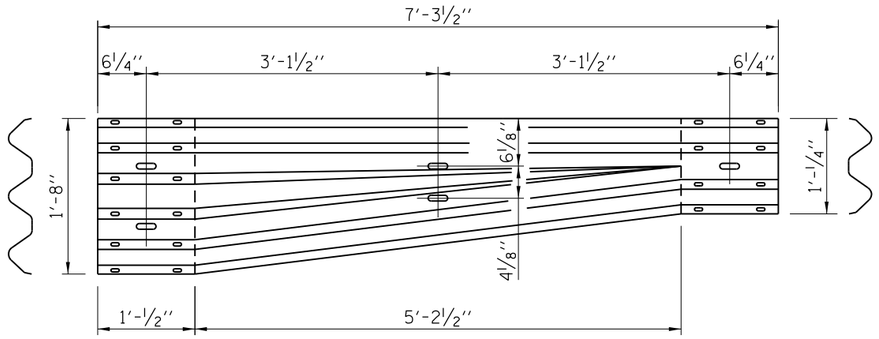
ELEVATION



SECTION A-A

NOTES:

1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
2. THRIE BEAM RAIL SHALL BE BOLTED TO BLOCK-OUT AT ALL POSTS.
3. THE TRAFFIC BARRIER TERMINAL, TYPE T6B IS TYPICALLY UTILIZED TO ATTACH GALVANIZED STEEL PLATE BEAM GUARDRAIL AT THE UPSTREAM END OF THE BRIDGE CONCRETE PARAPET, WHERE A ROADSIDE GUTTER IS NOT TO BE INSTALLED.
4. UNDER NO CIRCUMSTANCES SHALL EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
5. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY'S DETAILS AND SPECIFICATIONS. NO MODIFICATIONS SHALL BE PERMITTED.
6. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENTS. WHEN NECESSARY USE LEAVE-OUT DETAIL PER ILLINOIS TOLLWAY STANDARD DRAWING C1, SHEET 3 OF 4.
7. TERMINAL BARRIER CLEARANCE DISTANCE SHALL CONFORM WITH TABLE 2 ON ILLINOIS TOLLWAY STANDARD DRAWING C1.
8. LEAVE-OUT DIMENSION BEHIND POSTS 1-6, SHALL BE A MINIMUM OF 4".



TRANSITION SECTION
(10 GUAGE RAIL ELEMENT)

Paul Kovacs
APPROVED . . . . . DATE 7-1-2009
CHIEF ENGINEERING OFFICER

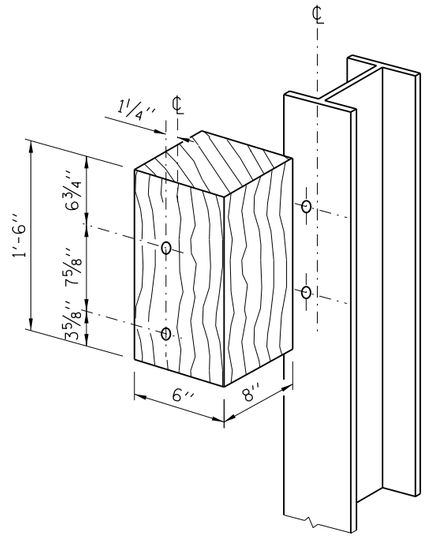
SHEET 1 OF 2

DATE	REVISIONS
11-01-2012	MODIFIED AGGREGATE SHOULDERS, REVISED NOTES
3-31-2014	REVISED WOOD BLOCKS AND NOTES
3-11-2015	REVISED NOTES
3-31-2016	REVISED SECTION A-A SHOULDER
3-31-2017	REVISED SHOULDER SLOPE LABEL
3-01-2020	REVISED LENGTH OF THRIE BEAM
	REVISED LENGTH OF POSTS

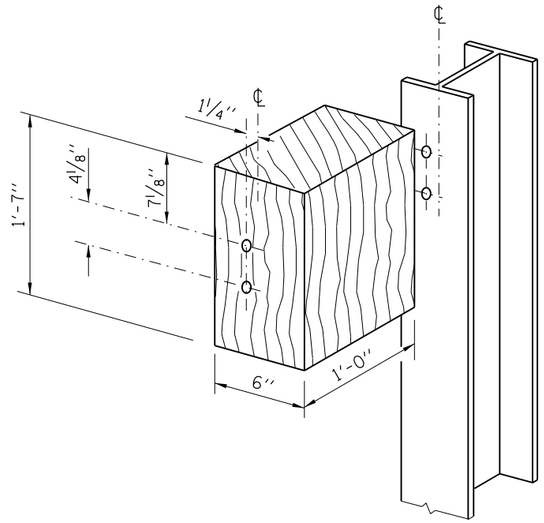
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T6B

STANDARD C10-09

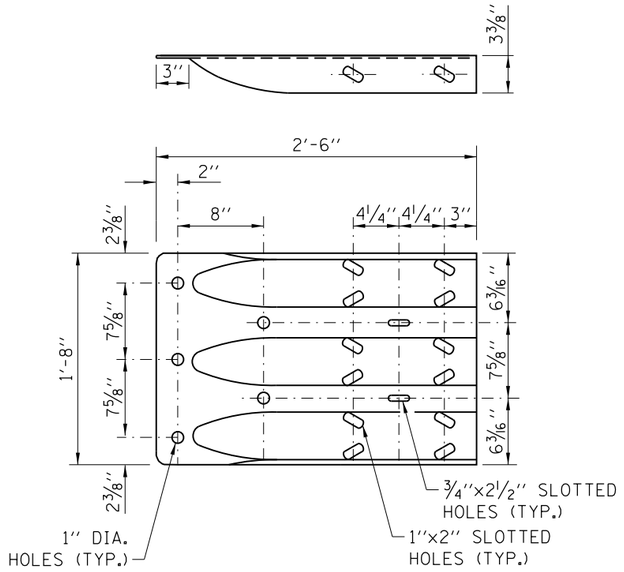


POSTS 1-11 WOOD BLOCK-OUT DETAIL

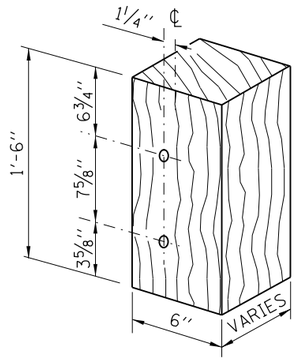


POST 12 WOOD BLOCK-OUT DETAIL

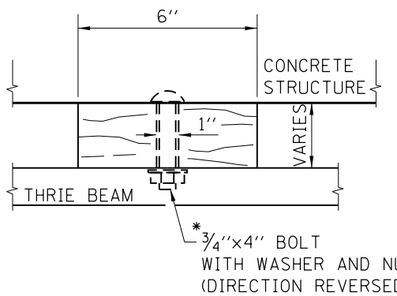
(SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR POST 13-16 BLOCKOUTS)



THRIE BEAM END SHOE DETAIL

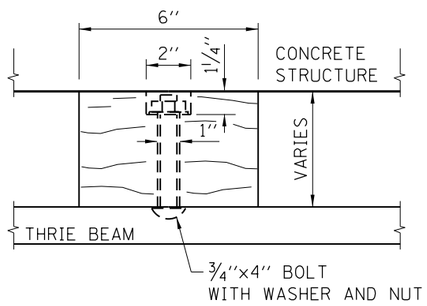


MODIFIED THICKNESS DETAIL
WOOD BLOCK-OUTS A, B, C, & D

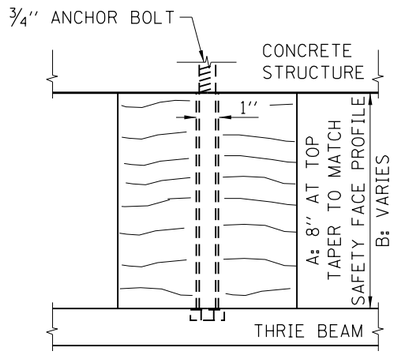


WOOD BLOCK-OUT D

* AFTER TIGHTENING, CUT THE BOLTS FLUSH WITH THE NUTS AND DAMAGE THE NUTS TO PREVENT THEM FROM LOOSENING.



WOOD BLOCK-OUT C



WOOD BLOCK-OUT A & B

NOTE:

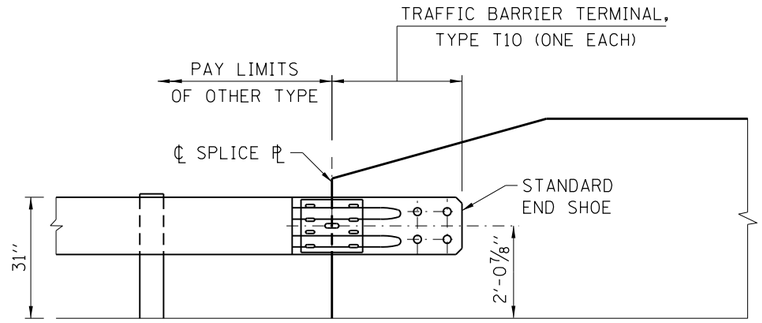
SEE SHEET 1 OF THIS SERIES FOR NOTES.

Paul Kovacs
APPROVED. . . . . DATE 7-1-2009
CHIEF ENGINEERING OFFICER

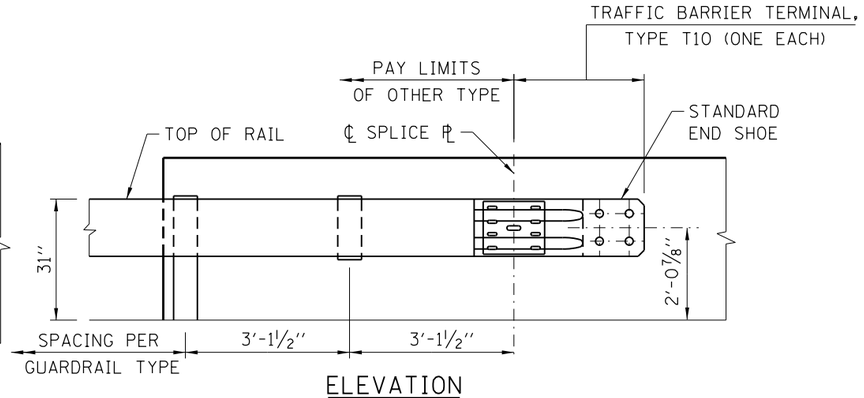
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T6B

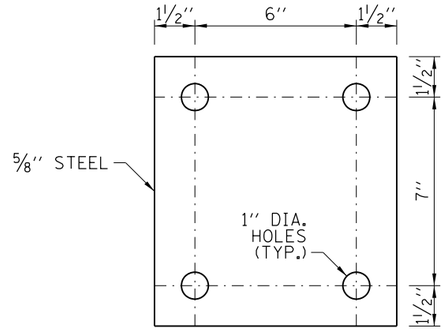
STANDARD C10-09



ELEVATION

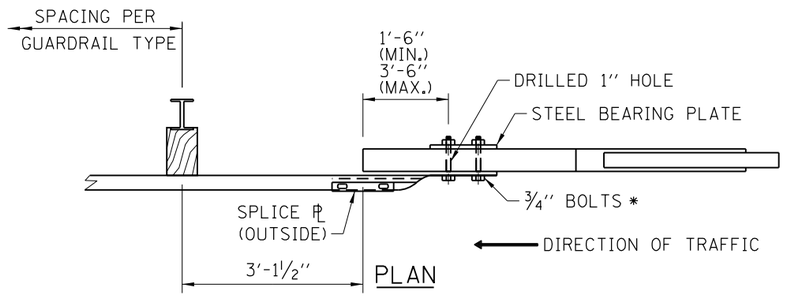


ELEVATION



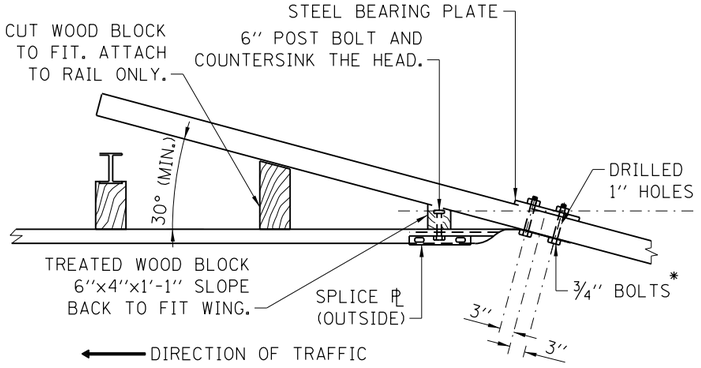
PARAPET STEEL BEARING
PLATE DETAIL

(4 EACH INDIVIDUAL 5''x5''x5/8'' STEEL PLATES WITH CENTERED HOLES MAY BE SUBSTITUTED FOR THE PLATE SHOWN)



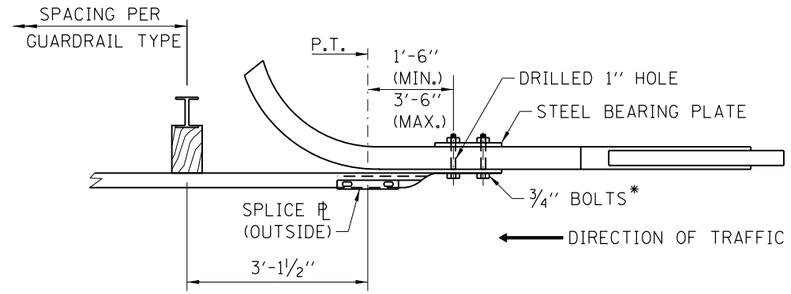
PLAN

TANGENT WING



PLAN

FLARED WING

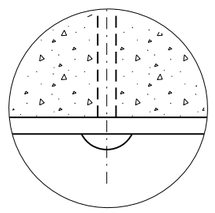


PLAN

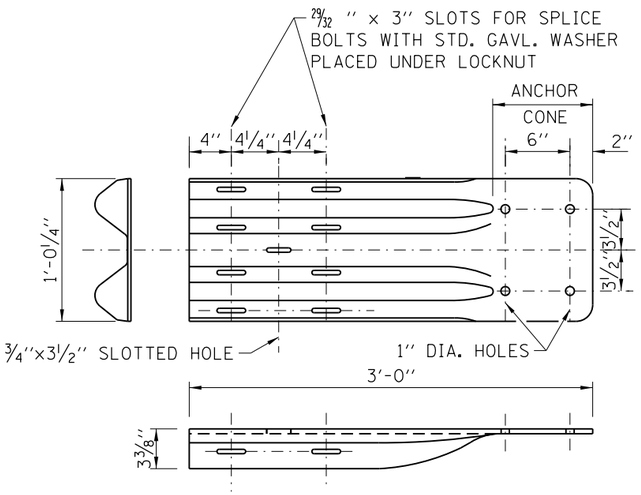
CURVED WING

GENERAL NOTE:

* HEAD OF BOLT TO BE ON TRAFFIC SIDE. SEE DETAIL ''A''



DETAIL ''A''



END SHOE

NOTES:

1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
2. THE 24 7/8'' TYPICAL RAIL HEIGHT IS MEASURED FROM EXISTING SURFACE 1'-0'' IN FRONT OF RAIL, OR FROM EDGE OF SHOULDER/EDGE OF GUTTER WHEN EDGE IS MORE THAN 1'-0'' IN FRONT OF RAIL TO CENTER OF RAIL.
3. THE TRAFFIC BARRIER TERMINAL, TYPE T10 IS TYPICALLY UTILIZED TO CONNECT GALVANIZED STEEL PLATE BEAM GUARDRAIL TO THE DEPARTING END OF AN EXISTING BRIDGE CONCRETE WING WALL OR PARAPET.
4. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
5. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY'S DETAILS AND SPECIFICATIONS. NO MODIFICATIONS SHALL BE PERMITTED.
6. 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.
7. THE ANCHOR CONE SHALL BE SET FLUSH WITH THE SURFACE OF THE CONCRETE.
8. EXTERNALLY THREADED STUDS PROTRUDING FROM THE SURFACE OF THE CONCRETE SHALL NOT BE PERMITTED.
9. WHEN WING WALL THICKNESS IS GREATER THAN 18'' OR NOT ACCESSIBLE TO THE BACK SIDE, 4-3/4'' BOLTS SHALL BE ANCHORED INTO DRILLED HOLES, USING A CHEMICAL ADHESIVE. MINIMUM EMBEDMENT SHALL BE 10''. ANCHOR BOLTS WITH STANDARD WASHER SHALL BE USED. AFTER TIGHTENING, CUT THE ANCHOR BOLTS FLUSH WITH THE NUTS, AND DAMAGE THE NUTS TO PREVENT THEM FROM LOOSENING.

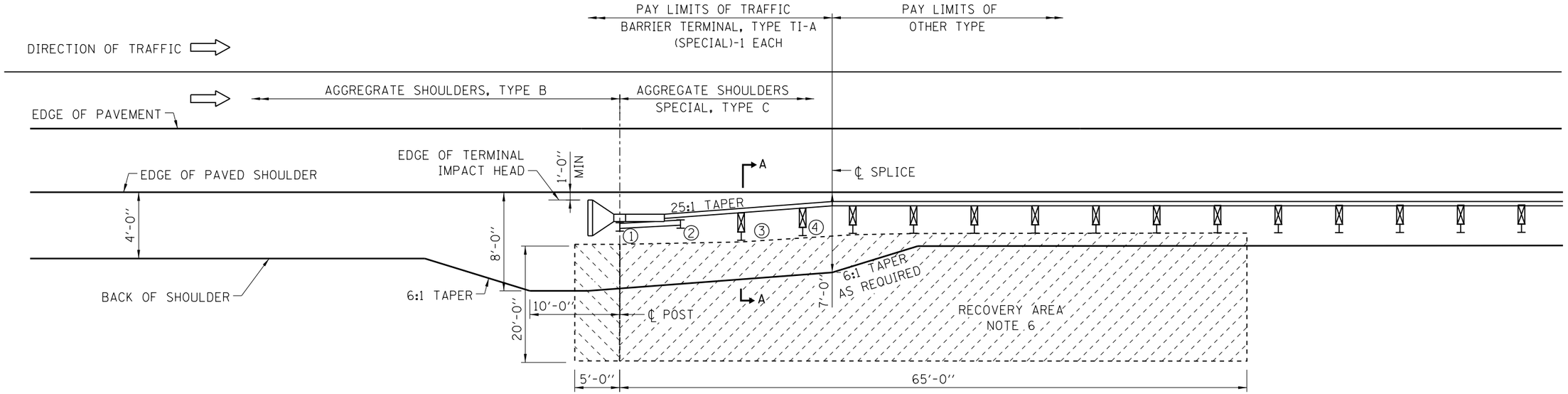
Paul Kovacs
APPROVED ..... DATE 7-1-2009
CHIEF ENGINEER

DATE	REVISIONS
3-01-2010	REVISED NOTES, ADDED END SHOE AND PARAPET BEARING PLATE DETAIL.
1-01-2011	REVISED END SHOE HEIGHT ATTACHMENT
2-07-2012	REVISED BOLT NOTE, ADDED DETAIL "A" AND REVISED NOTES.
3-31-2014	REVISED NOTES.
3-11-2015	REVISED NOTES.
3-31-2016	REVISED FLARED WING ANGLE.
3-31-2017	REV'D ELEV PARAPET & FL WING ANGLE

Illinois Tollway

TRAFFIC BARRIER
TERMINAL, TYPE T10

STANDARD C11-07



SHOULDER WIDENING TRANSITION-WITHOUT GUTTER
FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)

GENERAL NOTES:

1. ALL SLOPE RATIOS ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).

2. THE TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL) IS THE UPSTREAM END SECTION OF A GALVANIZED STEEL PLATE BEAM GUARDRAIL BARRIER SYSTEM, FOR RAMP INSTALLATION WITH DESIGN SPEED LIMIT OF 40 MPH OR LESS, AASHTO MASH, TEST LEVEL (TL-2).

3. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING B29 FOR GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL), AND MINIMUM DISTANCE FROM EDGE OF PAVED SHOULDER TO FACE OF RAIL.

4. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.

5. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S DETAILS AND SPECIFICATIONS.

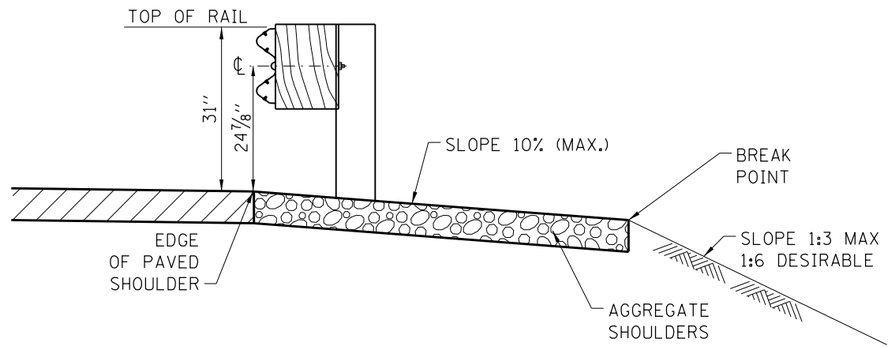
6. NO ABOVE-GROUND ROADSIDE OBSTACLE OF ANY TYPE-FIXED OR BREAKAWAY, EITHER TEMPORARY OR PERMANENT SHALL BE ALLOWED WITHIN THIS RECOVERY AREA.

7. ON TANGENT ROADWAY: TRAFFIC BARRIER TERMINAL SHALL BE INSTALLED AT A 25:1 TAPER MEASURED FROM EDGE OF TRAVELED WAY.
   ON CURVED ROADWAY: THE EDGE OF THE TERMINAL IMPACT HEAD SHALL BE OFFSET A DISTANCE FROM A POINT ON THE BACK OF THE CURVED EDGE OF PAVED SHOULDER AS SHOWN IN TABLE 1. NO CURVED W-BEAM SECTIONS ARE PERMITTED WITHIN THE TERMINAL PAY LIMITS. THE TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL) SHALL BE LAID OUT IN A STRAIGHT LINE.

8. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT. WHEN NECESSARY USE LEAVE-OUT DETAIL SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING C1.

9. THE TERMINAL SYSTEM HAS BEEN PERFORMANCE-TESTED FOR CRASHWORTHINESS UNDER PROCEDURCES DEFINED IN AASHTO MASH. NO MODIFICATION TO THIS STANDARD DRAWING SHALL BE PERMITTED.

10. WHEN GUTTER IS PRESENT, DRAINAGE STRUCTURES SHALL NOT BE INSTALLED WITHIN THE TERMINAL LIMITS, BUT SHALL BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE TERMINAL AS REQUIRED.



SECTION A-A

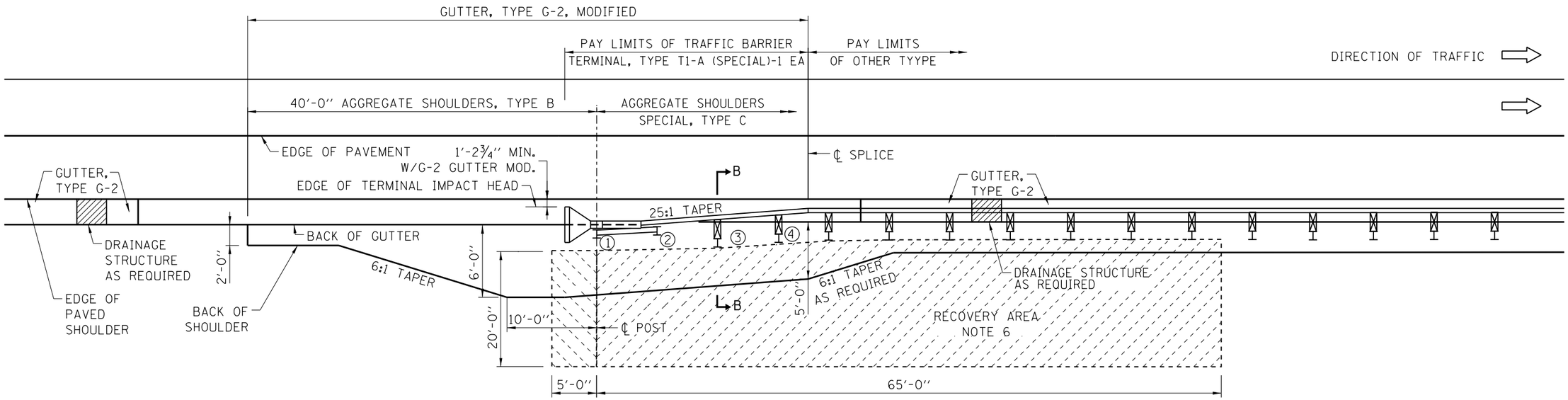
Paul Kovacs
APPROVED. . . . . DATE 1-1-2011
CHIEF ENGINEERING OFFICER

DATE	REVISIONS
3-01-2013	TERMINAL CHANGED TO ALL STEEL POST,
	REVISED TERMINAL PAY LIMITS
3-31-2014	REVISED RECOVERY AREA DIMENSION.
3-11-2015	REVISED NOTES
3-31-2016	ADDED INSTALLATION NOTES IN NOTE 7
	AND REVISED SECTION A-A SHOULDER
3-31-2017	REVISED SHOULDER WIDTH AT TERMINAL
3-01-2018	CORRECTED G-2 GUTTER REFERENCE
3-01-2019	REVISE NOTES FOR MASH
3-01-2020	ADDED MOD. TO TABLE 1 & PLAN NOTE

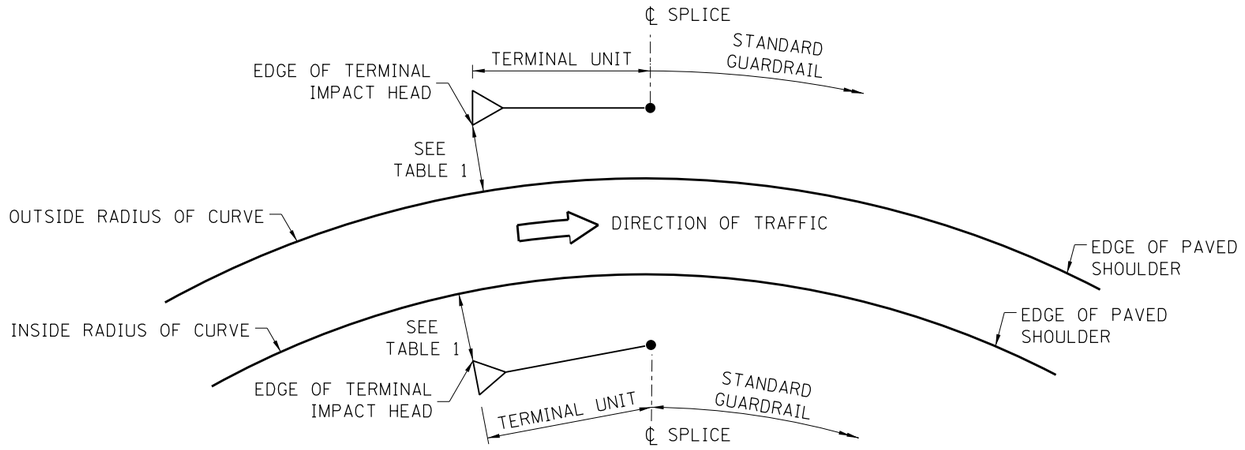
Illinois Tollway

SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)

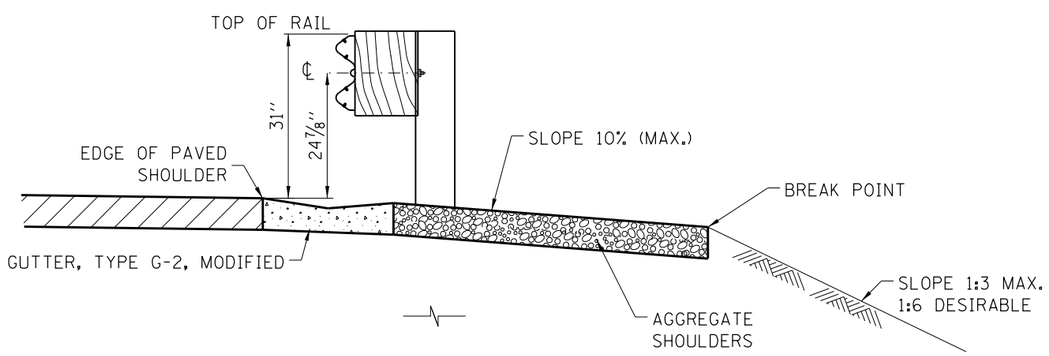
STANDARD C12-10



SHOULDER WIDENING TRANSITION-WITH GUTTER, TYPE G-2
FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)



CURVED ROADWAY
TRAFFIC BARRIER TERMINAL PLACEMENT
(SEE NOTE 7)



SECTION B-B

TABLE 1		
LATERAL OFFSET DIMENSION TO EDGE OF TERMINAL IMPACT HEAD		
	INSIDE RADIUS OF CURVE	OUTSIDE RADIUS OF CURVE
NO GUTTER	1'-0"	1'-0" *
GUTTER, TYPE G-2, MOD.	1'-2¾"	1'-2¾" MIN. *

(*) OFFSET DISTANCE WILL VARY BASED ON RADIUS OF HORIZONTAL CURVE AND THE TERMINAL BEING INSTALLED IN A STRAIGHT LINE.

NOTES:

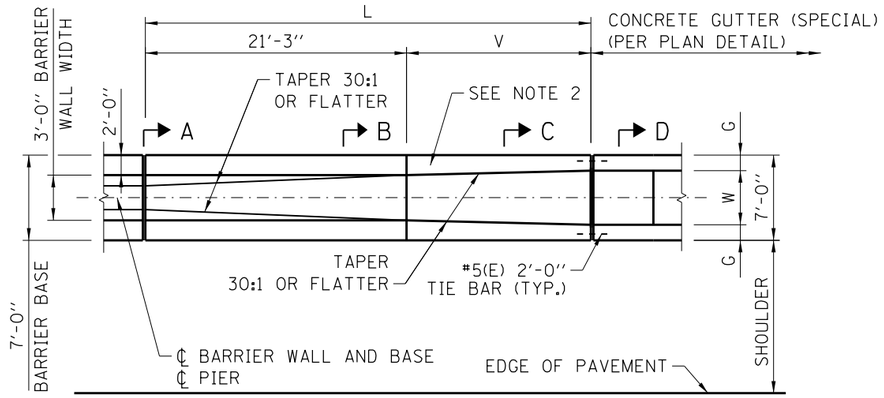
SEE SHEET 1 OF THIS SERIES FOR NOTES.

Paul Kovacs
APPROVED ..... DATE 1-1-2011
CHIEF ENGINEERING OFFICER

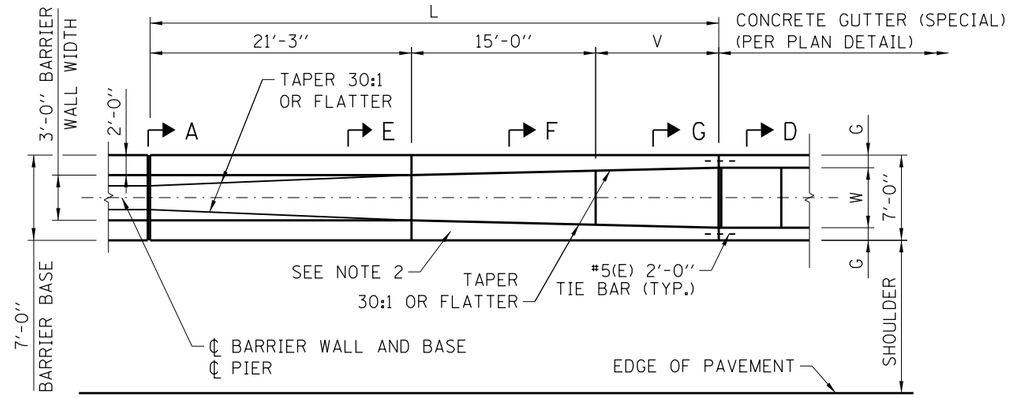
Illinois Tollway

SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)

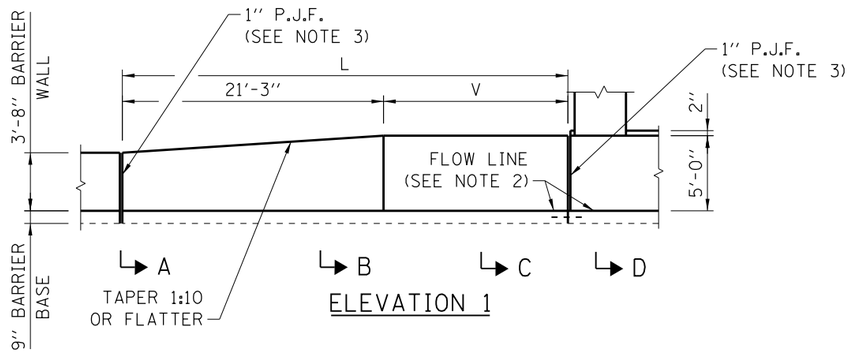
STANDARD C12-10



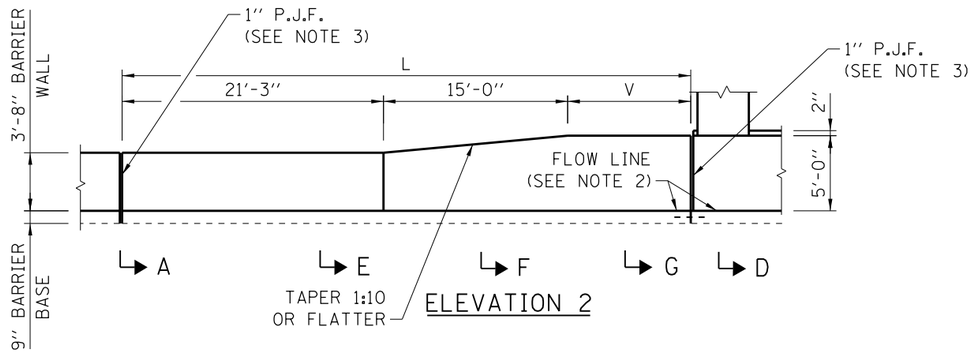
PLAN 1



PLAN 2



ELEVATION 1



ELEVATION 2

CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF AT BRIDGE PIERS (FOR W ≤4'-0")

CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF AT BRIDGE PIERS (FOR W >4'-0")

	TABLE OF VARIABLES			
	W	L	V	G
PLAN 1	3'-0"	31'-3"	10'-0"	2'-0"
	3'-6"	31'-3"	10'-0"	1'-9"
	4'-0"	36'-3"	15'-0"	1'-6"
PLAN 2	4'-6"	46'-3"	10'-0"	1'-3"
	5'-0"	51'-3"	15'-0"	1'-0"
	5'-6"	58'-9"	22'-6"	9"
	6'-0"	66'-3"	30'-0"	6"

NOTES:

1. 2" DEEP CONTRACTION JOINTS SHALL BE DONE BY SAWING AND SHALL BE CONSTRUCTED IN THE CONCRETE BARRIER WALL, CONCRETE BARRIER BASE, AND CONCRETE GUTTER (SPECIAL). CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0". THE MINIMUM DISTANCE BETWEEN CONTRACTION JOINTS IN THE MEDIAN BARRIER WALL SHALL BE 2'-0". WHEN A DRAINAGE STRUCTURE FALLS WITHIN 2'-0" FROM AN EXPANSION JOINT (OR) CONTRACTION JOINT, THE NEAREST CONTRACTION JOINT SHALL BE OMITTED.

2. GUTTER PROFILE IN THE VICINITY OF SAG VERTICAL CURVES, ALONG FLAT GRADES AND AT THE MEETING OF PROPOSED AND EXISTING GUTTER, SHALL BE CAREFULLY CONTROLLED AND FIELD ADJUSTED IF NECESSARY TO ENSURE POSITIVE DRAINAGE AND AVOID PONDING.

3. NON-STAINING GRAY ONE COMPONENT NON-SAG ELASTOMERIC GUN GRADE POLYURETHANE SEALANT MEETING THE REQUIREMENTS OF ASTM C-920, TYPE S, GRADE NS, CLASS 25, USE T WITH A BACKER ROD.

4. TIE BARS SHALL BE INCLUDED IN THE COST OF THE VARIOUS BARRIER AND GUTTER ITEMS AND SHALL BE EPOXY COATED. TIE BARS BETWEEN THE BARRIER AND BASE SHALL BE ON 30" CENTERS AND ALTERNATE LEFT AND RIGHT OF THE BARRIER CENTERLINE.

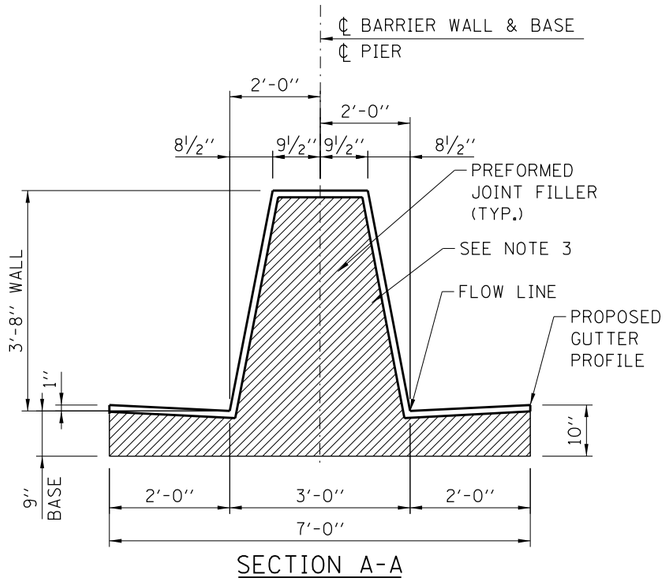
Paul Kovacs
APPROVED ..... DATE 2-7-2012
CHIEF ENGINEERING OFFICER

Illinois Tollway

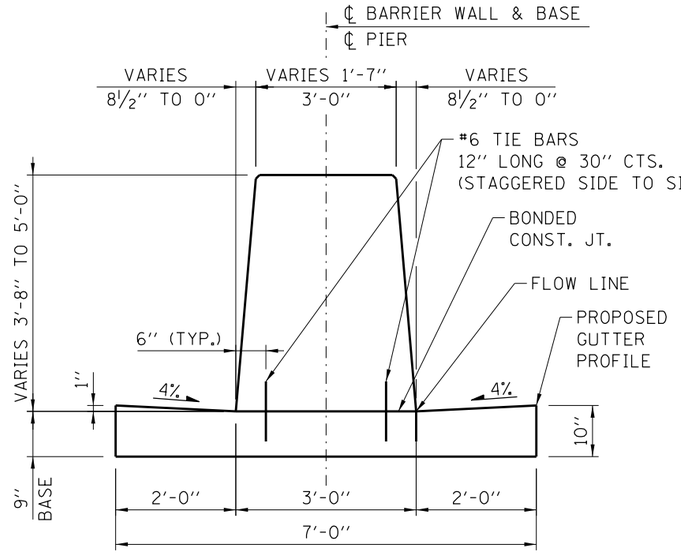
DATE	REVISIONS
11-01-2012	MODIFIED MEDIAN BARRIER TRANSITION.
3-31-2014	MODIFIED BARRIER BASE.
3-11-2015	MODIFIED MEDIAN BARRIER TRANSITION.
3-31-2016	MODIFIED NOTES
3-01-2019	REVISED TO CONSTANT SLOPE AT 44"

CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF AT BRIDGE PIERS

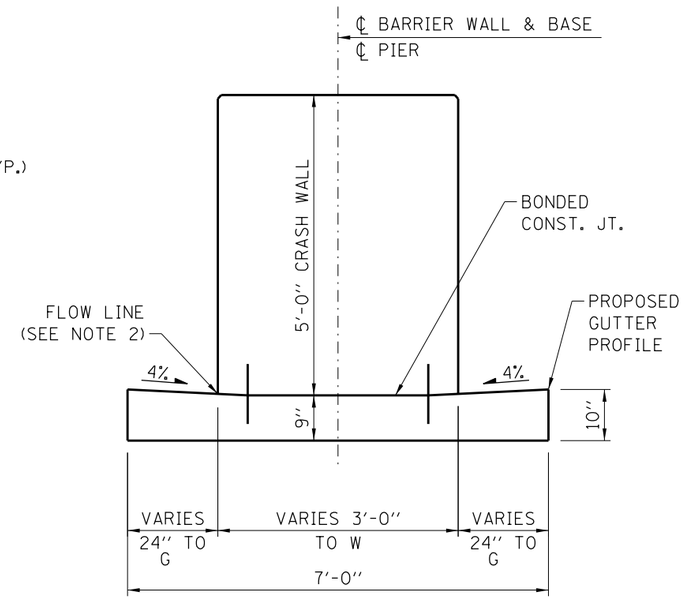
STANDARD C13-05



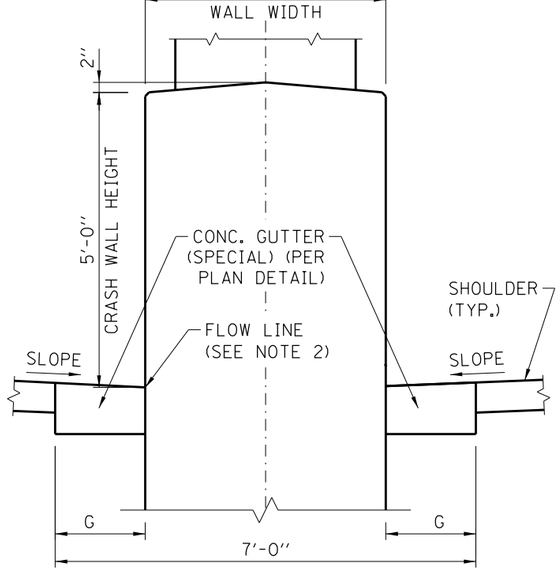
SECTION A-A



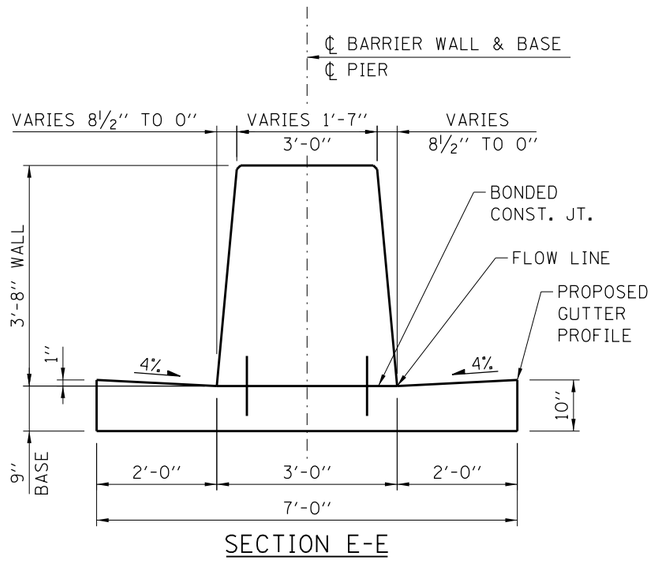
SECTION B-B



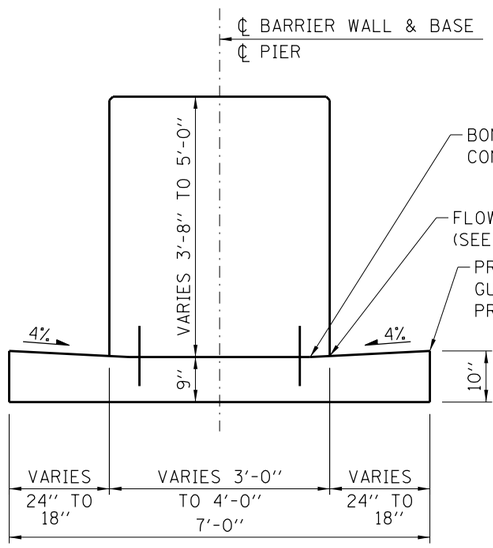
SECTION C-C



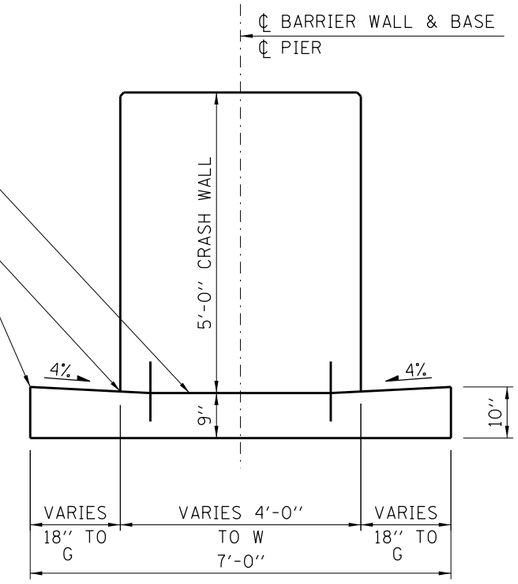
SECTION D-D



SECTION E-E



SECTION F-F



SECTION G-G

APPROVED Paul Kovacs CHIEF ENGINEERING OFFICER DATE 2-7-2012

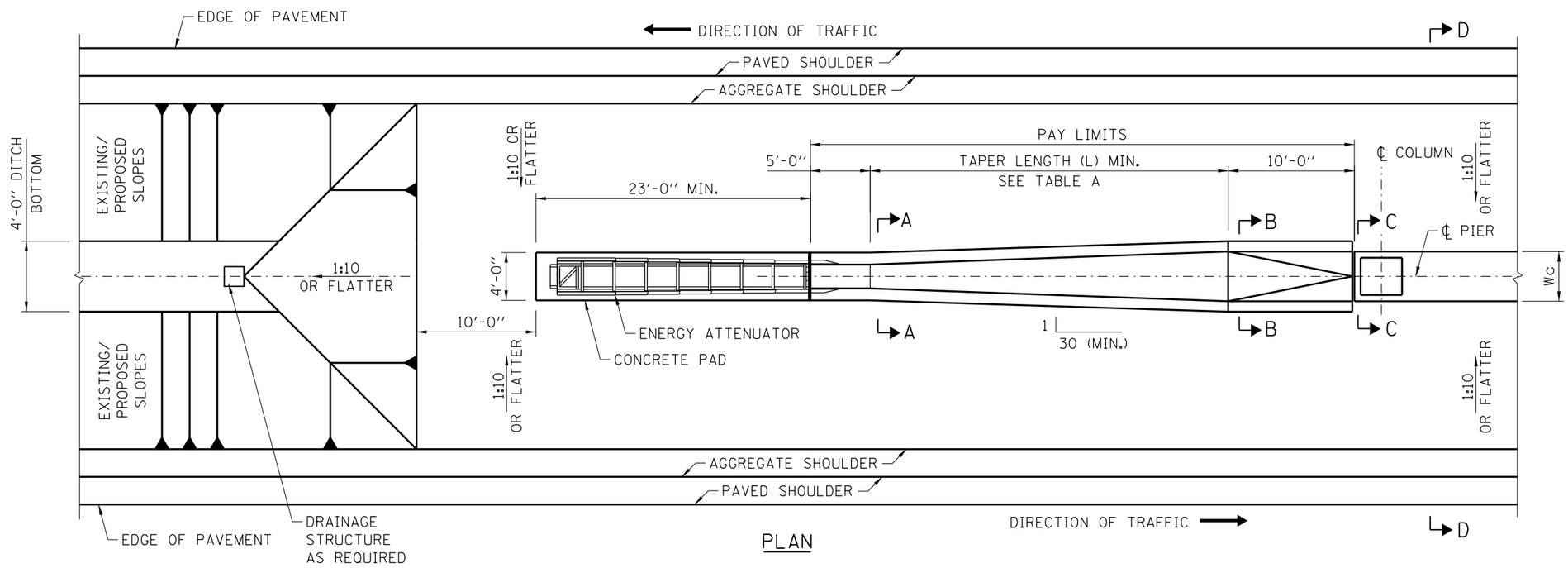
NOTES:

SEE SHEET 1 OF THIS SERIES FOR NOTES.

Illinois Tollway

CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF AT BRIDGE PIERS

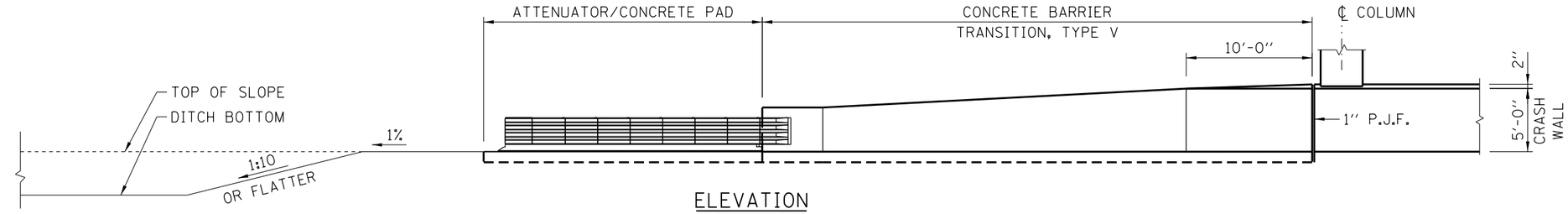
STANDARD C13-05



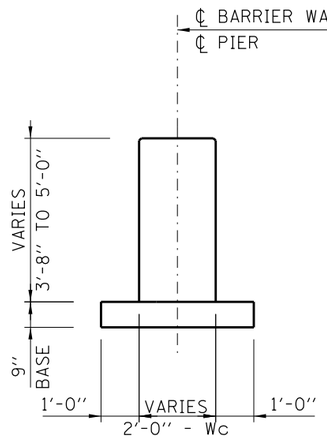
PLAN

TABLE A	
Wc	L (MIN.)
24''	20'-0''
24''<Wc<35''	25'-0''
35''<Wc<43''	35'-0''
43''<Wc<51''	45'-0''
51''<Wc<59''	55'-0''
59''<Wc<67''	65'-0''
67''<Wc<72''	75'-0''

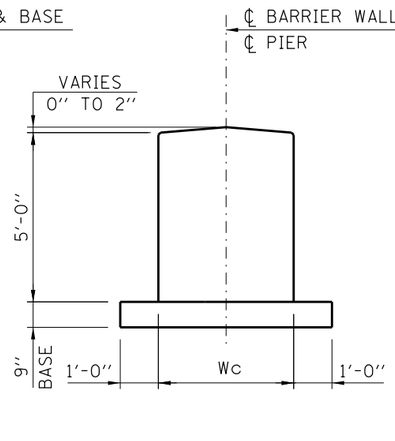
Wc=PIER CRASH WALL WIDTH



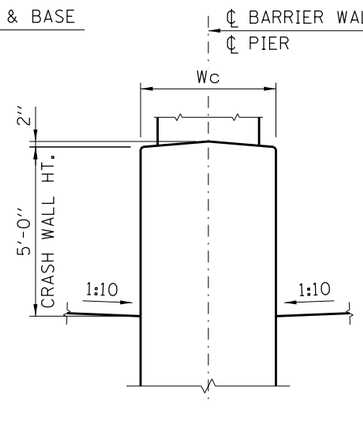
ELEVATION



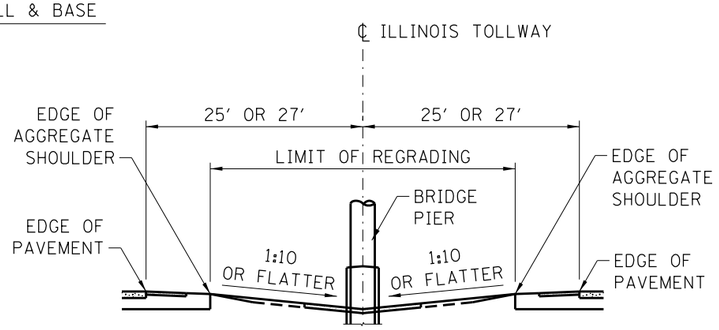
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

NOTES:

1. SLOPE RATIOS ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
2. ENERGY ATTENTUATOR AND PAD SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S DETAILS AND SPECIFICATIONS.
3. 2'' DEEP CONTRACTION JOINTS SHALL BE DONE BY SAWING AND SHALL BE CONSTRUCTED IN THE CONCRETE BARRIER WALL, AND CONCRETE BARRIER BASE. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0''. THE MINIMUM DISTANCE BETWEEN CONTRACTION JOINTS IN THE MEDIAN BARRIER WALL SHALL BE 2'-0''.

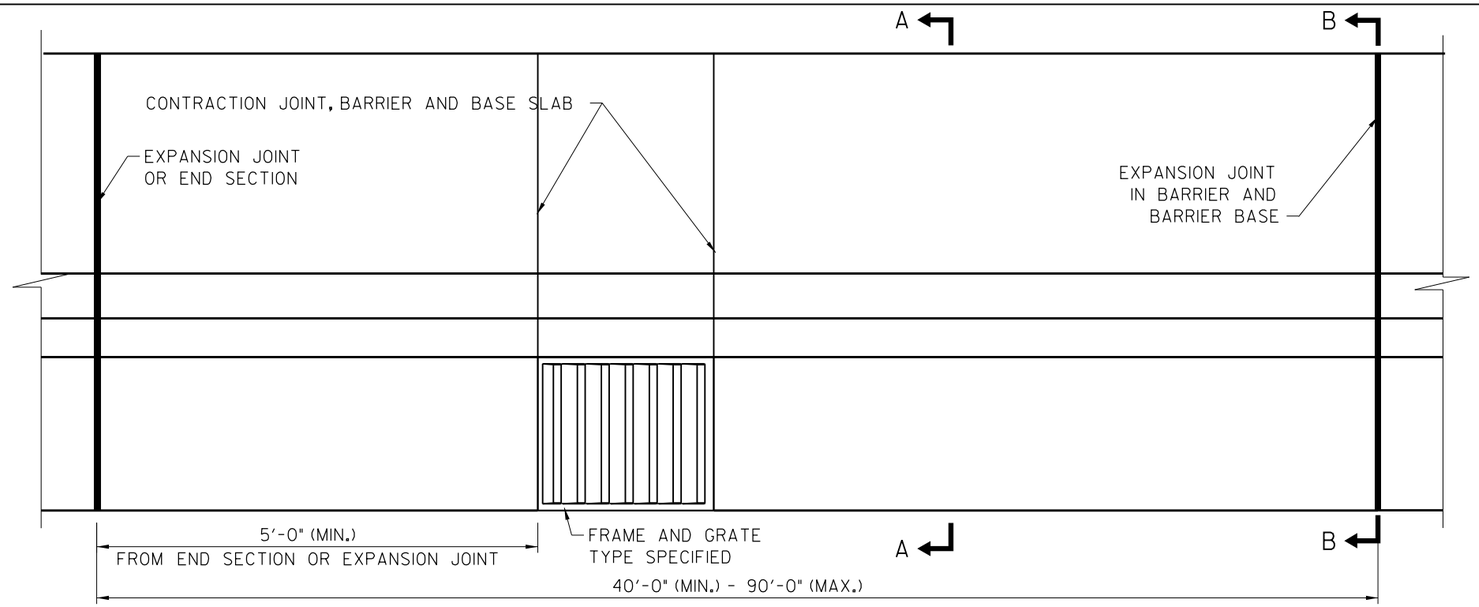
Paul Kovacs
APPROVED ..... DATE 3-31-2014
CHIEF ENGINEERING OFFICER

DATE	REVISIONS
3-11-2015	REVISED NOTES
3-31-2016	ADDED SEC. B-B TOP, DITCH ELEV. VIEW AND REVISED NOTE 3
3-01-2019	REVISED ATTENUATOR
3-01-2020	CORRECTED HEIGHT IN SECTION A-A

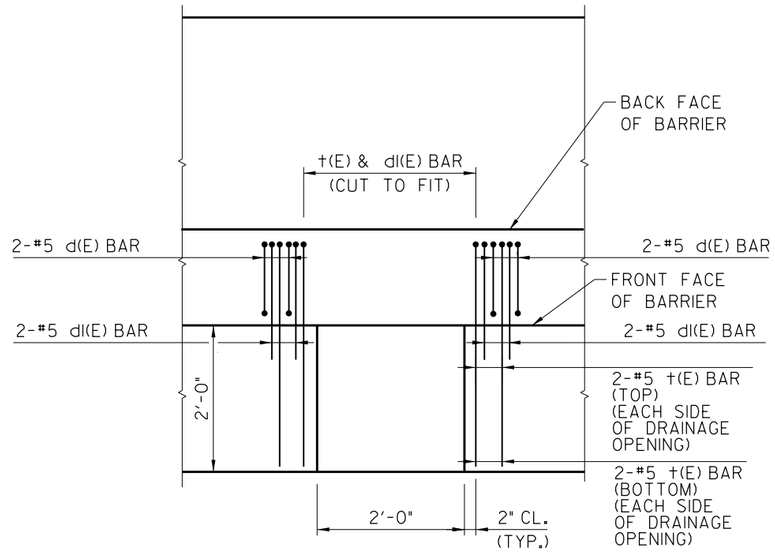
Illinois Tollway

CONCRETE MEDIAN BARRIER TRANSITION, TYPE V AT BRIDGE PIERS

STANDARD C14-04

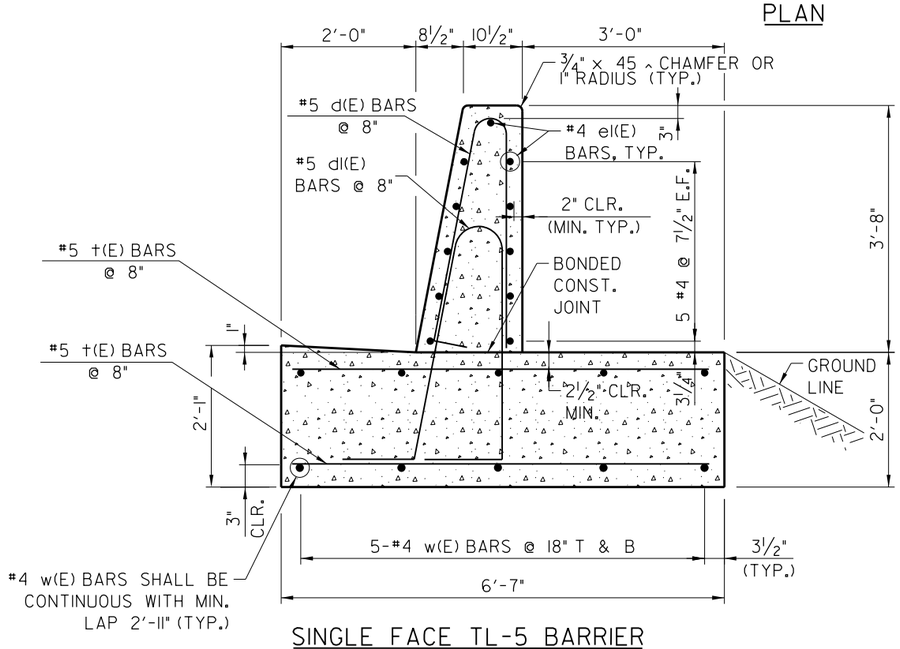


PLAN

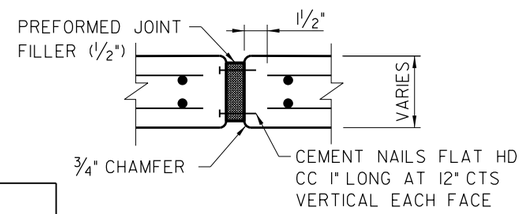


PLAN

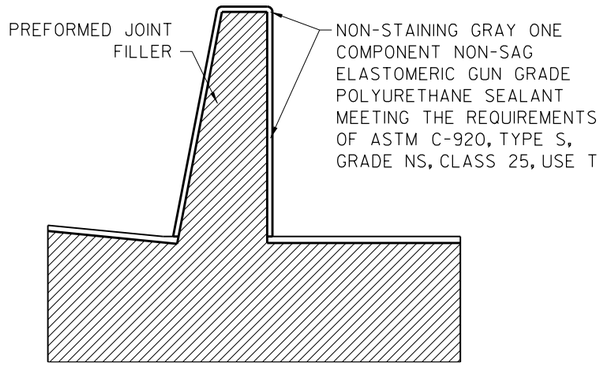
REINFORCEMENT AROUND DRAINAGE STRUCTURE



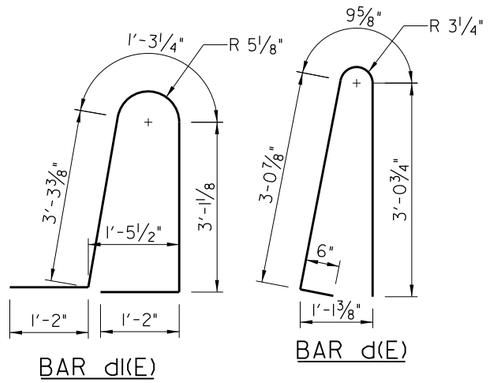
SINGLE FACE TL-5 BARRIER
SECTION A-A



EXPANSION JOINT



SINGLE FACE 44" BARRIER
EXPANSION JOINT
SECTION B-B



BENDING DIAGRAMS

NOTES:

1. THIS IS A REINFORCED CONCRETE TL-5 ROADSIDE BARRIER USED TO SHIELD DROP-OFFS AND STRUCTURES WHEN THE TOE OF THE TRAFFIC FACE IS GREATER THAN 10' FROM THE STRUCTURE FACE. THE MINIMUM LENGTH OF INSTALLATION SHALL BE 40'-0". BASIS OF DESIGN: IL TOLLWAY STRUCTURE DESIGN MANUAL.
2. TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
3. 1" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE REINFORCED CONCRETE BARRIER WALL AND BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".
4. THE FORMING OF CONTRACTION JOINTS SHALL BE DONE WITH AN APPROVED FINISHING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.
5. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
6. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT. E.F. DENOTES EACH FACE.
7. AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD AN ADDITIONAL PAIR OF d, dl AND † BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE.
8. EXPANSION JOINTS SHALL BE CONSTRUCTED IN BARRIER WALL AT A MAXIMUM JOINT SPACING OF 90'-0" AND A MINIMUM JOINT SPACING OF 40'-0". SEE SECTION B-B FOR DETAILS.

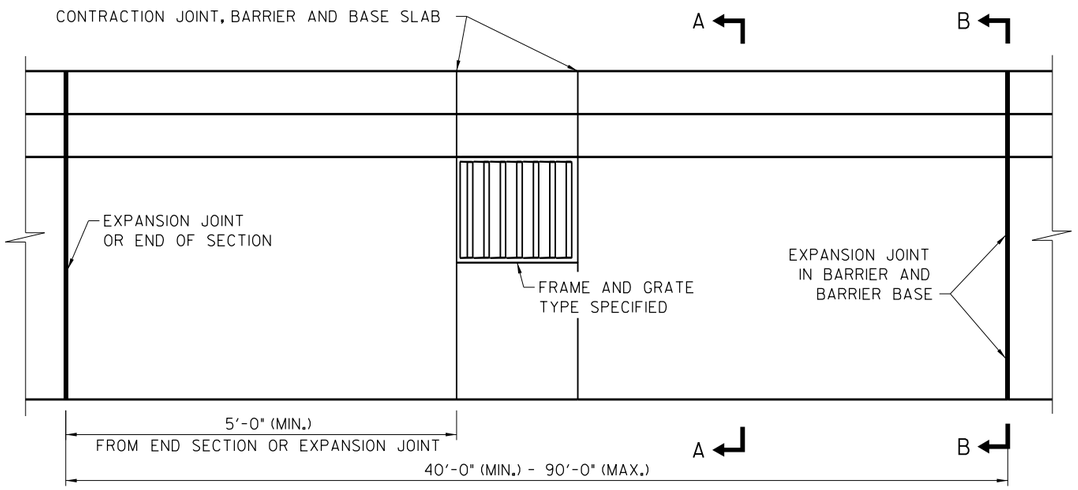
Paul Kovacs
APPROVED CHIEF ENGINEERING OFFICER
DATE 3-1-2019

DATE	REVISIONS
3-01-2020	REVISED NAME & REINFORCING

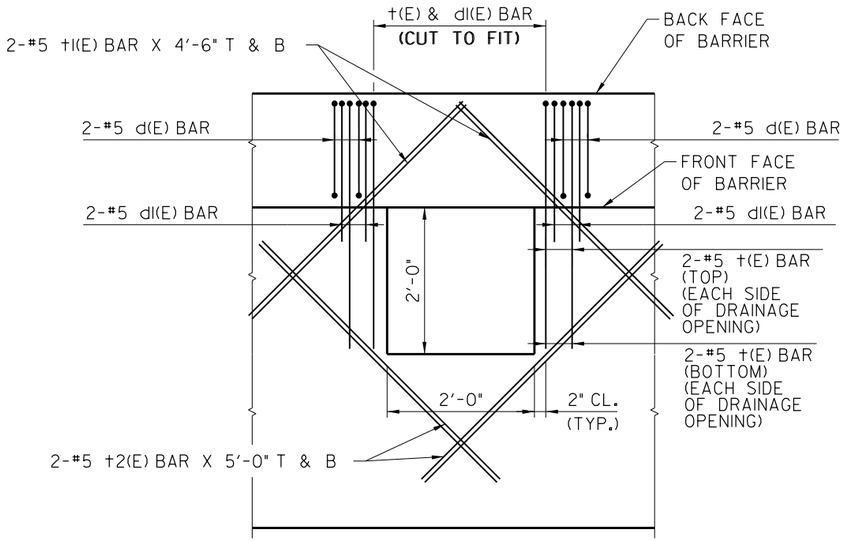
Illinois Tollway

CONCRETE BARRIER SINGLE FACE, REINFORCED TL-5, T-SHAPE 44 INCH

STANDARD C15-01

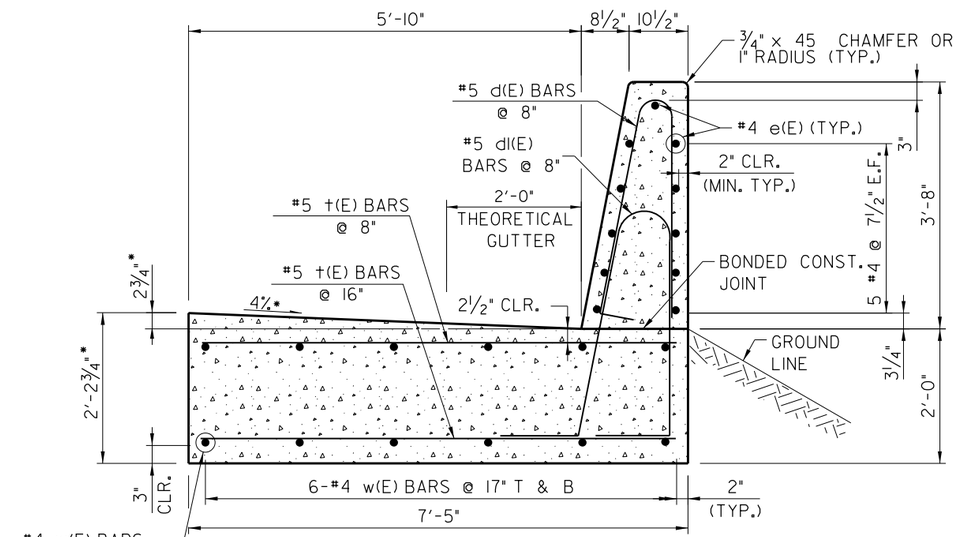


PLAN



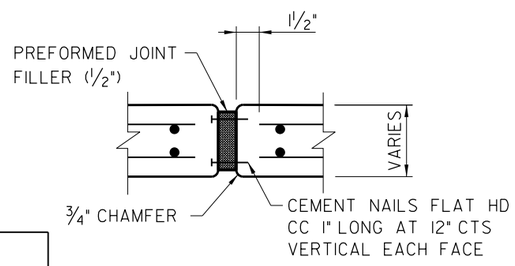
PLAN

REINFORCEMENT AROUND DRAINAGE STRUCTURE

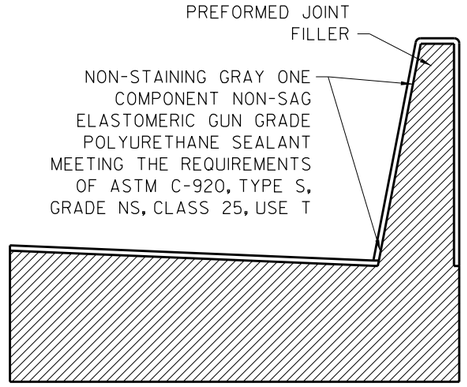


SINGLE FACE TL-5 BARRIER
SECTION A-A

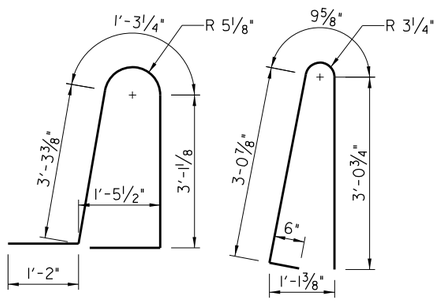
* OR AS REQUIRED TO MATCH SHOULDER CROSS SLOPE



EXPANSION JOINT



SINGLE FACE 44" BARRIER
EXPANSION JOINT
SECTION B-B



BENDING DIAGRAMS

NOTES:

1. THIS IS A REINFORCED CONCRETE TL-5 ROADSIDE BARRIER USED TO SHIELD DROP-OFFS AND STRUCTURES WHEN THE TOE OF THE TRAFFIC FACE IS GREATER THAN 10' FROM THE STRUCTURE FACE. THE MINIMUM LENGTH OF INSTALLATION SHALL BE 40'-0". BASIS OF DESIGN: IL TOLLWAY STRUCTURE DESIGN MANUAL.
2. TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
3. 1" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE REINFORCED CONCRETE BARRIER WALL AND BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".
4. THE FORMING OF CONTRACTION JOINTS SHALL BE DONE WITH AN APPROVED FINISHING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.
5. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
6. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT. E.F. DENOTES EACH FACE.
7. AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD AN ADDITIONAL PAIR OF d, dl AND † BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE.
8. EXPANSION JOINTS SHALL BE CONSTRUCTED IN BARRIER WALL AT A MAXIMUM JOINT SPACING OF 90'-0" AND A MINIMUM JOINT SPACING OF 40'-0". SEE SECTION B-B FOR DETAILS.

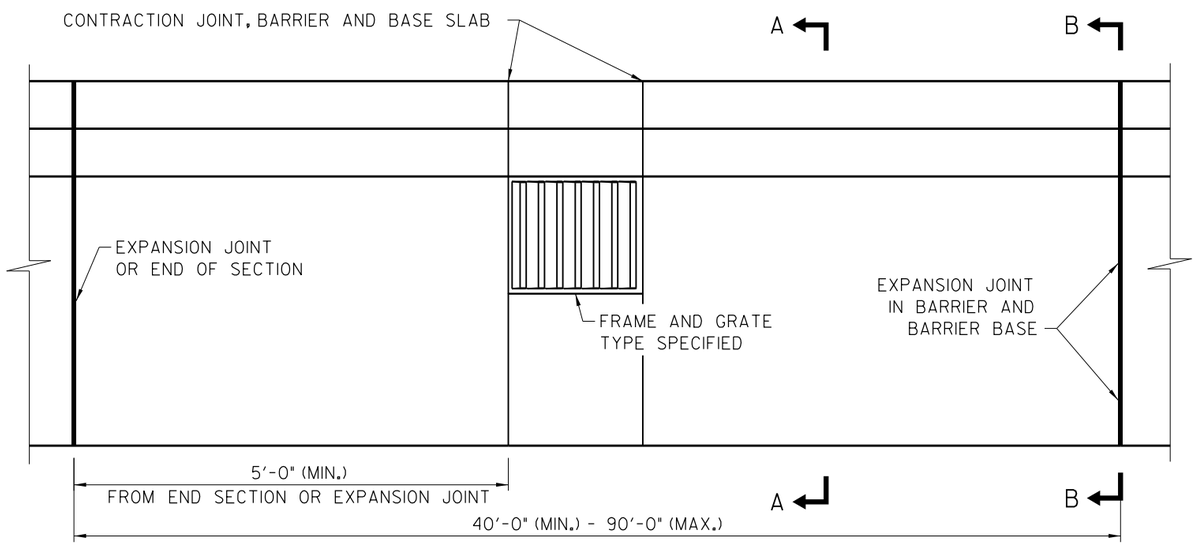
DATE	REVISIONS
3-01-2020	REVISED TITLE & STEM THICKNESS

Illinois Tollway

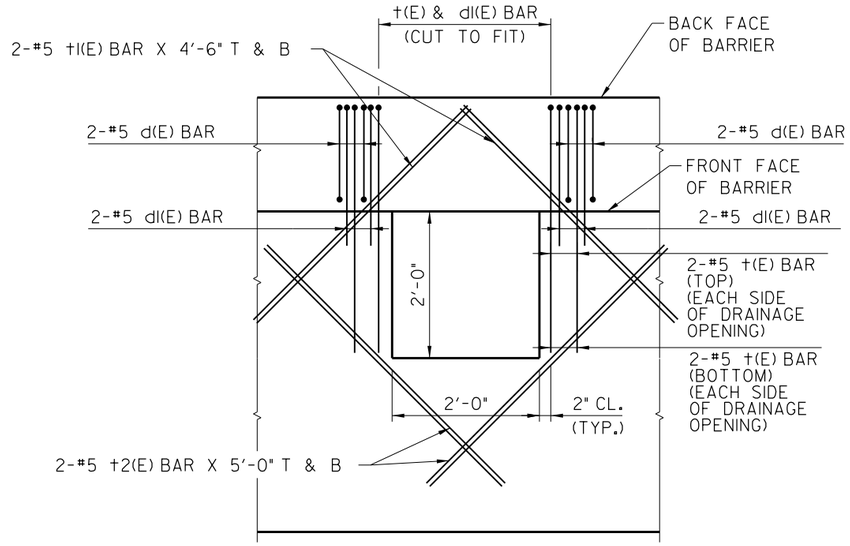
CONCRETE BARRIER SINGLE FACE, REINFORCED TL-5, L-SHAPE 44 INCH

STANDARD C16-01

Paul Kovacs
APPROVED ..... CHIEF ENGINEERING OFFICER
DATE 3-1-2019

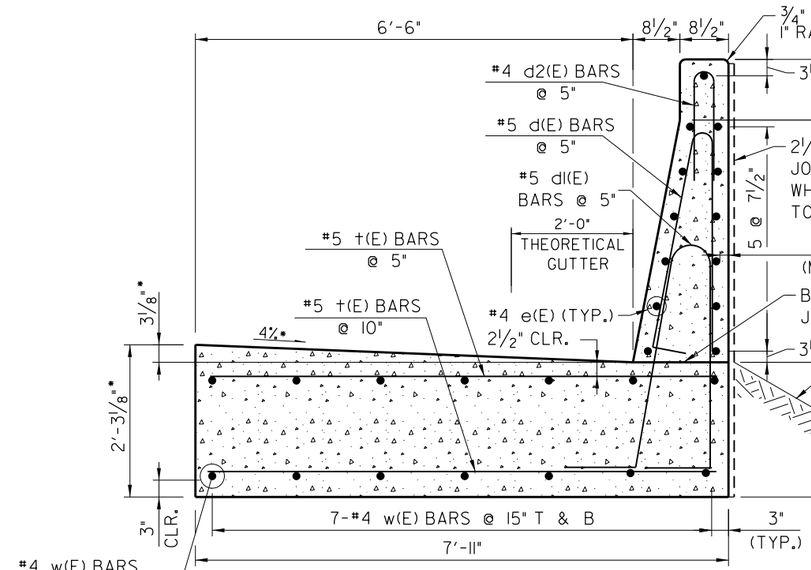


PLAN



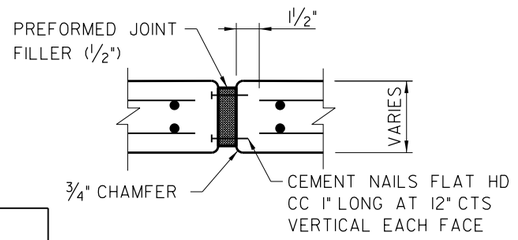
PLAN

REINFORCEMENT AROUND DRAINAGE STRUCTURE

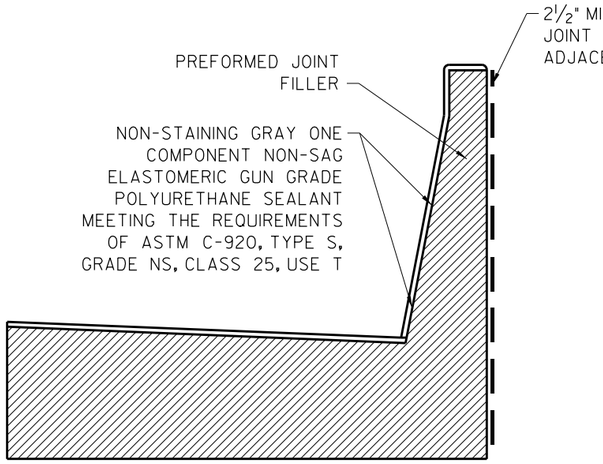


SINGLE FACE TL-5 BARRIER
SECTION A-A

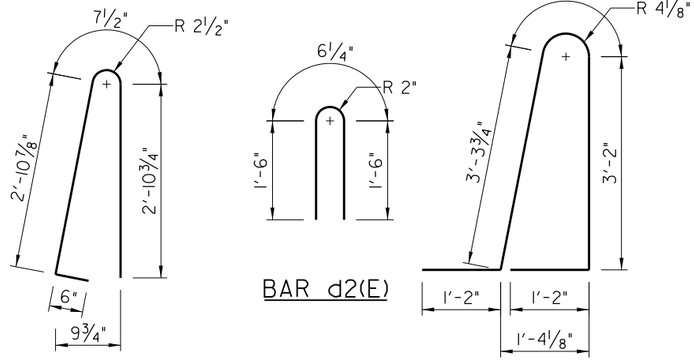
* OR AS REQUIRED TO MATCH SHOULDER CROSS SLOPE



EXPANSION JOINT



SINGLE FACE 54" BARRIER
EXPANSION JOINT
SECTION B-B



BENDING DIAGRAMS

NOTES:

1. THIS IS A REINFORCED CONCRETE TL-5 ROADSIDE BARRIER USED TO SHIELD BRIDGE PIERS AND ABUTMENTS WHEN THE TOE OF THE TRAFFIC FACE IS WITHIN 10' OF THE STRUCTURE FACE. THE MINIMUM LENGTH OF INSTALLATION SHALL BE 40'-0". BASIS OF DESIGN: IL TOLLWAY STRUCTURE DESIGN MANUAL.
2. TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
3. 1" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE REINFORCED CONCRETE BARRIER WALL AND BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".
4. THE FORMING OF CONTRACTION JOINTS SHALL BE DONE WITH AN APPROVED FINISHING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.
5. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
6. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION. REINFORCEMENT BAR BENDING DIMENSIONS ARE SHOWN OUT TO OUT.
7. AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD AN ADDITIONAL PAIR OF d, dl, d2, †, AND †l BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE.
8. EXPANSION JOINTS SHALL BE CONSTRUCTED IN BARRIER WALL AT A MAXIMUM JOINT SPACING OF 90'-0" AND A MINIMUM JOINT SPACING OF 40'-0". SEE SECTION B-B FOR DETAILS.

DATE	REVISIONS
3-01-2020	REVISED NAME, ADDED NOTE

Illinois Tollway

CONCRETE BARRIER
SINGLE FACE, REINFORCED
TL-5, 54 INCH

STANDARD C17-01

Paul Kovacs
APPROVED ..... DATE 3-1-2019
CHIEF ENGINEERING OFFICER