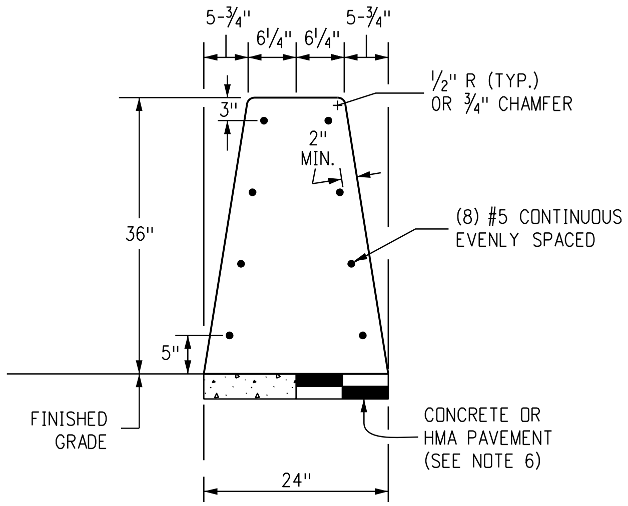
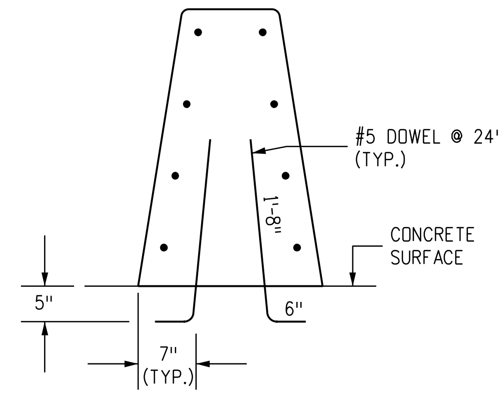
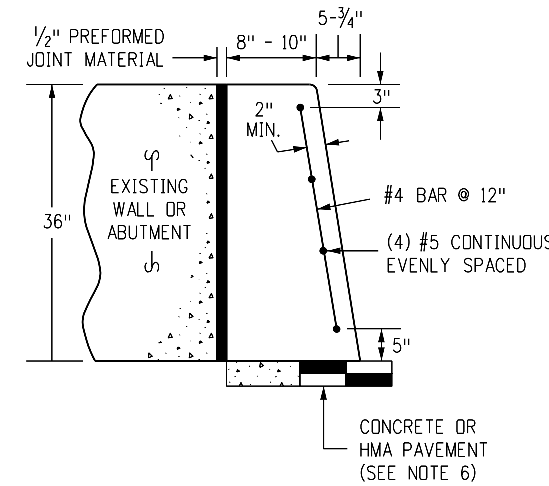


CONCRETE BARRIER STYLE CA



CONCRETE BARRIER STYLE CC

DETAILS SIMILAR TO STYLE CA EXCEPT AS NOTED.
BARRIER DOWELLED TO CONCRETE SURFACES.

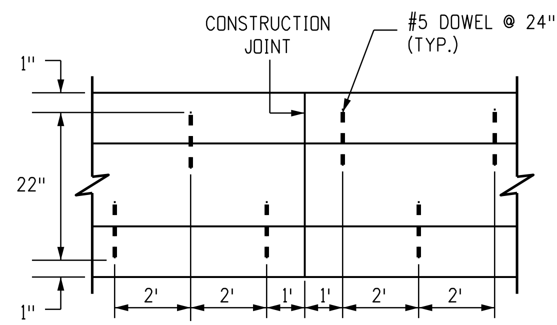


CONCRETE BARRIER STYLE CD

BARRIER AGAINST WALLS.

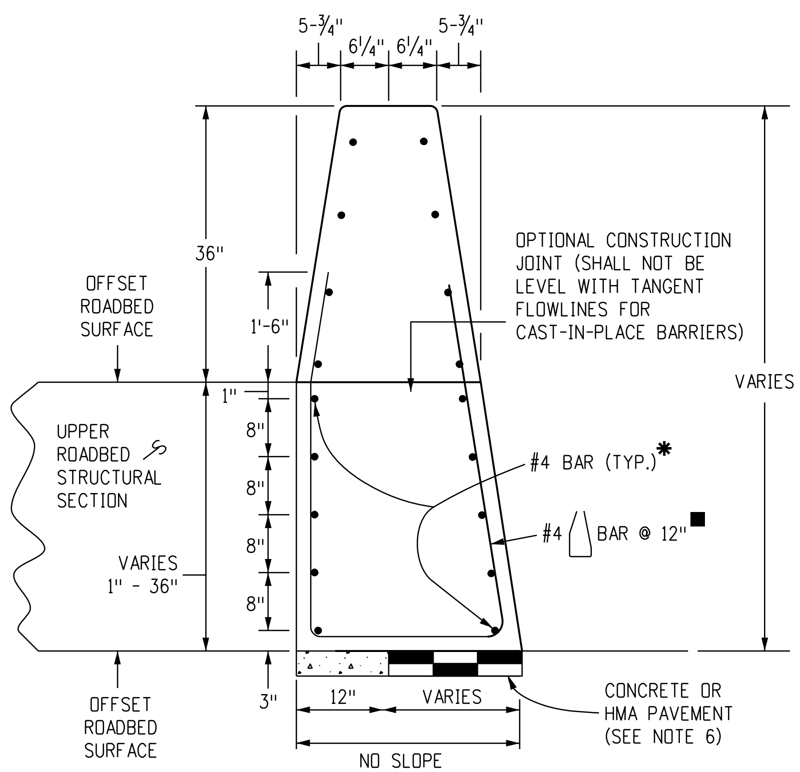
GENERAL NOTES

1. SEE SHEET 2 FOR DETAILS OF CONCRETE BARRIER STYLE CA END ANCHOR CONNECTIONS TO STRUCTURES OR TRANSITION TO GUARDRAIL TYPE 7.
2. SEE SHEET 6 FOR CONCRETE BARRIER STYLE CA TRANSITIONS AT BRIDGE COLUMNS AND SIGN PEDESTALS IN MEDIANS.
3. WHERE GLARE SCREENS ARE REQUIRED, USE CONCRETE BARRIER STYLE CG ON SHEET 4.
4. WHERE ROADBED OFFSET IS GREATER THAN 1½ INCH, SEE CONCRETE BARRIER STYLE CE
5. BARRIER MAY BE CAST-IN-PLACE OR SLIP FORMED.
6. BARRIER FOUNDATION SHALL BE PAVEMENT, OR COMPACTED AGGREGATE BASE, OR COMPACTED EMBANKMENT MATERIAL.
7. NO ANCHORAGE IS REQUIRED (TYP.) EXCEPT FOR THE 10 FOOT ANCHORAGE. SEE SHEETS 2 AND 3 FOR DETAILS.
8. CONSTRUCTION JOINTS SHALL BE USED ON ALL BARRIER TYPES SHOWN, AT THE END OF THE DAY'S POUR OR AFTER ANY INTERRUPTION LONGER THAN 30 MINUTES. ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED BEFORE FRESH CONCRETE IS POURED.
9. ALL REINFORCING STEEL SHALL BE GRADE 60 EPOXY COATED DEFORMED BARS AND SHALL BE A MINIMUM OF 2 INCHES IN FROM THE NEAREST CONCRETE SURFACE, UNLESS OTHERWISE NOTED.
10. CONTINUOUS LONGITUDINAL REINFORCEMENT SHALL BE EITHER GRADE 60 EPOXY COATED DEFORMED BARS OR WIRE STRAND WITH MINIMUM ULTIMATE TENSILE STRENGTH OF 28,000 LBS. AND CLASS C GALVANIZING ACCORDING TO ASTM A 603.
11. TRANSITION TO EXISTING CONCRETE BARRIER INSTALLATIONS OF DISSIMILAR SHAPE SHALL BE ACCOMPLISHED IN ONE 15 FOOT LONG SEGMENT OF BARRIER.
12. CONCRETE SHALL BE CLASS D.
13. ADDITIONAL MATERIAL FOR BARRIER EMBEDMENT GREATER THAN 1 INCH WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
14. EPOXY COATED LONGITUDINAL REBAR SHALL HAVE A MINIMUM LAP SPLICE OF 38 INCHES. WIRE STRAND LONGITUDINAL REINFORCEMENT SHALL BE BUTT WELDED OR MECHANICALLY SPLICED TO MAINTAIN 100 PERCENT OF THE MINIMUM REQUIRED TENSILE STRENGTH.
15. ALL INCIDENTAL WORK AND MATERIAL SUCH AS DOWELS, GROUT, ANCHORS, BOLTS, PINS, JOINT MATERIAL, EXCAVATION FOR BASES, CONTINUOUS LONGITUDINAL REINFORCEMENT, SHALL BE INCLUDED IN THE COST OF GUARDRAIL.
16. RETROREFLECTORIZATION IS REQUIRED ON ALL BARRIER TYPES. SEE BARRIER RETROREFLECTOR NOTES ON STANDARD PLAN S-612-1.



FOR STYLE CC BARRIER.
PLAN VIEW

DOWEL PLACEMENT LAYOUT



CONCRETE BARRIER STYLE CE

DETAILS SIMILAR TO STYLE CA EXCEPT AS NOTED.
USE CONCRETE BARRIER END ANCHOR WHEN NECESSARY.
SHOWN 36 INCH ROADBED SURFACES OFFSET.

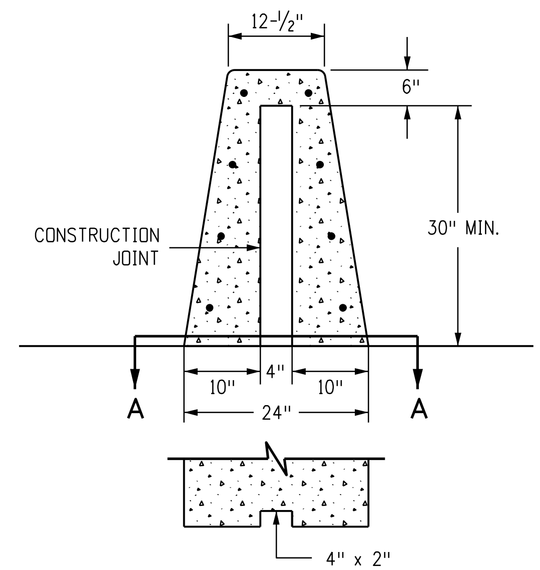
* FOR SURFACES OFFSETS LESS THAN OR EQUAL TO 3 INCHES, NO ADDITIONAL REINFORCEMENT IS REQUIRED.

SURFACE OFFSETS GREATER THAN 3 INCHES WILL REQUIRE ADDITIONAL REINFORCEMENT AS SHOWN.

THE LOWEST LAYER OF TWO #4 SHALL BE 3 INCHES ABOVE THE BOTTOM OF THE BARRIER. EACH VERTICAL INCREMENT OF 8 INCHES MEASURED FROM THE LOWEST LAYER OF REINFORCEMENT SHALL INCLUDE AN ADDITIONAL TWO #4.

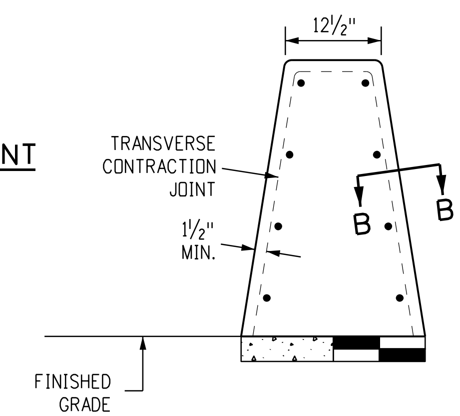
FOR BARRIER TRANSITIONING IN HEIGHT MAINTAIN THE BOTTOM REINFORCEMENT LAYER COVER AND DISCONTINUE/ADD INCREMENTAL REINFORCING PARALLEL TO THE BARRIER AS HEIGHT REQUIRES.

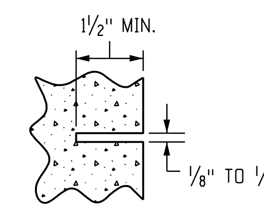
■ REINFORCING STIRRUP NOT REQUIRED FOR ROADBED OFFSETS LESS THAN 1 FOOT.



SECTION A-A
CONSTRUCTION JOINT

SEE NOTE 15.





SECTION B-B

TRANSVERSE CONTRACTION JOINTS

FORMED OR SAWED TRANSVERSE CONTRACTION JOINTS ARE REQUIRED AT 20 FT. INTERVALS OR THE INTERVALS SHALL MATCH THE CONCRETE PAVEMENT JOINTS FOR INSTALLATIONS THAT ARE ON TOP OF THE CONCRETE ROADWAY PAVEMENT. SEE CONCRETE BARRIER STYLE CA FOR TYPICAL DIMENSIONS.

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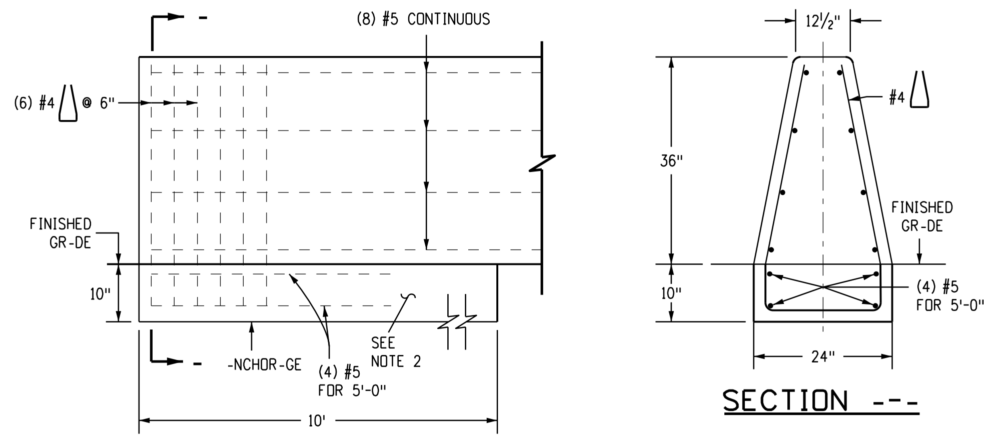
GUARDRAIL TYPE 9
SINGLE SLOPE BARRIER

Issued by the Project Development Branch: July 31, 2019

STANDARD PLAN NO.
M-606-15

Project Sheet Number:

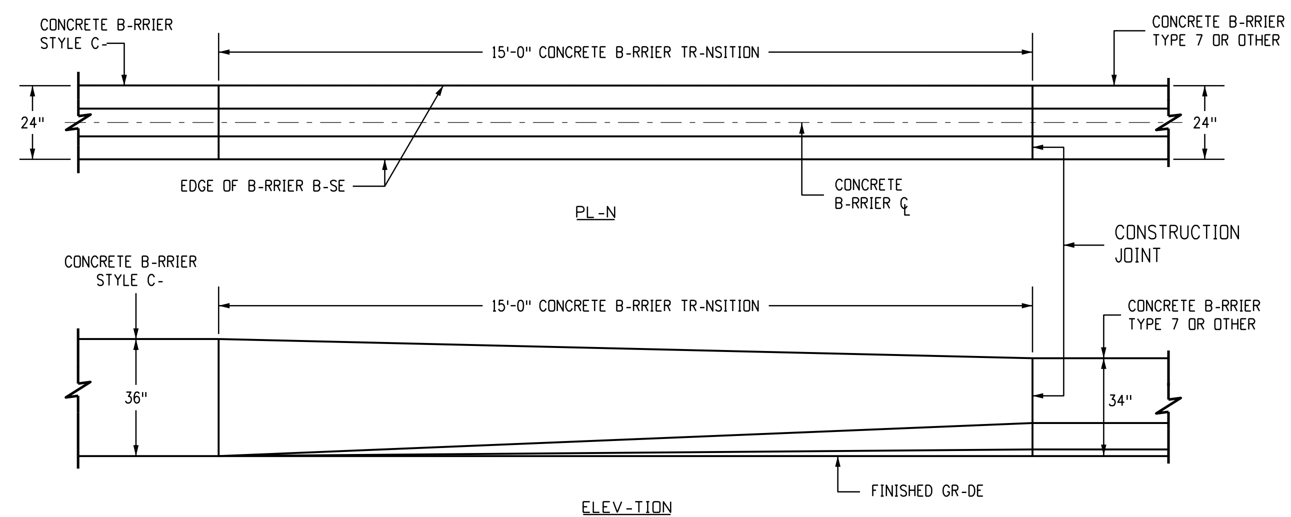


SECTION ---

END -NCHOR-GE

NOTES

1. SEE SHEET 3 FOR END -NCHOR-GE REQUIREMENTS. -T - MINIMUM, THE B-RRIER SH-LL BE -NCHORED -T THE ENDS -ND -T INTERRUPTIONS WITH THE - 10 FOOT -NCHOR-GE. THE -NCHOR-GE SH-LL BE MONOLITHIC OR DOWELED WITH 2-#8 X 8" @ 2'-0 B-RS.
2. SEE SHEET 1 FOR CONCRETE B-RRIER STYLE C- -ND STYLE CC.
3. TR-NSITION TO EXISTING CONCRETE B-RRIER INST-LL-TIONS OF DISSIMIL-R SH-PE SH-LL BE -CCOMPLISHED IN ONE 15 FOOT LONG SEGMENT OF B-RRIER.
4. SEE SHEET 6 FOR CONCRETE B-RRIER STYLE C- TR-NSITIONS -T BRIDGE COLUMNS -ND SIGN PEDEST-LS IN MEDI-NS.
5. FOR STYLE C- CONNECTIONS TO STRUCTURES, SEE THE BRIDGE PL-NS.



TR-NSITION CONCRETE B-RRIER TYPE 9 TO CONCRETE B-RRIER TYPE 7 OR EXISTING

Computer File Information	
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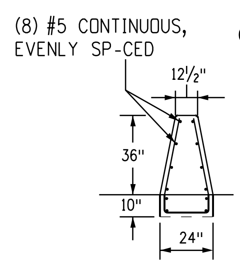
GUARDRAIL TYPE 9 SINGLE SLOPE BARRIER

Issued by the Project Development Branch: July 31, 2019

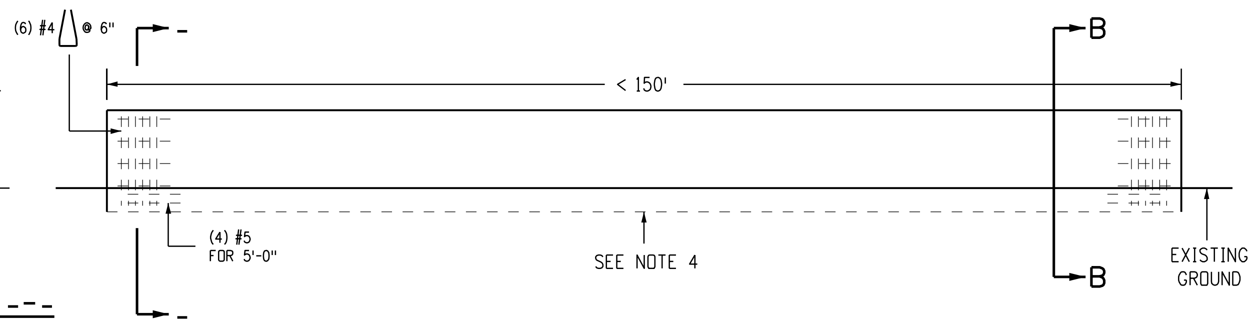
STANDARD PLAN NO.
M-606-15

Project Sheet Number:

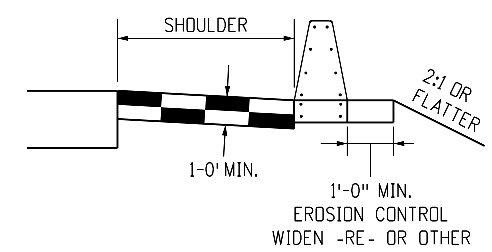


SECTION -–-

SEE NOTE 2



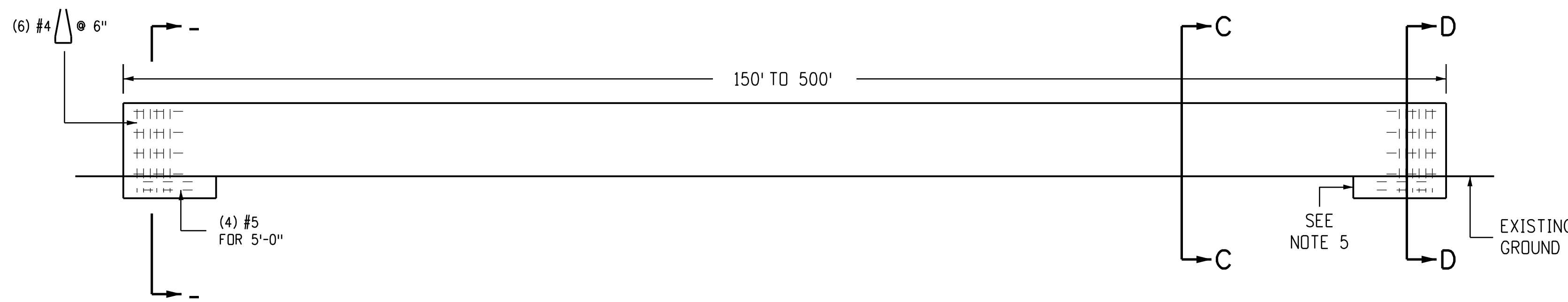
CONCRETE B-RRIER END -NCHOR-GE UNDER 150 FEET



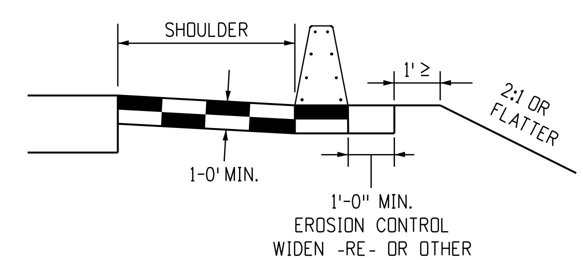
SECTION B-B

NOTES

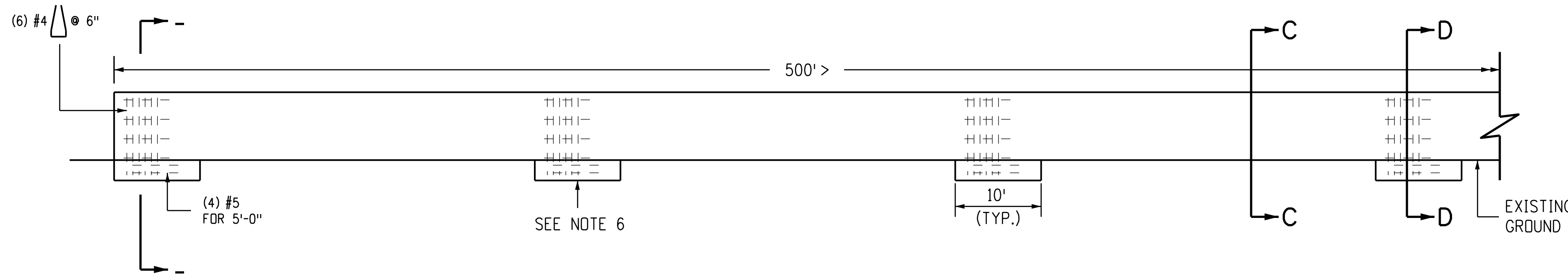
1. SEE PL-NS FOR CONCRETE B-RRIER LENGTHS LESS TH-N 150 FEET -ND/OR HINGE WIDTHS EQU-L TO OR LESS TH-N 1 FOOT BEHIND THE CONCRETE B-RRIER.
2. SEE SHEET 2 FOR REINFORCING B-R DET-ILS.
3. NEW CONCRETE B-RRIERS UNDER 150 FEET SH-LL BE DOWELED INTO EXISTING CONCRETE BRIDGE B-RRIERS OR WINGW-LLS TO MINIMIZE ROT-TIONS TO -NY OF THEM. SEE SHEET 1 FOR DOWEL PL-CEMENT L-YOUT.
4. FOR END -NCHOR-GES UNDER 150 FEET, CONSTRUCT THE -NCHOR-GE FOR THE ENTIRE LENGTH OF THE CONCRETE B-RRIER.
5. FOR CONCRETE B-RRIER RUNS GRE-TER TH-N 150 FEET BUT LESS TH-N 500 FEET, THE RUN SH-LL BE -NCHORED -T THE ENDS -ND -T G-PS, SUCH -S -N EMERGENCY -CCESS.
6. FOR END -NCHOR-GES OVER 500 FEET, CONSTRUCT -NCHOR-GES EVERY 250 FEET.
7. REINFORCING STEEL IN -NCHOR-GE SH-LL BE GR-DE 60 EPOXY CO-TED DEFORMED B-RS.
8. CONCRETE SH-LL BE CL-SS D.
9. -LL INCIDENT-L WORK -ND -DDITION-L M-TERI-LS SH-LL BE INCLUDED IN THE COST OF THE CONCRETE B-RRIER.



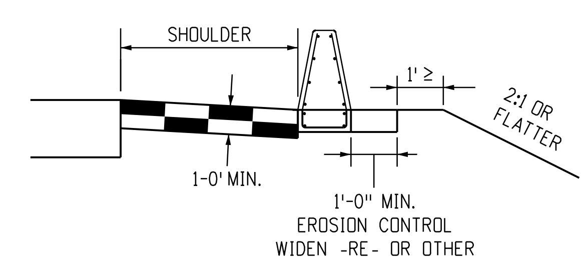
CONCRETE B-RRIER END -NCHOR-GE BETWEEN 150 FEET -ND 500 FEET



SECTION C-C



CONCRETE B-RRIER END -NCHOR-GE OVER 500 FEET



SECTION D-D

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GUARDRAIL TYPE 9
SINGLE SLOPE BARRIER

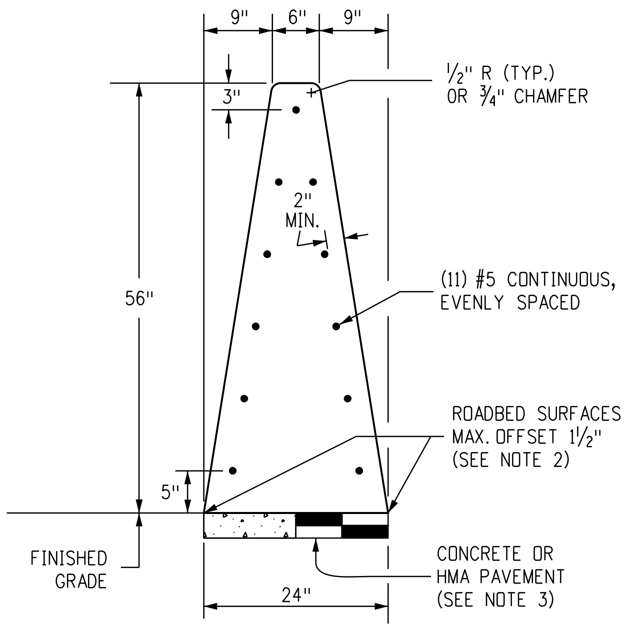
Issued by the Project Development Branch: July 31, 2019

STANDARD PLAN NO.
M-606-15

Project Sheet Number:

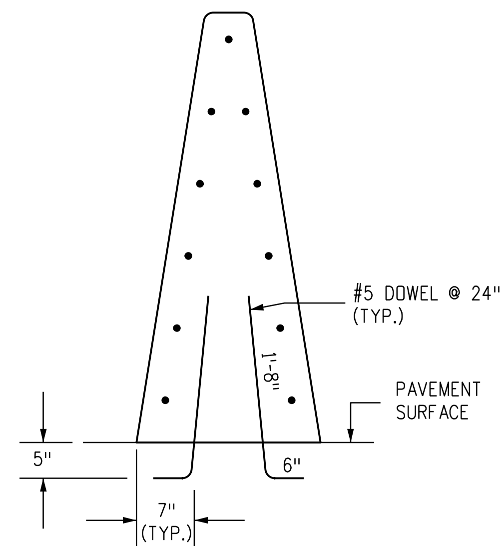
NOTES

1. SEE SHEET 5 FOR DETAILS OF CONCRETE BARRIER STYLE CGE/CG END ANCHORS CONNECTIONS TO STRUCTURES AND TRANSITIONS TO GUARDRAIL TYPE 7.
2. WHERE ROADBED OFFSET IS GREATER THAN $1\frac{1}{2}$ INCH, SEE CONCRETE BARRIER TYPE CGE.
3. BARRIER FOUNDATION SHALL BE PAVEMENT, OR COMPACTED AGGREGATE BASE, OR COMPACTED EMBANKMENT MATERIAL.
4. RETROREFLECTORIZATION IS REQUIRED ON ALL BARRIER TYPES. SEE THE BARRIER RETROREFLECTOR NOTES ON STANDARD PLAN S-612-1.



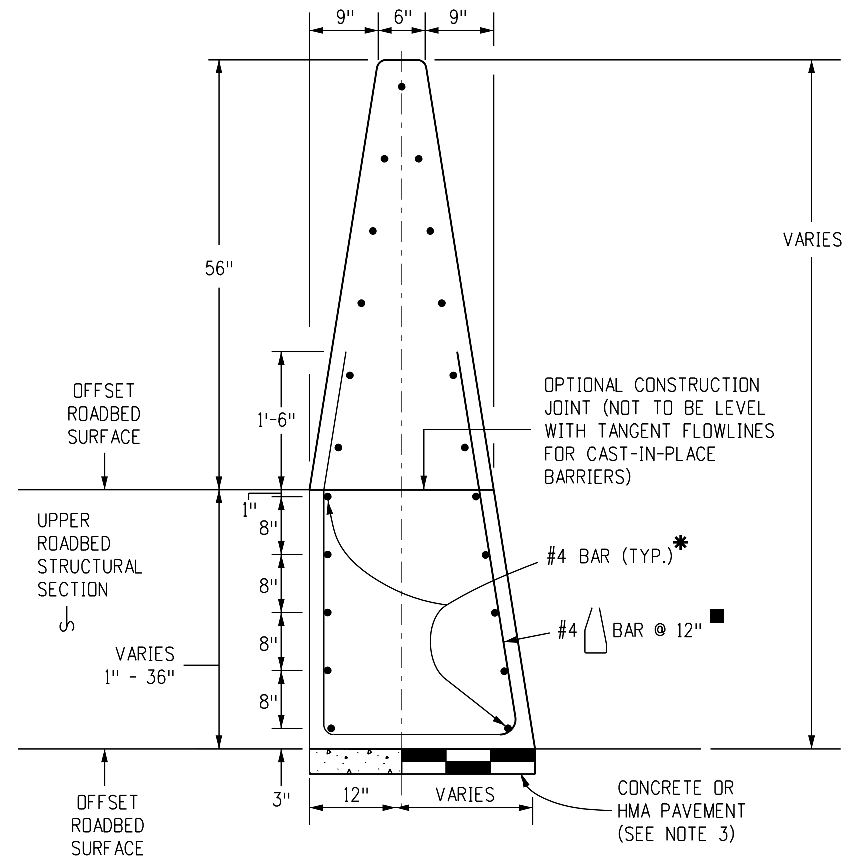
CONCRETE BARRIER STYLE CG (56")

MONOLITHIC CONCRETE GLARE SCREEN/BARRIER



CONCRETE BARRIER STYLE CGC

DETAILS SIMILAR TO STYLE CG EXCEPT AS NOTED.
BARRIER DOWELLED TO CONCRETE SURFACES.



CONCRETE BARRIER STYLE CGE

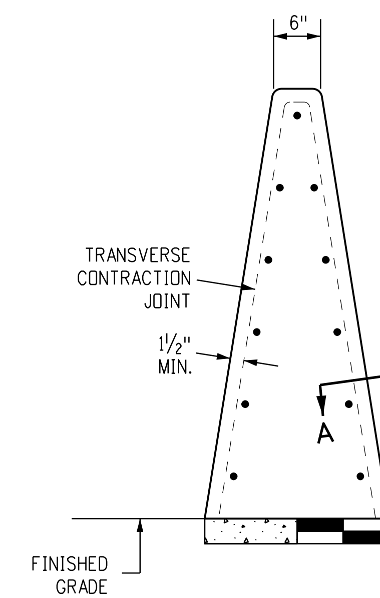
DETAILS SIMILAR TO STYLE CE EXCEPT AS NOTED.
USE CONCRETE BARRIER END ANCHOR WHEN NECESSARY.
SHOWN WITH A 36 INCH ROADBED SURFACES OFFSET.
BARRIER FOR OFFSET ROADWAYS.

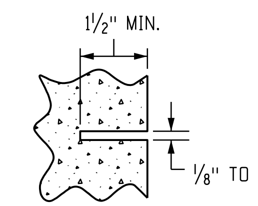
* FOR SURFACES OFFSETS LESS THAN OR EQUAL TO 3 INCHES, NO ADDITIONAL REINFORCEMENT IS REQUIRED.

SURFACE OFFSETS GREATER THAN 3 INCHES WILL REQUIRE ADDITIONAL REINFORCEMENT AS SHOWN.

THE LOWEST LAYER OF TWO #4 SHALL BE 3 INCHES ABOVE THE BOTTOM OF THE BARRIER. EACH VERTICAL INCREMENT OF 8 INCHES MEASURED FROM THE LOWEST LAYER OF REINFORCEMENT SHALL INCLUDE AN ADDITIONAL TWO #4.

■ REINFORCING STIRRUP NOT REQUIRED FOR ROADBED OFFSETS LESS THAN 1 FOOT.





SECTION A-A

TRANSVERSE CONTRACTION JOINTS

FORMED OR SAWED TRANSVERSE CONTRACTION JOINTS ARE REQUIRED AT 20 FT. INTERVALS OR THE INTERVALS SHALL MATCH THE CONCRETE PAVEMENT JOINTS FOR INSTALLATIONS THAT ARE ON TOP OF THE CONCRETE ROADWAY PAVEMENT. SEE CONCRETE BARRIER STYLE CG FOR TYPICAL DIMENSIONS.

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GUARDRAIL TYPE 9 SINGLE SLOPE BARRIER

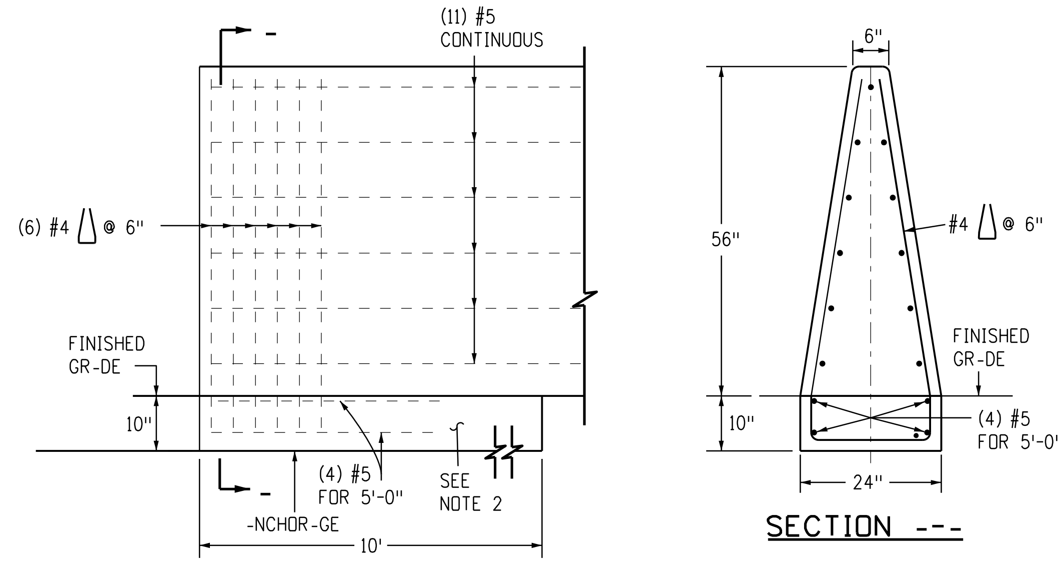
Issued by the Project Development Branch: July 31, 2019

STANDARD PLAN NO.
M-606-15

Project Sheet Number:

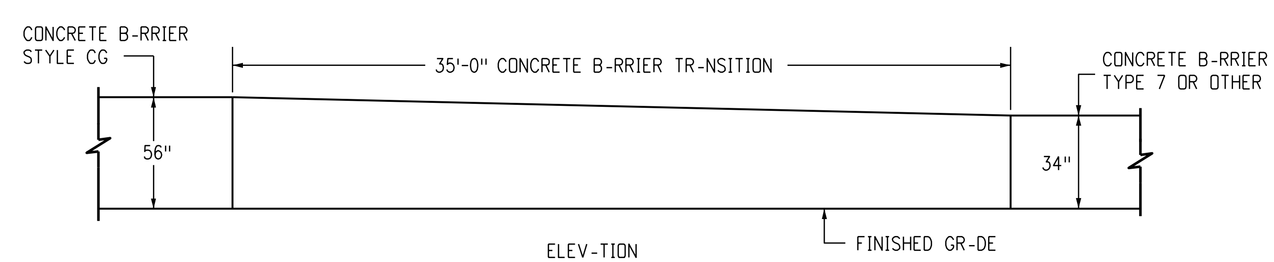
NOTES

1. SEE SHEET 3 FOR END -NCHOR-GE REQUIREMENTS. -T - MINIMUM, THE B-RRIER SH-LL BE -NCHORED -T THE ENDS -ND -T INTERRUPTIONS WITH THE 10 FOOT -NCHOR-GE. -NCHOR-GE SH-LL BE MONOLITHIC OR DOWELED WITH 2-#8 X 8" @ 2'-0 B-RS.
2. SEE SHEET 4 FOR CONCRETE B-RRIER STYLE CG -ND STYLE CGC.
3. SEE SHEET 9 FOR TR-NSITION TO THRIE BE-MS.
4. TR-NSITION TO EXISTING CONCRETE B-RRIER INST-LL-TIONS OF DISSIMIL-R SH-PE SH-LL BE -CCOMPLISHED IN ONE 15 FOOT LONG SEGMENT OF B-RRIER.
5. SEE SHEET 6 FOR CONCRETE B-RRIER STYLE C- TR-NSITIONS -T BRIDGE COLUMNS -ND SIGN PEDEST-LS IN MEDI-NS.
6. FOR STYLE CG CONNECTIONS TO STRUCTURES, SEE THE BRIDGE PL-NS.



-NCHOR-GE

B-RRIER ELEV-TION VIEW INCLUDING REINFORCED -NCHOR-GE -T END.



TR-NSITION CONCRETE B-RRIER STYLE CGE/CG TO CONCRETE B-RRIER TYPE 7 OR EXISTING

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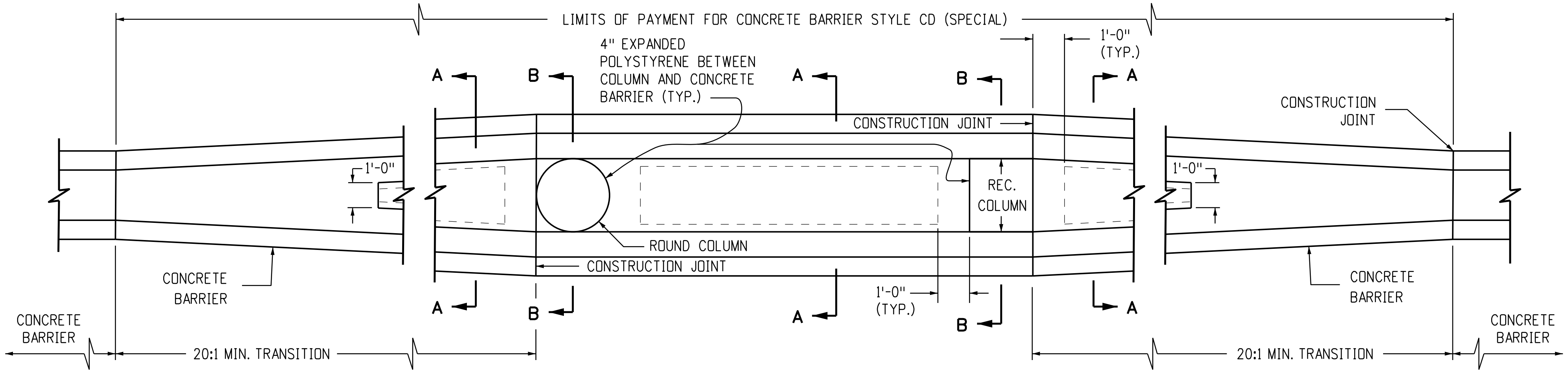
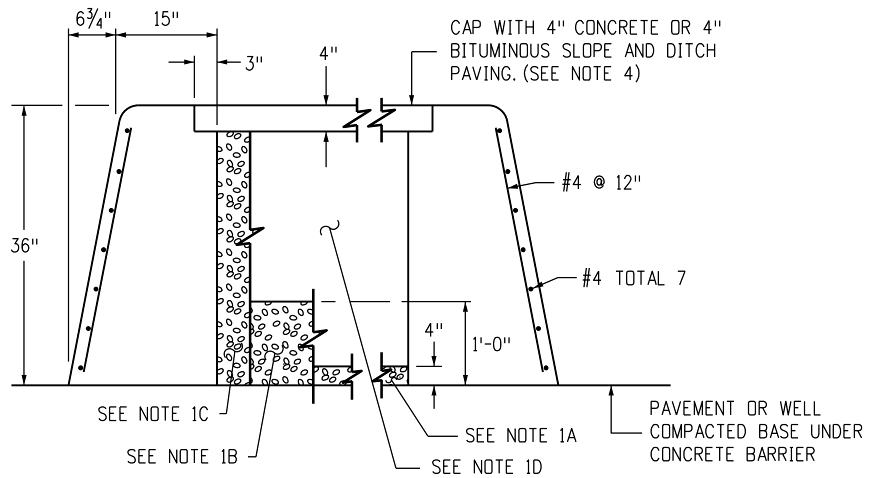


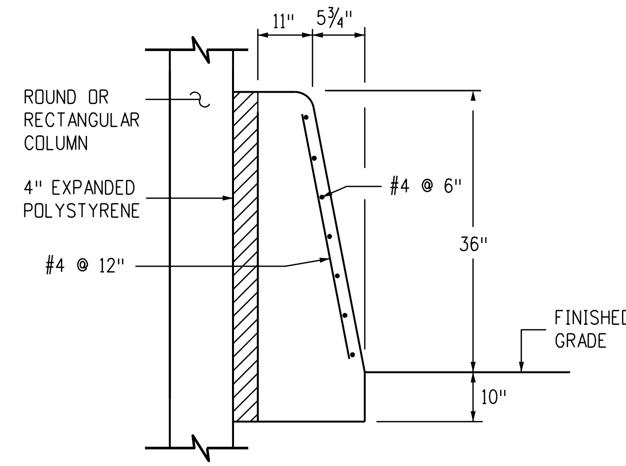
CONCRETE BARRIER TRANSITION AT BRIDGE COLUMNS

NOTES

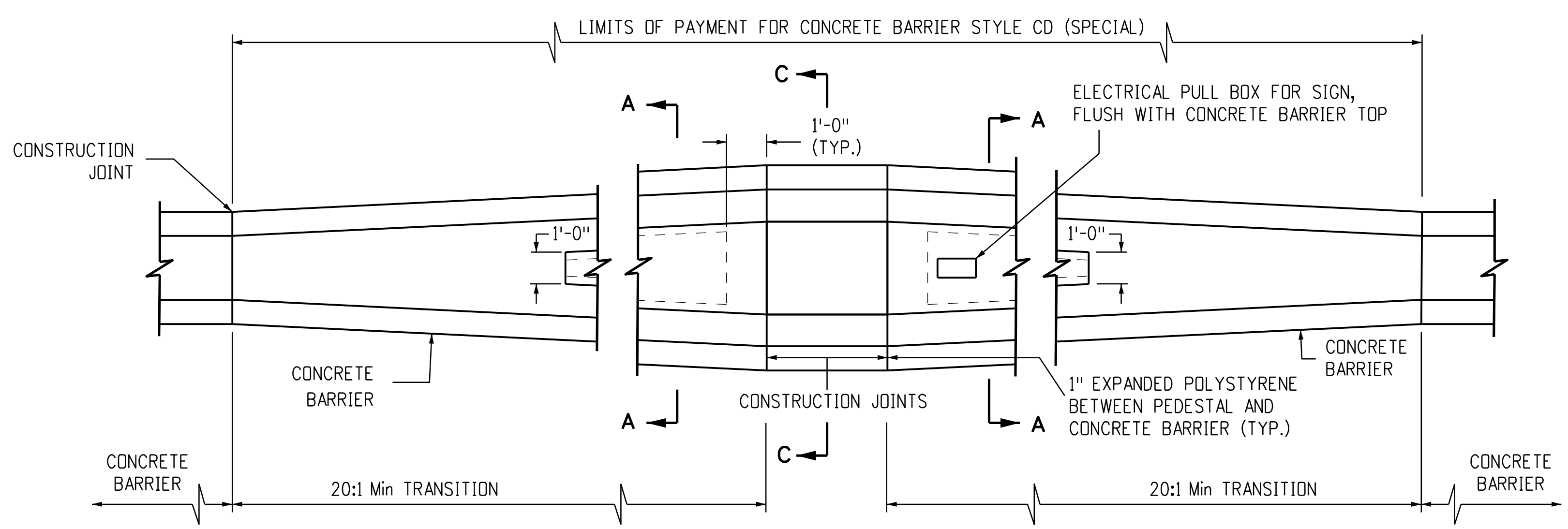
1. THE CONTRACTOR'S OPTIONS FOR FILL BETWEEN CONCRETE BARRIER WALLS:
   A. PLACE 4 INCHES OF POLYSTYRENE AT BASE BETWEEN CONCRETE BARRIER WALLS.
   B. PLACE 1 FOOT OF GRANULAR MATERIAL AT BASE BETWEEN WALLS.
   C. PLACE GRANULAR MATERIAL FROM BASE TO BOTTOM OF 4 INCH CAP.
   D. MONOLITHIC CONCRETE WITH FOAM BLOCKOUTS IS NOT PERMITTED.
2. REINFORCING STEEL SHALL EXTEND CONTINUOUS THROUGH CONSTRUCTION JOINTS.
3. SEE OVERHEAD SIGN PLANS FOR SIGN PEDESTAL ELEVATIONS FOR NEW CONSTRUCTION.
4. ADJUST HEIGHT OF CONCRETE BARRIER WALL ON LOW SIDE OF OFFSET OR SUPERELEVATED ROADWAYS TO PROVIDE LEVEL GRADE ACROSS TOP OF CONCRETE BARRIER CAP.
5. FOR OVERHEAD SIGNS, SEE STANDARD PLAN S-614-60.
6. TYPE 9 IS A MASH TEST LEVEL 3 (TL-3) APPROVED CONCRETE BARRIER DESIGNED FOR REDIRECTION AND PROTECTION FROM MOST STANDARD ROADSIDE OBSTACLES. TO PROTECT PIERS AND OTHER STRUCTURAL BRIDGE SUPPORTS, A MASH TL-5 DESIGN MAY BE REQUIRED.



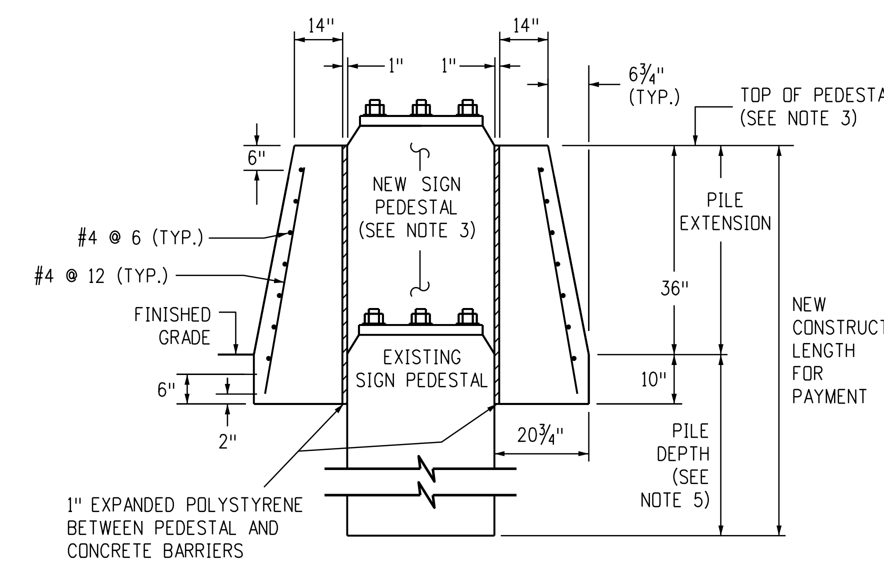
SECTION A-A



SECTION B-B



CONCRETE BARRIER TRANSITION AT SIGN PEDESTAL



SECTION C-C

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GUARDRAIL TYPE 9 SINGLE SLOPE BARRIER

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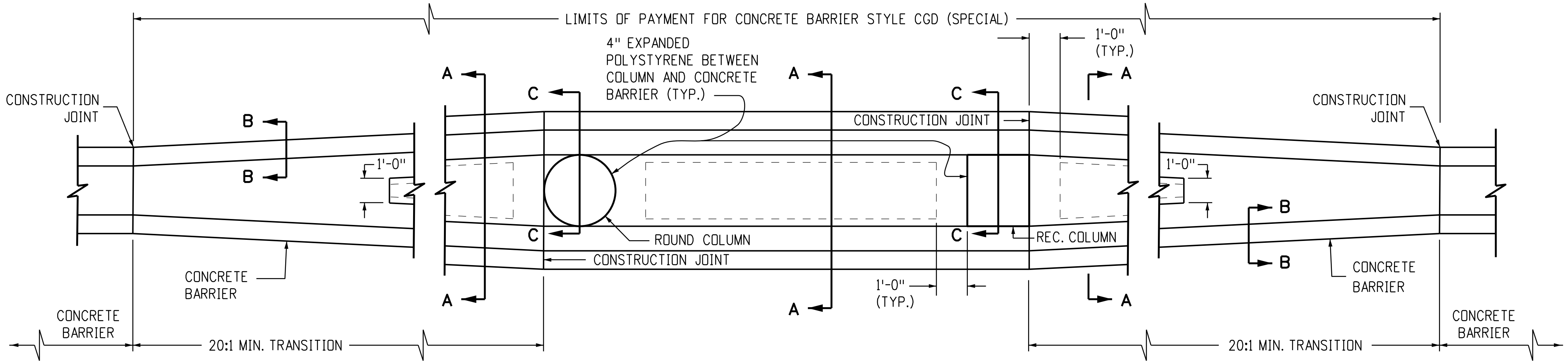
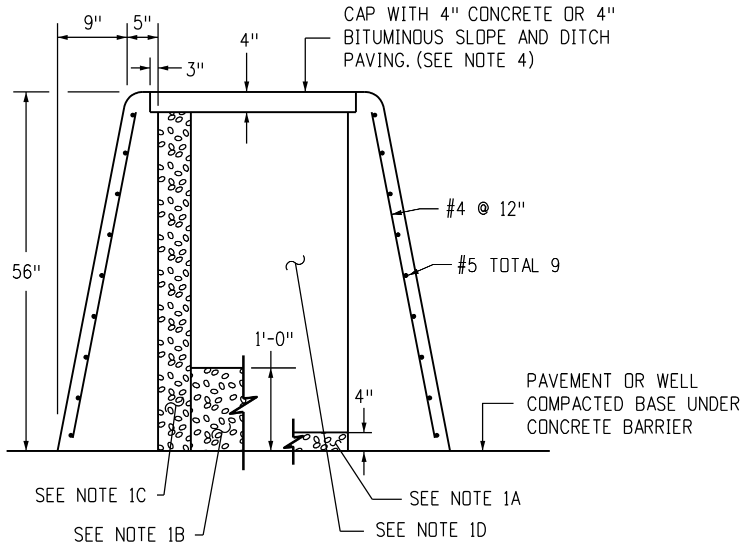
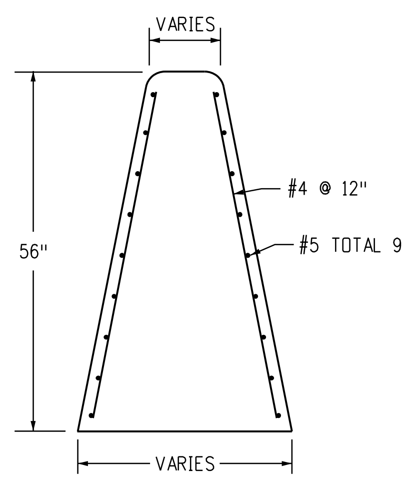


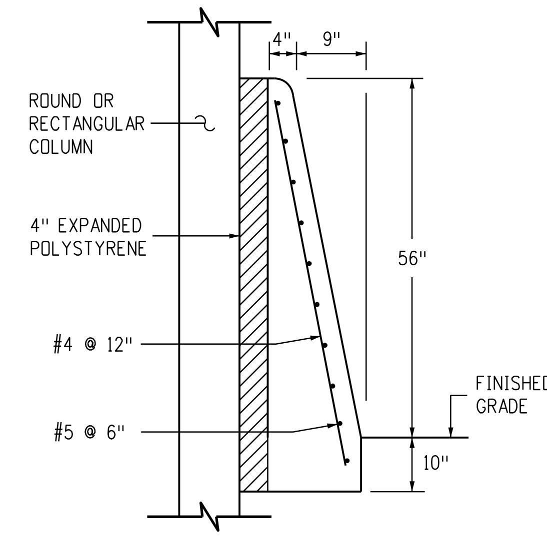
CONCRETE BARRIER TRANSITION AT BRIDGE COLUMNS



SECTION A-A



SECTION B-B



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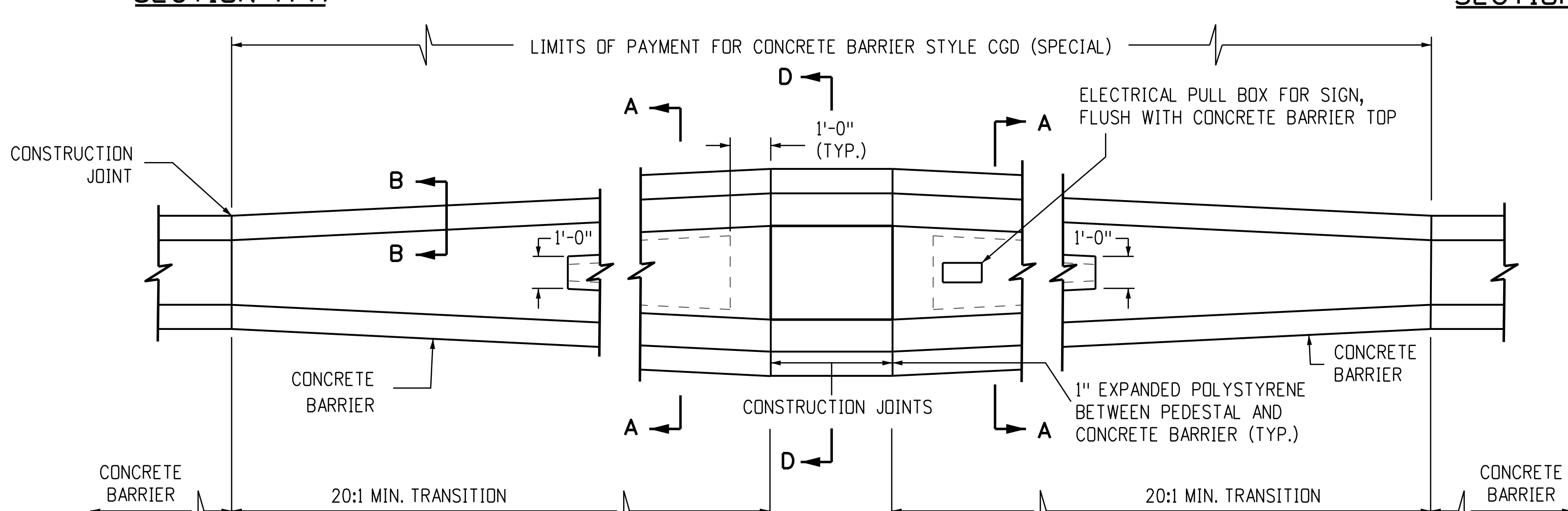
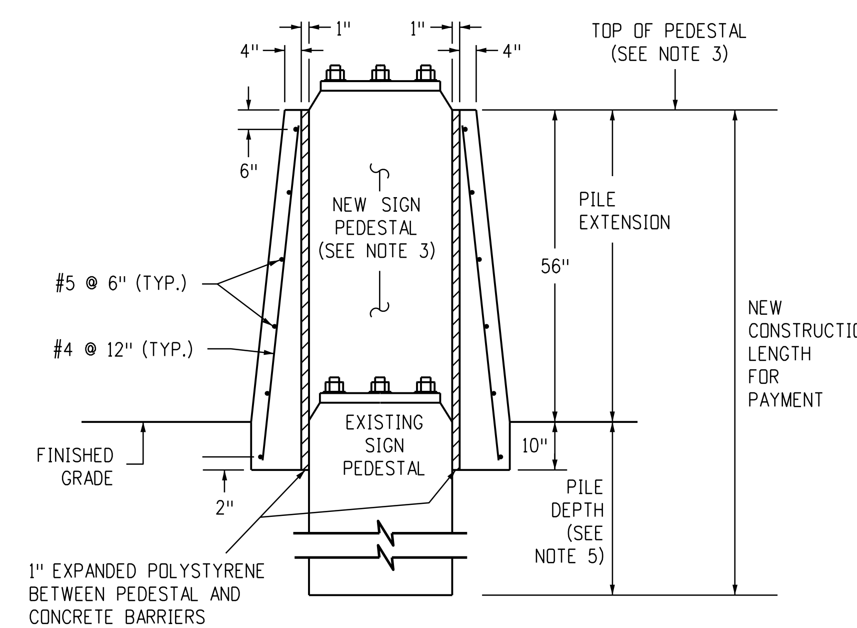


CONCRETE BARRIER TRANSITION AT SIGN PEDESTAL



SECTION D-D

NOTES

1. THE CONTRACTOR'S OPTIONS FOR FILL BETWEEN CONCRETE BARRIER WALLS:
   A. PLACE 4 INCHES OF POLYSTYRENE AT BASE BETWEEN CONCRETE BARRIER WALLS.
   B. PLACE 1 FOOT OF GRANULAR MATERIAL AT BASE BETWEEN WALLS.
   C. PLACE GRANULAR MATERIAL FROM BASE TO BOTTOM OF 4 INCH CAP.
   D. MONOLITHIC CONCRETE WITH FOAM BLOCKOUTS IS NOT PERMITTED.
2. REINFORCING STEEL SHALL EXTEND CONTINUOUS THROUGH CONSTRUCTION JOINTS.
3. SEE OVERHEAD SIGN PLANS FOR SIGN PEDESTAL ELEVATIONS FOR NEW CONSTRUCTION.
4. ADJUST HEIGHT OF CONCRETE BARRIER WALL ON LOW SIDE OF OFFSET OR SUPERELEVATED ROADWAYS TO PROVIDE LEVEL GRADE ACROSS TOP OF CONCRETE BARRIER CAP.
5. FOR OVERHEAD SIGNS, SEE STANDARD PLAN S-614-60.
6. TYPE 9 IS A MASH TEST LEVEL 3 (TL-3) APPROVED CONCRETE BARRIER DESIGNED FOR REDIRECTION AND PROTECTION FROM MOST STANDARD ROADSIDE OBSTACLES. TO PROTECT PIERS AND OTHER STRUCTURAL BRIDGE SUPPORTS, A MASH TL-5 DESIGN MAY BE REQUIRED.

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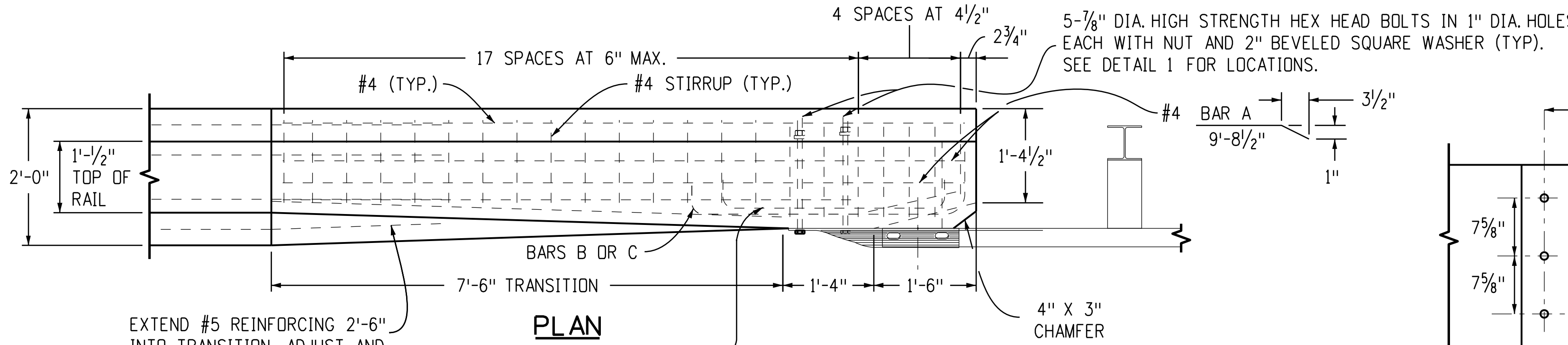
GUARDRAIL TYPE 9 SINGLE SLOPE BARRIER

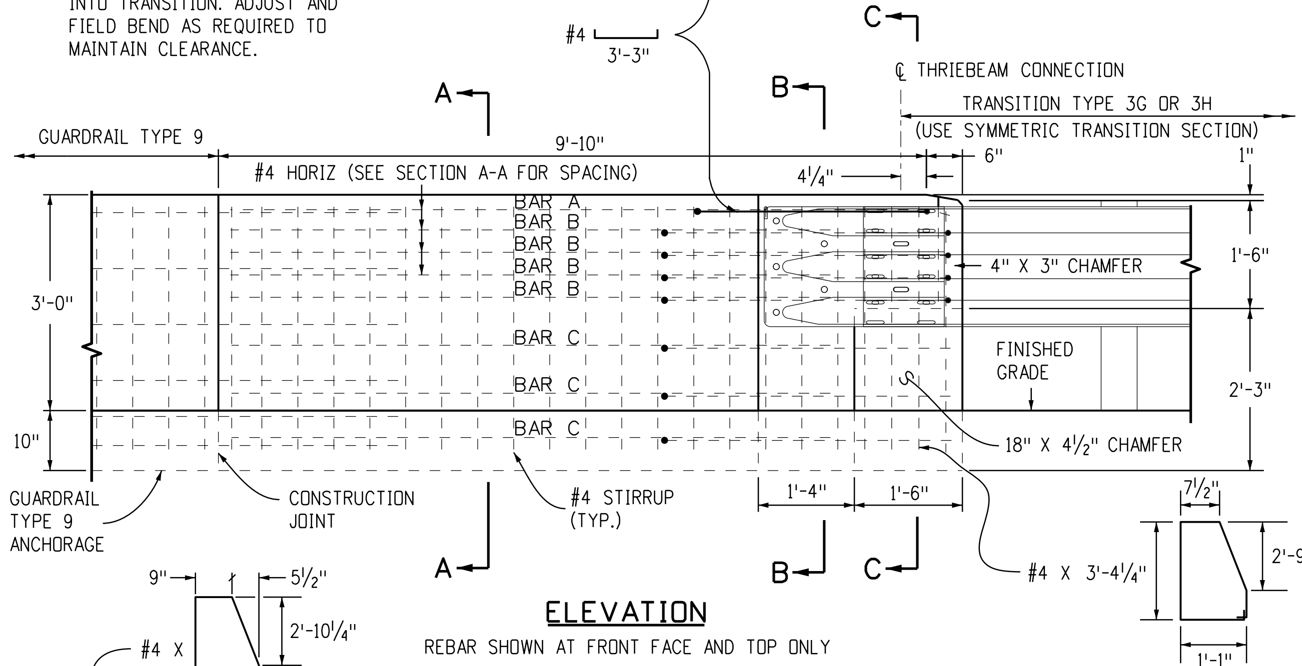
Issued by the Project Development Branch: July 31, 2019

STANDARD PLAN NO.
M-606-15
Standard Sheet No. 7 of 11

Project Sheet Number:

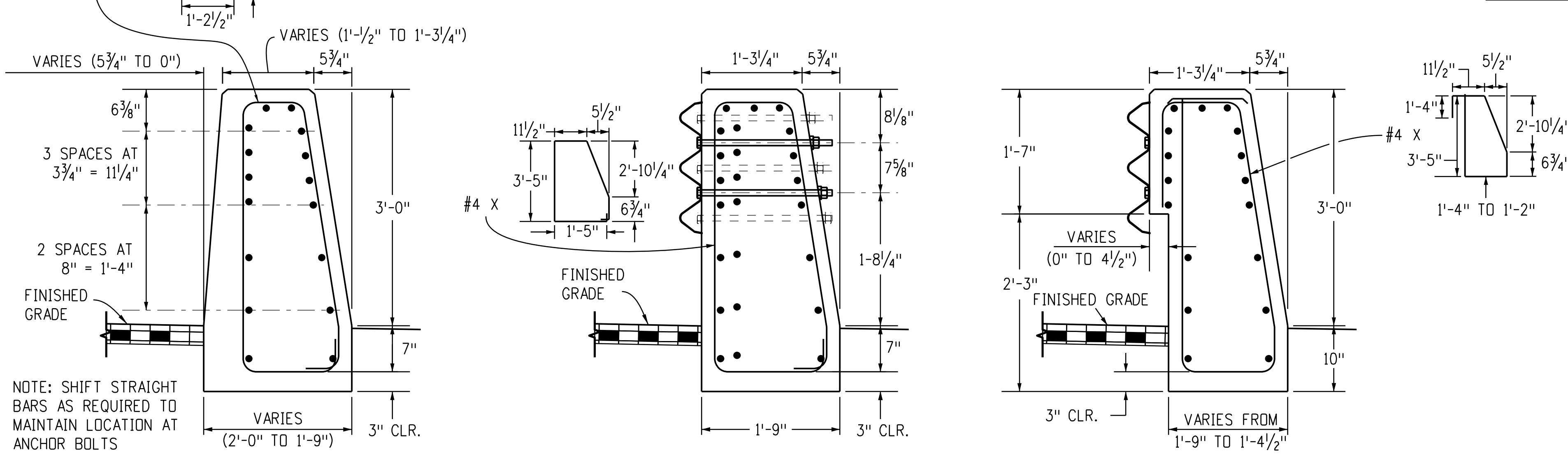


PLAN



ELEVATION

REBAR SHOWN AT FRONT FACE AND TOP ONLY



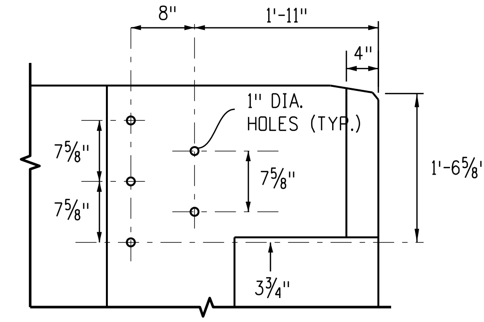
SECTION A-A

SEE SECTION A-A FOR REINFORCING SPACING

SECTION B-B

SEE SECTION A-A FOR REINFORCING SPACING

SECTION C-C



NOTE: HOLES SHALLED BE CORED THROUGH CONCRETE OR 1" INSIDE DIAMETER FULL DEPTH INSERTS PLACED BEFORE CONCRETE PLACEMENT.

DETAIL 1

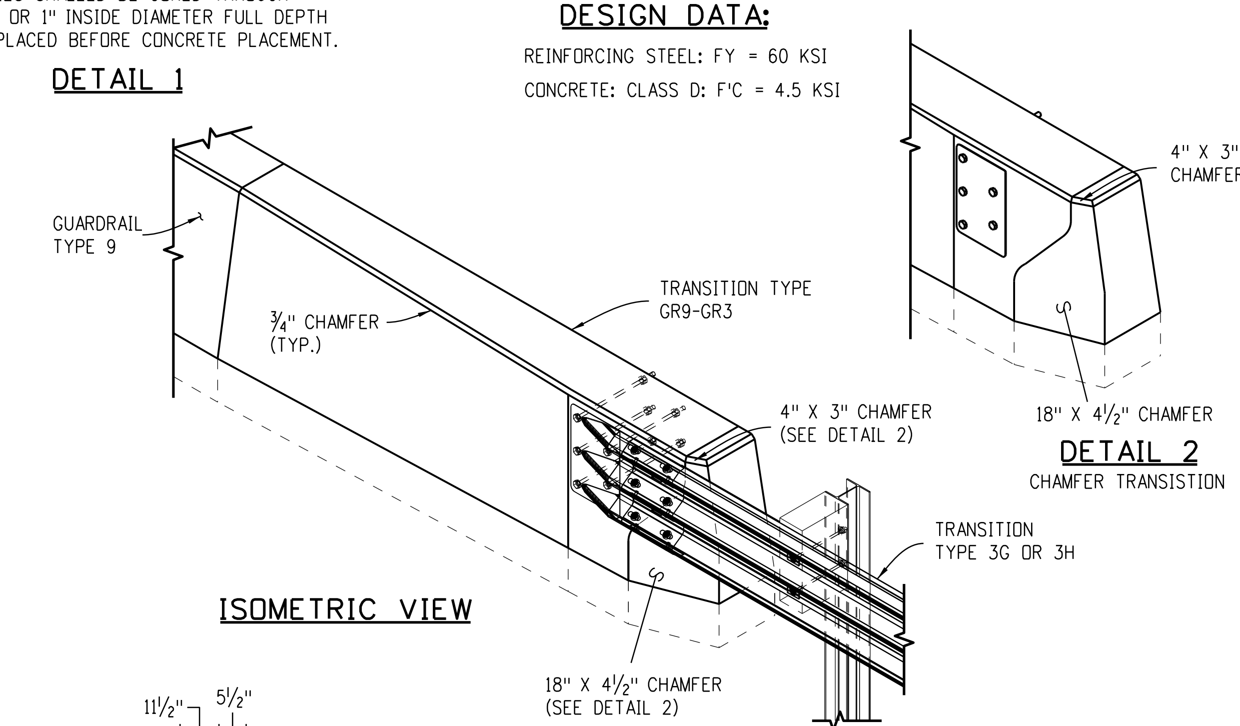
NOTES

1. PAYMENT WILL BE MADE UNDER ITEM 606, TRANSITION TYPE GR9-GR3, CONSISTING OF CONCRETE (CLASS D), REINFORCING STEEL AND OTHER ITEMS SHOWN, INCLUDING ANY EXCAVATION AND BACKFILL REQUIRED.
2. TRANSITIONS MAY BE CONSTRUCTED PERPENDICULAR TO ROADWAY CROSS SLOPE. VERTICAL DIMENSIONS ARE PERPENDICULAR TO THE LONGITUDINAL ROADWAY GRADE.
3. CONCRETE AND REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF SECTIONS 601 & 606 AND 602 RESPECTIVELY UNLESS OTHERWISE NOTED.
4. ALL REINFORCEMENTS SHALL BE LOCATED A MINIMUM OF 2 INCHES AWAY FROM THE OUTER EDGE OF THE CONCRETE.

DESIGN DATA:

REINFORCING STEEL: FY = 60 KSI

CONCRETE: CLASS D: F'C = 4.5 KSI



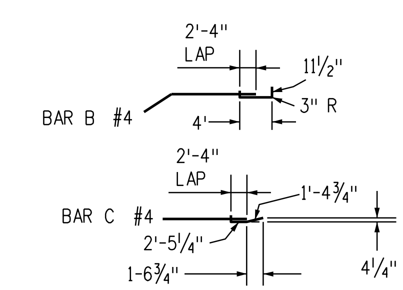
ISOMETRIC VIEW

DETAIL 2

CHAMFER TRANSITION

INFORMATION ONLY

DESCRIPTION	UNIT	EACH
STRUCTURAL STEEL (GALVANIZED)	LB	22
CONCRETE CLASS D	CY	2.4
REINFORCING STEEL (EPOXY COATED)	LB	301



REINFORCING DIMENSIONS (FRONT BARS)

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Sheet Revisions	
Date:	Comments
03/05/20	Completely revised this sheet for the new roadway transition type GR9-GR3.
12/14/21	Deleted macro fiber Concrete Class D in urban areas note under Design Data.
02/17/23	Simplified Steel Reinforcing Details

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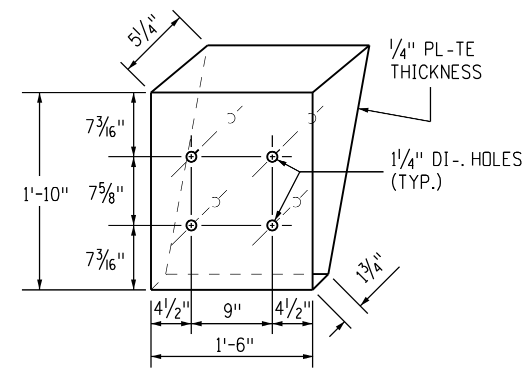
GUARDRAIL TYPE 9 SINGLE SLOPE BARRIER

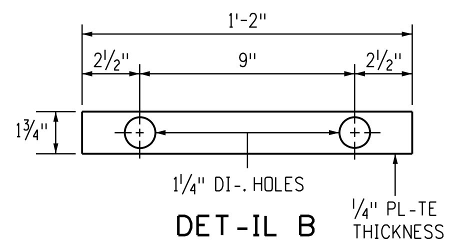
Issued by the Project Development Branch: July 31, 2019

STANDARD PLAN NO.
M-606-15
Standard Sheet No. 8 of 11

Project Sheet Number:



DET-IL -
BEVELED MET-L BOX SP-CE
(SEE NOTE 1)



DET-IL B
PL-TE -

LEGEND

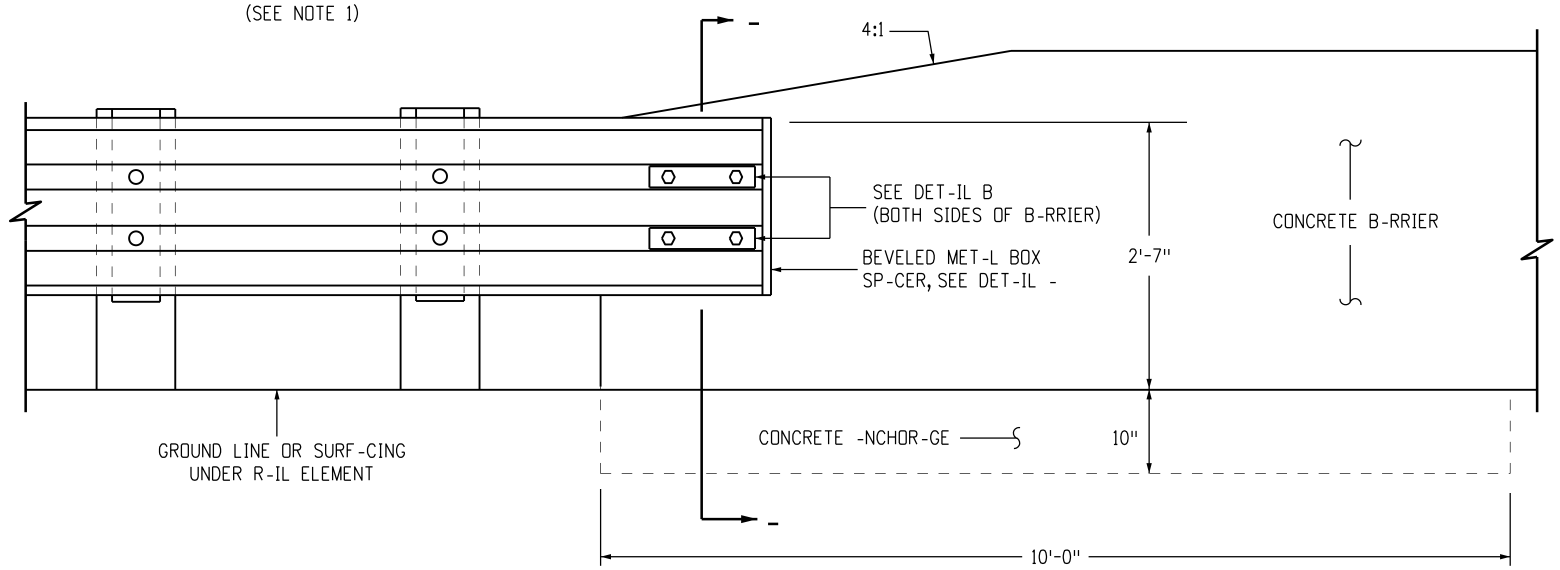
- (-) NESTED THRIE BE-M ELEMENTS (ONE 12 G-UGE ELEMENT NESTED OVER ONE 10 G-UGE ELEMENT).
- (B) ONE 10 G-UGE THRIE BE-M ELEMENT.
- (C) ONE 12 G-UGE THRIE BE-M ELEMENT.

10 G-UGE = 0.135" THICK

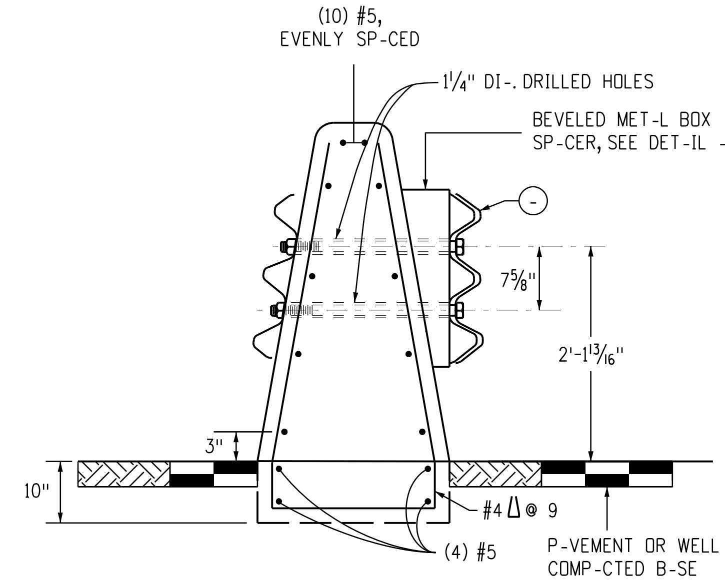
12 G-UGE = 0.108" THICK

NOTES

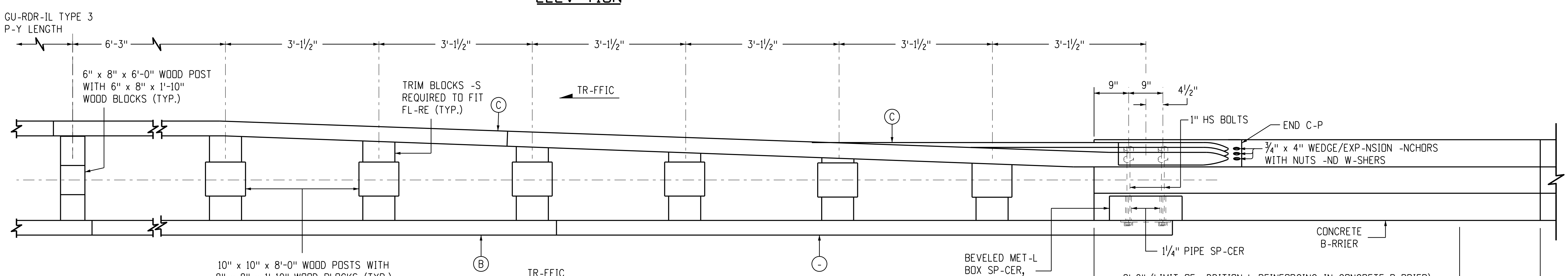
1. WHERE BEVELED MET-L BOX SP-CERS -RE INST-LLED, PL-CE - 11¼ INCH X 3¼ INCH -ND - 1¼ INCH X 2 INCH PIPE SP-CERS ON 1 INCH HS BOLTS P-SSING THROUGH THE INTERIOR OF BOX.
2. -LL MET-L BOXES SH-LL BE G-LV-NIZED.



ELEV-TION



SECTION ---



PL-N

DOUBLE THRIE BE-M B-RRIER CONNECTION TO CONCRETE B-RRIER

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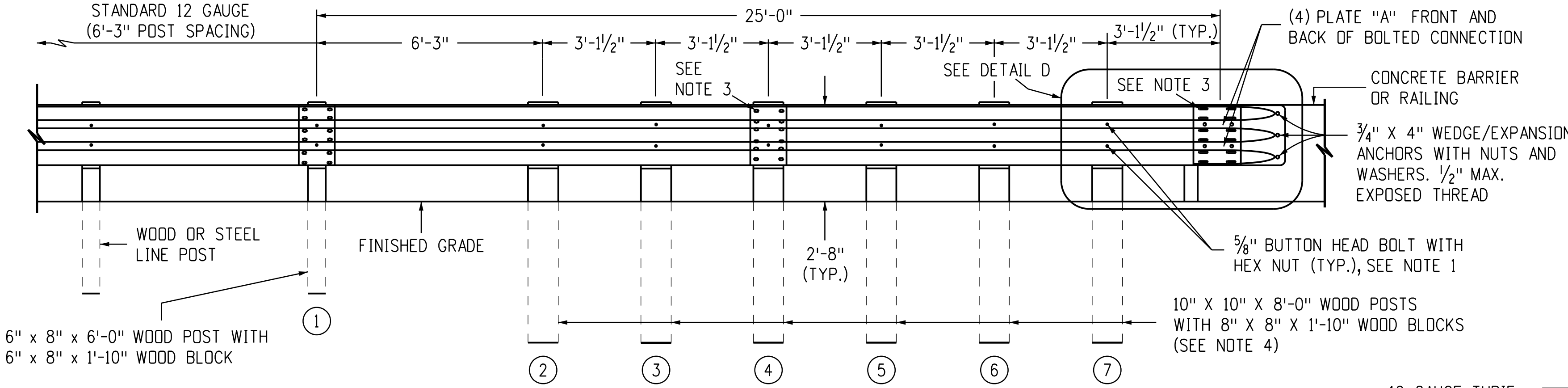
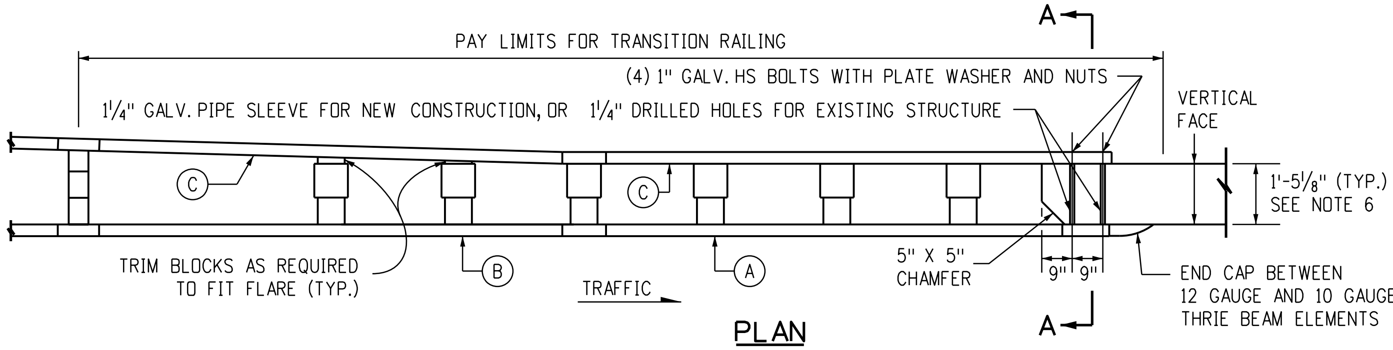
GUARDRAIL TYPE 9 SINGLE SLOPE BARRIER

Issued by the Project Development Branch: July 31, 2019

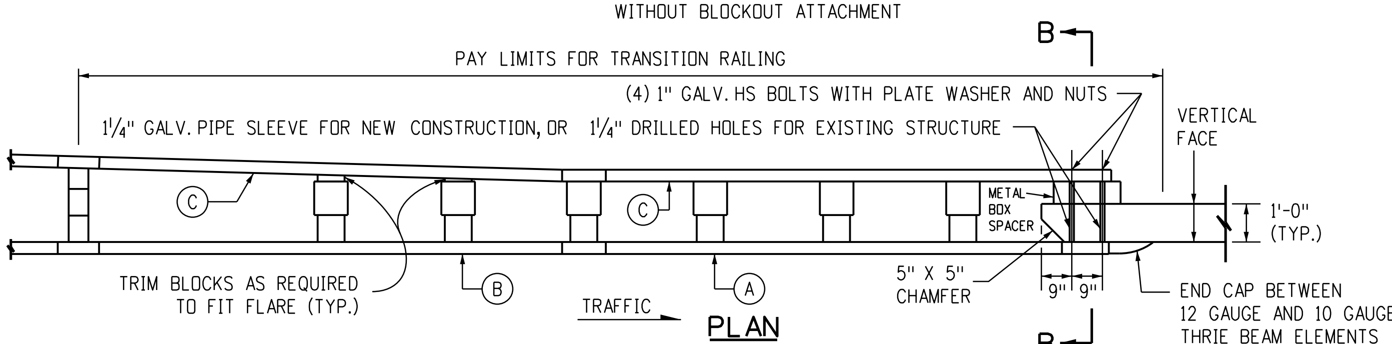
STANDARD PLAN NO.
M-606-15
Standard Sheet No. 9 of 11
Project Sheet Number:



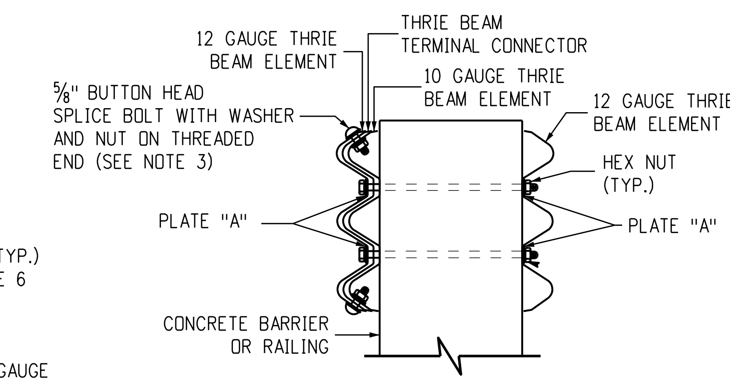
ELEVATION



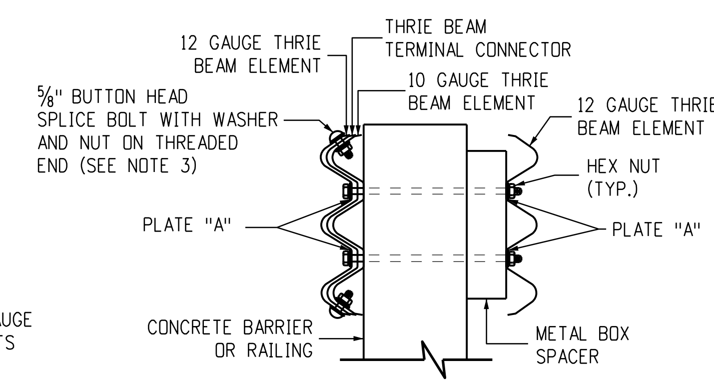
PLAN
TRANSITION RAILING
WITHOUT BLOCKOUT ATTACHMENT



PLAN
TRANSITION RAILING
WITH BLOCKOUT ATTACHMENT



SECTION A-A



SECTION B-B

LEGEND

(A) NESTED THRIE BEAM ELEMENTS (ONE 12 GAUGE ELEMENT NESTED OVER ONE 10 GAUGE ELEMENT)

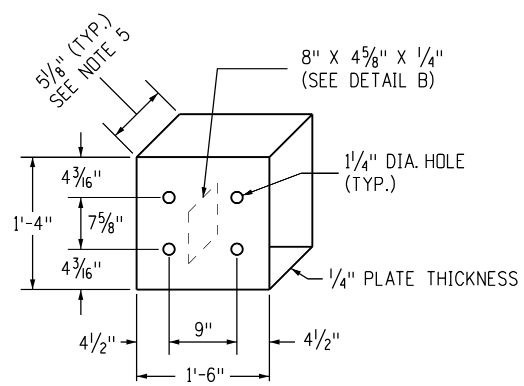
(B) ONE 10 GAUGE THRIE BEAM ELEMENT

(C) ONE 12 GAUGE THRIE BEAM ELEMENT

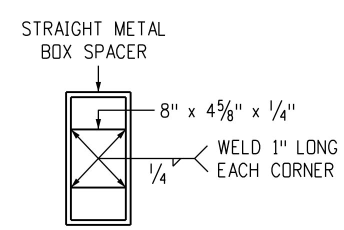
10 GAUGE = 0.135" THICK
12 GAUGE = 0.108" THICK

NOTES

1. USE 5/8" BUTTON HEAD BOLTS AND HEX NUTS FOR CONNECTIONS TO POSTS. NO WASHER ON RAIL FACE FOR BOLTED CONNECTIONS TO POST.
2. THE NESTED RAIL ELEMENTS, END CAP AND SINGLE 10 GAUGE THRIE BEAM ELEMENT, MAY BE SPLICED TOGETHER PRIOR TO BOLTING THE ELEMENTS TO THE WOOD POST AND CONCRETE BARRIER OR RAILING.
3. EXTERIOR SPLICE BOLT HOLES FOR RAIL ELEMENT SPLICES AT POST (4) AND THE CONNECTION TO THE CONCRETE BARRIER OR RAILING SHALL BE THE STANDARD 29/32" X 1 1/8" SLOT SIZE. INTERIOR SPLICE BOLT HOLES AT THESE LOCATIONS MAY BE INCREASED UP TO 1 1/4". ONLY THE TOP TWO AND THE BOTTOM TWO SPLICE BOLTS WITH WASHERS AND NUTS ARE REQUIRED FOR RAIL SPLICES AT POST (4) AND THE CONNECTION TO THE CONCRETE BARRIER OR RAILING.
4. THE TOP ELEVATION OF POSTS (1) THROUGH (7) SHALL NOT PROJECT MORE THAN 1 INCH ABOVE THE TOP ELEVATION OF THE RAIL ELEMENT.
5. THE DEPTH OF THE METAL BOX SPACER VARIES FROM THE 5 1/8" TO 1 1/2" AND IS DEPENDENT ON THE WIDTH OF THE CONCRETE RAILING OR WALL. THE COMBINED DIMENSION FOR THE DEPTH OF THE METAL BOX SPACER PLUS THE WIDTH OF RAILING OR WALL IS TYPICALLY 17 1/8". WHERE THE SPACE BETWEEN THE BACKSIDE OF THE CONCRETE RAILING OR WALL AND THE REAR THRIE BEAM ELEMENT IS LESS THAN 1 1/2", METAL PLATES SIMILAR TO PLATE "A" ARE BE USED AS SPACERS.
6. WHERE THE WIDTH OF THE CONCRETE RAILING OR WALL IS GREATER THAN 17 1/8", WOOD BLOCKS ARE TO BE USED TO FILL THE SPACE CREATED BETWEEN THE BACKSIDE OF POST (4) THROUGH NO. (7) AND THE REAR THRIE BEAM ELEMENT. THESE WOOD BLOCKS SHALL BE 8 INCHES IN WIDTH AND ONE FOOT-TWO INCHES IN LENGTH. THE DIMENSION BETWEEN THE FRONT THRIE BEAM ELEMENT AND THE REAR THRIE BEAM ELEMENT IS TO MATCH THE WIDTH OF THE CONCRETE RAILING OR WALL.



DETAIL A
PLACEMENT OF HOLES FOR FRONT AND BACK PANELS



DETAIL B

STRAIGHT METAL BOX SPACER

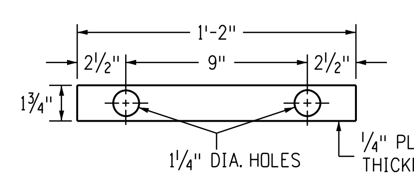
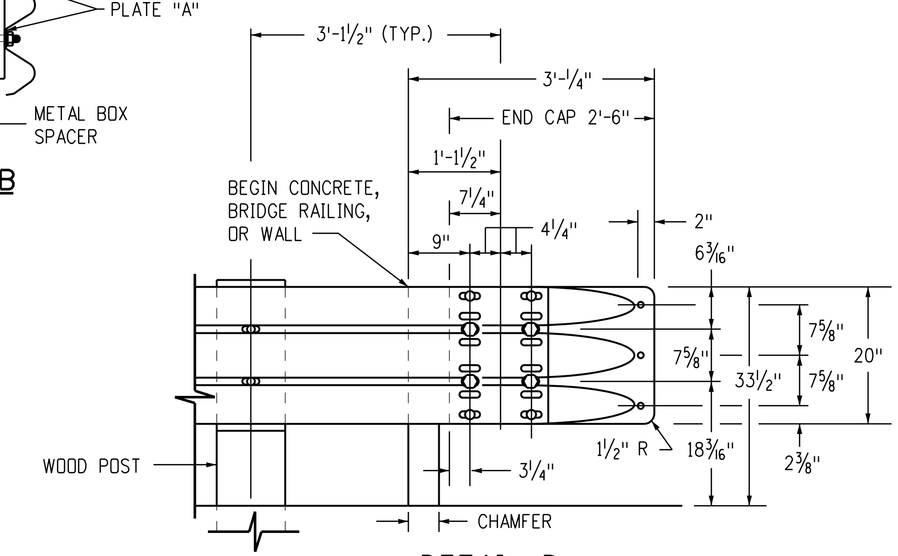


PLATE "A"
DETAIL C



DETAIL D
SEE MANUFACTURER'S DETAILS FOR EXACT DIMENSIONS

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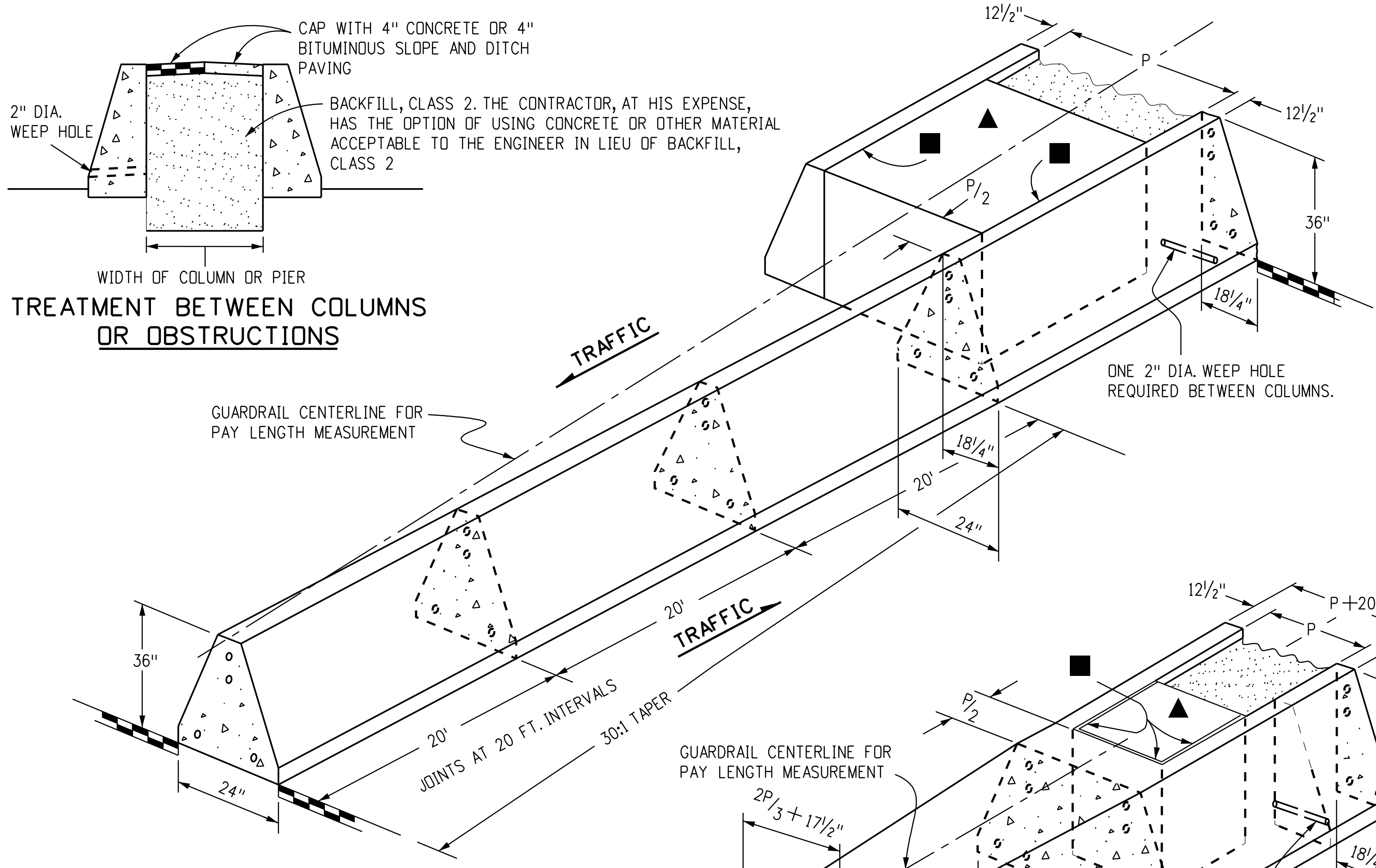
Last Modification Date: 02/17/23	(R-X)					
Detailer Initials: LTA	(R-X)					
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)			Construction Engineering Services JBK	Issued by the Project Development Branch: July 31, 2019	Project Sheet Number:

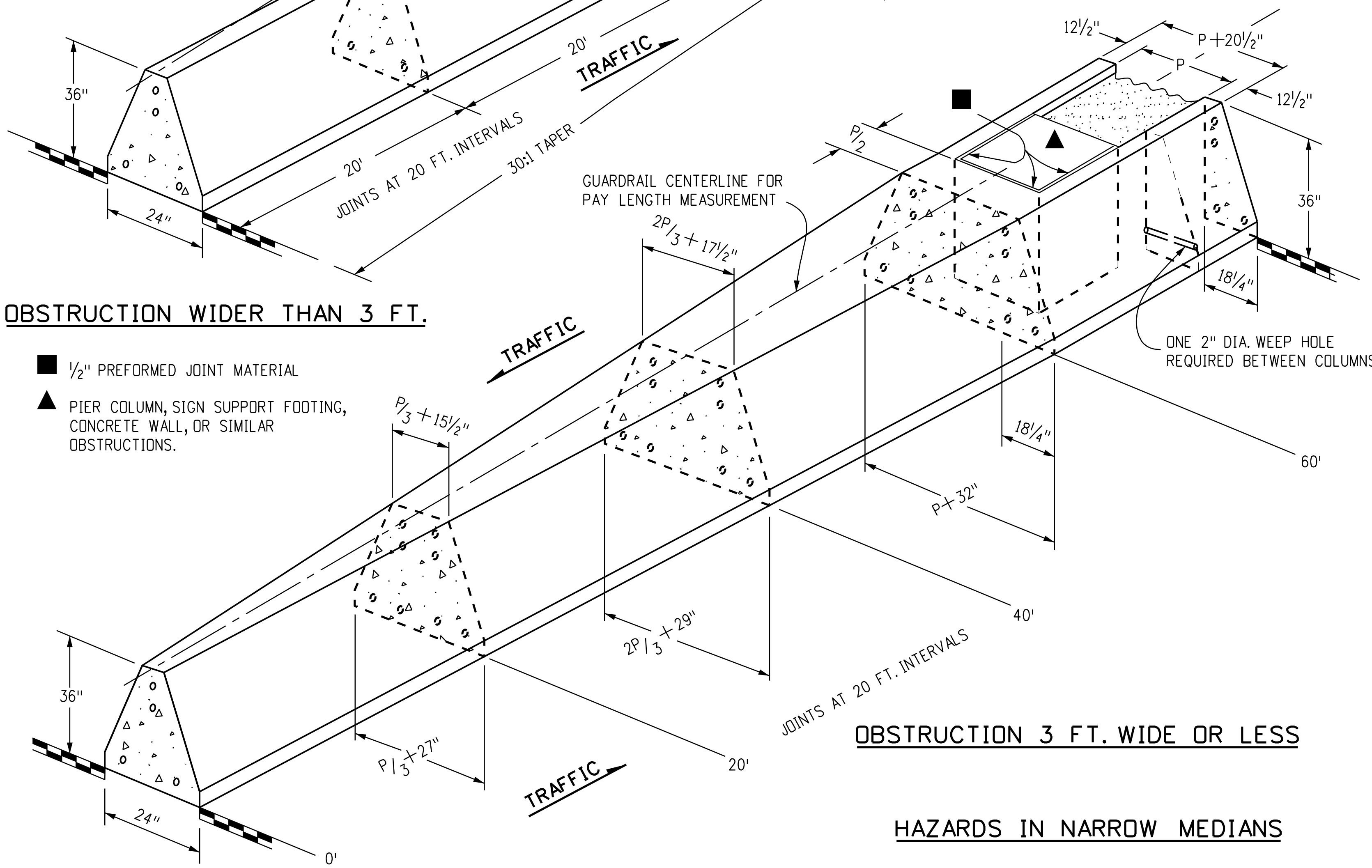


TREATMENT BETWEEN COLUMNS OR OBSTRUCTIONS

OBSTRUCTION WIDER THAN 3 FT.

■ ½" PREFORMED JOINT MATERIAL

▲ PIER COLUMN, SIGN SUPPORT FOOTING, CONCRETE WALL, OR SIMILAR OBSTRUCTIONS.



OBSTRUCTION 3 FT. WIDE OR LESS

HAZARDS IN NARROW MEDIANS

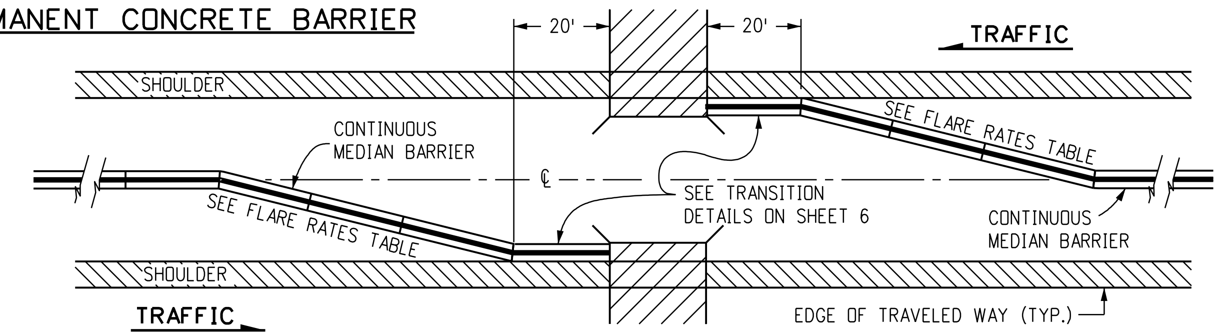
DESIGN SPEED (MPH)	SHY LINE OFFSET (FT.) *	FLARE RATE FOR BARRIER INSIDE SHY LINE	FLARE RATE FOR BARRIER OUTSIDE SHY LINE
80	12	30:1	20:1
75	10	30:1	20:1
70	9	30:1	20:1
60	8	26:1	18:1
55	7	24:1	16:1
50	6.5	21:1	14:1
45	6	18:1	12:1
40	5	16:1	10:1
30	4	13:1	8:1

* THE SHY LINE OFFSET IS MEASURED FROM THE EDGE OF THE TRAVELED WAY.

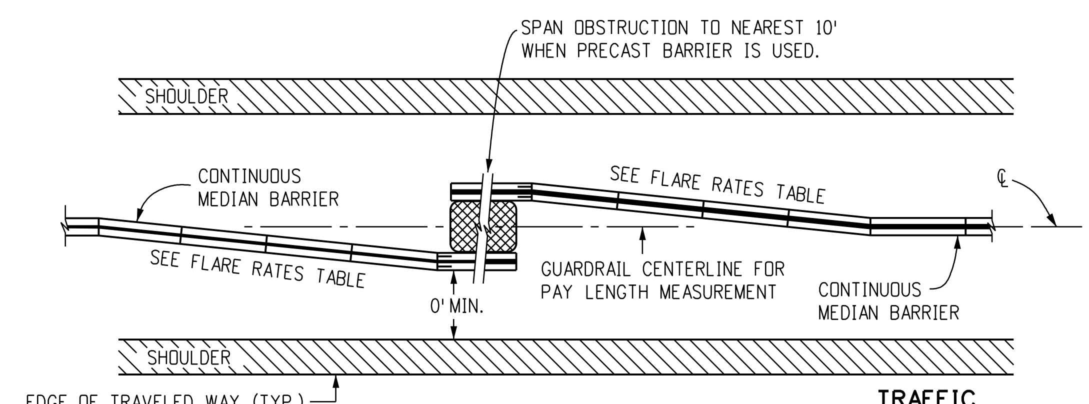
TABLE OF FLARE RATES FOR PERMANENT CONCRETE BARRIER

NOTES

1. THE MEDIAN IN THESE APPLICATIONS SHALL BE PAVED ON A SLOPE CONTINUED FROM THE ADJACENT PAVED SHOULDER OR A 10:1 OR FLATTER SLOPE.
2. THE PAY LENGTH FOR BARRIER ON BOTH SIDES OF AN OBSTRUCTION WILL BE DETERMINED BY ONE LINEAR MEASUREMENT ALONG THE GUARDRAIL CENTERLINE. THE BACKFILL AND CAP BETWEEN COLUMNS OR OBSTRUCTIONS WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
3. GUARDRAIL BETWEEN COLUMNS OR OBSTRUCTIONS MAY BE STYLES CA OR CD AS SHOWN ON THE PLANS.
4. TYPE 9 IS A MASH TEST LEVEL 3 (TL-3) APPROVED CONCRETE BARRIER DESIGNED FOR REDIRECTION AND PROTECTION FROM MOST STANDARD ROADSIDE OBSTACLES. TO PROTECT PIERS AND OTHER STRUCTURAL BRIDGE SUPPORTS, A MASH TL-5 DESIGN MAY BE REQUIRED.

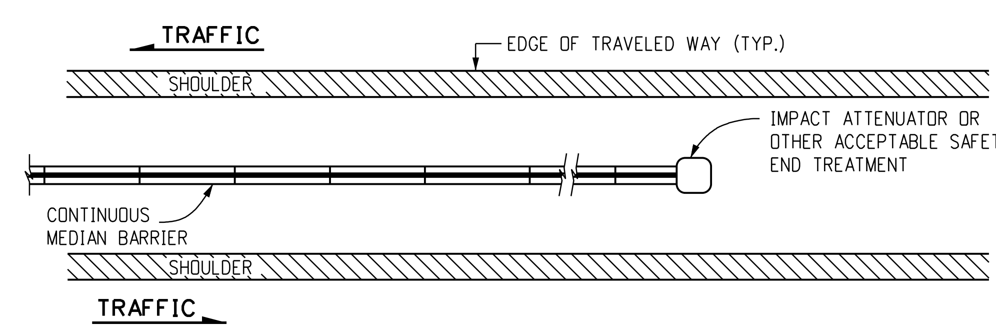


BRIDGE APPROACH



STYLE CA AT OBSTRUCTION

(OBSTRUCTION NOT SUITABLE FOR STYLE CD)



MEDIAN BARRIER END TREATMENT

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