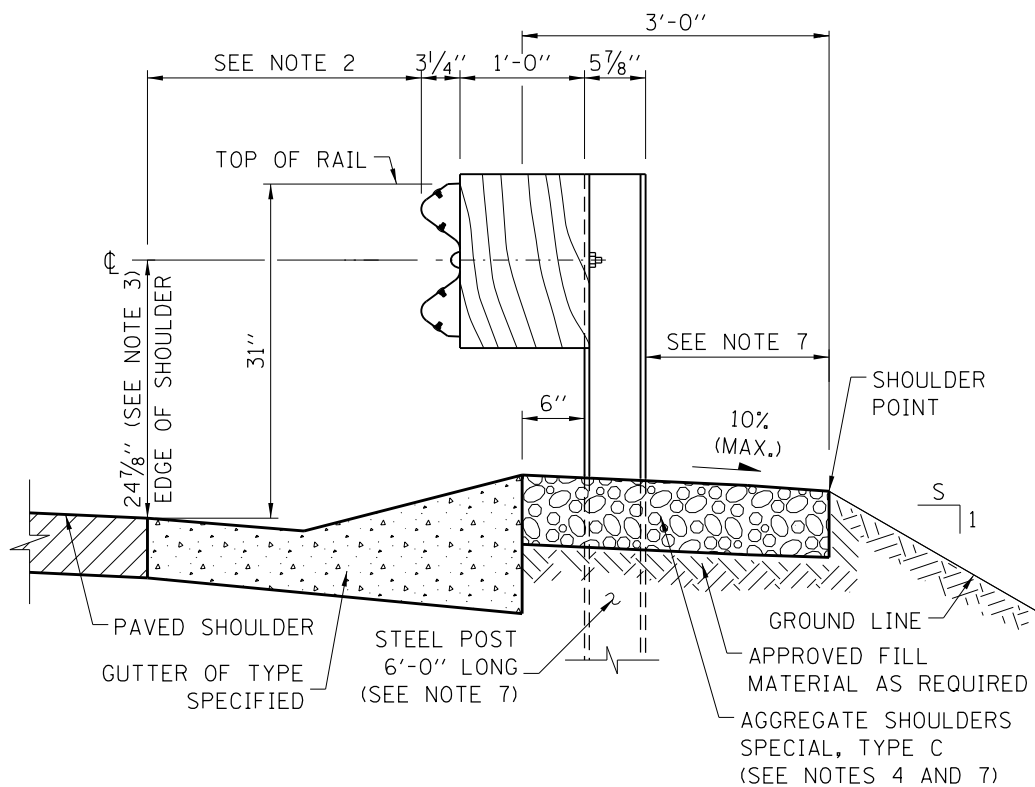


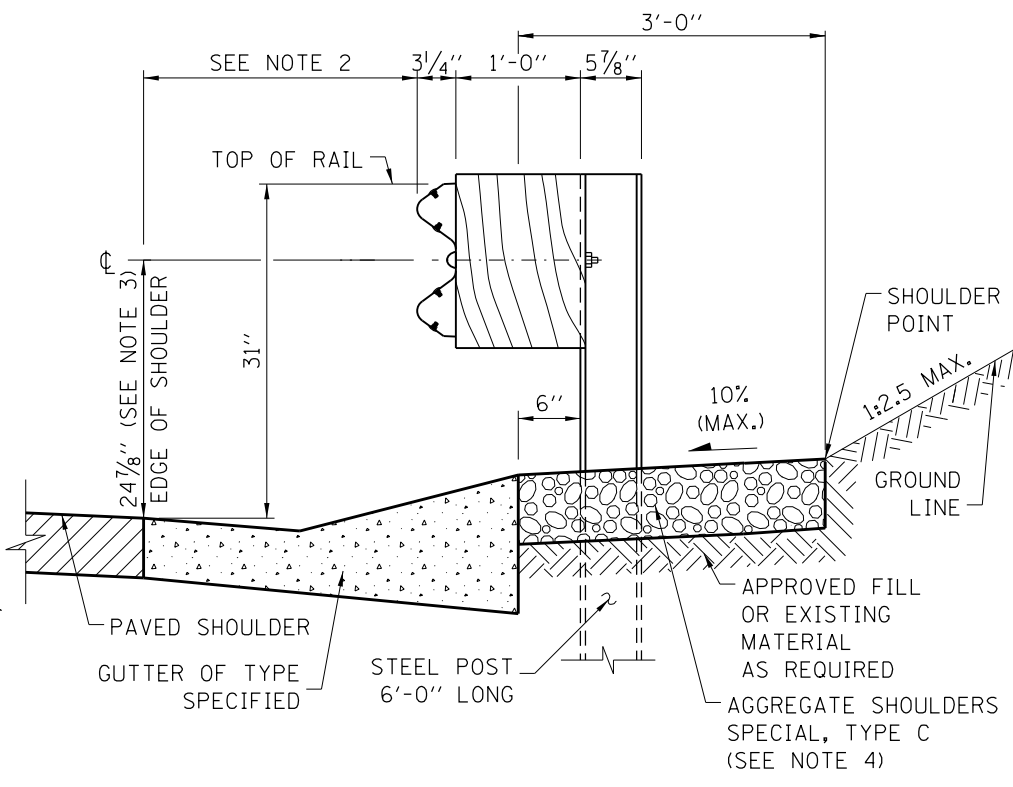
Illinois Tollway Standard Drawing Revisions

Section C		Guardrail / Median Barrier	
Standard	Modification Summary	Effective:	3/1/2019
C3	CONCRETE BARRIER, SINGLE FACE, REINFORCED, 42 INCH		
Sheet 1	Changed shape to constant-slope, modified reinforcement and renamed standard.		
C4	CONCRETE SHOULDER BARRIER TRANSITION, TYPE V-SF		
Sheet 1	Changed shape to constant-slope, modified reinforcement and renamed standard.		
C5	CONCRETE BARRIER BASE, AND CONCRETE BARRIER, DOUBLE FACE, 44" AND VARIABLE HEIGHT		
Sheet 1	Renamed standard, changed shape to constant-slope and height to 44". Added pins to base and revised notes.		
C6	SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL T1 (SPECIAL) TANGENT		
Sheet 1	Update notes to reference MASH specification.		
Sheet 2	No significant changes.		
C9	TRAFFIC BARRIER TERMINAL TYPE T6		
Sheets 1-4	Modify guardrail post offset notes to account for constant-slope concrete barrier.		
Sheet 5	No changes.		
C12	SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL T1-A (SPECIAL)		
Sheet 1	Update notes to reference MASH specification.		
Sheet 2	No significant changes.		
C13	CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF AT BRIDGE PIERS		
Sheets 1 & 2	Renamed standard, changed shape to constant-slope and height to 44" tall and added pins at base.		
C14	CONCRETE MEDIAN BARRIER TRANSITION, TYPE V AT BRIDGE PIERS		
Sheet 1	Changed taper lengths, concrete nose width, concrete pad and energy attenuator.		
C15	CONCRETE BARRIER SINGLE FACE, REINFORCED, T-SHAPE, 44 INCH		
Sheet 1	New reinforced concrete roadside barrier, T-shaped, 44" tall (TL-5).		
C16	CONCRETE BARRIER SINGLE FACE, REINFORCED, L-SHAPE 44 INCH		
Sheet 1	New reinforced concrete roadside barrier, L-shaped, 44" tall (TL-5).		
C17	CONCRETE BARRIER SINGLE FACE, REINFORCED 54 INCH		
Sheet 1	New reinforced concrete roadside barrier, L-shaped, 54" tall (TL-5).		

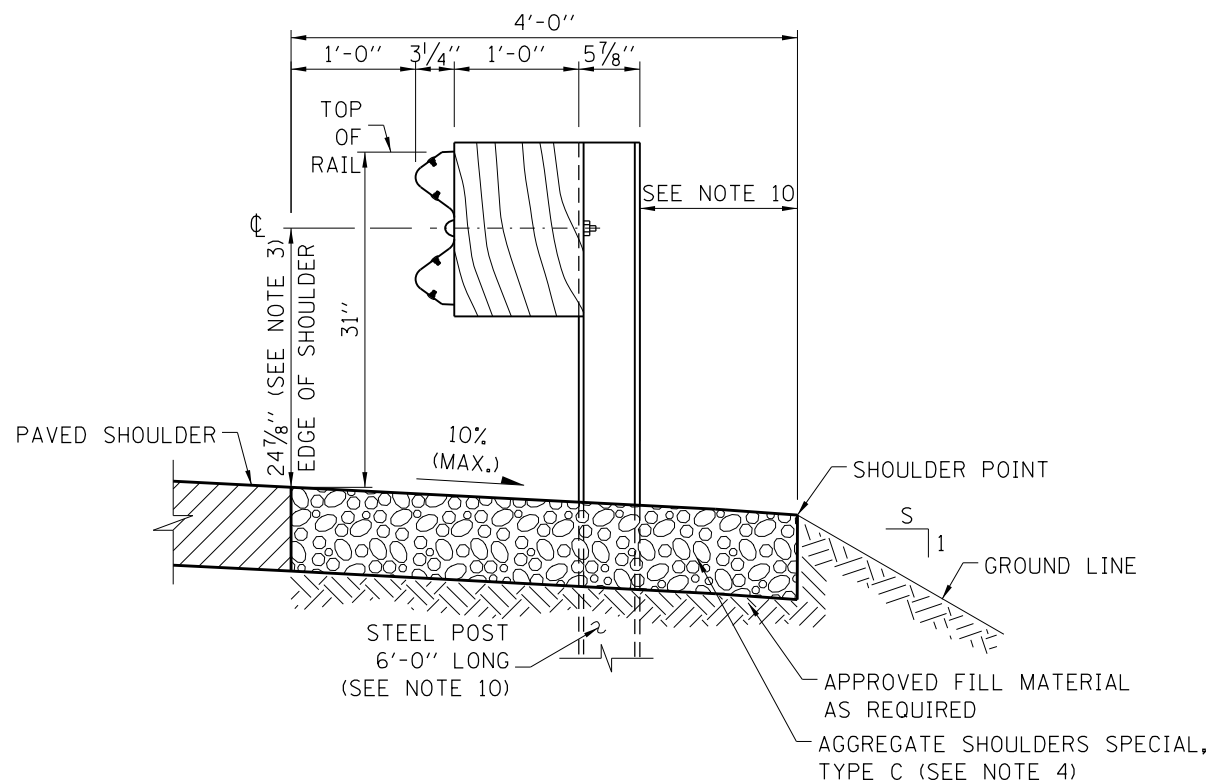
 New Sheet
  Retired Standard



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 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 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.

APPROVED: *Paul Kovacs* DATE 5-1-2009
CHIEF ENGINEERING OFFICER

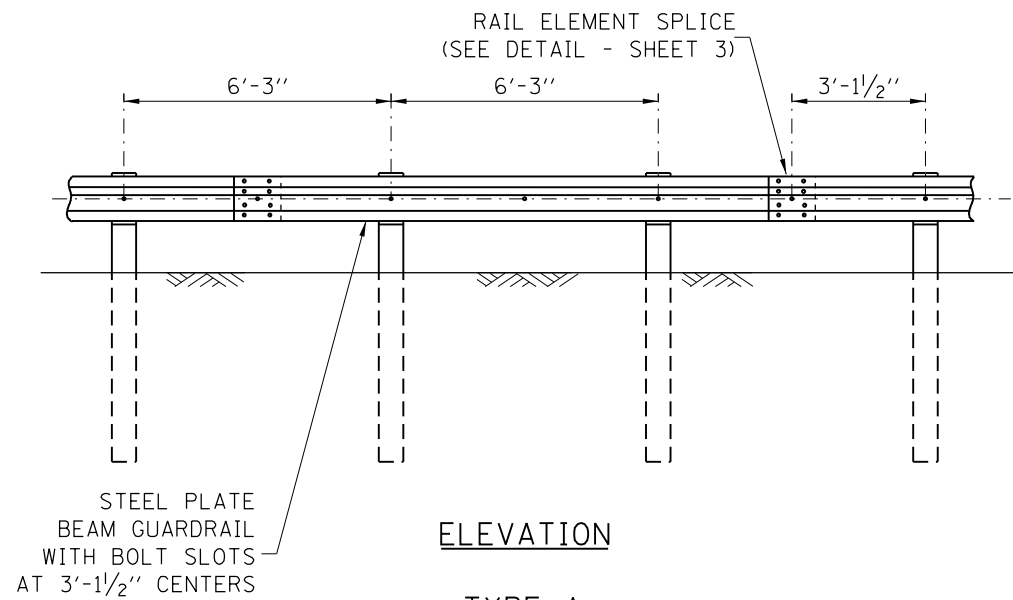
DATE	REVISIONS
11-01-12	MODIFIED AGGREGATE SHOULDERS
03-31-14	REMOVED SECONDARY HOLE FROM POST AND UPDATED NOTES.
03-31-16	ADDED SECTION, REV'D SHLDR
03-31-17	REVISED NOTES
03-01-18	CORRECTED NOTES, ADDED TABLES 2A AND 2B.

SHEET 1 OF 4



**GALVANIZED STEEL PLATE
BEAM GUARDRAIL**

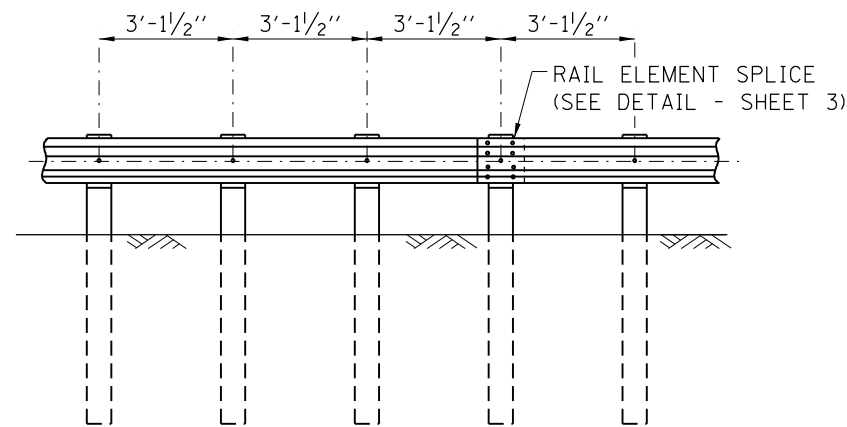
STANDARD C1-10



ELEVATION

TYPE A

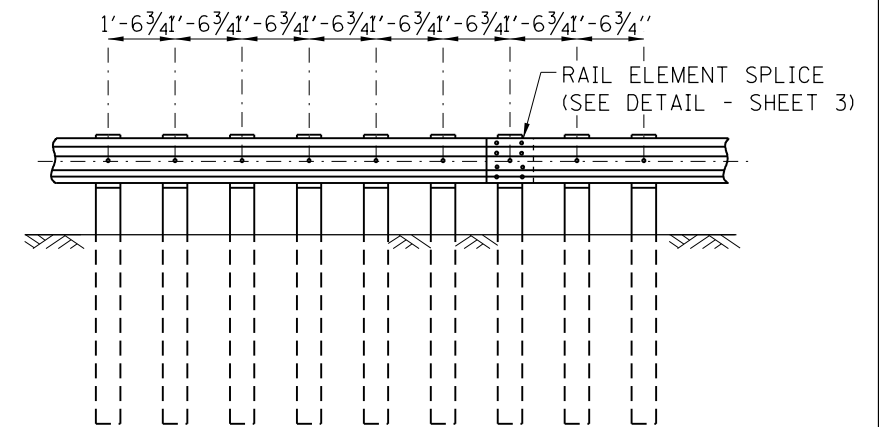
6'-3" TYPICAL POST SPACING



ELEVATION

TYPE B

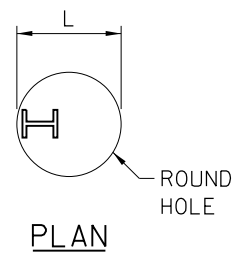
3'-1/2" 1/2 POST SPACING



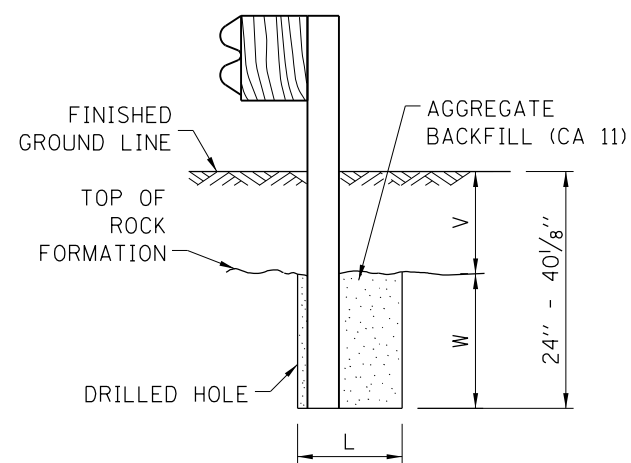
ELEVATION

TYPE C

1'-6 3/4" 1/4 POST SPACING



PLAN

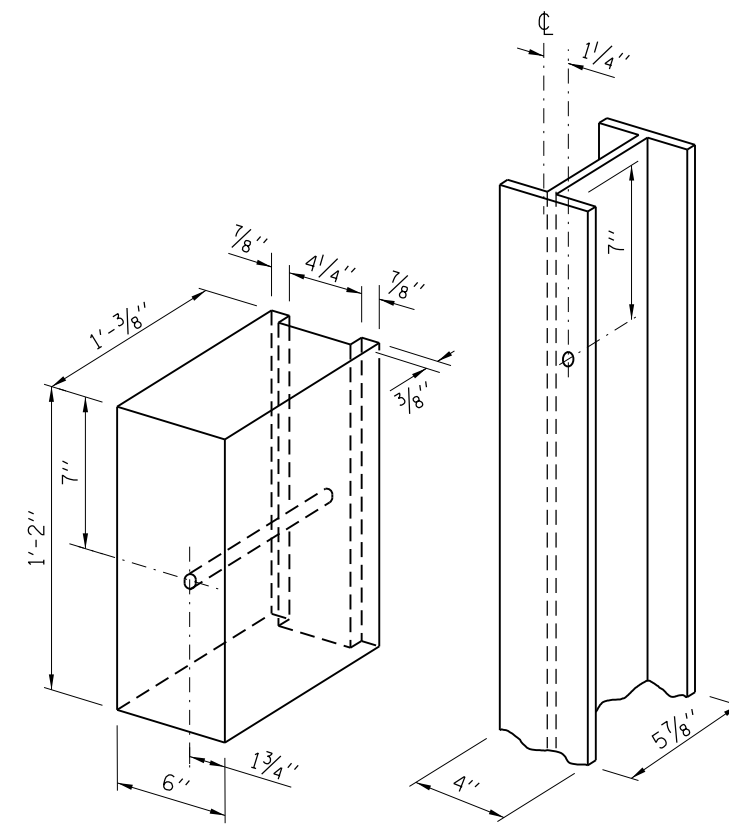


ELEVATION

FOOTING FOR POST WHEN ROCK FORMATION IS ENCOUNTERED

TABLE 1		
V	W	L
0 - 16 1/8"	24"	21"
> 16 1/8" - 28 1/8"	12"	8"
> 28 1/8" - 40 1/8"	12" - 0 (*)	8"

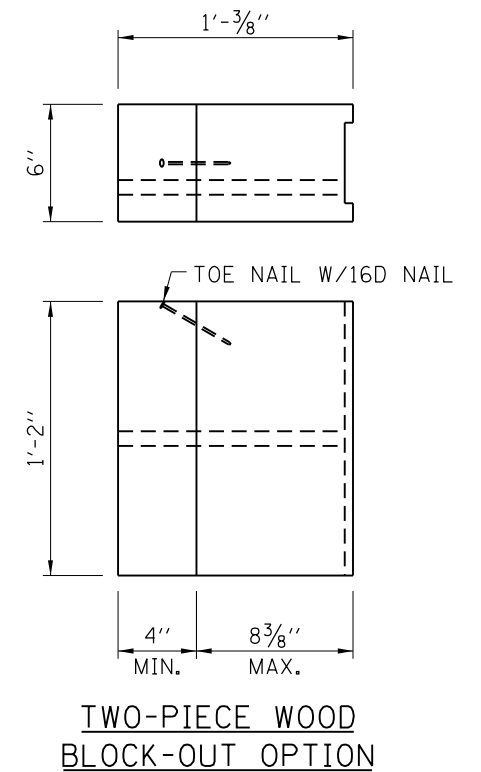
* V + W = 40 1/8"



NOTES:

ALL HOLES 3/4" DIA.

WOOD BLOCK-OUT AND STEEL POST DETAILS



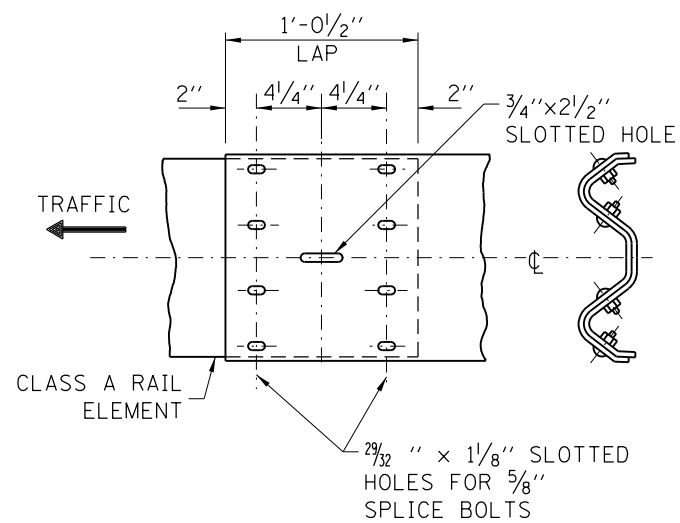
TWO-PIECE WOOD BLOCK-OUT OPTION



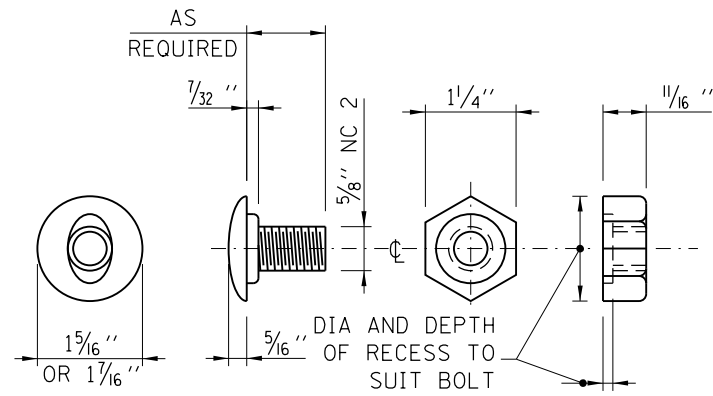
GALVANIZED STEEL PLATE BEAM GUARDRAIL

STANDARD C1-10

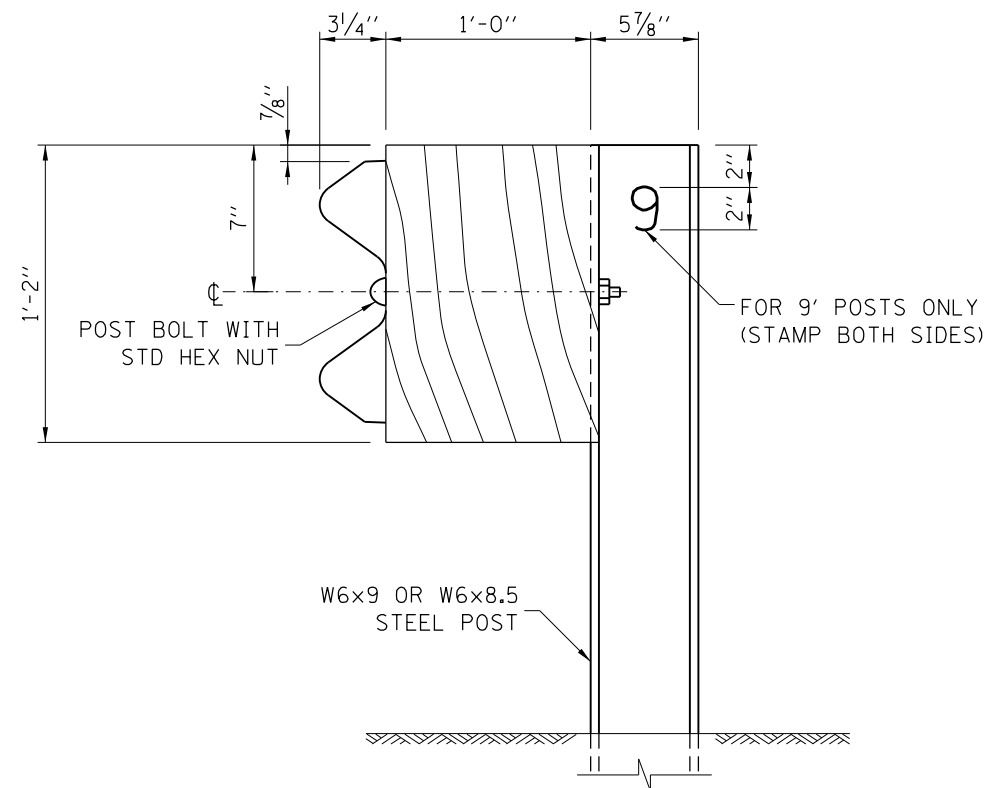
APPROVED: *Paul Kovacs* DATE 5-1-2009
CHIEF ENGINEERING OFFICER



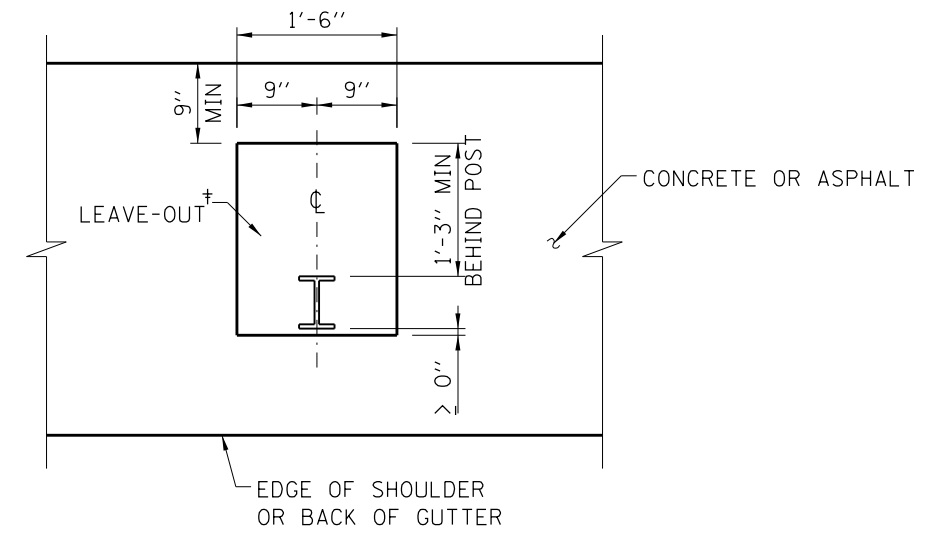
RAIL ELEMENT SPLICE



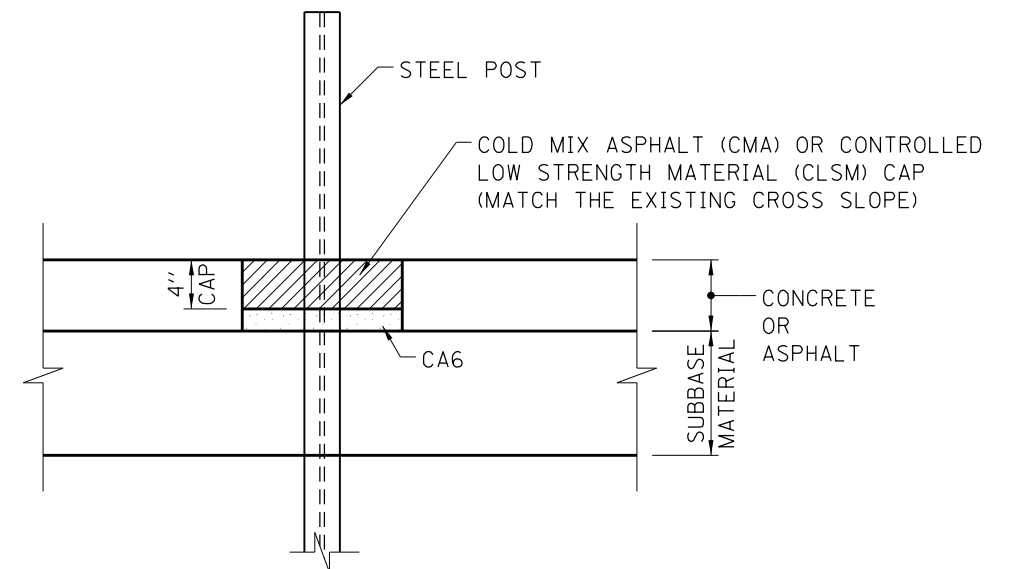
POST OR SPLICE BOLT & NUT



STEEL POST CONSTRUCTION



PLAN



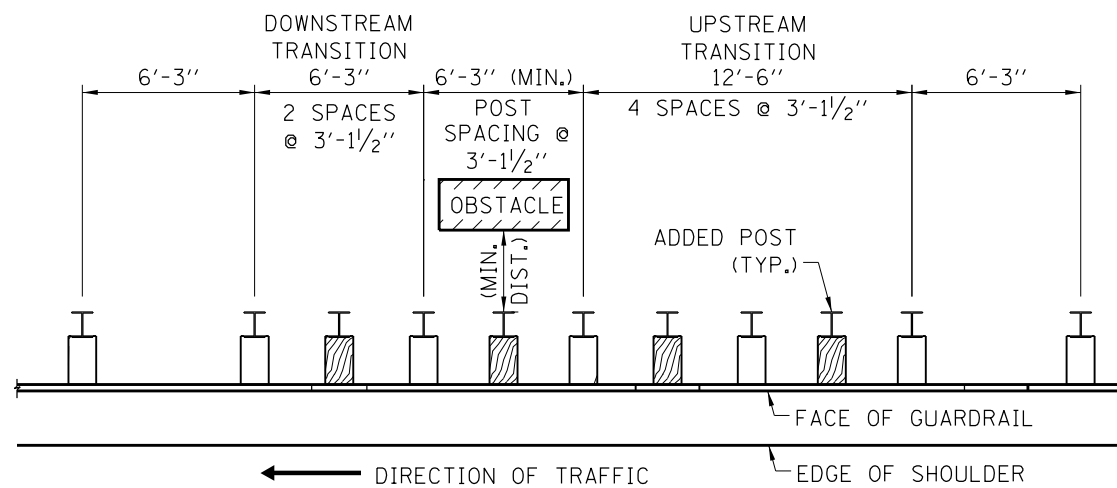
ELEVATION

LEAVE-OUTS

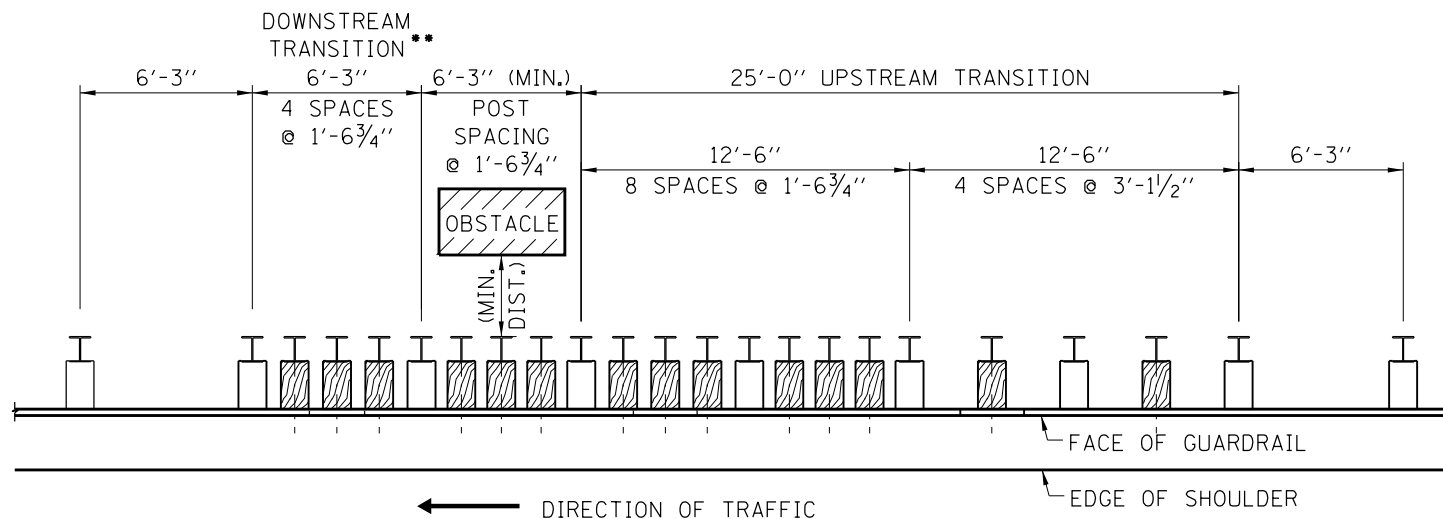
† THE AREA AROUND THE POST THAT IS EITHER OMITTED FROM THE NEW CONSTRUCTION OR REMOVED FROM THE EXISTING CONCRETE OR ASPHALT.

TABLE 2A BARRIER CLEARANCE DISTANCE (MGS) NEW CONSTRUCTION/RECONSTRUCTION		
GUARDRAIL SYSTEM	POST SPACING	MINIMUM DISTANCE
TYPE A	6'-3"	39"
TYPE B 1/2 POST SPACING	3'-1 1/2"	34"
TYPE C 1/4 POST SPACING	1'-6 3/4"	26"

TABLE 2B BARRIER CLEARANCE DISTANCE (MGS) REHABILITATION				
GUARDRAIL SYSTEM	POST SPACING	MINIMUM DISTANCE		
		EXISTING BREAKAWAY LIGHT POLES	ALL OTHER OBSTACLES	
			NCHRP 350	MASH
TYPE A	6'-3"	20"	28"	39"
TYPE B 1/2 POST SPACING	3'-1 1/2"	N/A	23"	34"
TYPE C 1/4 POST SPACING	1'-6 3/4"	N/A	14"	26"



TRANSITION TO 1/2-POST SPACING



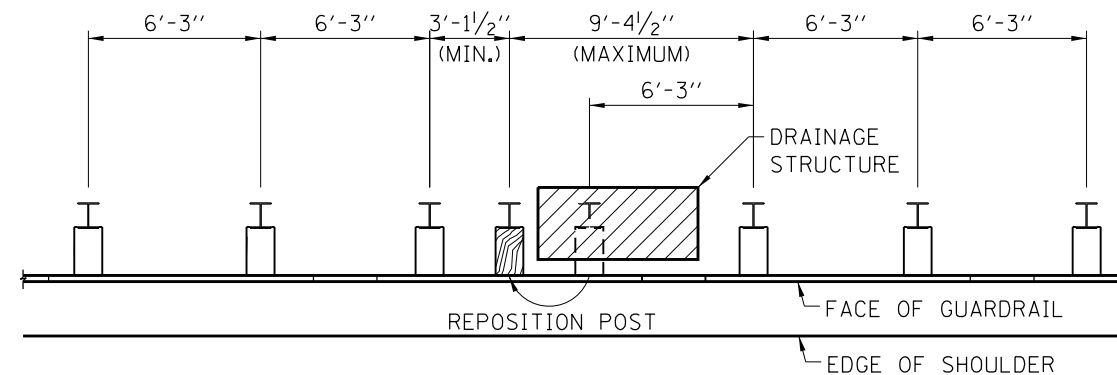
TRANSITION TO 1/4-POST SPACING

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

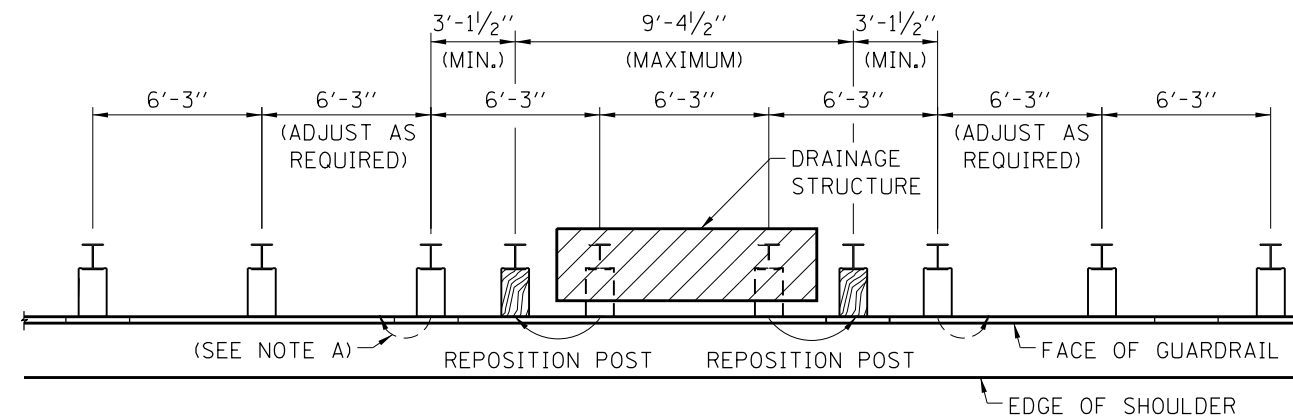
POST SPACING TRANSITIONS

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

APPROVED: *Paul Kovacs* DATE 5-1-2009
CHIEF ENGINEERING OFFICER



TYPE A GUARDRAIL- DRAINAGE STRUCTURE CONFLICT
ONE POST



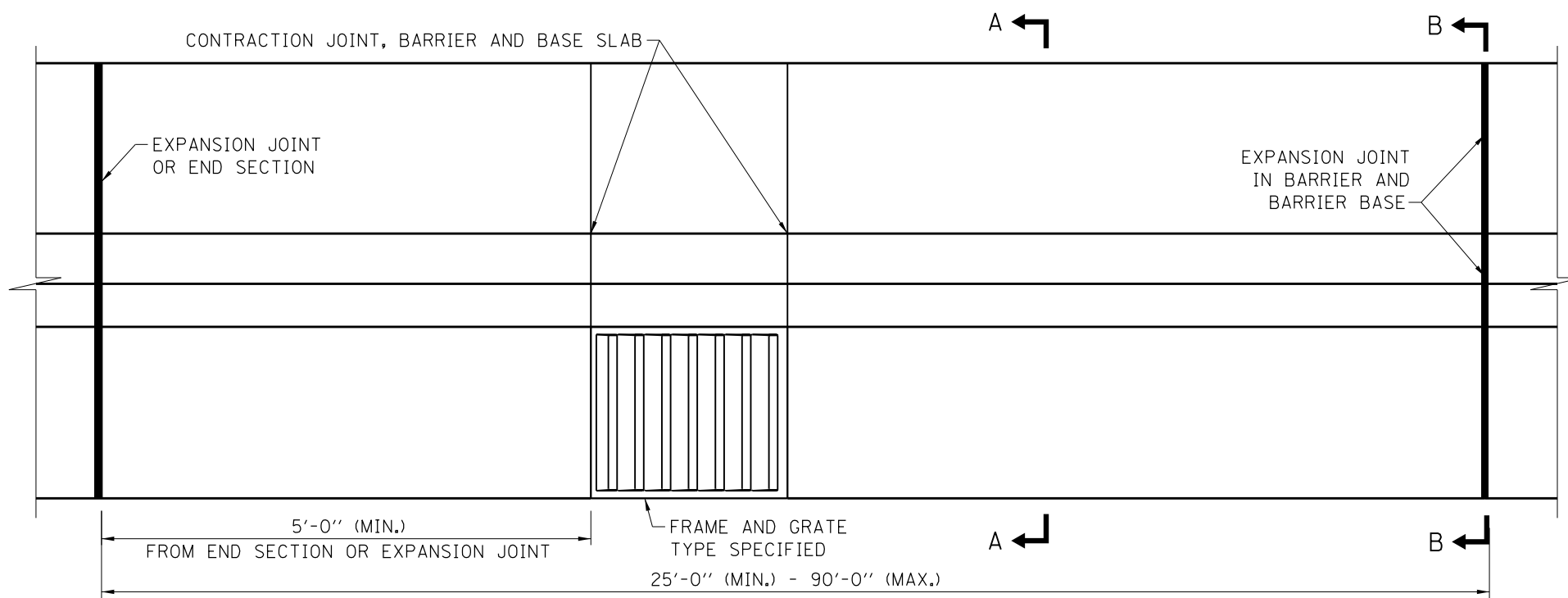
TYPE A GUARDRAIL - DRAINAGE STRUCTURE CONFLICT
TWO POSTS

DRAINAGE STRUCTURE CONFLICTS

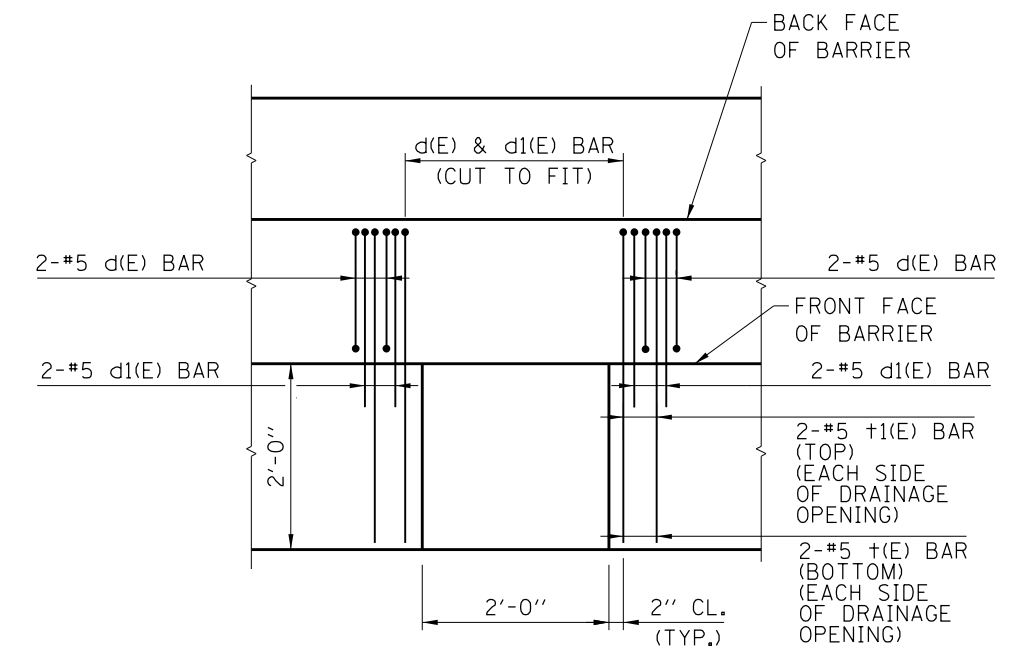
NOTES:

- 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'-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.

GALVANIZED STEEL PLATE
BEAM GUARDRAIL
STANDARD C1-10



PLAN

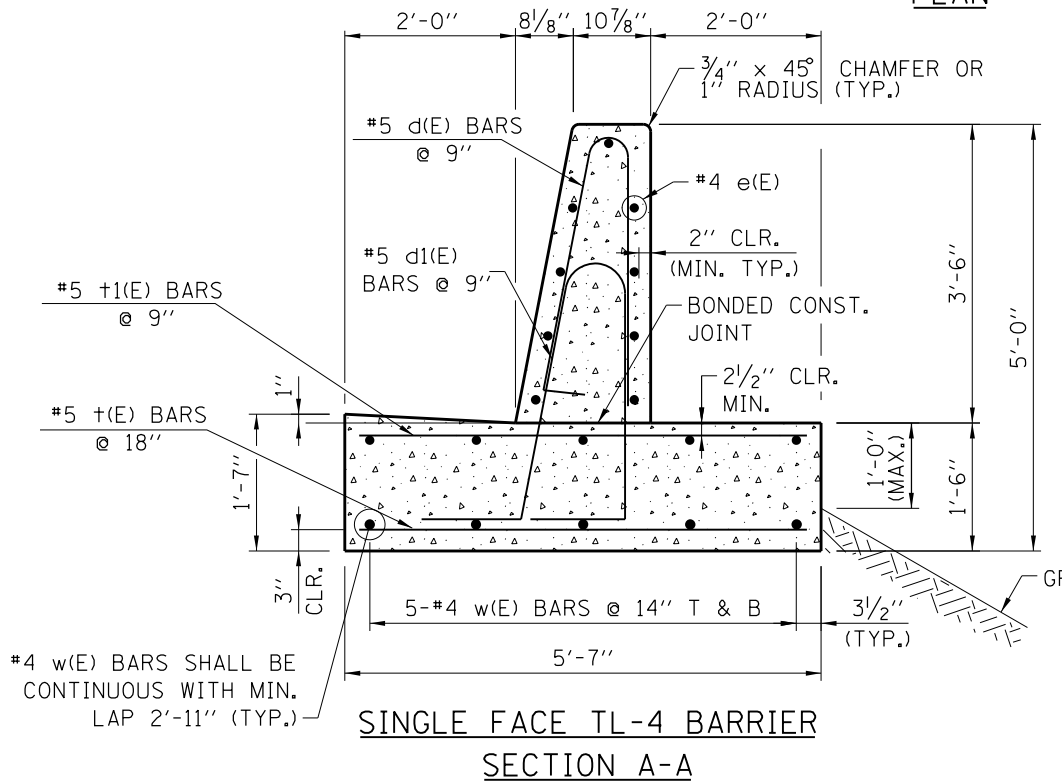


PLAN

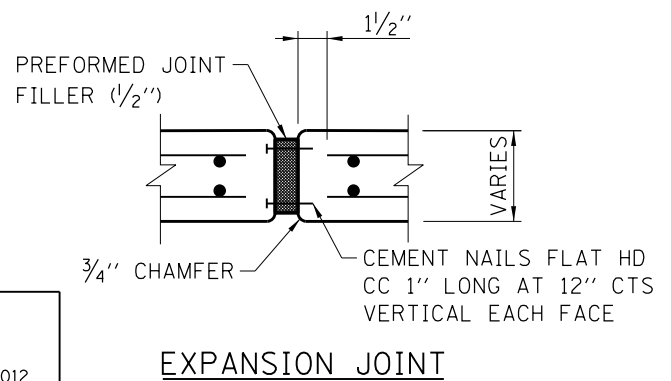
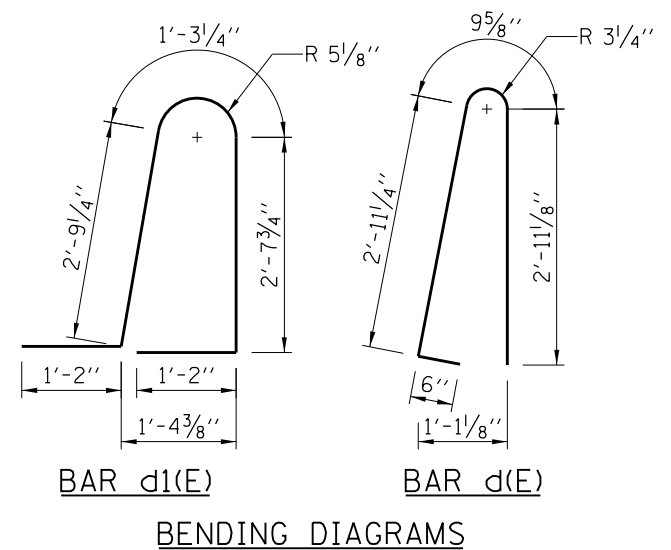
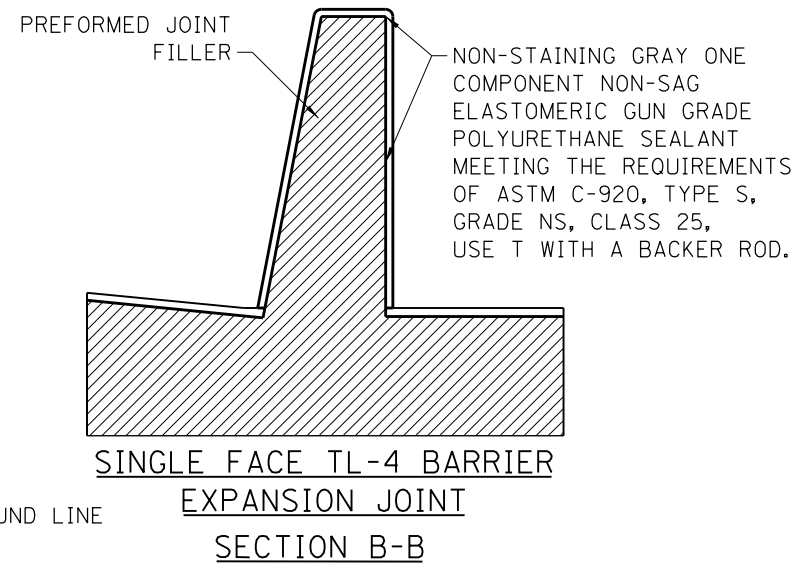
REINFORCEMENT AROUND DRAINAGE STRUCTURE

NOTES:

- 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.
- VERTICAL TRANSITION TO A 44" HIGH BARRIER REQUIRES A MINIMUM 2'-0" TAPER. BARRIER HEIGHT TRANSITIONS SHALL BE INCLUDED IN THE COST OF THE CONCRETE BARRIER.
- TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
- 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".
- THE FORMING OF CONTRACTION JOINTS SHALL BE DONE WITH AN APPROVED FINISHING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.
- REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
- 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.
- AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD AN ADDITIONAL PAIR OF d, d1, +, AND +1 BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE.
- 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.



SINGLE FACE TL-4 BARRIER SECTION A-A

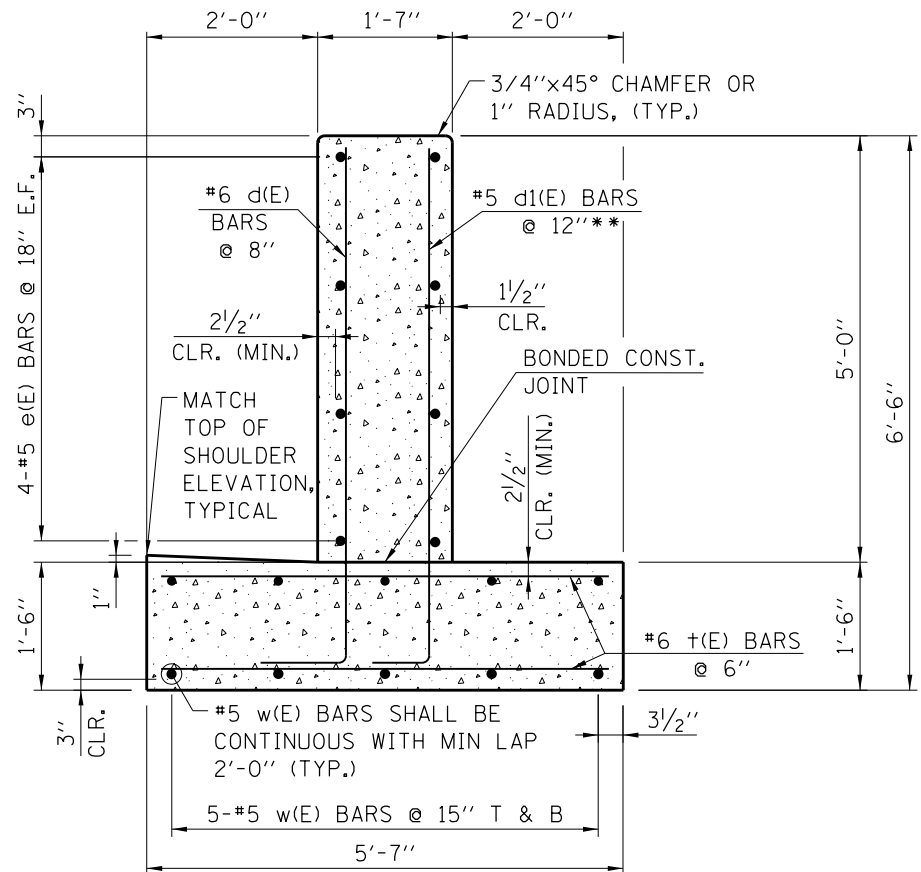


APPROVED: *Paul Kovacs* CHIEF ENGINEERING OFFICER DATE: 2-7-2012

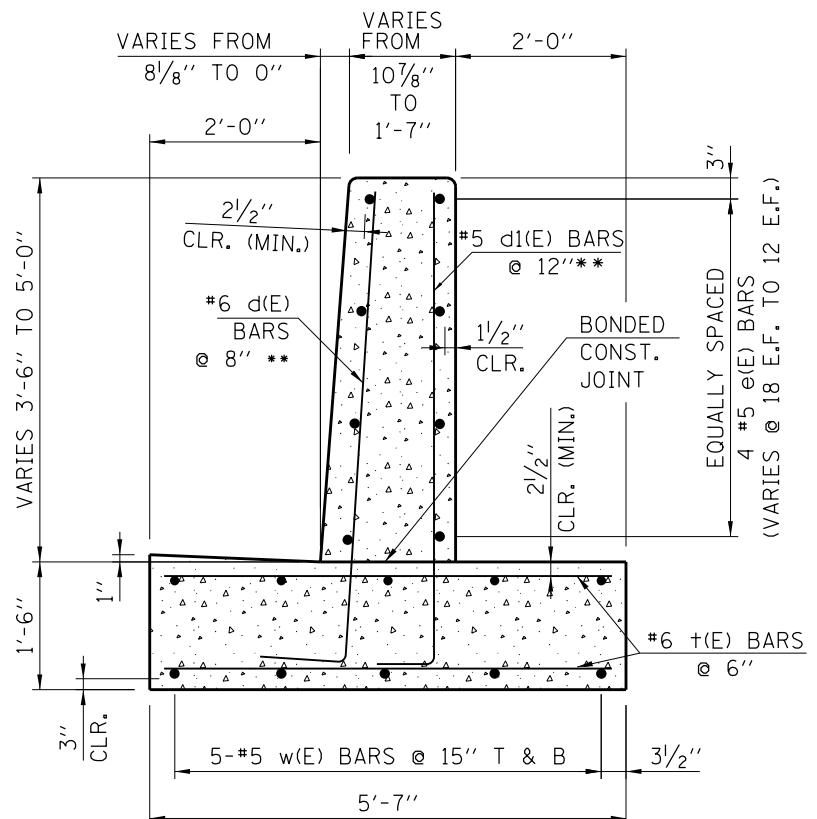
DATE	REVISIONS
10-01-13	REVISED REINFORCEMENT BARS AND GUTTER WIDTH
03-31-14	REDESIGNED FOR TL-4 LOADING
3-11-2015	REVISED BENDING DIAGRAM
3-31-2016	ADDED MAX. EXPOSED BASE.
	REVISED EXP. JT. NOTE
3-01-2019	REVISED TO CONSTANT SLOPE

CONCRETE BARRIER SINGLE FACE, REINFORCED 42 INCH

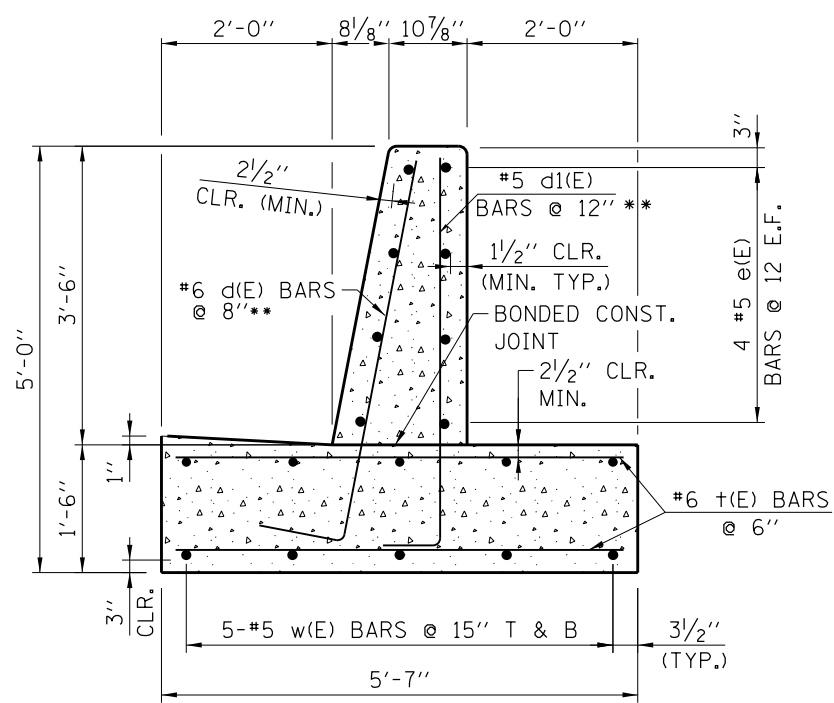
STANDARD C3-07



SECTION C-C



SECTION B-B



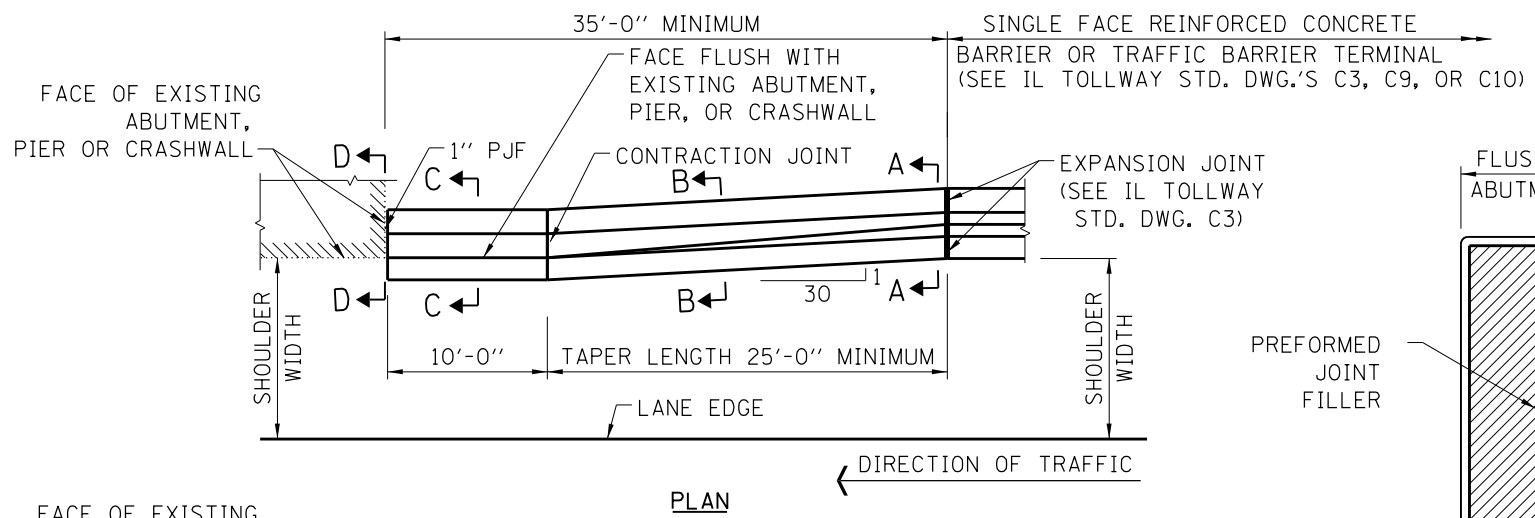
SECTION A-A

BENDING DIAGRAMS

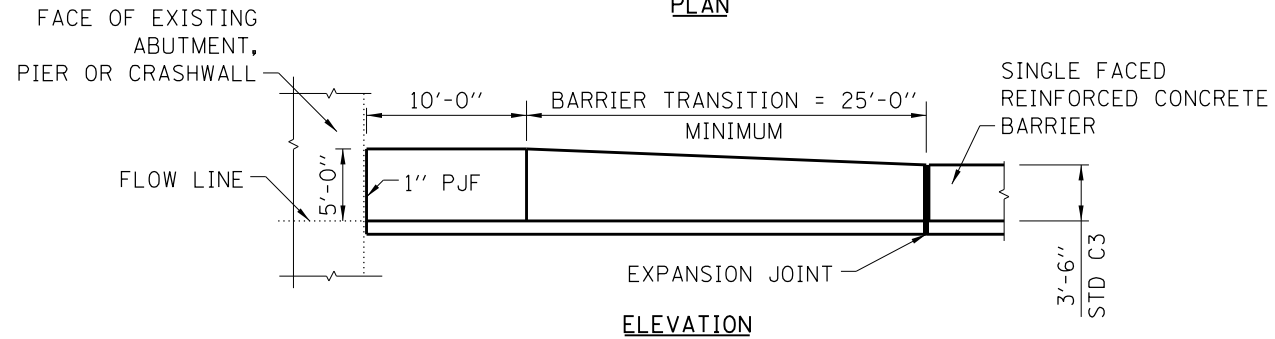
** CUT TO FIT IN FIELD
2" VERTICAL CLR.

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".

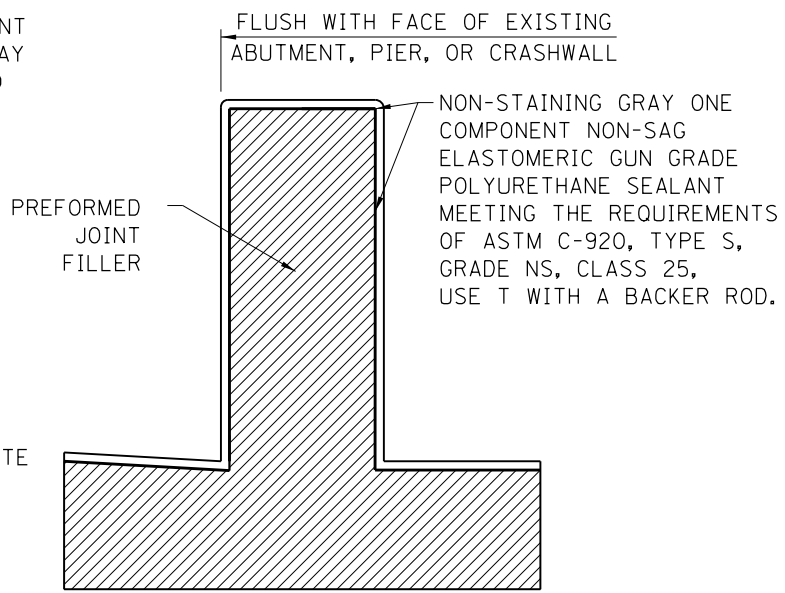


PLAN



ELEVATION

CONCRETE SHOULDER BARRIER TRANSITION, SF-T



SECTION D-D

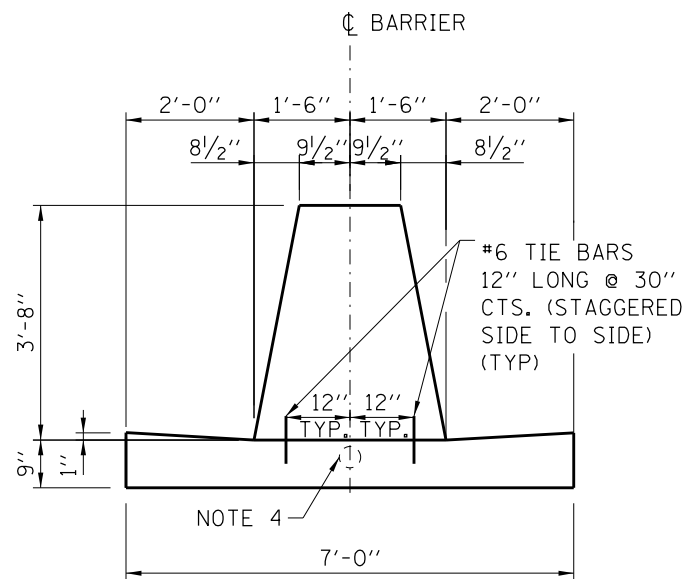
APPROVED: *Paul Kovacs*
CHIEF ENGINEERING OFFICER
DATE: 2-7-2012

DATE	REVISIONS
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
3-01-2019	REVISED TO CONSTANT SLOPE RENAMED DRAWING

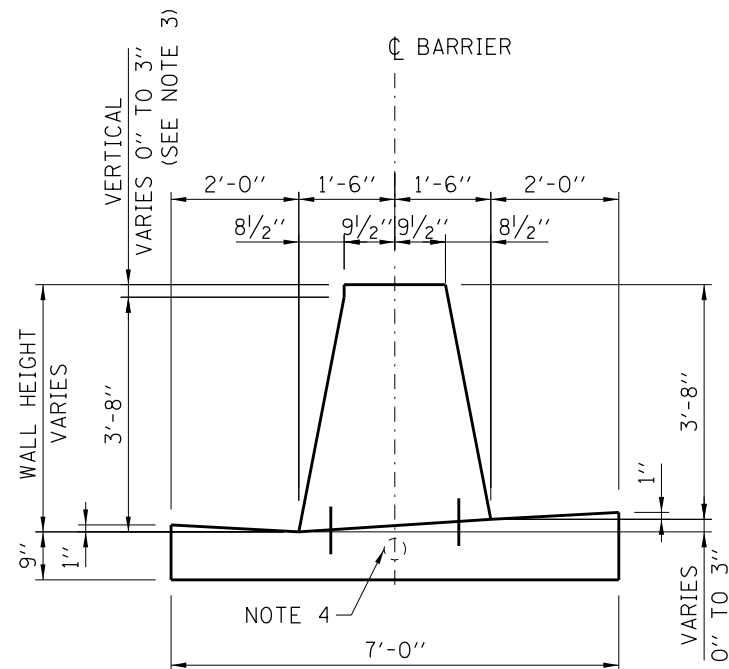


CONCRETE SHOULDER BARRIER TRANSITION TYPE V-SF

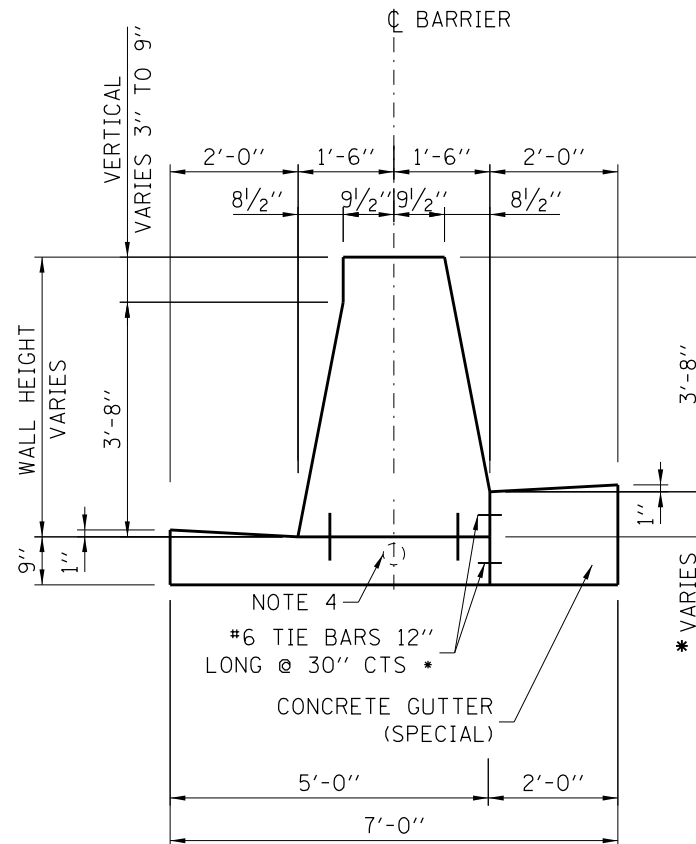
STANDARD C4-08



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 9")
 * WHEN 6" OR GREATER ADD TOP TIE BAR.

NOTES:

- 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.
- 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.
- IN AREAS OF RELATIVELY FLAT LONGITUDINAL PROFILE GRADES, THE VERTICAL DIMENSION AT THE TOP OF THE BARRIER CAN VARY FROM 0" (NORMALLY) TO 3" TO CREATE AN ACCEPTABLE LONGITUDINAL GRADE IN THE GUTTER.
- REFERENCE PLAN SHEET FOR TYPE, SIZE AND NUMBER OF CONDUITS. PROVIDE 1/2" (MIN.) CLEARANCE TO THE TOP OF CONDUIT AND 2" (MIN.) CLEARANCE TO THE BOTTOM OF THE CONDUIT.
- 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.
- WHEN VARIABLE HEIGHT VERTICAL DIFFERENTIAL EXCEEDS 9" SEE STRUCTURAL PLANS FOR DETAILS.
- 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.

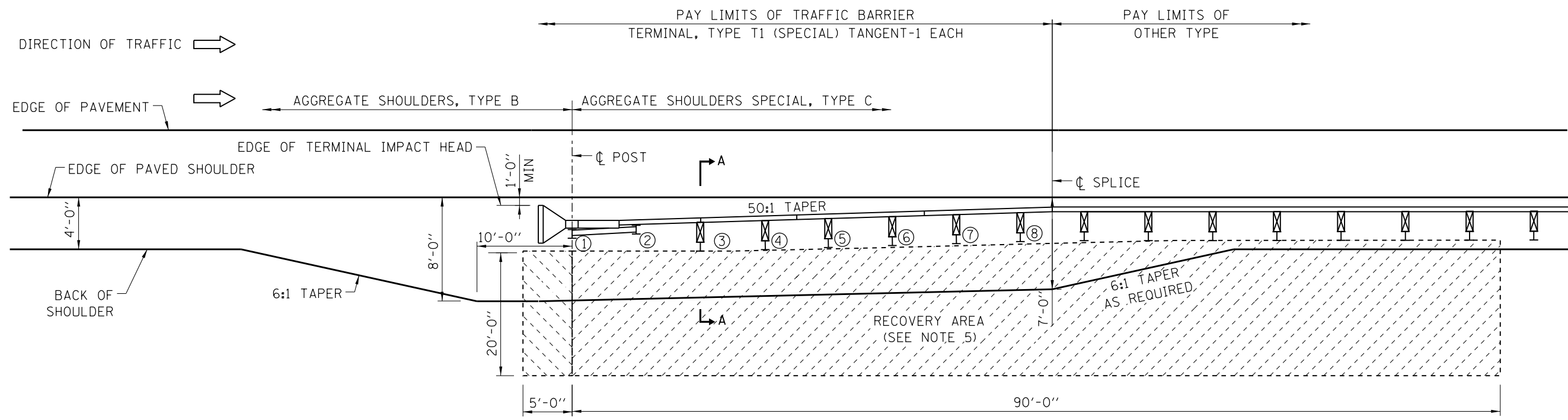
APPROVED: *Paul Kovacs* DATE 2-7-2012
 CHIEF ENGINEERING OFFICER

DATE	REVISIONS
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
3-01-2019	REVISED TO CONSTANT SLOPE ADDED TIE BARS

Illinois Tollway

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

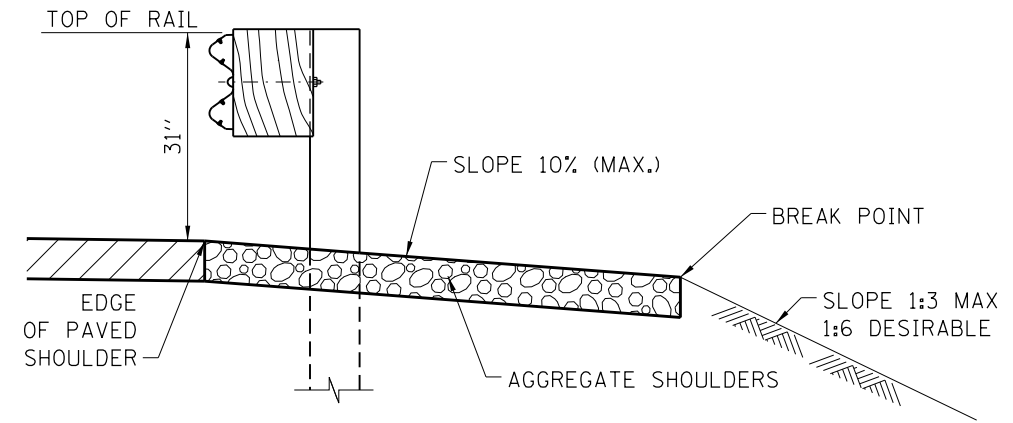
STANDARD C5-06



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

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 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.



SECTION A-A

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

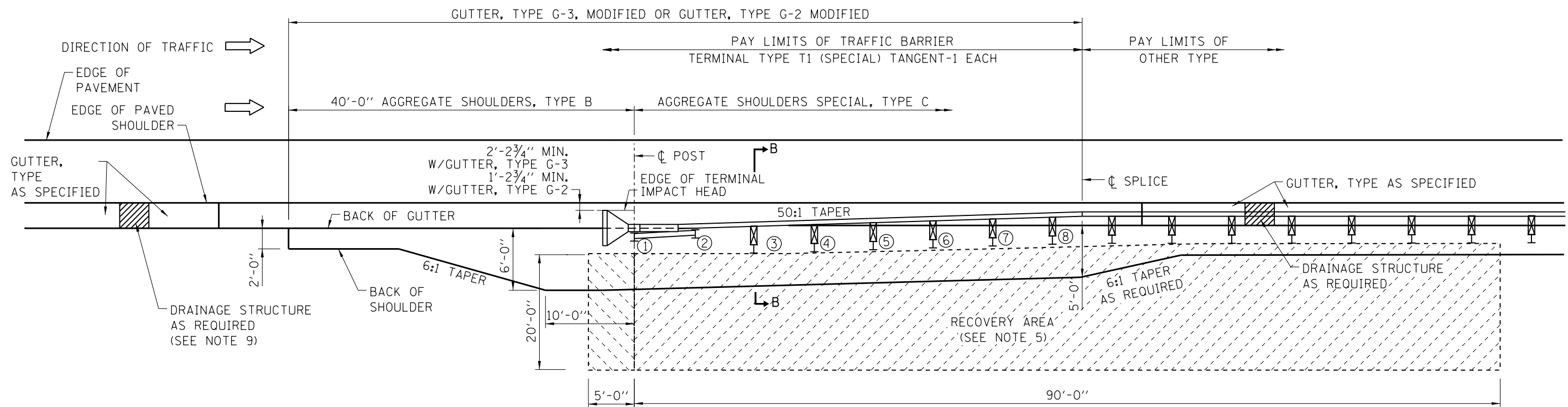
DATE	REVISIONS
03-31-14	REVISED RECOVERY AREA DIMENSION
3-11-2015	REVISED NOTES
3-31-2016	COMBINED G-3 & G-2
3-31-2017	REVISED NOTES
3-01-2019	REVISED NOTES FOR MASH

SHEET 1 OF 2

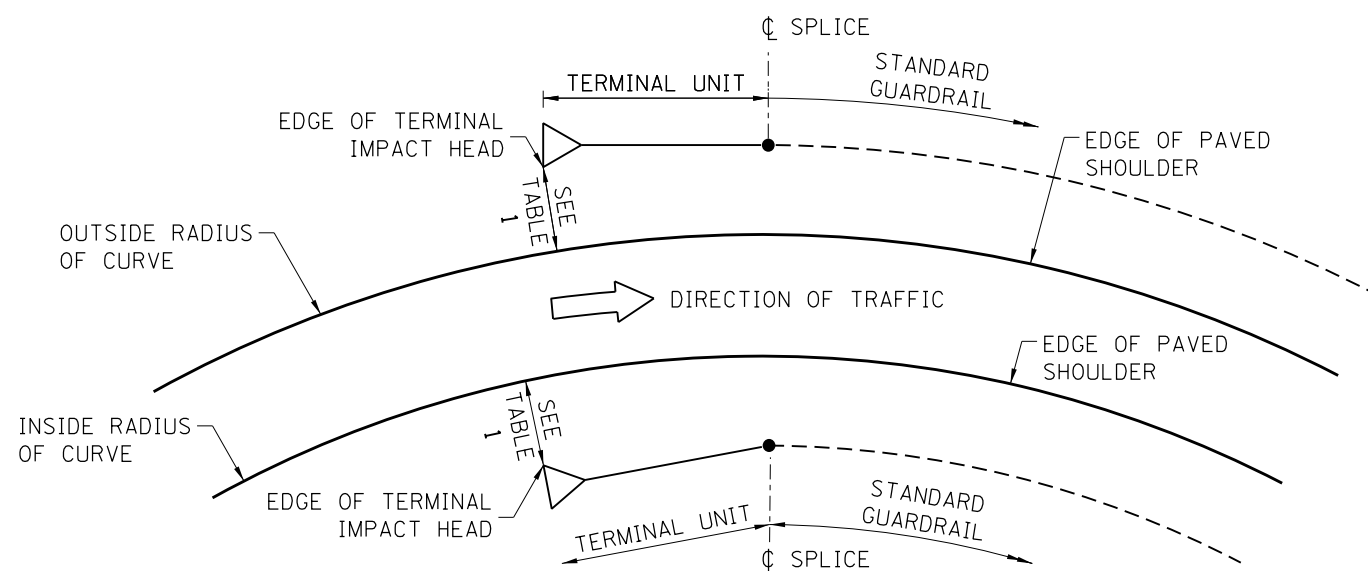


SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT

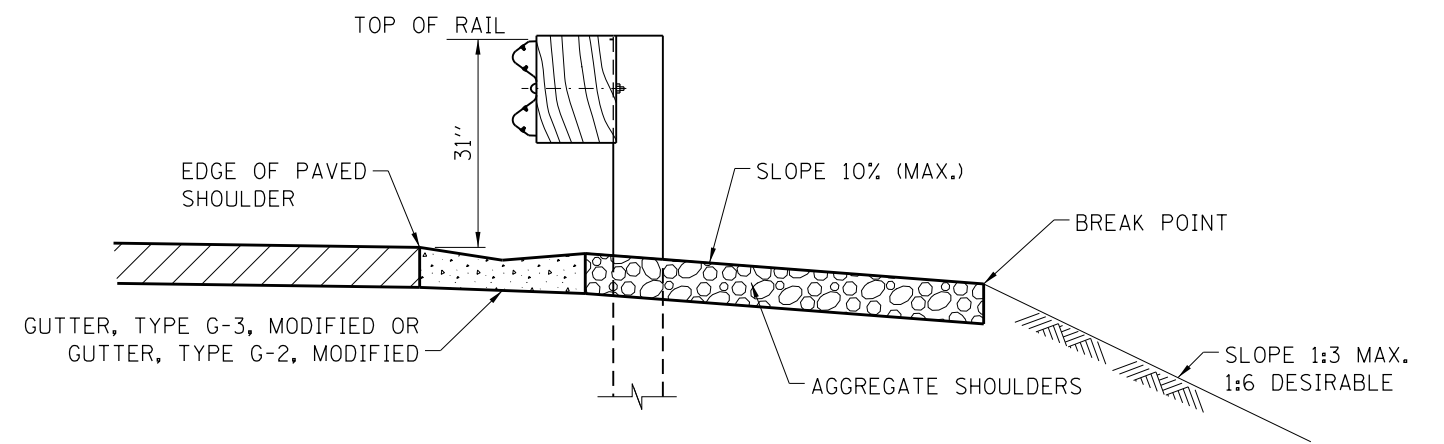
STANDARD C6-10



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'-2 3/4"	1'-2 3/4" MIN. *
GUTTER, TYPE G-3	2'-2 3/4"	2'-2 3/4" MIN. *

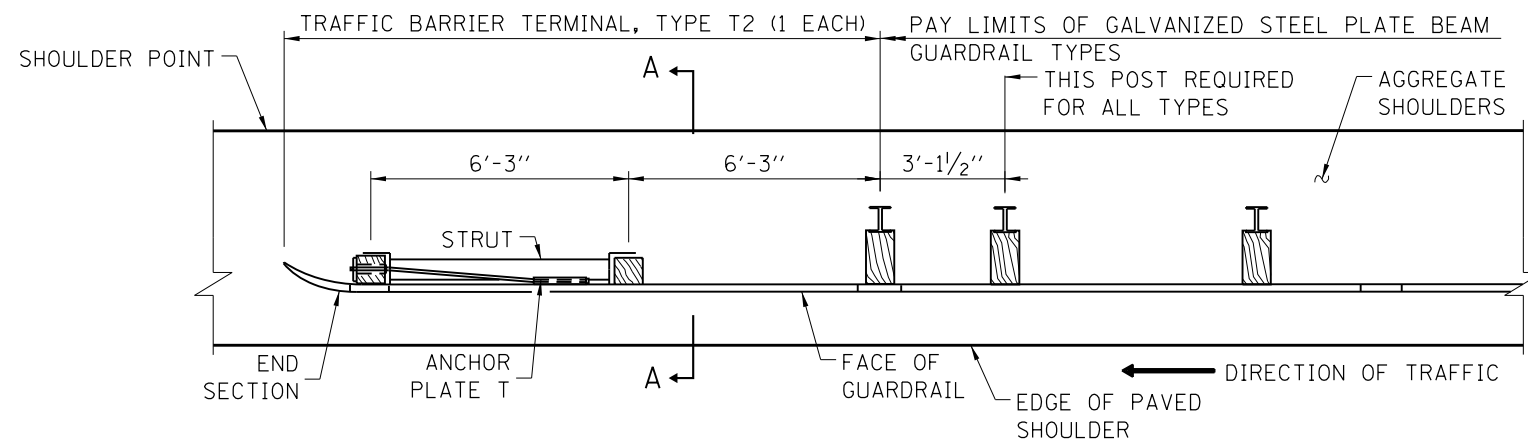
(*) OFFSET DISTANCE WILL VARY BASED ON RADIUS OF HORIZONTAL CURVE AND THE TERMINAL BEING INSTALLED IN A STRAIGHT LINE.

NOTES:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

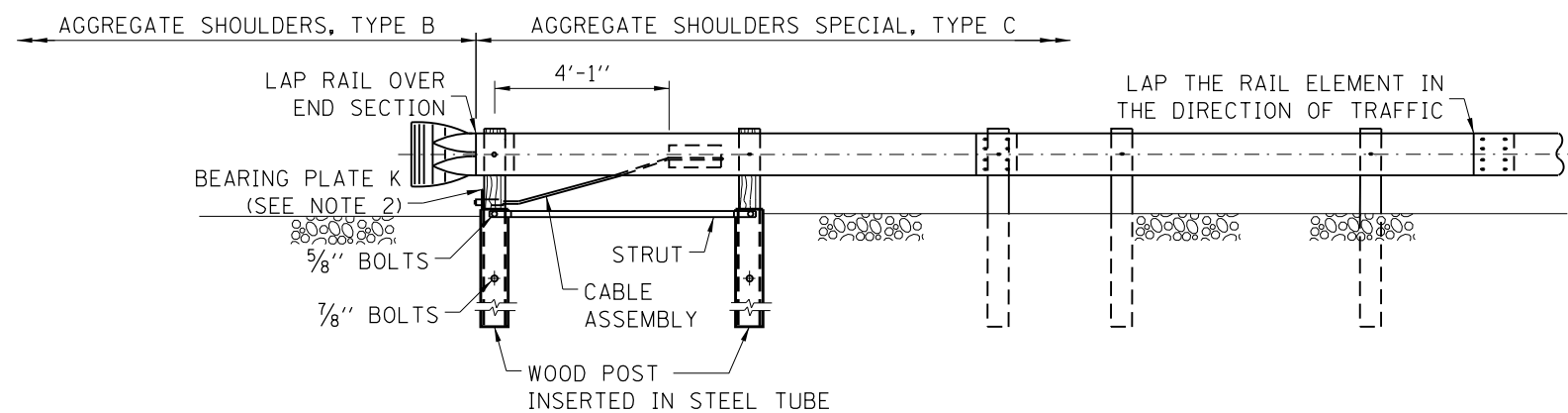
APPROVED: *Paul Kovacs*
CHIEF ENGINEERING OFFICER DATE 7-1-2009



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

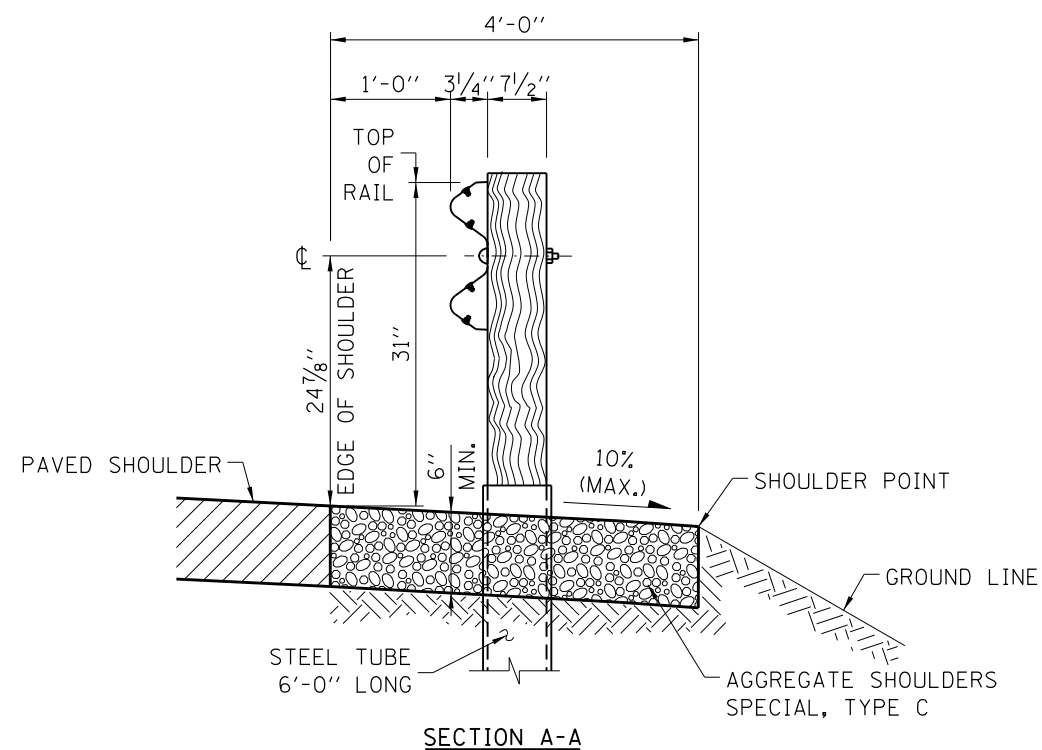


PLAN



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.

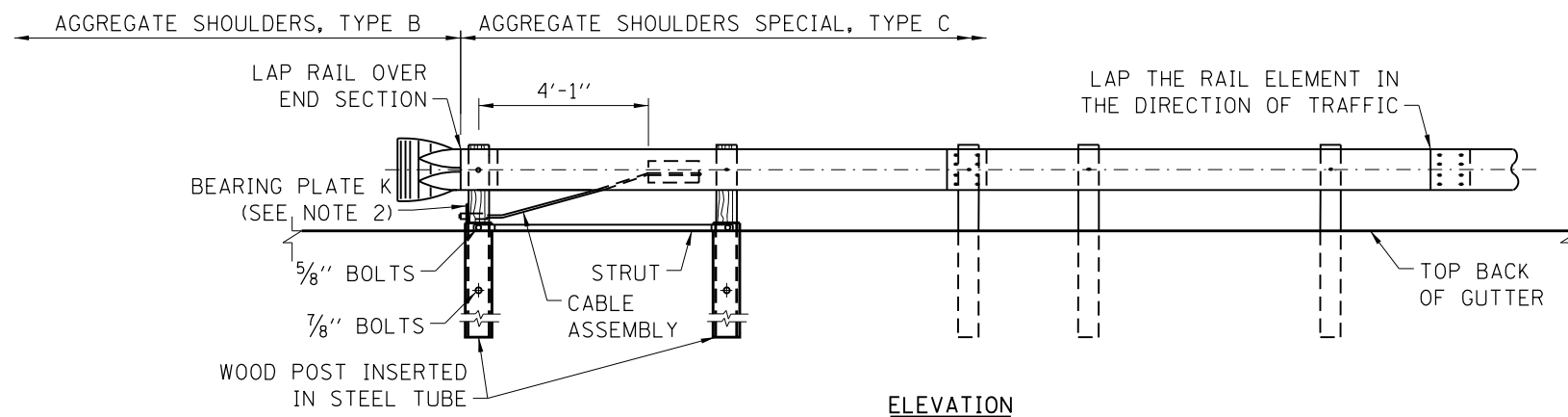
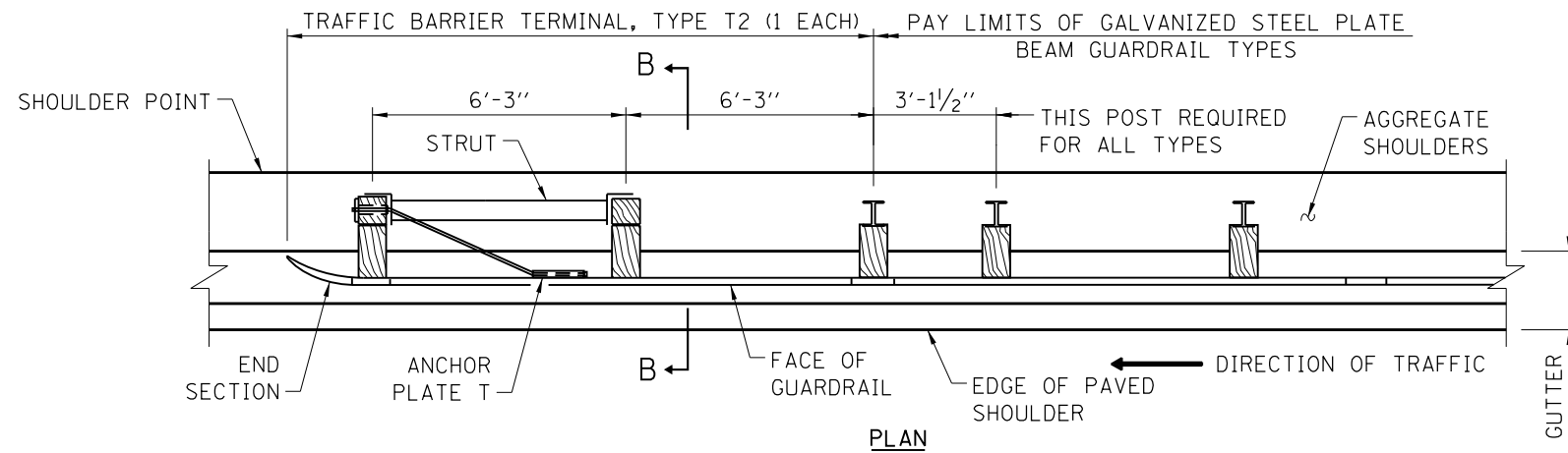


TRAFFIC BARRIER TERMINAL, TYPE T2

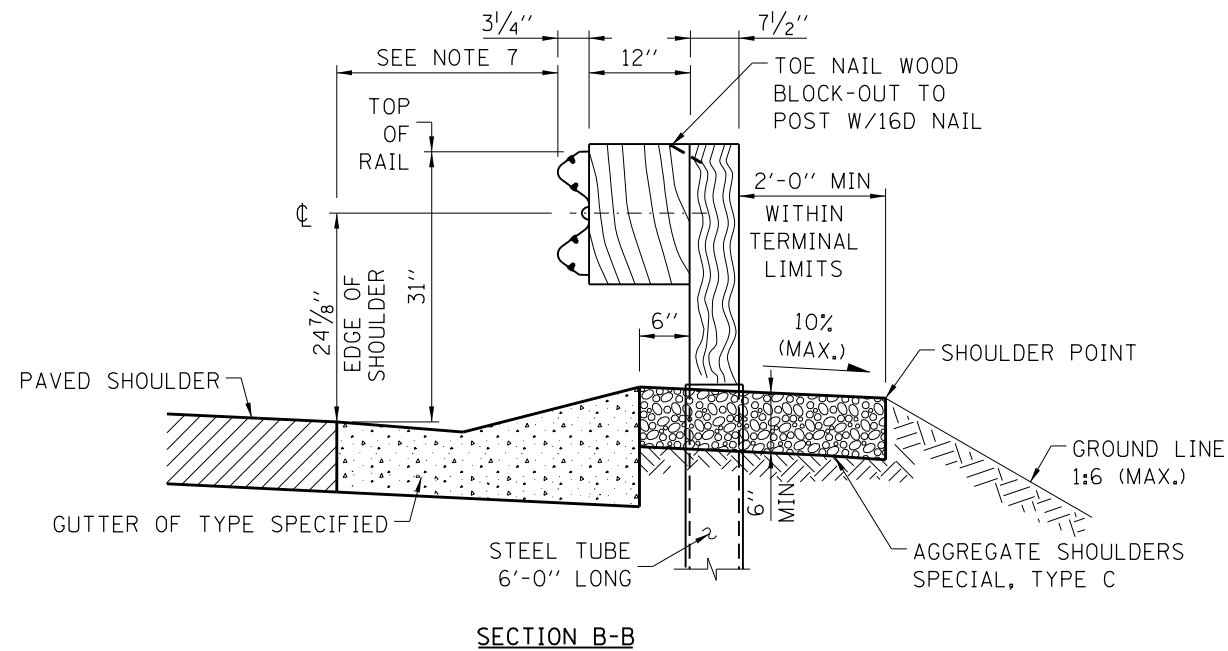
STANDARD C7-08

DATE	REVISIONS
2-07-2012	REVISED DIMENSIONS OF BEARING PLATE, POST, CABLE STRUT AND TUBE AND NOTES
11-01-2012	MODIFIED AGGREGATE SHOULDERS, 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 2%

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



TRAFFIC BARRIER TERMINAL, TYPE T2-WITH GUTTER



SECTION B-B

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

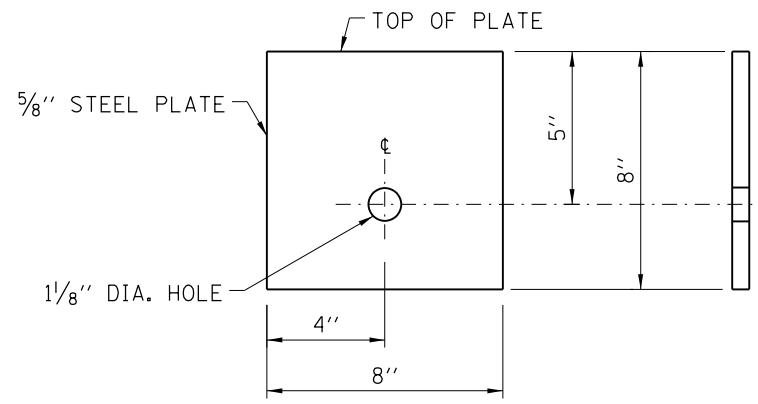
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

SHEET 2 OF 3

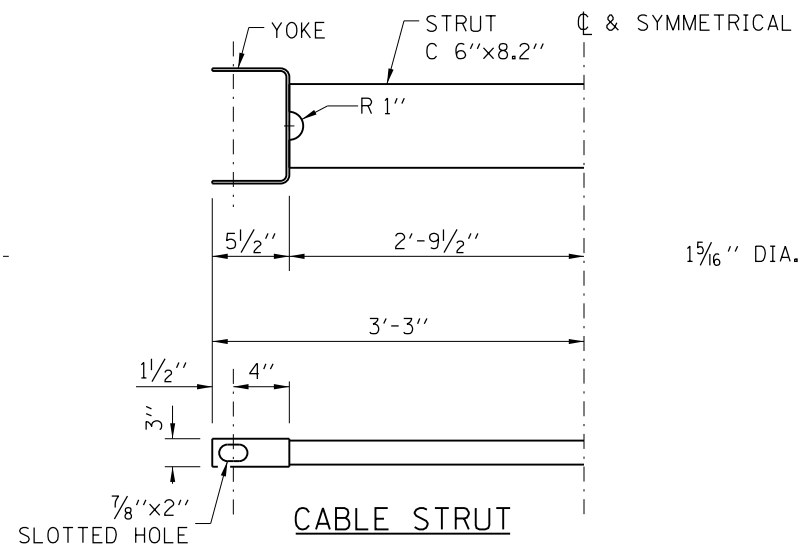


TRAFFIC BARRIER TERMINAL, TYPE T2

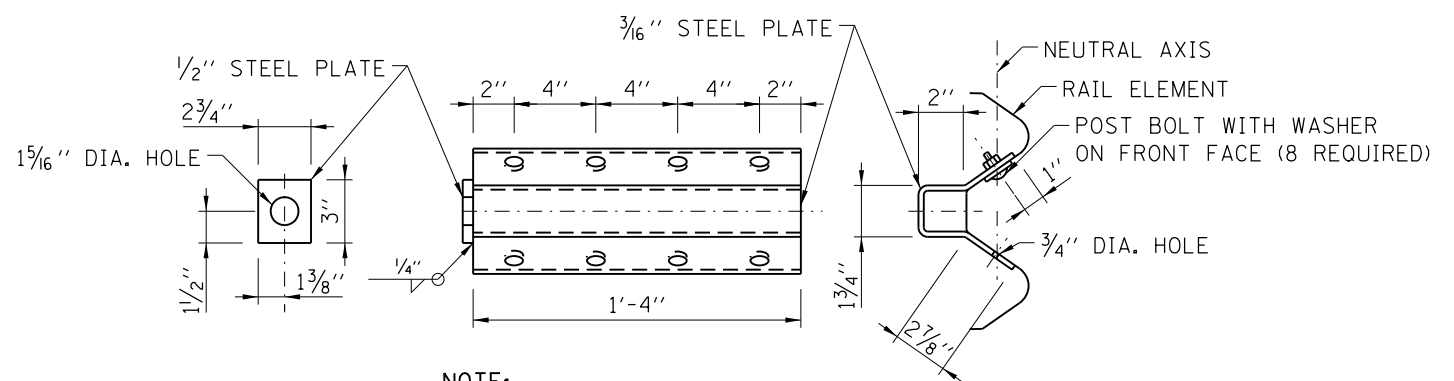
STANDARD C7-08



BEARING PLATE K

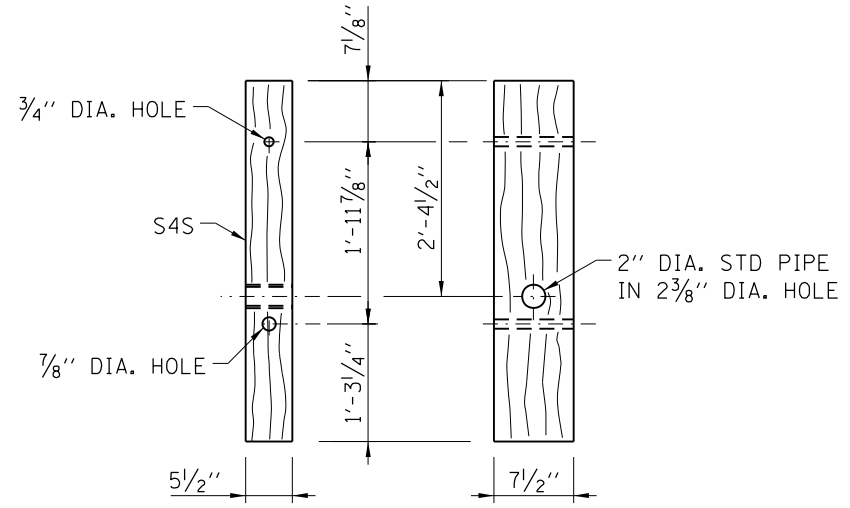


CABLE STRUT

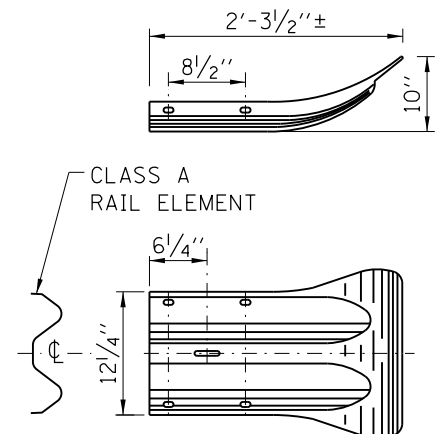


NOTE:
ANCHOR PLATE T SHALL BE USED TO ATTACH CABLE ASSEMBLY TO GUARDRAIL WHEN REQUIRED ON TRAFFIC BARRIER TERMINALS.

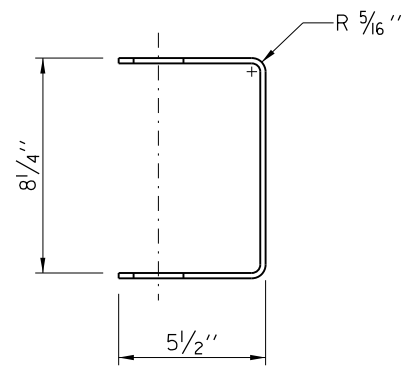
ANCHOR PLATE T DETAILS



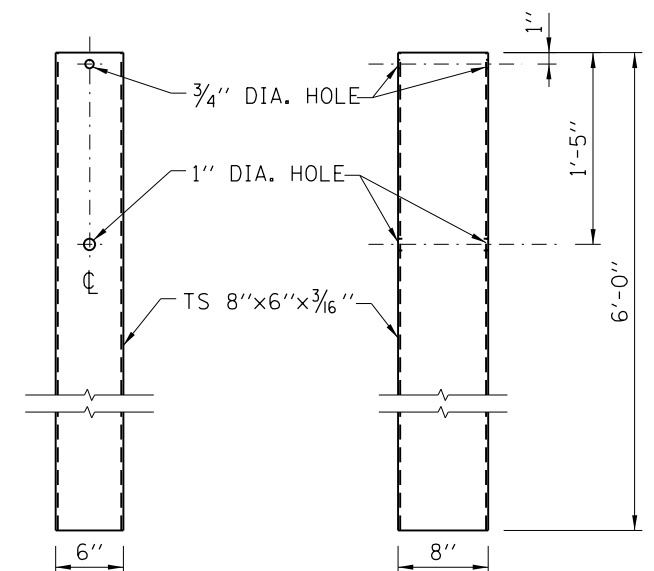
WOOD POST



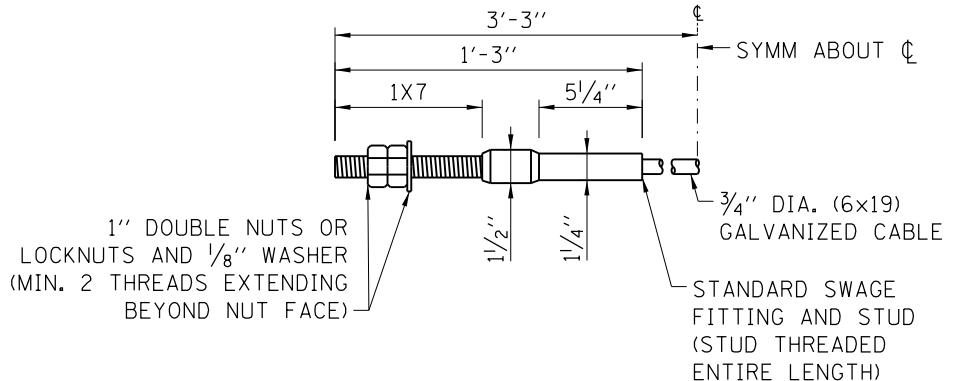
END SECTION



YOKE
3/16 inch THICK STEEL



STEEL TUBE



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

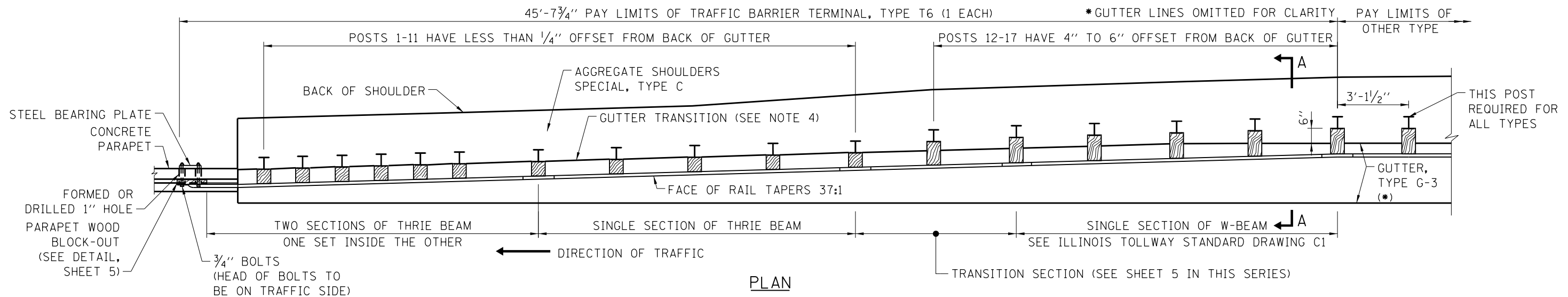
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

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

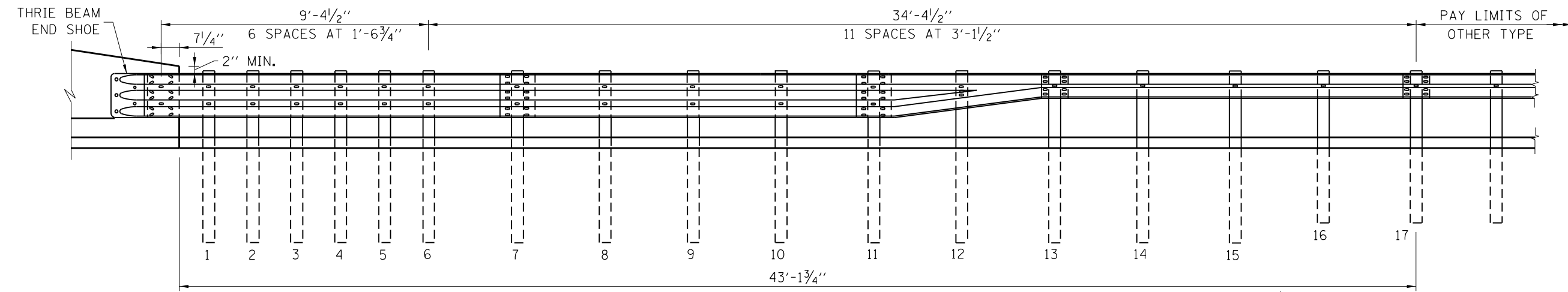
SHEET 3 OF 3

TRAFFIC BARRIER TERMINAL, TYPE T2

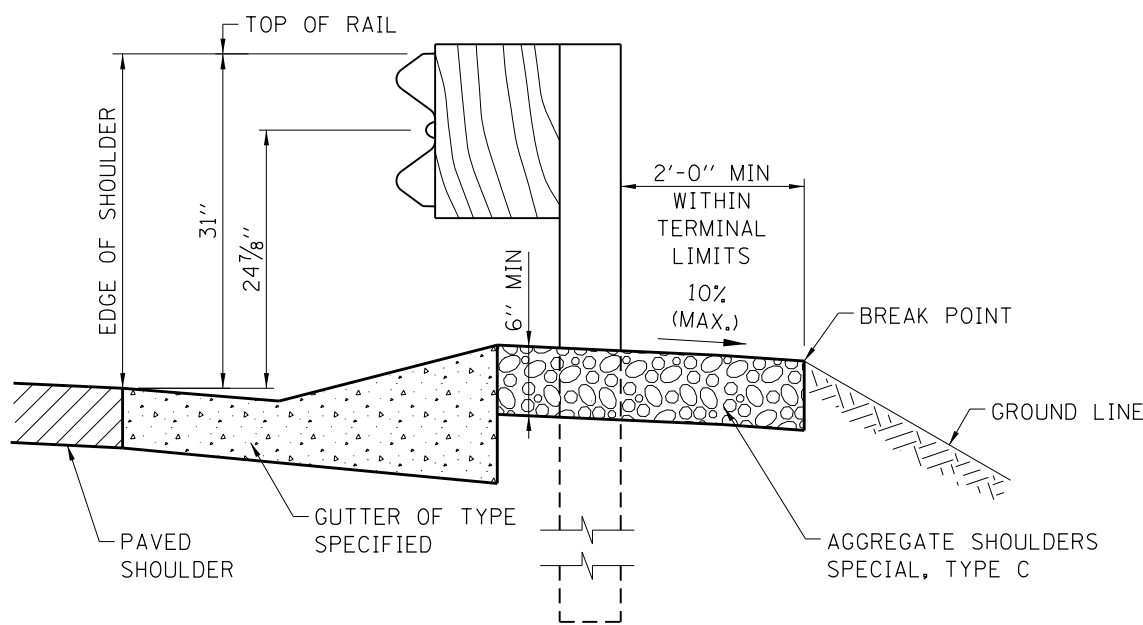
STANDARD C7-08



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 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.

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

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

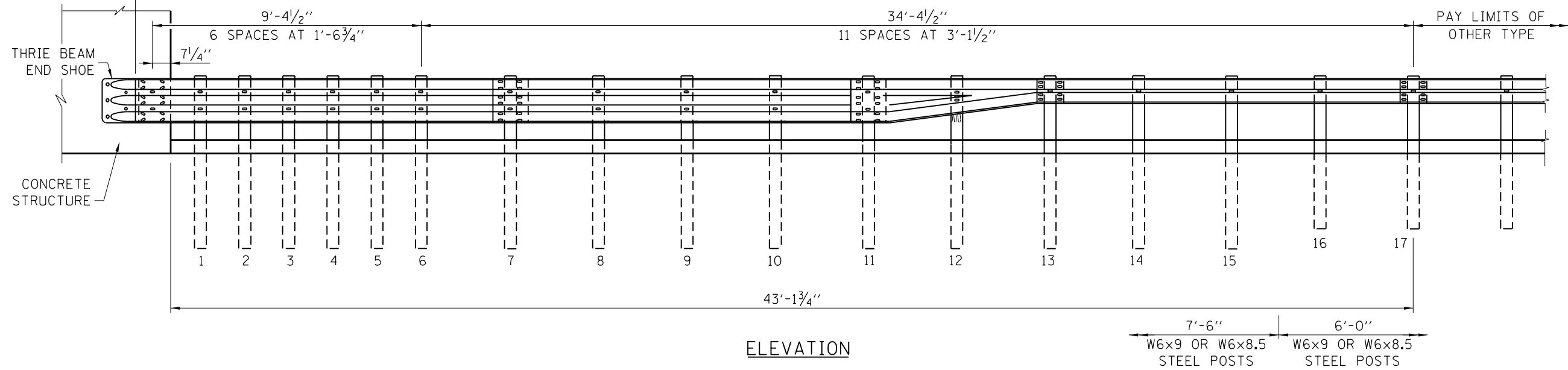
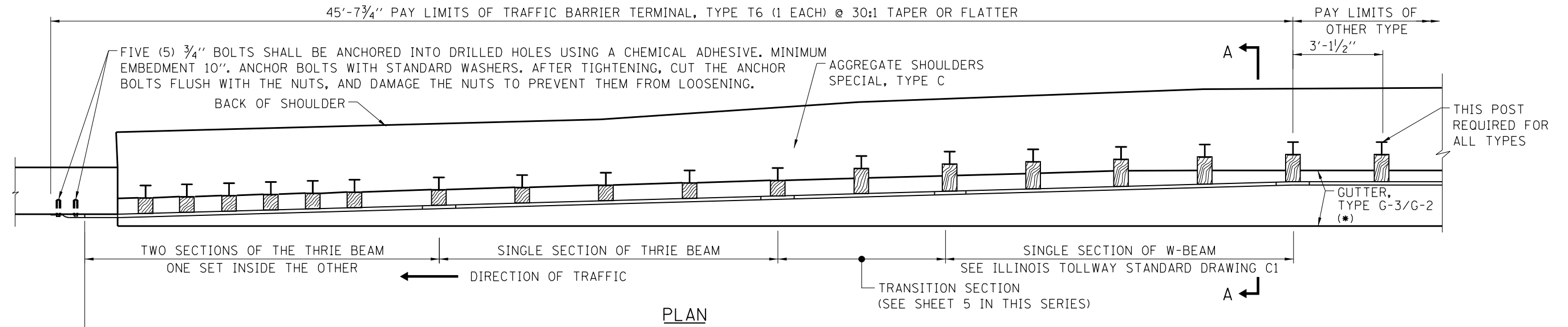
DATE	REVISIONS
11-01-2012	MODIFIED AGGREGATE SHOULDERS, REVISED NOTES.
3-31-2014	REVISED NOTES.
3-11-2015	REVISED NOTES AND ADDED DETAIL.
3-31-2016	REVISED SHOULDER SECTION
3-31-2017	ADDED DRAINAGE STRUCTURE NOTE
3-01-2019	UPDATED NOTES FOR CONSTANT-SLOPE CONCRETE BARRIER

SHEET 1 OF 5

**TRAFFIC BARRIER TERMINAL,
TYPE T6**

STANDARD C9-09

*GUTTER LINES OMITTED FOR CLARITY



FOR OTHER CONCRETE STRUCTURE (VERTICAL FACE)
WITH GUTTER

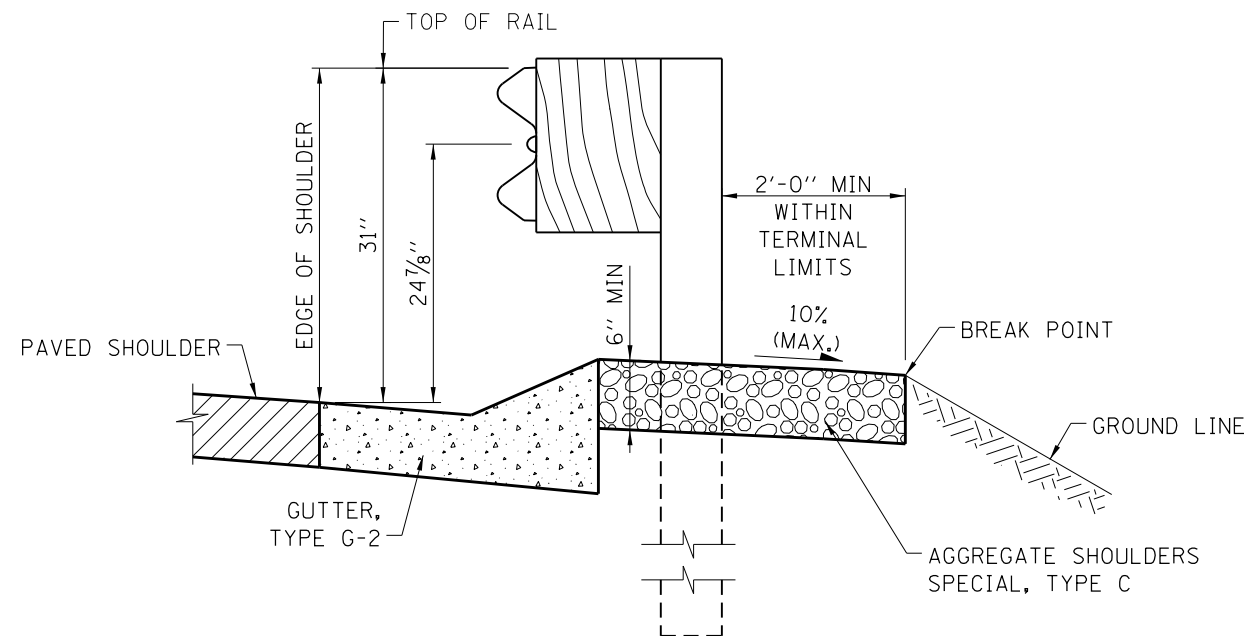
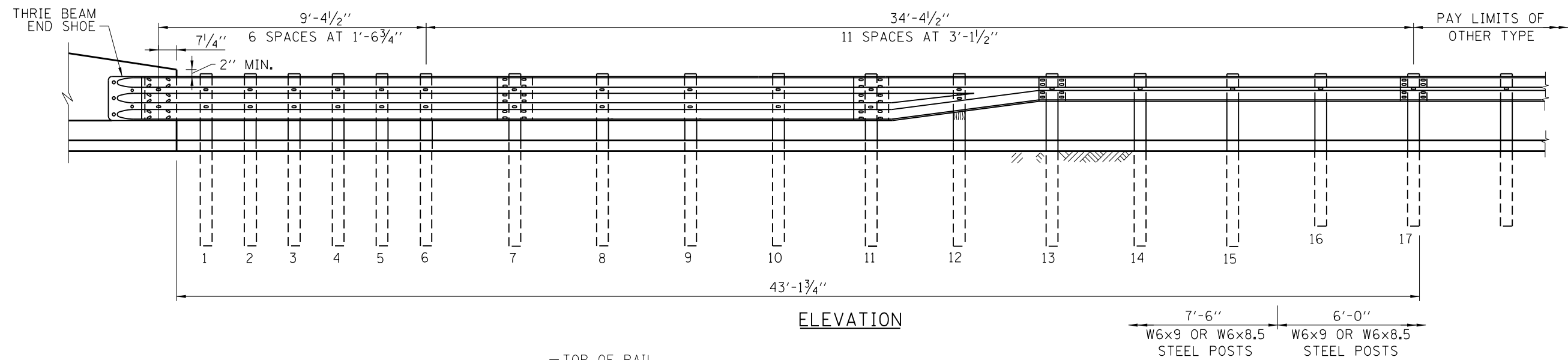
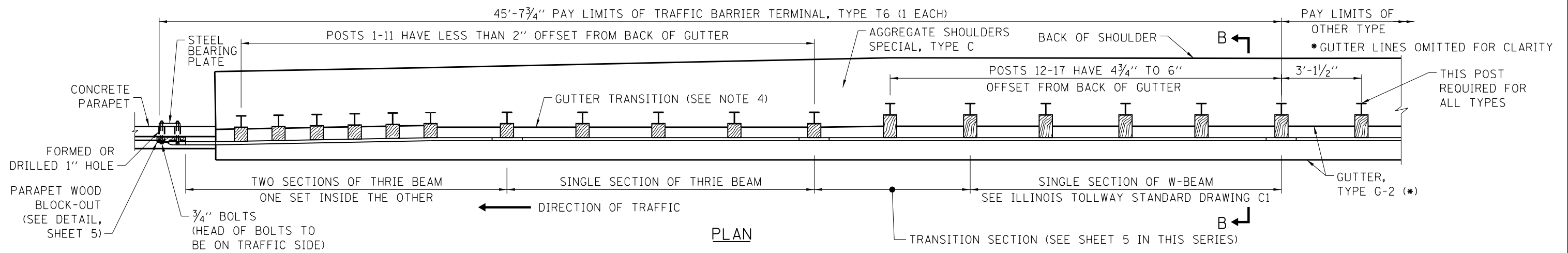


TRAFFIC BARRIER TERMINAL,
TYPE T6

STANDARD C9-09

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

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

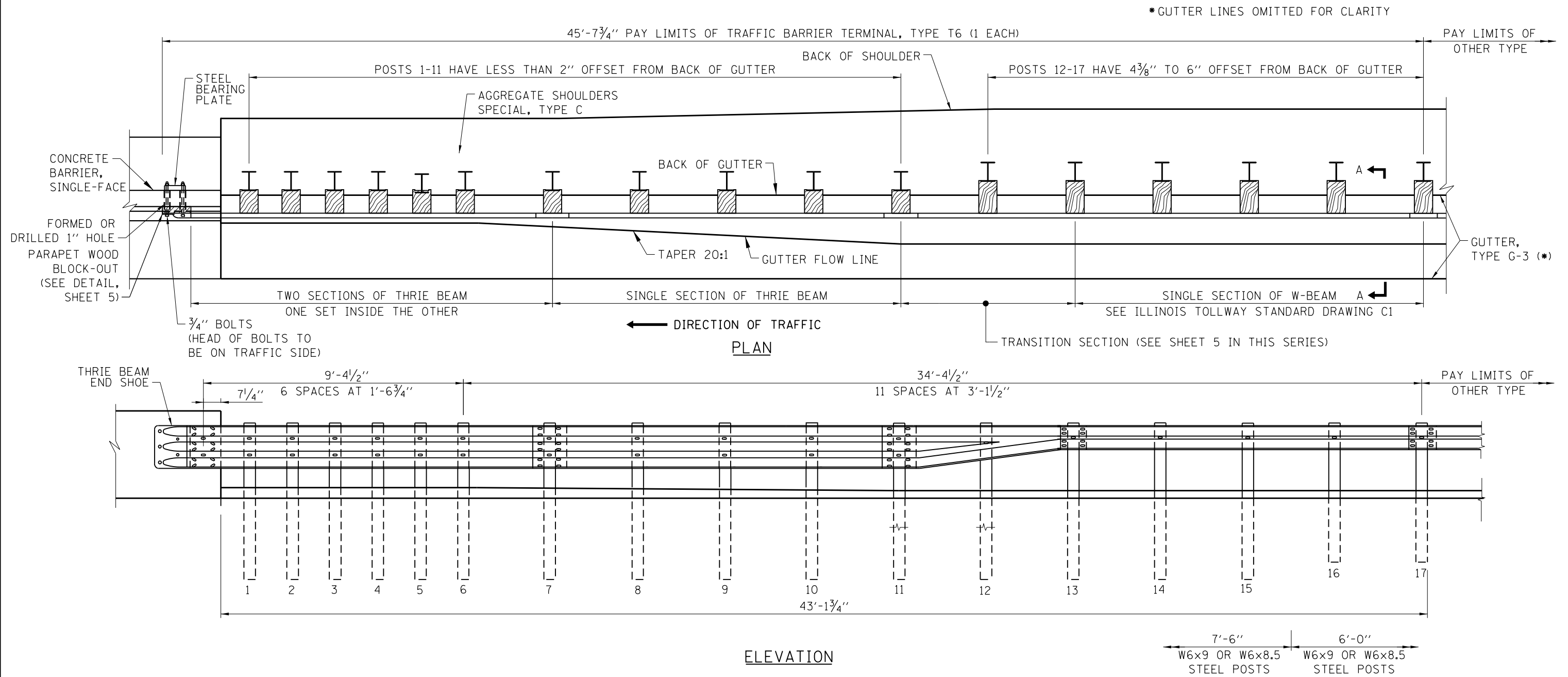


SECTION B-B
WITH GUTTER, TYPE G-2

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

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.





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

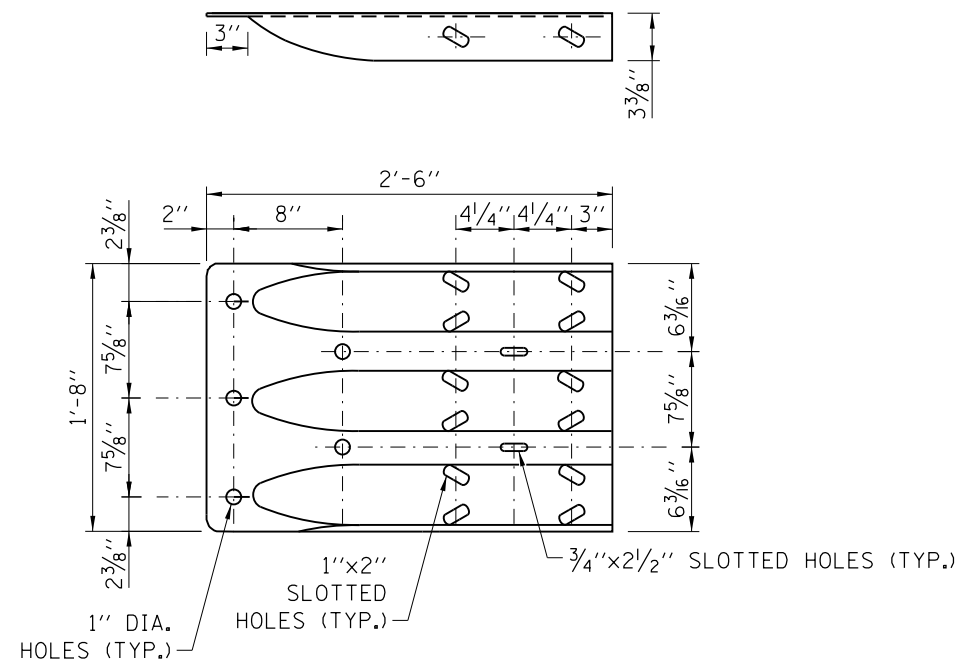


TRAFFIC BARRIER TERMINAL, TYPE T6

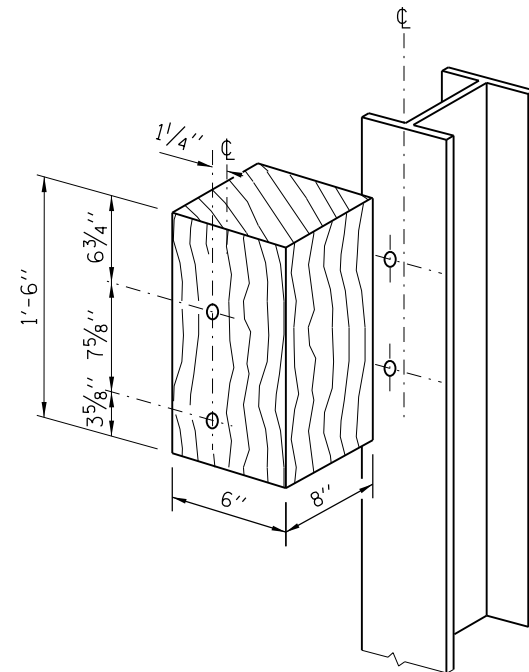
STANDARD C9-09

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

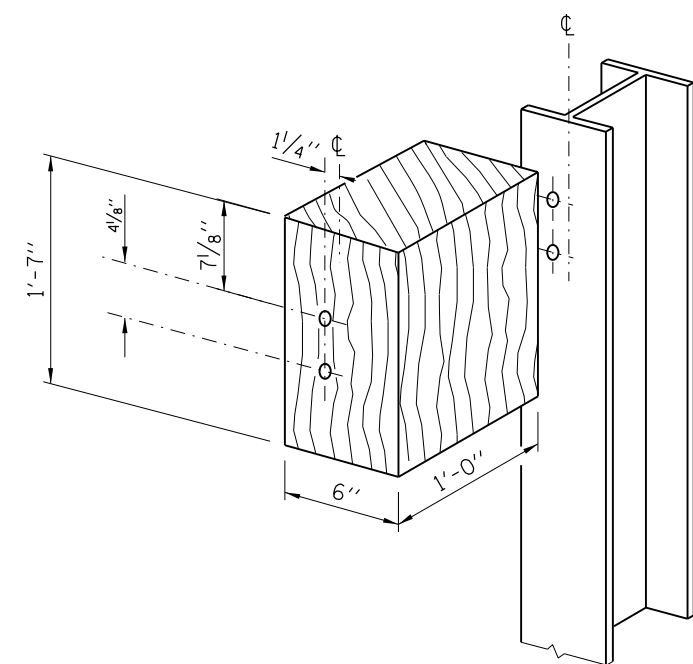
NOTE:
SEE SHEET 1 OF THIS SERIES FOR GUTTER TRANSITION NOTES AND SECTION A-A.



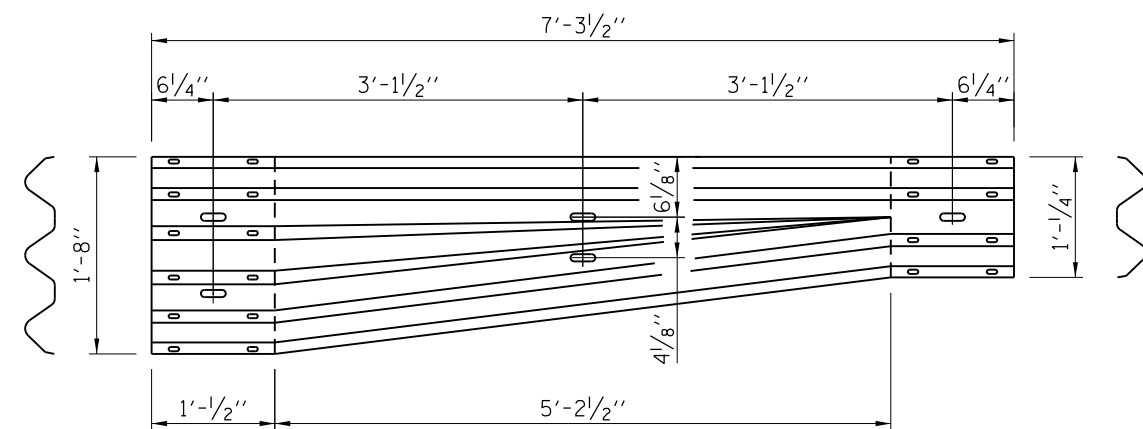
THRIE BEAM END SHOE DETAIL



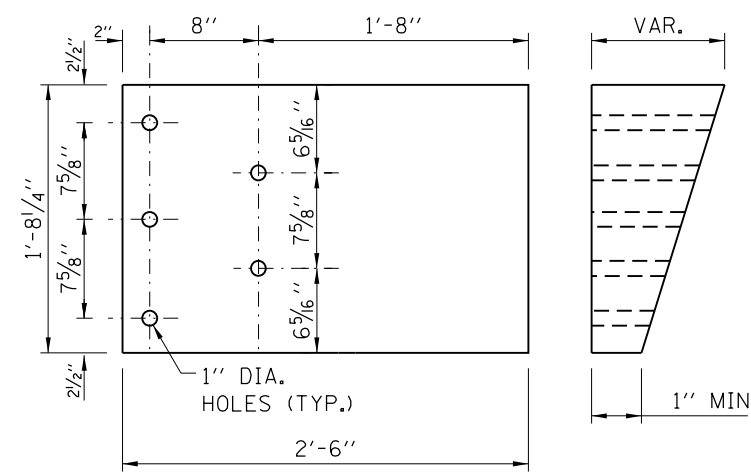
POSTS 1-11 WOOD BLOCK-OUT DETAIL



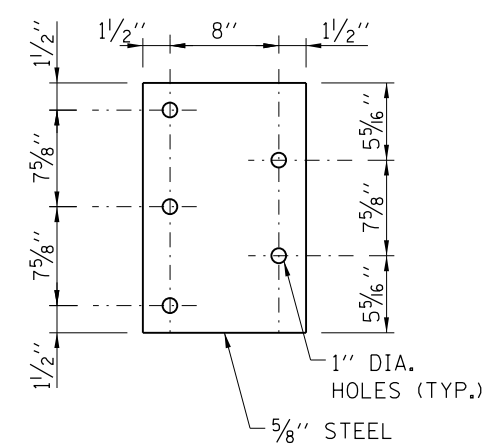
POST 12 WOOD BLOCK-OUT DETAIL
(SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR POST 13-17 BLOCKOUTS)



TRANSITION SECTION
(10 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.)

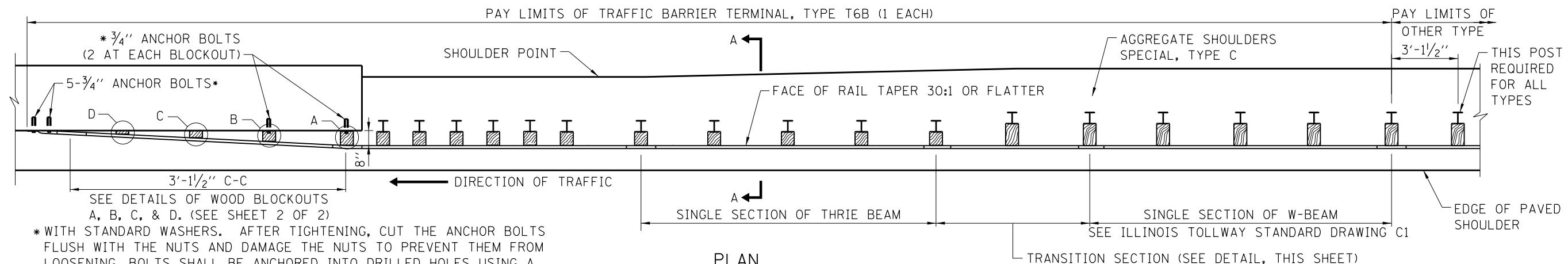
APPROVED *Paul Kovacs*
CHIEF ENGINEERING OFFICER DATE 7-1-2009

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

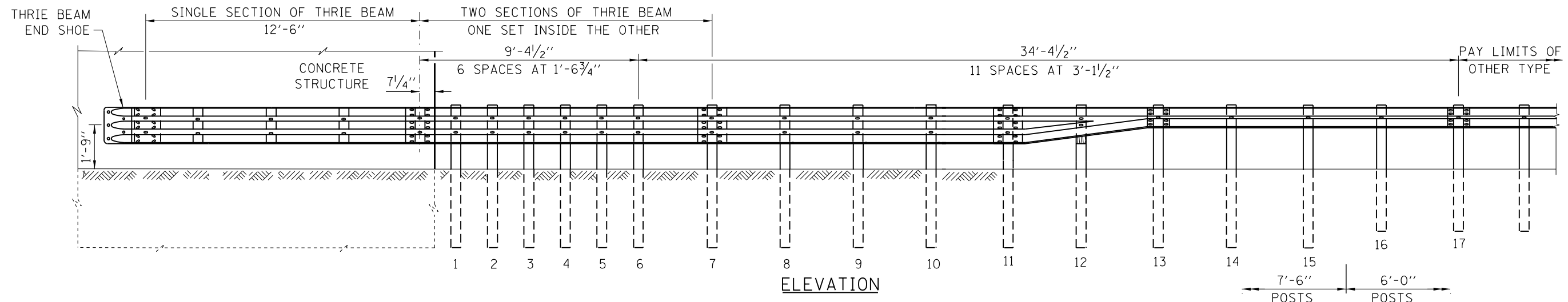


TRAFFIC BARRIER TERMINAL,
TYPE T6

STANDARD C9-09

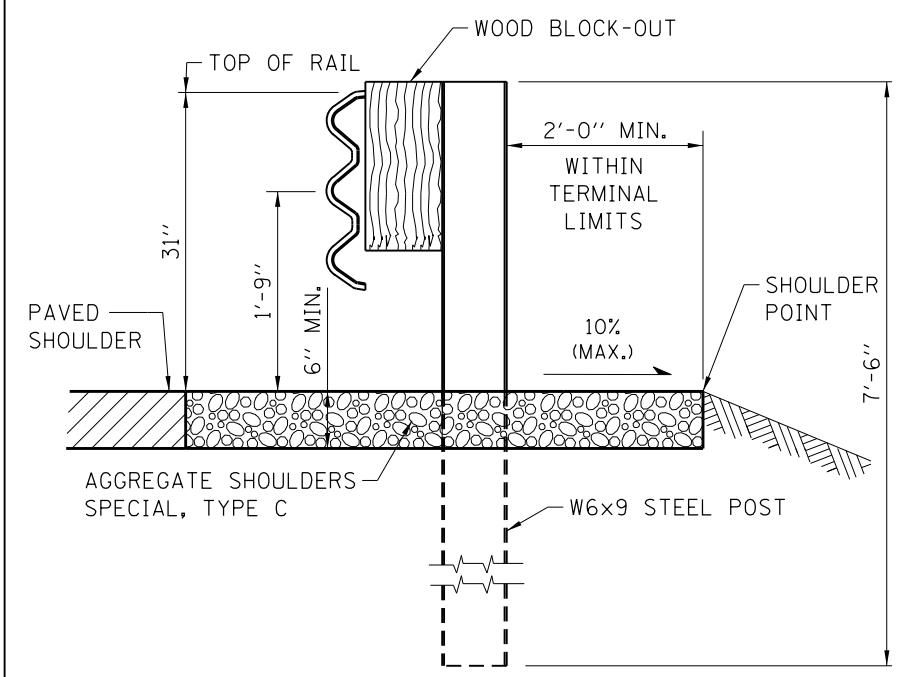


* WITH STANDARD WASHERS. AFTER TIGHTENING, CUT THE ANCHOR BOLTS FLUSH WITH THE NUTS AND DAMAGE THE NUTS TO PREVENT THEM FROM LOOSENING. BOLTS SHALL BE ANCHORED INTO DRILLED HOLES USING A CHEMICAL ADHESIVE RESIN SYSTEM. MINIMUM EMBEDMENT 10\".

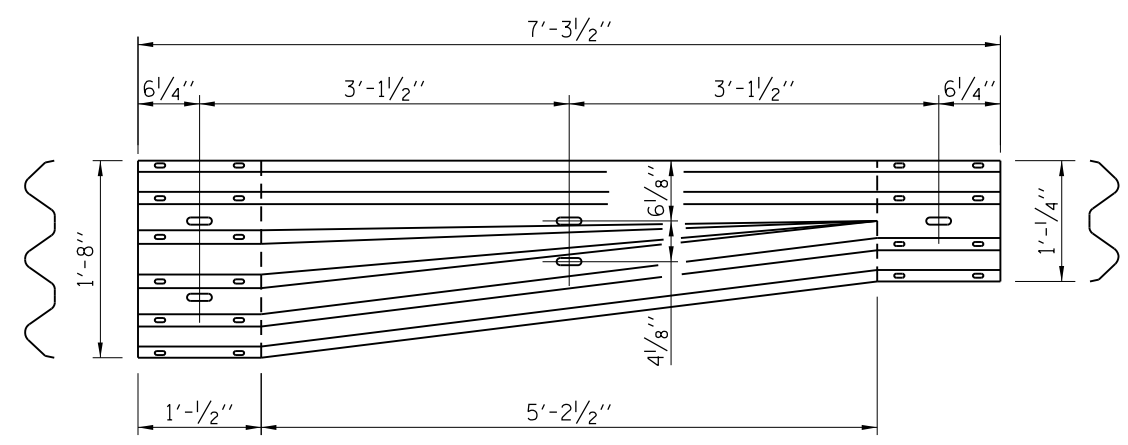


NOTES:

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\".



SECTION A-A



TRANSITION SECTION
(10 GAUGE RAIL ELEMENT)

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

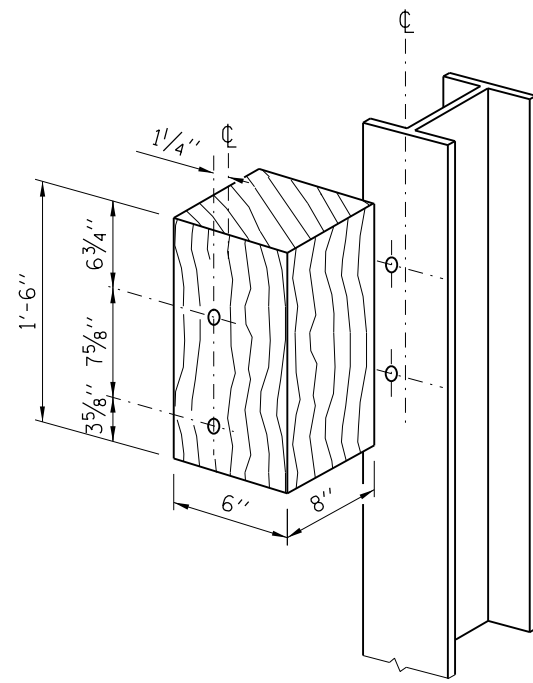
DATE	REVISIONS
2-07-2012	REVISED WOOD BLOCK-OUT DIMENSION ADHESIVE AND REVISED NOTES
11-01-2012	MODIFIED AGGREGATE SHOULDERS, REVISED NOTES
3-31-2014	REVISED WOOD BLOCKS AND NOTES
3-11-2015	REVISED NOTES
3-31-2016	REVISED SECTION A-A SHOULDER
3-31-2017	REVISED SHOULDER SLOPE LABEL

SHEET 1 OF 2

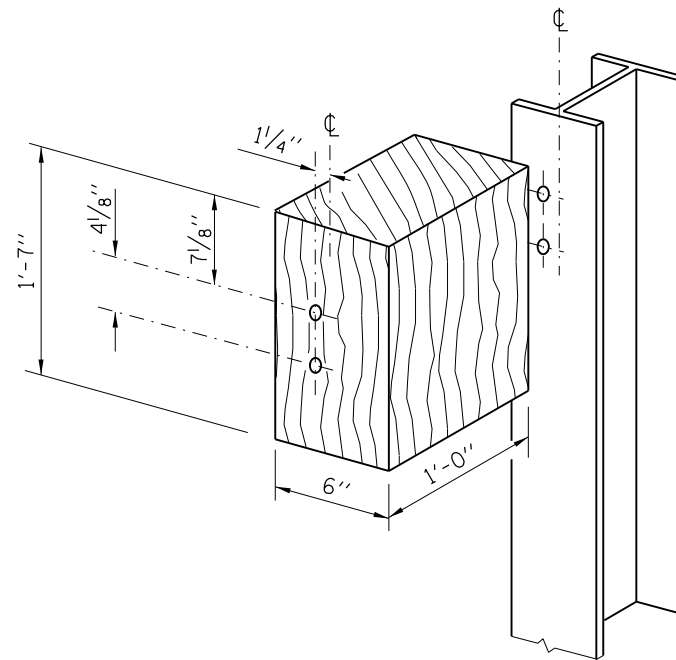


**TRAFFIC BARRIER
TERMINAL, TYPE T6B**

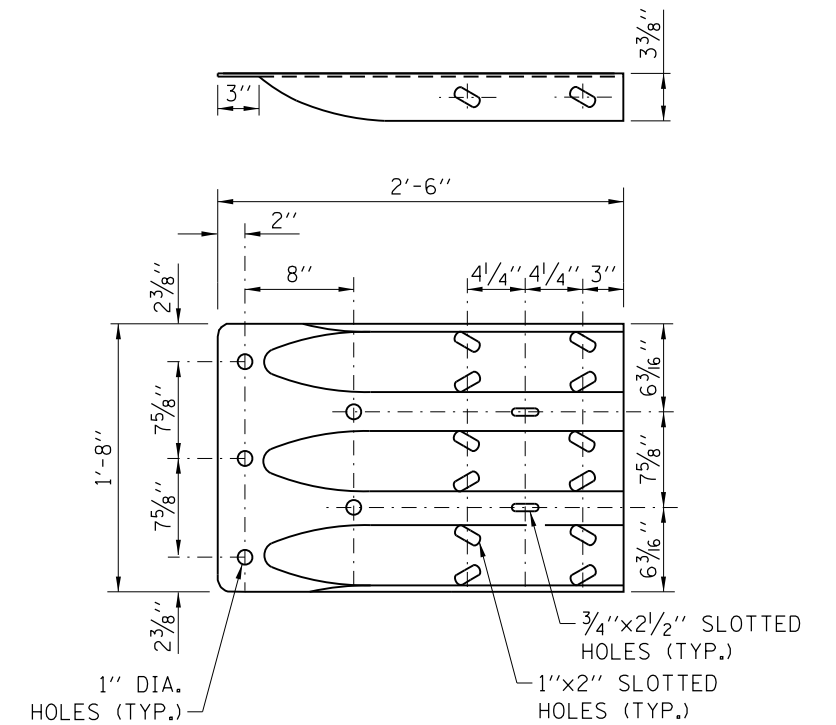
STANDARD C10-08



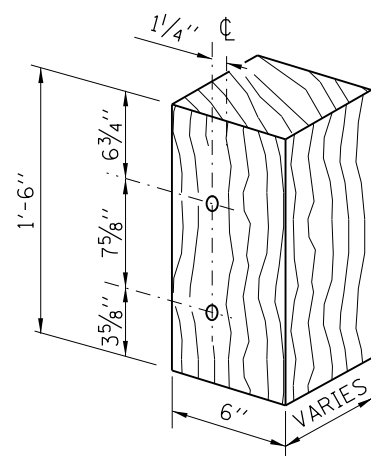
POSTS 1-11 WOOD BLOCK-OUT DETAIL



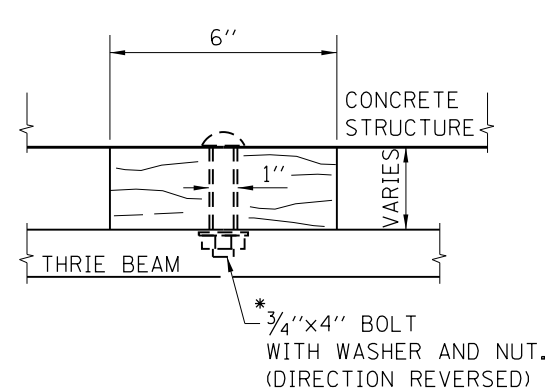
POST 12 WOOD BLOCK-OUT DETAIL
(SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR POST 13-17 BLOCKOUTS)



THRIE BEAM END SHOE DETAIL

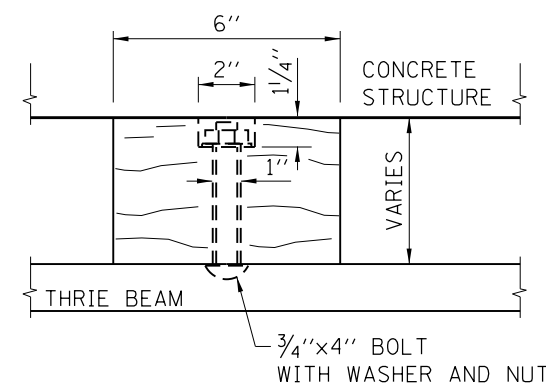


MODIFIED THICKNESS DETAIL
WOOD BLOCK-OUTS A, B, C, & D

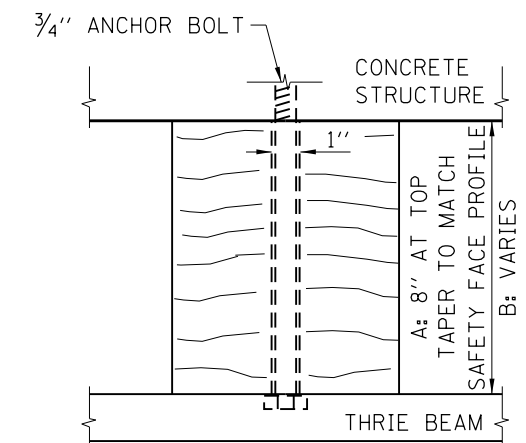


WOOD BLOCK-OUT D

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



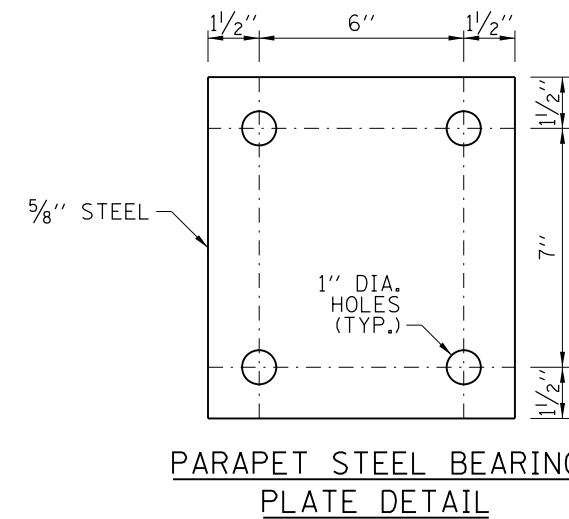
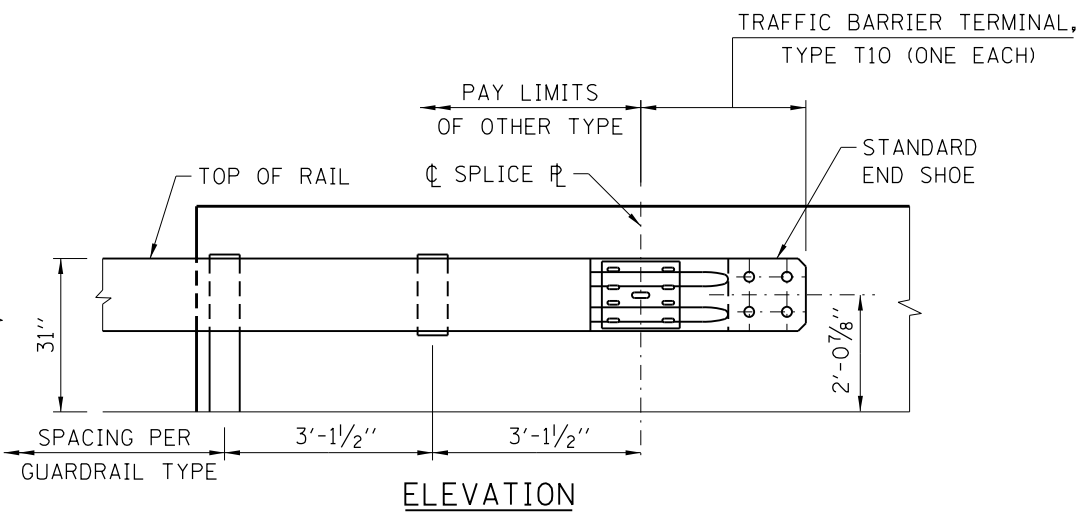
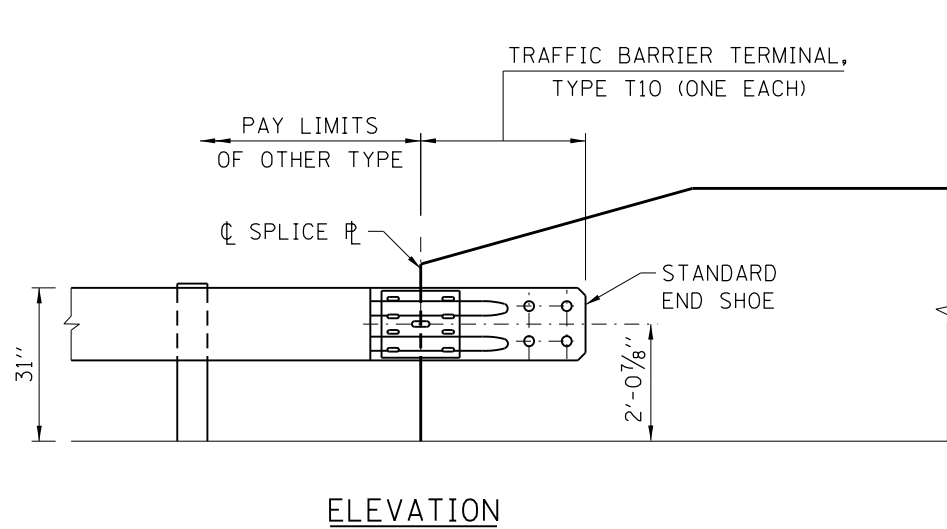
WOOD BLOCK-OUT C



WOOD BLOCK-OUT A & B

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

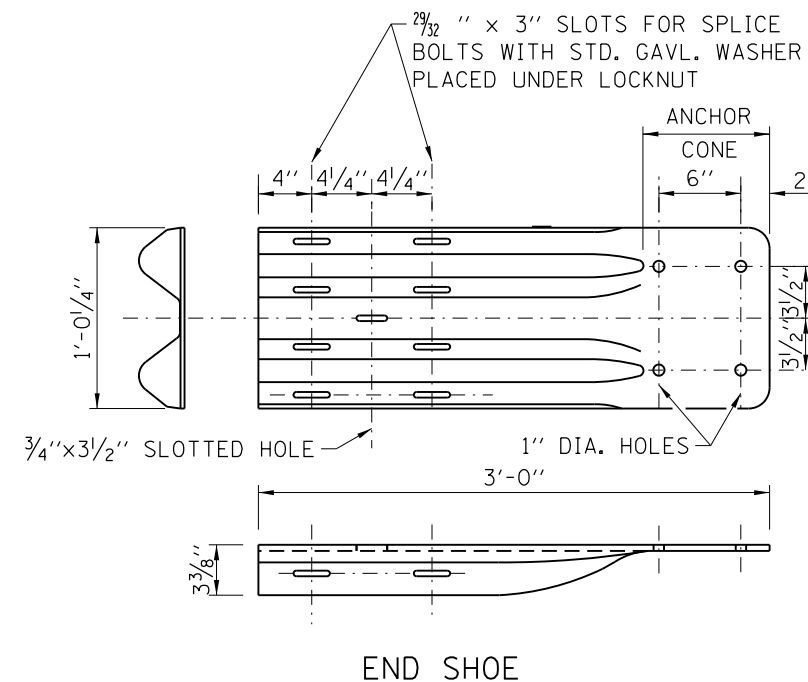
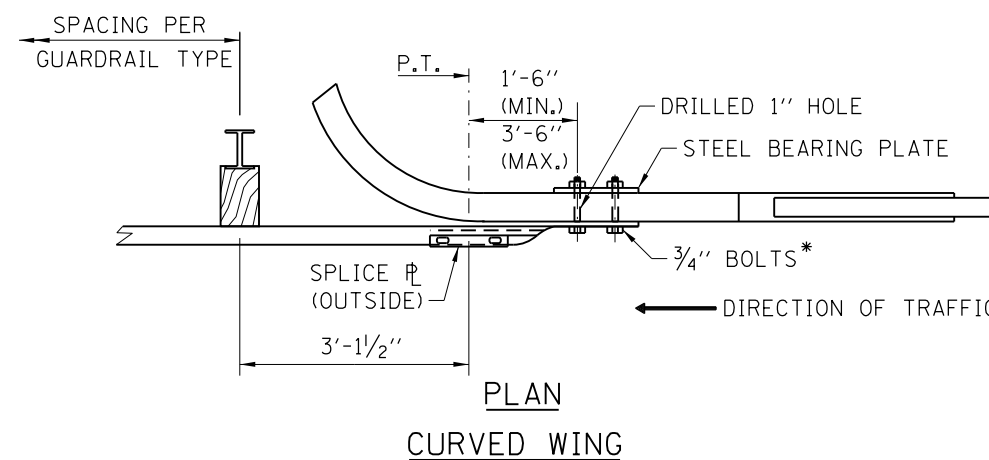
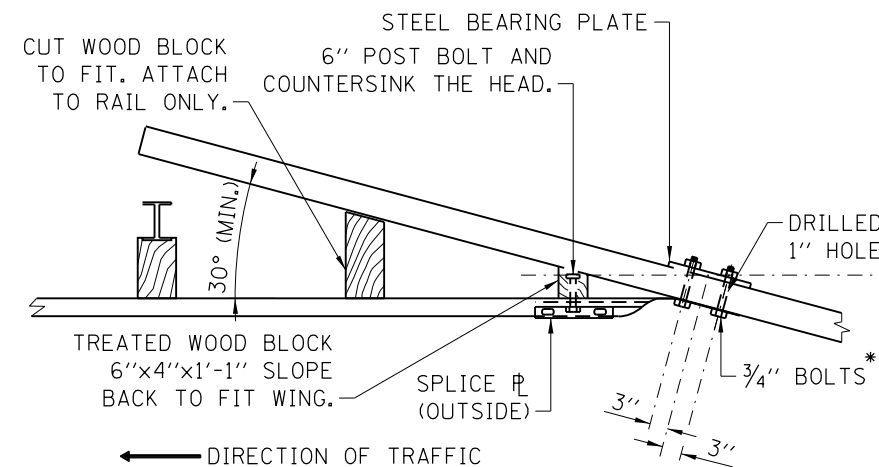
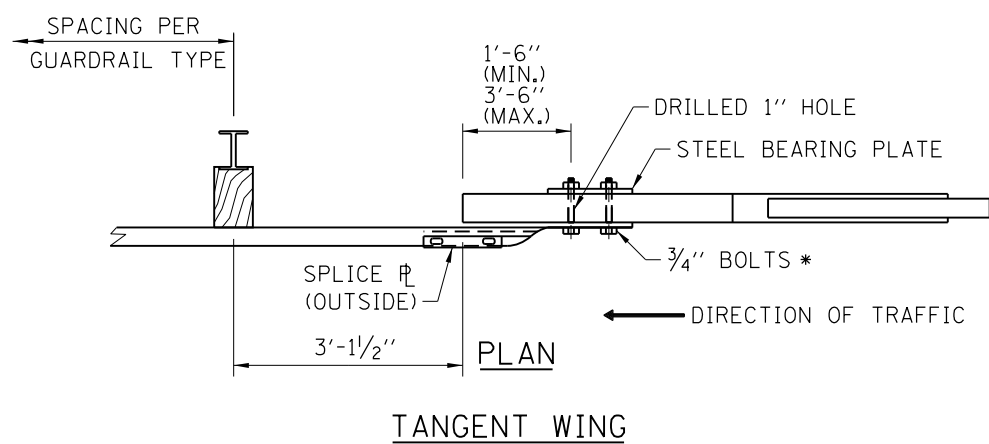
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009



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

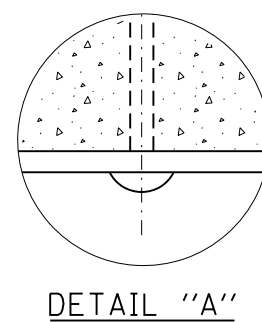
NOTES:

- SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
- 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.
- 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.
- 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.
- TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY'S DETAILS AND SPECIFICATIONS. NO MODIFICATIONS SHALL BE PERMITTED.
- WHEN END SHOE IS ATTACHED TO A BRIDGE PARAPET WHICH HAS AN EXPANSION JOINT, THE BOLTS SHALL BE PROVIDED WITH A LOCKNUT OR DOUBLE NUT AND SHALL BE TIGHTENED ONLY TO A POINT THAT WILL ALLOW GUARDRAIL MOVEMENT.
- THE ANCHOR CONE SHALL BE SET FLUSH WITH THE SURFACE OF THE CONCRETE.
- EXTERNALLY THREADED STUDS PROTRUDING FROM THE SURFACE OF THE CONCRETE SHALL NOT BE PERMITTED.
- 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.



GENERAL NOTE:

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

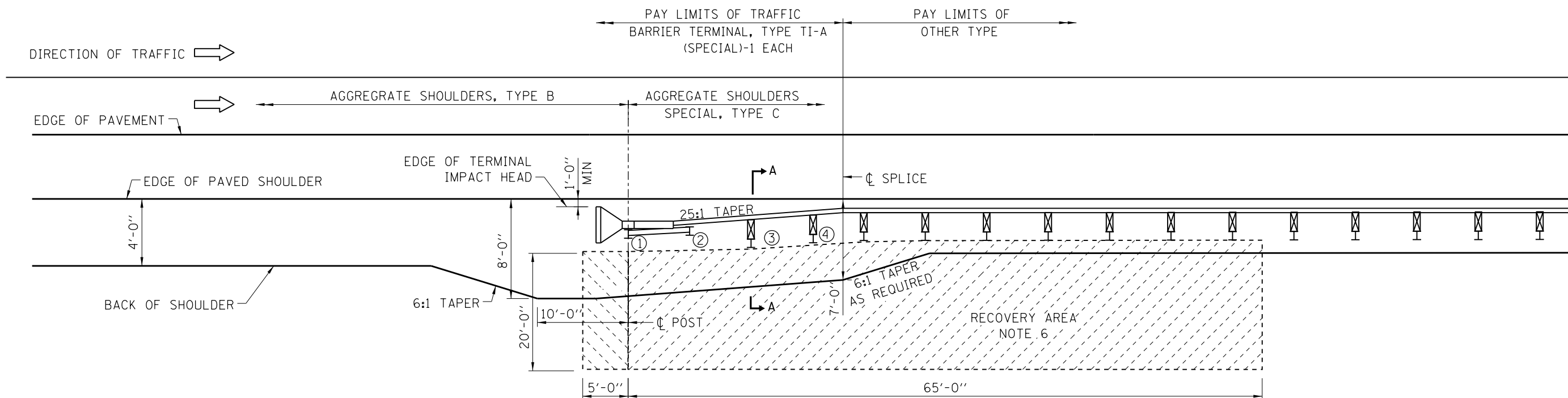


APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009

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

TRAFFIC BARRIER TERMINAL, TYPE T10

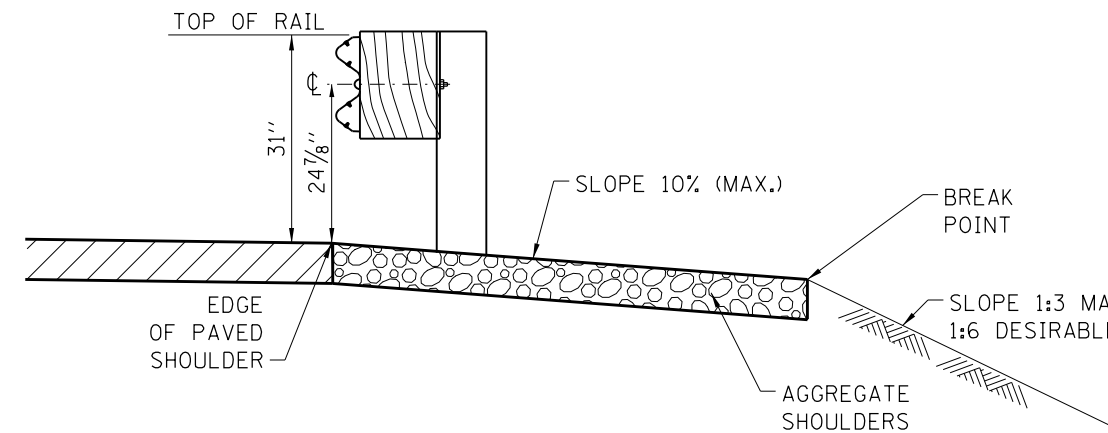
STANDARD C11-07



**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 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 PROCEDURES 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

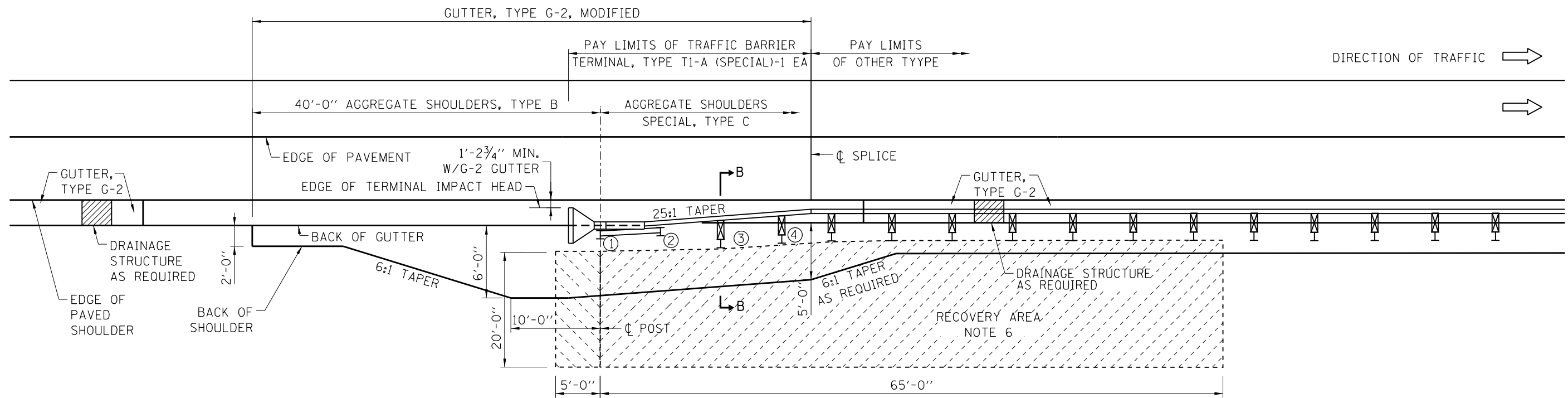
Paul Kovacs
APPROVED... DATE 1-1-2011...
CHIEF ENGINEERING OFFICER

DATE	REVISIONS
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
3-01-2018	CORRECTED G-2 GUTTER REFERENCE
3-01-2019	REVISE NOTES FOR MASH

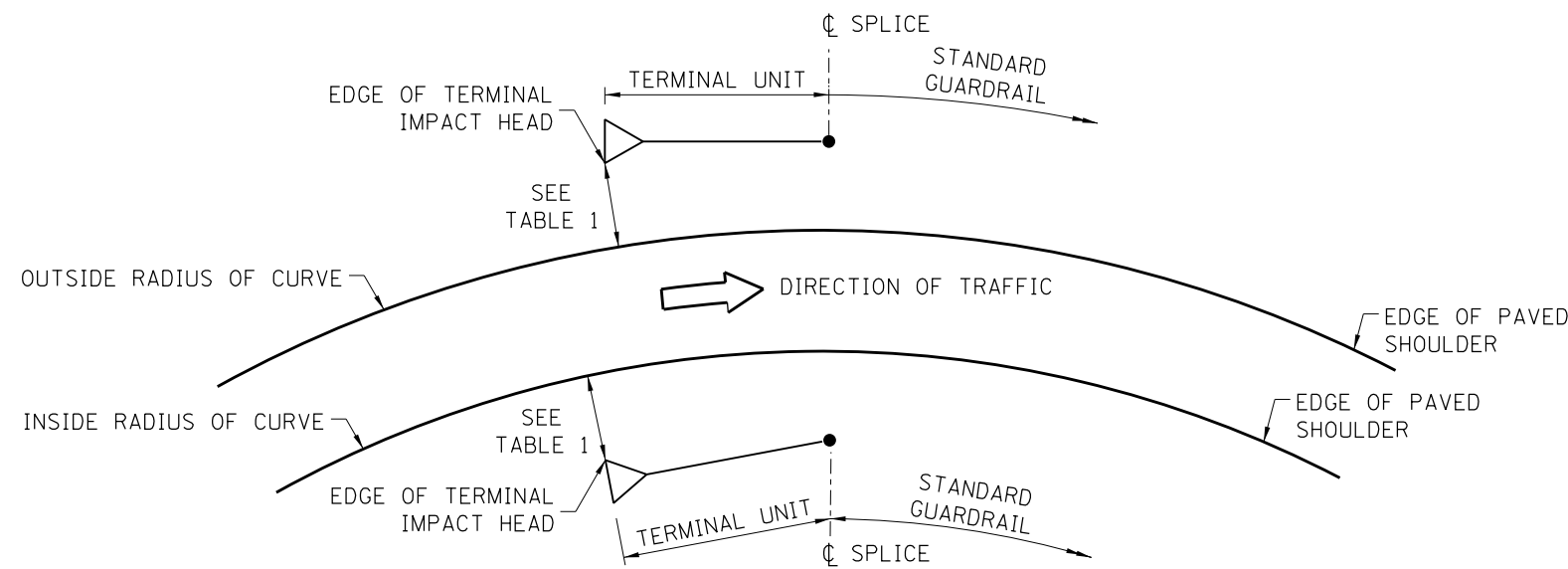


**SHOULDER WIDENING FOR
TRAFFIC BARRIER TERMINAL,
TYPE T1-A (SPECIAL)**

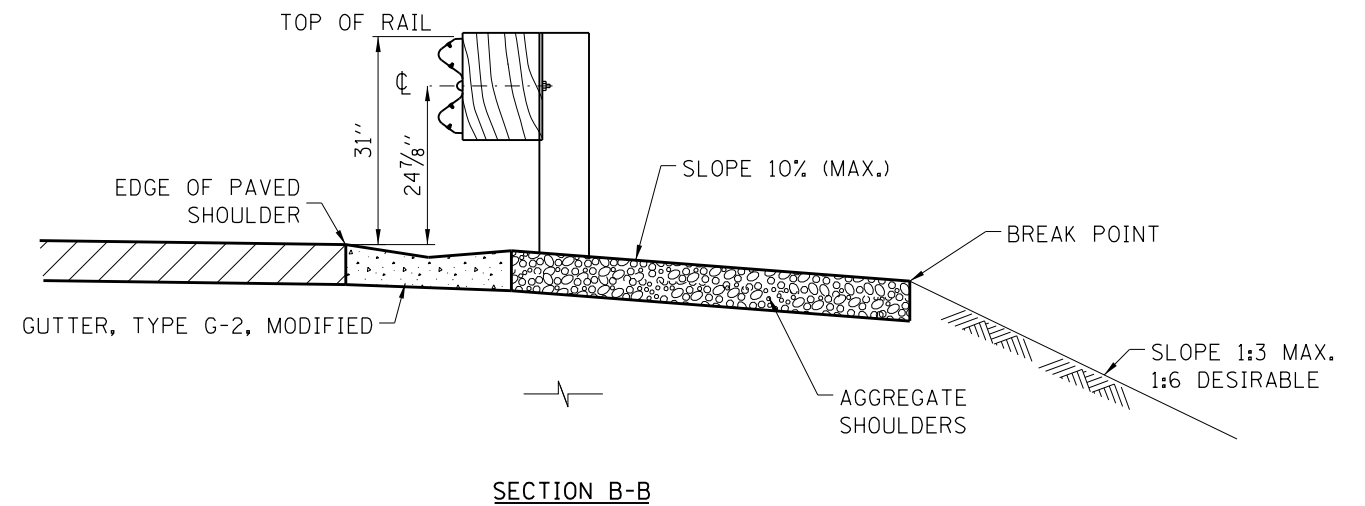
STANDARD C12-09



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)

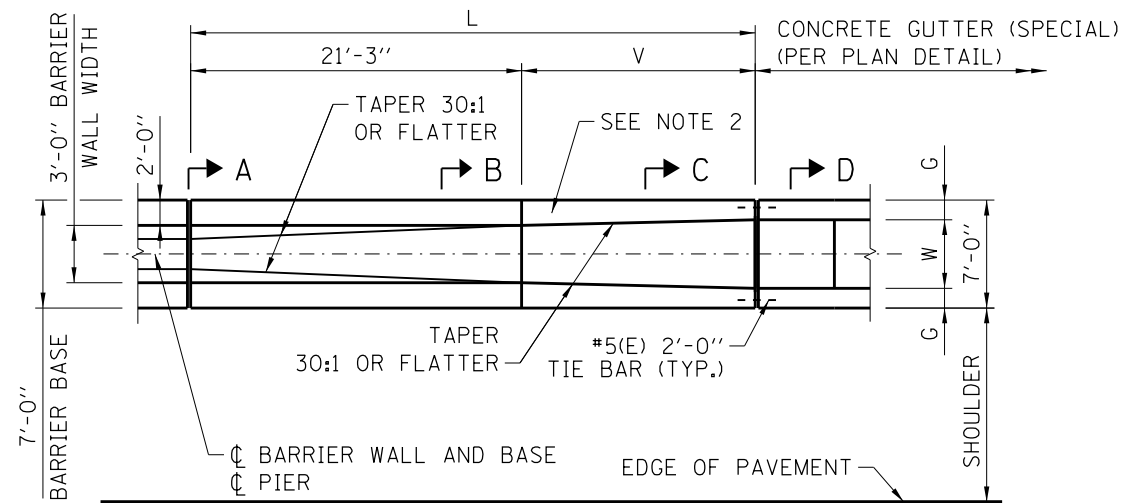


NOTES:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

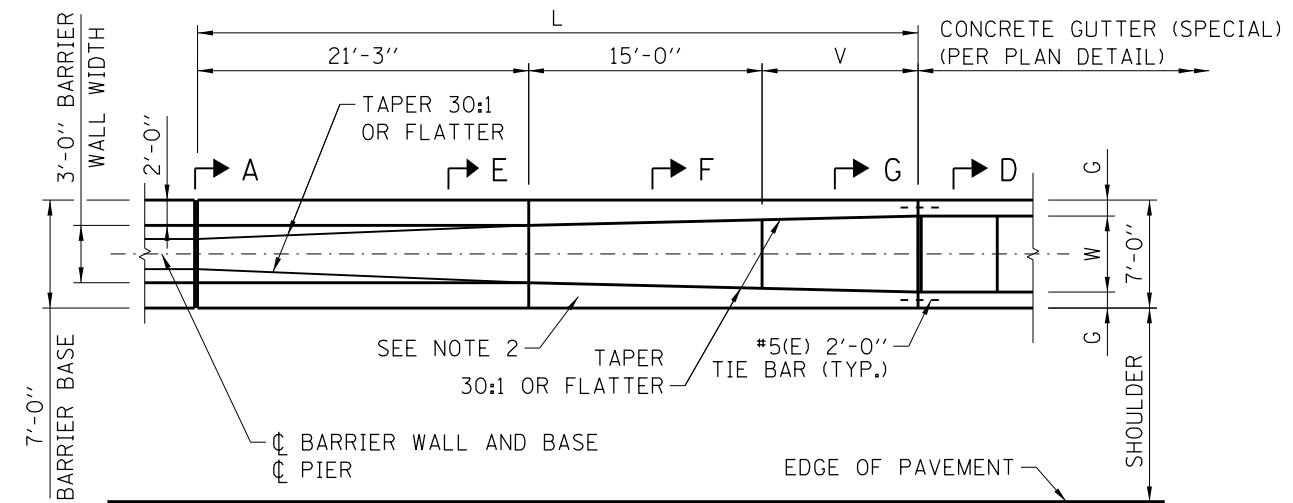
TABLE 1		
LATERAL OFFSET DIMENSION TO EDGE OF TERMINAL IMPACT HEAD		
	INSIDE RADIUS OF CURVE	OUTSIDE RADIUS OF CURVE
NO GUTTER	1'-0"	1'-0" MIN. *
GUTTER, TYPE G-2	1'-2 3/4"	1'-2 3/4" MIN. *

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

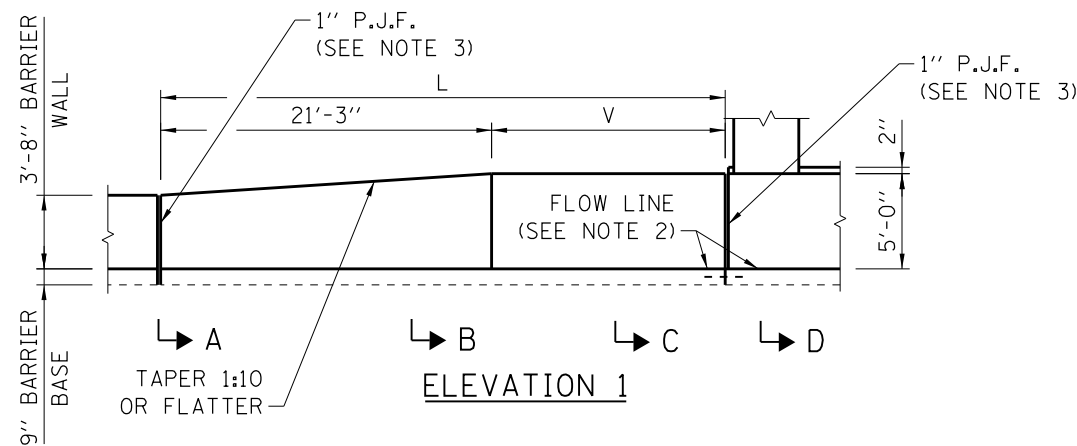




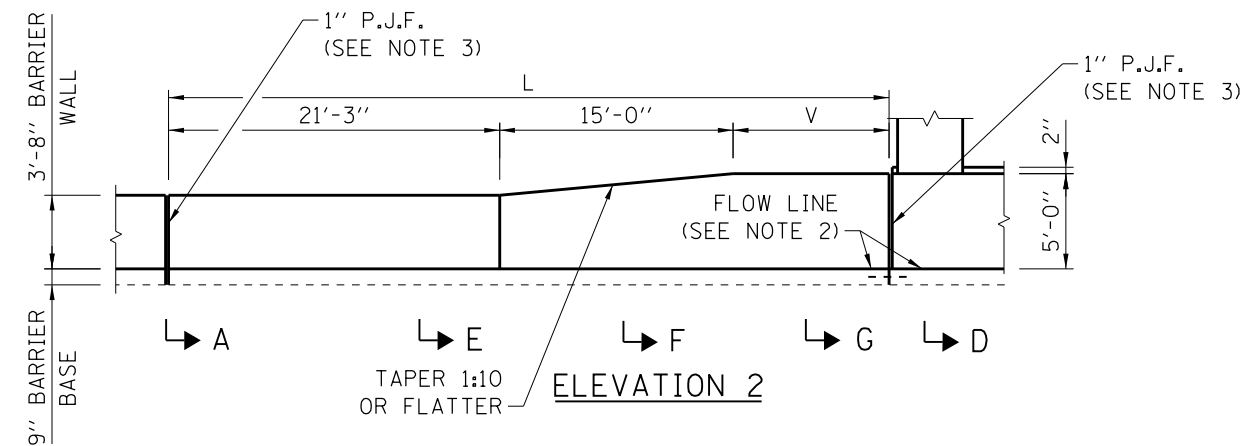
PLAN 1



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'')

NOTES:

- 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.
- 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.
- 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.
- 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.

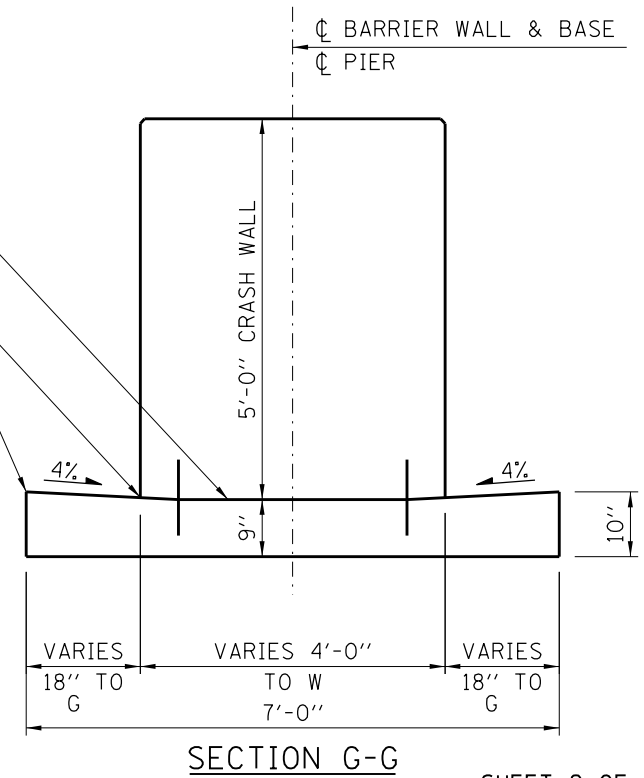
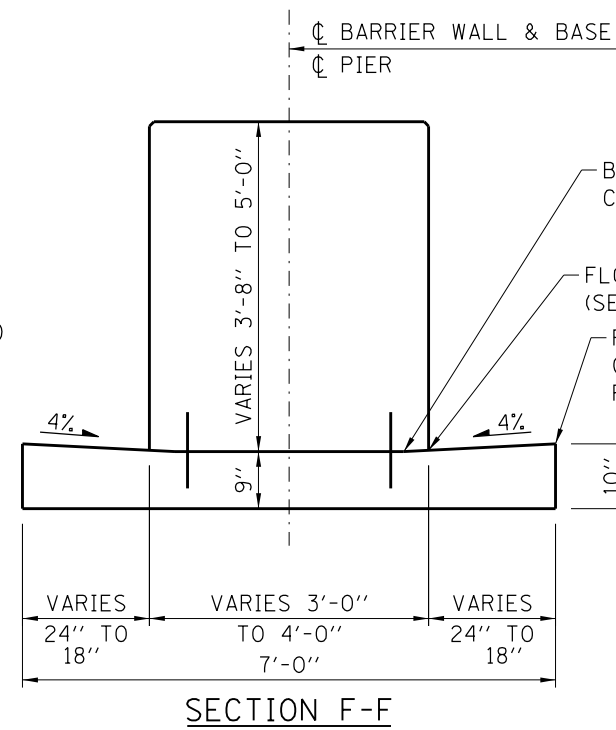
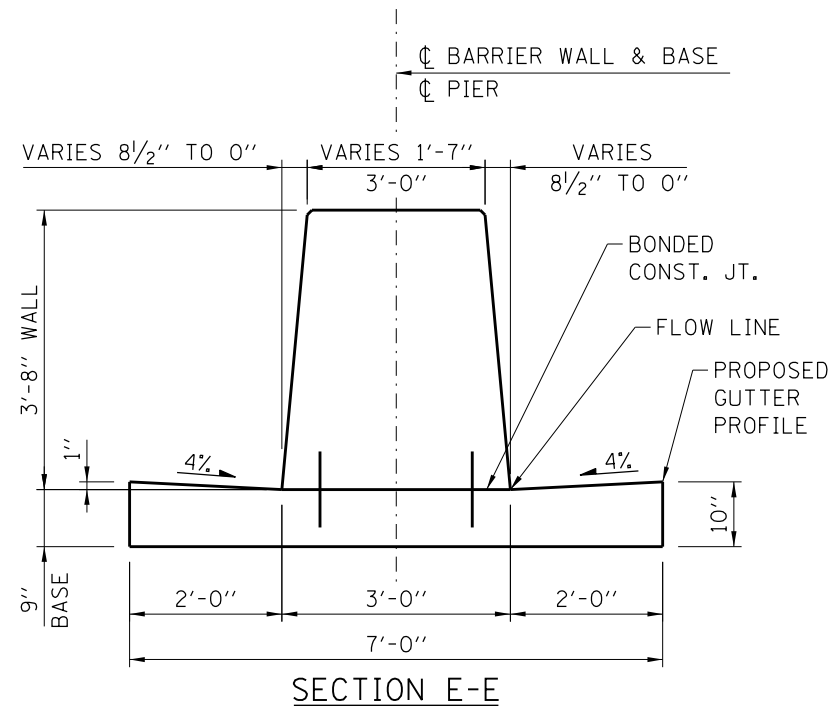
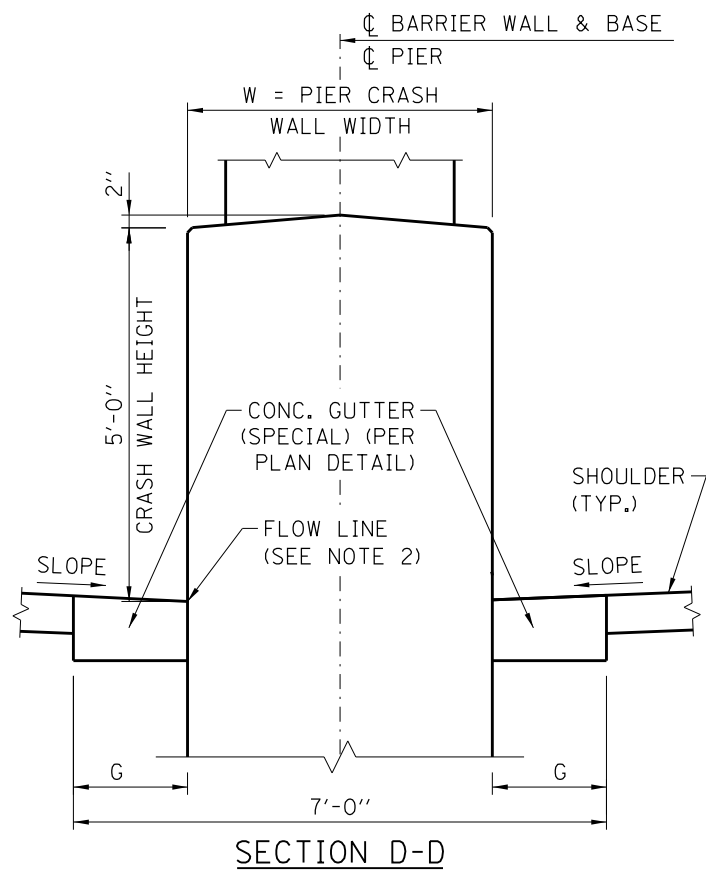
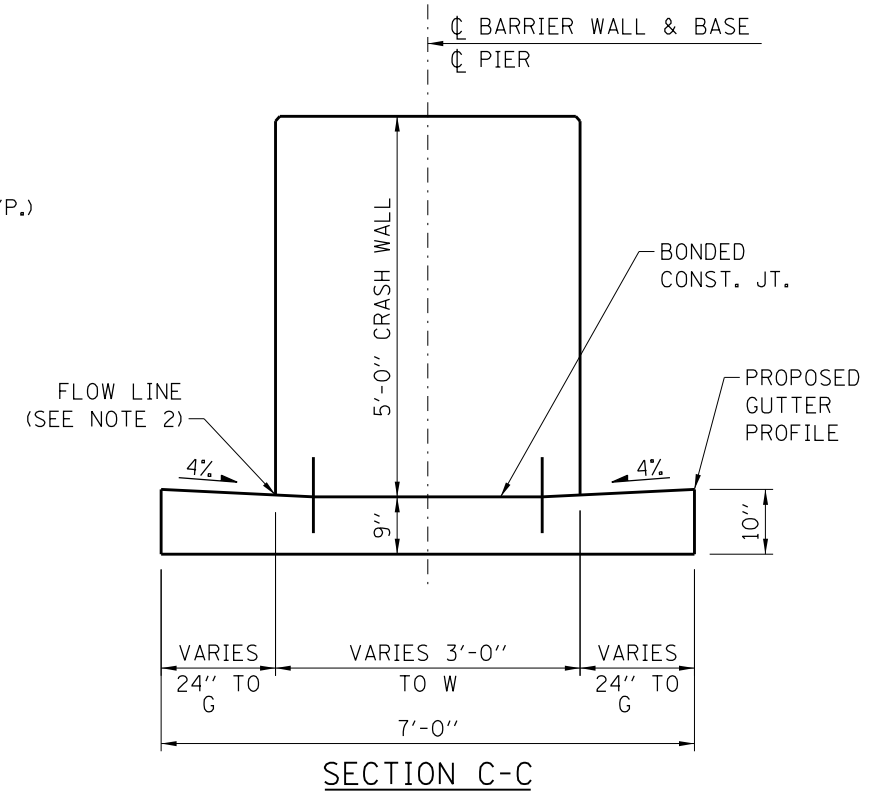
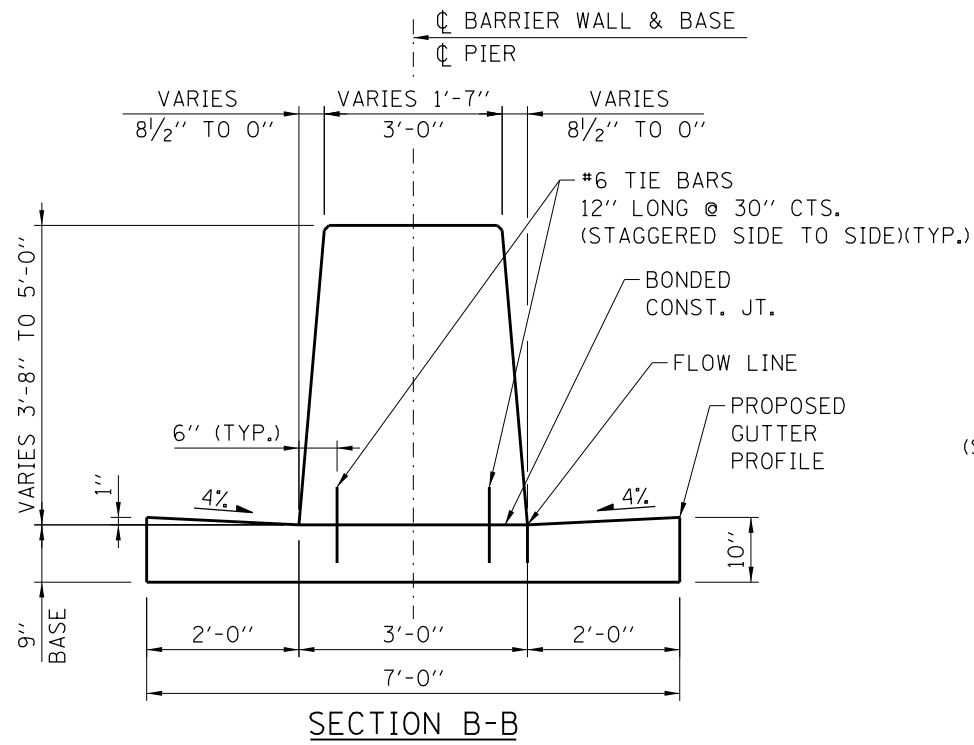
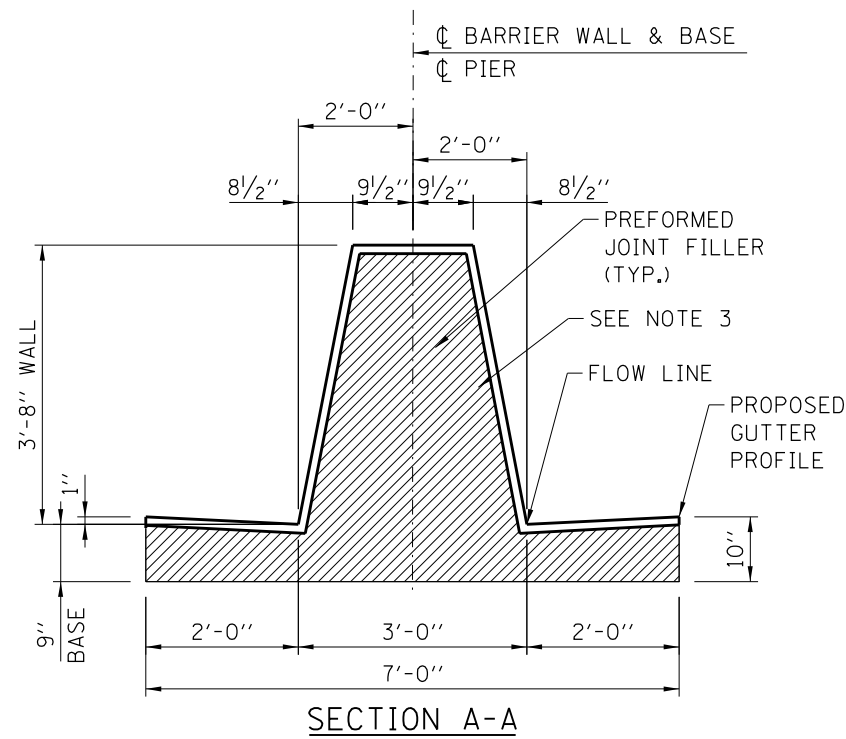
TABLE OF VARIABLES				
	W	L	V	G
PLAN 1	3'-0"	31'-3"	10'-0"	2'-0"
	3'-6"	31'-3"	10'-0"	1'-9"
	4'-0"	36'-3"	15'-0"	1'-6"
PLAN 2	4'-6"	46'-3"	10'-0"	1'-3"
	5'-0"	51'-3"	15'-0"	1'-0"
	5'-6"	58'-9"	22'-6"	9"
	6'-0"	66'-3"	30'-0"	6"

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



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



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

NOTES:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

SHEET 2 OF 2



CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF AT BRIDGE PIERS
STANDARD C13-05

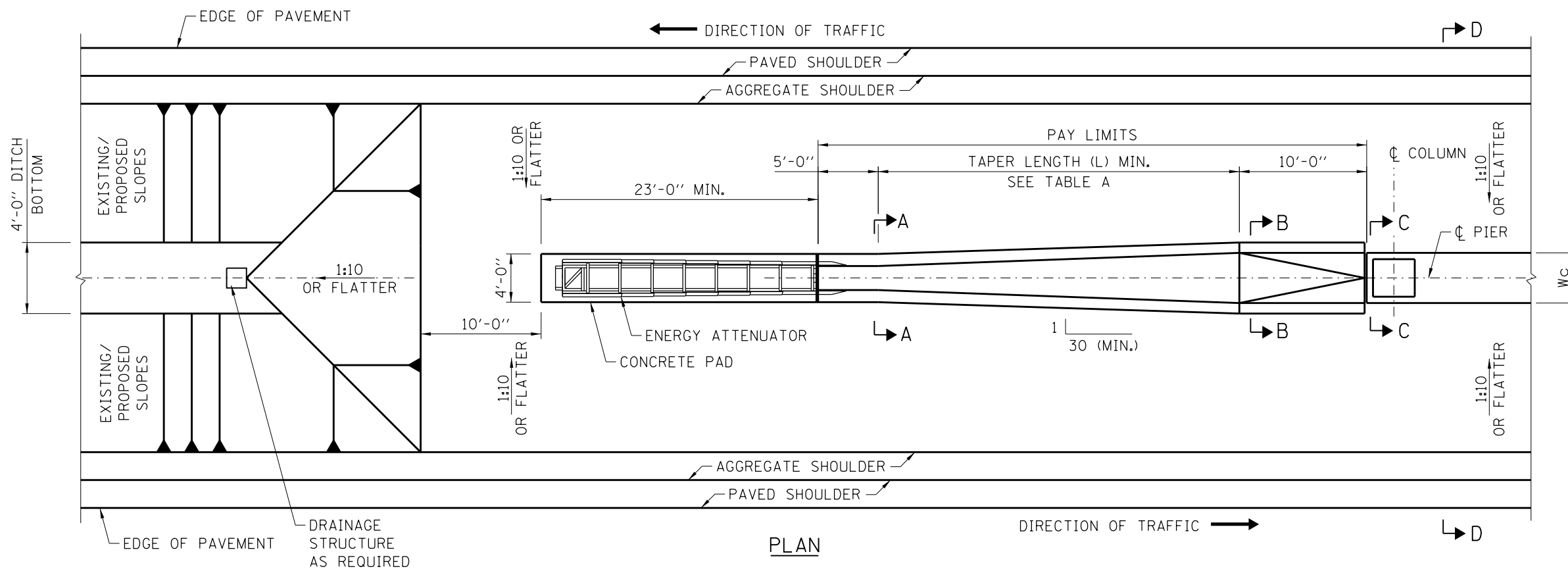
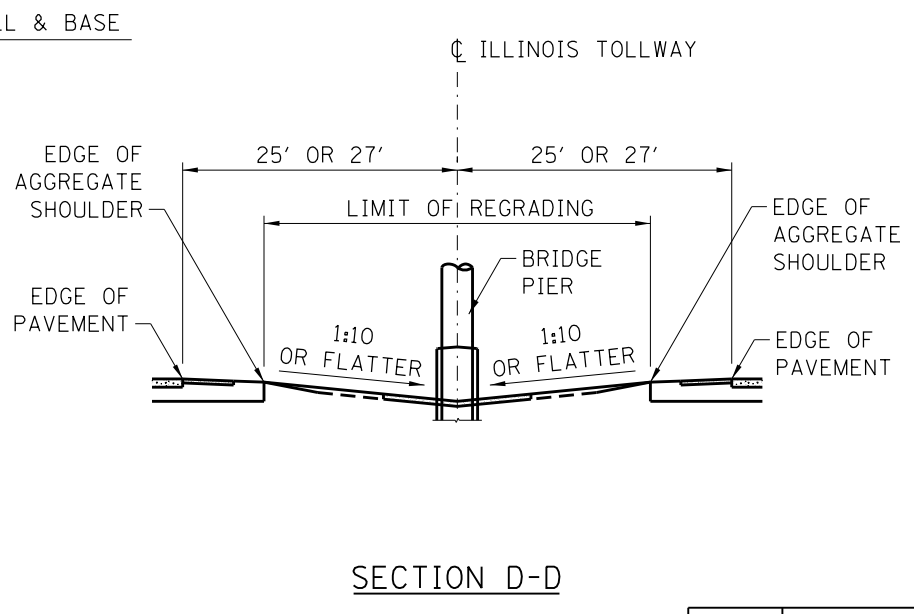
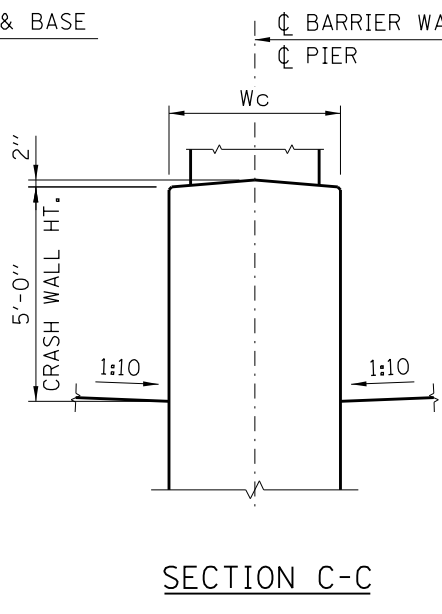
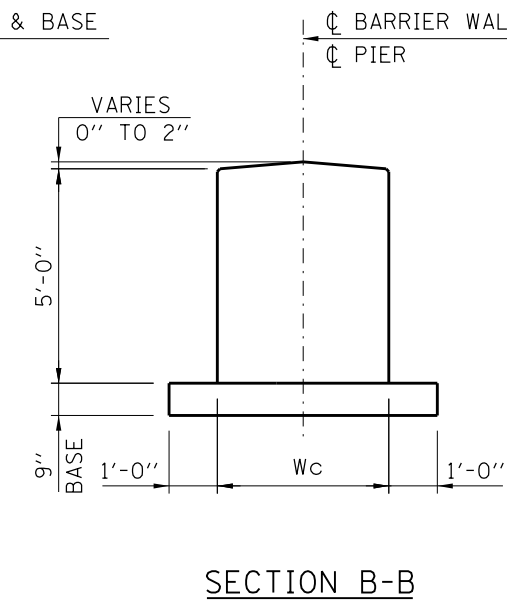
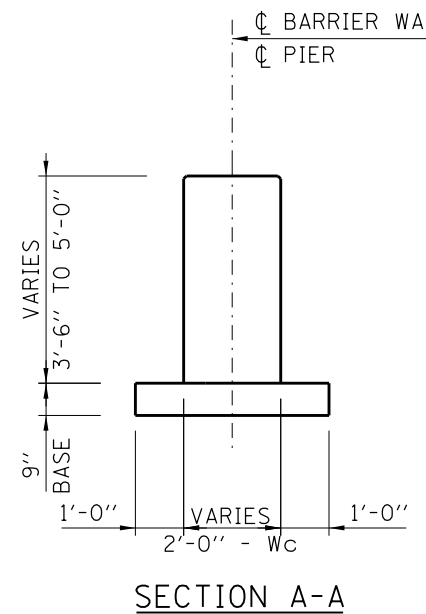
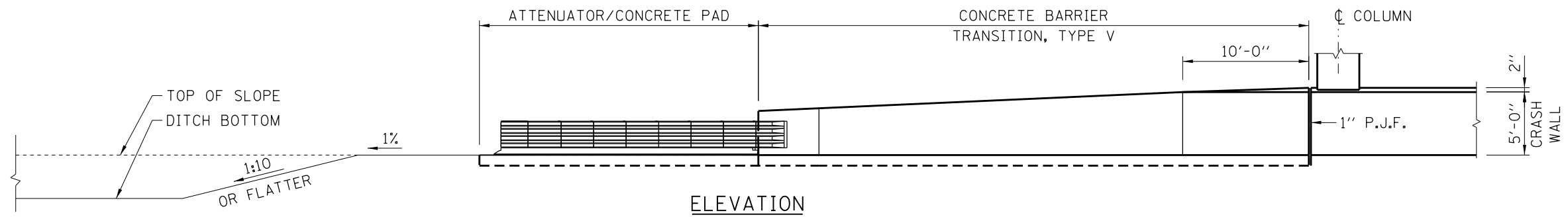


TABLE A	
W _c	L (MIN.)
24"	20'-0"
24" < W _c < 35"	25'-0"
35" < W _c < 43"	35'-0"
43" < W _c < 51"	45'-0"
51" < W _c < 59"	55'-0"
59" < W _c < 67"	65'-0"
67" < W _c < 72"	75'-0"

W_c=PIER CRASH WALL WIDTH



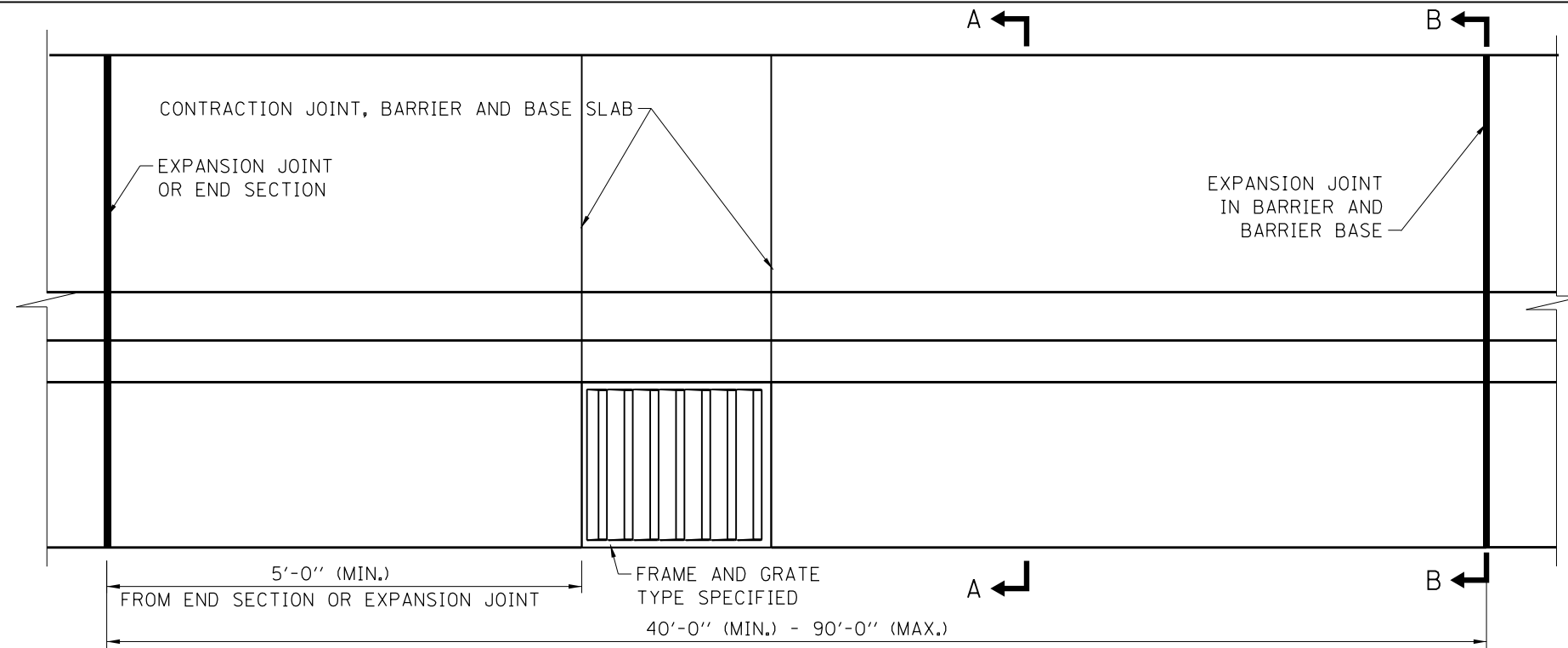
- NOTES:**
- SLOPE RATIOS ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
 - ENERGY ATTENUATOR AND PAD SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S DETAILS AND SPECIFICATIONS.
 - 2" DEEP CONTRACTION JOINTS SHALL BE DONE BY SAWING AND SHALL BE CONSTRUCTED IN 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".

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

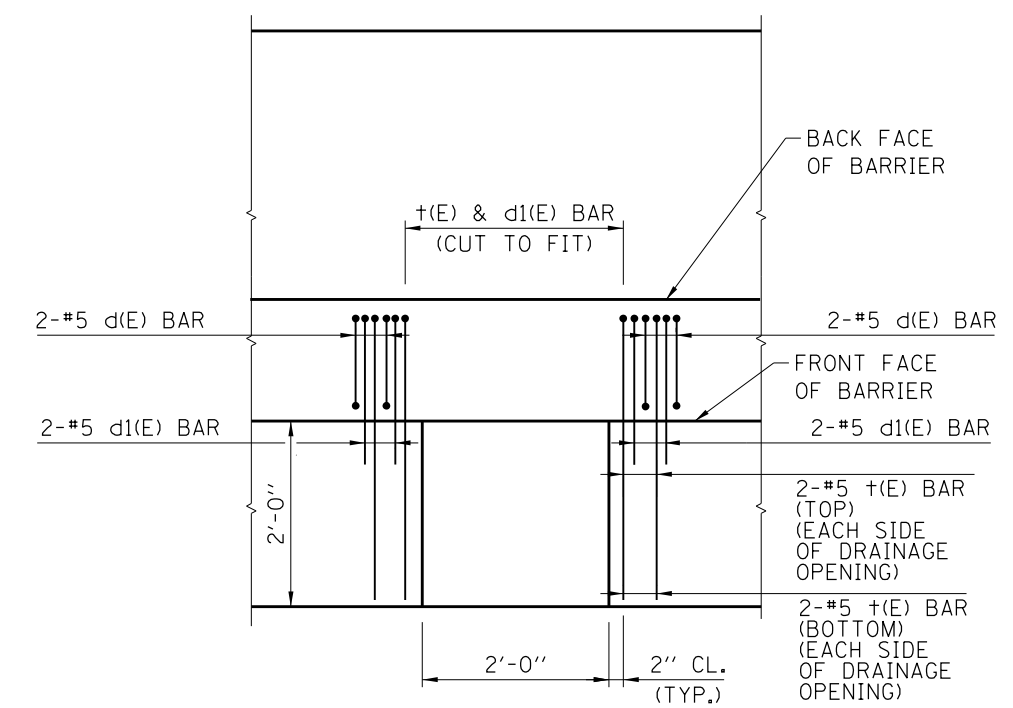
DATE	REVISIONS
3-11-2015	REVISED NOTES
3-31-2016	ADDED SEC. B-B TOP, DITCH ELEV. VIEW AND REVISED NOTE 3
3-01-2019	REVISED ATTENUATOR

CONCRETE MEDIAN BARRIER TRANSITION, TYPE V AT BRIDGE PIERS

STANDARD C14-03



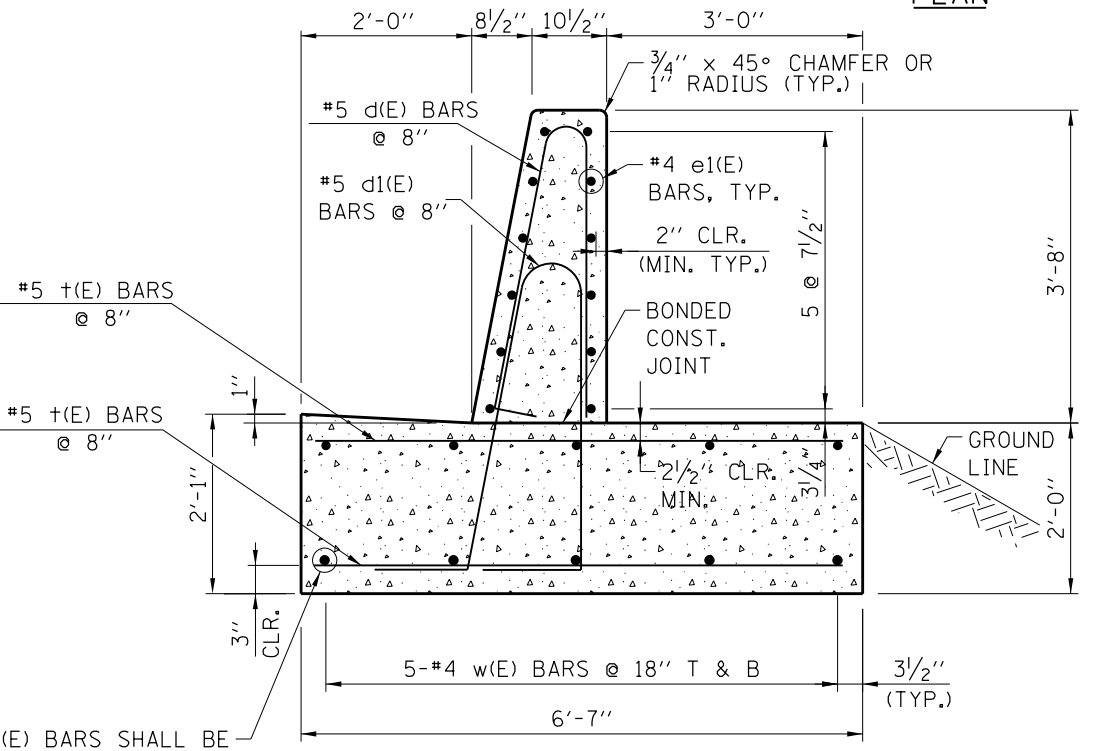
PLAN



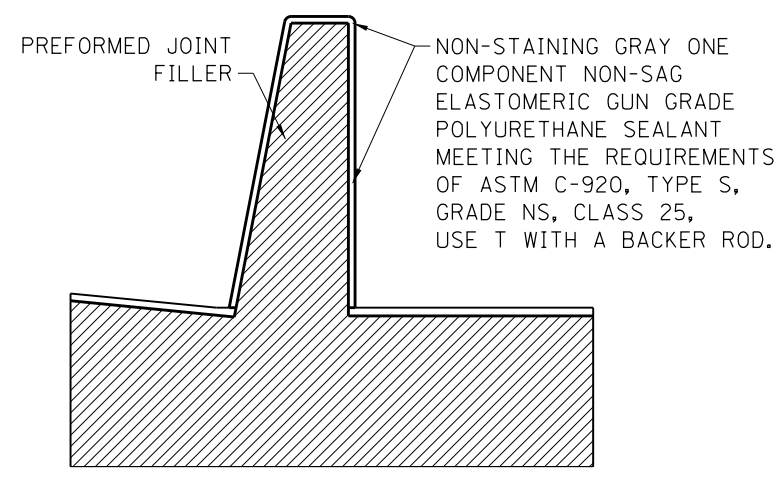
PLAN
REINFORCEMENT AROUND
DRAINAGE STRUCTURE

NOTES:

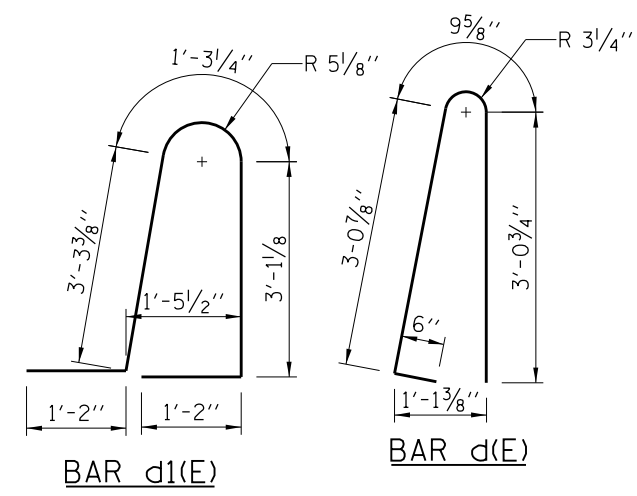
1. THIS IS A REINFORCED CONCRETE TL-5 ROADSIDE BARRIER USED TO SHIELD DROP-OFFS AND STRUCTURES WHEN THE TOE OF THE TRAFFIC FACE IS GREATER THAN 10' FROM THE STRUCTURE FACE. THE MINIMUM LENGTH OF INSTALLATION SHALL BE 40'-0". BASIS OF DESIGN: IL TOLLWAY STRUCTURE DESIGN MANUAL.
2. TOP SHOULDER EDGE OF 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.
7. AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD AN ADDITIONAL PAIR OF d, d1 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.



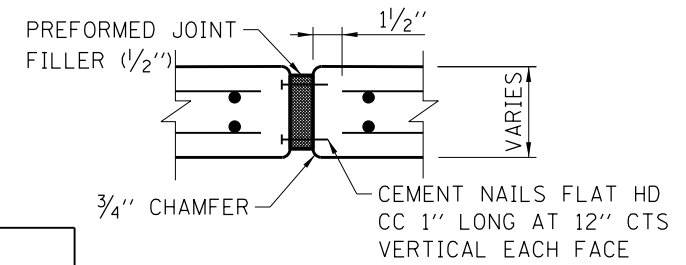
SINGLE FACE TL-5 BARRIER
SECTION A-A



SINGLE FACE 44" BARRIER
EXPANSION JOINT
SECTION B-B



BENDING DIAGRAMS

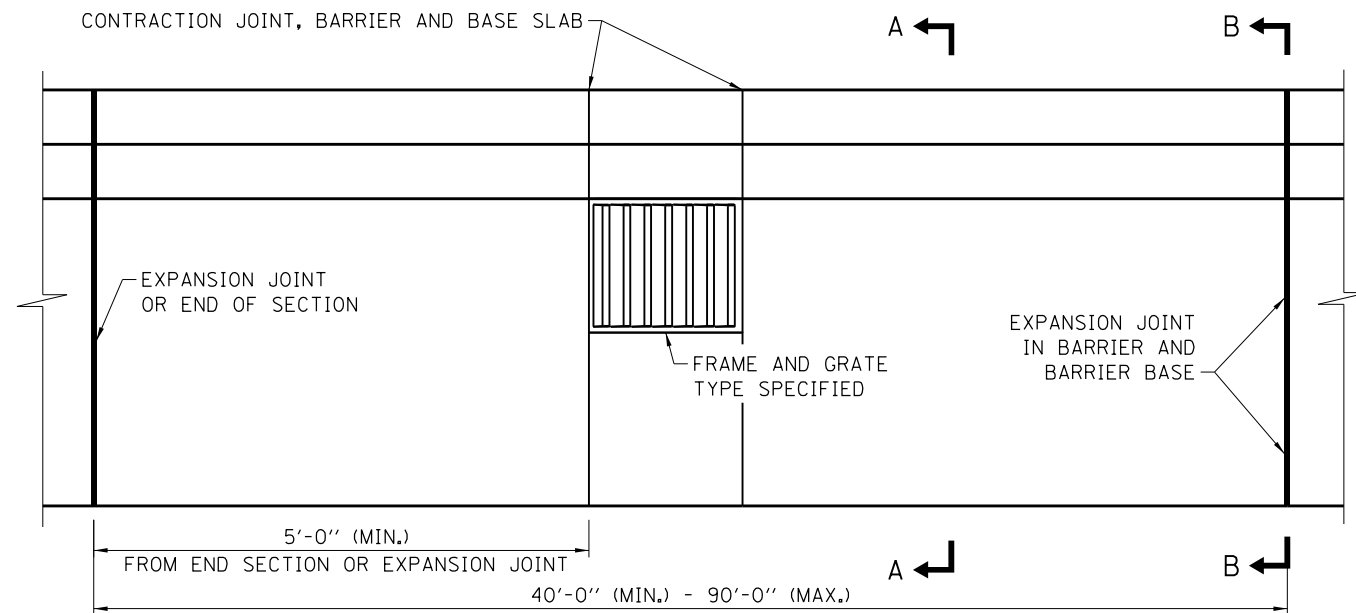


EXPANSION JOINT

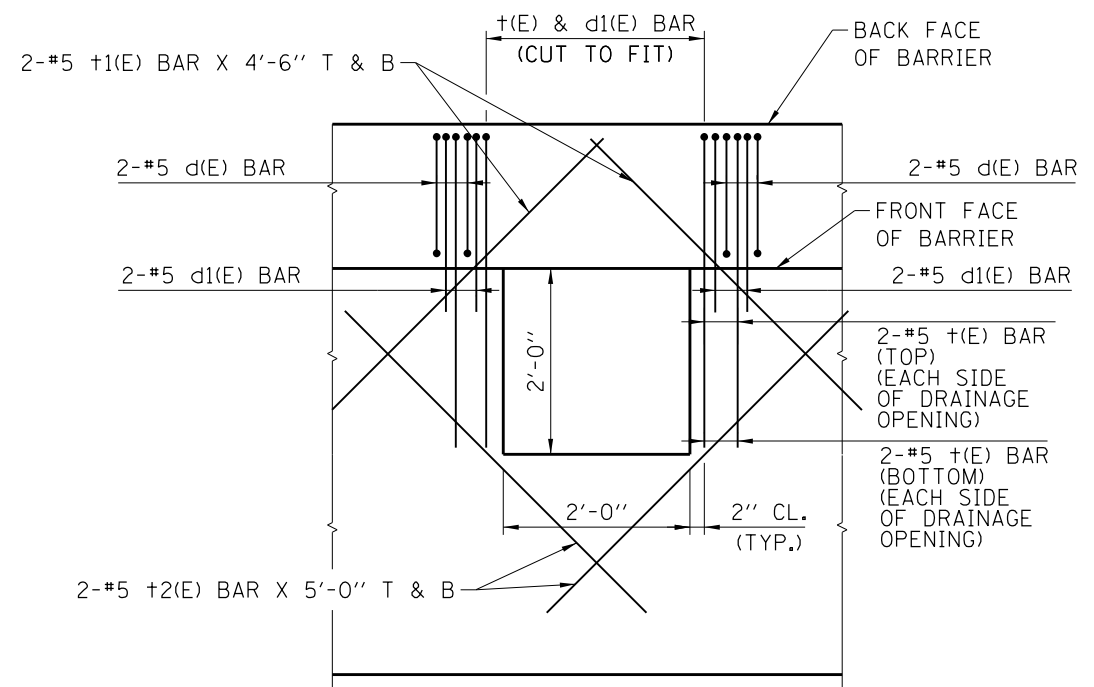
APPROVED: *Paul Kovacs*
CHIEF ENGINEERING OFFICER
DATE: 3-1-2019

DATE	REVISIONS

CONCRETE BARRIER SINGLE FACE, REINFORCED, T-SHAPE 44 INCH
STANDARD C15-00



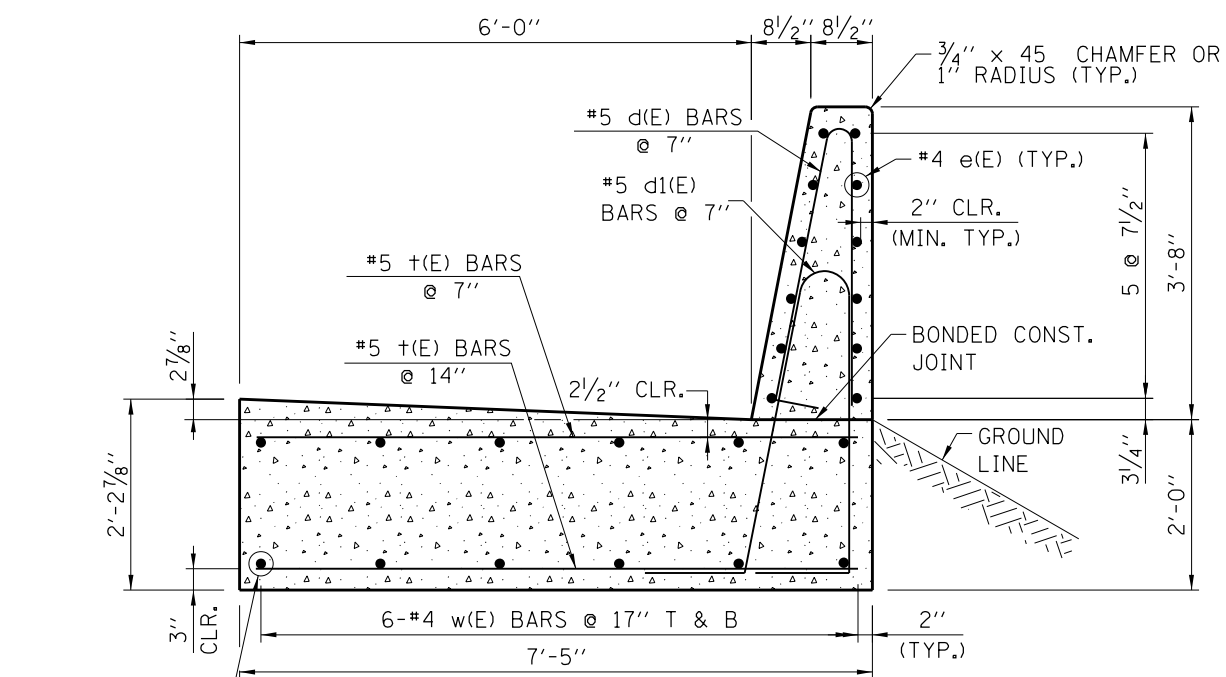
PLAN



REINFORCEMENT AROUND DRAINAGE STRUCTURE

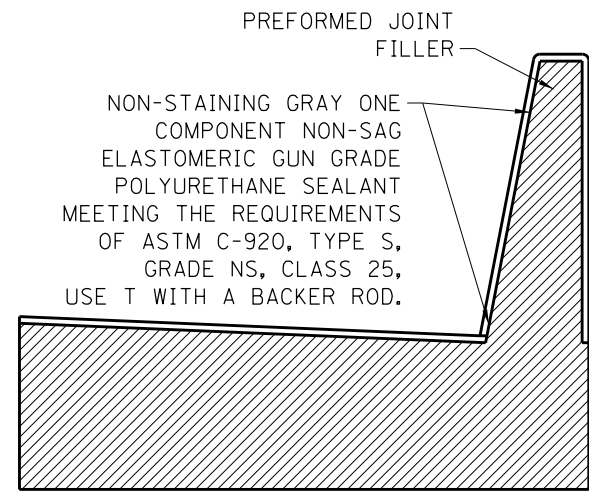
NOTES:

- 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.
- TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
- 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".
- THE FORMING OF CONTRACTION JOINTS SHALL BE DONE WITH AN APPROVED FINISHING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.
- REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
- 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.
- AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD AN ADDITIONAL PAIR OF d, d1 AND + BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE.
- 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.

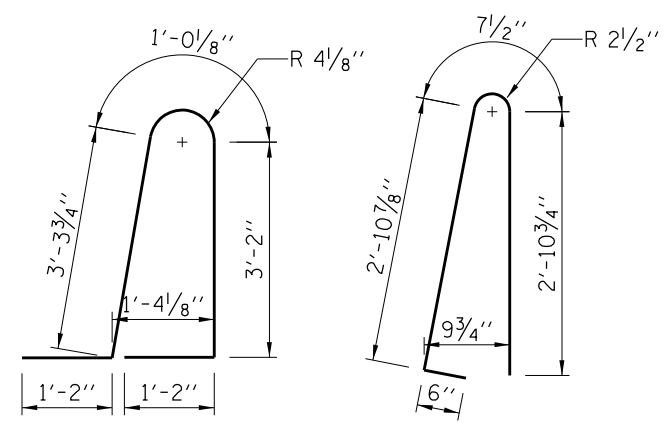


SINGLE FACE TL-5 BARRIER SECTION A-A

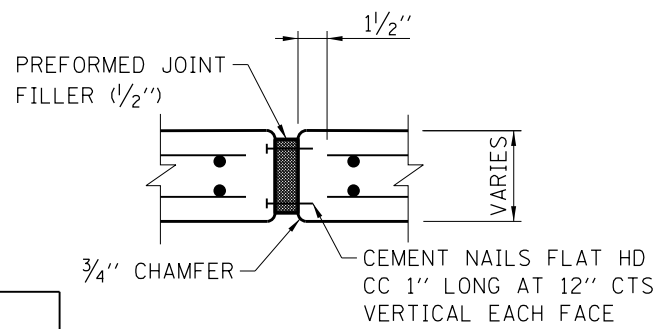
#4 w(E) BARS SHALL BE CONTINUOUS WITH MIN. LAP 2'-11" (TYP.)



SINGLE FACE 44" BARRIER EXPANSION JOINT SECTION B-B



BENDING DIAGRAMS



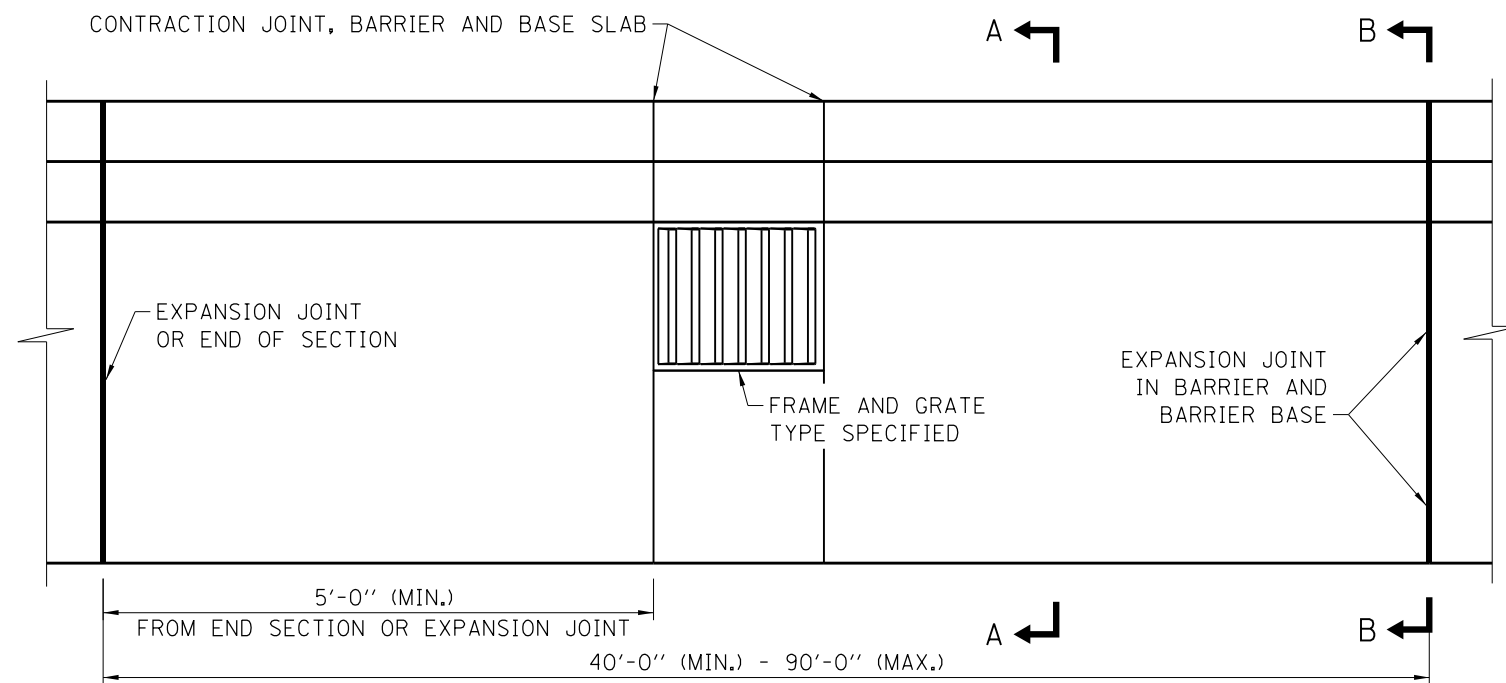
EXPANSION JOINT

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

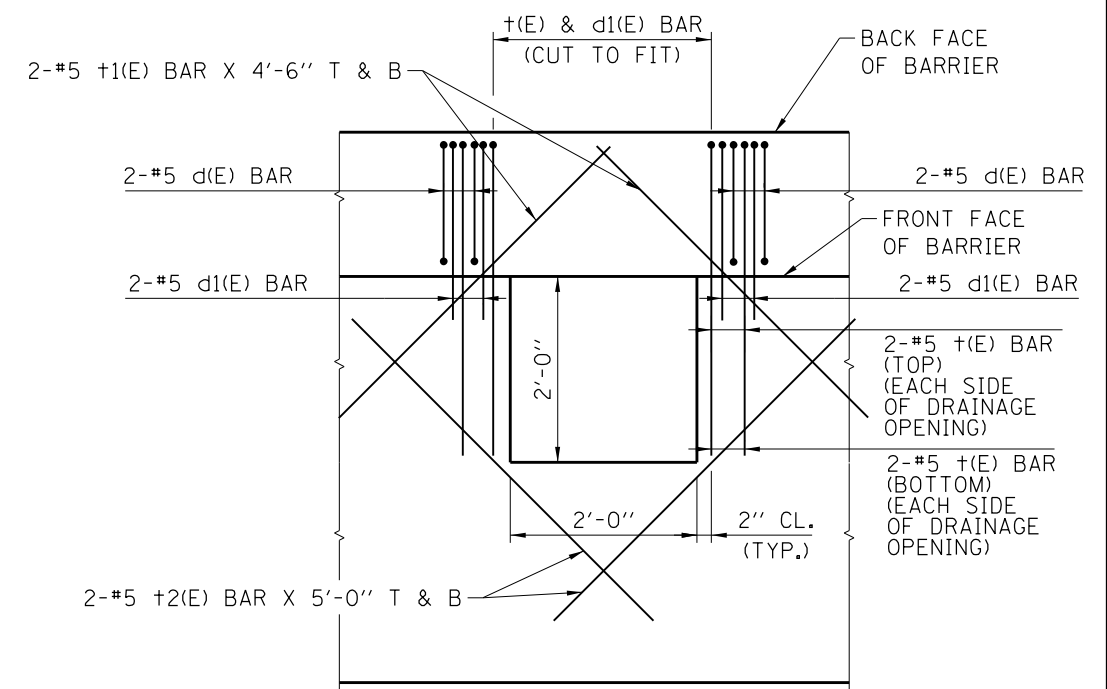
DATE	REVISIONS

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

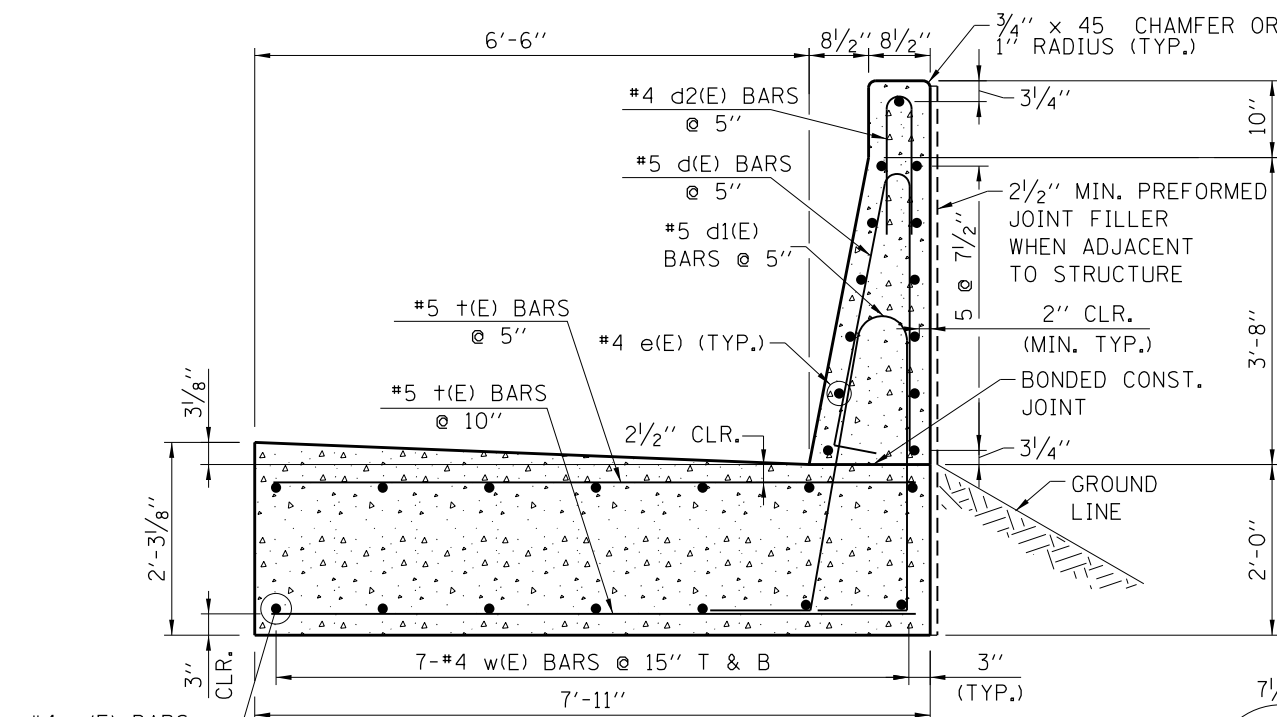
STANDARD C16-00



PLAN

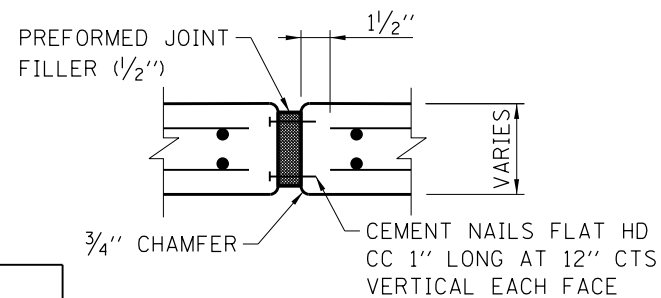


PLAN
REINFORCEMENT AROUND DRAINAGE STRUCTURE

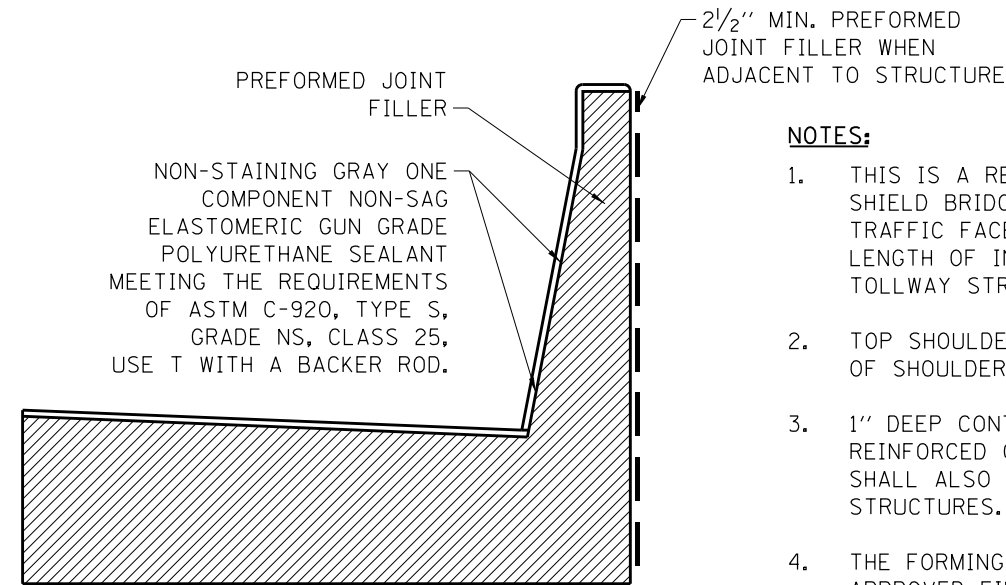


SINGLE FACE TL-5 BARRIER SECTION A-A

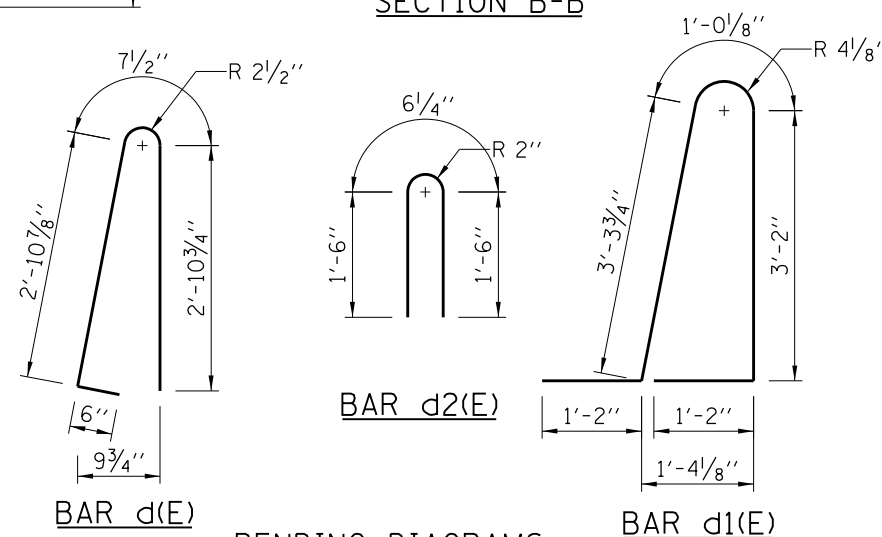
#4 w(E) BARS SHALL BE CONTINUOUS WITH MIN. LAP 2'-11" (TYP.)



EXPANSION JOINT



SINGLE FACE 54" BARRIER EXPANSION JOINT SECTION B-B



BENDING DIAGRAMS

NOTES:

- THIS IS A REINFORCED CONCRETE TL-5 ROADSIDE BARRIER USED TO SHIELD BRIDGE PIERS AND OTHER STRUCTURES 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.
- TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
- 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".
- THE FORMING OF CONTRACTION JOINTS SHALL BE DONE WITH AN APPROVED FINISHING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.
- REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
- 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.
- AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD AN ADDITIONAL PAIR OF d, d1, d2, t, AND t1 BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE.
- 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



CONCRETE BARRIER SINGLE FACE, REINFORCED 54 INCH

STANDARD C17-00

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