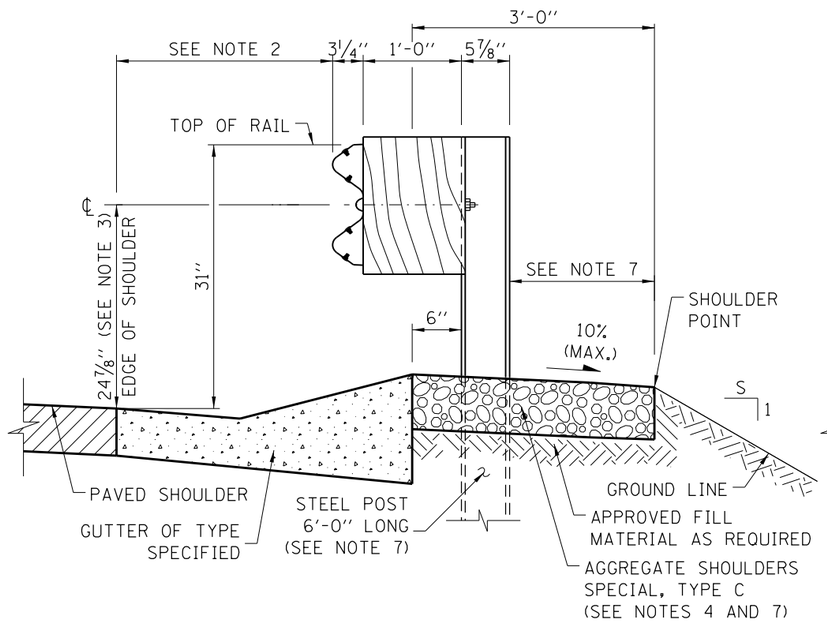
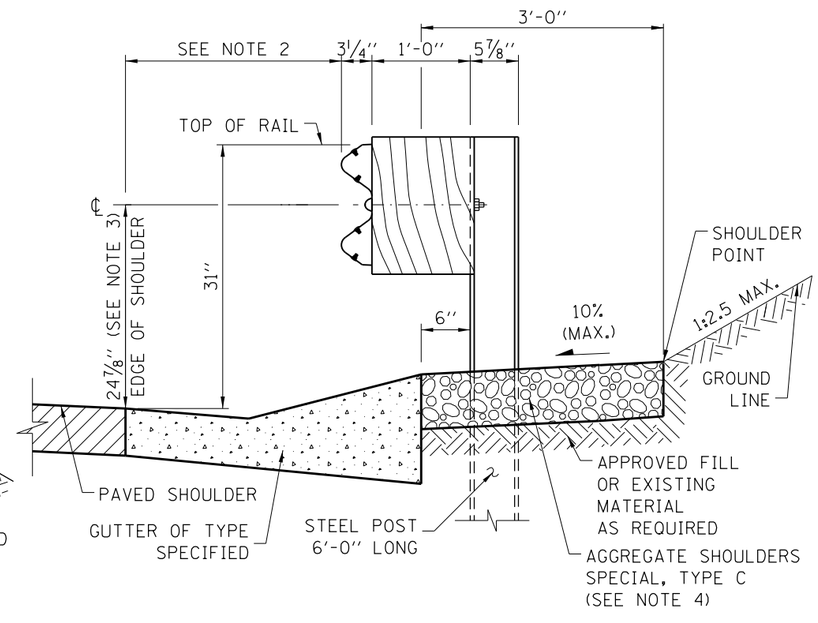
Illinois Tollway Standard Drawing Revisions

Section C	Guardrail / Median Barrier	
	Standard	**Modification Summary** **Effective: 03-31-2017**
	C1	**Galvanized Steel Plate Beam Guardrail**
	Sheet 1	Revised notes. Deleted the previous Note 5, and replaced with the previous Note 13.
		Revised shoulder slope to percentage in details.
	Sheet 2	Revised "Impervious Material" to "Rock Formation" in footing for post detail to match AASHTO RDG.
	C4	**Concrete Shoulder Barrier Transition Type F**
		Added that face of barrier is flush to abutment, pier or crashwall in Section D-D.
	C6	**Shoulder Widening for Traffic Barrier Terminal, Type T1 (Special) Tangent**
		Increased shoulder width through terminal area behind terminal.
		Revised Section A-A on sheet 2 to Section B-B.
		Revised foreslope to 1:3 (Maximum) and 1:6 (Desirable) in Sections A-A and B-B.
		Revised "Extruder" to "Impact" for terminal head.
		Revised shoulder slope to percentage in Sections A-A and B-B.
		Clarified Shoulder widening configuration.
	C7	**Traffic Barrier Terminal, Type T2**
	Sheet 1 & 2	Revised shoulder slope to percentage in Sections A-A (sheet 1) and B-B (sheet 2).
	Sheet 2	Revised Section A-A to Section B-B.
	Sheet 2	Added note to toe nail wood block into post in Section B-B. Added 1:6 (Max.) foreslope.
	Sheet 3	Added note for minimum two threads extending beyond nut face in Cable Assembly Detail.
	C9	**Traffic Barrier Terminal, Type T6**
	Sheet 1	Deleted note 3.
	Sheet 1	Added note 12 that drainage structures are not allowed within terminal limits
	Sheet 1 & 3	Revised shoulder slope to percentage in Sections A-A and B-B.
	C10	**Traffic Barrier Terminal, Type T6B**
	Sheet 1	Revised shoulder slope to percentage in Section A-A.
	Sheet 2	Added note to cut bolts flush and damage to detail for Wood Block-Out D
	C11	**Traffic Barrier Terminal, Type T10**
		Revised parapet/barrier shape in elevation views.
		Added 3'-6" (max.) length from parapet end to nearest drilled holes in tapered and curved wing details.
		Revise flared wing angle to meet MASH deflection for first post.
	C12	**Shoulder Widening for Traffic Barrier Terminal, Type T1-A (Special)**
		Increased shoulder width through terminal area behind terminal.
		Revised "Extruder" to "Impact" for terminal head.
		Revised shoulder slope to percentage in Sections A-A and B-B.
		Revised foreslope to 1:3 (Maximum) and 1:6 (Desirable) in Sections A-A and B-B.
		Added note 10 that drainage structures are not allowed within terminal limits
		Clarified Shoulder widening configuration.

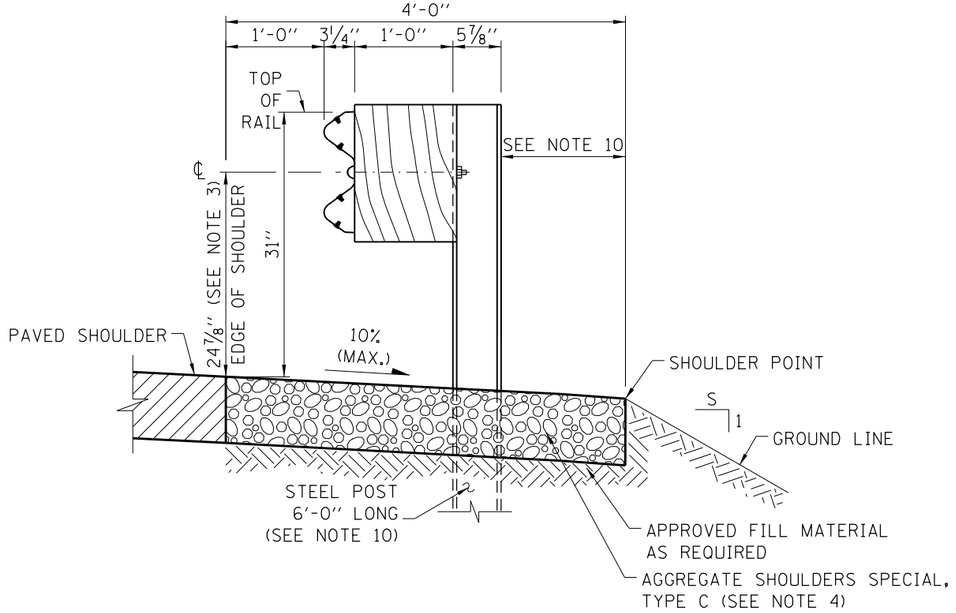
New Sheet   Retired Standard



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 GREATER 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 GREATER THAN OR EQUAL TO 3, THE POST LENGTH SHALL BE 9'-0'' AND 4'-0'' AGGREGATE SHOULDER WIDTH MAINTAINED.
11. THE GUARDRAIL SYSTEM HAS BEEN PERFORMANCE-TESTED FOR CRASHWORTHINESS UNDER PROCEDURES DEFINED 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.

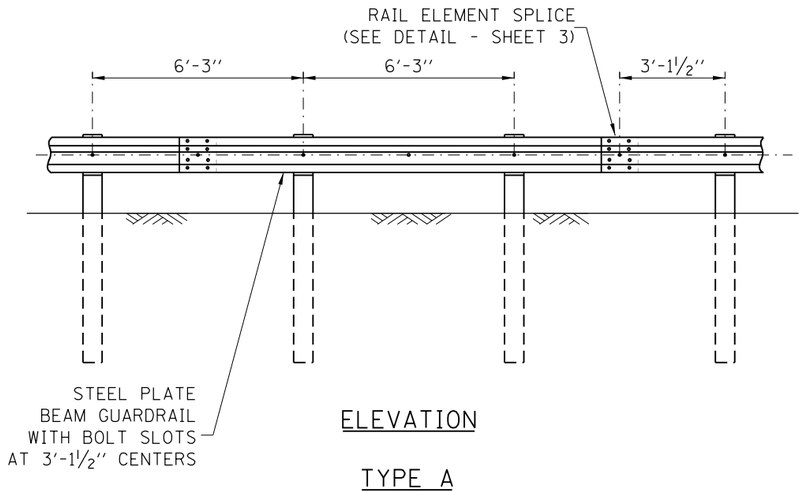
Paul Kovacs
APPROVED ..... CHIEF ENGINEER
DATE 5-1-2009

DATE	REVISIONS
11-01-12	MODIFIED AGGREGATE SHOULDERS
03-31-14	REMOVED SECONDARY HOLE FROM POST AND UPDATED NOTES.
03-31-16	ADDED SECTION, REV'D SHLDR
03-31-17	REVISED NOTES

Illinois Tollway

GALVANIZED STEEL PLATE BEAM GUARDRAIL

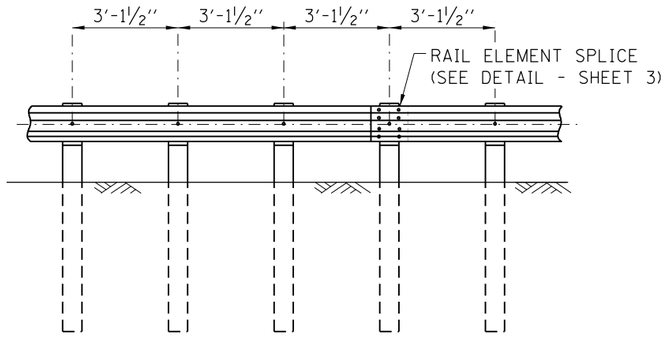
STANDARD C1-09



ELEVATION

TYPE A

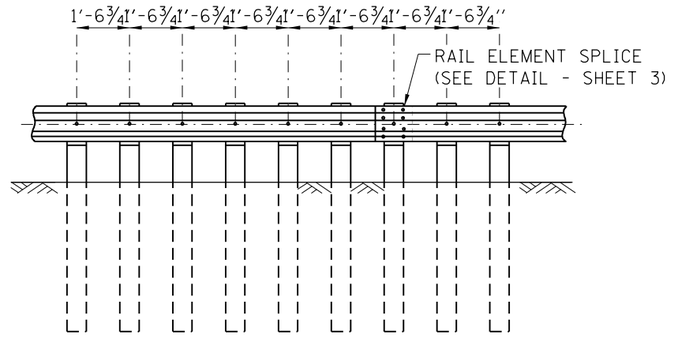
6'-3" TYPICAL POST SPACING



ELEVATION

TYPE B

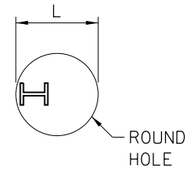
3'-1½" ½ POST SPACING



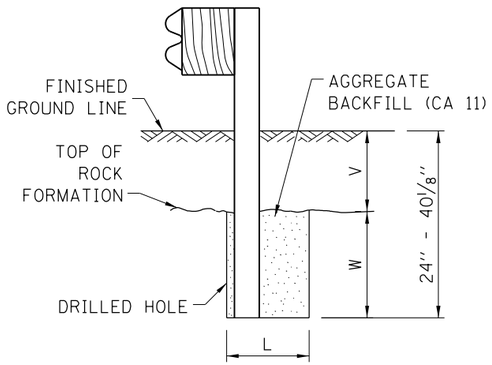
ELEVATION

TYPE C

1'-6¾" ¼ POST SPACING



PLAN

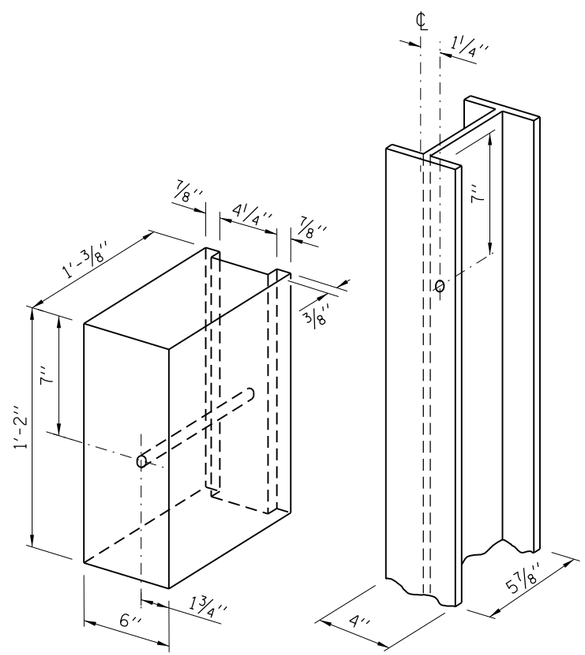


ELEVATION

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"

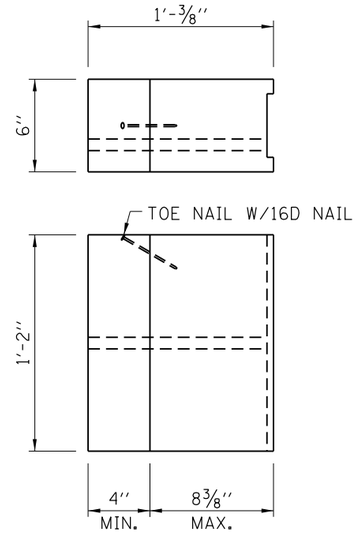
* V + W = 40⅛"



NOTES:

ALL HOLES 3/4" DIA.

WOOD BLOCK-OUT AND STEEL POST DETAILS



TWO-PIECE WOOD BLOCK-OUT OPTION

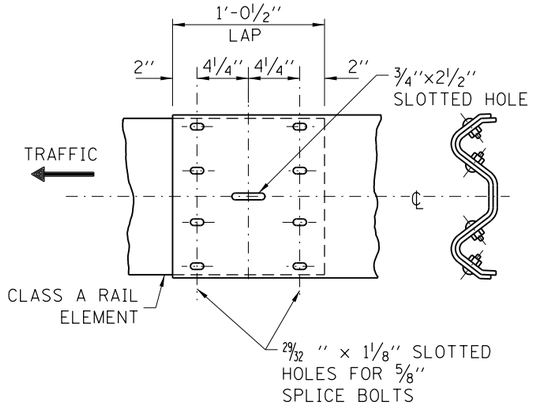
SHEET 2 OF 4

Illinois Tollway

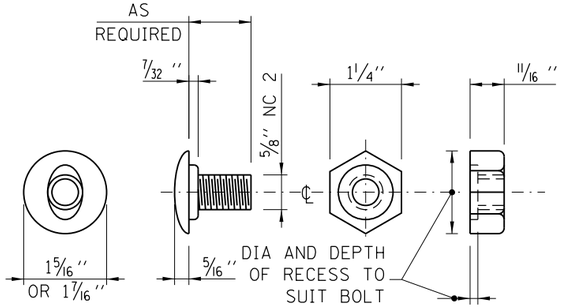
GALVANIZED STEEL PLATE BEAM GUARDRAIL

STANDARD C1-09

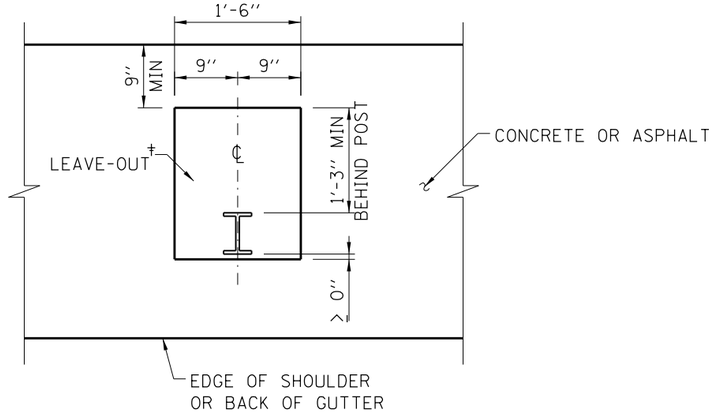
Paul Kovacs
APPROVED CHIEF ENGINEER DATE 5-1-2009



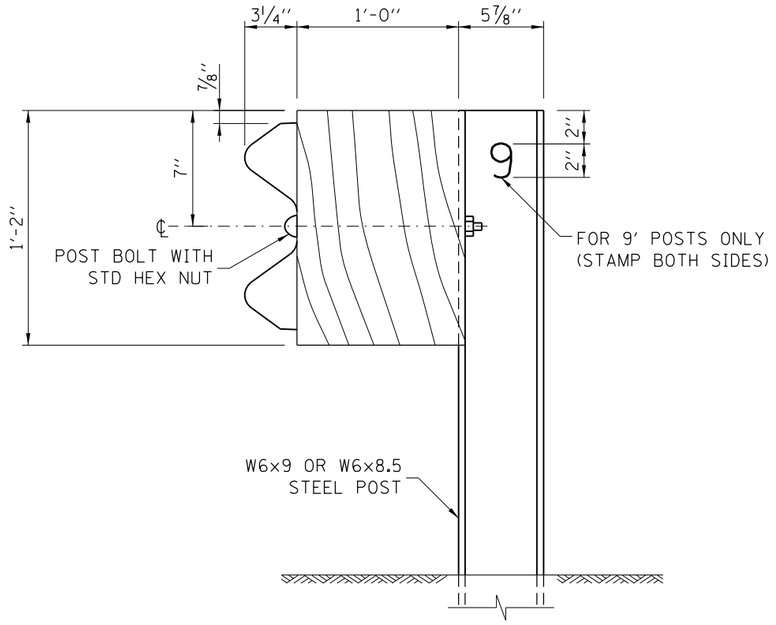
RAIL ELEMENT SPLICE



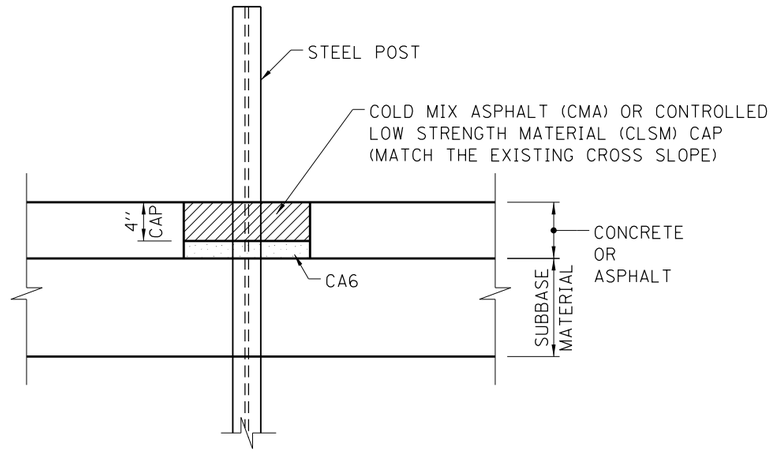
POST OR SPLICE BOLT & NUT



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.

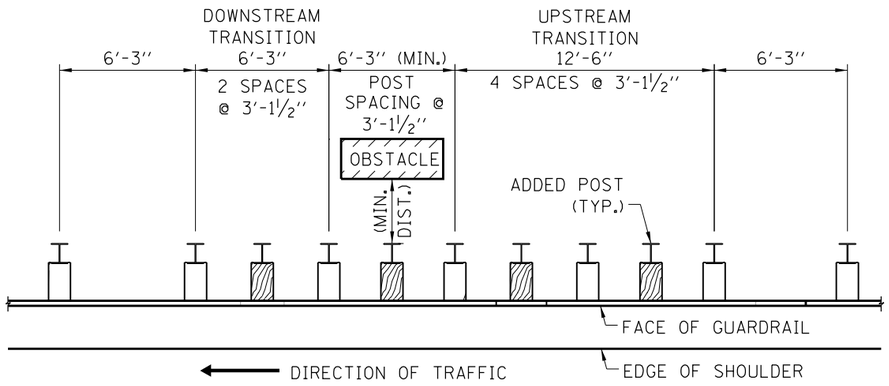
Paul Kovacs
APPROVED ..... DATE 5-1-2009
CHIEF ENGINEER

Illinois Tollway

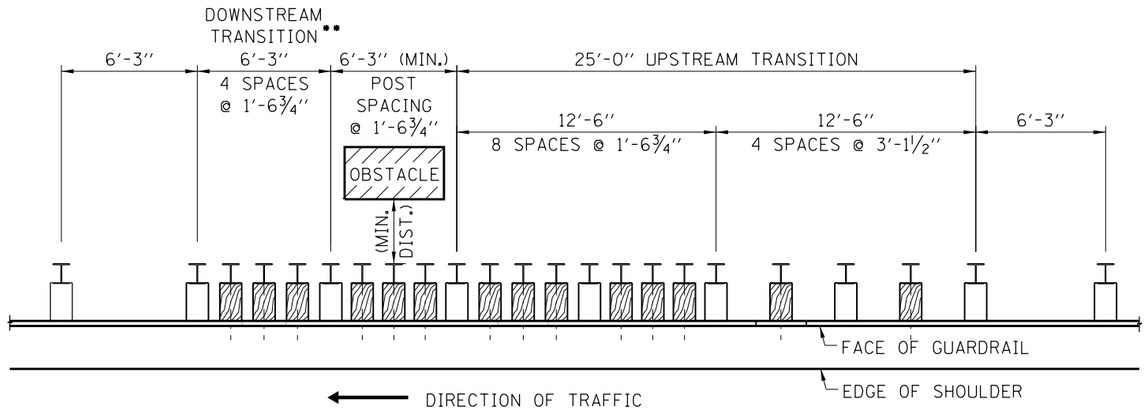
GALVANIZED STEEL PLATE BEAM GUARDRAIL

STANDARD C1-09

TABLE 2 - BARRIER CLEARANCE DISTANCE			
GUARDRAIL SYSTEM	POST SPACING	MINIMUM DISTANCE	
		CURRENT	CONSTRUCTION AFTER 2017
TYPE A	6'-3"	28"	39"
TYPE B 1/2 POST SPACING	3'-1 1/2"	23"	34"
TYPE C 1/4 POST SPACING	1'-6 3/4"	14"	26"



TRANSITION TO 1/2-POST SPACING



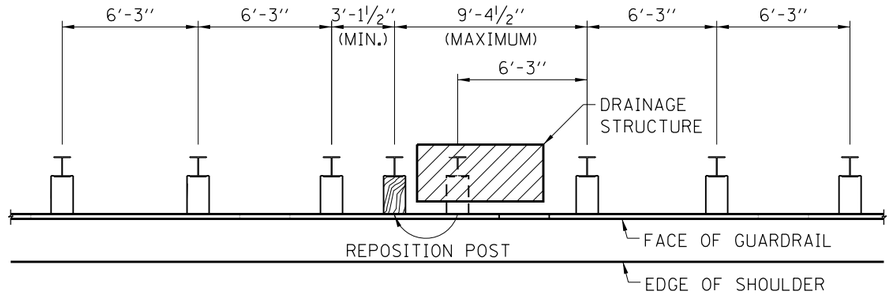
TRANSITION TO 1/4-POST SPACING

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

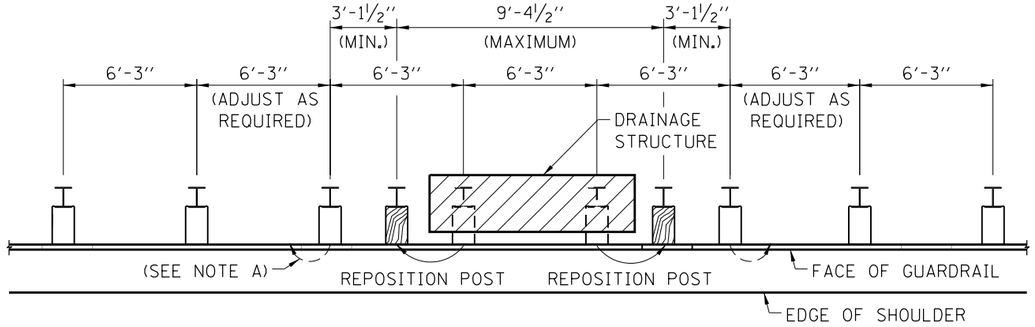
POST SPACING TRANSITIONS

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

Paul Kovacs
APPROVED ..... CHIEF ENGINEER
DATE 5-1-2009



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'-1 1/2" MINIMUM SPACING.

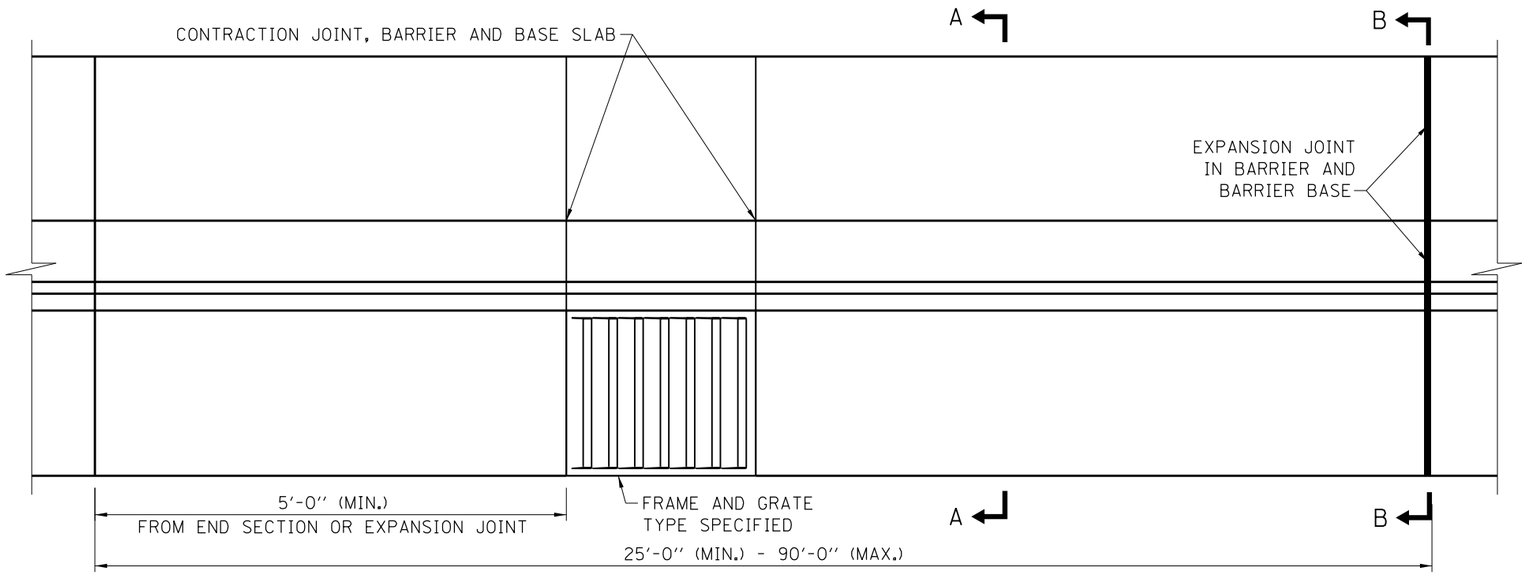
B. GUARDRAIL POSTS SHALL NOT BE SET BACK TO AVOID CONFLICTS WITH A DRAINAGE STRUCTURE.

C. THIS DETAIL ALSO APPLIES TO OTHER UNDERGROUND CONFLICTS.

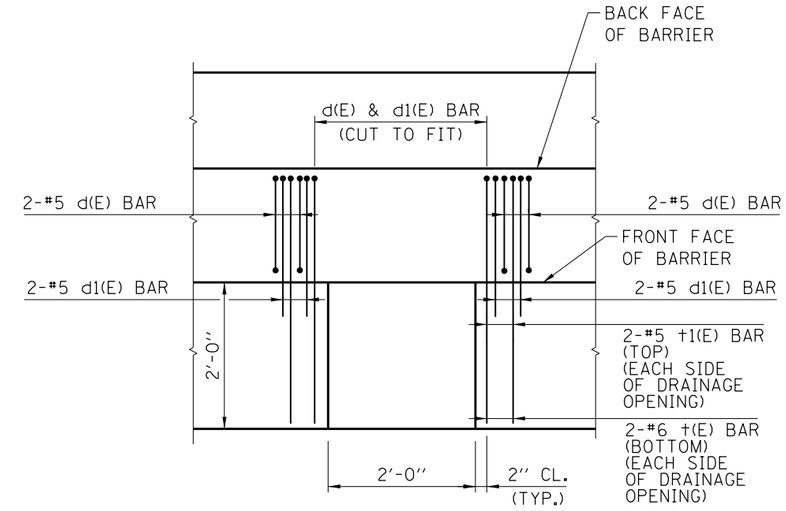
Illinois Tollway

GALVANIZED STEEL PLATE BEAM GUARDRAIL

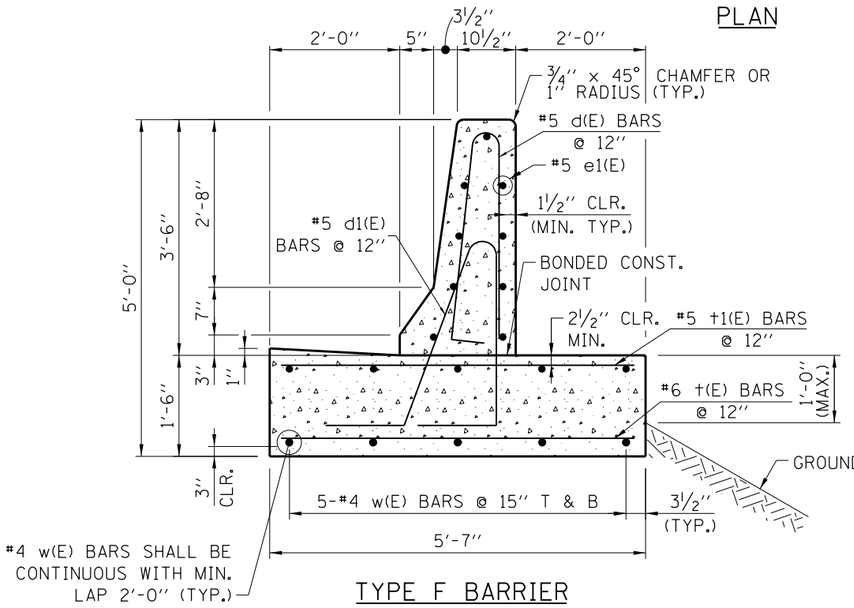
STANDARD C1-09



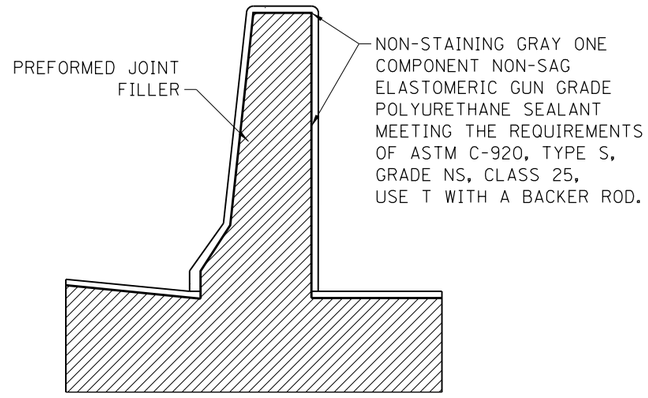
PLAN



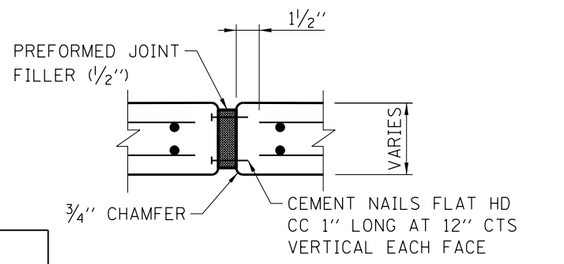
PLAN
REINFORCEMENT AROUND
DRAINAGE STRUCTURE



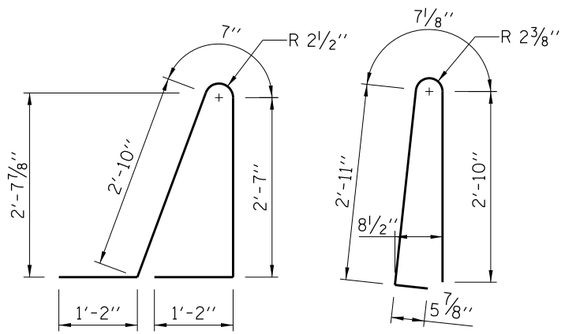
TYPE F BARRIER
SECTION A-A



TYPE F BARRIER
EXPANSION JOINT
SECTION B-B



EXPANSION JOINT



BAR d1(E) BAR d(E)

BENDING DIAGRAMS

NOTES:

1. TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
2. 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''.
3. THE FORMING OF CONTRACTION JOINTS SHALL BE DONE WITH AN APPROVED FINISHING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.
4. REINFORCEMENT BARS DESIGNATED ''(E)'' SHALL BE EPOXY COATED.
5. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE ''MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES'', ACI 315, LATEST EDITION.
6. REINFORCEMENT BARS BENDING DIMENSIONS ARE OUT TO OUT.
7. AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD AN ADDITIONAL SET OF d, d1, †, AND †1 BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE.
8. EXPANSION JOINTS SHALL BE CONSTRUCTED IN BARRIER WALL AT MAXIMUM JOINT SPACING OF 90'-0''. SEE SECTION B-B FOR DETAILS.
9. MINIMUM LENGTH OF INSTALLATION SHALL BE 25'-0''.
10. MINIMUM EXPANSION JOINT SPACING SHALL BE 25'-0''.

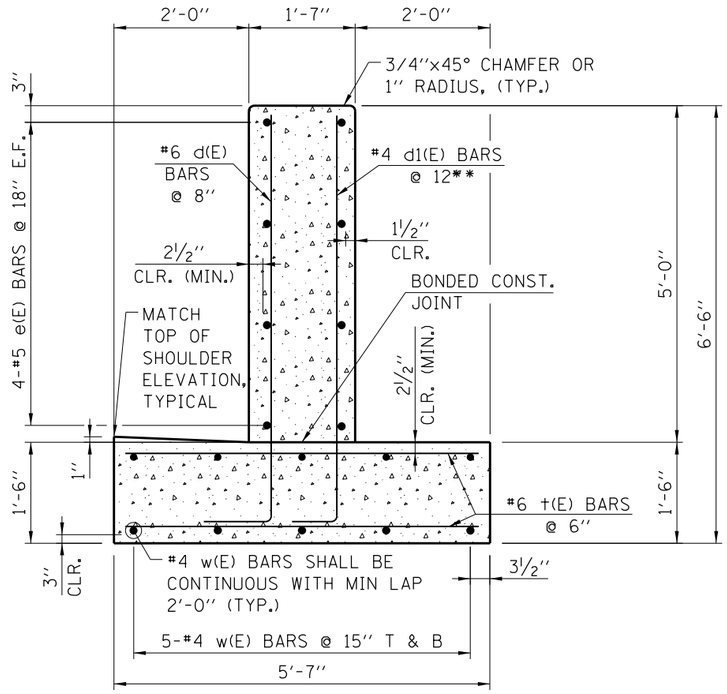
Paul Kovacs
APPROVED CHIEF ENGINEER DATE 2-7-2012

DATE	REVISIONS
11-01-12	GUTTER TRANS. TAPER DET.
	NEW JOINT DET., REV. NOTES
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

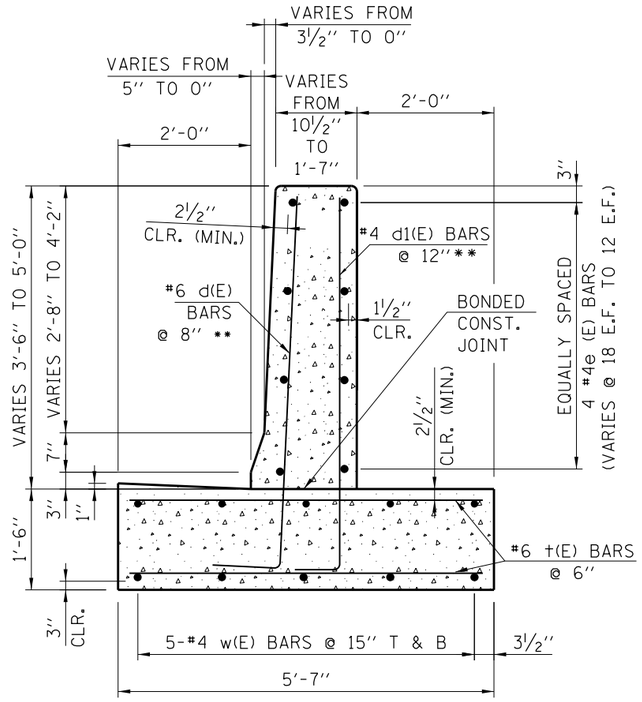
Illinois Tollway

SINGLE FACE REINFORCED CONCRETE BARRIER

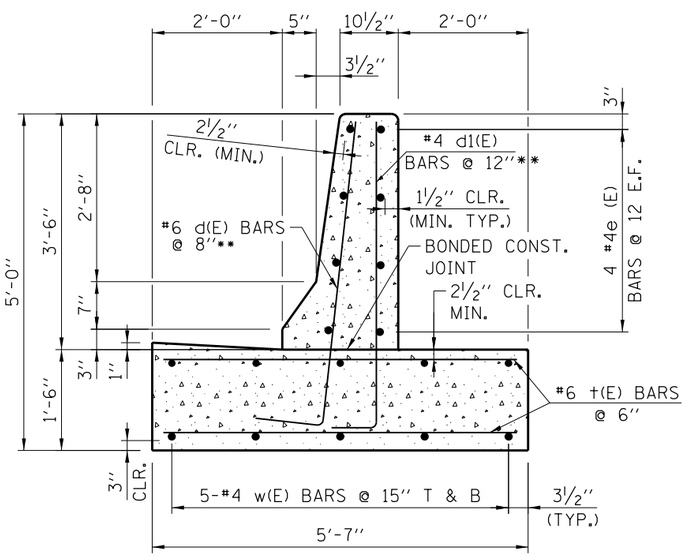
STANDARD C3-06



SECTION C-C

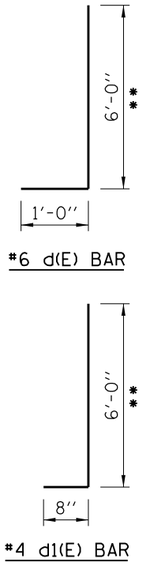


SECTION B-B



SECTION A-A

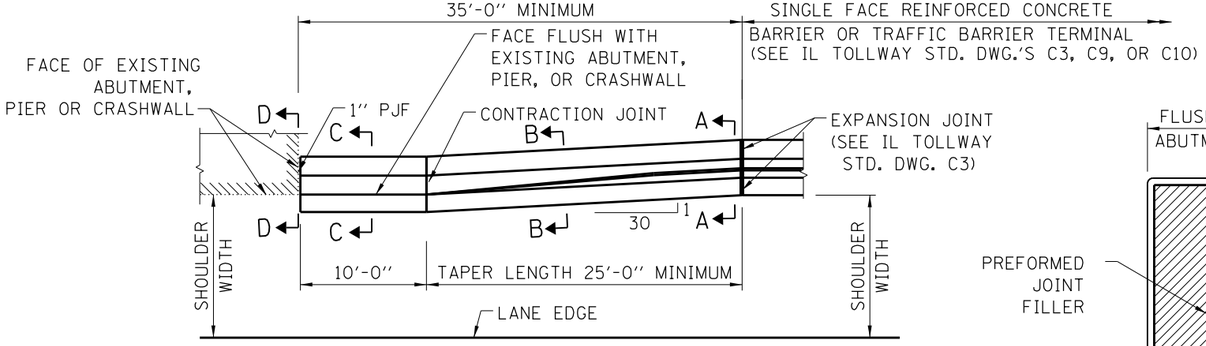
** CUT TO FIT IN FIELD
2" VERTICAL CLR.



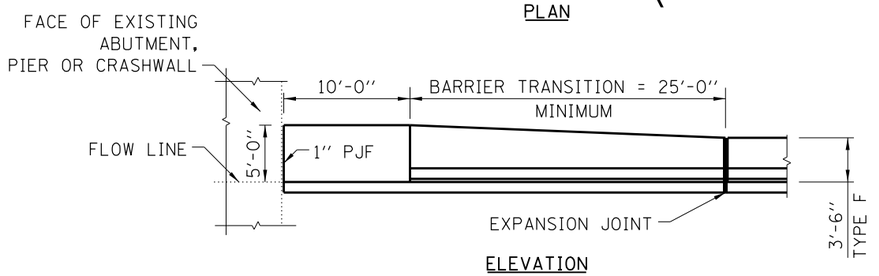
BENDING DIAGRAMS

NOTES:

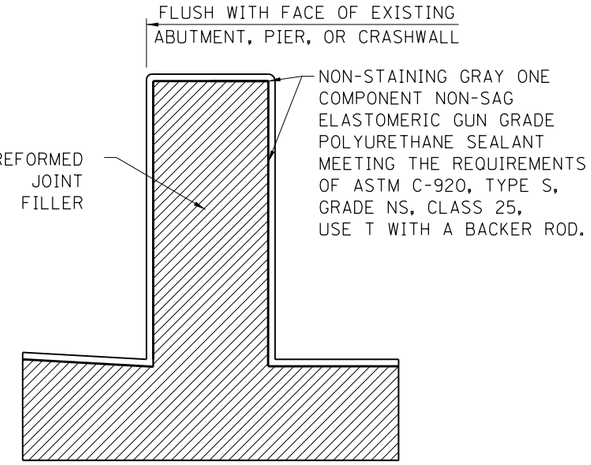
1. TAPER LENGTH REQUIRED FOR THE WIDTH TRANSITION WILL BE 25'-0" MINIMUM. INCREASE TAPER RATE AS REQUIRED TO OBTAIN THE LENGTH OF 25'-0".
2. TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
3. 1" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE REINFORCED CONCRETE 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. TYPE F 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".



PLAN



ELEVATION



SECTION D-D

CONCRETE SHOULDER BARRIER TRANSITION, TYPE F

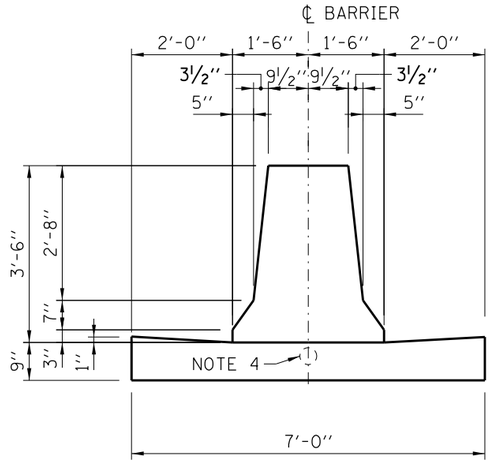
Paul Kovacs
APPROVED ..... CHIEF ENGINEER
DATE 2-7-2012

DATE	REVISIONS
11-01-12	GUTTER TRANS. TAPER DET.
	NEW JOINT DET., REV. NOTES
10-01-13	REVISED REINFORCEMENT
	BARS AND GUTTER WIDTH
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

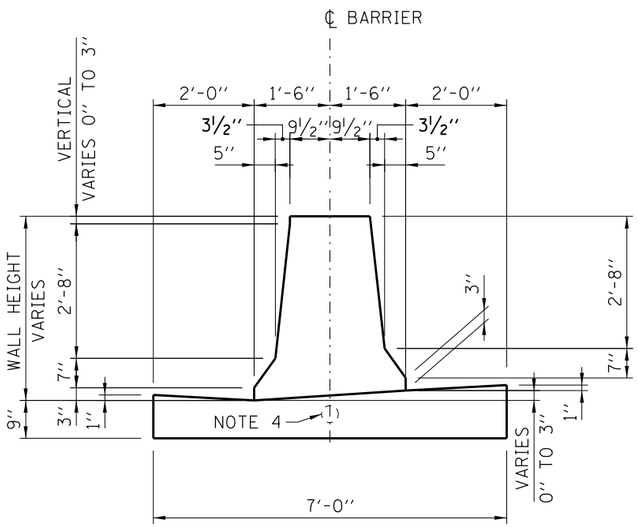
Illinois Tollway

CONCRETE SHOULDER BARRIER TRANSITION TYPE F

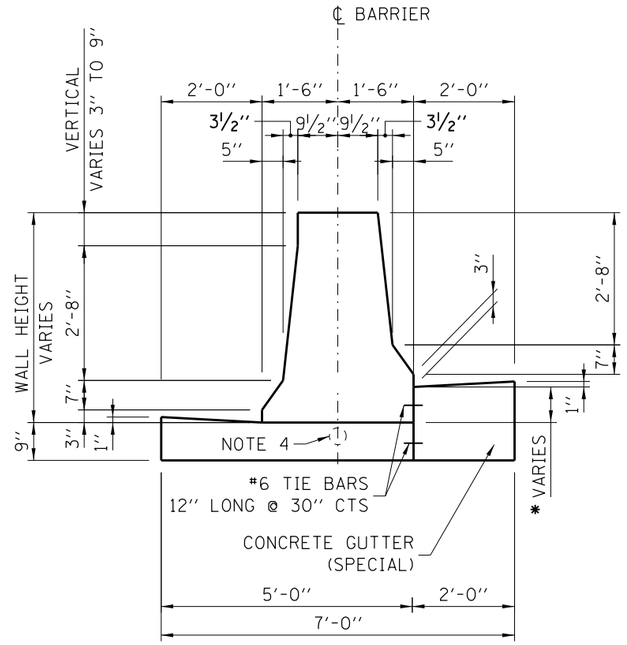
STANDARD C4-07



CONCRETE BARRIER, DOUBLE FACE, 42"
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 9")
* 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 3" VERTICAL DIMENSION AT THE BOTTOM OF THE BARRIER CAN VARY FROM 2" TO 3¼" 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. WHEN VARIABLE HEIGHT VERTICAL DIFFERENTIAL EXCEEDS 9" SEE STRUCTURAL PLANS FOR DETAILS.

6. GUTTER SLOPE SHALL BE 4.17% SLOPED TOWARD THE MEDIAN UNLESS OTHERWISE NOTED. GUTTER SLOPE IS REVERSE PITCHED IN SUPERELEVATED SECTIONS. 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.

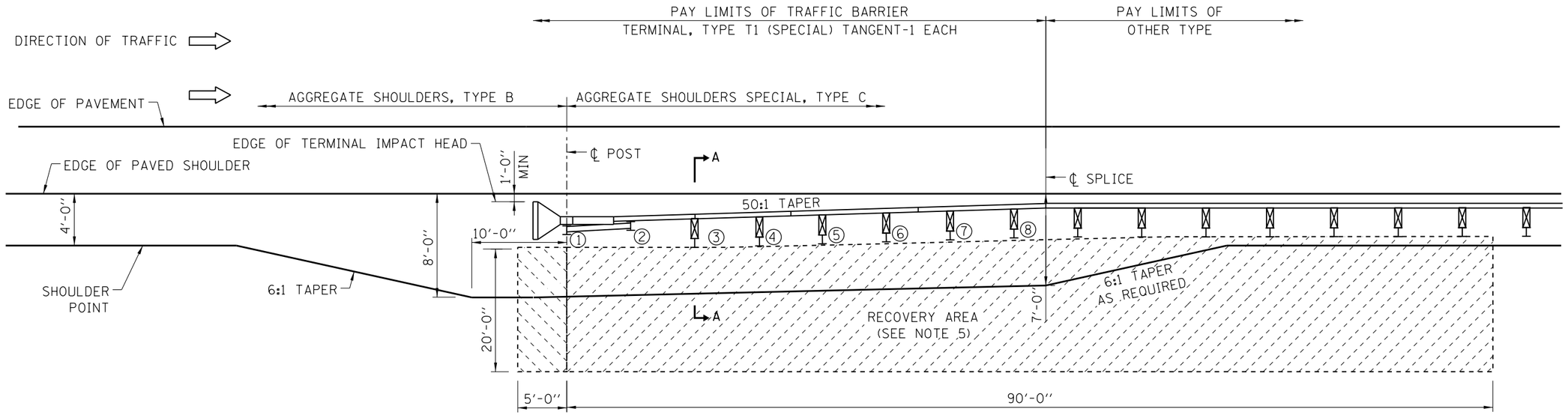
Paul Kovacs
APPROVED ..... DATE 2-7-2012
CHIEF ENGINEER

DATE	REVISIONS
2-07-2012	ADDED CONDUITS TO BARRIER BASE
11-01-2012	ADDED GUTTER TRANSITION
	TAPER DETAIL AND NEW JOINT DETAIL
3-31-2014	MODIFIED BARRIER BASE
3-11-2015	REVISED NOTES
3-31-2016	REVISED NOTES

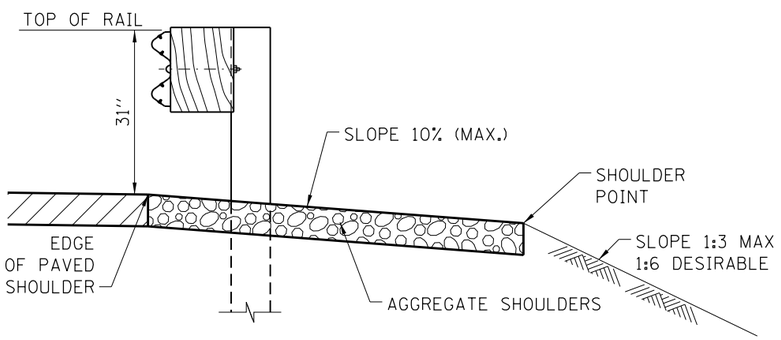
Illinois Tollway

CONCRETE BARRIER BASE, AND CONCRETE BARRIER, DOUBLE FACE, 42" AND VARIABLE HEIGHT

STANDARD C5-05



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 HMA. 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 THE NATIONAL COOPERATIVE HIGHWAY RESEARCH REPORT (NCHRP) REPORT 350. 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.

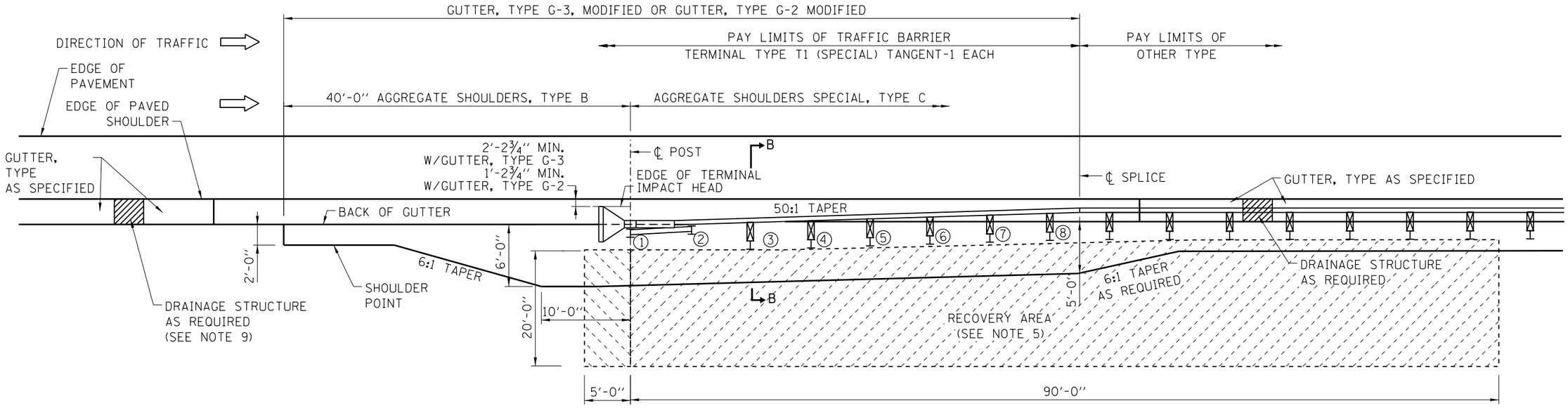
Paul Kovacs
APPROVED ..... DATE 7-1-2009
CHIEF ENGINEER

DATE	REVISIONS
03-01-13	TERMINAL CHANGED TO ALL
	STEEL POST SYSTEM, REVISED
	TERMINAL PAY LIMITS
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

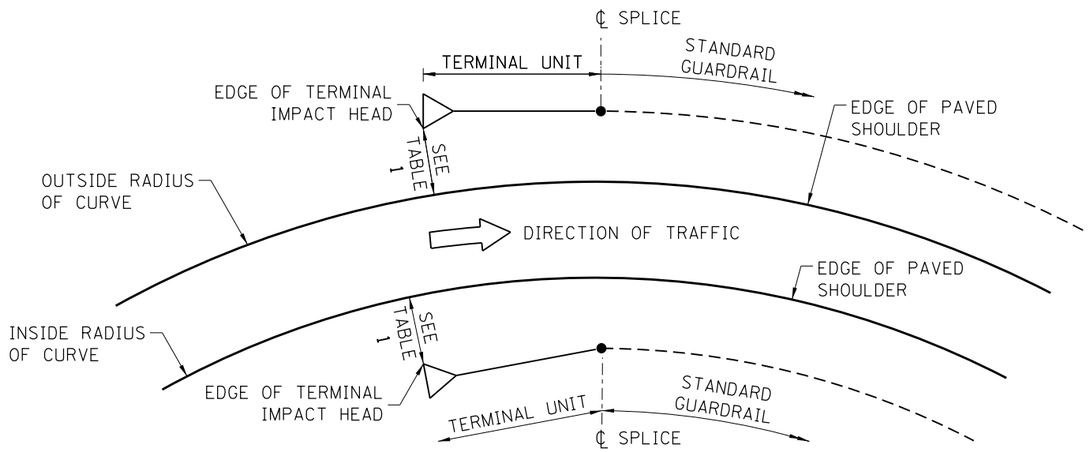
Illinois Tollway

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

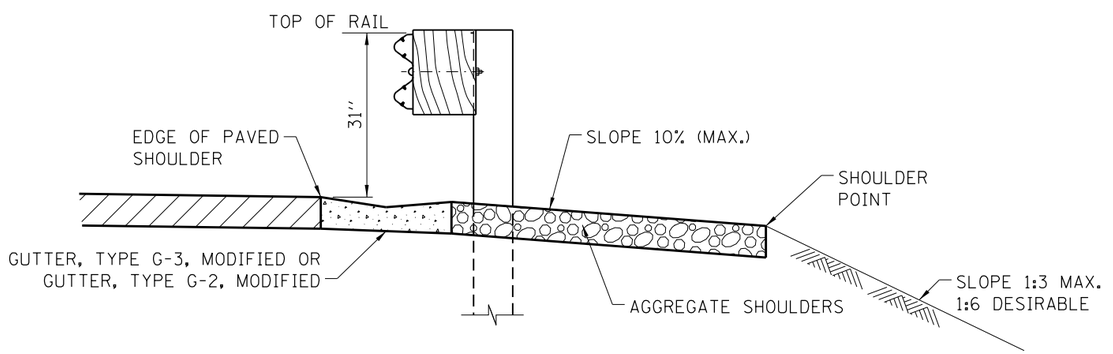
STANDARD C6-09



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" MIN. *
GUTTER, TYPE G-2	1'-2¾"	1'-2¾" MIN. *
GUTTER, TYPE G-3	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:

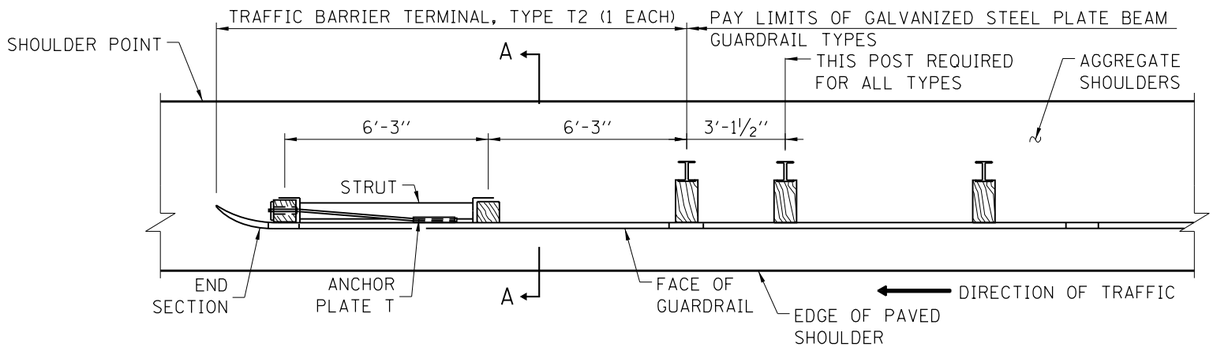
SEE SHEET 1 OF THIS SERIES FOR NOTES.

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

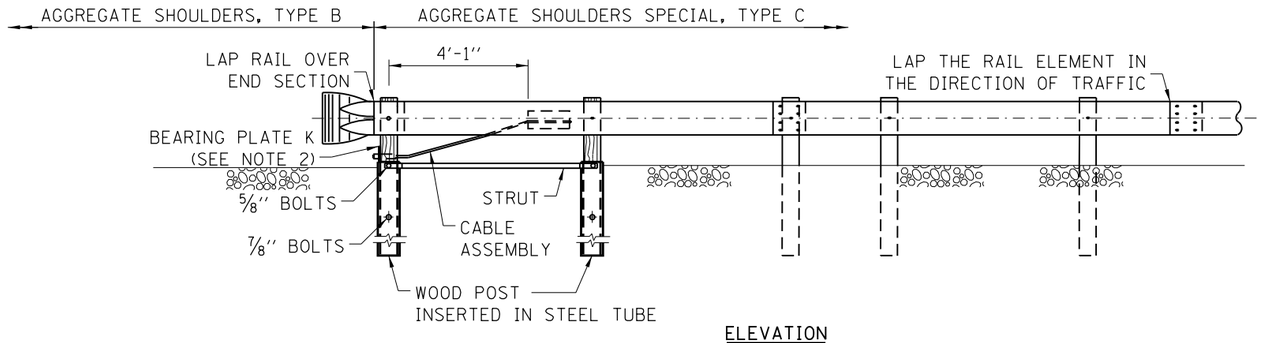
Illinois Tollway

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

STANDARD C6-09

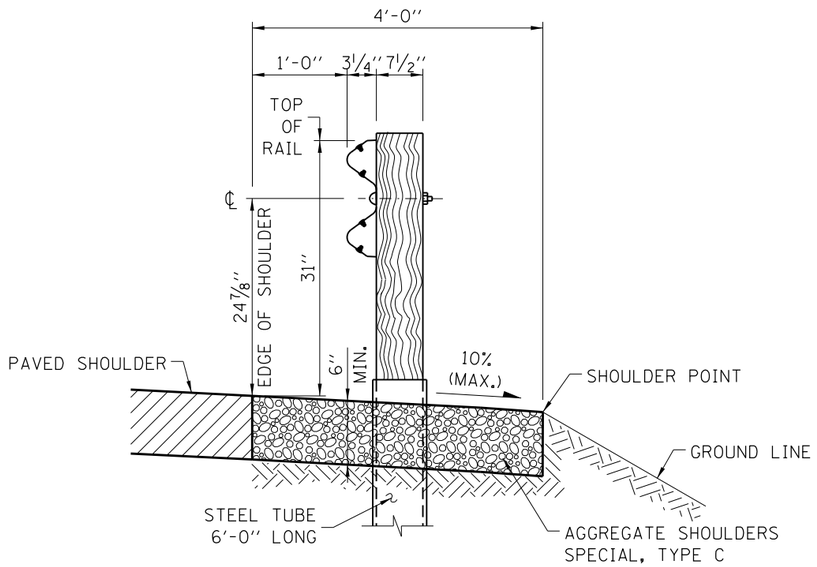


PLAN



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.

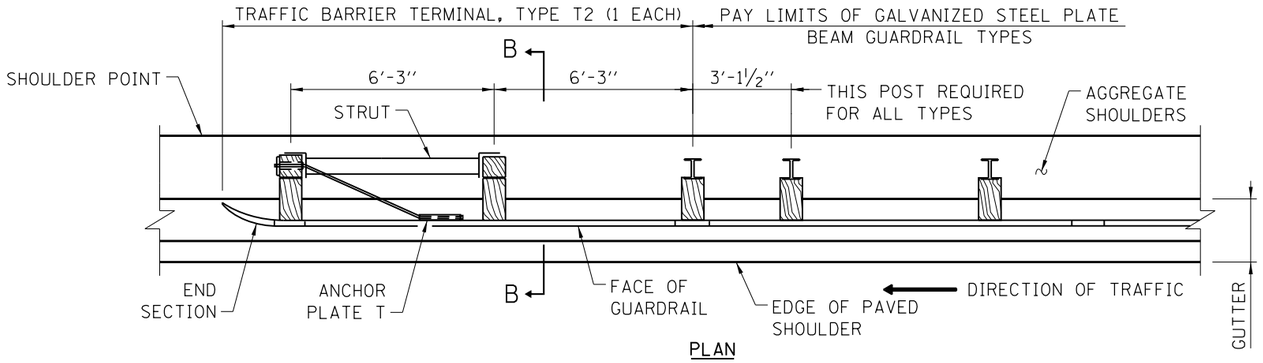
Paul Kovacs
APPROVED ..... DATE 7-1-2009
CHIEF ENGINEER

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 %

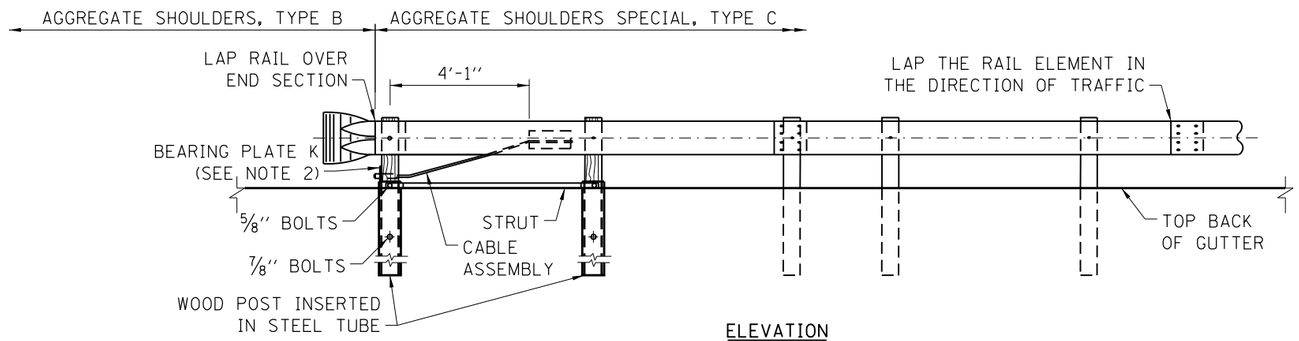
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T2

STANDARD C7-08

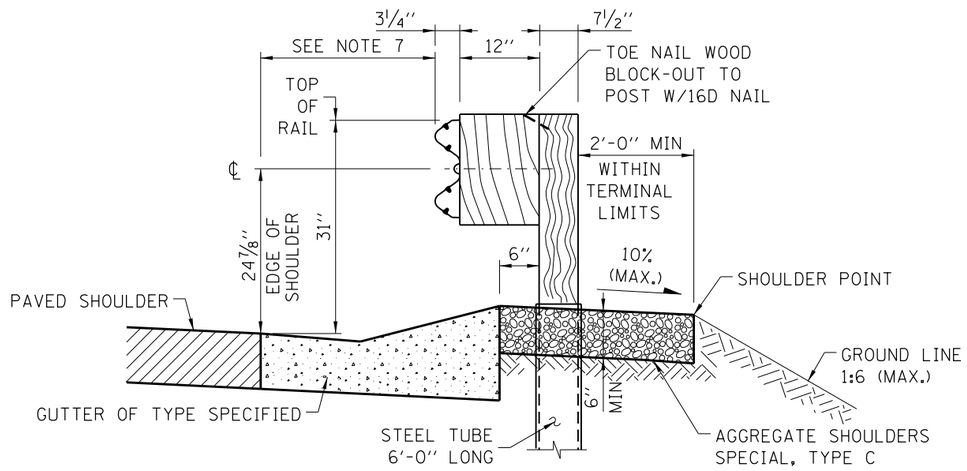


PLAN



ELEVATION

TRAFFIC BARRIER TERMINAL, TYPE T2-WITH GUTTER



SECTION B-B

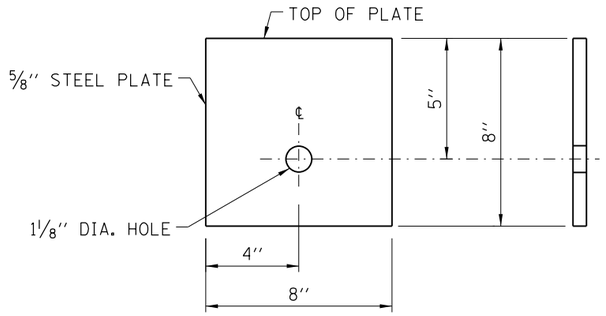
APPROVED Paul Kovacs CHIEF ENGINEER DATE 7-1-2009

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

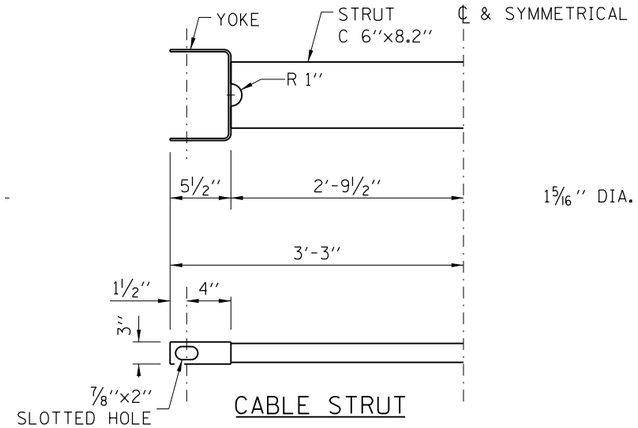
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T2

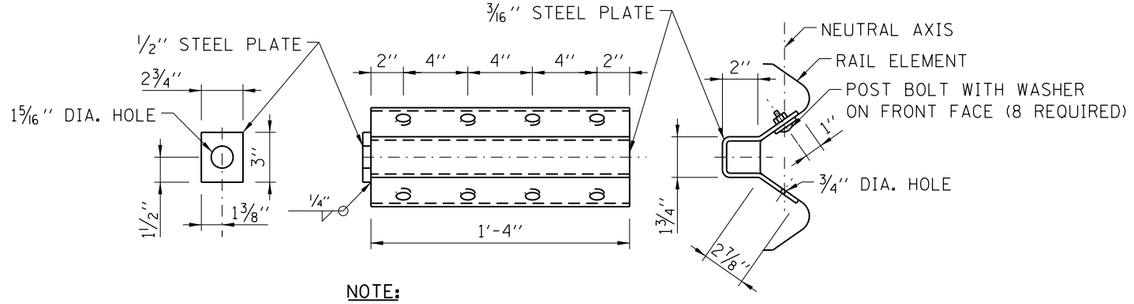
STANDARD C7-08



BEARING PLATE K

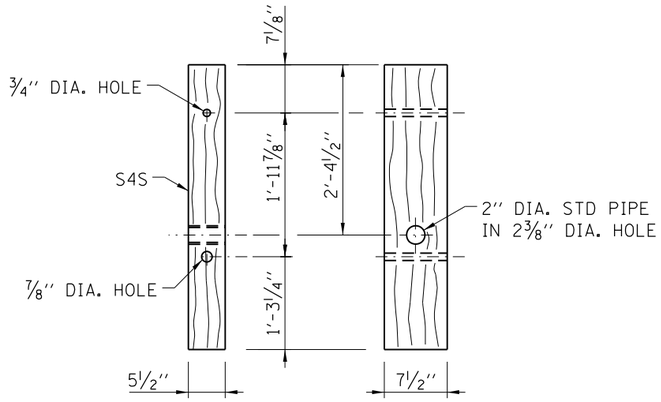


CABLE STRUT

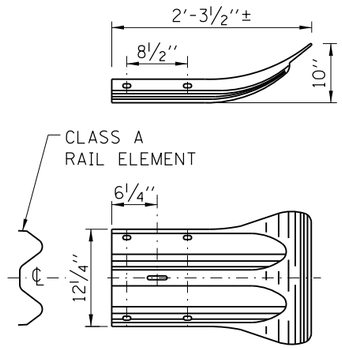


NOTE:
ANCHOR PLATE T SHALL BE USED TO ATTACH CABLE ASSEMBLY TO GUARDRAIL WHEN REQUIRED ON TRAFFIC BARRIER TERMINALS.

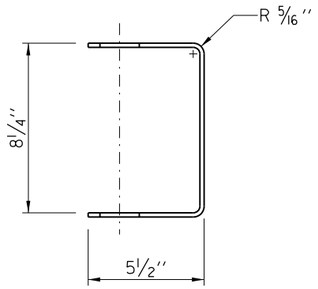
ANCHOR PLATE T DETAILS



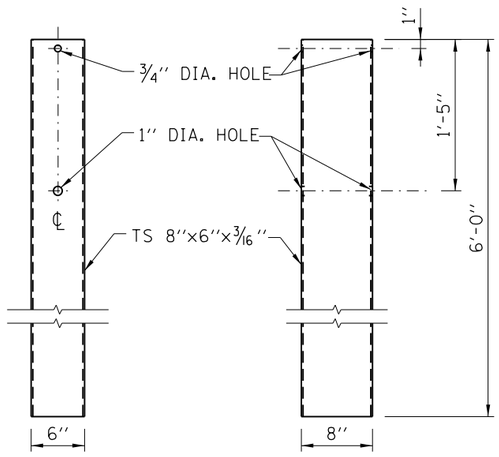
WOOD POST



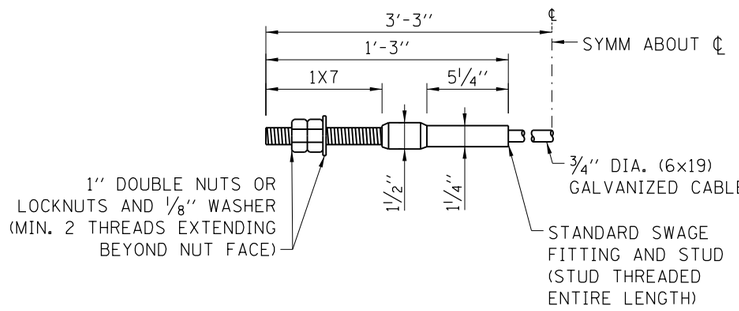
END SECTION



YOKE
3/16'' THICK STEEL



STEEL TUBE



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

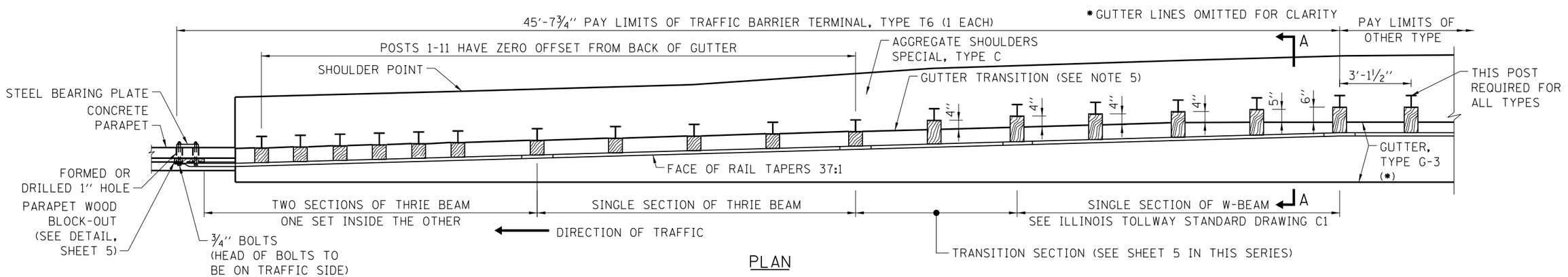
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

Illinois Tollway

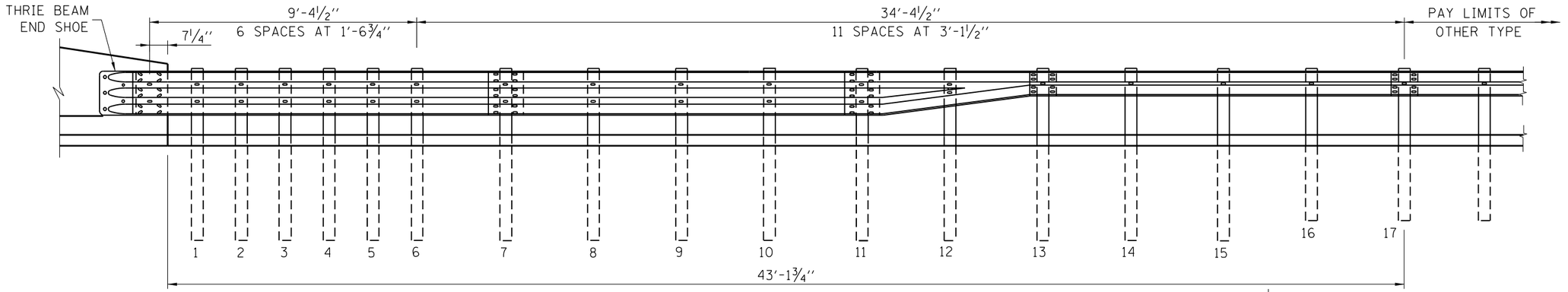
TRAFFIC BARRIER TERMINAL, TYPE T2

STANDARD C7-08

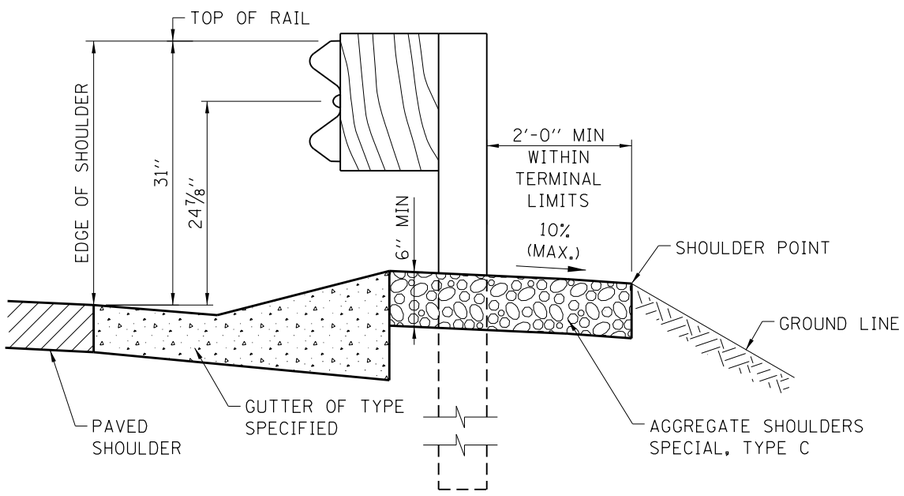
Paul Kovacs
APPROVED ..... CHIEF ENGINEER
DATE 7-1-2009



PLAN

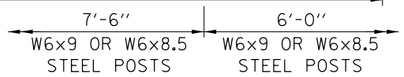


ELEVATION



WITH GUTTER,TYPE G-3

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 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 COMFORMS 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 THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350. 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.

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

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

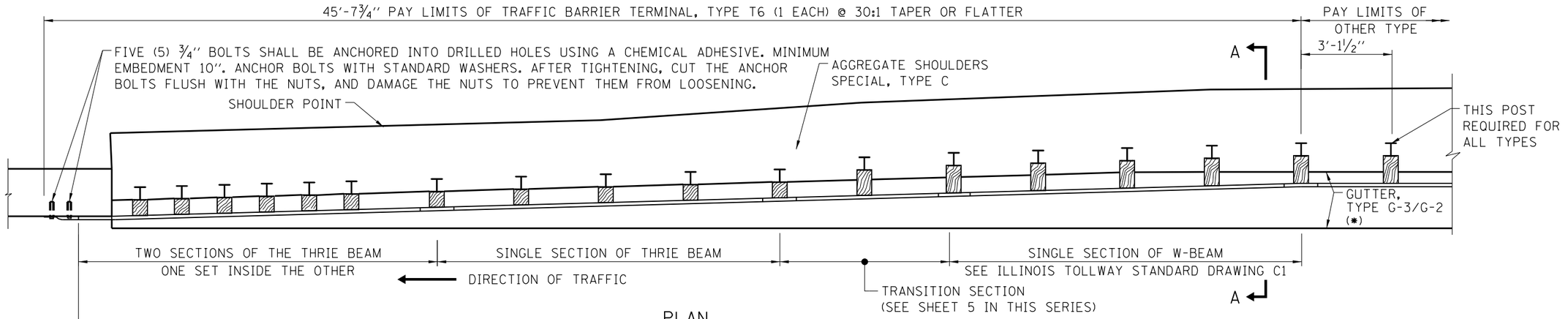
DATE	REVISIONS
2-07-2012	REVISED BOLT NOTES, ANCHORAGE ADHESIVE AND REVISED NOTES.
11-01-2012	MODIFIED AGGREGATE SHOULDERS, REVISED NOTES.
3-31-2014	REVISED NOTES.
3-11-2015	REVISED NOTES AND ADDED DETAIL.
3-31-2016	REVISED SHOULDER SECTION
3-31-2017	ADDED DRAINAGE STRUCTURE NOTE

Illinois Tollway

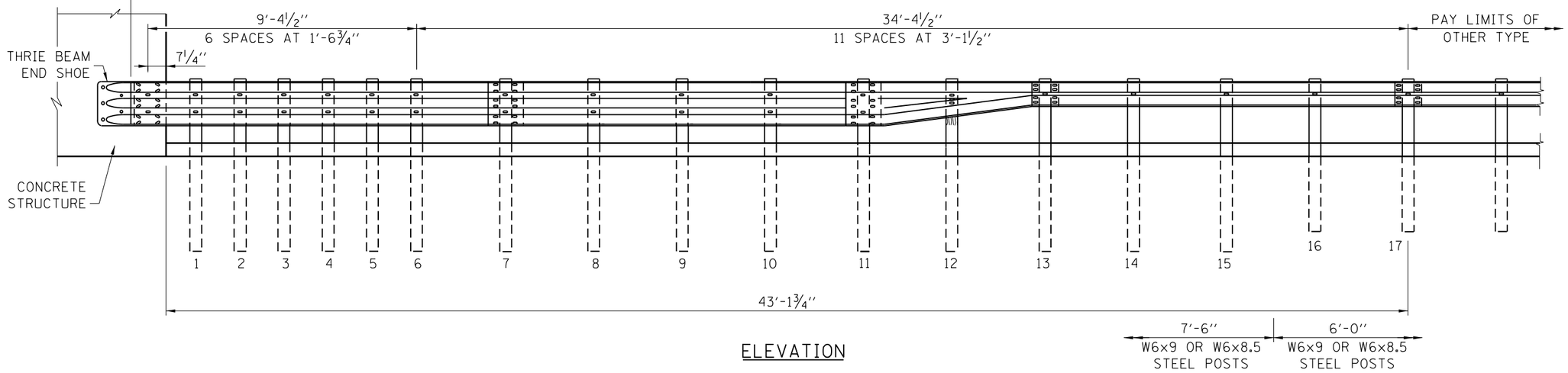
TRAFFIC BARRIER TERMINAL, TYPE T6

STANDARD C9-08

*GUTTER LINES OMITTED FOR CLARITY



PLAN



ELEVATION

FOR OTHER CONCRETE STRUCTURE (VERTICAL FACE) WITH GUTTER

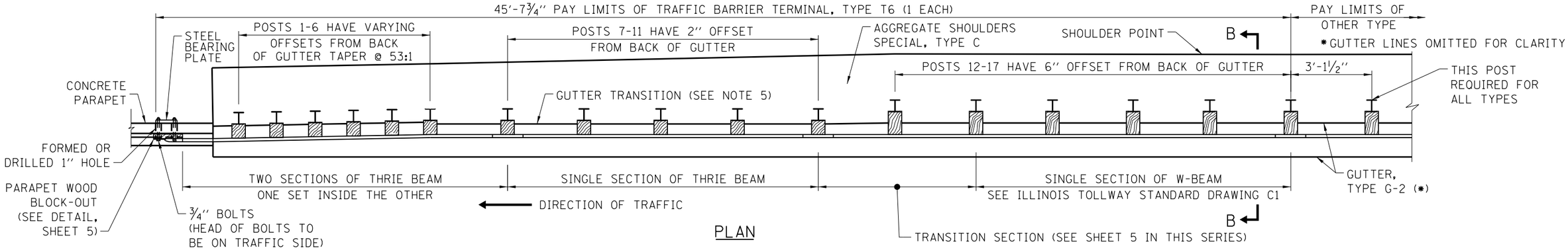
Paul Kovacs
APPROVED ..... CHIEF ENGINEER
DATE 7-1-2009

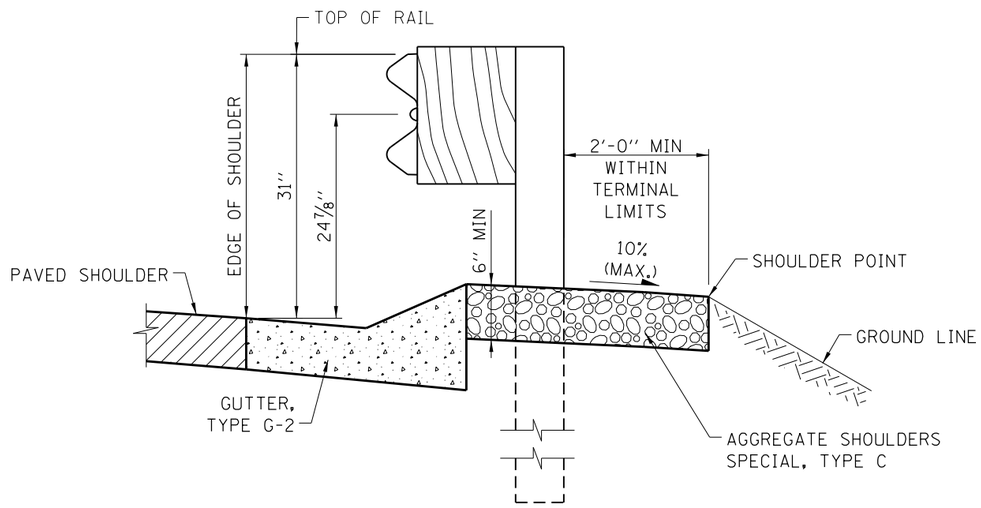
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES AND SECTION A-A.

Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T6

STANDARD C9-08





SECTION B-B
WITH GUTTER, TYPE G-2

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

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

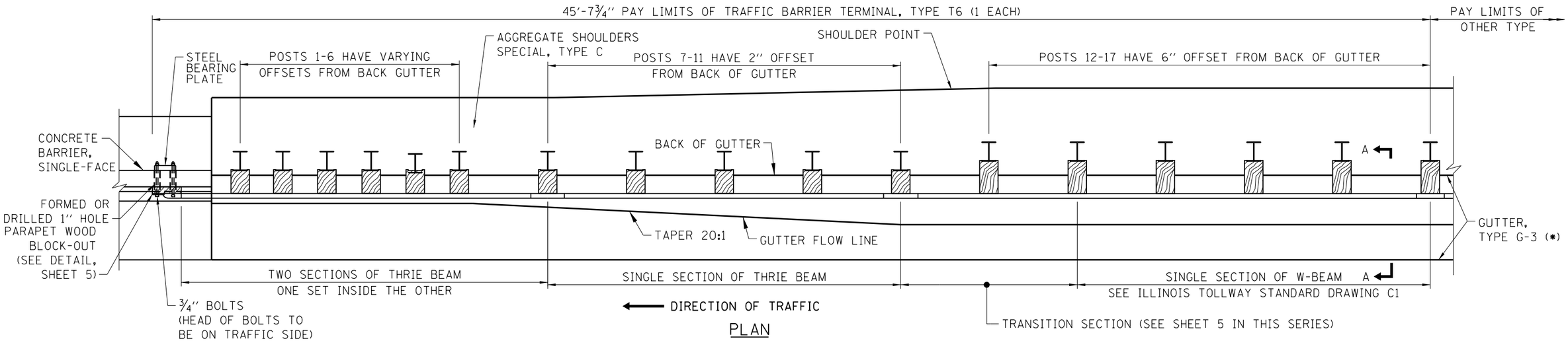
Paul Kovacs
APPROVED CHIEF ENGINEER DATE 7-1-2009

Illinois Tollway

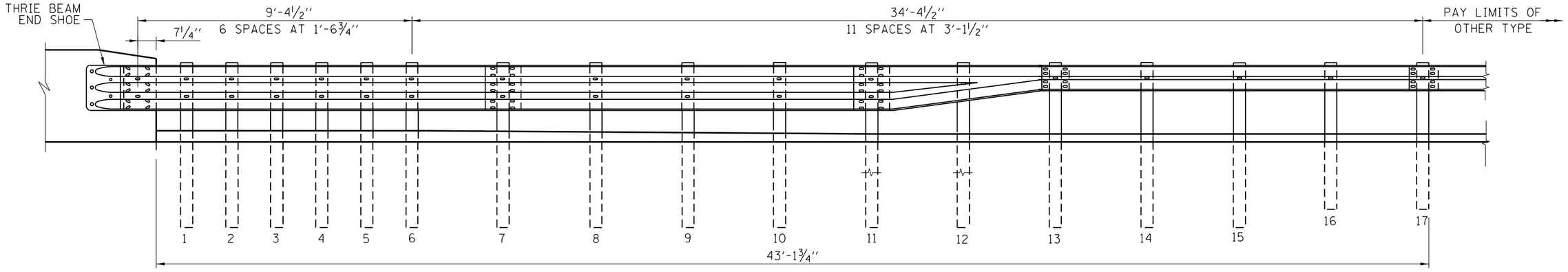
TRAFFIC BARRIER TERMINAL TYPE T6

STANDARD C9-08

*GUTTER LINES OMITTED FOR CLARITY



PLAN



ELEVATION

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

Paul Kovacs
APPROVED ..... CHIEF ENGINEER
DATE 2-7-2012

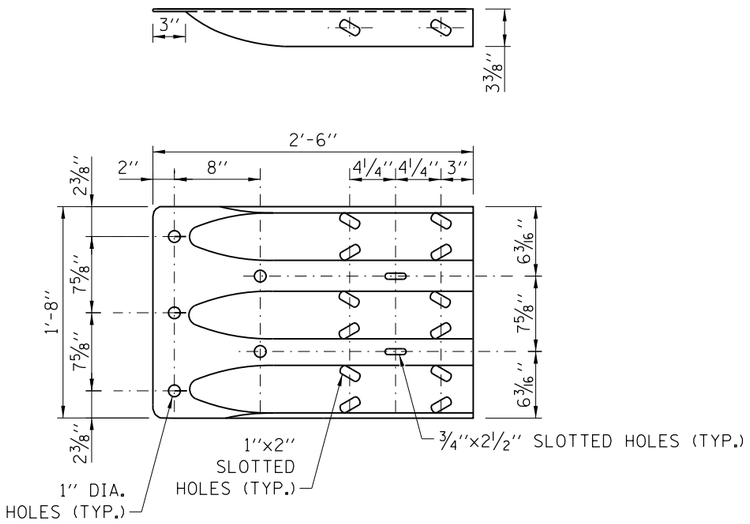
NOTE:

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

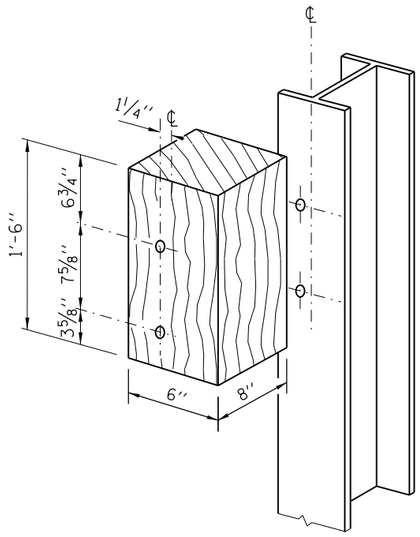
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T6

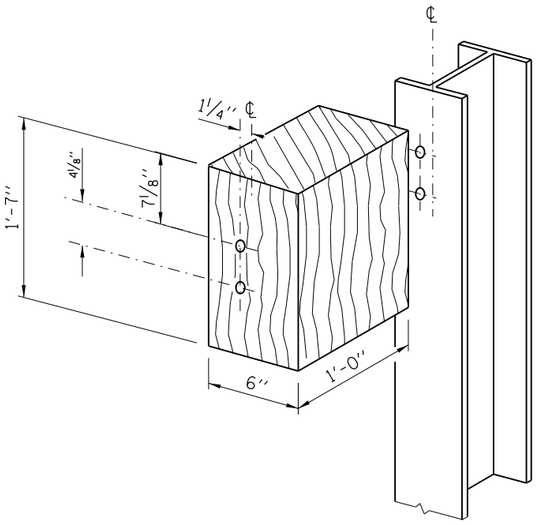
STANDARD C9-08



THRIE BEAM END SHOE DETAIL

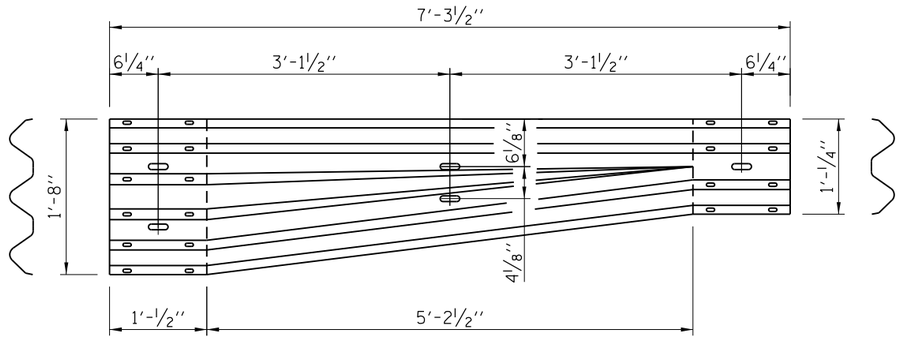


POSTS 1-11 WOOD BLOCK-OUT DETAIL



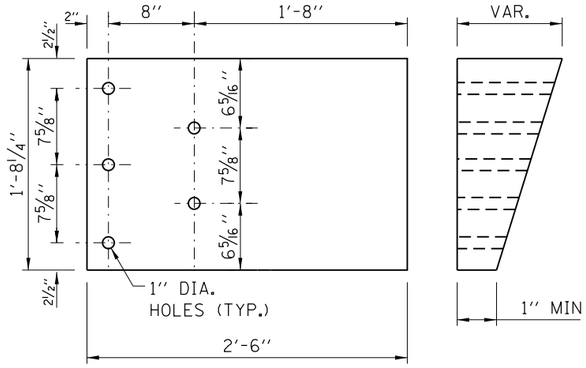
POST 12 WOOD BLOCK-OUT DETAIL

(SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR POST 13-17 BLOCKOUTS)

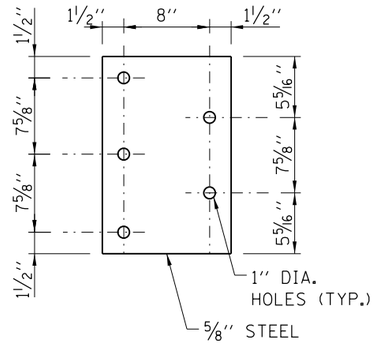


TRANSITION SECTION

(10 GUAGE 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.)

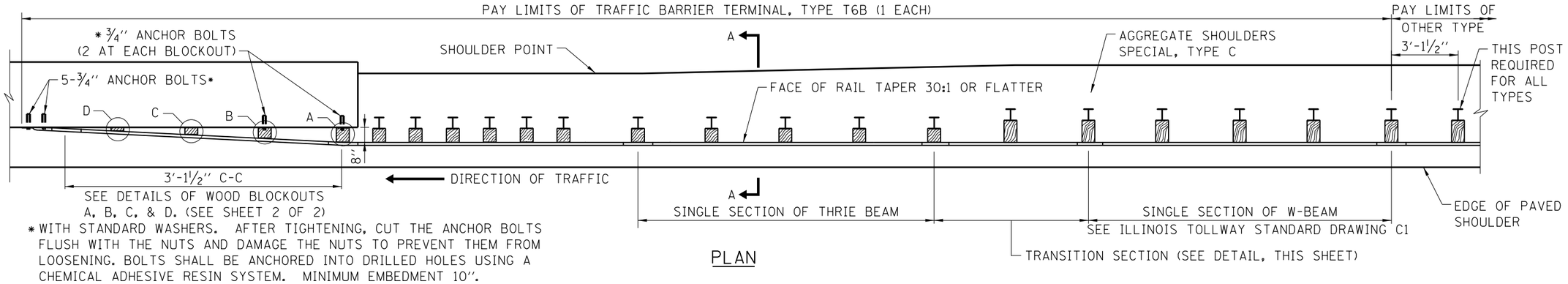
Paul Kovacs
APPROVED ..... CHIEF ENGINEER
DATE 7-1-2009

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

Illinois Tollway

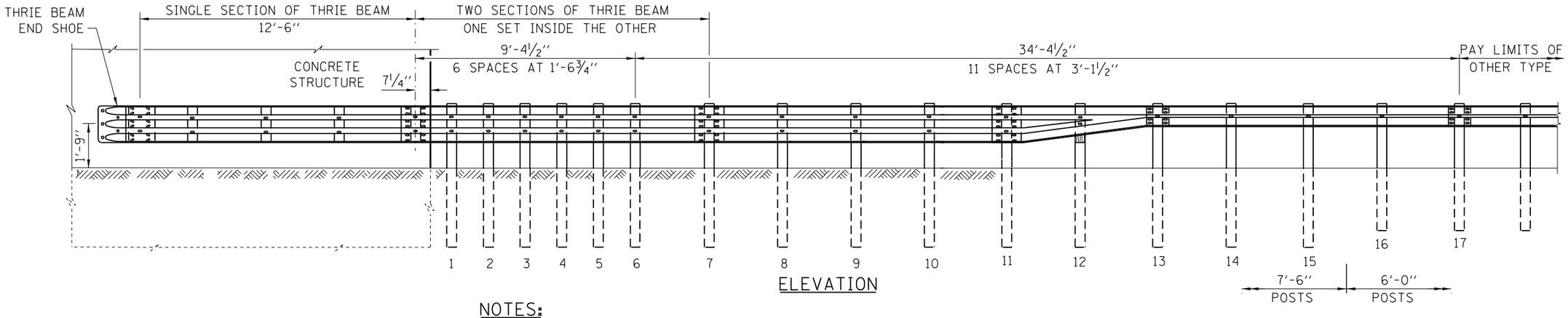
TRAFFIC BARRIER TERMINAL, TYPE T6

STANDARD C9-08

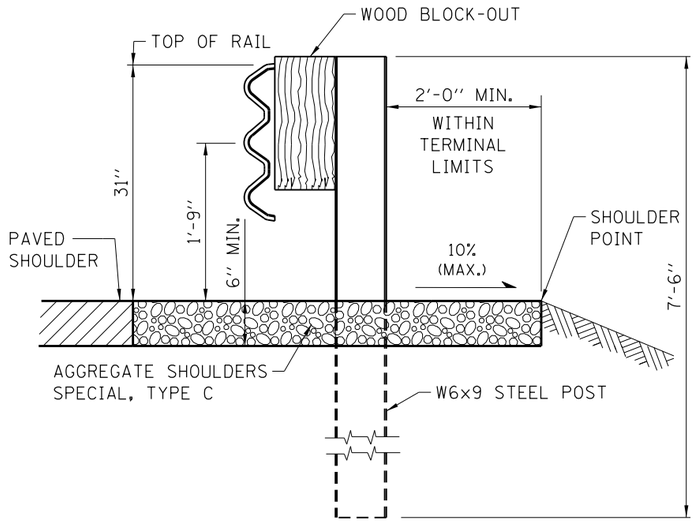


* WITH STANDARD WASHERS. AFTER TIGHTENING, CUT THE ANCHOR BOLTS FLUSH WITH THE NUTS AND DAMAGE THE NUTS TO PREVENT THEM FROM LOOSENING. BOLTS SHALL BE ANCHORED INTO DRILLED HOLES USING A CHEMICAL ADHESIVE RESIN SYSTEM. MINIMUM EMBEDMENT 10''.

PLAN



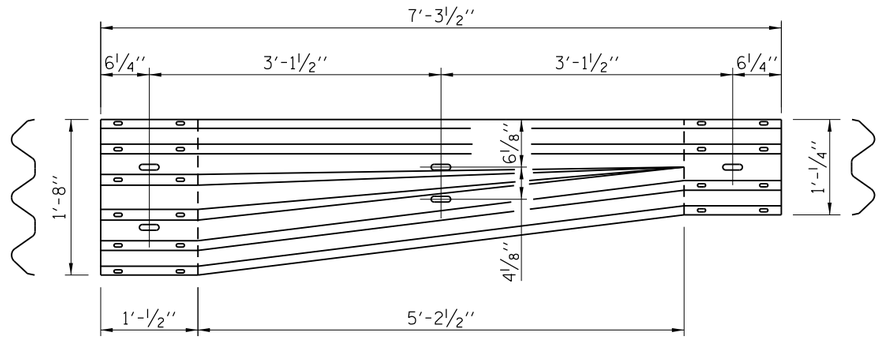
ELEVATION



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)

SHEET 1 OF 2

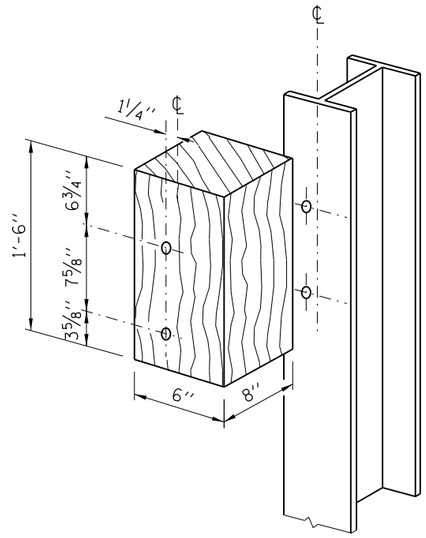
DATE	REVISIONS
2-07-2012	REVISED WOOD BLOCK-OUT DIMENSION
	ADHESIVE AND REVISED NOTES
11-01-2012	MODIFIED AGGREGATE SHOULDERS,
	REVISED NOTES
3-31-2014	REVISED WOOD BLOCKS AND NOTES
3-11-2015	REVISED NOTES
3-31-2016	REVISED SECTION A-A SHOULDER
3-31-2017	REVISED SHOULDER SLOPE LABEL

Illinois Tollway

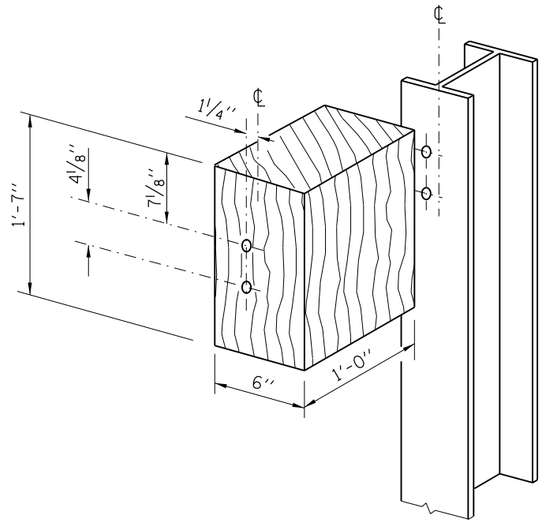
TRAFFIC BARRIER TERMINAL, TYPE T6B

STANDARD C10-08

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

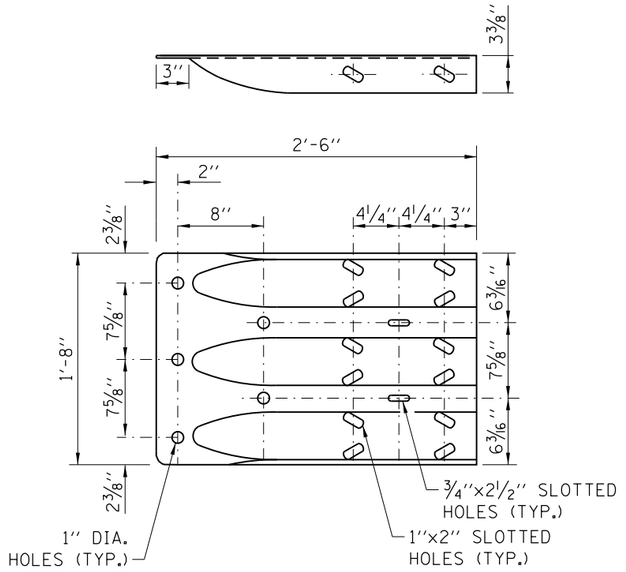


POSTS 1-11 WOOD BLOCK-OUT DETAIL

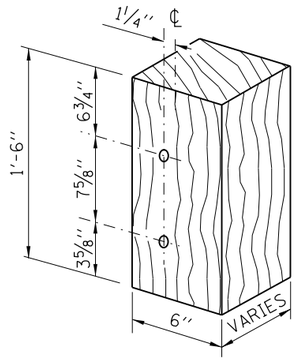


POST 12 WOOD BLOCK-OUT DETAIL

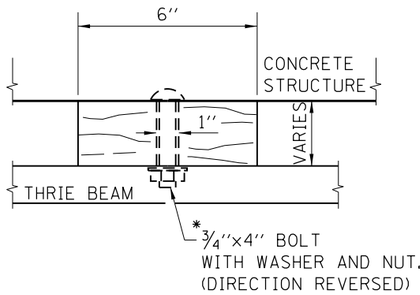
(SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR POST 13-17 BLOCKOUTS)



THRIE BEAM END SHOE DETAIL

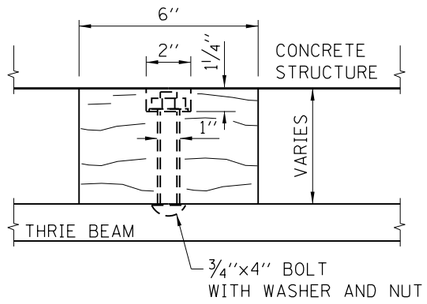


MODIFIED THICKNESS DETAIL
WOOD BLOCK-OUTS A, B, C, & D

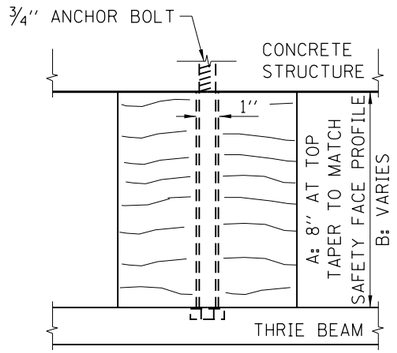


WOOD BLOCK-OUT D

* 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

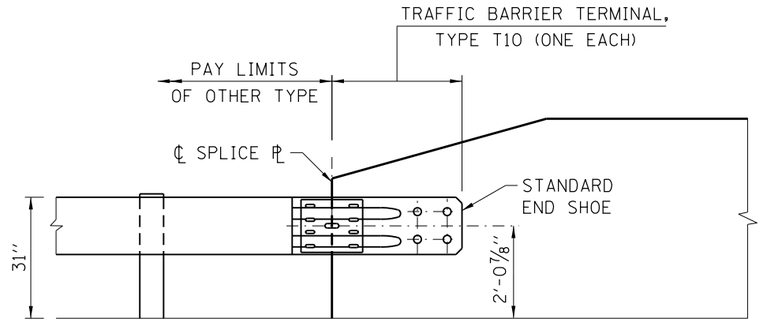
Paul Kovacs
APPROVED ..... CHIEF ENGINEER
DATE 7-1-2009

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

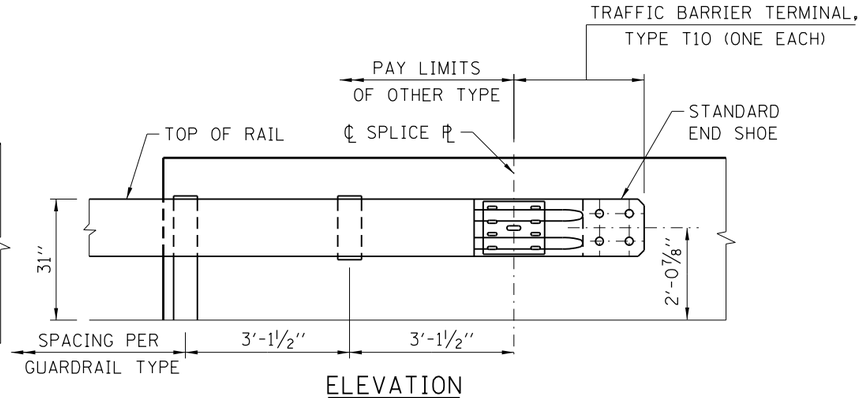
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T6B

STANDARD C10-08



ELEVATION



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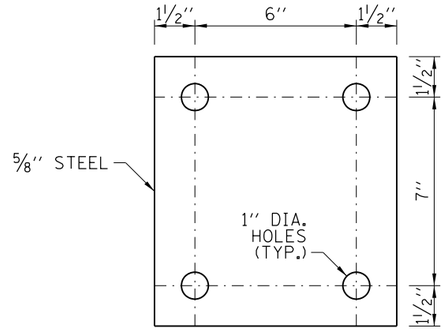
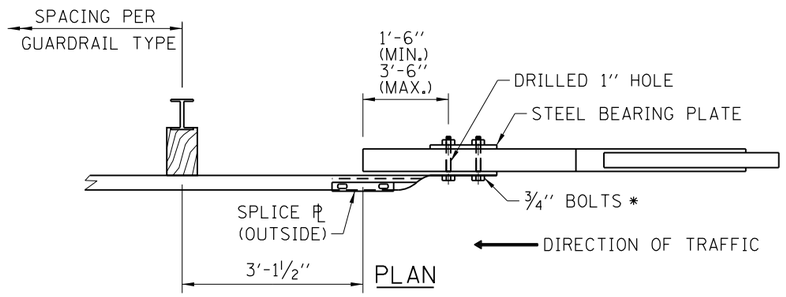


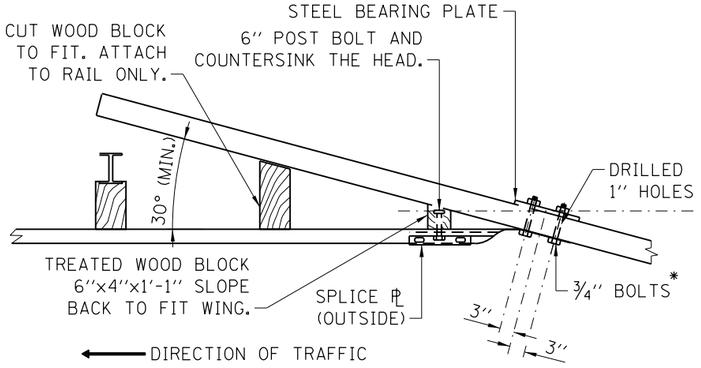
PARAPET STEEL BEARING
PLATE DETAIL

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



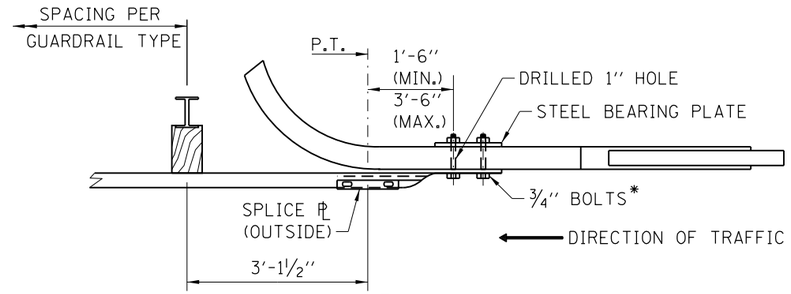
PLAN

TANGENT WING



PLAN

FLARED WING

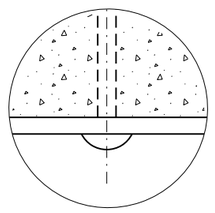


PLAN

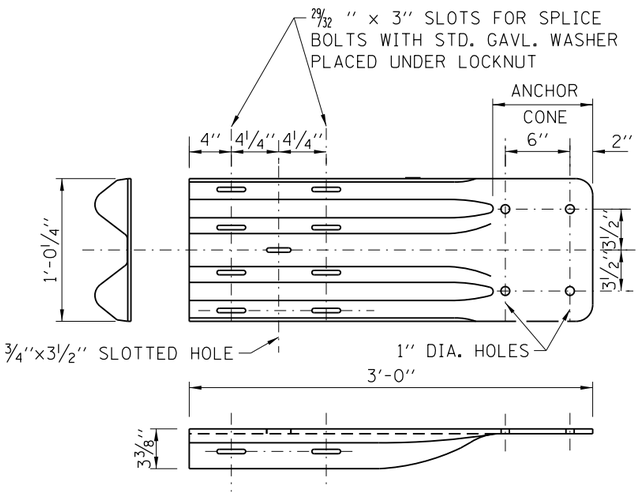
CURVED WING

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.

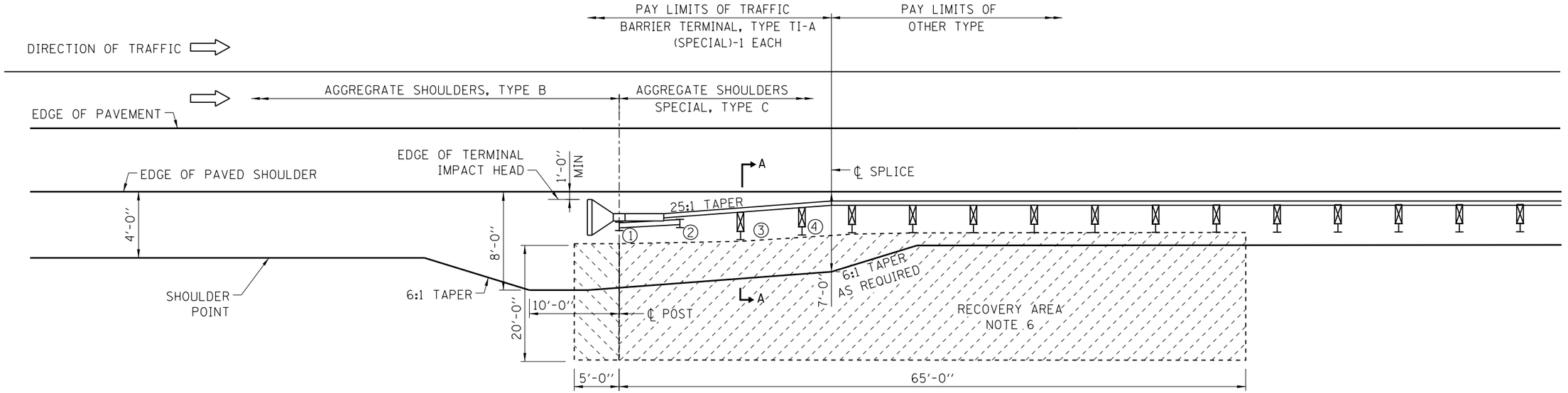
Paul Kovacs
APPROVED ..... DATE 7-1-2009
CHIEF ENGINEER

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

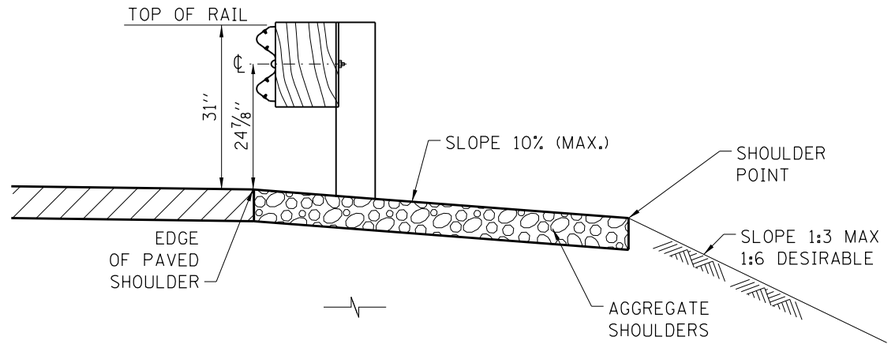
Illinois Tollway

TRAFFIC BARRIER
TERMINAL, TYPE T10

STANDARD C11-07



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



SECTION A-A

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, NCHRP 350, 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 HMA. 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 THE NATIONAL COOPERATIVE HIGHWAY RESEARCH REPORT (NCHRP) REPORT 350. 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.

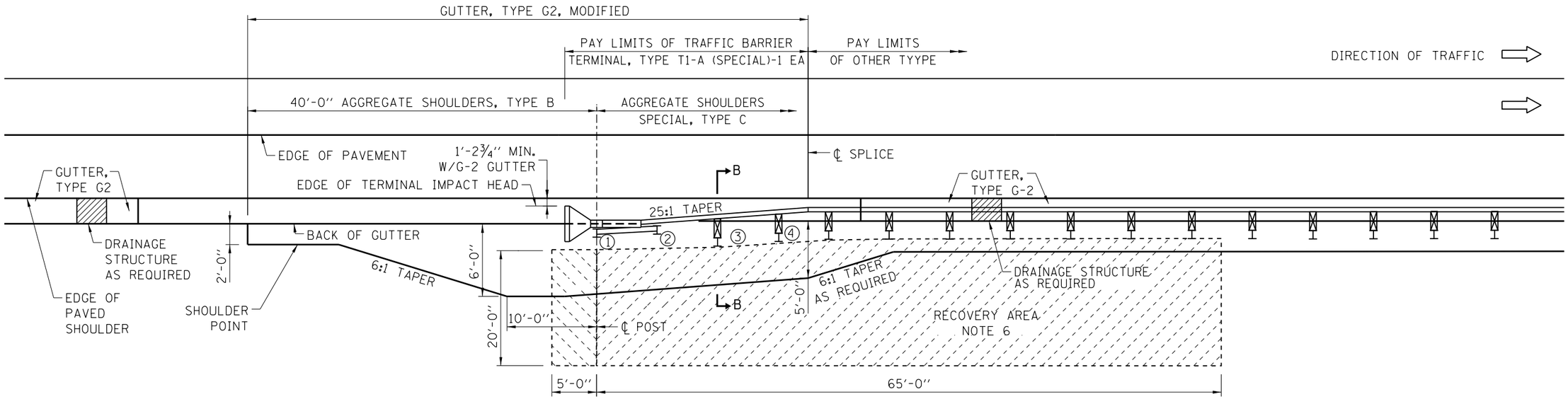
Paul Kovacs
APPROVED ..... CHIEF ENGINEER
DATE 1-1-2011

DATE	REVISIONS
2-07-2012	REVISED SLOPE NOTE.
11-01-2012	MODIFIED AGGREGATE SHOULDER
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

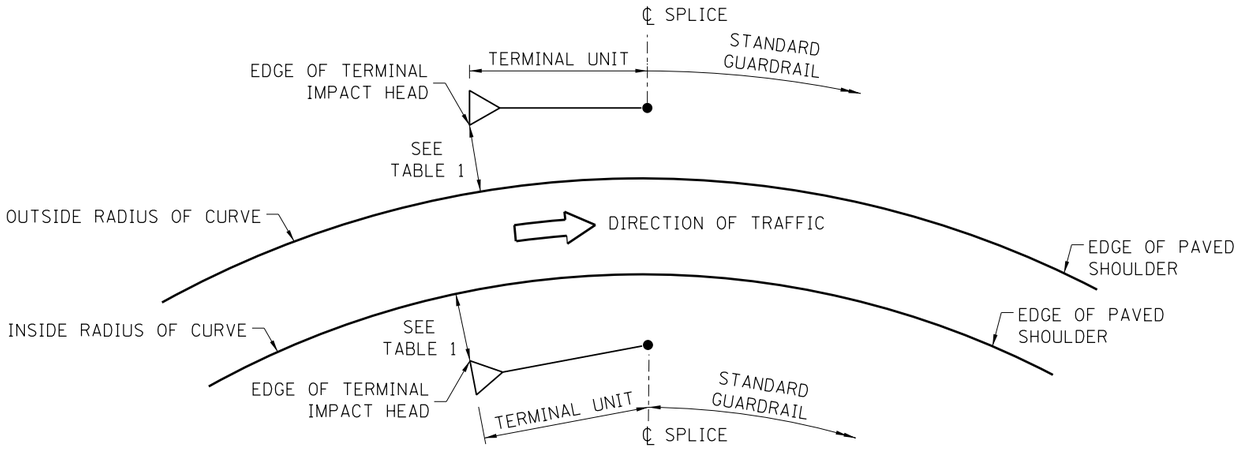
Illinois Tollway

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

STANDARD C12-07

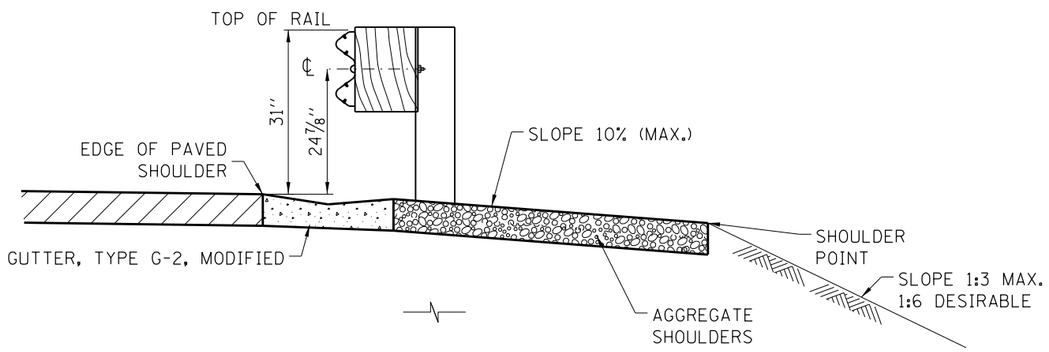


SHOULDER WIDENING TRANSITION-WITH GUTTER, TYPE G-2 FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)



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" MIN. *
GUTTER, TYPE G-2	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:

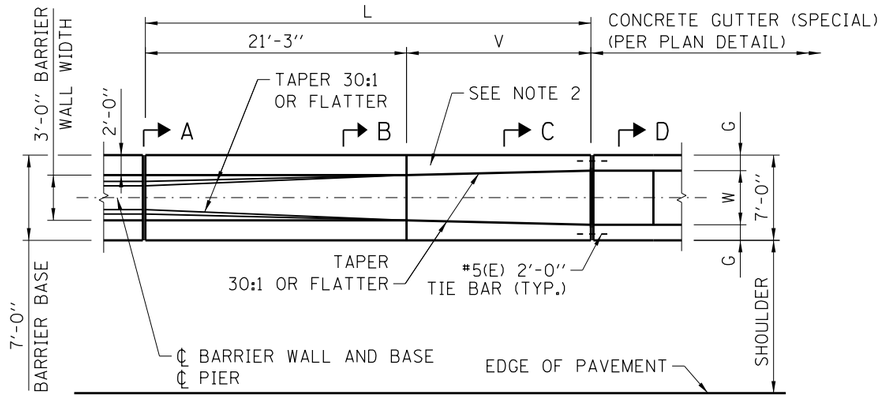
SEE SHEET 1 OF THIS SERIES FOR NOTES.

Paul Kovacs
APPROVED ..... DATE 1-1-2011
CHIEF ENGINEER

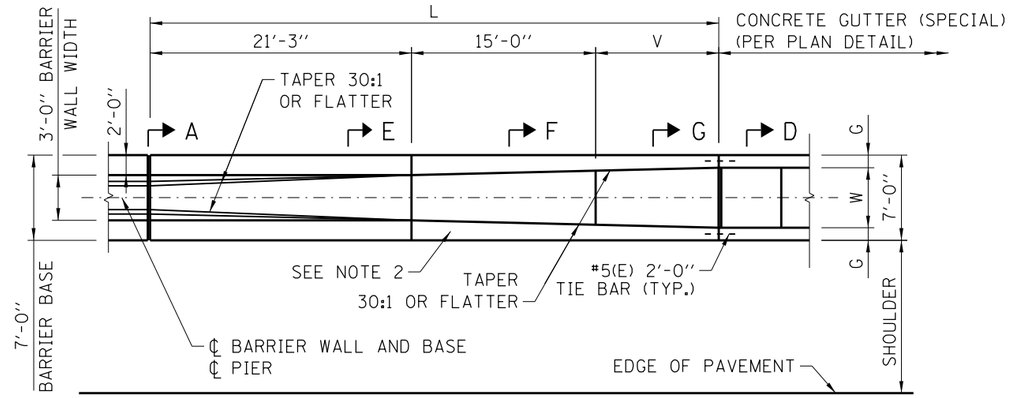
Illinois Tollway

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

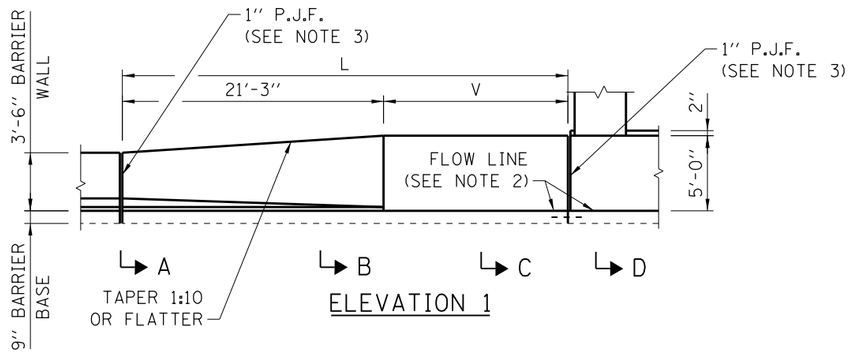
STANDARD C12-07



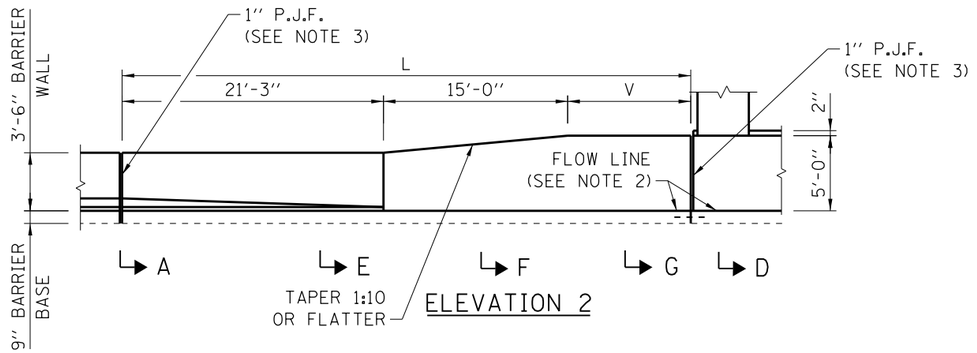
PLAN 1



PLAN 2



ELEVATION 1



ELEVATION 2

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

CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-F 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.

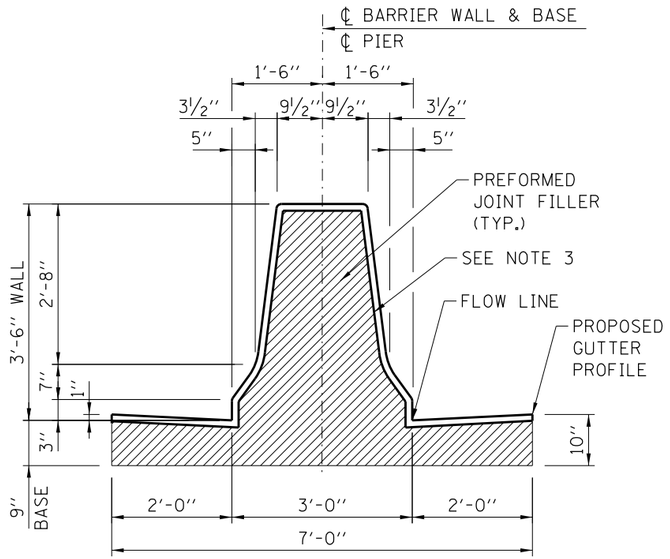
Paul Kovacs
APPROVED ..... DATE 2-7-2012
CHIEF ENGINEER

Illinois Tollway

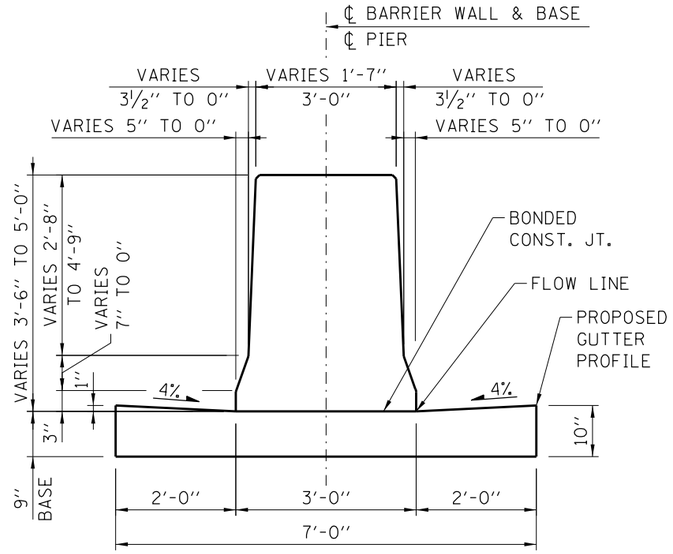
DATE	REVISIONS
11-01-2012	MODIFIED MEDIAN BARRIER TRANSITION.
3-31-2014	MODIFIED BARRIER BASE.
3-11-2015	MODIFIED MEDIAN BARRIER TRANSITION.
3-31-2016	MODIFIED NOTES

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

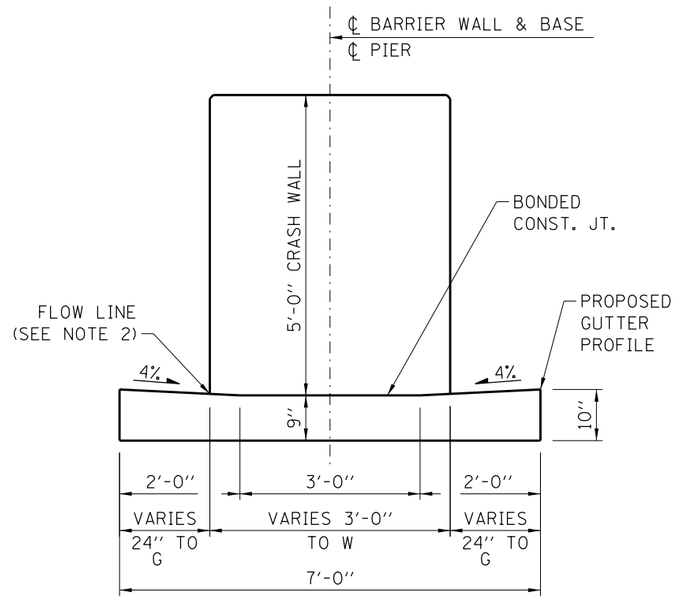
STANDARD C13-04



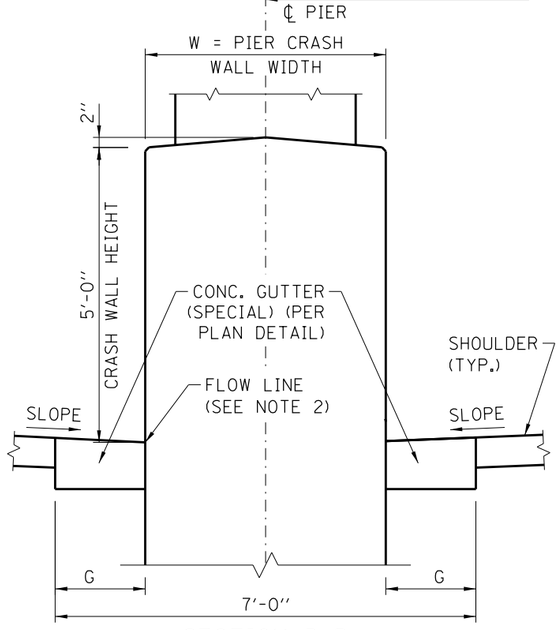
SECTION A-A



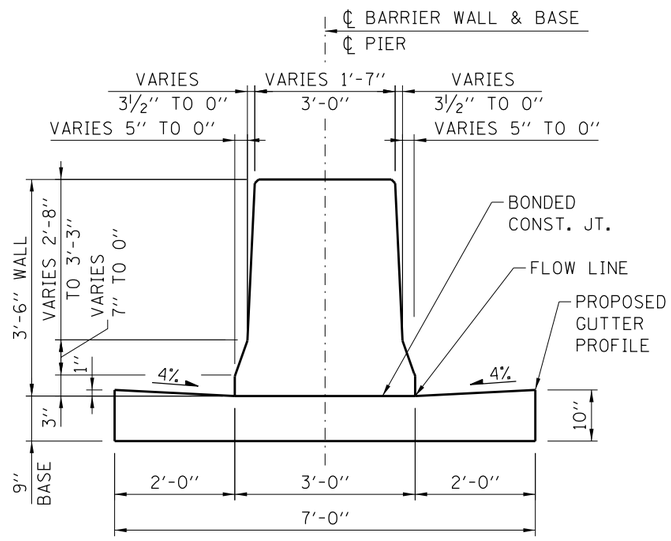
SECTION B-B



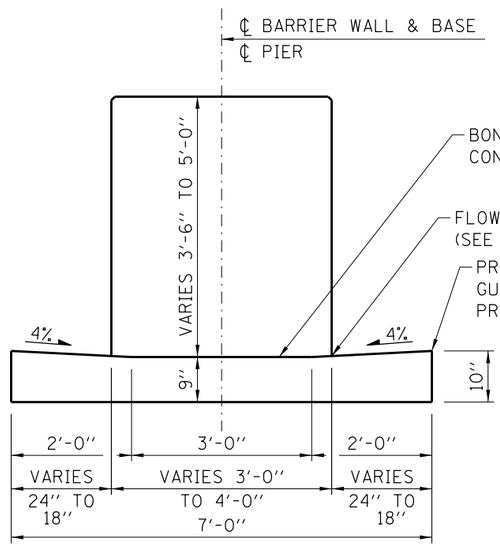
SECTION C-C



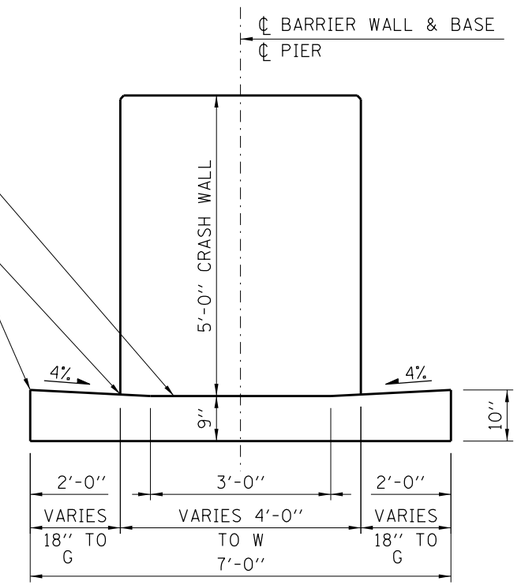
SECTION D-D



SECTION E-E



SECTION F-F



SECTION G-G

APPROVED Paul Kovacs CHIEF ENGINEER DATE 2-7-2012

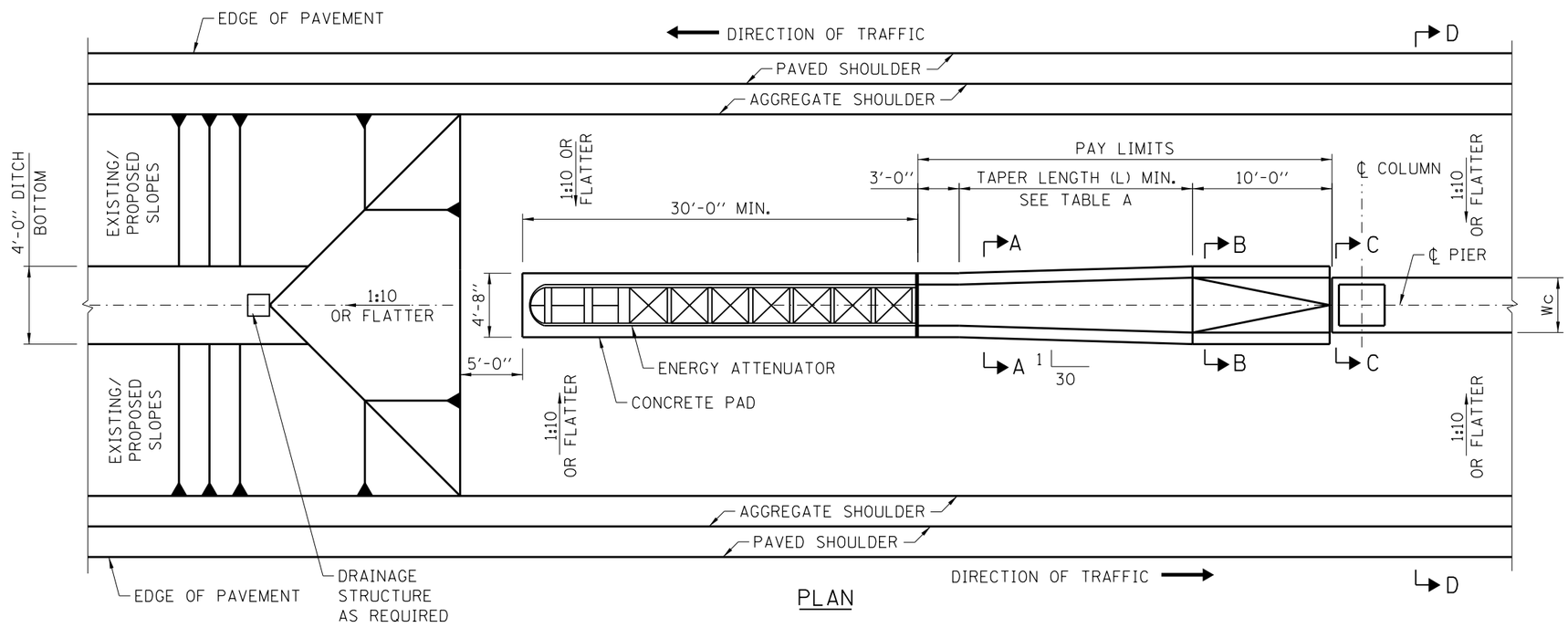
NOTES:

SEE SHEET 1 OF THIS SERIES FOR NOTES.

Illinois Tollway

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

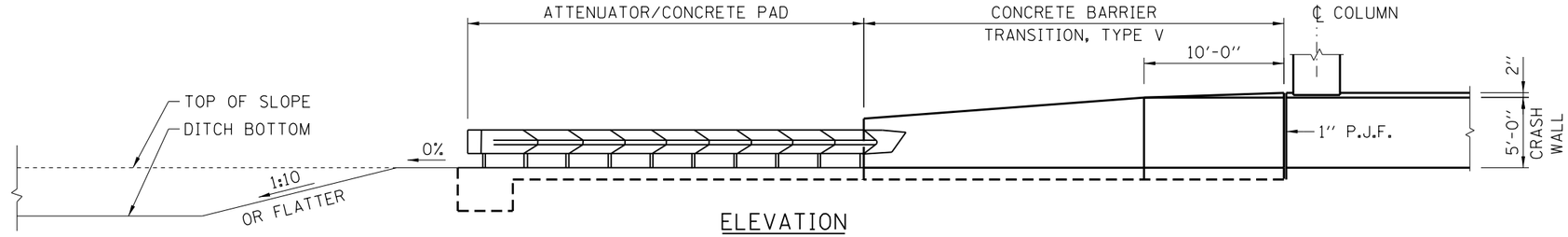
STANDARD C13-04



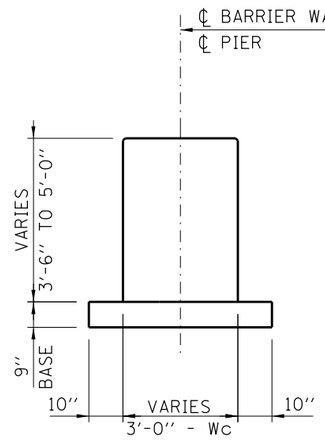
PLAN

TABLE A	
Wc	L (MIN.)
Wc<35''	20'-0''
35''<Wc<43''	30'-0''
43''<Wc<51''	40'-0''
51''<Wc<59''	50'-0''
59''<Wc<67''	60'-0''
67''<Wc<72''	70'-0''

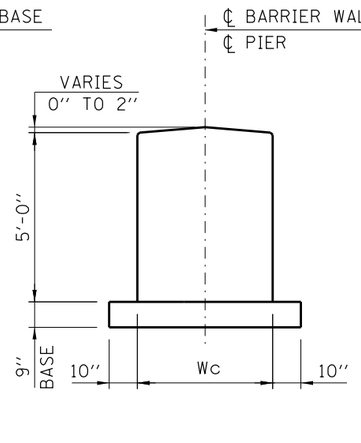
Wc=PIER CRASH WALL WIDTH



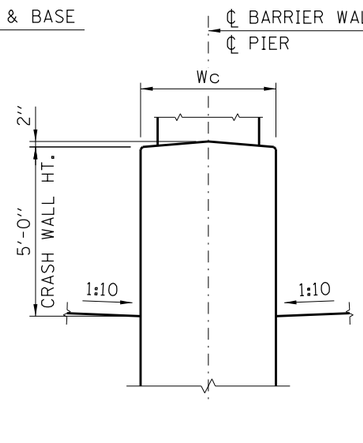
ELEVATION



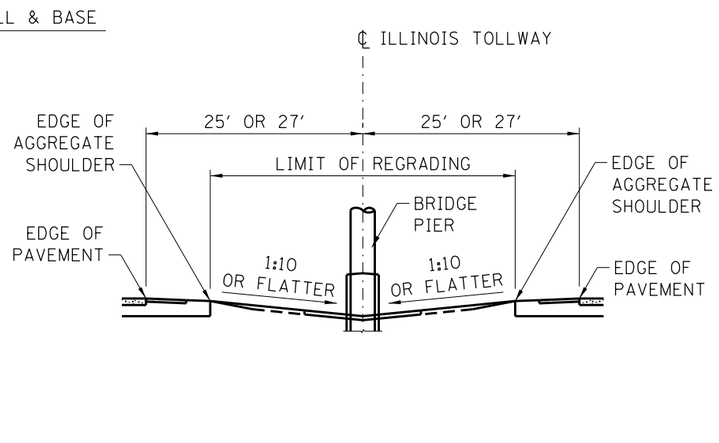
SECTION A-A



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 ..... CHIEF ENGINEER
DATE 3-31-2014

Illinois Tollway

DATE	REVISIONS
3-11-2015	REVISED NOTES
3-31-2016	ADDED SEC. B-B TOP. DITCH ELEV. VIEW AND REVISED NOTE 3

CONCRETE MEDIAN BARRIER TRANSITION, TYPE V AT BRIDGE PIERS

STANDARD C14-02