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40	CD-602-3 INLETS, TYPE B1, B2, & B, B1, & B2 MODIFIED	76A	CD-609-15A BEAM GUIDE RAIL ATTACHMENTS		
41	CD-602-4 INLETS, TYPE E, E1, E2, & ES	76B	CD-609-15B BEAM GUIDE RAIL ATTACHMENTS		

ABBREVIATIONS

CD = ROADWAY
TCD = TRAFFIC CONTROL DETAILS
BCD = BRIDGE CONSTRUCTION DETAILS

INDEX FOR STANDARD ROADWAY CONSTRUCTION DETAILS

INDEX SHEET 1

DESCRIPTION	CD	DESCRIPTION	CD	DESCRIPTION	CD
BEAM GUIDE RAIL (BGR)		BEAM GUIDE RAIL ATTACHMENTS		CONSTRUCTION SIGNS	
BEAM GUIDE RAIL	CD-609-1.1	BEAM GUIDE RAIL ATTACHMENT TO SIDEWALK	CD-609-11.1	CONSTRUCTION SIGNS	CD-159-6.1
BEAM GUIDE RAIL, DUAL FACED	CD-609-2.1	BEAM GUIDE RAIL ATTACHMENT TO EXISTING BALUSTRADE	CD-609-12.1	CONSTRUCTION SIGNS	CD-159-7.1
RUB RAIL	CD-609-3.1	BEAM GUIDE RAIL ATTACHMENTS	CD-609-13.1	INTERSTATE CONSTRUCTION IDENTIFICATION SIGN	CD-159-8
MODIFIED THRIE BEAM GUIDE RAIL	CD-609-18.1	GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION - MASH TL-3 F SHAPE BARRIER PARAPET (NO ROADWAY CURBING ON APPROACH)	CD-609-14.1	CONSTRUCTION IDENTIFICATION SIGN	CD-159-9
MODIFIED THRIE BEAM GUIDE RAIL, DUAL FACED	CD-609-19.1				
THRIE BEAM GUIDE RAIL TRANSITIONS	CD-609-20.1	GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION - MASH TL-3 F SHAPE BARRIER PARAPET (WITH ROADWAY CURBING ON APPROACH)	CD-609-15.1		
		GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION - MASH TL-2 F SHAPE BARRIER PARAPET (NO ROADWAY CURBING ON APPROACH)	CD-609-15A.1	CRASH CUSHIONS	
BEAM GUIDE RAIL TREATMENTS		GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION - MASH TL-2 F SHAPE BARRIER PARAPET (WITH ROADWAY CURBING ON APPROACH)	CD-609-15B.1	TEMPORARY CRASH CUSHIONS COMPRESSIVE BARRIER SUMMARY TABLE	CD-159-10.1
MEDIAN GUIDE RAIL TREATMENTS	CD-609-7			CRASH CUSHIONS COMPRESSIVE BARRIER SUMMARY TABLE	CD-611-11.1
TELESCOPING GUIDE RAIL END TERMINAL	CD-609-7.1				
DUAL FACED MEDIAN GUIDE RAIL AND TANGENT OR FLARED TERMINAL	CD-609-7.2	GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION - MASH TL-3 SIDEWALK WITH ONE RAIL STEEL BRIDGE RAILING PARAPET	CD-609-16.1	CULVERTS	
MEDIAN GUIDE RAIL TREATMENTS	CD-609-7A			CONCRETE CULVERT	CD-602-11.1
TELESCOPING GUIDE RAIL END TERMINAL CONNECTION TO DUAL FACED MODIFIED THRIE BEAM GUIDE RAIL	CD-609-7A.1	GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION - MASH TL-2 SIDEWALK WITH ONE RAIL STEEL BRIDGE RAILING PARAPET	CD-609-16A.1	CONSTRUCTION JOINT OF CULVERT	CD-602-11.2
MEDIAN GUIDE RAIL TREATMENT AT ADJACENT BRIDGES	CD-609-7A.2				
OVERLAPPING DUAL FACED MEDIAN BEAM GUIDE RAIL	CD-609-7B.1	GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION - MASH TL-3 SIDEWALK WITH 4 BAR OPEN STEEL BRIDGE RAILING PARAPET	CD-609-17.1	CURBS	
BEAM GUIDE RAIL TREATMENTS	CD-609-8			CONCRETE AND GRANITE CURB	CD-607-1
CLEARANCE FROM FACE OF RAIL TO OBSTRUCTION	CD-609-8.1	GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION - MASH TL-2 SIDEWALK WITH 4 BAR OPEN STEEL BRIDGE RAILING PARAPET	CD-609-17A.1	GENERAL NOTES APPLYING TO ALL TYPES OF DOWELLED CURBS	CD-607-1.1
ADDITIONAL LENGTH BEAM GUIDE RAIL POSTS	CD-609-8.2			9" x ___" CONCRETE VERTICAL CURB, DOWELLED	CD-607-1.2
GUIDE RAIL POST INSTALLATION IN ROCK	CD-609-8.3	GUIDE RAIL ATTACHMENT - MASH TL-3 - EXISTING NJ BARRIER PARAPET (NO ROADWAY CURBING ON APPROACH)	CD-609-17B.1	12" x 3" CONCRETE SLOPING CURB, DOWELLED	CD-607-1.3
VERTICAL TRANSITION TO EXISTING 27¼" HIGH GUIDE RAIL	CD-609-8.4			CONCRETE VERTICAL CURB MONOLITHIC WITH CONCRETE BASE COURSE	CD-607-1.4
BEAM GUIDE RAIL TREATMENTS	CD-609-8A	GUIDE RAIL ATTACHMENT - MASH TL-3 - EXISTING NJ BARRIER PARAPET (WITH ROADWAY CURBING ON APPROACH)	CD-609-17C.1	12" x 13" CONCRETE SLOPING CURB	CD-607-1.5
18'-9" OR 25'-0" UNSUPPORTED SPAN	CD-609-8A.1			CONCRETE VERTICAL CURB	CD-607-1.6
12'-6" UNSUPPORTED SPAN	CD-609-8A.2	GUIDE RAIL ATTACHMENT - MASH TL-2 - EXISTING NJ BARRIER PARAPET (NO ROADWAY CURBING ON APPROACH)	CD-609-17D.1	CONCRETE VERTICAL CURB MONOLITHIC WITH CONCRETE PAVEMENT	CD-607-1.7
RAIL HEIGHT DETERMINATION	CD-609-8A.3			NEW OR RESET GRANITE CURB	CD-607-1.8
		GUIDE RAIL ATTACHMENT - MASH TL-2 - EXISTING NJ BARRIER PARAPET (WITH ROADWAY CURBING ON APPROACH)	CD-609-17E.1	LIP CURB FOR BEAM GUIDE RAIL ATTACHMENTS	CD-607-1.9
				BARRIER CURB AND VERTICAL CURB	CD-607-2
BEAM GUIDE RAIL TERMINALS				MASH TL-3 NJ BARRIER CURB	CD-607-2.1
BEAM GUIDE RAIL ANCHORAGE	CD-609-4.1	CONCRETE PAVEMENT REHABILITATION		CURB TREATMENT AT BERM SECTION AND ALL CURB ENDS	CD-607-2.2
FLARED GUIDE RAIL TERMINAL AND TANGENT GUIDE RAIL TERMINAL	CD-609-5.1	SLAB STABILIZATION	CD-451-1.1	APPROACH CURBED GORE AREA TREATMENT	CD-607-2.3
CONTROLLED RELEASE TERMINAL	CD-609-6	PARTIAL DEPTH CONCRETE PAVEMENT REPAIR	CD-452-1.1	METHOD OF DEPRESSING CURB AT DRIVEWAYS	CD-607-2.4
CONTROLLED RELEASE TERMINAL	CD-609-6.1	FULL DEPTH CONCRETE PAVEMENT REPAIR	CD-453-1.1	LINEAR CURB TRANSITION	CD-607-2.5
CONTROLLED RELEASE TERMINAL ANCHORAGE	CD-609-6.2	FULL DEPTH CONCRETE PAVEMENT REPAIR	CD-453-2	BARRIER CURB	CD-607-3
GENERAL NOTES	CD-609-6.3	REINFORCEMENT STEEL FOR FULL DEPTH CONCRETE PAVEMENT REPAIR, CLASS ___	CD-453-2.1	24" x ___" CONCRETE BARRIER CURB, DOWELLED	CD-607-3.1
BURIED GUIDE RAIL TERMINAL	CD-609-9.1			24" x 41" CONCRETE BARRIER CURB	CD-607-3.2
GRADING AND ROADSIDE RECOVERY AREA AT FLARED AND TANGENT GUIDE RAIL TERMINALS	CD-609-10	FULL DEPTH CONCRETE PAVEMENT REPAIR, HMA	CD-453-2.2	OPENINGS TO BE CONSTRUCTED IN BARRIER CURB	CD-607-3.3
GRADING TREATMENT AT FLARED AND TANGENT GUIDE RAIL TERMINALS	CD-609-10.1	RETROFIT DOWEL BARS	CD-454-1	MASH TL-5 F SHAPE BARRIER CURB	CD-607-4.1
RECOVERY AREA AT FLARED AND TANGENT GUIDE RAIL TERMINALS	CD-609-10.2	RETROFIT DOWEL BARS AT EXISTING JOINT	CD-454-1.1	BARRIER CURB	CD-607-5
		RETROFIT DOWEL BARS AT PAVEMENT CRACK	CD-454-1.2	24½" x ___" F SHAPE CONCRETE BARRIER CURB, DOWELLED	CD-607-5.1
				24½" x 51" F SHAPE CONCRETE BARRIER CURB	CD-607-5.2
				OPENINGS TO BE CONSTRUCTED IN F SHAPE BARRIER CURB	CD-607-5.3
				BARRIER CURB TAPERED END	CD-607-6

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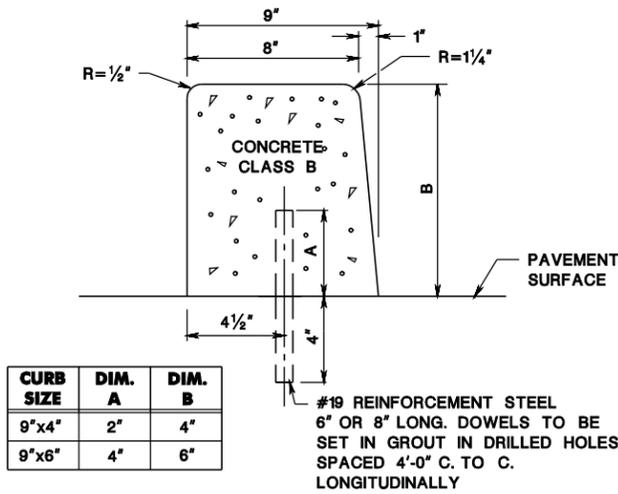
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BDC7D-01-ORIGINAL SHEET

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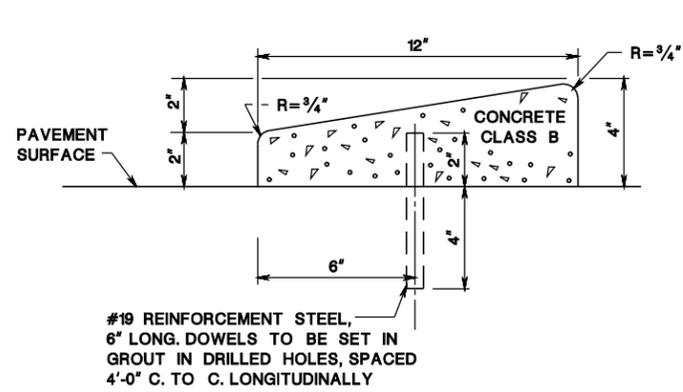
GENERAL NOTES APPLYING TO ALL TYPES OF DOWELLED CURBS

- CONSTRUCT THE TRANSVERSE JOINTS AS SPECIFIED FOR THE CURB, EXCEPT THAT THE THICKNESS OF THE JOINT FILLER IN THE CURB TO BE AS FOLLOWS:
 - 1/2 INCH FOR INTERMEDIATE JOINTS AND JOINTS OVER DEFINITE CRACKS.
 - 1/2 INCH OVER PAVEMENT JOINTS WHERE SLAB LENGTH IS 50 FEET OR LESS.
 - 1 INCH OVER PAVEMENT JOINTS WHERE SLAB LENGTH IS MORE THAN 50 FEET VARIABLE IN MULTIPLES OF 1/2 INCH BUT NOT LESS THAN THE EXISTING WIDTH OF THE TRANSVERSE JOINTS IN BRIDGES AND THE JOINTS BETWEEN THE APPROACH SLABS AND BRIDGES.
- FOR THICKNESS OF 1 INCH OR MORE, LAYERS OF 1/2 INCH MATERIAL MAY BE GLUED OR OTHERWISE FASTENED TOGETHER BY A MEANS SATISFACTORY TO THE RE. WHERE THE REQUIRED JOINT OPENING EXCEEDS 1 INCH, THE CONTRACTOR MAY CONSTRUCT OPEN JOINTS, IF DESIRED.
- WHERE DOWELLED CURB IS TO BE CONSTRUCTED ACROSS A LONGITUDINAL JOINT IN THE EXISTING PAVEMENT, THE DOWELS IN THE SHORTER PORTION OF THE CURB PANEL ARE TO BE OMITTED AND THE CURB IN THE PORTION OF THE PANEL TO BE CONSTRUCTED WITH 45# SMOOTH ROLL ROOFING BETWEEN IT AND THE EXISTING PAVEMENT.



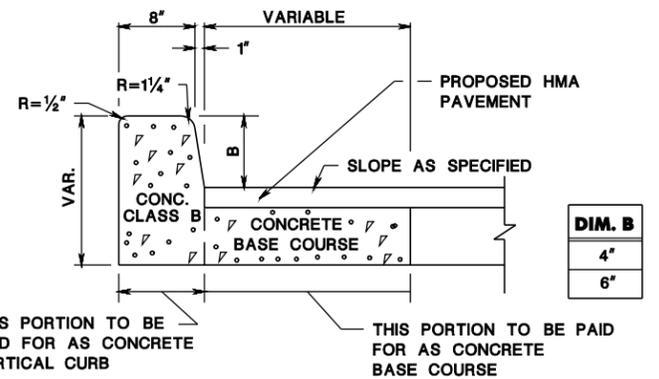
9" x B" CONCRETE VERTICAL CURB, DOWELLED

CD-607-1.2



12" x 3" CONCRETE SLOPING CURB, DOWELLED

CD-607-1.3

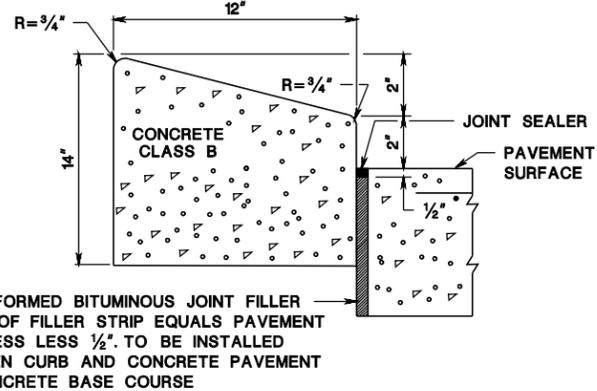


NOTES:
EXPANSION JOINTS 1/2 INCH WIDE IN THE CURB, AND EXPANSION JOINT ASSEMBLY IN THE MONOLITHIC PAVEMENT STRIP TO BE DIRECTLY OPPOSITE EVERY TRANSVERSE JOINT IN THE CENTRAL PAVEMENT STRIPS. JOINT MATERIAL IN THE CURB TO BE AS SPECIFIED FOR CONCRETE VERTICAL CURB. THE TRANSVERSE EXPANSION JOINT MATERIAL NOT TO EXTEND THROUGH THE CURB.

CONCRETE VERTICAL CURB MONOLITHIC WITH CONCRETE BASE COURSE

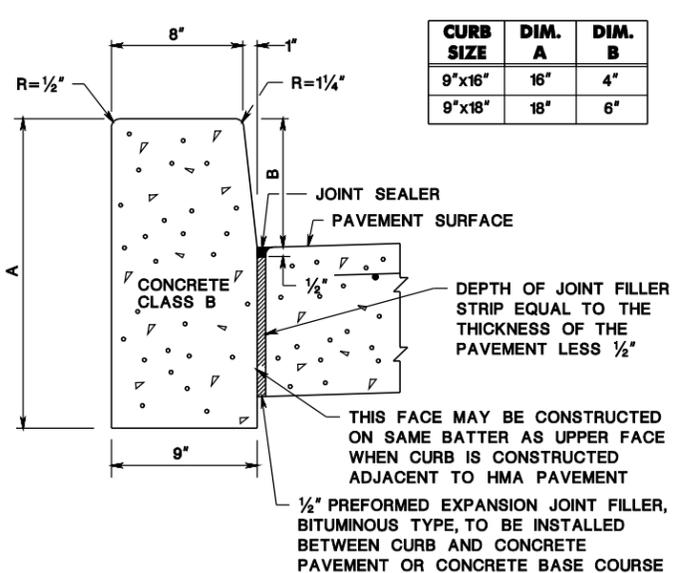
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CD-607-1.1



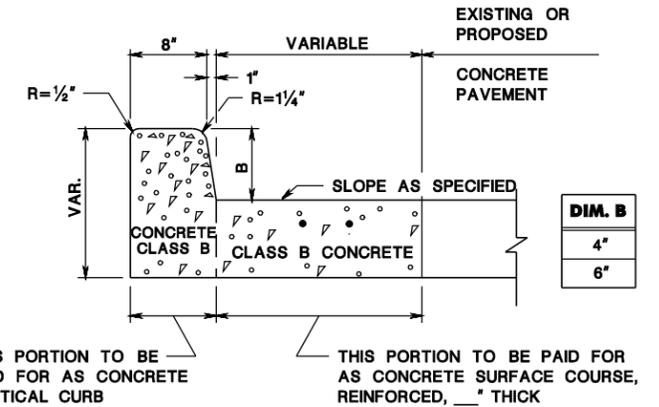
12" x 13" CONCRETE SLOPING CURB

CD-607-1.5



CONCRETE VERTICAL CURB

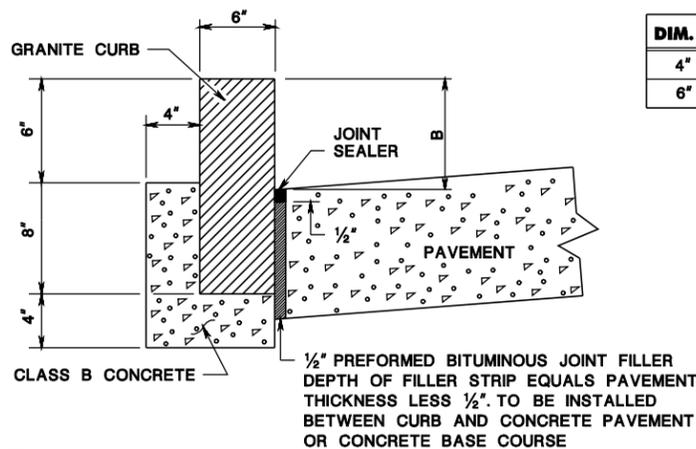
CD-607-1.6



NOTES:
EXPANSION JOINTS 1/2 INCH WIDE IN THE CURB, AND EXPANSION JOINT ASSEMBLY IN THE MONOLITHIC PAVEMENT STRIP TO BE DIRECTLY OPPOSITE EVERY TRANSVERSE JOINT IN THE CENTRAL PAVEMENT STRIPS. JOINT MATERIAL IN THE CURB TO BE AS SPECIFIED FOR CONCRETE VERTICAL CURB. THE TRANSVERSE EXPANSION JOINT MATERIAL NOT TO EXTEND THROUGH THE CURB.

CONCRETE VERTICAL CURB MONOLITHIC WITH CONCRETE PAVEMENT

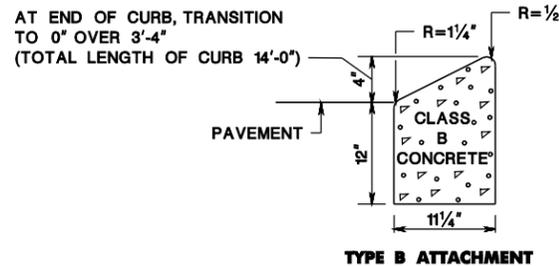
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NEW OR RESET GRANITE CURB

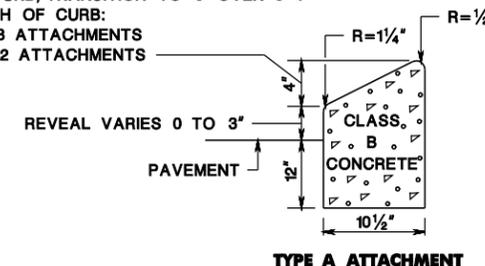
CD-607-1.8

- NOTES:**
- PAYMENT FOR LIP CURB WILL BE MADE UNDER 9" x 16" CONCRETE VERTICAL CURB.
 - SEE BRIDGE ATTACHMENT DETAILS ON SHEETS CD-609-14 THRU CD-609-17E.



TYPE B ATTACHMENT

AT END OF CURB, TRANSITION TO 0" OVER 3'-4"
TOTAL LENGTH OF CURB:
17'-0" FOR TL-3 ATTACHMENTS
24'-6" FOR TL-2 ATTACHMENTS



TYPE A ATTACHMENT

LIP CURB FOR BEAM GUIDE RAIL ATTACHMENTS

CD-607-1.9

CONCRETE AND GRANITE CURB

N.T.S.

NOTE:
REINFORCEMENT STEEL IS IN METRIC UNITS.
HMA = HOT MIX ASPHALT

CD-607-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

58

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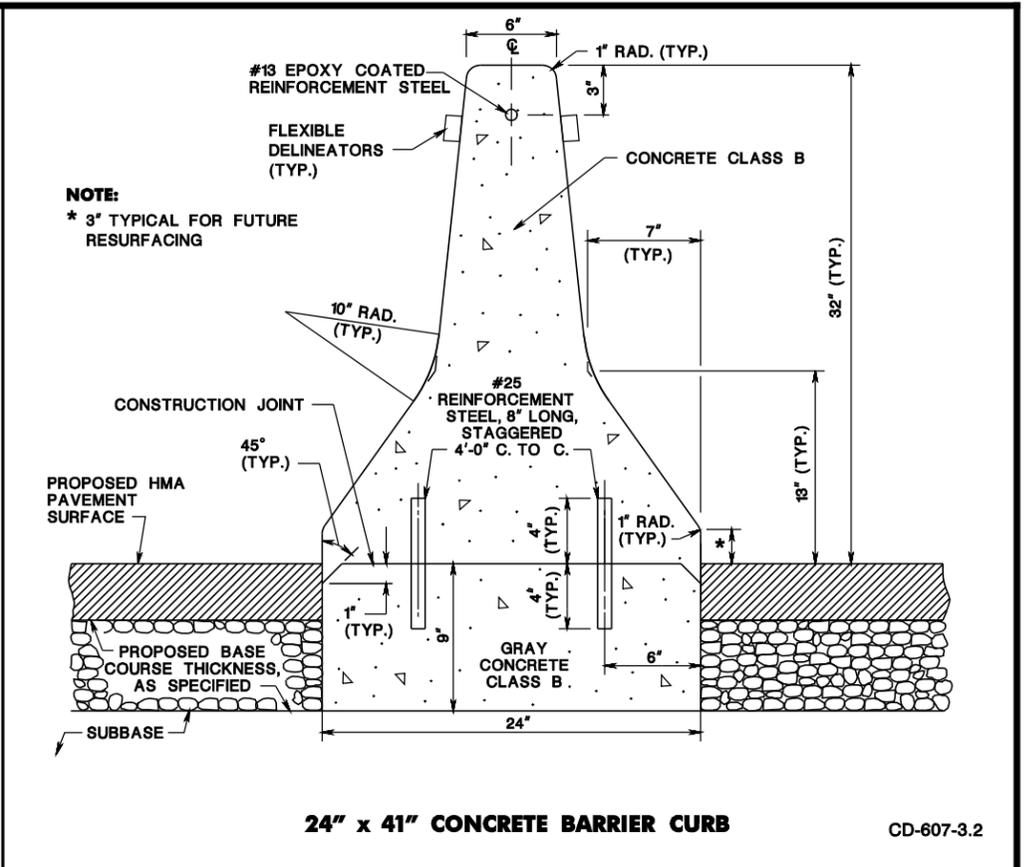
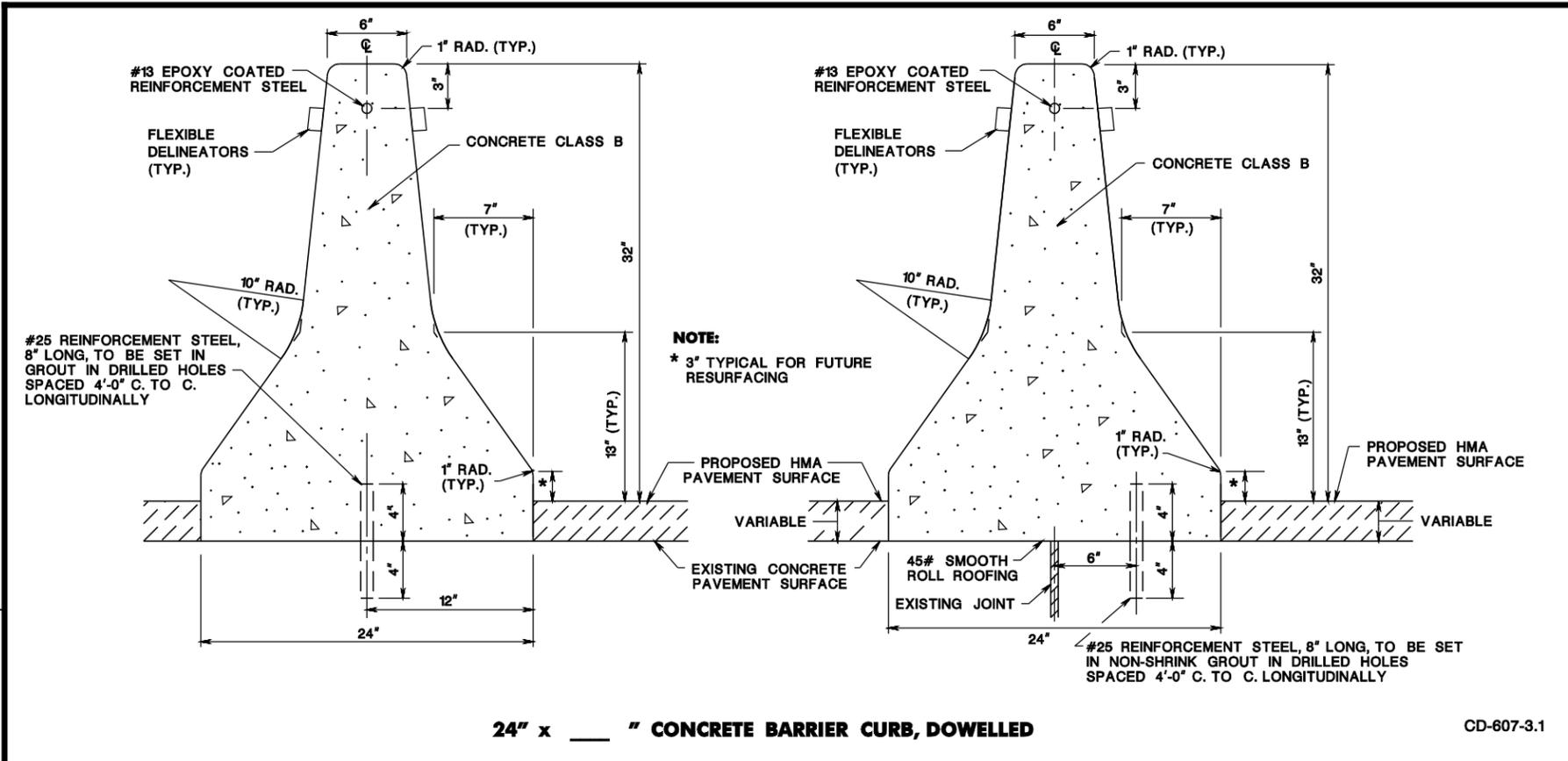
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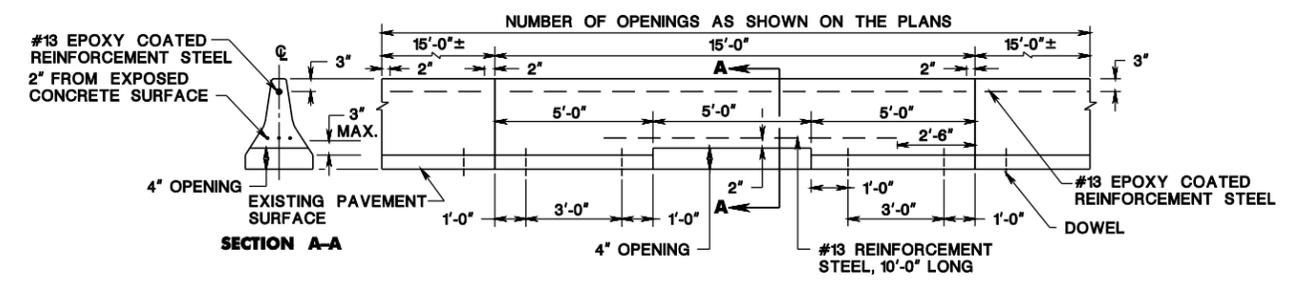
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BCD7D-02-MASH TITLE ADDED
BCD8D-01-ORIGINAL SHEET



GENERAL NOTES:

- (A) WHERE DOWELLED BARRIER CURB IS TO BE CONSTRUCTED ON EXISTING CONCRETE PAVEMENT OR EXISTING CONCRETE BASE COURSE:
 - (1) INSTALL TRANSVERSE JOINTS IN THE CURBS AT AND DIRECTLY OVER TRANSVERSE JOINTS IN THE PAVEMENT. TREAT DEFINITE CRACKS THROUGH THE PAVEMENT AS JOINTS. ALSO CONSTRUCT ADDITIONAL JOINTS IN THE CURB SO SPACED AS TO MAKE EQUAL SECTIONS NOT OVER 15'-0" IN LENGTH.
 - (2) FILL THE TRANSVERSE JOINTS WITH PREFORMED BITUMINOUS-IMPREGNATED FIBER JOINT FILLER, COMPLYING WITH THE REQUIREMENTS OF AASHTO M-213 SPECIFICATION, RECESSED 1/4" FROM FACES AND TOP OF CURB. THE THICKNESS OF THE TRANSVERSE EXPANSION JOINT FILLER IS AS FOLLOWS:
 - (a) 1/2" FOR IMMEDIATE JOINTS AND JOINTS OVER DEFINITE CRACKS, 1/2" OVER PAVEMENT JOINTS WHERE SLAB LENGTH IS 50 FEET OR LESS, 1" OVER PAVEMENT JOINTS WHERE SLAB LENGTH IS MORE THAN 50 FEET.
 - (b) VARIABLE IN MULTIPLES OF 1/2" BUT NOT LESS THAN THE EXISTING WIDTH OF THE TRANSVERSE JOINTS IN BRIDGES AND JOINTS BETWEEN THE APPROACH SLABS AND BRIDGES.
 - (c) THE THICKNESS OF 1" OR MORE LAYERS OF 1/2" MATERIAL MAY BE GLUED OR OTHERWISE FASTENED TOGETHER BY A MEANS SATISFACTORY TO THE RE. WHERE THE REQUIRED JOINT OPENING EXCEEDS 1", THE CONTRACTOR MAY CONSTRUCT OPEN JOINTS.
 - (3) CLEAN THE SURFACE OF THE EXISTING CONCRETE PAVEMENT OR CONCRETE BASE COURSE AS SPECIFIED IN THE SPECIFICATIONS PRIOR TO THE CONSTRUCTION OF THE CURB THEREON.
- (B) WHERE DOWELLED BARRIER CURB IS TO BE CONSTRUCTED ACROSS A LONGITUDINAL JOINT IN THE EXISTING CONCRETE OR BASE COURSE, OMIT THE DOWELS IN THE SHORTER PORTION OF THE CURB. CONSTRUCT THE CURB IN THIS PORTION OF THE PANEL WITH 45# SMOOTH ROLL ROOFING BETWEEN IT AND THE EXISTING PAVEMENT.
- (C) WHERE BARRIER CURB IS TO BE CONSTRUCTED ON PROPOSED CONCRETE BASE, INSTALL TRANSVERSE JOINTS 1/2" WIDE IN THE BASE 20'-0" APART AND IN THE BARRIER CURB DIRECTLY OVER JOINTS IN THE BASE. FILL THE JOINTS WITH PREFORMED BITUMINOUS-IMPREGNATED FIBER JOINT FILLER, COMPLYING WITH THE REQUIREMENTS OF AASHTO M-213 SPECIFICATION, RECESSED 1/4" FROM FACES AND TOP OF CURB.
- (D) THE FINISHED SURFACE OF THE BARRIER CURB IS TO BE SMOOTH, DENSE UNPITTED AND FREE FROM AIR BUBBLE POCKETS, DEPRESSIONS, AND HONEYCOMBS. IF THE RE DEEMS IT NECESSARY, THE CURB IS TO BE GIVEN A WOOD FLOAT FINISH RUBBED WITH A MIXTURE OF CEMENT, SAND, AND WATER TO OBTAIN THE ABOVE MENTIONED FINISHED SURFACE.
- (E) INSTALL FLEXIBLE DELINEATORS ON BARRIER CURB.
- (F) REINFORCEMENT STEEL IS IN METRIC UNITS.



OPENINGS TO BE CONSTRUCTED IN BARRIER CURB

HMA = HOT MIX ASPHALT

BARRIER CURB

N.T.S. CD-607-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

MASH TL-3 NJ BARRIER CURB

CD-607-3.3

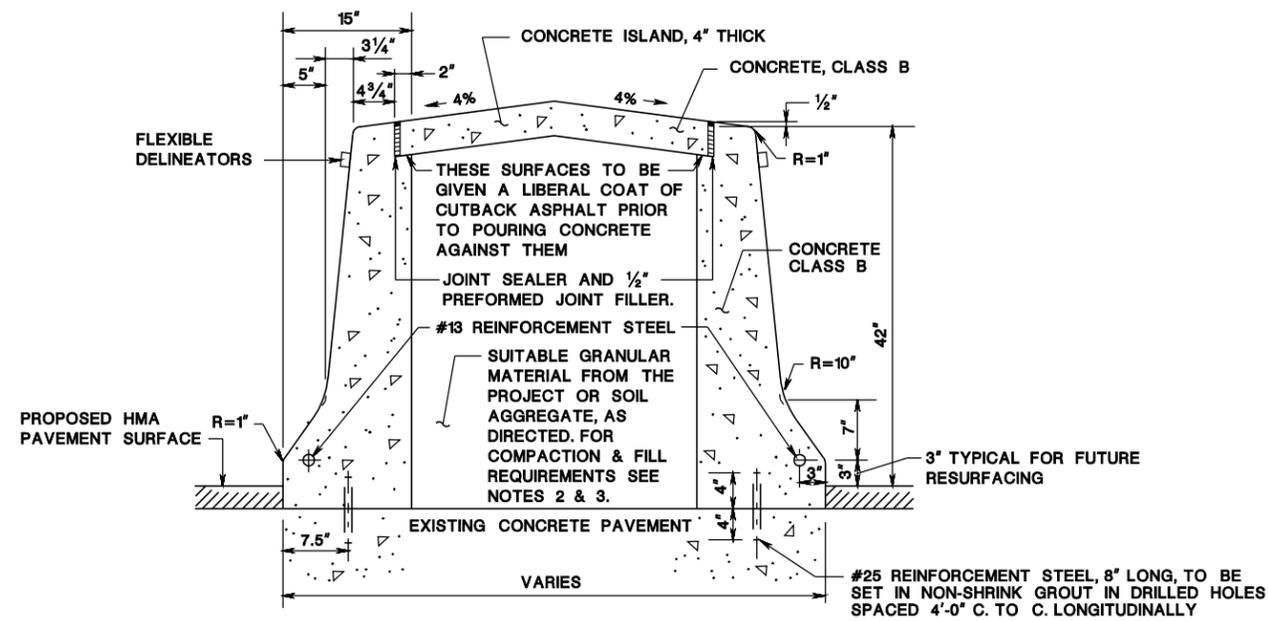
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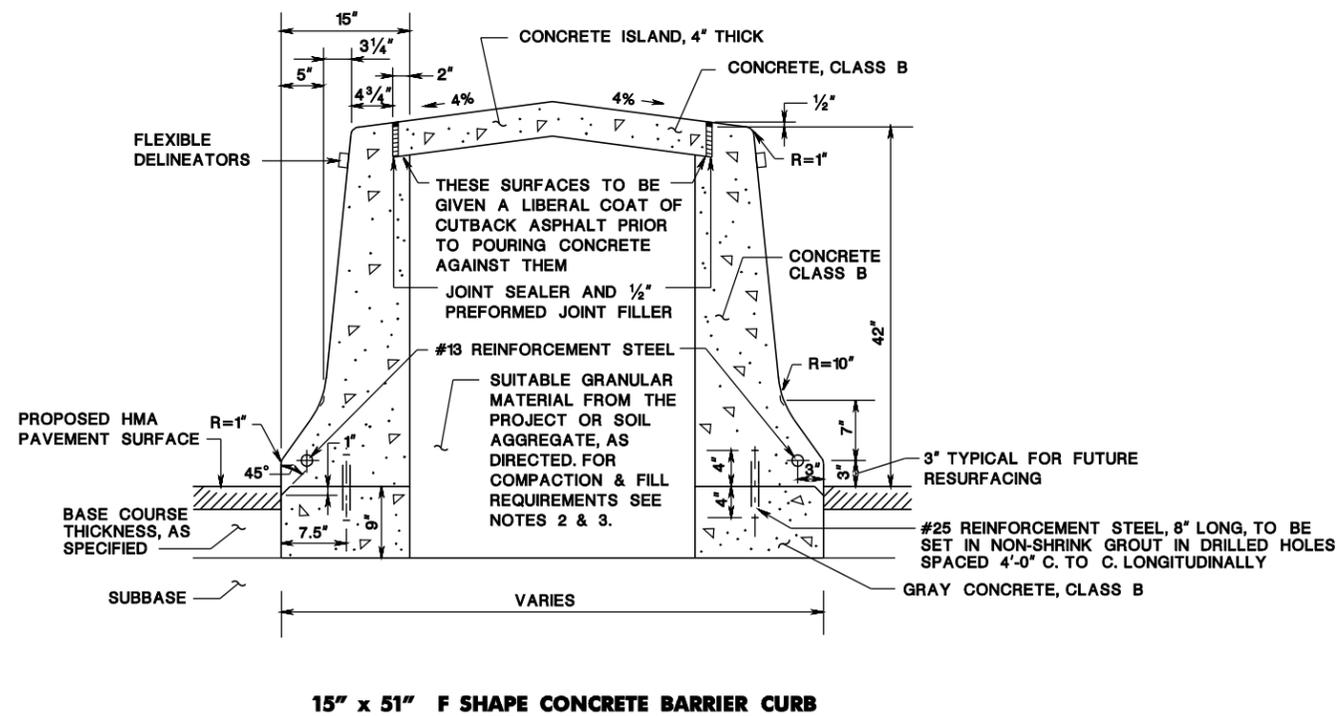
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BDC7D-02-NEW SHEET

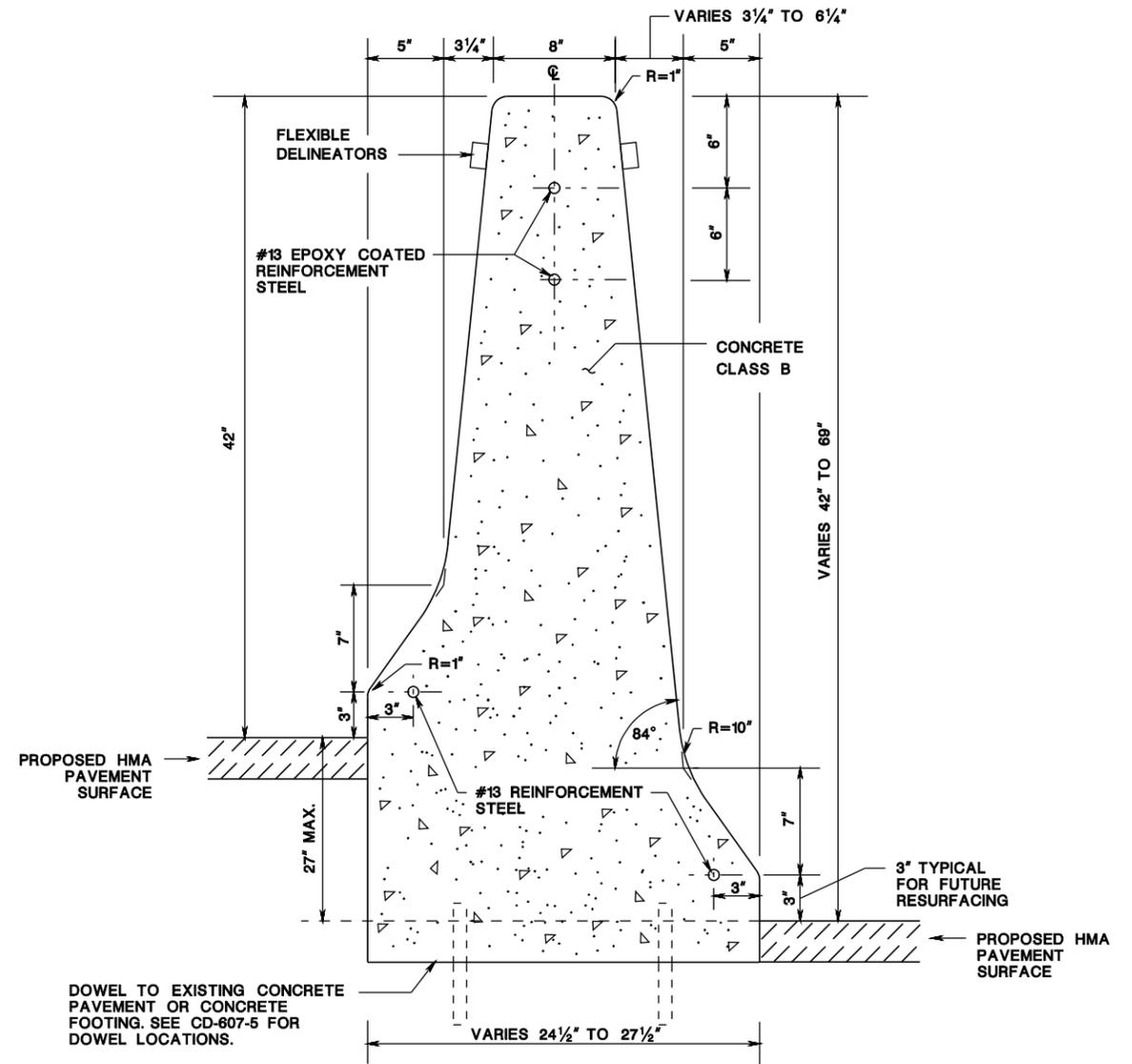


15" x VARIABLE HEIGHT F SHAPE CONCRETE BARRIER CURB, DOWELLED



15" x 51" F SHAPE CONCRETE BARRIER CURB

MASH TL-5 F SHAPE BARRIER CURB



VARIABLE WIDTH x VARIABLE HEIGHT F SHAPE CONCRETE BARRIER CURB

HMA = HOT MIX ASPHALT

BARRIER CURB

NOTES:

1. SEE GENERAL NOTES APPLYING TO ALL BARRIER CURB CD-607-5.
2. COMPACT ACCORDING TO SUBSECTION 202.03.
3. SHAPE AND COMPACT THE FILL BETWEEN THE CURBS TO A FIRM EVEN SURFACE. REMOVE UNSUITABLE MATERIAL AND REPLACE WITH ACCEPTABLE MATERIAL AND COMPACT.
4. REINFORCEMENT STEEL IS IN METRIC UNITS.

N.T.S.

CD-607-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-607-4.1

60A
164

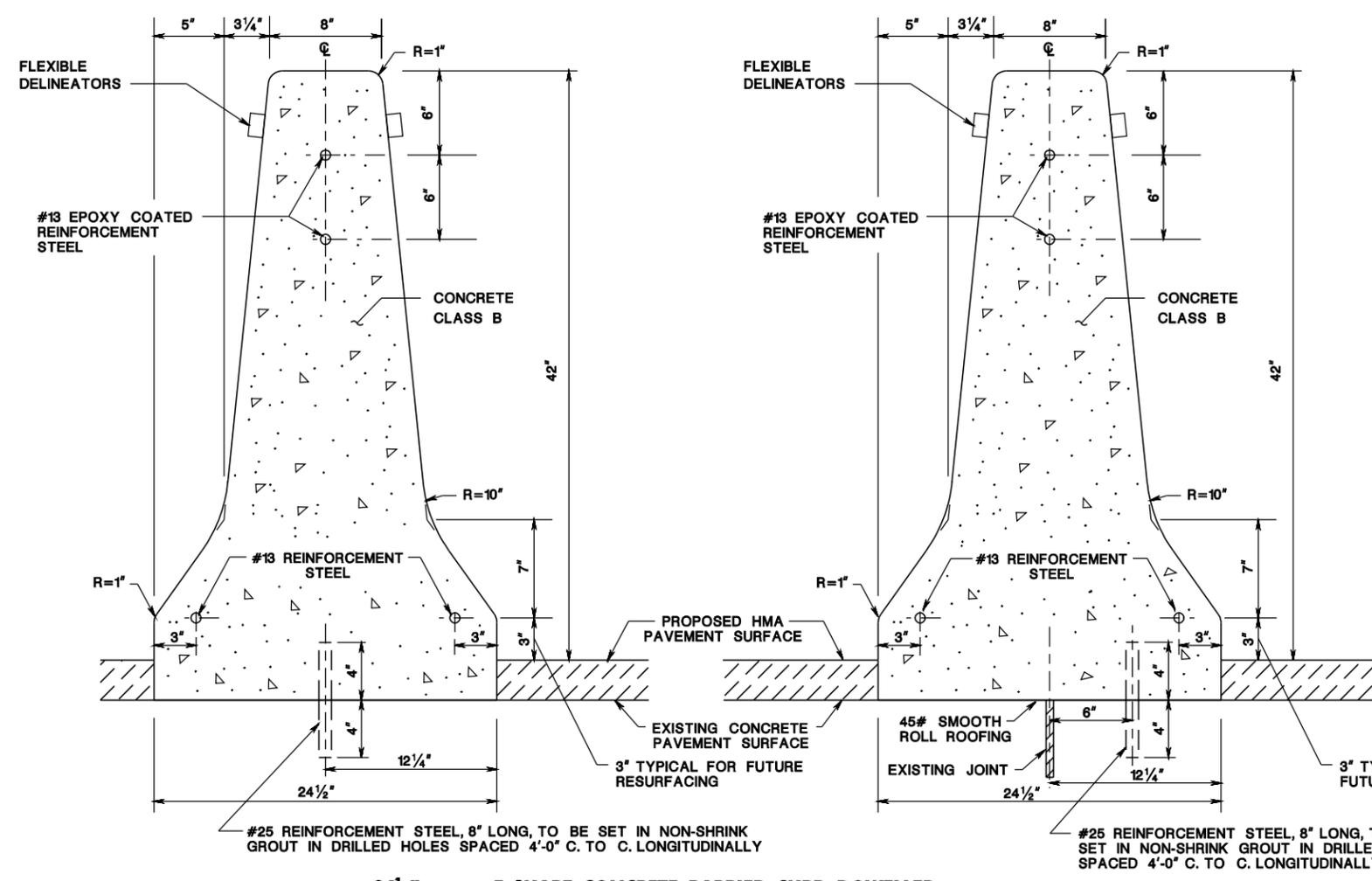
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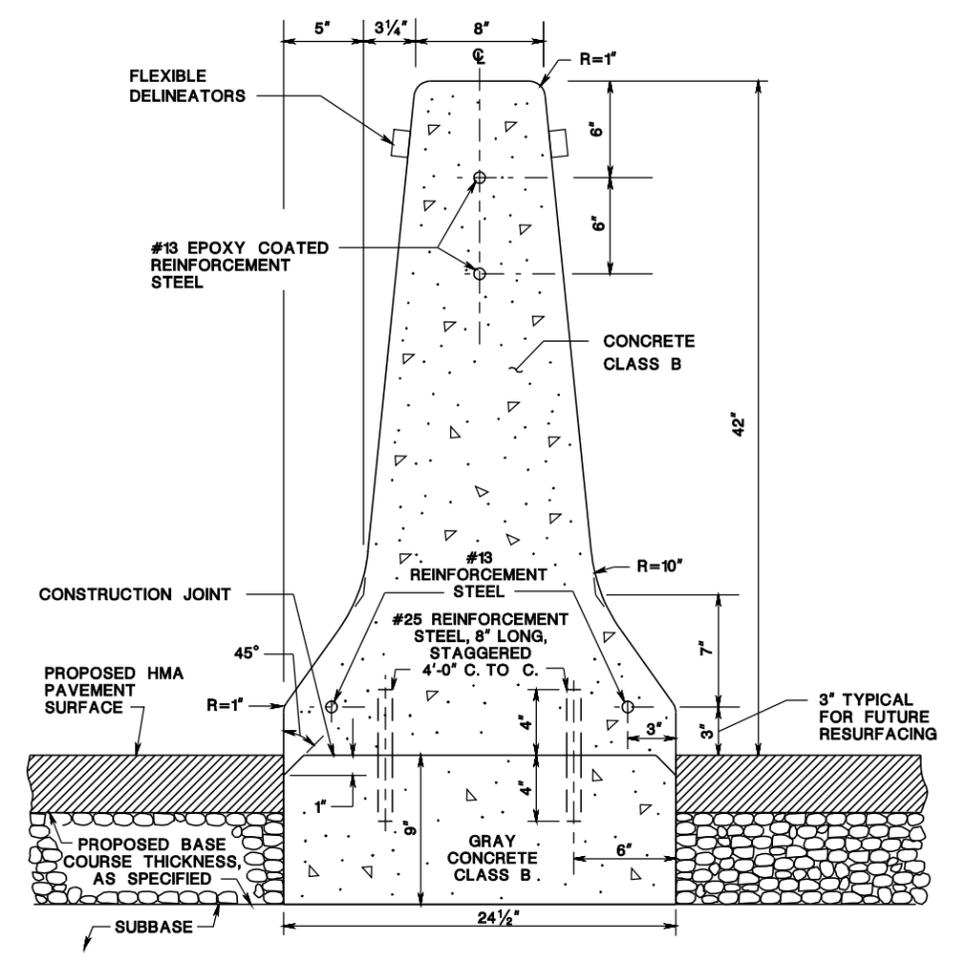
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BD07D-02-NEW SHEET



24 1/2" x ___ F SHAPE CONCRETE BARRIER CURB, DOWELLED

CD-607-5.1



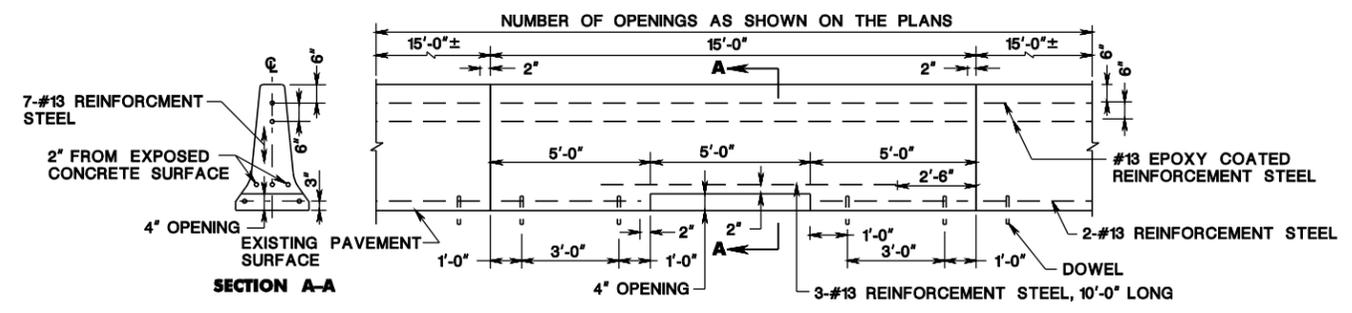
24 1/2" x 51" F SHAPE CONCRETE BARRIER CURB

CD-607-5.2

GENERAL NOTES:

- (A) WHERE DOWELLED BARRIER CURB IS TO BE CONSTRUCTED ON EXISTING CONCRETE PAVEMENT OR EXISTING CONCRETE BASE COURSE:
 - (1) INSTALL TRANSVERSE JOINTS IN THE CURBS AT AND DIRECTLY OVER TRANSVERSE JOINTS IN THE PAVEMENT. TREAT DEFINITE CRACKS THROUGH THE PAVEMENT AS JOINTS. ALSO CONSTRUCT ADDITIONAL JOINTS IN THE CURB SO SPACED AS TO MAKE EQUAL SECTIONS NOT OVER 15'-0" IN LENGTH.
 - (2) FILL THE TRANSVERSE JOINTS WITH PREFORMED BITUMINOUS-IMPREGNATED FIBER JOINT FILLER, COMPLYING WITH THE REQUIREMENTS OF AASHTO M-213 SPECIFICATION, RECESSED 1/4" FROM FACES AND TOP OF CURB. THE THICKNESS OF THE TRANSVERSE EXPANSION JOINT FILLER IS AS FOLLOWS:
 - (a) 1/2" FOR IMMEDIATE JOINTS AND JOINTS OVER DEFINITE CRACKS, 3/2" OVER PAVEMENT JOINTS WHERE SLAB LENGTH IS 50 FEET OR LESS, 1" OVER PAVEMENT JOINTS WHERE SLAB LENGTH IS MORE THAN 50 FEET.
 - (b) VARIABLE IN MULTIPLES OF 1/2" BUT NOT LESS THAN THE EXISTING WIDTH OF THE TRANSVERSE JOINTS IN BRIDGES AND JOINTS BETWEEN THE APPROACH SLABS AND BRIDGES.
 - (c) THE THICKNESS OF 1" OR MORE LAYERS OF 1/2" MATERIAL MAY BE GLUED OR OTHERWISE FASTENED TOGETHER BY A MEANS SATISFACTORY TO THE RE. WHERE THE REQUIRED JOINT OPENING EXCEEDS 1", THE CONTRACTOR MAY CONSTRUCT OPEN JOINTS.
 - (3) CLEAN THE SURFACE OF THE EXISTING CONCRETE PAVEMENT OR CONCRETE BASE COURSE AS SPECIFIED IN THE SPECIFICATIONS PRIOR TO THE CONSTRUCTION OF THE CURB THEREON.
- (B) WHERE DOWELLED BARRIER CURB IS TO BE CONSTRUCTED ACROSS A LONGITUDINAL JOINT IN THE EXISTING CONCRETE OR BASE COURSE, OMIT THE DOWELS IN THE SHORTER PORTION OF THE CURB. CONSTRUCT THE CURB IN THIS PORTION OF THE PANEL WITH 45# SMOOTH ROLL ROOFING BETWEEN IT AND THE EXISTING PAVEMENT.
- (C) WHERE BARRIER CURB IS TO BE CONSTRUCTED ON PROPOSED CONCRETE BASE, INSTALL TRANSVERSE JOINTS 1/2" WIDE IN THE BASE 20'-0" APART AND IN THE BARRIER CURB DIRECTLY OVER JOINTS IN THE BASE. FILL THE JOINTS WITH PREFORMED BITUMINOUS-IMPREGNATED FIBER JOINT FILLER, COMPLYING WITH THE REQUIREMENTS OF AASHTO M-213 SPECIFICATION, RECESSED 1/4" FROM FACES AND TOP OF CURB.
- (D) THE FINISHED SURFACE OF THE BARRIER CURB IS TO BE SMOOTH, DENSE UNPITTED AND FREE FROM AIR BUBBLE POCKETS, DEPRESSIONS, AND HONEYCOMBS. IF THE RE DEEMS IT NECESSARY, THE CURB IS TO BE GIVEN A WOOD FLOAT FINISH RUBBED WITH A MIXTURE OF CEMENT, SAND, AND WATER TO OBTAIN THE ABOVE MENTIONED FINISHED SURFACE.
- (E) INSTALL FLEXIBLE DELINEATORS ON BARRIER CURB.
- (F) REINFORCEMENT STEEL IS IN METRIC UNITS.

MASH TL-5 F SHAPE BARRIER CURB



OPENINGS TO BE CONSTRUCTED IN F SHAPE BARRIER CURB

BARRIER CURB

N.T.S.

CD-607-5

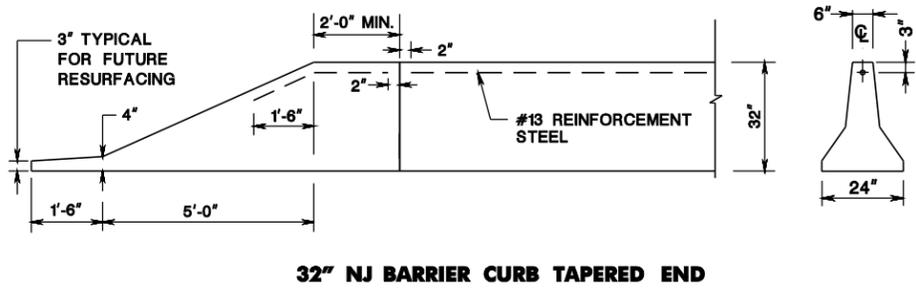
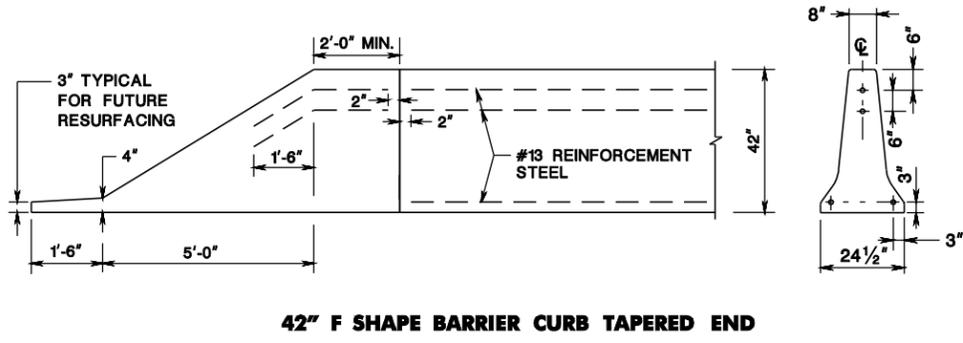
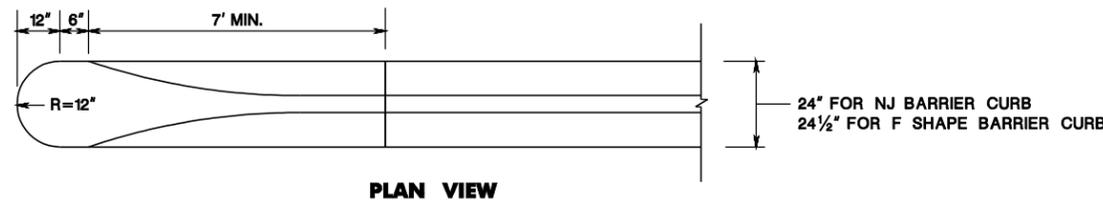
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-607-5.3

60B
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BARRIER CURB TAPERED END

- NOTES:**
1. THIS DETAIL IS TO BE USED ONLY AT THE TRAILING END OF BARRIER CURB SEPARATING SAME DIRECTION TRAFFIC OR WHERE THE TERMINAL IS BEYOND THE CLEAR ZONE.
 2. REINFORCEMENT STEEL IS IN METRIC UNITS.
 3. PAYMENT FOR NJ BARRIER CURB TAPERED END WILL BE MADE UNDER ITEM "CONCRETE BARRIER CURB". PAYMENT FOR F SHAPE BARRIER CURB TAPERED END WILL BE MADE UNDER "F SHAPE CONCRETE BARRIER CURB".

BARRIER CURB TAPERED END

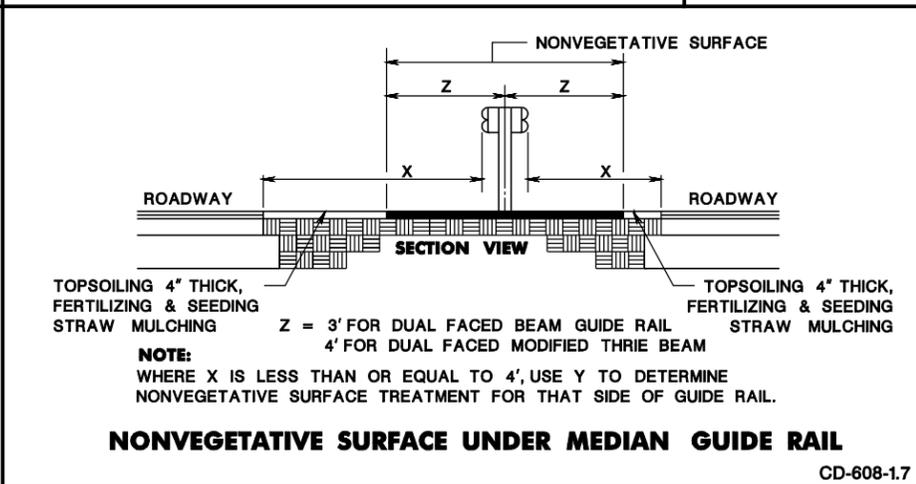
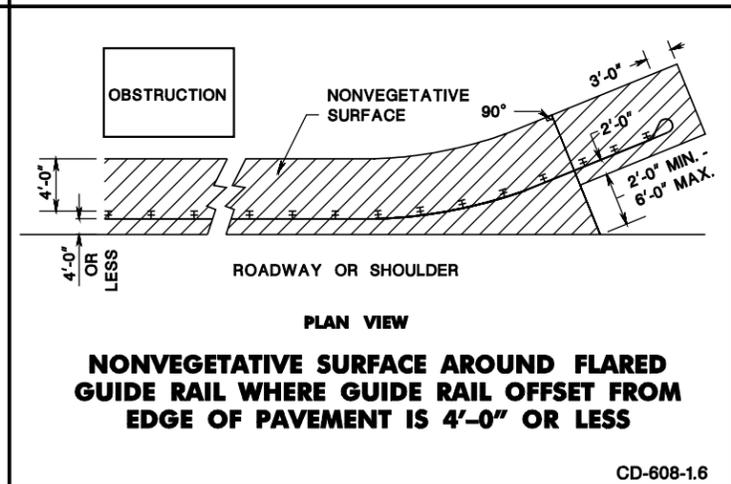
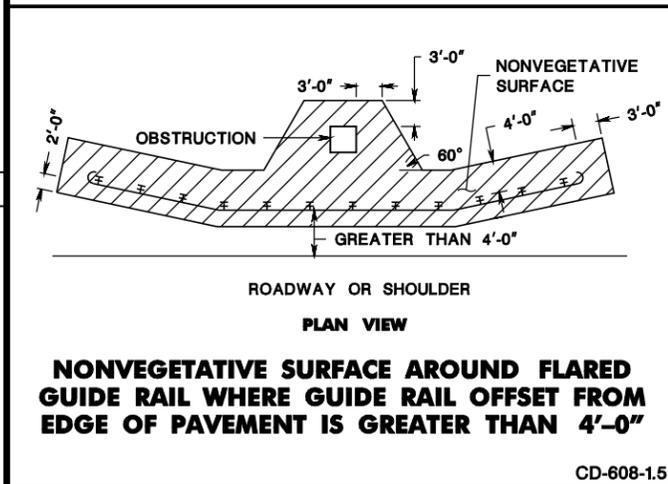
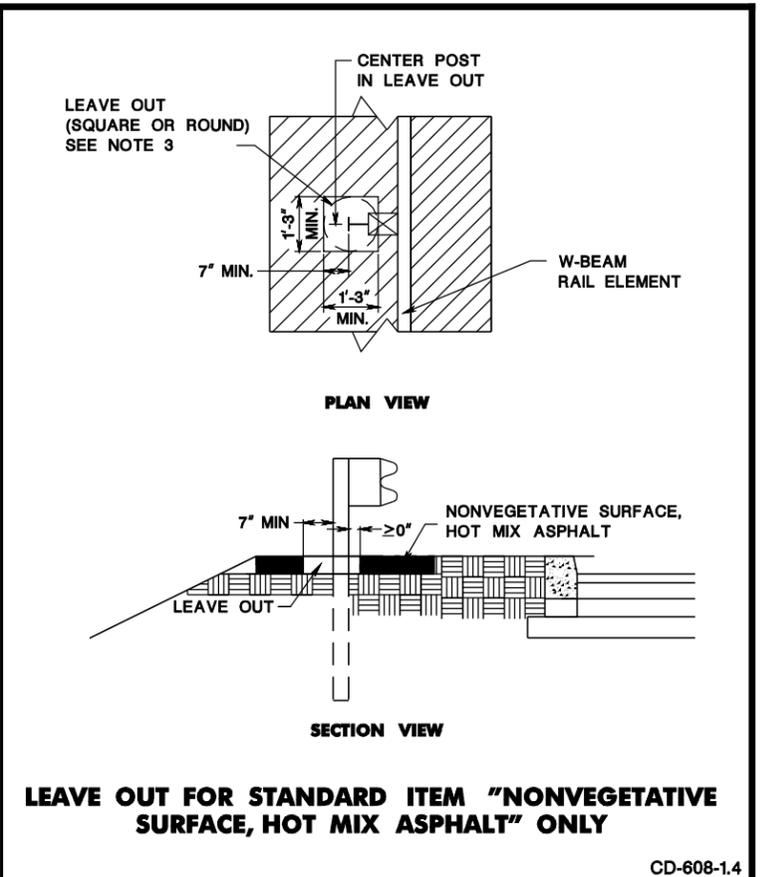
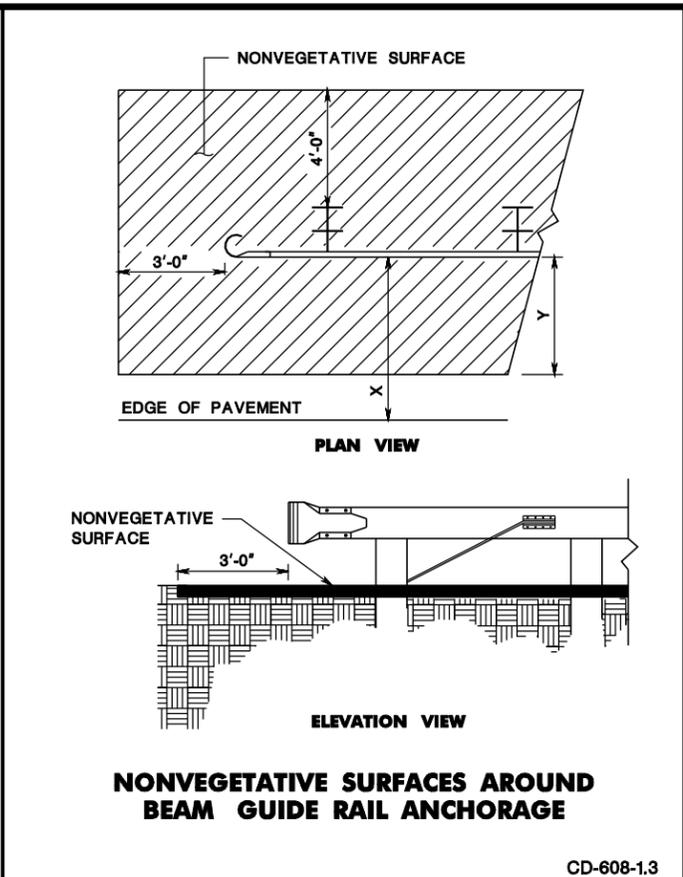
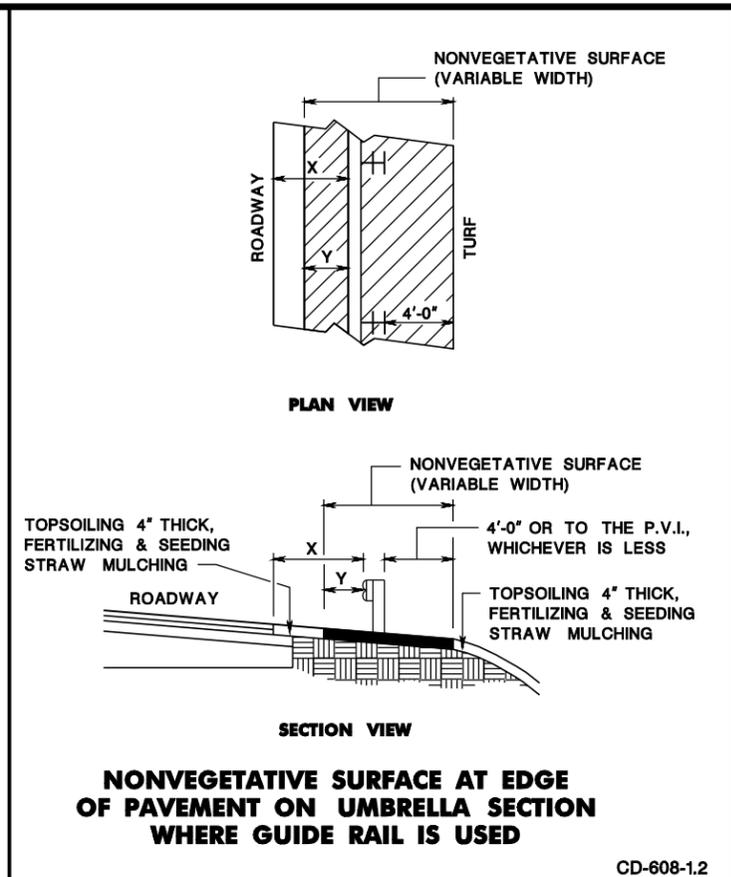
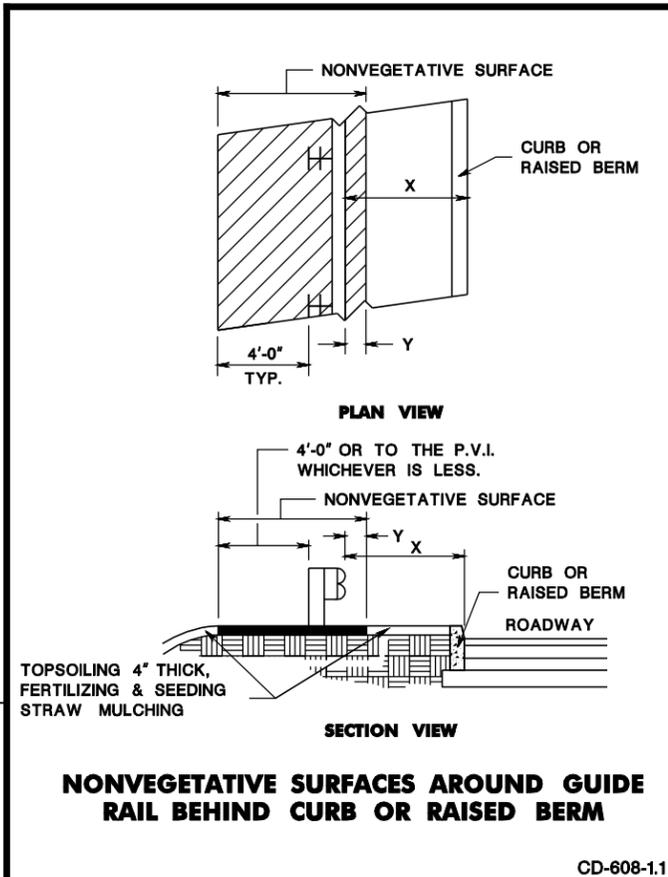
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

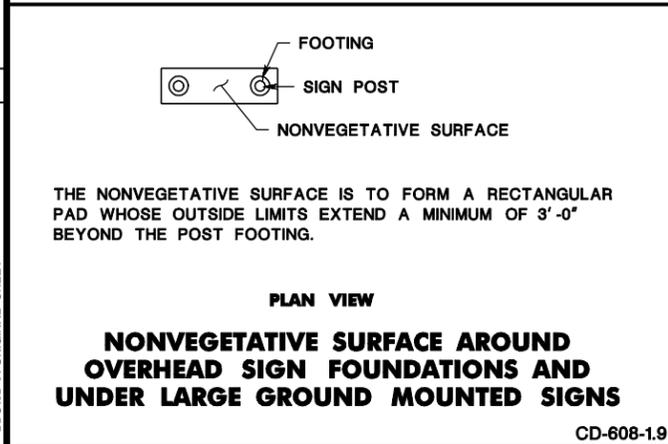
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 BDC7D-02-REVISIONS TO CD-608-1
 BDC7D-01-ORIGINAL SHEET



X	Y
GUIDE RAIL OFFSET FROM EDGE OF PAVEMENT	WIDTH OF NONVEGETATIVE SURFACE IN FRONT OF GUIDE RAIL
GREATER THAN 4'-0" LESS THAN OR EQUAL TO 4'-0"	2'-0" Y=X

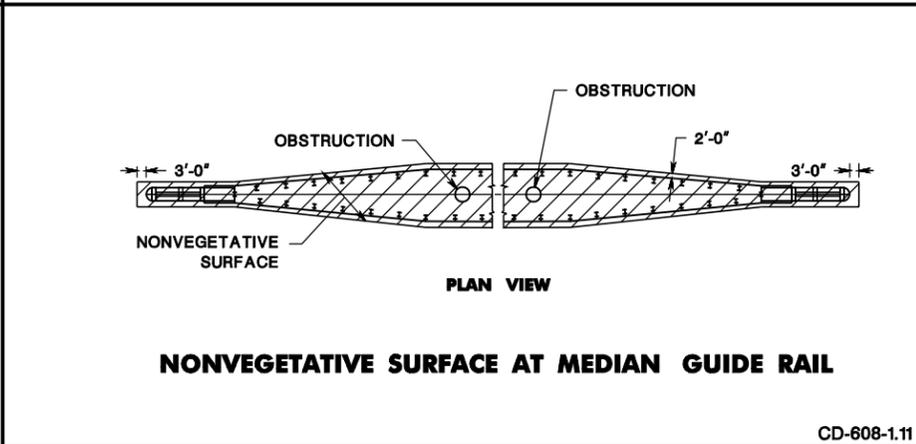
CD-608-1.8



GENERAL NOTES:

- IF THE END OF THE GUIDE RAIL IS BURIED IN THE SLOPE, THE LIMIT OF NONVEGETATIVE SURFACE RELATIVE TO THE BURIED GUIDE RAIL WILL BE DETERMINED BY THE RE.
- SEE TYPICAL SECTIONS FOR CROSS SLOPES IN ROADSIDE (BORDER OR SIDEWALK AREA).
- LEAVE OUTS CAN BE FILLED WITH:
 - COARSE AGGREGATE, SIZE NO. 57 TO BE HAND TAMPED, THEN SEAL SURFACE WITH EMULSIFIED ASPHALT AT 0.35 GAL/SY ±0.05 AS PER STANDARD SPECIFICATIONS SECTION 902; OR
 - COARSE AGGREGATE, SIZE NO. 57 IN BASE OF LEAVE OUT AND TOP WITH NONVEGETATIVE SURFACE, HMA, 2" THICK. GRADE TO DRAIN AND HAND TAMP LEAVE OUT SURFACE.

CD-608-1.10



NONVEGETATIVE SURFACE
N.T.S.

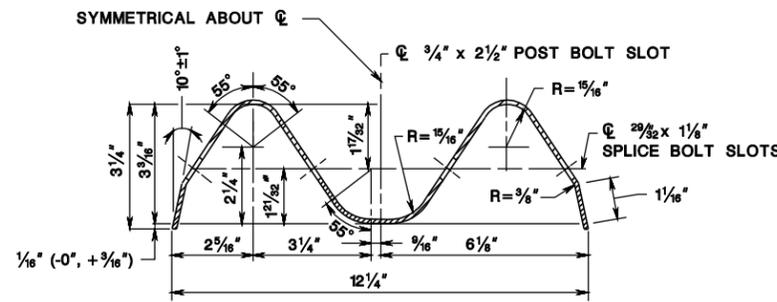
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

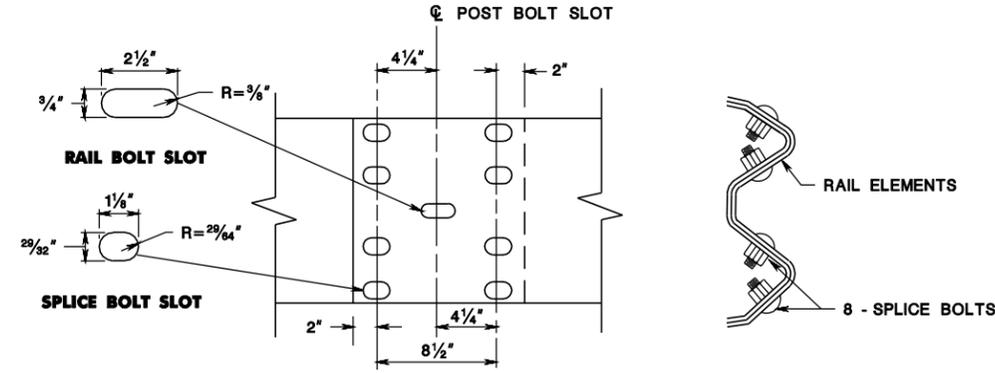
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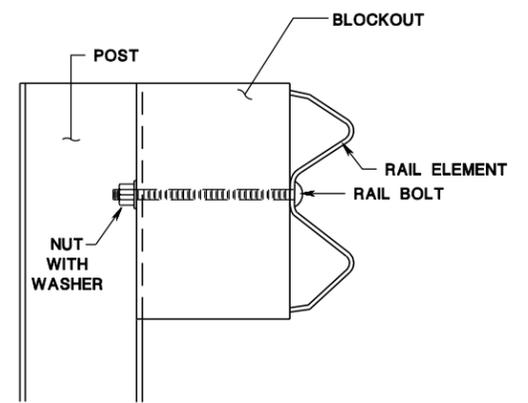


RAIL ELEMENT TO BE SUPPLIED IN LENGTHS OF 13'-6 $\frac{1}{2}$ " OR 26'-0 $\frac{1}{2}$ "

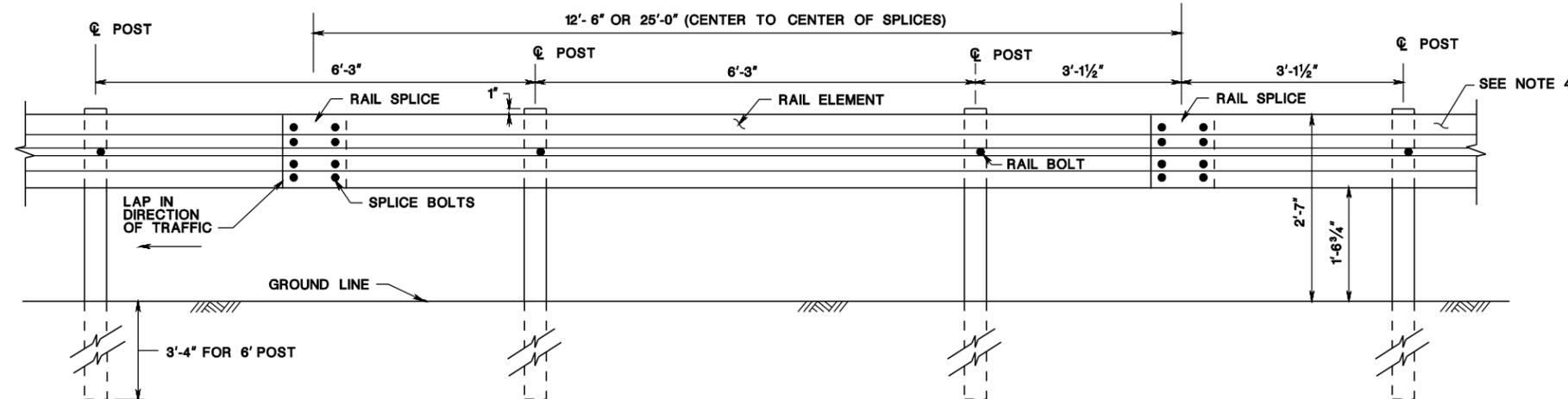
W-BEAM RAIL ELEMENT



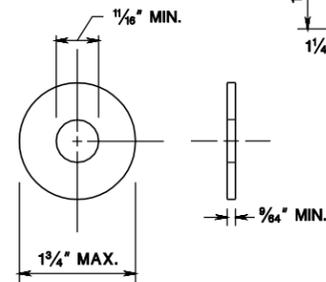
RAIL SPLICE



BEAM GUIDE RAIL POST ASSEMBLY



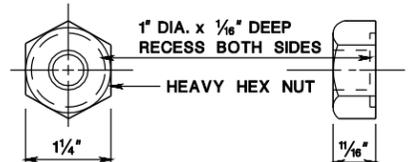
BEAM GUIDE RAIL



STEEL WASHER

TYPE	L	MIN. THREAD LENGTH
SPLICE	1 $\frac{1}{4}$ "	FULL LENGTH THREAD
RAIL	9 $\frac{1}{2}$ "	1 $\frac{3}{4}$ "

$\frac{5}{8}$ " DIA. BUTTON HEAD BOLT



SPLICE & RAIL NUT & BOLT

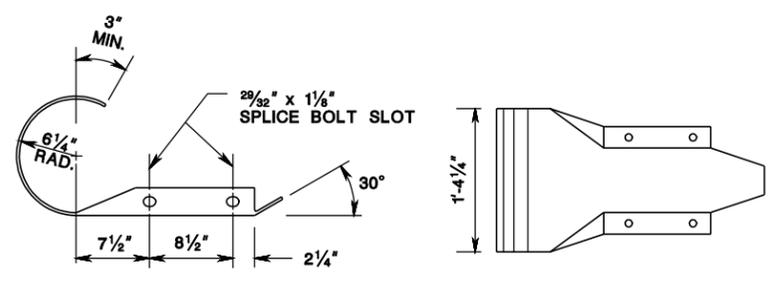
BEAM GUIDE RAIL (MASH TL-3)

N.T.S.

CD-609-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

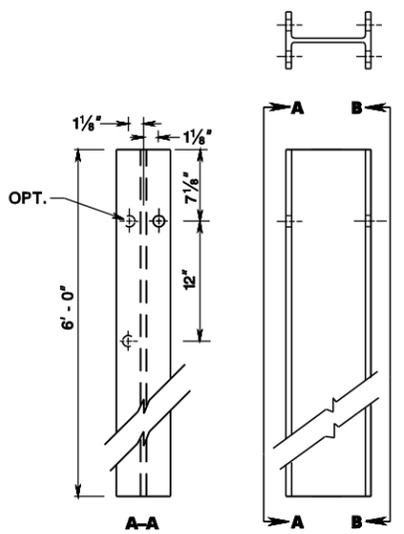
CONSTRUCTION DETAILS



END SECTION (ROUNDED)

NOTES:

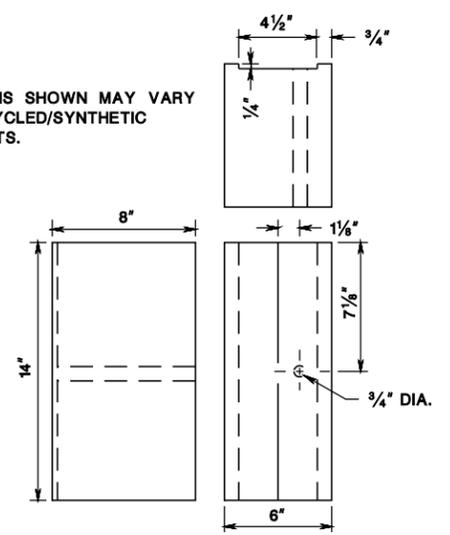
- ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
- FURNISH RAIL ELEMENTS SHOPCURVED, CONCAVE OR CONVEX, FOR RADII BETWEEN 20 AND 150 FEET.
- WHERE TRANSITIONING TO EXISTING GUIDE RAIL, AN END TERMINAL, OR A CRASH CUSHION MOUNTED AT A HEIGHT OTHER THAN 2'-7", THE VERTICAL TRANSITION TO BE ACCOMPLISHED IN A MINIMUM LENGTH OF 12'-6" FOR EACH 2" OF VERTICAL CHANGE. SEE CD-609-8.
- INSTALL AN END TERMINAL AS SHOWN ON THE PLANS. USE THE END SECTION (ROUNDED) ON THE END OF THE RAIL ELEMENT WHERE DUAL FACED BEAM GUIDE RAIL ENDS AND SINGLE FACED BEAM GUIDE RAIL BEGINS.



W6x8.5 OR W6x9 STEEL POST

6' POST

NOTE:
ALL HOLES $\frac{13}{16}$ " DIA.



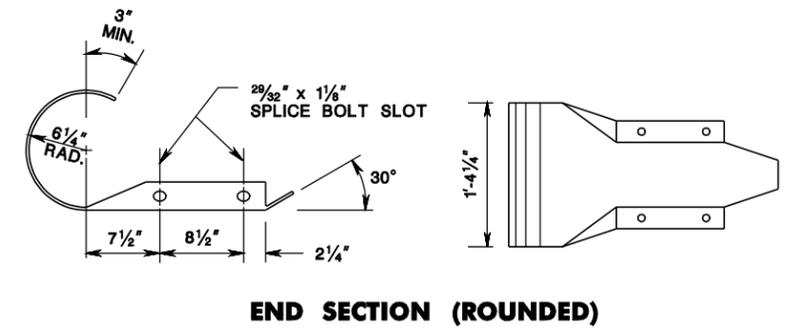
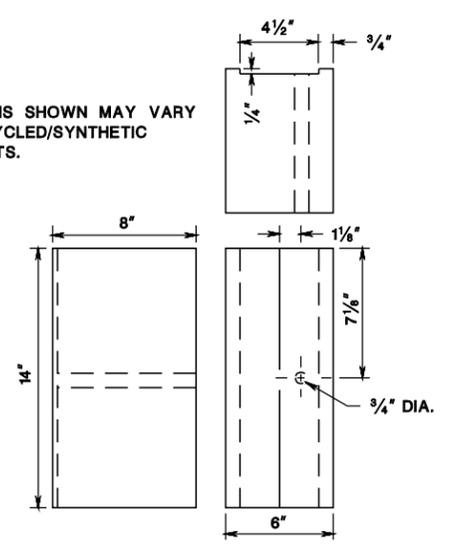
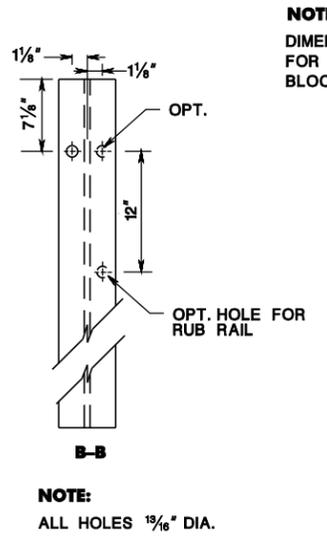
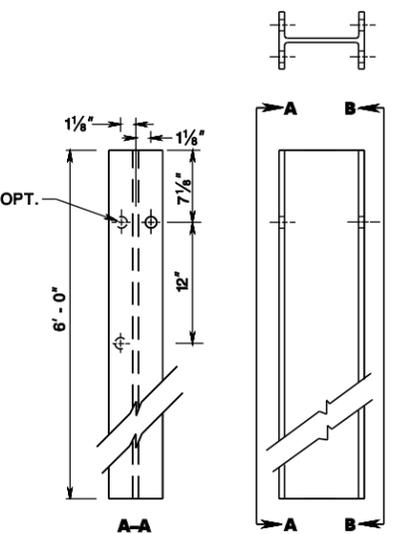
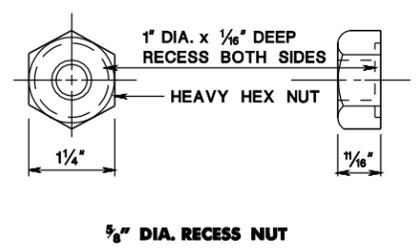
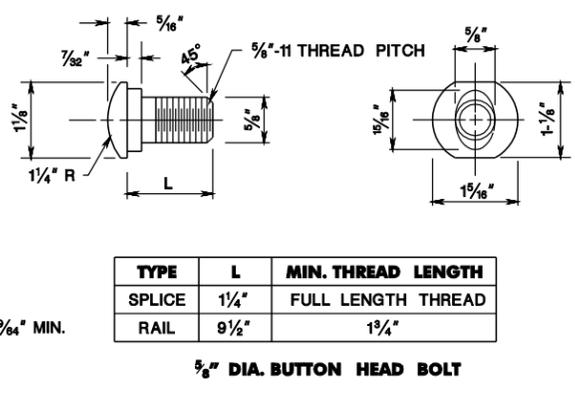
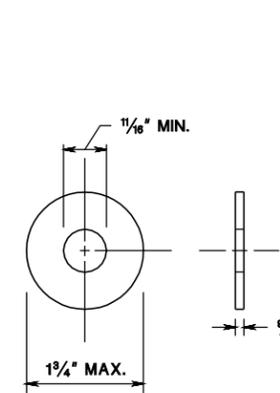
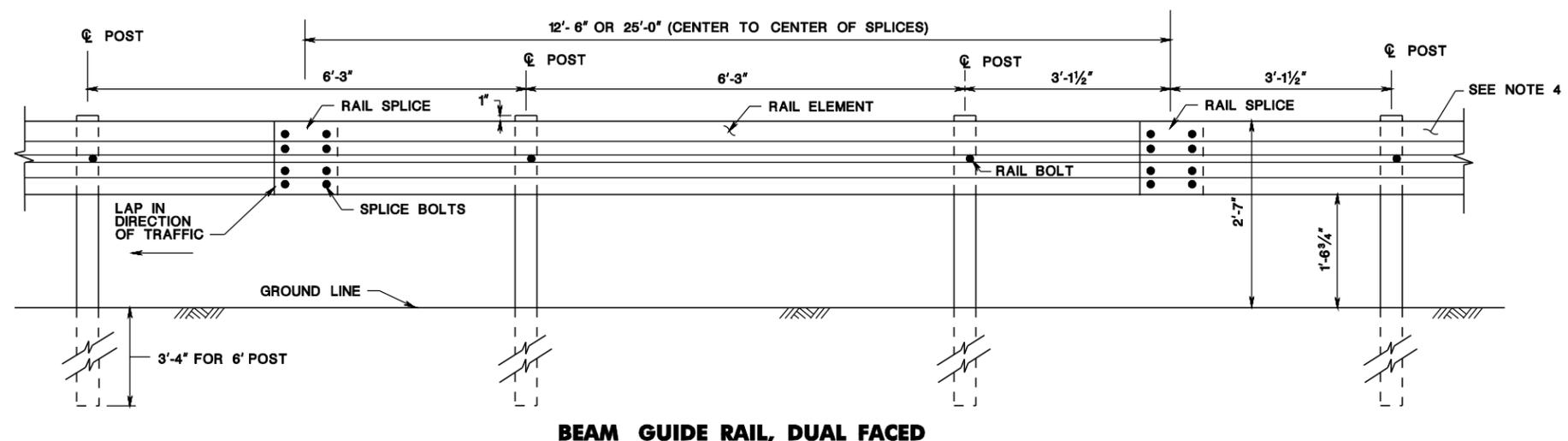
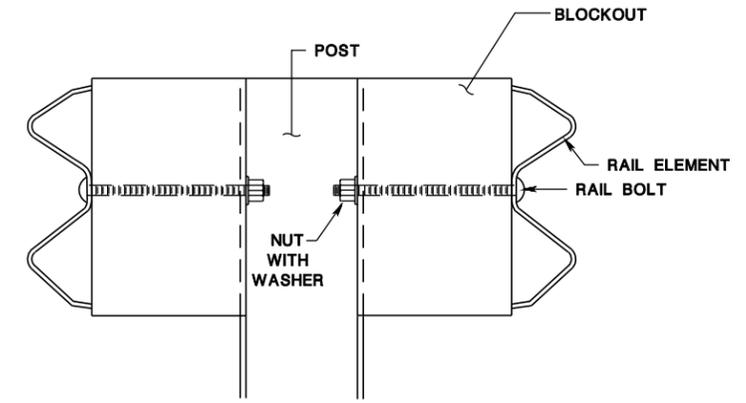
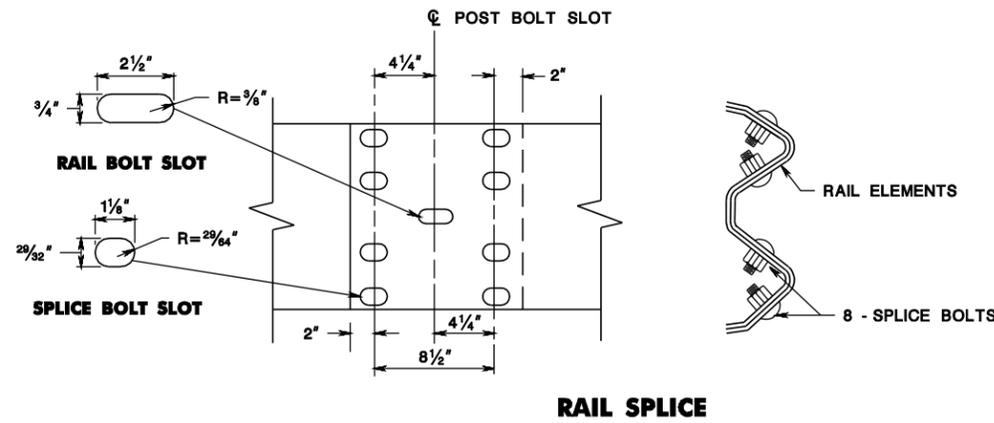
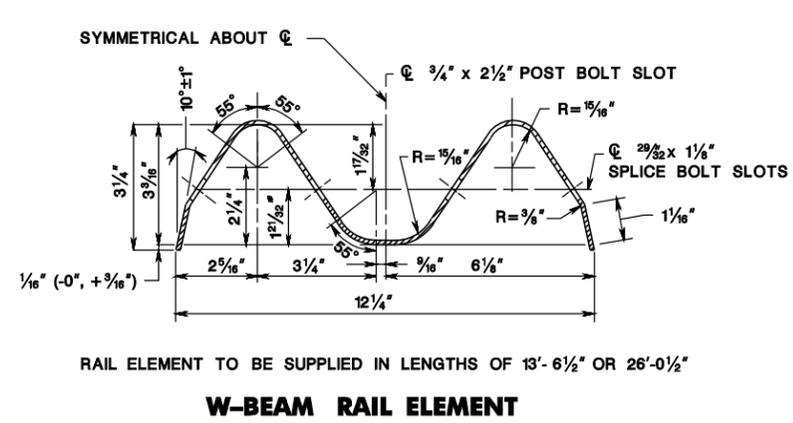
APPROVED RECYCLED/
SYNTHETIC MATERIALS

6"x8"x14" BLOCKOUT

NOTE:
DIMENSIONS SHOWN MAY VARY FOR RECYCLED/SYNTHETIC BLOCKOUTS.

CD-609-1.1

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 BDC7D-02-REVISIONS TO CD-609-2
 BDC7D-01-ORIGINAL SHEET



- NOTES:**
- ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
 - FURNISH RAIL ELEMENTS SHOPCURVED, CONCAVE OR CONVEX, FOR RADII BETWEEN 20 AND 150 FEET.
 - WHERE TRANSITIONING TO EXISTING GUIDE RAIL, AN END TERMINAL, OR A CRASH CUSHION MOUNTED AT A HEIGHT OTHER THAN 2'-7", THE VERTICAL TRANSITION TO BE ACCOMPLISHED IN A MINIMUM LENGTH OF 12'-6" FOR EACH 2" OF VERTICAL CHANGE. SEE CD-609-8.
 - INSTALL AN END TERMINAL AS SHOWN ON THE PLANS. USE THE END SECTION (ROUNDED) ON THE END OF THE RAIL ELEMENT WHERE DUAL FACED BEAM GUIDE RAIL ENDS AND SINGLE FACED BEAM GUIDE RAIL BEGINS.

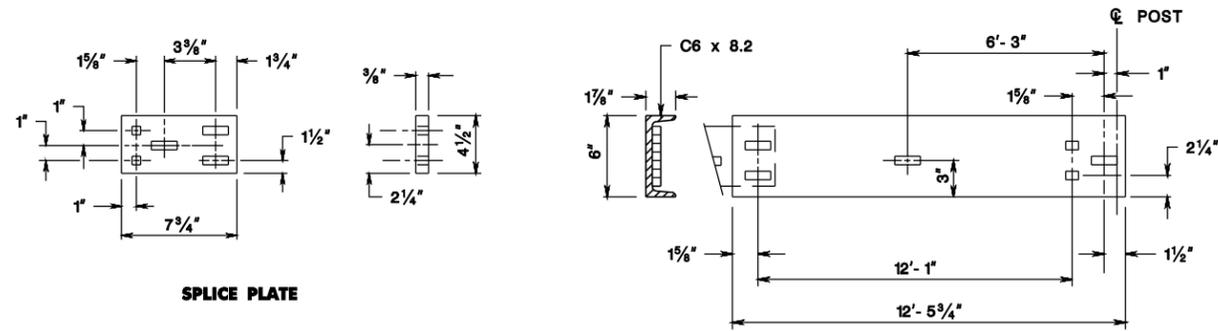
BEAM GUIDE RAIL, DUAL FACED (MASH TL-3)
 N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-609-2.1

CD-609-2

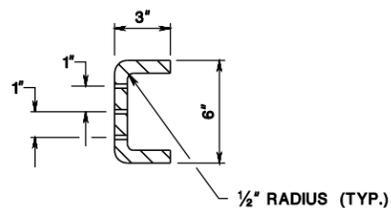


SPLICE PLATE

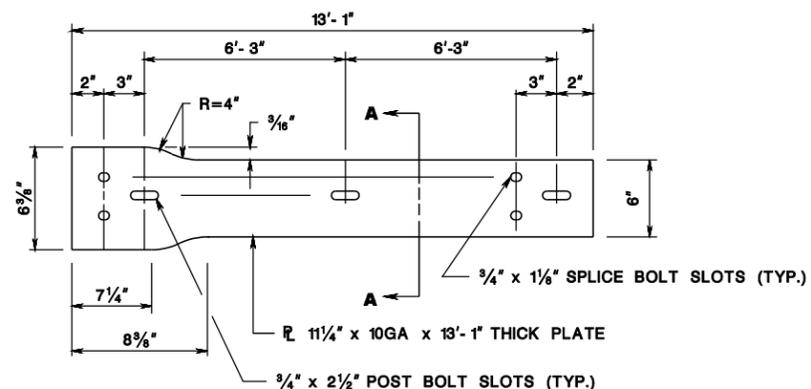
NOTES:

1. RUB RAIL MAY BE SUPPLIED IN LENGTHS OF 12'-5 3/4" OR 24'-11 3/4"
2. ALL RECTANGULAR SLOTS ARE 1 1/8" x 2", ALL SQUARE HOLES ARE 1/8"

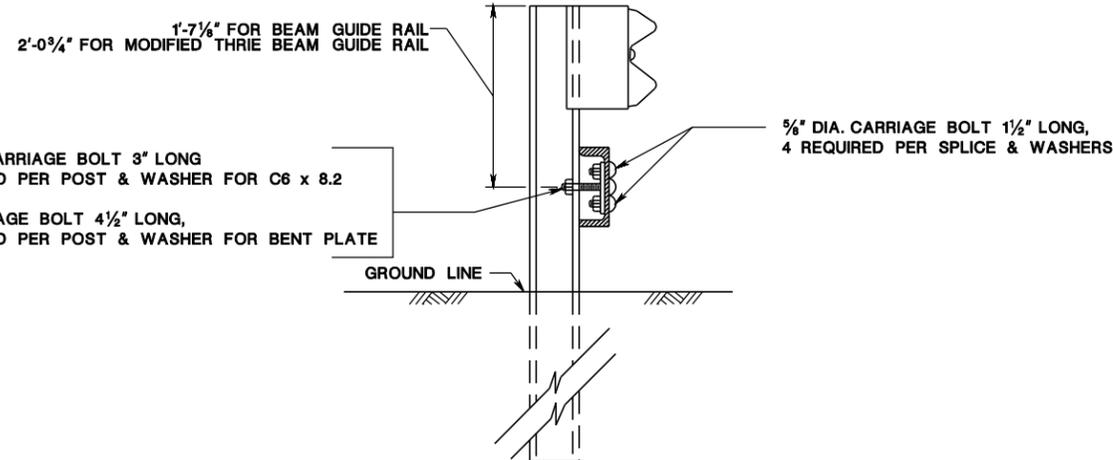
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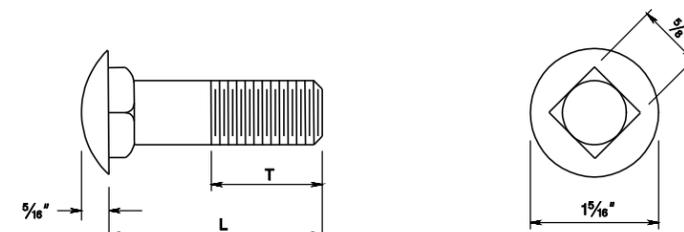
SECTION A-A



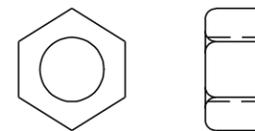
BENT PLATE



RUB RAIL SECTION



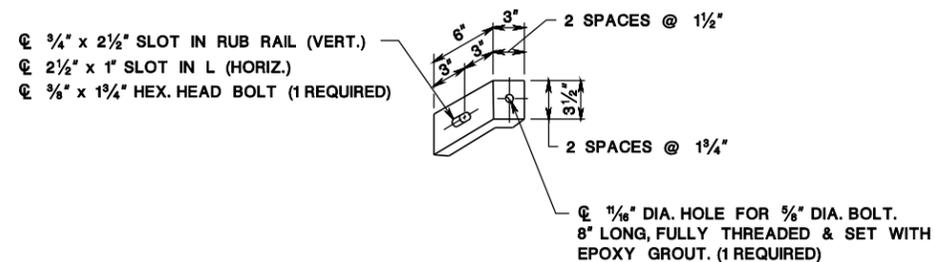
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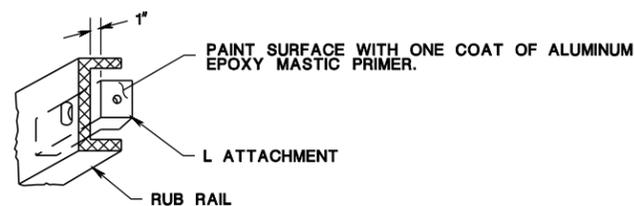
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L	THREAD LENGTH (T)
1 1/2"	FULL LENGTH
3"	1 1/2" MIN.
4 1/2"	1 1/2" MIN.

CARRIAGE BOLT DETAIL



RUB RAIL ANGLE ATTACHMENT



NOTES:

1. USE EITHER C6 x 8.2 OR BENT PLATE FOR RUB RAIL.
2. INSTALL RUB RAIL WHERE SHOWN ON THE PLANS.

RUB RAIL
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-609-3.1

CD-609-3

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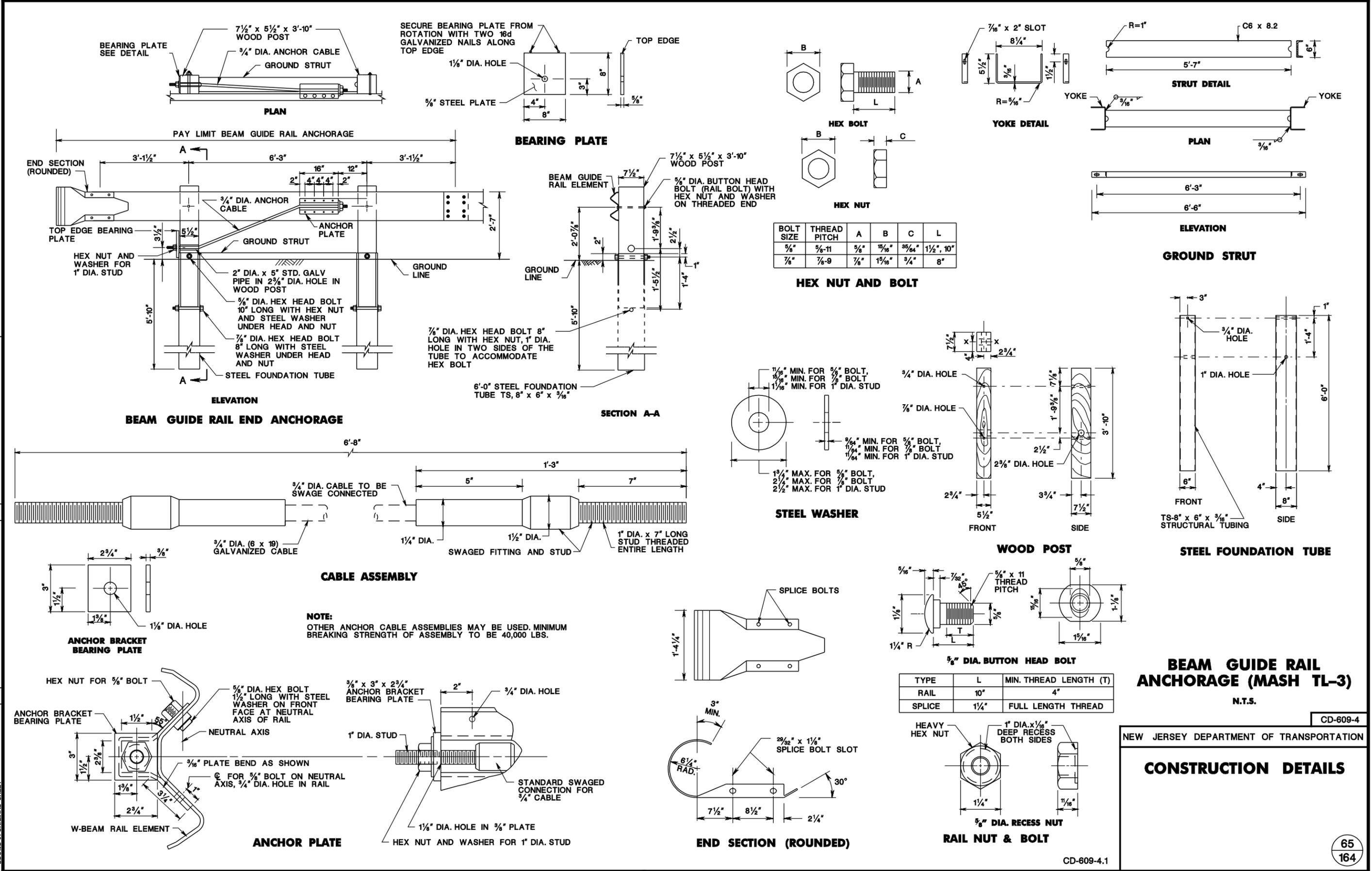
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BDCTD-02-REVISIONS TO CD-609-4
BDCTD-01-ORIGINAL SHEET



HEX NUT AND BOLT

BOLT SIZE	THREAD PITCH	A	B	C	L
5/8"	5/8-11	5/8"	15/16"	3/64"	1 1/2", 10"
7/8"	7/8-9	7/8"	1 1/16"	3/4"	8"

STEEL WASHER

1 1/8" MIN. FOR 5/8" BOLT,
5/8" MIN. FOR 7/8" BOLT,
1 1/8" MIN. FOR 1" DIA. STUD

1 3/4" MAX. FOR 5/8" BOLT,
2 1/2" MAX. FOR 7/8" BOLT,
2 1/2" MAX. FOR 1" DIA. STUD

5/8" DIA. BUTTON HEAD BOLT

TYPE	L	MIN. THREAD LENGTH (T)
RAIL	10"	4"
SPLICE	1 1/4"	FULL LENGTH THREAD

BEAM GUIDE RAIL ANCHORAGE (MASH TL-3)
N.T.S.

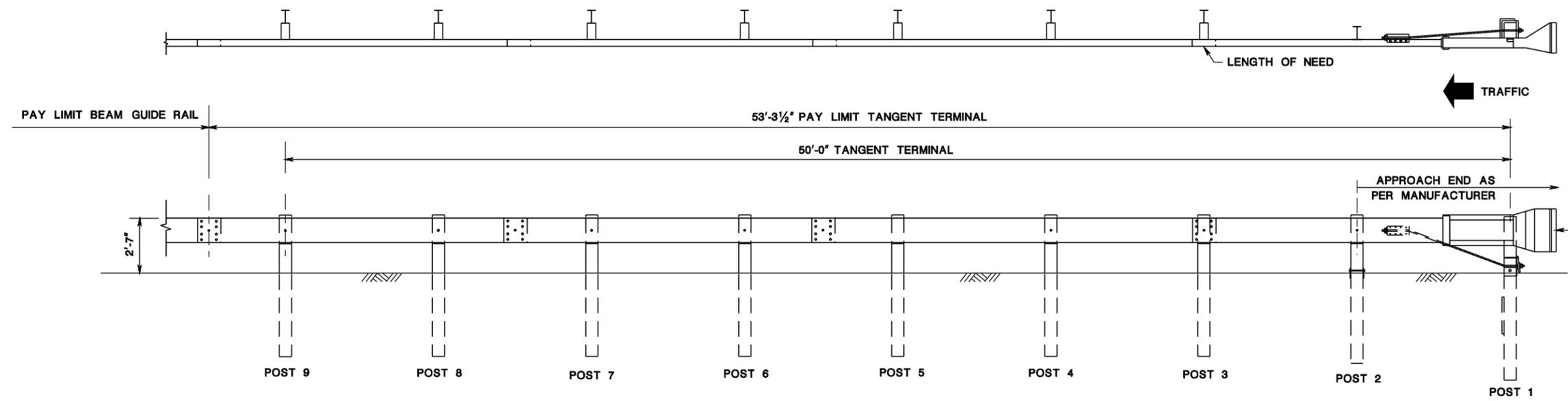
CD-609-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-609-4.1

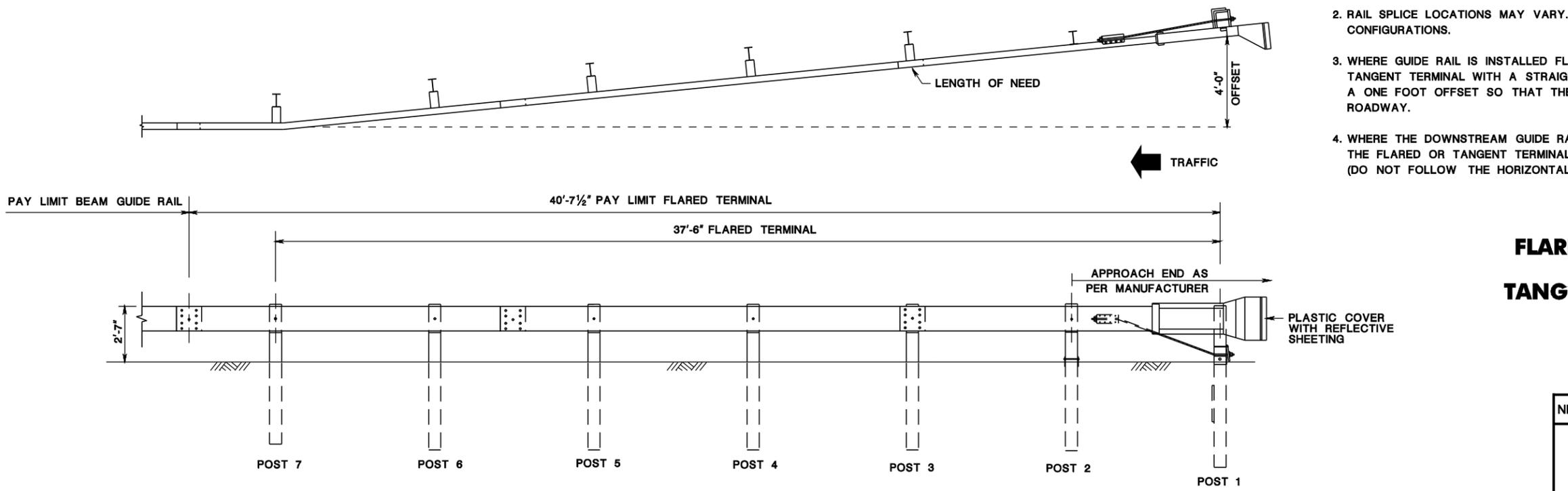
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 BDC7D-02-REVISIONS TO CD-609-5
 BDC7D-01-ORIGINAL SHEET



TANGENT GUIDE RAIL TERMINAL

NOTES:

1. NUMBER OF POSTS, TYPE OF POST, POST SPACING, FLARE RATE, AND MATERIALS TO BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND THE DEPARTMENT'S QUALIFIED PRODUCTS LIST.
2. RAIL SPLICE LOCATIONS MAY VARY. SEE MANUFACTURER'S OPTIONAL PANEL CONFIGURATIONS.
3. WHERE GUIDE RAIL IS INSTALLED FLUSH WITH THE GUTTER LINE, CONSTRUCT THE TANGENT TERMINAL WITH A STRAIGHT FLARE FOR ITS ENTIRE LENGTH TO PROVIDE A ONE FOOT OFFSET SO THAT THE EXTRUDER HEAD DOES NOT PROTRUDE INTO THE ROADWAY.
4. WHERE THE DOWNSTREAM GUIDE RAIL IS ON A HORIZONTAL CURVE, CONSTRUCT THE FLARED OR TANGENT TERMINAL IN A STRAIGHT LINE AS SHOWN ON THIS DETAIL (DO NOT FOLLOW THE HORIZONTAL CURVE).



FLARED GUIDE RAIL TERMINAL

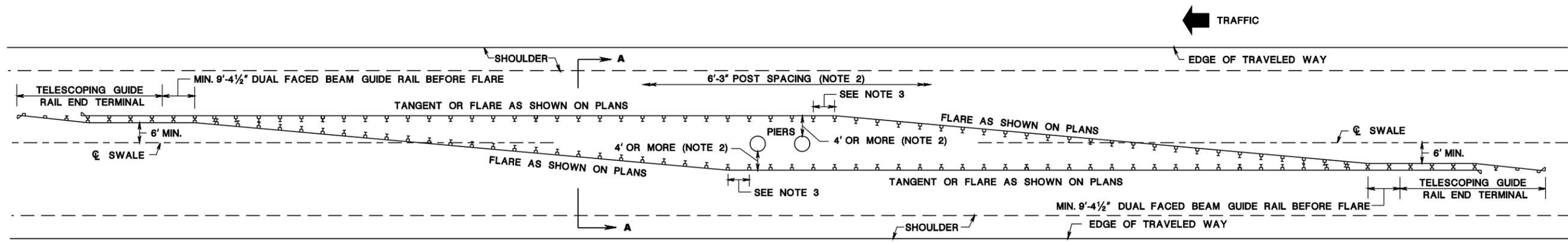
FLARED GUIDE RAIL TERMINAL AND TANGENT GUIDE RAIL TERMINAL (MASH TL-3)

N.T.S.

CD-609-5
 NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

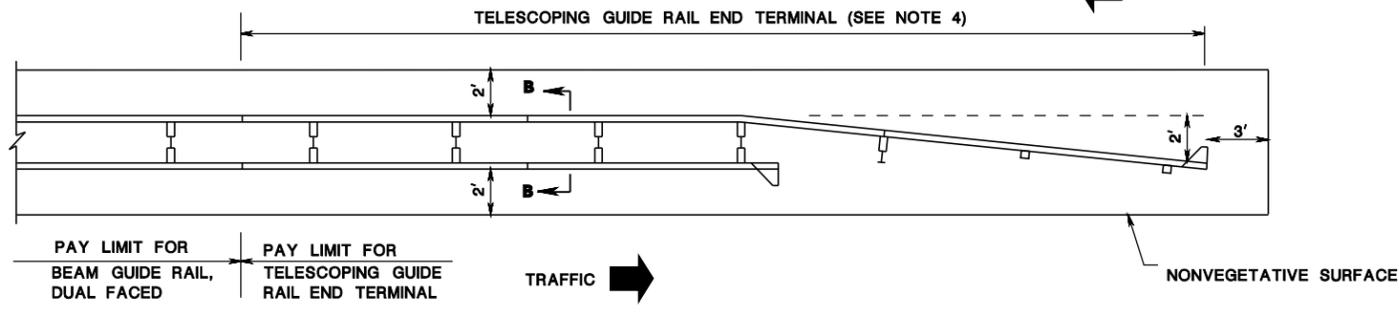
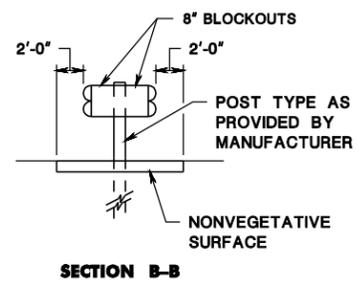
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TRAFFIC →

MEDIAN GUIDE RAIL WITH TELESCOPING GUIDE RAIL END TERMINAL

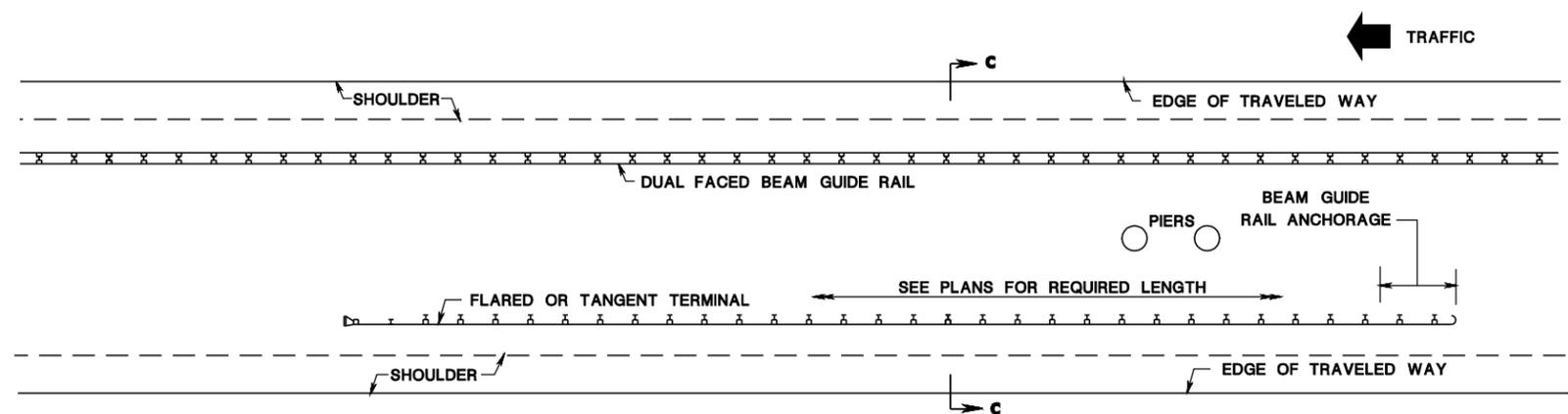
- NOTES:**
- 10H:1V OR FLATTER SLOPES TO BEGIN 100' IN ADVANCE OF THE TELESCOPING GUIDE RAIL END TERMINAL.
 - WHERE THE DISTANCE FROM THE FACE OF RAIL TO THE OBSTRUCTION IS LESS THAN 4', REDUCED POST SPACING IS REQUIRED. SEE CD-609-8.
 - A MINIMUM OF ONE 6'-3" TANGENT SPACE IS REQUIRED BEYOND THE OBSTRUCTION BEFORE BEGINNING A FLARE.
 - LENGTH OF TELESCOPING GUIDE RAIL END TERMINAL AS PER MANUFACTURER. SEE QUALIFIED PRODUCTS LIST.



TELESCOPING GUIDE RAIL END TERMINAL CONNECTION TO DUAL FACED BEAM GUIDE RAIL

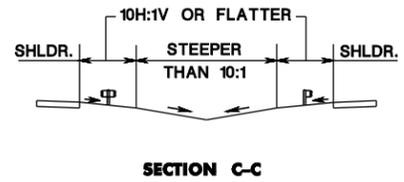
TELESCOPING GUIDE RAIL END TERMINAL

CD-609-7.1



TRAFFIC →

DUAL FACED MEDIAN GUIDE RAIL AND TANGENT OR FLARED TERMINAL



MEDIAN GUIDE RAIL TREATMENTS

N.T.S.

CD-609-7

NEW JERSEY DEPARTMENT OF TRANSPORTATION

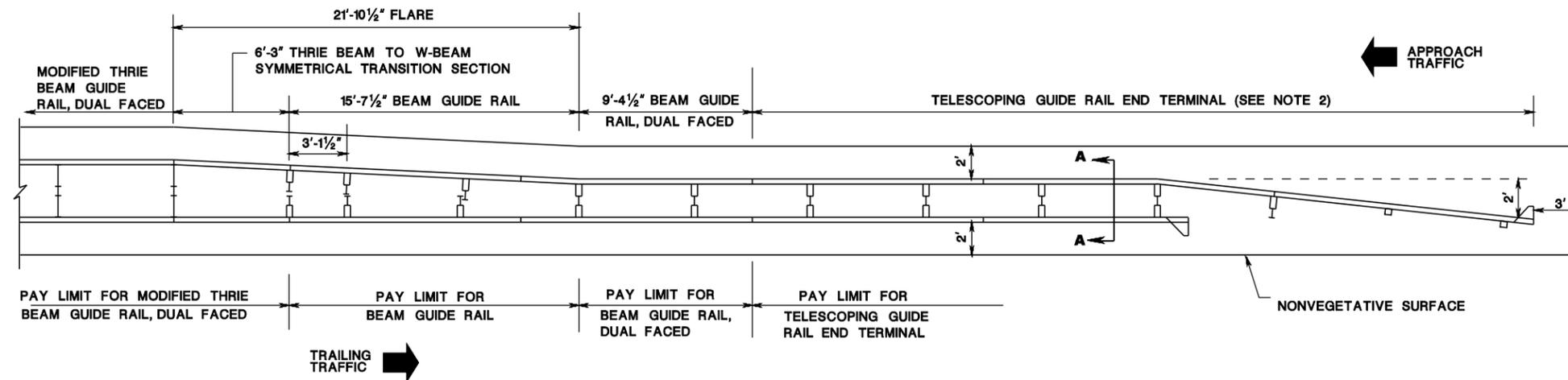
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CD-609-7.2

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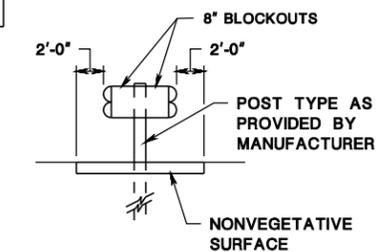
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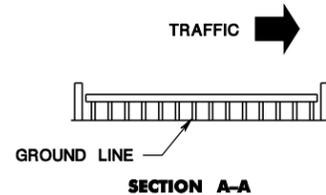
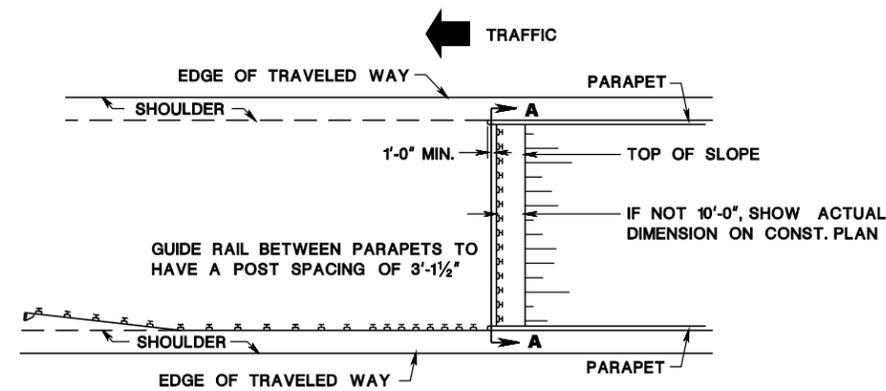
TELESCOPING GUIDE RAIL END TERMINAL CONNECTION TO DUAL FACED MODIFIED THRIE BEAM GUIDE RAIL

- NOTES:**
1. THE DIRECTION OF THE APPROACH TRAFFIC AND TRAILING TRAFFIC SHOWN IS THE PREFERRED TREATMENT.
 2. LENGTH OF TELESCOPING GUIDE RAIL END TERMINAL AS PER MANUFACTURER. SEE QUALIFIED PRODUCTS LIST.



SECTION A-A

CD-609-7A.1



MEDIAN GUIDE RAIL TREATMENT AT ADJACENT BRIDGES

MEDIAN GUIDE RAIL TREATMENTS
N.T.S.

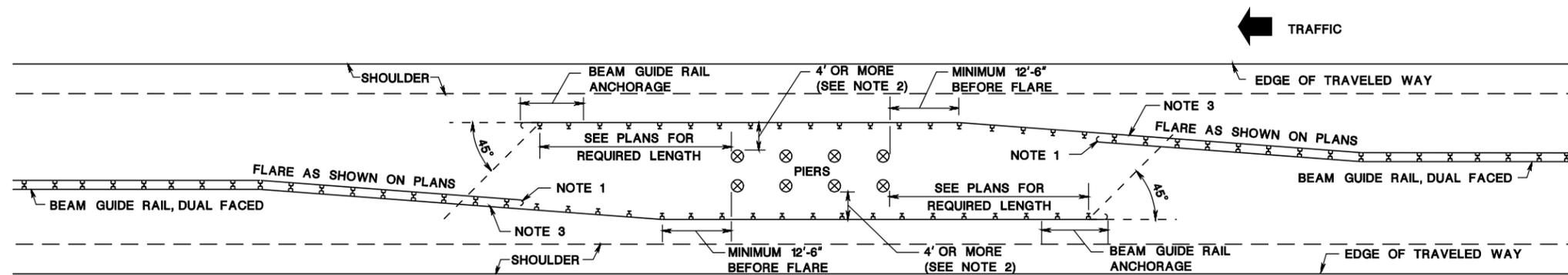
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

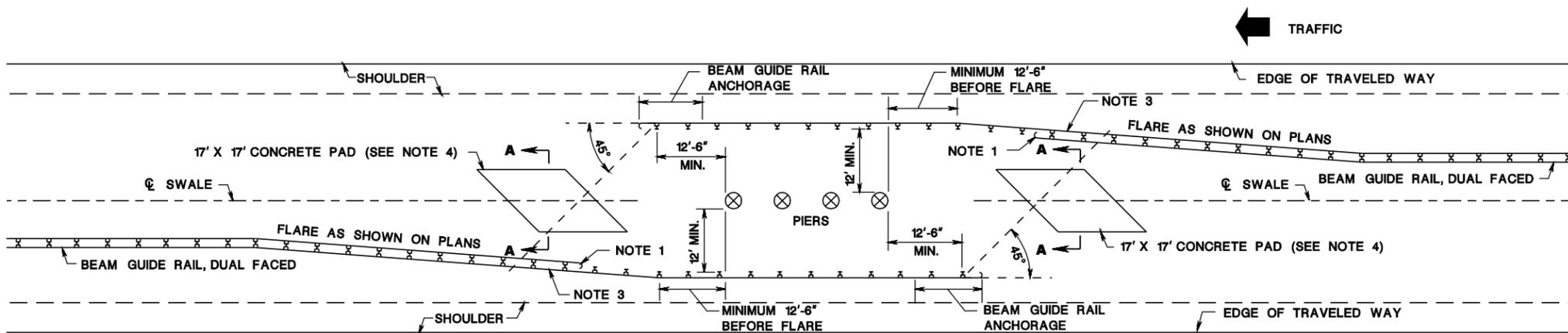
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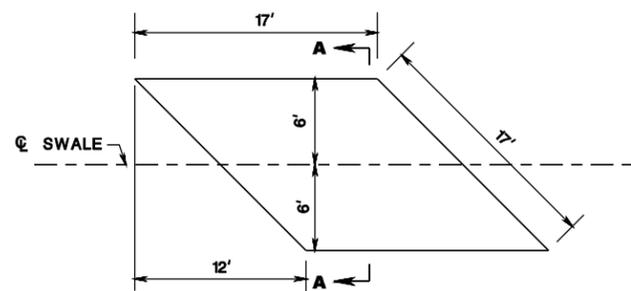
TRAFFIC →

OVERLAPPING DUAL FACED MEDIAN BEAM GUIDE RAIL

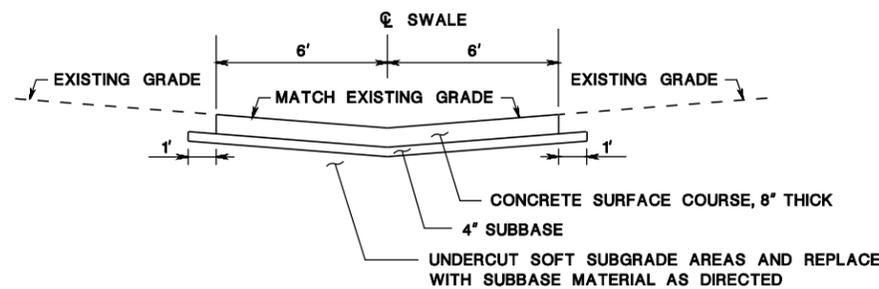


TRAFFIC →

OVERLAPPING DUAL FACED MEDIAN BEAM GUIDE RAIL WITH CONCRETE PAD



17' X 17' CONCRETE PAD



SECTION A-A

NOTES:

1. ATTACH AN END SECTION (ROUNDED) WHERE DUAL-FACED BEAM GUIDE RAIL TERMINATES. SEE CD-609-2.
2. WHERE CLEARANCE FROM THE OBSTRUCTION TO THE FACE OF RAIL IS LESS THAN 4', REDUCED POST SPACING IS REQUIRED. SEE CD-609-8.
3. EXTEND DUAL FACED GUIDE RAIL A MINIMUM OF ONE 6'-3" SPACE (TWO POSTS) BEYOND A 45 DEGREE LINE EXTENDED FROM THE LAST POST OF THE BEAM GUIDE RAIL ANCHORAGE.
4. LOCATION OF CONCRETE PAD AS SHOWN ON THE PLANS.

MEDIAN GUIDE RAIL TREATMENTS

N.T.S.

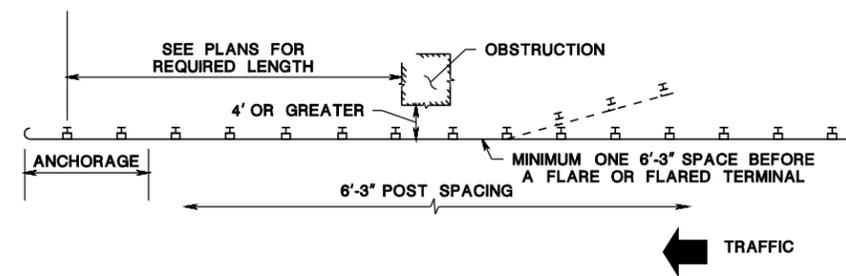
CD-609-7B

NEW JERSEY DEPARTMENT OF TRANSPORTATION

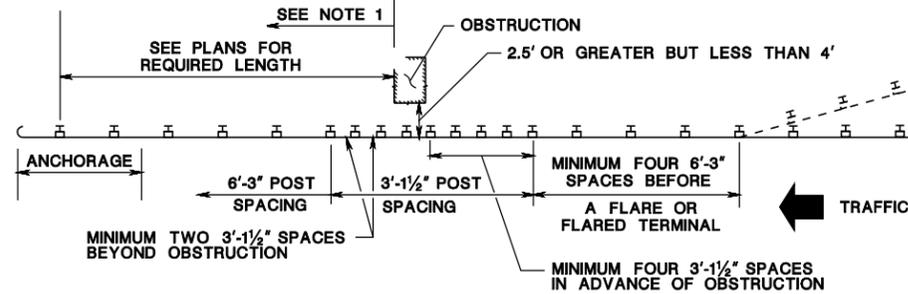
CONSTRUCTION DETAILS

CD-609-7B.1

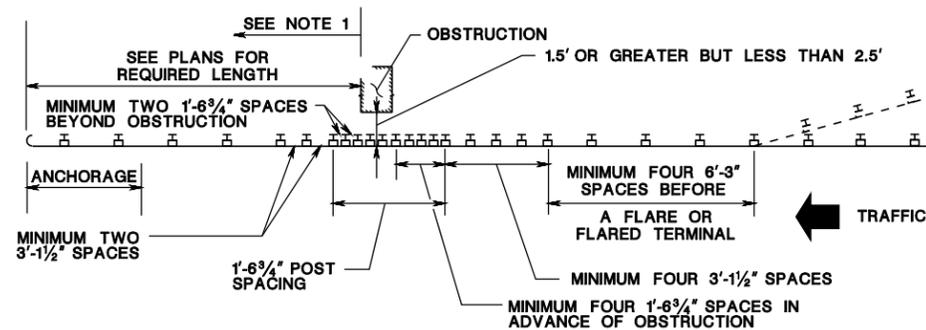
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WHERE CLEARANCE FROM FACE OF RAIL TO OBSTRUCTION IS 4' OR GREATER (SEE NOTE 2)



WHERE CLEARANCE FROM FACE OF RAIL TO OBSTRUCTION IS 2.5' OR GREATER BUT LESS THAN 4' (SEE NOTE 2)



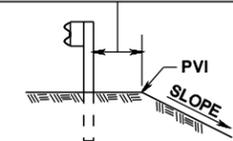
WHERE CLEARANCE FROM FACE OF RAIL TO OBSTRUCTION IS 1.5' OR GREATER BUT LESS THAN 2.5' (SEE NOTE 2)

CLEARANCE FROM FACE OF RAIL TO OBSTRUCTION

NOTES:

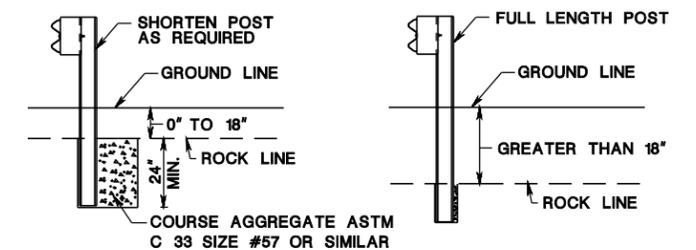
1. WHERE AN APPROACH END TREATMENT AT THE TRAILING END OF GUIDE RAIL IS SHOWN ON THE PLANS, THE POST SPACING REQUIREMENTS SHALL BE THE SAME AS THE APPROACH END.
2. IN A FILL SECTION WHERE THE DISTANCE FROM THE BACK OF THE POST TO THE PVI IS LESS THAN 1' AND THE SLOPE IS STEEPER THAN 3:1, THE MINIMUM CLEARANCE FROM THE FACE OF THE RAIL TO AN OBSTRUCTION IS INCREASED BY 1' DUE TO INCREASED POST DEFLECTION.
3. ADDITIONAL POSTS AND BLOCKOUTS WILL BE PAID FOR UNDER PAY ITEM "BEAM GUIDE RAIL POST".

DISTANCE FROM BACK OF POST TO PVI	SLOPE	ADDITIONAL POST LENGTH
IF LESS THAN 2' BUT GREATER OR EQUAL TO 1'	6:1 OR FLATTER STEEPER THAN 6:1 TO 3:1 STEEPER THAN 3:1 TO 2:1	NO CHANGE 1' 2'
IF LESS THAN 1'	6:1 OR FLATTER STEEPER THAN 6:1 TO 3:1 STEEPER THAN 3:1 TO 2:1	1' 2' 3'



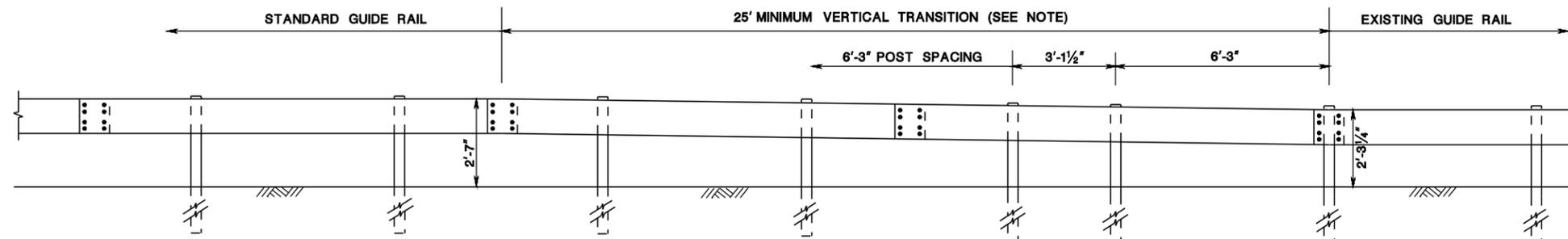
ADDITIONAL LENGTH BEAM GUIDE RAIL POSTS

CD-609-8.2



GUIDE RAIL POST INSTALLATION IN ROCK

CD-609-8.3



NOTE: WHERE TRANSITIONING TO EXISTING GUIDE RAIL, AN END TERMINAL, OR A CRASH CUSHION MOUNTED AT A HEIGHT OTHER THAN 2'-7", THE VERTICAL TRANSITION SHALL BE ACCOMPLISHED IN A MINIMUM LENGTH OF 12'-6" FOR EACH 2" OF VERTICAL CHANGE.

VERTICAL TRANSITION TO EXISTING 27 1/4" HIGH GUIDE RAIL

CD-609-8.4

BEAM GUIDE RAIL TREATMENTS

N.T.S.

CD-609-8

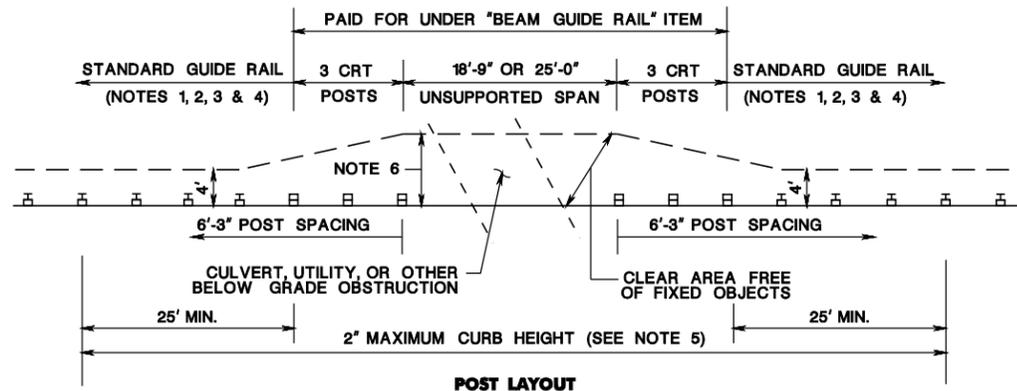
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CONSTRUCTION DETAILS

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BDC7D-02 REVISIONS TO CD-609-8 BDC8D-01 ORIGINAL SHEET

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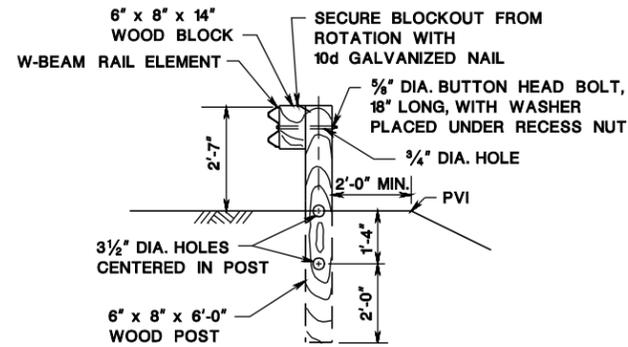


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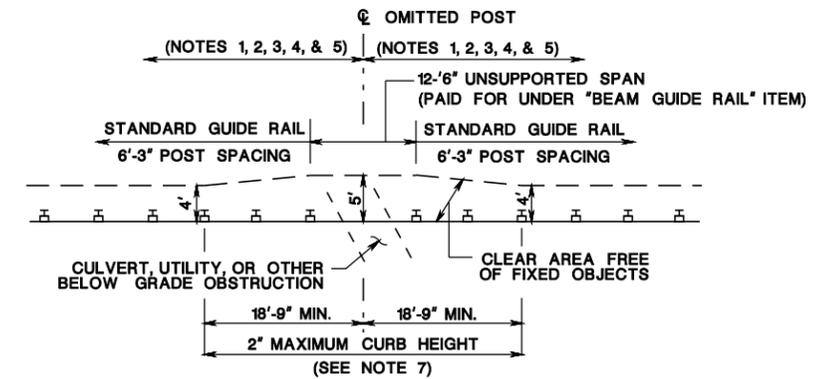
1. A MINIMUM OF TEN 6'-3" POST SPACES OF TANGENT GUIDE RAIL ARE REQUIRED BETWEEN THE OUTER CRT POSTS OF CONSECUTIVE 18'-9" OR 25'-0" UNSUPPORTED SPANS.
2. THE OUTER CRT POSTS MUST BE A MINIMUM OF TEN 6'-3" POST SPACES FROM THE APPROACH END OF A TANGENT TERMINAL, FOURTEEN 6'-3" POST SPACES FROM THE APPROACH END OF A FLARED TERMINAL, AND EIGHT 6'-3" POST SPACES FROM THE BEGINNING OF A FLARE OR REDUCED POST SPACING.
3. THE OUTER CRT POSTS MUST BE A MINIMUM OF TEN 6'-3" POST SPACES FROM THE LAST POST OF AN END ANCHORAGE.
4. THE OUTER CRT POSTS MUST BE A MINIMUM OF SIX 6'-3" POST SPACES FROM A THRIE BEAM TO W-BEAM ASYMMETRICAL TRANSITION SECTION.
5. WHERE THERE IS CURB, THE MAXIMUM CURB HEIGHT IS 2" FROM 25' IN ADVANCE OF THE FIRST CRT POST ON THE APPROACH END TO 25' PAST THE LAST CRT POST ON THE TRAILING END.
6. THE REQUIRED CLEAR AREA FREE OF FIXED OBJECTS IS 7' FOR AN 18'-9" UNSUPPORTED SPAN AND 8' FOR A 25'-0" UNSUPPORTED SPAN.
7. IF THERE IS A VERTICAL DROPOFF BEHIND THE UNSUPPORTED SPAN, THE FACE OF RAIL MUST BE A MINIMUM OF 3' FROM THE DROPOFF.

18'-9" OR 25'-0" UNSUPPORTED SPAN

CD-609-8A.1



CRT POST FOR UNSUPPORTED SPAN

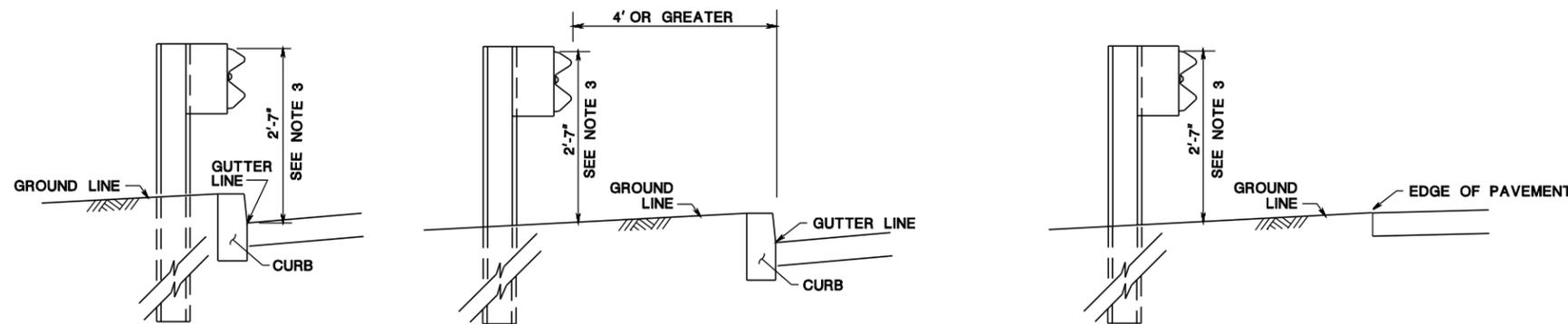


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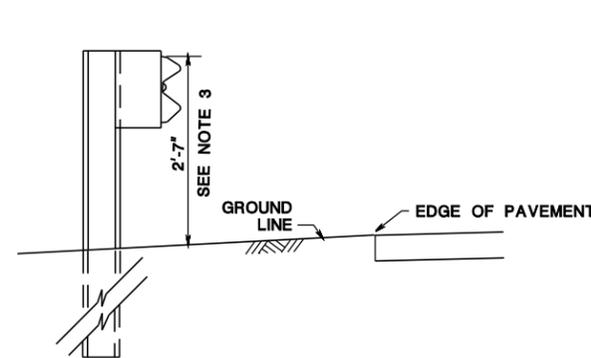
1. A MINIMUM OF NINE 6'-3" POST SPACES OF TANGENT GUIDE RAIL ARE REQUIRED BETWEEN TWO CONSECUTIVE SINGLE POST OMISSIONS.
2. THE OMITTED POST MUST BE A MINIMUM OF TEN 6'-3" POST SPACES FROM THE APPROACH END OF A TANGENT TERMINAL, ELEVEN 6'-3" POST SPACES FROM THE APPROACH END OF A FLARED TERMINAL, AND FIVE 6'-3" POST SPACES FROM THE BEGINNING OF A FLARE OR REDUCED POST SPACING.
3. THE OMITTED POST MUST BE A MINIMUM OF TEN 6'-3" POST SPACES FROM THE LAST POST OF AN END ANCHORAGE.
4. THE OMITTED POST MUST BE A MINIMUM OF SIX 6'-3" POST SPACES FROM A THRIE BEAM TO W-BEAM ASYMMETRICAL TRANSITION SECTION.
5. THE OMITTED POST MUST BE A MINIMUM OF SEVEN 6'-3" POST SPACES FROM AN OUTER CRT POST OF AN 18'-9" OR 25'-0" UNSUPPORTED SPAN.
6. THE REQUIRED CLEAR AREA FREE OF FIXED OBJECTS IS 5' BEHIND A 12'-6" UNSUPPORTED SPAN.
7. WHERE THERE IS CURB, THE MAXIMUM CURB HEIGHT IS 2" FOR A MINIMUM LENGTH OF 18'-9" IN ADVANCE OF AND ON THE TRAILING END OF THE OMITTED POST.

12'-6" UNSUPPORTED SPAN

CD-609-8A.2



RAIL HEIGHT DETERMINATION WITH CURB



RAIL HEIGHT DETERMINATION WITHOUT CURB

NOTES:

1. WHERE GUIDERAIL ADJACENT TO CURB IS FLUSH WITH THE GUTTERLINE (6" OFFSET FOR SLOPING CURB) AND IS TAPERED TO AN OFFSET OF 4' OR GREATER, A VERTICAL TRANSITION IS REQUIRED. THE VERTICAL TRANSITION SHALL BE ACCOMPLISHED IN A MINIMUM LENGTH OF 12'-6" FOR EACH 2" OF VERTICAL CHANGE.
2. SEE PLANS FOR GUIDE RAIL OFFSET.
3. 2'-10" FOR MODIFIED THRIE BEAM GUIDE RAIL.
4. FOR SLOPING CURB, FACE OF RAIL IS OFFSET 6" FROM GUTTER LINE.

BEAM GUIDE RAIL TREATMENTS (MASH TL-3)

N.T.S.

CD-609-8A

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-609-8A.3

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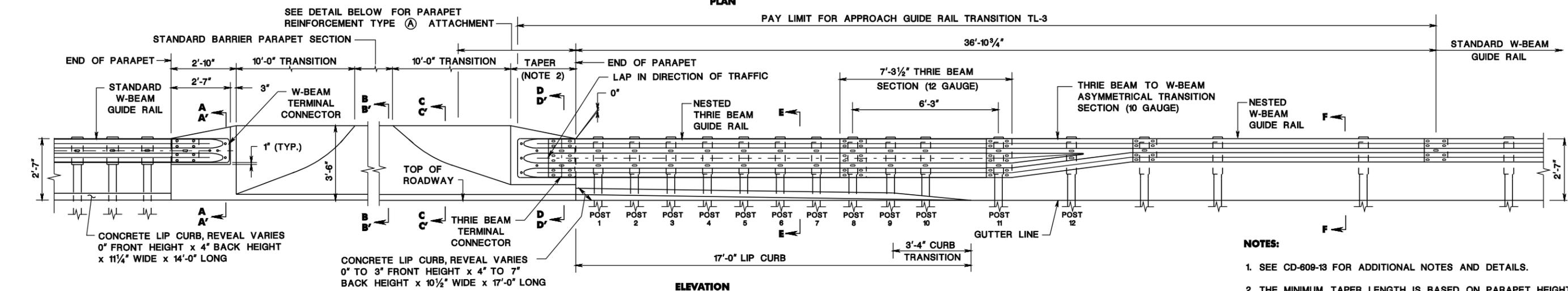
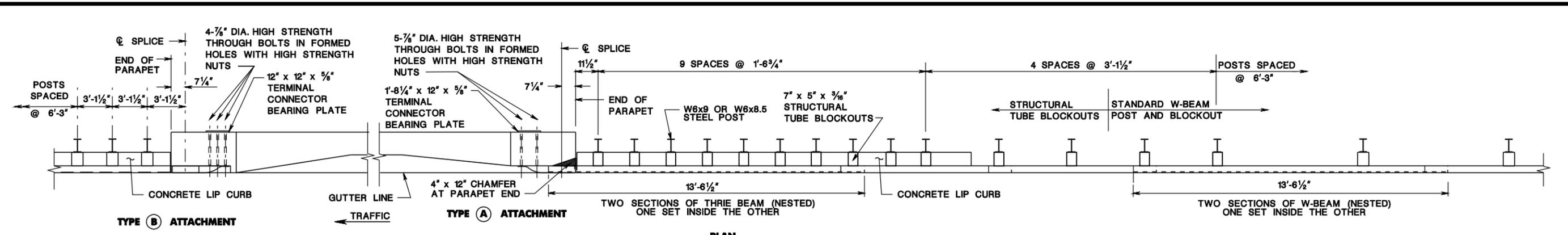
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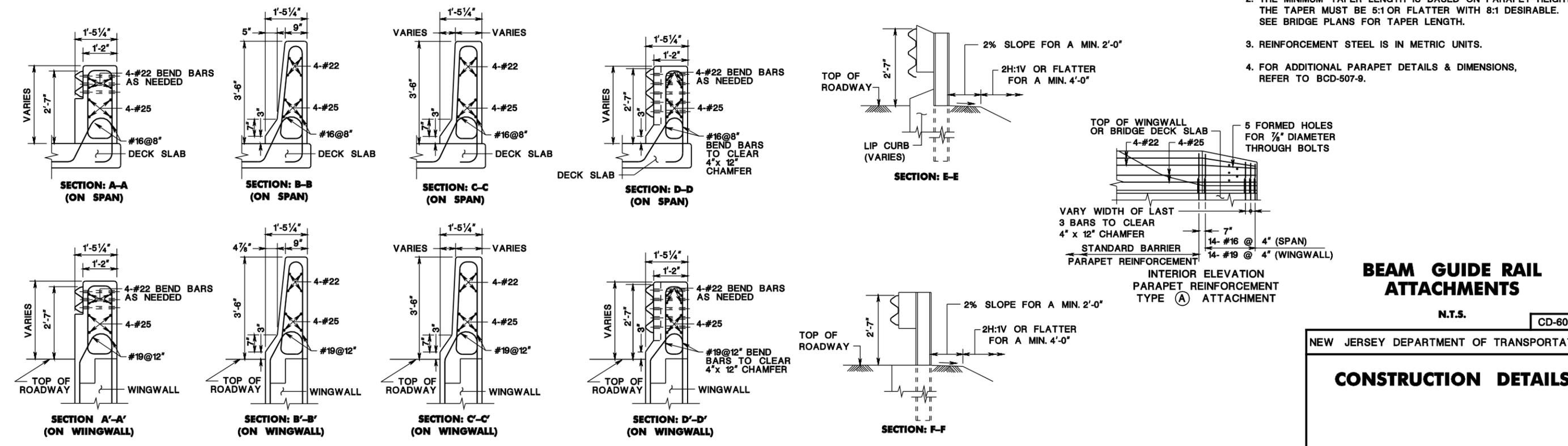
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BDCTD-02-REVISIONS TO CD-609-14
BDCTD-01-ORIGINAL SHEET



- NOTES:**
- SEE CD-609-13 FOR ADDITIONAL NOTES AND DETAILS.
 - THE MINIMUM TAPER LENGTH IS BASED ON PARAPET HEIGHT. THE TAPER MUST BE 5:1 OR FLATTER WITH 8:1 DESIRABLE. SEE BRIDGE PLANS FOR TAPER LENGTH.
 - REINFORCEMENT STEEL IS IN METRIC UNITS.
 - FOR ADDITIONAL PARAPET DETAILS & DIMENSIONS, REFER TO BCD-507-9.



BEAM GUIDE RAIL ATTACHMENTS

N.T.S.

CD-609-14

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION - DESIGN SPEED GREATER THAN 45 MPH (MASH TL-3) F SHAPE BARRIER PARAPET (NO ROADWAY CURBING ON APPROACH)

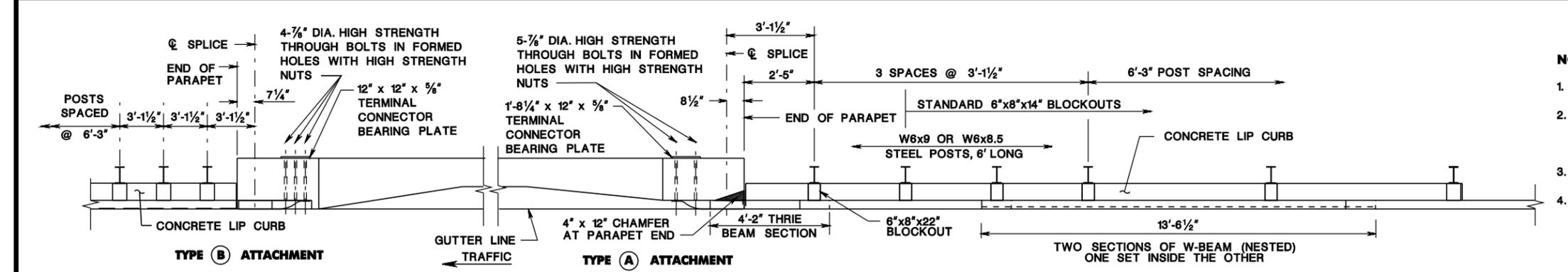
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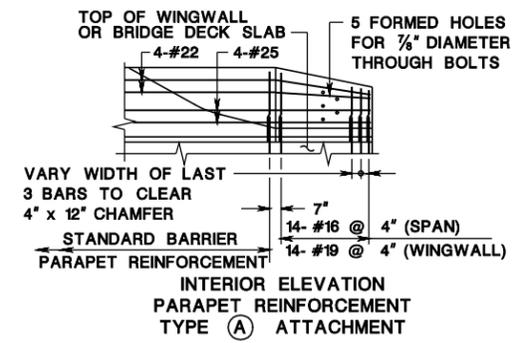
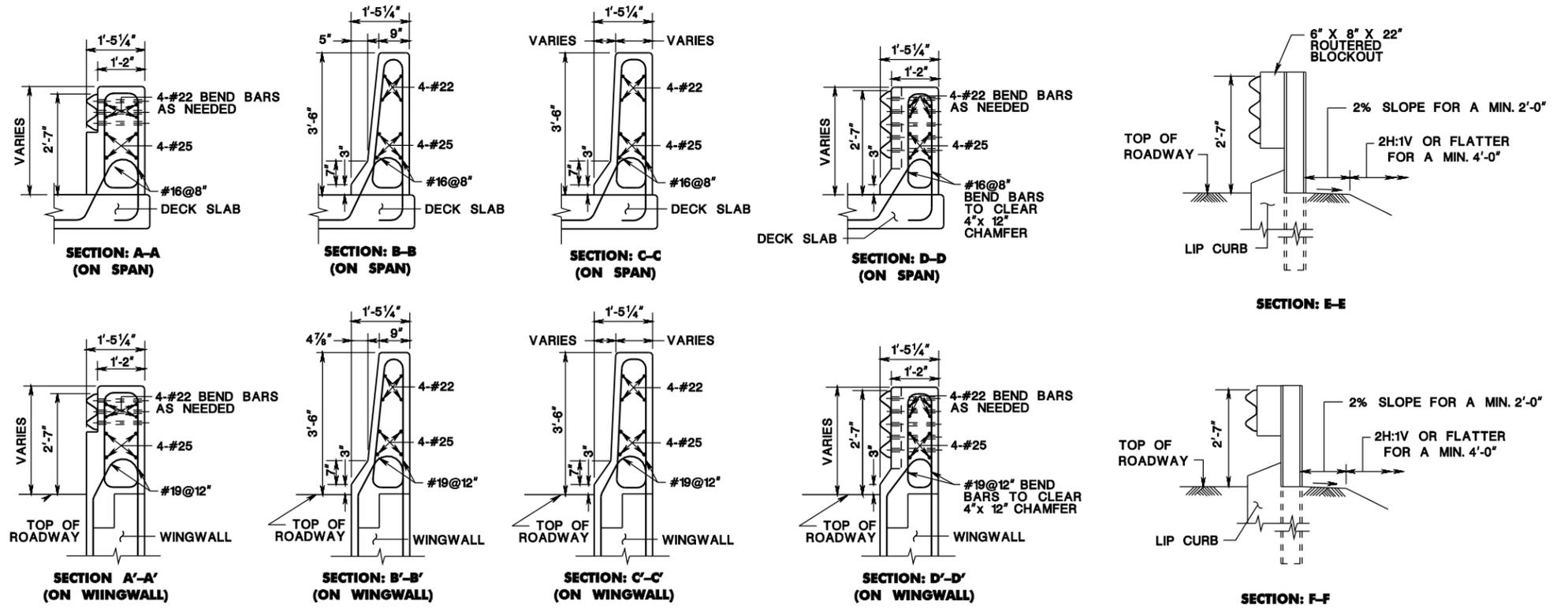
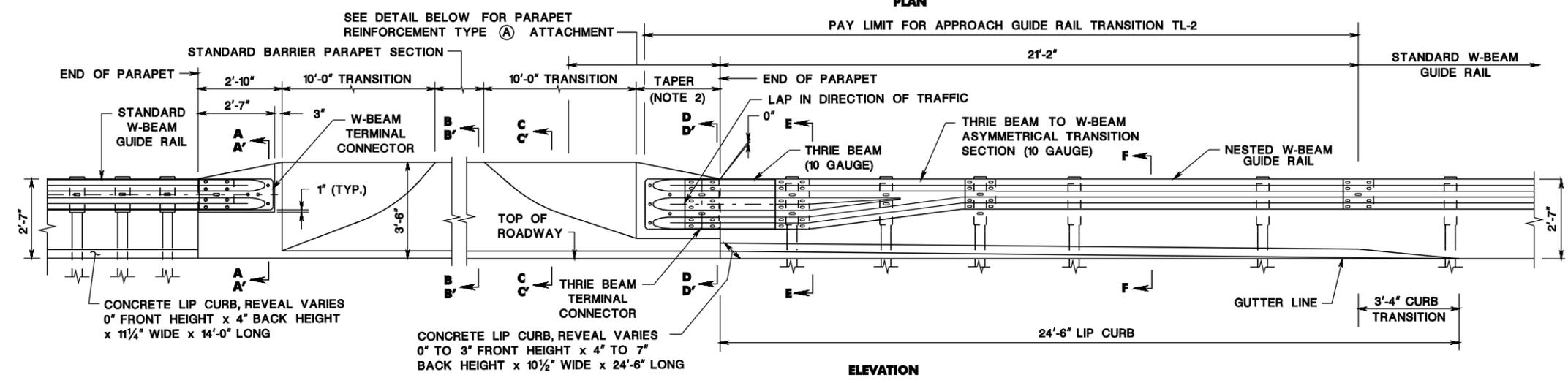
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- NOTES:**
1. SEE CD-609-13 FOR ADDITIONAL NOTES AND DETAILS.
 2. THE MINIMUM TAPER LENGTH IS BASED ON PARAPET HEIGHT. THE TAPER MUST BE 5:1 OR FLATTER WITH 8:1 DESIRABLE. SEE BRIDGE PLANS FOR TAPER LENGTH.
 3. REINFORCEMENT STEEL IS IN METRIC UNITS.
 4. FOR ADDITIONAL PARAPET DETAILS & DIMENSIONS, REFER TO BCD-507-9.



BEAM GUIDE RAIL ATTACHMENTS

N.T.S.

CD-609-15A

NEW JERSEY DEPARTMENT OF TRANSPORTATION

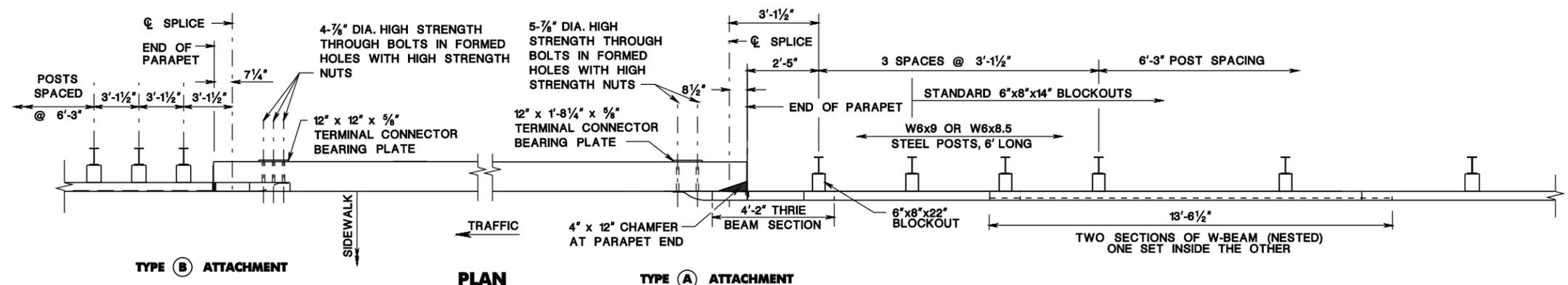
CONSTRUCTION DETAILS

GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION - DESIGN SPEED 45 MPH OR LESS (MASH TL-2) F SHAPE BARRIER PARAPET (NO ROADWAY CURBING ON APPROACH)

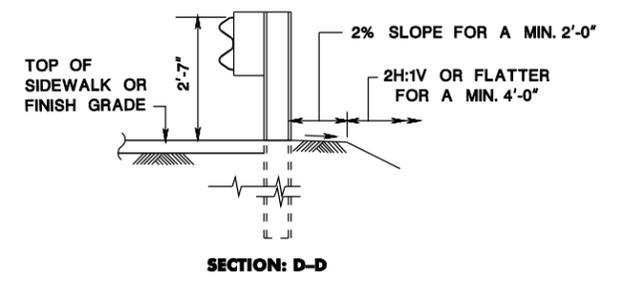
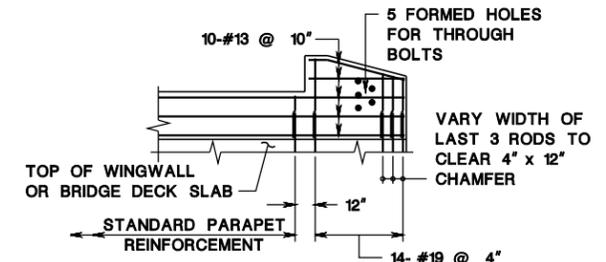
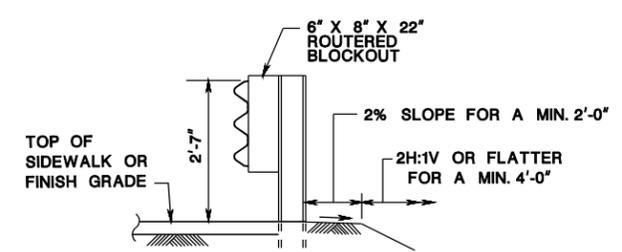
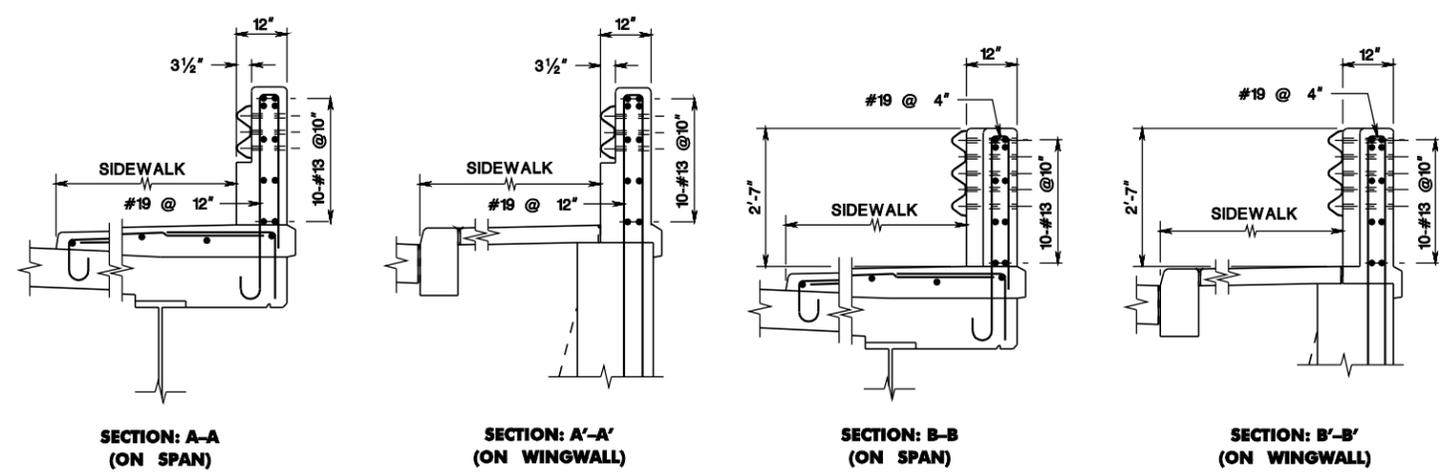
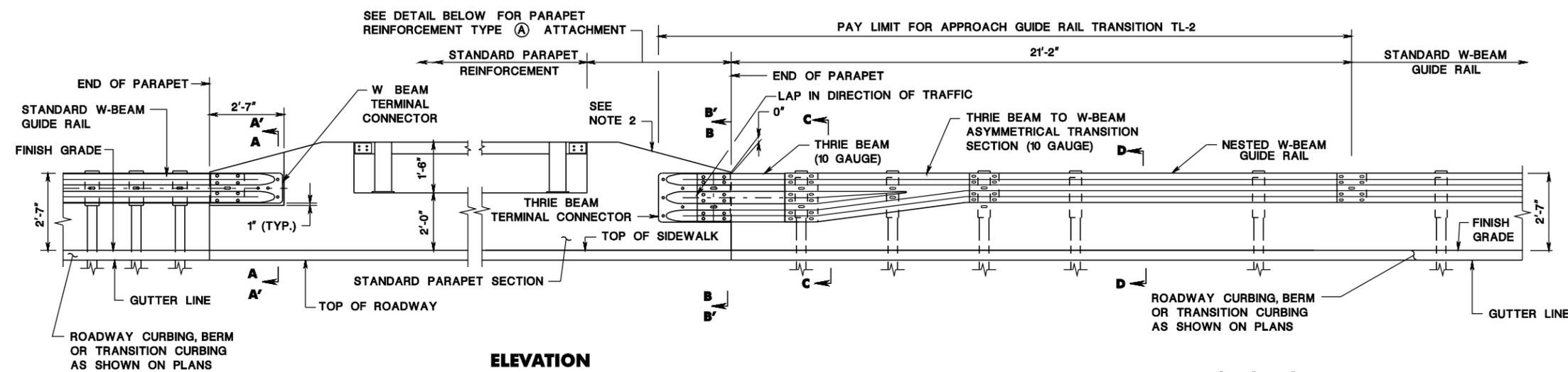
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- NOTES:**
- SEE CD-609-13 FOR ADDITIONAL NOTES AND DETAILS.
 - THE MINIMUM TAPER LENGTH IS BASED ON PARAPET HEIGHT. THE TAPER MUST BE 5:1 OR FLATTER WITH 8:1 DESIRABLE. SEE BRIDGE PLANS FOR TAPER LENGTH.
 - REINFORCEMENT STEEL IS IN METRIC UNITS.
 - FOR ADDITIONAL PARAPET DETAILS & DIMENSIONS, REFER TO BCD-509-6.



BEAM GUIDE RAIL ATTACHMENTS

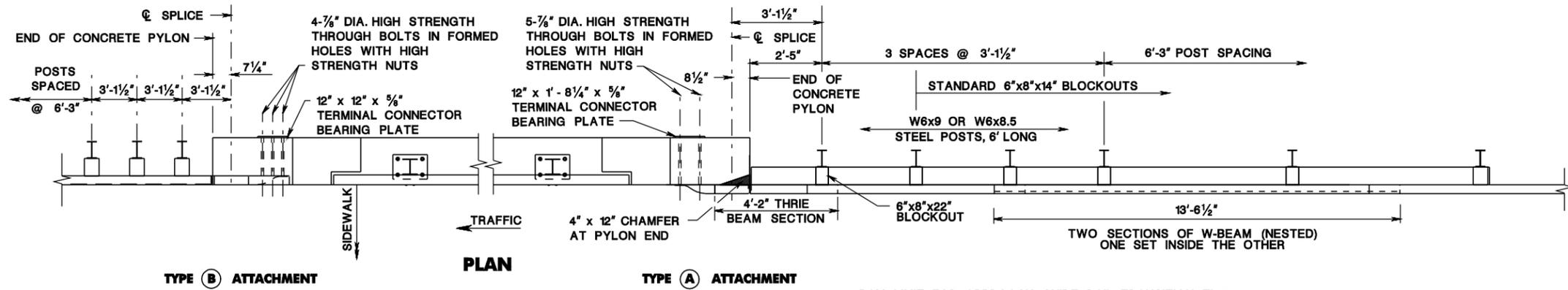
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

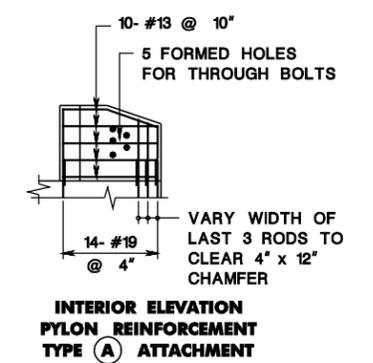
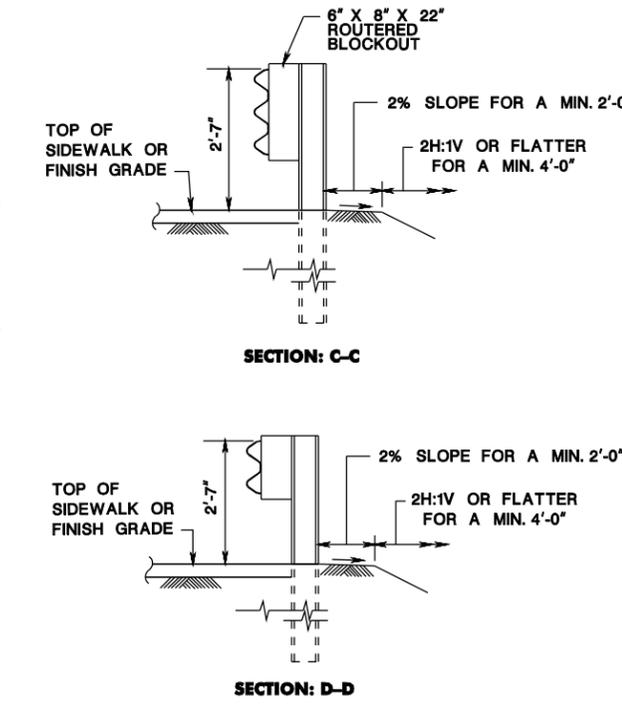
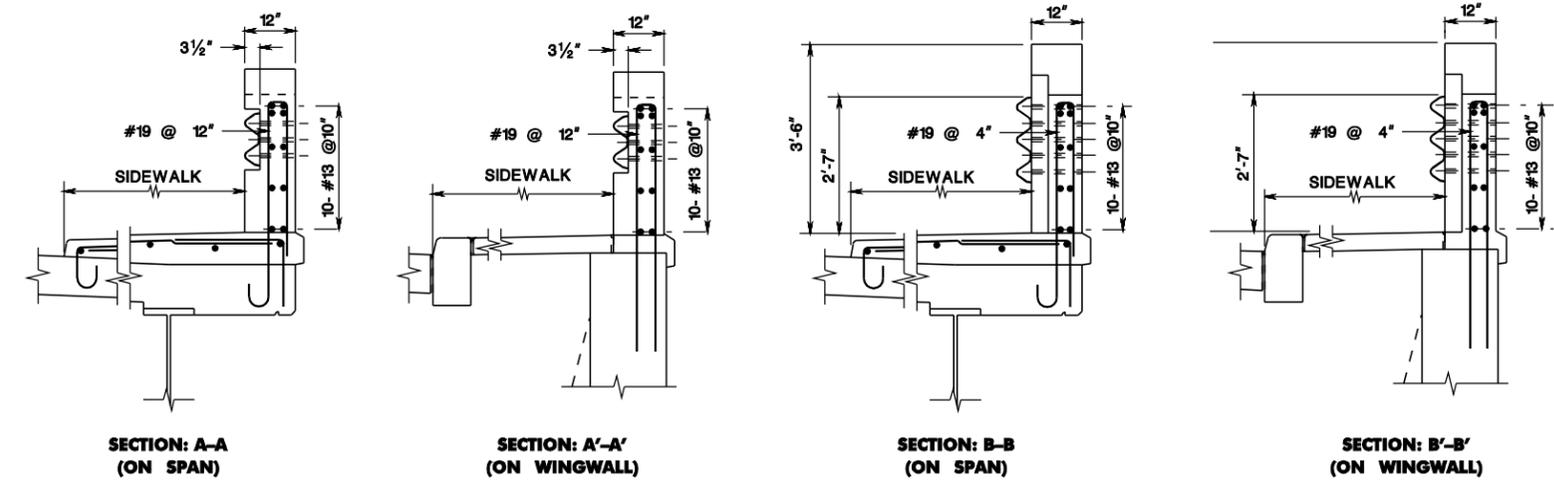
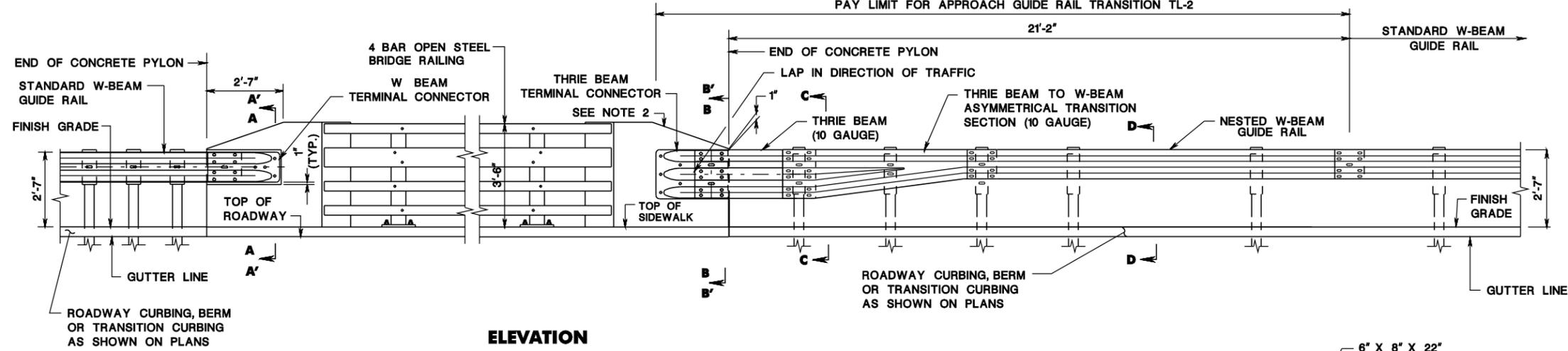
CONSTRUCTION DETAILS

**GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION - DESIGN SPEED 45 MPH OR LESS (MASH TL-2)
 SIDEWALK WITH ONE RAIL STEEL BRIDGE RAILING PARAPET**

CD-609-16A.1



- NOTES:**
1. SEE CD-609-13 FOR ADDITIONAL NOTES AND DETAILS.
 2. THE TAPER MUST BE 5:1 OR FLATTER WITH 8:1 DESIRABLE. SEE BRIDGE PLANS FOR TAPER LENGTH.
 3. REINFORCEMENT STEEL IS IN METRIC UNITS.
 4. FOR ADDITIONAL PARAPET DETAILS & DIMENSIONS, SEE BCD-507-11 & BCD-507-12.



BEAM GUIDE RAIL ATTACHMENTS

N.T.S.

CD-609-17A

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

**GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION - DESIGN SPEED 45 MPH OR LESS (MASH TL-2)
SIDEWALK WITH 4 BAR OPEN STEEL BRIDGE RAILING PARAPET**

CD-609-17A.1

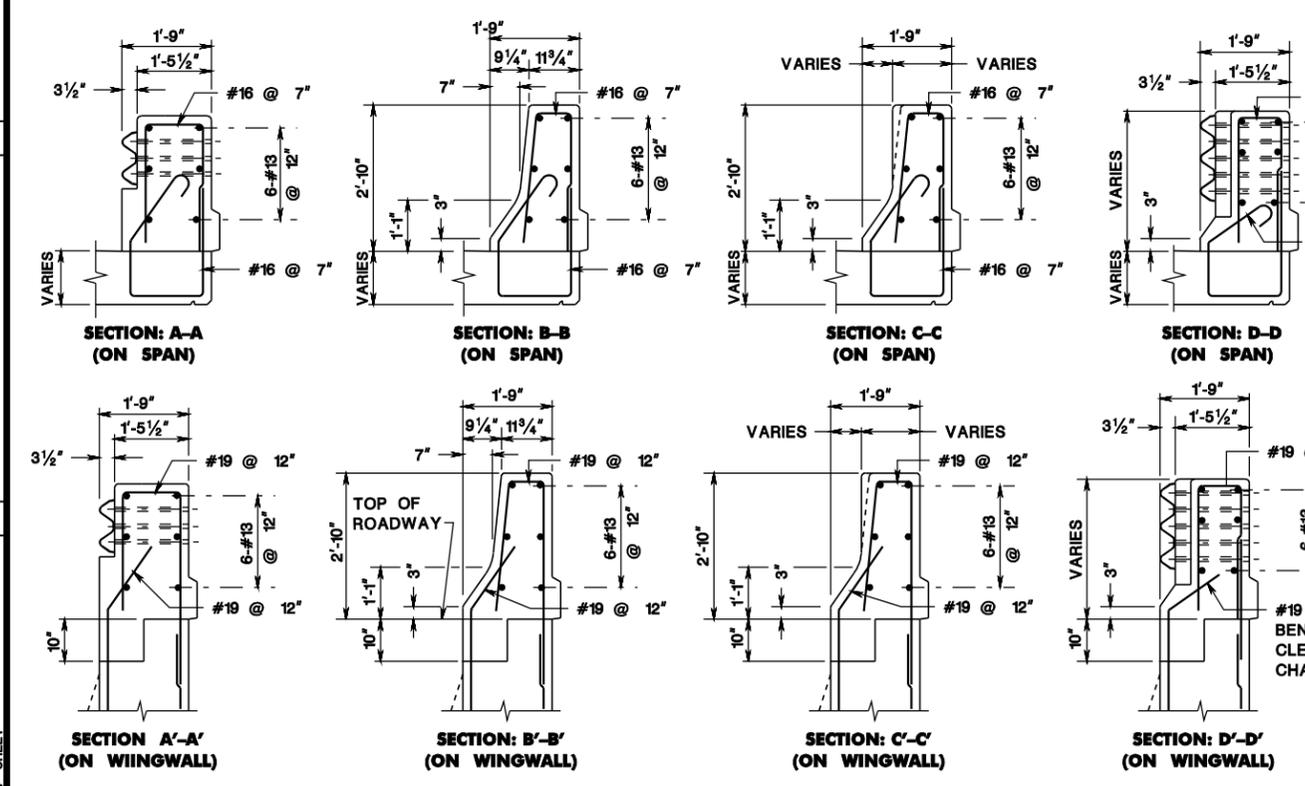
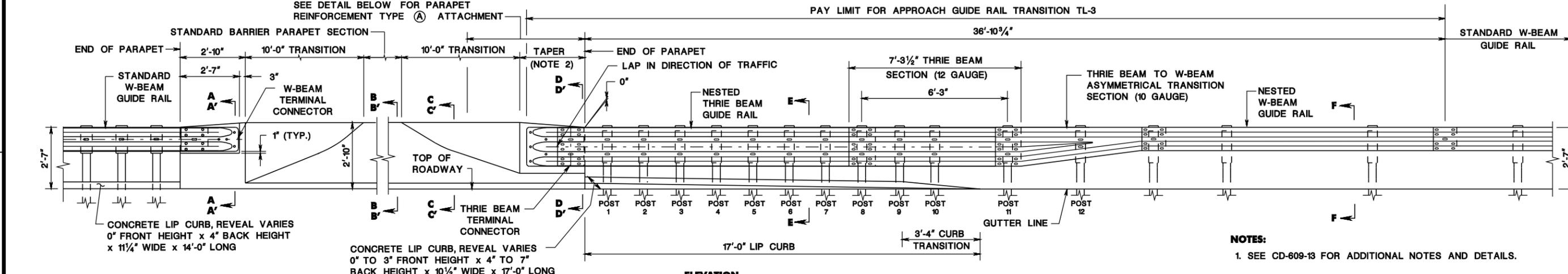
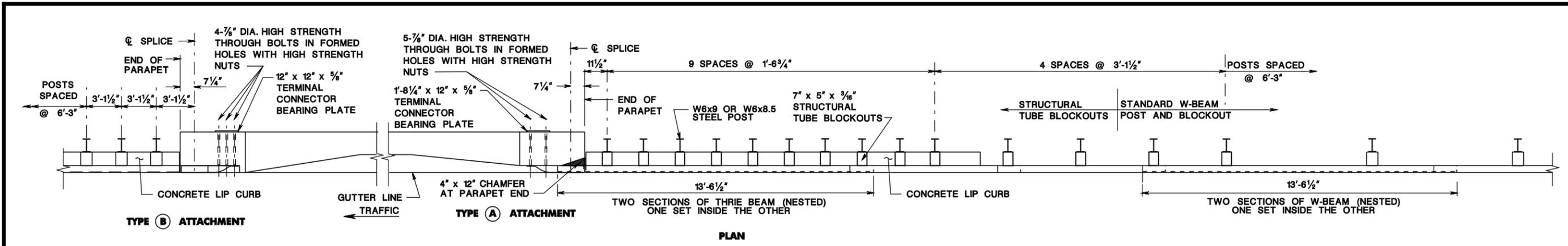
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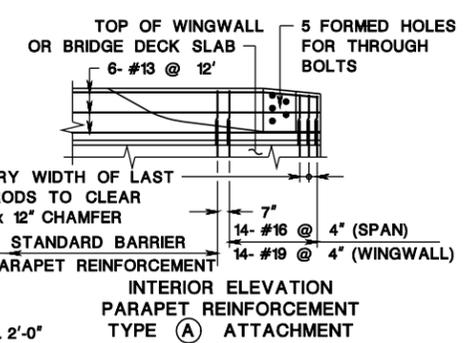
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- NOTES:**
- SEE CD-609-13 FOR ADDITIONAL NOTES AND DETAILS.
 - THE MINIMUM TAPER LENGTH IS BASED ON PARAPET HEIGHT. THE TAPER MUST BE 5:1 OR FLATTER WITH 8:1 DESIRABLE. SEE BRIDGE PLANS FOR TAPER LENGTH.
 - REINFORCEMENT STEEL IS IN METRIC UNITS.
 - FOR ADDITIONAL PARAPET DETAILS & DIMENSIONS, SEE BCD-507-3.4.



BEAM GUIDE RAIL ATTACHMENTS

N.T.S. CD-609-17B
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

**GUIDE RAIL ATTACHMENT - DESIGN SPEED GREATER THAN 45 MPH (MASH TL-3)
EXISTING NJ BARRIER PARAPET (NO ROADWAY CURBING ON APPROACH)**

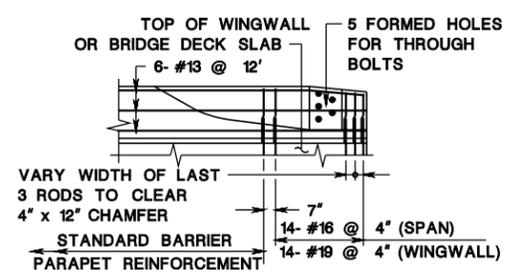
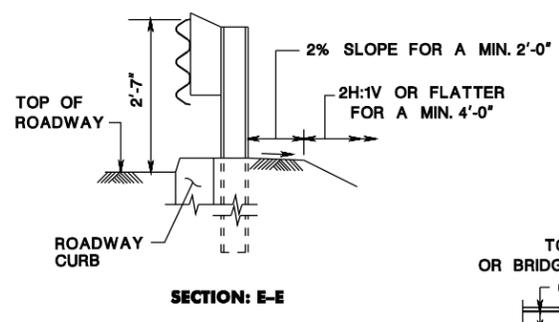
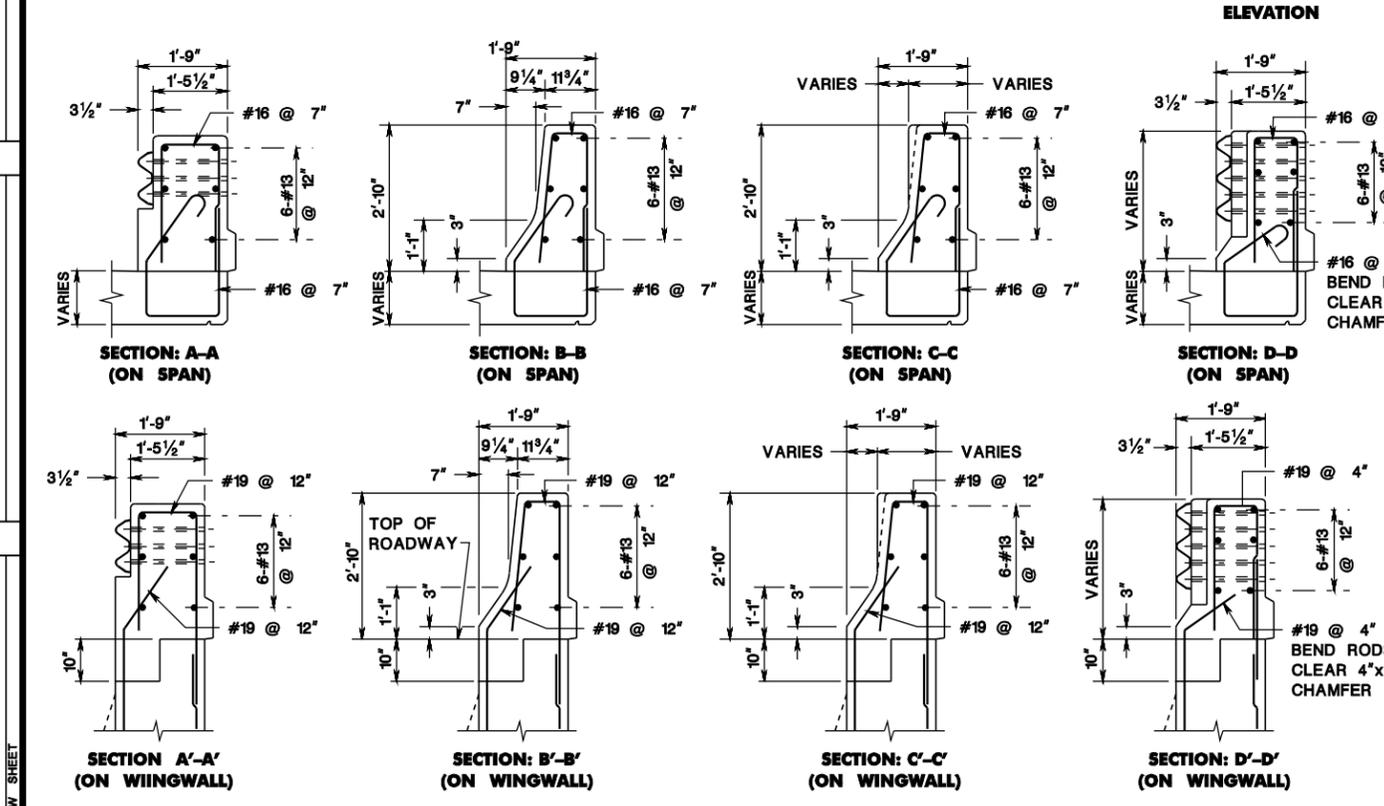
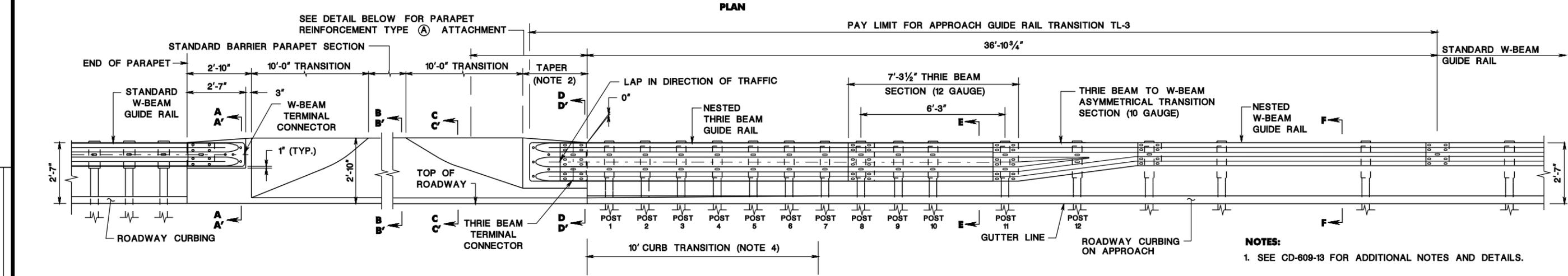
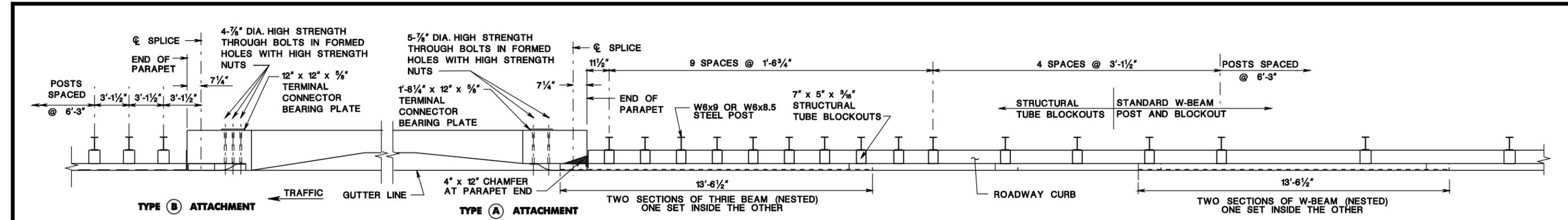
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- NOTES:**
1. SEE CD-609-13 FOR ADDITIONAL NOTES AND DETAILS.
 2. THE MINIMUM TAPER LENGTH IS BASED ON PARAPET HEIGHT. THE TAPER MUST BE 5:1 OR FLATTER WITH 8:1 DESIRABLE. SEE BRIDGE PLANS FOR TAPER LENGTH.
 3. REINFORCEMENT STEEL IS IN METRIC UNITS.
 4. TRANSITION LAST 10 FEET OF ROADWAY CURBING TO MATCH BARRIER PARAPET SHAPE.
 5. FOR ADDITIONAL PARAPET DETAILS & DIMENSIONS, SEE BCD-507-3.4.

BEAM GUIDE RAIL ATTACHMENTS

N.T.S. CD-609-17C
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

GUIDE RAIL ATTACHMENT - DESIGN SPEED GREATER THAN 45 MPH (MASH TL-3) EXISTING NJ BARRIER PARAPET (WITH ROADWAY CURBING ON APPROACH)

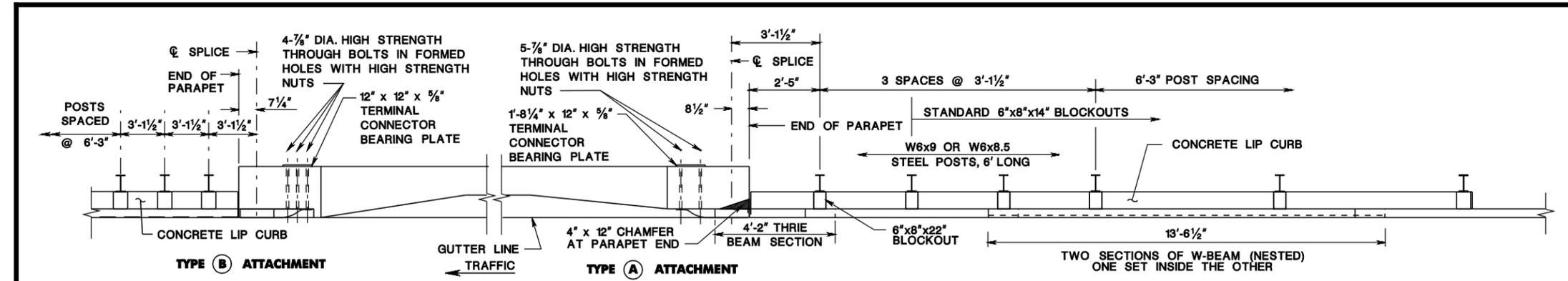
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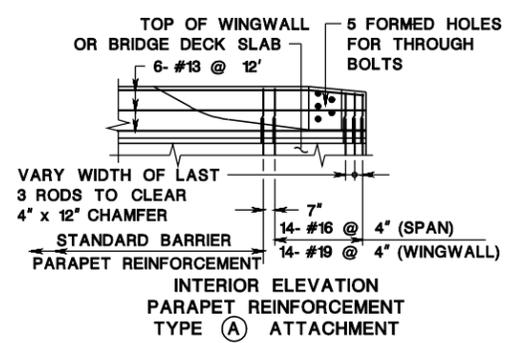
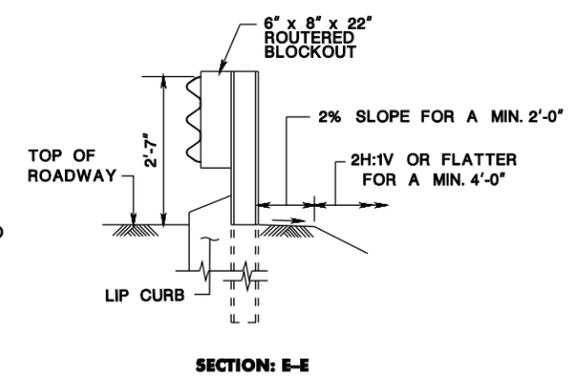
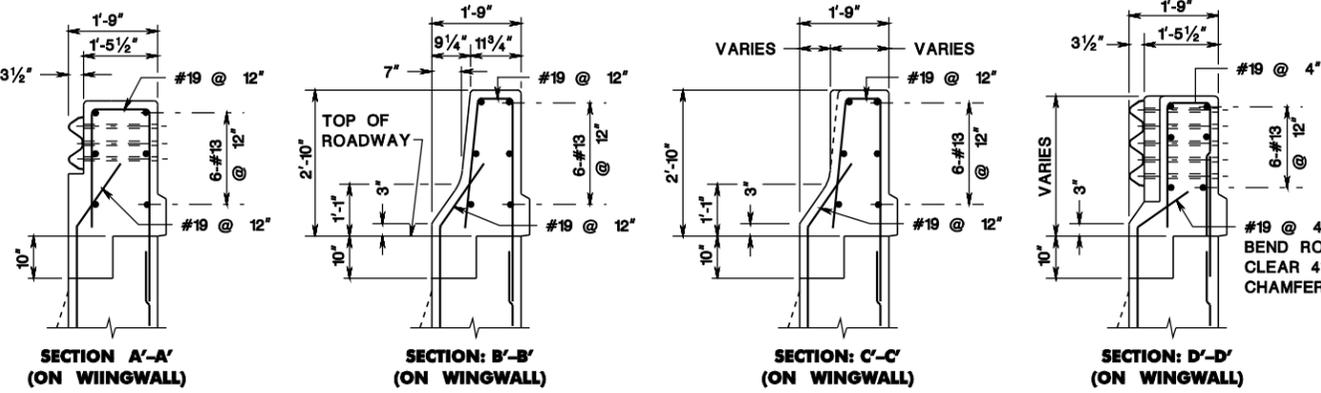
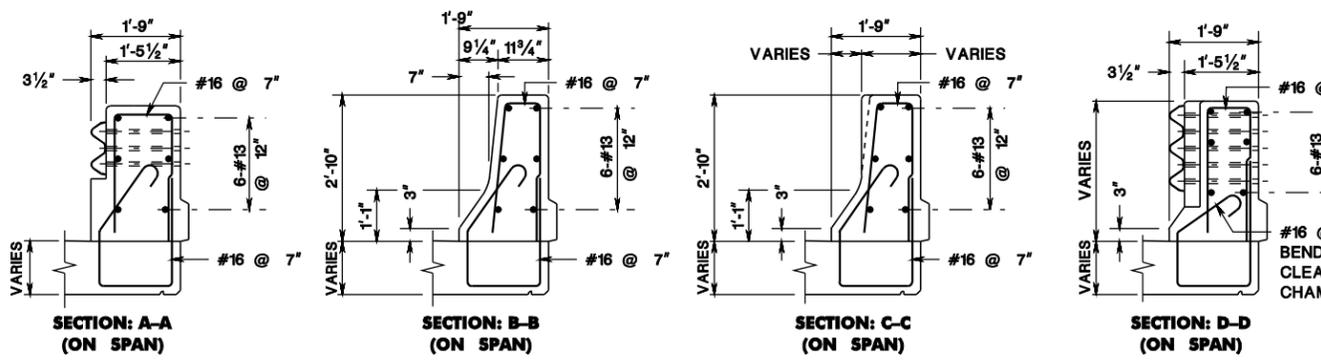
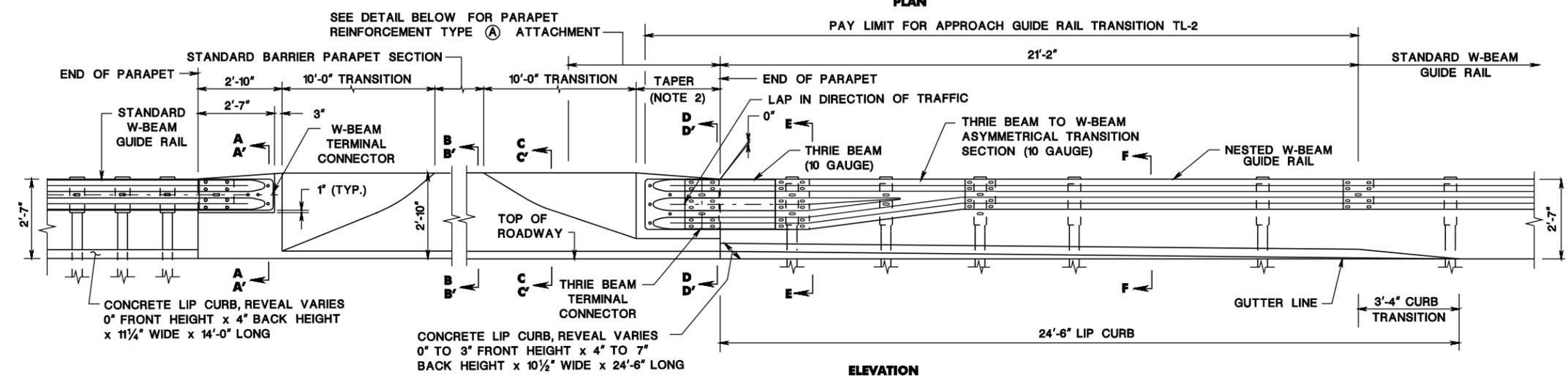
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- NOTES:**
1. SEE CD-609-13 FOR ADDITIONAL NOTES AND DETAILS.
 2. THE MINIMUM TAPER LENGTH IS BASED ON PARAPET HEIGHT. THE TAPER MUST BE 5:1 OR FLATTER WITH 8:1 DESIRABLE. SEE BRIDGE PLANS FOR TAPER LENGTH.
 3. REINFORCEMENT STEEL IS IN METRIC UNITS.
 4. FOR ADDITIONAL PARAPET DETAILS & DIMENSIONS, SEE BCD-507-3.4.



BEAM GUIDE RAIL ATTACHMENTS

N.T.S.

CD-609-17D

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

**GUIDE RAIL ATTACHMENT - DESIGN SPEED 45 MPH OR LESS (MASH TL-2)
EXISTING NJ BARRIER PARAPET (NO ROADWAY CURBING ON APPROACH)**

CD-609-17D.1

78D
164

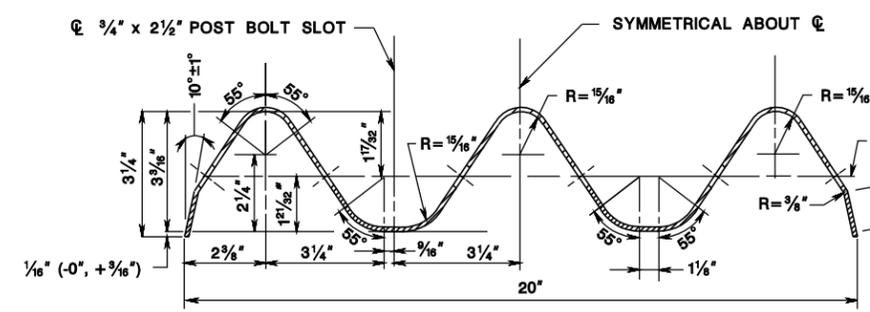
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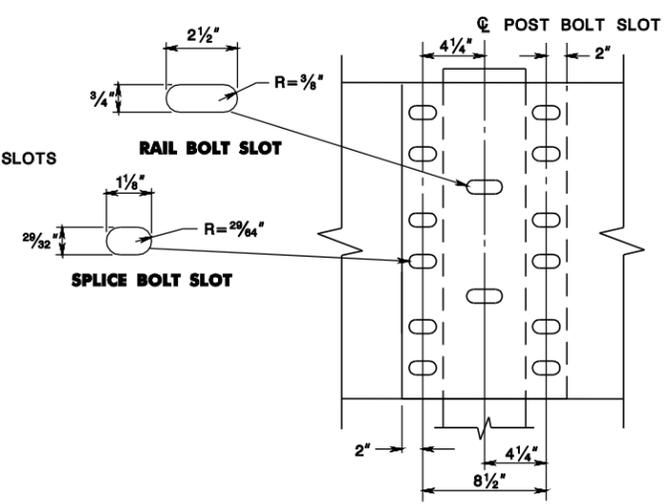
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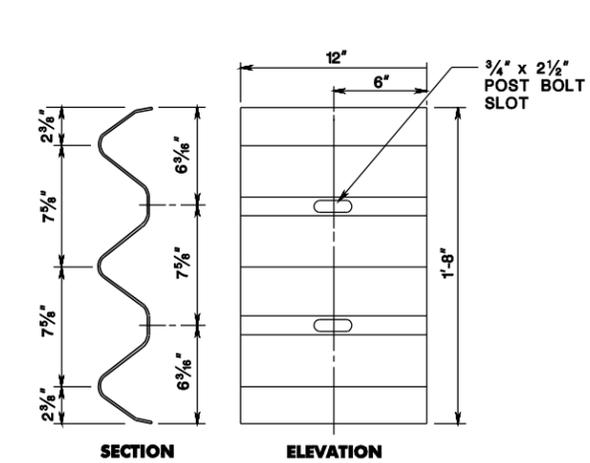
BD07D-02-REVISIONS TO CD-609-18
BD018D-01-ORIGINAL SHEET



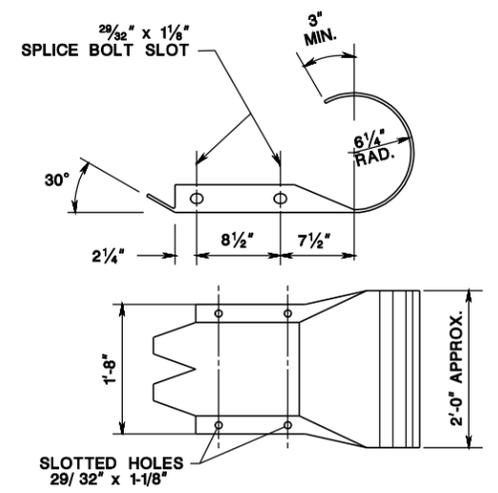
RAIL ELEMENT TO BE SUPPLIED IN LENGTHS OF 13'-6 1/2" OR 26'-0 1/2"
THRIE BEAM RAIL ELEMENT AND BACKUP PLATE



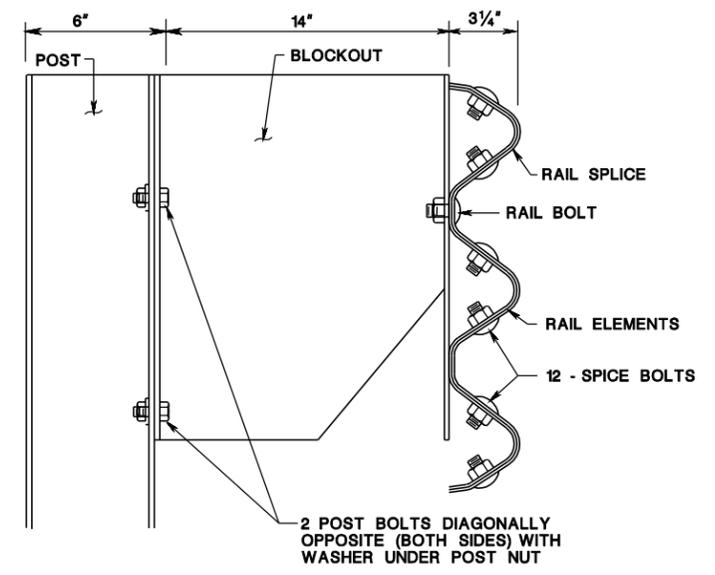
THRIE BEAM RAIL SPLICE



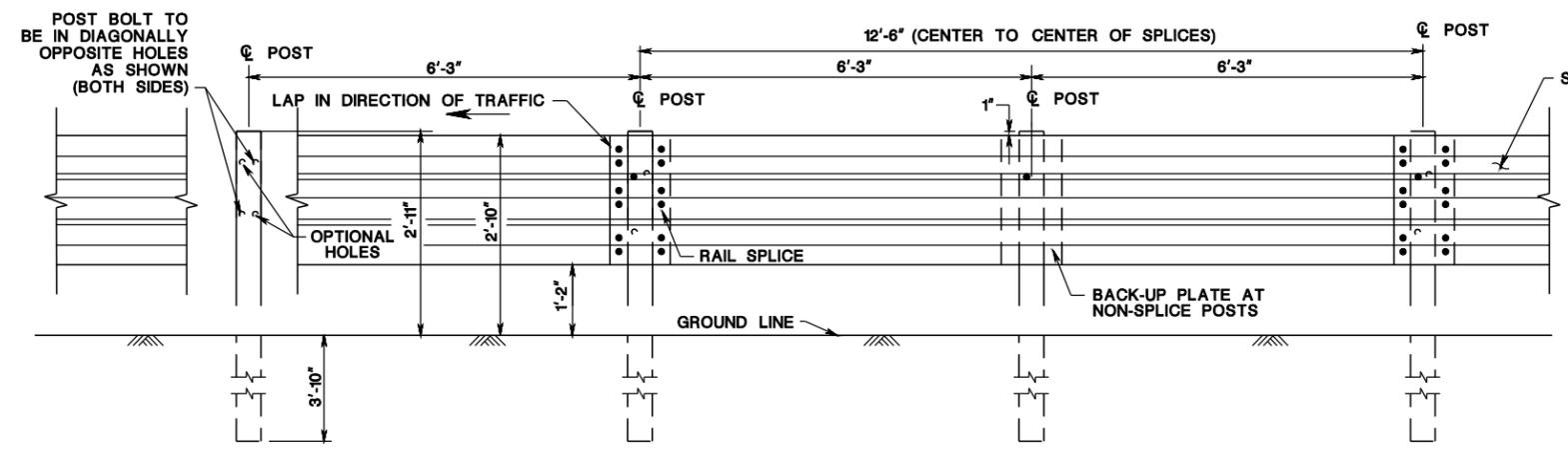
BACK-UP PLATE AT NON-SPLICE POSTS



THRIE BEAM END SECTION (ROUNDED)

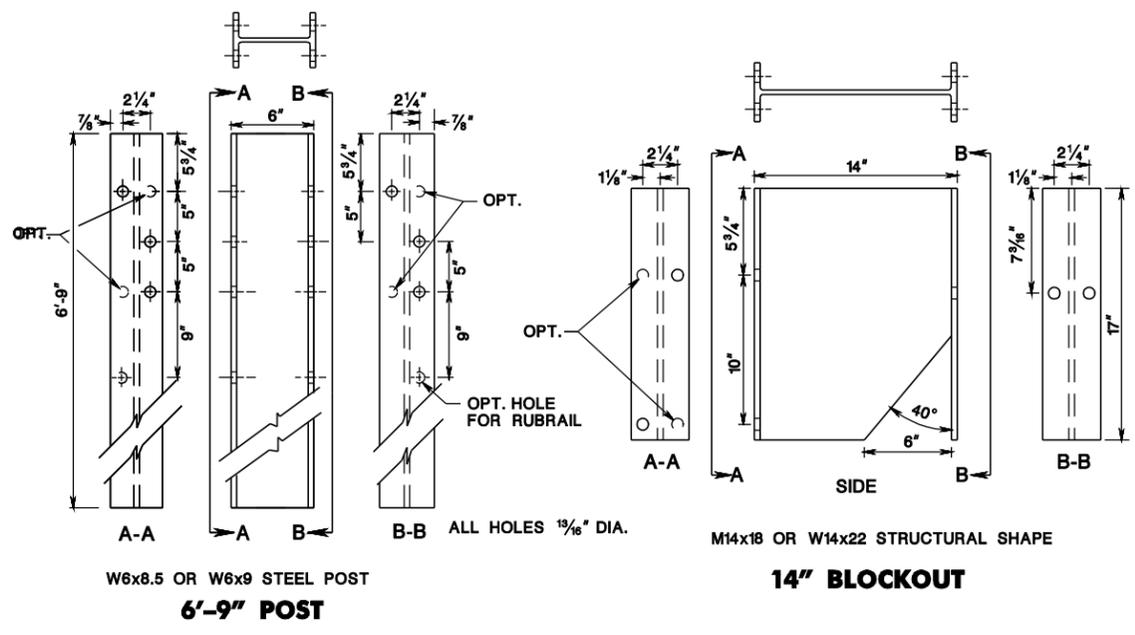


POST ASSEMBLY

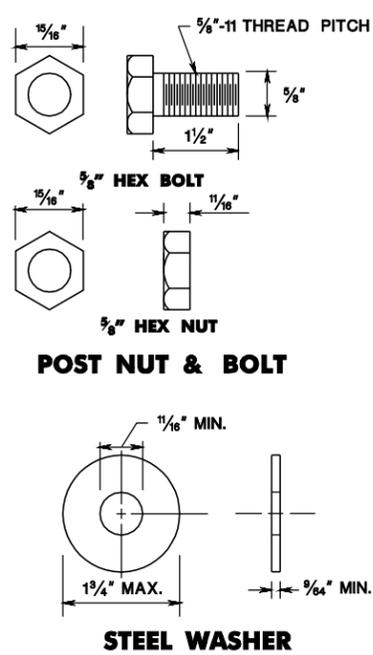


MODIFIED THRIE BEAM GUIDE RAIL

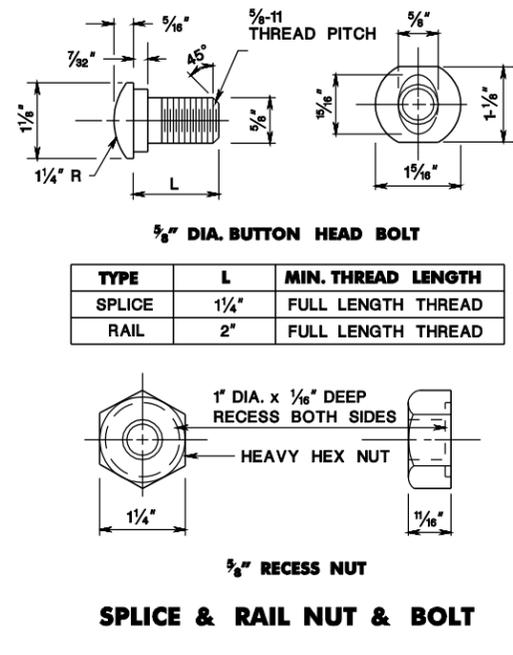
- NOTES:**
1. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
 2. RAIL ELEMENTS TO BE FURNISHED SHOPCURVED, CONCAVE OR CONVEX, FOR RADII BETWEEN 20 FEET AND 150 FEET.
 3. SEE CD-609-20 FOR TRANSITION TO BEAM GUIDE RAIL AND AN END TERMINAL. USE THE THRIE BEAM END SECTION (ROUNDED) ON THE END OF THE RAIL ELEMENT WHERE DUAL FACED MODIFIED THRIE BEAM GUIDE RAIL ENDS AND SINGLE FACED MODIFIED THRIE BEAM GUIDE RAIL BEGINS.



14" BLOCKOUT



POST NUT & BOLT



SPLICE & RAIL NUT & BOLT

5/8" DIA. BUTTON HEAD BOLT

TYPE	L	MIN. THREAD LENGTH
SPLICE	1 1/4"	FULL LENGTH THREAD
RAIL	2"	FULL LENGTH THREAD

MODIFIED THRIE BEAM GUIDE RAIL (NCHRP 350 TL-4)

N.T.S.

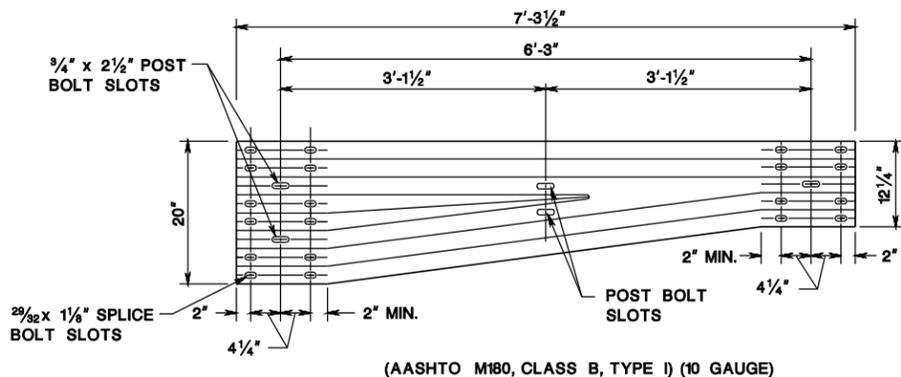
CD-609-18

NEW JERSEY DEPARTMENT OF TRANSPORTATION

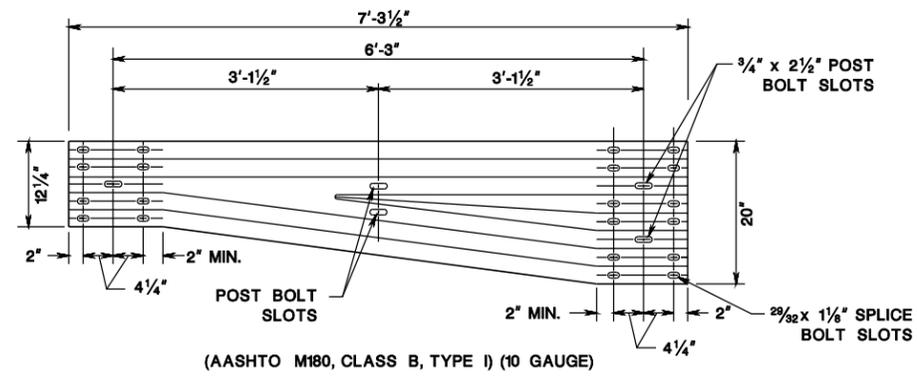
CONSTRUCTION DETAILS

CD-609-18.1

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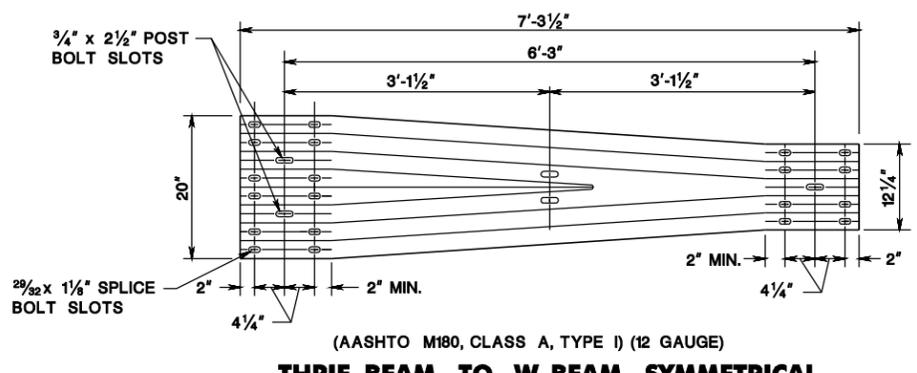


(AASHTO M180, CLASS B, TYPE I) (10 GAUGE)
THRIE BEAM TO W-BEAM ASYMMETRICAL TRANSITION SECTION - RIGHT SIDE APPROACH - SEE NOTE 2

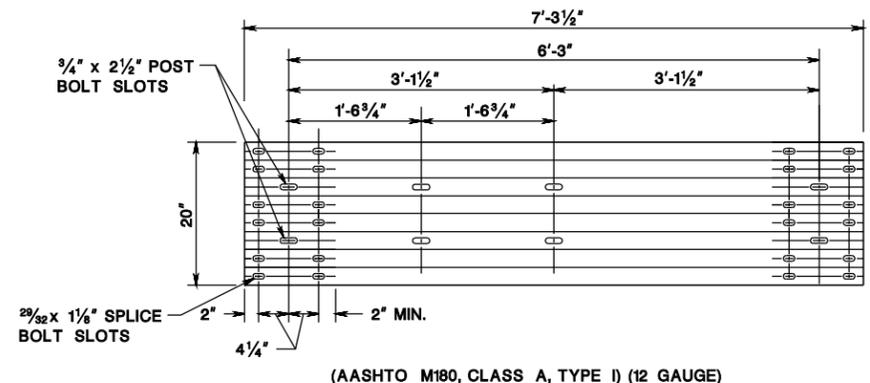


(AASHTO M180, CLASS B, TYPE I) (10 GAUGE)
THRIE BEAM TO W-BEAM ASYMMETRICAL TRANSITION SECTION - LEFT SIDE APPROACH - SEE NOTE 2

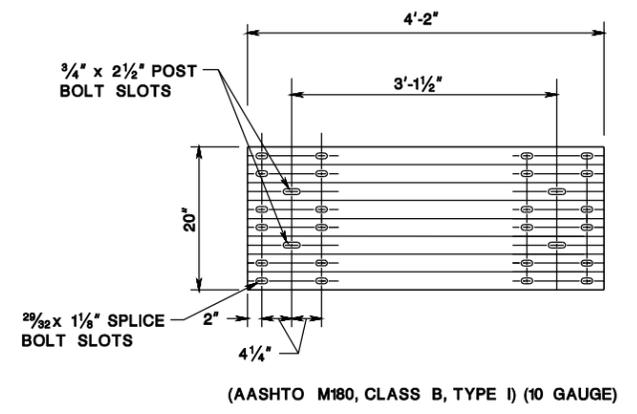
- NOTES:**
1. A THRIE BEAM TO W-BEAM SYMMETRICAL TRANSITION SECTION IS USED WHERE A VERTICAL TRANSITION IS REQUIRED SUCH AS A TRANSITION FROM MODIFIED THRIE BEAM TO W-BEAM GUIDE RAIL.
 2. A THRIE BEAM TO W-BEAM ASYMMETRICAL TRANSITION SECTION IS USED WHERE A VERTICAL TRANSITION IS NOT REQUIRED SUCH AS A TRANSITION FROM THRIE BEAM AT A BRIDGE ATTACHMENT TO W-BEAM GUIDE RAIL.
 3. A MINIMUM LENGTH OF STANDARD W-BEAM GUIDE RAIL IS REQUIRED BETWEEN THE SYMMETRICAL TRANSITION SECTION AND AN END TERMINAL OR FLARE: 12'-6" FOR A TANGENT TERMINAL AND 25' FOR A FLARE OR FLARED TERMINAL.



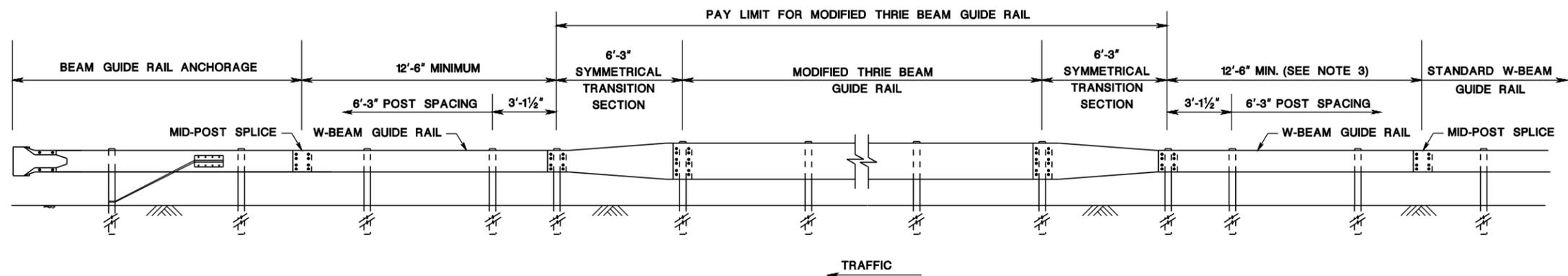
(AASHTO M180, CLASS A, TYPE I) (12 GAUGE)
THRIE BEAM TO W-BEAM SYMMETRICAL TRANSITION SECTION - SEE NOTE 1



(AASHTO M180, CLASS A, TYPE I) (12 GAUGE)
THRIE BEAM SECTION FOR TL-3 BRIDGE ATTACHMENTS



(AASHTO M180, CLASS B, TYPE I) (10 GAUGE)
THRIE BEAM SECTION FOR TL-2 BRIDGE ATTACHMENTS



MODIFIED THRIE BEAM TRANSITION TO BEAM GUIDE RAIL

THRIE BEAM GUIDE RAIL TRANSITIONS

N.T.S.

CD-609-20

NEW JERSEY DEPARTMENT OF TRANSPORTATION

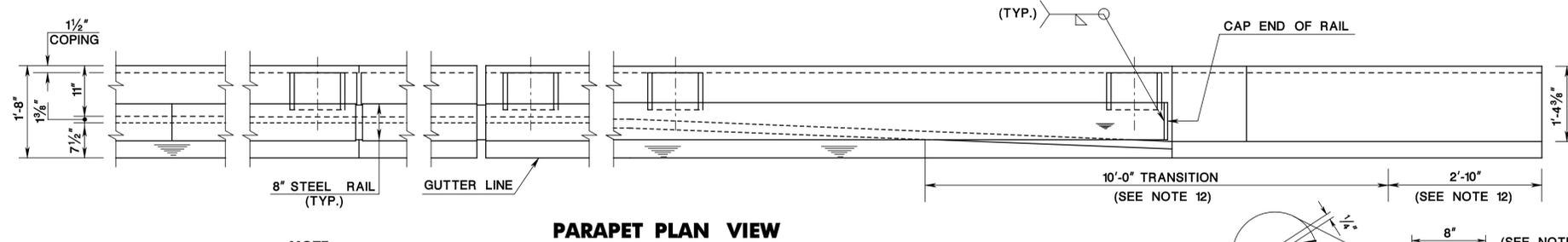
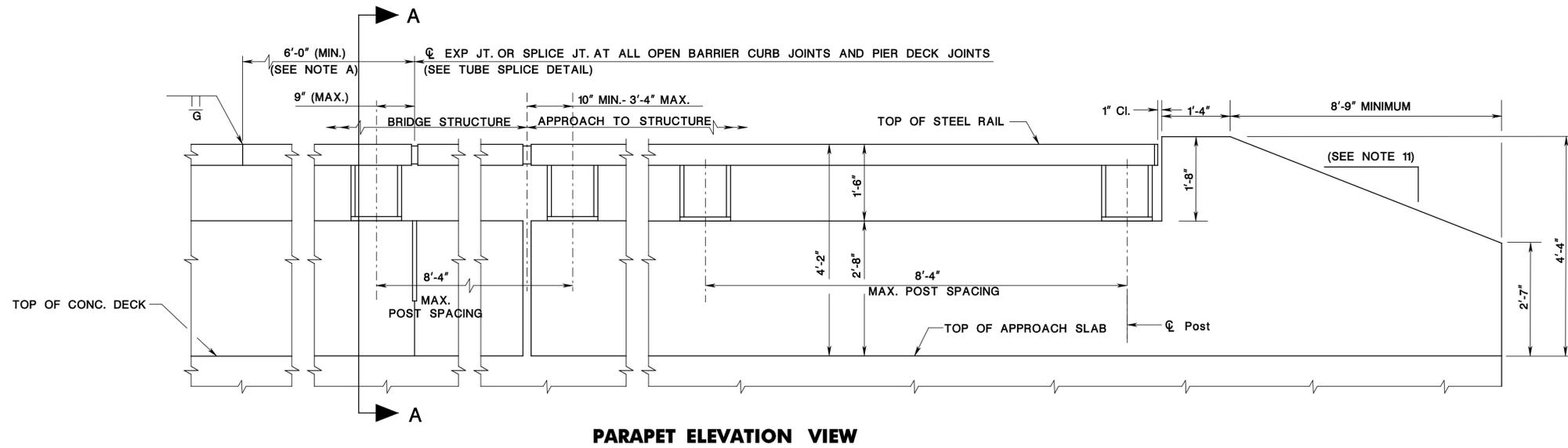
CONSTRUCTION DETAILS

CD-609-20.1

80A
164

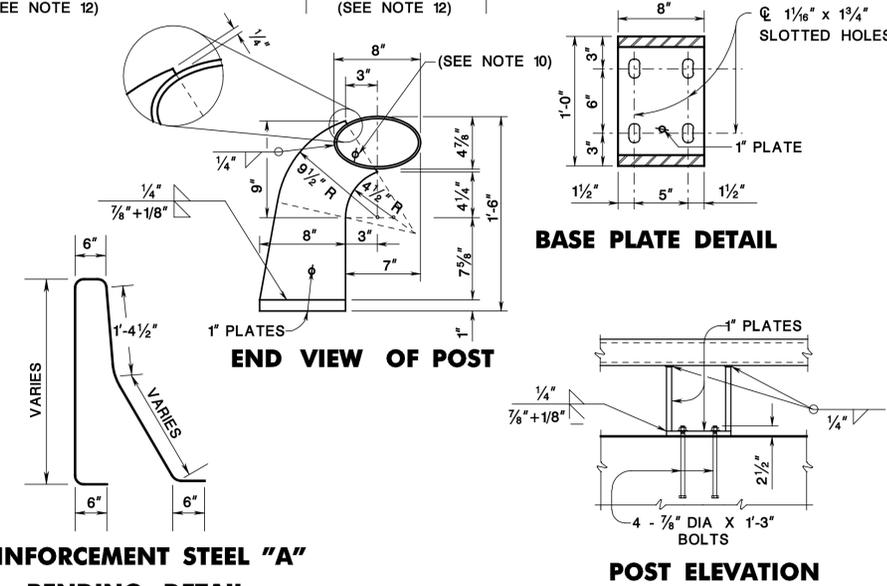
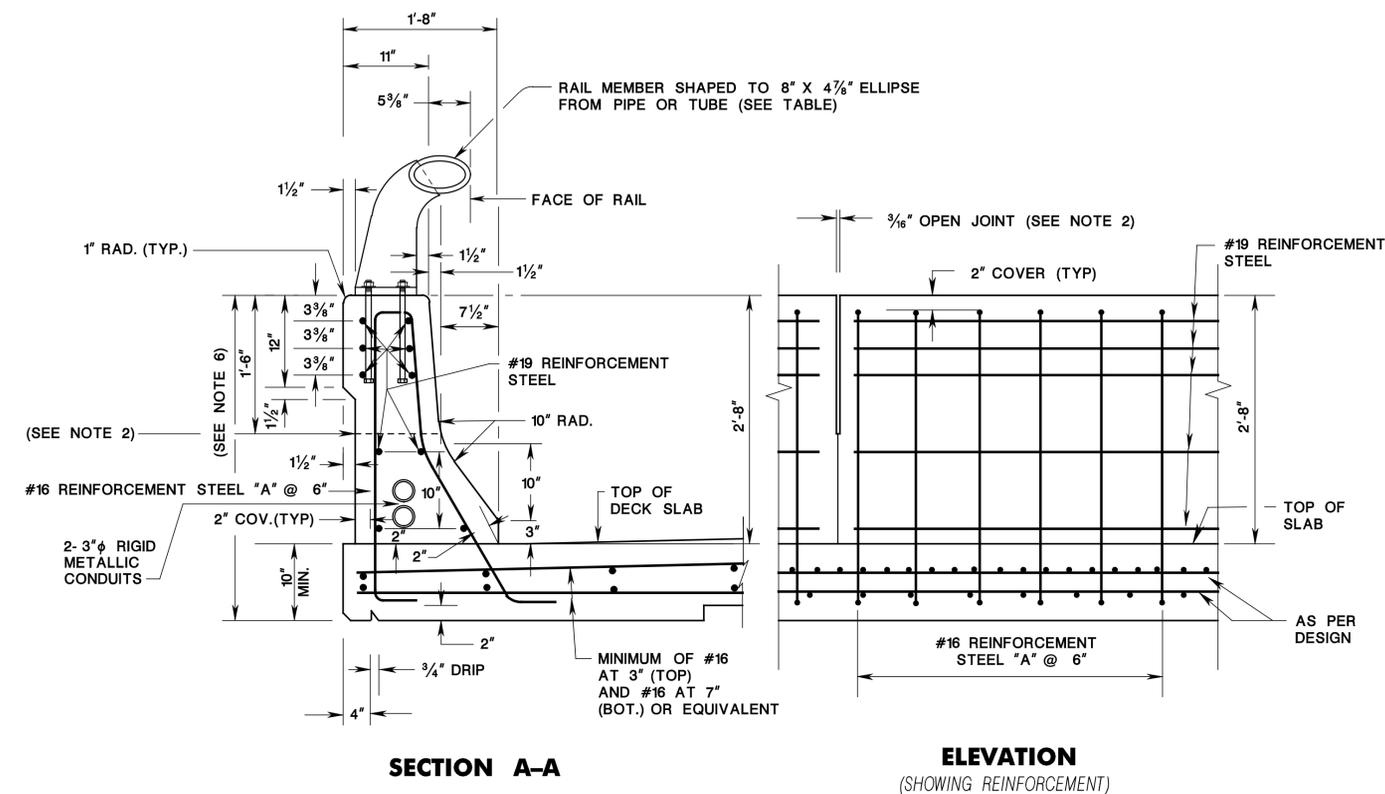
NOTES:

1. PROVIDE $\frac{3}{16}$ " OPEN DEFLECTION JOINT IN PARAPETS AT INTERVALS NOT EXCEEDING 20'-0" AND CONTRACTION JOINTS AT THE MIDPOINT BETWEEN THE OPEN JOINTS.
2. STOP THE $\frac{3}{16}$ " OPEN JOINT AT THE LINE INDICATED AND PROVIDE A CONTRACTION JOINT BELOW THAT LINE.
3. PROVIDE FULL DEPTH JOINTS AT LOCATION OF TRANSVERSE DECK JOINTS. ENSURE THAT THE FULL DEPTH JOINT OPENING WIDTH IS EQUAL TO THE TRANSVERSE DECK JOINT OPENING WIDTH.
4. ENSURE THAT ALL REINFORCEMENT STEEL IN PARAPET IS CORROSION PROTECTED.
5. PERMANENT METAL STAY-IN-PLACE FORMS NOT PERMITTED IN THE DECK OVERHANG AREA.
6. FASCIA RUSTICATION AND/OR CONFIGURATION AS PER SPECIFICATIONS.
7. GALVANIZE ALL STEEL COMPONENTS INCLUDING BOLTS, NUTS, AND WASHERS UNLESS OTHERWISE SHOWN ON THE PLANS.
8. USE $\frac{7}{8}$ " DIA ANCHOR BOLTS. ASTM F1554 BOLTS WITH ONE HEX NUT AND ONE $2\frac{1}{4}$ " O.D. WASHER ($\frac{3}{16}$ " MIN. THICKNESS) PLUS ONE $1\frac{3}{4}$ " O.D. HARDENED STEEL WASHER ($\frac{1}{8}$ " MIN. THICKNESS) AT EACH BOLT. CONFORM NUTS TO A563 REQUIREMENTS.
9. THE PIPE MAY BE SLOTTED TO FIT PLATES IN LIEU OF CUTTING PLATES TO FIT PIPE, EXCEPT PLATES ADJACENT TO TUBE SPLICE.
10. USE PLATES CONFORMING TO AASHTO M 270, GRADE 36 OR 50.
11. SEE BRIDGE PLANS FOR TAPER LENGTH. THE TAPER MUST BE 5:1 OR FLATTER WITH 8:1 DESIRABLE. THE MINIMUM TAPER LENGTH IS BASED ON PARAPET HEIGHT.
12. FOR GUIDERAIL ATTACHMENT AND PARAPET TRANSITION DETAILS SEE CD-609-14 THROUGH CD-609-17E



NOTE:

A. ONE SHOP SPLICE PER PANEL IS PERMITTED WITH MINIMUM 85 PERCENT PENETRATION. WELD FLAWS RESULTING IN NO LESS THAN 60 PERCENT PENETRATION ARE PERMISSIBLE IN THE UPPER AND LOWER 90 DEGREE QUADRANTS OF THE MEMBERS. THE WELD MAY BE SQUARE GROOVE, DOUBLE VEE GROOVE, OR SINGLE GROOVE AND GROUND SMOOTH.

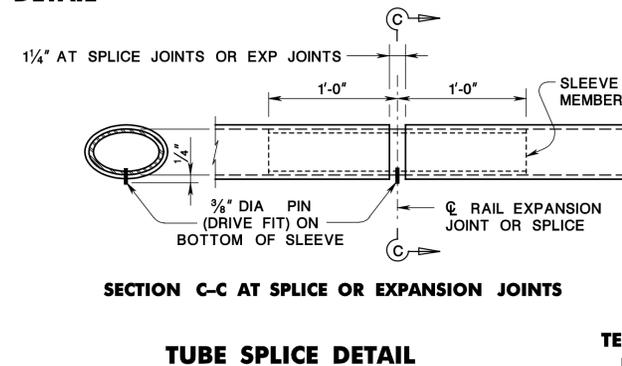


TUBE & SLEEVE MEMBERS		
8" x 4 7/8" ELLIPSE	SPLICE MEMBER	
MATERIAL	MATERIAL	THICKNESS
6" DIA STD PIPE ASTM-A53 E OR S GR B)	ASTM-A53-B	0.353"
	A36 OR A500 GR B	0.339"
6 5/8" O.D. X 0.188" TUBE API-5LX52	API-5LX52	0.224"
	ASTM-A53-B	0.339"
6 5/8" O.D. X 0.188" TUBE API-5LX52	A36 OR A500 GR B	0.325"
	API-5LX52	0.216"

NOTES:

1. OTHER SECTIONS OF EQUAL OR GREATER STRENGTH ARE ACCEPTABLE FOR SLEEVES.
2. THE MAJOR AND MINOR DIAMETERS OF THE RAIL MEMBER MAY VARY +/- 0.1875 INCHES FROM PLAN DIMENSION. HOWEVER, THE DIFFERENCE BETWEEN THE OUTSIDE DIAMETERS OF THE SLEEVE AND THE INSIDE DIAMETERS OF THE RAIL NOT TO EXCEED 0.125 INCHES ALONG THE MAJOR OR MINOR AXIS. GAPS EXCEEDING THIS AMOUNT UP TO 0.25 INCHES ARE PERMISSIBLE ALONG THE 45° AXES OF THE SLEEVES.

4'-2" HIGH HEAVY TRUCK PARAPET N.T.S.



TEST LEVEL 5
BCD-507-8.1

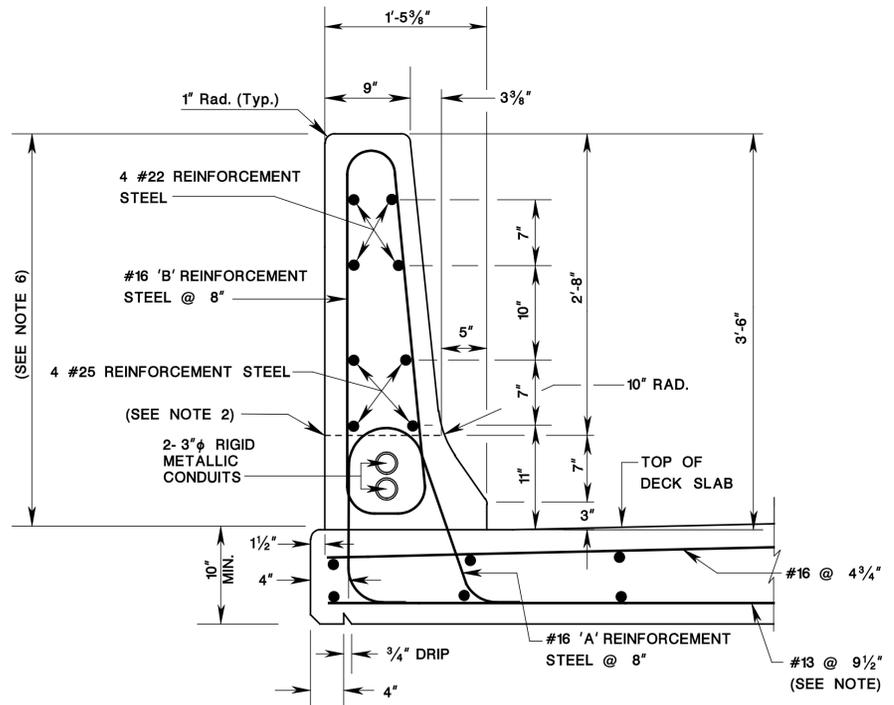
NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

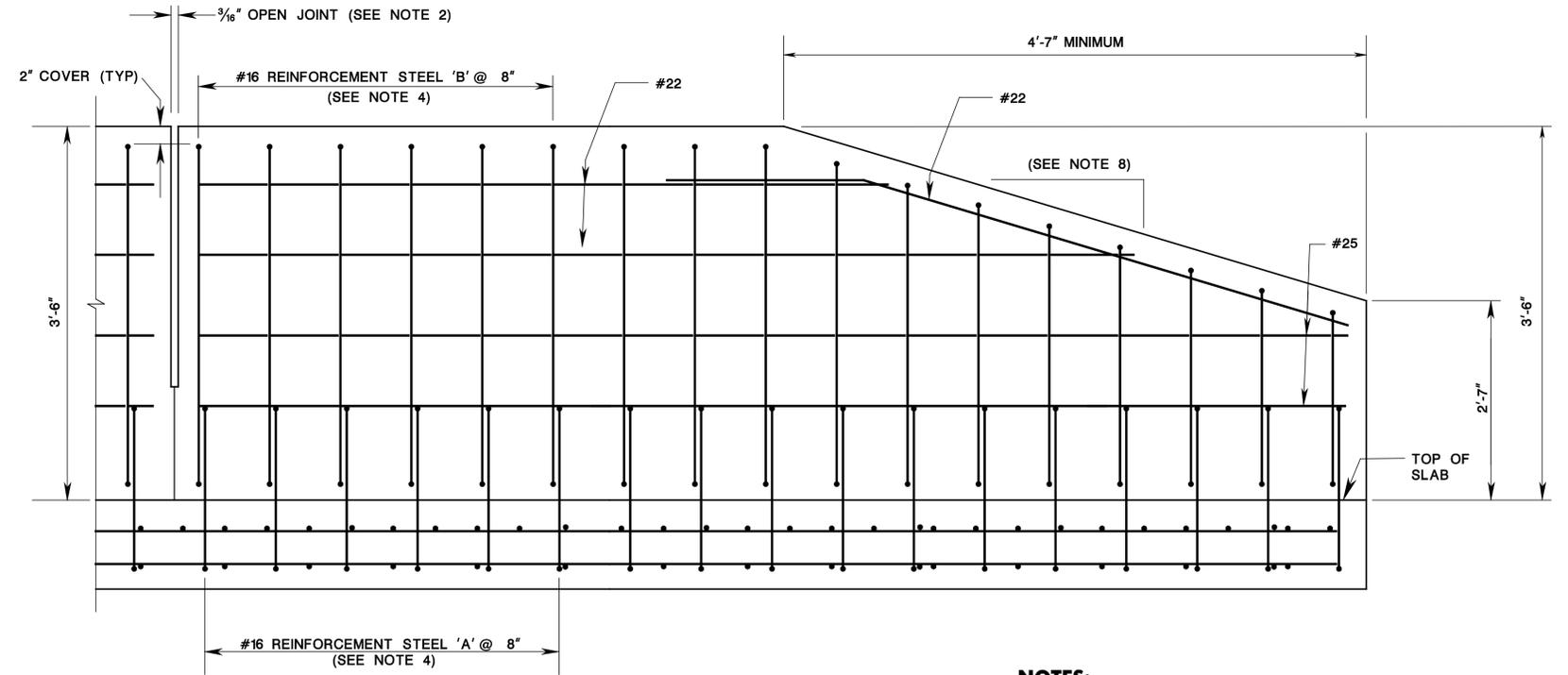
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164

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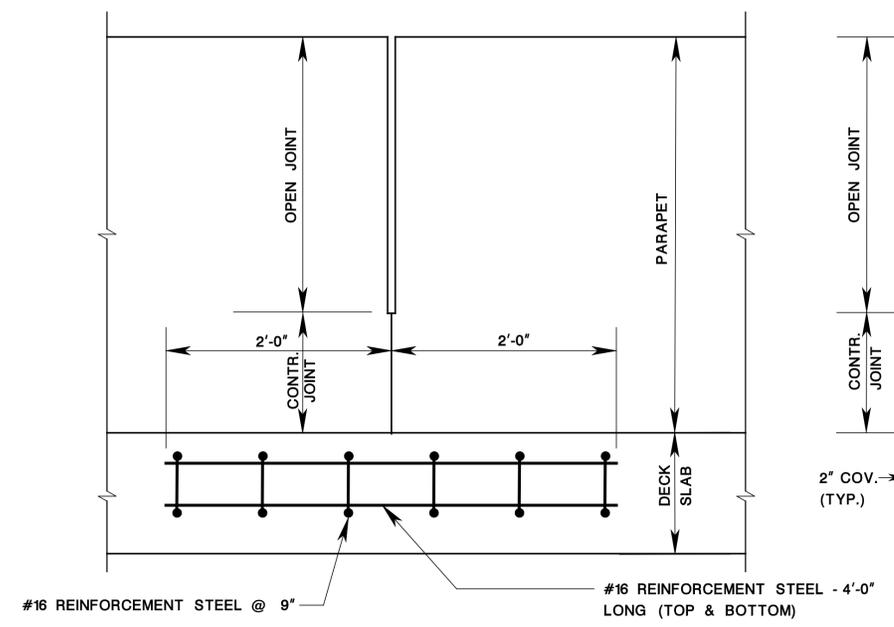
3'-6" HIGH F-SHAPE PARAPET



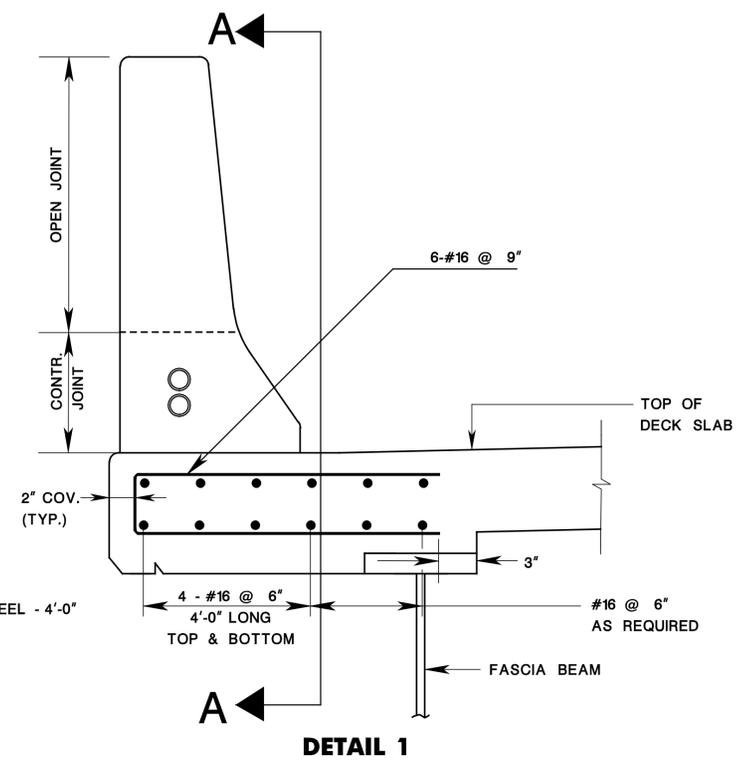
ELEVATION (SHOWING REINFORCEMENT STEEL)

NOTES:

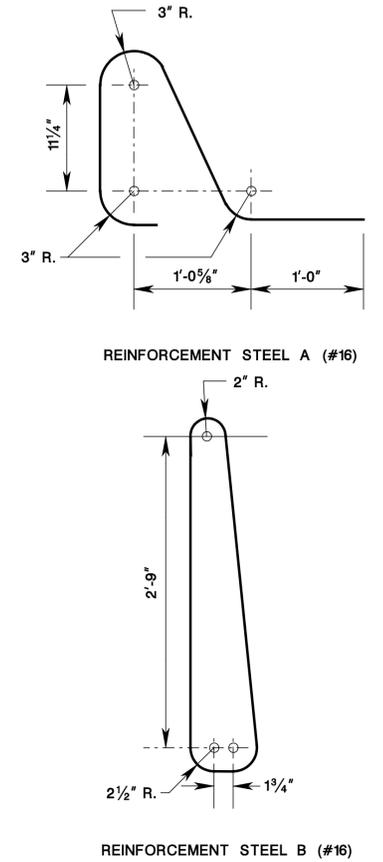
1. PROVIDE $\frac{3}{16}$ " OPEN DEFLECTION JOINT IN PARAPETS AT INTERVALS NOT EXCEEDING 20'-0" AND CONTRACTION JOINTS AT THE MIDPOINT BETWEEN THE OPEN JOINTS.
2. STOP $\frac{3}{16}$ " OPEN JOINT AT THE LINE INDICATED AND PROVIDE A CONTRACTION JOINT BELOW THAT LINE.
3. PROVIDE FULL DEPTH JOINTS AT LOCATION OF TRANSVERSE DECK JOINTS. ENSURE THAT THE FULL DEPTH JOINT OPENING WIDTH IS EQUAL TO THE TRANSVERSE DECK JOINT OPENING WIDTH.
4. ENSURE THAT ALL REINFORCEMENT STEEL IN PARAPET IS CORROSION PROTECTED.
5. PERMANENT METAL STAY-IN-PLACE FORMS NOT PERMITTED IN THE DECK OVERHANG AREA.
6. FASCIA RUSTICATION AND CONFIGURATION AS PER SPECIFICATIONS.
7. FOR ADDITIONAL REINFORCEMENT STEEL THAT IS REQUIRED IN THE VICINITY OF PARAPET JOINTS TO PREVENT CONCRETE CRACKING IN THE OVERHANG PORTIONS OF THE DECK SLAB, SEE DETAIL 1.
8. SEE BRIDGE PLANS FOR TAPER LENGTH. THE TAPER MUST BE 5:1 OR FLATTER WITH 8:1 DESIRABLE. THE MINIMUM TAPER LENGTH IS BASED ON PARAPET HEIGHT.
9. FOR GUIDERAIL ATTACHMENT AND PARAPET TRANSITION DETAILS SEE CD-609-14 THROUGH CD-609-17E.



SECTION A-A



DETAIL 1 DECK REINFORCEMENT STEEL AT PARAPET JOINTS



REINFORCEMENT STEEL BENDING DETAILS

3'-6" HIGH F-SHAPE PARAPET DETAILS
 N.T.S.

BCD-507-9
 NEW JERSEY DEPARTMENT OF TRANSPORTATION
 BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

TEST LEVEL 5
 BCD-507-9.1