



New Jersey Department of Transportation

STANDARD CONSTRUCTION DETAILS

• Roadway • Traffic Control • Bridge

2016



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ABBREVIATIONS

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

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BCD-CBD-ORIGINAL SHEET

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ABBREVIATIONS

CD = ROADWAY
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INDEX FOR STANDARD ROADWAY CONSTRUCTION DETAILS

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TYPE B	CD-606-5.2	INLET GENERAL DETAILS	CD-602-1	MANHOLE PRECAST CONCRETE MANHOLE 5' DIAMETER, MANHOLE 6' DIAMETER PRECAST CONCRETE	CD-602-9.1
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		BICYCLE SAFE GRATE (CAST IRON)	CD-602-1.8	CONCRETE ISLAND ON EXISTING PAVEMENT	CD-606-6.1
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		ALTERNATE BACK PLATE	CD-602-2.5	JOINTS	
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		METHOD OF SETTING CASTING FOR B TYPE INLET WHERE CURB PIECE HEIGHT IS 2" GREATER THAN CURB FACE	CD-602-2.7	WEDGE JOINT	CD-401-2.1
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INDEX FOR STANDARD ROADWAY CONSTRUCTION DETAILS

INDEX SHEET 3

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TYPICAL EXPANSION JOINT ASSEMBLY - PLAN	CD-405-3.1	NON-VEGETATIVE SURFACE		LEGEND	CD-610-1.2
TYPICAL CONTRACTION JOINT ASSEMBLY - PLAN	CD-405-3.2	NON-VEGETATIVE SURFACES AROUND GUIDE RAIL ANCHORAGE	CD-608-1	TYPICAL ACCELERATION LANE TREATMENT	CD-610-1.3
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TYPICAL SIDE FRAME DETAIL - "A" DESIGN	CD-405-3.8	NON-VEGETATIVE SURFACE AROUND FLARED GUIDE RAIL WHERE GUIDE RAIL OFFSET FROM EDGE OF PAVEMENT IS 4'-0" OR LESS	CD-608-1.6	TYPICAL TWO LANE SECTION	CD-610-2.4
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NARCISSUS IN TURF DETAIL	CD-811-2.4				
HEDGE PLANTING DETAIL	CD-811-2.5				

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BDC\BDO-ORIGINAL SHEET

INDEX FOR STANDARD ROADWAY CONSTRUCTION DETAILS

INDEX SHEET 4

DESCRIPTION	CD	DESCRIPTION	CD	DESCRIPTION	CD
SIDEWALK		SOIL EROSION AND SEDIMENT CONTROL		CONSTRUCTION BARRIER CURB WITH BOX BEAM STIFFENER	CD-159-3.1
CONCRETE SIDEWALK (PUBLIC SIDEWALK CURB RAMP)	CD-606-1	SOIL EROSION AND SEDIMENT CONTROL MEASURES	CD-158-1	CONSTRUCTION BARRIER CURB (ALTERNATE A)	CD-159-4.1
CURB RAMPS	CD-606-1.1	SILT FENCE	CD-158-1.1	CONSTRUCTION BARRIER CURB (ALTERNATE B)	CD-159-5.1
DETECTABLE WARNING SURFACE	CD-606-2.1	ATTACHING TWO SILT FENCES	CD-158-1.2	TEMPORARY CRASH CUSHION, COMPRESSIVE BARRIER SUMMARY TABLE	CD-159-10.1
CONCRETE SIDEWALK (PUBLIC SIDEWALK CURB RAMP TABLES)	CD-606-3.1	HEAVY DUTY SILT FENCE	CD-158-1.3		
CONCRETE SIDEWALK (PUBLIC SIDEWALK CURB RAMP TABLES)	CD-606-4.1	SILT FENCE FASTENER REQUIREMENTS	CD-158-1.4		
CONCRETE AND HMA, DRIVEWAY AND SIDEWALK	CD-606-5	SILT FENCE ON A STEEP OR LONG GRADE	CD-158-1.5	UNDERDRAINS	
CONCRETE SIDEWALK, 4" THICK	CD-606-5.9	HAYBALES	CD-158-1.6	UNDERDRAIN TYPE F	CD-601-1.1
HMA SIDEWALK, 5½" THICK	CD-606-5.10	EMBEDDING DETAIL	CD-158-1.7	UNDERDRAIN TYPE X	CD-601-1.2
		STABILIZED CONSTRUCTION DRIVEWAY	CD-158-1.8	SUBBASE OUTLET DRAIN	CD-601-1.3
		SOIL EROSION AND SEDIMENT CONTROL MEASURES	CD-158-2	COMBINED STORM DRAIN AND OUTLET TRENCH IN ROCK AREAS	CD-601-1.4
		HAYBALE CHECK DAM WITH TEMPORARY STONE OUTLET	CD-158-2.1		
SIGNS		STONE CHECK DAM	CD-158-2.2		
SIGNS	CD-612-1.1	SLOPE DRAIN	CD-158-2.3		
SIGNS	CD-612-2.1	INLET FILTERS, TYPE 1	CD-158-2.4		
SIGNS	CD-612-3.1	INLET FILTERS, TYPE 2	CD-158-2.5		
		SOIL EROSION AND SEDIMENT CONTROL MEASURES	CD-158-3		
		INLET SEDIMENT TRAP	CD-158-3.1		
SIGN SUPPORTS		FLOATING TURBIDITY BARRIER	CD-158-3.2		
STEEL U-POST SIGN SUPPORTS	CD-612-4.1	STONE OUTLET SEDIMENT TRAPS, 'X'	CD-158-3.3		
STEEL U-POST SIGN SUPPORTS	CD-612-5	SEDIMENT CONTROL TANK OR BAG	CD-158-3.4		
SPACER BAR, ANCHOR POST ASSEMBLY SIGN SUPPORTS	CD-612-5.1	SOIL EROSION AND SEDIMENT CONTROL MEASURES	CD-158-4		
TYPE 1 ANCHOR POST ASSEMBLY	CD-612-5.2	USE OF AN OIL / WATER SEPARATOR DURING DEWATERING	CD-158-4.1		
STEEL U-POST SIGN SUPPORTS	CD-612-6.1	ROADWAY GRADING	CD-158-4.2		
BREAKAWAY SIGN SUPPORTS FOR GROUND MOUNTED SIGNS	CD-612-7.1	TEMPORARY RUNOFF DIVERSION	CD-158-4.3		
BREAKAWAY SIGN SUPPORTS FOR GROUND MOUNTED SIGNS	CD-612-8.1	STREAM DIVERSION	CD-158-4.4		
BREAKAWAY SIGN SUPPORTS FOR GROUND MOUNTED SIGNS	CD-612-9.1				
BREAKAWAY SIGN SUPPORTS FOR GROUND MOUNTED SIGNS	CD-612-10.1				
		TRAFFIC CONTROL			
		TRAFFIC CONTROL DEVICES	CD-159-1		
SLOPE, OUTFALL, AND CHANNEL PROTECTION		DRUMS	CD-159-1.1		
SLOPE, OUTFALL, AND CHANNEL PROTECTION	CD-603-1	TRAFFIC CONES	CD-159-1.2		
RIPRAP STONE PROTECTION (CHANNEL/SLOPE/OUTFALL)	CD-603-1.1	BREAKAWAY BARRICADES	CD-159-1.3		
SLOPE PROTECTION AT LOW POINTS OF UMBRELLA SECTIONS	CD-603-1.2	TRAFFIC CONTROL DEVICES	CD-159-2		
CONCRETE SLOPE GUTTER, 6" THICK	CD-603-1.3	ILLUMINATED FLASHING ARROWS, ' x '	CD-159-2.1		
		CHANNELIZING GUIDE POSTS	CD-159-2.2		
		STOP / SLOW PADDLE	CD-159-2.3		
		TEMPORARY SIDEWALK	CD-159-2.4		
		TEMPORARY PAVEMENT MARKERS	CD-159-2.5		
		TEMPORARY TRAFFIC STRIPES AND MARKINGS	CD-159-2.6		

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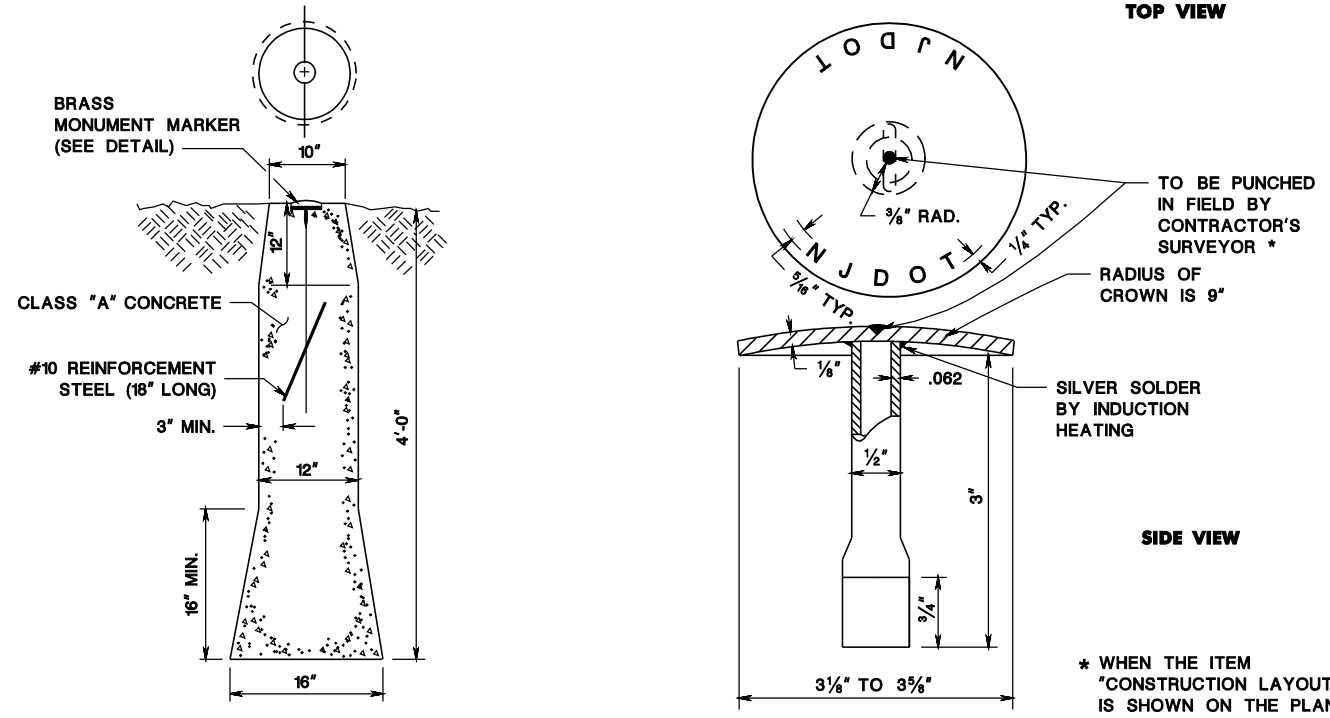
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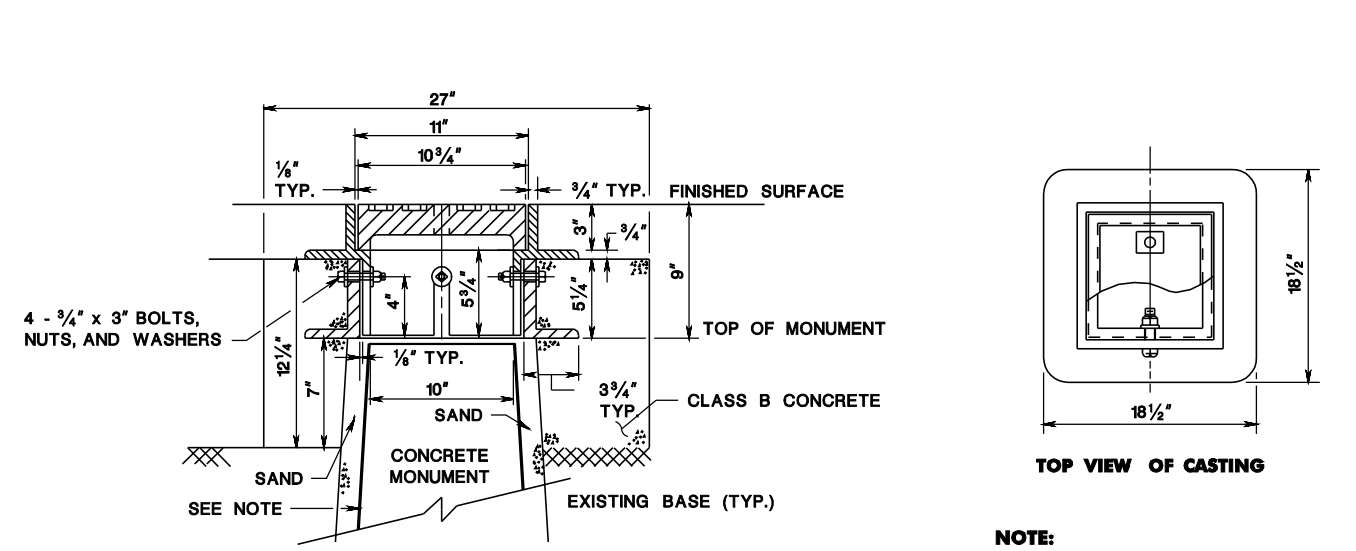


MONUMENT TO BE SET FLUSH WITH GROUND

GENERAL NOTES:
 THE MONUMENT IS TO BE POURED IN PLACE AND THE MARKER PLUMBED INTO POSITION AND SET IN THE CONCRETE IN SUCH A MANNER THAT NO AIR WILL BE TRAPPED ON THE UNDERSIDE OF THE MARKER.
 #10 REINFORCEMENT STEEL, 18" LONG, TO BE PLACED AT THE TIME OF CONCRETE POUR.
 ENSURE THAT THE MONUMENT MARKER IS MADE OF BRASS, CONFORMING TO ASTM B-19.

MONUMENT

CD-157-1.1



MONUMENT BOX FOR NEW MONUMENT

CD-157-1.2

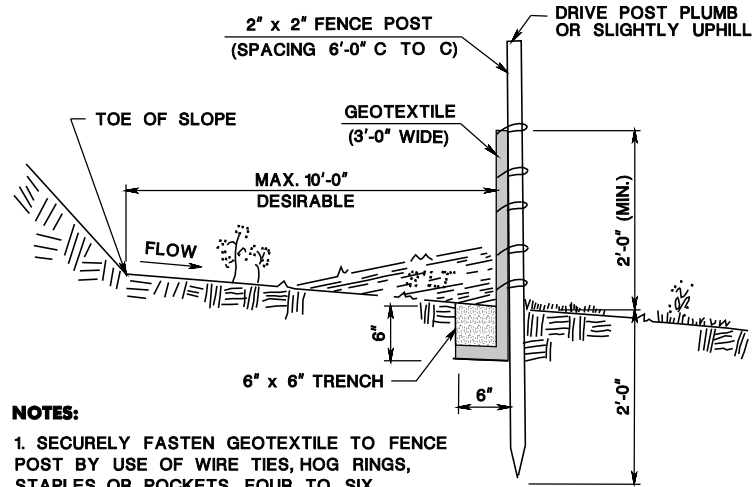
NOTE:
 REINFORCEMENT STEEL IS IN METRIC UNITS.

MONUMENT AND MONUMENT BOX
 N.T.S.

CD-157-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

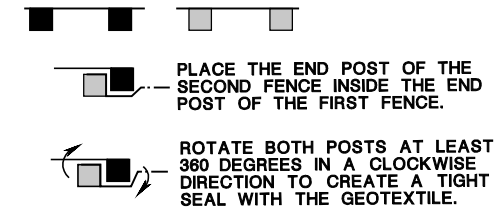
CONSTRUCTION DETAILS



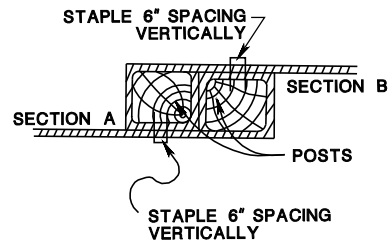
- NOTES:**
1. SECURELY FASTEN GEOTEXTILE TO FENCE POST BY USE OF WIRE TIES, HOG RINGS, STAPLES, OR POCKETS. FOUR TO SIX FASTENERS PER POST.
 2. BURY BOTTOM 1'-0" OF GEOTEXTILE AND TAMP IN PLACE.
 3. SECURELY FASTEN ENDS OF INDIVIDUAL ROLLS OF GEOTEXTILE TO A POST BY WRAPPING EACH END OF THE GEOTEXTILE AROUND THE POST TWICE AND ATTACHING AS SPECIFIED IN NOTE 1 ABOVE. DO NOT SPLICE INDIVIDUAL ROLLS AT LOW POINTS.
 4. SET SILT FENCE WITHIN PROJECT LIMITS. 10'-0" IS DESIRABLE.

SILT FENCE

CD-158-1.1

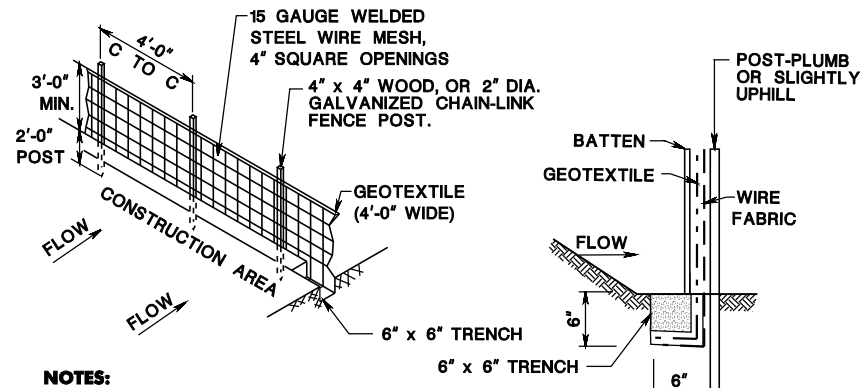


- DIRECTION OF RUNOFF**
- DRIVE BOTH POSTS ABOUT 10 INCHES INTO THE GROUND AND BURY FLAP.



ATTACHING TWO SILT FENCES

CD-158-1.2



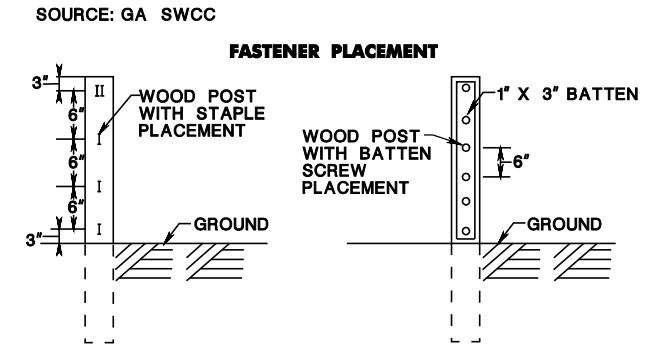
- NOTES:**
1. SECURELY FASTEN GEOTEXTILE TO WIRE FABRIC BY USE OF WIRE TIES OR HOG RINGS, THEN SANDWICH BETWEEN A 1" x 3" x 3" BATTEN AND THE POSTS PLACING SCREWS, OR APPROVED FASTENERS, AT 6 INCH INTERVALS STARTING 3 INCHES FROM TOP.
 2. BURY FENCE POST 2'-0" BELOW GROUND.
 3. BURY BOTTOM 1 FOOT OF GEOTEXTILE AS PER SILT FENCE AND TAMP IN PLACE.
 4. SECURELY FASTEN ENDS OF INDIVIDUAL ROLLS OF GEOTEXTILE TO A COMMON POST BY WRAPPING EACH END OF THE GEOTEXTILE AROUND A BATTEN TWICE AND ATTACHING THE BATTEN TO POST WITH SCREWS AT 6 INCH INTERVALS STARTING 3 INCHES FROM THE TOP. DO NOT SPLICE INDIVIDUAL ROLLS AT LOW POINTS.
 5. BURY 6" OF WIRE FABRIC IN TIDAL AREAS.

HEAVY DUTY SILT FENCE

CD-158-1.3

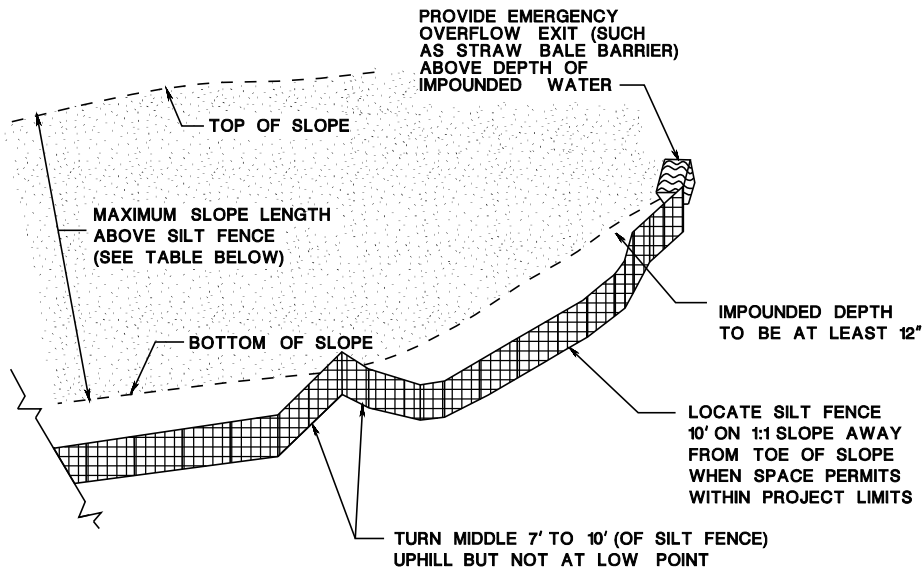
FASTENERS FOR WOOD POSTS

WIRE STAPLES	GAUGE	CROWN	LEGS	STAPLES / POST
	17 MIN.	3/4" WIDE	1/2" LONG	5 MIN.
SCREWS	LENGTH	PHILLIPS HEADS	SCREW / POST	
	2"	2"	6 MIN.	



SILT FENCE FASTENER REQUIREMENTS

CD-158-1.4



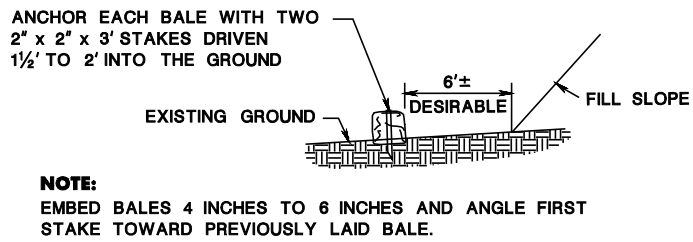
CRITERIA FOR SILT FENCE PLACEMENT

LAND SLOPE (PERCENT)	MAXIMUM SLOPE LENGTH ABOVE FENCE (FEET)
<2	100
2 TO 5	75
5 TO 10	50
10 TO 20	25
>20 *	15

* IN AREAS WHERE THE SLOPE IS GREATER THAN 20%, PROVIDE A FLAT AREA LENGTH OF 10 FEET BETWEEN THE TOE OF THE SLOPE AND THE FENCE TO BE PROVIDED.

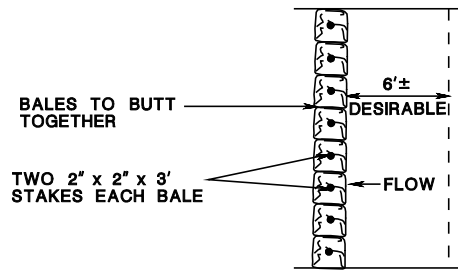
SILT FENCE ON A STEEP OR LONG GRADE

CD-158-1.5



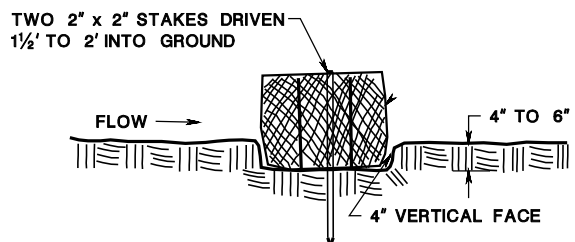
- NOTE:** EMBED BALES 4 INCHES TO 6 INCHES AND ANGLE FIRST STAKE TOWARD PREVIOUSLY LAID BALE.

ELEVATION



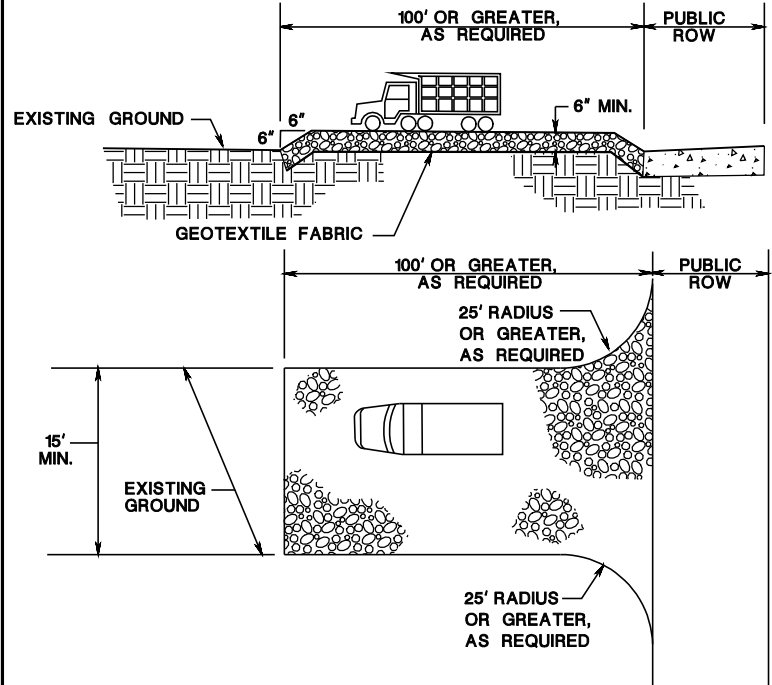
HAYBALES

CD-158-1.6



EMBEDDING DETAIL

CD-158-1.7



- NOTE:** PROVIDE TRANSITION BETWEEN THE STABILIZED CONSTRUCTION ENTRANCE AND THE PUBLIC RIGHT-OF-WAY.

PROFILE AND PLAN VIEW

STABILIZED CONSTRUCTION DRIVEWAY

CD-158-1.8

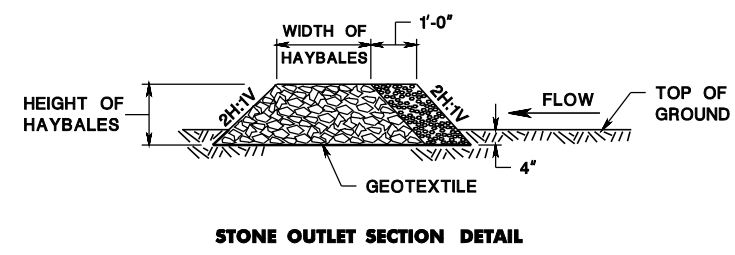
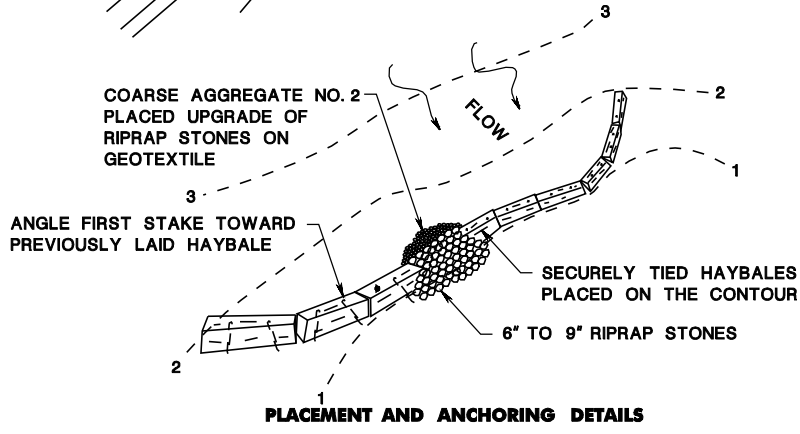
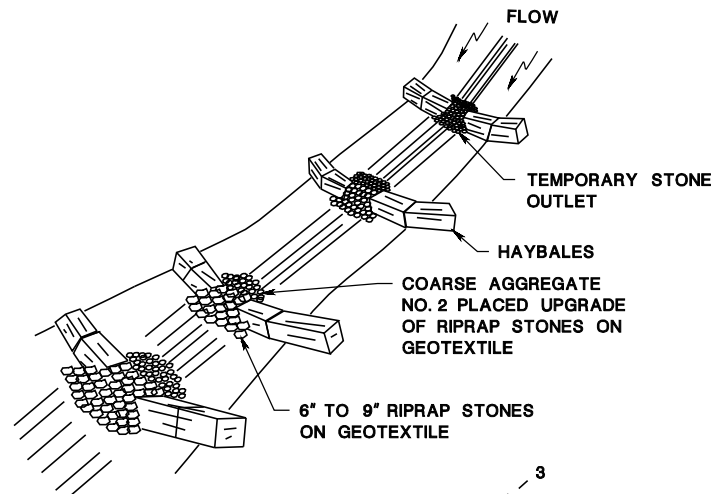
SOIL EROSION AND SEDIMENT CONTROL MEASURES

N.T.S.

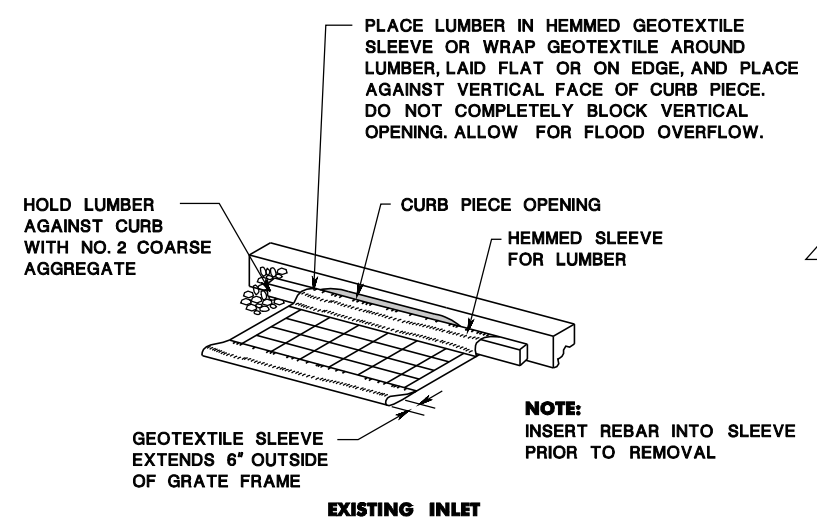
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

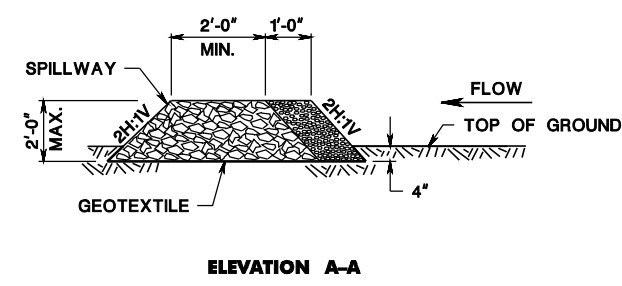
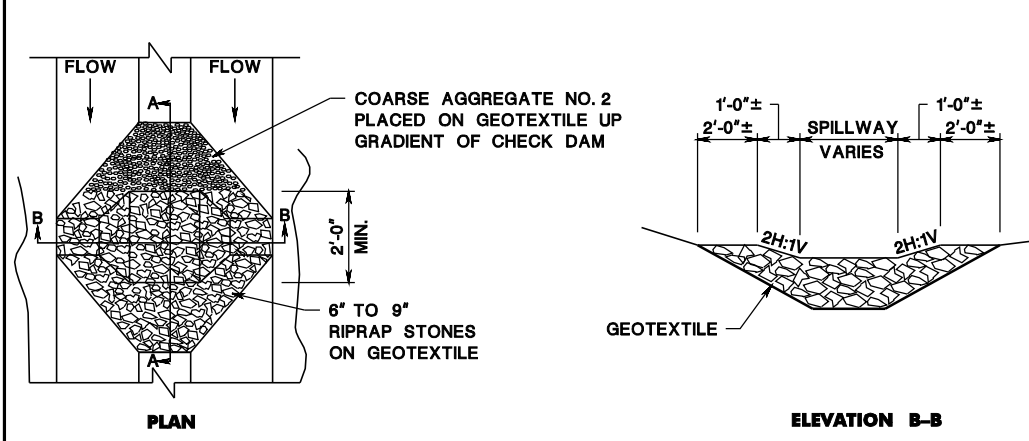
CONSTRUCTION DETAILS



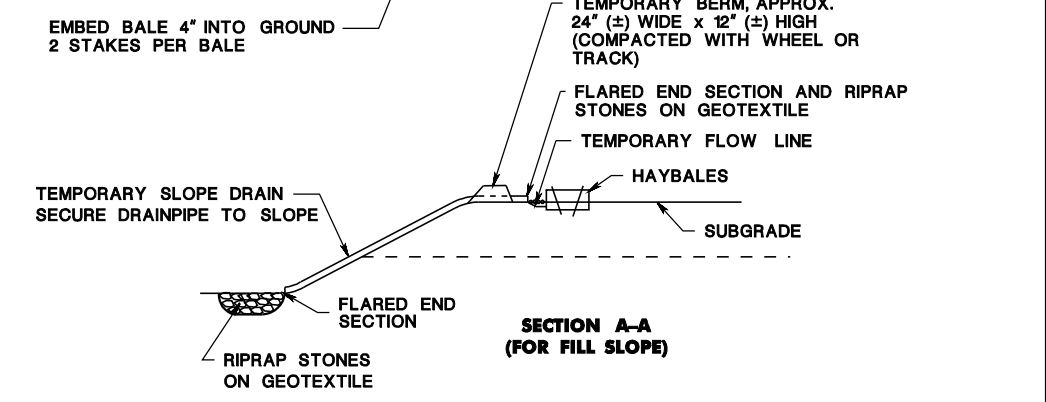
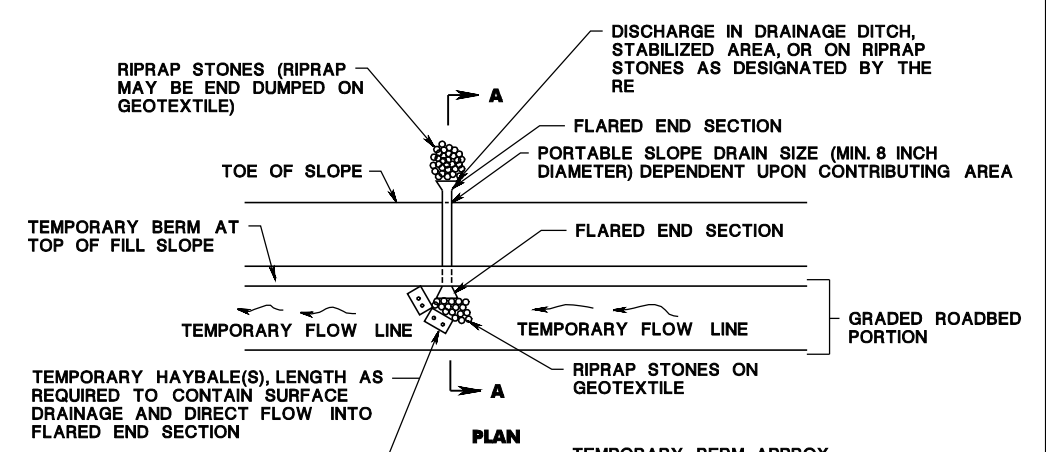
HAYBALE CHECK DAM WITH TEMPORARY STONE OUTLET
CD-158-2.1



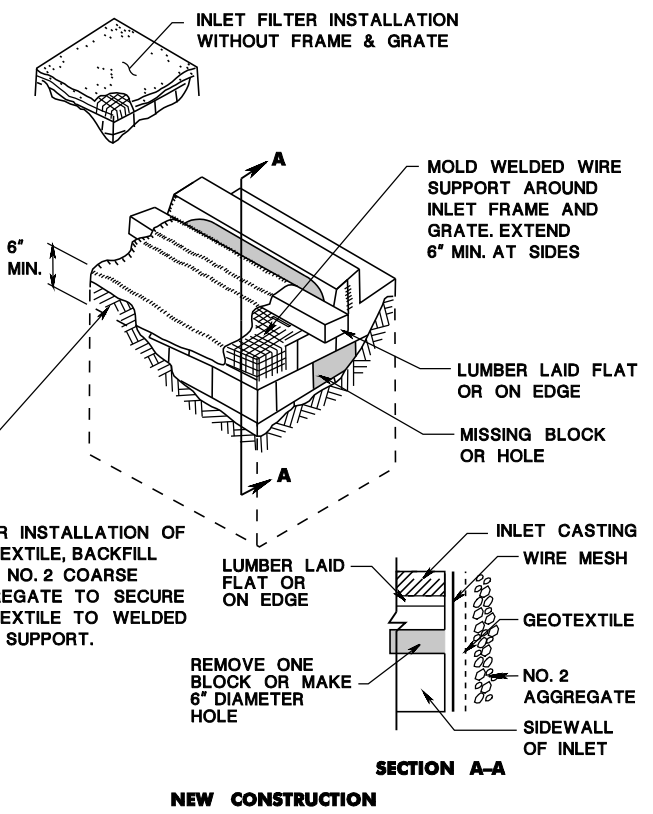
NOTE: INSERT REBAR INTO SLEEVE PRIOR TO REMOVAL



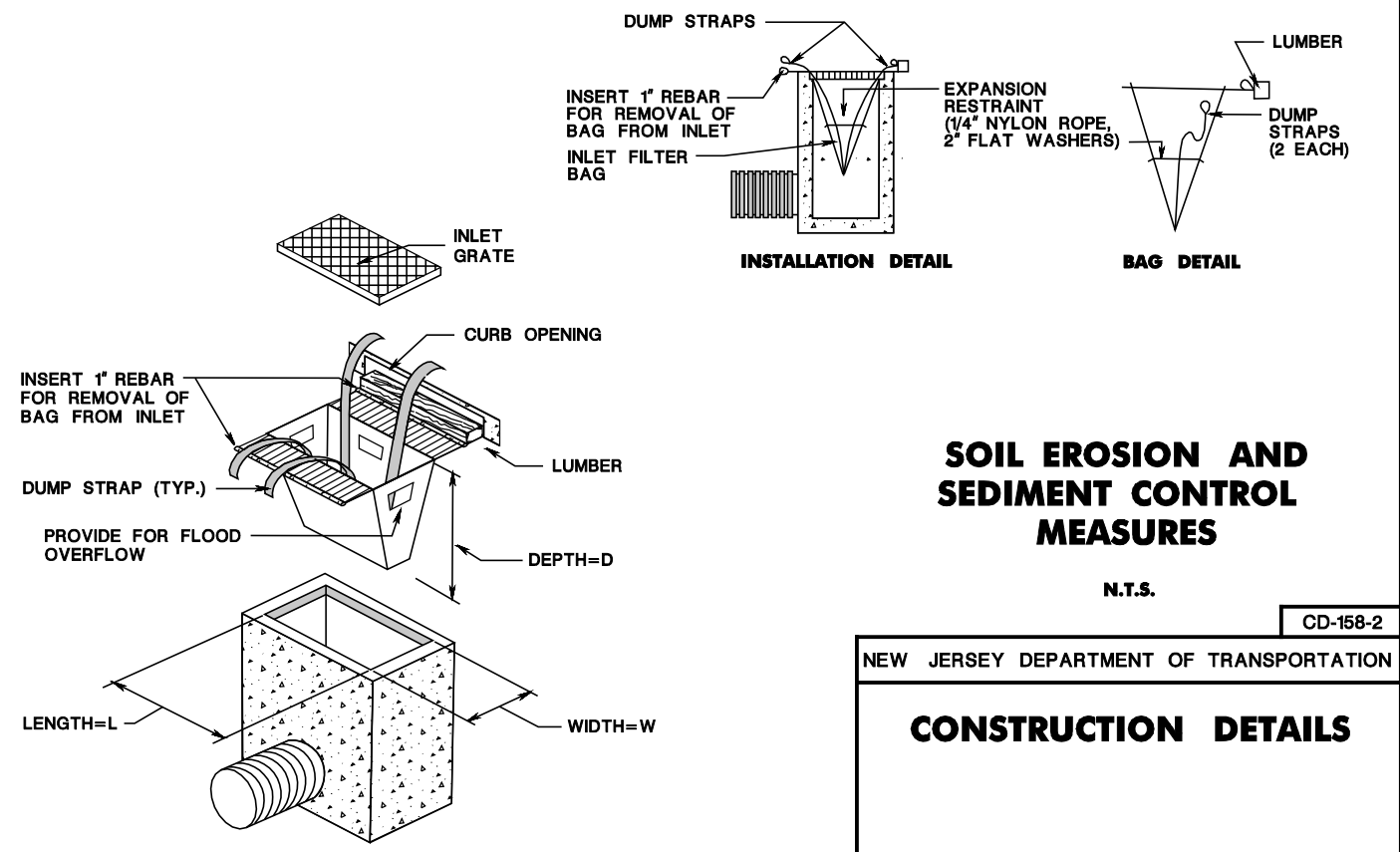
STONE CHECK DAM
CD-158-2.2



SLOPE DRAIN
CD-158-2.3



INLET FILTERS, TYPE 1
CD-158-2.4



INLET FILTERS, TYPE 2
CD-158-2.5

SOIL EROSION AND SEDIMENT CONTROL MEASURES

N.T.S.

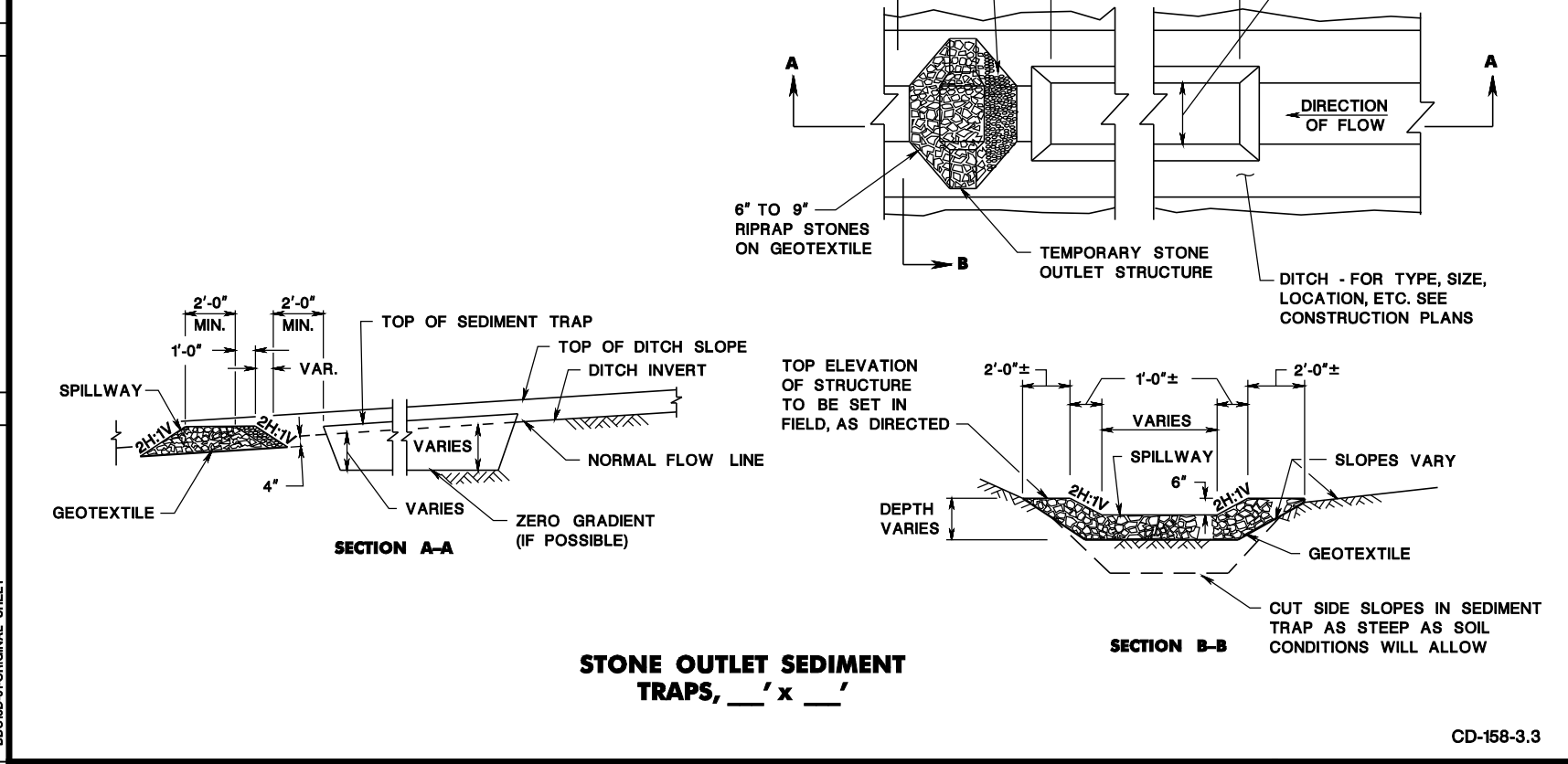
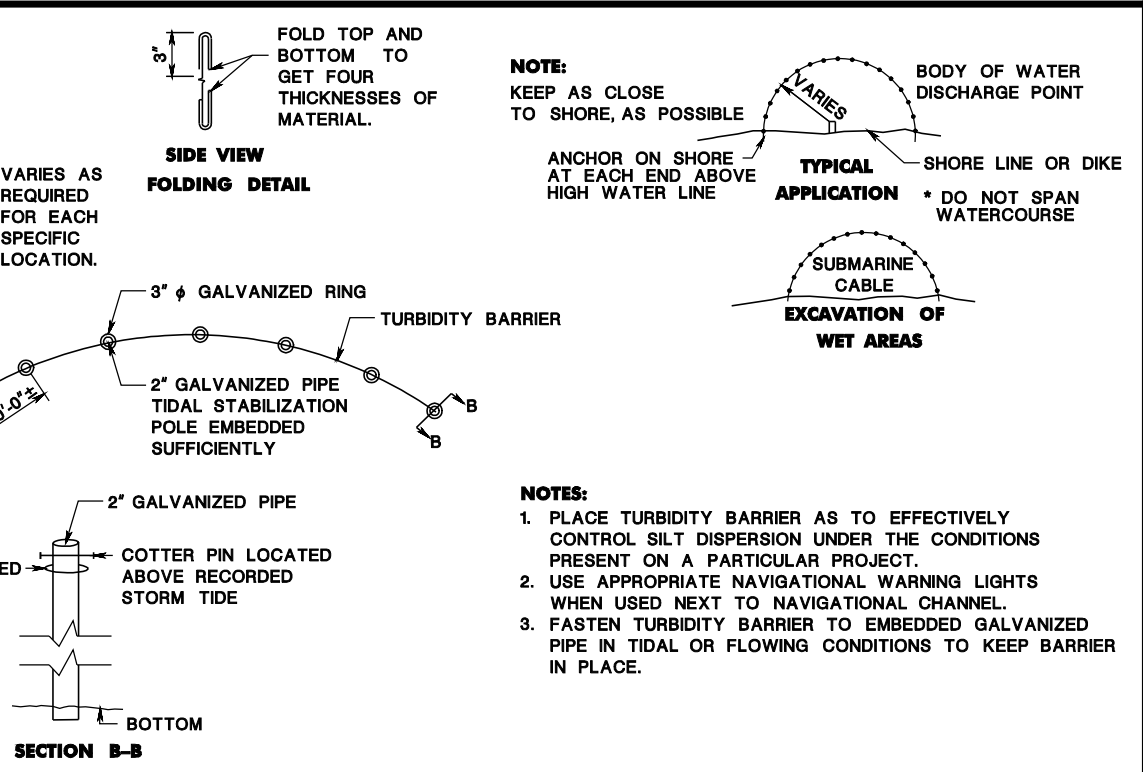
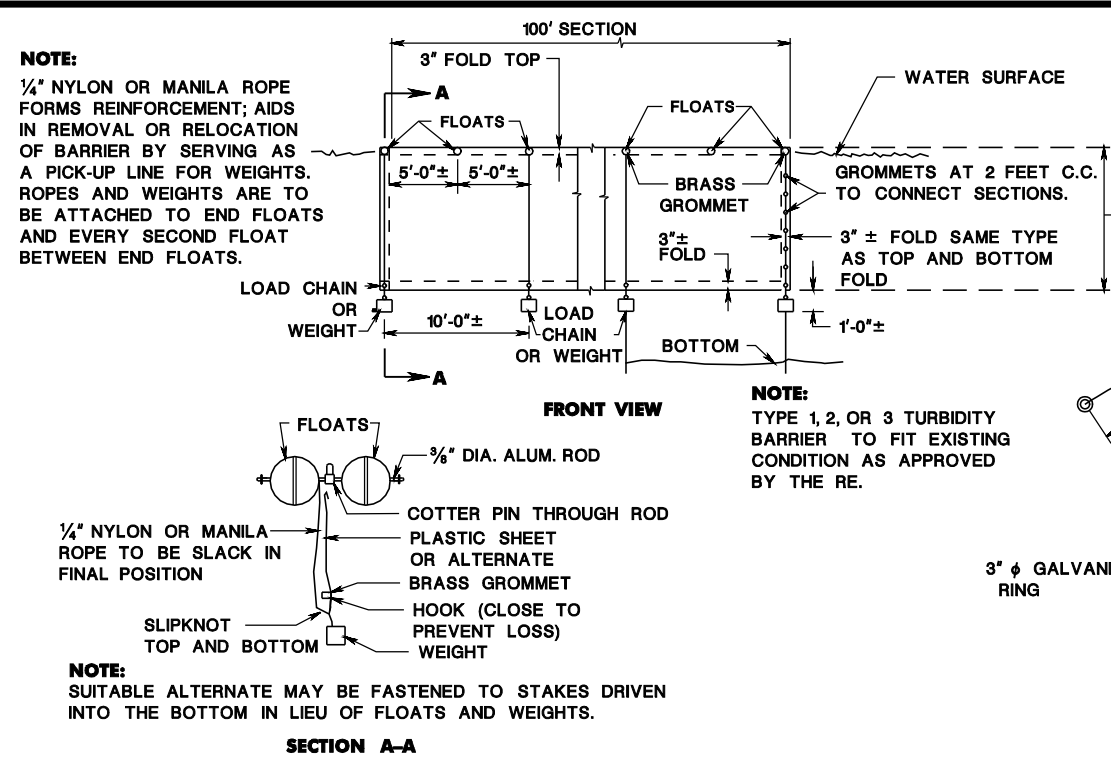
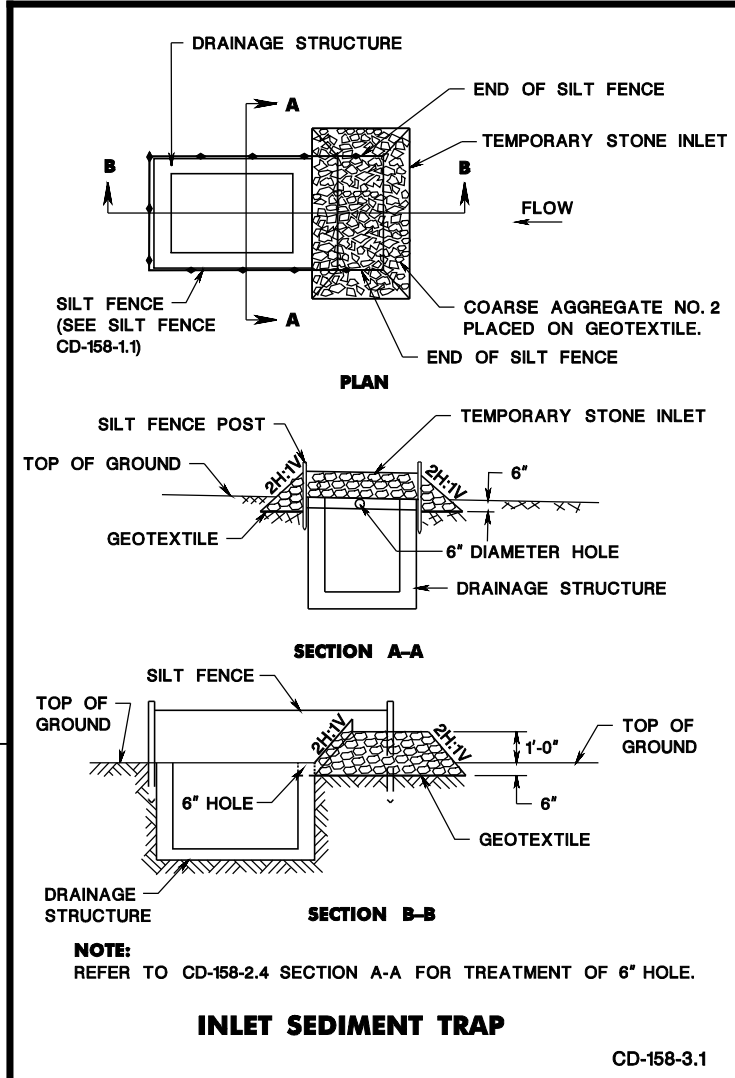
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-158-2

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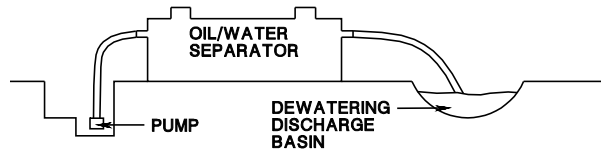
CD-158-3.2

CD-158-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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164

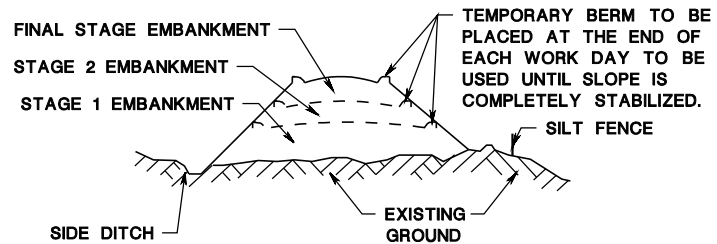


NOTES:

1. ENSURE THE OIL / WATER SEPARATOR MEETS THE UNDERWRITERS LABORATORY UL-58 STANDARD FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS.
2. ENSURE THE OIL / WATER SEPARATOR IS CAPABLE OF ACHIEVING A DISCHARGE QUALITY OF 30 PARTS PER MILLION OF PETROLEUM HYDROCARBONS OR LESS.

USE OF AN OIL / WATER SEPARATOR DURING DEWATERING

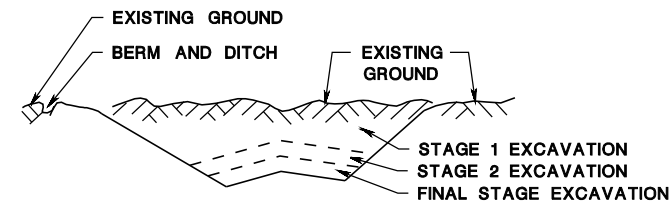
CD-158-4.1



PHASING PLAN-FILL SECTION

CONSTRUCTION SEQUENCE:

1. EXCAVATE AND STABILIZE SIDE DITCHES AND/OR INSTALL PROPOSED CONTROLS AT THE TOE OF SLOPE.
2. PLACE STAGE 1 EMBANKMENT. PLACE TEMPORARY SEEDING AND MULCH, OR TOPSOIL AND PERMANENTLY SEED AND MULCH SLOPE AT THIS STAGE.
3. PLACE STAGE 2 EMBANKMENT. PLACE TEMPORARY SEEDING AND MULCH, OR TOPSOIL AND PERMANENTLY SEED AND MULCH SLOPE AT THIS STAGE.
4. PLACE FINAL STAGE EMBANKMENT. PLACE TOPSOIL, PERMANENT SEED AND MULCH ON THE SLOPE AT THIS STAGE AND ON THE ENTIRE SLOPE IF NOT PREVIOUSLY DONE.



PHASING PLAN-CUT SECTION

CONSTRUCTION SEQUENCE:

1. EXCAVATE AND STABILIZE BERM, SIDE AND OUTLET DITCHES.
2. PERFORM STAGE 1 EXCAVATION. TOPSOIL, PERMANENTLY SEED, AND MULCH SLOPE AT THIS STAGE.
3. PERFORM STAGE 2 EXCAVATION. TOPSOIL, PERMANENTLY SEED, AND MULCH SLOPE AT THIS STAGE.
4. PERFORM FINAL STAGE EXCAVATION. TOPSOIL, PERMANENTLY SEED, AND MULCH SLOPE AT THIS STAGE. REPAIR ANY DAMAGE DONE TO PREVIOUS STAGES.

EMBANKMENT

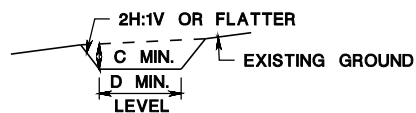
BEFORE BEGINNING ANY EARTHWORK, EXCAVATE AND STABILIZE SIDE DITCHES AND INSTALL PERIMETER CONTROLS (SILT FENCE, ETC.). SLOPES GREATER THAN 25 FEET IN HEIGHT ARE TO BE EXCAVATED AND STABILIZED IN STAGES OF EQUAL INCREMENTS NOT TO EXCEED 15 FEET.

AT THE END OF EACH WORK DAY, CONSTRUCT TEMPORARY BERMS (EARTH) AND SLOPE DRAINS ALONG THE TOP EDGE(S) OF THE EMBANKMENT TO INTERCEPT SURFACE RUNOFF.

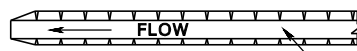
ROADWAY GRADING

CD-158-4.2

	DITCH A (5 AC OR LESS)	DITCH B (5 - 10 AC)
DITCH DEPTH (C)	1'-0"	1'-0"
DITCH WIDTH (D)	4'-0"	6'-0"

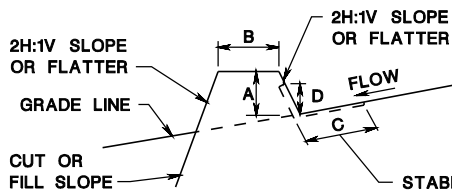


DITCH CROSS SECTION



DITCH PLAN VIEW

0.5% OR STEEPER (DEPENDENT ON TOPOGRAPHY)



BERM CROSS SECTION

NOTE:

ADJUST FIELD LOCATION AS NEEDED TO ACHIEVE A STABILIZED OUTLET.

	BERM A (5 AC OR LESS)	BERM B (5 - 10 AC)
BERM HEIGHT (A)	18"	36"
BERM WIDTH (B)	24"	36"
FLOW WIDTH (C)	48"	72"
FLOW HEIGHT (D)	8"	15"

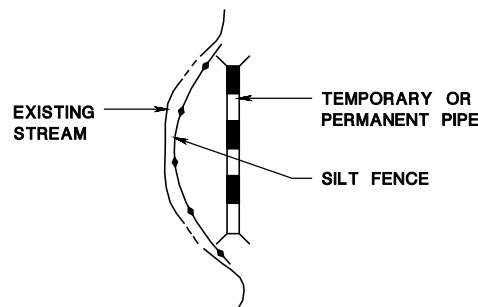
STABILIZATION, AS REQUIRED. ON STEEP SLOPES EXCAVATE TO PROVIDE REQUIRED FLOW WIDTH AT FLOW DEPTH.

STABILIZATION FOR DITCH OR BERM

TYPE OF TREATMENT	GRADE	A - (5 AC OR LESS)	B - (5 - 10 AC)
1	0.5 - 5.0%	SEED USED WITH TOPSOIL STABILIZATION MATTING	SEED USED WITH TOPSOIL STABILIZATION MATTING
2	5.1 - 8.0%	SEED USED WITH TOPSOIL STABILIZATION MATTING	LINED 6" - 9" RIPRAP
3	8.1 - 20.0%	LINED 6" - 9" RIPRAP	ENGINEERED DESIGN

TEMPORARY RUNOFF DIVERSION

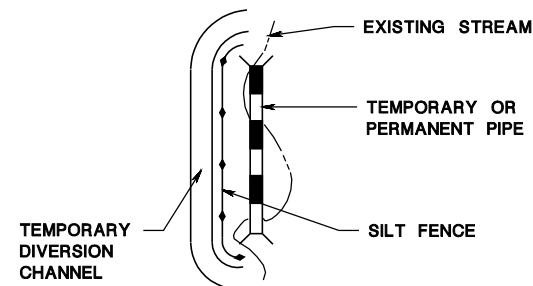
CD-158-4.3



METHOD A

CONSTRUCTION SEQUENCE:

1. INSTALL SILT FENCE ALONG EXISTING STREAM IN AREA OF PROPOSED PIPE CONSTRUCTION.
2. CONSTRUCT PIPE SYSTEM.
3. DIVERT STREAM FLOW INTO PIPE.
4. FOR TEMPORARY DIVERSIONS, RETURN FLOW TO EXISTING STREAM.
5. RESTORE TEMPORARY DIVERSION AREA TO ORIGINAL CONDITION.



METHOD B

CONSTRUCTION SEQUENCE:

1. INSTALL SILT FENCE ALONG EXISTING STREAM IN AREA OF TEMPORARY DIVERSION CHANNEL.
2. CONSTRUCT TEMPORARY DIVERSION CHANNEL AND LINE WITH GEOTEXTILE AND TEMPORARY RIPRAP.
3. DIVERT STREAM FLOW INTO TEMPORARY CHANNEL.
4. CONTINUE SEQUENCE FROM STEP 2, METHOD A.

STREAM DIVERSION

CD-158-4.4

SOIL EROSION AND SEDIMENT CONTROL MEASURES

N.T.S.

CD-158-4

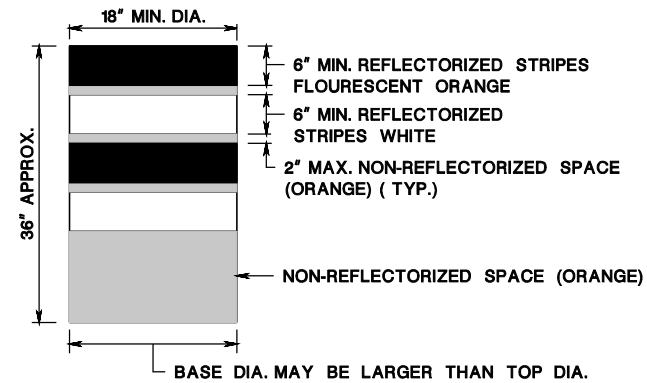
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

ENSURE DRUMS ARE MADE OF ORANGE PLASTIC WITH A MINIMUM OF FOUR ALTERNATE FLUORESCENT ORANGE AND WHITE RETROREFLECTIVE STRIPES. IF THERE ARE NON-REFLECTORIZED SPACES BETWEEN THE STRIPES, THEY ARE TO BE NO MORE THAN 2" WIDE. ENSURE RETROREFLECTIVE SHEETING FOR STRIPES CONFORMS WITH ASTM D4956 TYPE VII OR VIII WITH S2 REQUIREMENTS.

ENSURE THE TOP OF THE DRUM IS NOT OPEN. CONSTRUCT DRUMS TO INHIBIT ROLLING IF KNOCKED OVER.

ENSURE THE REFLECTORIZED AREA OF DRUMS IS ROUND EXCEPT OTHER SHAPES, WHICH PROVIDE THE SAME VISIBILITY AS AN 18 INCH DIAMETER ROUND DRUM REGARDLESS OF ORIENTATION, MAY BE USED.



WHEN BALLAST IS REQUIRED BY THE RE, USE SAND. THE MAXIMUM WEIGHT OF THE BALLAST IS 50 LBS. AND IS TO BE LOCATED APPROXIMATELY AT GROUND LEVEL. ALTERNATE TYPES OF BALLAST MUST BE APPROVED BY THE RE.

DRUMS

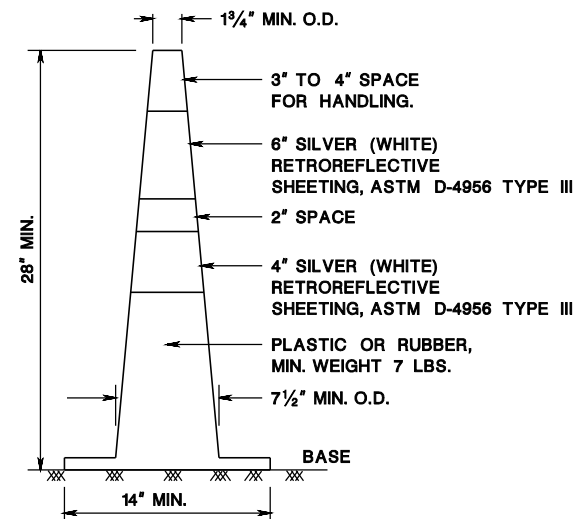
CD-159-1.1

NOTES:

TRAFFIC CONES MUST BE PREDOMINATELY ORANGE IN COLOR.

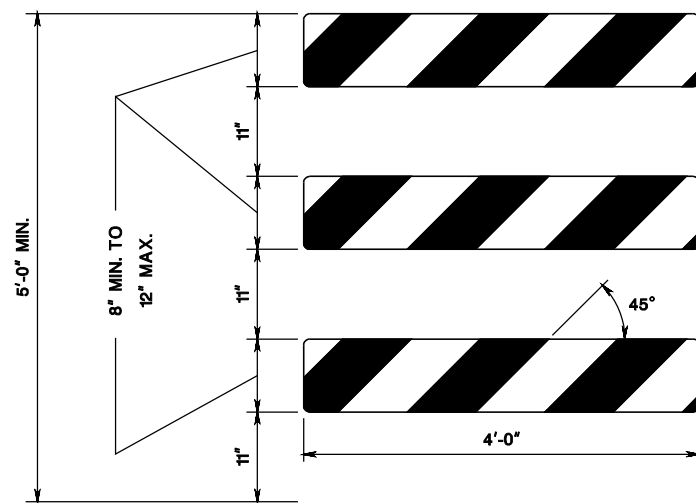
BASES MAY BE OF BREAKAWAY BALLASTED TYPE.

MINOR MANUFACTURER'S VARIATIONS MAY BE ACCEPTABLE UPON APPROVAL OF THE RE.



TRAFFIC CONES

CD-159-1.2



TYPE III BARRICADE - FRONT VIEW

NOTES:

1. ENSURE THE 8" MIN. x 48", TO 12" MAX. x 48" BARRICADE RAILS TO BE ATTACHED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.
2. ENSURE ORANGE AND SILVER (WHITE) STRIPES TO BE RETROREFLECTIVE SHEETING, ASTM D4956 TYPE III. ALTERNATE ORANGE AND SILVER (WHITE) STRIPES 6" WIDE SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION TRAFFIC IS TO PASS.
3. THE FRAMING, RAILS, AND BALLAST FOR BREAKAWAY BARRICADE TO BE NCHRP-350 CRASHED TESTED AND FHWA APPROVED.
4. IF NECESSARY, FABRICATE THE BALLAST AND PLACE ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.

BREAKAWAY BARRICADES

CD-159-1.3

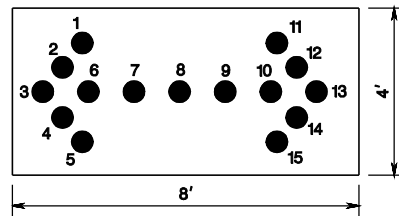
TRAFFIC CONTROL DEVICES

N.T.S.

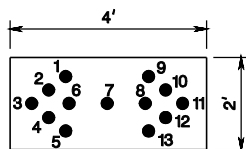
CD-159-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS



4' x 8' BOARD
 FLASHING MESSAGES TO LIGHT AS FOLLOWS
 RIGHT ARROW 3, 6, 7, 8, 9, 11, 12, 13, 14, & 15
 LEFT ARROW 1, 2, 3, 4, 5, 7, 8, 9, 10, & 13
 DOUBLE ARROW 1, 2, 3, 4, 5, 7, 8, 9, 11, 12, 13, 14, & 15
 CAUTION MODE 1, 5, 11, & 15

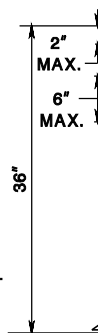


2' x 4' BOARD
 RIGHT ARROW 3, 6, 7, 9, 10, 11, 12, & 13
 LEFT ARROW 1, 2, 3, 4, 5, 7, 8, & 11
 DOUBLE ARROW 1, 2, 3, 4, 5, 7, 9, 10, 11, 12, & 13
 CAUTION MODE 1, 5, 9, & 13

ILLUMINATED FLASHING ARROWS,
 ___' x ___'

CD-159-2.1

CHANNELIZING GUIDE POSTS TO BE PREDOMINATELY ORANGE IN COLOR.



3" COMPLETE WRAP AROUND SILVER (WHITE) RETROREFLECTIVE SHEETING, ASTM D 4956 TYPE VII OR VIII, WHEN POSTS ARE USED FROM DUSK TO DAWN.
 FLEXIBLE POLYETHYLENE, POLYURETHANE, OR POLYVINYL POST MUST BE CAPABLE OF BENDING AND SPRINGING BACK INTO POSITION AFTER BEING HIT BY AN AVERAGE PASSENGER VEHICLE.

REMOVE BASE FROM THE PAVEMENT WHEN THE POST IS NO LONGER NEEDED.

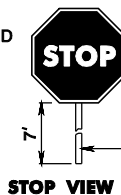
BASE TO BE SEPARATE FROM POST
 EPOXY CEMENT

NOTE:
 MINOR MANUFACTURER'S VARIATIONS MAY BE ACCEPTABLE UPON APPROVAL OF THE RE.

CHANNELIZING GUIDE POSTS

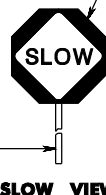
CD-159-2.2

R 1-1
 24"x 24",
 8" C LETTERS
 WHITE MESSAGE AND BORDER ON RED BACKGROUND.



STOP VIEW

NON-REFLECTIVE BLACK
 24"x 24",
 8" B LETTERS
 BLACK MESSAGE AND BORDER ON ORANGE BACKGROUND.

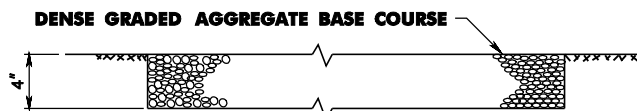


SLOW VIEW

NOTE:
 SIGN FACES TO BE RETROREFLECTIVE SHEETING, ASTM D4956 TYPE III.

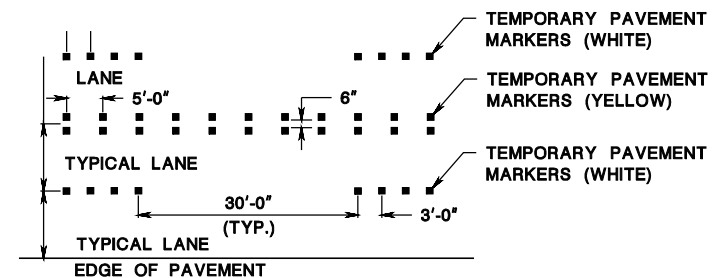
STOP / SLOW PADDLE

CD-159-2.3



TEMPORARY SIDEWALK

CD-159-2.4



NOTES:

1. WHEN TEMPORARY PAVEMENT MARKERS ARE TO SIMULATE LANE LINES ON SHARP CURVES OR IN TRANSITIONS TO EITHER REDUCE THE NUMBER OF LANES OR TO SHIFT TRAFFIC Laterally, SPACE THE TEMPORARY PAVEMENT MARKERS 5 FEET APART CONTINUOUSLY THROUGH THE CURVE OR TRANSITION AREA.
2. DO NOT USE TEMPORARY PAVEMENT MARKERS TO DELINEATE RIGHT EDGE LINES.

TEMPORARY PAVEMENT MARKERS

CD-159-2.5

NOTES:

UNLESS OTHERWISE SHOWN ON THE PLANS, APPLY TEMPORARY TRAFFIC STRIPES AND MARKINGS AT THE LOCATIONS OF THE FINAL STRIPING AS PER THE FOLLOWING:

1. **DURATION** - TEMPORARY PAVEMENT MARKINGS ARE NOT TO REMAIN IN PLACE FOR MORE THAN 14 DAYS AFTER THE CONSTRUCTION OF THE FINAL PAVEMENT SURFACE ON NEW ROADWAYS OR OVER EXISTING PAVEMENTS. ANY EXTENSION OF THE DURATION FOR TEMPORARY STRIPES BEYOND 14 DAYS TO BE APPROVED BY THE REGIONAL TRAFFIC ENGINEER - WORK ZONE.
2. **WIDTH** - ALL LONGITUDINAL LINES (CENTER LINES, SHOULDER LINES, AND SKIPS) TO BE 4 OR 6 INCHES IN WIDTH TO FOLLOW THE EXISTING PRE-CONSTRUCTION MARKING.
3. **SKIP LINES** - PLACE SKIP LINES USING THE SAME CYCLE LENGTH AS PERMANENT MARKINGS (DISTANCE FROM START OF SKIP TO START OF SKIP, TYPICALLY 40 FOOT), AND MAY HAVE SKIPS HAVING 2 FOOT LENGTHS.
4. **STOP LINES** - STOP LINES TO BE PLACED OR RESTORED.
5. **GORE AREAS** - GORE AREAS TO HAVE EDGE LINES, BUT DO NOT REQUIRE CROSS HATCHING.
6. **TURN ARROWS** - WHEN TEMPORARY MARKINGS WILL BE IN PLACE MORE THAN 7 DAYS, PLACE AT LEAST ONE INDICATION OF TURN ARROWS.
7. **CROSSWALKS** - PLACE CROSSWALKS AT SIGNALIZED INTERSECTIONS, ONLY IF THEY PRE-EXISTED THE CONSTRUCTION.

TEMPORARY TRAFFIC STRIPES AND MARKINGS

CD-159-2.6

TRAFFIC CONTROL DEVICES

N.T.S.

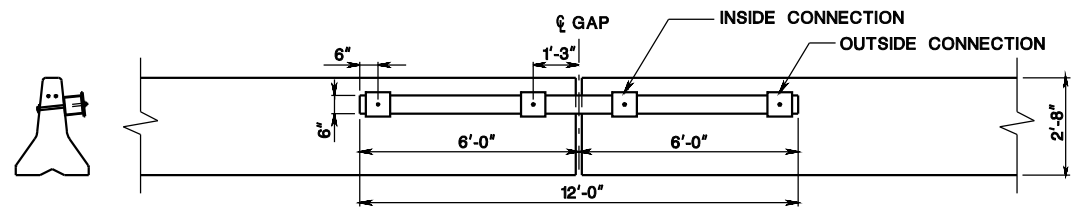
CD-159-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

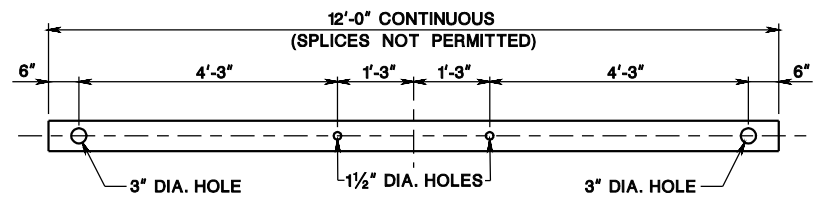
CONSTRUCTION DETAILS

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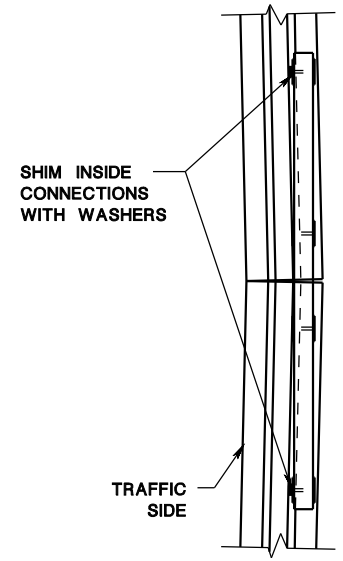
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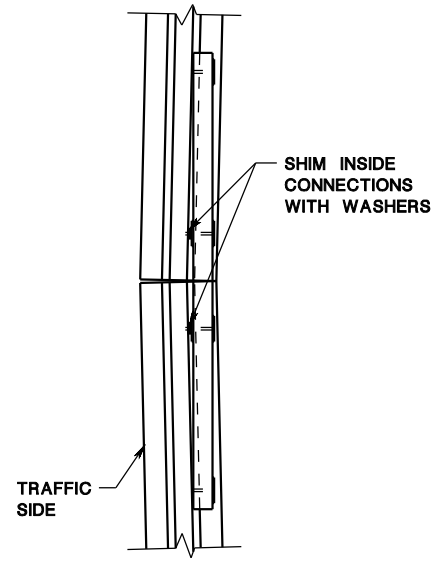
**SIDE VIEW
(CONSTRUCTION SIDE)**



**BOX BEAM
HOLE LAYOUT DETAIL**



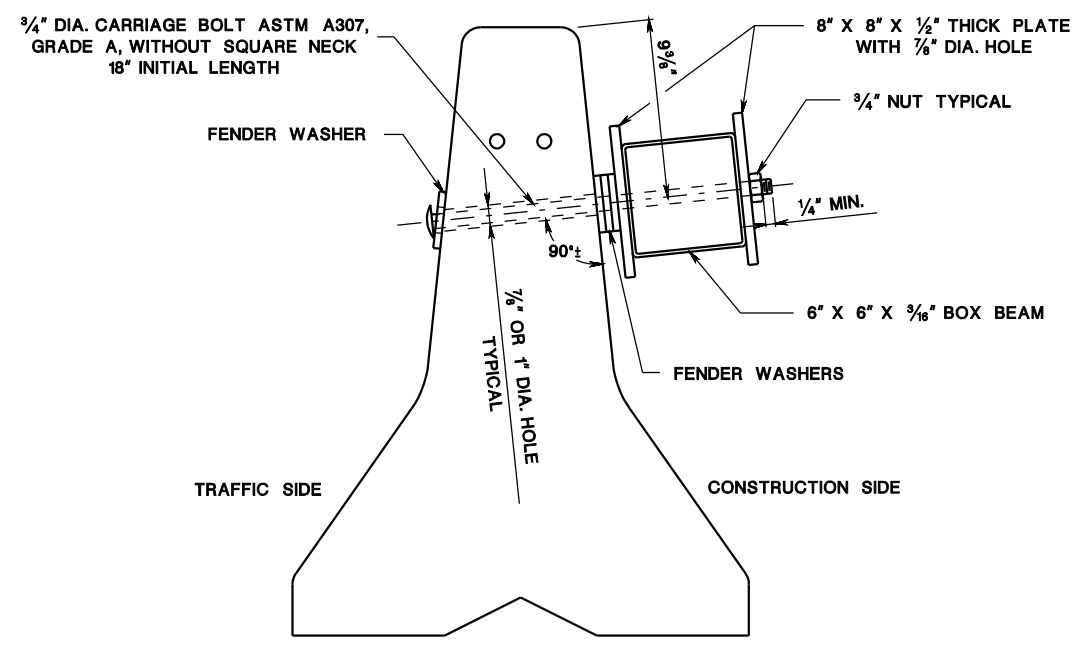
**PLAN VIEW
CONSTRUCTION BARRIER CURB
CURVING TOWARD TRAFFIC**



**PLAN VIEW
CONSTRUCTION BARRIER
CURVING AWAY FROM TRAFFIC**

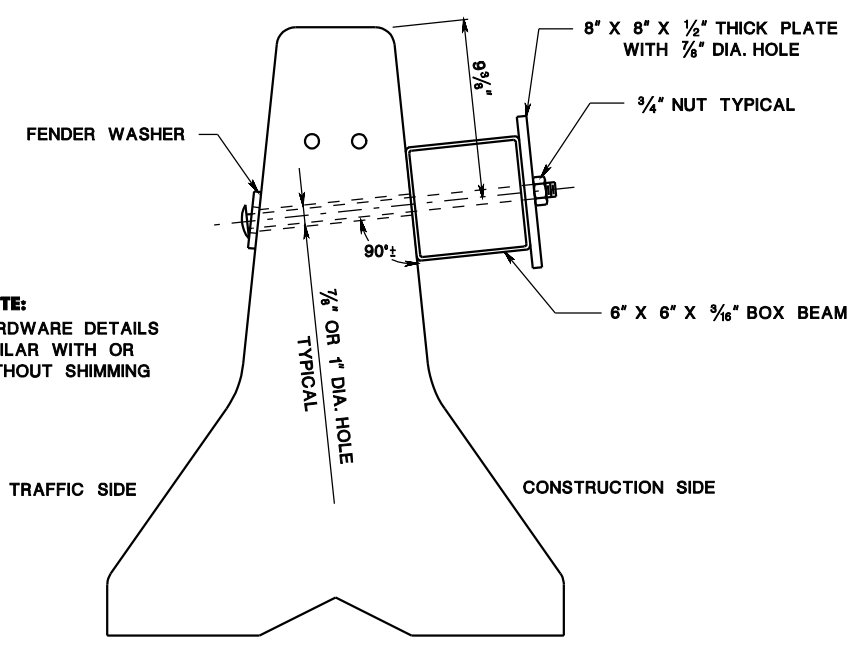
NOTES:

1. BOX BEAM IS TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS.
2. CONSTRUCTION BARRIER CURB WITH BOX BEAM STIFFENER MAY ONLY BE USED WITH SEGMENTS 14'-0" OR LONGER.
3. CONSTRUCTION BARRIER CURB MAY ONLY BE INSTALLED TO THE FOLLOWING MINIMUM RADI: 14'-0" SEGMENT - 161'-0" RADIUS; 16'-0" SEGMENT - 184'-0" RADIUS; 18'-0" SEGMENT - 207'-0" RADIUS; 20'-0" SEGMENT - 230'-0" RADIUS.
4. WHERE CONSTRUCTION BARRIER CURB ARE PLACED ON A RADIUS, THE RESULTING GAPS BETWEEN THE BOX BEAM AND CONCRETE BARRIER TO BE SHIMMED.
5. THE SHIMMING CONSISTS OF 8" X 8" X 1/2" SQUARE PLATE, AND FENDER WASHERS AS NEEDED TO SNUG THE BOX BEAM STIFFENER TO THE CONSTRUCTION BARRIER CURB.
6. FENDER WASHER TO BE 3" NOMINAL O.D.
7. THE PRESENCE OF NORMAL HOLES DRILLED PER THIS SHEET WILL NOT AFFECT THE REUSABILITY OF THE CONCRETE SEGMENTS.
8. DRILL HOLES IN CONSTRUCTION BARRIER CURB FOR PURPOSE OF BOX BEAM ATTACHMENT USING A CORE DRILL OR ANY OTHER APPROVED ROTARY DRILLING DEVICE THAT DOES NOT IMPART AN IMPACT FORCE.
9. DO NOT USE BOX BEAM STIFFENING AS MEDIAN BARRIER (TRAFFIC ON BOTH SIDES OF BARRIER).



SECTION WITH SHIMMING

NOTE:
 HARDWARE DETAILS
 SIMILAR WITH OR
 WITHOUT SHIMMING



SECTION WITHOUT SHIMMING

BOX BEAM STIFFENING OF CONSTRUCTION BARRIER CURB

**CONSTRUCTION BARRIER CURB
WITH BOX BEAM STIFFENER**

N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-159-3.1

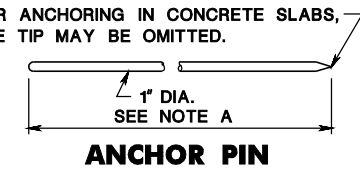
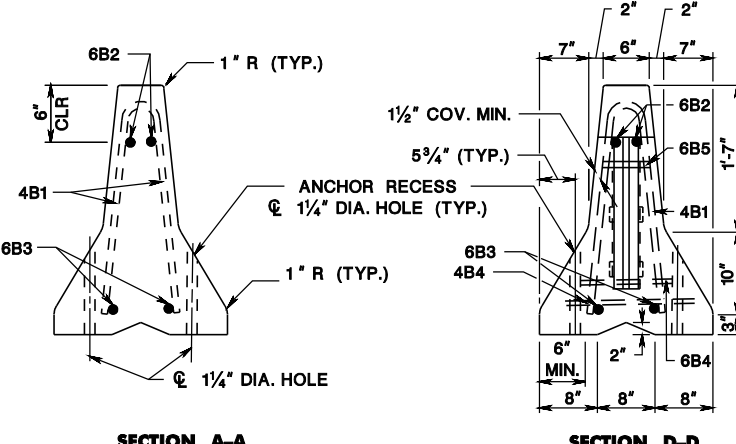
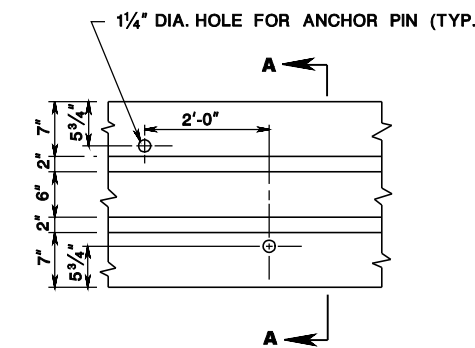
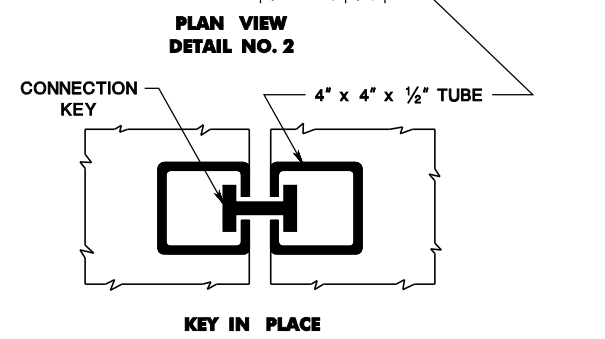
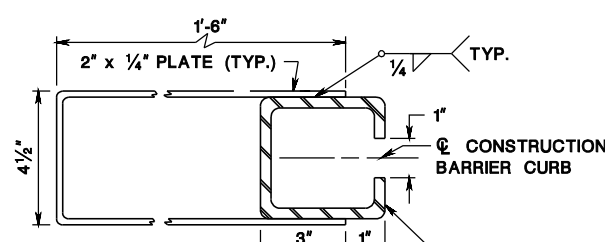
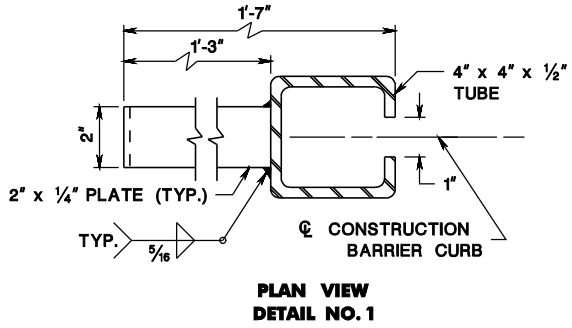
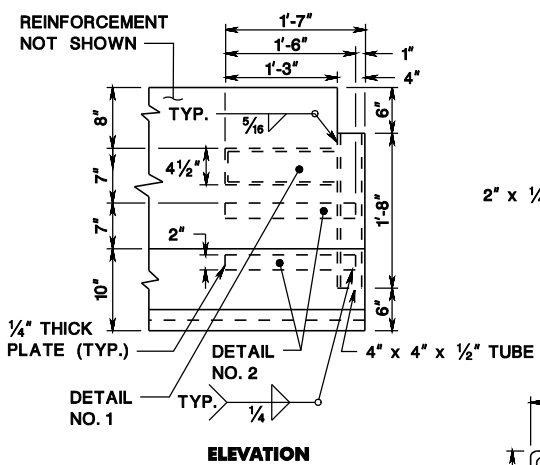
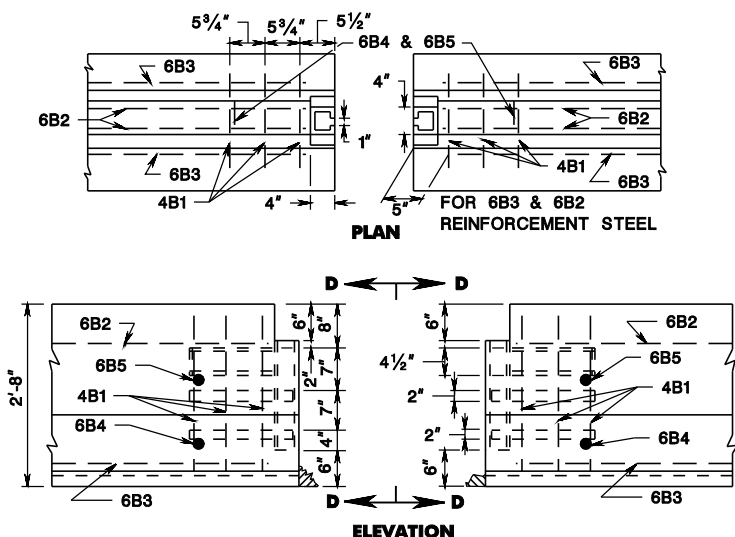
CD-159-3

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CONSTRUCTION BARRIER CURB CONNECTION DETAILS

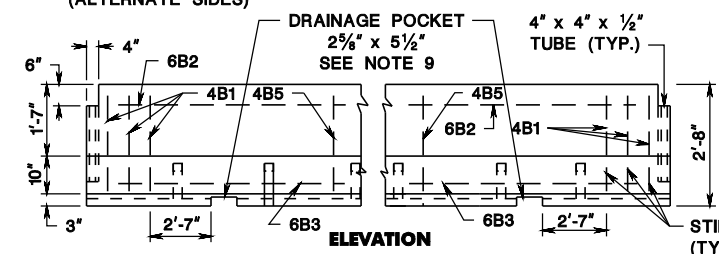
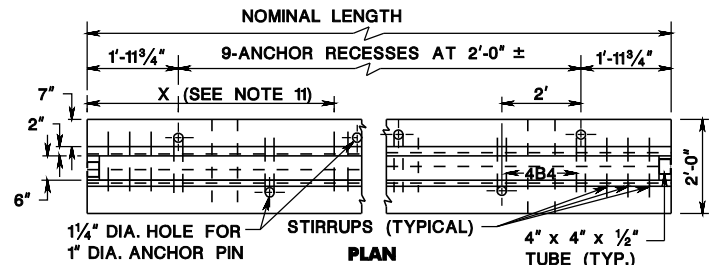
GENERAL NOTES:

- STEEL PLATE TO BE ASTM A36, A588, A441, OR A572 GRADE 50.
- USE REINFORCEMENT STEEL ASTM A615, GRADE 60.
- USE CONCRETE CLASS B.
- CONCRETE CLEAR COVER FOR REINFORCEMENT STEEL IS 1 1/2" (MIN.).
- USE TUBE STEEL ASTM A500, GRADE B OR C.
- USE ANCHOR PINS AND BOLTS, 1 INCH DIA. ASTM A36.
- ANCHOR PINS ARE NOT REQUIRED IN EVERY UNIT. SEE TABLE OF JOINT AND ANCHORAGE TREATMENTS.
- PIN ALL END SECTIONS UNLESS OTHERWISE NOTED.
- 2 5/8" X 5 1/2" DRAINAGE POCKETS - TWO REQUIRED IN SECTIONS 12 FEET AND GREATER. ONE REQUIRED IN 8 FOOT AND 10 FOOT SECTIONS.
- AFTER A BARRIER UNIT HAS BEEN PLACED AND THE CONNECTION KEY INSERTED, REMOVE ANY SLACK IN THE JOINT BY PULLING THE UNIT IN A DIRECTION PARALLEL TO ITS LONGITUDINAL AXIS.
- THE CONSTRUCTION BARRIER CURB TO BE CAST IN STEEL FORMS.
- THE CONSTRUCTION BARRIER CURB IS IN UNITS OF 20 FEET, HOWEVER, OTHER LENGTHS MAY BE USED TO MEET FIELD CONDITIONS. THE NUMBER AND PLACEMENT OF THE 4B4 AND 4B5 REINFORCEMENT STEEL WILL VARY WITH THE LENGTH OF THE BARRIER UNIT AS SHOWN ON THE TABLE OF VARIABLE REINFORCEMENT STEEL. THE 6B2 AND 6B3 REINFORCEMENT STEEL TO BE 10 INCHES SHORTER THAN THE NOMINAL LENGTH OF THE BARRIER UNITS.
- REINFORCING SHOWN IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING NECESSARY FOR HANDLING IS THE OPTION AND RESPONSIBILITY OF THE CONTRACTOR.
- WELDING AND FABRICATION OF STEEL STRUCTURES TO BE IN ACCORDANCE WITH SECTIONS 1 THROUGH 6 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE AND SECTION 10 OF THE ANSI/AWS D.1 STRUCTURAL WELDING CODE. ENSURE THAT THE WELDS ARE FREE OF SCALE, SLAG, RUST, MOISTURE, GREASE, OR ANY OTHER MATERIAL THAT WILL PREVENT PROPER WELDING OR PRODUCE OBJECTIONAL FUMES. WELDING IS TO BE SHIELDED METAL ARC WELDING USING PROPERLY DRIED 5/32" DIA. E7018 ELECTRODES.
- AFTER REMOVAL OF THE BARRIER, FILL THE HOLES IN THE SURFACE ON WHICH THE BARRIER SAT WHICH WERE USED TO ANCHOR THE SYSTEM. THE ONLY EXCEPTION IS WHEN THE HOLES ARE IN AN AREA WHICH IS TO BE REMOVED. FILL HOLES IN FLEXIBLE PAVEMENT OR UNPAVED AREAS, AS DIRECTED. FILL HOLES IN PORTLAND CEMENT CONCRETE PAVEMENTS OR STRUCTURAL DECKS WITH NON-SHRINK GROUT MATERIAL MEETING THE REQUIREMENTS OF SECTION 903.07, EXCEPT THAT IN LATEX MODIFIED CONCRETE BRIDGE DECK, USE A COMPATIBLE NON-SHRINK GROUT MATERIAL.
- THE APPROACH END OF THE CONSTRUCTION BARRIER CURB TO BE FLARED AWAY FROM TRAFFIC AT A RATE OF 8:1. ON CURVED ROADWAYS, AVOID KINKS IN THE BARRIER ALIGNMENT.



CONNECTION TYPE	TABLE OF JOINT AND ANCHORAGE TREATMENTS FOR CONSTRUCTION BARRIER CURB
A	CONNECTION KEY AND BARRIER END SECTIONS FULLY PINNED*
B	CONNECTION KEY, 6" X 6" BOX BEAM, AND BARRIER END SECTIONS FULLY PINNED*
C	CONNECTION KEY, CONSTRUCTION SIDE OF ALL SECTIONS PINNED, AND BARRIER END SECTIONS FULLY PINNED*

*FULLY PINNED - PINS IN EVERY ANCHOR RECESS ON BOTH SIDES



REINFORCEMENT STEEL LIST (EACH BARRIER SECTION)								
MARK	SIZE	NUMBER IN EACH SECTION	LENGTH	TYPE	A	B	C	LOCATION
4B1	#13	6	4'-11"	I	5"	26"	2"	STIRRUPS
4B4	#13	SEE NOTE 12	3'-1"	II	15 1/2"	4"		STIRRUPS
4B5	#13	SEE NOTE 12	4'-11"	I	5"	26"	2"	STIRRUPS
6B2	#19	2	SEE NOTE 12	STR.				LONGITUDINAL (TOP) NORMAL SECTION
6B3	#19	2	SEE NOTE 12	STR.				LONGITUDINAL (BOTTOM) NORMAL SECTION
6B4	#19	2	1'-2"	STR.				TRANSVERSE (BOTTOM) NORMAL SECTION
6B5	#19	2	0'-6"	STR.				TRANSVERSE (TOP) NORMAL SECTION

TABLE OF VARIABLE REINFORCEMENT STEEL			
NOMINAL LENGTH OF BARRIER UNIT	MARK	"X"	NO. EACH SECTION
20'	4B4	N.A.	9
20'	4B5	6'-11"	2
18'	4B4	N.A.	8
18'	4B5	6'-5"	2
16'	4B4	N.A.	7
16'	4B5	5'-11"	2
14'	4B4	N.A.	6
14'	4B5	7'-0"	1
12'	4B4	N.A.	5
12'	4B5	6'-0"	1
10'	4B4	N.A.	4
10'	4B5	5'-0"	1
8'	4B4	N.A.	3
8'	4B5	-	0

"X" DISTANCE FROM END OF BARRIER TO 4B5 REINFORCEMENT STEEL

NOTE A

ENSURE THAT THE LENGTH OF THE ANCHOR PIN IS SUCH THAT THE FOLLOWING MINIMUM EMBEDMENT LENGTH ARE OBTAINED:
 (a) INTO CONCRETE PAVEMENT 0'-5".
 (b) INTO FLEXIBLE PAVEMENT 1'-6"
 (c) INTO UNPAVED AREA 2'-6"

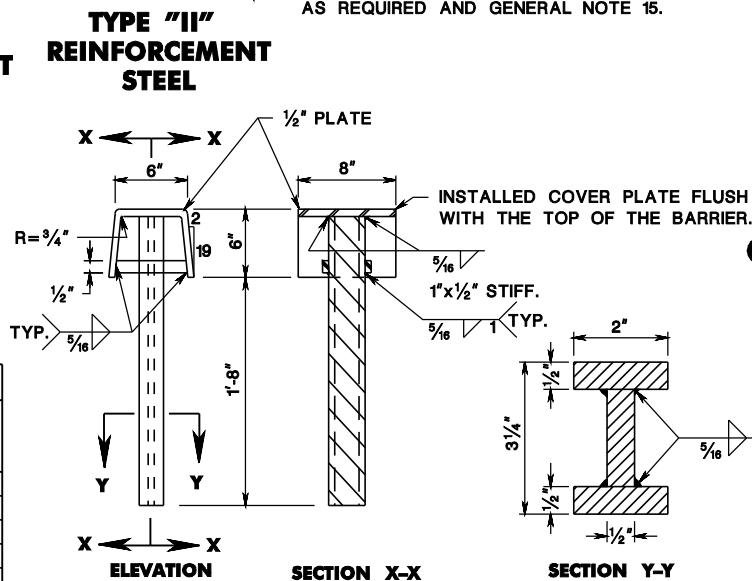
WHEN ANCHOR PINS ARE IN PLACE, THEY WILL NOT PROJECT ABOVE THE PLANE OF THE CONCRETE SURFACE OF THE BARRIER.

HOLES IN BRIDGE DECKS TO BE 1/4" DIAMETER MAXIMUM AND MADE WITH A CORE DRILL OR ANY OTHER APPROVED ROTARY DRILLING DEVICE THAT DOES NOT IMPART AN IMPACT FORCE.

NOTE B

FOR INSTALLATION ON BRIDGE DECKS REFER TO BRIDGE PLANS FOR NECESSARY MODIFICATIONS AS REQUIRED AND GENERAL NOTE 15.

NOTE:
REINFORCEMENT STEEL IS IN METRIC UNITS.



CONSTRUCTION BARRIER CURB (ALTERNATE A)
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-159-4

CD-159-4.1

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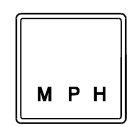
G20 - 1 [60" x 24"]
(10 S.F.)



M4 - 8a [24" x 18"]
(3 S.F.)
 M4 - 11 (S) [48" x 36"]
(12 S.F.)



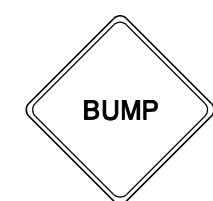
(L OR R)
 W1 - 4a [48" x 48"]
(16 S.F.)



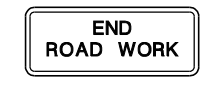
W13 - 1 [18" x 18"]
(2.3 S.F.)
 W13 - 1 (S) [24" x 24"]
(4 S.F.)



W20 - 7a [48" x 48"]
(16 S.F.)



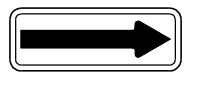
W8 - 1 (S) [48" x 48"]
(16 S.F.)



G20 - 2A [48" x 24"]
(8 S.F.)



R2 - 1 [36" x 48"]
(12 S.F.)
 R2 - 1 (S) [48" x 60"]
(20 S.F.)



(L OR R)
 W1 - 6 [48" x 24"]
(8 S.F.)
 W1 - 6 (S) [60" x 30"]
(12.5 S.F.)



W20 - 1A [48" x 48"]
(16 S.F.)



W21 - 5 (S) [48" x 48"]
(16 S.F.)



W8 - 11a [48" x 48"]
(16 S.F.)



M4 - 9L (LEFT) [30" x 24"]
 M4 - 9R (RIGHT) [30" x 24"]
(5 S.F.)
 M4 - 9 (L or R) (S) [48" x 36"]
(12 S.F.)



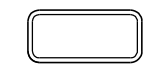
R4 - 1 [24" x 30"]
(5 S.F.)



(L OR R)
 W4 - 2 [48" x 48"]
(16 S.F.)



W20 - 2 [48" x 48"]
(16 S.F.)



M4 - 9N [30" x 12" MIN.]
(2.5 S.F.)
 (SIZE WILL VARY WITH LENGTH OF STREET NAME)
 STREET NAME SIGN TO BE USED IN CONJUNCTION WITH M4 - 9 SIGNS BLACK ON ORANGE



W8 - 15F [48" x 48"]
(16 S.F.)



M4 - 9LX (LEFT) [30" x 24"]
 M4 - 9RX (RIGHT) [30" x 24"]
(5 S.F.)
 M4 - 9 (L or R) XS [48" x 36"]
(12 S.F.)



R11 - 2 [48" x 30"]
(10 S.F.)



W5 - 1 (S) [48" x 48"]
(16 S.F.)



W20 - 3 [48" x 48"]
(16 S.F.)



[24" x 24"]
(4 S.F.)
 [30" x 30"] (S)
(6.3 S.F.)



W8 - 15P [36" x 30"]
(7.5 S.F.)



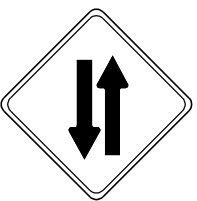
W8 - 15 [48" x 48"]
(16 S.F.)



M4 - 9X [30" x 24"]
(5 S.F.)
 M4 - 9X (S) [48" x 36"]
(12 S.F.)



R11 - 3 [60" x 30"]
(12.5 S.F.)



W6 - 3 [48" x 48"]
(16 S.F.)



W20 - 4 [48" x 48"]
(16 S.F.)



[24" x 24"]
(4 S.F.)
 [30" x 30"] (S)
(6.3 S.F.)



W99 - 2 [48" x 48"]
(16 S.F.)



M4 - 10L (LEFT) [48" x 18"]
 M4 - 10R (RIGHT) [48" x 18"]
(6 S.F.)



R11 - 4 [60" x 30"]
(12.5 S.F.)



W20 - 7b [48" x 48"]
(16 S.F.)



(L OR R) (CENTER)
 W20 - 5 [48" x 48"]
(16 S.F.)

GENERAL NOTES:

- DIMENSIONS, COLORS, AND DETAILS OF VARIOUS SIZE SIGNS AND ACCESSORY PANELS TO FOLLOW STANDARDS IN THE CURRENT "STANDARD HIGHWAY SIGN PUBLICATION" AND THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".
- (S) REPRESENTS A SPECIAL SIZE SIGN.
- LETTERS AND NUMERALS TO CONFORM TO THE CURRENT MANUAL, "STANDARD ALPHABETS FOR HIGHWAY SIGNS" U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.
- OBTAIN RE'S APPROVAL FOR THE DISTANCE TO BE USED ON THE ADVANCE WARNING SIGNS AND FOR THE SPEED LIMIT TO BE USED ON THE R2-1 SIGN.
- DISTANCE LEGEND: SIGN NUMBER FOLLOWED BY A LETTER AND DISTANCE, ARE THE SIGN PLACEMENTS FOR USE WITH TCD-3 THROUGH TCD-21 AND PROJECT SPECIFIC PLANS. ALL DISTANCES ARE FROM THE TRANSITION OR POINT OF RESTRICTION.

LETTER	DISTANCE
A	1500'
B	1000'
C	500'
D	1 MILE
E	1/2 MILES AHEAD

BACKING MATERIAL

- USE ALUMINUM FLAT SHEET OF ALLOY AND TEMPER 5052-H38 OR 6061-T6 :
 A. 0.10" THICK FOR ALL CONSTRUCTION SIGNS EXCEPT SIGNS SHOWN MOUNTED ON BREAKAWAY BARRICADES.
 B. 0.024" THICK FOR ALL CONSTRUCTION SIGNS SHOWN MOUNTED ON BREAKAWAY BARRICADES.

TEMPORARY SIGN SUPPORTS

- USE WELL SEASONED LUMBER FOR SIGN SUPPORTS, FREE OF SPLITS, KNOTS AND WARPS, OR OF STEEL COMPONENTS.
- WOOD POSTS TO HAVE A UNIFORM CROSS-SECTION AND NOT TO EXCEED THE FOLLOWING DIMENSIONS FOR:
 SINGLE POST = 4" x 6"
 TWO POSTS = 3" x 6" OR 4" x 5"
 THREE POSTS = 3" x 5" OR 4" x 4"
 4" X 6" WOOD POSTS TO BE MODIFIED BY DRILLING 1/2 INCH DIAMETER HOLES 4 INCHES AND 18 INCHES ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.
- NO BRACING IS PERMITTED. VERTICAL CLEARANCES FOR SIGNS MOUNTED ON WOOD SUPPORTS TO BE 7 FOOT MINIMUM. EMBEDMENT DEPTH FOR THE WOOD POST NOT TO EXCEED 3.5 FEET.
- USE STEEL POSTS IN ACCORDANCE WITH THE STANDARD DETAIL FOR U-POST SIGN SUPPORT.
- TEMPORARY SIGN SUPPORTS NOT MEETING THIS CRITERIA TO BE SHIELDED BY A LONGITUDINAL BARRIER OR CRASH CUSHIONS.
- USE WOOD POST ONLY ON TEMPORARY SIGN SUPPORT.

SIGN FACES

- USE SIGN FACES OF ASTM D4956 TYPE VII OR VIII FLUORESCENT ORANGE SHEETING.

FASTENING

- SECURELY FASTEN ALL SIGNS TO THEIR SUPPORTS WITH BOLTS, NUTS, AND WASHERS, AS SPECIFIED.

CONSTRUCTION SIGNS
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

NOTE:

THE BORDER, THE WORDS "GIVE US A", "SLOW DOWN", AND THE BRAKE PEDAL ARE BLACK; LEAVING THE WORD "BRAKE" ORANGE.

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 BDC180-01 ORIGINAL SHEET



E5 - 1 [60" x 48"]
(20 S.F.)



W50 - 1C [60" x 48"]
(20 S.F.)



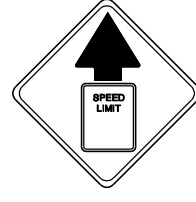
W5 - 4 [48" x 48"]
(16 S.F.)



W(NJ)100 - 1(L OR R)
48" x 48"
(16 S.F.)



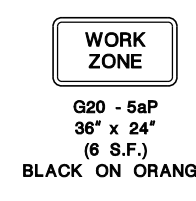
W9 - 3 [48" X 48"]
(16 S.F.)



W3 - 5
48" x 48"
(16 S.F.)



W20 - 4F(M) [48" x 48"]
(16 S.F.)



G20 - 5aP
36" x 24"
(6 S.F.)
BLACK ON ORANGE



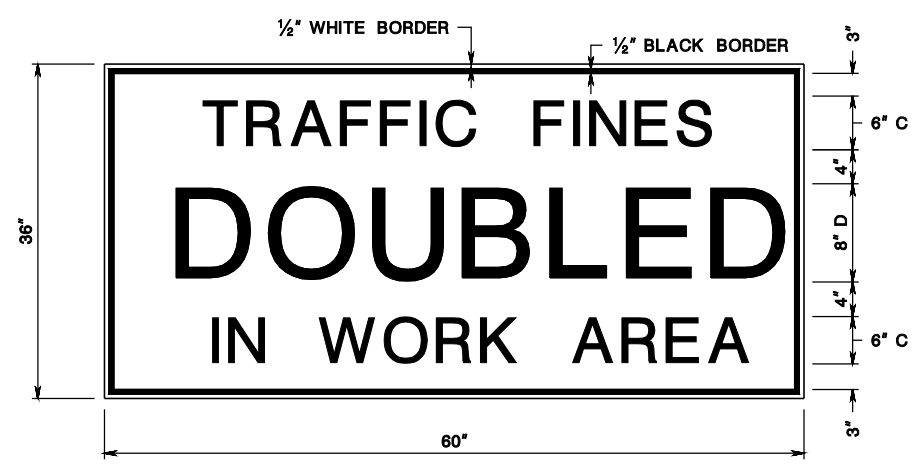
W20 - 10(G) [48" x 48"]
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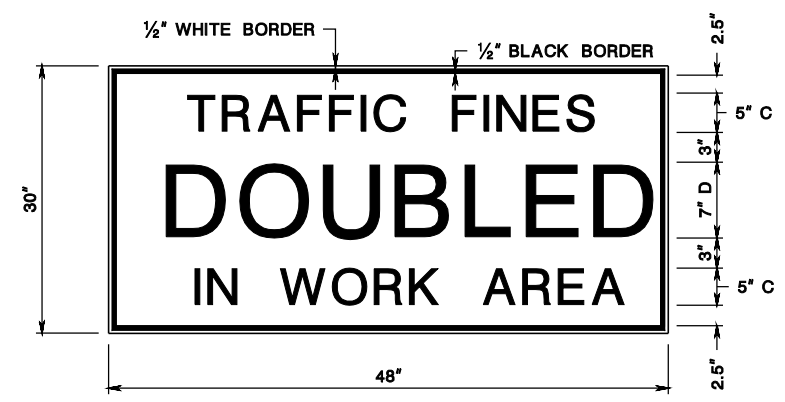
EP1
60" X 36"
(15 S.F.)
BLACK ON ORANGE



EP2
60" X 36"
(15 S.F.)
BLACK ON ORANGE



NOTE:
MESSAGE TO BE BLACK LETTERS
ON WHITE REFLECTIVE BACKGROUND.
R(NJ)5-17 60" x 36"
(15 S.F.)



NOTE:
MESSAGE TO BE BLACK LETTERS
ON WHITE REFLECTIVE BACKGROUND.
R(NJ)5-17 48" x 30"
(10 S.F.)

GENERAL NOTES:

- DIMENSIONS, COLORS, AND DETAILS OF VARIOUS SIZE SIGNS, AND ACCESSORY PANELS TO FOLLOW STANDARDS IN THE CURRENT "STANDARD HIGHWAY SIGN PUBLICATION" AND THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".
- LETTERS AND NUMERALS TO CONFORM TO THE CURRENT MANUAL, "STANDARD ALPHABETS FOR HIGHWAY SIGNS" U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.
- OBTAIN RE'S APPROVAL FOR THE DISTANCE TO BE USED ON THE ADVANCE WARNING SIGNS AND FOR THE SPEED LIMIT TO BE USED ON THE R2-1 SIGN.
- DISTANCE LEGEND: SIGN NUMBER FOLLOWED BY A LETTER AND DISTANCE, ARE THE SIGN PLACEMENTS FOR USE WITH TCD-3 THROUGH TCD-21 AND PROJECT SPECIFIC PLANS. ALL DISTANCES ARE FROM THE TRANSITION OR POINT OF RESTRICTION.

LETTER	DISTANCE
A	1500'
B	1000'
C	500'
D	1/2 MILE
E	1/4 MILES AHEAD
F	1/8 MILES AHEAD

BACKING MATERIAL

- USE ALUMINUM FLAT SHEET OF ALLOY AND TEMPER 5052-H38 OR 6061-T8:
 - 0.10" THICK FOR ALL CONSTRUCTION SIGNS EXCEPT SIGNS SHOWN MOUNTED ON BREAKAWAY BARRICADES.
 - 0.024" THICK FOR ALL CONSTRUCTION SIGNS SHOWN MOUNTED ON BREAKAWAY BARRICADES.

TEMPORARY SIGN SUPPORTS

- USE WELL SEASONED LUMBER SIGN SUPPORTS, FREE OF SPLITS, KNOTS AND WARPS, OR OF STEEL COMPONENTS.
- WOOD POSTS TO HAVE A UNIFORM CROSS-SECTION AND NOT TO EXCEED THE FOLLOWING DIMENSIONS FOR:
 - SINGLE POST = 4" x 6"
 - TWO POSTS = 3" x 6" OR 4" x 5"
 - THREE POSTS = 3" x 5" OR 4" x 4"

4" X 6" WOOD POSTS TO BE MODIFIED BY DRILLING 1/2 INCH DIAMETER HOLES 4 INCHES AND 18 INCHES ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.
- NO BRACING IS PERMITTED. VERTICAL CLEARANCES FOR SIGNS MOUNTED ON WOOD SUPPORTS TO BE 7 FOOT MINIMUM. EMBEDMENT DEPTH FOR THE WOOD POST NOT TO EXCEED 3.5 FEET.
- USE STEEL POSTS IN ACCORDANCE WITH THE STANDARD DETAIL FOR U-POST SIGN SUPPORT.
- TEMPORARY SIGN SUPPORTS NOT MEETING THIS CRITERIA TO BE SHIELDED BY A LONGITUDINAL BARRIER OR CRASH CUSHIONS.
- USE WOOD POST ONLY ON TEMPORARY SIGN SUPPORT.

SIGN FACES

- USE SIGN FACES OF ASTM D4956 TYPE VII OR VIII FLUORESCENT ORANGE SHEETING.

FASTENING

- SECURELY FASTEN ALL SIGNS TO THEIR SUPPORTS WITH BOLTS, NUTS, AND WASHERS, AS SPECIFIED.

CONSTRUCTION SIGNS
N.T.S.

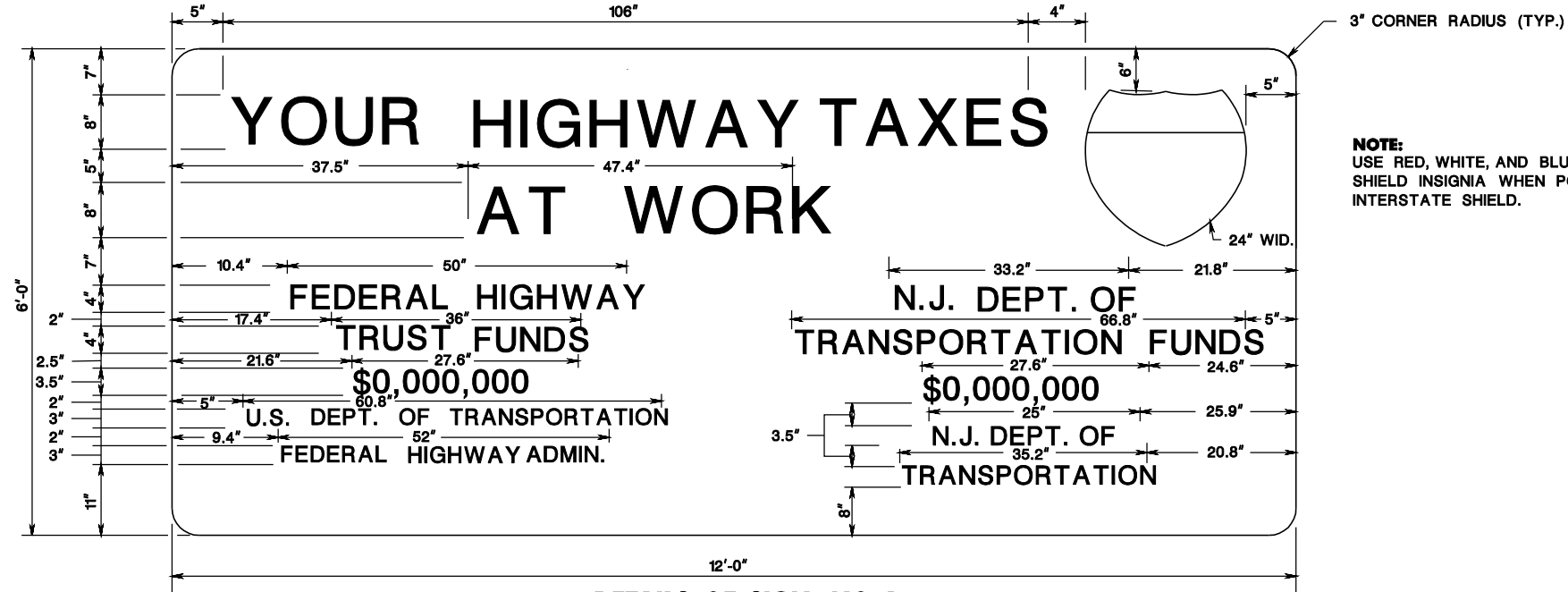
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-159-7.1

CD-159-7

SIGN NO. 1 (INTERSTATE)



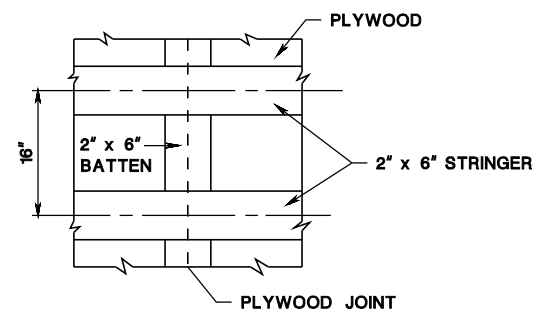
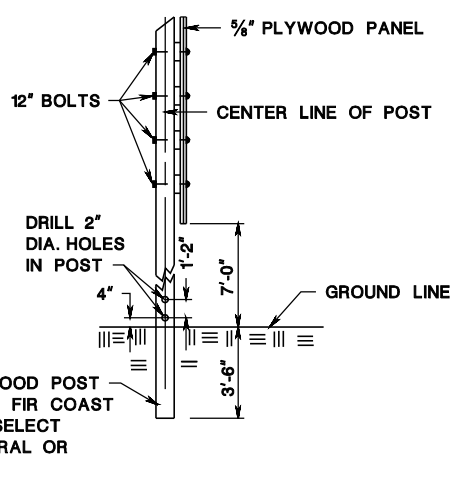
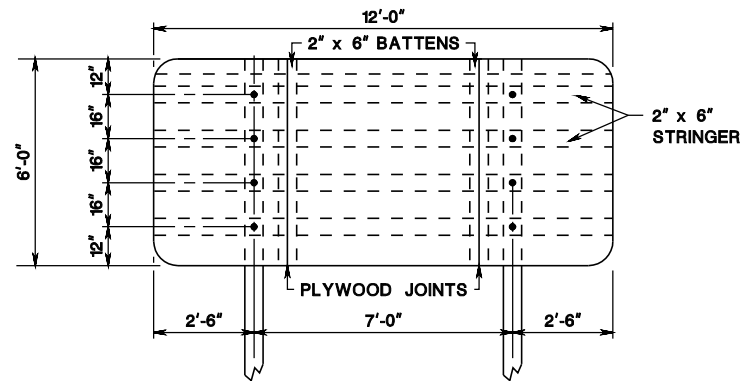
NOTE:
USE RED, WHITE, AND BLUE SHIELD INSIGNIA WHEN POSTING INTERSTATE SHIELD.

NOTES:

1. USE PLYWOOD PANELS CONFORMING TO THE REQUIREMENTS FOR HIGH DENSITY OVERLAY AS SET FORTH IN COMMERCIAL STANDARD CS 45-60 FOR DOUGLAS FIR PLYWOOD AND ALL AMENDMENTS THERETO.
2. COSTS LISTED ON SIGNS TO BE FURNISHED BY THE DEPARTMENT AFTER AWARD OF CONTRACT.
3. SIGNS TO BE LOCATED AS SHOWN ON PLANS OR AS DIRECTED BY THE RE.
4. SHIELD TO CONFORM TO DETAILS SHOWN IN THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
5. COLOR: GREEN BACKGROUND WITH WHITE MESSAGE AND BORDER NOT REFLECTORIZED.
6. LEGEND: SERIES "C" LETTERS - "YOUR HIGHWAY TAXES AT WORK" SERIES "D" LETTERS (BALANCE OF LETTERING).

CORNER RADIUS: 3"
INTERSTATE SHIELD: RED, WHITE, AND BLUE

DETAILS OF SIGN NO. 1



**DETAIL OF BATTEN AT PLYWOOD JOINTS
SIGN NO. 1**

NOTE:
ON PROJECTS WITH NO FEDERAL FUNDING DO NOT INCLUDE ON THE SIGN THE REFERENCE
FEDERAL HIGHWAY TRUST FUNDS
\$0,000,000
U.S. DEPT. OF TRANSPORTATION
FEDERAL HIGHWAY ADMIN.

INTERSTATE CONSTRUCTION IDENTIFICATION SIGN

N.T.S.

CD-159-8

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-159-8.1

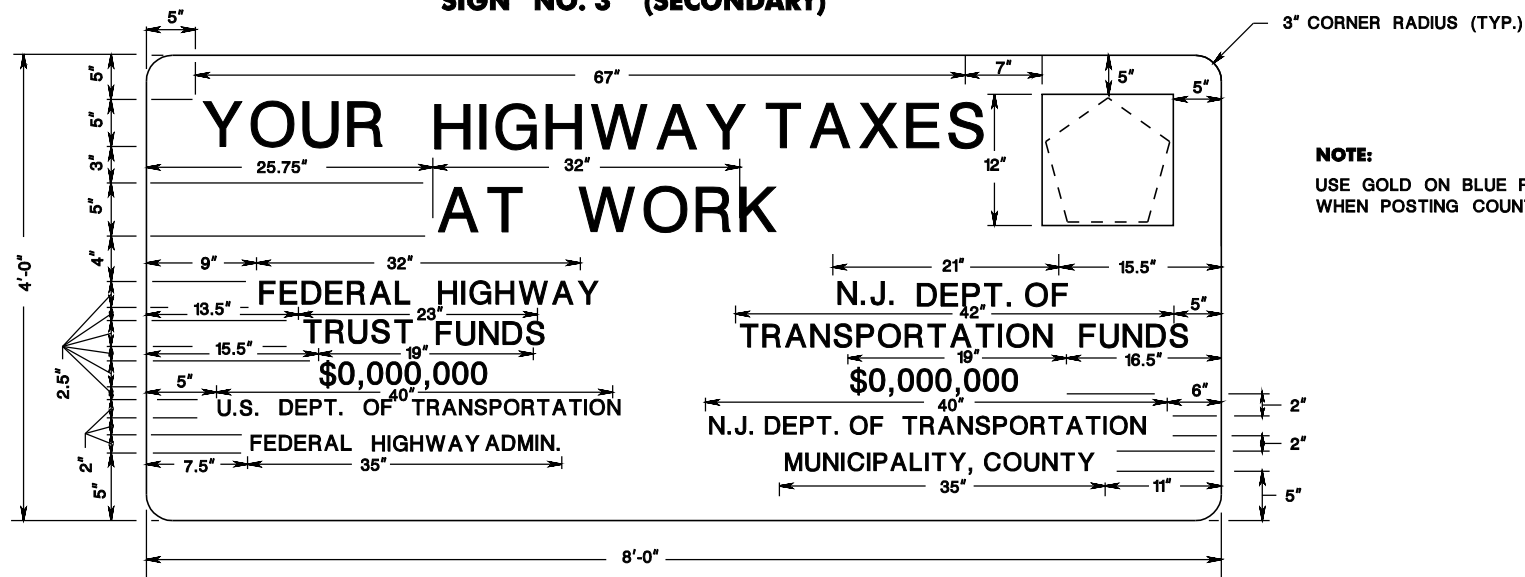
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BDC\RD-01-ORIGINAL SHEET

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SIGN NO. 3 (SECONDARY)

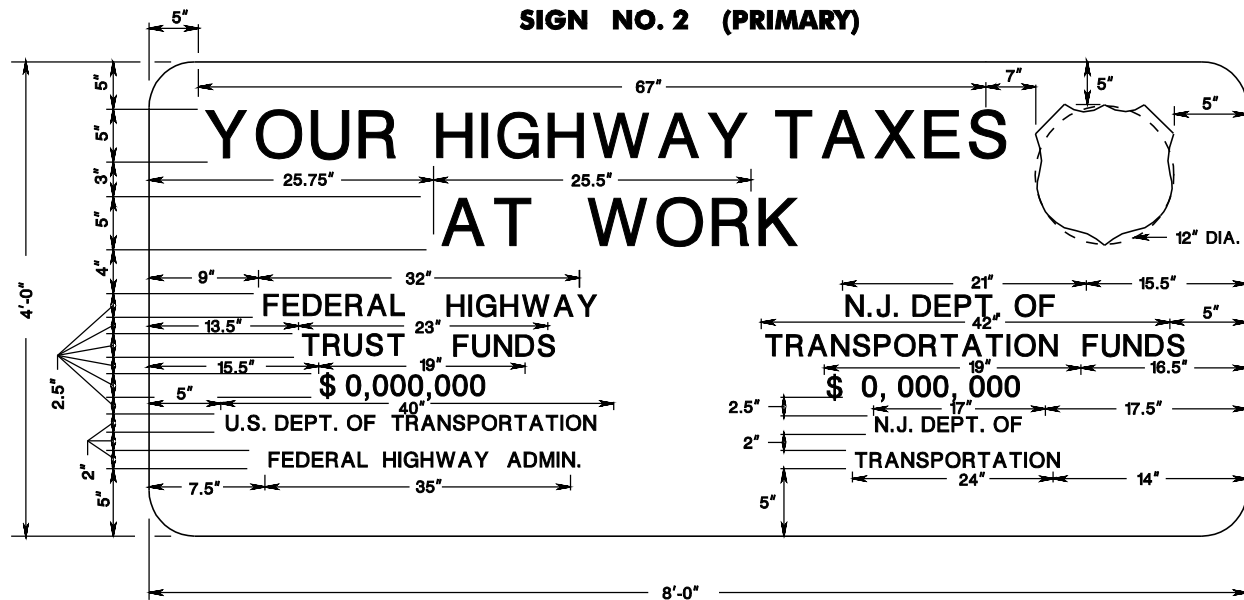


NOTE:
 USE GOLD ON BLUE PENTAGON INSIGNIA WHEN POSTING COUNTY ROUTES.

NOTES:

1. USE PLYWOOD PANELS CONFORMING TO THE REQUIREMENTS FOR HIGH DENSITY OVERLAY AS SET FORTH IN COMMERCIAL STANDARD CS 45-60 FOR DOUGLAS FIR PLYWOOD AND ALL AMENDMENTS THERETO.
2. COSTS LISTED ON SIGNS TO BE FURNISHED BY THE DEPARTMENT AFTER AWARD OF CONTRACT.
3. SIGNS TO BE LOCATED AS SHOWN ON PLANS OR AS DIRECTED BY THE RE.
4. SHIELD TO CONFORM TO DETAILS SHOWN IN THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
5. COLOR: GREEN BACKGROUND WITH WHITE MESSAGE AND BORDER NOT REFLECTORIZED.
6. LEGEND: SERIES "C" LETTERS - "YOUR HIGHWAY TAXES AT WORK" SERIES "D" LETTERS (BALANCE OF LETTERING).

SIGN NO. 2 (PRIMARY)

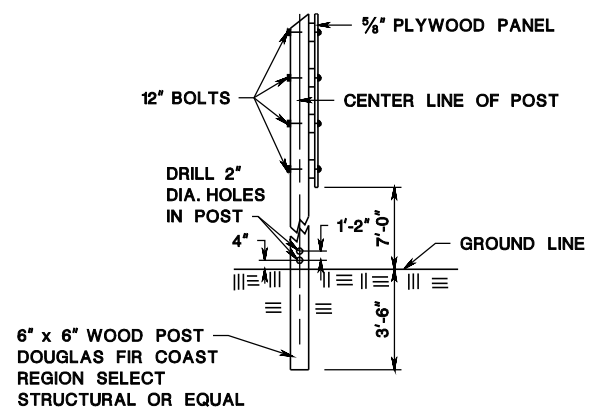
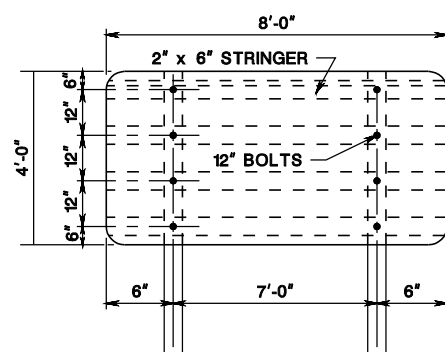


NOTE:
 USE BLACK, RED, WHITE, AND BLUE SHIELD INSIGNIA WHEN POSTING U. S. ROUTES.
 USE BLACK ON WHITE CIRCLE INSIGNIA WHEN POSTING STATE ROUTES.

NOTE:

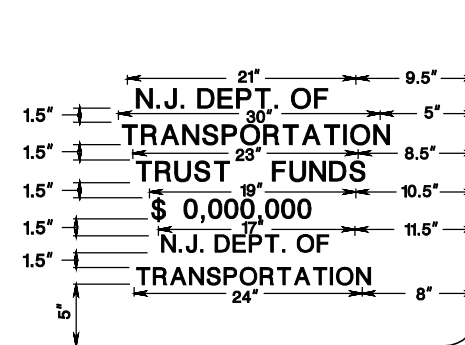
ON PROJECTS WITH NO FEDERAL FUNDING DO NOT INCLUDE ON THE SIGN THE REFERENCE
 FEDERAL HIGHWAY TRUST FUNDS
 \$0,000,000
 U.S. DEPT. OF TRANSPORTATION
 FEDERAL HIGHWAY ADMIN.

DETAILS OF SIGNS NO. 2 & 3



NOTE:

USE MODIFIED DETAIL BELOW WHEN NJDOT TRUST FUNDS ARE APPLICABLE FOR SIGNS #2 AND #3 (LOWER RIGHT HAND CORNER OF SIGNS).



CONSTRUCTION IDENTIFICATION SIGNS

N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-159-9.1

CD-159-9

TEMPORARY CRASH CUSHION, COMPRESSIVE BARRIER SUMMARY TABLE

ITEM NO.	DESCRIPTION	DESIGN SPEED	ROUTE & APPROXIMATE STATION	PRODUCT	FOUNDATION	BACKUP SYSTEM

NOTE TO DESIGNER:

THIS SHEET REQUIRES DESIGN SPECIFIC INFORMATION TO BE ADDED AND INCLUDED IN THE CONTRACT PLANS.

REMOVE THIS NOTE AFTER DESIGN SPECIFIC INFORMATION IS ADDED.

NOTES:

- FOR EACH LOCATION SHOWN IN THE TEMPORARY CRASH CUSHION, COMPRESSIVE BARRIER SUMMARY TABLE, INSTALL ONE (1) OF THE CRASH CUSHIONS LISTED FOR THAT LOCATION.
- THE STATION LOCATION SHOWN IS APPROXIMATE AND MAY BE ADJUSTED IN THE FIELD.

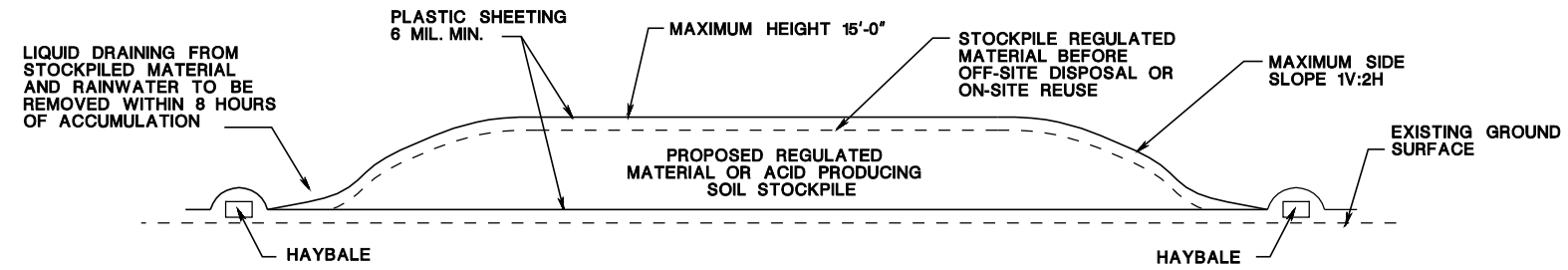
TEMPORARY CRASH CUSHION, COMPRESSIVE BARRIER SUMMARY TABLE

N.T.S.

CD-159-10

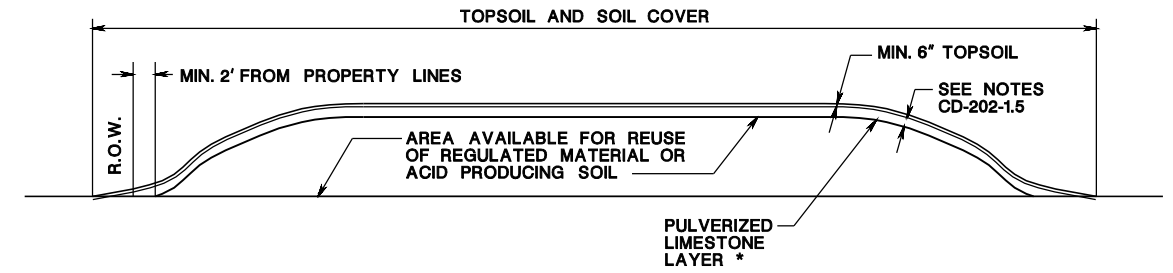
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS



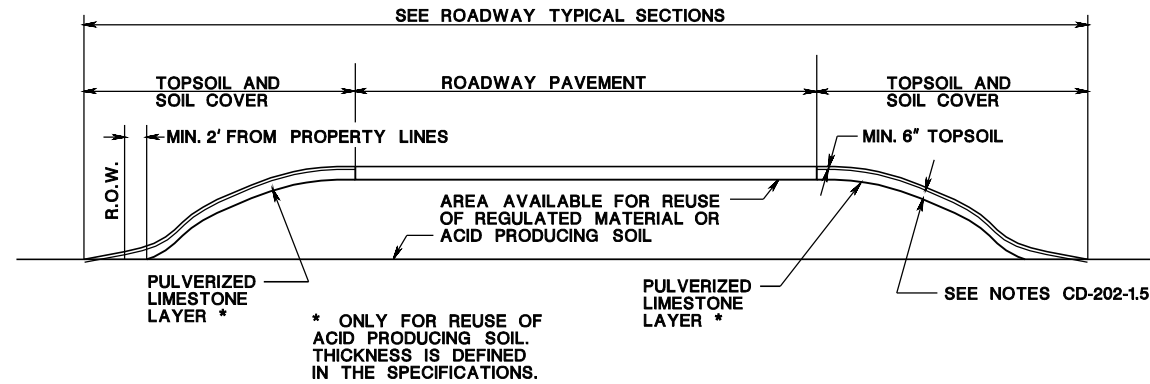
TEMPORARY STOCKPILING OF REGULATED MATERIAL OR ACID PRODUCING SOIL

CD-202-1.1



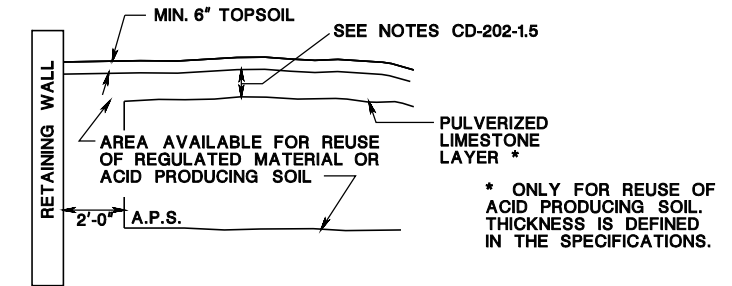
REUSE OF REGULATED MATERIAL OR ACID PRODUCING SOIL IN UNPAVED AREAS TYPICAL CROSS-SECTION

CD-202-1.2



REUSE OF REGULATED MATERIAL OR ACID PRODUCING SOIL IN ROADWAY OR RAMP EMBANKMENT TYPICAL CROSS-SECTION

CD-202-1.3



REUSE OF REGULATED MATERIAL OR ACID PRODUCING SOIL FOR A RETAINING WALL

CD-202-1.4

NOTES:

1. DO NOT PLACE REGULATED MATERIAL WITHIN 2 FEET OF PROPERTY LINES NOR WITHIN 2 FEET OF LOCAL GROUNDWATER.
2. DO NOT PLACE ACID PRODUCING SOIL (APS) WITHIN 2 FEET OF THE SURFACE ALONG A STREAMBANK, STRUCTURE, PIPE, OR SLOPE.
3. BUFFER APS WITH PULVERIZED LIMESTONE LAYER AT A RATE OF 6 TONS PER ACRE (275 LB / 1000 SF).
4. PLACE A MINIMUM OF 12" COMPACTED SOIL OF PH 5 OR HIGHER FOR AREAS OF TURF.
5. PLACE A MINIMUM OF 24" COMPACTED SOIL OF PH 5 OR HIGHER FOR TREES AND SHRUB AREAS.
6. PLACE A MINIMUM OF 24" COMPACTED SOIL BETWEEN APS AND SURFACES OF SLOPES, STREAMBANKS, STRUCTURES, AND PIPES.

CD-202-1.5

SOIL REUSE

N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-202-1

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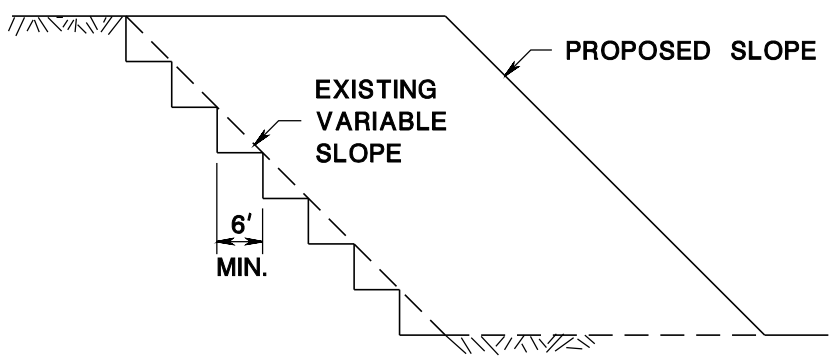
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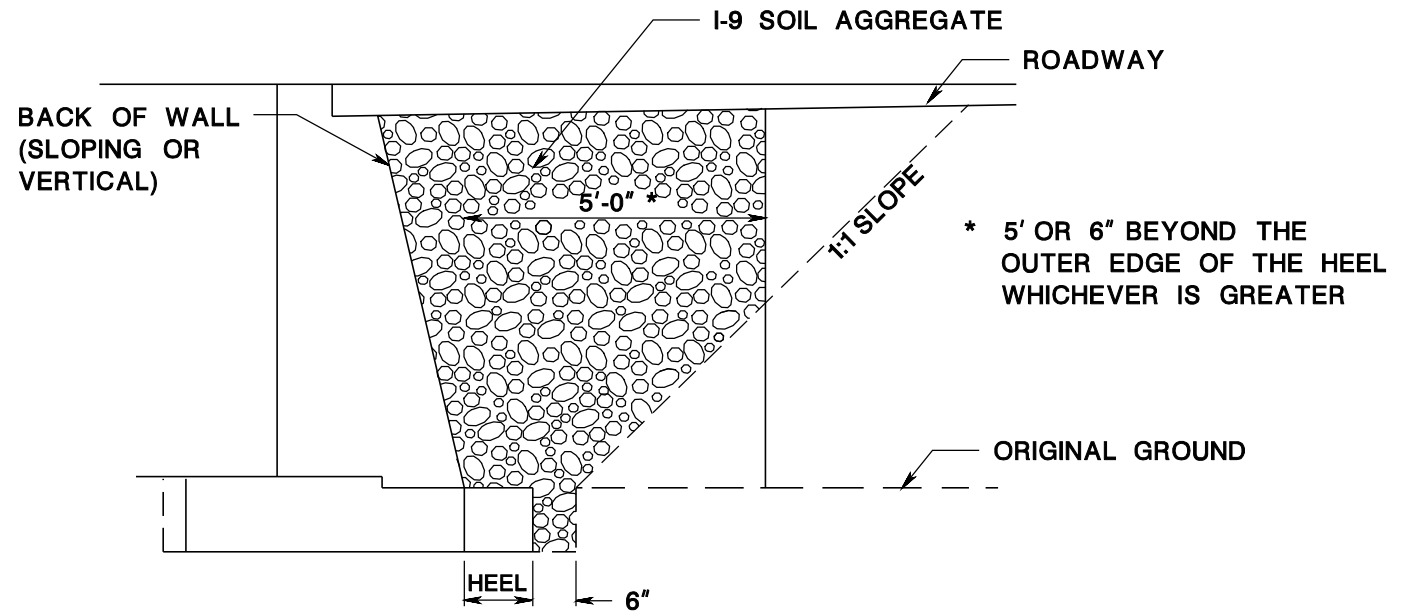


EMBANKMENT ON EXISTING SLOPES

BENCHING DETAIL

NOTE:
WHERE EXISTING SLOPE HAS TOPSOIL, STRIP TOPSOIL BEFORE BENCHING.

CD-203-1.1



LIMITS OF PLACING EMBANKMENT AND I-9 SOIL AGGREGATE

I-9 SOIL AGGREGATE AND EMBANKMENT
N.T.S.

CD-203-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

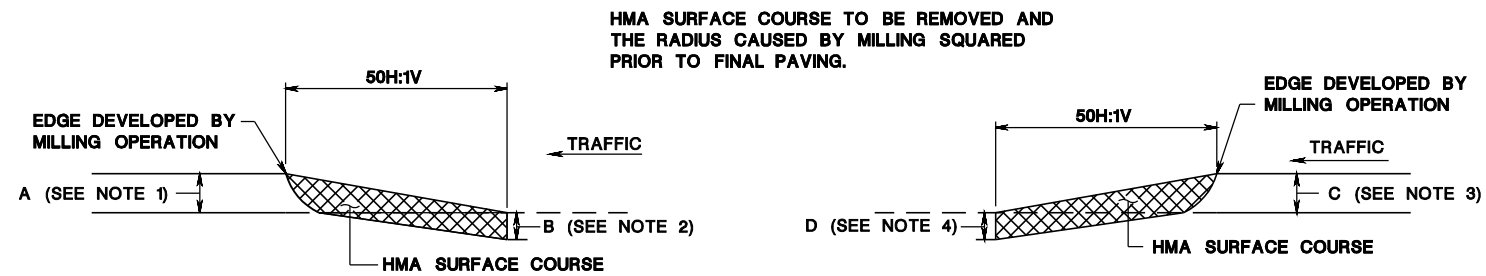
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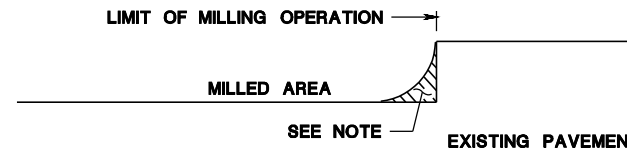


NOTES:

1. USE HMA SURFACE COURSE IN THE MILLING TRANSITION WHEN LEADING EDGE DEVELOPED BY MILLING OPERATION IS EQUAL TO OR GREATER THAN 1 INCH. NONE REQUIRED FOR EDGE LESS THAN 1 INCH.
2. ENSURE THAT THE THICKNESS OF THE HMA SURFACE COURSE IN THE MILLING TRANSITION IS NOT LESS THAN B. B IS EQUAL TO 2 INCHES OR A, WHICHEVER IS LESS.
3. USE HMA SURFACE COURSE IN THE MILLING TRANSITION WHEN TRAILING EDGE DEVELOPED BY MILLING OPERATION IS EQUAL TO OR GREATER THAN 1½ INCHES. NONE REQUIRED FOR EDGE LESS THAN 1½ INCHES.
4. ENSURE THAT THE THICKNESS OF THE HMA SURFACE COURSE IN THE MILLING TRANSITION IS NOT LESS THAN D. D IS EQUAL TO 2 INCHES OR C, WHICHEVER IS LESS.

MILLING TRANSITIONS

CD-401-1.1



NOTE:

REMOVE THE HMA MATERIAL LEFT BY THE DRUM RADIUS AT THE LIMITS OF THE MILLING OPERATION. ENSURE THAT THE FACE IS CLEAN AND VERTICAL BY SAWCUTTING OR TRANSVERSE MILLING. THIS END TREATMENT IS NOT APPLICABLE TO TEMPORARY LIMITS OF MILLING (I.E. END OF WORKDAY). IT IS APPLICABLE TO ALL AREAS WHERE THE COMPLETED MILLING OPERATION MATCHES ANY EXISTING PAVEMENT INCLUDING BRIDGES.

END TREATMENT FOR MILLING OPERATIONS

CD-401-1.2

NOTE:

HMA = HOT MIX ASPHALT

MILLING

N.T.S.

CD-401-1

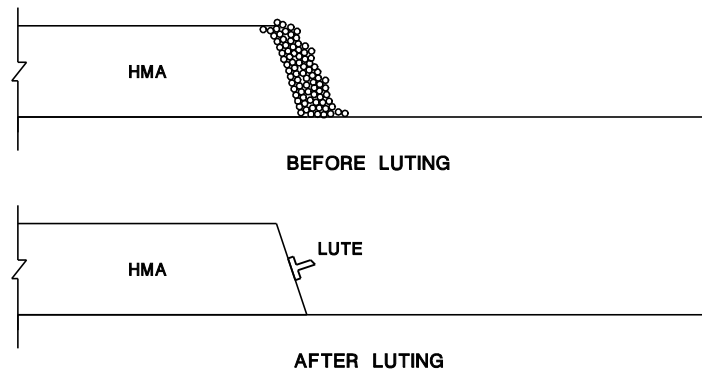
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS



WEDGE JOINT
(NOTE 1) CD-401-2.6

CD-401-2.1



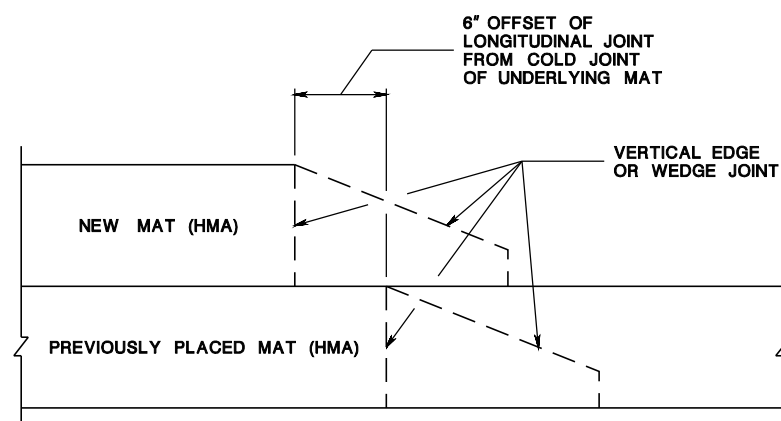
COMPACTION OF UNCONFINED VERTICAL EDGE
(NOTE 3) CD-401-2.6

CD-401-2.4

NOTES:

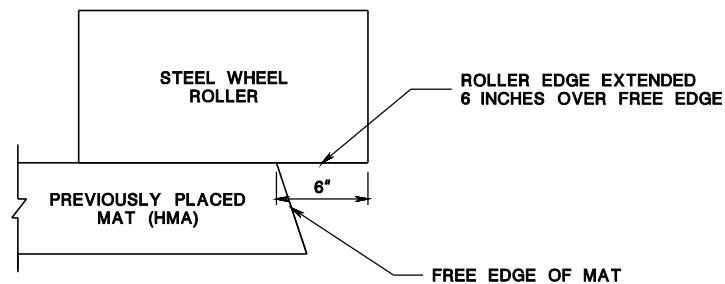
1. WHEN HMA LIFT THICKNESS IS GREATER THAN 2 1/4 INCHES AND WHEN TRAFFIC IS TO BE MAINTAINED, CONSTRUCT A WEDGE JOINT.
2. ENSURE THAT THE JOINT IN THE HMA SURFACE COURSE IS OFFSET FROM THE LANE LINES BY 6 INCHES. IN THE CENTERLINE OF A ROADWAY, ENSURE THAT THE JOINT FALLS BETWEEN THE DOUBLE YELLOW TRAFFIC STRIPE.
3. ENSURE THE LUTE OPERATOR MANUALLY BUMPS THE EDGE TO OBTAIN A TRUE VERTICAL AND DENSE UNCONFINED EDGE.
4. ENSURE THAT THE OVERLAPPED HMA MATERIAL AT THE JOINT IS TIGHTLY CROWDED (BUMPED) OVER THE JOINT ONTO THE NEWLY PLACED LANE LEAVING A SMALL MOUND OF MIX HUMPED UP FOR THE ROLLERS TO COMPACT.
5. FOR THE WEDGE JOINT, ENSURE THAT COARSE AGGREGATE PARTICLES ARE KEPT AWAY FROM THE POINT WHERE THE WEDGE MEETS THE SURFACE OF THE PREVIOUSLY PLACED LANE.
6. TO PREVENT LATERAL DISPLACEMENT OF THE UNCONFINED EDGE, ENSURE THAT THE EDGE OF THE ROLLER WHEEL EXTENDS OVER THE FREE EDGE OF THE HMA MAT BY AT LEAST 6 INCHES.

CD-401-2.6



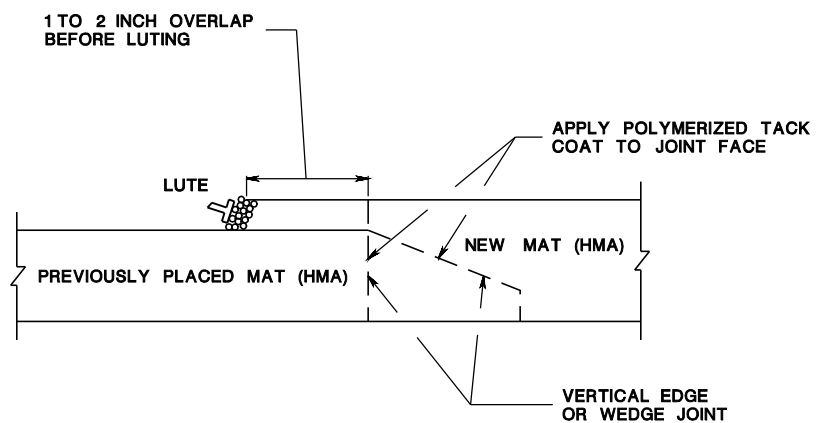
OFFSET OF JOINTS
(NOTE 2) CD-401-2.6

CD-401-2.2

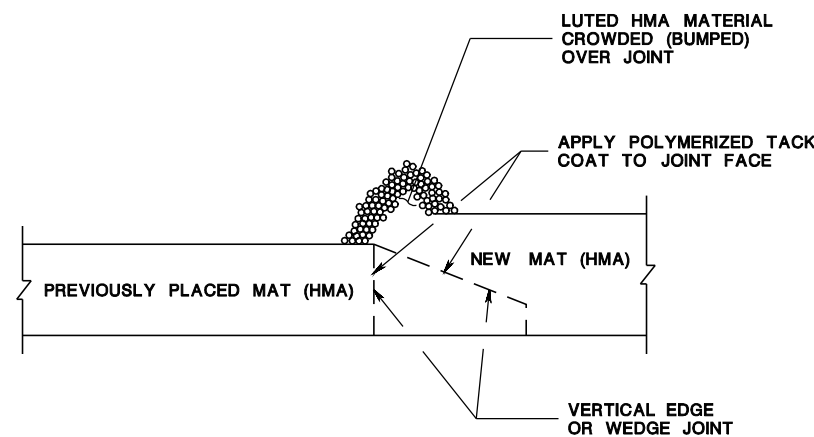


ROLLER PLACEMENT FOR COMPACTING ALONG THE UNCONFINED VERTICAL EDGE
(NOTE 6) CD-401-2.6

CD-401-2.5



OVERLAPPED HMA BEFORE LUTING
(NOTES 4 & 5) CD-401-2.6



HMA AFTER LUTING
(NOTE 4) CD-401-2.6

HMA PAVEMENT

CD-401-2.3

LONGITUDINAL JOINTS IN HMA
N.T.S.

HMA = HOT MIX ASPHALT

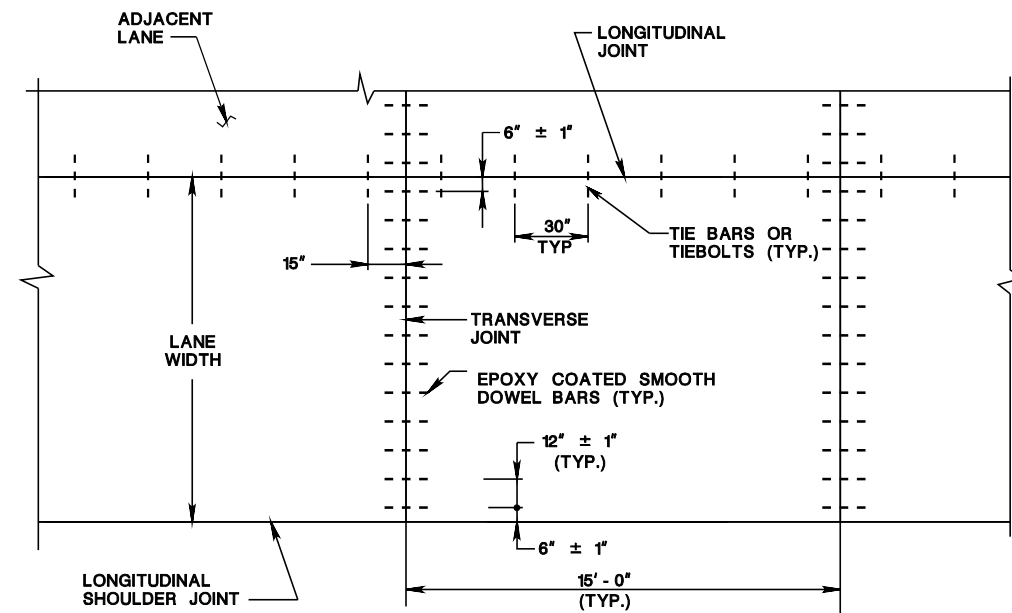
CD-401-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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TYPICAL LAYOUT

CD-405-1.1

EXPANSION JOINTS AT BRIDGES

DISTANCE BETWEEN BRIDGES *	NUMBER OF EXPANSION JOINTS
TO 500'	1
500' - 704'	2
704' - 908'	3
908' - 1111'	4
1111' - 1315'	5
OVER 1315'	6

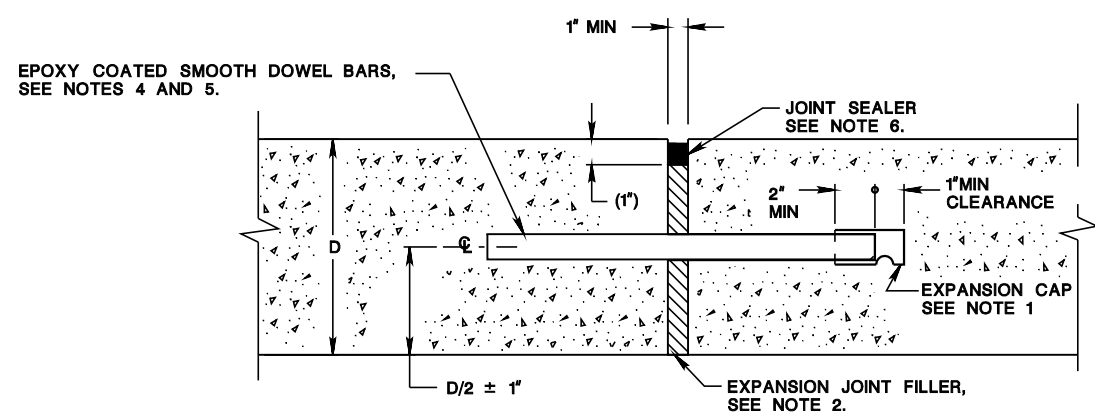
* LENGTH OF PAVEMENT BETWEEN BRIDGES

CD-405-1.2

NOTES:

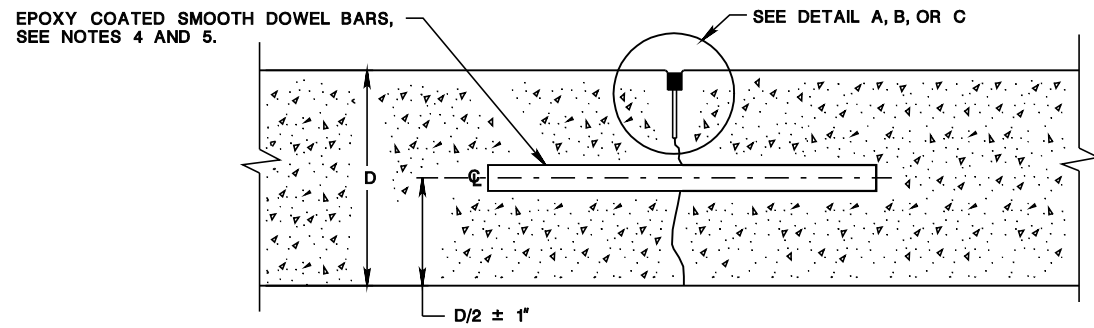
1. PLACE A CLOSED-END EXPANSION CAP OVER THE LUBRICATED END OF ALL DOWEL BARS USED IN TRANSVERSE EXPANSION JOINTS AND PROVIDE A MINIMUM 1" CLEARANCE POCKET ASSURED BY MEANS OF A POSITIVE SPACING DEVICE.
2. CUT EXPANSION JOINT FILLER MATERIAL TO CONFORM TO THE CROSS-SECTION OF THE PAVEMENT AND FURNISH IN STRIPS EQUAL TO THE WIDTH OF THE PAVEMENT SLAB. MAKE THE TOP SURFACE SMOOTH AND HAVE HOLES PUNCHED FOR THE DOWEL BARS PROVIDE A SNUG FIT WITHOUT LOSS IN THICKNESS OF THE MATERIAL.
3. CONSTRUCT ALL TRANSVERSE JOINTS PERPENDICULAR TO THE CENTERLINE.
4. USE MINIMUM 1/4" φ X 18" LONG EPOXY COATED SMOOTH DOWEL BARS FOR PAVEMENT DEPTHS 10" OR LESS, AND MINIMUM 1/2" φ X 18" LONG DOWEL BARS FOR PAVEMENT DEPTHS GREATER THAN 10". APPROVED ALTERNATE DOWEL BARS HAVING EQUIVALENT PROPERTIES TO CONVENTIONAL ROUND DOWEL REINFORCEMENT STEEL MAY BE PROPOSED FOR USE.
5. PLACE EPOXY COATED SMOOTH DOWEL BARS PARALLEL TO THE CENTERLINE AND SURFACE OF THE SLAB.
6. MAKE THE TOP OF THE JOINT SEALING MATERIAL 1/4" ± 1/8" BELOW THE SURFACE OF THE PAVEMENT.
7. THE INITIAL SAW CUT RELIEF JOINT IS NOT REQUIRED FOR CONSTRUCTION JOINTS.
8. WHEN COLD-POURED JOINT SEALER IS SELECTED FOR USE IN TRANSVERSE JOINTS, USE THE SAME JOINT SEALER IN THE LONGITUDINAL JOINTS.

CD-405-1.3



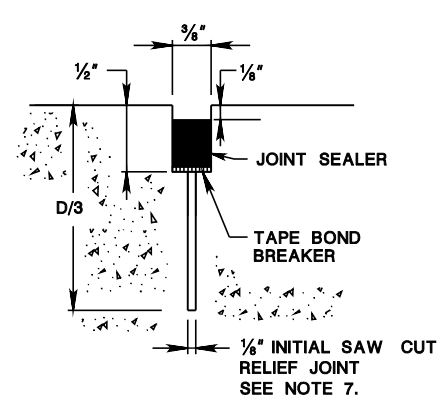
TRANSVERSE EXPANSION JOINT

CD-405-1.4



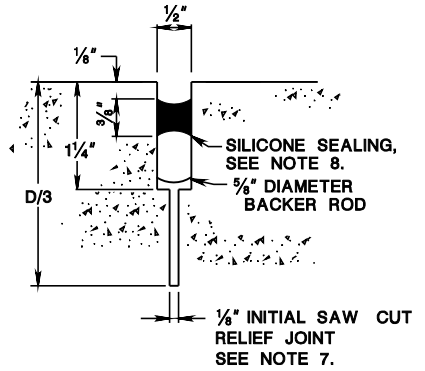
TRANSVERSE CONTRACTION JOINT

CD-405-1.5



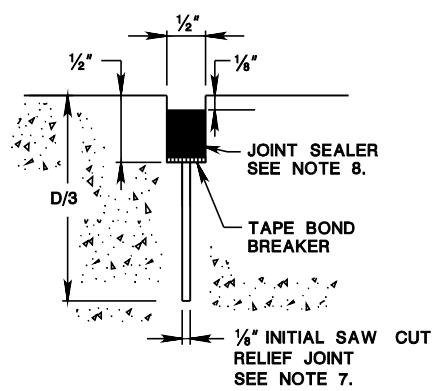
**DETAIL A
HOT-POURED JOINT SEALER**

CD-405-1.6



**DETAIL B
COLD-POURED JOINT SEALER
WITH BACKER ROD**

CD-405-1.7



**DETAIL C
COLD-POURED JOINT SEALER
WITHOUT BACKER ROD**

CD-405-1.8

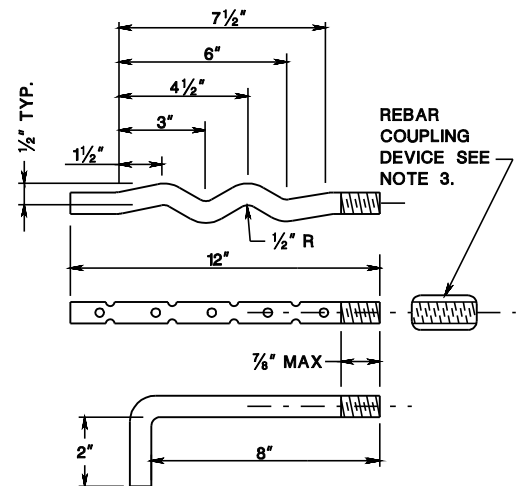
**CONCRETE PAVEMENT
TRANSVERSE JOINTS**

N.T.S.

CD-405-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

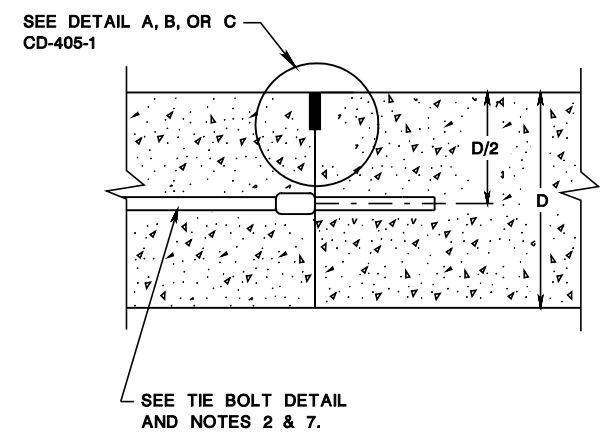
CONSTRUCTION DETAILS



MAKE TIE BOLTS $\frac{3}{16}$ " ϕ BAR WITH ROLLED THREADS OR $\frac{3}{16}$ " ϕ BAR WITH CUT THREADS.

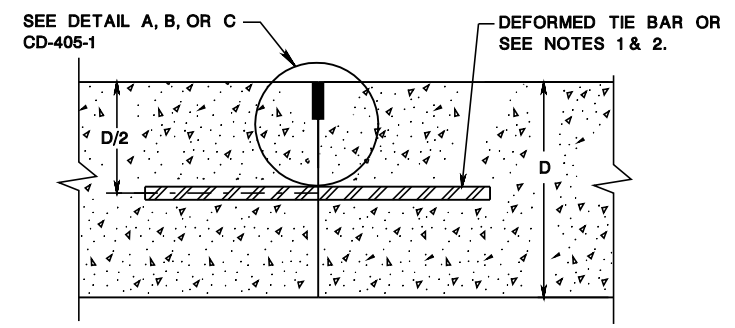
TIE BOLT DETAIL

CD-405-2.1



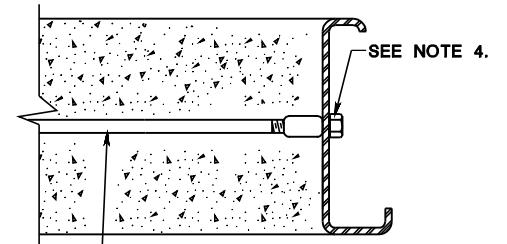
CONSTRUCTION JOINT TIE BOLT

CD-405-2.2



CONSTRUCTION JOINT TIE BAR

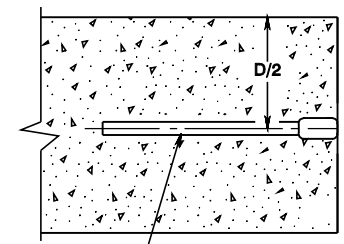
CD-405-2.3



SEE TIE BOLT DETAIL AND NOTES 2 & 5.

STATIONARY FORMING

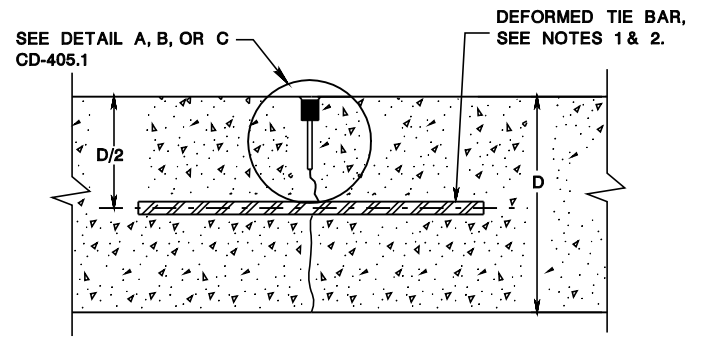
CD-405-2.4



SEE TIE BOLT DETAIL AND NOTES 2, 5 & 7.

SLIP FORMING

CD-405-2.5



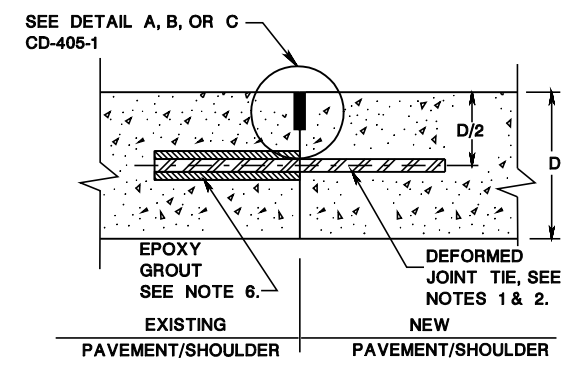
CONTRACTION JOINT

CD-405-2.6

NOTES:

1. SPECIFY #6 TIE BARS 30" $\pm 1/4$ " LONG, SPACED 30" CENTER TO CENTER MAXIMUM. FOR JOINT TIES SPECIFY #6 BARS 18" $\pm 1/4$ " LONG, SPACED 30" CENTER TO CENTER MAXIMUM. PLACE PERPENDICULAR TO AND CENTERED OVER THE LONGITUDINAL JOINT ± 1 ". WHEN ADJOINING TO AN UNEQUAL PAVEMENT OR SHOULDER DEPTH, D IS THE DEPTH OF THE THINNER SECTION.
2. DO NOT FIELD BEND TIE BARS, TIE BOLTS, AND JOINT TIES.
3. USE REBAR COUPLING DEVICE THAT IS LISTED ON THE QPL.
4. TEMPORARILY SECURE THE TIE BOLT TO THE FORM DURING PLACEMENT OF THE CONCRETE USING A METHOD ACCEPTABLE TO THE RE.
5. PLACE TIE BOLTS AT 30" CENTER TO CENTER MAXIMUM SPACING. WHEN ADJOINING TO AN UNEQUAL PAVEMENT OR SHOULDER DEPTH, D IS THE DEPTH OF THE THINNER SECTION. SCREW TIE BOLTS UNTIL SNUG.
6. USE AN APPROVED EPOXY GROUT MATERIAL TO WITHSTAND THE NECESSARY MINIMUM PULL-OUT RESISTANCE. DRILL TIE BAR HOLE IN EXISTING PAVEMENT ACCORDING TO THE MANUFACTURER'S RECOMMENDATION. USE ROTARY IMPACT DRILL TO AVOID IMPACTING FINES INTO HOLE.
7. DO NOT USE THE HOOK COMPONENT OF THE TIE BOLT ASSEMBLY WHEN SLIP FORMING.
8. WHEN COLD-POURED JOINT SEALER IS SELECTED FOR USE IN TRANSVERSE JOINTS, USE THE SAME JOINT SEALING MATERIAL IN THE LONGITUDINAL JOINTS.

CD-405-2.7



LONGITUDINAL JOINT WHEN TYING INTO EXISTING CONCRETE PAVEMENT / SHOULDER

CD-405-2.8

CONCRETE PAVEMENT LONGITUDINAL JOINTS
N.T.S.

CD-405-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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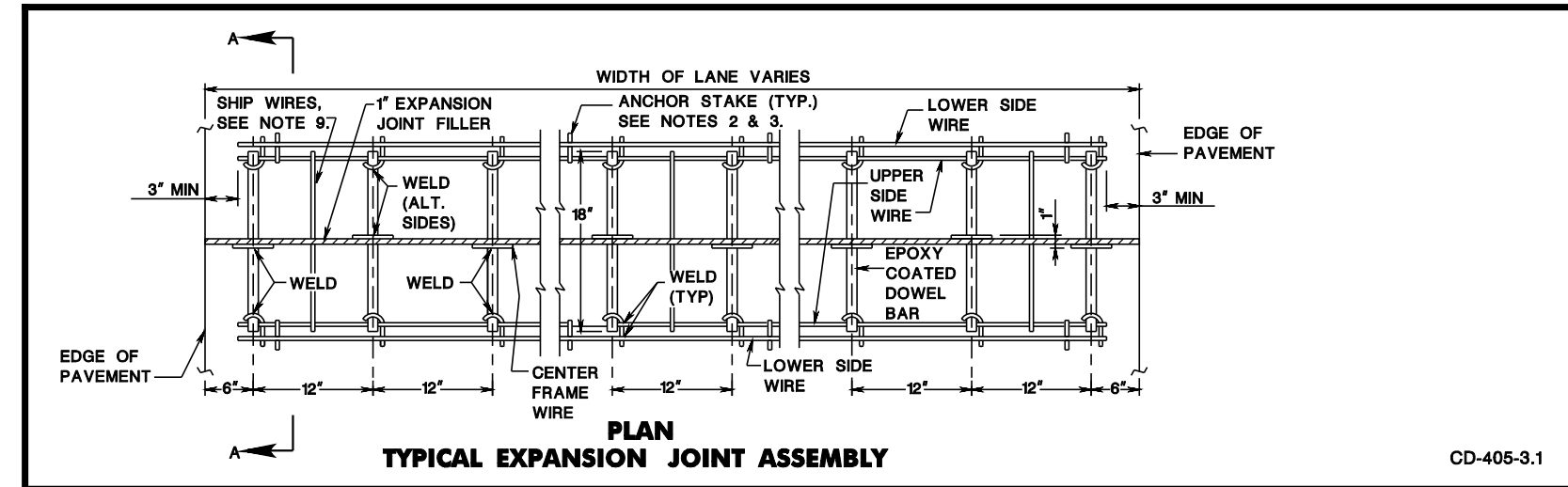
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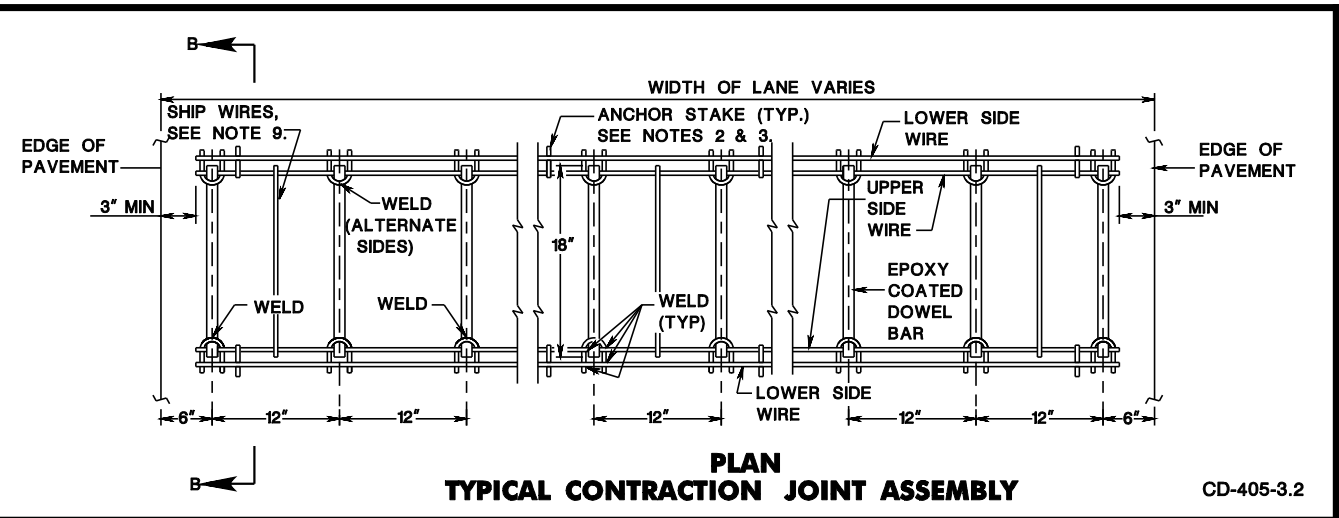
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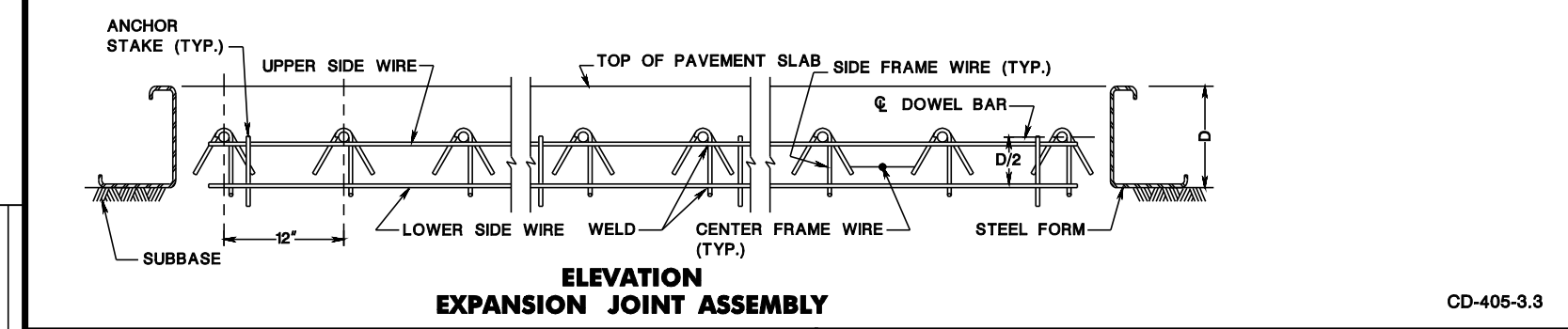
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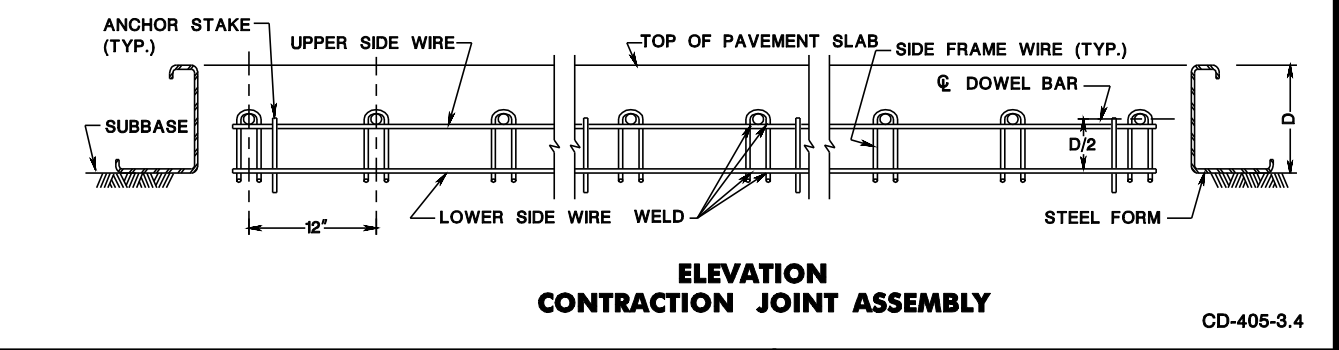
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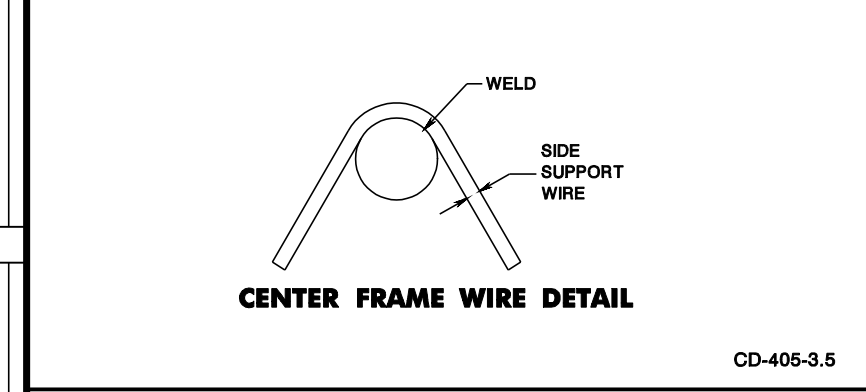
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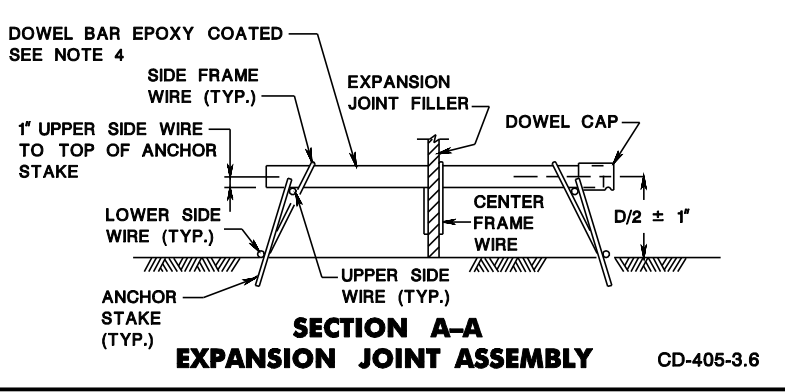
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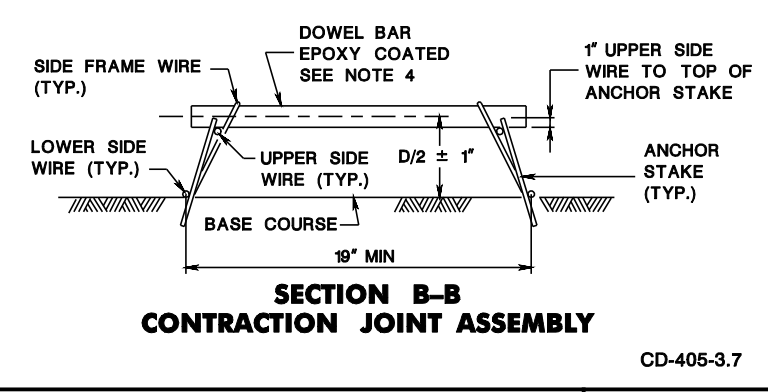
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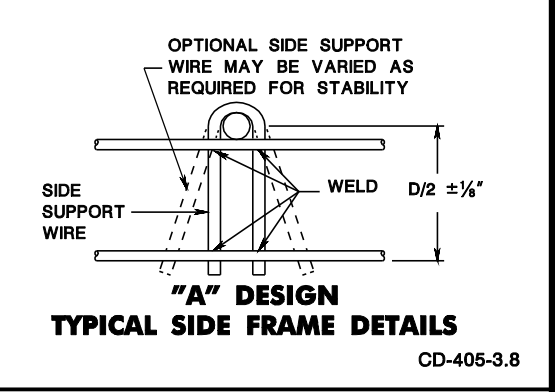
CD-405-3.5



CD-405-3.6



CD-405-3.7



CD-405-3.8

NOTES:

- THIS STANDARD DEPICTS THE DIMENSIONS REQUIRED FOR UNIFORMITY AND COMPATIBILITY. IT DOES NOT INCLUDE ALL THE DETAILS REQUIRED FOR FABRICATION. ENSURE THAT ANCHOR STAKES DO NOT TOUCH ANY DOWEL BAR AND MAY BE SPACED AS NEEDED TO PROVIDE STABILITY.
- PROVIDE A MINIMUM OF EIGHT ANCHOR STAKES (FOUR PER SIDE). ANCHOR STAKES ARE TO ENGAGE LOWER SIDE FRAME WIRES. USE ADDITIONAL STAKES AS NECESSARY, TO SECURE ASSEMBLIES, AS DIRECTED BY THE RE.
- PROVIDE 12 INCH MINIMUM ANCHOR STAKES TO SECURE ASSEMBLIES WHEN SUBBASE IS USED AND 18 INCH MINIMUM ANCHOR STAKES WHEN AN OPEN GRADED DRAINAGE LAYER IS USED.
- PROVIDE DOWEL BARS PARALLEL TO THE CENTERLINE AND TO THE PAVEMENT SURFACE. TOLERANCE OF THIS PLACEMENT TO BE WITHIN 1/4 INCH PER DOWEL BAR.
- PROVIDE FRAME SUPPORT ASSEMBLY WIRES CONFORMING TO THE CURRENT ASTM DESIGNATION A-510 SPECIFICATIONS FOR WIRE RODS AND COURSE ROUND WIRE, CARBON STEEL, AND OF A MINIMUM ALLOWABLE SIZE AS FOLLOWS:

PAVEMENT THICKNESS	UPPER AND LOWER SIDE FRAME WIRES	SIDE SUPPORT WIRES
10" OR LESS	0.331" φ MIN 2/0 GAUGE	0.331" φ MIN 2/0 GAUGE
GREATER THAN 10"	0.362" φ MIN 3/0 GAUGE	0.362" φ MIN 3/0 GAUGE

- PROVIDE DOWEL BARS PARALLEL TO THE CENTERLINE AND TO THE PAVEMENT SURFACE. MAKE TOLERANCE OF THIS PLACEMENT WITHIN ±1/4" PER DOWEL BAR.

- WELD REQUIREMENTS AS LISTED BELOW AND TESTED PER MANUFACTURER'S QUALITY CONTROL PLANS FOR WELD SHEAR.

PAVEMENT THICKNESS	UPPER AND LOWER WIRE TO SIDE SUPPORT	DOWEL TO SUPPORT ASSEMBLY
10" OR LESS	794 LBS.	1190 LBS.
> 10"	1190 LBS.	1984 LBS.

- WIRE TOLERANCES PER ASTM 510M IS 0.003 in.
- AFTER EACH LOAD TRANSFER ASSEMBLY IS SECURED IN PLACE, REMOVE AND PROPERLY DISPOSE OF ALL TIE WIRES OR SHIPPING WIRES.

TYPICAL LOAD TRANSFER ASSEMBLY		
LANE WIDTH	OVERALL UNIT LENGTH	NO. OF DOWELS
9'-0"	8'-6"	9
10'-0"	9'-6"	10
11'-0"	10'-6"	11
12'-0"	11'-6"	12

CD-405-3.9

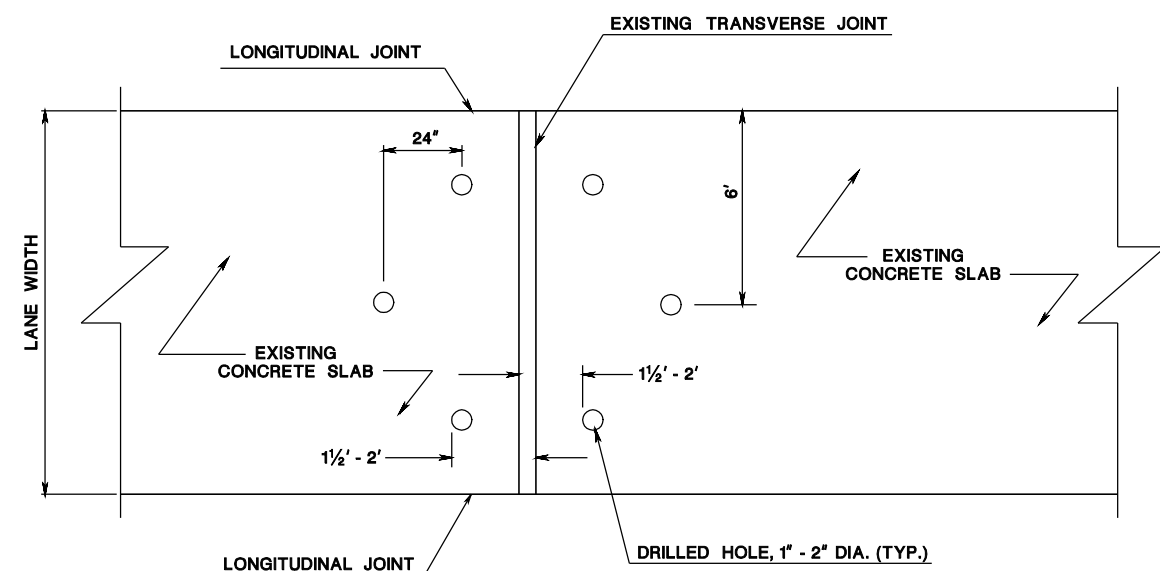
**CONCRETE PAVEMENT JOINTS
NON-SKEWED LOAD
TRANSFER ASSEMBLIES**
N.T.S.

CD-405-3

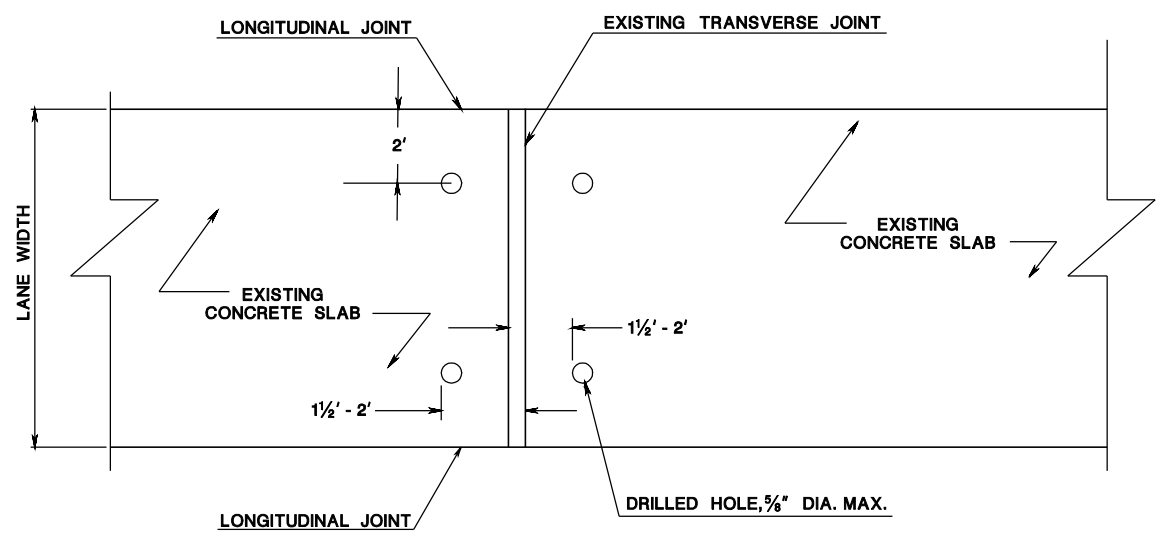
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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**TYPICAL HOLE PATTERN
USED FOR SLAB STABILIZATION, POZZOLAN GROUT**



SLAB STABILIZATION, POLYURETHANE GROUT

SLAB STABILIZATION
N.T.S.

CD-451-1
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-451-1

BDC\RD-01-ORIGINAL SHEET

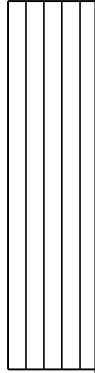
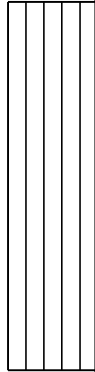
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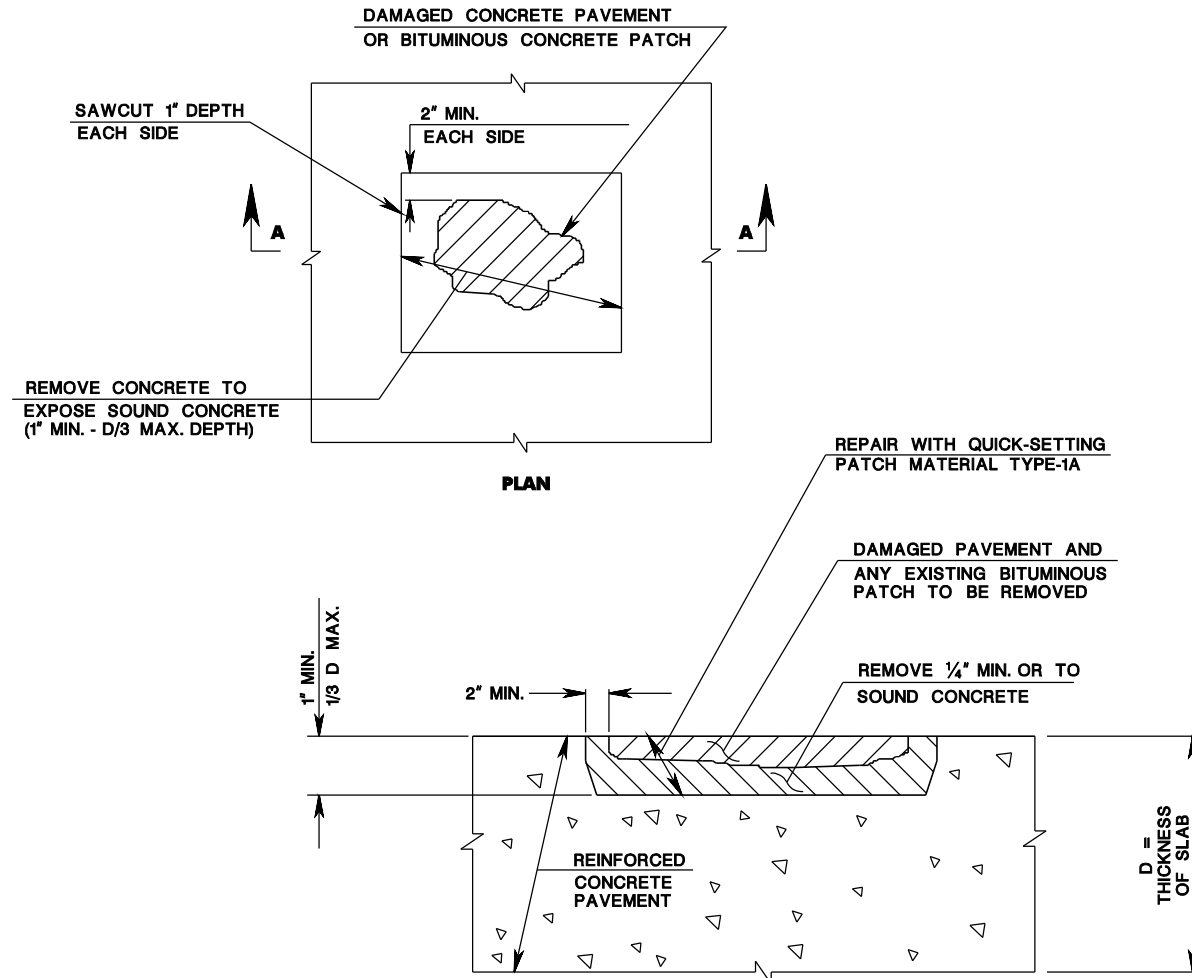
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BDC\RD-01-ORIGINAL SHEET



NOTES:

1. DEPTH OF REPAIR NOT TO EXCEED 1/3 SLAB THICKNESS. IF DETERIORATION EXTENDS BELOW 1/3 SLAB THICKNESS, NOTIFY THE RE.
2. AT TRANSVERSE EXPANSION JOINTS, MATCH WIDTH OF EXISTING JOINT FILLER WITH PREFORMED JOINT FILLER.

PARTIAL DEPTH CONCRETE PAVEMENT REPAIR

PARTIAL DEPTH CONCRETE PAVEMENT REPAIR

N.T.S.

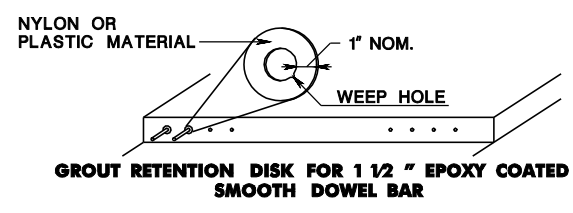
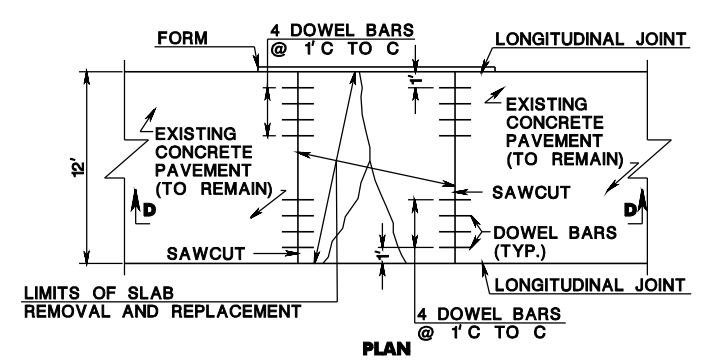
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

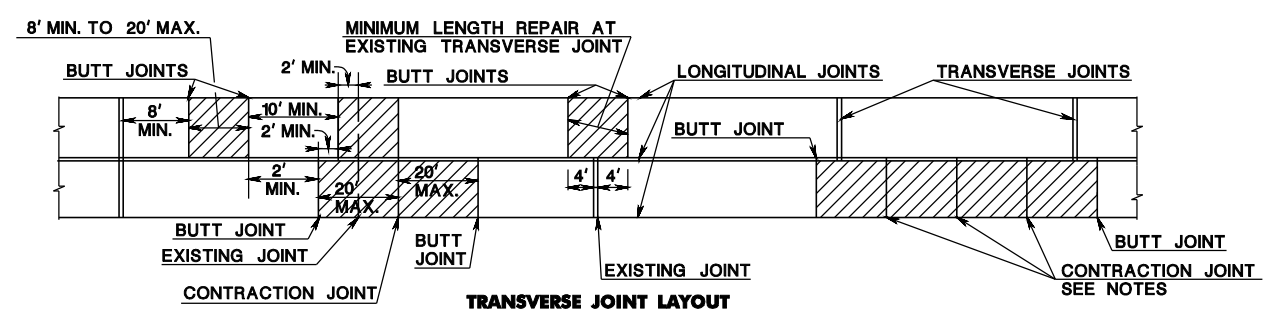
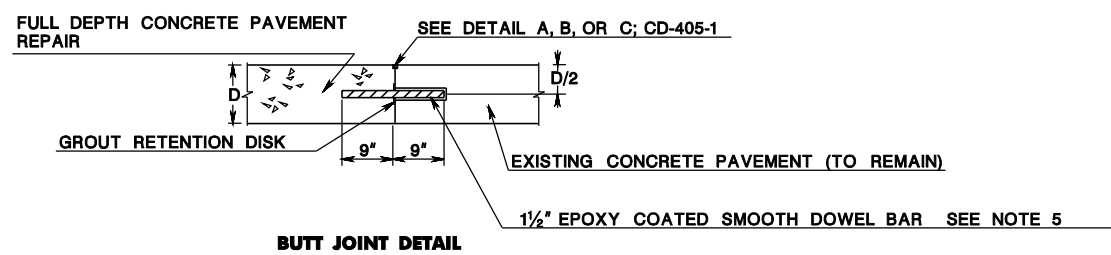
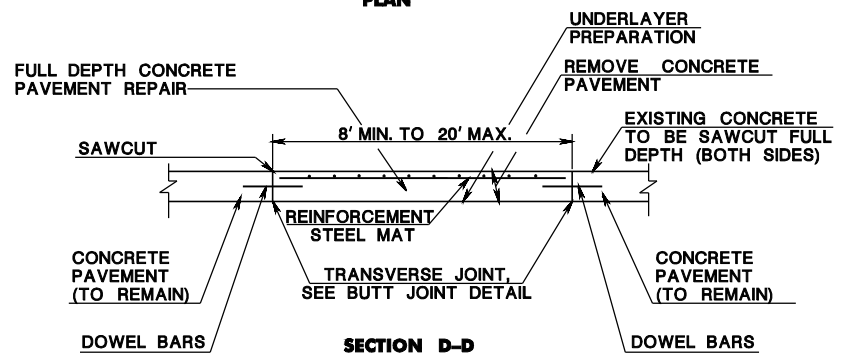
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- NOTES:**
1. SAWCUT PERPENDICULAR TO BASELINE.
 2. INITIAL SAWCUT IS NOT REQUIRED FOR BUTT JOINTS.
 3. A MINIMUM OF 3" CONCRETE COVER IS REQUIRED OVER REINFORCEMENT STEEL MAT.
 4. SPACE CONTRACTION JOINTS AND CONTRACTION / BUTT JOINTS EQUIDISTANT AND NOT MORE THAN 20' APART.
 5. DRILL 1 1/8" HOLES FOR THE DOWEL BARS. EPOXY GROUT DOWEL BARS INTO DRILLED HOLES.



FULL DEPTH CONCRETE PAVEMENT REPAIR

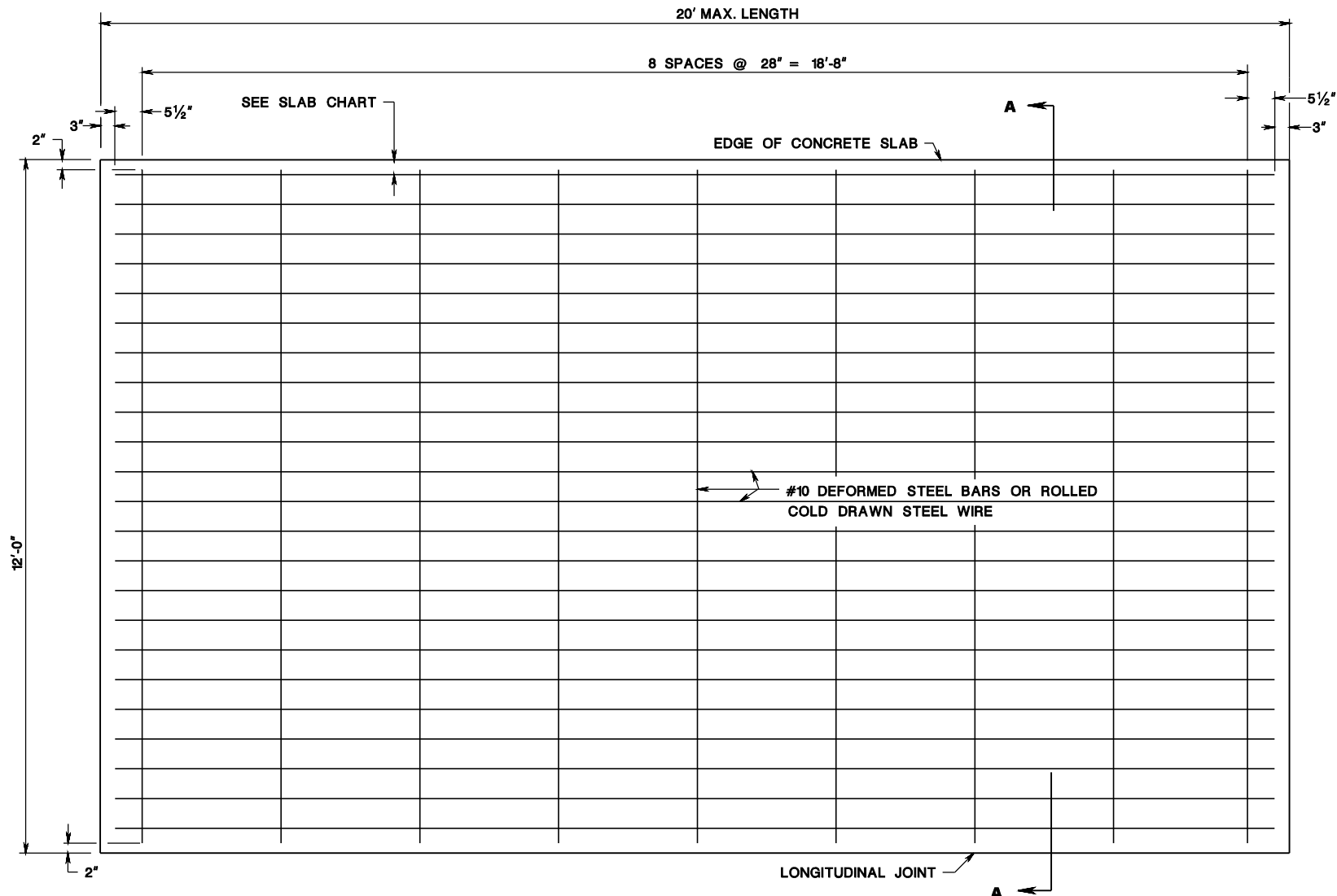
FULL DEPTH CONCRETE PAVEMENT REPAIR

N.T.S.

CD-453-1
 NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-453-1.1



REINFORCEMENT STEEL FOR 12'-0" WIDTH SLAB

NOTES:

1. REINFORCEMENT STEEL MATS DIFFERING WITH RESPECT TO THEIR LENGTH, SPACING OF TRANSVERSE REINFORCEMENT STEEL, AND TYPE OF FABRICATION FROM THE MAT SHOWN IN THESE DRAWINGS MAY BE USED, PROVIDED THAT (A) THE MATS HAVE THE SAME SIZE AND SPACING OF LONGITUDINAL REINFORCEMENT STEEL, AND PROVIDE AT LEAST THE SAME NUMBER OF TRANSVERSE REINFORCEMENT STEEL PER SLAB, AS CALLED FOR IN THESE DRAWINGS, AND (B) APPROVAL FOR USE HAS BEEN OBTAINED FROM THE DEPARTMENT.
* SEE SLAB CHART
2. AN EDGE CLEARANCE OF 3" IS REQUIRED OF OUTSIDE LONGITUDINAL REINFORCEMENT STEEL. SPACE REINFORCEMENT STEEL EVENLY ACROSS WIDTH OF SLAB WITH A MAXIMUM SPACING OF 7 1/2" FOR SLABS WITH A THICKNESS OF LESS THAN 10" AND 6" FOR SLABS WITH A THICKNESS OF 10" OR GREATER.

REINFORCEMENT REQUIREMENTS WHEN USING WELDED STEEL WIRE FABRIC

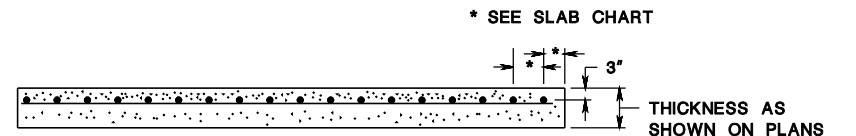
SLABS LESS THAN 10 INCHES THICK:

- USE SIZE NO. W8.6 LONGITUDINAL WIRE SPACED 6 INCHES ON CENTER.
- USE SIZE NO. W4.7 TRANSVERSE WIRE SPACED 12 INCHES ON CENTER.
- ENSURE THAT THE EDGE CLEARANCE IS 3 INCHES FOR OUTSIDE LONGITUDINAL WIRE.
- ENSURE THAT THE MAXIMUM EDGE CLEARANCE IS 11 INCHES FOR THE LAST TRANSVERSE WIRE.
- ENSURE THAT THE END CLEARANCE IS BETWEEN 1 INCH AND 3 INCHES FOR THE LONGITUDINAL WIRE.
- ENSURE THE LONGITUDINAL WIRES ARE LAPPED A MINIMUM OF 12 INCHES.

SLABS 10 INCHES THICK OR GREATER:

- USE SIZE NO. W10.5 LONGITUDINAL WIRE SPACED 6 INCHES ON CENTER.
- USE SIZE NO. W5.5 TRANSVERSE WIRE SPACED 12 INCHES ON CENTER.
- ENSURE THAT THE EDGE CLEARANCES 3 INCHES FOR OUTSIDE LONGITUDINAL WIRE.
- ENSURE THAT THE MAXIMUM EDGE CLEARANCE IS 11 INCHES FOR THE LAST TRANSVERSE WIRE.
- ENSURE THAT THE END CLEARANCE IS BETWEEN 1 INCH AND 3 INCHES FOR THE LONGITUDINAL WIRE.
- ENSURE THE LONGITUDINAL WIRES ARE LAPPED A MINIMUM OF 12 INCHES.

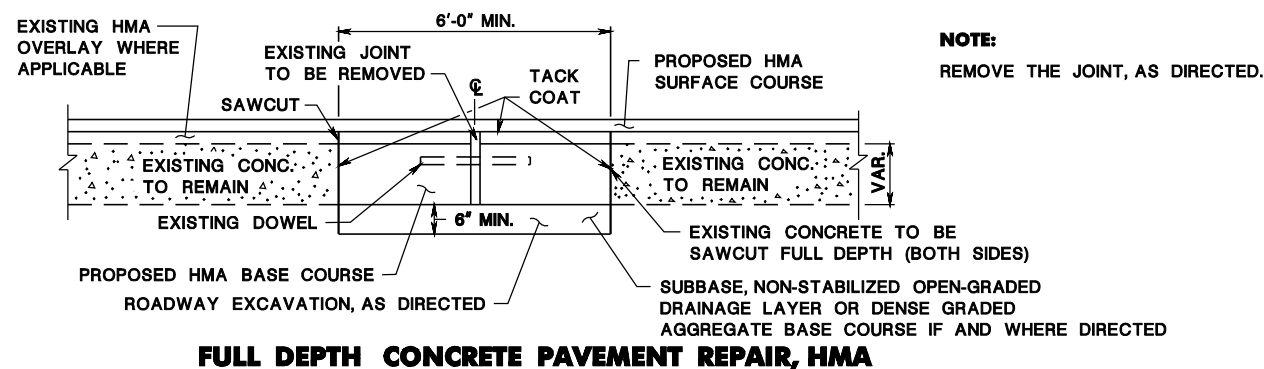
SLAB CHART FOR THICKNESS LESS THAN 10"														
* WIDTH OF SLAB	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
NUMBER OF LONGITUDINAL REINF. STEEL	5	6	8	9	11	13	14	16	17	19	21	22	24	25
SLAB CHART FOR 10" THICKNESS OR GREATER														
* WIDTH OF SLAB	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
NUMBER OF LONGITUDINAL REINF. STEEL	6	8	10	12	14	16	18	20	22	24	26	28	30	32



SECTION A-A

REINFORCEMENT STEEL FOR FULL DEPTH CONCRETE PAVEMENT REPAIR, CLASS ___

FULL DEPTH CONCRETE PAVEMENT REPAIR
N.T.S.



FULL DEPTH CONCRETE PAVEMENT REPAIR, HMA

CD-453-2.2

NOTE:

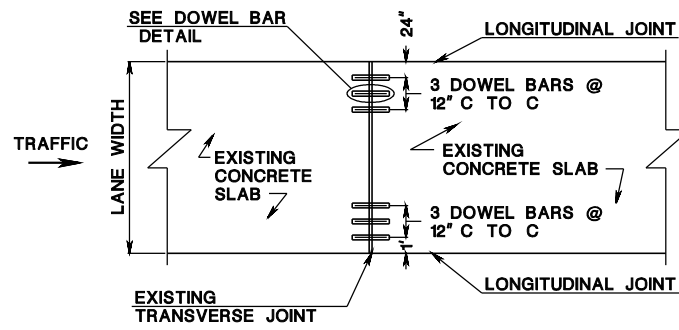
REINFORCEMENT STEEL ARE IN METRIC UNITS.

CD-453-2.1

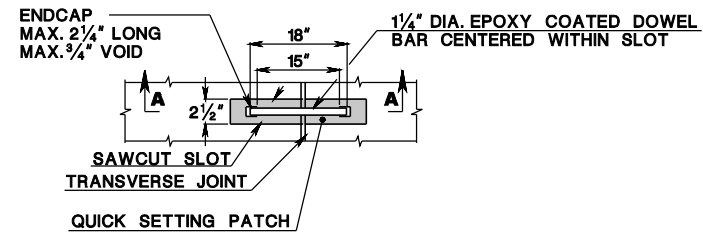
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

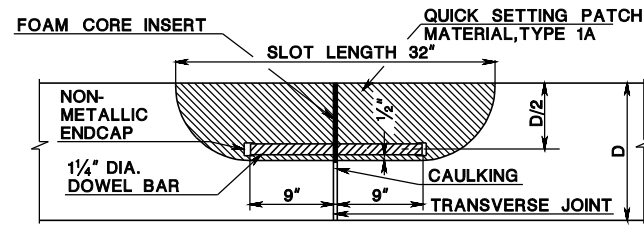
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PLAN



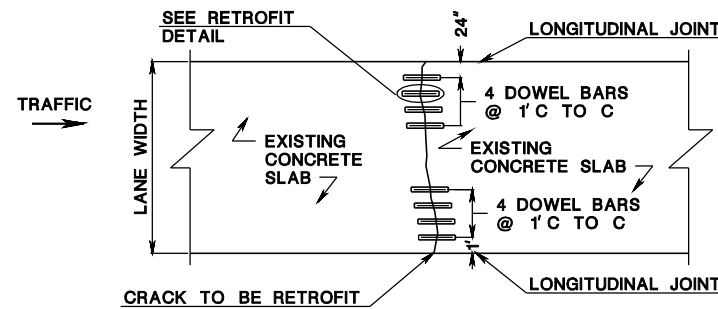
DOWEL BAR DETAIL



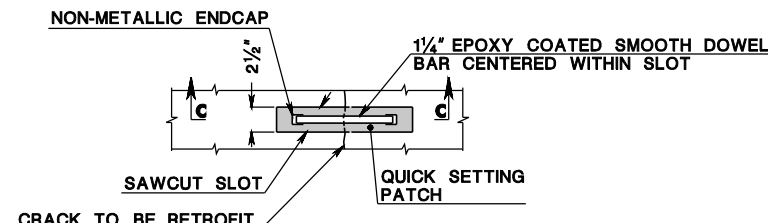
SECTION B-B

RETROFIT DOWEL BARS AT EXISTING JOINT

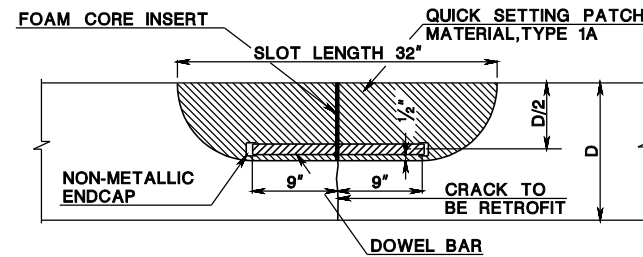
CD-454-1.1



PLAN



DOWEL BAR DETAIL



SECTION C-C

RETROFIT DOWEL BARS AT PAVEMENT CRACK

CD-454-1.2

RETROFIT DOWEL BARS

N.T.S.

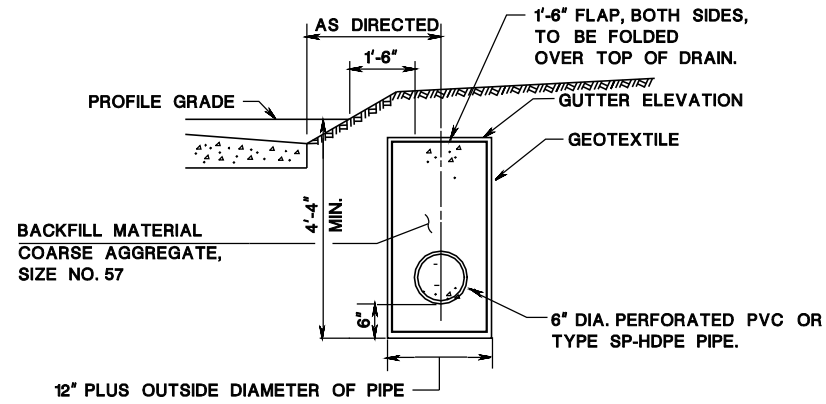
CD-454-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

NOTES:

UNDERDRAIN IS SHOWN PARALLEL TO THE EDGE OF PAVEMENT, BUT MAY BE USED IN OTHER LOCATIONS IF SO DIRECTED BY THE RE.



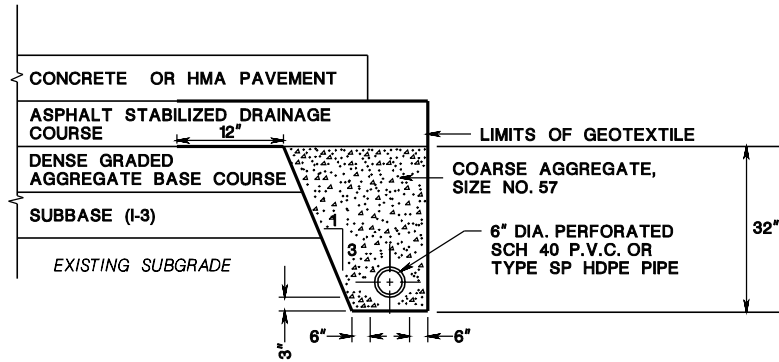
UNDERDRAIN TYPE F

CD-601-1.1

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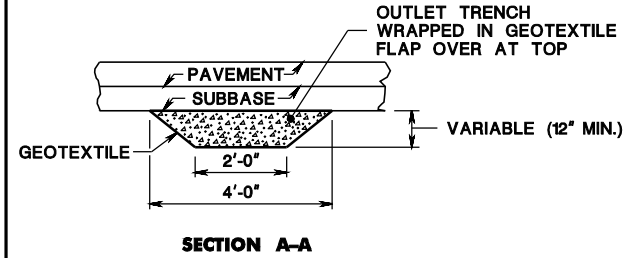
AFTER PLACING ASPHALT STABILIZED DRAINAGE COURSE, OVERLAP WITH GEOTEXTILE TO PROTECT THE EXPOSED SURFACE.

THE 6" DIA. PERFORATED PIPE TO BE AT LEAST 12" BELOW THE LOWEST COURSE EITHER DENSE GRADED AGGREGATE BASE COURSE OR SUBBASE, DESIGNATION I-3.

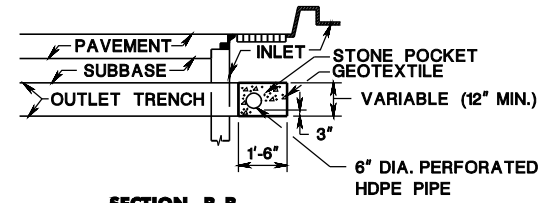


UNDERDRAIN TYPE X

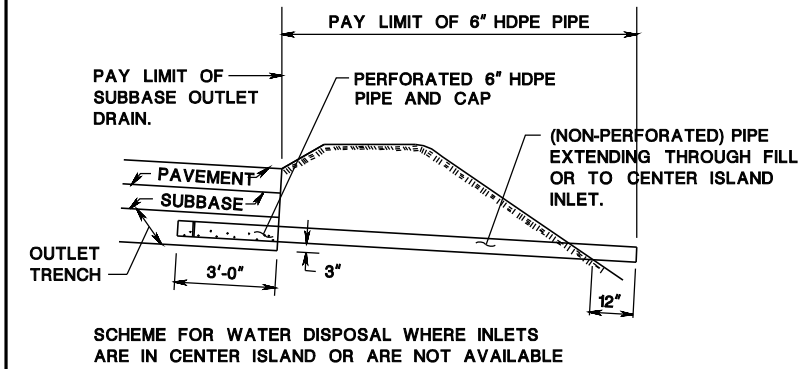
CD-601-1.2



SECTION A-A

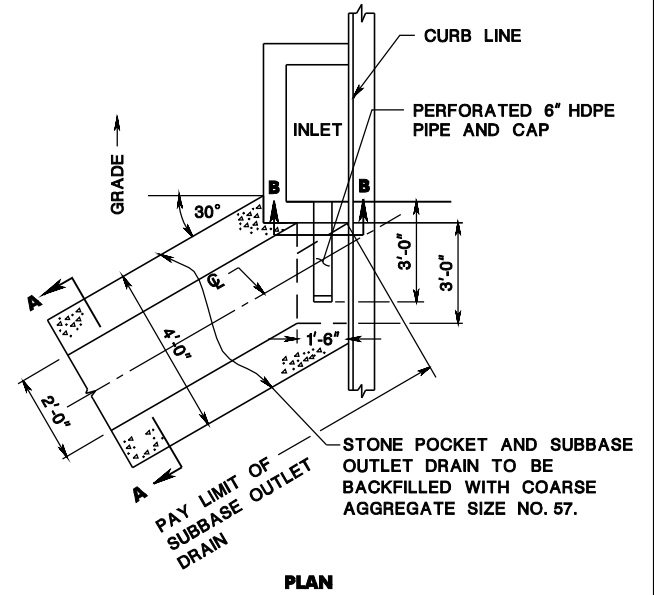


SECTION B-B



SUBBASE OUTLET DRAIN

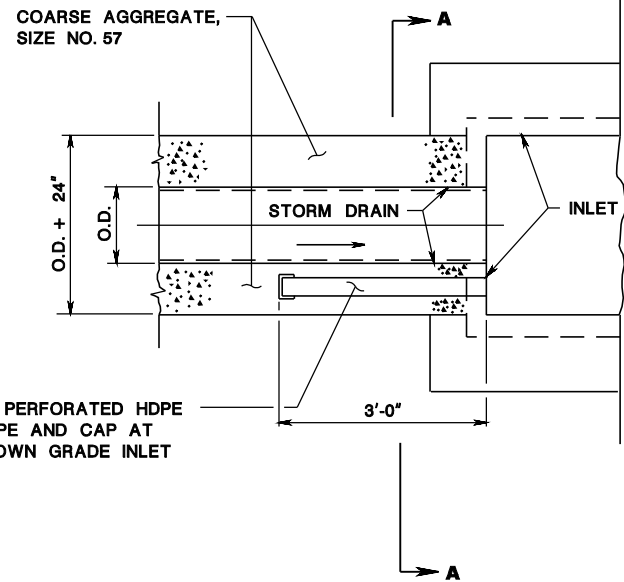
CD-601-1.3



PLAN

NOTES:

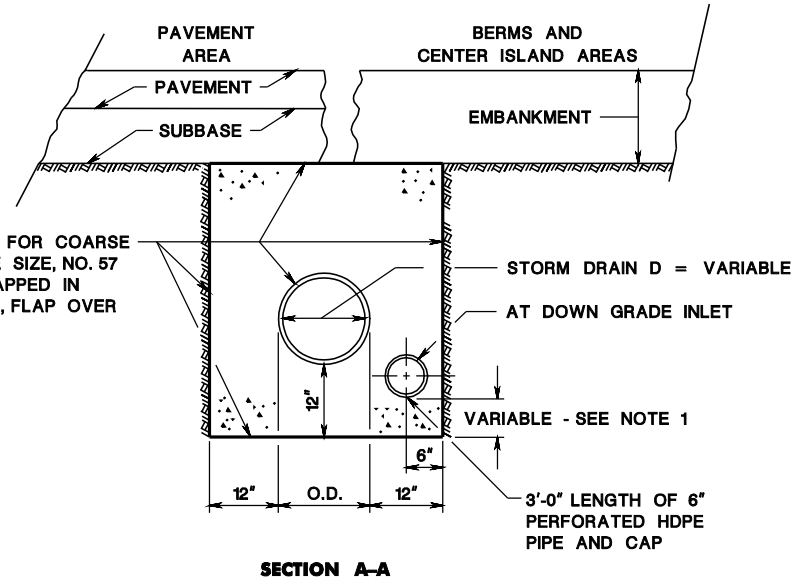
1. DISCHARGED WATER IN NO CASE TO VIOLATE DRAINAGE RIGHTS.
2. SEE NOTE 2, CD-601-1.4.



NOTES:

1. INVERT OF 6" PERFORATED HDPE PIPE TO BE 6" ABOVE BOTTOM OF INLET OR 6" ABOVE BOTTOM OF TRENCH, WHICHEVER IS HIGHER.
2. THE SIZE OF PERFORATIONS TO BE SMALLER THAN SIZE OF STONE SPECIFIED, OTHERWISE WRAP FILTER FABRIC AROUND PIPE.
3. PAY ITEMS ARE:
 - a. 6" PERFORATED HDPE PIPE
 - b. STORM DRAIN.
 - c. REMOVAL OF PAVEMENT IF PAVEMENT AREA EXISTS.
4. BACKFILL THE TRENCH WITH COARSE AGGREGATE SIZE NO. 57 UP TO 3 FEET FROM THE TOP OF THE PIPE AND WRAP IT IN GEOTEXTILE. BACKFILL THE REMAINDER OF THE TRENCH, IF ENCOUNTERED, WITH SUITABLE MATERIAL. THIS WORK TO BE INCLUDED IN STORM DRAIN ITEM.

COMBINED STORM DRAIN AND OUTLET TRENCH IN ROCK AREAS



SECTION A-A

UNDERDRAINS

N.T.S.

CD-601-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-601-1.4

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PIPE DIAMETER (INCHES)	STEEL GA.	ALUM. GA.	DIMENSIONS (INCHES)	
			L	C
12	16	16	21	36
15	16	16	26	44
18	16	16	31	52
21	16	16	36	60
24	16	16	41	68
30	14	14	51	84
36	14	12	60	100
42	12	12	69	116
48	12	12	78	126
54	12	12	84	138
60	12	12	87	150
66	12	12	87	156
72	12	12	87	162
78	12	12	87	168
84	12	12	87	174

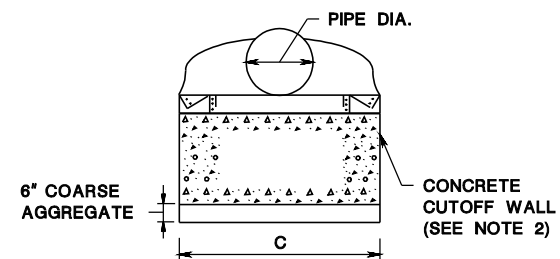
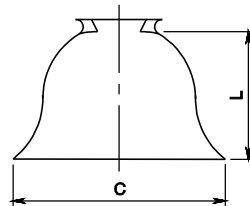
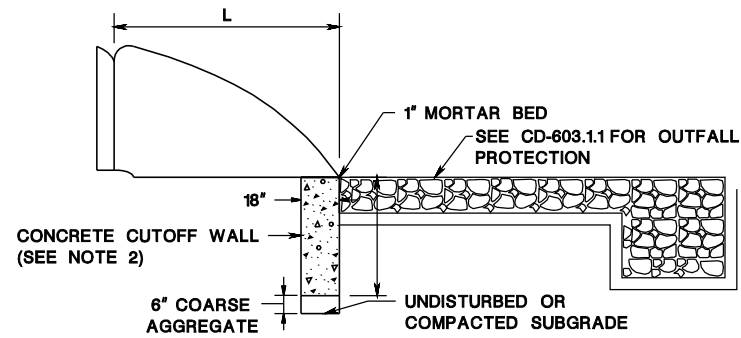
ROUND PIPE

ARCH PIPE DIMENSION (INCHES)	SPAN	RISE	STEEL GA.	ALUM. GA.	DIMENSIONS (INCHES)	
					L	C
17	13	16	16	16	19	44
21	15	16	16	16	23	50
24	18	16	16	16	28	58
28	20	16	16	16	32	66
35	24	14	14	14	39	80
42	29	14	14	14	46	99
49	33	12	12	12	53	111
57	38	12	12	12	63	126
64	43	12	12	12	70	138
71	47	12	12	12	77	150
77	52	12	12	12	77	162
83	57	12	12	12	77	174

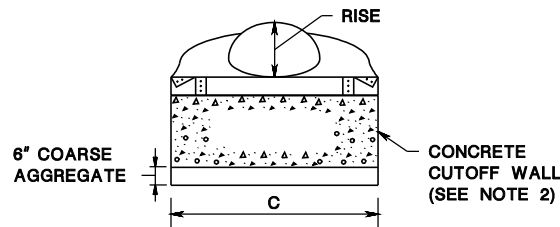
ARCH PIPE

NOTES:

- MINOR VARIATIONS TO THE ABOVE DIMENSIONS ARE ACCEPTABLE WITH THE EXCEPTION OF THE INSIDE DIAMETER DIMENSION.
- A 1 INCH THICK MORTAR BED AND A 6 INCH DEEP LAYER OF COURSE AGGREGATE ARE REQUIRED WHEN A PRECAST CONCRETE CUTOFF WALL IS USED.
- REFER TO NOTE 3, CD-601-2.2 FOR SIZE OF CONCRETE CUTOFF WALL.



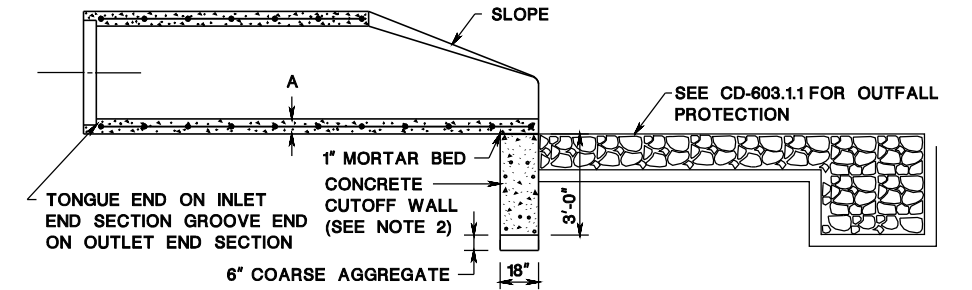
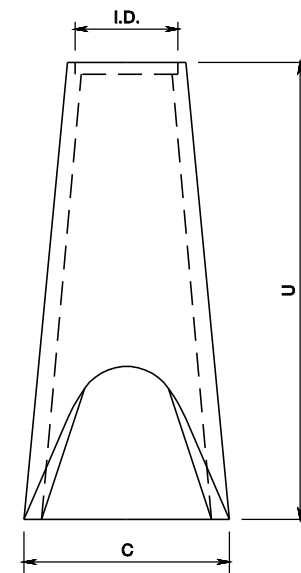
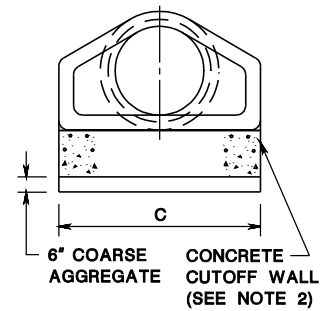
ELEVATION



ELEVATION

CORRUGATED ALLUMINUM ALLOY END SECTION

CD-601-2.1



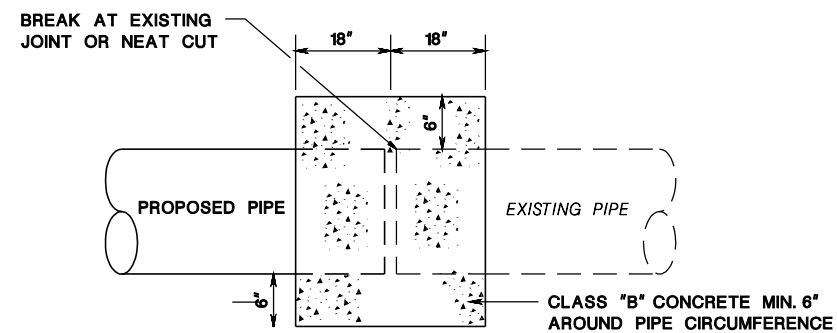
DIMENSIONS (INCHES)												
I.D.	12	15	18	21	24	27	30	36	42	48	54	60
A	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	4	4 1/2	5	5 1/2	6
U	72	72	72	72	72	72	72	96	96	96	96	96
C	28	34.5	41	47.5	54	60.5	67	80	87	94	101	108

NOTES:

- MINOR VARIATIONS TO THE ABOVE DIMENSIONS ARE ACCEPTABLE WITH THE EXCEPTION OF THE INSIDE DIAMETER DIMENSION.
- A 1 INCH THICK MORTAR BED AND A 6 INCH DEEP LAYER OF COURSE AGGREGATE ARE REQUIRED WHEN A PRECAST CONCRETE CUTOFF WALL IS USED.
- THE WIDTH OF THE CONCRETE CUTOFF WALL TO BE EQUAL TO THE MAXIMUM WIDTH OF THE END SECTION AS INDICATED ON THE DETAIL BY DIMENSION "C". HOWEVER, IF THE ACTUAL MAXIMUM WIDTH EXCEEDS THE CHART VALUE OF "C", THE WIDTH OF THE CONCRETE CUTOFF WALL TO BE EQUAL TO THE ACTUAL MAXIMUM WIDTH OF THE END SECTION.

REINFORCED CONCRETE END SECTION

CD-601-2.2



NOTE:

COAT ALL SURFACES TO BE ENCASED IN CONCRETE COLLAR WITH APPROVED EPOXY BONDING COMPOUND. NO SEPARATE PAYMENT WILL BE MADE FOR THE CONCRETE COLLAR. THE COST OF THE CONCRETE COLLAR SHALL BE INCLUDED IN THE COST OF THE VARIOUS PIPE ITEMS ON THE PROJECT.

CONCRETE COLLAR (FOR JOINING PROPOSED PIPE TO EXISTING PIPE)

CD-601-2.3

PIPE END SECTIONS

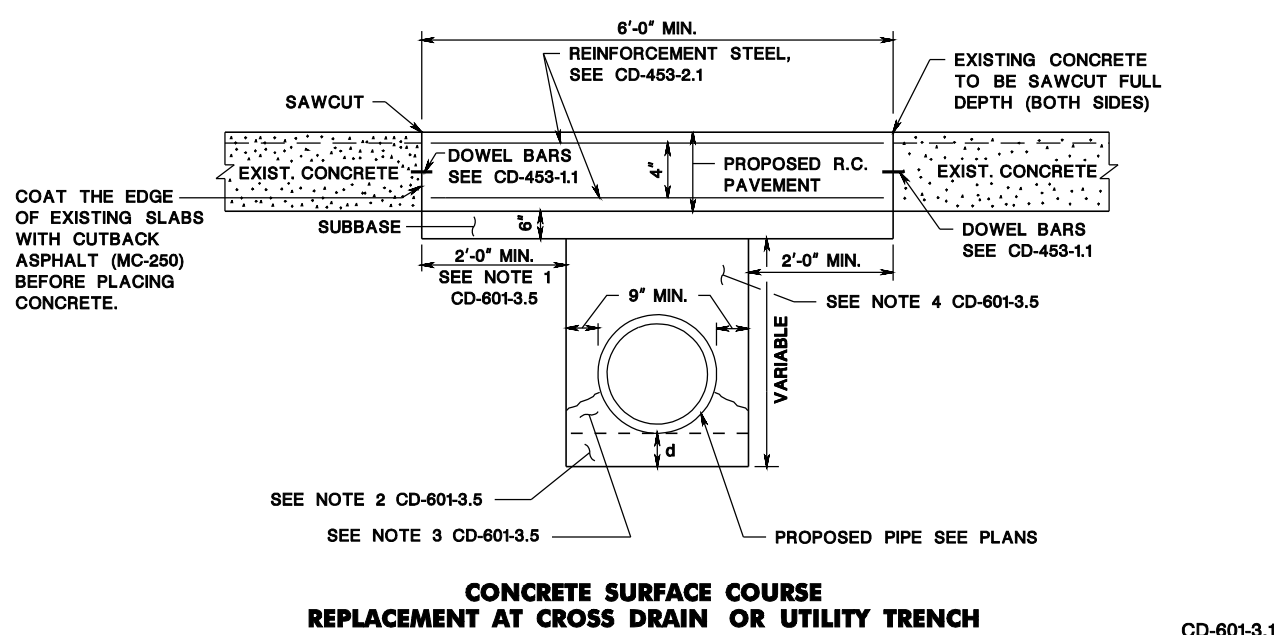
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CD-601-2

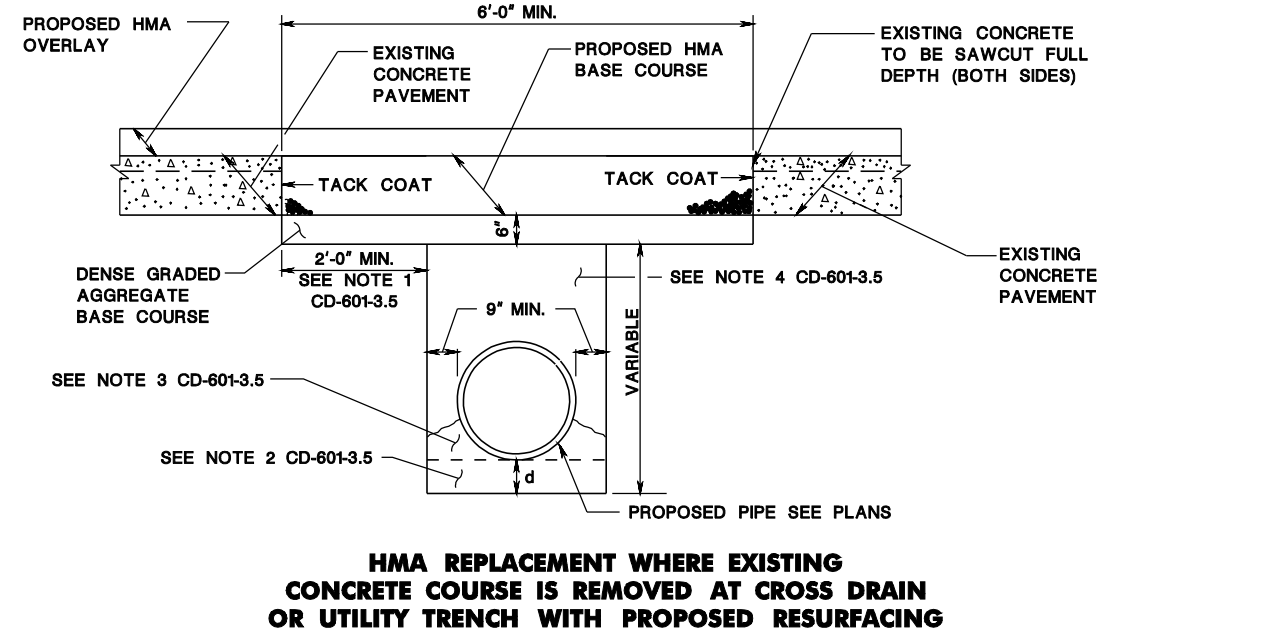
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

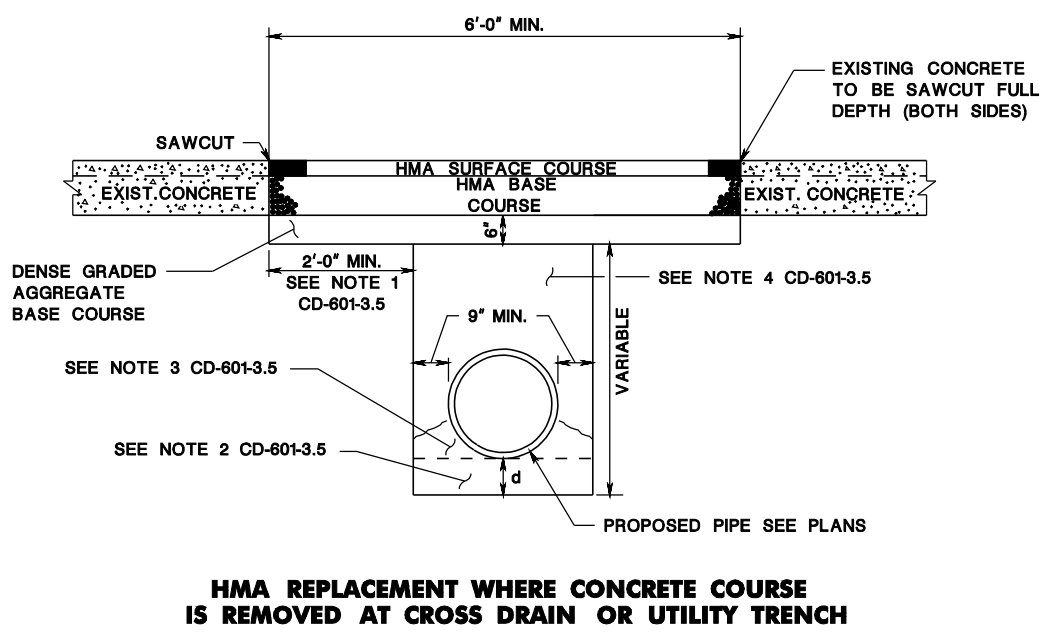
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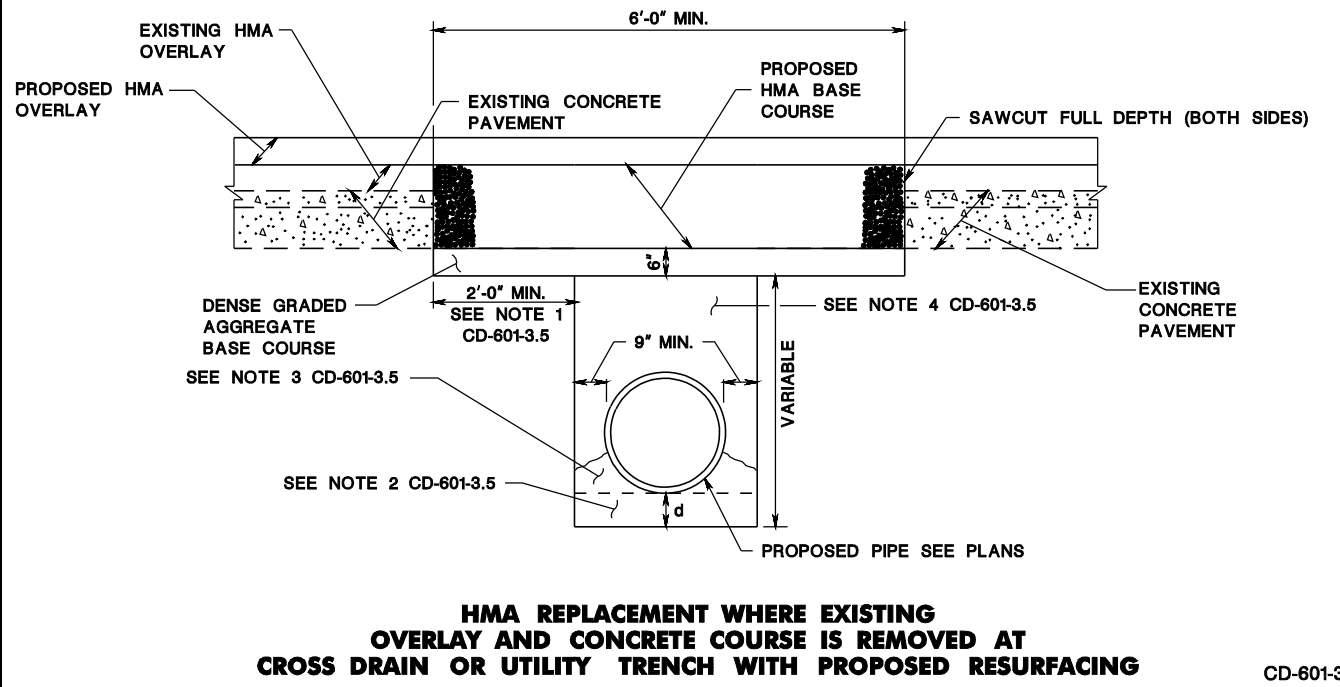
CD-601-3.1



CD-601-3.2



CD-601-3.3



CD-601-3.4

- NOTES:**
- SAWCUT THE EXISTING PAVEMENT A MINIMUM OF 2'-0" FROM THE SIDES OF THE PROPOSED CROSS DRAIN OR UTILITY TRENCH EXCAVATION ON BOTH SIDES.
 - ADDITIONAL EXCAVATION REQUIRED WHEN PIPE BEDDING IS DESIGNATED, OR WHEN ROCK OR OTHER HARD MATERIAL IS ENCOUNTERED.
 - BACKFILL TO BE PLACED SO AS TO ENSURE SUFFICIENT COMPACTION UNDER PIPE HAUNCHES.
 - THE PIPE OR UTILITY TRENCH TO BE BACKFILLED IN ACCORDANCE WITH THE SPECIFICATIONS FOR BACKFILLING OR WITH AGGREGATE, DESIGNATION I-1, I-2, I-3, OR I-13. ENSURE THE WIDTH IS 36" MINIMUM OR THE OUTSIDE DIAMETER OF THE PIPE PLUS 18".

UNDERLYING SOIL	d MIN.	
	CONC. PIPE	ALUMINUM PIPE OR HDPE PIPE
ROCK OR HARD MATERIAL	6"	12"
OTHER MATERIAL	6"	6"

CD-601-3.5

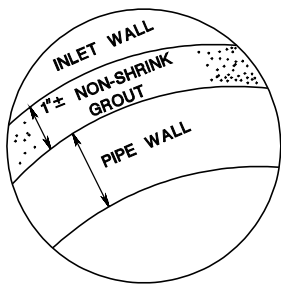
CROSS DRAIN OR UTILITY TRENCH CONSTRUCTION
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

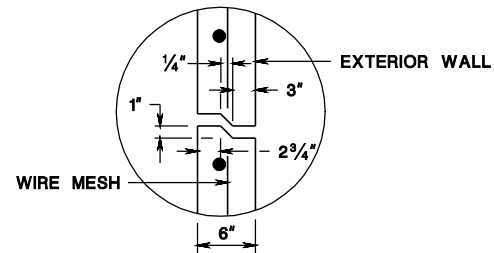
NOTE:
 REINFORCEMENT STEEL IS IN METRIC UNITS.
 HMA = HOT MIX ASPHALT

CD-601-3



CONNECTION OF PIPE AND INLET FOR PRECAST INLET

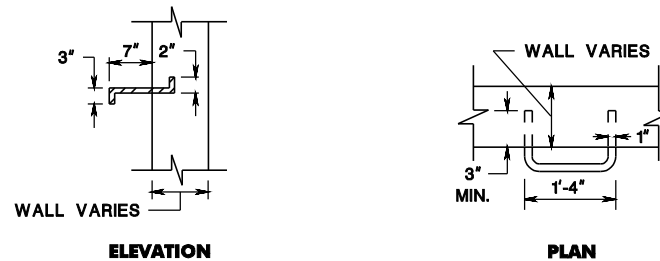
CD-602-1.1



RISER JOINT DETAIL FOR PRECAST INLETS

NOTE:
JOINT TO BE GROUTED WITH MORTAR BY CONTRACTOR

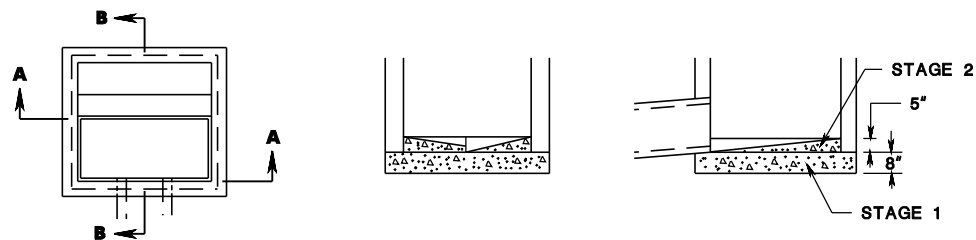
CD-602-1.2



LADDER RUNG DETAIL

NOTE:
LADDER RUNGS FACING TRAFFIC 12" C TO C

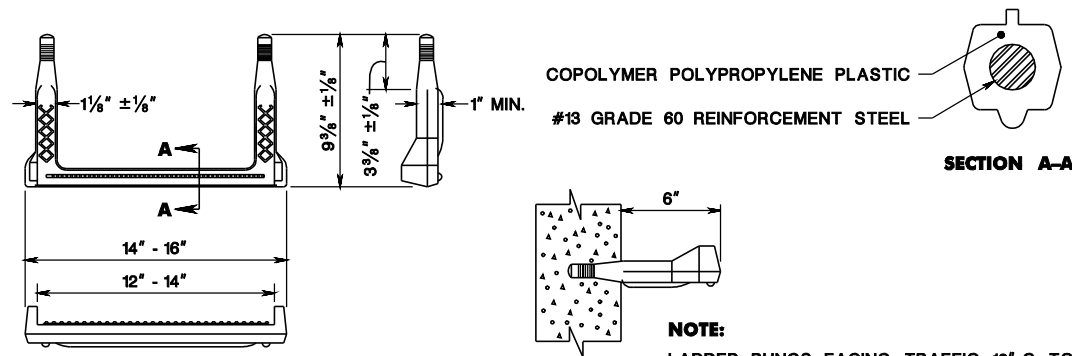
CD-602-1.3



NOTE:
FOUNDATION AND INVERT TO BE CONSTRUCTED IN TWO STAGES. THE TOP SURFACE OF STAGE 1 TO BE LEFT ROUGH.

DETAIL OF INVERT FOR INLET WITHOUT CONTINUOUS PIPE

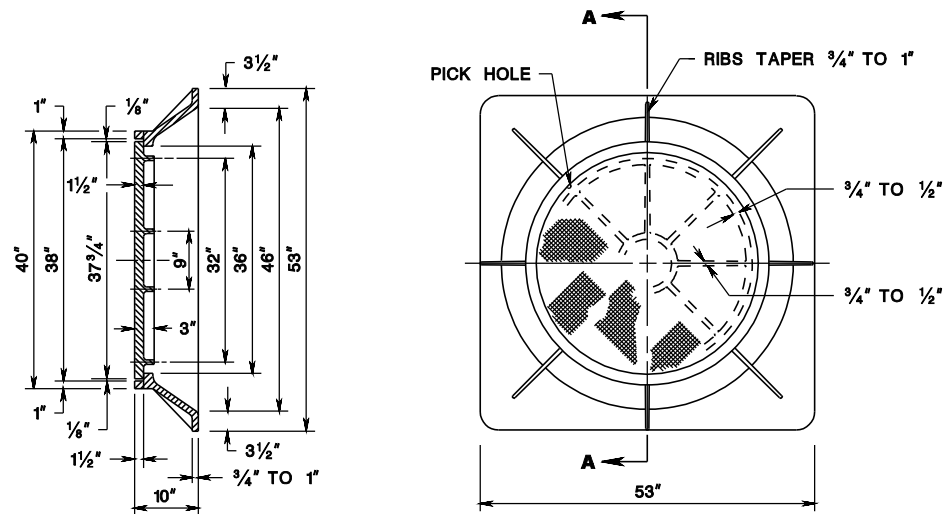
CD-602-1.4



COPOLYMER POLYPROPYLENE PLASTIC LADDER RUNG

NOTE:
LADDER RUNGS FACING TRAFFIC 12" C TO C

CD-602-1.5

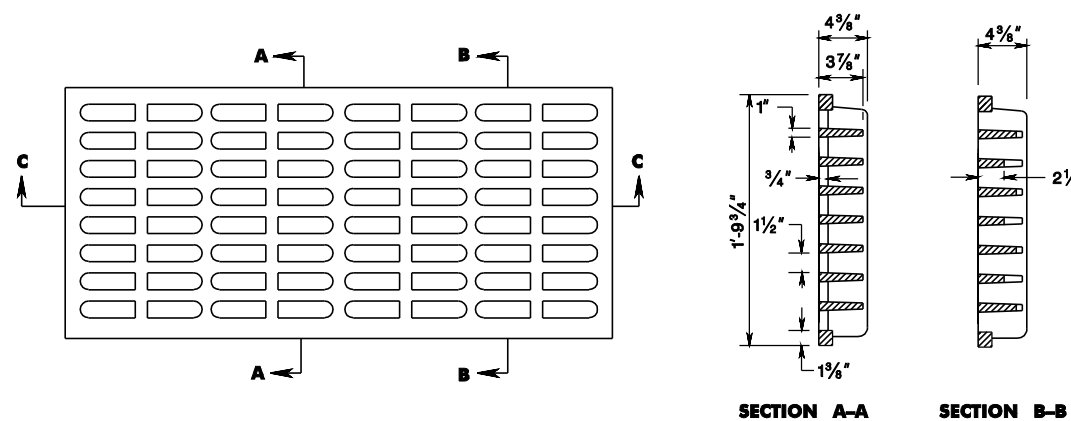


NOTE:
SEE GENERAL NOTE 9, CD-602-1.6

MINIMUM WEIGHTS
WEIGHT OF FRAME = 630#
WEIGHT OF COVER = 400#

SQUARE FRAMED MANHOLE CASTING, CIRCULAR COVER

CD-602-1.7



WEIGHT 300 ± 15 LBS.

NOTE:
SEE GENERAL NOTE 9, CD-602-1.6

BICYCLE SAFE GRATE (CAST IRON)

CD-602-1.8

GENERAL NOTES:

- INLETS MAY BE CONSTRUCTED OF BRICK, CONCRETE, CONCRETE BLOCK, OR PRECAST CONCRETE. WALLS TO BE 8 INCHES THICK IF BRICK AND 6 INCHES THICK IF CONCRETE, CONCRETE BLOCK, OR PRECAST CONCRETE. INLET FOUNDATIONS AND INVERTS TO BE CLASS B CONCRETE.
- CORBELLING OF INLET WALLS WILL BE PERMITTED AT THE RATE OF 1/2 INCH PER 8 INCHES OF HEIGHT; MAXIMUM CORBEL 6 INCHES PER WALL.
- EXCEPT FOR INLETS TYPE A AND C, FOUNDATIONS AND INVERTS TO BE CONSTRUCTED IN TWO STAGES, AND THE BOTTOM OF THE FOOTINGS TO BE 8 INCHES BELOW THE OUTER WALL OF THE LOWEST PIPE IN THE INLET.
- WHEN THE DEPTH OF AN INLET THAT IS NOT PRECAST EXCEEDS 10 FEET AS MEASURED FROM TOP OF GRATE TO INVERT, WALLS BELOW A DEPTH OF 8 FEET TO BE 12 INCHES THICK AND THE DEPTH OF FOUNDATION INCREASED TO 12 INCHES. WHEN ROCK IS ENCOUNTERED, THE DEPTH OF THE FOUNDATION NOT TO BE INCREASED.
- PLACE INLET FOUNDATIONS WHICH ARE PRECAST ON A 6 INCH THICK BED OF COMPACTED COARSE AGGREGATE #57. EXTEND THE COARSE AGGREGATE 6 INCHES BEYOND THE HORIZONTAL LIMITS OF THE INLET FOUNDATION.
- ADJUST CASTINGS FOR PRECAST INLETS TO GRADE WITH COURSES OF BRICK, AS REQUIRED, 12 INCHES MAXIMUM.
- WHEN THE DEPTH OF A PRECAST INLET EXCEEDS 10 FEET AS MEASURED FROM TOP OF GRATE TO INVERT, THE FOUNDATION IS TO BE INCREASED TO 12 INCHES. WHEN ROCK IS ENCOUNTERED, THE DEPTH OF THE FOUNDATION IS NOT TO BE INCREASED.
- MINIMUM WALL REINFORCEMENT FOR PRECAST INLETS TYPES A, B, C, E, D-1, D-2, AND B MODIFIED:

DEPTH BELOW TOP OF GRATE	HORIZONTAL REINF.	VERTICAL REINF.	WALL THK.
0' TO 10'-0"	#13 @ 10" C.C.	#13 @ 18" C.C.	6"
10'-1" TO 15'-0"	#13 @ 8" C.C.	#13 @ 18" C.C.	6"
15'-1" TO 20'-0"	#13 @ 6" C.C.	#13 @ 18" C.C.	6"

REINFORCING SHOWN FOR PRECAST INLETS IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING FOR HANDLING IS THE RESPONSIBILITY OF THE CONTRACTOR.

ALTERNATE REINFORCEMENT

DEPTH BELOW TOP OF GRATE	REINFORCEMENT
0' TO 10'-0"	WWF 3 x 6 W6 WIRES SPACED AT 3" TO RUN HORIZONTAL IN ALL CASES.
10'-1" TO 15'-0"	WWF 3 x 6 W6 ADD #10 REINFORCEMENT STEEL @ 18" HORIZONTAL.
15'-1" TO 20'-0"	WWF 3 x 6 W6 ADD #10 REINFORCEMENT STEEL @ 9" HORIZONTAL OR ADD #13 REINFORCEMENT STEEL AT 15" HORIZONTAL.
- DIMENSIONS, WEIGHTS, AND OTHER CRITERIA SHOWN ON THESE DETAILS ARE FOR CLASS 35B CAST IRON.

CD-602-1.6

NOTE:
REINFORCEMENT STEEL IS IN METRIC UNITS.

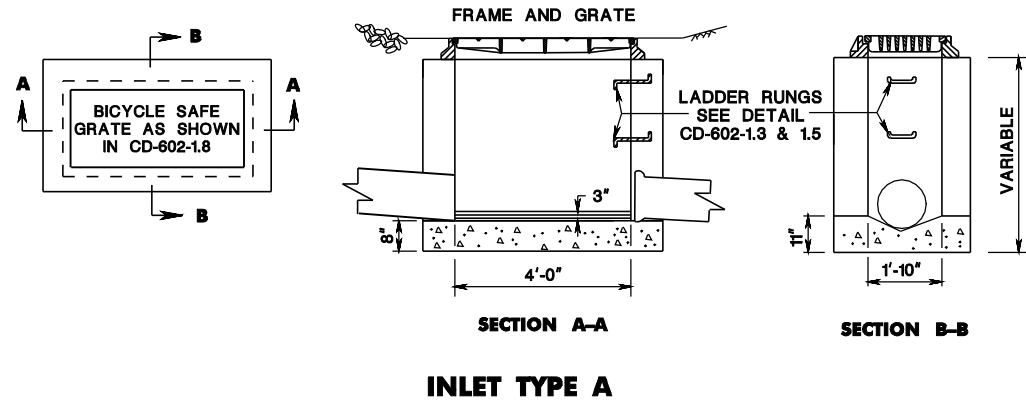
INLET GENERAL DETAILS

N.T.S.

CD-602-1

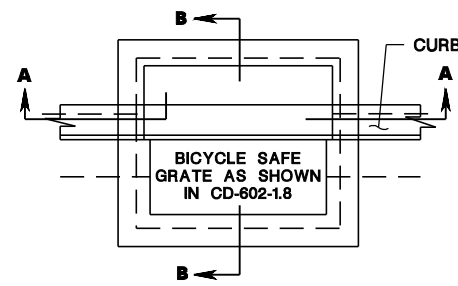
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS



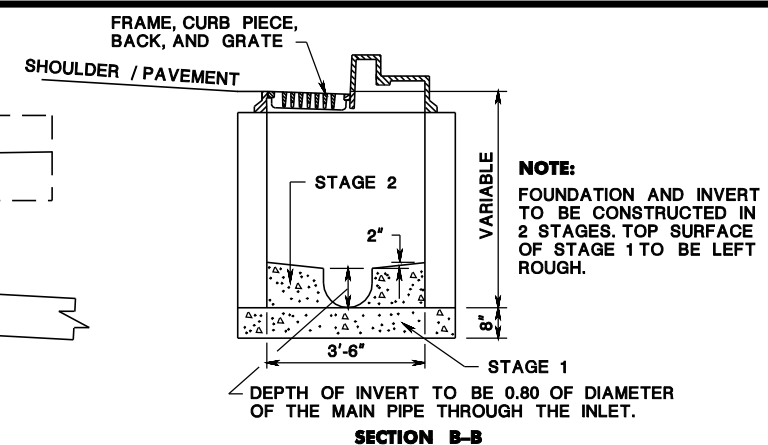
INLET TYPE A

CD-602-2.1

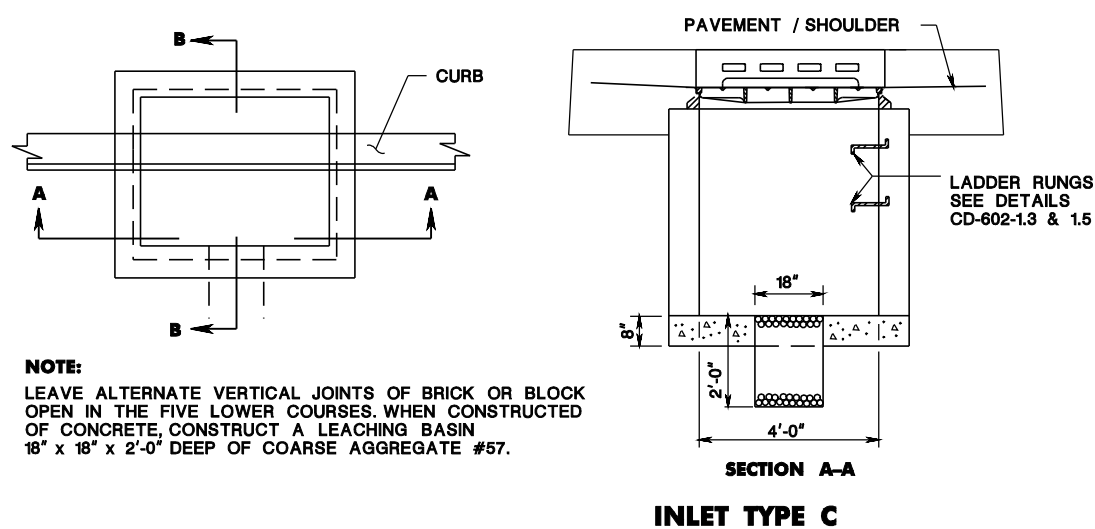


INLET TYPE B

CD-602-2.2



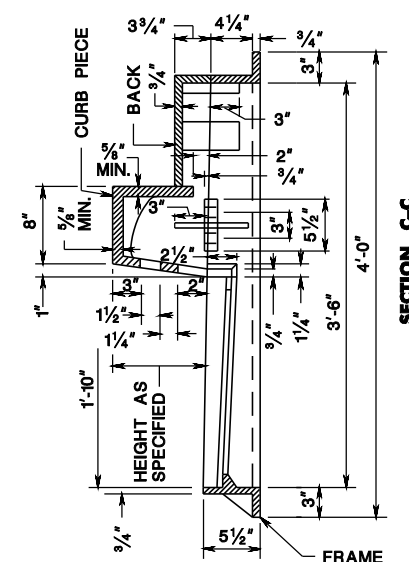
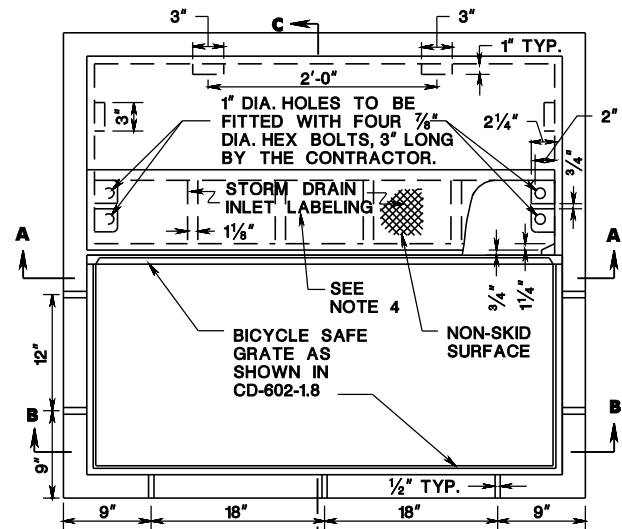
NOTE:
FOUNDATION AND INVERT TO BE CONSTRUCTED IN 2 STAGES. TOP SURFACE OF STAGE 1 TO BE LEFT ROUGH.



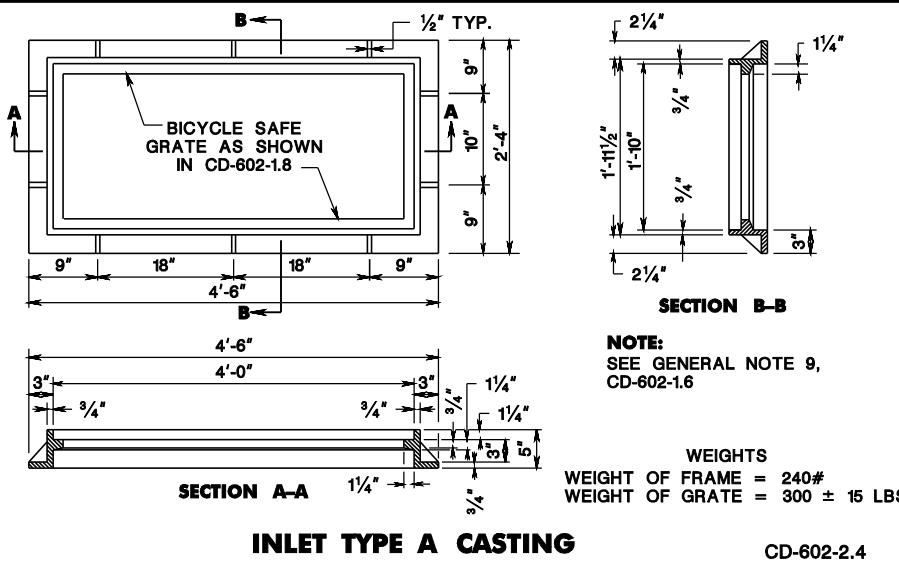
INLET TYPE C

CD-602-2.3

NOTE:
LEAVE ALTERNATE VERTICAL JOINTS OF BRICK OR BLOCK OPEN IN THE FIVE LOWER COURSES. WHEN CONSTRUCTED OF CONCRETE, CONSTRUCT A LEACHING BASIN 18" x 18" x 2'-0" DEEP OF COARSE AGGREGATE #57.

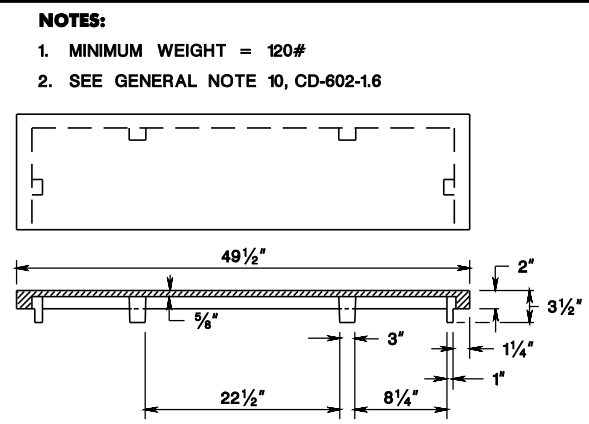


WEIGHTS CLASS 35B
 WEIGHT OF GRATE = 300 ± 15 LBS
 WEIGHT OF FRAME = 312#
 WEIGHT OF BACK = 120#
 WEIGHT OF CURB PIECE — 6" = 125#
 8" = 167#
 10" = 209#
 12" = 251#



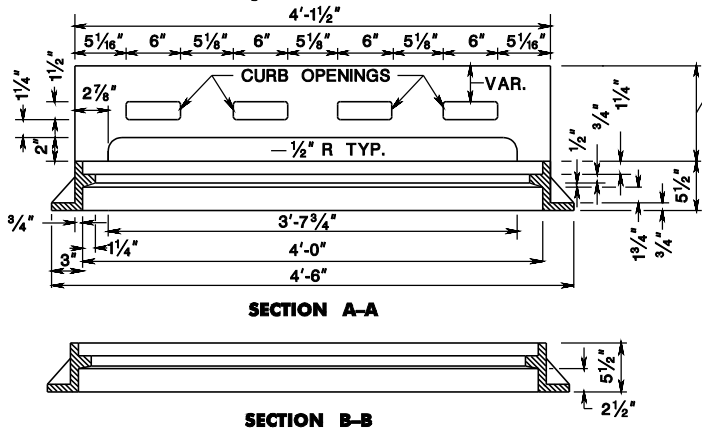
INLET TYPE A CASTING

CD-602-2.4



ALTERNATE BACK PLATE

CD-602-2.5



INLET TYPE B AND TYPE C CASTING

CD-602-2.6

NOTES:
 1. SEE ALTERNATE BACK PLATE DETAIL CD-602-2.5
 2. SEE GENERAL NOTE 9, CD-602-1.6
 3. THE CLEAR SPACE IN THE CURB OPENING OR EACH INDIVIDUAL CLEAR SPACE, IF THE CURB OPENING HAS TWO OR MORE CLEAR SPACES, MUST HAVE AN AREA OF NO MORE THAN SEVEN (7.0) SQUARE INCHES, OR BE NO GREATER THAN TWO (2.0) INCHES ACROSS THE SMALLEST DIMENSION.
 4. STORM DRAIN INLET LABEL TO READ "NO DUMPING, DRAINS TO WATERWAYS" OR OTHERWISE APPROVED BY THE RE. INCLUDE FISH LOGOS ON BOTH SIDES OF THE LABEL.

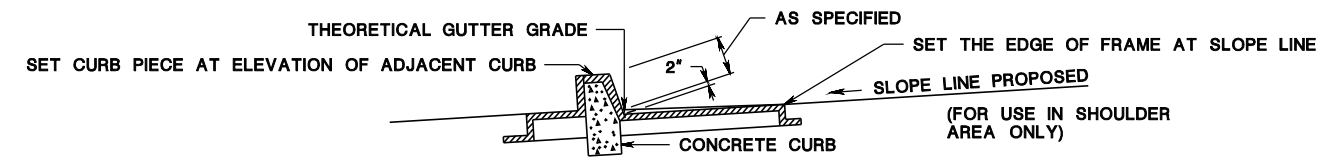
INLETS, TYPE A, B, & C
N.T.S.

CD-602-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

METHOD OF SETTING CASTING FOR B TYPE INLET WHERE CURB PIECE HEIGHT IS 2" GREATER THAN CURB FACE



CD-602-2.7

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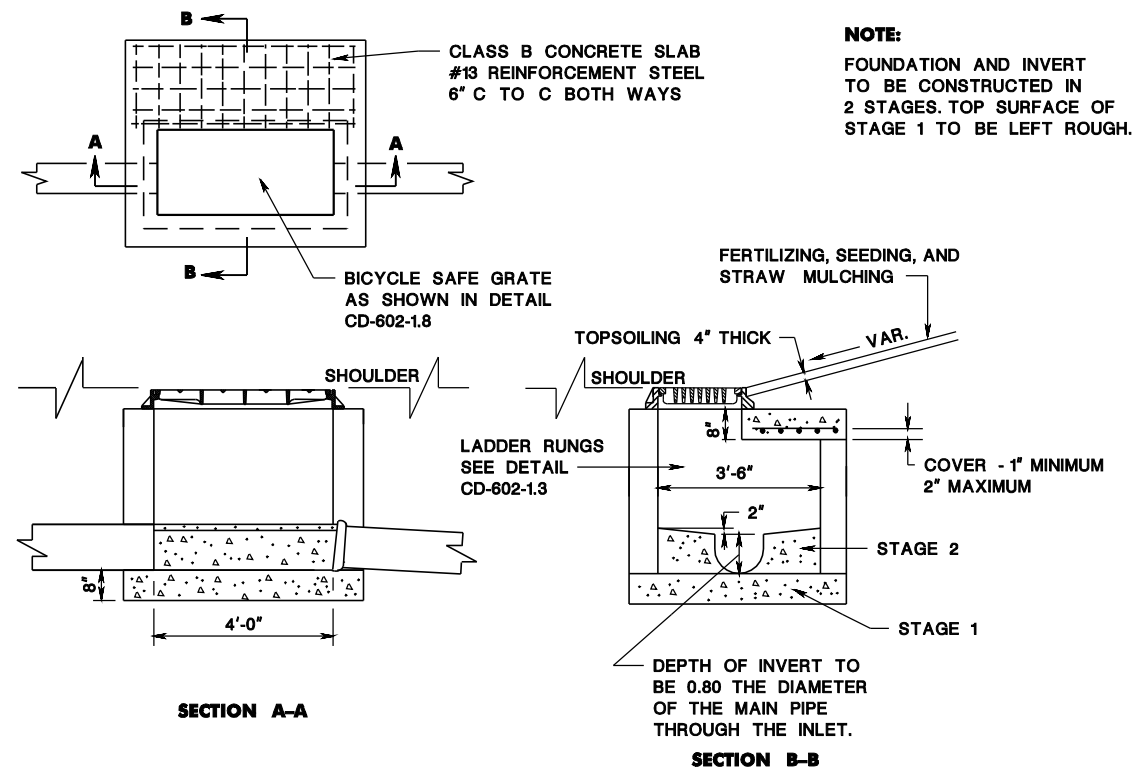
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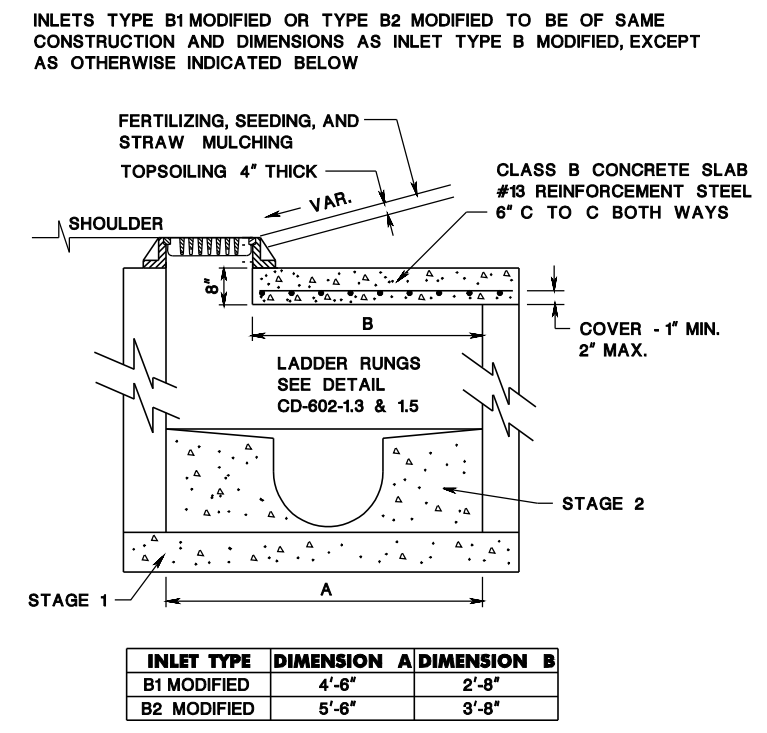
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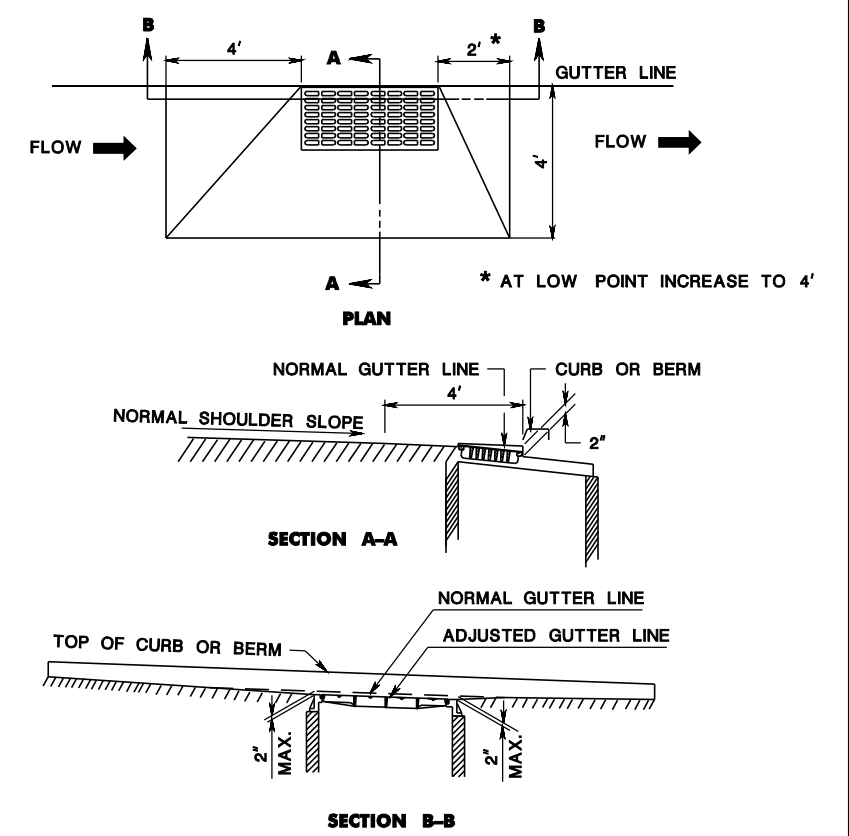
INLET, TYPE B MODIFIED

CD-602-3.1



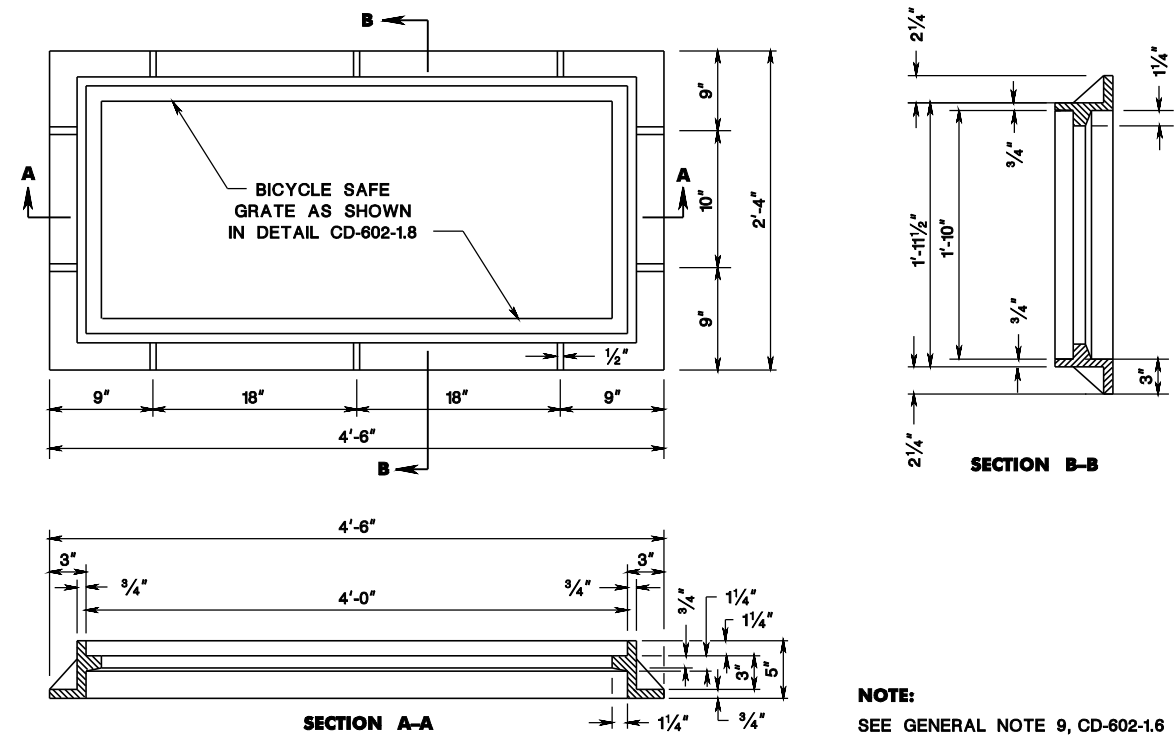
INLETS, TYPE B1 MODIFIED AND TYPE B2 MODIFIED

CD-602-3.2



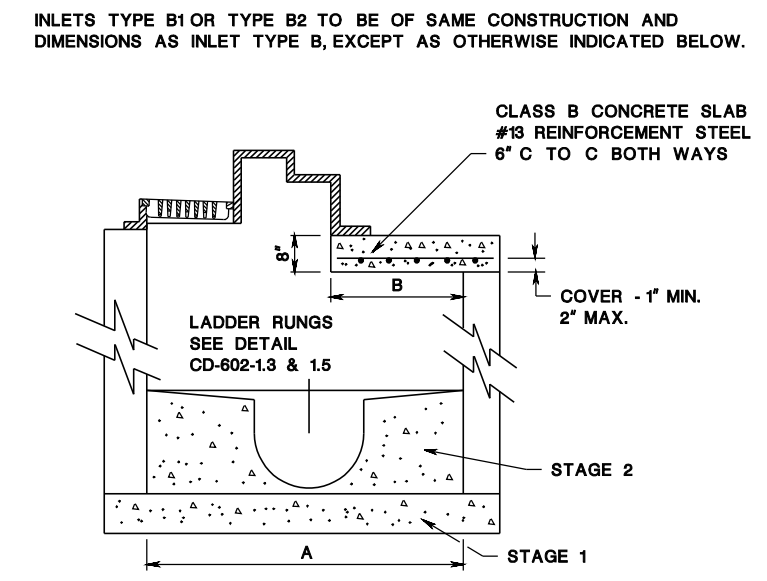
METHOD OF DEPRESSING INLETS AT SHOULDERS

CD-602-3.3



FRAME TO BE USED FOR INLET, TYPE B MODIFIED

CD-602-3.4



INLETS, TYPE B1 AND TYPE B2

CD-602-3.5

NOTE:
REINFORCEMENT STEEL IS IN METRIC UNITS.

INLETS, TYPE B1, B2, & B, B1, & B2 MODIFIED
N.T.S.

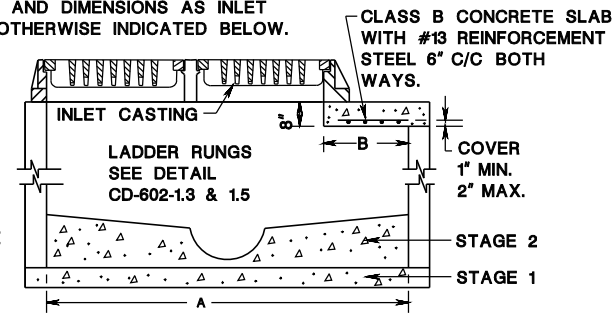
CD-602-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

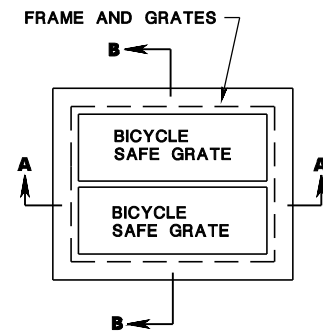
INLETS TYPE E1 AND TYPE E2 TO BE OF THE SAME CONSTRUCTION AND DIMENSIONS AS INLET TYPE E, EXCEPT AS OTHERWISE INDICATED BELOW.

NOTE:
CONSTRUCT FOUNDATION AND INVERT IN TWO STAGES. LEAVE TOP SURFACE OF STAGE 1 ROUGH.

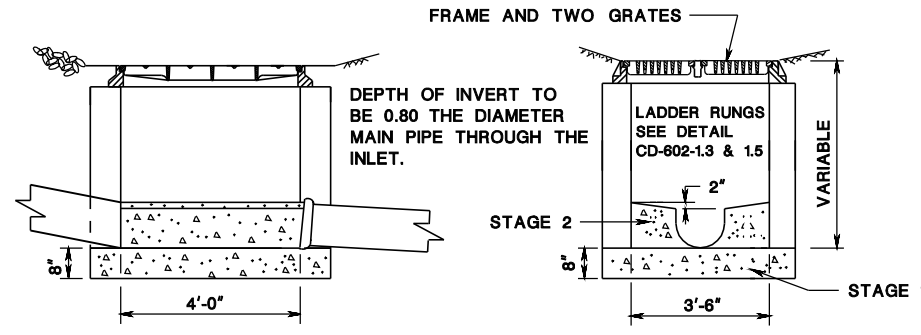


INLET TYPE	DIMENSION A	DIMENSION B
E 1	4'-6"	1'-0"
E 2	5'-6"	2'-0"

INLETS, TYPE E1 AND TYPE E2 CD-602-4.1



SECTION A-A

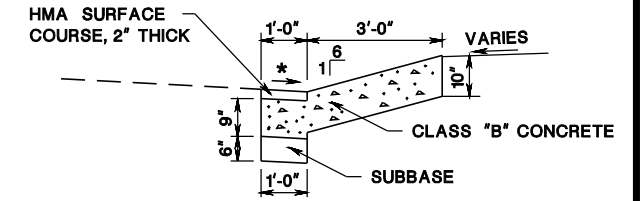


SECTION B-B

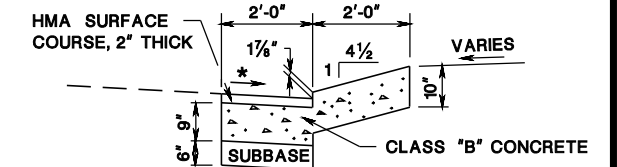
NOTE:
CONSTRUCT FOUNDATION AND INVERT IN 2 STAGES. LEAVE TOP SURFACE OF STAGE 1 ROUGH.

INLET, TYPE E

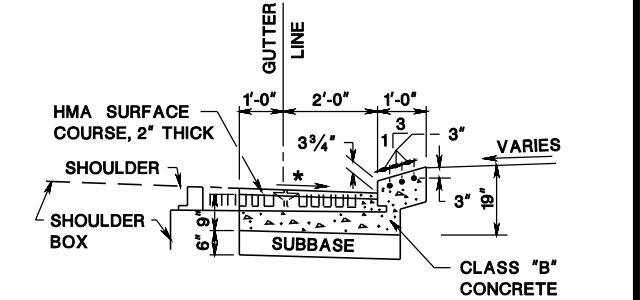
CD-602-4.2



SECTION A-A



SECTION B-B

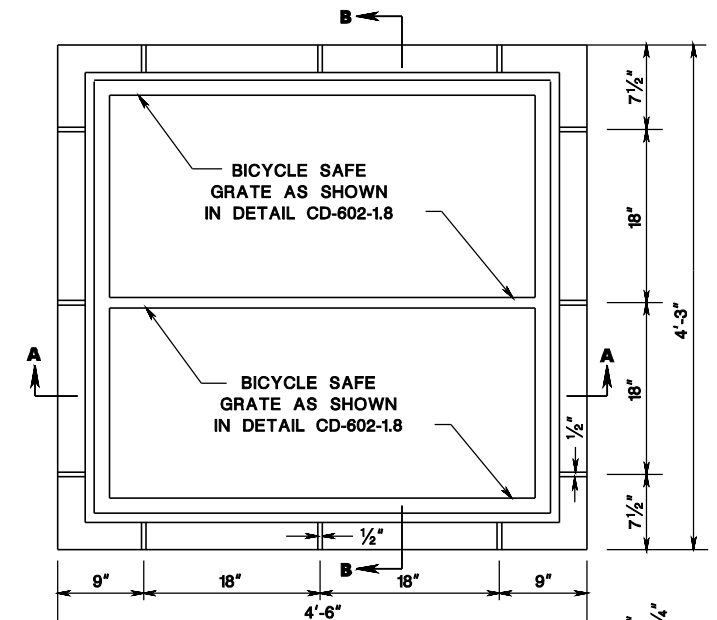


SECTION C-C

* SAME CROSS-SLOPE AS ADJOINING SHOULDER

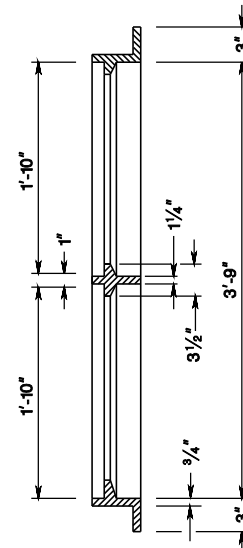
INLET, TYPE ES

CD-602-4.4



SECTION A-A

FRAME FOR INLET, TYPE E

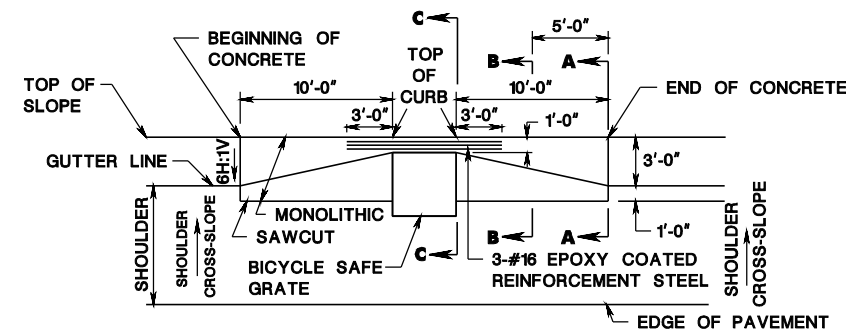


SECTION B-B

WEIGHT OF FRAME = 435#
WEIGHT OF EACH GRATE = 300 ± 15 LBS

NOTE:
SEE GENERAL NOTE 9, CD-602-1.6

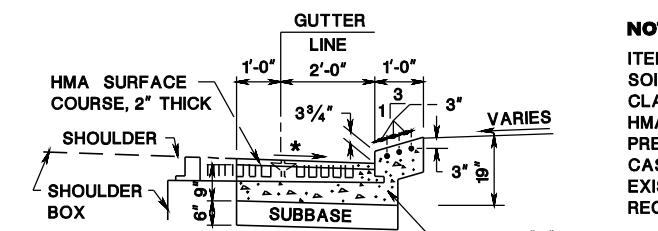
CD-602-4.3



PLAN VIEW

NOTE:
SHAPE THE UNDERLYING MATERIAL AND COMPACTED TO A FIRM, EVEN SURFACE.

NOTE:
ITEM ALSO INCLUDES EXCAVATION SUBBASE SOIL AGGREGATE 1-3, 6" THICK. CLASS B CONCRETE (ROADWAY) HMA SURFACE COURSE UNDERLAYER PREPARATION TACK COAT INLET, TYPE "E" WITH CASTING, AND REINFORCEMENT STEEL.



SECTION C-C

NOTE:
ITEM INCLUDES EXCAVATION SUBBASE SOIL AGGREGATE 1-3, 6 INCHES THICK. CLASS B CONCRETE (ROADWAY) HMA SURFACE COURSE UNDERLAYER PREPARATION TACK COAT INLET CASTING, TYPE "E" REMOVAL OF EXISTING CLASS B CONCRETE, IF REQUIRED.

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

INLETS, TYPE E, E1, E2, & ES

N.T.S.

CD-602-4

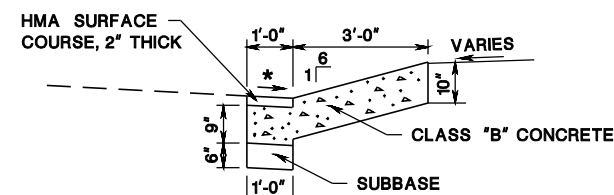
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

FOR EXISTING INLET TYPE "B", PROVIDE NEW INLET CASTING TYPE "E".
FOR EXISTING INLET TYPE "E" OR "ES" USE EXISTING CASTING.

PLAN VIEW

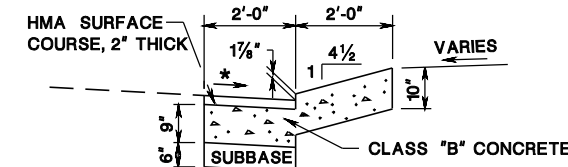
NOTE:
SHAPE THE UNDERLYING MATERIAL AND COMPACT TO A FIRM, EVEN SURFACE.



SECTION A-A

SET INLET TYPE ES, CASTING

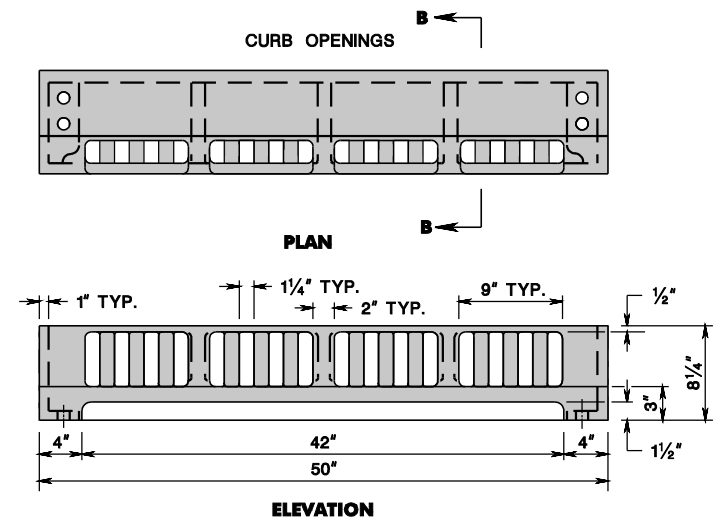
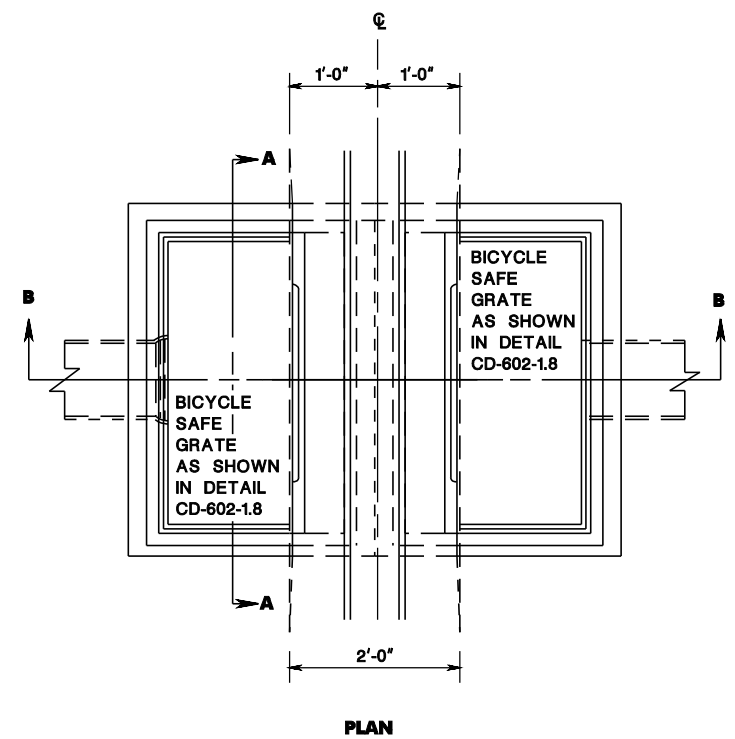
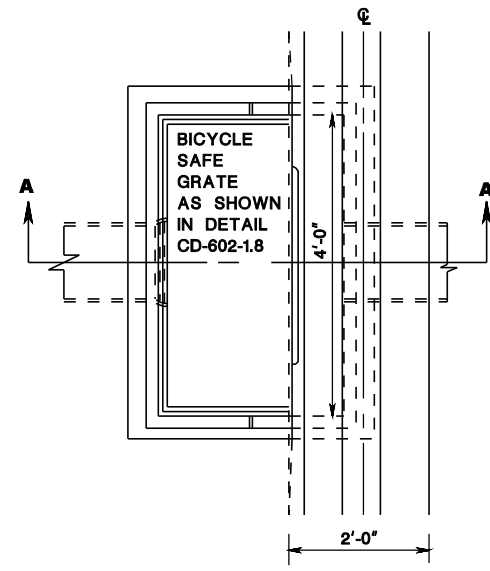
* SAME CROSS-SLOPE AS ADJOINING SHOULDER



SECTION B-B

CD-602-4.5

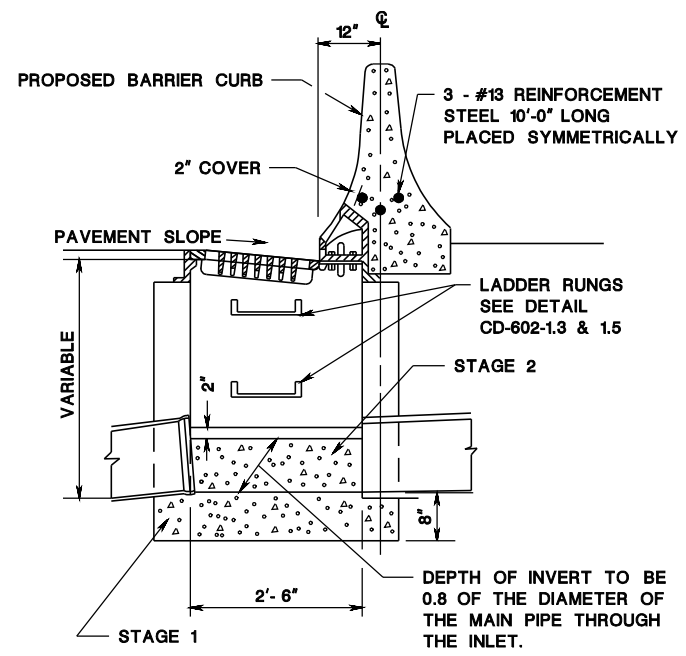
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 BDC\RD-01-ORIGINAL SHEET



CURB PIECE FOR INLETS, TYPE D1 AND D2

- NOTE:**
1. SEE GENERAL NOTE 9, CD-602-1.6
 2. THE CLEAR SPACE IN THE CURB OPENING (OR EACH INDIVIDUAL CLEAR SPACE, IF THE CURB OPENING HAS TWO OR MORE CLEAR SPACES) MUST HAVE AN AREA OF NO MORE THAN SEVEN (7.0) SQUARE INCHES, OR BE NO GREATER THAN TWO (2.0) INCHES ACROSS THE SMALLEST DIMENSION.

CD-602-5.3

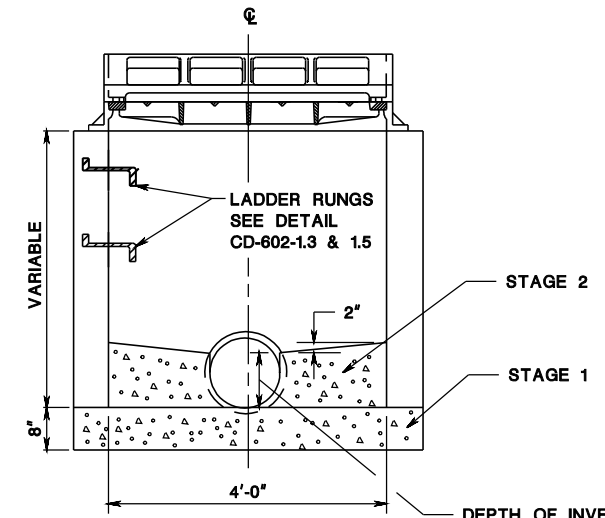


SECTION A-A

NOTE:
 CONSTRUCT FOUNDATION AND INVERT IN 2 STAGES.
 LEAVE TOP SURFACE OF STAGE 1 ROUGH.

INLET, TYPE D1

CD-602-5.1

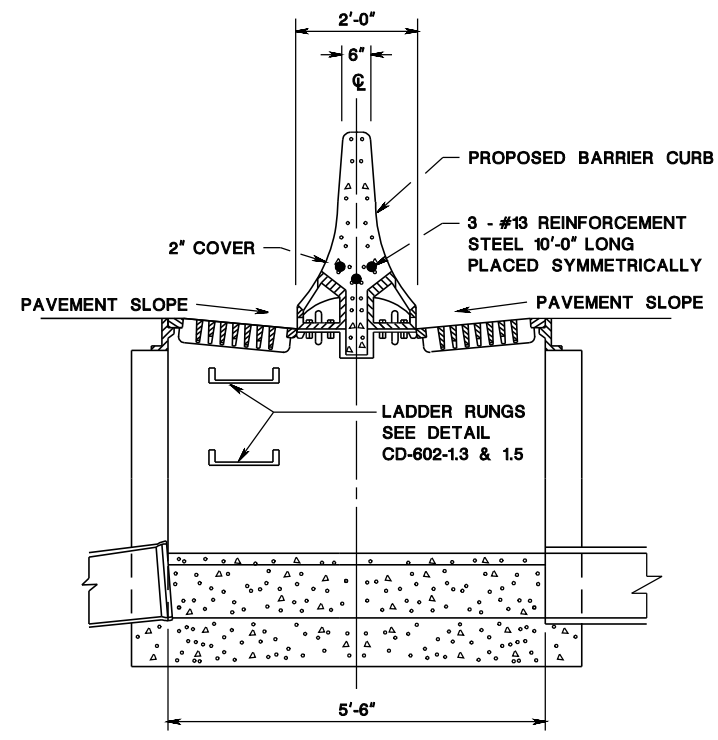


SECTION A-A

NOTE:
 CONSTRUCT FOUNDATION AND INVERT IN 2 STAGES.
 LEAVE TOP SURFACE OF STAGE 1 ROUGH.

INLET, TYPE D2

CD-602-5.2



SECTION B-B

NOTE:
 REINFORCEMENT STEEL IS IN METRIC UNITS.

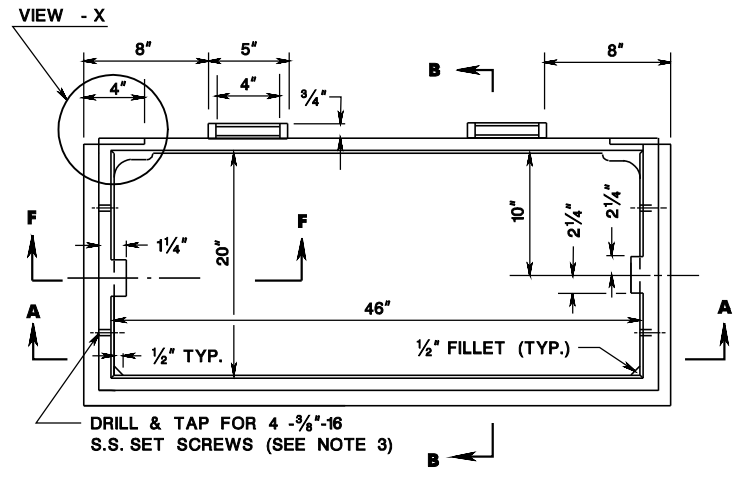
INLETS, TYPE D1 & D2
 N.T.S.

CD-602-5

NEW JERSEY DEPARTMENT OF TRANSPORTATION

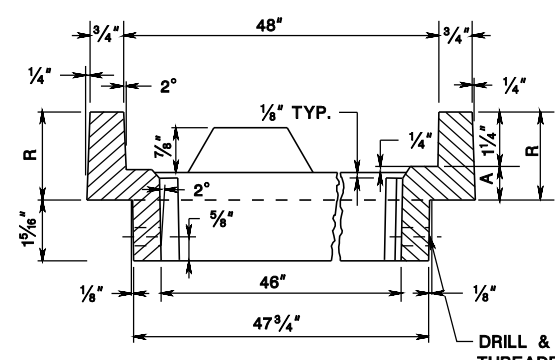
CONSTRUCTION DETAILS

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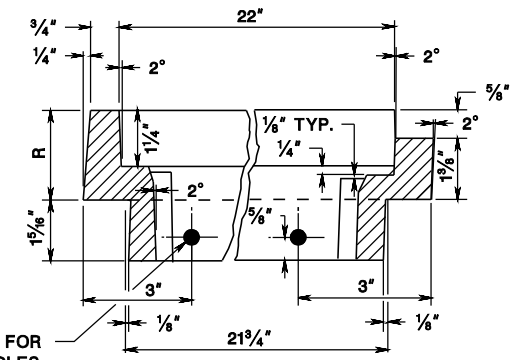
EXTENSION FRAMES FOR INLETS, TYPE B & C AND INLETS, TYPE D1 & D2

DRILL & TAP FOR 4 - 3/8"-16 S.S. SET SCREWS (SEE NOTE 3)

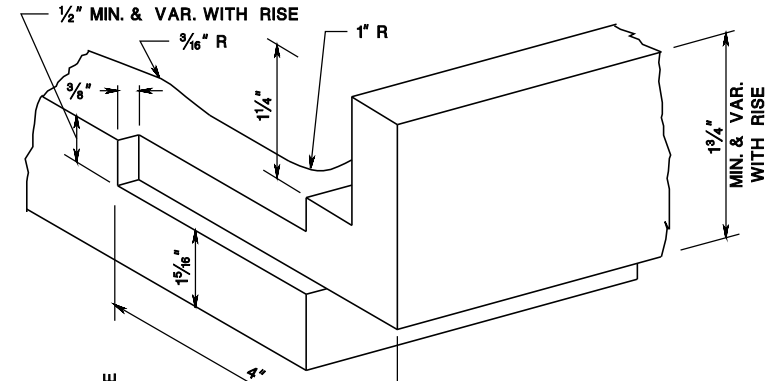


SECTION A-A

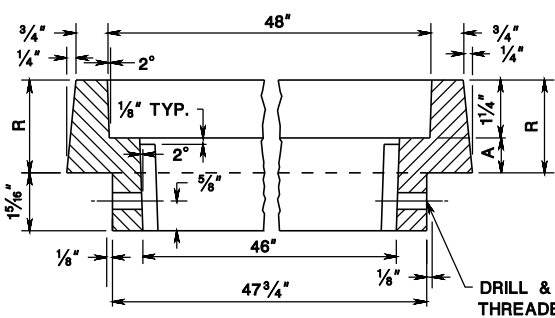
DRILL & TAP FOR THREADED HOLES, 3/8" - 16 N.C. THREAD (FOR FUTURE USE) (SEE NOTE 3)



SECTION B-B

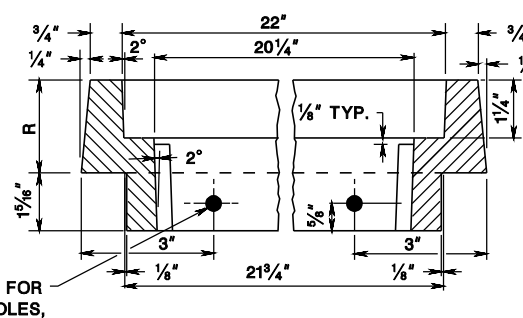


VIEW - X

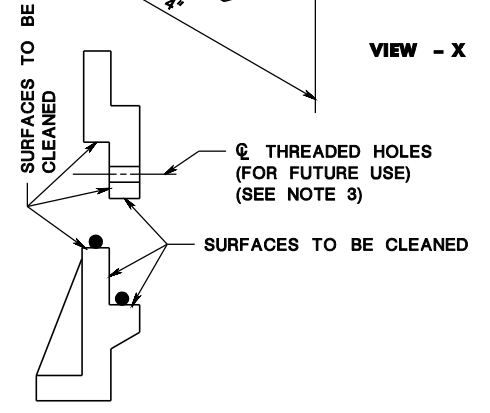


SECTION C-C

DRILL & TAP FOR THREADED HOLES, 3/8" - 16 N.C. THREAD (FOR FUTURE USE) (SEE NOTE 3)

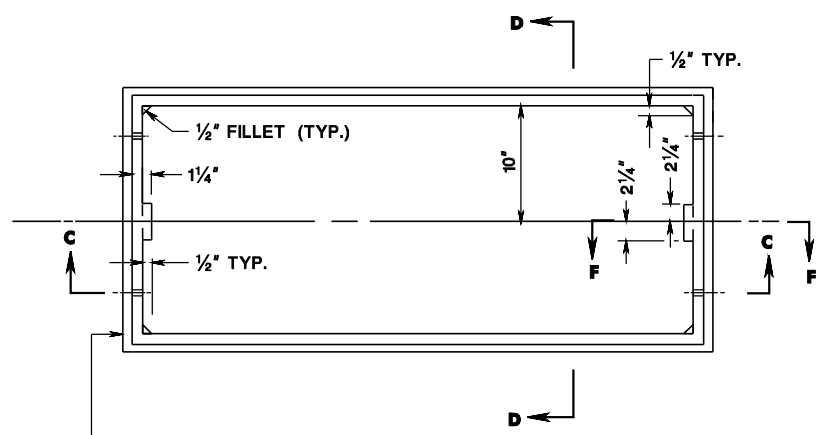


SECTION D-D



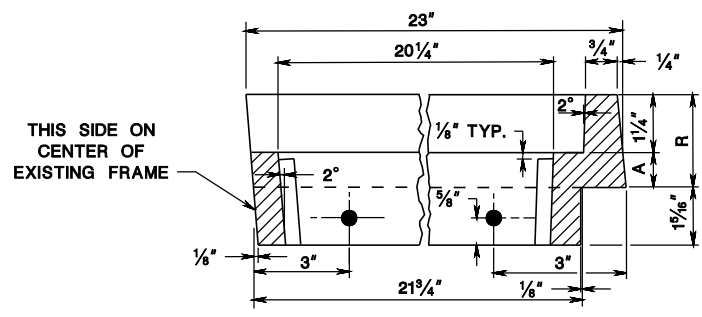
VIEW - Y

THREADED HOLES (FOR FUTURE USE) (SEE NOTE 3)



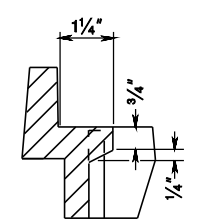
EXTENSION FRAMES FOR INLETS, TYPE A AND B MODIFIED

INLETS, TYPE E 1 EACH (2 UNITS)

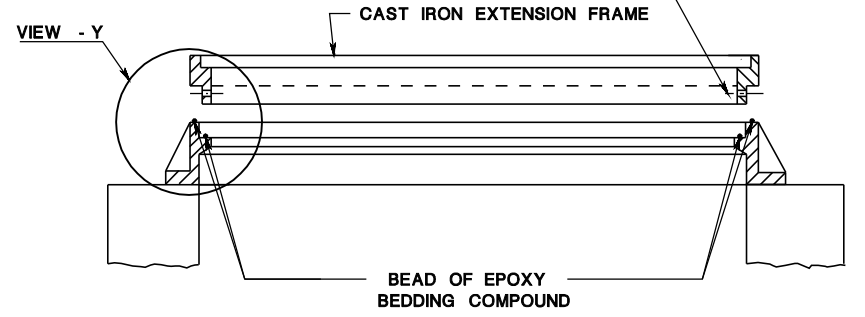


SECTION E-E

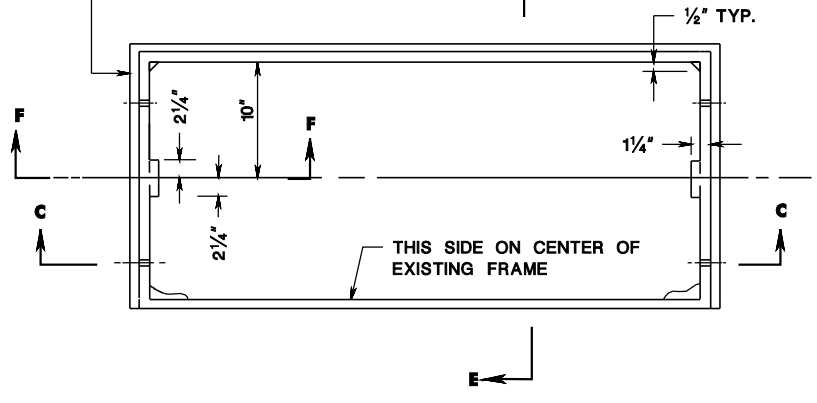
THIS LUG IS ONLY NECESSARY WHEN A BICYCLE SAFE GRATE (CAST IRON) IS USED



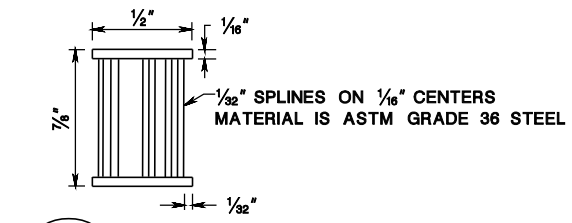
SECTION F-F



METHOD OF ATTACHING EXTENSION FRAMES



EXTENSION FRAMES FOR INLET, TYPE E (HALF ONLY)



THREADED INSERT FOR EXTENSION FRAMES ALTERNATE

TAPPED FOR 3/8"-16 THREAD

NOTES:

1. THE CONTRACTOR IS TO MEASURE THE EXISTING INLET FRAMES AND GRATES TO DETERMINE PROPER DIMENSIONS OF PROPOSED EXTENSION FRAMES BEFORE PLACING ORDER.
2. NOT TO BE USED WITH DISH GRATES.
3. A THREADED INSERT MAY BE USED AS AN ALTERNATE TO DRILLING AND TAPPING.
4. SEE GENERAL NOTE 9, CD-802-1.6

RISE=R	A
1 3/4"	1/2"
2"	3/4"
2 1/2"	1 1/4"
3"	1 3/4"
3 1/2"	2 1/4"

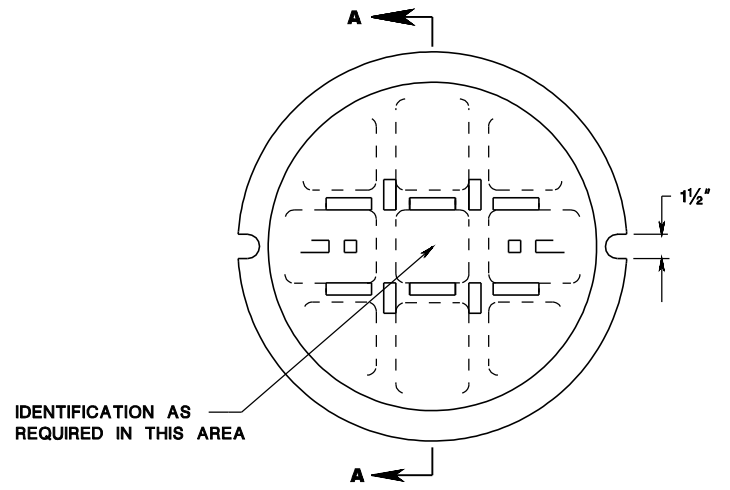
EXTENSION FRAMES FOR EXISTING INLETS
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

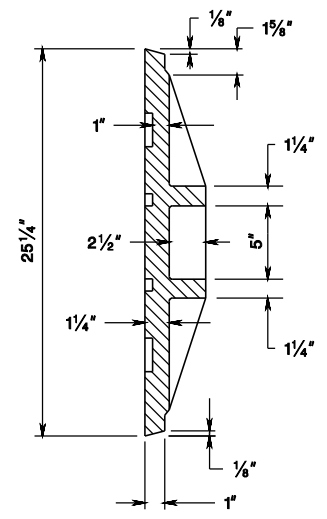
CD-602-6.1

CD-602-6

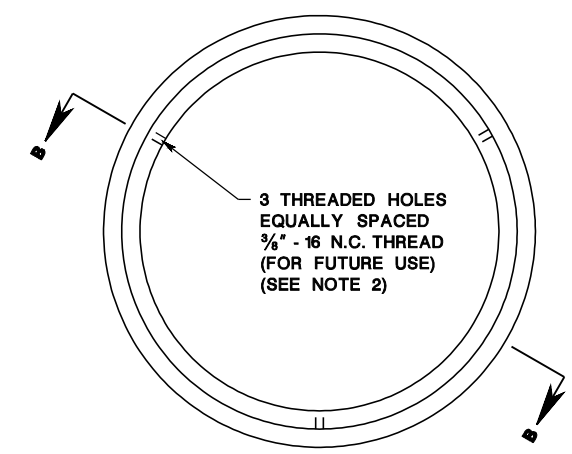


IDENTIFICATION AS REQUIRED IN THIS AREA

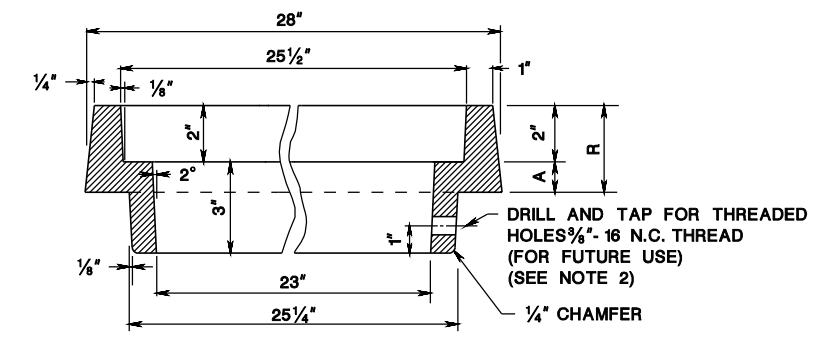
HEAVY DUTY COVER



SECTION A-A

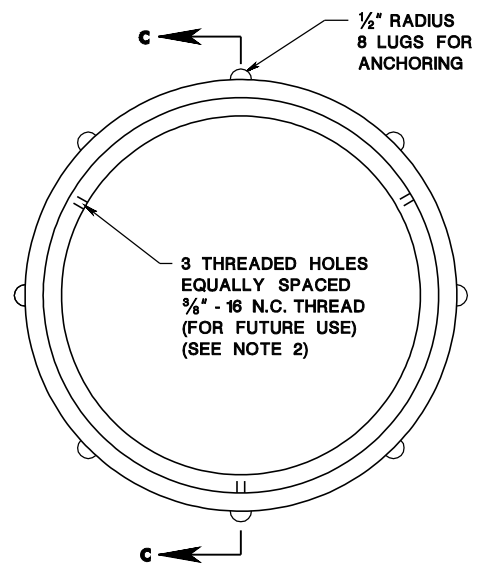


EXTENSION RING FOR MANHOLE COVER

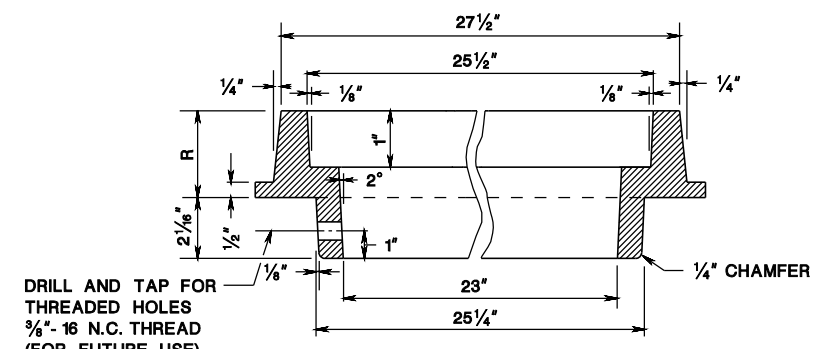


SECTION B-B

R = RISE	A
R = A + 2"	
2 1/2"	1/2"
3"	1"
3 1/2"	1 1/2"

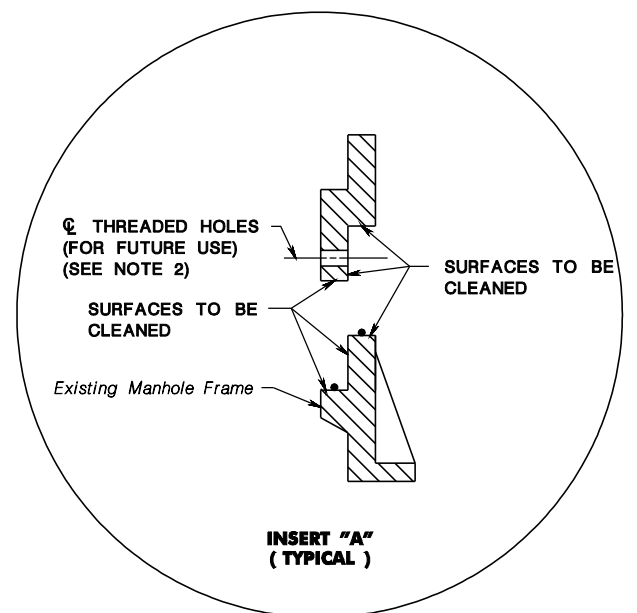


EXTENSION RING FOR HEAVY DUTY COVER
(SEE NOTE 3)



SECTION C-C

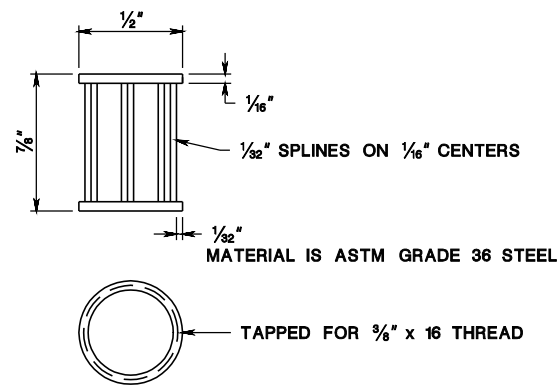
R = RISE
1 1/2"
1 3/4"
2"



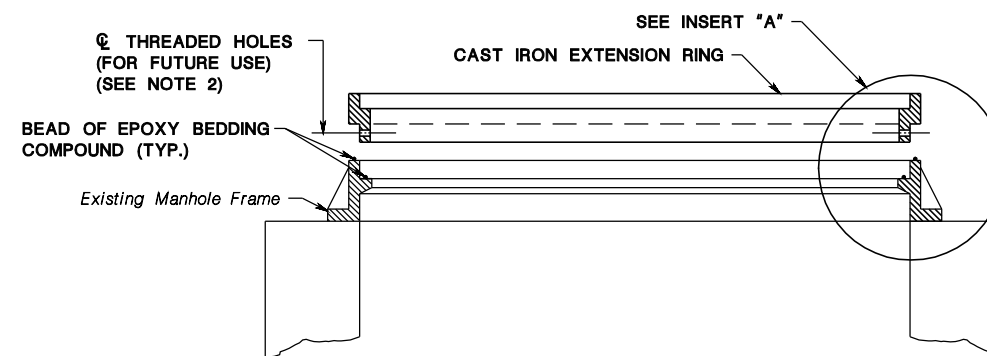
METHOD OF ATTACHING EXTENSION RING

NOTES:

1. MEASURE THE EXISTING MANHOLE FRAMES AND COVERS TO DETERMINE PROPER DIMENSIONS OF PROPOSED EXTENSION RINGS BEFORE PLACING ORDER.
2. A THREADED INSERT MAY BE USED AS AN ALTERNATE TO DRILLING AND TAPPING.
3. A HEAVY DUTY COVER TO BE USED FOR A RISE OF 1 1/2" TO 2 1/4" INCLUSIVE.
4. SEE GENERAL NOTE 9, CD-602-1.6.



THREADED INSERT FOR EXTENSION RING, ALTERNATE



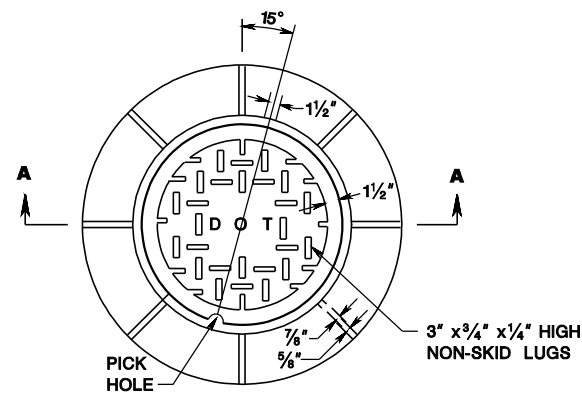
EXTENSION RING FOR EXISTING MANHOLE
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

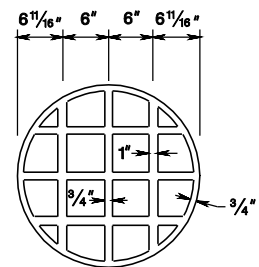
CONSTRUCTION DETAILS

CD-602-7

CD-602-7.1

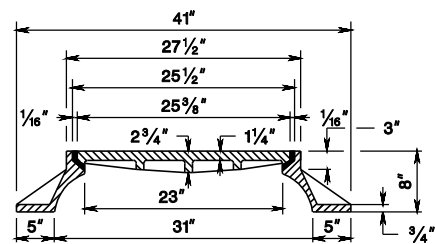


MINIMUM WEIGHTS
 WEIGHT OF FRAME = 265#
 WEIGHT OF COVER = 175#

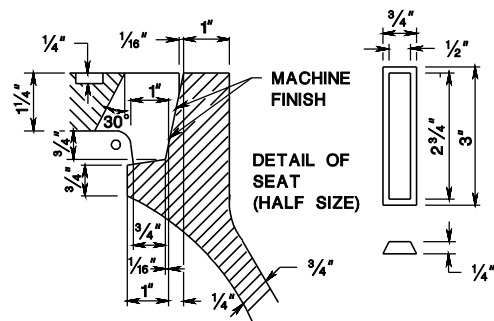


UNDERSIDE OF COVER

NOTE:
 SEE GENERAL NOTE 9, CD-602-1.6



SECTION A-A



DETAIL OF SEAT (HALF SIZE)

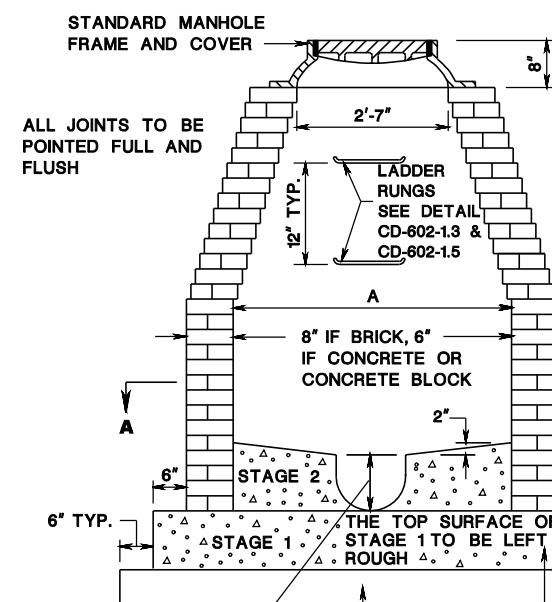
MANHOLE FRAME AND COVER

CD-602-8.1

GENERAL NOTES:

1. MANHOLE MAY BE CONSTRUCTED OF BRICK, CONCRETE, CONCRETE BLOCK, OR PRECAST CONCRETE.
2. WHEN THE DEPTH OF A MANHOLE EXCEEDS 10 FEET AS MEASURED FROM TOP OF COVER TO INVERT, THE WALLS OF BRICK, CONCRETE, OR CONCRETE BLOCK BELOW A DEPTH OF 8 FEET TO BE 12 INCHES THICK. THE OVERALL HORIZONTAL DIMENSIONS TO BE INCREASED 12 INCHES AND THE DEPTH OF THE FOUNDATION INCREASED TO 12 INCHES. WHEN ROCK IS ENCOUNTERED, THE HORIZONTAL DIMENSION AND DEPTH OF THE FOUNDATION IS NOT TO BE INCREASED. THE THICKNESS OF PRECAST CONCRETE MANHOLE WALLS DOES NOT HAVE TO BE INCREASED IF THE DEPTH OF THE MANHOLE EXCEEDS 10 FEET.
3. ADJUST CASTINGS OF PRECAST MANHOLES TO GRADE WITH COURSES OF BRICK OR CONCRETE BLOCK, AS REQUIRED, 12 INCHES MAXIMUM.
4. AS AN ALTERNATE TO THE STANDARD MANHOLE FRAME AND COVER, A 39 INCH DIAMETER FRAME WITH 4 INCH FLANGE MAY BE FURNISHED WITH ALL OTHER DIMENSIONS AND WEIGHTS REMAINING THE SAME.
5. IN A BRICK, CONCRETE, OR CONCRETE BLOCK MANHOLE, CONSTRUCT THE INVERT IN TWO STAGES.
6. AS AN ALTERNATIVE, COPOLYMER POLYPROPYLENE PLASTIC LADDER RUNGS MAY BE FURNISHED IN PRECAST MANHOLES AND INLETS.

CD-602-8.3



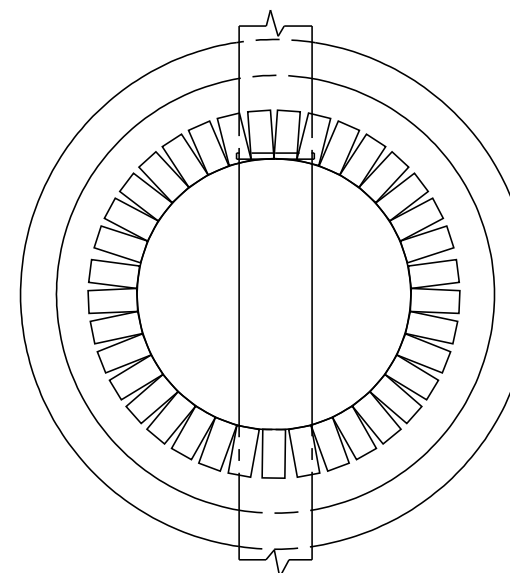
ITEM	DIMENSION A
MANHOLES	4'-0"
MANHOLES 5'-0" DIA.	5'-0"
MANHOLES 6'-0" DIA.	6'-0"

NOTE:
 DEPTH OF INVERT TO BE 0.80 OF THE DIAMETER OF THE MAIN SEWER THROUGH THE MANHOLE (TYP)

COARSE AGGREGATE #57 IF FOOTING IS PRECAST

NOTE:
 CONSTRUCT FOUNDATION AND INVERT IN TWO STAGES.

BOTTOM OF FOOTING TO BE 10" BELOW BOTTOM O.D. OF LOWEST PIPE



SECTION A-A

MANHOLE 5 FOOT DIAMETER, MANHOLE 6 FOOT DIAMETER

MANHOLE
 N.T.S.

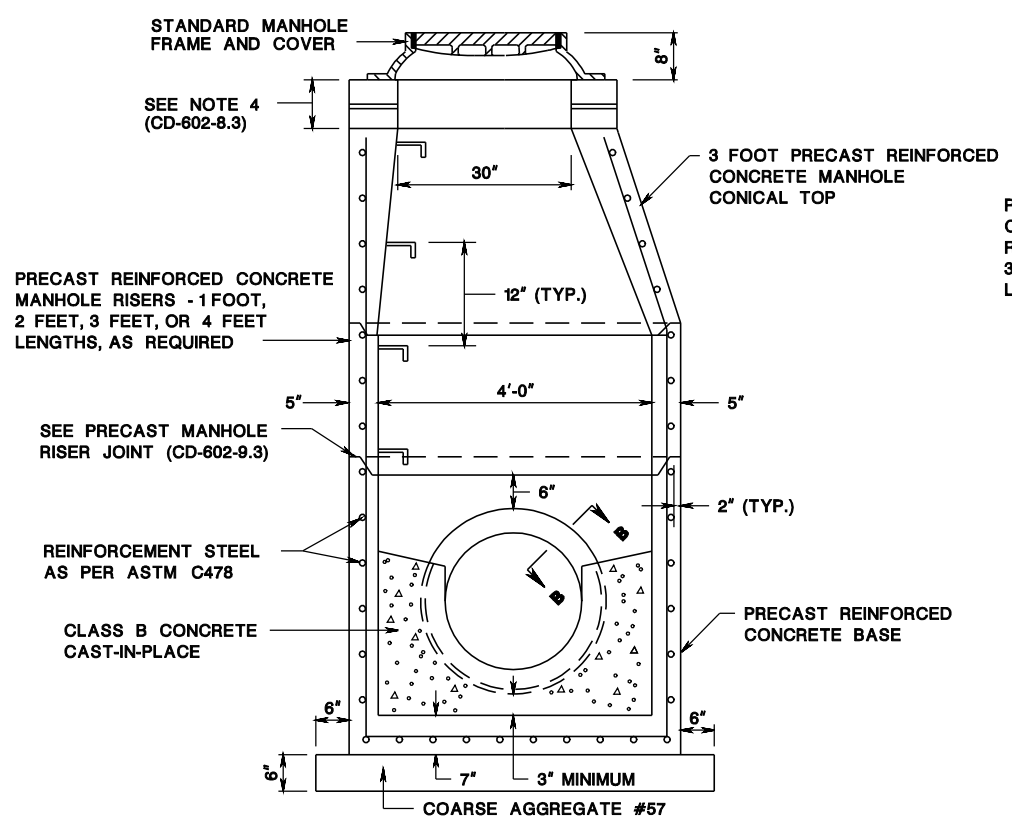
CD-602-8

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

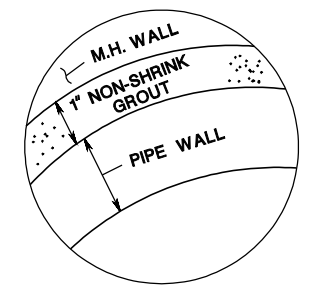
CD-602-8.2

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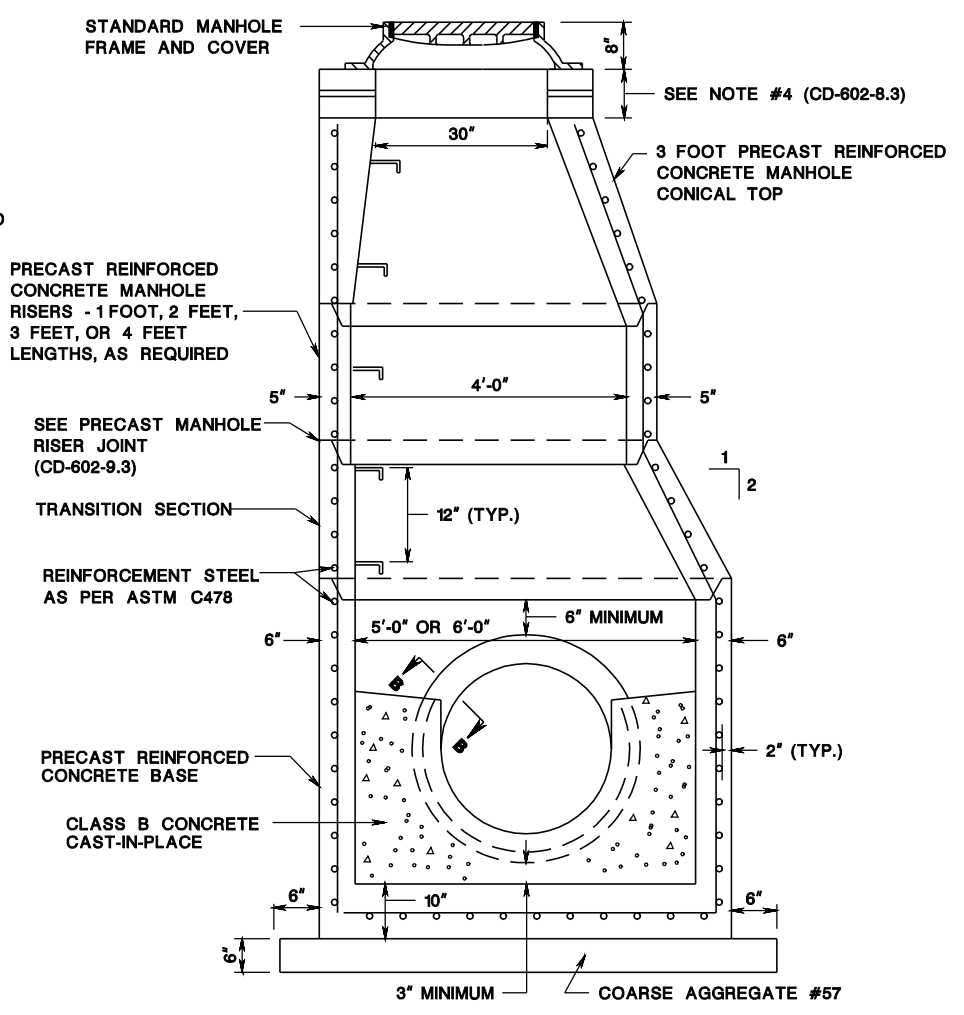


PRECAST REINFORCED CONCRETE MANHOLE SECTIONS TO CONFORM TO ASTM C478

MANHOLE PRECAST CONCRETE

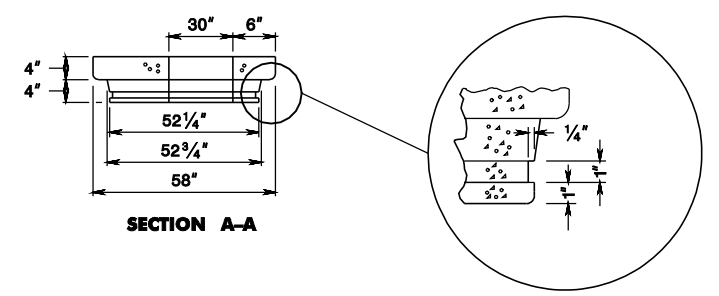


SECTION B-B



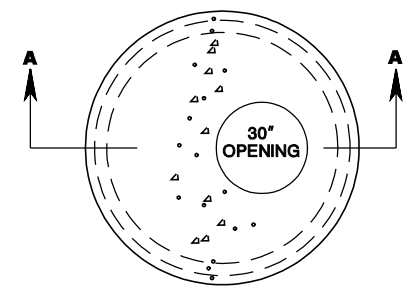
MANHOLE 5' DIAMETER, MANHOLE 6' DIAMETER PRECAST CONCRETE

CD-602-9.1



SECTION A-A

GROOVE FOR "O" RING RUBBER GASKET

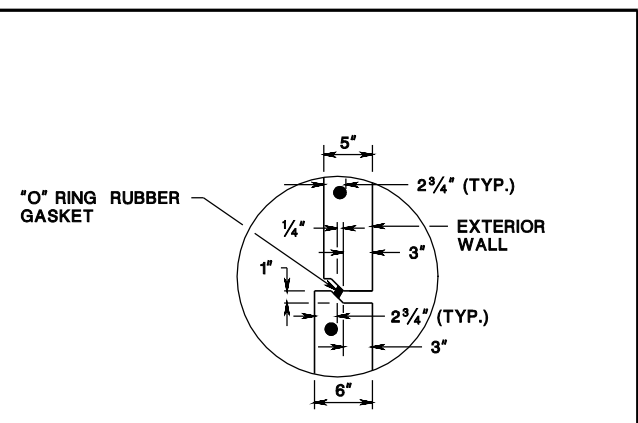


PLAN

NOTE:
 USE IN LIEU OF CONICAL SECTION WHEN HEIGHT OF MANHOLE IS LESS THAN 4 FEET

48" PRECAST REINFORCED CONCRETE MANHOLE FLAT TOP

CD-602-9.2



PRECAST MANHOLE RISER JOINT

CD-602-9.3

PRECAST MANHOLE
 N.T.S.

CD-602-9

NEW JERSEY DEPARTMENT OF TRANSPORTATION

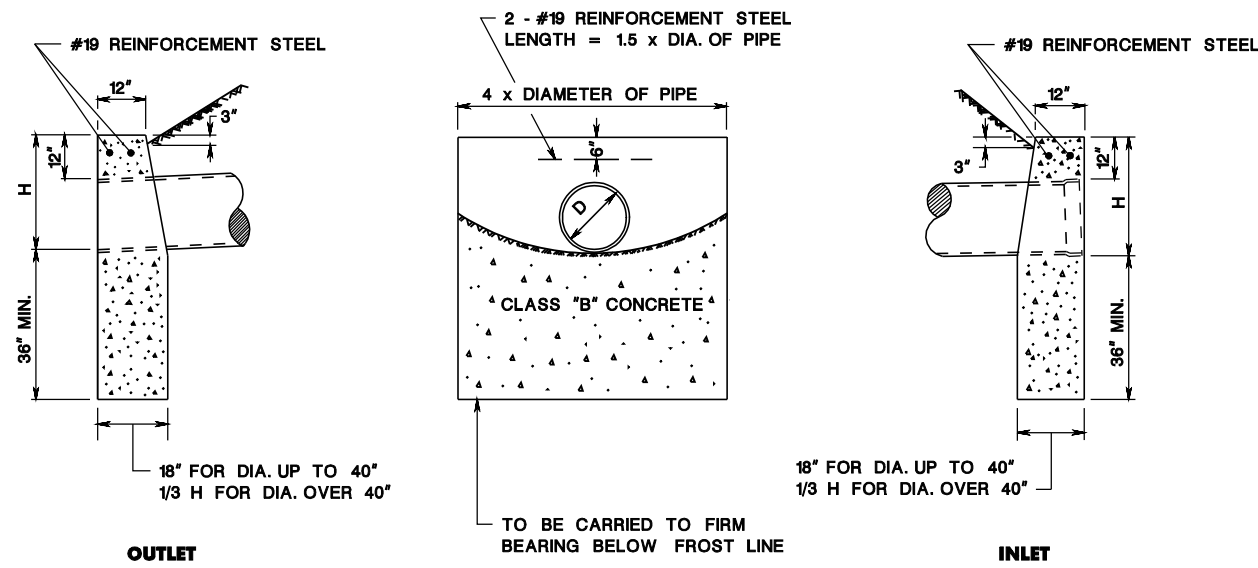
CONSTRUCTION DETAILS

HEADWALL QUANTITY IN CUBIC YARDS

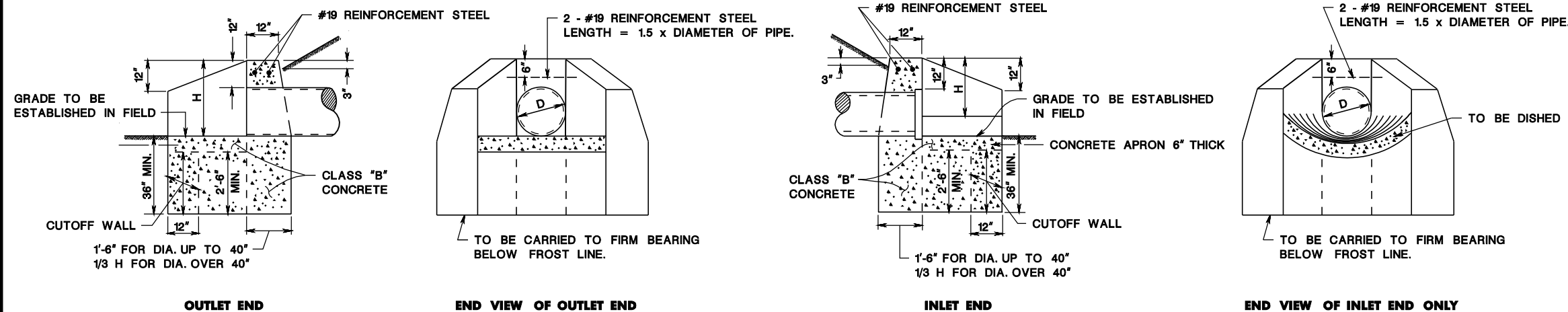
PIPE DIA.	CORR. STEEL PIPE	REINF. CONC. PIPE
12"	1.0	1.1
15"	1.3	1.4
18"	1.7	1.7
21"	2.0	2.1
24"	2.3	2.5
27"	2.7	2.8
30"	3.1	3.3
36"	3.9	4.2
42"	4.8	5.8
48"	6.3	7.6
54"	8.1	9.7
60"	10.1	12.1
66"	12.3	14.9
72"	14.5	18.0

GENERAL NOTES:

1. THE FINISHING OF CONCRETE HEADWALLS WILL NOT BE REQUIRED FOR HEADWALLS AT THE BOTTOM OF EMBANKMENTS IN RURAL AREAS.
2. ALL EDGES TO BE CHAMFERED 1 INCH.
3. FOR ARCH PIPE USE LENGTH OF HEADWALL AS $3H + \text{SPAN}$.
4. FOR MORE THAN ONE PIPE, SET THE PIPE A MINIMUM OF ONE FOOT APART (OUTSIDE BARREL TO OUTSIDE BARREL); THE ENDS OF THE HEADWALL TO BE SET $2 \times \text{DIAMETER}$ OFF THE CENTERLINE OF THE CONTROLLING PIPE.



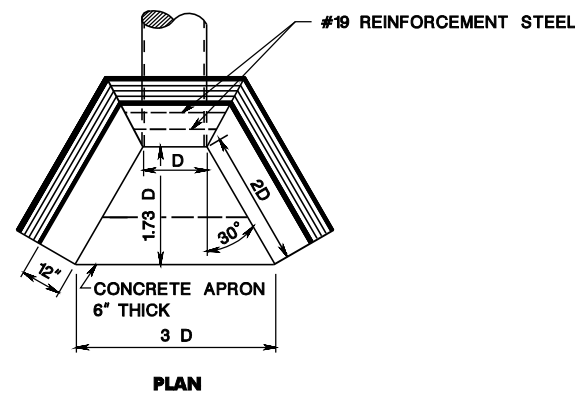
CONCRETE HEADWALL



NOTE:
REINFORCEMENT STEEL IS IN METRIC UNITS.

VOLUME OF CONCRETE IN HEADWALLS AND APRONS IN CUBIC YARDS

PIPE DIA.	CORR. STEEL PIPE	REIN. CONC. PIPE	APRONS
12"	1.6	1.7	0.4
15"	2.0	2.1	0.5
18"	2.4	2.5	0.6
21"	2.8	3.0	0.8
24"	3.3	3.4	0.9
27"	3.7	4.0	1.1
30"	4.2	4.5	1.2
36"	5.3	5.6	1.5
42"	7.2	7.9	1.9
48"	9.4	10.4	2.3
54"	12.0	13.3	2.7
60"	15.0	16.6	3.2
66"	18.5	20.5	3.7
72"	22.4	24.8	4.2



CONCRETE HEADWALL WITH APRON

GENERAL NOTES:

1. ALL EDGES TO BE CHAMFERED 1 INCH.
2. THE FINISHING OF CONCRETE HEADWALLS WILL NOT BE REQUIRED FOR HEADWALLS AT THE BOTTOM OF EMBANKMENTS IN RURAL AREAS.
3. FOR MORE THAN ONE PIPE, SET THE PIPES A MINIMUM OF ONE FOOT APART (OUTSIDE BARREL TO OUTSIDE BARREL); THERE IS TO BE 12 INCHES ABOVE THE TOP OF A PIPE IN A WINGWALL: THE TERMINUS OF THE WINGWALL TO BE $2 \times \text{DIAMETER}$ FROM THE CENTERLINE OF THE PIPE IN A WINGWALL.
4. SET THE TERMINUS FOR OUTLET AND INLET APRONS BY EXTENDING THE PIPE GRADE AHEAD AND BACK, RESPECTIVELY.
5. FOR ARCH PIPE, THE SPAN TO BE SUBSTITUTED FOR D.

CONCRETE HEADWALL AND APRON

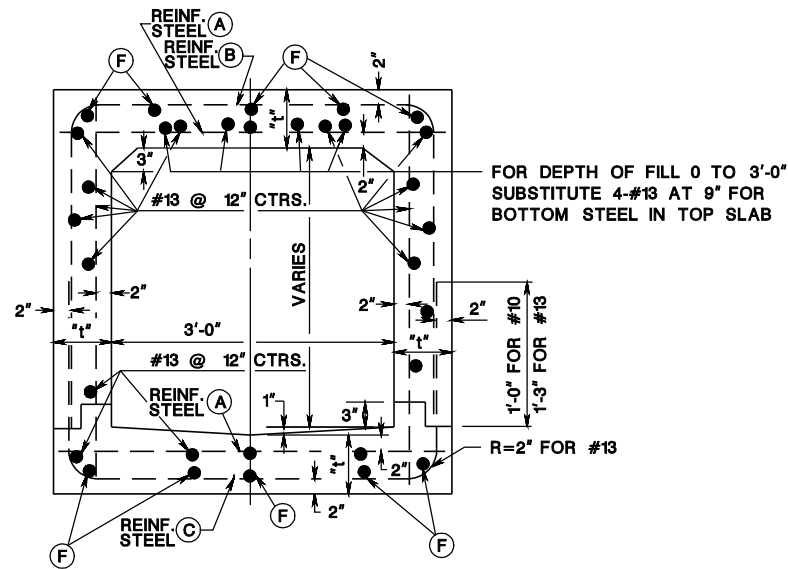
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

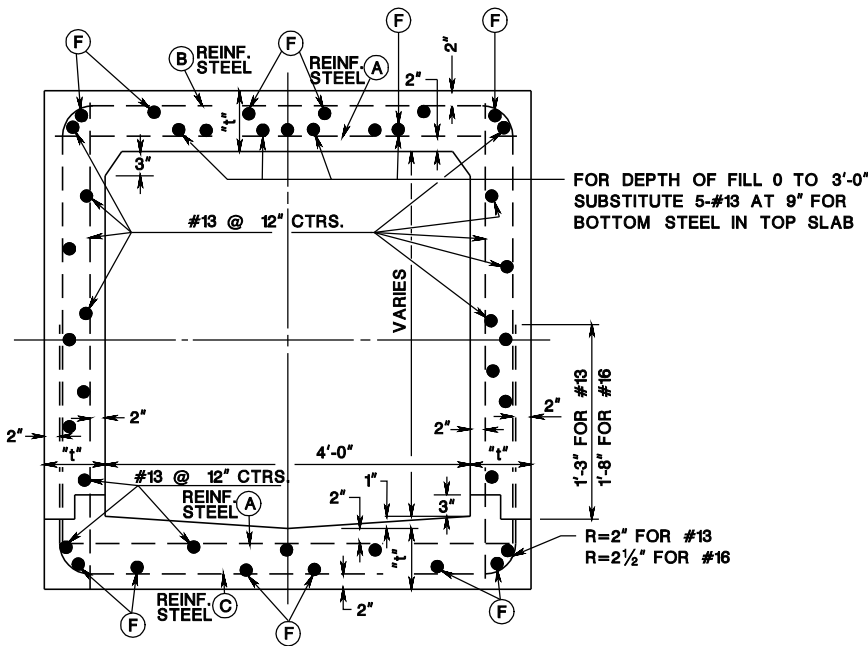
CONSTRUCTION DETAILS

CD-602-10

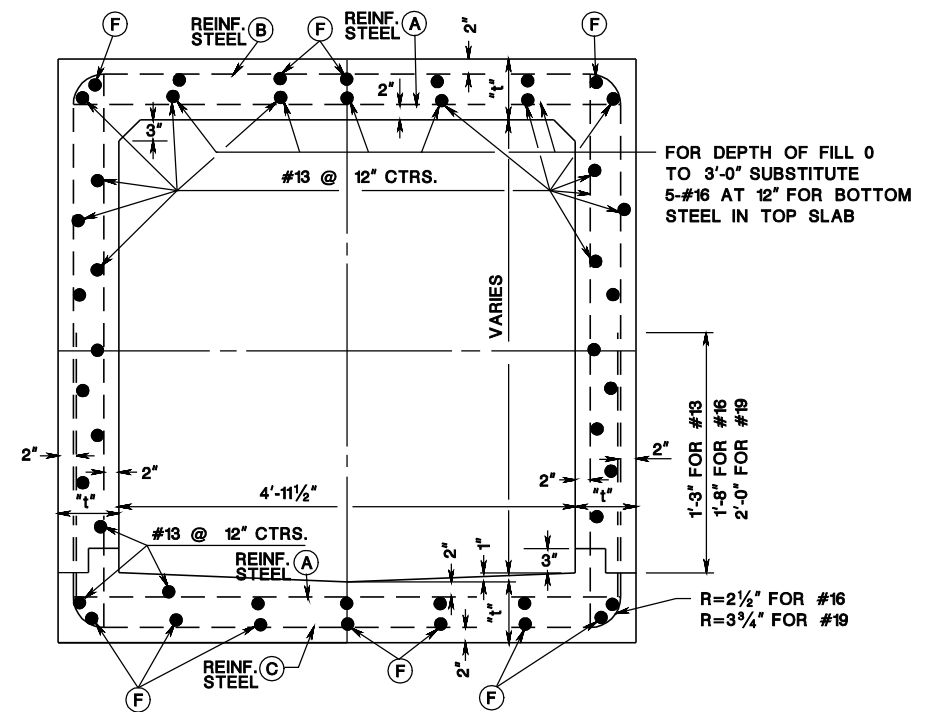
STANDARD 3'-0" CONCRETE CULVERT



STANDARD 4'-0" CONCRETE CULVERT



STANDARD 4'-11 1/2" CONCRETE CULVERT



DEPTH OF FILL	REINF. STEEL	SPAN 3 FT.		THICKNESS
		REINF. STEEL	SPACING	
0	A	#13	5"	8"
	B&C	#13	12"	
3'-1"	A	#13	12"	8"
	B&C	#13	12"	
10'-1"	A	#13	9"	8"
	B&C	#13	10"	
15'-1"	A	#13	7"	8"
	B&C	#13	9"	
20'-1"	A	#13	6"	8"
	B&C	#13	7"	

DEPTH OF FILL	REINF. STEEL	SPAN 4 FT.		THICKNESS
		REINF. STEEL	SPACING	
0	A	#13	4"	8"
	B&C	#13	10"	
3'-1"	A	#13	9"	8"
	B&C	#13	12"	
10'-1"	A	#13	6"	8"
	B&C	#13	9"	
15'-1"	A	#16	7"	8"
	B&C	#16	10"	
20'-1"	A	#16	6"	9"
	B&C	#16	10"	

DEPTH OF FILL	REINF. STEEL	SPAN 4'-11 1/2"		THICKNESS
		REINF. STEEL	SPACING	
0	A	#16	5"	8"
	B&C	#16	12"	
3'-1"	A	#13	6"	8"
	B&C	#13	9"	
10'-1"	A	#16	7"	9"
	B&C	#16	12"	
15'-1"	A	#16	7"	10"
	B&C	#16	10"	
20'-1"	A	#16	5"	10"
	B&C	#16	8"	
25'-1"	A	#19	6"	11"
	B&C	#19	9"	

NOTES:
 TOP AND BOTTOM LAYER OF LONGITUDINAL REINFORCEMENT STEEL (F) TO BE SAME SIZE AS REINFORCEMENT STEEL A, B, & C AND SPACED 12" CTRS.
 FOR BACKFILLING AND EMBANKMENT SEE NJDOT STANDARD SPECIFICATIONS.
 REINFORCEMENT STEEL TO CONFORM TO ASTM A615, GRADE 60.

VOLUME OF CONCRETE AND WEIGHT OF REINFORCEMENT PER LINEAR FOOT OF CULVERT

SIZE OF CULVERT OPENING IN FEET	3'-0" x 3'-0"					4'-0" x 3'-0"					4'-0" x 4'-0"					4'-11 1/2" x 3'-0"					4'-11 1/2" x 4'-0"					4'-11 1/2" x 5'-0"					
	3	10	15	20	25	3	10	15	20	25	3	10	15	20	25	3	10	15	20	25	3	10	15	20	25	3	10	15	20	25	40
MAX DEPTH OF FILL FT.	3	10	15	20	25	3	10	15	20	25	3	10	15	20	25	3	10	15	20	25	3	10	15	20	25	3	10	15	20	25	40
VOLUME OF CONCRETE CU. YD. PER FT.	0.37	0.37	0.37	0.37	0.37	0.42	0.42	0.42	0.42	0.48	0.47	0.47	0.47	0.47	0.54	0.47	0.47	0.54	0.61	0.61	0.52	0.52	0.60	0.67	0.67	0.57	0.57	0.65	0.73	0.73	0.82
REINFORCEMENT LB. PER FT.	53	43	48	53	59	66	50	60	75	79	70	54	63	84	89	88	74	84	89	105	94	81	90	96	114	99	85	95	102	122	150

NOTE:
 FIRST DIMENSION OF CULVERT SIZE INDICATES THE SPAN. CULVERT TO BE CONSTRUCTED OF CLASS "A" CONCRETE.

NOTE:
 REINFORCEMENT STEEL IS IN METRIC UNITS.

CONCRETE CULVERT
 N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

SECTION THROUGH KEY OF CONSTRUCTION JOINT
 TO BE CONSTRUCTED IN TOP, WALLS, AND BASE OF CULVERT NOT MORE THAN 35'-0" APART

CONSTRUCTION JOINT OF CULVERT

CD-602-11.2

CONCRETE CULVERT

CD-602-11.1

CD-602-11

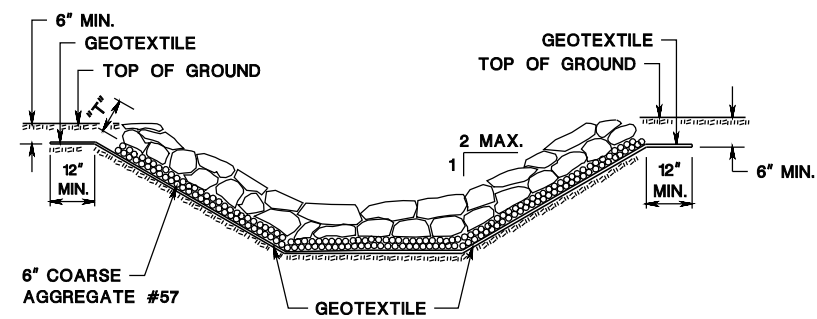
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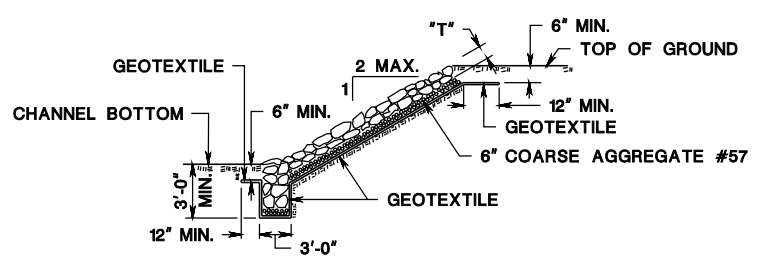
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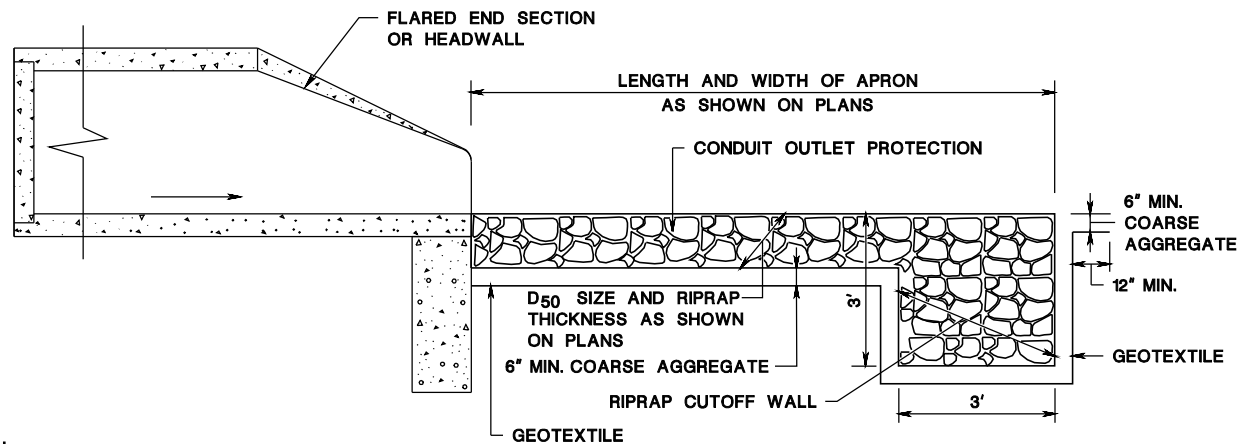
BDC\RD-01-ORIGINAL SHEET



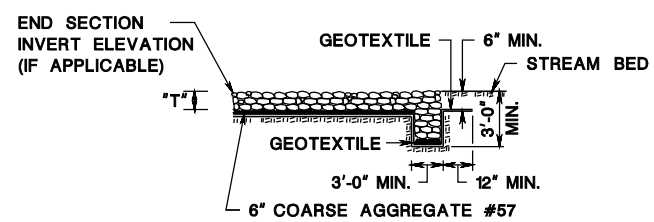
CHANNEL PROTECTION



SLOPE PROTECTION



OUTFALL PROTECTION



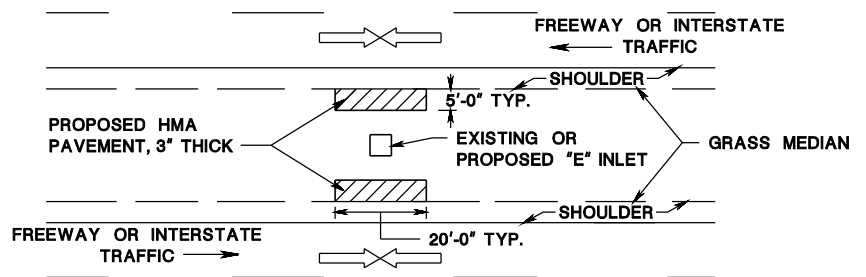
END TREATMENT FOR CHANNEL PROTECTION

NOTE:
FOR WIDTHS AND SLOPES REFER TO CONSTRUCTION PLANS

$T' = 2d_{50}$
 d_{50} = DESIGNATED MEDIAN STONE SIZE, 6" MIN.

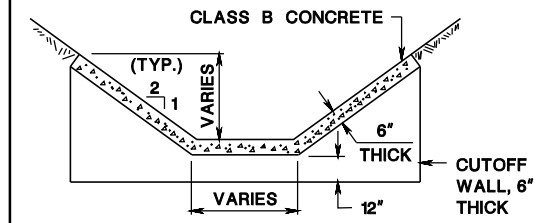
RIPRAP STONE PROTECTION (CHANNEL / SLOPE / OUTFALL)

CD-603-1.1



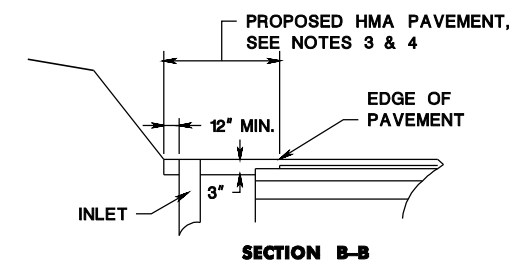
MEDIAN EDGE OF MAINLINE PAVEMENT

- NOTES:**
- FOR SLOPES, REFER TO PLANS.
 - WHERE GUIDE RAIL EXISTS AT THE LOW POINT, THE PROPOSED HMA PAVEMENT HAS PREFERENCE OVER NON - VEGETATIVE SURFACE.
 - HMA PAVEMENT TO BE THE SAME AS THE SURFACE COURSE. IF THERE IS NO SURFACE COURSE ON THE PROJECT, USE A 9.5MM NOMINAL MAXIMUM SIZE HMA.
 - IN CUT SECTIONS GRADE THE HMA PAVEMENT TO DRAIN TOWARD THE INLET.

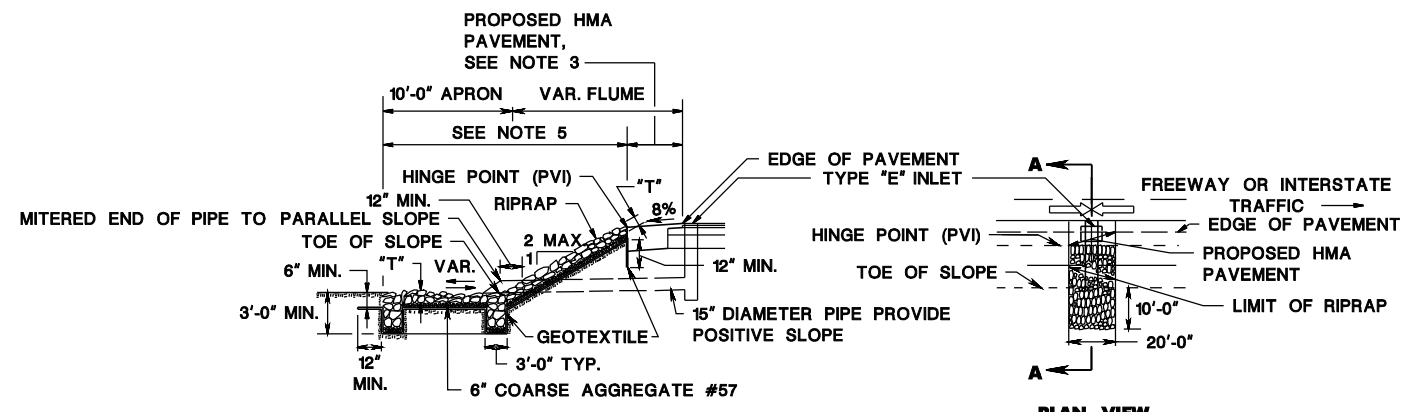


CONCRETE SLOPE GUTTER, 6" THICK

CD-603-1.3



SECTION B-B



SECTION A-A

PLAN VIEW

$T' = 2d_{50}$
 d_{50} = DESIGNATED MEDIAN STONE SIZE (8" MIN)

SLOPE PROTECTION AT LOW POINTS OF UMBRELLA SECTIONS

SLOPE, OUTFALL, AND CHANNEL PROTECTION

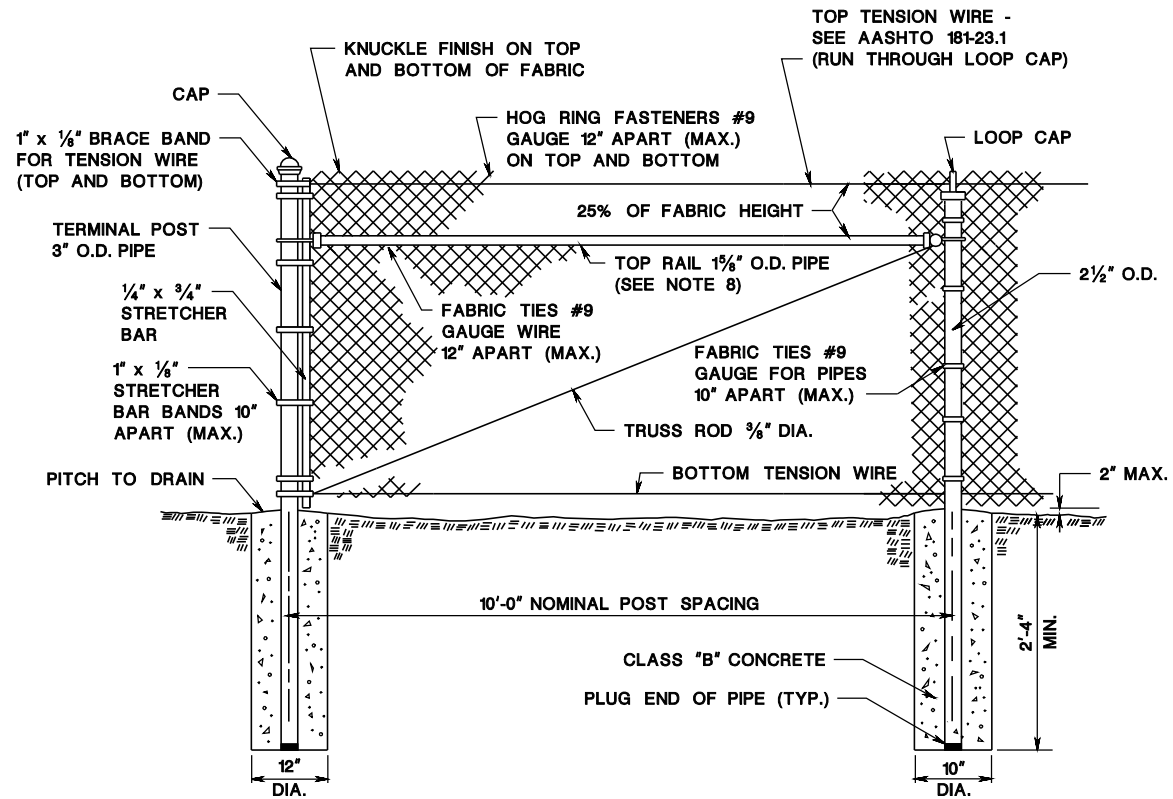
N.T.S.
HMA = HOT MIX ASPHALT

CD-603-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

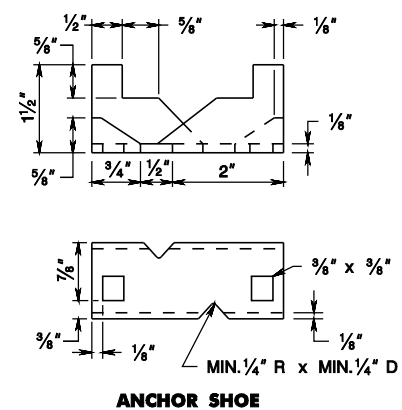
CONSTRUCTION DETAILS

CD-603-1.2

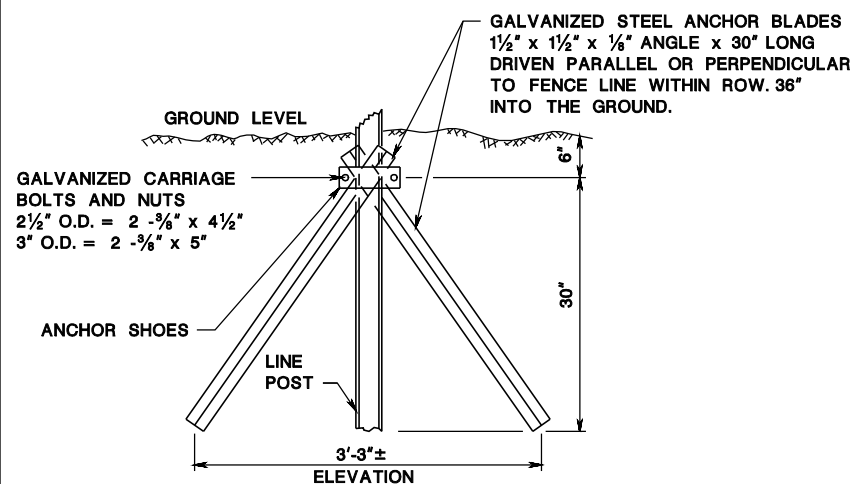


CHAIN-LINK FENCE, ___ ' HIGH

CD-605-1.1



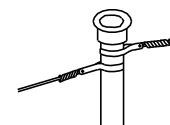
ANCHOR SHOE



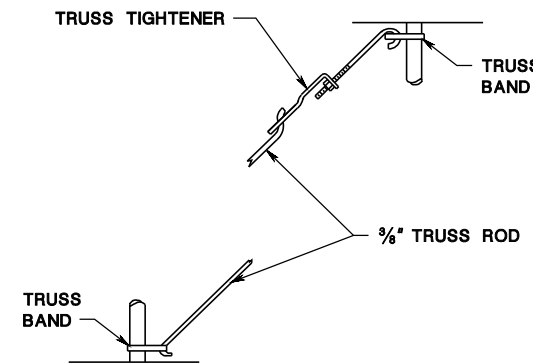
DRIVE ANCHOR SHOE ASSEMBLY

(SEE NOTE 7)

CD-605-1.2



TENSION WIRE CONNECTION AT ROUND INTERMEDIATE OR CORNER POST



3/8" TRUSS ROD ASSEMBLY

CHAIN-LINK FENCE ASSEMBLIES

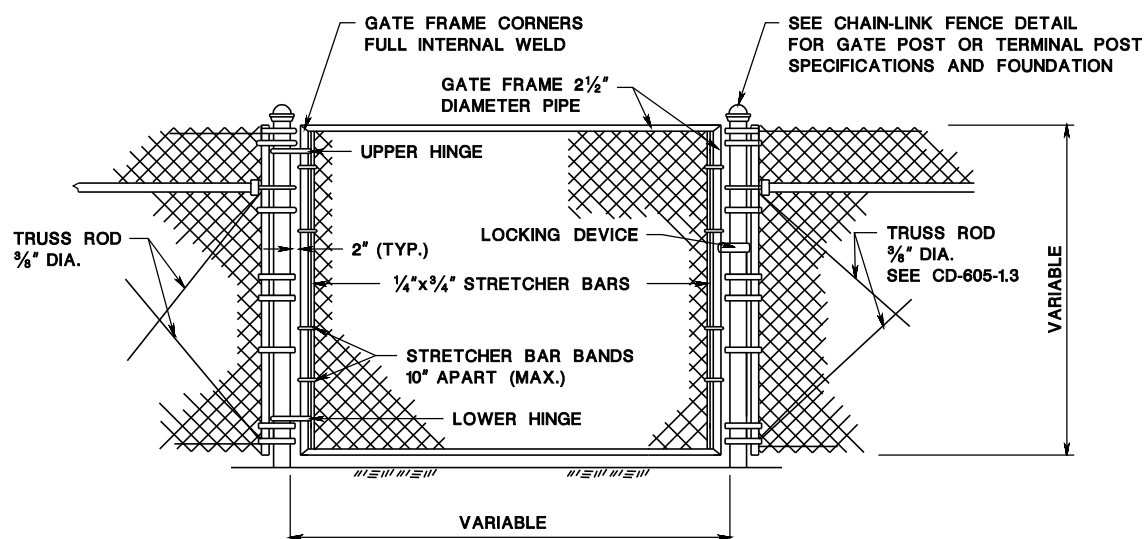
CD-605-1.3

GENERAL NOTES

- CHAIN-LINK FENCE FABRIC, POSTS, RAILS, TIES, BANDS, BARS, RODS, AND OTHER FITTINGS AND HARDWARE TO CONFORM TO AASHTO M181 FOR TYPES, GRADES, AND CLASSES, AND AS NOTED BELOW.
- POSTS:

	TERMINAL, CORNER, AND GATE POSTS 3" O.D. PIPE	LINE POSTS 2 1/2" O.D. PIPE	TOP OR BRACE RAIL 1 1/2" O.D. PIPE
AASHTO TYPE	I OR II	I OR II	I OR II
AASHTO GRADE	1 OR 2	1 OR 2	1 OR 2
MINIMUM LENGTH OF POST FOR			
4' FABRIC	6'-8"	6'-8"	NA
5' FABRIC	7'-8"	7'-8"	NA
6' FABRIC	8'-8"	8'-8"	NA
ACTUAL OUTSIDE DIAMETER (IN.)	2.875	2.375	1.680
WALL THICKNESS (IN.)			
	GRADE 1 = .203 GRADE 2 = .160	GRADE 1 = .154 GRADE 2 = .120	GRADE 1 = .140 GRADE 2 = .111
- FABRIC:
 - TYPE II AND TYPE IV TO BE 9 GAUGE CORE WIRE, 2 INCH MESH
 - TYPE IV FABRIC TO BE CLASS A OR B.
 - TYPE IV FABRIC TO BE GREY IN COLOR, AND MATCH FEDERAL STANDARD 595A, COLOR CHIP NO. 26493 (SEMI-GLOSS), UNLESS OTHERWISE SPECIFIED IN THE SPECIAL PROVISIONS.
- THE CENTERLINE OF ALL POSTS NOT TO BE LESS THAN 8" INSIDE ROW.
- THE DEPTH OF CONCRETE FOOTINGS IN SOLID ROCK MAY BE REDUCED TO ONE FOOT BELOW THE TOP OF ROCK AND THE DIAMETER OF THE HOLE IN ROCK MAY BE REDUCED TO 3 1/2".
- FURNISH BRACE BANDS AND STRETCHER BAR BANDS WITH 5/16" DIA. CARRIAGE BOLTS AND ELASTIC STOP NUTS.
- USE DRIVE ANCHOR SHOE ASSEMBLY ONLY IN WET AREAS AND WITH PRIOR APPROVAL OF THE RE.
- WHEN THE PLANS INDICATE A TERMINAL OR CORNER POST DESIGNATED TYPE NR, THE TOP RAIL IS TO BE ELIMINATED FROM THIS SECTION OF FENCE.

CD-605-1.4



GATES, CHAIN-LINK FENCE, ___ ' WIDE

CD-605-1.5

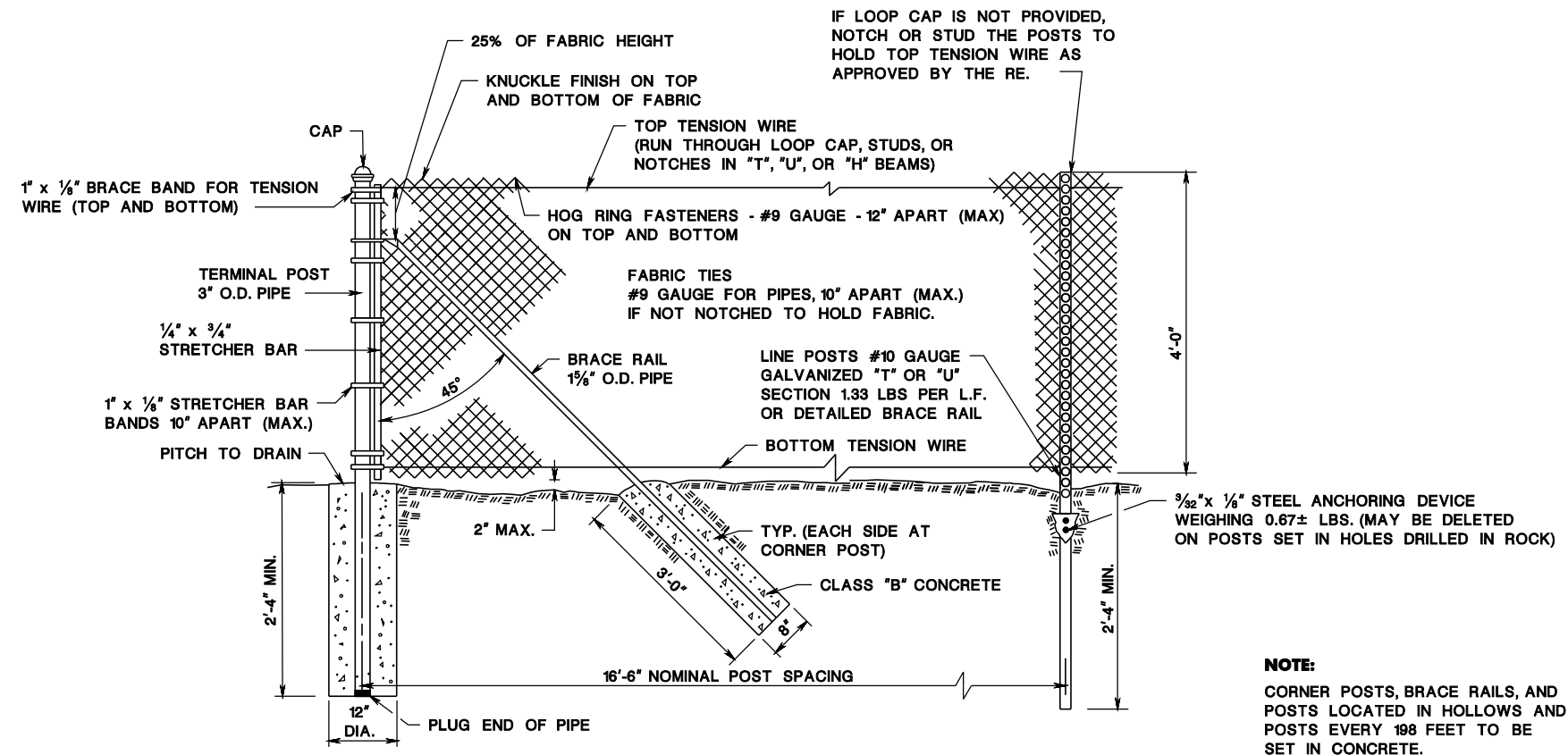
CHAIN-LINK FENCE
N.T.S.

CD-605-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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 BDC\RD-01-ORIGINAL SHEET



NOTE:
 CORNER POSTS, BRACE RAILS, AND LINE POSTS LOCATED IN HOLLOW AND LINE POSTS EVERY 198 FEET TO BE SET IN CONCRETE.

CHAIN-LINK FARM-TYPE FENCE

CHAIN-LINK FENCE

N.T.S.

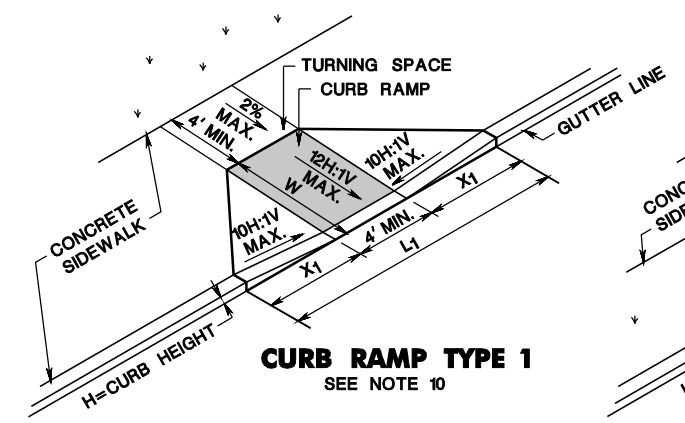
CD-605-2

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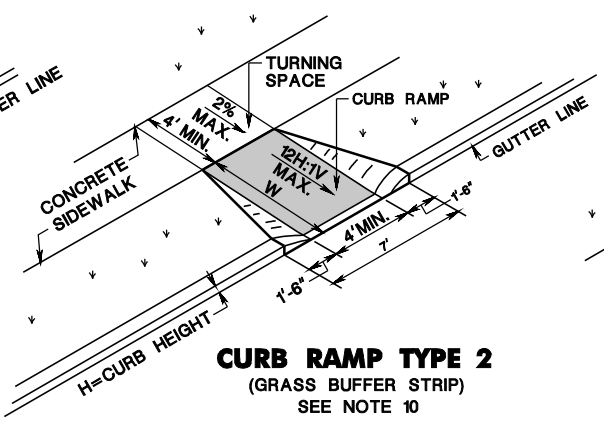
CONSTRUCTION DETAILS

CD-605-2.1

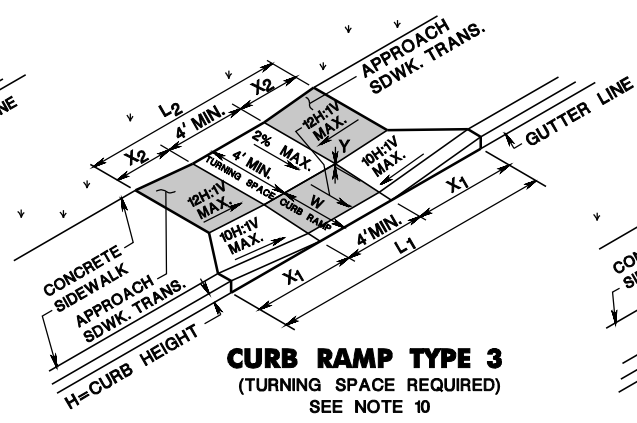
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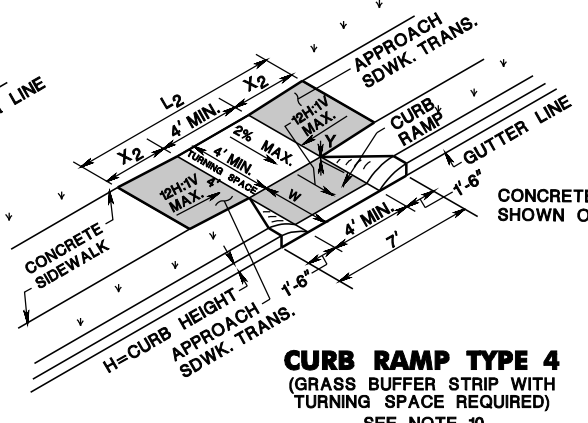
CURB RAMP TYPE 1
SEE NOTE 10



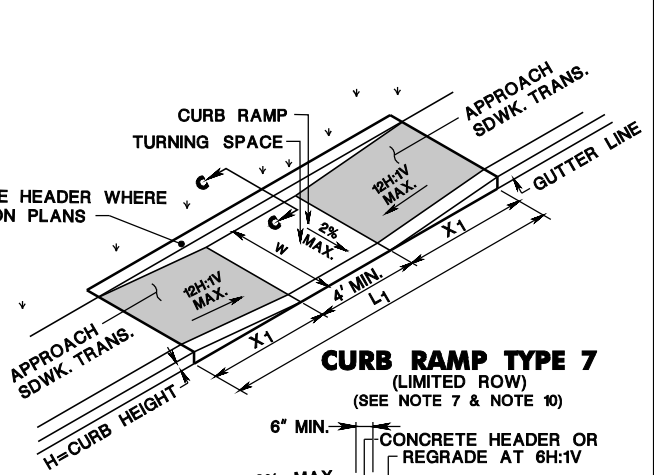
CURB RAMP TYPE 2
(GRASS BUFFER STRIP)
SEE NOTE 10



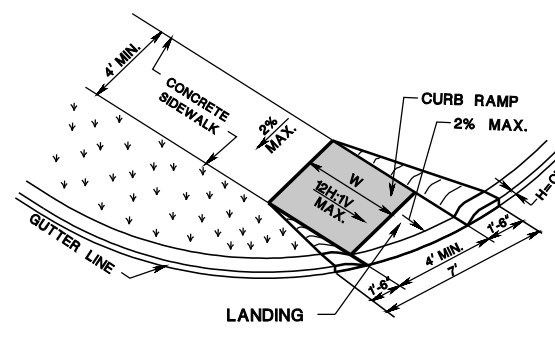
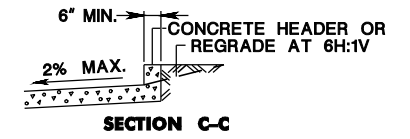
CURB RAMP TYPE 3
(TURNING SPACE REQUIRED)
SEE NOTE 10



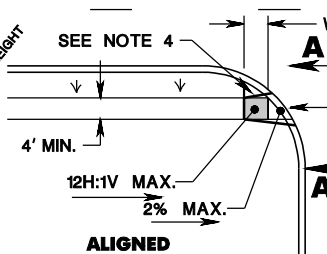
CURB RAMP TYPE 4
(GRASS BUFFER STRIP WITH
TURNING SPACE REQUIRED)
SEE NOTE 10



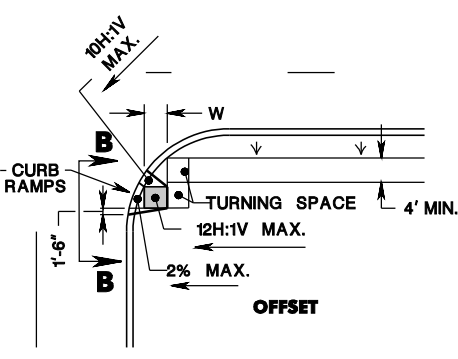
CURB RAMP TYPE 7
(LIMITED ROW)
(SEE NOTE 7 & NOTE 10)



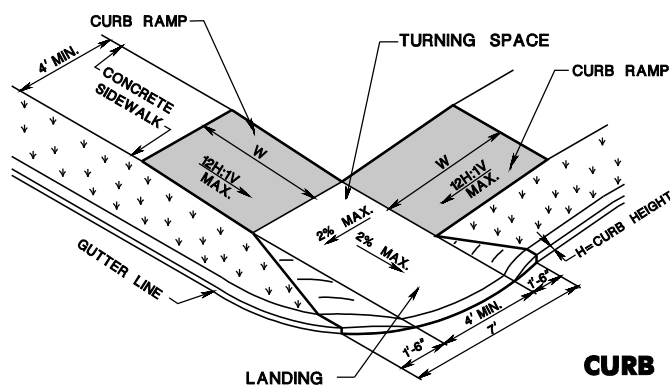
CURB RAMP TYPE 5



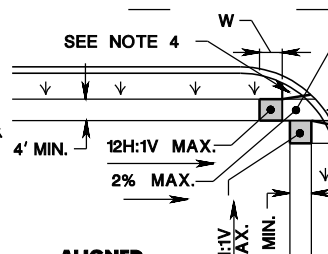
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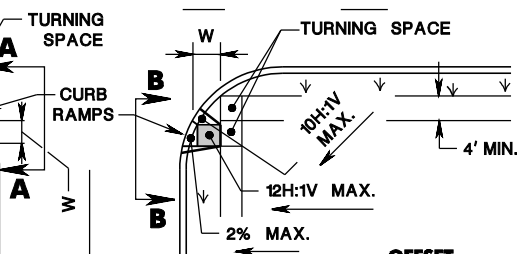
OFFSET



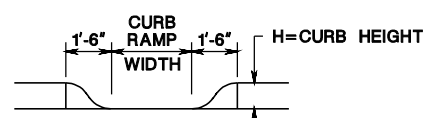
CURB RAMP TYPE 6



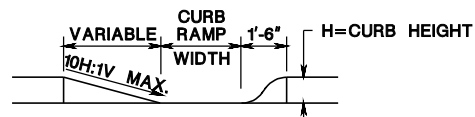
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OFFSET

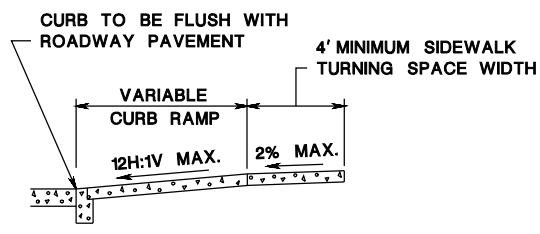


SECTION A-A

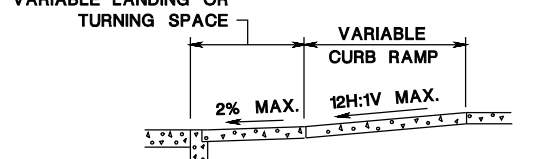


SECTION B-B

NOTE:
CURB RAMP OPENING TO BE FLUSH WITH ROADWAY PAVEMENT (CURB RAMP TYPES 5 & 6).



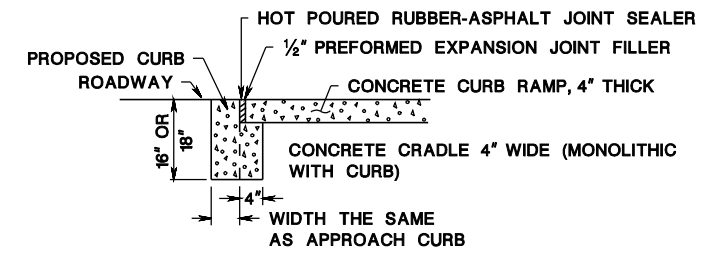
SECTION THROUGH CURB RAMPS 1 THROUGH 4



SECTION THROUGH CURB RAMPS 5 AND 6

NOTES:

- KEEP TURNING SPACE, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP CLEAR OF OBSTRUCTIONS THAT PROTRUDE ABOVE THE SURFACE.
- FOR DIMENSIONS SEE CD-606-3 AND CD-606-4
- CURB (DROPPED CURB) GUTTERLINE TO BE FLUSH WITH ROADWAY PAVEMENT THE ENTIRE WIDTH OF THE RAMP (4 FEET MIN.) AT ALL CURB RAMPS.
- FOR CURB RAMP TYPES 5 AND 6, IF A GRASS BUFFER DOES NOT EXIST, SLOPE CURB TO EQUAL SLOPE OF ADJACENT CURB RAMP.
- SIDEWALK AND CURB RAMP WITHIN AREA ENCLOSED BY HEAVY LINES INDICATES THE PAY LIMIT FOR CONCRETE SIDEWALK OF THE APPROPRIATE ADJACENT THICKNESS.
- CURB AND HEADER WITHIN AREA ENCLOSED BY HEAVY LINES INDICATES THE PAY LIMIT FOR VERTICAL CURB OR SLOPING CURB OF THE APPROPRIATE ADJACENT SIZE AND KIND.
- WHERE THE DISTANCE FROM THE GUTTER LINE TO THE OUTSIDE EDGE OF SIDEWALK IS 6 FEET OR LESS, USE CURB RAMP TYPE 7, INSTEAD OF CURB RAMP TYPE 1 THROUGH 4.
- CROSSWALKS AND STOP LINES MAY BE MARKED OR UNMARKED. SEE PLANS.
- THE 12H:1V MAX SLOPE IS THE RUNNING SLOPE FOR CURB RAMPS, BUT ONLY THE 12H:1V SLOPE MEASURED AS X_2 IS THE RUNNING SLOPE FOR TYPE 3 AND TYPE 4 CURB RAMPS. ENSURE THE RUNNING SLOPE OF CURB RAMPS DOES NOT REQUIRE ITS LENGTH TO EXCEED 15 FEET. THE RUNNING SLOPE MAY EXCEED THE 12H:1V MAX SLOPE SO AS NOT TO EXCEED THE 15 FEET MAXIMUM LENGTH.
- CURB RAMP TYPE 1 THROUGH 7 ARE NORMALLY PLACED ON THE RADIUS RETURN AT THE INTERSECTION AND ON A TANGENT SECTION AS DRAWN.



DROPPED CURB AND CRADLE

CONCRETE SIDEWALK
(PUBLIC SIDEWALK CURB RAMP)
N.T.S.

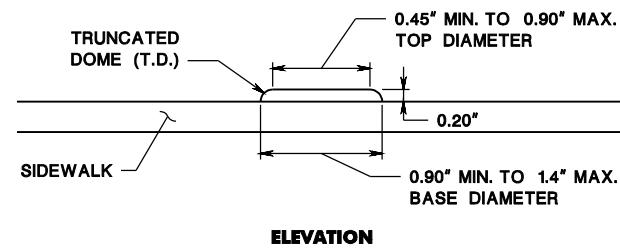
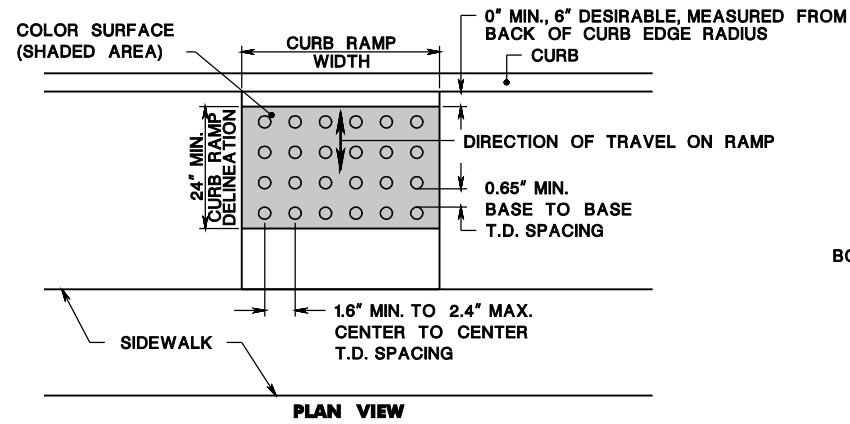
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

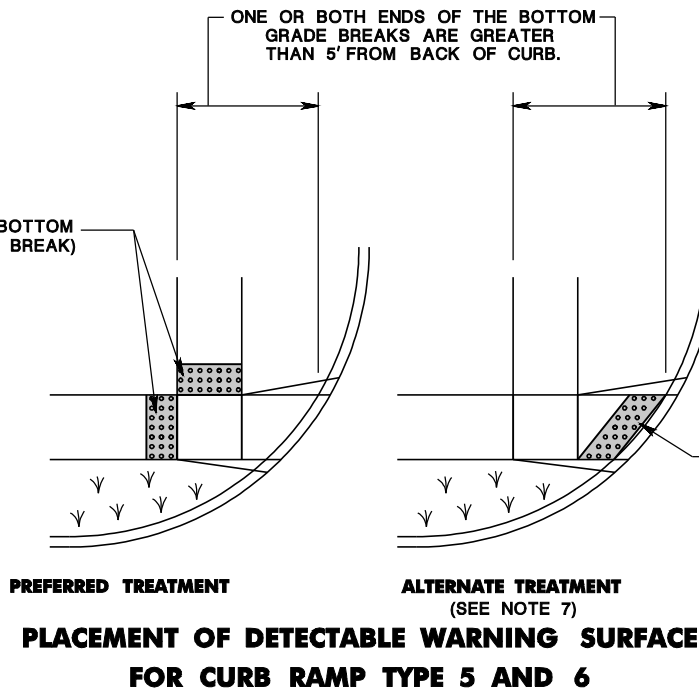
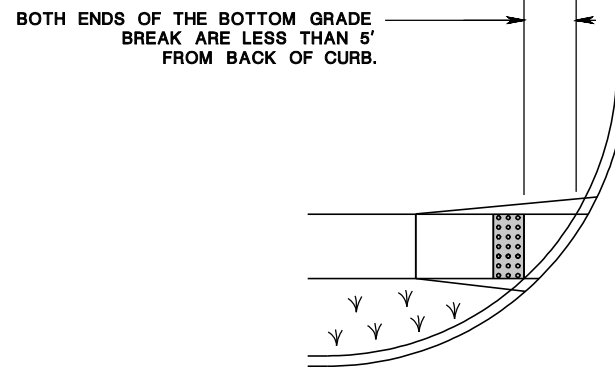
CURB RAMPS

CD-606-1.1

CD-606-1

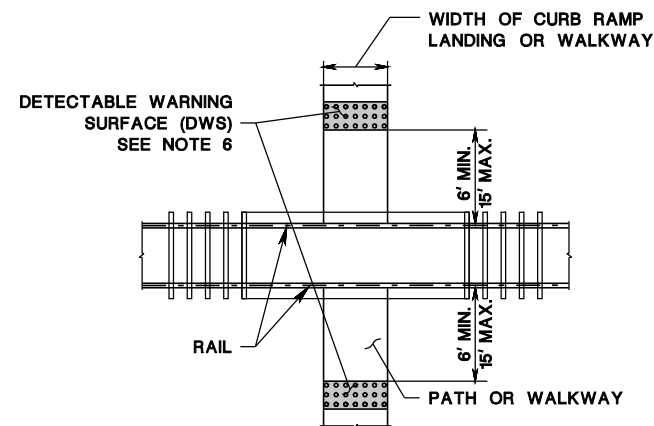


DETECTABLE WARNING SURFACE

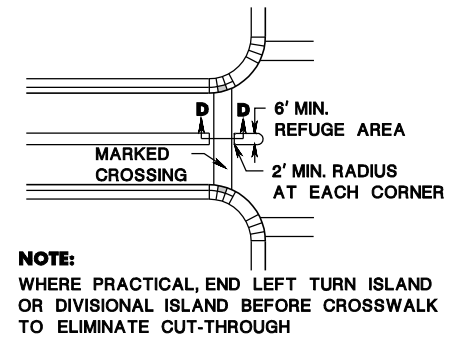


NOTES:

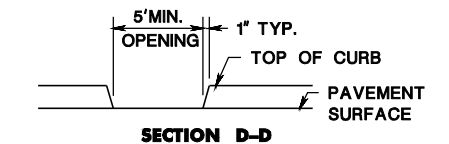
- KEEP TURNING SPACE, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP CLEAR OF OBSTRUCTIONS THAT PROTRUDE ABOVE THE SURFACE.
- CROSSWALKS AND STOP LINES MAY BE MARKED OR UNMARKED, SEE PLANS.
- FOR NARROW ISLAND WIDTH, SEE PEDESTRIAN REFUGE ISLAND WALKWAY OPENING AT INTERSECTIONS DETAIL.
- FOR MEDIUM AND LARGE ISLAND WIDTH, SEE CURB RAMP TYPE 1 ON CD-606-1.
- CONSTRUCT CURB RAMP TYPES 1, 2, 3, 4, & 7 PERPENDICULAR TO CURBLINE, AS SHOWN.
- IF A CURB RAMP IS REQUIRED, THE LOCATION OF THE DETECTABLE WARNING SURFACE MUST BE AT THE BOTTOM OF THE RAMP AND WITHIN THE REQUIRED DISTANCE FROM THE RAIL.
- A STANDARD DETECTABLE WARNING (DWS) SURFACE IS NOT AVAILABLE TO FIT THIS APPLICATION, AND THEREFORE ONE WILL NEED TO BE CUSTOMIZED. THE DWS SHOULD COVER THE ENTIRE WIDTH OF THE RAMP. THE ROWS OF DOMES ON THE DWS SHOULD FOLLOW THE DIRECTION OF TRAVEL OF THE RAMP, SO PEDESTRIANS WHO USE MOBILE DEVICES CAN TRACK BETWEEN THE DOMES.



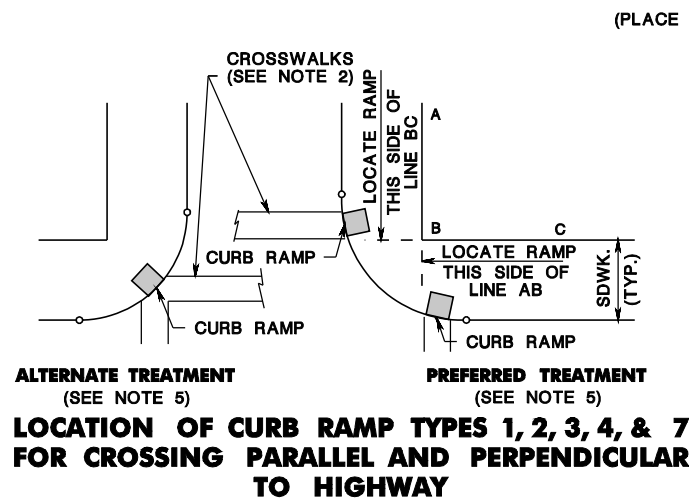
PEDESTRIAN RAILROAD CROSSING



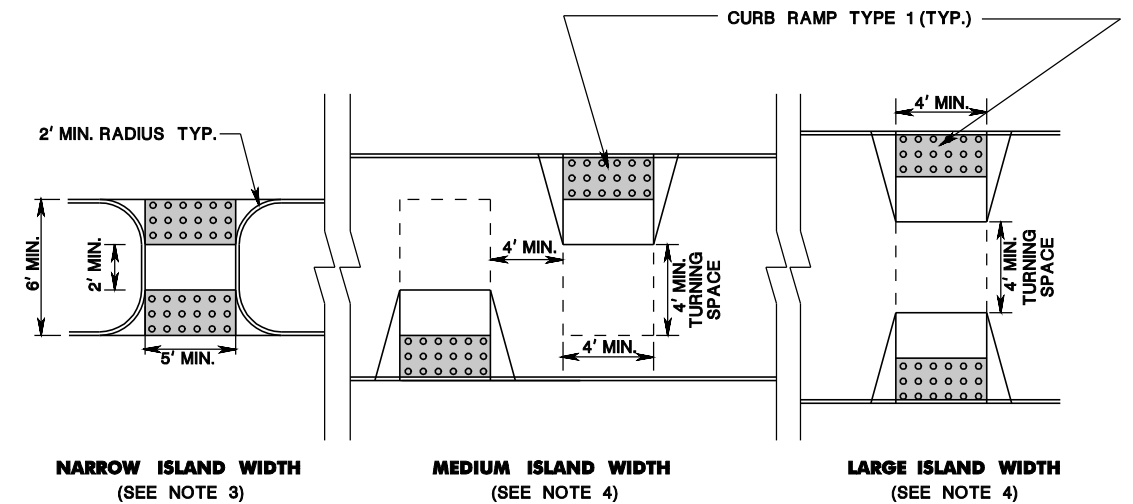
NOTE: WHERE PRACTICAL, END LEFT TURN ISLAND OR DIVISIONAL ISLAND BEFORE CROSSWALK TO ELIMINATE CUT-THROUGH



PEDESTRIAN REFUGE ISLAND WALKWAY OPENING AT INTERSECTIONS



LOCATION OF CURB RAMP TYPES 1, 2, 3, 4, & 7 FOR CROSSING PARALLEL AND PERPENDICULAR TO HIGHWAY



NARROW ISLAND WIDTH (SEE NOTE 3)

MEDIUM ISLAND WIDTH (SEE NOTE 4)

LARGE ISLAND WIDTH (SEE NOTE 4)

PEDESTRIAN REFUGE ISLAND

DETECTABLE WARNING SURFACE N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-606-2

CURB RAMP TYPE 1

0.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1 and rows for curb heights 3-9.

1.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1 and rows for curb heights 3-9.

2.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1 and rows for curb heights 3-9.

3.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1 and rows for curb heights 3-9.

4.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1 and rows for curb heights 3-9.

5.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1 and rows for curb heights 3-9.

6.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1 and rows for curb heights 3-9.

7.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1 and rows for curb heights 3-9.

CURB RAMP TYPE 3

0.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

1.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

2.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

3.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

4.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

5.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

6.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

7.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

CURB RAMP TYPE 2

0-8 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1 and rows for curb heights 3-9.

1.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

2.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

3.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

4.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

5.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

6.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

2.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

3.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

4.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

5.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

6.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

7.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

3.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

4.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

5.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

6.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

7.0 % GUTTER LINE PROFILE table with columns H, W, X1U, X1L, L1, Y, X2U, X2L, L2 and rows for curb heights 3-9.

NOTES:

- 1. FOR CURB RAMP TYPES, SEE CD-606-1.
2. THE ABOVE TABLES ARE BASED ON THE SPECIFIC GUTTER PROFILE REFERENCED. THEY DO NOT TAKE INTO ACCOUNT VARIATIONS IN THE GUTTER PROFILE...
3. THE 12H:1V MAX SLOPE IS THE RUNNING SLOPE FOR CURB RAMPS, BUT ONLY THE 12H:1V SLOPE MEASURED AS X IS THE RUNNING SLOPE FOR TYPE 3 AND TYPE 4 CURB RAMPS...
4. DIMENSIONS SHOWN IN TABLES ARE FOR 3 INCH TO 9 INCH CURB HEIGHTS. WHERE THE CURB HEIGHTS ARE OTHER THAN WHAT IS PROVIDED IN THE TABLES, THE DIMENSIONS OF THE RAMPS WILL HAVE TO BE CALCULATED BASED ON CROSS SLOPES SHOWN.

LEGEND

- U = UPPER SIDE OF GUTTER LINE PROFILE
L = LOWER SIDE OF GUTTER LINE PROFILE
FOR THE OTHER ABBREVIATIONS - REFER TO CD-606-1
* TYPE 3 RAMP IS NOT APPLICABLE, USE TYPE 1
** TYPE 4 RAMP IS NOT APPLICABLE, USE TYPE 2

CONCRETE SIDEWALK (PUBLIC SIDEWALK CURB RAMP TABLES) N.T.S.

CD-606-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-606-3.1

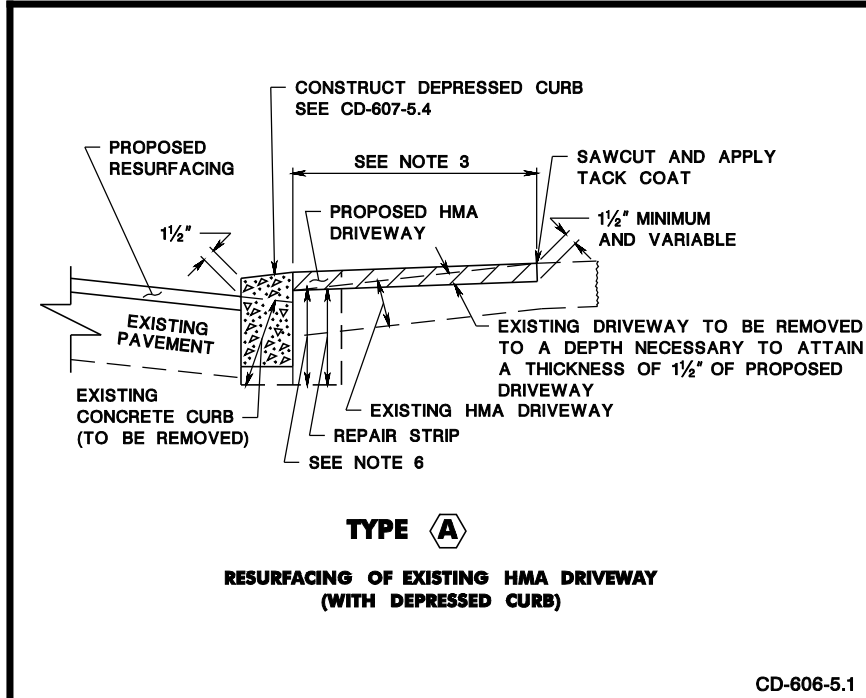
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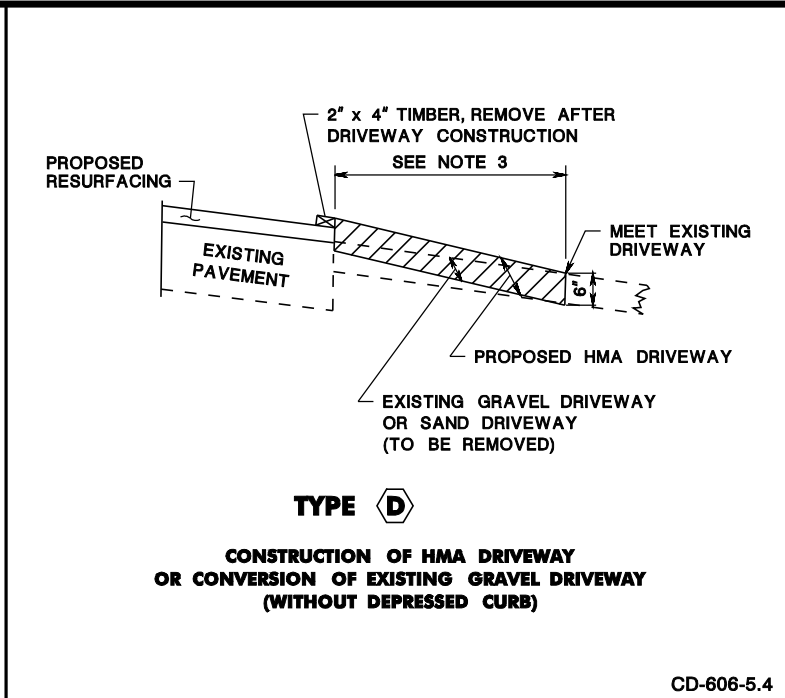
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BDC8D-ORIGINAL SHEET



TYPE A
RESURFACING OF EXISTING HMA DRIVEWAY
(WITH DEPRESSED CURB)

CD-606-5.1



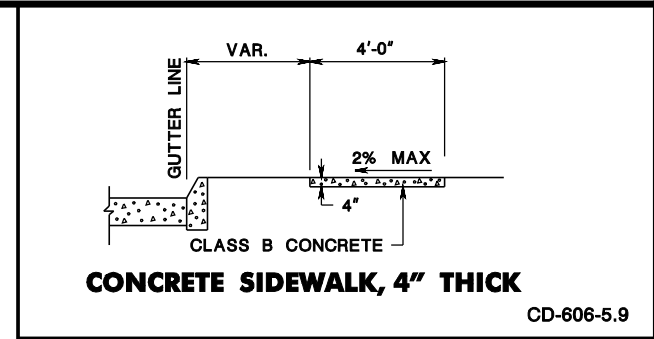
TYPE D
CONSTRUCTION OF HMA DRIVEWAY
OR CONVERSION OF EXISTING GRAVEL DRIVEWAY
(WITHOUT DEPRESSED CURB)

CD-606-5.4

GENERAL NOTES:

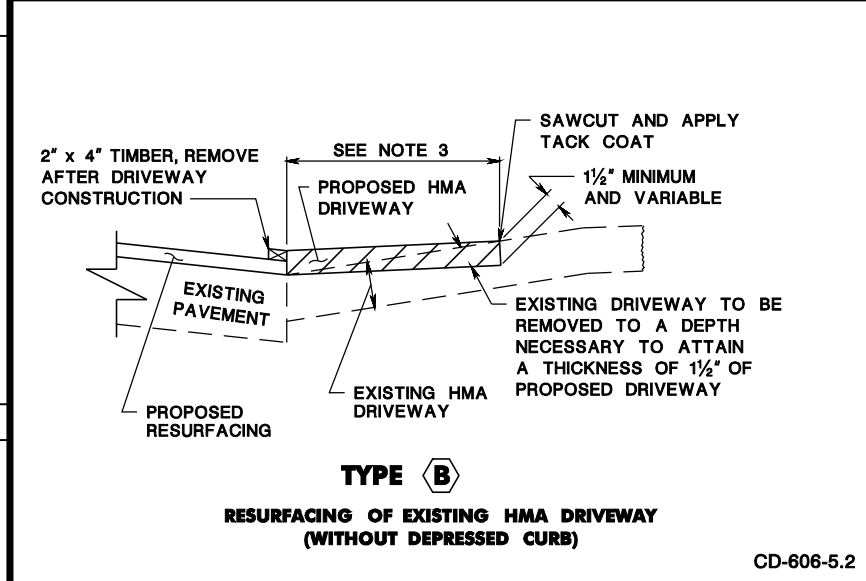
1. ALL MATERIAL, REPAIR STRIPS, AND EXCAVATION FOR DRIVEWAY CONSTRUCTION TO BE INCLUDED IN THE BID PRICE FOR HMA DRIVEWAY, CONCRETE DRIVEWAY, OR CONCRETE CURB.
2. USE HMA SURFACE COURSE FOR HMA DRIVEWAY.
3. CONSTRUCT 5 FEET LONG DRIVEWAY UNLESS OTHERWISE SHOWN ON PLANS OR AS DIRECTED.
4. MAINTAIN EXISTING DIRECTION OF FLOW ON DRIVEWAY.
5. USE DENSE GRADED AGGREGATE BASE COURSE TO PROVIDE TEMPORARY ACCESS DURING DRIVEWAY CONSTRUCTION.
6. DENSE GRADED AGGREGATE BASE COURSE.
7. WHERE SIDEWALK CROSSES DRIVEWAY PROVIDE A 2% MAXIMUM SIDEWALK CROSS SLOPE WITHIN DRIVEWAY AREA.

CD-606-5.7



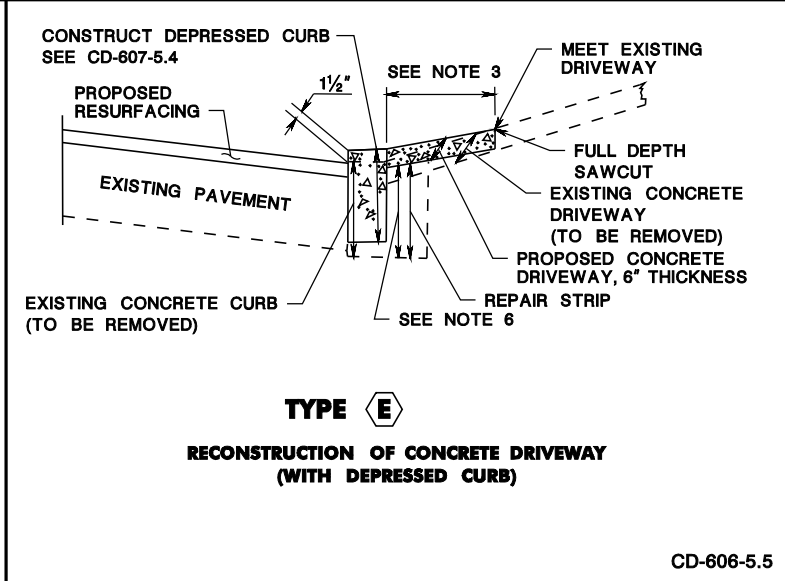
CONCRETE SIDEWALK, 4\"/>

CD-606-5.9



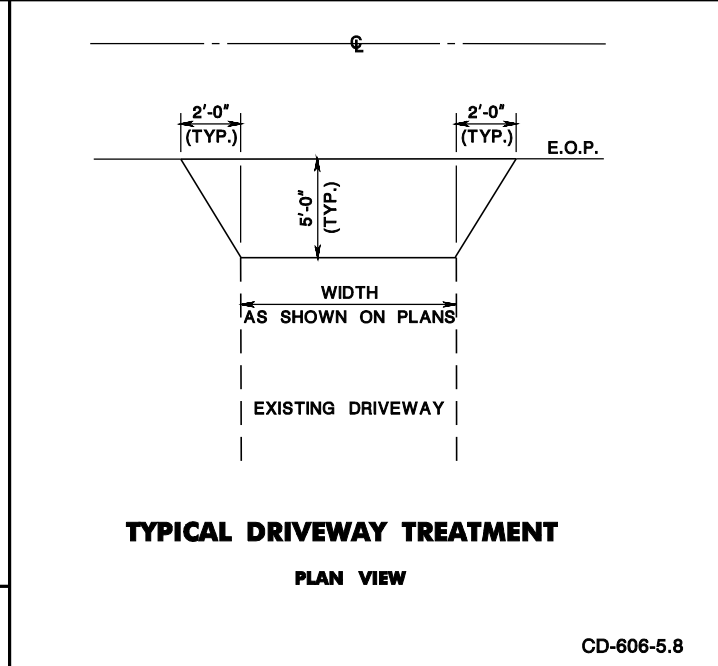
TYPE B
RESURFACING OF EXISTING HMA DRIVEWAY
(WITHOUT DEPRESSED CURB)

CD-606-5.2



TYPE E
RECONSTRUCTION OF CONCRETE DRIVEWAY
(WITH DEPRESSED CURB)

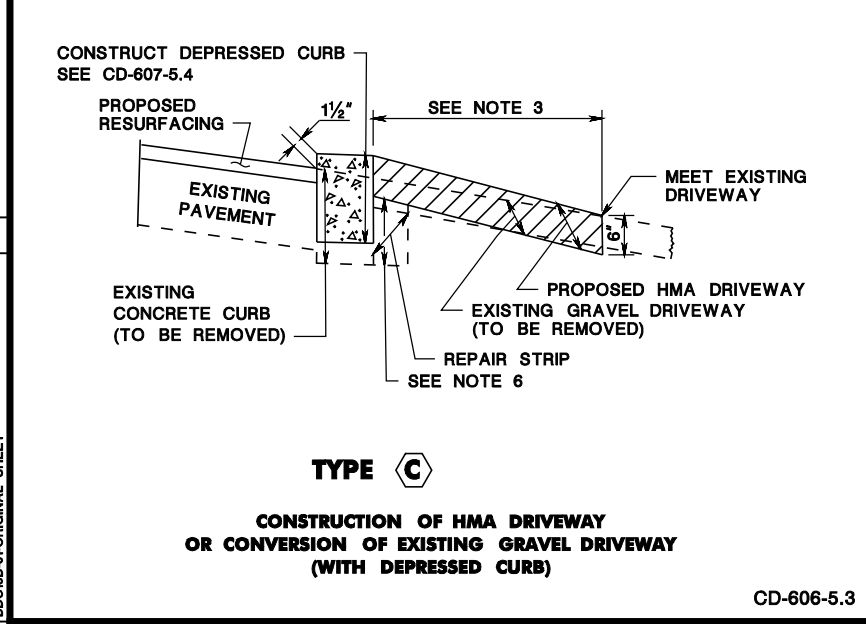
CD-606-5.5



TYPICAL DRIVEWAY TREATMENT

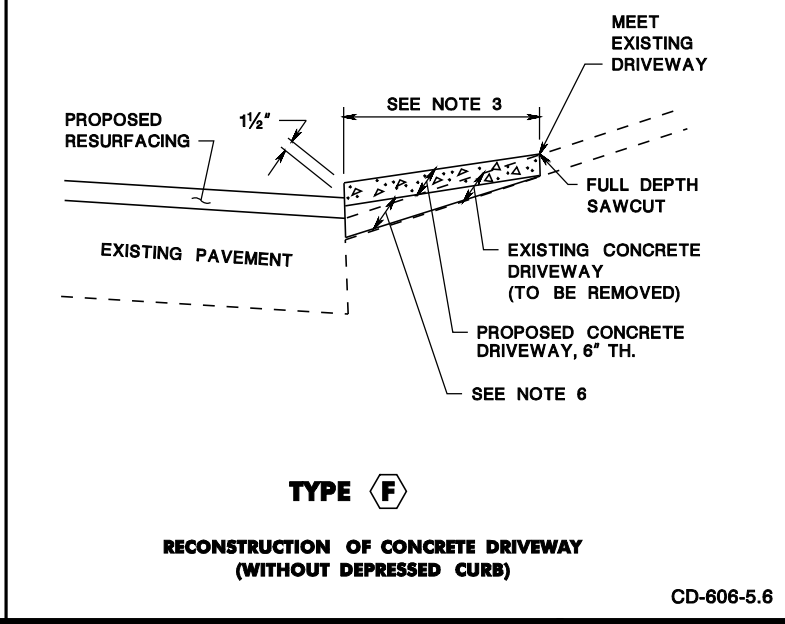
PLAN VIEW

CD-606-5.8



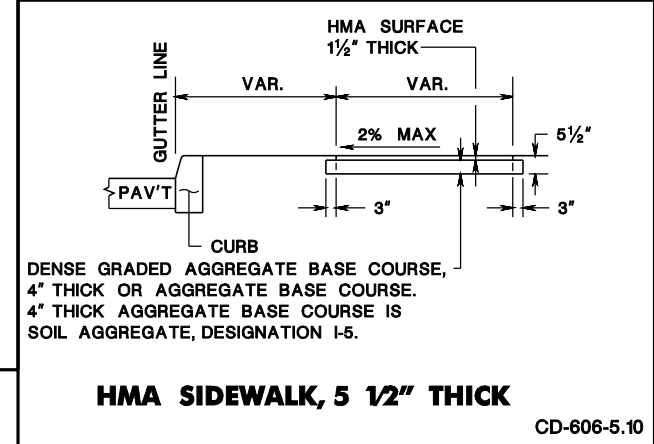
TYPE C
CONSTRUCTION OF HMA DRIVEWAY
OR CONVERSION OF EXISTING GRAVEL DRIVEWAY
(WITH DEPRESSED CURB)

CD-606-5.3



TYPE F
RECONSTRUCTION OF CONCRETE DRIVEWAY
(WITHOUT DEPRESSED CURB)

CD-606-5.6



HMA SIDEWALK, 5 1/2\"/>

CD-606-5.10

**CONCRETE AND HMA,
DRIVEWAY AND SIDEWALK**

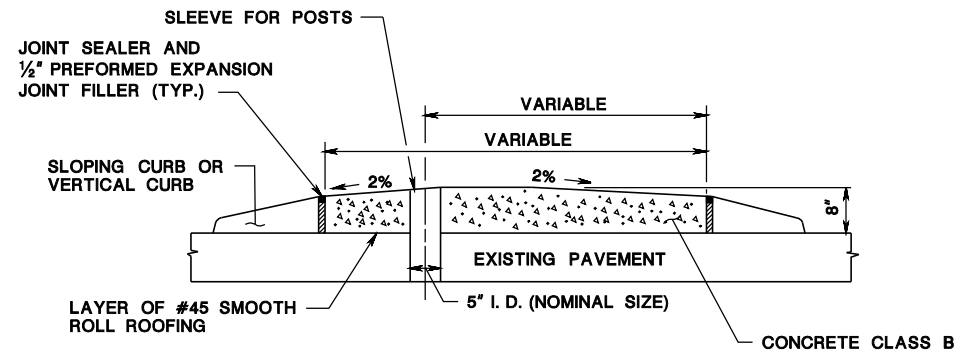
N.T.S.

HMA = HOT MIX ASPHALT

CD-606-5

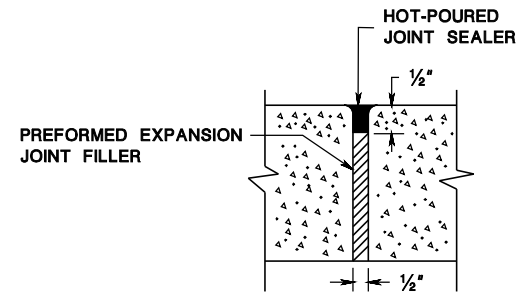
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS



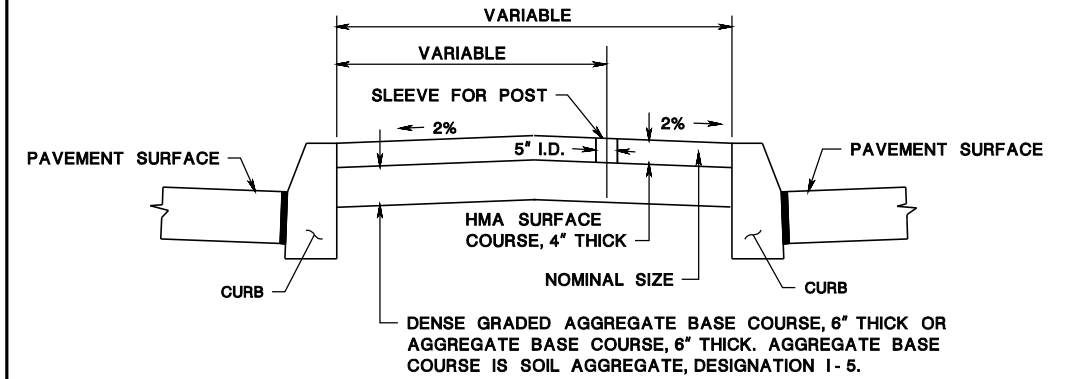
CONCRETE ISLAND ON EXISTING PAVEMENT

CD-606-6.1



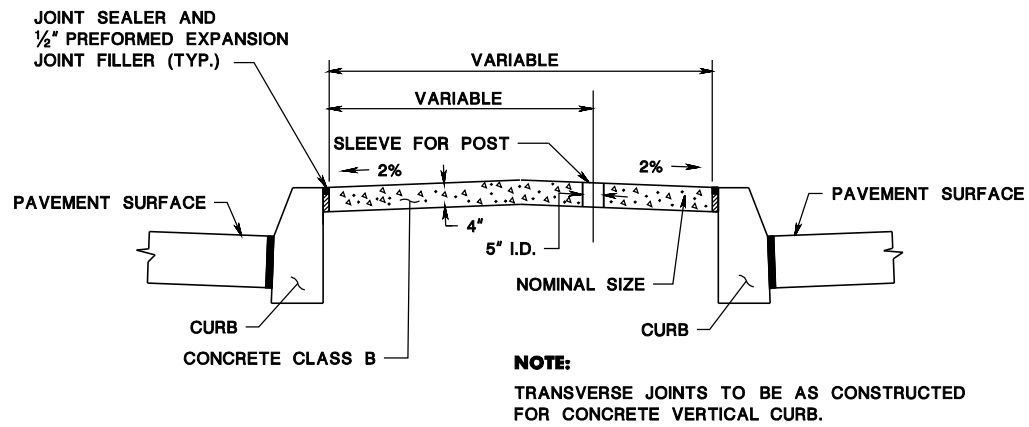
LONGITUDINAL AND TRANSVERSE JOINT TREATMENT FOR CONCRETE ISLAND

CD-606-6.2



HMA ISLAND, 10" THICK

CD-606-6.3



CONCRETE ISLAND, 4" THICK

CD-606-6.4

NOTE:
TRANSVERSE JOINTS TO BE AS CONSTRUCTED FOR CONCRETE VERTICAL CURB.

CONCRETE AND HMA ISLAND

N.T.S.

HMA = HOT MIX ASPHALT

CD-606-6

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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GENERAL NOTES APPLYING TO ALL TYPES OF DOWELLED CURBS

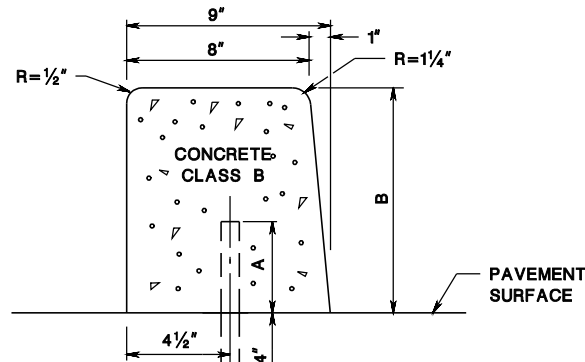
CONSTRUCT THE TRANSVERSE JOINTS AS SPECIFIED FOR THE CURB, EXCEPT THAT THE THICKNESS OF THE JOINT FILLER IN THE CURB TO BE AS FOLLOWS:

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.

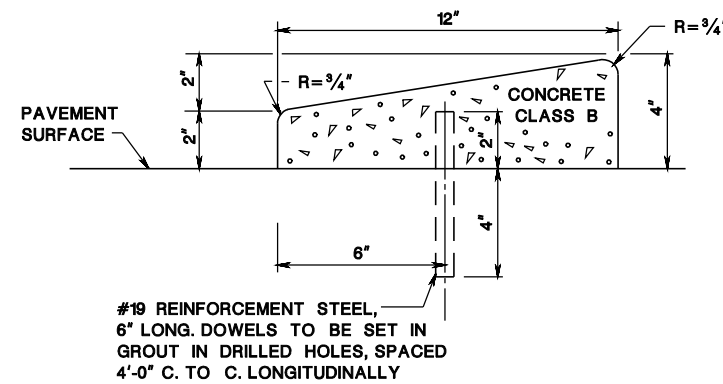
WHERE DOWELLED CURB IS TO BE CONSTRUCTED ACROSS A LONGITUDINAL JOINT IN THE EXISTING PAVEMENT, THE DOWELS IN THE SHORTER PORTION OF THE CURB PANEL ARE TO BE OMITTED AND THE CURB IN THE PORTION OF THE PANEL TO BE CONSTRUCTED WITH 45# SMOOTH ROLL ROOFING BETWEEN IT AND THE EXISTING PAVEMENT.



CURB SIZE	DIM. A	DIM. B
9"x4"	2"	4"
9"x6"	4"	6"

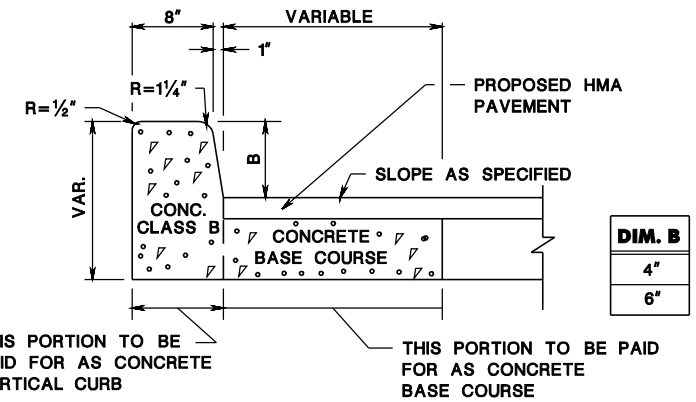
9" x 4" CONCRETE VERTICAL CURB, DOWELLED

CD-607-1.2



12" x 3" CONCRETE SLOPING CURB, DOWELLED

CD-607-1.3

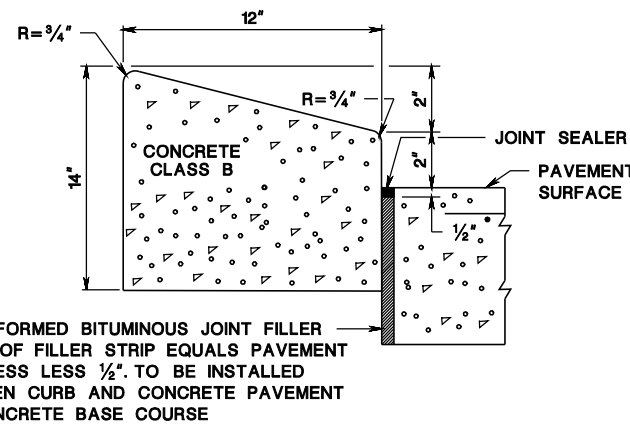


NOTES:
EXPANSION JOINTS 1/2 INCH WIDE IN THE CURB, AND EXPANSION JOINT ASSEMBLY IN THE MONOLITHIC PAVEMENT STRIP TO BE DIRECTLY OPPOSITE EVERY TRANSVERSE JOINT IN THE CENTRAL PAVEMENT STRIPS. JOINT MATERIAL IN THE CURB TO BE AS SPECIFIED FOR CONCRETE VERTICAL CURB. THE TRANSVERSE EXPANSION JOINT MATERIAL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

CONCRETE VERTICAL CURB MONOLITHIC WITH CONCRETE BASE COURSE

CD-607-1.4

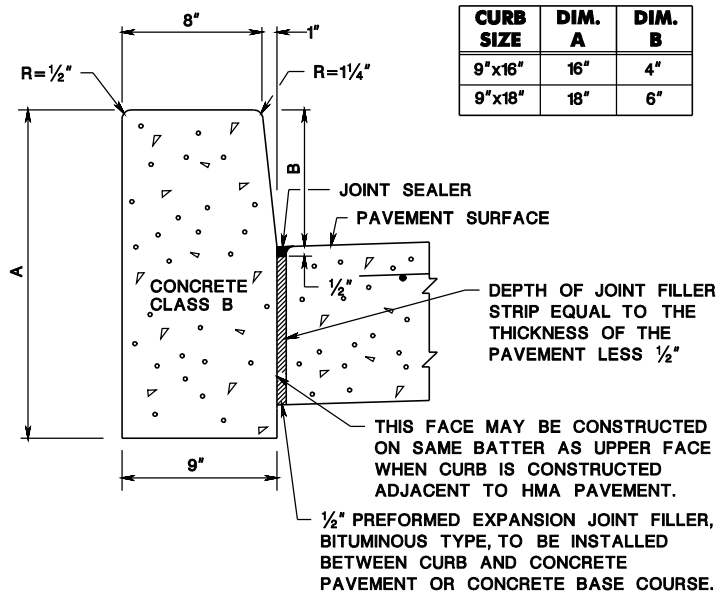
CD-607-1.1



1/2" PREFORMED BITUMINOUS JOINT FILLER DEPTH OF FILLER STRIP EQUALS PAVEMENT THICKNESS LESS 1/2". TO BE INSTALLED BETWEEN CURB AND CONCRETE PAVEMENT OR CONCRETE BASE COURSE

12" x 13" CONCRETE SLOPING CURB

CD-607-1.5

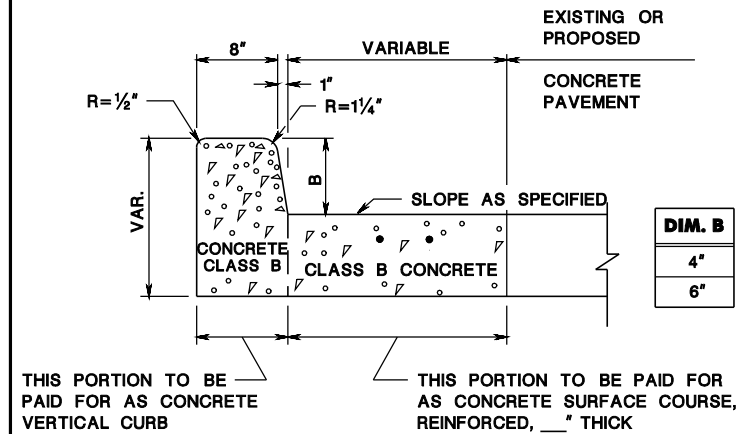


CURB SIZE	DIM. A	DIM. B
9"x16"	16"	4"
9"x18"	18"	6"

THIS FACE MAY BE CONSTRUCTED ON SAME BATTER AS UPPER FACE WHEN CURB IS CONSTRUCTED ADJACENT TO HMA PAVEMENT.
1/2" PREFORMED EXPANSION JOINT FILLER, BITUMINOUS TYPE, TO BE INSTALLED BETWEEN CURB AND CONCRETE PAVEMENT OR CONCRETE BASE COURSE.

CONCRETE VERTICAL CURB

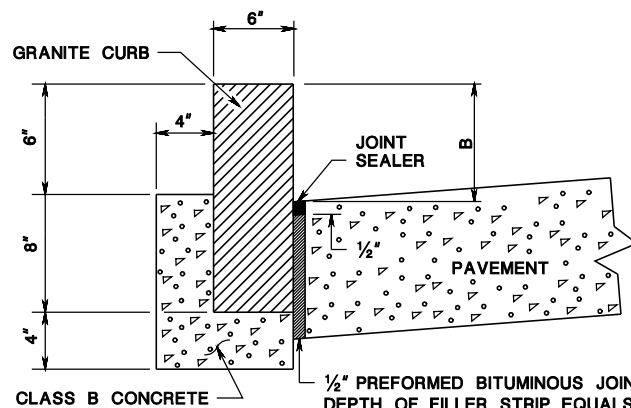
CD-607-1.6



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

CD-607-1.7



DIM. B
4"
6"

1/2" PREFORMED BITUMINOUS JOINT FILLER DEPTH OF FILLER STRIP EQUALS PAVEMENT THICKNESS LESS 1/2". TO BE INSTALLED BETWEEN CURB AND CONCRETE PAVEMENT OR CONCRETE BASE COURSE

NOTE:
FOUNDATION TO BE INSTALLED THE ENTIRE LENGTH OF THE GRANITE CURB.

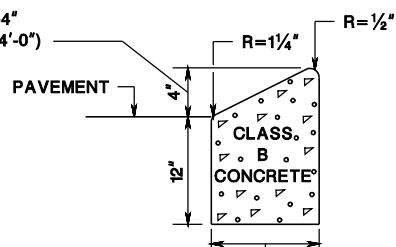
NEW OR RESET GRANITE CURB

CD-607-1.8

ATTACHMENT TABLE		
CD NO.	ATTACH. TYPE	WIDTH
609-13	B	11 1/4"
609-15	A	7"
609-15	B	11 1/4"
609-16	A	7"
609-16	B	11 1/4"

AT END OF CURB, TRANSITION TO 0° OVER 3'-4" (TOTAL LENGTH OF CURB 14'-0")

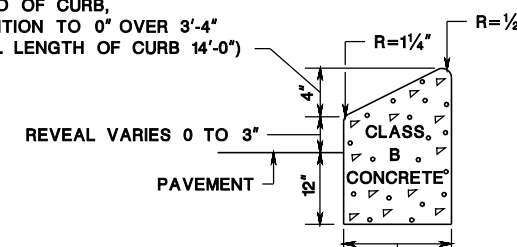
NOTE:
PAYMENT FOR LIP CURB WILL BE MADE UNDER 9" x 16" CONCRETE VERTICAL CURB.



WIDTH VARIES (SEE ATTACHMENT TABLE)

LIP CURB FOR BEAM GUIDE RAIL ATTACHMENTS

AT END OF CURB, TRANSITION TO 0° OVER 3'-4" (TOTAL LENGTH OF CURB 14'-0")



WIDTH IS 10 1/2" FOR CD-609-13, TYPE (A) ATTACHMENT ONLY

CD-607-1.9

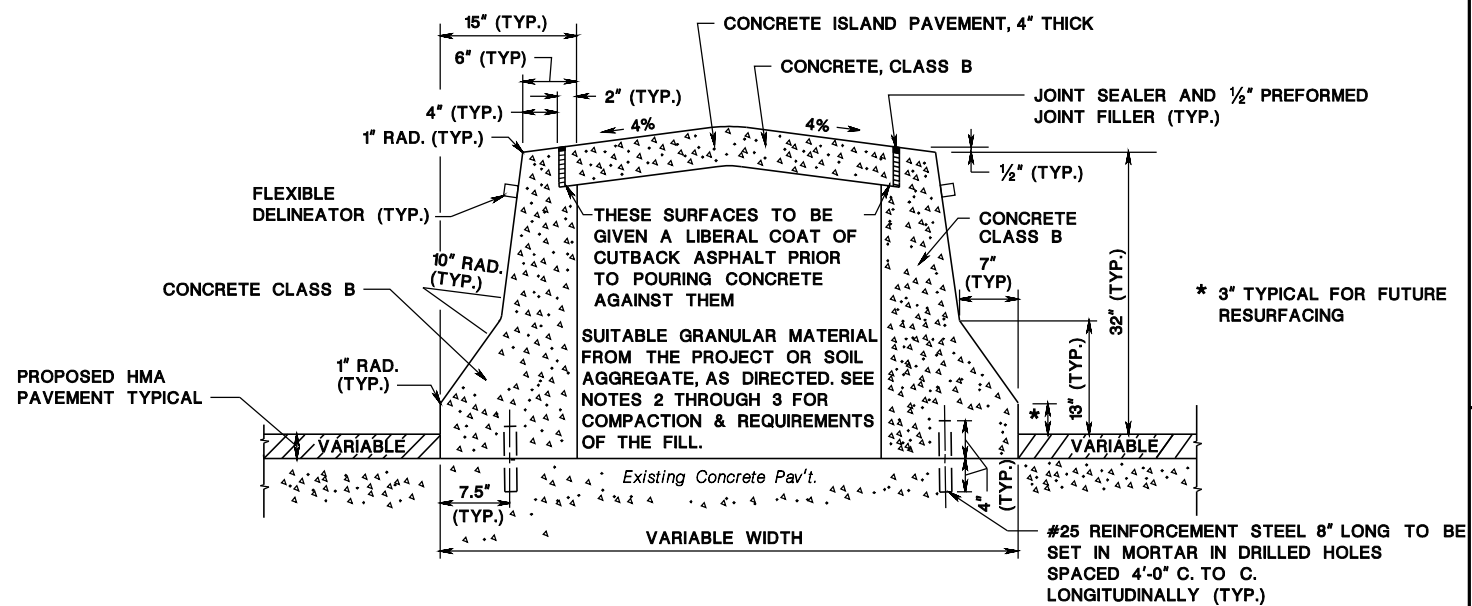
CONCRETE AND GRANITE CURB

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

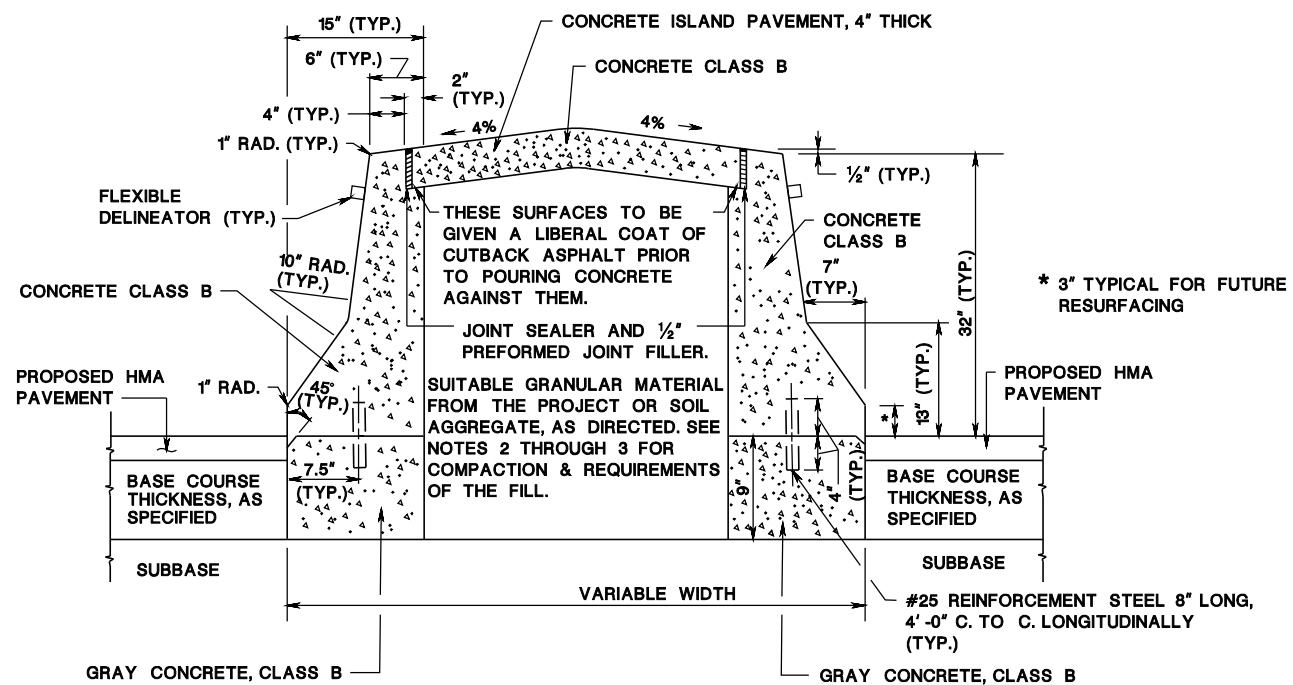
CD-607-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS



15" x VARIABLE HEIGHT CONCRETE BARRIER CURB, DOWELLED

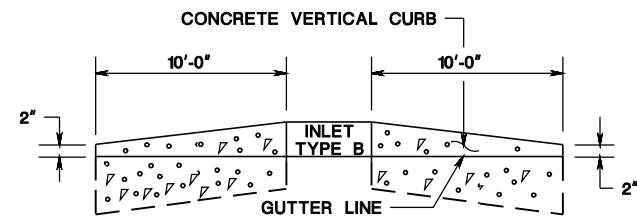


15" x 41" CONCRETE BARRIER CURB

NOTES:

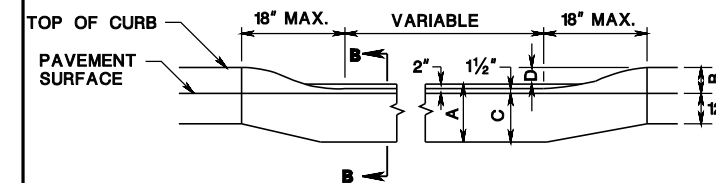
1. SEE GENERAL NOTES APPLYING TO ALL BARRIER CURB CD-607-3.2.
2. COMPACT ACCORDING TO SUBSECTION 202.03.
3. SHAPE AND COMPACT THE FILL BETWEEN THE CURBS TO A FIRM EVEN SURFACE. REMOVE UNSUITABLE MATERIAL AND REPLACE WITH ACCEPTABLE MATERIAL AND COMPACT.

CD-607-2.1



CURB TREATMENT AT BERM SECTION AND ALL CURB ENDS

CD-607-2.2

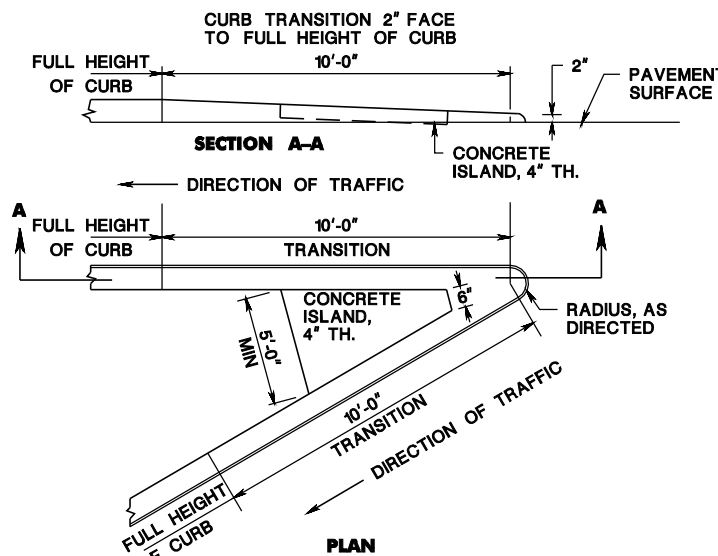


CURB SIZE	DIM. A	DIM. B	DIM. C	DIM. D
9" x 16"	16"	4"	14"	2"
9" x 18"	18"	6"	16"	4"

SECTION B-B

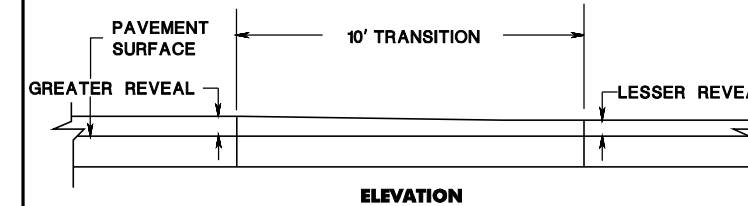
METHOD OF DEPRESSING CURB AT DRIVEWAYS

CD-607-2.4



APPROACH CURBED GORE AREA TREATMENT

CD-607-2.3



LINEAR CURB TRANSITION

CD-607-2.5

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

BARRIER CURB AND VERTICAL CURB

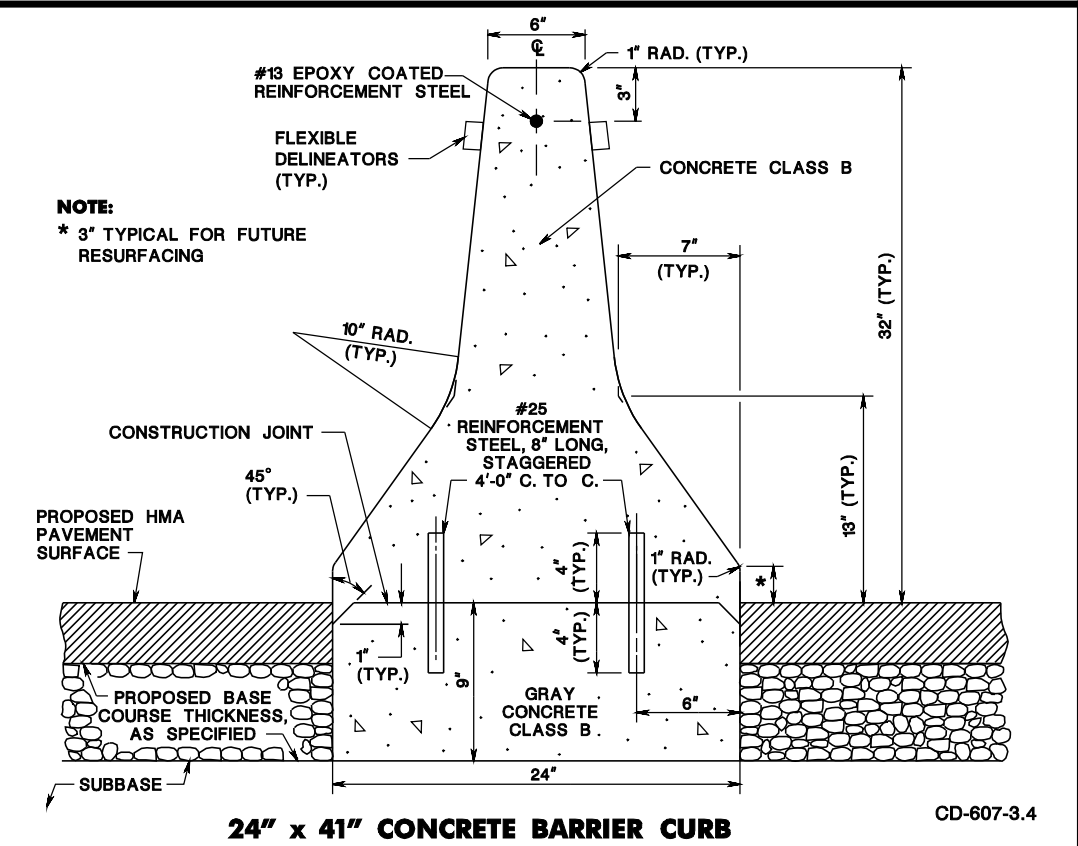
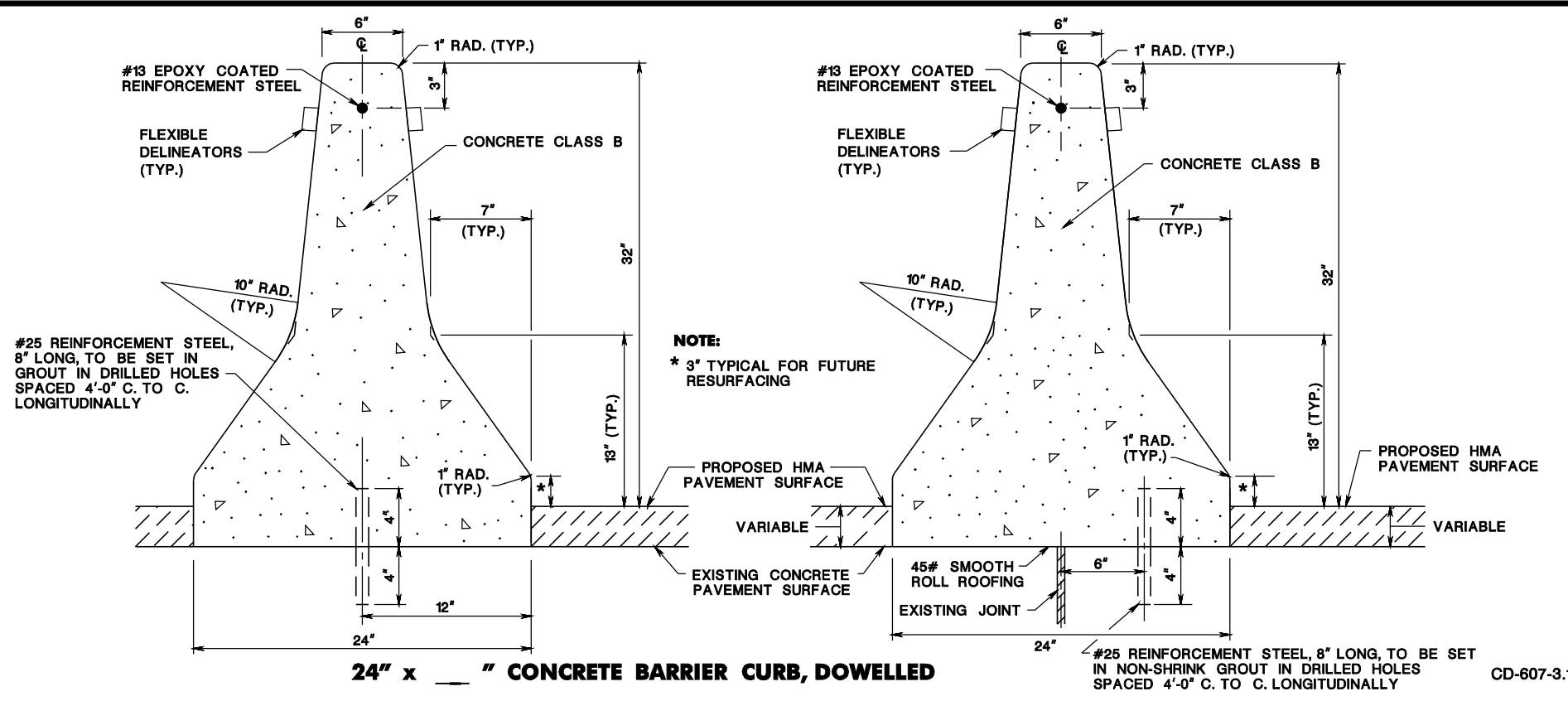
N.T.S.

CD-607-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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GENERAL NOTES:

(A) WHERE BARRIER CURB, DOWELLED, IS TO BE CONSTRUCTED ON EXISTING CONCRETE PAVEMENT OR EXISTING CONCRETE BASE COURSE:

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.

FILL THE TRANSVERSE JOINTS WITH PREFORMED BITUMINOUS-IMPREGNATED FIBER JOINT FILLER, COMPLYING WITH THE REQUIREMENTS OF AASHTO M-213 SPECIFICATION, RECESSED 1/4" IN FROM FACES AND TOP OF CURB. THE THICKNESS OF THE TRANSVERSE EXPANSION JOINT FILLER IS AS FOLLOWS:

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.

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.

THE THICKNESS OF 1 INCH 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 INCH, THE CONTRACTOR MAY CONSTRUCT OPEN JOINTS.

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.

WHERE DOWELLED 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.

(B) 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" IN FROM FACES AND TOP OF CURB.

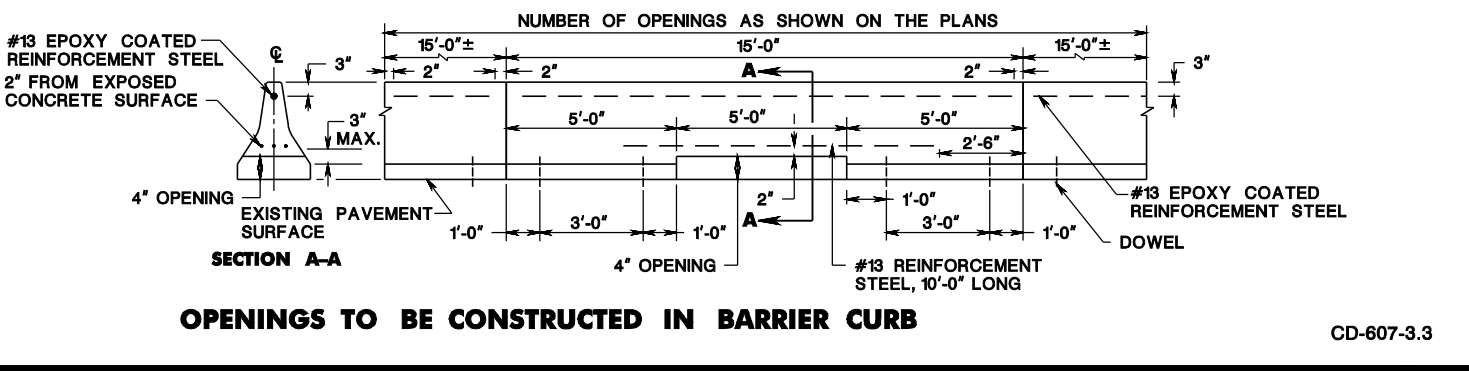
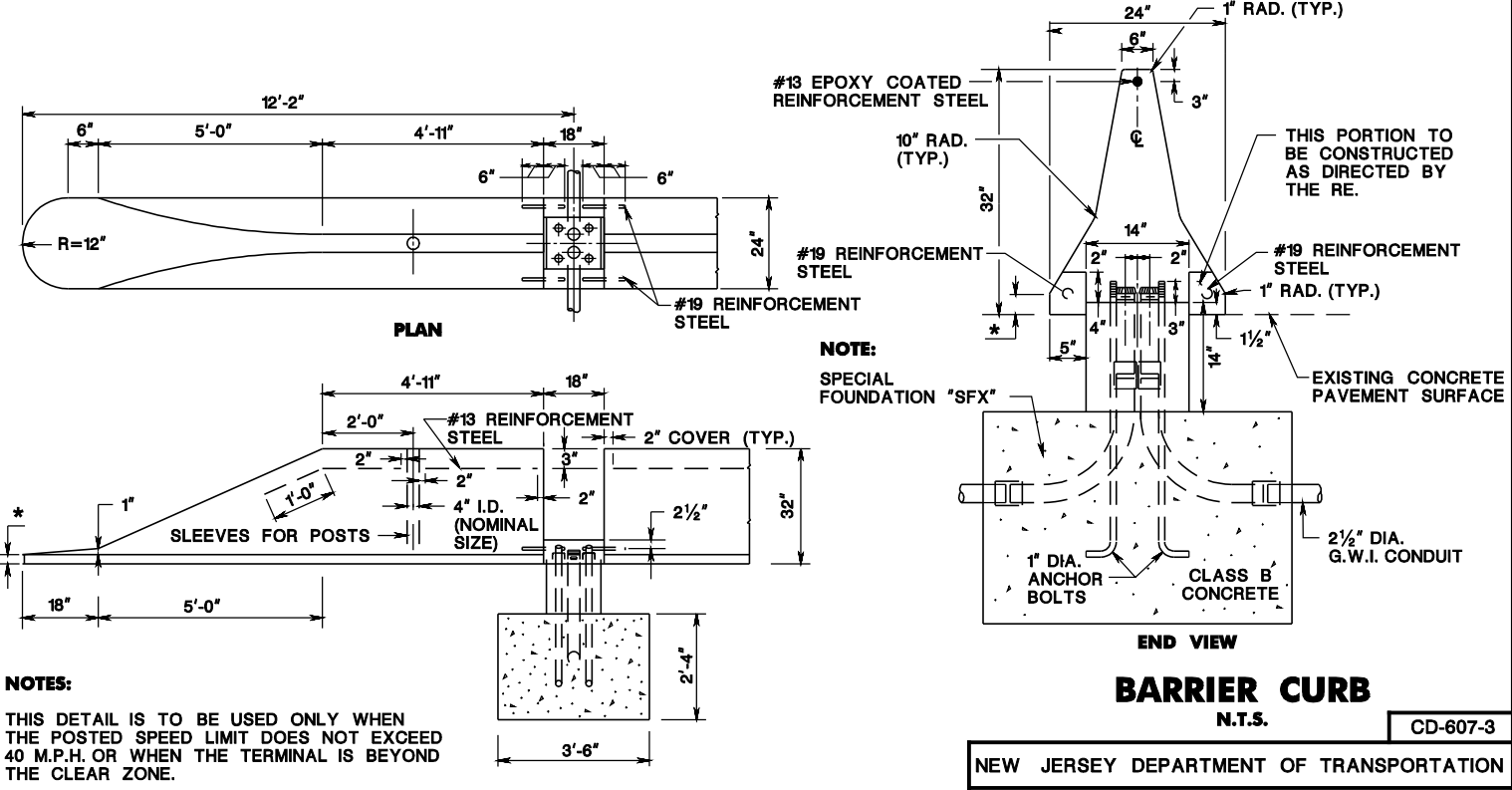
(C) GENERAL:

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.

(D) DELINEATORS:

INSTALL FLEXIBLE DELINEATORS ON BARRIER CURB.

CD-607-3.2



NOTES:

THIS DETAIL IS TO BE USED ONLY WHEN THE POSTED SPEED LIMIT DOES NOT EXCEED 40 M.P.H. OR WHEN THE TERMINAL IS BEYOND THE CLEAR ZONE.

* 3" TYPICAL FOR FUTURE RESURFACING

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

CD-607-3.5

NEW JERSEY DEPARTMENT OF TRANSPORTATION

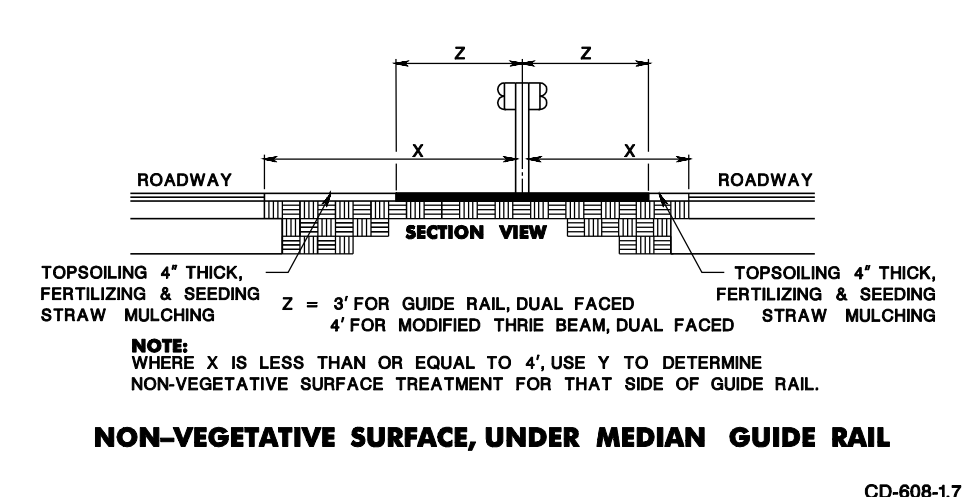
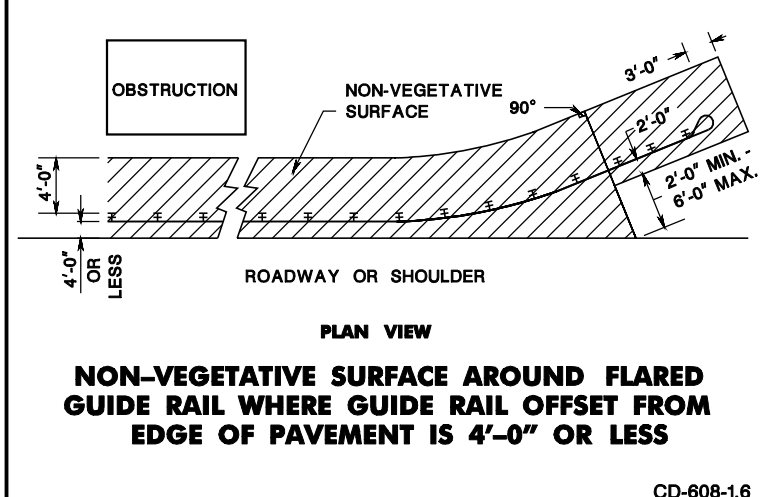
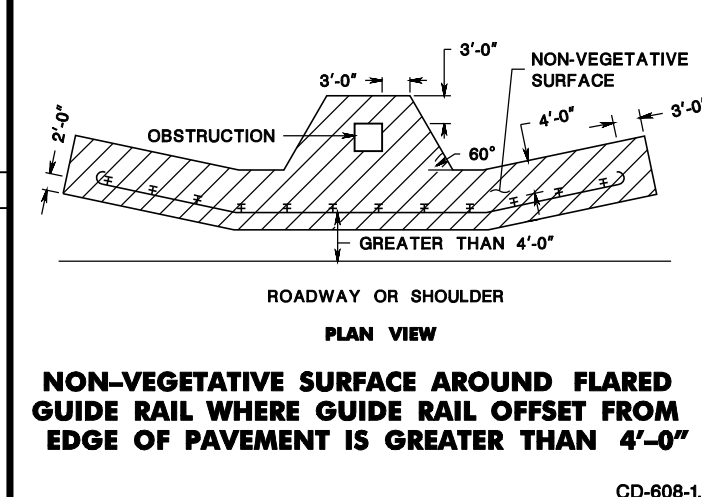
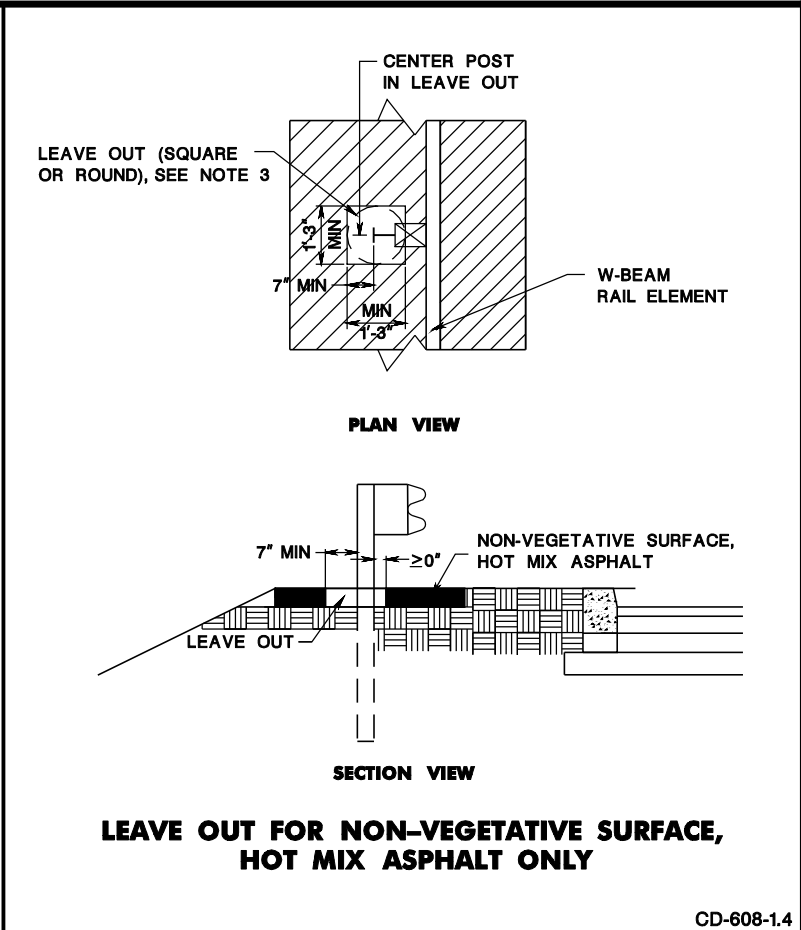
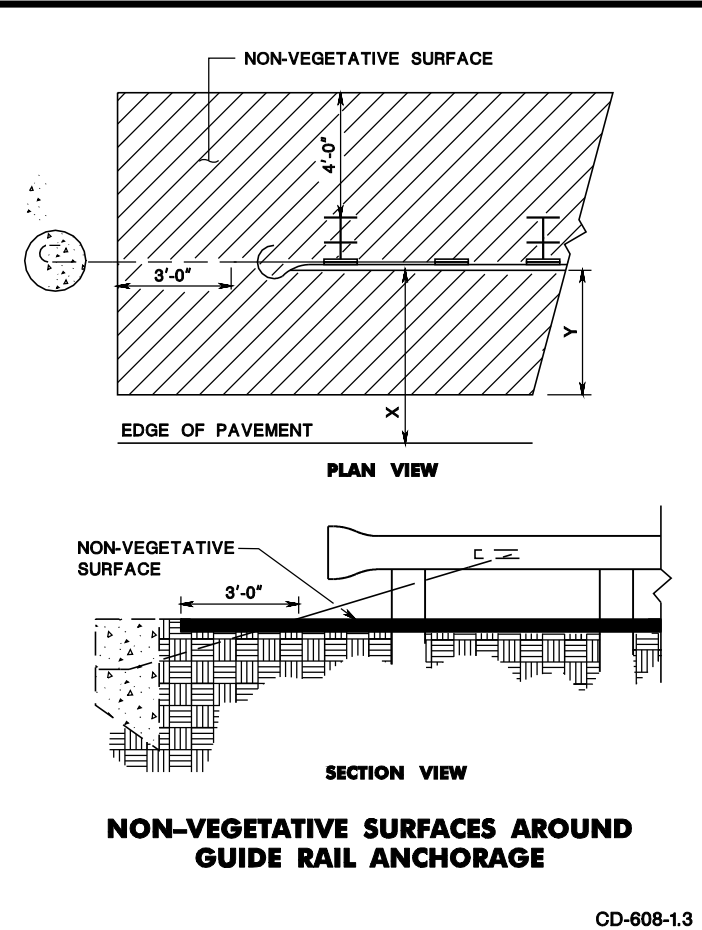
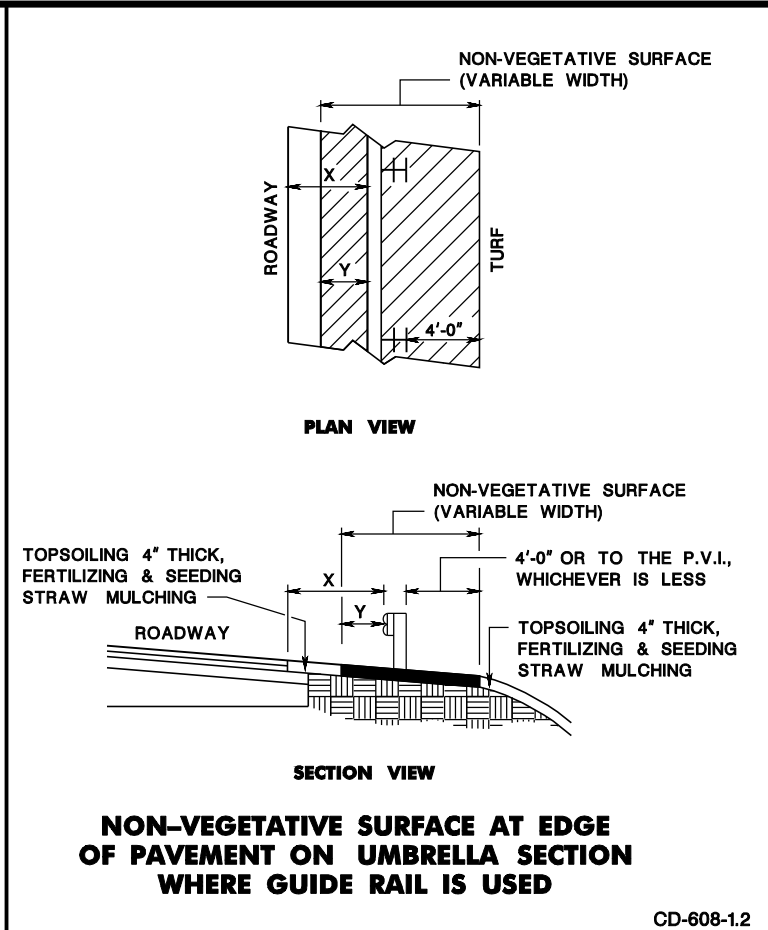
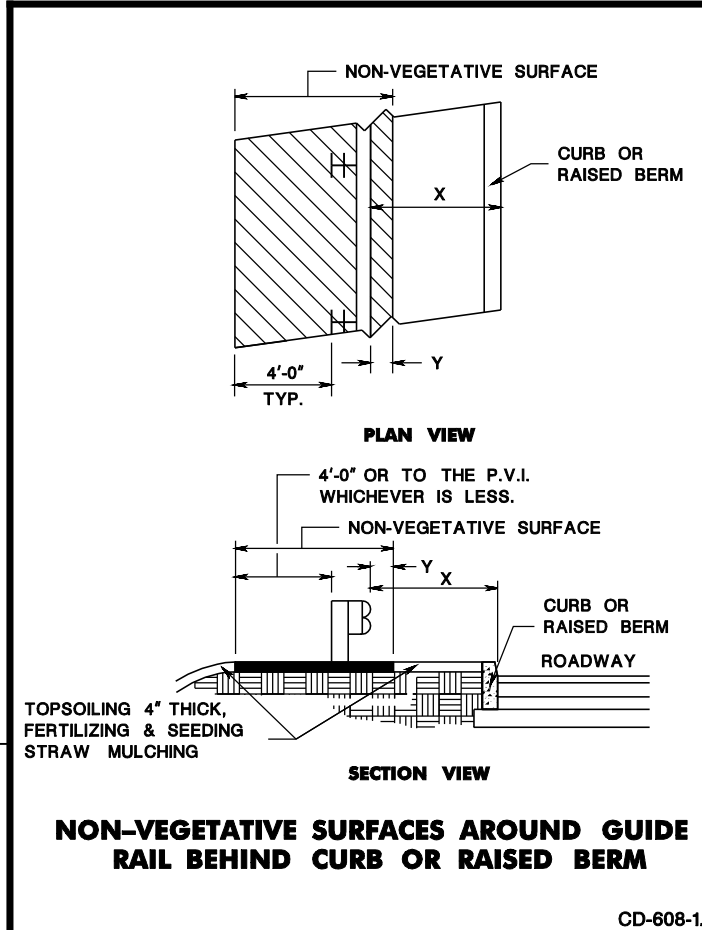
CONSTRUCTION DETAILS

CD-607-3

N.T.S.

60
164

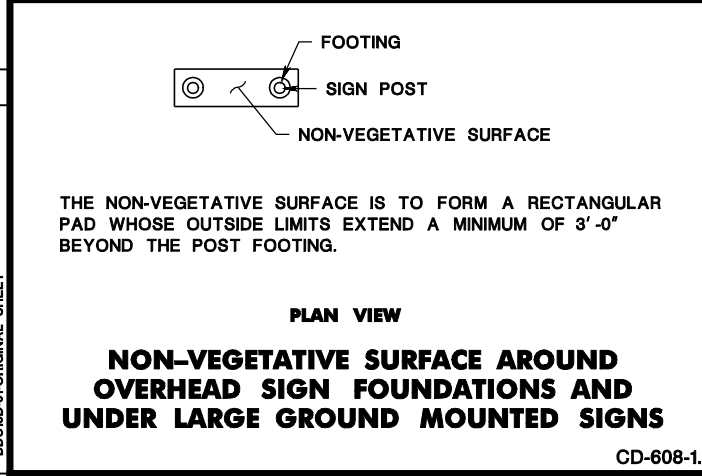
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X	Y
GUIDE RAIL OFFSET FROM EDGE OF PAVEMENT	WIDTH OF NON-VEGETATIVE SURFACE IN FRONT OF GUIDE RAIL
7'-0" OR GREATER	2'-0"
4'-0"	4'-0"
0'-0"	0'-0"

NOTE: WHERE X IS LESS THAN OR EQUAL TO 4', USE Y TO DETERMINE NON-VEGETATIVE SURFACE TREATMENT FOR THAT SIDE OF GUIDE RAIL.

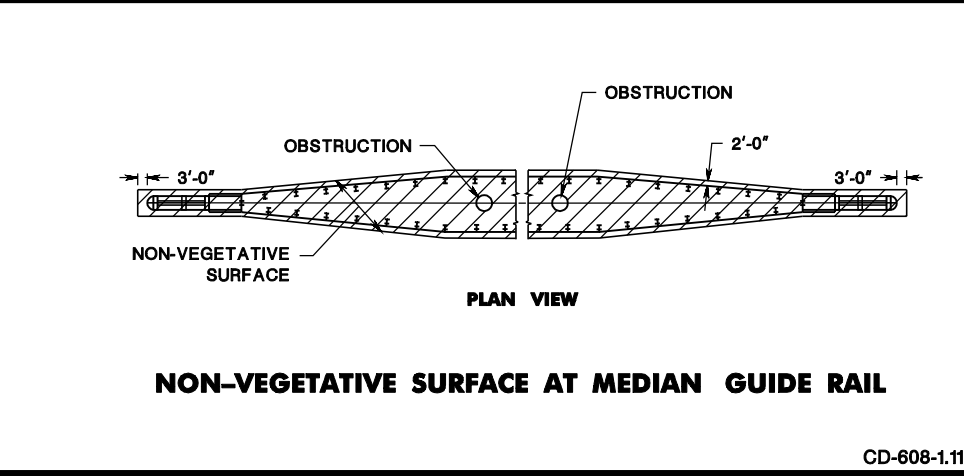
CD-608-1.8



GENERAL NOTES:

- IF THE END OF THE GUIDE RAIL IS BURIED IN THE SLOPE, THE LIMIT OF NON-VEGETATIVE 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:
 - COURSE AGREGATE, 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 802; OR
 - COURSE AGREGATE, SIZE NO. 57 IN BASE OF LEAVE OUT AND TOP WITH NON-VEGETATIVE SURFACE, HMA, 2" THICK. GRADE TO DRAIN AND HAND TAMP LEAVE OUT SURFACE.

CD-608-1.10



NON-VEGETATIVE SURFACE
N.T.S.

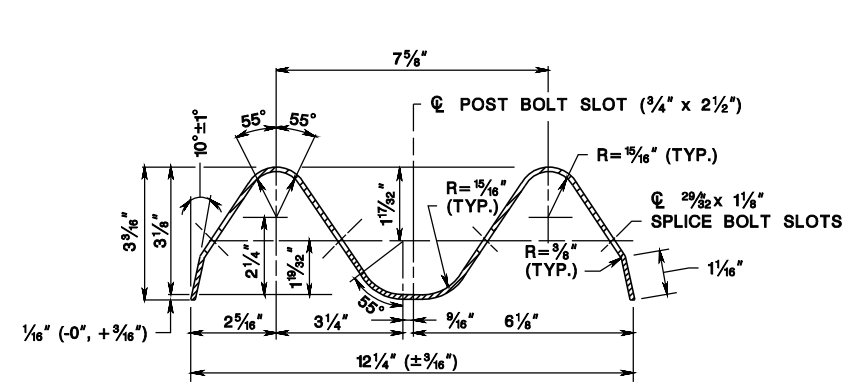
CD-608-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

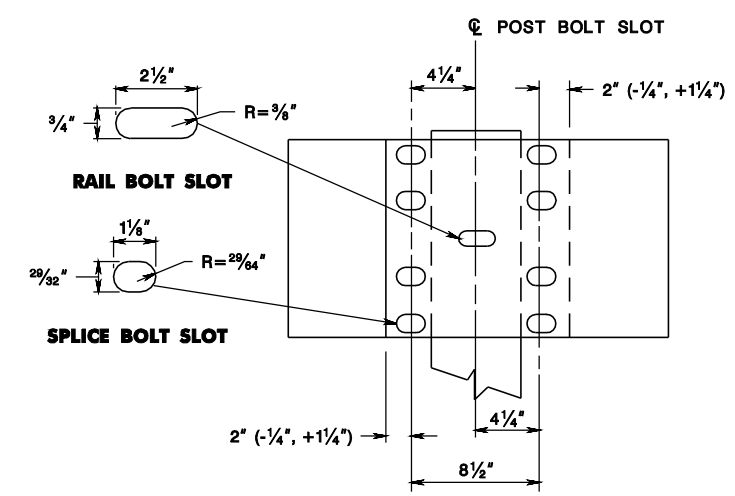
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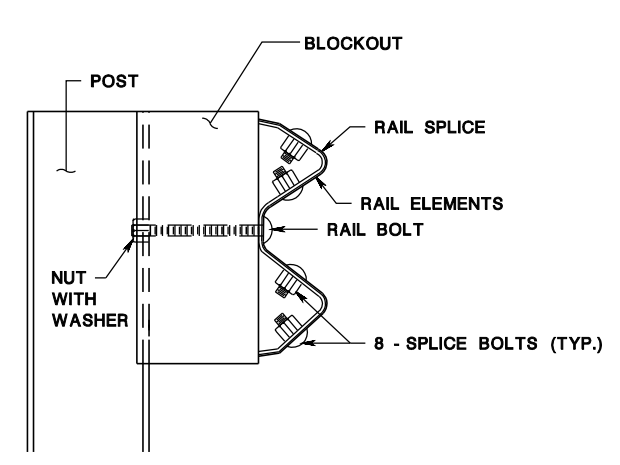


RAIL ELEMENT TO BE SUPPLIED IN LENGTHS OF 13'-6 1/2" OR 26'-1/2"

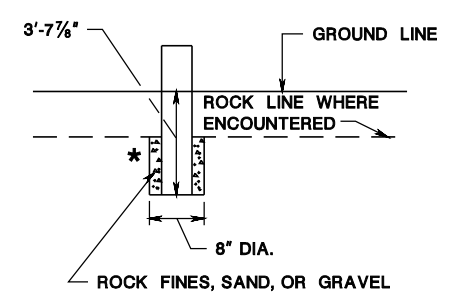
W-BEAM RAIL ELEMENT



RAIL SPLICE



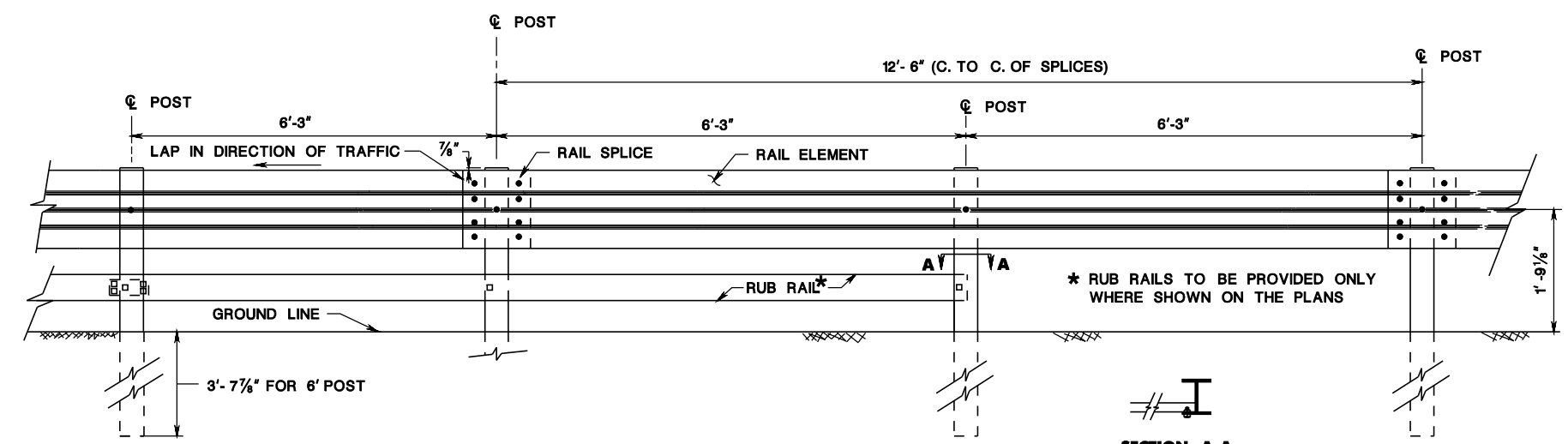
BEAM GUIDE RAIL POST ASSEMBLY



* ALTERNATE CONSTRUCTION METHOD: PLACE POST IN 8" DIA. HOLE AND BACKFILL WITH CLASS "B" CONCRETE

GUIDE RAIL POST INSTALLATION IN ROCK

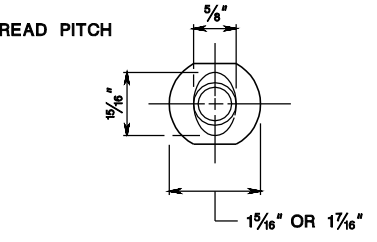
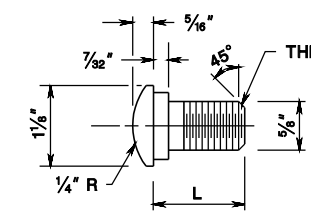
CD-609-1.2



BEAM GUIDE RAIL

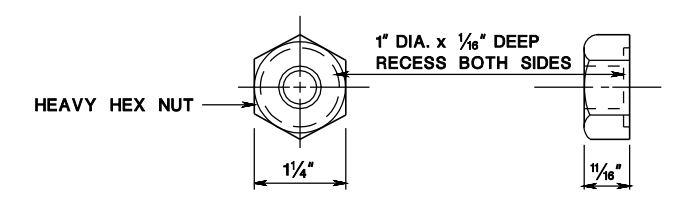
SECTION A-A

* RUB RAILS TO BE PROVIDED ONLY WHERE SHOWN ON THE PLANS

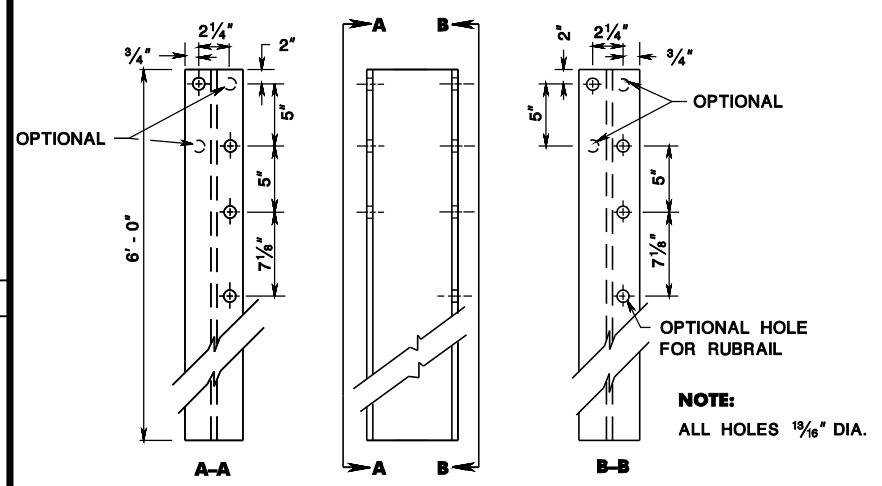


5/8" DIA. BUTTON HEAD BOLT

TYPE	L	MIN. THREAD LENGTH
SPLICE	1 1/4"	FULL LENGTH THREAD
RAIL	9 1/2"	1 3/4"



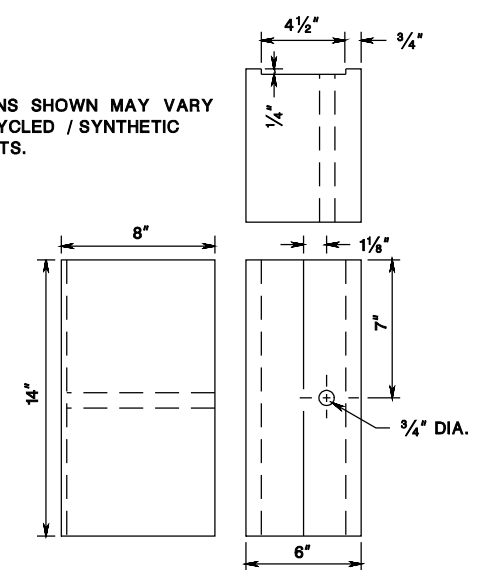
**5/8" DIA. RECESS NUT
SPLICE AND RAIL NUT AND BOLT**



W6 x 8.5 OR W6 x 9 STEEL POST

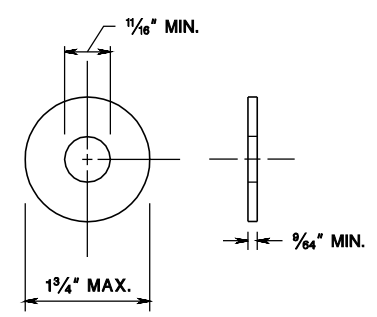
6' POST

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



APPROVED RECYCLED/ SYNTHETIC MATERIALS

14" BLOCKOUT



STEEL WASHER

GENERAL NOTES:

- ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
- FURNISH RAIL ELEMENTS SHOPCURVED, CONCAVE, OR CONVEX, FOR RADII BETWEEN 20 AND 150 FEET.

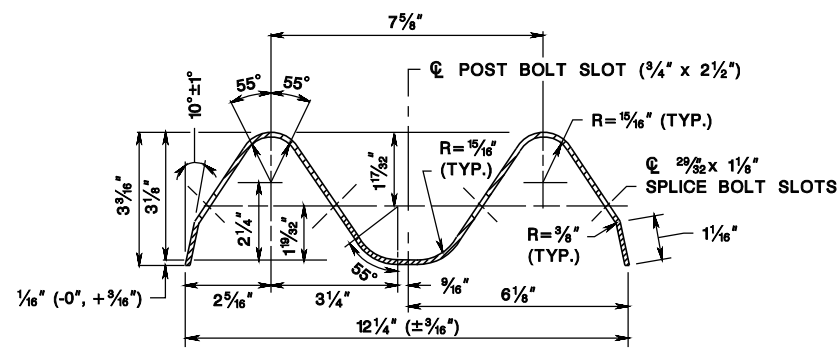
**BEAM GUIDE RAIL
N.T.S.**

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

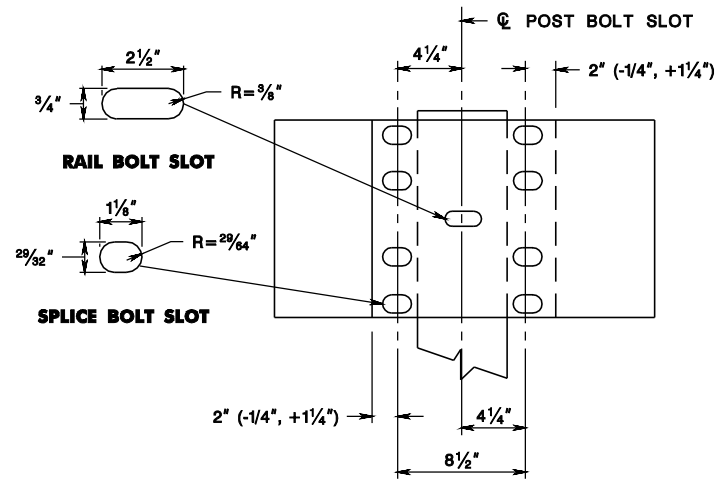
CD-609-1

CD-609-1.1

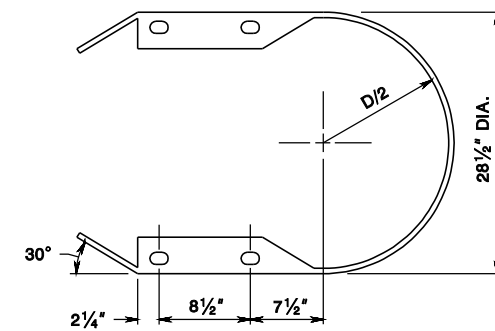


SUPPLY RAIL ELEMENT IN LENGTHS OF 13'-6 1/2" OR 26'-1/2"

W-BEAM RAIL ELEMENT



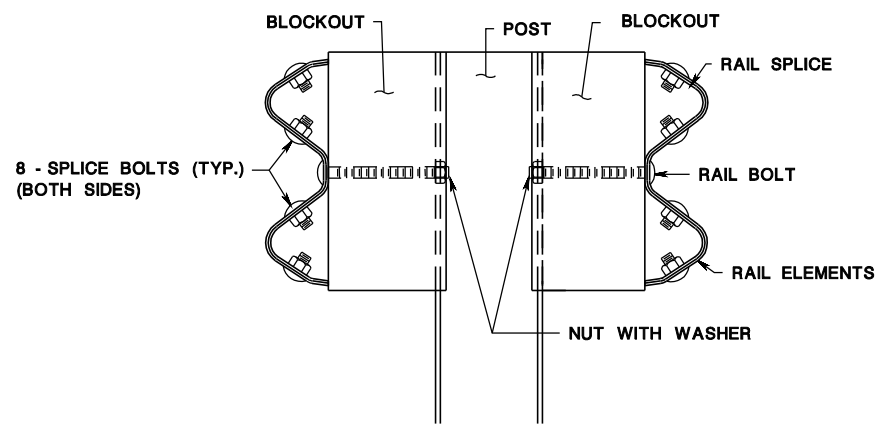
RAIL SPLICE



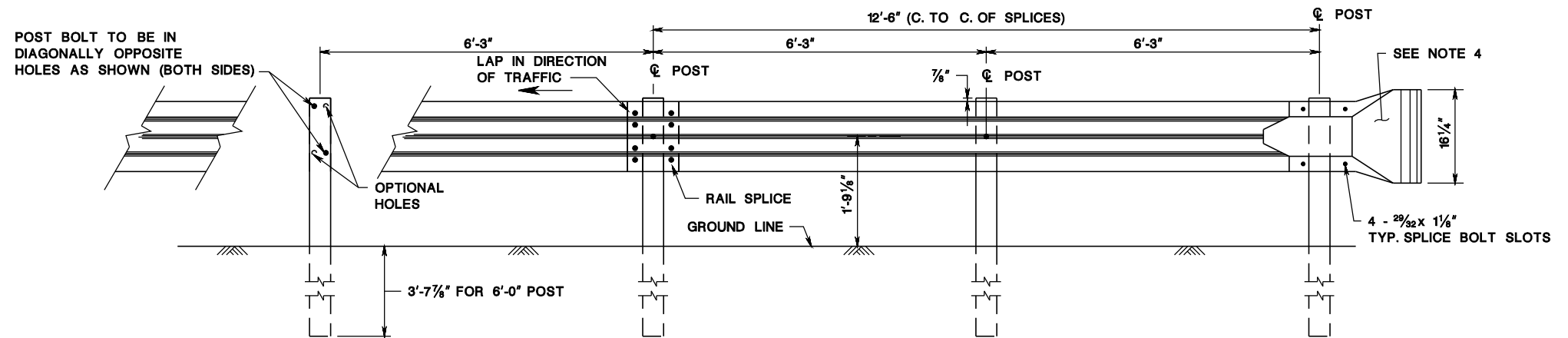
END SECTION (BUFFER)

GENERAL NOTES:

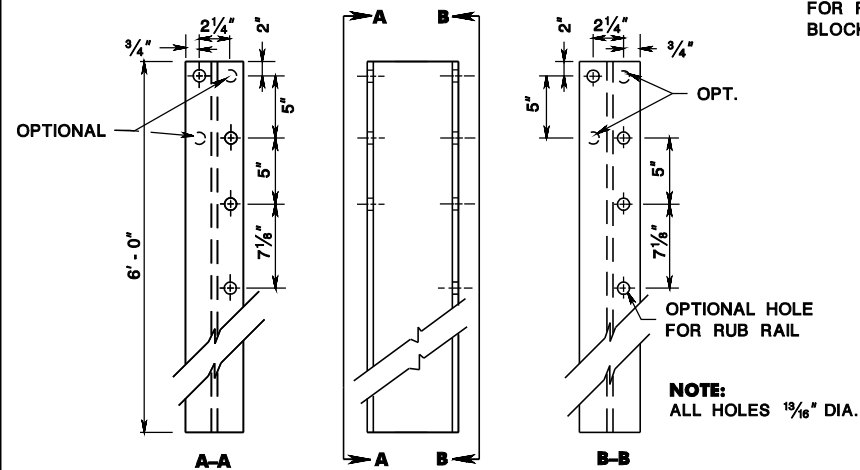
1. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
2. RAIL ELEMENTS TO BE FURNISHED SHOPCURVED, CONCAVE, OR CONVEX FOR RADII BETWEEN 20 FEET AND 150 FEET.
3. USE END SECTION (BUFFER) UNLESS THE CONSTRUCTION PLANS CALL FOR ANOTHER TYPE OF END TREATMENT.



POST ASSEMBLY, DUAL FACED



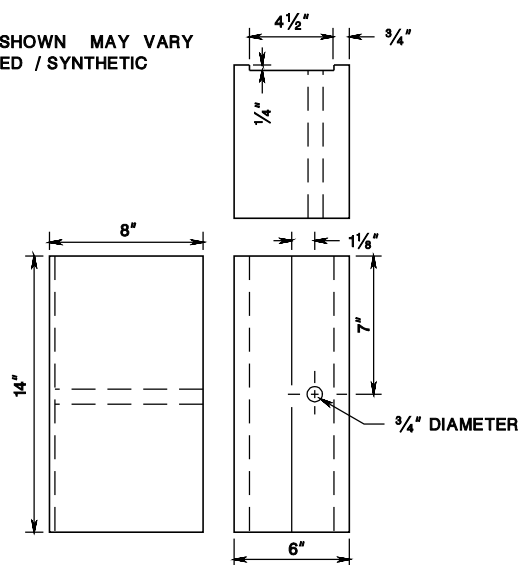
BEAM GUIDE RAIL, DUAL FACED



W6 x 8.5 OR W6 x 9 STEEL POST

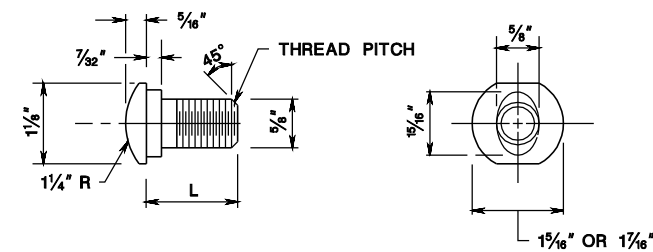
6' POST

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



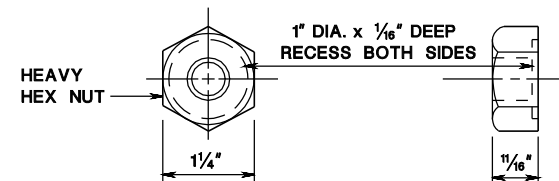
APPROVED RECYCLED/ SYNTHETIC MATERIALS

14' BLOCKOUT

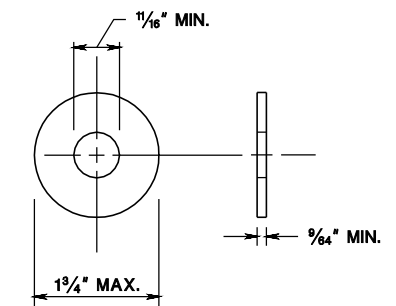


5/8" DIA. BUTTON HEAD BOLT

TYPE	L	MIN. THREAD LENGTH
SPLICE	1 1/4"	FULL LENGTH THREAD
RAIL	9 1/2"	1 3/4"



**5/8" DIA. RECESS NUT
SPLICE AND RAIL NUT AND BOLT**



STEEL WASHER

BEAM GUIDE RAIL, DUAL FACED

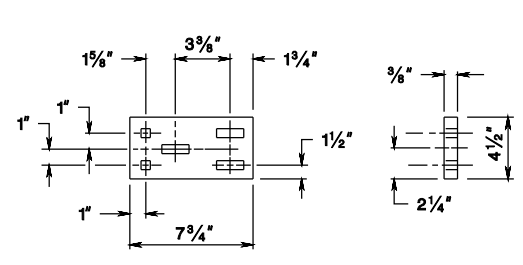
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

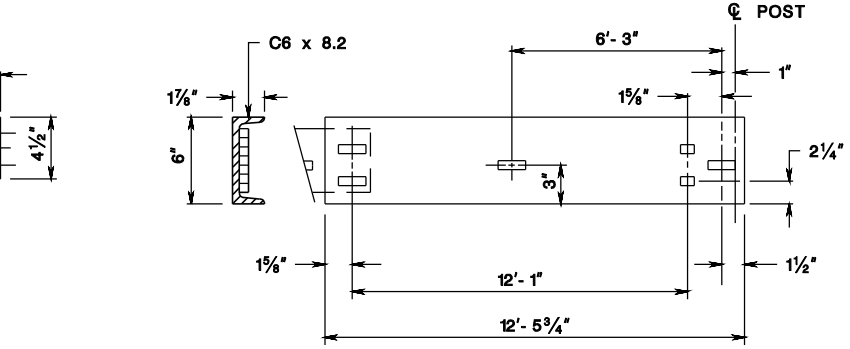
CD-609-2

CD-609-2.1



SPLICE PLATE

NOTE:
ALL RECTANGULAR SLOTS ARE 1 1/8" x 2"
ALL SQUARE HOLES ARE 1 1/8"

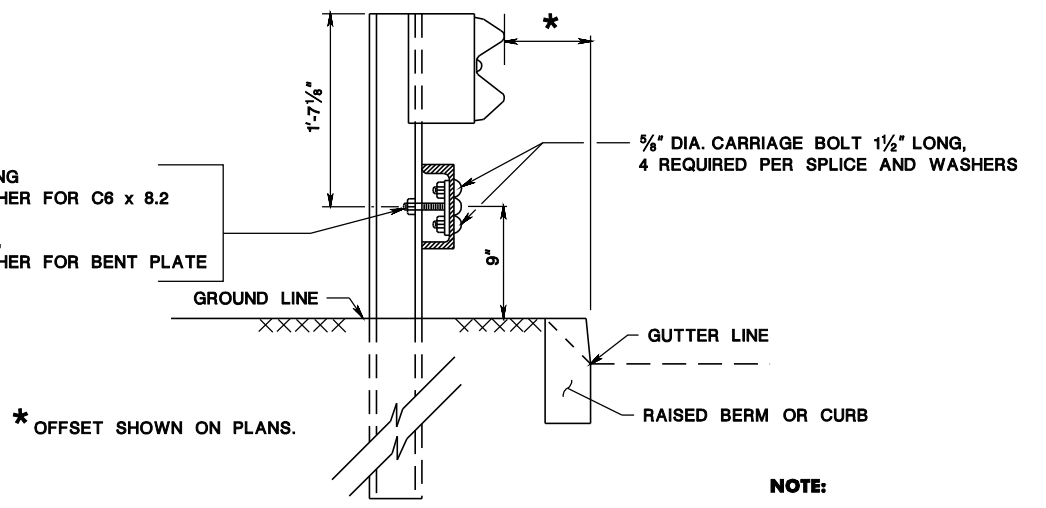


C6 x 8.2

RUB RAIL MAY BE SUPPLIED IN LENGTHS OF 12'-5 3/4" OR 24'-11 3/4"

NOTE:
USE EITHER C6 x 8.2 OR BENT PLATE FOR RUB RAIL

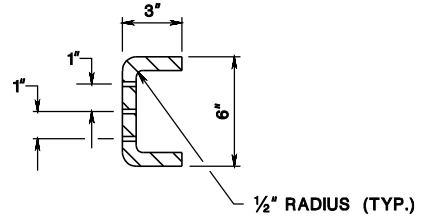
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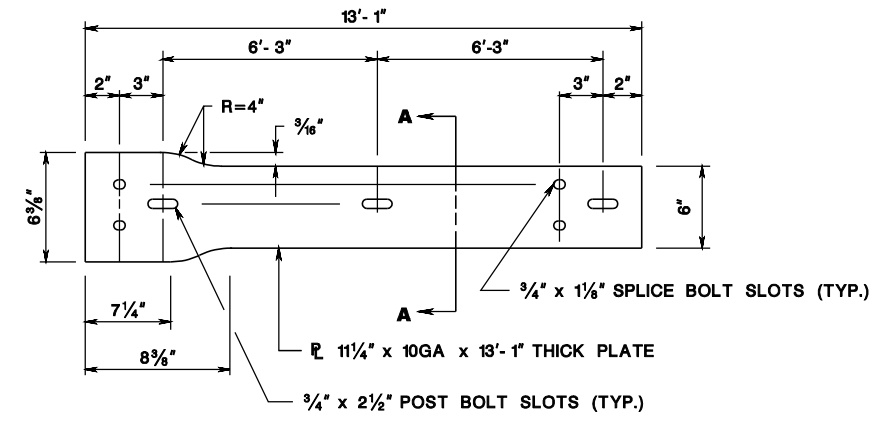
RUB RAIL SECTION

NOTE:
USE EITHER C6 x 8.2 OR BENT PLATE FOR RUB RAIL

CD-609-3.2



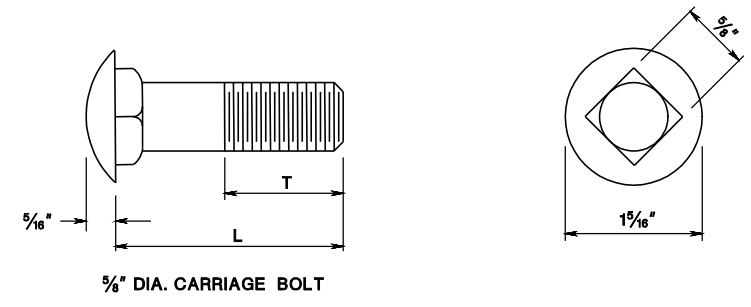
SECTION A-A



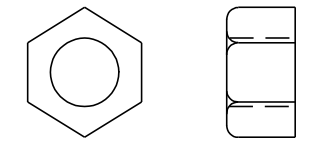
BENT PLATE

NOTE:
USE EITHER C6 x 8.2 OR BENT PLATE FOR RUB RAIL

CD-609-3.3



5/8" DIA. CARRIAGE BOLT

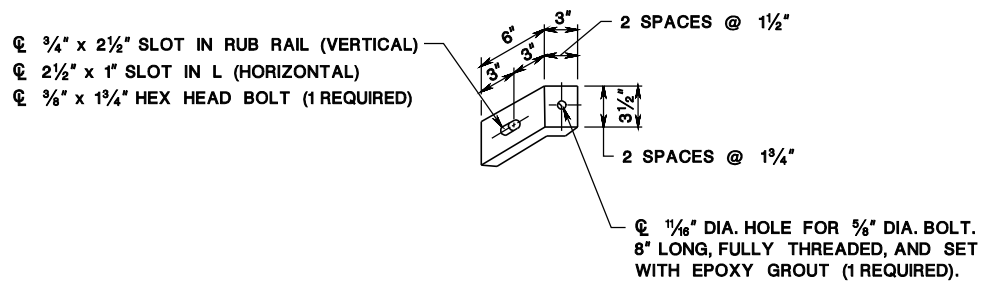


5/8" DIA. HEX NUT

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

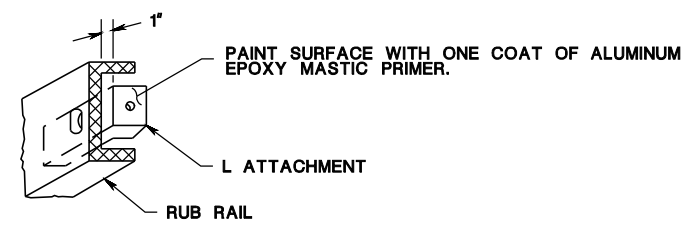
CARRIAGE BOLT DETAIL

CD-609-3.4



RUB RAIL ANGLE ATTACHMENT

SEE CD-609-11.2 FOR GENERAL NOTES



CD-609-3.5

RUB RAIL

N.T.S.

HMA = HOT MIX ASPHALT

CD-609-3

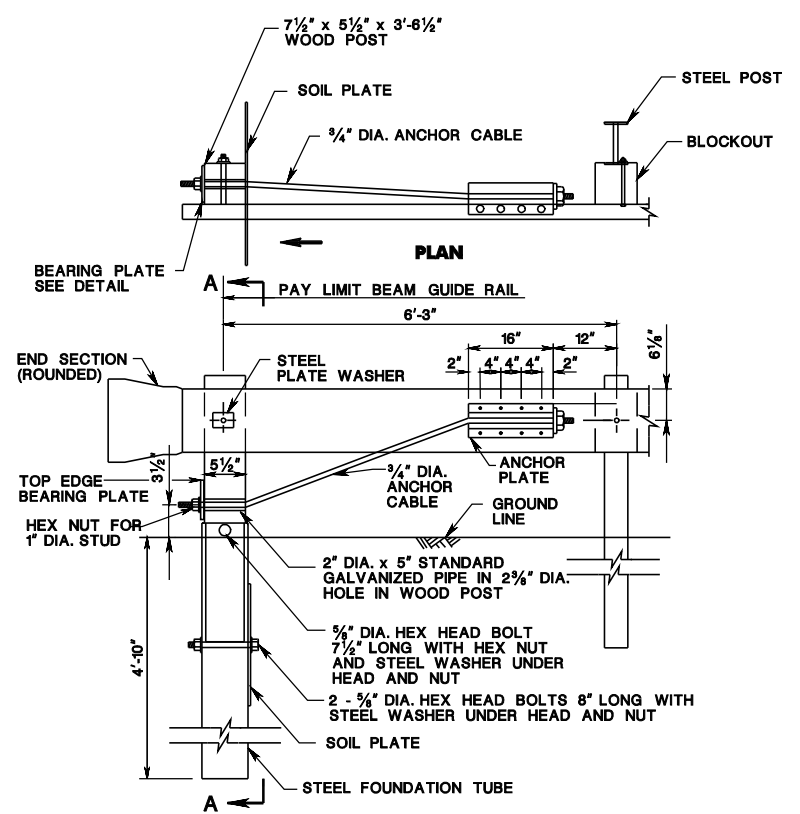
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CONSTRUCTION DETAILS

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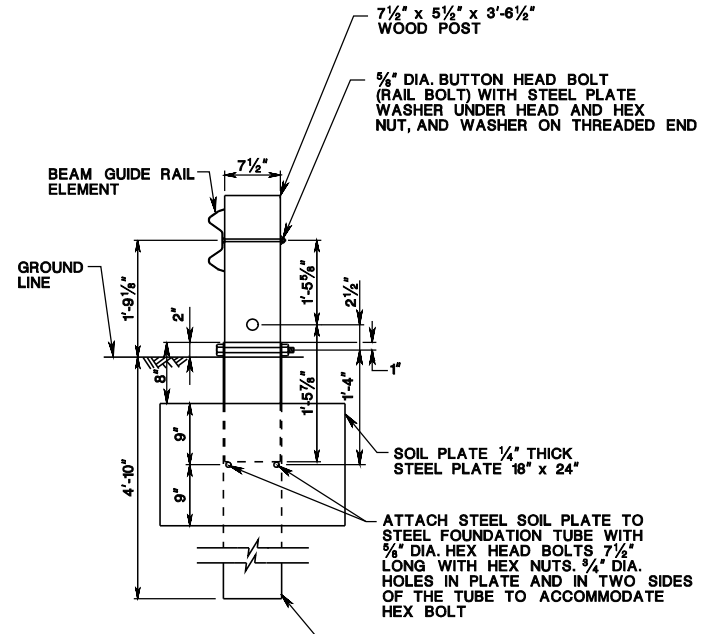
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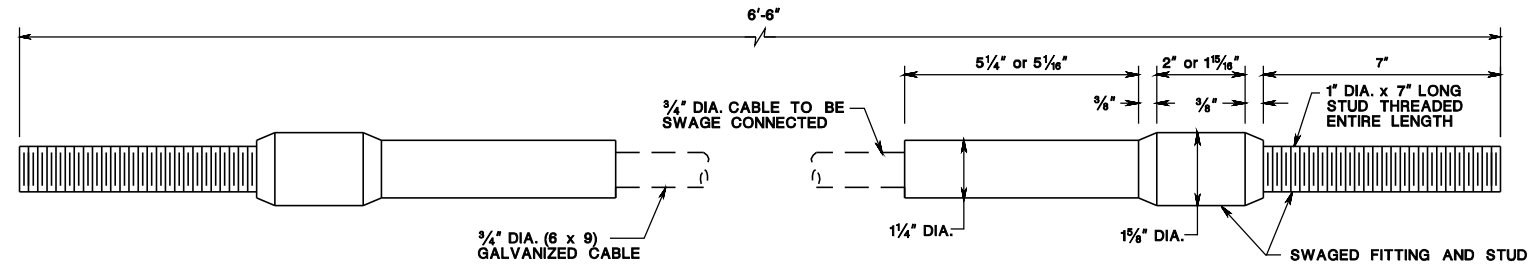


ELEVATION
BEAM GUIDE RAIL ANCHORAGE

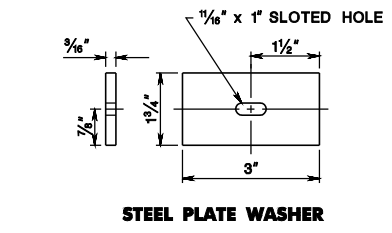
PAYMENT FOR ITEM ANCHORAGE INCLUDES THE ANCHOR PLATE, CABLE ASSEMBLY, WOOD POST, STEEL FOUNDATION TUBE AND SOIL PLATE



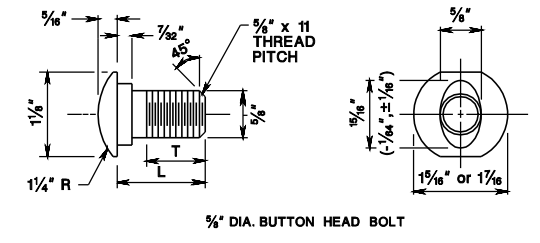
SECTION A-A



CABLE ASSEMBLY

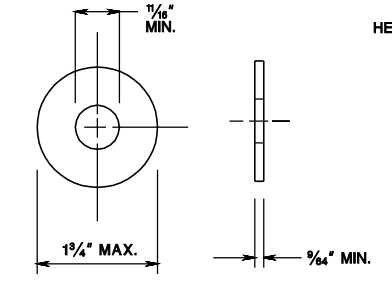


STEEL PLATE WASHER

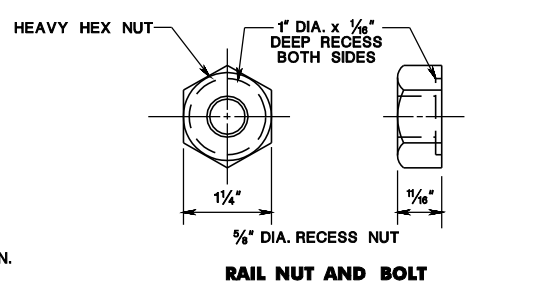


NUT AND BOLT

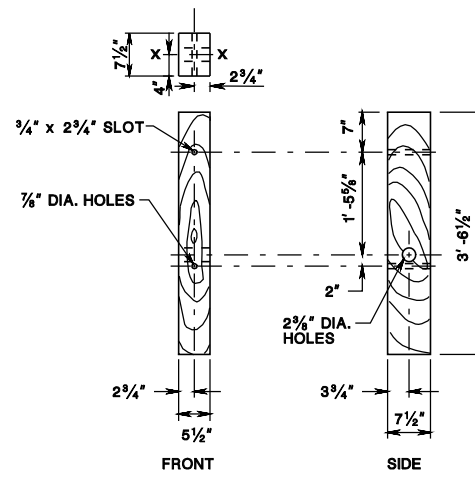
TYPE	L	MIN. THREAD LENGTH (T)
RAIL	10"	4"
SPLICE	1 1/4"	1 1/4"



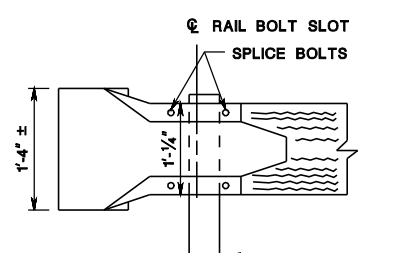
STEEL WASHER



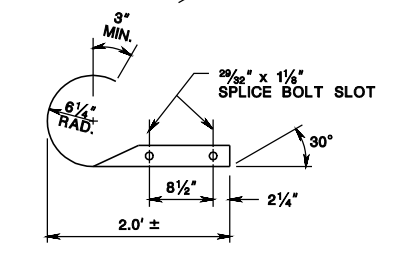
RAIL NUT AND BOLT



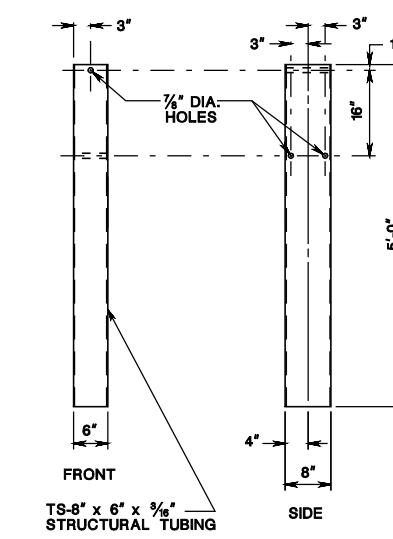
WOOD POST



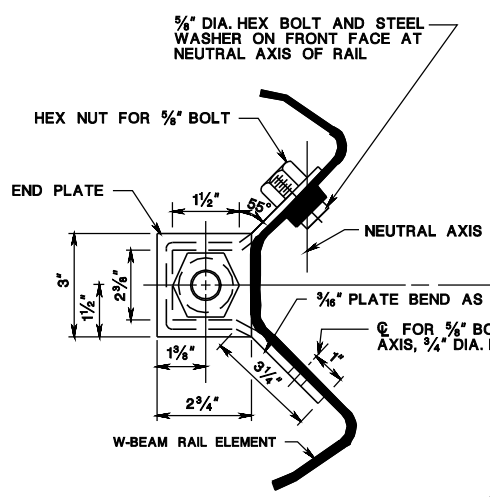
END SECTION (ROUNDED)



END SECTION (ROUNDED)

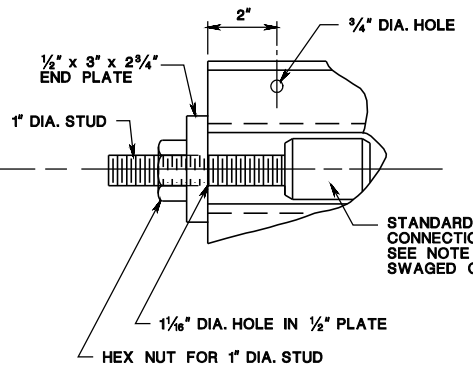


STEEL FOUNDATION TUBE

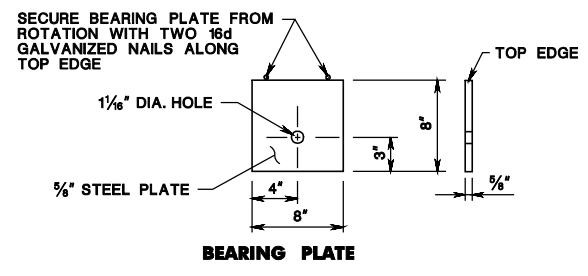


ANCHOR PLATE

NOTE:
 OTHER ANCHOR CABLE ASSEMBLIES MAY BE USED. MINIMUM BREAKING STRENGTH OF ASSEMBLY TO BE 40,000 LBS.

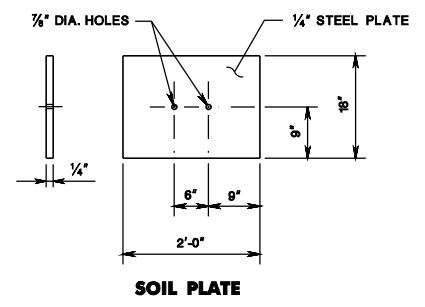


STANDARD SWAGED CONNECTION CONNECTION FOR 3/4 CABLE, SEE NOTE IN STANDARD SWAGED CONNECTION DETAIL



BEARING PLATE

SECURE BEARING PLATE FROM ROTATION WITH TWO 18d GALVANIZED NAILS ALONG TOP EDGE



SOIL PLATE

BEAM GUIDE RAIL ANCHORAGE
 N.T.S.

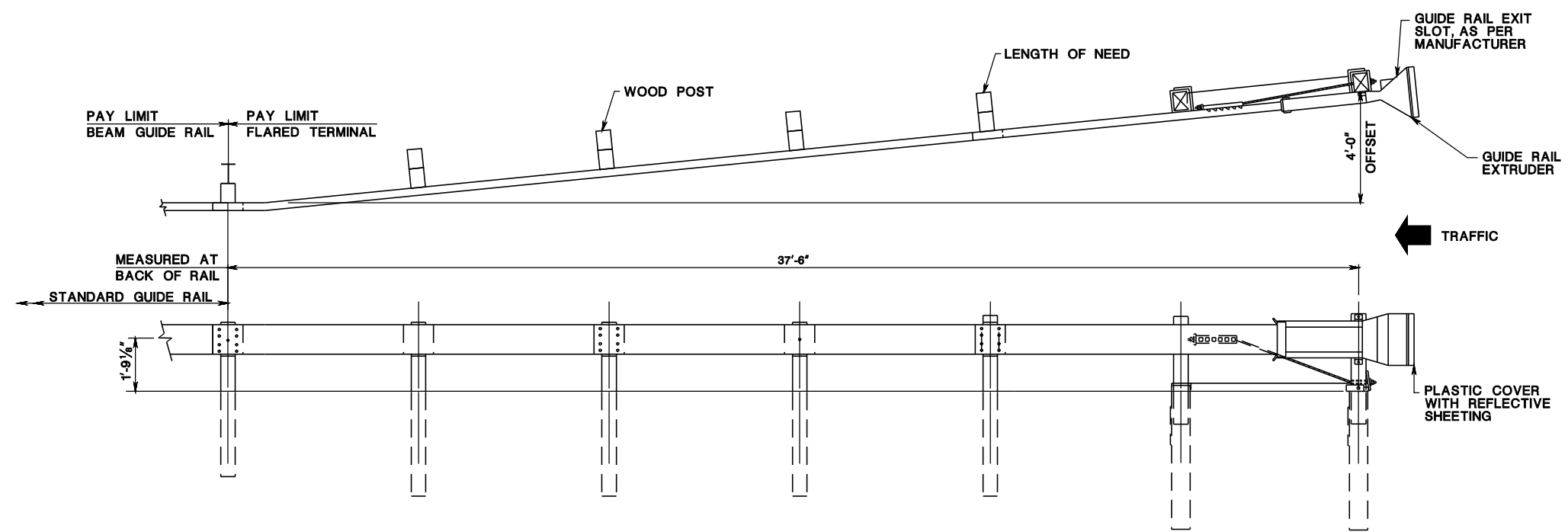
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-609-4

CD-609-4.1

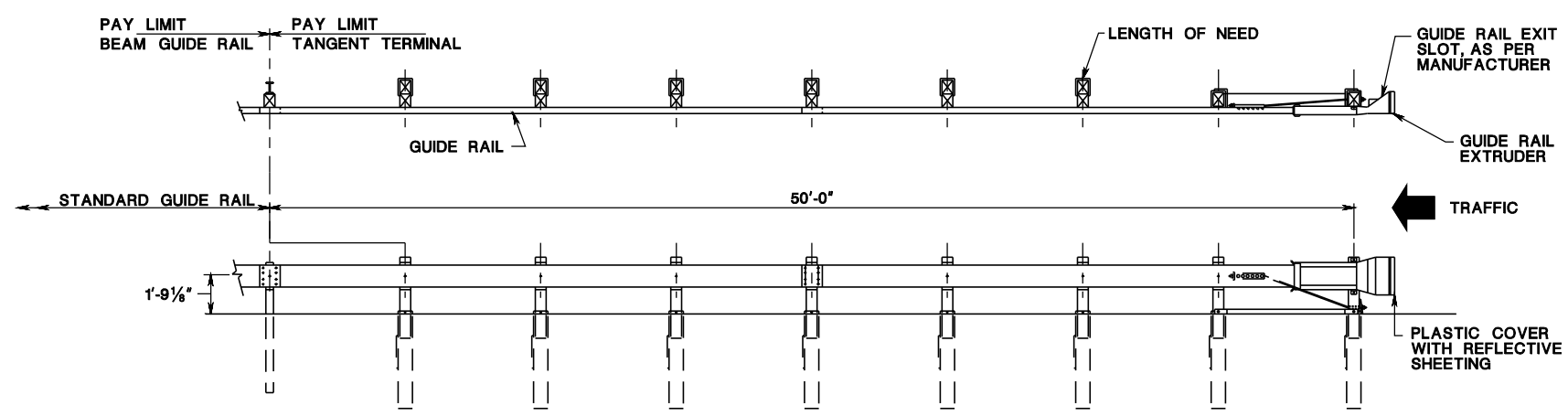
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FLARED GUIDE RAIL TERMINAL

NOTE:
NUMBER OF POSTS, TYPE OF POST, POST SPACING,
FLARE RATE, AND MATERIALS TO BE IN ACCORDANCE
WITH THE MANUFACTURER'S RECOMMENDATION AND
THE DEPARTMENT'S QUALIFIED PRODUCTS LIST

CD-609-5.1



TANGENT GUIDE RAIL TERMINAL

NOTE:
NUMBER OF POSTS, TYPE OF POST, POST SPACING,
AND MATERIALS TO BE IN ACCORDANCE
WITH THE MANUFACTURER'S RECOMMENDATION AND
THE DEPARTMENT'S QUALIFIED PRODUCTS LIST

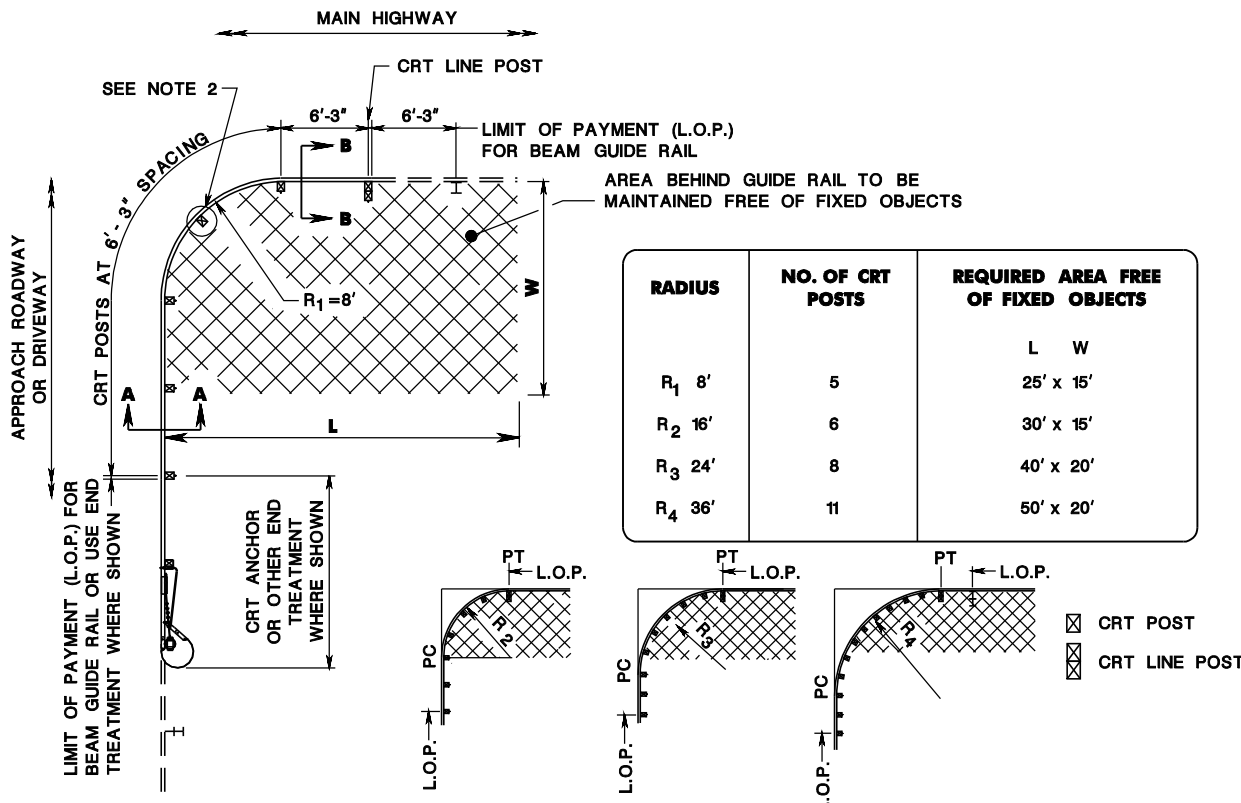
**FLARED GUIDE RAIL TERMINAL
AND
TANGENT GUIDE RAIL TERMINAL**
N.T.S.

CD-609-5

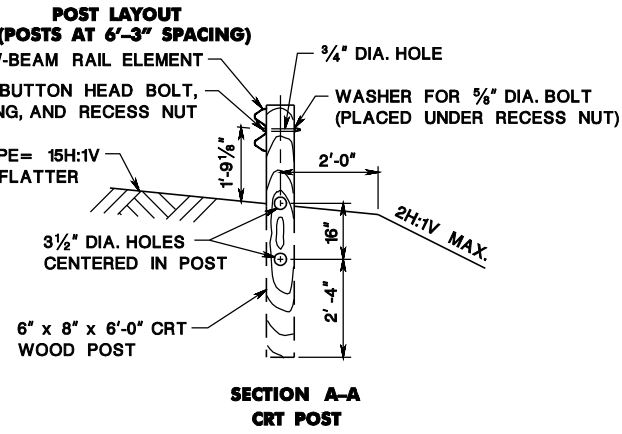
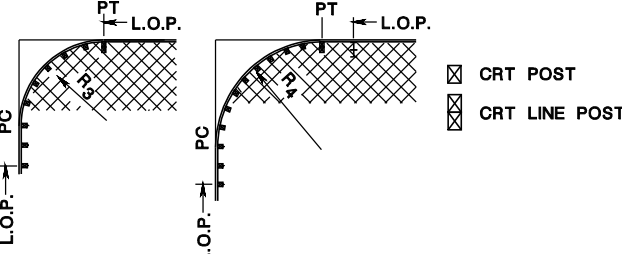
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

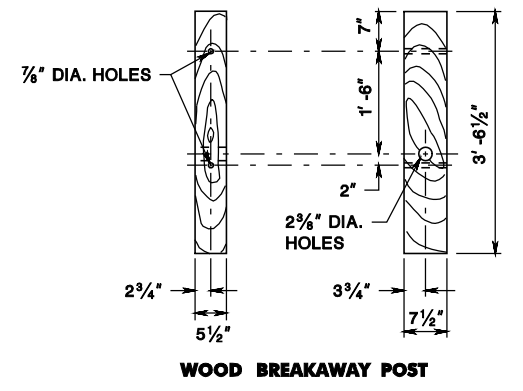
CD-609-5.2



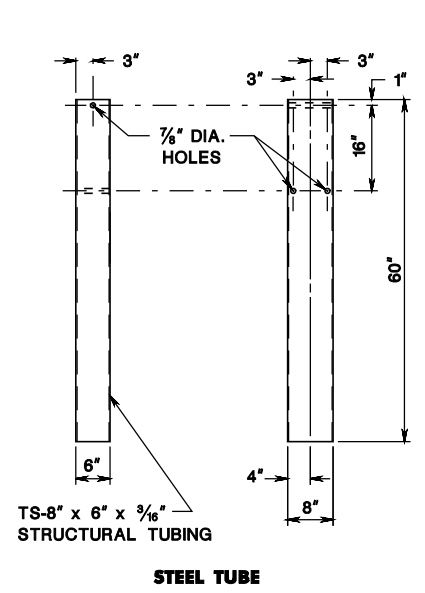
AREA BEHIND GUIDE RAIL TO BE MAINTAINED FREE OF FIXED OBJECTS



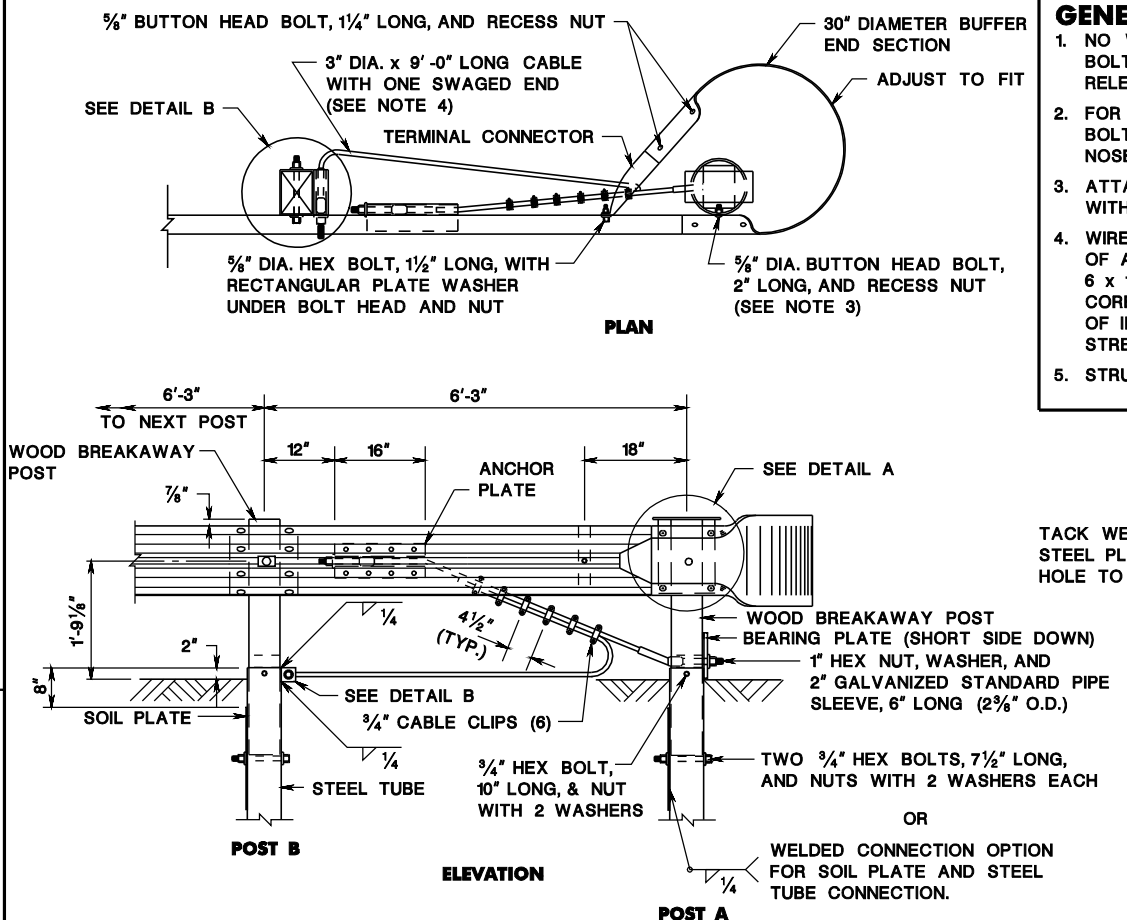
SECTION B-B
CRT LINE POST



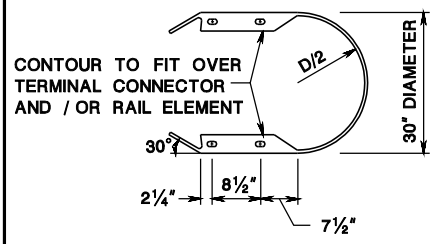
CONTROLLED RELEASE TERMINALS



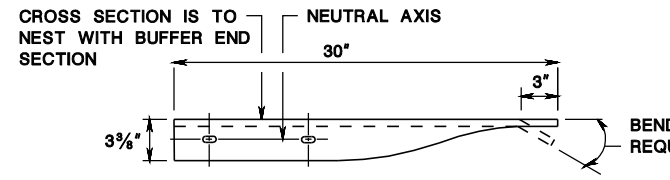
STEEL TUBE



CRT ANCHOR

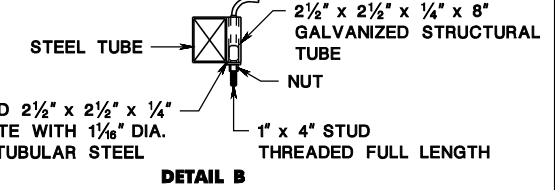


30" DIA. BUFFER END SECTION

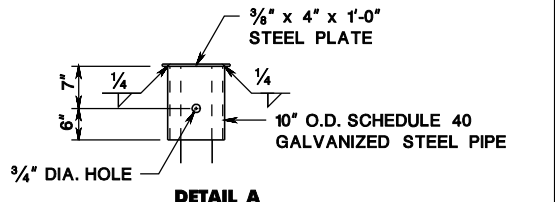


TERMINAL CONNECTOR

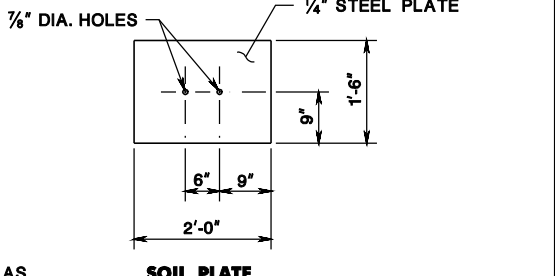
- GENERAL NOTES:**
- NO WASHERS ARE USED ON THE 5/8" DIA. BUTTON HEAD BOLTS CONNECTING THE RAIL TO THE CONTROLLED RELEASE TERMINAL (CRT) POSTS.
 - FOR 8 FOOT RADIUS, THE RAIL ELEMENT NOT TO BE BOLTED TO THE CRT POST AT THE CENTER OF THE NOSE, AS SHOWN.
 - ATTACH W-BEAM TO STEEL PIPE WITH BUTTON HEAD BOLT WITH NO WASHER. NO CONNECTION TO POST IS REQUIRED.
 - WIRE ROPE CABLE TO CONFORM TO THE REQUIREMENTS OF AASHTO M30 AND BE 3/4" DIAMETER PREFORMED, 6 x 19, WIRE STRAND CORE OR INDEPENDENT WIRE ROPE CORE, GALVANIZED, RIGHT REGULAR LAY, MANUFACTURED OF IMPROVED PLOW STEEL WITH A MINIMUM BREAKING STRENGTH OF 42,800 POUNDS.
 - STRUCTURAL TUBING TO CONFORM TO ASTM A500. CD-609-6.3



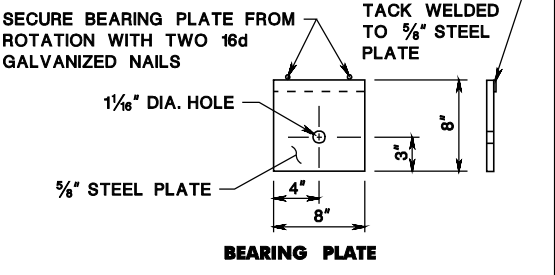
DETAIL B



DETAIL A



SOIL PLATE



BEARING PLATE

CONTROLLED RELEASE TERMINALS

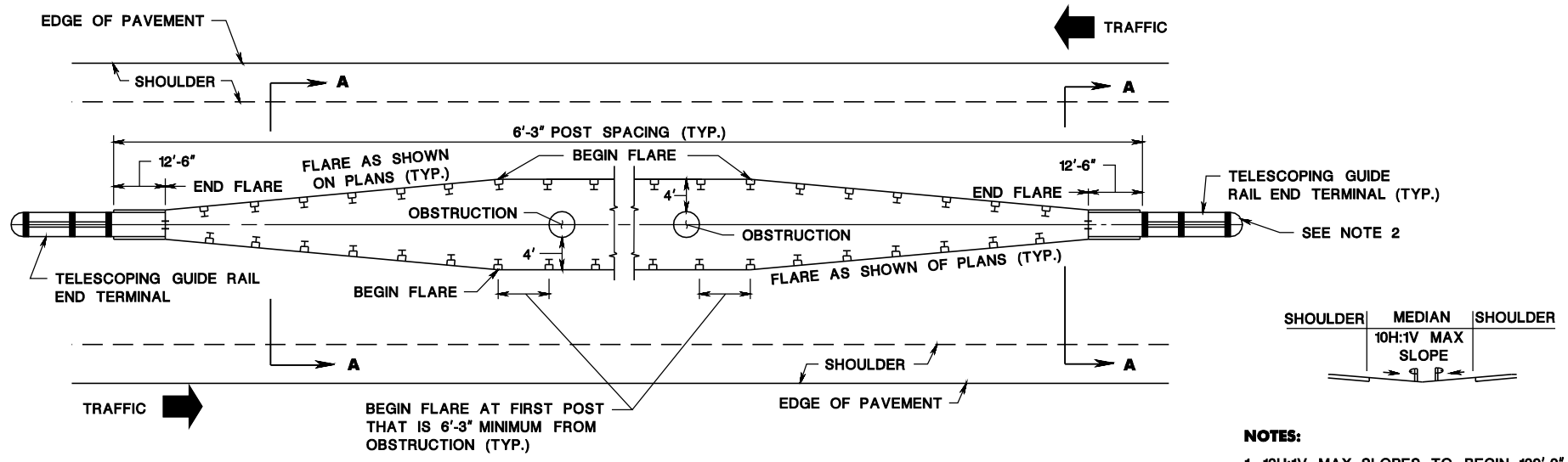
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CONTROLLED RELEASE TERMINAL ANCHORAGE

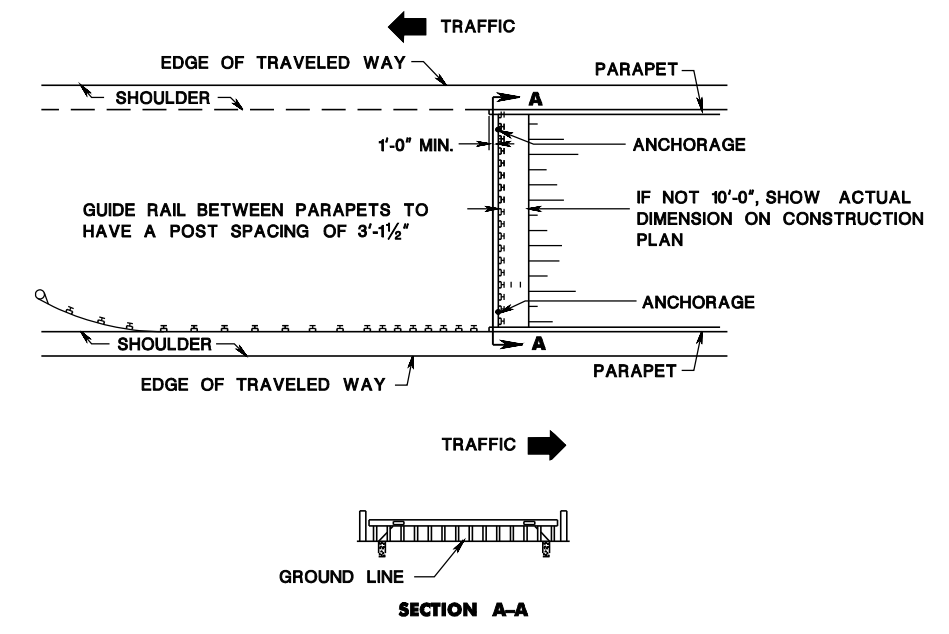
CD-609-6.2



MEDIAN GUIDE RAIL WHEN CLEARANCE FROM BACK OF RAIL TO OBSTRUCTION IS 4' OR GREATER

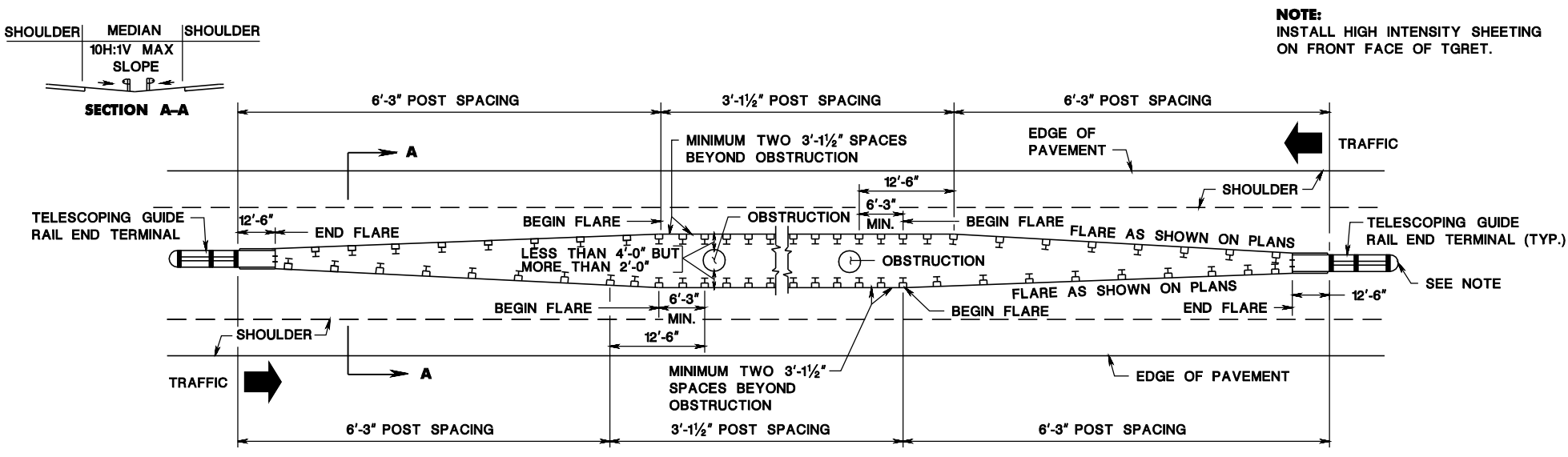
- NOTES:**
- 10H:1V MAX. SLOPES TO BEGIN 100'-0" IN ADVANCE OF GUIDE RAIL TERMINALS.
 - INSTALL HIGH INTENSITY SHEETING ON FRONT FACE OF TGRET.

CD-609-7.1



MEDIAN GUIDE RAIL TREATMENT AT ADJACENT BRIDGES

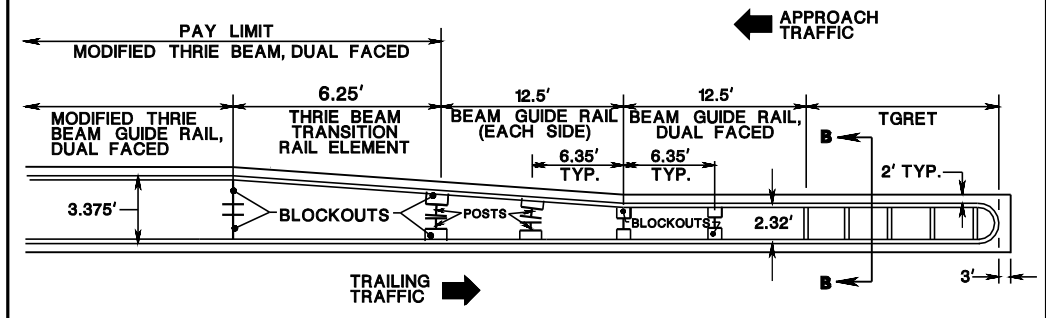
CD-609-7.4



MEDIAN GUIDE RAIL WHEN CLEARANCE FROM BACK OF RAIL TO OBSTRUCTION IS MORE THAN 2' BUT LESS THAN 4'

- NOTE:**
INSTALL HIGH INTENSITY SHEETING ON FRONT FACE OF TGRET.

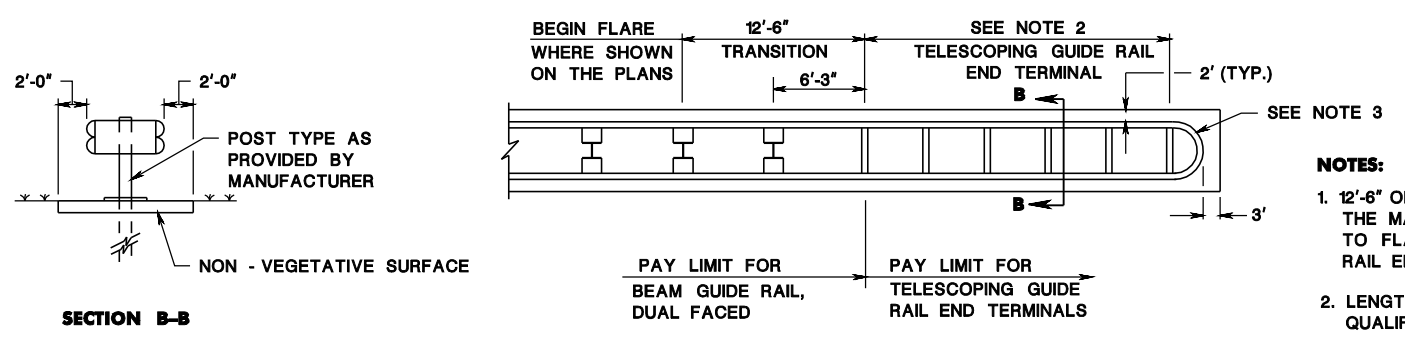
CD-609-7.2



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

CD-609-7.5

- NOTES:**
- SEE NOTES AND SECTION B-B IN CD-609-7.3
 - THE DIRECTION OF THE APPROACH TRAFFIC AND TRAILING TRAFFIC SHOWN ABOVE IS THE PREFERRED TREATMENT



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

- NOTES:**
- 12'-6" OR 6'-3" TRANSITION AS RECOMMENDED BY THE MANUFACTURER. GUIDE RAIL NOT TO BEGIN TO FLARE WITHIN 12'-6" OF TELESCOPING GUIDE RAIL END TREATMENT.
 - LENGTH OF TGRET AS PER MANUFACTURER, SEE QUALIFIED PRODUCTS LIST (QPL).
 - INSTALL HIGH INTENSITY SHEETING ON FRONT FACE OF TGRET.

CD-609-7.3

MEDIAN GUIDE RAIL TREATMENT

N.T.S.
HMA = HOT MIX ASPHALT

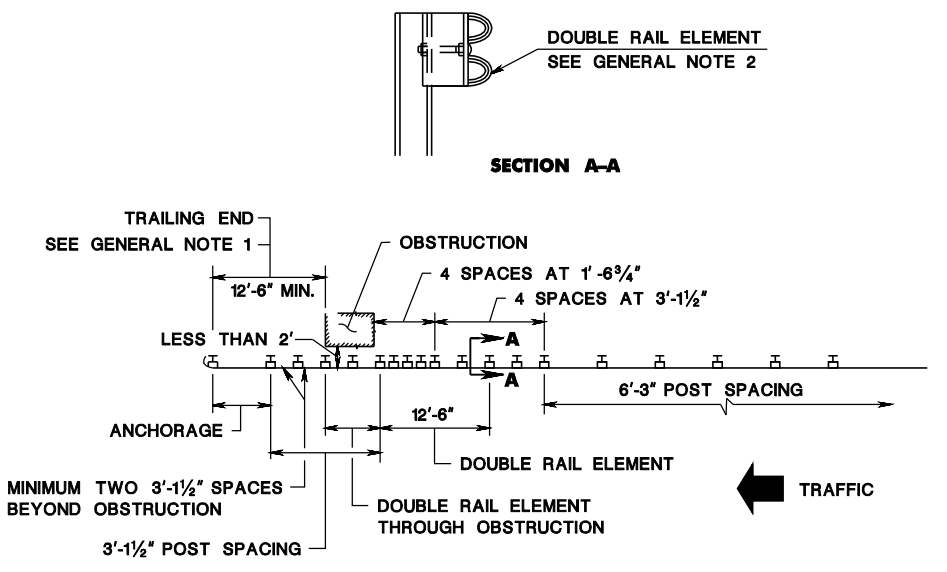
CD-609-7

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

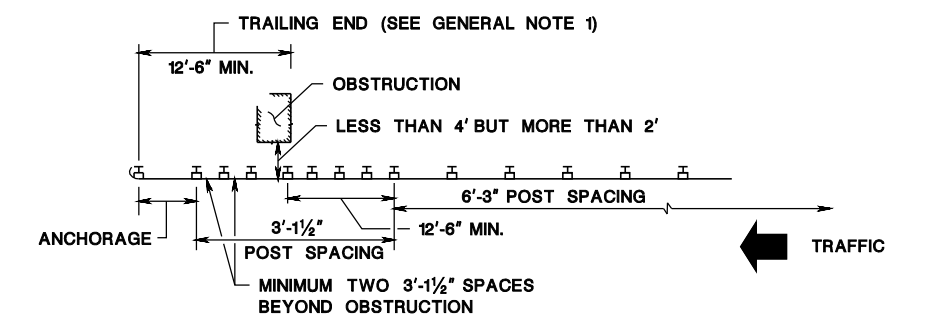
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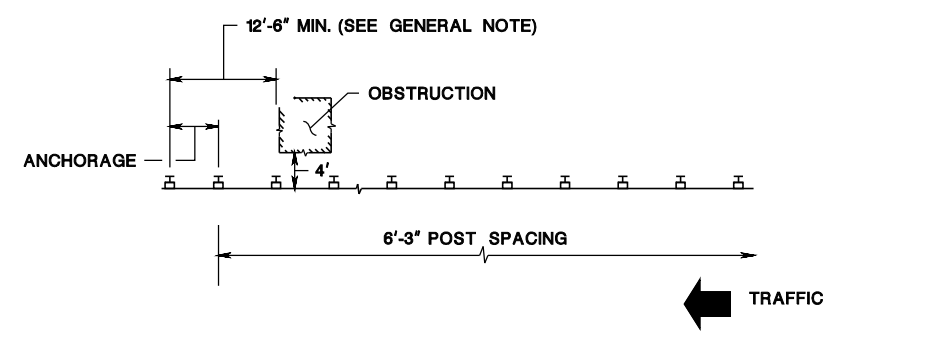
WHERE CLEARANCE FROM BACK OF RAIL TO OBSTRUCTION IS LESS THAN 2'

CD-609-8.1



WHERE CLEARANCE FROM BACK OF RAIL TO OBSTRUCTION IS MORE THAN 2' BUT LESS THAN 4'

CD-609-8.2



WHERE CLEARANCE FROM BACK OF RAIL TO OBSTRUCTION IS 4' OR GREATER

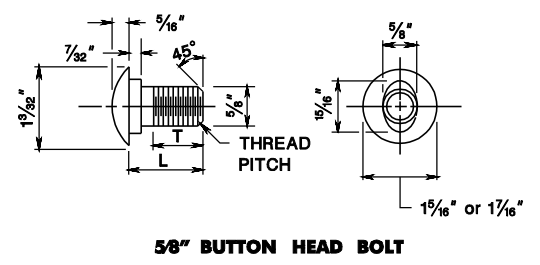
CD-609-8.3

IF LESS THAN 2'

SLOPES	ADDITIONAL POST LENGTH FEET
FLATTER THAN 6H:1V	NO CHANGE
6H:1V TO 4H:1V	1'
3H:1V TO 2H:1V	2'
STEEPER THAN 2H:1V	4'

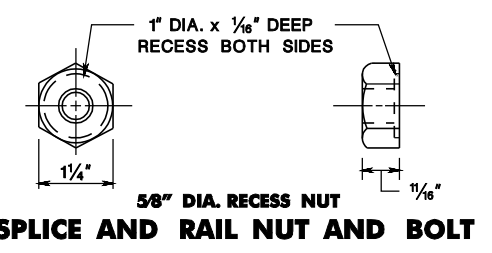
ADDITIONAL LENGTH BEAM GUIDE RAIL POSTS

CD-609-8.4

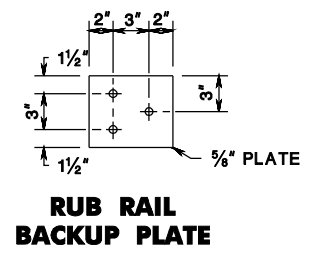


5/8\"/>

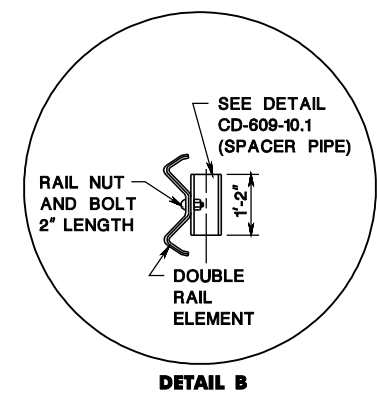
TYPE	L	MIN. THREAD LENGTH
SPLICE	1 1/8"	1 1/8"
RAIL	2"	1 1/2"



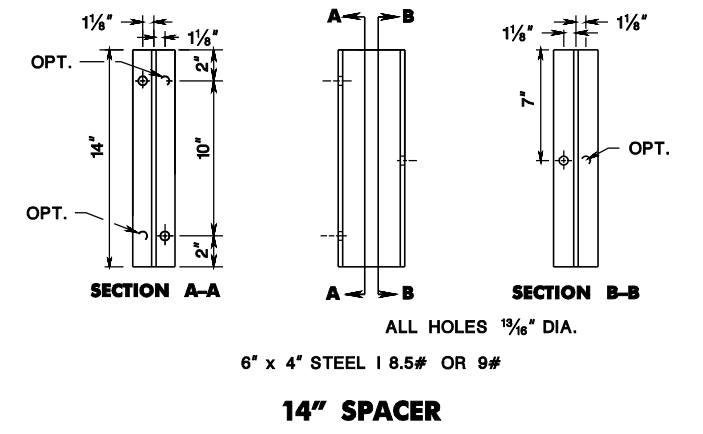
5/8\"/>



RUB RAIL BACKUP PLATE



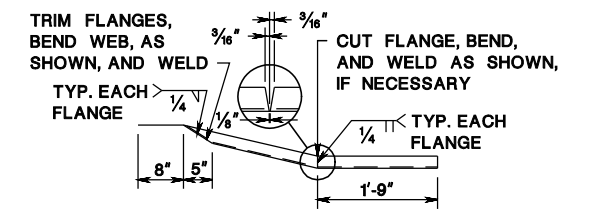
DETAIL B



ALL HOLES 1 3/16\"/>

6\"/>

14\"/>



**DETAIL A
C6 x 8.2 RUB RAIL**

GENERAL NOTES:

- WHERE A CRASHWORTHY END TREATMENT IS SHOWN AT THE TRAILING END ON THE PLANS, THE POST SPACING AND DOUBLE RAIL ELEMENT FOR THE GUIDE RAIL TO BE THE SAME AS THE APPROACH END.
- WHERE DOUBLE RAIL ELEMENT IS REQUIRED, PLACE ADDITIONAL RAIL ELEMENT BEHIND THE CONTINUOUS FRONT RAIL.

CD-609-8.6

BEAM GUIDE RAIL END TREATMENT

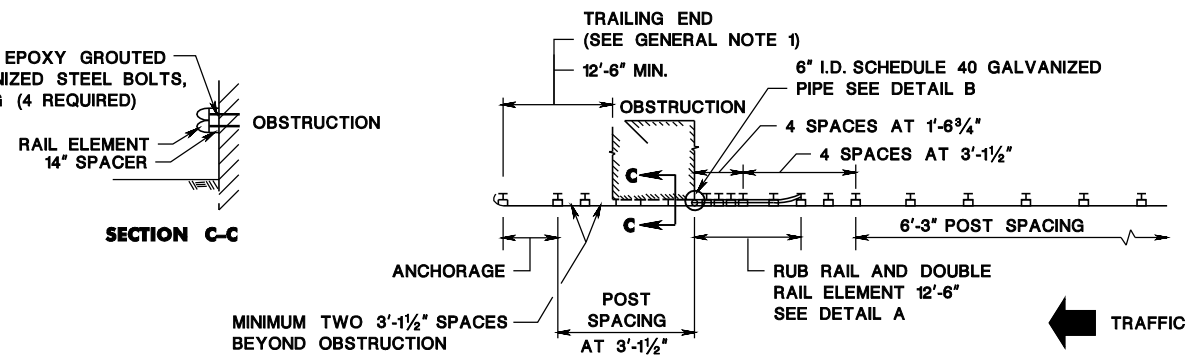
N.T.S.

CD-609-8

NEW JERSEY DEPARTMENT OF TRANSPORTATION

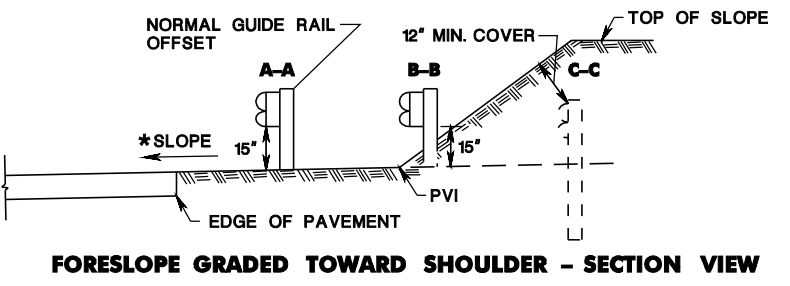
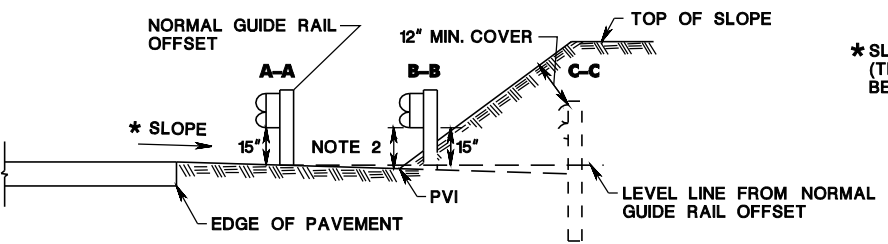
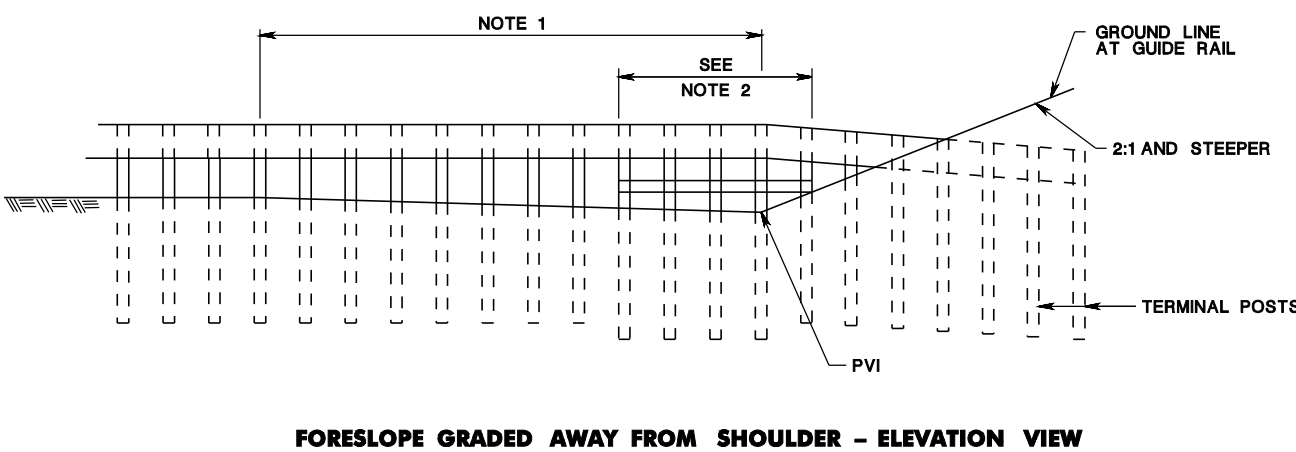
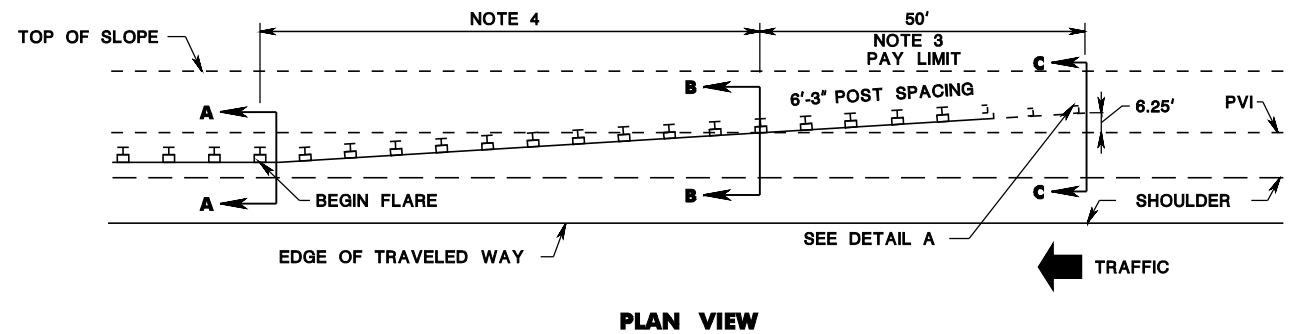
CONSTRUCTION DETAILS

WHERE RAIL ELEMENT WITH SPACER IS ATTACHED TO OBSTRUCTION



CD-609-8.5

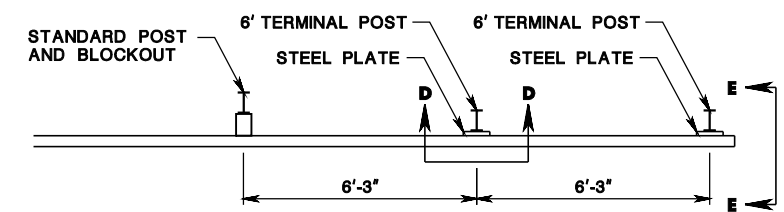
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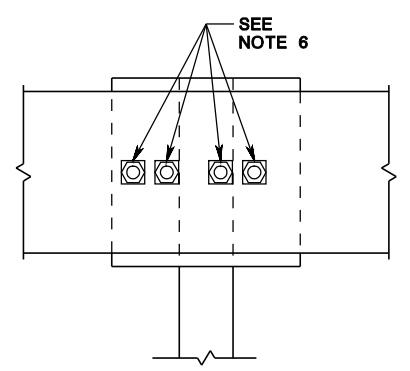
*SLOPE AS SHOWN ON PLANS.
 (THE SLOPE ON APPROACH SHOULD
 BE NO GREATER THAN 4:1).

NOTES:

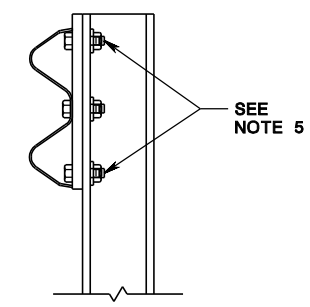
1. TOP OF GUIDE RAIL TO BE PARALLEL TO ROADWAY GRADE WHERE FORESLOPE IS GRADED AWAY FROM SHOULDER.
2. WHEN CLEARANCE FROM BOTTOM OF RAIL TO GROUND EXCEEDS 18", ADD RUB RAIL AND 8' LONG POSTS.
3. TAPER GUIDE RAIL HEIGHT TO PROVIDE 1" MINIMUM COVER AT LAST POST.
4. FLARE AS SHOWN ON CONSTRUCTION PLAN.
5. ATTACH STEEL PLATE TO POST WITH FOUR - 5/8" x 1 1/2" LONG HEX HEAD BOLTS WITH HEX HEAD NUTS.
6. ATTACH RAIL TO STEEL PLATE WITH FOUR - 5/8" x 2" LONG HEX BOLTS WITH SQUARE WASHER AND NUT.
7. DRILL 3 - 1" DIA. HOLES IN BEAM GUIDE RAIL.



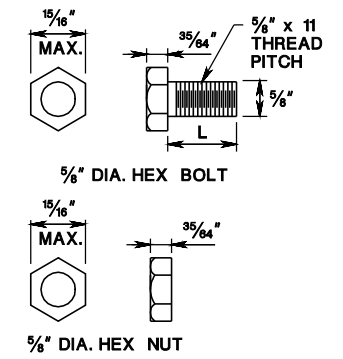
DETAIL A



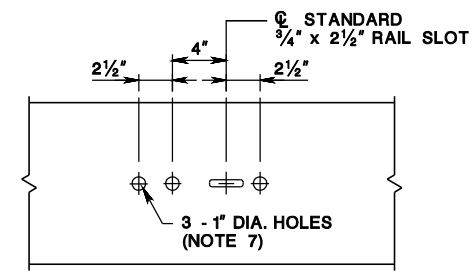
SECTION D-D



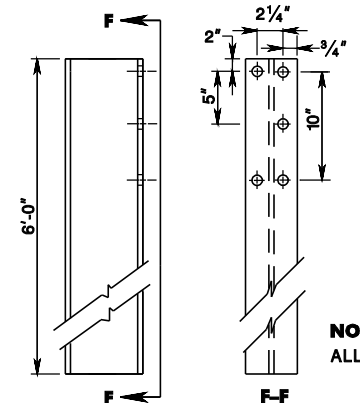
SECTION E-E



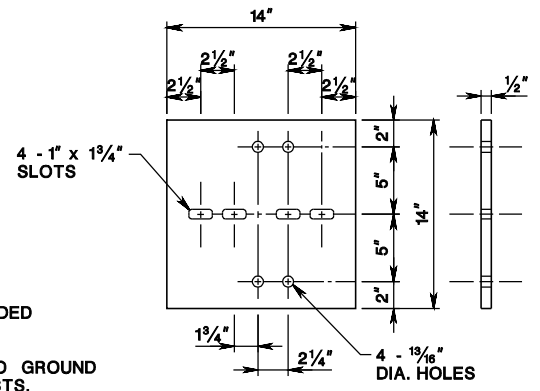
NUT AND BOLT



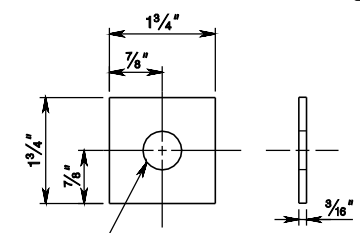
BEAM GUIDE RAIL TERMINAL HOLES



6' TERMINAL POST



STEEL PLATE



SQUARE WASHER

BURIED GUIDE RAIL TERMINAL

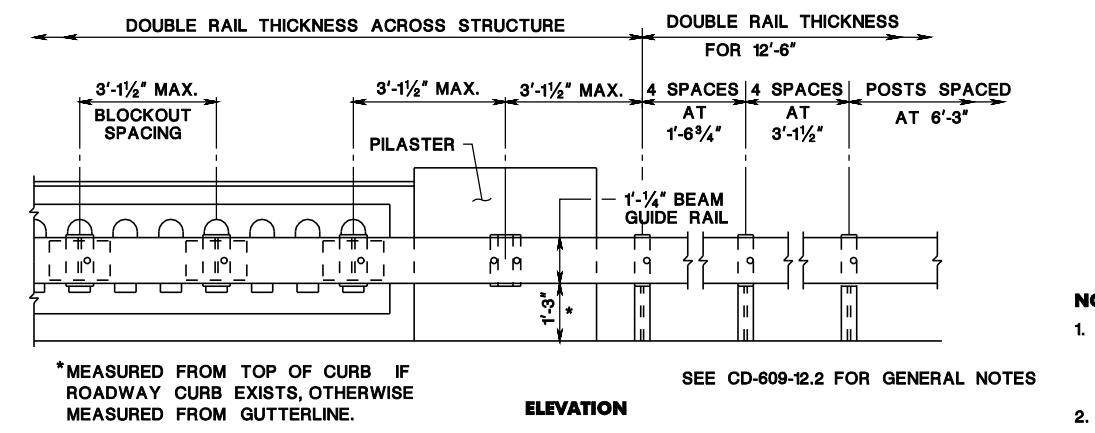
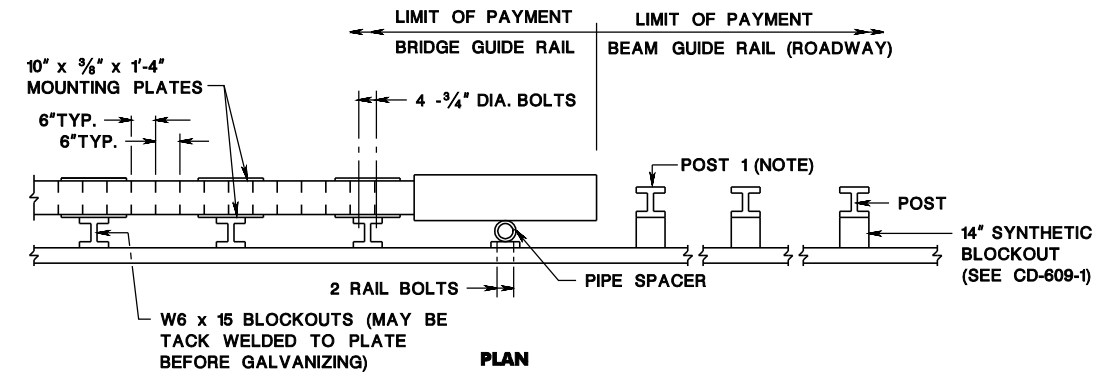
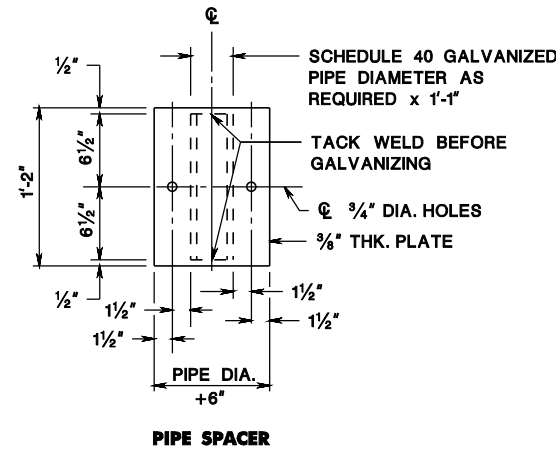
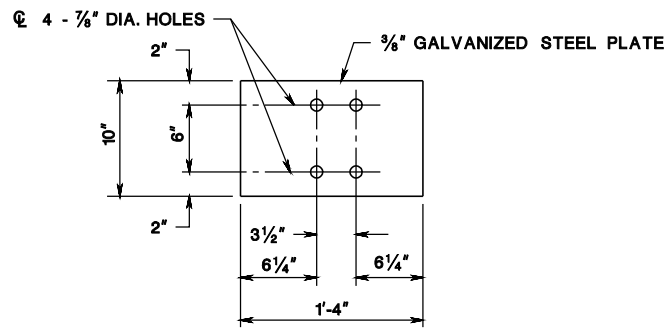
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

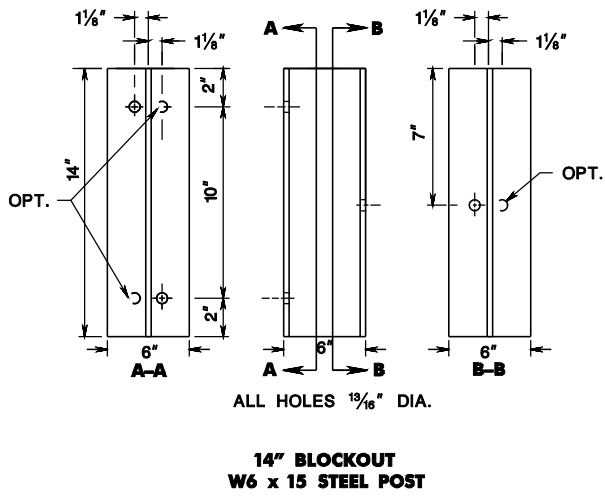
CONSTRUCTION DETAILS

CD-609-9

CD-609-9.1

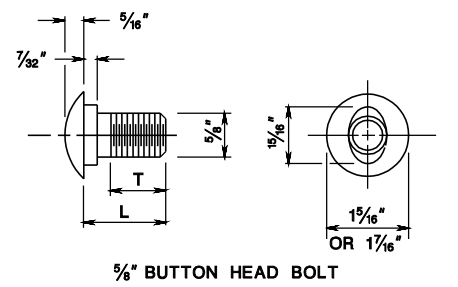


BEAM GUIDE RAIL ATTACHMENT TO EXISTING BALUSTRADE

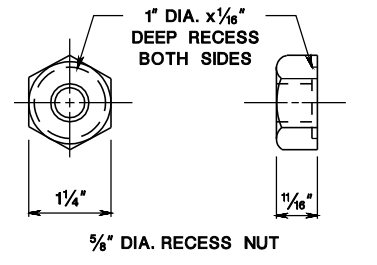


NOTES:

1. WHEN THE CONFIGURATION OF BRIDGE ABUTMENTS AND WINGWALLS DO NOT ACCOMMODATE THE INSTALLATION OF POST 1, THE W6 x 20 POST MAY BE ATTACHED TO THE ABUTMENT HEADER WITH THE USE OF A BASE PLATE, SEE CD-609-11.2.
2. THIS DETAIL CAN IMPROVE THE IMPACT PERFORMANCE OF A SUBSTANDARD BALUSTRADE RAILING, BUT IT MAY NOT BRING THE BALUSTRADE RAILING INTO FULL COMPLIANCE WITH AASHTO DESIGN CRITERIA. DO NOT USE THIS DETAIL ON BRIDGE DECK REPLACEMENT OR SUPERSTRUCTURE REPLACEMENT PROJECTS.

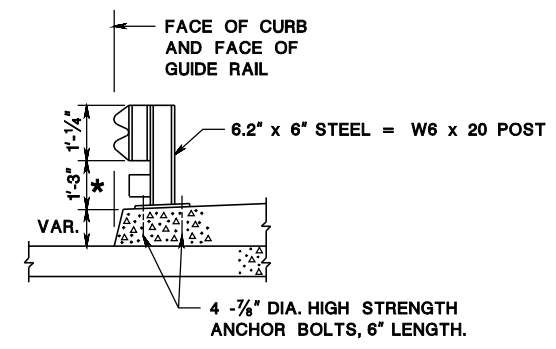
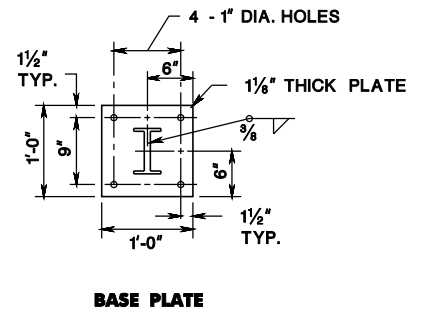


TYPE	L	T
SPLICE	1 1/4"	1 1/4"
RAIL	2"	1 1/2"

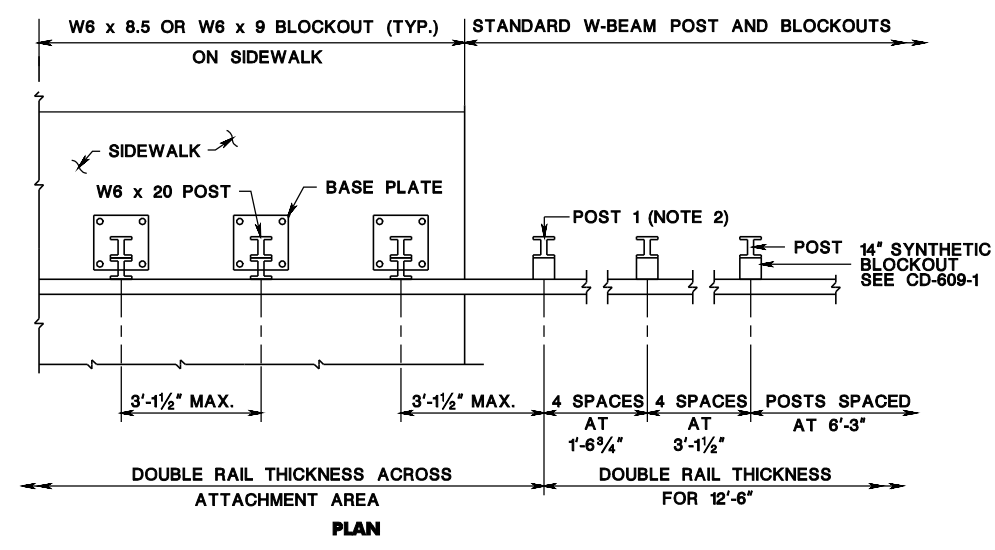


SPLICE AND RAIL NUT AND BOLT

CD-609-11.1



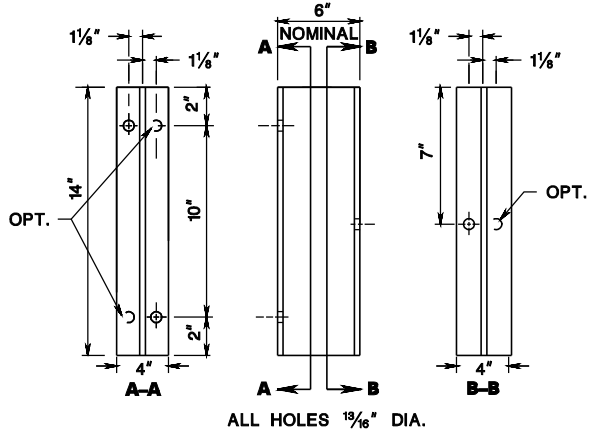
SEE CD-609-12.2 FOR GENERAL NOTES



BEAM GUIDE RAIL ATTACHMENT TO SIDEWALK

NOTES:

1. USE "BEAM GUIDE RAIL BRIDGE" ITEM IF SIDEWALK IS ON A STRUCTURE. IF SIDEWALK IS NOT ON A STRUCTURE, USE "BEAM GUIDE RAIL" ITEM AND AND SIDEWALK TO BE MINIMUM 8 INCHES THICK.
2. WHEN THE CONFIGURATION OF BRIDGE ABUTMENTS AND WINGWALLS DO NOT ACCOMMODATE THE INSTALLATION OF POST 1, THE W6 x 20 POST MAY BE ATTACHED TO THE ABUTMENT HEADER WITH THE USE OF A BASE PLATE.



BEAM GUIDE RAIL ATTACHMENTS

N.T.S.

CD-609-11

NEW JERSEY DEPARTMENT OF TRANSPORTATION

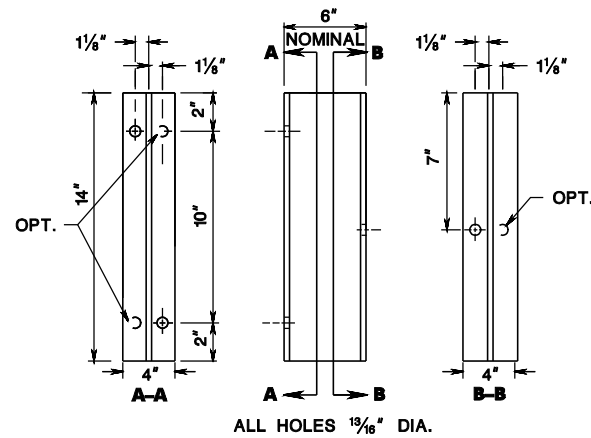
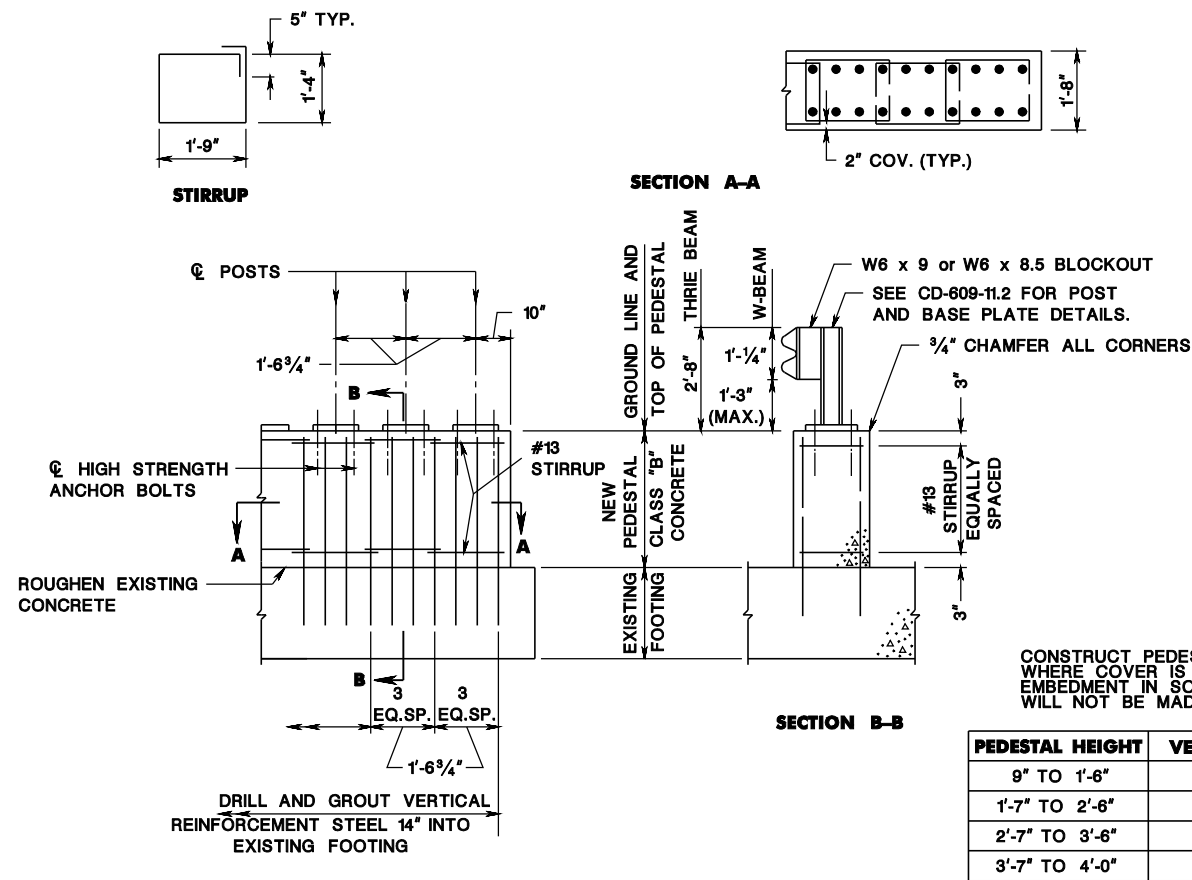
CONSTRUCTION DETAILS

CD-609-11.2

BDCRBD-01-ORIGINAL SHEET

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**14" BLOCKOUT
W6 x 9 OR W6 x 8.5 STEEL POST**

PEDESTAL HEIGHT	VERTICAL REINFORCEMENT STEEL	STIRRUPS
9" TO 1'-6"	#16	2 - #13
1'-7" TO 2'-6"	#16	3 - #13
2'-7" TO 3'-6"	#16	4 - #13
3'-7" TO 4'-0"	#16	5 - #13

BEAM GUIDE RAIL ATTACHMENT TO FOOTING
SEE CD-609-12.2 FOR GENERAL NOTES

CD-609-12.1

CD-609-12.2

GENERAL NOTES:

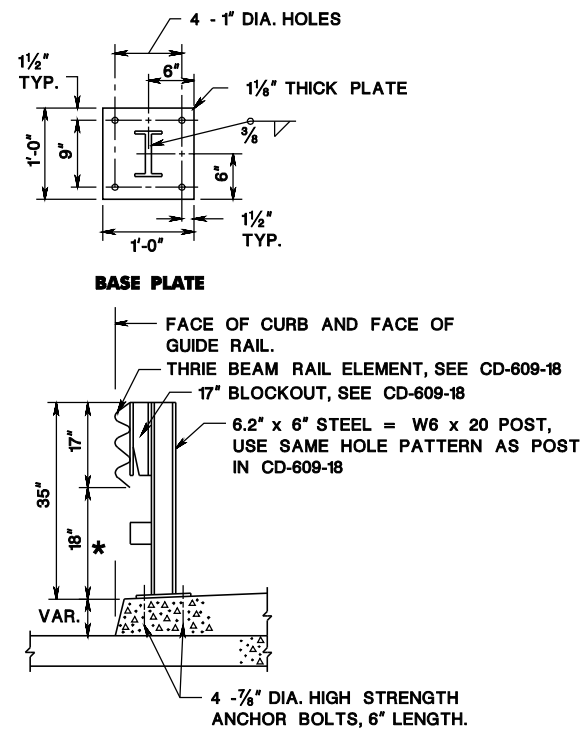
STRUCTURAL STEEL PLATES AND SHAPES TO CONFORM TO ASTM A36 AND BE GALVANIZED PER ASTM A123.

STEEL BOLTS, NUTS, AND WASHERS TO CONFORM TO ASTM A307, UNLESS DESIGNATED AS HIGH STRENGTH. HIGH STRENGTH BOLTS, NUTS, AND WASHERS TO CONFORM TO ASTM A325. HARDWARE TO BE GALVANIZED PER ASTM A153.

FOR CD-609-11.2 HIGH STRENGTH BOLTS FOR BASE PLATE ANCHORAGE TO BE FULLY THREADED. USE AN ADHESIVE ANCHOR BOLT SYSTEM MEETING THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS. INSTALL BOLTS A MINIMUM 6" EMBEDMENT AND PER MANUFACTURER'S RECOMMENDATION TO ENSURE A MINIMUM PULLOUT STRENGTH OF 24,000 POUNDS. CARE TO BE EXERCISED TO AVOID DAMAGE TO EXISTING REINFORCEMENT AND CONDUITS.

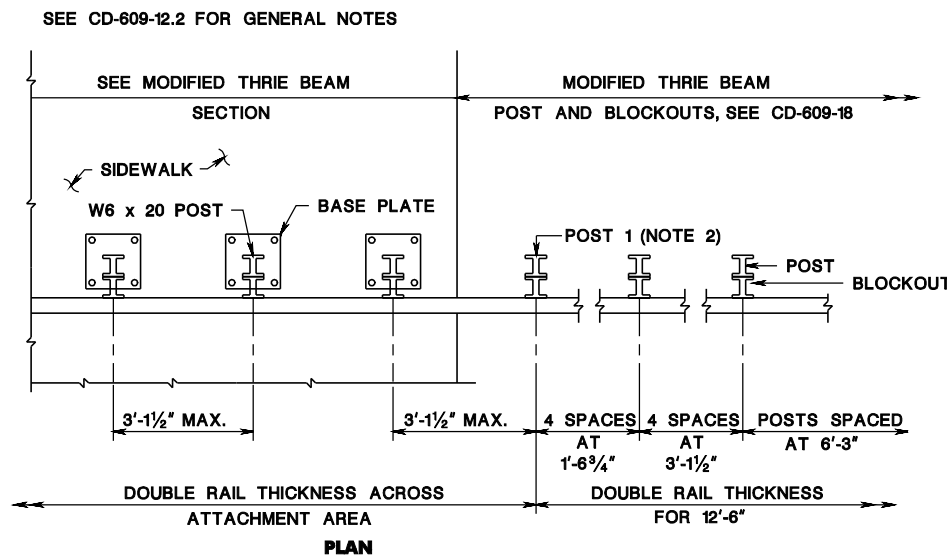
FOR CD-609-12.1, HIGH STRENGTH BOLTS FOR BASE PLATE ANCHORAGE MAY BE CAST-IN-PLACE IN FRESH CONCRETE WITH A MINIMUM EMBEDMENT LENGTH OF 20".

WELD POSTS TO BASE PLATES ACCORDING TO THE ANSI/AASHTO / AWS D1.5 BRIDGE WELDING CODE.



* MEASURED FROM TOP OF CURB IF ROADWAY CURB EXISTS, OTHERWISE MEASURED FROM GUTTER LINE.

MODIFIED THRIE BEAM SECTION



MODIFIED THRIE BEAM GUIDE RAIL ATTACHMENT TO SIDEWALK

NOTES:

- USE "THRIE BEAM GUIDE RAIL BRIDGE" ITEM IF SIDEWALK IS ON A STRUCTURE. IF SIDEWALK IS NOT ON A STRUCTURE, USE "MODIFIED THRIE BEAM GUIDE RAIL ITEM AND SIDEWALK" TO BE MINIMUM 8 INCHES THICK.
- USE "THRIE BEAM GUIDE RAIL BRIDGE" DO NOT ACCOMMODATE THE INSTALLATION OF POST 1, THE W6 x 20 POST MAY BE ATTACHED TO THE ABUTMENT HEADER WITH THE USE OF A BASE PLATE.

NOTES:

REINFORCEMENT STEEL IS IN METRIC UNITS.

BEAM GUIDE RAIL ATTACHMENTS
N.T.S.

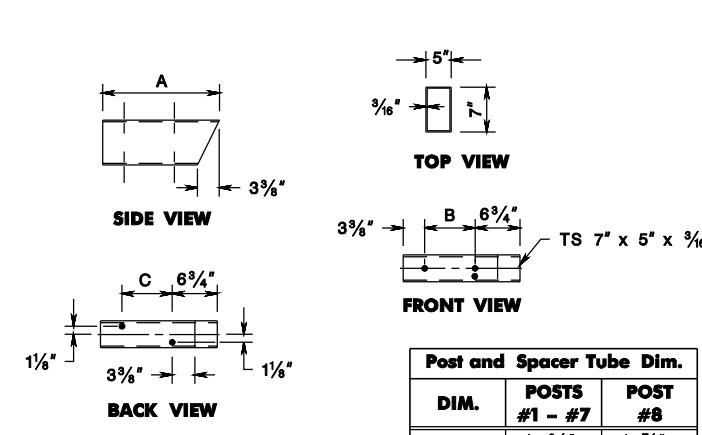
CD-609-12

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

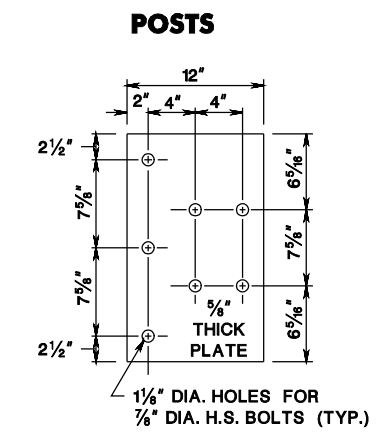
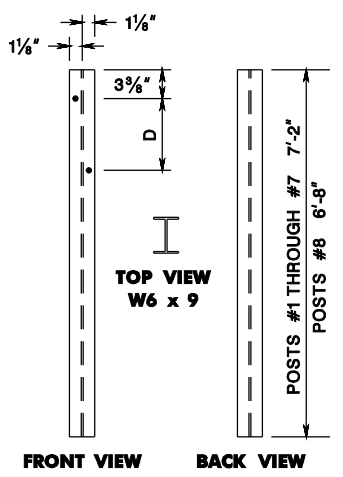
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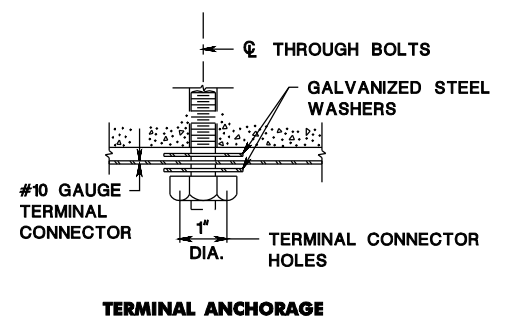


Post and Spacer Tube Dim.		
DIM.	POSTS #1 - #7	POST #8
A	1'-5 3/4"	1'-1 1/4"
B	7 5/8"	3 3/4"
C	7 5/8"	3 3/4"
D	7 5/8"	3 3/4"

- NOTES:**
1. STEEL FOR SPACER TUBE TO MEET ASTM A500 GRADE B.
 2. STEEL FOR WIDE-FLANGE TO MEET ASTM A36.
 3. GALVANIZED.
 4. ALL HOLES DRILLED OR PUNCHED TO 3/4" DIA.
 5. WELDING OF SPACER TUBE TO BE DONE ACCORDING TO THE ANSI/AWS D1.1 STRUCTURAL WELDING CODE.

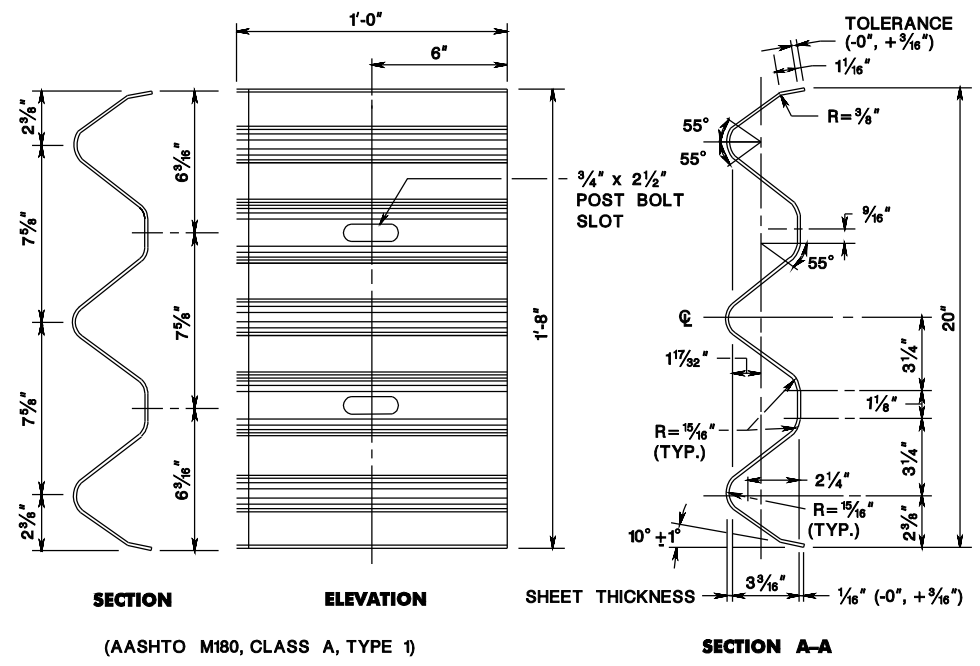


BACKUP PLATE FOR TERMINAL CONNECTOR

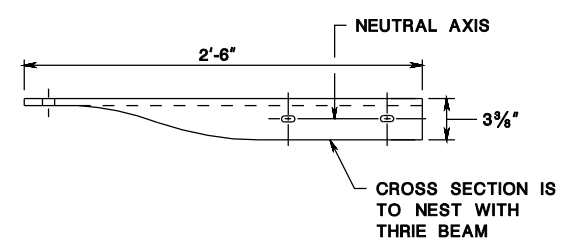


TERMINAL ANCHORAGE

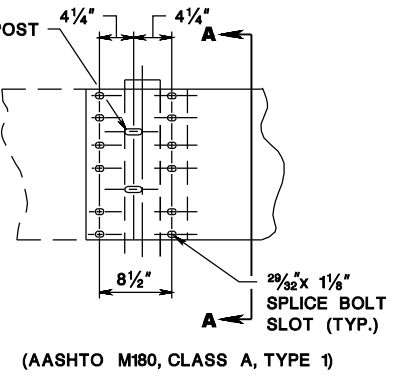
SEE CD-609-12.2 FOR GENERAL NOTES



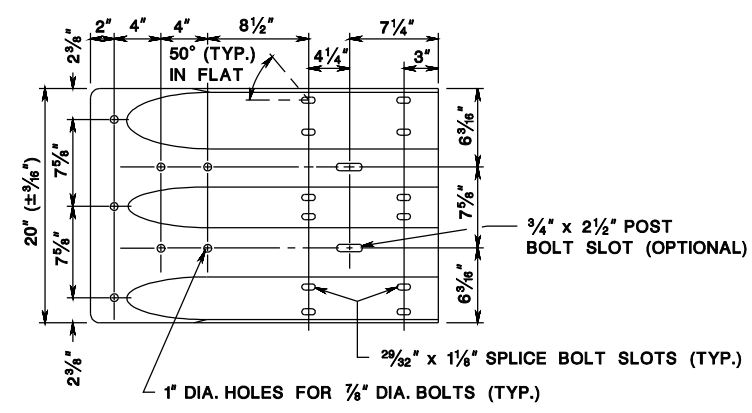
BACKUP PLATE AT NON SPLICE POSTS
 (AASHTO M180, CLASS A, TYPE 1)



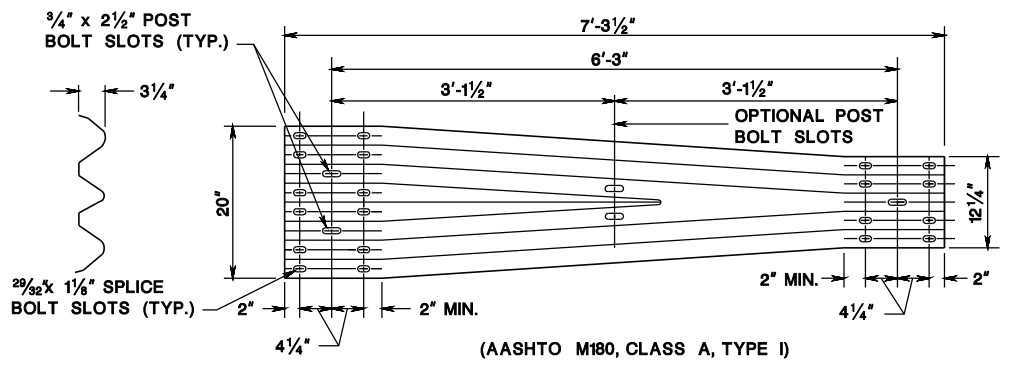
CROSS SECTION IS TO NEST WITH THRIE BEAM



ELEVATION THRIE BEAM SPLICE
 (AASHTO M180, CLASS A, TYPE 1)

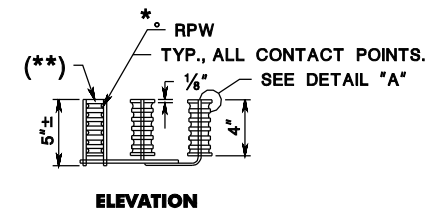
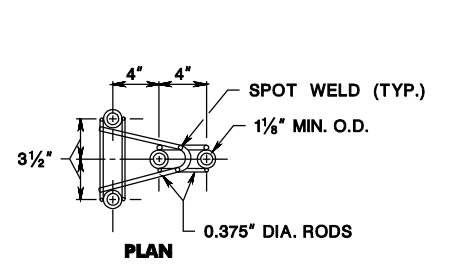


TERMINAL CONNECTOR
 (AASHTO M180, CLASS B, TYPE 1)



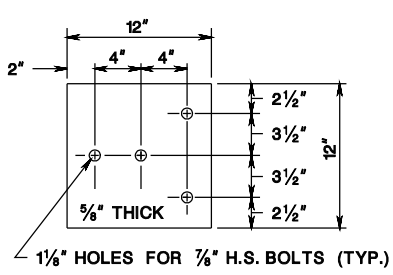
W-THRIE BEAM TRANSITION SECTION
 (AASHTO M180, CLASS A, TYPE 1)

CD-609-13.1



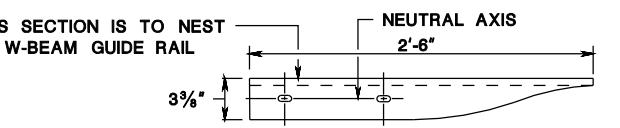
DETAIL "A"

SEE CD-609-13.1 FOR TERMINAL ANCHORAGE

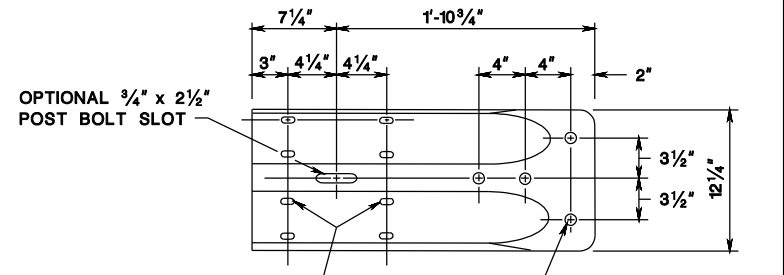


BACKUP PLATE FOR TERMINAL CONNECTOR

SEE CD-609-12.2 FOR GENERAL NOTES



CROSS SECTION IS TO NEST WITH W-BEAM GUIDE RAIL



TERMINAL CONNECTOR
 (AASHTO M180, CLASS B, TYPE 1)

W-BEAM TERMINAL CONNECTOR

CD-609-13.2

NOTES:

- * ENSURE EACH WELDED ATTACHMENT OF WIRE TO FERRULE DEVELOPS THE TENSILE STRENGTH OF THE WIRE.
- (**) THREADED STEEL INSERT WITH SOLID BOTTOM TAPPED TO A MINIMUM THREADED DEPTH OF 2 1/2" FOR USE WITH 7/8" - 9 x 2 1/2" GALVANIZED H.S. HEX BOLT AND A 1/16" I.D., 2 1/4" O.D., 5/32" THICK, TYPE A, PLAIN WASHER.
- FOUR (4) BOLTS AND FOUR (4) WASHERS TO BE PROVIDED WITH EACH ASSEMBLY.
- WIRES SHOWN ARE MINIMUM ALLOWABLE SIZE AND ARE TO CONFORM TO THE REQUIREMENTS OF ASTM A510, GRADE 1030 AND HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.
- ENSURE THAT THE STEEL FERRULES CONFORMS TO ASTM A108, GRADE 12L14. INSERTS TO BE TAPPED TO THE DIMENSIONAL REQUIREMENTS SPECIFIED IN ASTM A563 FOR NUTS RECEIVING GALVANIZED BOLTS.
- BOLTS TO CONFORM TO THE REQUIREMENTS OF ASTM A325 OR A449 AND BE THREADED FULL LENGTH. WASHERS TO BE MADE OF STEEL AND MEET THE DIMENSIONAL REQUIREMENTS OF ASTM B272 TYPE A PLAIN WASHERS. BOTH TO BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
- WIRE DIAMETERS, MATERIALS REQUIREMENTS, FERRULE MATERIALS REQUIREMENTS, AND EXTERNAL DIAMETERS MAY BE ALTERED PROVIDED MANUFACTURER DEMONSTRATES REVISED DESIGN IS EQUIVALENT TO THE DESIGN SHOWN IN THIS STANDARD.
- DIMENSIONAL TOLERANCE NOT SHOWN OR IMPLIED ARE INTENDED TO BE THOSE CONSISTENT WITH THE PROPER FUNCTIONING OF THE PART, INCLUDING ITS APPEARANCE, AND ACCEPTED MANUFACTURING PRACTICE.

THRIE BEAM AND W-BEAM TERMINAL CONNECTOR

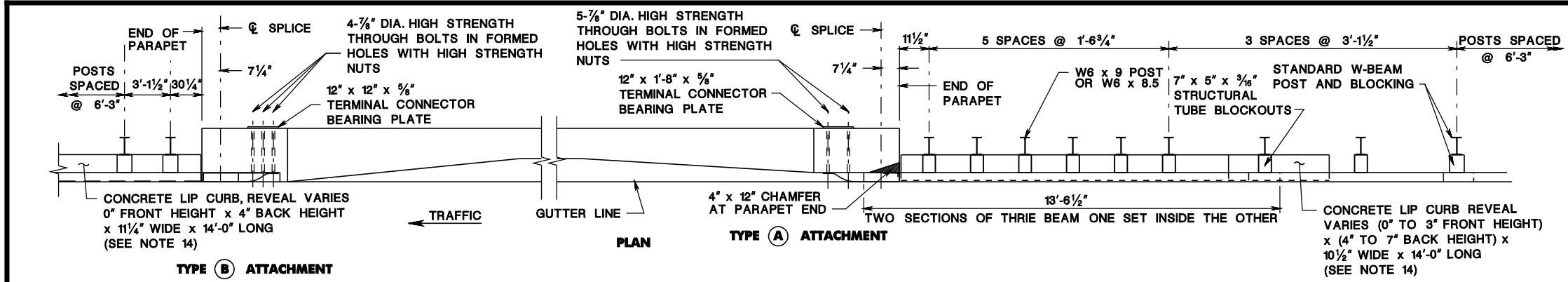
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

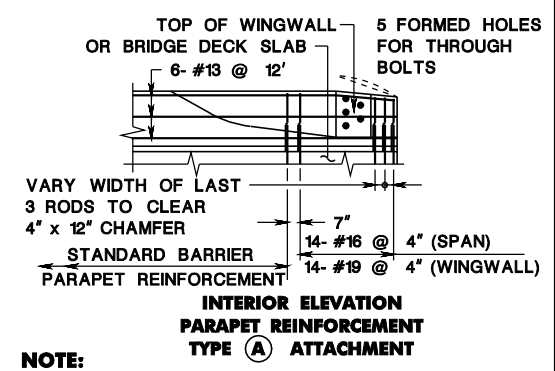
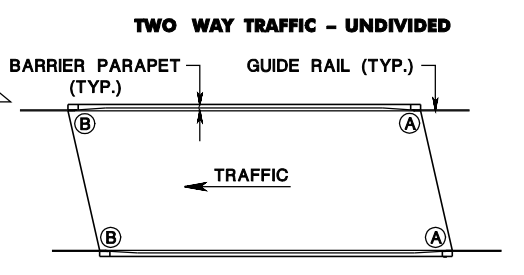
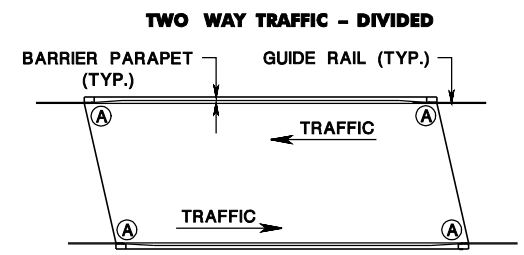
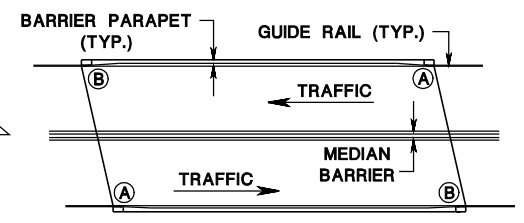
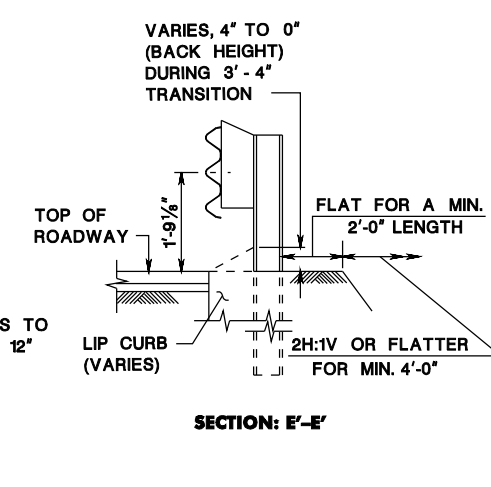
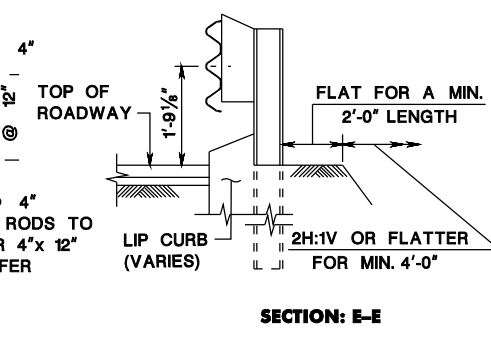
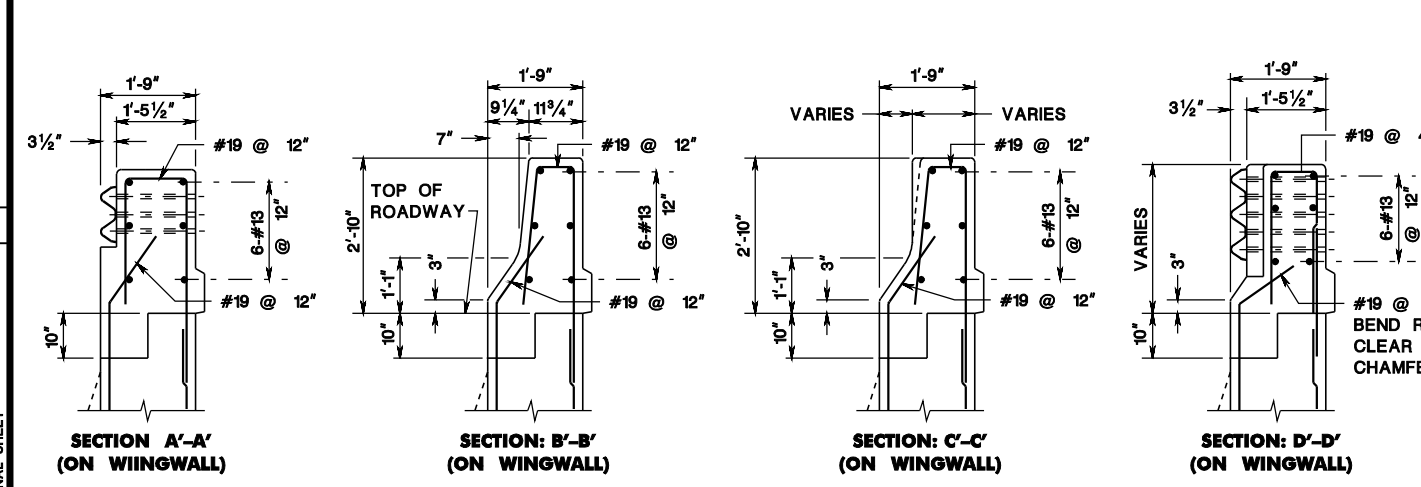
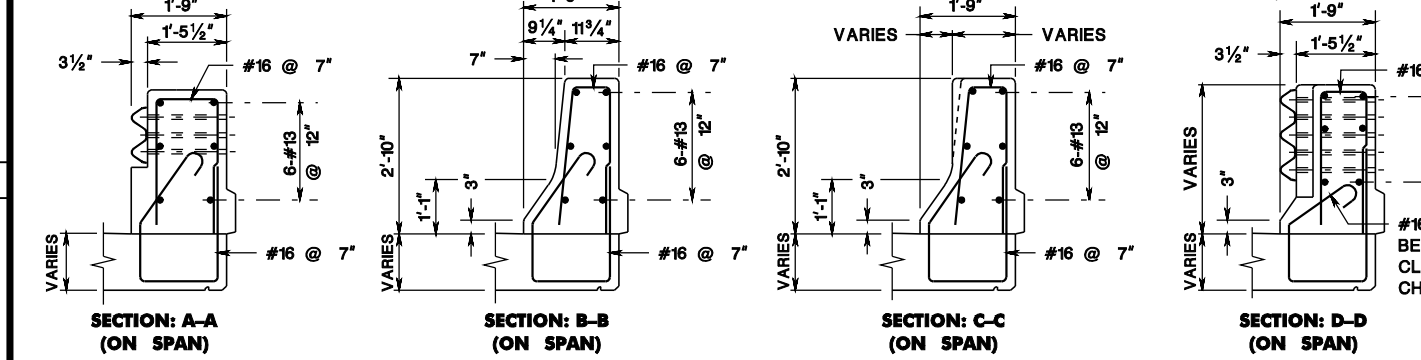
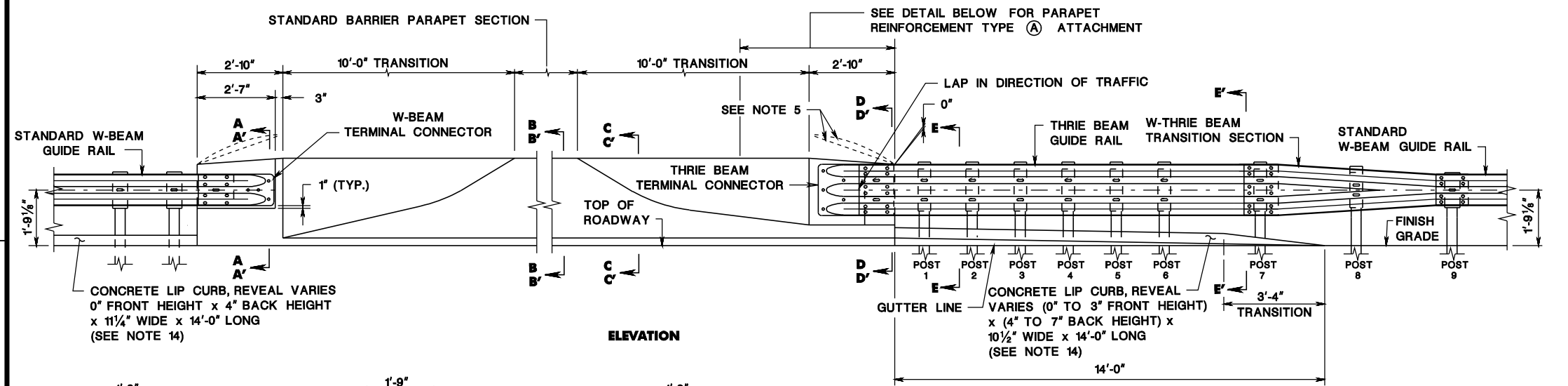
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NOTES:

1. THIS GUIDE RAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A VERTICAL CONCRETE SHAPE AND SHOULD NOT BE CONNECTED DIRECTLY TO A CONCRETE SAFETY SHAPE. CONCRETE SAFETY BARRIER SHOULD BE TRANSITIONED TO A VERTICAL SHAPE AT THE GUIDE RAIL CONNECTION.
2. FOR RECOMMENDED ATTACHMENT, REFER TO "BRIDGE ATTACHMENT TYPES", ON THIS SHEET.
3. ALL CROSS SLOPES BETWEEN THE PAVEMENT EDGE AND POSTS TO BE 10H:1V OR FLATTER.
4. EMBANKMENT MATERIAL CONFORMING TO THE NJDOT STANDARD SPECIFICATIONS SECTION 203 TO EXTEND FLAT BEHIND THE POSTS AT LEAST 2'-0" AT WHICH POINT A SLOPE OF NO STEEPER THAN 2H:1V SHOULD EXTEND A MINIMUM OF 4'-0" FURTHER.
5. BARRIER PARAPET END MAY HAVE TO BE RECONFIGURED TO ACCEPT DIFFERENT TYPES OF RAILING OR FENCING THAT MAY BE MOUNTED ON TOP OF THE PARAPET.
6. AT TYPE (A) ATTACHMENTS, THRIE BEAM RAIL ELEMENT WILL REQUIRE ADDITIONAL POST MOUNTING HOLES FOR POST #1, #3, AND #5. CAUTION HOLES ARE TO BE SHOP PUNCHED OR DRILLED BEFORE GALVANIZATION. NO FIELD DRILLING IS PERMITTED.
7. POSTS 1 THROUGH 7 TO BE 7'-2" LONG WITH 4'-10" POST EMBEDMENT. POST 8 TO BE 6'-8" LONG WITH 4'-6" POST EMBEDMENT. POST 9 TO BE 6'-8" LONG WITH 4'-4" POST EMBEDMENT.
8. LOCATE CONDUIT AT END OF BARRIER PARAPETS SO AS NOT TO INTERFERE WITH GUIDE RAIL POST SPACING.
9. LOCATE DRAINAGE INLETS AND ELECTRICAL JUNCTION BOXES ON APPROACHES SO AS NOT TO INTERFERE WITH GUIDE RAIL POST SPACING.
10. STRUCTURAL STEEL PLATES AND SHAPES TO CONFORM TO AASHTO M270 AND BE GALVANIZED PER AASHTO M111.
11. HIGH STRENGTH STEEL BOLTS, NUTS, AND WASHERS TO CONFORM TO AASHTO M164. ZINC COATED BOLTS, NUTS, AND WASHERS TO BE TREATED ACCORDING TO AASHTO M232M.
12. THE THICKNESS OF THRIE BEAM, W-BEAM AND W-THRIE BEAM TRANSITION IS 12-GAUGE.
13. FOR ADDITIONAL THRIE BEAM, AND W-BEAM DETAILS REFER TO CD-609-1, CD-609-3, AND CD-609-13.
14. CONCRETE LIP CURB TO BE PAID UNDER 9"X16" CONCRETE VERTICAL CURB, SEE CD-607-1.9.
15. WHEN THE CONFIGURATION OF BRIDGE ABUTMENTS AND WINGWALLS DO NOT ACCOMMODATE THE INSTALLATION OF POST 1, THE POST MAY BE ATTACHED TO THE ABUTMENT HEADER WITH THE USE OF A BASE PLATE.



NOTE: REINFORCEMENT STEEL IS IN METRIC UNITS.

BEAM GUIDE RAIL ATTACHMENTS

N.T.S. CD-609-14

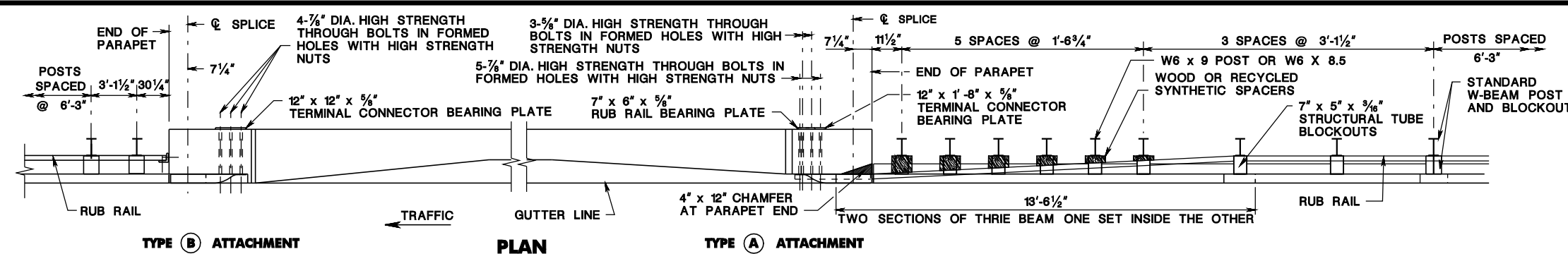
**GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION
 NEW JERSEY BARRIER SHAPE PARAPET (NO ROADWAY CURBING ON APPROACH)**

**ONE WAY TRAFFIC
 BRIDGE ATTACHMENT TYPES
 CD-609-14.1**

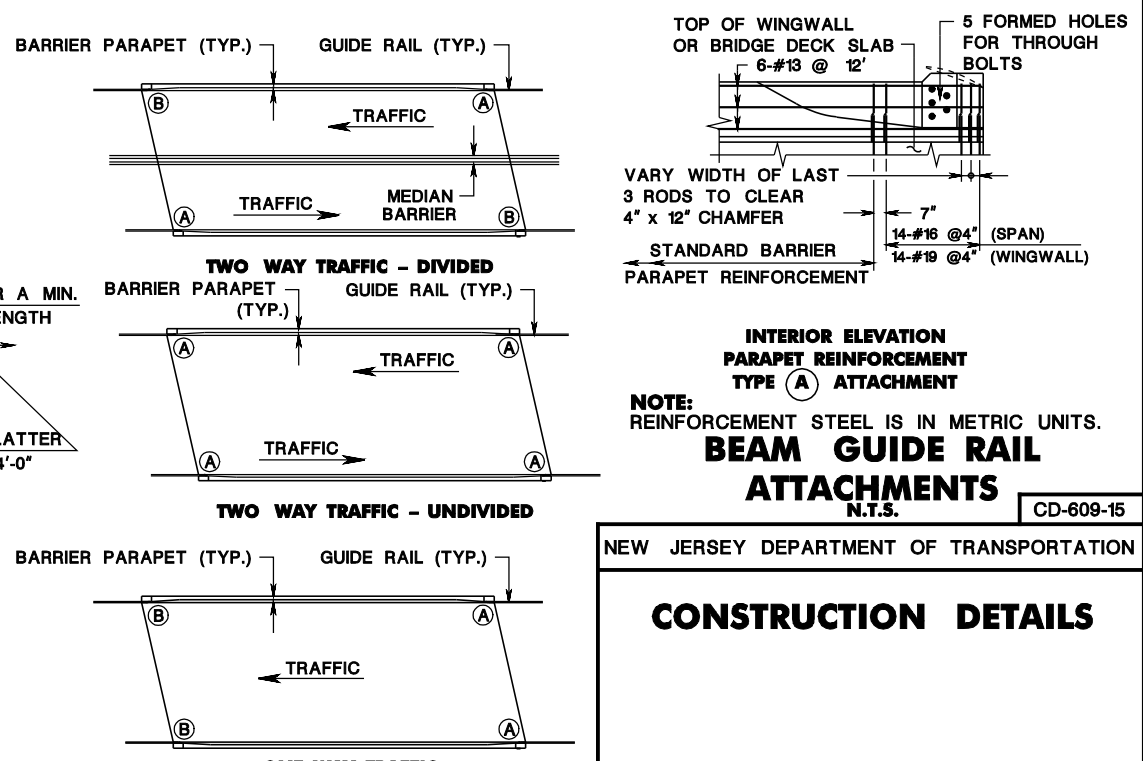
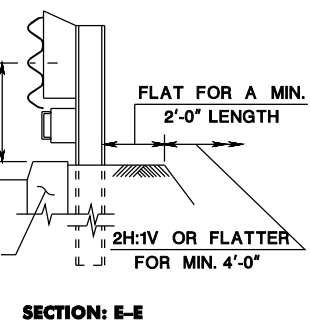
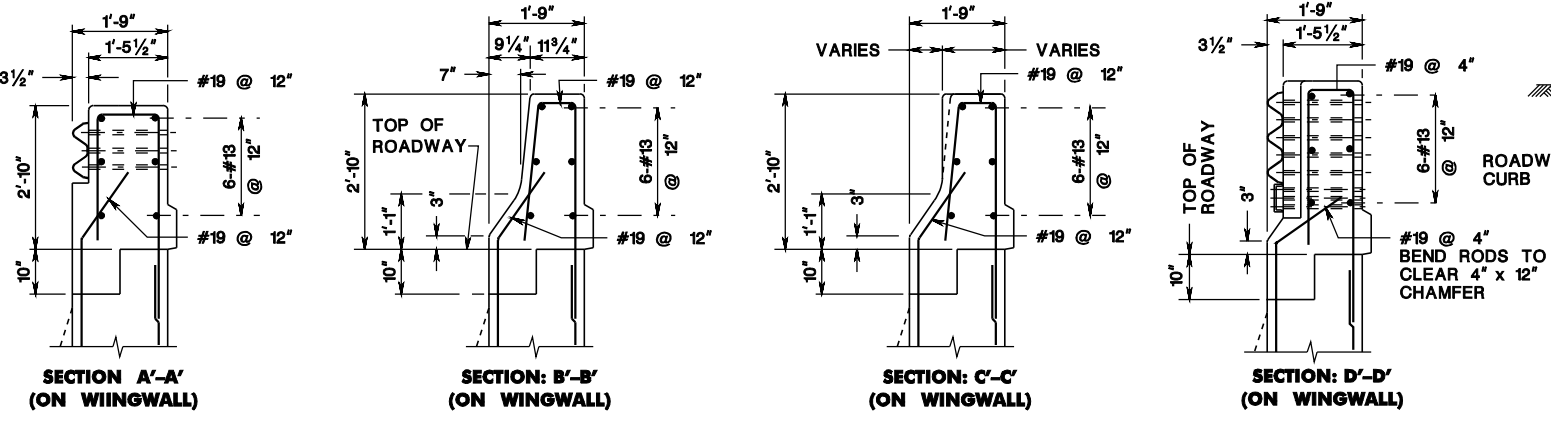
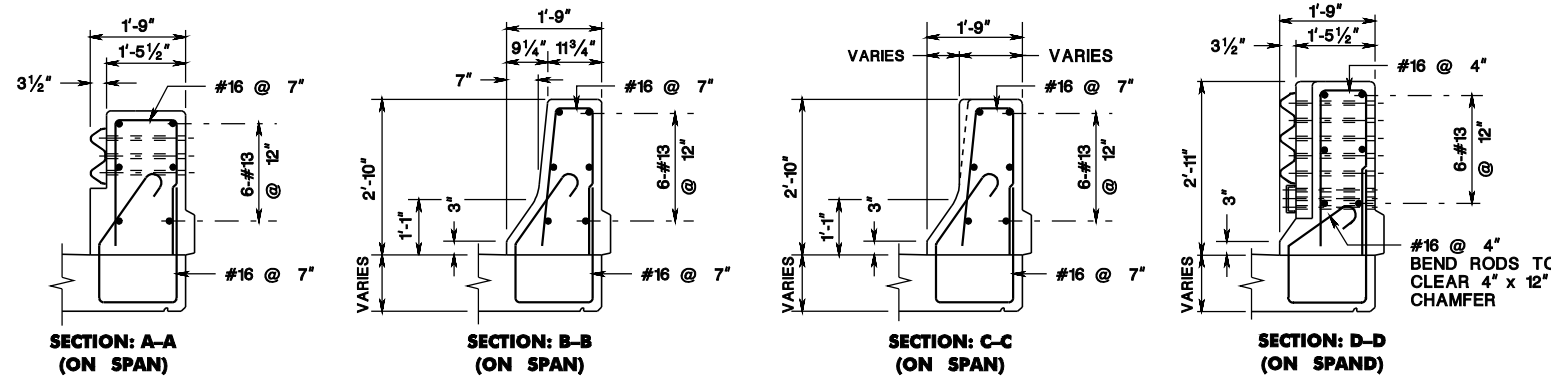
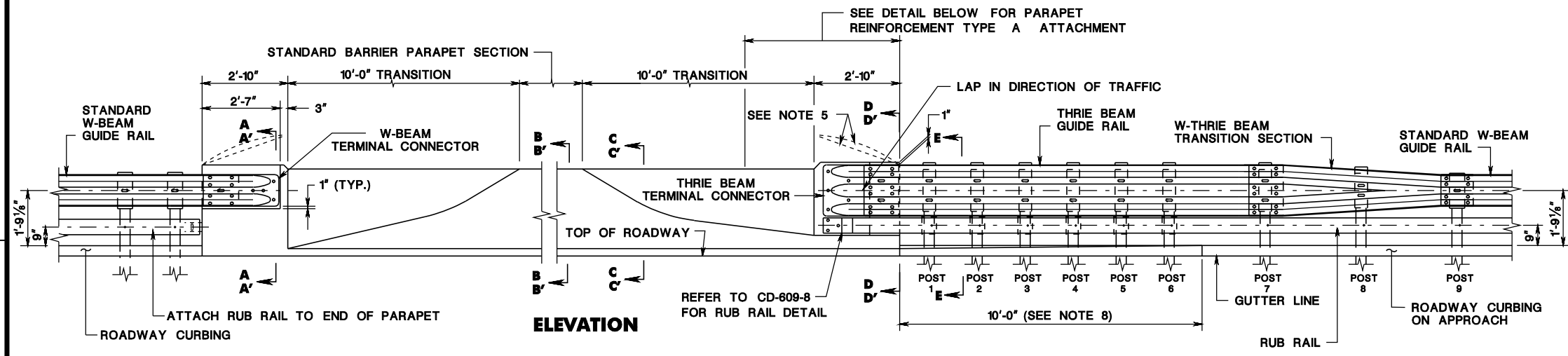
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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- NOTES:**
1. THIS GUIDE RAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A VERTICAL CONCRETE SHAPE AND SHOULD NOT BE CONNECTED DIRECTLY TO A CONCRETE SAFETY SHAPE. CONCRETE SAFETY BARRIER SHOULD BE TRANSITIONED TO A VERTICAL SHAPE AT THE GUIDE RAIL CONNECTION.
 2. FOR RECOMMENDED ATTACHMENT, REFER TO "BRIDGE ATTACHMENT TYPES", ON THIS SHEET.
 3. ALL CROSS SLOPES BETWEEN THE PAVEMENT EDGE AND POSTS TO BE 1V:10H OR FLATTER.
 4. EMBANKMENT MATERIAL CONFORMING TO THE NJDOT STANDARD SPECIFICATIONS SECTION 203 TO EXTEND FLAT BEHIND THE POSTS AT LEAST 2'-0" AT WHICH POINT A SLOPE OF NO STEEPER THAN 1V:2H SHOULD EXTEND A MINIMUM OF 4'-0" FURTHER.
 5. BARRIER PARAPET END MAY HAVE TO BE RECONFIGURED TO ACCEPT DIFFERENT TYPES OF RAILING OR FENCING THAT MAY BE MOUNTED ON TOP OF THE PARAPET.
 6. AT TYPE A ATTACHMENTS, THRIE BEAM RAIL ELEMENT WILL REQUIRE ADDITIONAL POST MOUNTING HOLES FOR POST #1, #3, AND #5. HOLES ARE TO BE SHOP PUNCHED OR DRILLED BEFORE GALVANIZATION. NO FIELD DRILLING IS PERMITTED.
 7. POSTS 1 THROUGH 7 TO BE 7'-2" LONG WITH 4'-10" POST EMBEDMENT. POST 8 TO BE 6'-8" LONG WITH 4'-6" POST EMBEDMENT. POST 9 TO BE 6'-8" LONG WITH 4'-4" POST EMBEDMENT.
 8. TRANSITION LAST 10 FEET OF ROADWAY CURBING TO MATCH BARRIER PARAPET SHAPE.
 9. LOCATE CONDUIT AT END OF BARRIER PARAPETS SO AS NOT TO INTERFERE WITH GUIDE RAIL POST SPACING.
 10. LOCATE DRAINAGE INLETS AND ELECTRICAL JUNCTION BOXES ON APPROACHES SO AS TO NOT INTERFERE WITH GUIDE RAIL POST SPACING.
 11. STRUCTURAL STEEL PLATES AND SHAPES TO CONFORM TO AASHTO M270 AND BE GALVANIZED ACCORDING TO AASHTO M11.
 12. HIGH STRENGTH STEEL BOLTS, NUTS, AND WASHERS TO CONFORM TO AASHTO M164. ZINC COATED BOLTS, NUTS, AND WASHERS TO BE TREATED ACCORDING TO AASHTO M232M.
 13. THE THICKNESS OF THRIE BEAM, W-BEAM, AND W-THRIE BEAM TRANSITION IS 12-GAUGE.
 14. FOR ADDITIONAL THRIE BEAM AND W-BEAM DETAILS REFER TO CD-609-1, CD-609-3, AND CD-609-13.
 15. WHEN THE CONFIGURATION OF BRIDGE ABUTMENTS AND WINGWALLS DO NOT ACCOMMODATE THE INSTALLATION OF POST 1, THE POST MAY BE ATTACHED TO THE ABUTMENT HEADER WITH THE USE OF A BASE PLATE.



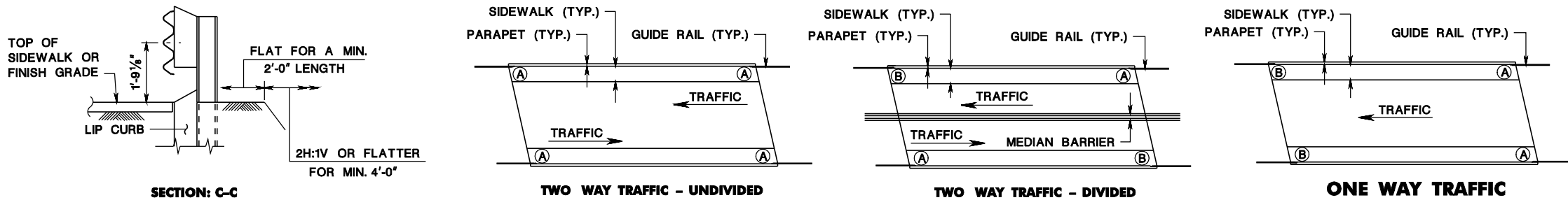
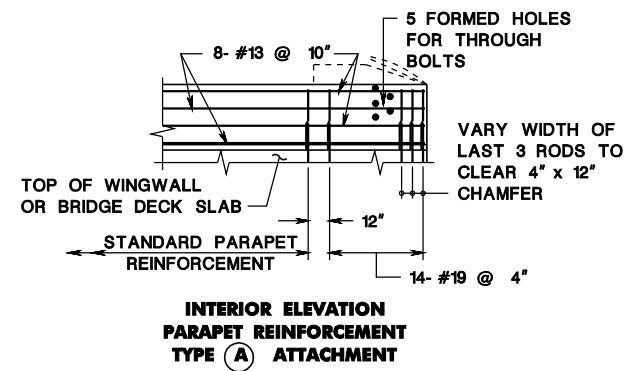
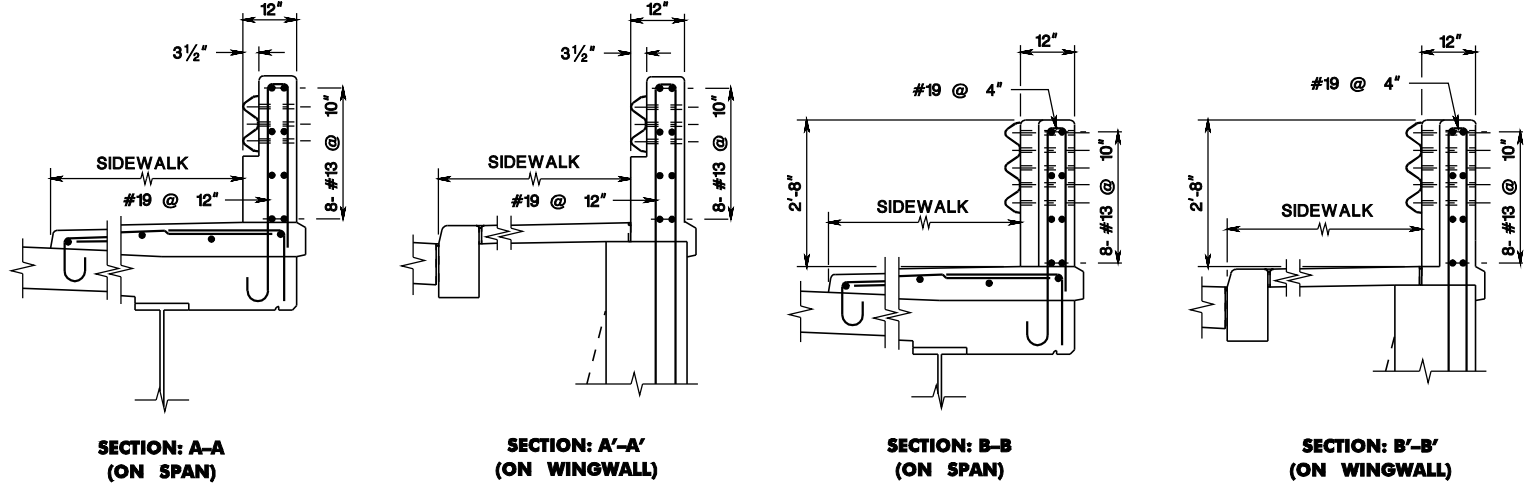
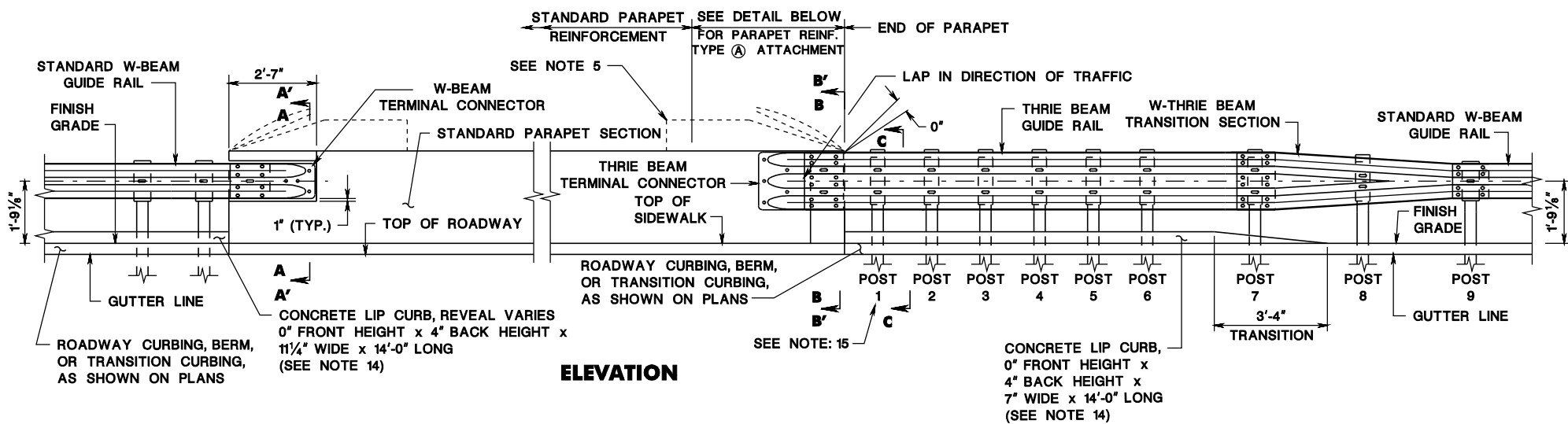
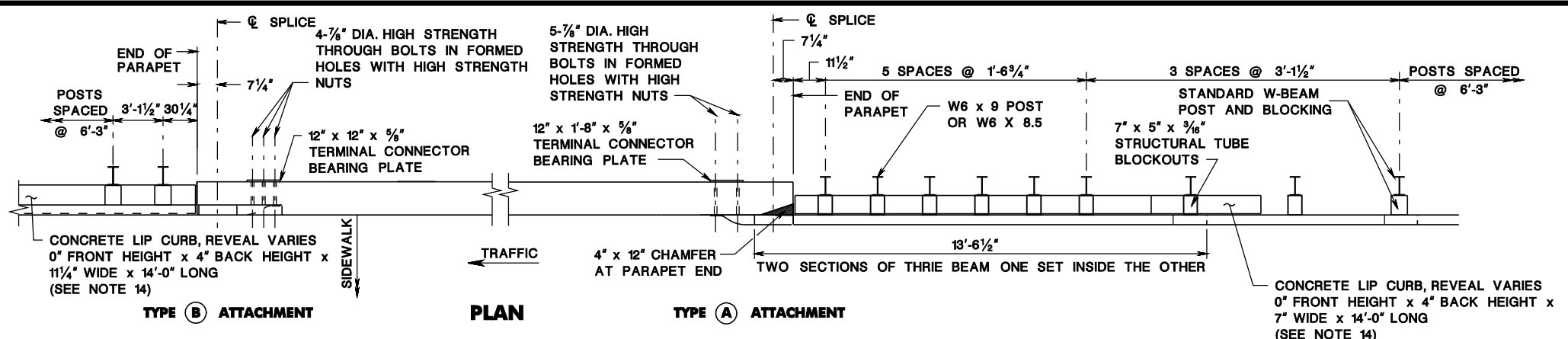
**GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION
 NEW JERSEY BARRIER SHAPE PARAPET (WITH ROADWAY CURBING ON APPROACH)**

**BRIDGE ATTACHMENT TYPES
 CD-609-15.1**

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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- NOTES:**
- THIS GUIDE RAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A VERTICAL CONCRETE SHAPE.
 - FOR RECOMMENDED ATTACHMENT TYPE, REFER TO "BRIDGE ATTACHMENT TYPES", ON THIS SHEET.
 - ALL CROSS SLOPES BETWEEN THE PAVEMENT EDGE AND POSTS TO BE 10H:1V OR FLATTER.
 - EMBANKMENT MATERIAL CONFORMING TO THE NJDOT STANDARD SPECIFICATIONS SECTION 203 TO EXTEND FLAT BEHIND THE POSTS AT LEAST 2'-0" AT WHICH POINT A SLOPE OF NO STEEPER THAN 2H:1V SHOULD EXTEND A MINIMUM OF 4'-0" FURTHER.
 - WHEN RAILING IS INSTALLED ON TOP OF PARAPET, PARAPET END TO BE MODIFIED TO ACCOMMODATE HORIZONTAL RAIL ATTACHMENT TO PARAPET. REFER TO STANDARD RAILING PLATE FOR ATTACHMENT DETAILS.
 - AT TYPE (A) ATTACHMENTS, THRIE BEAM RAIL ELEMENT WILL REQUIRE ADDITIONAL POST MOUNTING HOLES FOR POST #1, 3, & 5. HOLES ARE TO BE SHOP PUNCHED OR DRILLED BEFORE GALVANIZATION. NO FIELD DRILLING IS PERMITTED.
 - POSTS 1 THROUGH 7 TO BE 7'-2" LONG WITH 4'-10" POST EMBEDMENT. POST 8 TO BE 6'-8" LONG WITH 4'-6" POST EMBEDMENT. POST 9 TO BE 6'-8" LONG WITH 4'-4" POST EMBEDMENT.
 - LOCATE CONDUIT AT END OF PYLON SO AS NOT TO INTERFERE WITH GUIDE RAIL POST SPACING.
 - LOCATE DRAINAGE INLETS AND ELECTRIC JUNCTION BOXES ON APPROACHES SO AS NOT TO INTERFERE WITH GUIDE RAIL POST SPACING.
 - STRUCTURAL STEEL PLATES AND SHAPES TO CONFORM TO AASHTO M270 AND BE GALVANIZED ACCORDING TO AASHTO M111.
 - HIGH STRENGTH STEEL BOLTS, NUTS, AND WASHERS TO CONFORM TO AASHTO M164. ZINC COATED BOLTS, NUTS, AND WASHERS TO BE TREATED ACCORDING TO AASHTO M232M.
 - THE THICKNESS OF THRIE BEAM, W-BEAM, AND W-THRIE BEAM TRANSITION IS 12-GAUGE.
 - FOR ADDITIONAL THRIE BEAM, AND W-BEAM DETAILS REFER TO CD-609-1, CD-609-3, AND CD-609-13.
 - CONCRETE LIP CURB TO BE PAID UNDER 9"X16" CONCRETE VERTICAL CURB, SEE CD-607-1.9.
 - WHEN THE CONFIGURATION OF BRIDGE ABUTMENTS AND WINGWALLS DO NOT ACCOMMODATE THE INSTALLATION OF POST 1, THE POST MAY BE ATTACHED TO THE ABUTMENT HEADER WITH THE USE OF A BASE PLATE.

GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION (SIDEWALK WITH PARAPET)

NOTE: REINFORCEMENT STEEL IS IN METRIC UNITS.

BEAM GUIDE RAIL ATTACHMENTS

N.T.S.

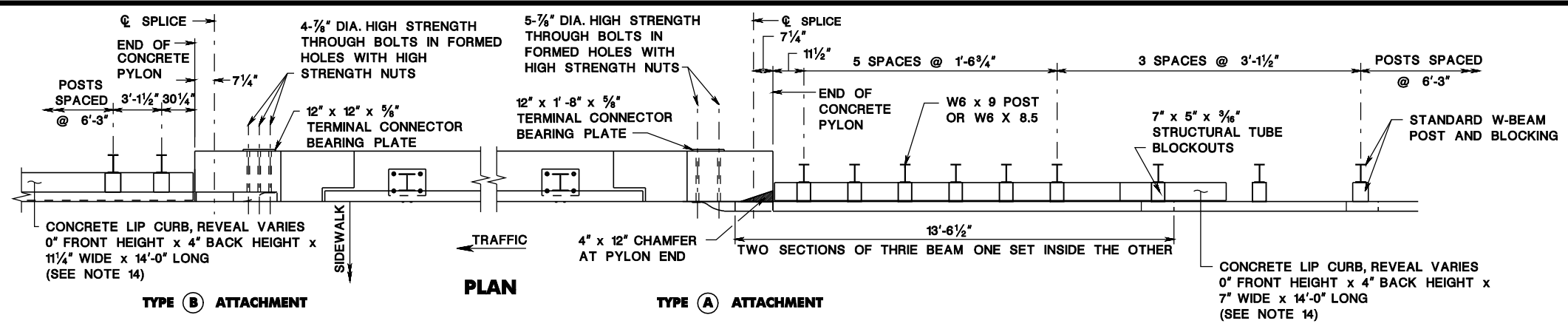
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

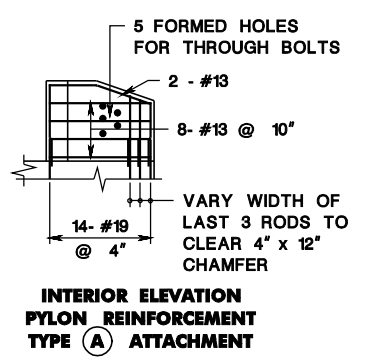
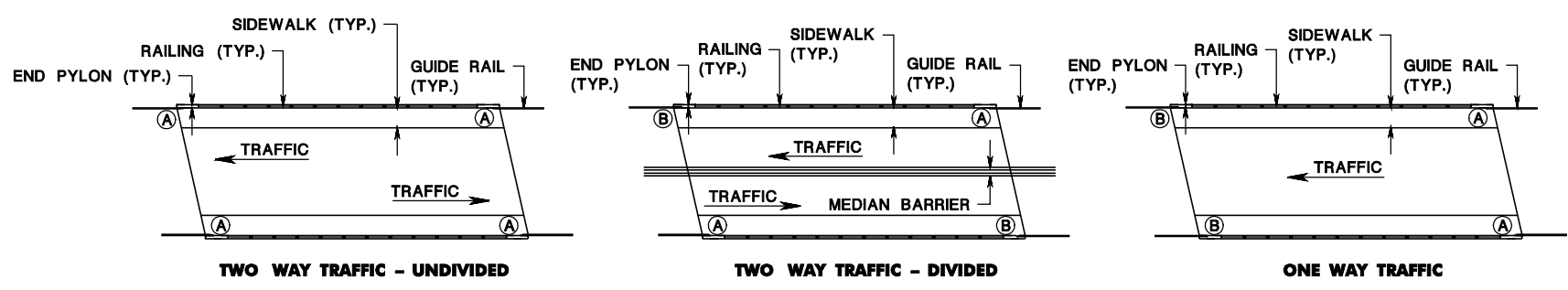
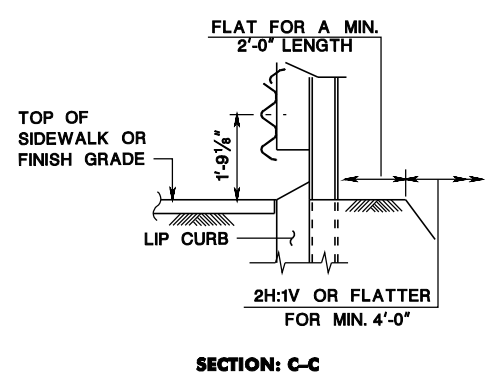
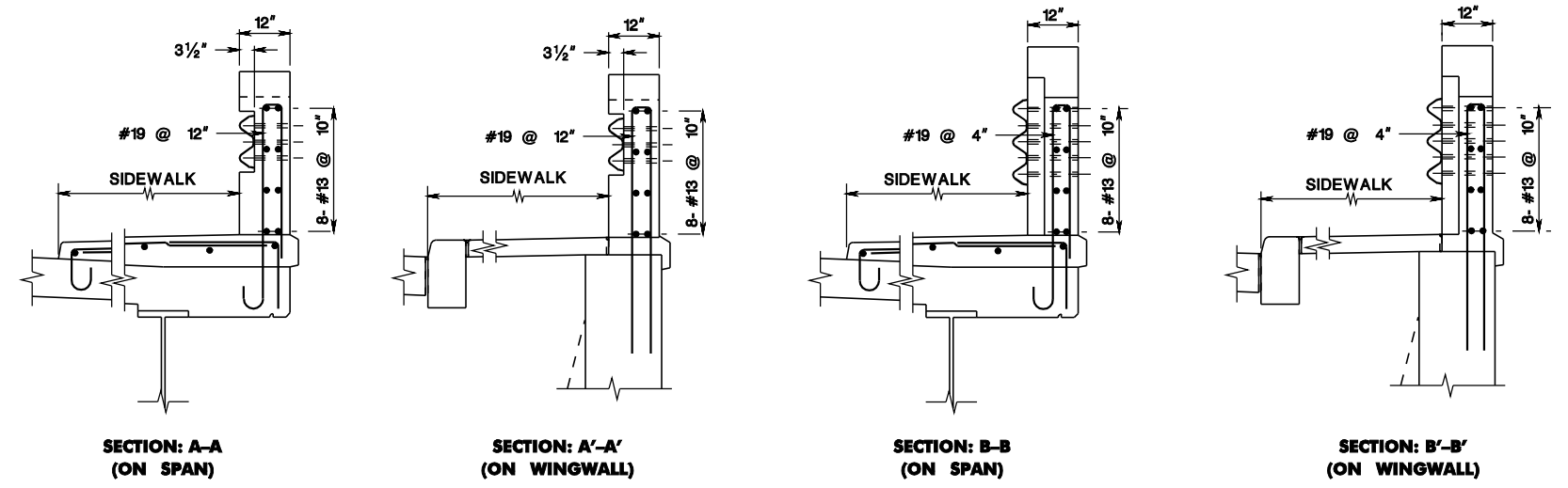
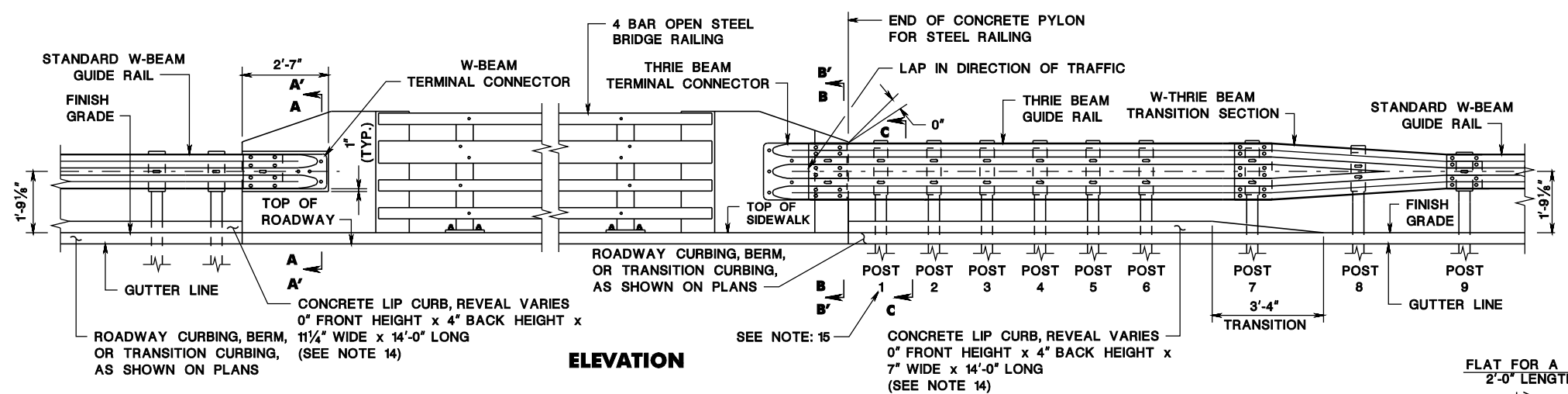
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- NOTES:**
- THIS GUIDE RAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A VERTICAL CONCRETE SHAPE.
 - FOR RECOMMENDED ATTACHMENT TYPE, REFER TO "BRIDGE ATTACHMENT TYPES", ON THIS SHEET.
 - ALL CROSS SLOPES BETWEEN THE PAVEMENT EDGE AND POSTS TO BE 10H:1V OR FLATTER.
 - EMBANKMENT MATERIAL CONFORMING TO THE NJDOT STANDARD SPECIFICATIONS SECTION 203 TO EXTEND FLAT BEHIND THE POSTS AT LEAST 2'-0" AT WHICH POINT A SLOPE OF NO STEEPER THAN 2H:1V SHOULD EXTEND A MINIMUM OF 4'-0" FURTHER.
 - CONCRETE PYLONS TO BE CONSTRUCTED AT ALL ENDS OF STEEL RAILING. ATTACH GUIDE RAIL TO THE PYLONS.
 - AT TYPE (A) ATTACHMENTS, THRIE BEAM RAIL ELEMENT WILL REQUIRE ADDITIONAL POST MOUNTING HOLES FOR POST #1, 3, & 5. HOLES ARE TO BE SHOP PUNCHED OR DRILLED BEFORE GALVANIZATION. NO FIELD DRILLING IS PERMITTED.
 - POSTS 1 THROUGH 7 TO BE 7'-2" LONG WITH 4'-10" POST EMBEDMENT. POST 8 TO BE 6'-8" LONG WITH 4'-6" POST EMBEDMENT. POST 9 TO BE 6'-8" LONG WITH 4'-4" POST EMBEDMENT.
 - LOCATE CONDUIT AT END OF PYLON SO AS NOT TO INTERFERE WITH GUIDE RAIL POST SPACING.
 - LOCATE DRAINAGE INLETS AND ELECTRIC JUNCTION BOXES ON APPROACHES SO AS NOT TO INTERFERE WITH GUIDE RAIL POST SPACING.
 - STRUCTURAL STEEL PLATES AND SHAPES TO CONFORM TO AASHTO M270 AND BE GALVANIZED ACCORDING TO AASHTO M111.
 - HIGH STRENGTH STEEL BOLTS, NUTS, AND WASHERS TO CONFORM TO AASHTO M164. ZINC COATED BOLTS, NUTS, AND WASHERS TO BE TREATED ACCORDING TO AASHTO M232M.
 - THE THICKNESS OF THRIE BEAM, W-BEAM, AND W-THRIE BEAM TRANSITION IS 12-GAUGE.
 - FOR ADDITIONAL THRIE BEAM, AND W-BEAM DETAILS REFER TO CD-609-1, CD-609-3, AND CD-609-13.
 - CONCRETE LIP CURB TO BE PAID UNDER 9" x 16" CONCRETE VERTICAL CURB, SEE CD-607-1.9.
 - WHEN THE CONFIGURATION OF BRIDGE ABUTMENTS AND WINGWALLS DO NOT ACCOMMODATE THE INSTALLATION OF POST 1, THE POST MAY BE ATTACHED TO THE ABUTMENT HEADER WITH THE USE OF A BASE PLATE.



GUIDE RAIL ATTACHMENT - NEW CONSTRUCTION (SIDEWALK WITH STEEL RAILING)

NOTE: REINFORCEMENT STEEL IS IN METRIC UNITS.

BEAM GUIDE RAIL ATTACHMENTS

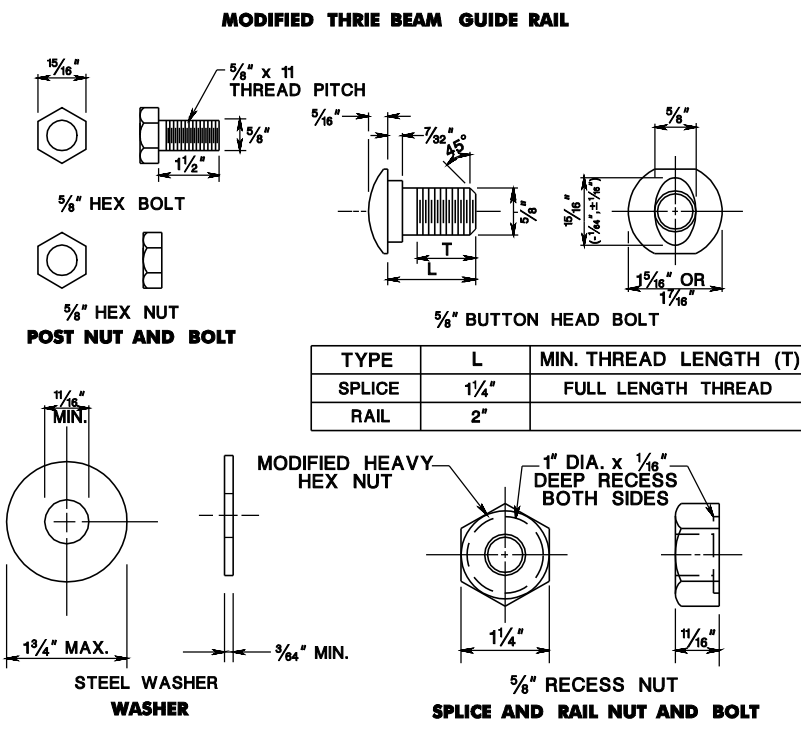
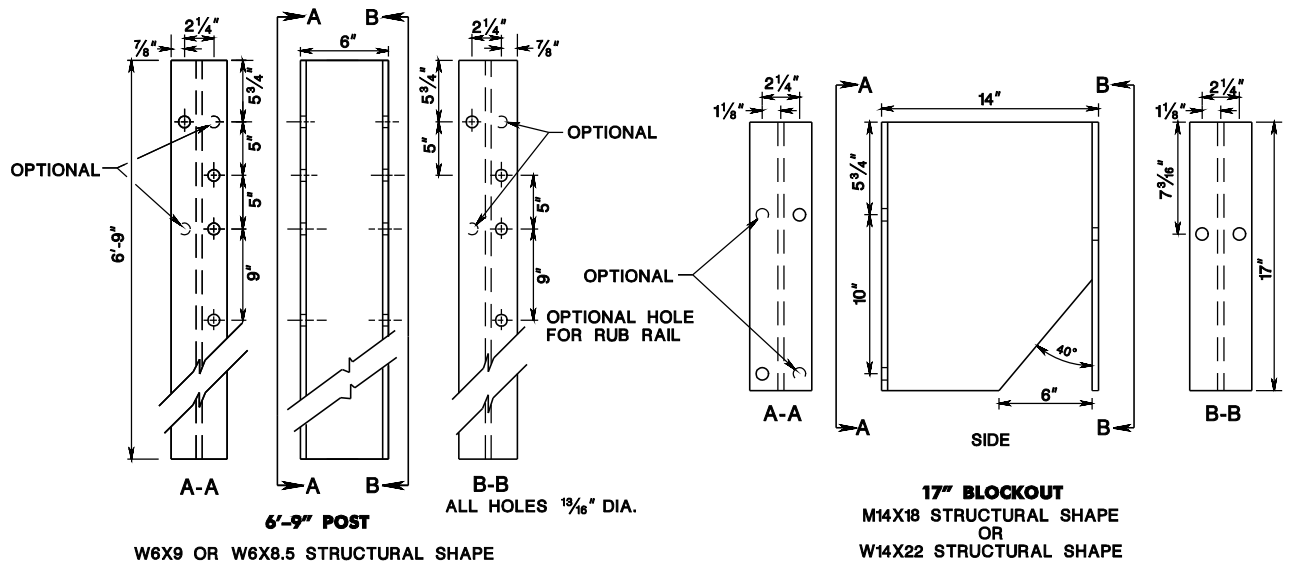
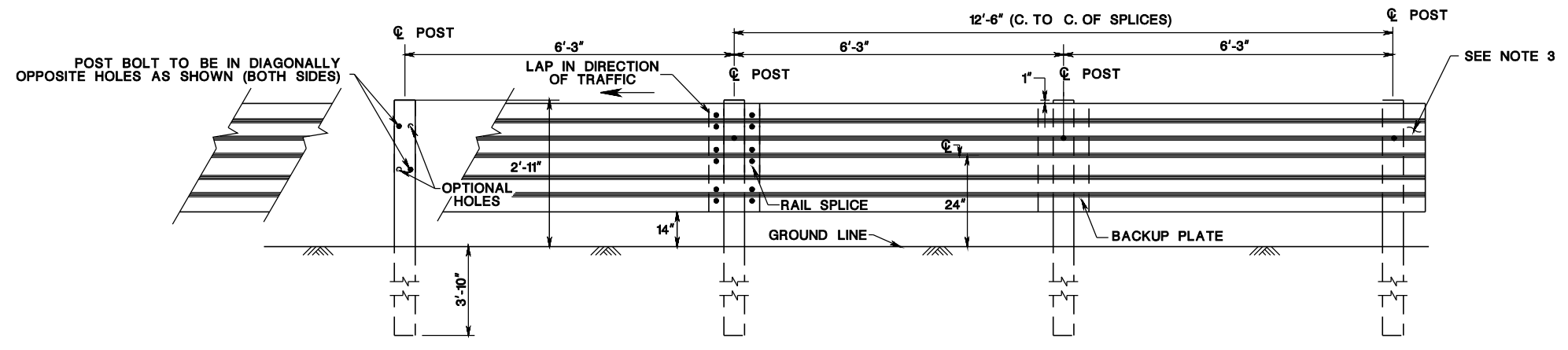
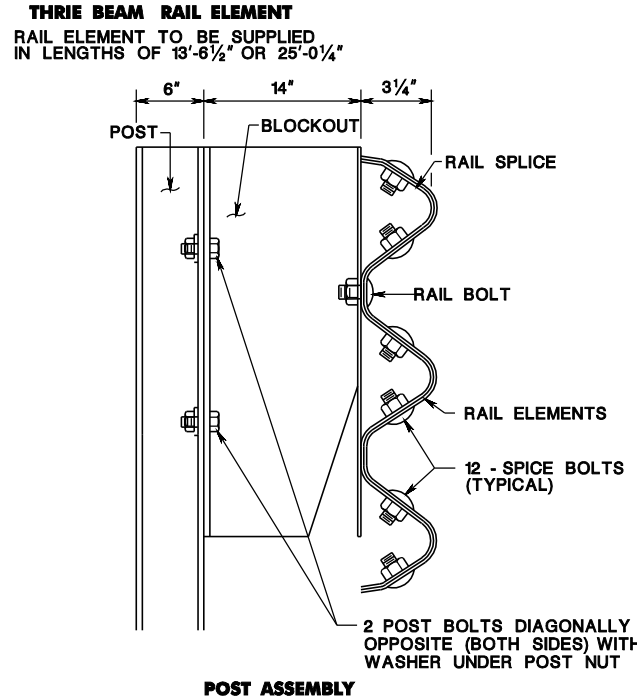
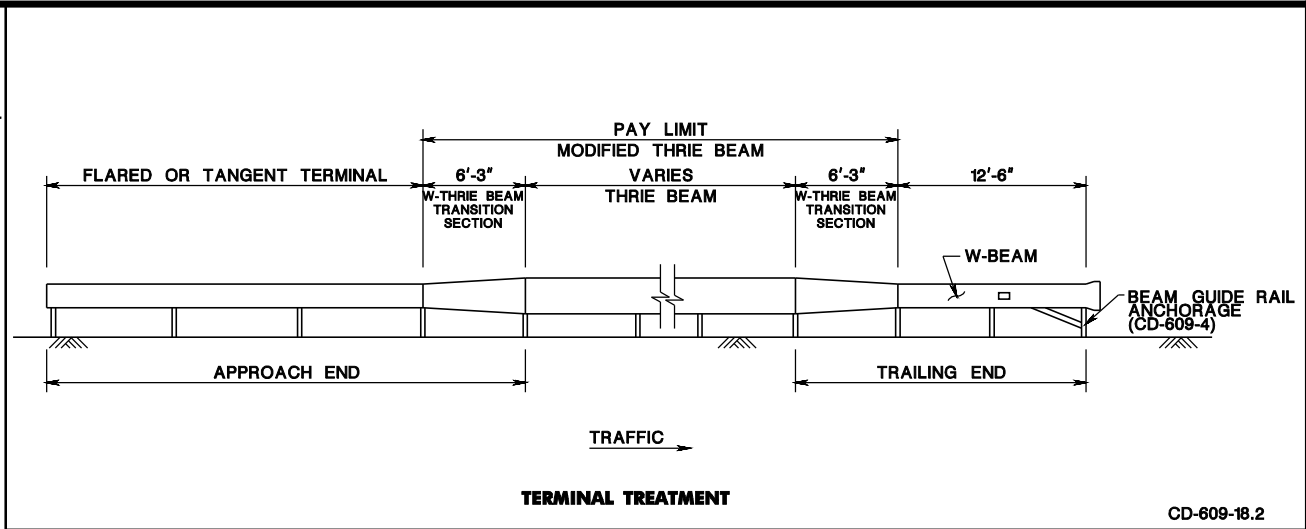
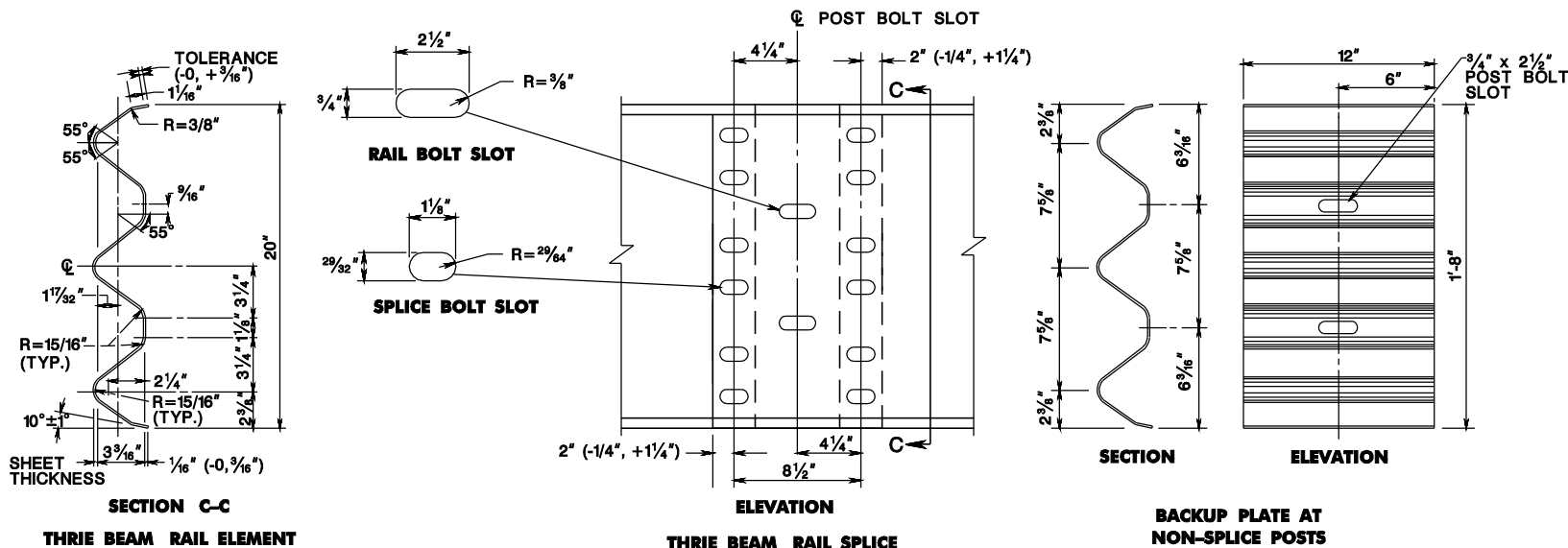
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CD-609-17

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-609-17.1



- NOTES:**
- ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES
 - RAIL ELEMENTS TO BE FURNISHED SHOPCURVED, CONCAVE, OR CONVEX, FOR RADII BETWEEN 20 FEET AND 150 FEET
 - SEE CD-609-18.2 FOR TERMINAL TREATMENT

MODIFIED THRIE BEAM GUIDE RAIL
 N.T.S.

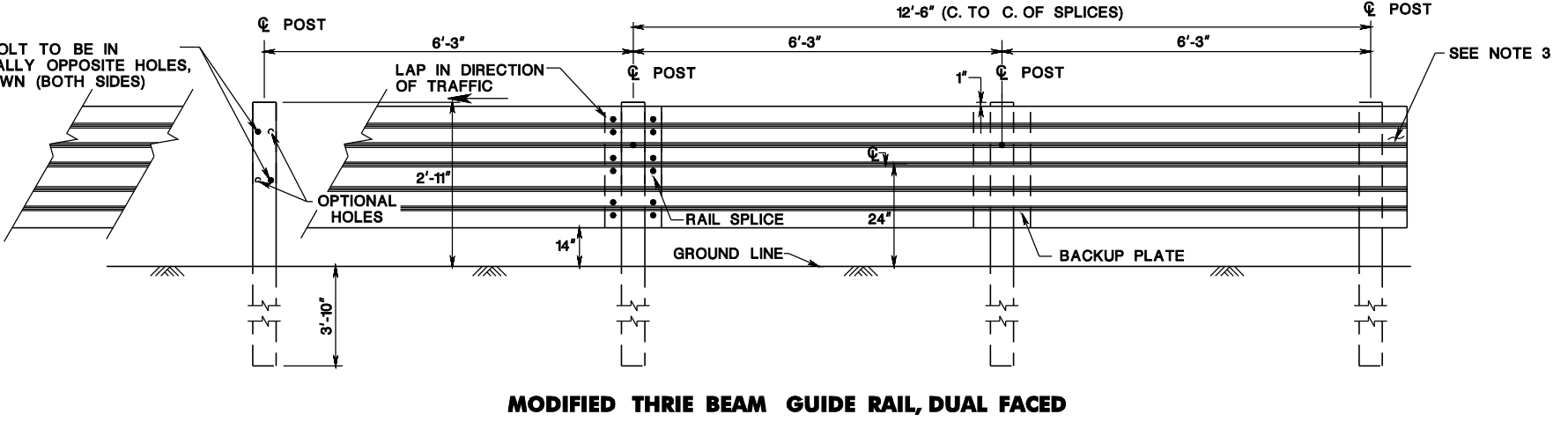
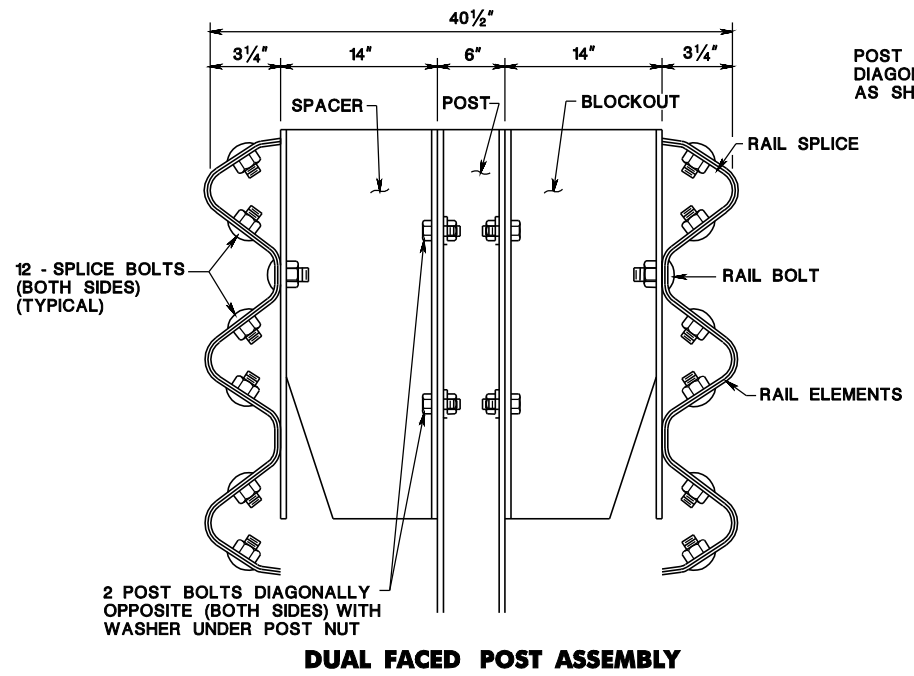
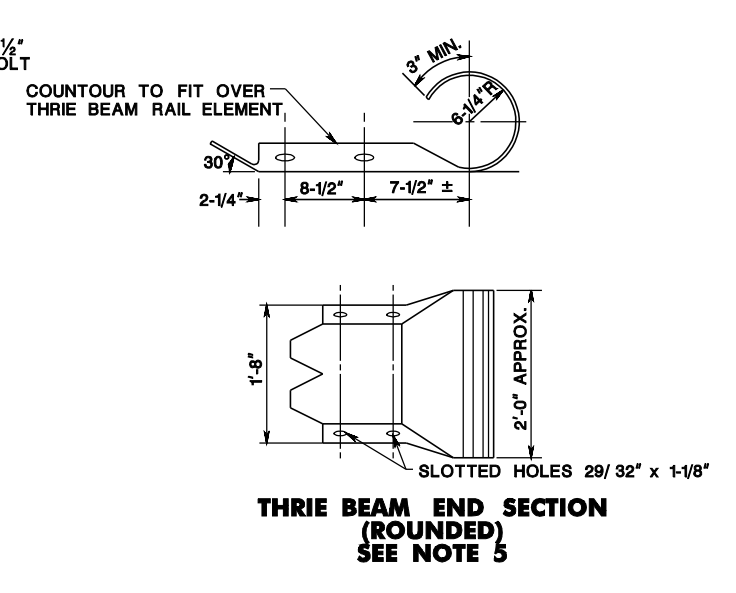
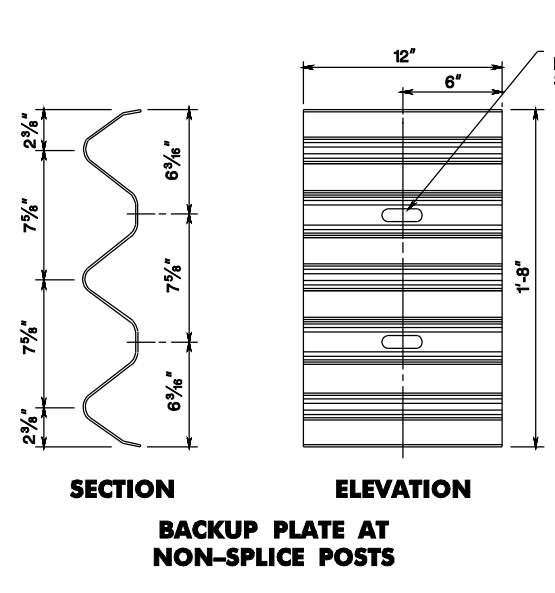
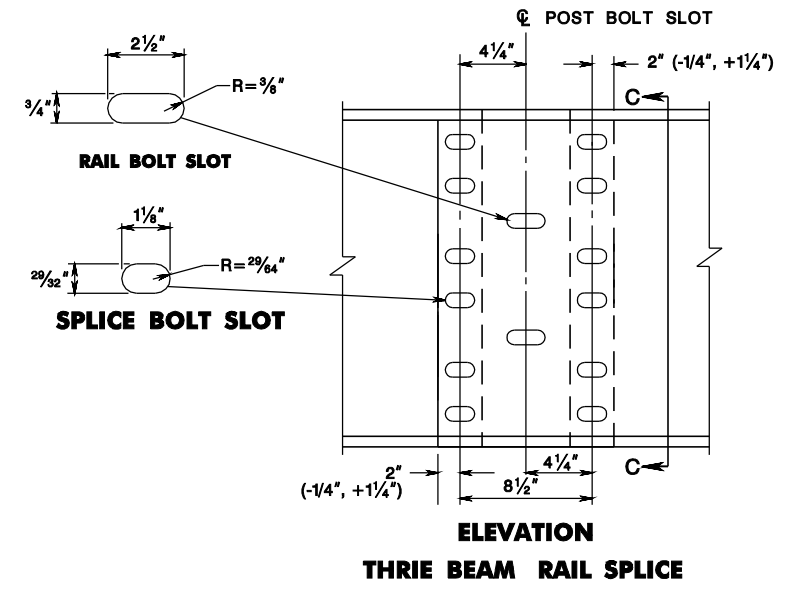
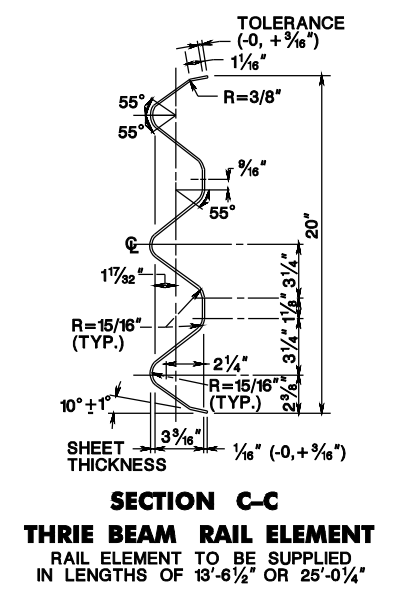
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

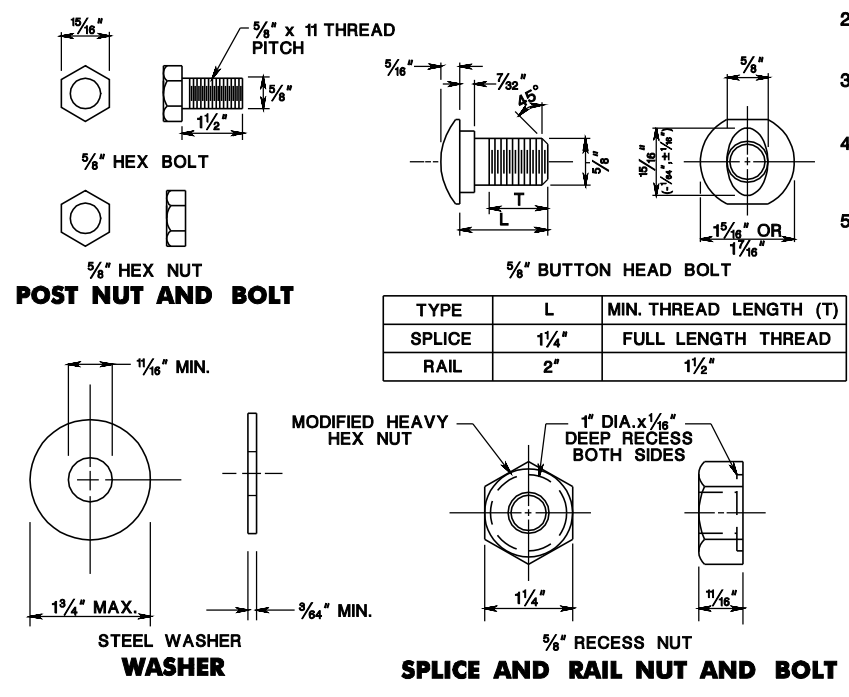
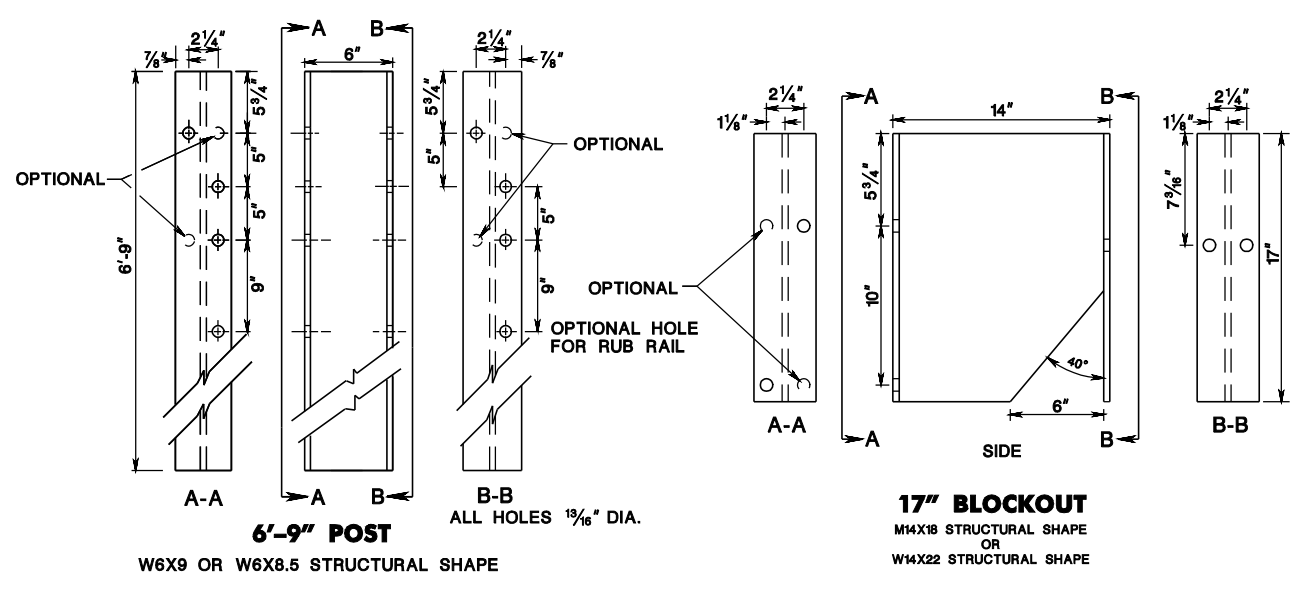
CD-609-18

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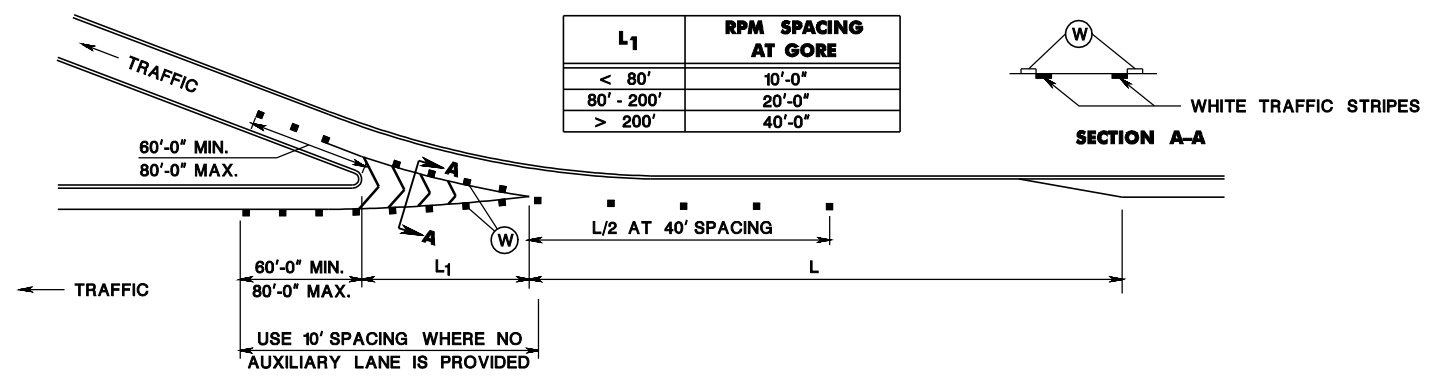
- NOTES:**
1. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
 2. RAIL ELEMENTS TO BE FURNISHED SHOPCURVED, CONCAVE, OR CONVEX, FOR RADII BETWEEN 20 FEET AND 150 FEET.
 3. USE CD-609-7.5 TELESCOPING GUIDE RAIL END TERMINAL CONNECTION UNLESS THE PLANS CALL FOR ANOTHER TYPE OF END TREATMENT.
 4. USE A 25' GUIDE RAIL TRANSITION WHERE A TELESCOPING GUIDE RAIL END TREATMENT IS TO BE ATTACHED TO THE END OF MODIFIED THRIE BEAM, DUAL FACED.
 5. USE THRIE BEAM END SECTION (ROUNDED) ON END OF RAIL ELEMENT WHERE DUAL FACED MODIFIED THRIE BEAM ENDS AND SINGLE FACED MODIFIED THRIE BEAM BEGINS.



MODIFIED THRIE BEAM
GUIDE RAIL, DUAL FACED
 N.T.S.

CD-609-19
 NEW JERSEY DEPARTMENT OF TRANSPORTATION
CONSTRUCTION DETAILS
 80
 164
 CD-609-19.1

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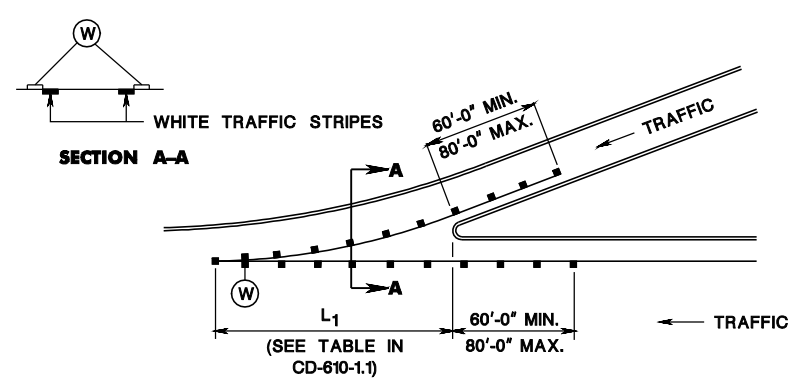
TYPICAL DECELERATION LANE TREATMENT

CD-610-1.1

LEGEND

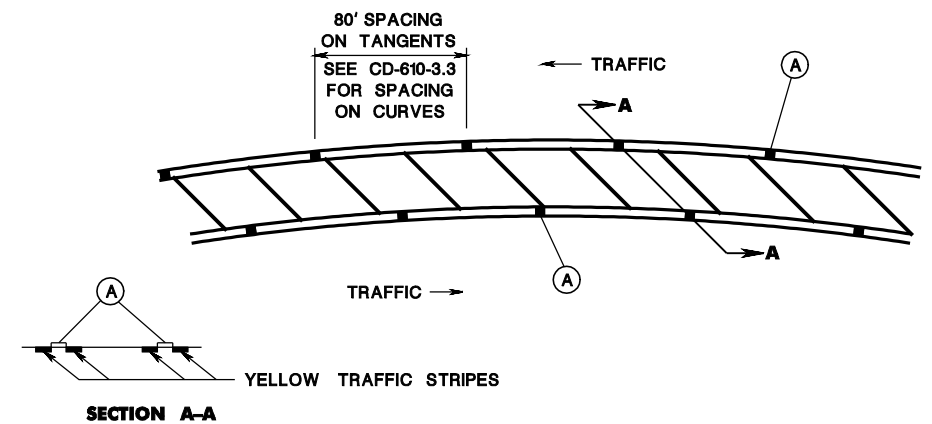
- (W) RPM, MONO-DIRECTIONAL WHITE LENS
- (A) RPM, MONO-DIRECTIONAL AMBER LENS

CD-610-1.2



TYPICAL ACCELERATION LANE TREATMENT

CD-610-1.3



TYPICAL PAVED MEDIAN TREATMENT

CD-610-1.4

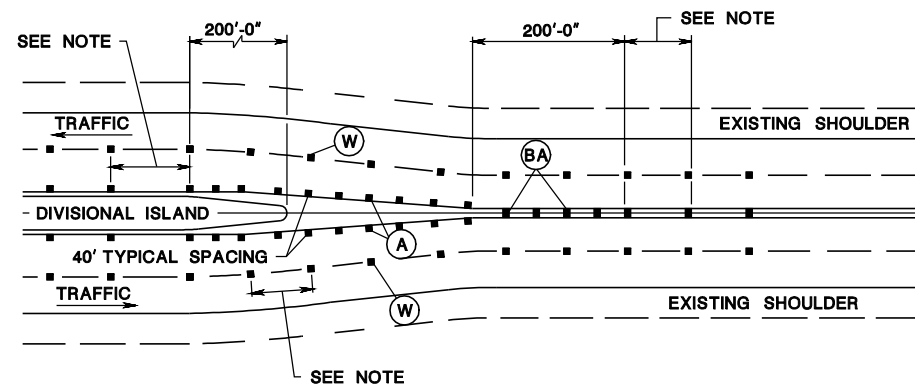
RAISED PAVEMENT MARKER (RPM), LOCATION

N.T.S.

CD-610-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

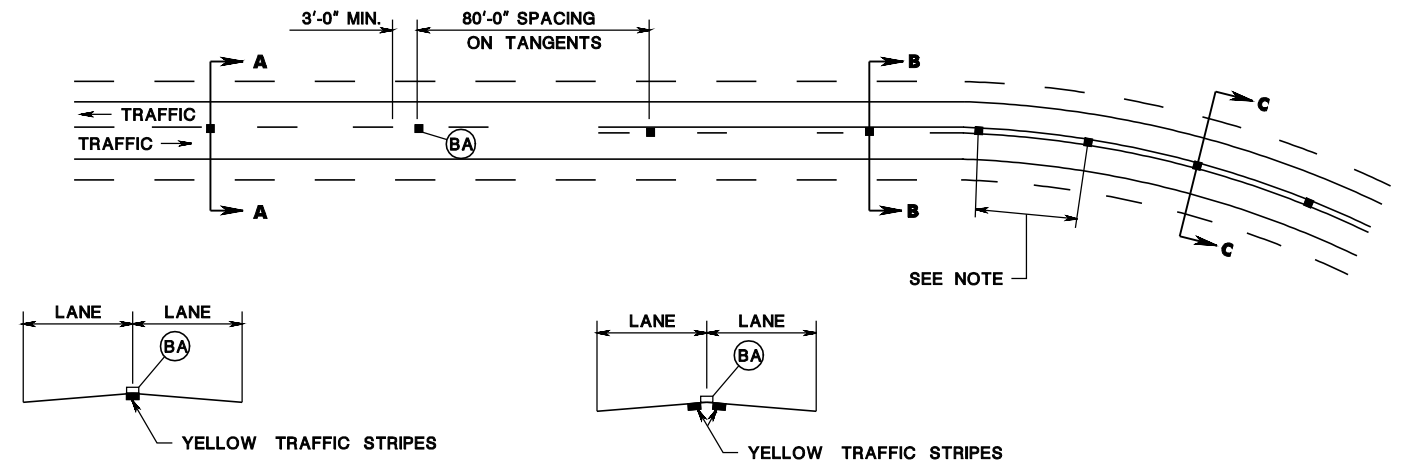
CONSTRUCTION DETAILS



NOTE:
80 FOOT SPACING ON TANGENT FOR
SPACING ON CURVES SEE CD-610-3.3

TYPICAL DIVISIONAL ISLAND TREATMENT

CD-610-2.1



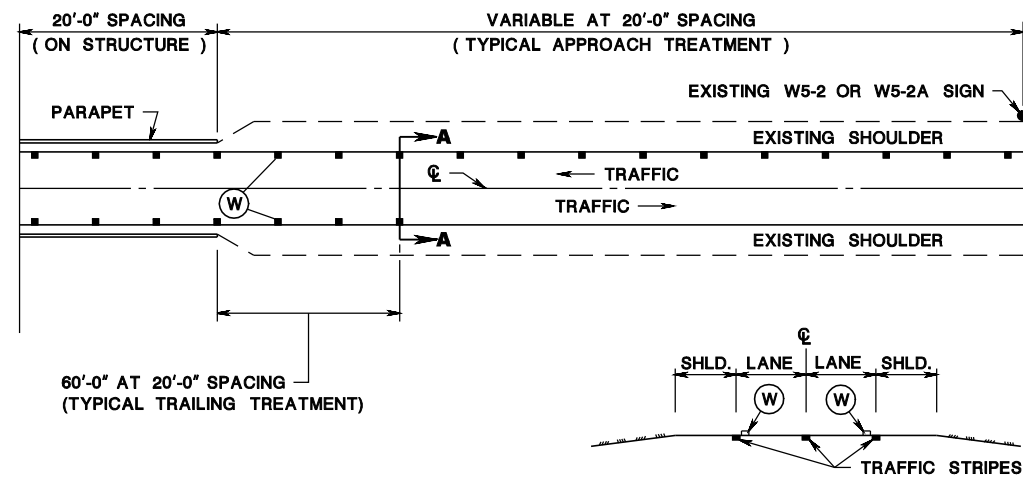
SECTION A-A

SECTION B-B & SECTION C-C

NOTE:
FOR SPACING ON CURVES SEE CD-610-3.3

TYPICAL TWO LANE SECTION

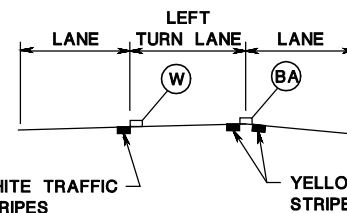
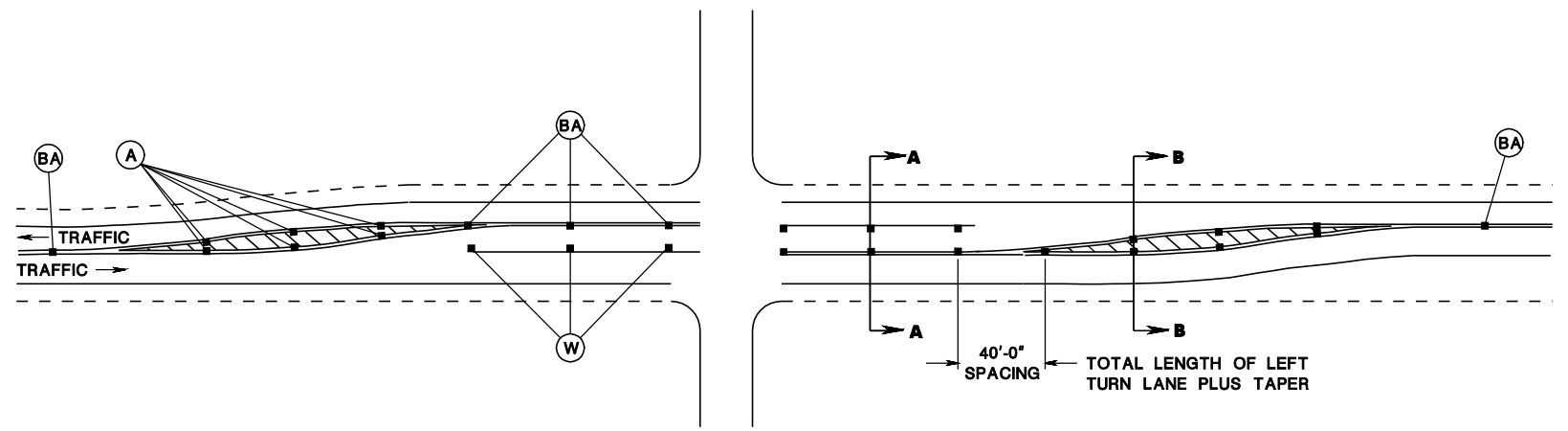
CD-610-2.4



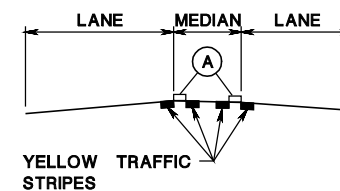
SECTION A-A

NARROW BRIDGE OR CULVERT TREATMENT

CD-610-2.2



SECTION A-A



SECTION B-B

TYPICAL LEFT TURN LANE SECTION

CD-610-2.5

LEGEND

- (W) RPM, MONO-DIRECTIONAL WHITE LENS
- (A) RPM, MONO-DIRECTIONAL AMBER LENS
- (BA) RPM, BI-DIRECTIONAL AMBER LENS

CD-610-2.3

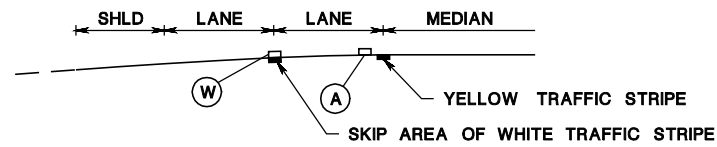
RAISED PAVEMENT MARKER (RPM), LOCATION

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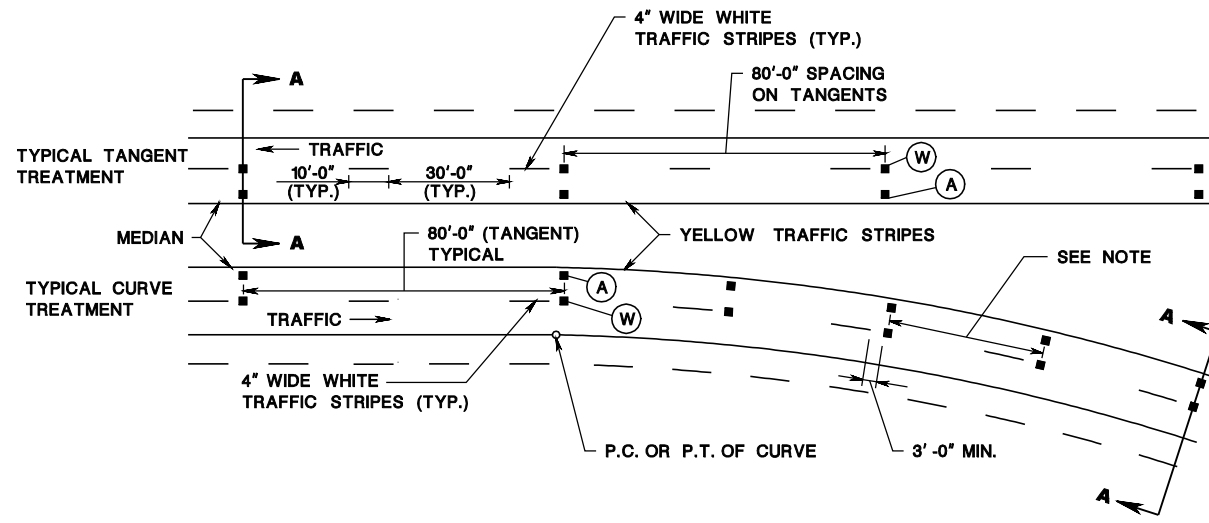
CD-610-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS



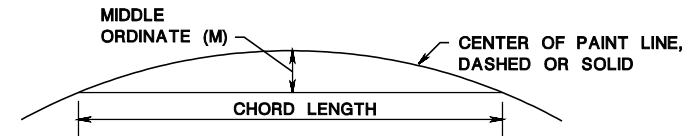
SECTION A-A (TYP.)



TYPICAL MULTI-LANE DIVIDED SECTION

NOTE:
FOR SPACING ON CURVES SEE CD-610-3.3

CD-610-3.1



NOTES:

1. USE 200 FOOT TAPE.
2. ESTABLISH 200 FOOT CHORD.
3. MEASURE MIDDLE ORDINATE PERPENDICULAR TO CHORD 100 FOOT FROM EITHER END.
4. DETERMINE SPACING FROM TABLE 1.
5. WHEN DIFFICULT TO DETERMINE MIDDLE ORDINATE, 80 FOOT OR 40 FOOT SPACING WILL BE AS DIRECTED BY THE DEPARTMENT.

CHORD LENGTH	MIDDLE ORDINATE	RADIUS	REFLECTOR SPACING
200'-0"	$M \geq 2'-7"$	$R \leq 1910'$	40'-0"
200'-0"	$M < 2'-7"$	$R > 1910'$	80'-0"

< LESS THAN
 \leq EQUAL TO OR LESS THAN
 > GREATER THAN
 \geq EQUAL TO OR GREATER THAN

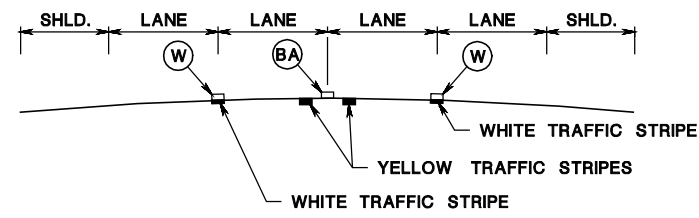
METHOD FOR DETERMINING RPM SPACING ON HORIZONTAL CURVES

CD-610-3.3

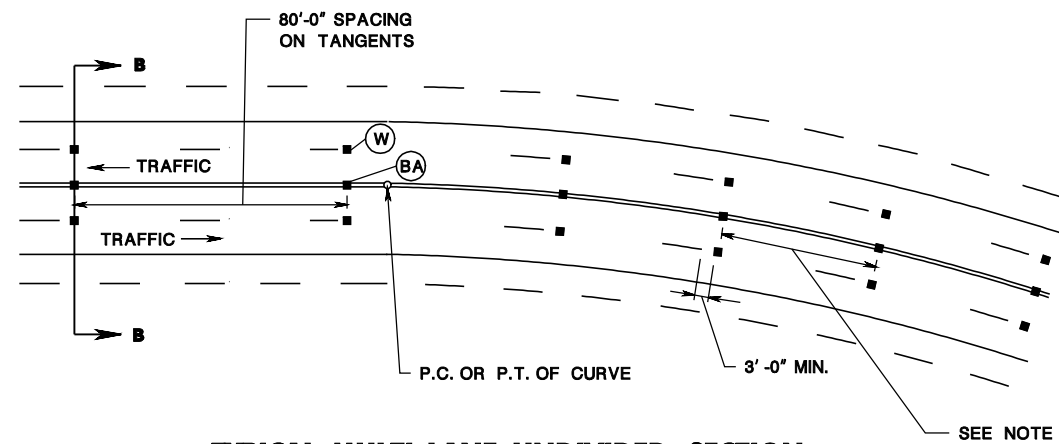
LEGEND

- (W) RPM, MONO-DIRECTIONAL WHITE LENS
- (A) RPM, MONO-DIRECTIONAL AMBER LENS
- (BA) RPM, BI-DIRECTIONAL AMBER LENS

CD-610-3.4



SECTION B-B



TYPICAL MULTI-LANE UNDIVIDED SECTION

NOTE:
FOR SPACING ON CURVES SEE CD-610-3.3

CD-610-3.2

RAISED PAVEMENT MARKER (RPM), LOCATION

N.T.S.

CD-610-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

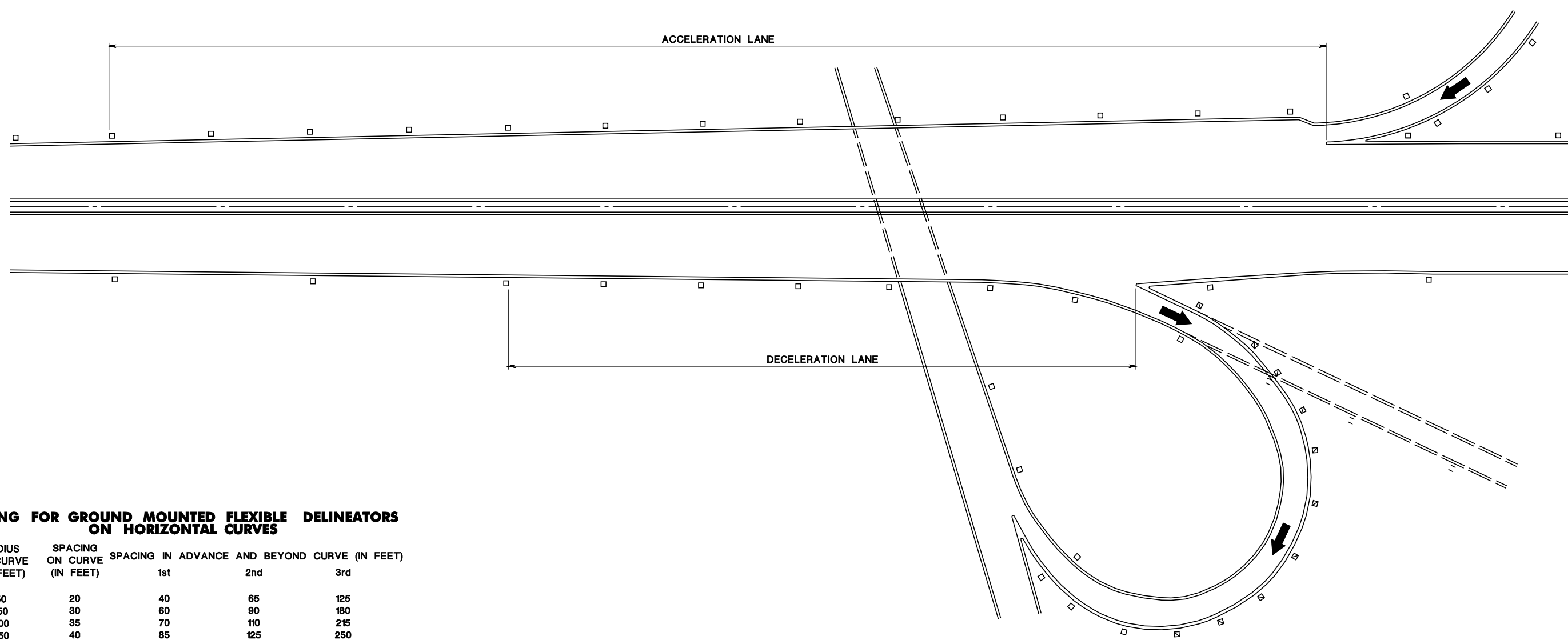
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SPACING FOR GROUND MOUNTED FLEXIBLE DELINEATORS ON HORIZONTAL CURVES

RADIUS OF CURVE (IN FEET)	SPACING ON CURVE (IN FEET)	SPACING IN ADVANCE AND BEYOND CURVE (IN FEET)		
		1st	2nd	3rd
50	20	40	65	125
150	30	60	90	180
200	35	70	110	215
250	40	85	125	250
300	50	95	145	290
400	55	110	170	300
500	65	125	190	300
600	70	140	210	300
700	75	150	230	300
800	80	165	245	300
900	85	175	260	300
1000	90	185	275	300

SPACING FOR SPECIFIC RADII NOT SHOWN MAY BE INTERPOLATED FROM TABLE. THE MINIMUM SPACING TO BE 20 FEET. THE SPACING ON CURVES TO NOT EXCEED 300 FEET. IN ADVANCE OF OR BEYOND A CURVE, AND PROCEEDING AWAY FROM THE END OF THE CURVE, THE SPACING OF THE FIRST DELINEATOR IS 2S, THE SECOND 3S, AND THE THIRD 6S BUT NOT TO EXCEED 300 FEET. S REFERS TO THE DELINEATOR SPACING FOR SPECIFIC RADII COMPUTED FROM THE FORMULA $s = 3 \sqrt{R - 50}$

LEGEND

- WHITE FLEXIBLE DELINEATORS ON MAINLINE AT 200 FEET SPACING, ON RAMPS, ACCELERATION AND DECELERATION LANES 100 FEET MAXIMUM SPACING.
- ▣ YELLOW FLEXIBLE DELINEATORS ON RAMPS 100 FEET MAXIMUM SPACING.

INSTALLATION, DIMENSIONS, COLOR, AND DETAILS TO FOLLOW STANDARDS IN THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".

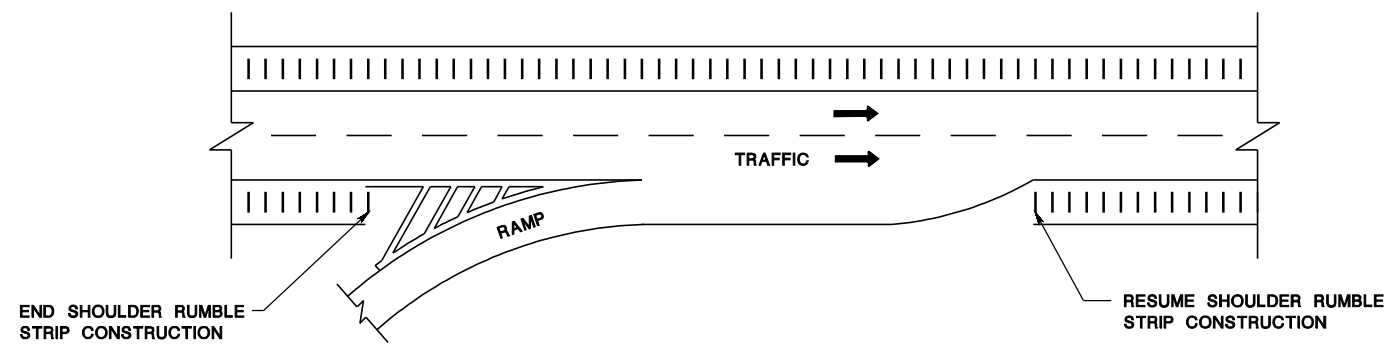
GROUND MOUNTED FLEXIBLE DELINEATORS
N.T.S.

CD-610-4
NEW JERSEY DEPARTMENT OF TRANSPORTATION

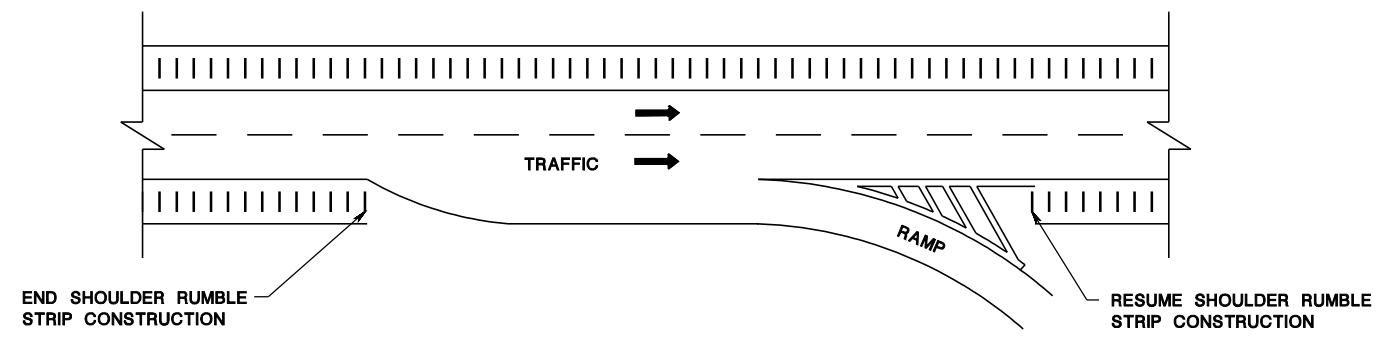
CONSTRUCTION DETAILS

CD-610-4.1

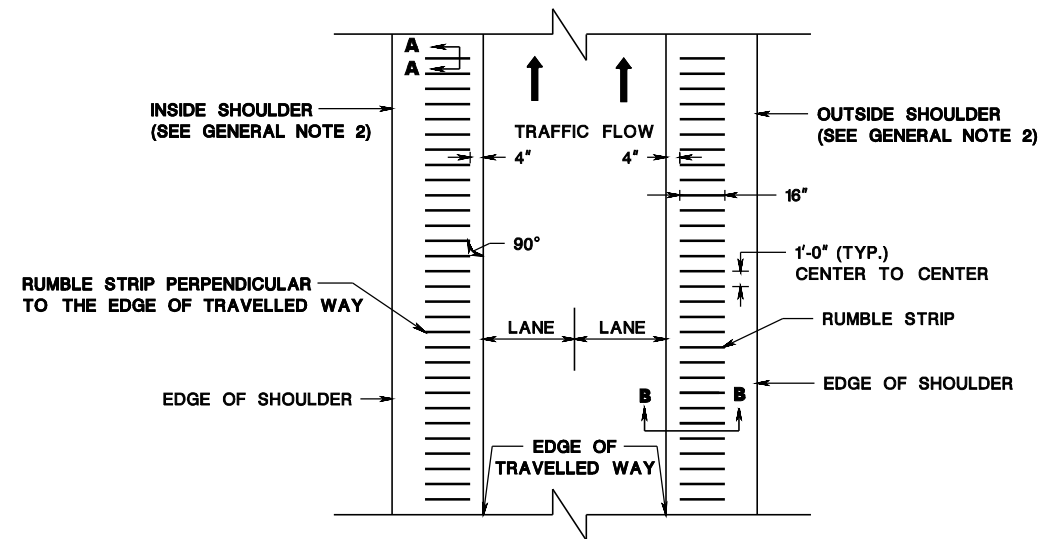
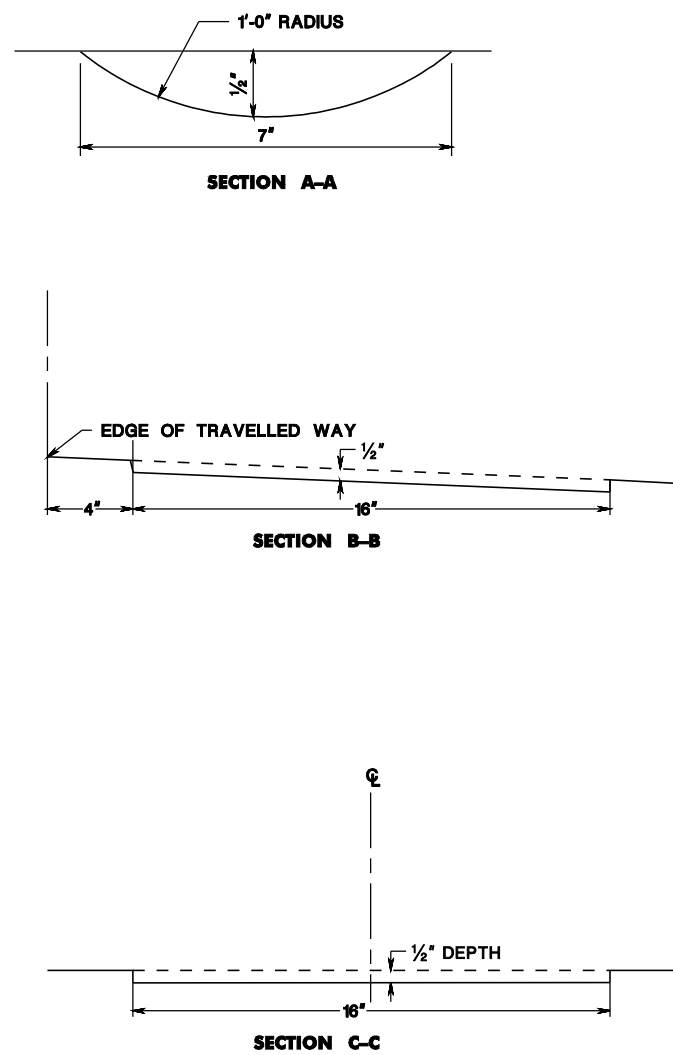
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SHOULDER RUMBLE STRIP AT ACCELERATION LANE



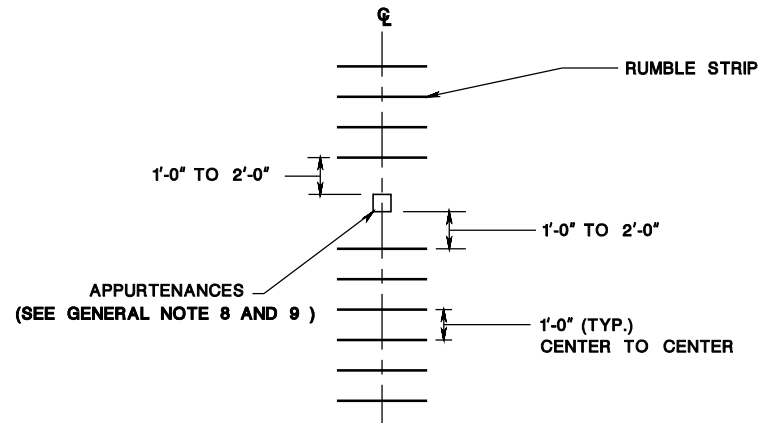
SHOULDER RUMBLE STRIP AT DECELERATION LANE



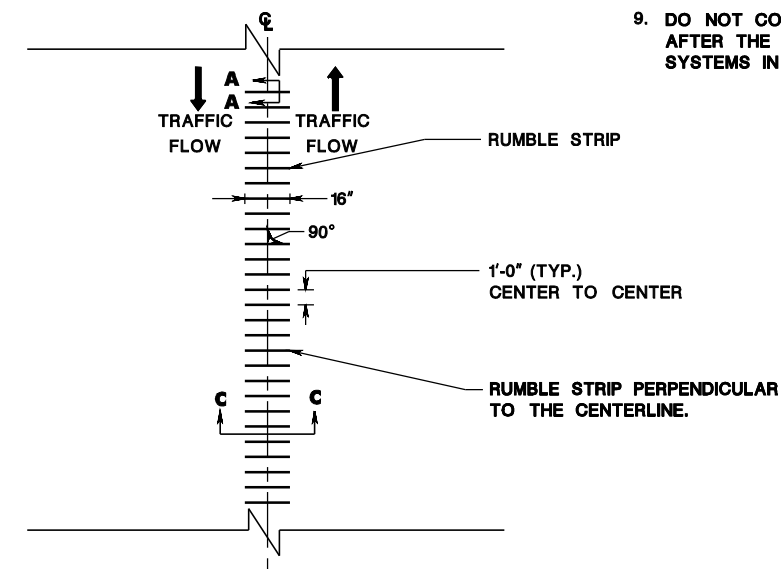
SHOULDER RUMBLE STRIP PLACEMENT

GENERAL NOTES:

1. THE MINIMUM LENGTH OF RUMBLE STRIPS MEASURED LONGITUDINALLY ALONG THE SHOULDER OR CENTERLINE IS 100 FEET.
2. SHOULDER RUMBLE STRIPS TO BE CONSTRUCTED ON 3 FEET OR WIDER INSIDE SHOULDERS, AND 6 FEET OR WIDER OUTSIDE SHOULDERS.
3. THE MINIMUM ADJACENT LANE WIDTH FOR CENTERLINE RUMBLE STRIPS IS 10 FEET.
4. DO NOT CONSTRUCT RUMBLE STRIPS ON BRIDGE DECKS.
5. DO NOT CONSTRUCT SHOULDER RUMBLE STRIPS WITHIN 100 FEET BEFORE AND 100 FEET AFTER THE P.C. OF INTERSECTING ROADWAYS AND COMMERCIAL DRIVEWAYS.
6. CONSTRUCT CENTERLINE RUMBLE STRIPS TO THE END OF THE CENTERLINE STRIPE AT ALL STREET INTERSECTIONS. CENTERLINE RUMBLE STRIPS TO BE CONTINUOUS AND NOT BREAK AT DRIVEWAYS.
7. DO NOT CONSTRUCT CENTERLINE RUMBLE STRIPS ALONG LEFT TURN SLOTS AND CONTINUOUS TWO WAY LEFT TURN MEDIAN LANES.
8. APPURTENANCES INCLUDE, BUT ARE NOT LIMITED TO, RAISED PAVEMENT MARKERS, MANHOLES, INLETS, VALVE BOXES, AND MONUMENT BOXES.
9. DO NOT CONSTRUCT RUMBLE STRIPS 200 FEET BEFORE AND AFTER THE APPROXIMATE MIDPOINT OF WEIGH-IN-MOTION (WIM) SYSTEMS IN THE ROADWAY.



COMBINED CENTERLINE RUMBLE STRIP AND APPURTENANCES



CENTERLINE RUMBLE STRIP PLACEMENT

NOTE:
HMA = HOT MIX ASPHALT

RUMBLE STRIPS

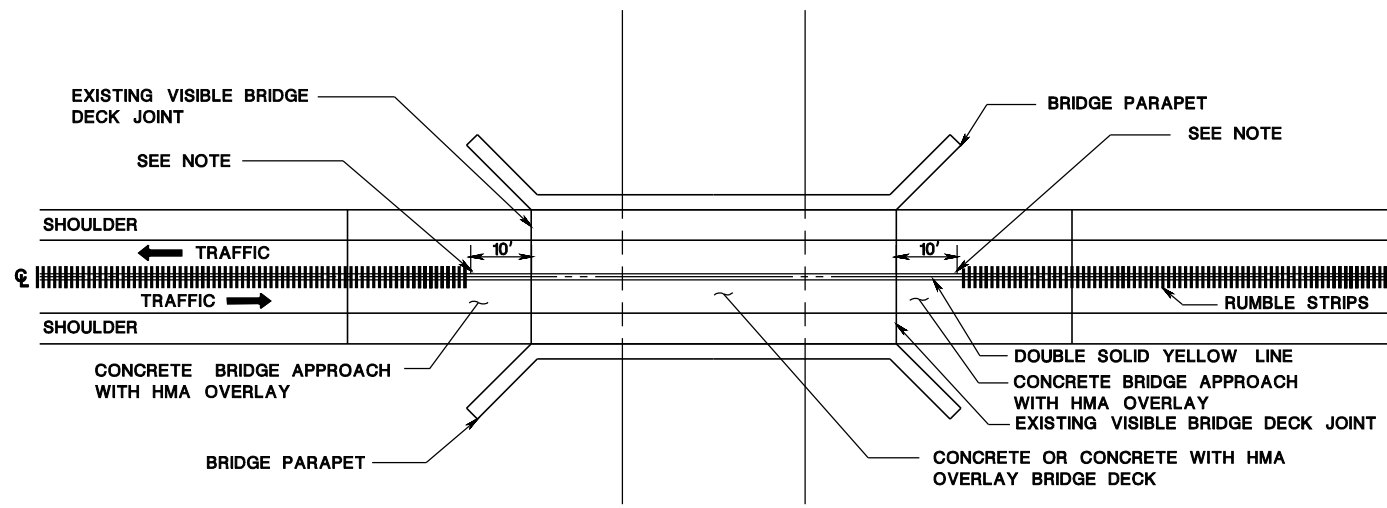
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-610-5

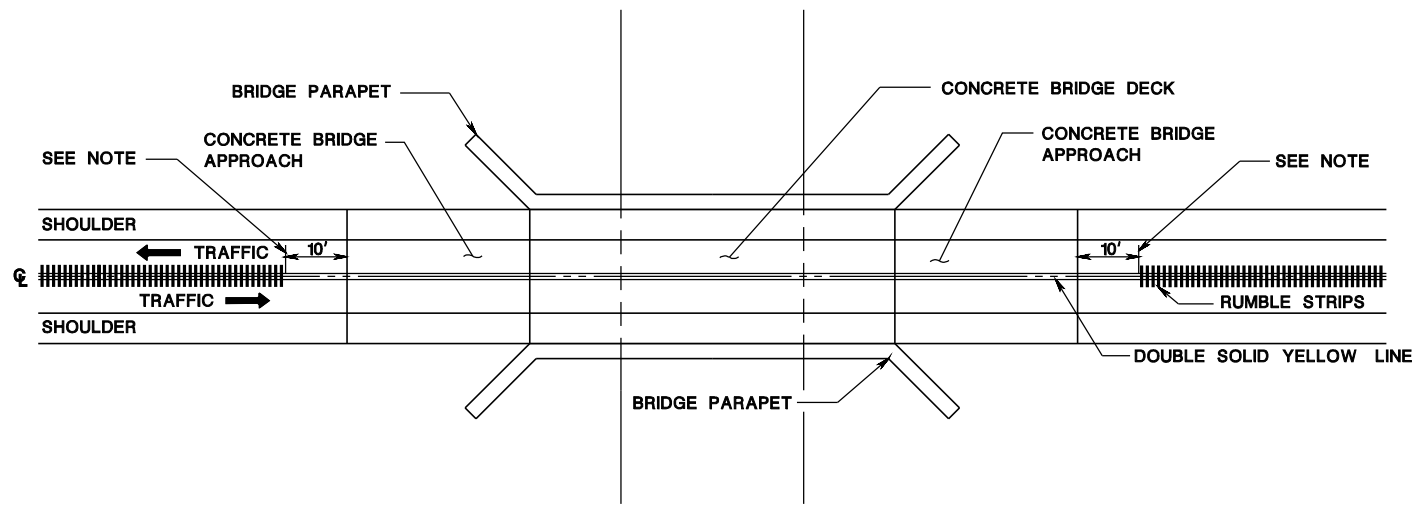
CD-610-5.1



CONCRETE BRIDGE APPROACH WITH HMA OVERLAY

NOTE:
TERMINATE CENTERLINE RUMBLE STRIPS 10 FEET FROM BRIDGE DECK JOINT.

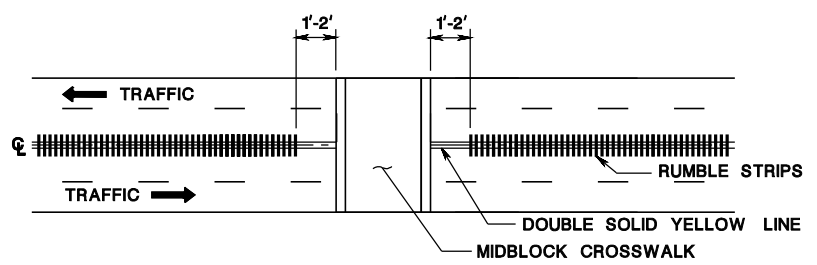
CD-610-6.1



CONCRETE BRIDGE APPROACH WITHOUT HMA OVERLAY

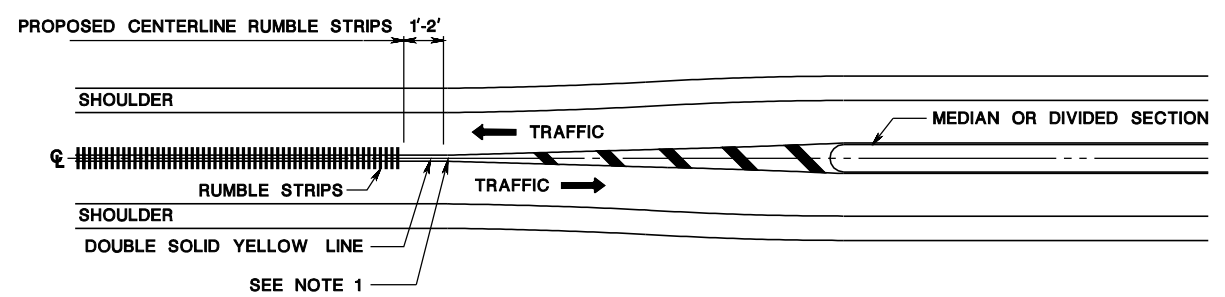
NOTE:
TERMINATE CENTERLINE RUMBLE STRIPS 10 FEET FROM CONCRETE BRIDGE APPROACH.

CD-610-6.2



MIDBLOCK CROSSWALK

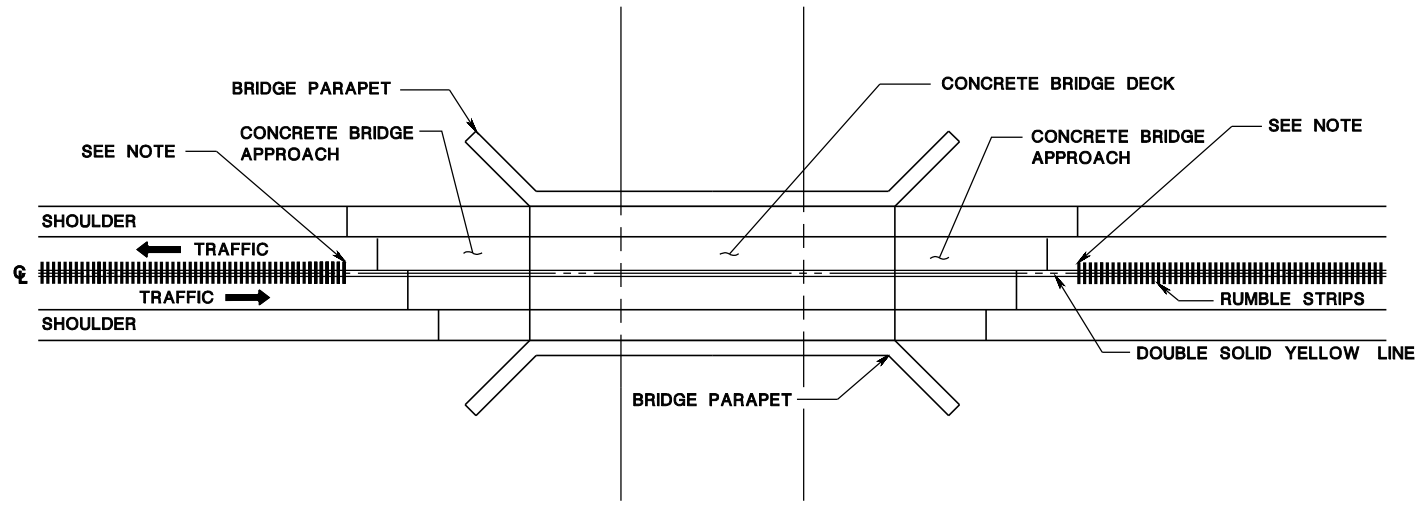
CD-610-6.4



APPROACH TO MEDIAN OR DIVIDED HIGHWAY WITH A PHYSICAL ISLAND

- NOTES:**
1. TERMINATE CENTERLINE RUMBLE STRIPS 1 FEET TO 2 FEET PRIOR TO THE BEGINNING OF YELLOW DIAGONAL CROSSHATCH MARKINGS AREA.
 2. EXISTING THERMOPLASTIC TRAFFIC MARKINGS ARE NOT TO BE DISTURBED DURING THE CONSTRUCTION OF THE CENTERLINE RUMBLE STRIPS.

CD-610-6.5



STAGGERED CONCRETE BRIDGE APPROACH

NOTE:
TERMINATE CENTERLINE RUMBLE STRIPS AT FARTHEST EDGE OF STAGGERED CONCRETE BRIDGE APPROACH.

CD-610-6.3

CENTERLINE RUMBLE STRIP

N.T.S.

CD-610-6

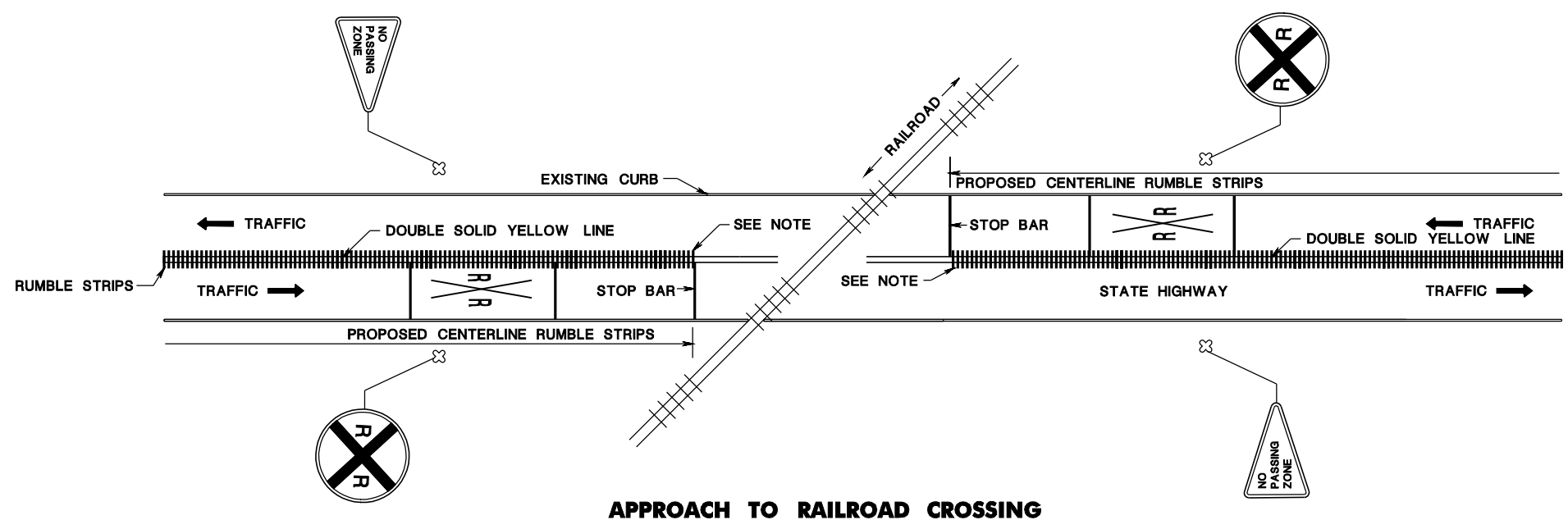
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CONSTRUCTION DETAILS

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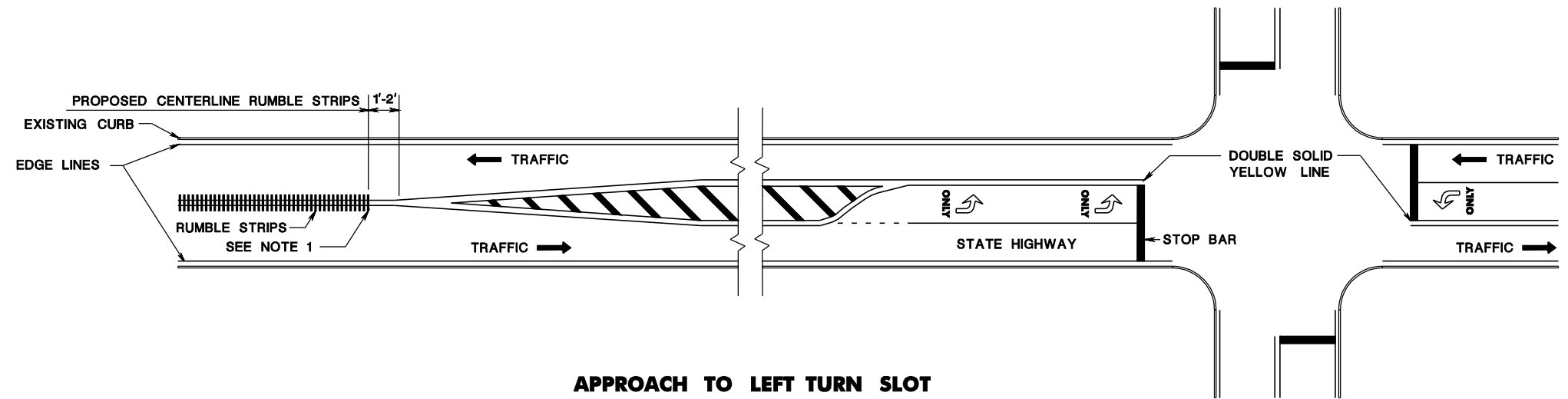
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APPROACH TO RAILROAD CROSSING

NOTE:
 TERMINATE CENTERLINE RUMBLE STRIPS AT STOP BAR.

CD-610-7.1



APPROACH TO LEFT TURN SLOT

NOTES:

1. TERMINATE CENTERLINE RUMBLE STRIPS 1 FEET TO 2 FEET PRIOR TO THE BEGINNING OF YELLOW DIAGONAL CROSSHATCH MARKINGS AREA.
2. EXISTING THERMOPLASTIC TRAFFIC MARKINGS ARE NOT TO BE DISTURBED DURING THE CONSTRUCTION OF THE CENTERLINE RUMBLE STRIPS.

CENTERLINE RUMBLE STRIP
 N.T.S.
 CD-610-7
 NEW JERSEY DEPARTMENT OF TRANSPORTATION
CONSTRUCTION DETAILS

CD-610-7.2

CRASH CUSHION COMPRESSIVE BARRIER SUMMARY TABLE

ITEM NO.	DESCRIPTION	DESIGN SPEED	ROUTE AND STATION	PRODUCT	FOUNDATION	BACKUP SYSTEM

NOTE TO DESIGNER:
THIS SHEET REQUIRES DESIGN SPECIFIC INFORMATION TO BE ADDED AND INCLUDED IN THE CONTRACT PLANS.

REMOVE THIS NOTE AFTER DESIGN SPECIFIC INFORMATION IS ADDED.

NOTE:
FOR EACH LOCATION SHOWN IN THE CRASH CUSHION COMPRESSIVE BARRIER SUMMARY TABLE, INSTALL ONE (1) OF THE CRASH CUSHIONS LISTED FOR THAT LOCATION.

CRASH CUSHION COMPRESSIVE BARRIER SUMMARY TABLE

N.T.S.

CD-611-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS



M1 - 1 [1, 2 DIGITS - 24" x 24"]
(4 S.F.)
[3 DIGITS - 30" x 24"]
(5 S.F.)

M1 - 1 (S) [1, 2 DIGITS - 36" x 36"]
(9 S.F.)
[3 DIGITS - 45" x 36"]
(11.3 S.F.)



M1 - 4 [1, 2 DIGITS - 24" x 24"]
(4 S.F.)
[3 DIGITS - 30" x 24"]
(5 S.F.)

M1 - 4 (S) [1, 2 DIGITS - 36" x 36"]
(9 S.F.)
[3 DIGITS - 45" x 36"]
(11.3 S.F.)



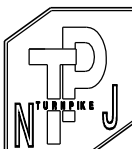
M1 - 5 [1, 2 DIGITS - 24" x 24"]
(4 S.F.)
[3 DIGITS - 30" x 24"]
(5 S.F.)

M1 - 5 (S) [1, 2 DIGITS - 36" x 36"]
(9 S.F.)
[3 DIGITS - 45" x 36"]
(11.3 S.F.)



M1 - 6 [1, 2, 3 DIGITS - 24" x 24"]
(4 S.F.)

M1 - 6 (S) [1, 2, 3 DIGITS - 36" x 36"]
(9 S.F.)



NJTP - 1 [24" x 24"]
(4 S.F.)

NJTP - 1 (S) [36" x 36"]
(9 S.F.)



M2 - 1 [21" x 15"]
(2.2 S.F.)

M2 - 1 (S) [32" x 23"]
(5.1 S.F.)



M3 - 1 [24" x 12"]
(2 S.F.)

M3 - 1 (S) [36" x 18"]
(4.5 S.F.)



M3 - 2 [24" x 12"]
(2 S.F.)

M3 - 2 (S) [36" x 18"]
(4.5 S.F.)



M3 - 3 [24" x 12"]
(2 S.F.)

M3 - 3 (S) [36" x 18"]
(4.5 S.F.)



M3 - 4 [24" x 12"]
(2 S.F.)

M3 - 4 (S) [36" x 18"]
(4.5 S.F.)



M4 - 5 [24" x 12"]
(2 S.F.)

M4 - 5 (S) [30" x 15"]
(3 S.F.)



(L or R)

M5 - 1 [21" x 15"]
(2.2 S.F.)

M5 - 1 (S) [32" x 23"]
(5.1 S.F.)



(L or R)

M5 - 2 [21" x 15"]
(2.2 S.F.)

M5 - 2 (S) [32" x 23"]
(5.1 S.F.)



(L or R)

M6 - 1 [21" x 15"]
(2.2 S.F.)

M6 - 1 (S) [32" x 23"]
(5.1 S.F.)



(L or R)

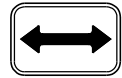
M6 - 2 [21" x 15"]
(2.2 S.F.)

M6 - 2 (S) [32" x 23"]
(5.1 S.F.)



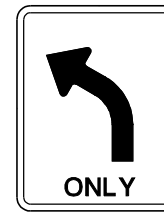
M6 - 3 [21" x 15"]
(2.2 S.F.)

M6 - 3 (S) [32" x 23"]
(5.1 S.F.)



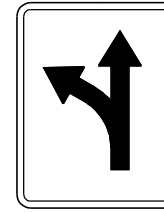
M6 - 4 [21" x 15"]
(2.2 S.F.)

M6 - 4 (S) [32" x 23"]
(5.1 S.F.)



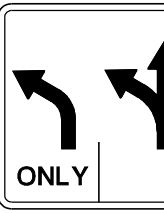
R3 - 5 [30" x 36"]
(7.5 S.F.)
OVERHEAD

R3 - 5 [30" x 30"]
(6.3 S.F.)
GROUND MOUNT

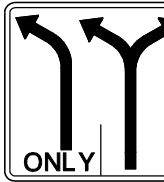


R3 - 6 [30" x 36"]
(7.5 S.F.)
OVERHEAD

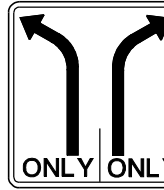
R3 - 6 [30" x 30"]
(6.3 S.F.)
GROUND MOUNT



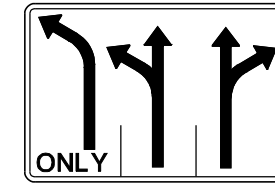
R3 - 8 [30" x 30"]
(6.3 S.F.)



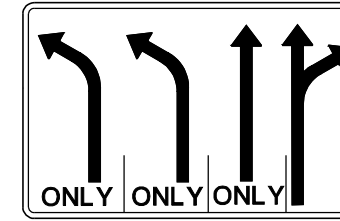
R(NJ)3 - 8A [36" x 30"]
(7.5 S.F.)



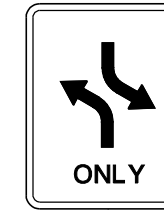
R(NJ)3 - 8B [30" x 30"]
(6.3 S.F.)



R(NJ)3 - 8C [48" x 30"]
(10 S.F.)



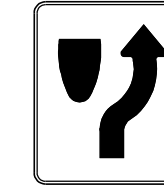
R(NJ)3 - 8D [60" x 30"]
(12.5 S.F.)



R3 - 9a [30" x 36"]
(7.5 S.F.)

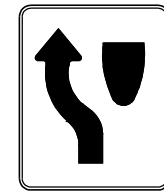


R3 - 9b [24" x 36"]
(6 S.F.)



R4 - 7 [24" x 30"]
(5 S.F.)

R4 - 7 (S) [36" x 48"]
(12 S.F.)



R4 - 8 [24" x 30"]
(5 S.F.)

R4 - 8 (S) [36" x 48"]
(12 S.F.)



GSP - 1 24" DIA.
(3.1 S.F.)

GSP - 1 (S) 36" DIA.
(7.1 S.F.)

GENERAL NOTES:

1. DIMENSIONS, COLORS, AND DETAILS OF VARIOUS SIZE SIGNS, SHIELDS, AND ACCESSORY PANELS TO FOLLOW STANDARDS IN THE CURRENT "STANDARD HIGHWAY SIGNS PUBLICATION" AND THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".
2. (S) DENOTES A SPECIAL SIZE SIGN.
3. ALL SIGNS TO BE ASTM D 4956 TYPE III SHEETING.

SIGNS
N.T.S.

CD-612-1

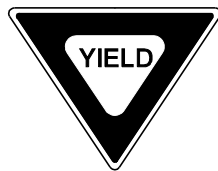
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-612-1.1



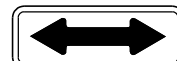
R1 - 1 [30" X 30"]
(5.5 S.F.)



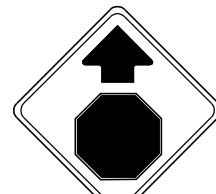
R1 - 2 [36" X 36" X 36"]
(3.9 S.F.)



(L OR R)
W1 - 1 [30" X 30"]
(6.3 S.F.)
W1 - 1 (S) [36" X 36"]
(9 S.F.)



W1 - 7 [48" X 24"]
(8 S.F.)
W1 - 7 (S) [60" X 30"]
(12.5 S.F.)



W3 - 1a [30" X 30"]
(6.3 S.F.)
W3 - 1a (S) [48" X 48"]
(16 S.F.)



R3 - 1 [24" X 24"]
(4 S.F.)

R3 - 1 (S) [30" X 30"]
(6.3 S.F.)

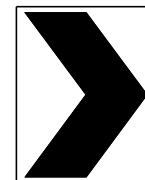


R3 - 2 [24" X 24"]
(4 S.F.)

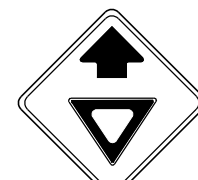
R3 - 2 (S) [30" X 30"]
(6.3 S.F.)



(L OR R)
W1 - 2 [30" X 30"]
(6.3 S.F.)
W1 - 2 (S) [36" X 36"]
(9 S.F.)



(L OR R)
W1 - 8 [18" X 24"]
(3 S.F.)
W1 - 8 (S) [24" X 30"]
(5 S.F.)



W3 - 2a [30" X 30"]
(6.3 S.F.)
W3 - 2a (S) [48" X 48"]
(16 S.F.)



R3 - 3 [24" X 24"]
(4 S.F.)

R3 - 3 (S) [30" X 30"]
(6.3 S.F.)

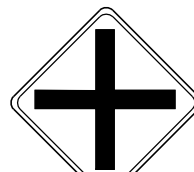


R3 - 4 [24" X 24"]
(4 S.F.)

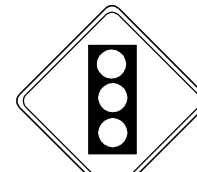
R3 - 4 (S) [30" X 30"]
(6.3 S.F.)



(L OR R)
W1 - 3 [30" X 30"]
(6.3 S.F.)
W1 - 3 (S) [36" X 36"]
(9 S.F.)



W2 - 1 [30" X 30"]
(6.3 S.F.)
W2 - 1 (S) [36" X 36"]
(9 S.F.)



W3 - 3 [36" X 36"]
(9 S.F.)
W3 - 3 (S) [48" X 48"]
(16 S.F.)



(L OR R)
R3 - 7 [30" X 30"]
(6.3 S.F.)

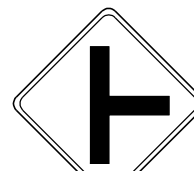


R5 - 1 [30" X 30"]
(6.3 S.F.)

R5 - 1 (S) [36" X 36"]
(9 S.F.)



(L OR R)
W1 - 4 [30" X 30"]
(6.3 S.F.)
W1 - 4 (S) [36" X 36"]
(9 S.F.)



(L OR R)
W2 - 2 [30" X 30"]
(6.3 S.F.)
W2 - 2 (S) [36" X 36"]
(9 S.F.)



W4 - 1 [36" X 36"]
(9 S.F.)
W4 - 1 (S) [48" X 48"]
(16 S.F.)
W4 - 1 (EXPWY) [36" X 36"]
(9 S.F.)



R5 - 1a [36" X 24"]
(6 S.F.)

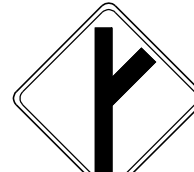
R5 - 1a (S) [30" X 18"]
(3.8 S.F.)



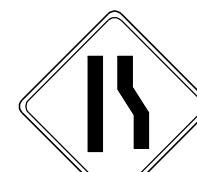
(L OR R)
R6 - 1 [36" X 12"]
(3 S.F.)



(L OR R)
W1 - 5 [30" X 30"]
(6.3 S.F.)
W1 - 5 (S) [36" X 36"]
(9 S.F.)



(L OR R)
W2 - 3 [30" X 30"]
(6.3 S.F.)
W2 - 3 (S) [36" X 36"]
(9 S.F.)



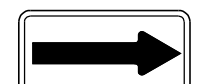
(L OR R)
W4 - 2 [36" X 36"]
(9 S.F.)
W4 - 2 (S) [48" X 48"]
(16 S.F.)



R10 - 11a [24" X 30"]
(5 S.F.)



R2 - 1 [24" X 30"]
(5 S.F.)
R2 - 1 (EXPWY) [36" X 48"]
(12 S.F.)
R2 - 1 (S) [48" X 60"]
(20 S.F.)



(L OR R)
W1 - 6 [48" X 24"]
(8 S.F.)
W1 - 6 (S) [60" X 30"]
(12.5 S.F.)



W2 - 5 [30" X 30"]
(6.3 S.F.)
W2 - 5 (S) [36" X 36"]
(9 S.F.)



(L OR R)
W4 - 3 [36" X 36"]
(9 S.F.)
W4 - 3 (S) [48" X 48"]
(16 S.F.)

GENERAL NOTES:

1. DIMENSIONS, COLORS, AND DETAILS OF VARIOUS SIZE SIGNS, SHIELDS, AND ACCESSORY PANELS TO FOLLOW STANDARDS IN THE CURRENT "STANDARD HIGHWAY SIGNS PUBLICATION" AND THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".
2. (S) DENOTES A SPECIAL SIZE SIGN.
3. ALL SIGNS TO BE ASTM D 4956 TYPE III SHEETING.

SIGNS

N.T.S.

CD-612-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-612-2.1

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 ID=TP2VLL
 BDC:RD-01-ORIGINAL SHEET



W5 - 1 [36" x 36"]
(9 S.F.)
W5 - 1 (S) [48" x 48"]
(16 S.F.)



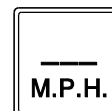
W6 - 1 [36" x 36"]
(9 S.F.)
W6 - 1 (S) [48" x 48"]
(16 S.F.)



W8 - 5 [30" x 30"]
(6.3 S.F.)
W8 - 5 (S) [36" x 36"]
(9 S.F.)



W10 - 1 [36" DIA.]
(7.1 S.F.)



W13 - 1 [18" x 18"]
(2.3 S.F.)
W13 - 1 (S) [24" x 24"]
(4 S.F.)



W14 - 1 [30" x 30"]
(6.3 S.F.)
W14 - 1 (S) [36" x 36"]
(9 S.F.)



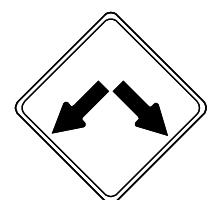
W5 - 2 [30" x 30"]
(6.3 S.F.)
W5 - 2 (S) [36" x 36"]
(9 S.F.)



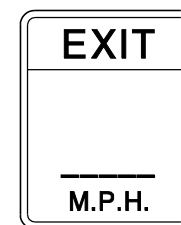
W6 - 2 [36" x 36"]
(9 S.F.)
W6 - 2 (S) [48" x 48"]
(16 S.F.)



(L OR R)
W9 - 1 [36" x 36"]
(9 S.F.)
W9 - 1 (S) [48" x 48"]
(16 S.F.)



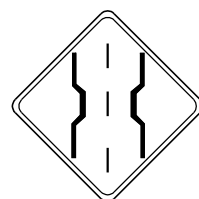
W12 - 1 [24" x 24"]
(4 S.F.)
W12 - 1 (S) [30" x 30"]
(6.3 S.F.)



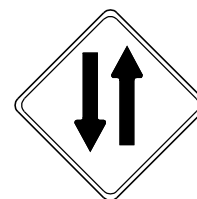
W13 - 2 [48" x 60"]
(20 S.F.)
W13 - 2 (EXPWY) [36" x 48"]
(12 S.F.)
W13 - 2 (S) [24" x 30"]
(5 S.F.)



W14 - 2 [30" x 30"]
(6.3 S.F.)
W14 - 2 (S) [36" x 36"]
(9 S.F.)



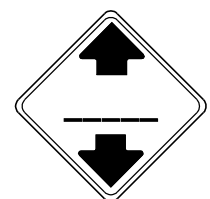
W5 - 2a [30" x 30"]
(6.3 S.F.)
W5 - 2a (S) [36" x 36"]
(9 S.F.)



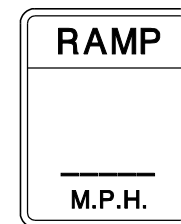
W6 - 3 [30" x 30"]
(6.3 S.F.)
W6 - 3 (S) [36" x 36"]
(9 S.F.)



(L OR R)
W9 - 2 [36" x 36"]
(9 S.F.)
W9 - 2 (S) [48" x 48"]
(16 S.F.)



W12 - 2 [36" x 36"]
(9 S.F.)
W12 - 2 (S) [48" x 48"]
(16 S.F.)



W13 - 3 [48" x 60"]
(20 S.F.)
W13 - 3 (EXPWY) [36" x 48"]
(12 S.F.)
W13 - 3 (S) [24" x 30"]
(5 S.F.)



W14 - 3 [36" x 48" x 48"]
(6 S.F.)
W14 - 3 (S) [48" x 64" x 64"]
(10.7 S.F.)

GENERAL NOTES:

1. DIMENSIONS, COLORS, AND DETAILS OF VARIOUS SIZE SIGNS, SHIELDS, AND ACCESSORY PANELS TO FOLLOW STANDARDS IN THE CURRENT "STANDARD HIGHWAY SIGNS PUBLICATION" AND THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".
2. (S) DENOTES A SPECIAL SIZE SIGN.
3. ALL SIGNS TO BE ASTM D 4956 TYPE III SHEETING.

SIGNS
N.T.S.

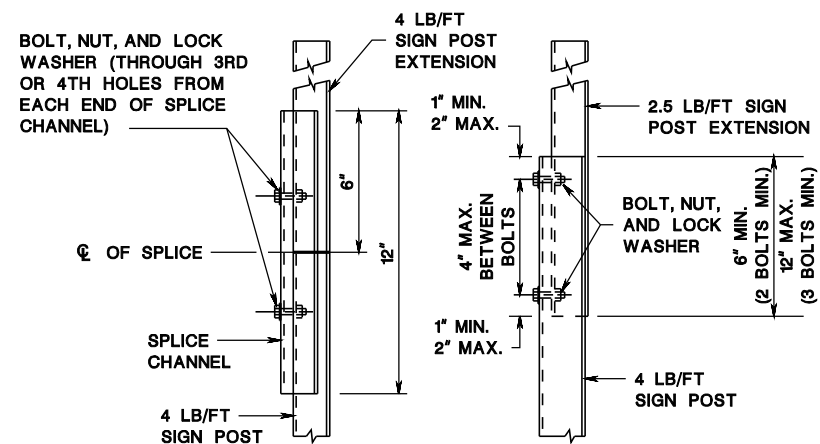
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

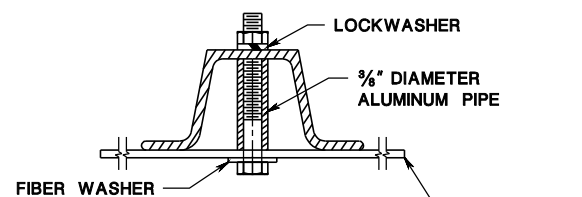
CD-612-3.1

CD-612-3

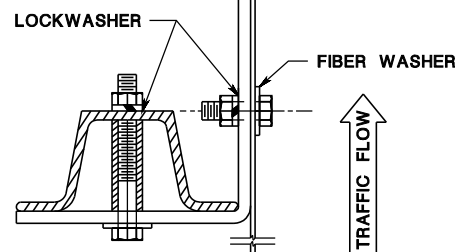
pen table= \\NDOT\PT\Projects\NDOT\Projects\Projects\NDOT\T&E\T&E\Roadway\Details_13cd7.tbl
scale= 63.073306:1.000000
date= 28-SEP-2016 11:10
ID= TP2VLL
file=



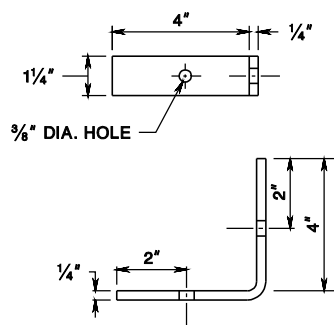
**SIGN POST EXTENSION
SPLICE DETAILS**



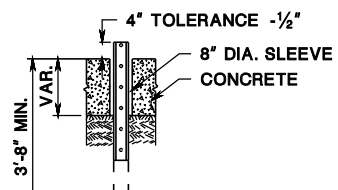
FRONT MOUNT BRACKET



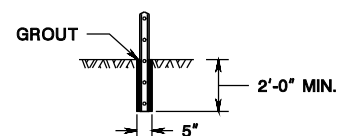
SIDE MOUNT BRACKET



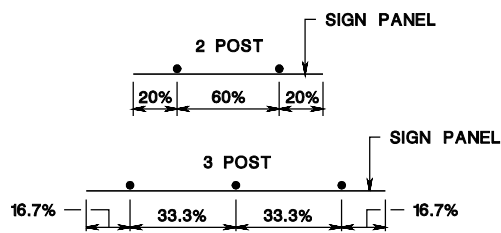
**DETAIL OF BRACKET
FOR SIDE MOUNTED SIGNS**



**CONCRETE
INSTALLATION**



**ROCK
INSTALLATION**

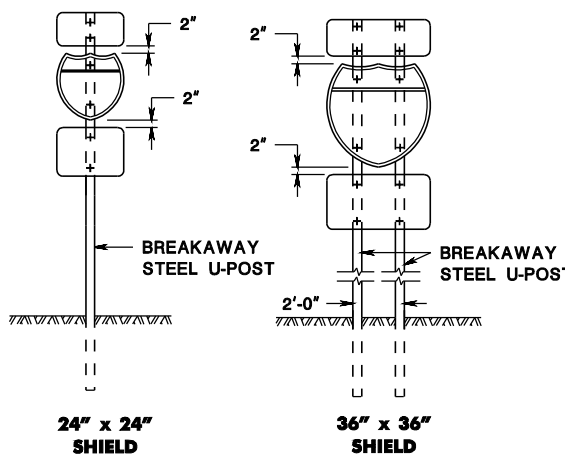


STEEL U-POST SPACING

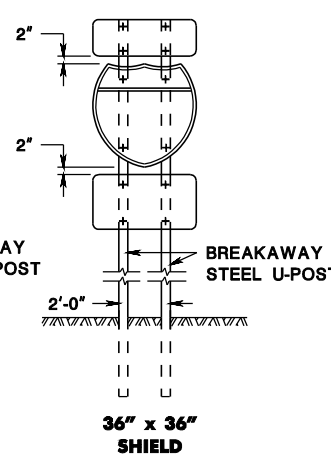
PANEL SIZE (W x H)	# OF POSTS	POST SIZE (LB/FT)
18" x 18"	1	2.5
18" x 24"	1	2.5
24" x 24"	1	2.5
24" x 30"	1	2.5
24" x 36"	1	2.5
30" x 24"	1	2.5
30" x 30"	1	2.5
36" x 12"	2	2.5
36" x 36" x 36"	2	2.5
30" x 36"	1	4.0

PANEL SIZE (W x H)	# OF POSTS	POST SIZE (LB/FT)
36" x 36"	2	2.5
36" x 48"	2	2.5
45" x 36"	2	2.5
48" x 24"	2	2.5
48" x 36"	2	2.5
48" x 48"	2	4.0
48" x 64" x 64"	2	2.5
60" x 36"	2	4.0
48" x 60"	2	4.0
60" x 30"	2	4.0

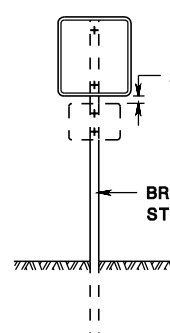
**U-POST SELECTION TABLE
BREAKAWAY SIGN SUPPORT**



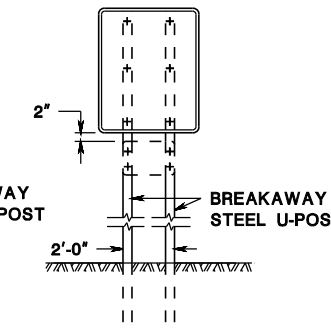
24" x 24" SHIELD



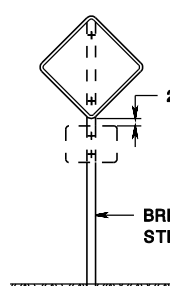
36" x 36" SHIELD



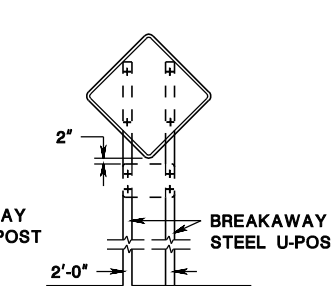
30" x 30" OR SMALLER



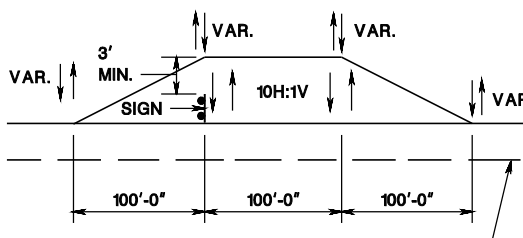
36" x 36" OR LARGER



30" x 30" OR SMALLER



36" x 36" OR LARGER



STEEL U-POST GRADING DETAIL

GENERAL NOTES:

- ALL POSTS TO BE OF ADEQUATE LENGTH TO MEET THE REQUIREMENTS FOR ERECTION AS STATED IN THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND AS INDICATED BELOW.
- ALL SMALL SIGN SUPPORTS TO BE OF THE BREAKAWAY TYPE WITH EXCEPTION OF THOSE INSTALLED BEHIND GUIDE RAIL OR OTHER ROADSIDE BARRIER.
- ALL STEEL POSTS AND BRACKETS TO BE CUT, BENT, AND HOLES PUNCHED AND DRILLED BEFORE GALVANIZING. GALVANIZING TO BE ACCORDING TO ASTM A123.
- ALL STEEL U-POST SIGN SUPPORTS MUST BE INSTALLED FACING THE PREDOMINANT TRAFFIC FLOW. USE A MOUNTING BRACKET ON SIDE MOUNTED SIGNS SUCH AS "ONE WAY" SIGNS INSTALLED IN MEDIANS.
- SIGN PANEL SIZES ARE TO DETERMINE POST TYPE AND NUMBER AS SHOWN ON THIS DETAIL.
- BOLTS ARE NOT TO PROTRUDE MORE THAN 3/4" BEYOND THE NUT WHEN TIGHT, BUT ARE TO ENGAGE ALL THREADS IN THE NUT.
- WHEN SIGNS ARE INSTALLED ON SLOPES 10H:1V OR FLATTER, THE MINIMUM VERTICAL CLEARANCE REQUIREMENTS FOR SIGNS ARE:

FOR SINGLE POST INSTALLATIONS - THE MINIMUM DISTANCE BETWEEN THE EDGE OF THE PAVEMENT AND THE BOTTOM OF ANY PANEL MUST BE 7 FEET, AND THE MINIMUM DISTANCE FROM EDGE OF PAVEMENT TO THE TOP OF ANY SIGN PANEL MUST BE 9 FEET.

FOR MULTI-POST INSTALLATIONS - THE MINIMUM DISTANCE BETWEEN THE EDGE OF PAVEMENT AND THE BOTTOM OF A MAIN SIGN PANEL MUST BE 7 FEET.

SECONDARY SIGN PANELS (LAND SERVICE HIGHWAYS) - THE MINIMUM DISTANCE BETWEEN THE EDGE OF PAVEMENT AND THE BOTTOM OF A SECONDARY SIGN PANEL IS 6 FEET.

SECONDARY SIGN PANELS (INTERSTATE AND FREEWAYS) - THE BOTTOM OF THE MAIN SIGN TO BE A MINIMUM OF 8 FEET AND THE SECONDARY SIGN PANEL A MINIMUM OF 5 FEET ABOVE THE EDGE OF PAVEMENT.

WHERE GRADING OF 10H:1V OR FLATTER CANNOT BE OBTAINED, OR WHERE CURB OR BERM IS GREATER THAN 4 INCHES, THE MINIMUM VERTICAL CLEARANCE WILL BE MEASURED FROM THE GROUND LINE TO THE BOTTOM OF THE SIGN.
- THE HORIZONTAL OFFSET FROM EDGE OF PAVEMENT TO EDGE OF SIGN IS DERIVED FROM SECTION 2A.19 OF THE MUTCD AS FOLLOWS:

FOR URBAN INSTALLATIONS - IN AREAS WHERE LATERAL OFFSETS ARE LIMITED, A MINIMUM LATERAL OFFSET OF 2 FEET IS DESIRABLE. A MINIMUM OFFSET OF 1 FOOT FROM THE FACE OF THE CURB MAY BE USED IN AREAS WHERE THE SIDEWALK WIDTH IS LIMITED OR WHERE EXISTING POLES ARE CLOSE TO THE CURB.

FOR RURAL INSTALLATIONS - 6 FEET MINIMUM DESIRABLE FROM EDGE OF SHOULDER, BUT 12 FEET MINIMUM DESIRABLE FROM EDGE OF TRAFFIC OR AUXILIARY LANE.

FOR INTERSTATE AND FREEWAY INSTALLATIONS - 6 FEET MINIMUM DESIRABLE FROM EDGE OF SHOULDER, BUT NOT LESS THAN 12 FEET FROM THE EDGE OF TRAFFIC OR AUXILIARY LANE.

FOR RAMP INSTALLATIONS - 6 FEET MINIMUM FROM EDGE OF ROAD.

WHERE BEHIND GUIDE RAIL - 4 FEET MINIMUM FROM BACK OF BEAM GUIDE RAIL ELEMENT TO SIGN POST.
- DO NOT INSTALL PERMANENT SIGN SUPPORTS ON SLOPES GREATER THAN 10H:1V, EXCEPT WHERE GRADING OF 10H:1V CANNOT BE OBTAINED OR THE SIGN SUPPORTS WILL BE BEHIND A TRAFFIC BARRIER. THE SLOPE IS TO EXTEND A MINIMUM OF 3 FEET BEYOND THE OUTSIDE EDGE OF SIGN (SEE GRADING DETAIL FOR SLOPE TREATMENT).
- EXTRUDED ALUMINUM SIGN PANELS ARE NOT PERMITTED FOR USE WITH STEEL U-POST SIGN SUPPORTS.
- DO NOT PLACE STEEL U-POST SIGN SUPPORTS IN FRONT OF GUIDE RAIL AND THE POSTS MUST NOT STRADDLE GUIDE RAIL.
- TO EXTEND THE HEIGHT OF A SIGN POST, A MAXIMUM OF ONE SPLICE MAY BE MADE AND MUST BE A MINIMUM OF 9 FEET FROM THE GROUNDLINE TO CENTER LINE OF SPLICE.

**STEEL U-POST SIGN
SUPPORTS**

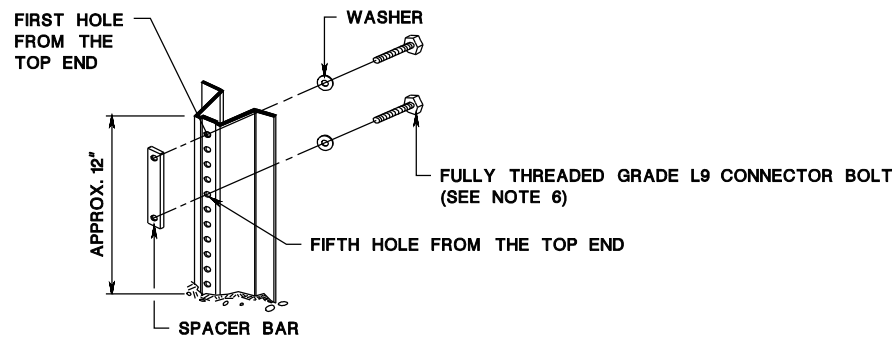
N.T.S.

CD-612-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

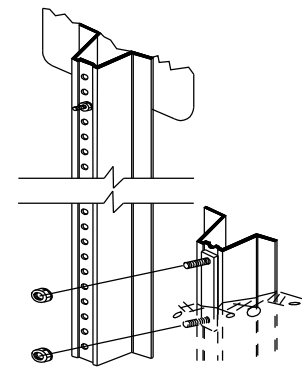
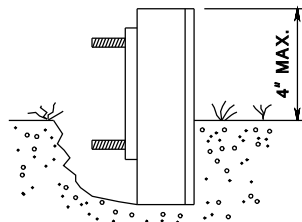
CONSTRUCTION DETAILS

CD-612-4.1

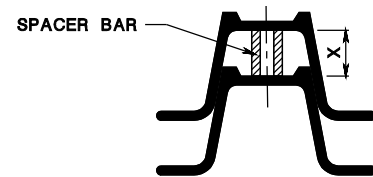
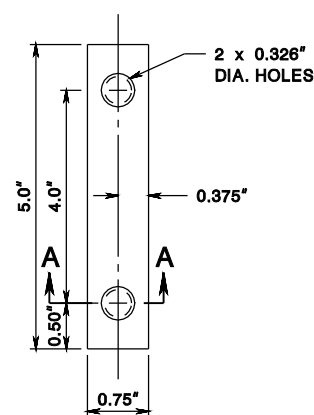


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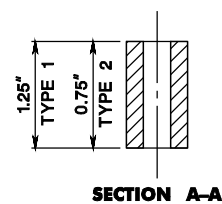
1. DRIVE ANCHOR POST ASSEMBLY TO WITHIN APPROXIMATELY 12 INCHES ABOVE GROUND LEVEL. PLACE BOLT AND WASHER IN FIRST AND FIFTH HOLES FROM THE TOP END, AND SECURE BOLTS ONTO SPACER.
2. DRIVE ANCHOR POST ASSEMBLY TO WITHIN A MAXIMUM OF 4 INCHES ABOVE GROUND LEVEL.
3. DIG OUT AROUND BACK OF ANCHOR POST ASSEMBLY TO ALLOW ROOM FOR TOP POST TO BE ATTACHED.
4. NEST TOP POST ASSEMBLY ONTO PROTRUDING ANCHOR POST ASSEMBLY BOLTS, THROUGH THE FIRST AND FIFTH HOLES FROM THE BOTTOM OF THE TOP POST.
5. PLACE AND TIGHTEN A SELF-LOCKING FLANGE NUT ON EACH BOLT. WHEN INSTALLATION IS COMPLETE, TOP OF GROUND POST NOT TO EXCEED 4 INCHES ABOVE GROUND LEVEL.
6. SIZE OF CONNECTOR BOLT FOR TYPE 1, $\frac{5}{16}$ " x $1\frac{1}{2}$ "
SIZE OF CONNECTOR BOLT FOR TYPE 2, $\frac{3}{16}$ " x 2"
7. THE CONNECTOR BOLTS ARE TO BE FULLY THREADED. EACH CONNECTOR BOLT AND NUT TO BE CLEARLY STAMPED WITH MANUFACTURER'S IDENTIFYING MARK.



ANCHOR POST ASSEMBLY SIGN SUPPORTS



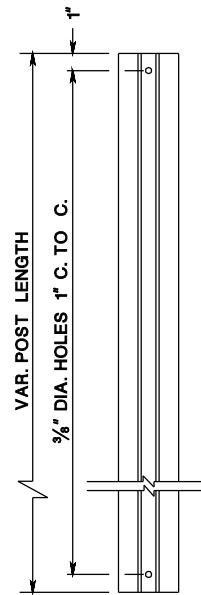
WHEN X IS GREATER THAN 0.75", USE TYPE 1 SPACER BAR
WHEN X IS 0.75" OR LESS, USE TYPE 2 SPACER BAR



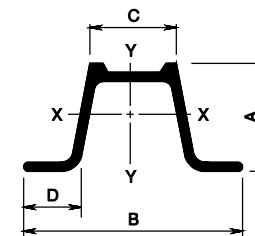
SPACER BAR

WEIGHT * LBS./FT.	DIMENSIONS (IN)				AREA IN. ²	X-X AXIS **		Y-Y AXIS	
	"A"	"B"	"C"	"D"		I(IN. ⁴)	S(IN. ³)	I(IN. ⁴)	S(IN. ³)
2.50	1.516	3.062	1.278	0.669	0.760	0.228	0.313	0.539	0.352
4.00	1.968	3.500	1.336	0.834	1.187	0.611	0.707	1.161	0.664

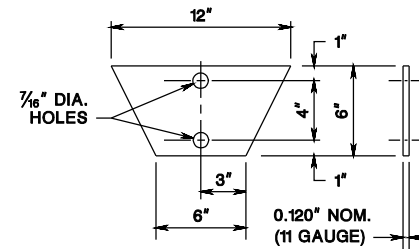
* ± 5% **TYPE 1 STEEL U-POST PROPERTIES**
** GOVERNING SECTION



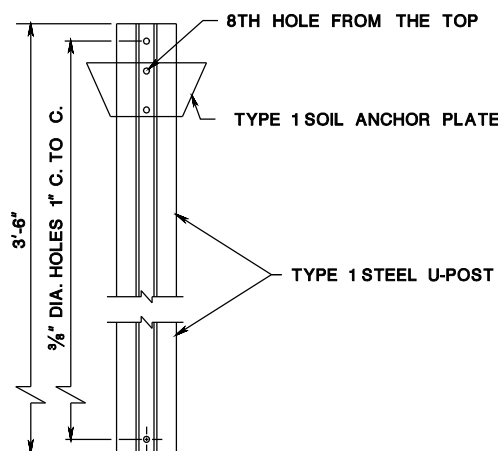
TOP POST U-POST



TYPE 1 STEEL U-POST



TYPE 1 SOIL ANCHOR PLATE



TYPE 1 ANCHOR POST ASSEMBLY

NOTES:

1. ANCHOR POST AND TOP POST TO BE OF EQUAL WEIGHT / FEET.
2. SOIL ANCHOR PLATE TO BE ATTACHED TO ALL ANCHOR POSTS.
3. THE MATERIAL FOR THE SOIL ANCHOR PLATES TO BE CARBON SHEET STEEL.
4. THE STEEL "U" POST TO BE GRADE 60.

STEEL U-POST SIGN SUPPORTS

N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-612-5

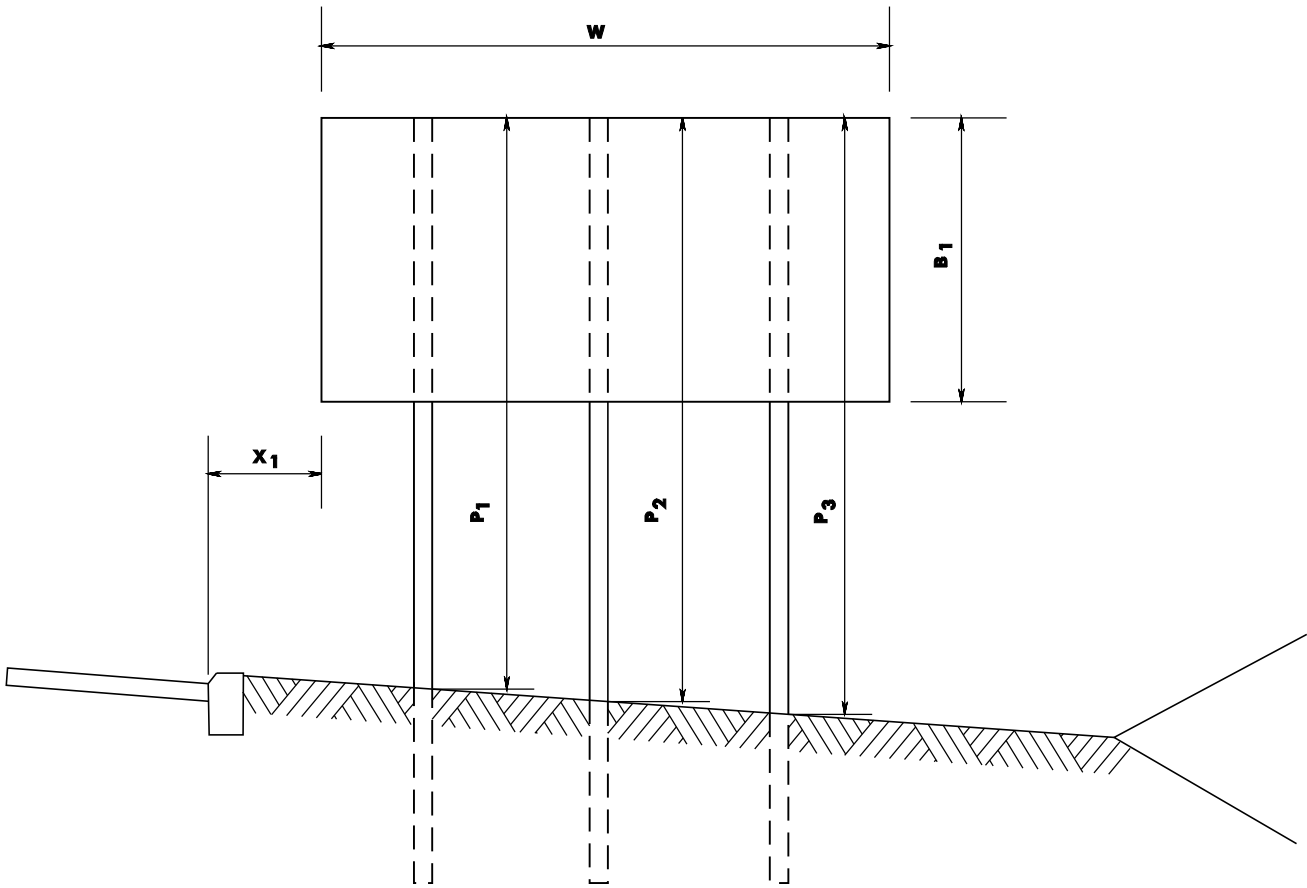
CD-612-5.2

CD-612-5.1

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BDC60-01-ORIGINAL SHEET

STEEL U-POST SIGN SUPPORT DATA TABLE									
IDENTIFICATION		OFFSET (FT.)	PANEL SIZE (IN.)		NO. OF POSTS	POST HEIGHT (IN.)			POST SIZE (LBS./FT.)
NO.	STATION	X ₁	W	B ₁		P ₁	P ₂	P ₃	



STEEL U-POST SIGN SUPPORTS

N.T.S.

CD-612-6

NEW JERSEY DEPARTMENT OF TRANSPORTATION

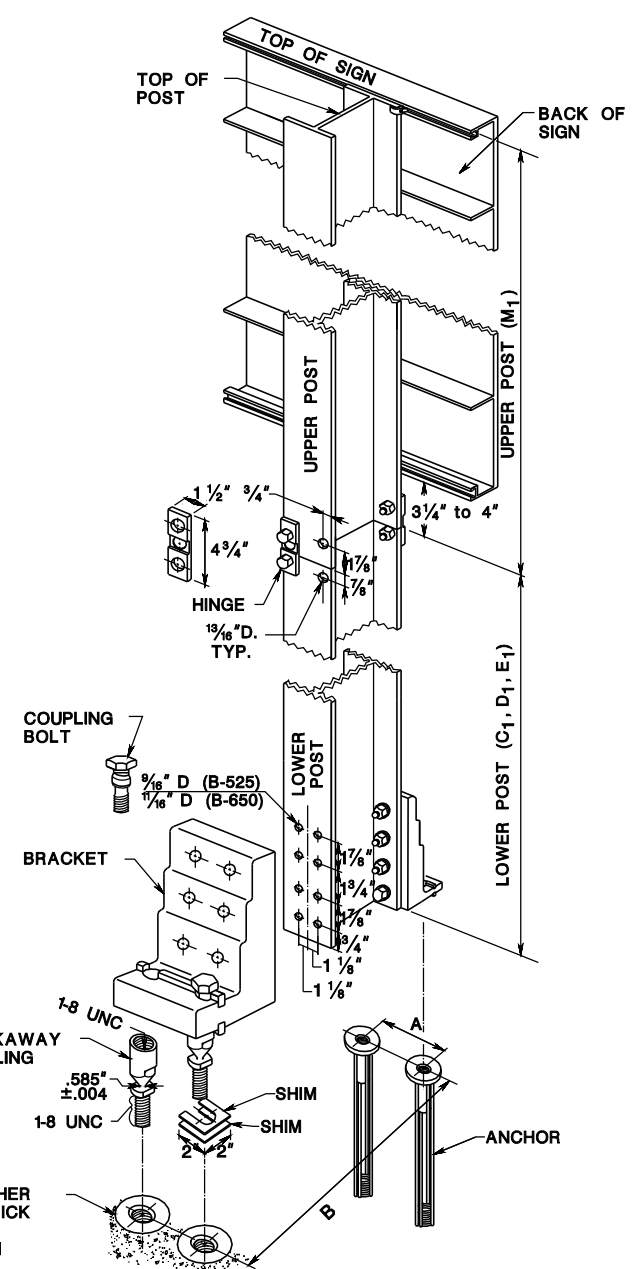
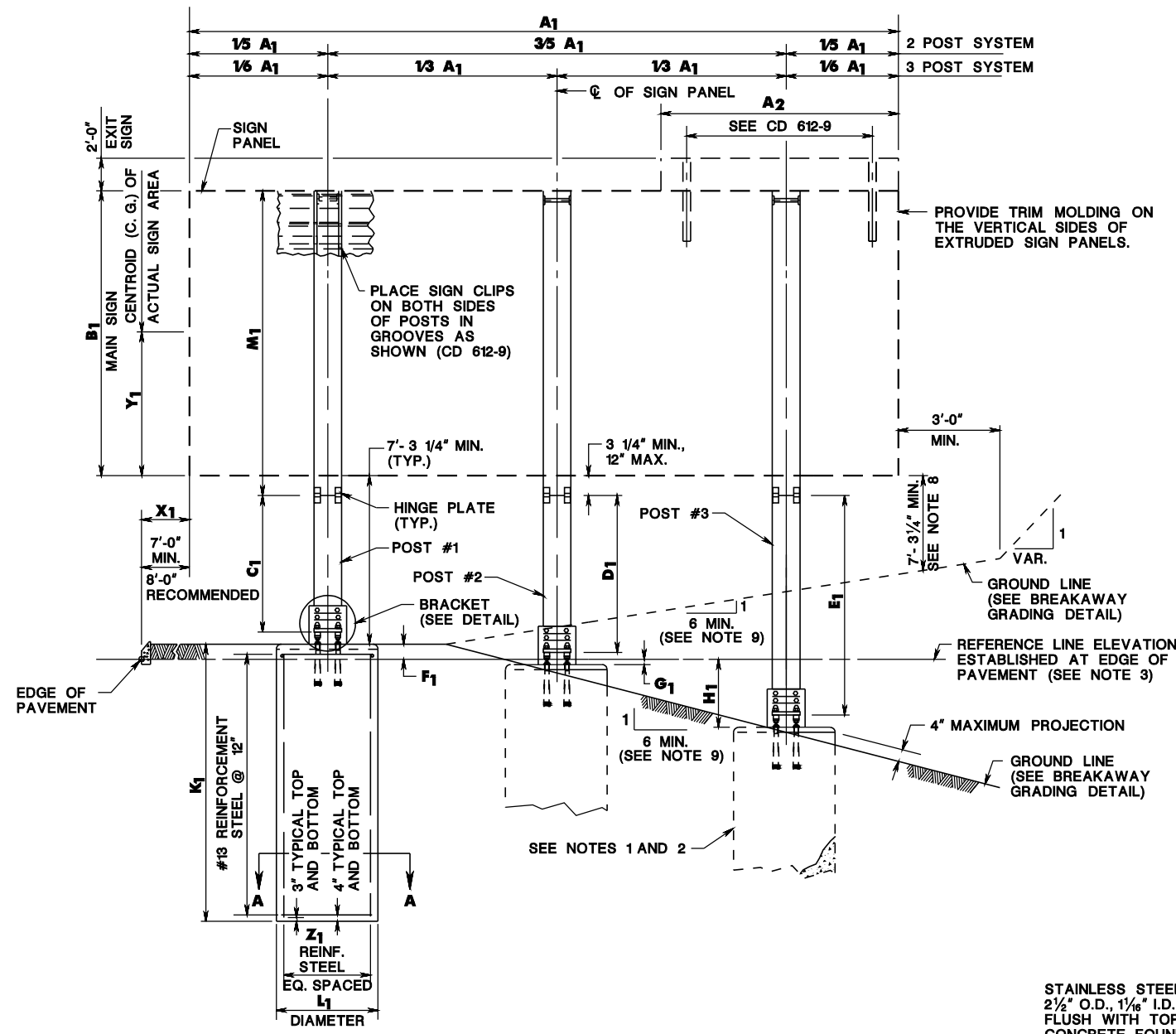
CONSTRUCTION DETAILS

NOTE TO DESIGNER:
 THIS SHEET REQUIRES DESIGN SPECIFIC INFORMATION TO BE ADDED AND INCLUDED IN THE CONTRACT PLANS.

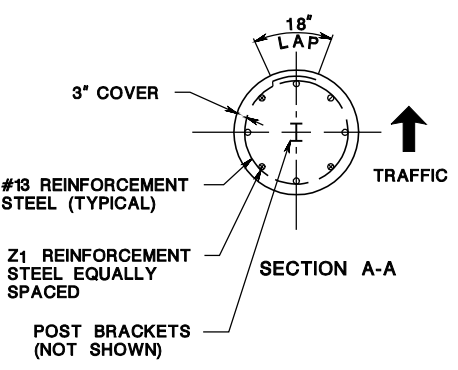
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CD-612-6.1

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BDCBD-07-ORIGINAL SHEET



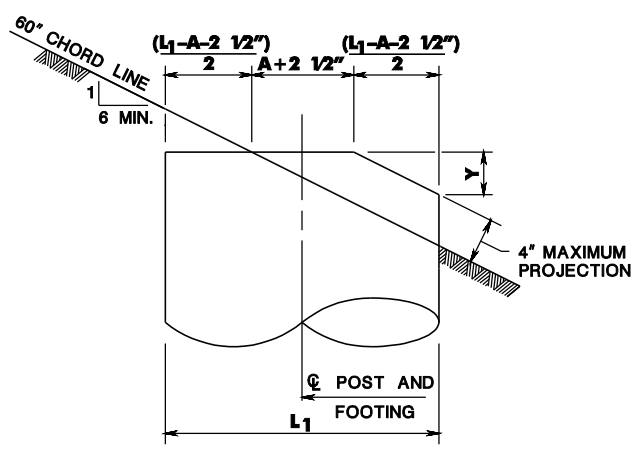
- GENERAL NOTES:**
- USE CLASS B CONCRETE IN ALL FOOTINGS, AS SPECIFIED IN SECTION 903 OF THE STANDARD SPECIFICATIONS.
 - PLACE ALL FOOTINGS AGAINST UNDISTURBED EARTH, EXCEPT FOR FOOTING TOPS WHICH ARE TO BE FORMED TO A DEPTH OF 3 INCHES BELOW GROUND LINE.
 - TOPS OF FOOTINGS ABOVE REFERENCE LINE ARE INDICATED BY PLUS (+) VALUE AND BELOW BY MINUS (-) VALUE.
 - UNUSUAL FOUNDATION CONDITIONS MAY REQUIRE REDESIGNING OF FOOTINGS AND SUCH CONDITIONS ARE TO BE BROUGHT TO THE ATTENTION OF THE RE.
 - FOR Z₁, L₁, & K₁, REFER TO CD-612-10 "SIGN SUPPORT DATA TABLE".
 - USE GALVANIZED POSTS.
 - BREAKAWAY GRADING DETAIL, FOOTING / STUB PROJECTION DETAIL, AND FOOTING BEVEL DETAIL, DO NOT APPLY TO SIGNS BEHIND GUIDE RAIL OR BEYOND THE CLEAR ZONE.
 - SIGN UNDERCLEARANCE AT FAR END OF SIGN IS 1 FOOT MINIMUM WHEN SIGN IS BEHIND GUIDE RAIL OR BEYOND THE CLEAR ZONE.
 - BACK SLOPE MAY BE 2H:1V MAXIMUM WHEN SIGN IS BEHIND GUIDE RAIL OR BEYOND CLEAR ZONE.



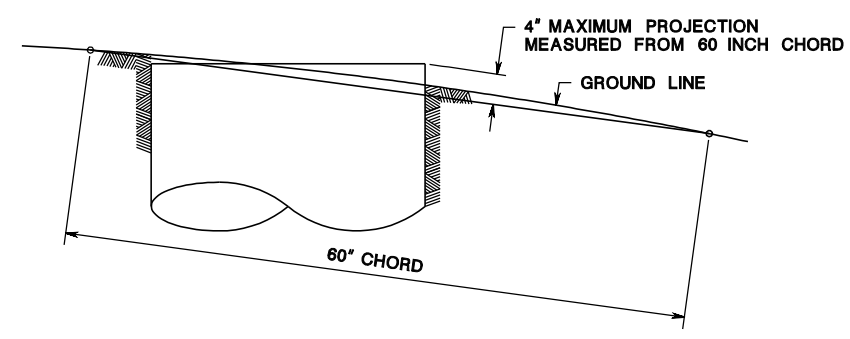
ANCHOR SPACING

A	(MODEL B525) = 3"
A	(MODEL B650) = 4"
B	(BRACKET No. 1) = DEPTH OF POST + 7 1/8"
B	(BRACKET No. 2) = DEPTH OF POST + 8 1/8"
B	(BRACKET No. 3) = DEPTH OF POST + 8 1/8"

NOTE:
REINFORCEMENT STEEL IS IN METRIC UNITS

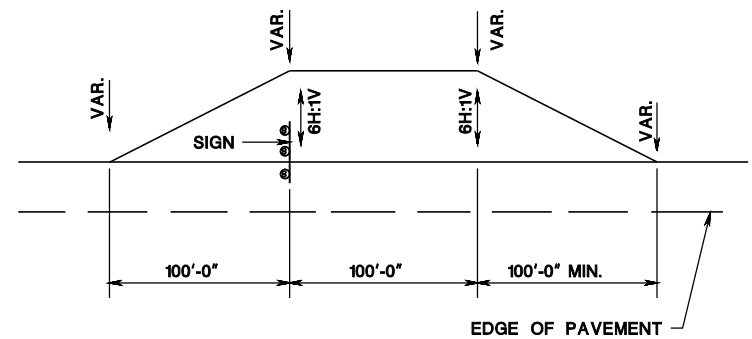


FOOTING BEVEL DETAIL (SEE NOTE 7)



FOOTING / STUB PROJECTION DETAIL (SEE NOTE 7)

BREAKAWAY COUPLING AND HINGE PLATE ASSEMBLY (TYPICAL)



BREAKAWAY GRADING DETAIL (SEE NOTE 7) (PLAN VIEW)

BREAKAWAY SIGN SUPPORTS FOR GROUND MOUNTED SIGNS

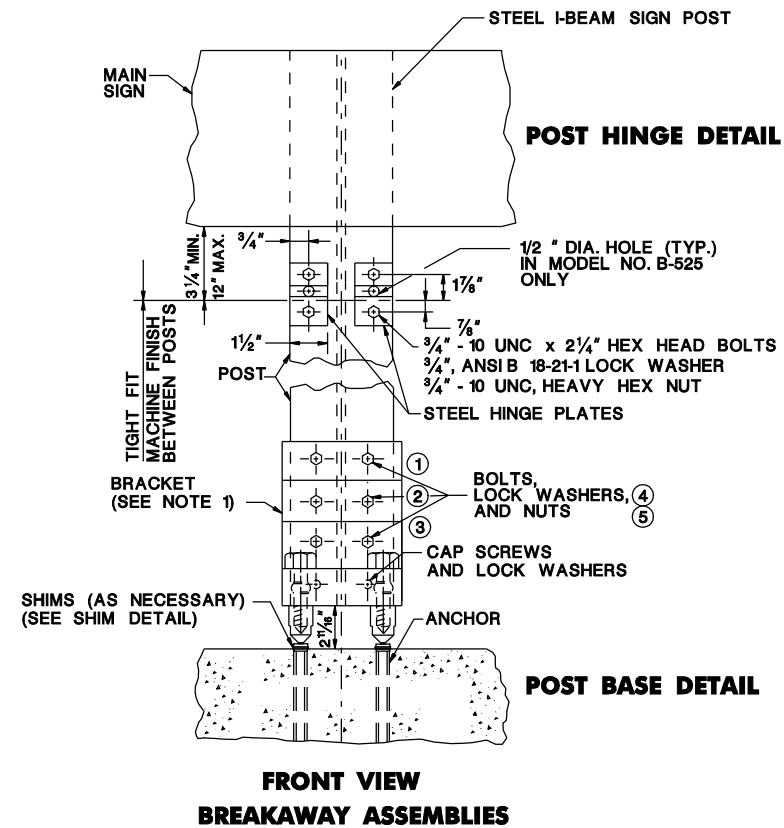
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

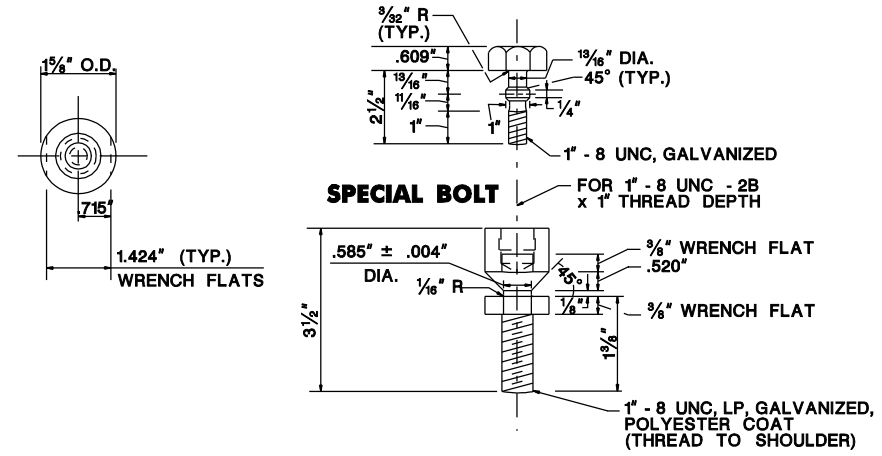
CONSTRUCTION DETAILS

CD-612-7.1

CD-612-7



SPECIAL BOLT, ANCHOR AND COUPLING DETAIL



NOTES:

1. STAMP THE BRACKET NUMBER ON THE BRACKET.
2. BOLT THE BRACKETS TO POST. THEN PLACE POST AND CONNECTED BRACKET TO BREAKAWAY COUPLING.
3. ALL BOLTS TO BE TIGHTENED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
4. DESIGNATION B-525 IS FOR 6\"/>

BOLTS, LOCK WASHERS, NUTS, & CAP SCREWS

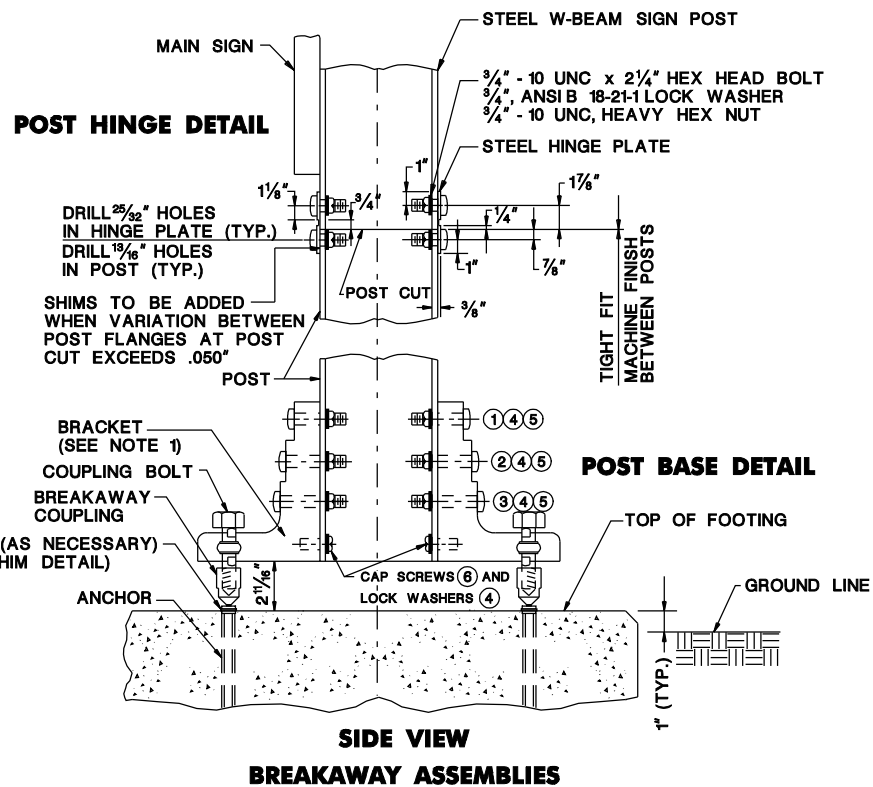
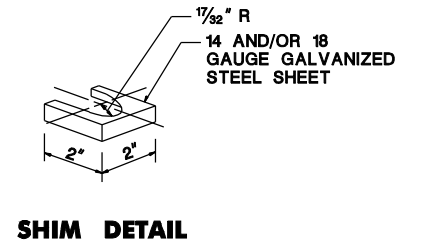
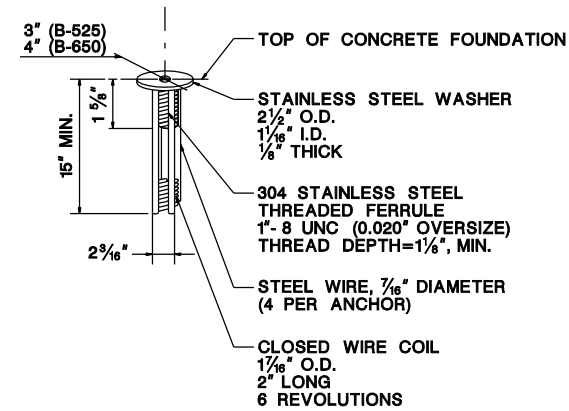
MODEL 525

- ① 1/2\"/>

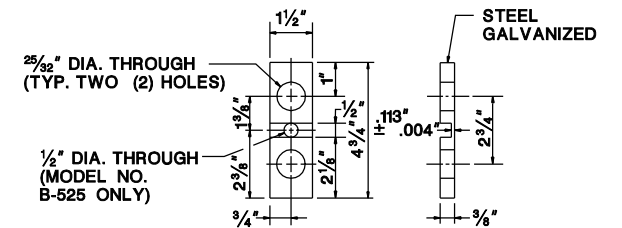
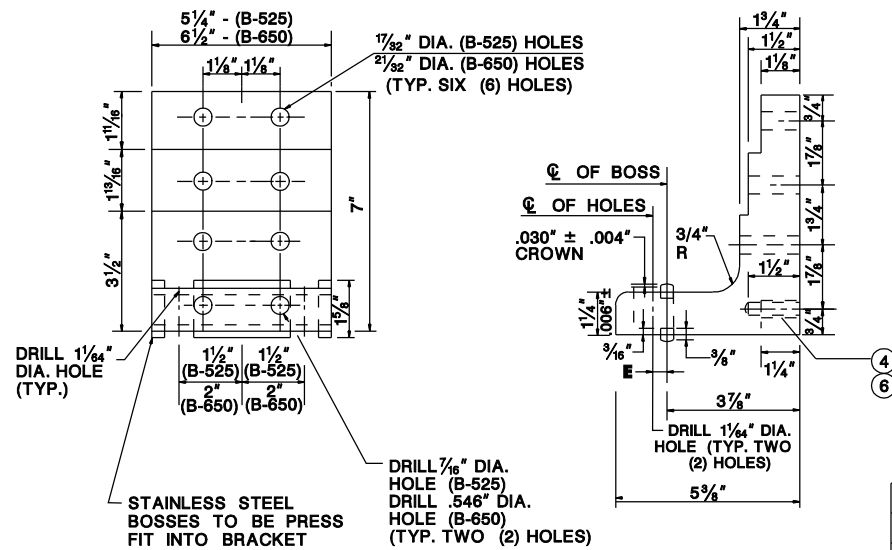
MODEL 650

- ① 5/8\"/>

COUPLING



ANCHOR



BREAKAWAY SIGN SUPPORTS FOR GROUND MOUNTED SIGNS

N.T.S.

BRACKET No.	E (IN.)
1	0.100
2	0.150
3	0.200

SEE NOTE 7.

FRONT VIEW

SIDE VIEW

BRACKET DETAIL

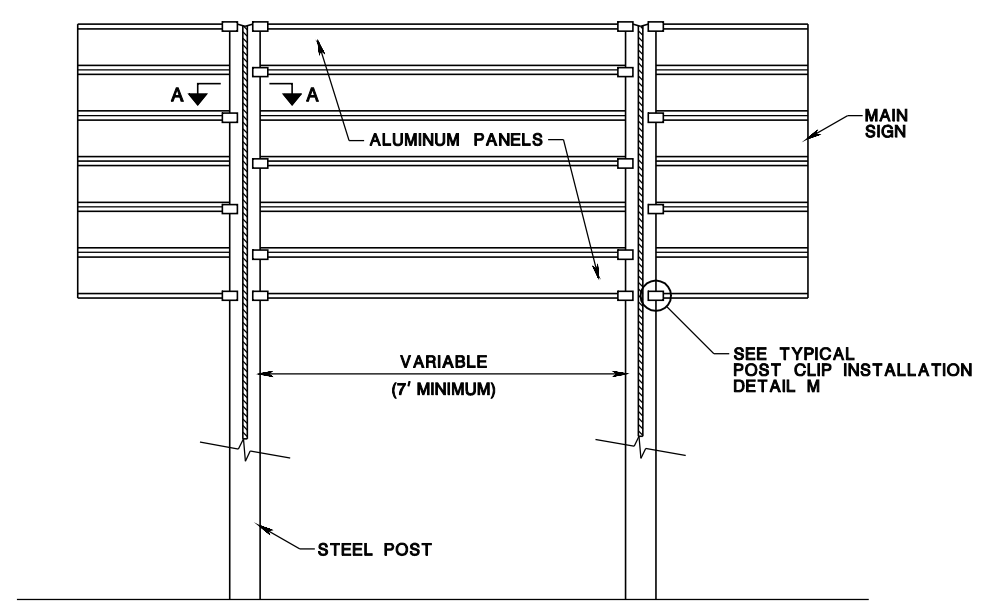
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

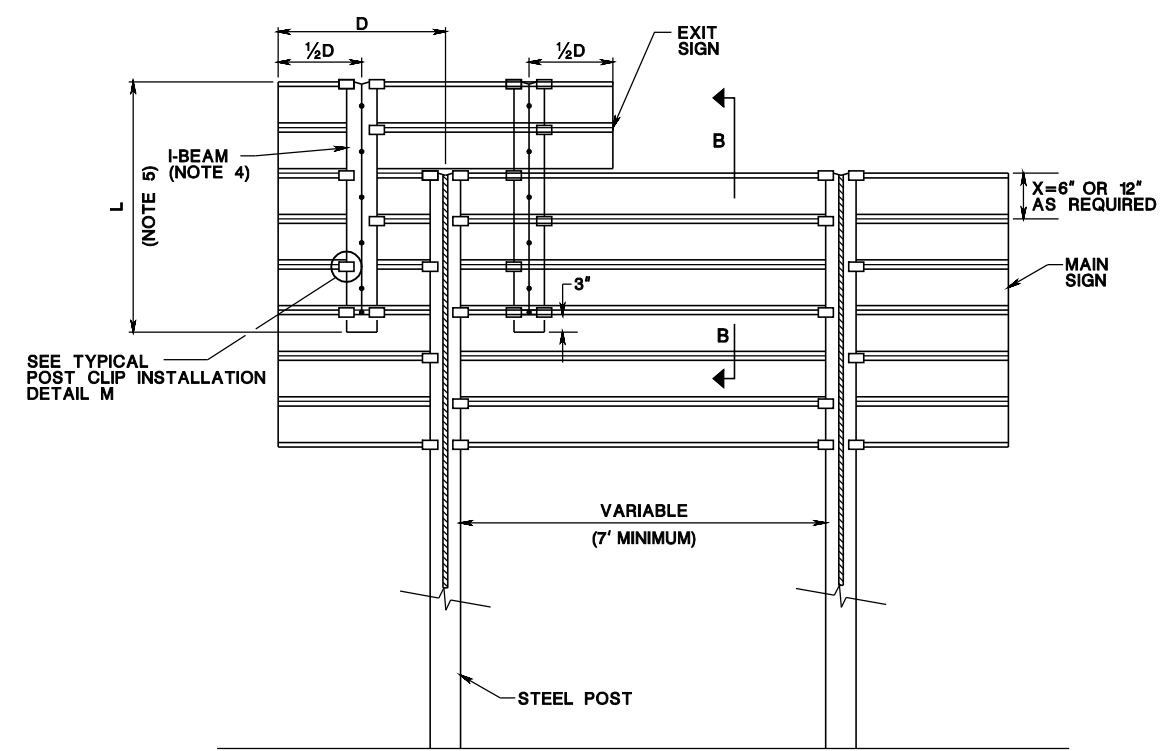
CONSTRUCTION DETAILS

CD-612-8

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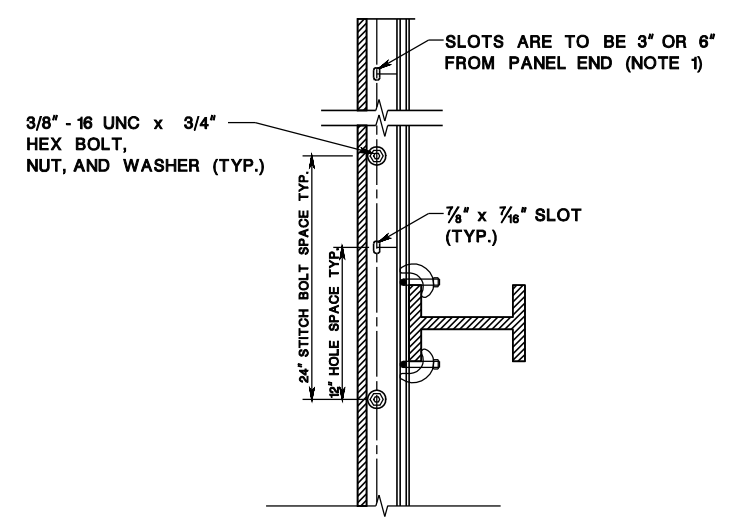
SIGN WITHOUT EXIT SIGN



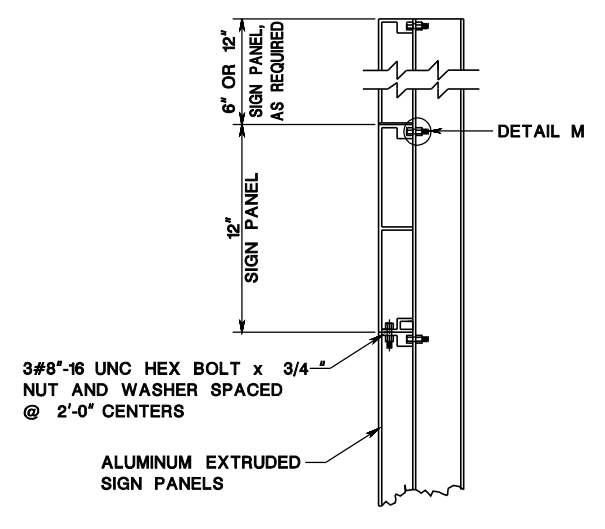
SIGN WITH EXIT SIGN

NOTES:

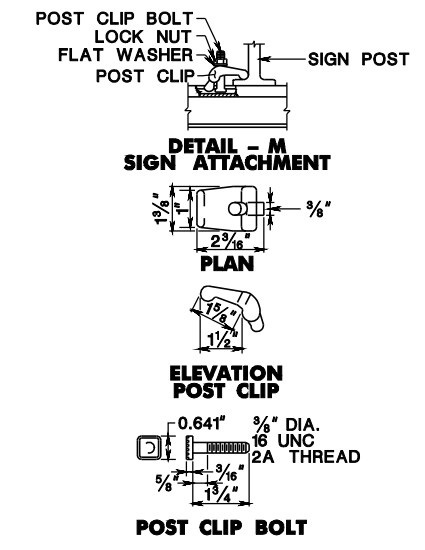
1. EXTRUDED SIGN PANEL SECTIONS TO BE BOLTED TOGETHER WITH 3/8 -16 UNC x 3/4 HEX BOLTS. A HEX BLOT TO BE INSTALLED IN THE FIRST HOLE FROM THE PANEL END AND AT 24" C TO C THEREAFTER.
2. INSTALL HEX BOLTS IN ACCORDANCE WITH NOTE 1 BETWEEN SIGN PANEL AND EXIT PANEL (WHEN PROVIDED)
3. EXIT SIGN TO BE PLACED ON EXIT SIDE OF SIGN MAIN.
4. ALUMINUM I-BEAM (DEPTH=4"), WEB THICKNESS=0.25", FLANGE THICKNESS=0.25", FLANGE WIDTH=3.5"
5. L=5'-3" WHEN X=12" AND L=4'-9" WHEN X=6"
6. SIGNS WITHOUT EXIT SIGNS OR SIGNS WITH PARTIAL WIDTH EXIT SIGNS TO BE PROVIDED WITH I-BEAM EXTENDING TO THE TOP OF THE MAIN SIGN, AS SHOWN. THE UPPER POST IS TO BE EXTENDED TO THE TOP OF THE EXIT SIGN WHEN FULL WIDTH EXIT SIGNS ARE EMPLOYED.



SECTION A-A



SECTION B-B
(EXIT PANEL NOT SHOWN IN SECTION B-B)



POST CLIP BOLT

BREAKAWAY SIGN SUPPORTS FOR GROUND MOUNTED SIGNS

N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-612-9.1

CD-612-9

SIGN SUPPORT DATA TABLE

IDENTIFICATION		OFFSET	SIGN SIZE			C.G. SIGN	NO. OF POSTS	POST SIZE	MODEL	BRACKET NO.	POST HEIGHT				DIMENSIONS TO TOP OF FOOTING			FOOTING DIMENSIONS		REINF. STEEL		
NO.	STATION	X ₁	A ₁	B ₁	A ₂	Y ₁					C ₁	D ₁	E ₁	M ₁	F ₁	G ₁	H ₁	K ₁	L ₁	Z ₁		

FOOTING BEVEL TABLE				
IDENT. NO.	(L ₁ - A - 2 1/2") 2	Y		
		POST #1	POST #2	POST #3

- NOTES:**
1. AN ASTERISK (*) IN COLUMN L INDICATES THAT THE EXPOSED EDGE OF FOOTING MUST BE BEVELLED TO MEET THE 4 INCH MAXIMUM PROJECTION REQUIREMENT.
 2. FOR IDENTIFICATION OF TABULAR ITEMS AND DETAILS RELATING THERETO, REFER TO BREAKAWAY SIGN SUPPORTS FOR GROUND MOUNTED SIGNS (CD-612-7)

NOTE TO DESIGNER:
THIS SHEET REQUIRES DESIGN SPECIFIC INFORMATION TO BE ADDED AND INCLUDED IN THE CONTRACT PLANS.
REMOVE THIS NOTE AFTER DESIGN SPECIFIC INFORMATION IS ADDED.

BREAKAWAY SIGN SUPPORTS FOR GROUND MOUNTED SIGNS

N.T.S.

CD-612-10

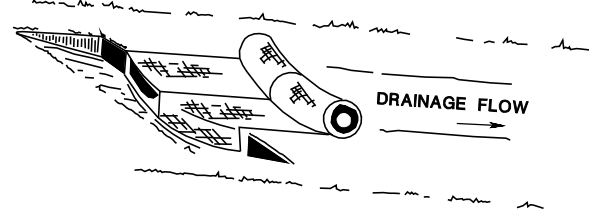
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

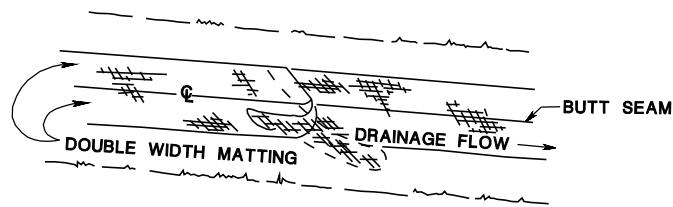
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BDC:RD-01-ORIGINAL SHEET

SWALE OR DITCH

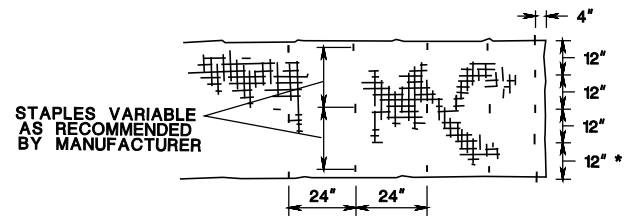
DOUBLE WIDTH MATTING AND BLANKETS IN SWALE, USE 3'-6" OVERLAP WHERE TWO OR MORE STRIPS ARE REQUIRED, AND STAPLE ON 2'-0" CENTERS



BURY TOP END OF MATTING AND BLANKETS IN A 6" TRENCH TAMP TRENCH FULL OF SOIL. SECURE WITH ROW OF STAPLES, 12" MAXIMUM SPACING 4" DOWN FROM TRENCH.

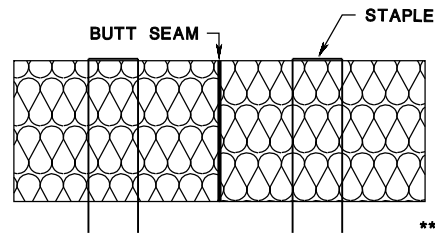


OVERLAP: BURY UPPER END OF LOWER STRIP AS PER ABOVE DETAIL. OVERLAP END OF TOP STRIP 6" AND STAPLE EITHER SIDE OF JOINT.



* DEPENDANT ON WIDTH OF PRODUCT

SECURE MATTING AND BLANKETS WITH STAPLES SPACED 24" APART ALONG THE SIDES AND DOWN THE CENTER. AT THE ENDS OF THE MATTING AND AT 50 FOOT INTERVALS STAPLES SHALL BE PLACED 12" APART ACROSS THE WIDTH.

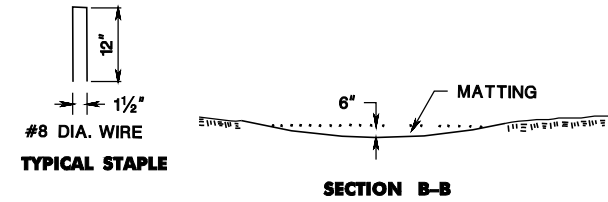
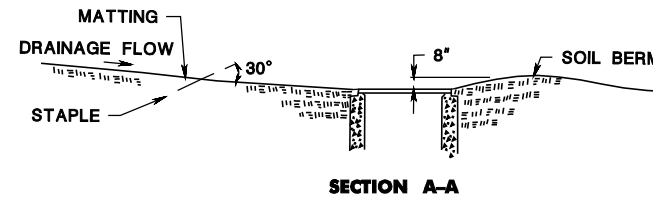
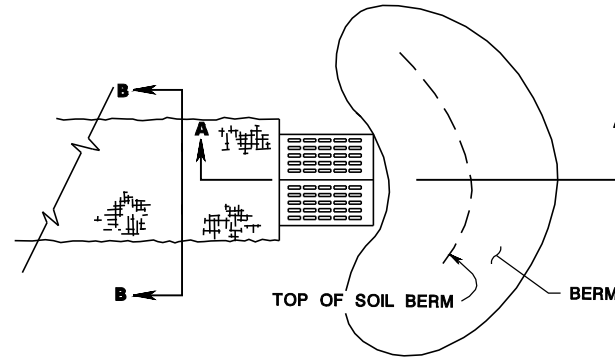


EXCELSIOR BUTT SEAM

** REFER TO SE&SC MANUAL FOR WHERE THIS TREATMENT IS TO BE USED.

TOPSOIL STABILIZATION MATTING

INLET AND MOUND



TOPSOIL STABILIZATION

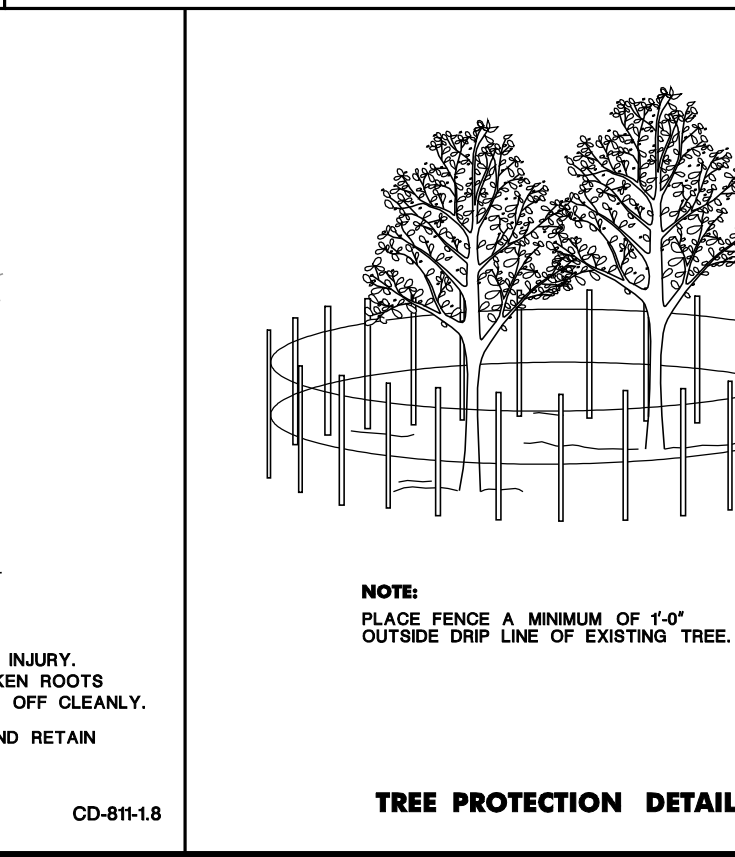
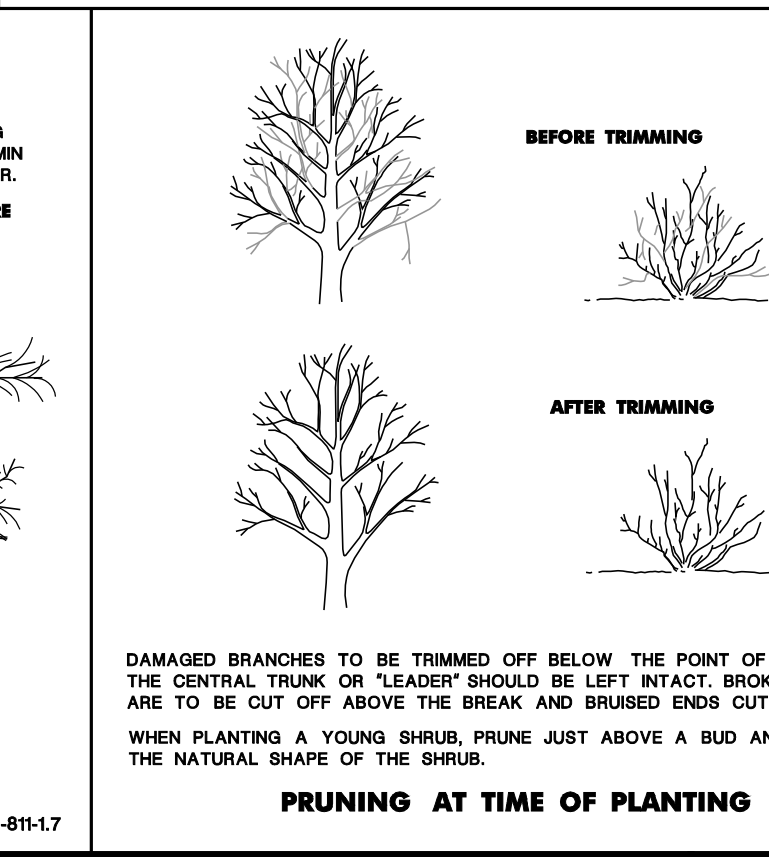
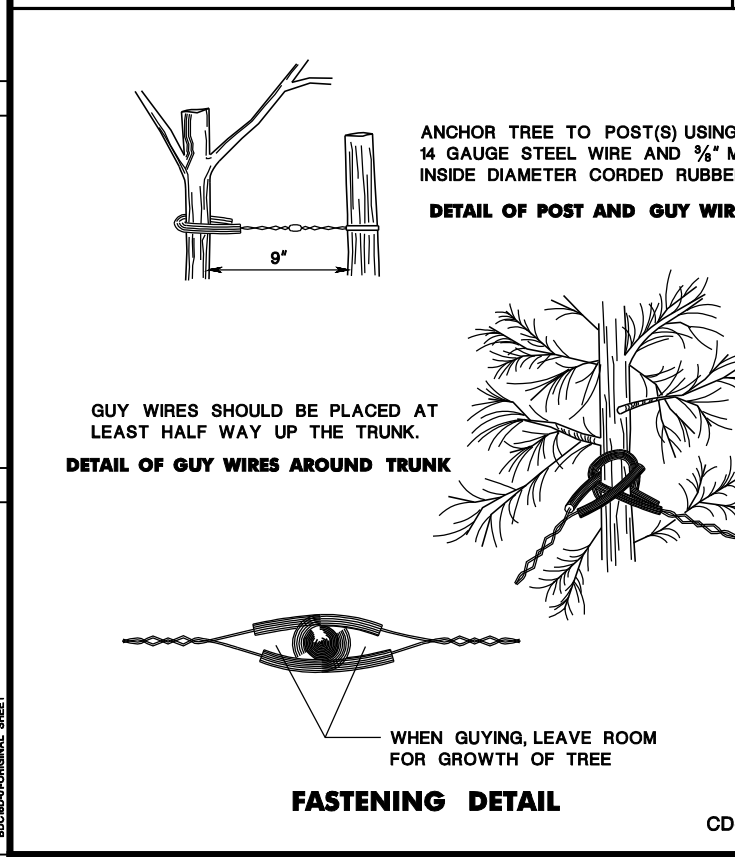
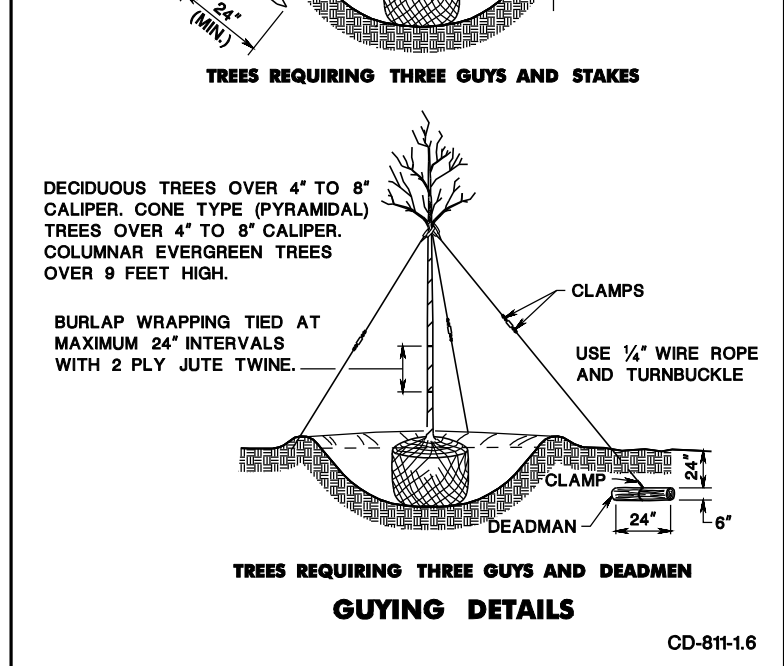
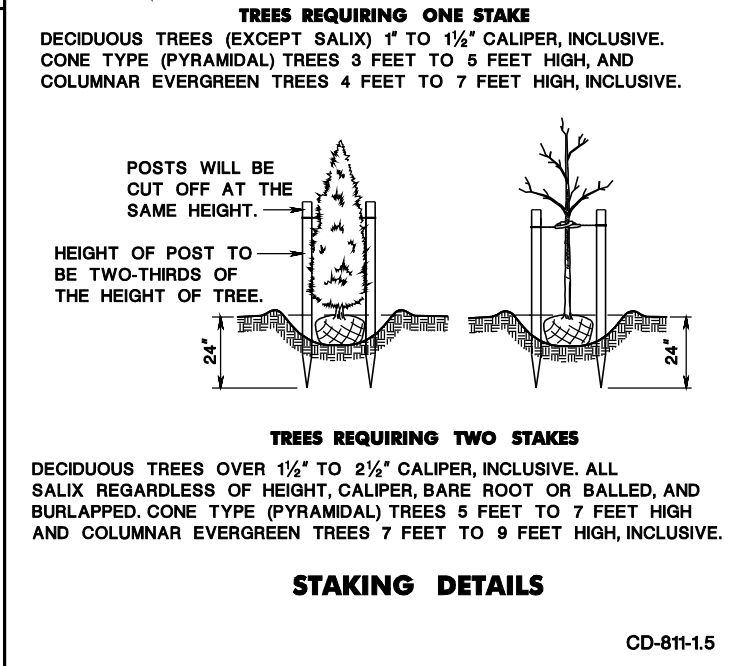
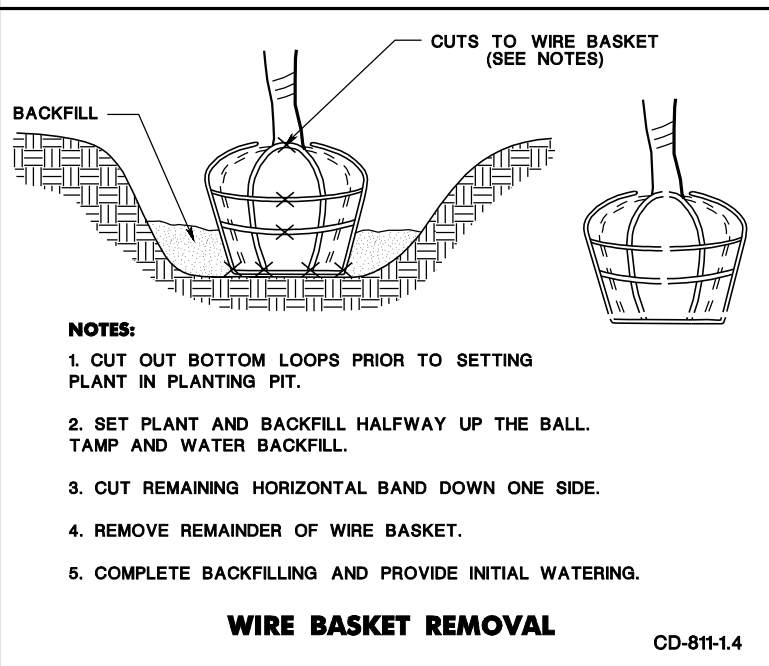
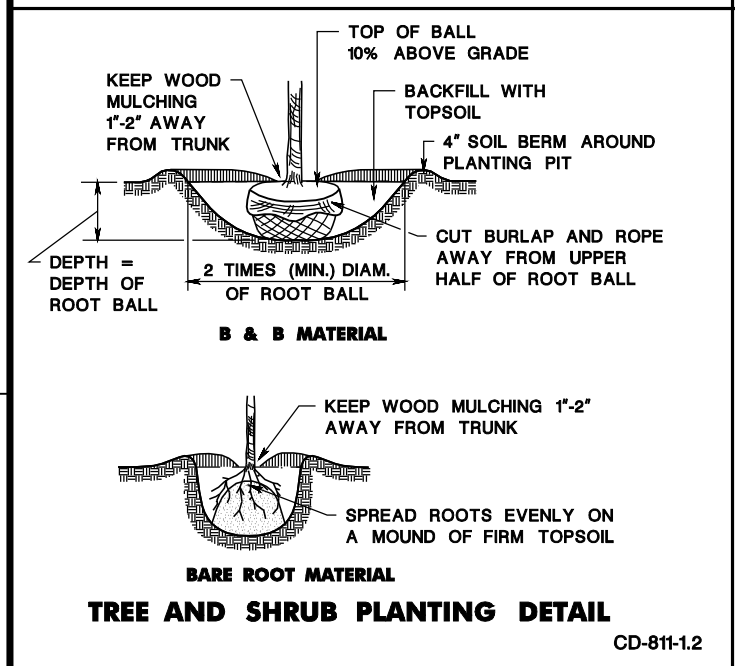
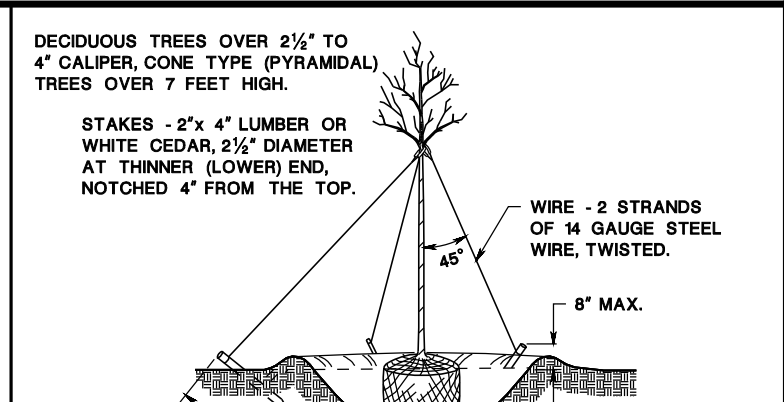
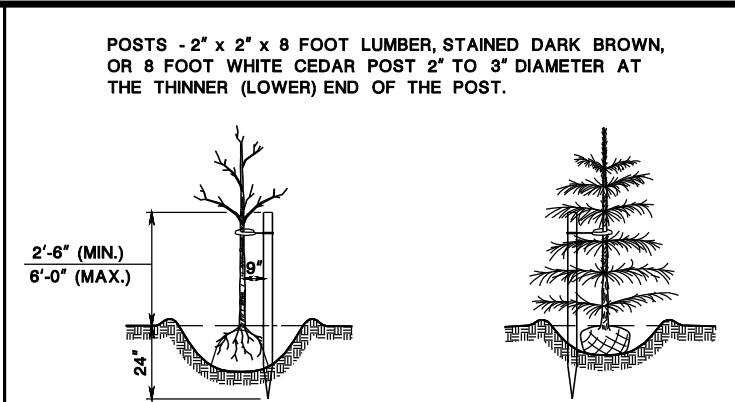
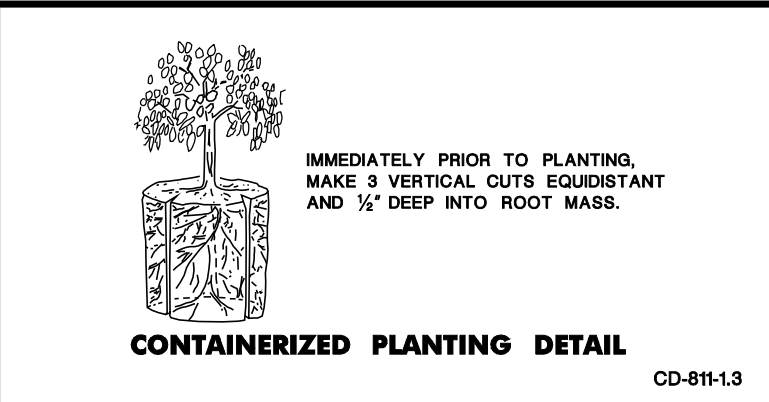
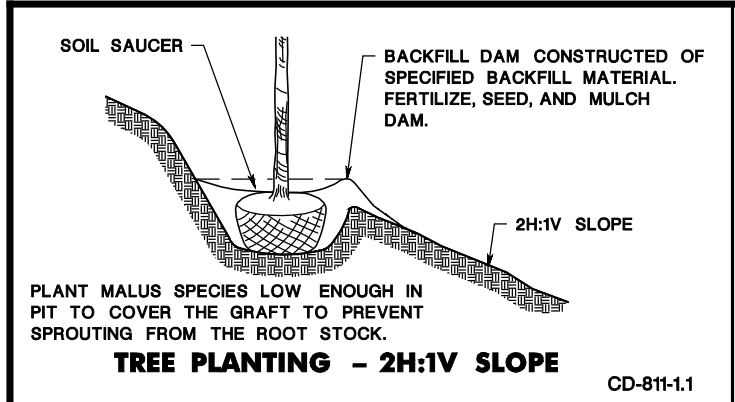
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CD-807-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-807-1.1



PLANTING
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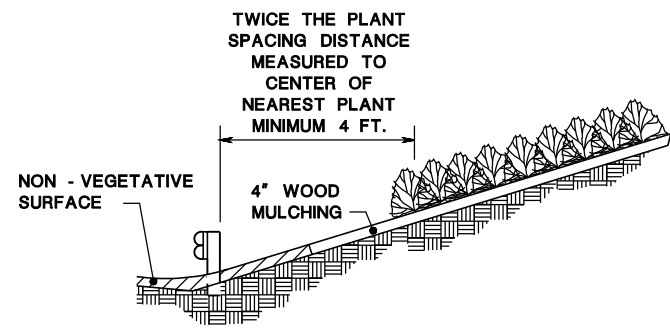
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

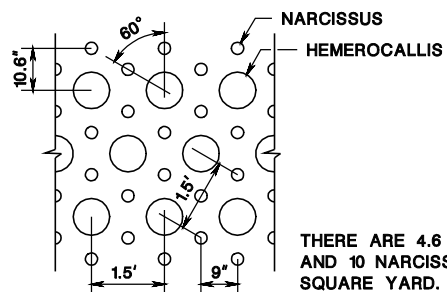
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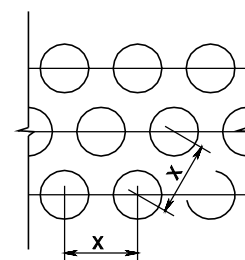
SHRUB PLANTING BEHIND GUIDE RAIL

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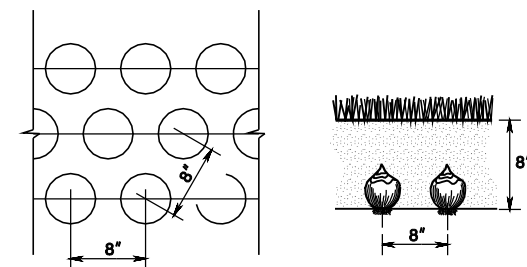
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SHRUB BED PLANTING DETAIL

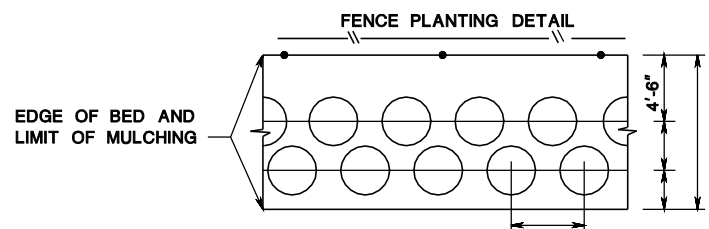
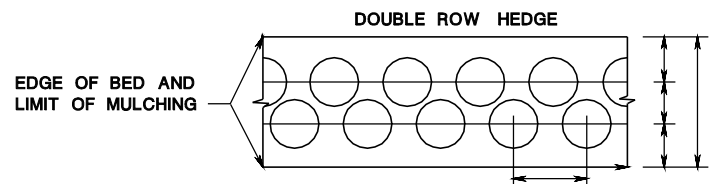
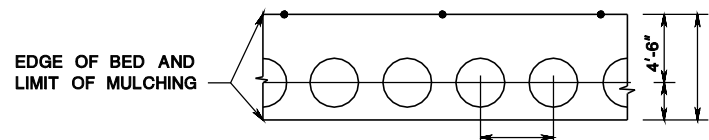
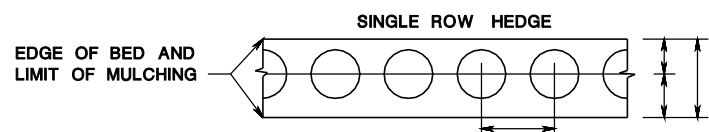
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NOTE:
NARCISSUS TO BE PLANTED IN TURF AREAS AND NOT TO RECEIVE WOOD MULCHING.

NARCISSUS IN TURF DETAIL

CD-811-2.4



HEDGE PLANTING DETAILS

CD-811-2.5

NOTE TO DESIGNER:
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REMOVE THIS NOTE AFTER DESIGN SPECIFIC INFORMATION IS ADDED.

PLANTING

N.T.S.

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NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS










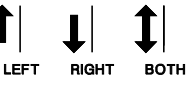

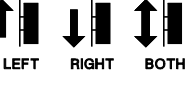





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BDC\RD-01-ORIGINAL SHEET

LEGEND

-  BREAKAWAY BARRICADES
-  BREAKAWAY BARRICADES WITH SIGN
-  CONSTRUCTION SIGNS
-  DRUMS
-  CONE
-  CONSTRUCTION BARRIER CURB (TYPE SPECIFIED)
-  DIRECTION OF TRAFFIC FLOW
-  TRAFFIC DIRECTOR, FLAGGER
-  TRAILER MOUNTED MOUNTED ARROW BOARD SHOWING CAUTION MODE
-  ILLUMINATED FLASHING ARROW MOUNTED ON TOWING VEHICLE SHOWING ARROW PATTERN (LEFT, RIGHT, BOTH)
-  TRAFFIC CONTROL TRUCK WITH MOUNTED CRASH CUSHION AND ARROW BOARD SHOWING CAUTION MODE
-  TRAFFIC CONTROL TRUCK WITH MOUNTED CRASH CUSHION AND ARROW BOARD SHOWING ARROW PATTERN (LEFT, RIGHT, BOTH)
-  TEMPORARY CRASH CUSHION, INERTIAL BARRIER SYSTEM
-  TEMPORARY CRASH CUSHION, (ALL OTHER APPROVED)
-  BUFFER ZONE
-  WORK AREA
-  PAINT STRIPING TRUCK OR OTHER OPERATING VEHICLE

GENERAL NOTES:

1. ADVANCE WARNING SIGNS DISTANCES AND TAPER LENGTHS MAY BE EXTENDED, AT DIRECTION OF THE DEPARTMENT, TO ADJUST FOR REDUCED VISIBILITY DUE TO HORIZONTAL AND VERTICAL CURVATURE OF THE ROADWAY.
2. THE APPROXIMATE LOCATIONS OF THE ILLUMINATED FLASHING ARROW BOARDS ARE SHOWN ON THE TRAFFIC CONTROL PLANS. THESE LOCATIONS MAY BE MODIFIED AS APPROVED BY RE TO ADJUST FOR VISIBILITY DUE TO HORIZONTAL OR VERTICAL CURVATURE OF THE ROADWAY OR TO POSITION AT A SAFER LOCATION. ILLUMINATED FLASHING ARROW BOARDS ARE TO BE USED FOR TEMPORARY LANE CLOSINGS AND AT LOCATIONS SHOWN ON THE TRAFFIC CONTROL PLANS.
3. PRIOR TO ANY ROAD CONSTRUCTION, TRAFFIC CONTROL SIGNS AND DEVICES ARE TO BE IN PLACE.
4. RAMPS AND/OR SIDE STREETS ENTERING THE ROADWAY AFTER THE FIRST ADVANCE WARNING SIGN ARE TO BE PROVIDED WITH AT LEAST ONE W20-IF SIGN (ROAD WORK AHEAD) AS A MINIMUM.
5. ALL EXISTING ROAD SIGNS, PAVEMENT MARKINGS, AND / OR PLOWABLE PAVEMENT REFLECTORS WHICH CONFLICT WITH THE PROPOSED TRAFFIC CONTROL PLAN ARE TO BE COVERED, REMOVED, OR RELOCATED AS DIRECTED BY THE RE.
6. CONFLICTING OR NON-OPERATING SIGNAL INDICATIONS ON EITHER THE EXISTING, TEMPORARY, OR PROPOSED TRAFFIC SIGNAL SYSTEMS ARE TO BE BAGGED OR COVERED.
7. MAINTENANCE AND PROTECTION OF TRAFFIC TO BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - PART VI STANDARDS AND GUIDES FOR TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY, AND INCIDENT MANAGEMENT OPERATIONS, UNLESS OTHERWISE NOTED IN THE PLANS AND SPECIFICATIONS.
8. CONSTRUCTION SIGN W99-2 (GIVE US A BRAKE) TO BE LOCATED 200 FEET IN ADVANCE OF PROJECT LIMITS.
9. A W1-6 (ARROW) SIGN MOUNTED ON A BREAKAWAY BARRICADE AND CENTERED ON THE CLOSED WIDTH TO BE LOCATED 100 FEET BEYOND EACH INTERSECTION OR MAIN ACCESS POINT WITHIN THE AREA OF A LANE OR SHOULDER CLOSURE.
10. CONSTRUCTION SIGNS R11-4 (ROAD CLOSED THRU TRAFFIC) TO BE PLACED AT THE INTERSECTING STREETS WHICH ARE CLOSED TO TRAFFIC BECAUSE OF CONSTRUCTION.
11. CONSTRUCTION SIGNS W8-9A (SYMBOL FOR UNEVEN PAVEMENT) AND W8-44A (GROOVED PAVEMENT) TO BE USED WHEN SUCH PAVEMENT CONDITIONS EXIST. THE PLACEMENT OF THESE SIGNS TO BE AS DIRECTED BY THE RE.
12. MOVING WORK AREAS IN A LANE CLOSURE REQUIRE A TRAILER MOUNTED ILLUMINATED FLASHING ARROW TO REMAIN AT THE END OF THE TAPER, THE TRAFFIC CONTROL TRUCK WITH MOUNTED CRASH CUSHION THAT IS TO MOVE WITH THE WORK AREAS TO KEEP A 70 FEET MIN. AND 150 FEET MAX. BUFFER IN ADVANCE OF EACH WORK AREA.
13. THE CONTRACTOR TO SUBMIT A PLAN FOR THE SAFE ACCESS OF CONSTRUCTION VEHICLES THROUGHOUT THE WORK SITE WHERE SPACE CONSTRAINTS PREVENT THE USE OF LANE CLOSURES. THE PLAN TO BE SUBMITTED TO THE RE AS SPECIFIED IN THE SPECIFICATIONS.
14. BACKFILL ALL EXCAVATED AREAS WITHIN OR ADJACENT TO THE ROADWAY AND PLACE ON AT LEAST 6H:1V SLOPE BEFORE THE END OF EACH WORK DAY. OTHER EXCAVATED AREA WITHIN THE CLEAR ZONE ARE TO BE BACKFILLED.
15. WHERE REQUIRED, THE CONTRACTOR IS TO MAKE PROVISIONS FOR MAINTAINING PEDESTRIAN CROSSING LOCATIONS AND TYPE AS DIRECTED BY THE RE.
16. BITUMINOUS CONCRETE PLACED DURING THE VARIOUS CONSTRUCTION STAGES TO BE TRANSITIONED ON A MINIMUM 20H:1V SLOPE TO MEET THE ADJACENT EXISTING GRADE AT THE LONGITUDINAL AND TRANSVERSE LIMITS OF THE STAGE CONSTRUCTION AREAS UNLESS OTHERWISE NOTED ON THE STAGE CONSTRUCTION PLANS.
17. THE PLACEMENT AND / OR RELOCATION OF CONSTRUCTION BARRIER CURB TO BE DONE DURING APPROVED OFF-PEAK HOURS WHEN TRAFFIC MAY BE REDUCED TO ONE LANE IN EACH DIRECTION.
18. CONSTRUCTION ZONE SPEED LIMIT WILL BE DETERMINED BY THE BUREAU OF TRAFFIC ENGINEERING, REGIONAL TRAFFIC ENGINEER - WORK ZONE, AT THE TIME OF OR DURING CONSTRUCTION, AS REQUESTED BY THE RE.
19. THE SPEED LIMIT, R2-1 (BLACK ON WHITE) WITH ADDED WORK ZONE PLATE (BLACK ON ORANGE) SIGNS TO BE LOCATED THROUGH WORK AREAS AS DIRECTED BY THE BUREAU OF TRAFFIC ENGINEERING, REGIONAL TRAFFIC ENGINEER - WORK ZONE.
20. THE REDUCED SPEED AHEAD SIGN, W3-5(S) (BLACK ON ORANGE) TO BE LOCATED IN ADVANCE OF SPEED LIMIT R2-1 SIGNS WHICH REDUCE THE NORMAL POSTED SPEED LIMIT THROUGH THE CONSTRUCTION ZONE.
21. TRAFFIC FINES DOUBLED IN WORK AREA R(NJ)5-17(S), 4 FEET BY 2.5 FEET SIGN TO BE LOCATED 500 FEET AFTER THE FIRST ADVANCE WARNING SIGN, (W20 SERIES) AT EACH WORK AREA LOCATED WITHIN URBAN AREAS. THIS SIGN TO ALSO BE USED ON PROJECTS REQUIRING MOVING OPERATIONS IN WHICH CASE THE SIGN IS TO BE MOUNTED ON A SLOW MOVING CONSTRUCTION VEHICLE.
22. DO NOT CONSTRUCT THE FINAL HMA SURFACE PAVEMENT UNTIL THE FINAL STAGE OF THE PROJECT UNLESS OTHERWISE DIRECTED BY THE RE OR INDICATED ON THE PLANS. SET MANHOLES AND INLETS TO FINISHED GRADE AND CONSTRUCT TEMPORARY PAVEMENT RAMPS AROUND THEM WITH A MINIMUM 20H:1V SLOPE IN ALL DIRECTIONS USING HOT MIX ASPHALT PAVEMENT. THIS TEMPORARY MATERIAL WILL BE REMOVED IMMEDIATELY PRIOR TO PLACING THE SURFACE COURSE.

23. PLACE TRAFFIC CONTROL DEVICES FOR LANE CLOSURES INCLUDING SIGNS, CONES, BARRICADES, ETC. AS SHOWN ON PLANS. NO SIGNS ARE TO BE PLACED WITHOUT ACTUAL LANE CLOSURES AND REMOVE IMMEDIATELY UPON REMOVAL OF THE CLOSURES.
24. CONES MAY BE SUBSTITUTED FOR DRUMS AND INSTALLED UPON THE APPROVAL OF THE RE.
25. TRAFFIC IMPACT NOTICES AND CHANGES

A. TERMS:
WHEN THE FOLLOWING TERMS ARE USED, THE INTENT AND MEANING IS AS FOLLOWS:

- I. IMPACTS TO NORMAL TRAFFIC FLOW - WORK THAT REQUIRES A PORTION OF THE PAVED ROADWAY BEING BLOCKED OR CLOSED WITH SAFETY DEVICES OR VEHICLES, INCLUDING, BUT NOT LIMITED TO, FULL OR PARTIAL LANE CLOSURES, FULL OR PARTIAL RAMP CLOSURES, SHOULDER CLOSURES, MOVING OPERATIONS SUCH AS TRAFFIC STRIPING OR SWEEPING, LANE SHIFTS, OR ALTERNATING TRAFFIC. THIS APPLIES EVEN WHEN DETOURS ARE PROVIDED.
- II. TEMPORARY LANE CLOSURES - WORK DESCRIBED UNDER "IMPACTS TO NORMAL TRAFFIC FLOW" WHICH IS ROUTINELY SET UP AND REMOVED ON A DAILY BASIS.
- III. PERMANENT LANE CLOSURES - WORK DESCRIBED UNDER "IMPACTS TO NORMAL TRAFFIC FLOW" WHICH REMAINS IN PLACE CONTINUOUSLY FOR 24 HOURS OR MORE.

B. ADVANCE NOTICES

FOR THE INITIAL START OF WORK THAT REQUIRES "IMPACTS TO NORMAL TRAFFIC FLOW", THE CONTRACTOR IS TO NOTIFY THE RE IN WRITING, ON THE ADVANCE FORM TO-103 PROVIDED BY THE DEPARTMENT, OF THE PROPOSED DATE. THE NOTICE IS TO BE SUBMITTED AT LEAST TWENTY-EIGHT CALENDAR DAYS, BUT NOT MORE THAN SIXTY CALENDAR DAYS, BEFORE THE PROPOSED DATE. START OF WORK THAT IMPACTS NORMAL TRAFFIC FLOW WILL NOT BE PERMITTED PRIOR TO THE DATE STATED IN THE NOTICE. THE CONTRACTOR IS TO CONFIRM, IN WRITING TO THE RE, THE PROPOSED DATE SEVEN (AND/OR FOURTEEN) CALENDAR DAYS BEFORE STARTING THE ESTABLISHMENT OF THE TRAFFIC CONTROL MEASURES FOR THE TRAFFIC IMPACT. THE CONTRACTOR IS TO IMMEDIATELY NOTIFY THE RE IF THE PROPOSED ESTABLISHMENT CANNOT BE COMPLETED ON THE PROPOSED DATE.

FOR A "PERMANENT LANE CLOSURE", THE CONTRACTOR IS TO NOTIFY THE RE IN WRITING, ON ADVANCE FORM TO-103, OF THE PROPOSED DATE A NEW TRAFFIC PATTERN WILL BE ESTABLISHED. THE NOTICE IS TO BE SUBMITTED AT LEAST TWENTY-EIGHT CALENDAR DAYS, BUT NOT MORE THAN SIXTY CALENDAR DAYS, IN ADVANCE OF THE PROPOSED DATE. START OF A NEW TRAFFIC PATTERN WILL NOT BE PERMITTED PRIOR TO THE DATE STATED IN THE NOTICE. THE CONTRACTOR IS TO CONFIRM, IN WRITING TO THE RE, THE PROPOSED DATE OF THE NEW TRAFFIC PATTERN SEVEN (AND/OR FOURTEEN) DAYS BEFORE STARTING TRAFFIC CONTROL MEASURES FOR THE ESTABLISHMENT OF THE NEW PATTERN. THE CONTRACTOR IS TO IMMEDIATELY NOTIFY THE RE IF THE PROPOSED ESTABLISHMENT CANNOT BE COMPLETED ON THE PROPOSED DATE.

STARTING THE ESTABLISHMENT OF A NEW PERMANENT TRAFFIC PATTERN IS TO BEGIN NO EARLIER THAN 11:00 PM FRIDAY AND BE COMPLETED AND READY FOR OPERATIONS BY 6:00 PM THE FOLLOWING SUNDAY. THE ESTABLISHMENT IS TO BE COMPLETED IN ACCORDANCE WITH THE LANE CLOSURE HOURS SPECIFIED IN THE CONTRACT.

ADVANCE NOTICES SENT PRIOR TO THE PRE-CONSTRUCTION MEETING ARE TO BE ADDRESSED TO THE CONTACT PERSON AS SPECIFIED IN SUBSECTION 101.04 OF THE SPECIAL PROVISIONS.

C. PROGRESS NOTICES

ALL "IMPACTS TO NORMAL TRAFFIC FLOW" SCHEDULED FOR THE SEVEN DAY PERIOD STARTING ON THE FOLLOWING MONDAY ARE TO BE SUBMITTED TO THE RE BY 9:00 AM OF EACH FRIDAY ON WEEKLY FORM TO-100 PROVIDED BY THE DEPARTMENT.

EACH DAY OF "TEMPORARY LANE CLOSURES" ARE TO BE SUBMITTED TO THE RE BY 9:00 AM THE DAY IN ADVANCE OF THE START OF THOSE OPERATIONS ON DAILY FORM TO-101 PROVIDED BY THE DEPARTMENT.

"TEMPORARY LANE CLOSURES" FOR WEEKENDS ARE TO BE SUBMITTED TO THE RE BY 9:00 AM ON THE IMMEDIATELY PRECEDING FRIDAY ON THE DAILY FORM TO-101 PROVIDED BY THE DEPARTMENT.

D. CHANGES TO THE SCHEDULED CLOSURES

REQUEST FOR A CHANGE TO THE TRAFFIC CONTROL REQUIREMENTS IN THE CONTRACT DOCUMENTS ARE TO BE SUBMITTED IN WRITING TO THE RE AS FOLLOWS:

CHANGES TO THE SCHEDULED HOURS FOR "TEMPORARY LANE CLOSURES" ARE TO BE SUBMITTED TO THE RE AT LEAST EIGHT CALENDAR DAYS IN ADVANCE OF WHEN THE CHANGE IS PROPOSED TO START.

OTHER PROPOSED CHANGES TO "TEMPORARY LANE CLOSURES" AND ALL CHANGES TO "PERMANENT LANE CLOSURES" ARE TO BE SUBMITTED TO THE RE AS SPECIFIED IN THE SPECIFICATIONS.

26. WHERE MILLING OR HMA PAVING IS PERFORMED AND THE LANE IS TO BE RE-OPENED TO TRAFFIC EACH DAY, APPLY TEMPORARY TRAFFIC STRIPES.

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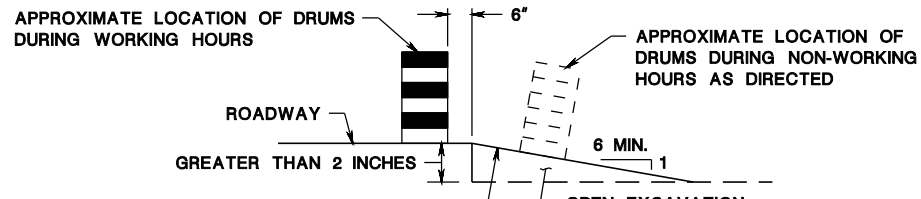
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

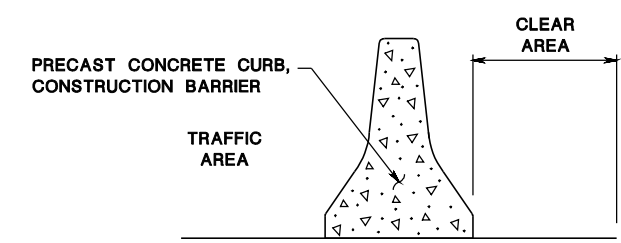
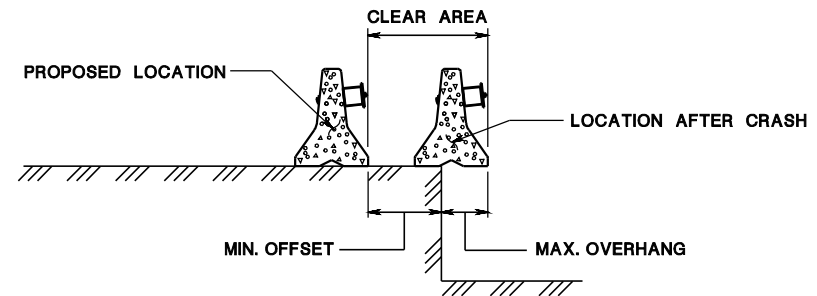
TRAFFIC CONTROL DETAILS



FILLET OF MATERIAL DENSE GRADED AGGREGATE BASE COURSE OR OTHER MATERIAL AS APPROVED BY THE RE.

NOTE:
ESCAPE RAMPS MUST BE CONSTRUCTED AND MAINTAINED DURING NON-WORKING HOURS WHERE A VERTICAL DROP GREATER THAN 2 INCHES EXISTS ADJACENT TO TRAVELED LANE.

ESCAPE RAMP DETAIL



NOTES:

- CHANGES TO THE PROPOSED CONNECTION TYPE AT ANY LOCATION MUST BE APPROVED BY THE DEPARTMENT.
- NO ROADWAY DROP OFFS, OBSTRUCTIONS, STORAGE OF MATERIALS, OR WORK WILL BE PERMITTED IN THE CLEAR AREA UNLESS APPROVED BY THE RE. EXCEPT ROADWAY DROP OFFS ARE PERMITTED ONLY WHEN USING THE OPTIONAL CONNECTION TYPE B TREATMENT AT VERTICAL DROP OFF.

REGULATORY APPROACH SPEED OF TRAFFIC MILES/HOUR	RECOMMENDED SIGHT DISTANCE TO BEGINNING OF CHANNELIZING TAPERS		
	DESIRABLE		MINIMUM
	RURAL FEET	URBAN FEET	RURAL AND URBAN FEET
25	375	525	150
30	450	625	200
35	525	725	250
40	600	825	325
45	675	925	400
50	750	1025	475
55	875	1150	550
60	1000	1275	650
65	1050		725

- NOTES:**
- AVOIDANCE MANEUVER IS FOR A SPEED, PATH, AND / OR DIRECTION CHANGE PRIOR TO THE BEGINNING OF CHANNELIZING TAPERS.
 - RECOMMENDED DISTANCES BETWEEN TWO SEPARATE LANE CLOSURES ARE DOUBLE THE VALUES SHOWN ABOVE.
 - RURAL AND URBAN ROAD DESIGNATIONS ARE AS DEFINED IN THE NJDOT STATE HIGHWAY STRAIGHT LINE DIAGRAMS.
 - PROVIDE DESIRABLE VALUES WHEREVER POSSIBLE. IF IT IS NOT FEASIBLE OR PRACTICAL TO PROVIDE DESIRABLE VALUES BECAUSE OF HORIZONTAL OR VERTICAL CURVATURE OR IF RELOCATION OF THE TAPER IS NOT POSSIBLE, THEN MINIMUM VALUES CAN BE APPLIED. WHEN MINIMUM VALUES ARE USED, PAY SPECIAL ATTENTION TO THE USE OF SUITABLE TRAFFIC CONTROL DEVICES WHEN PROVIDING ADVANCED WARNING OF THE CONDITIONS THAT ARE LIKELY TO BE ENCOUNTERED.
 - LOCATE TAPERS TO MAXIMIZE THE VISIBILITY OF THEIR TOTAL LENGTH.

STAGE	LOCATION RTE. STA. TO STA.	CONNECTION TYPE

CONNECTION TYPE	MIN. OFFSET	MAX. OVERHANG	CLEAR AREA
B	12"	16"	28"

OPTIONAL CONNECTION TYPE B TREATMENT AT VERTICAL DROP OFF

REGULATORY APPROACH SPEED OF TRAFFIC MILES / HOUR	MINIMUM TAPER RATIO IN LENGTH PER FOOT OF WIDTH	RECOMMENDED TAPER LENGTH AND SPACING FOR CHANNELIZING TAPERS			MAXIMUM DEVICE (B) SPACING ALONG TAPERS IN FEET	RECOMMENDED SPACING ALONG TANGENTS
		MINIMUM TAPER LENGTH L - FOR LANE WIDTHS				
		10'	11'	12'		
25	10.5:1	105	115	125	25	50
30	15:1	150	165	180	30	60
35	20.5:1	205	225	245	35	70
40	27:1	270	300	325	40	80
45	45:1	450	495	540	45	90
50	50:1	500	550	600	50	100
55	55:1	550	605	660	55	110
60	60:1	600	660	720	60	120
65	65:1	650	715	780	65	130

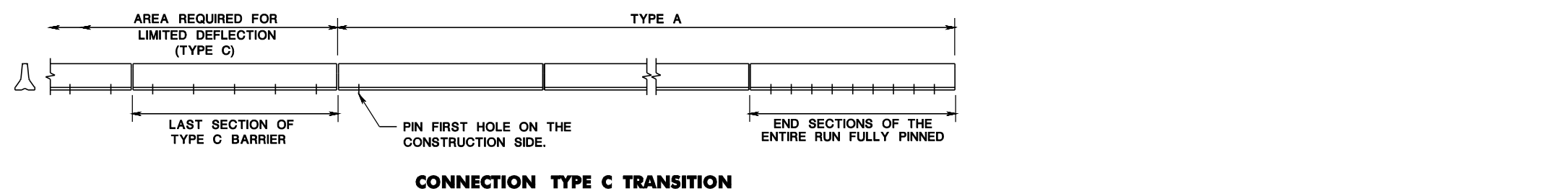
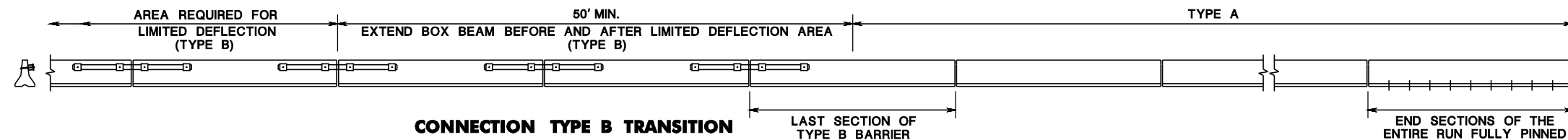
NOTE:
THE MAXIMUM DEVICE SPACING ALONG CURVES IS DEFINED FOR TAPERS (B) IN THE ABOVE TABLE.

STAGE	LOCATION RTE. STA. TO STA.	CONNECTION TYPE

CONNECTION TYPE	CLEAR AREA
A	41 INCHES
B	28 INCHES
C	11 INCHES

CONSTRUCTION BARRIER CURB CONNECTION TYPE AND CLEAR AREA

NOTE TO DESIGNER:
THIS SHEET REQUIRES DESIGN SPECIFIC INFORMATION TO BE ADDED AND INCLUDED IN THE CONTRACT PLANS.
REMOVE THIS NOTE AFTER DESIGN SPECIFIC INFORMATION IS ADDED.



N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

TCD-2

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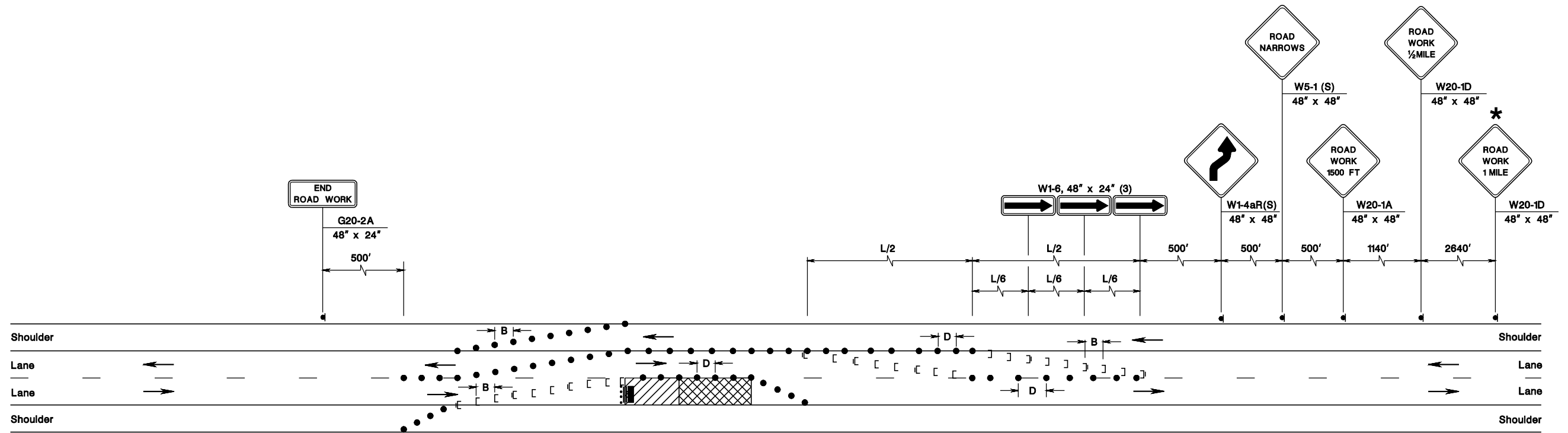
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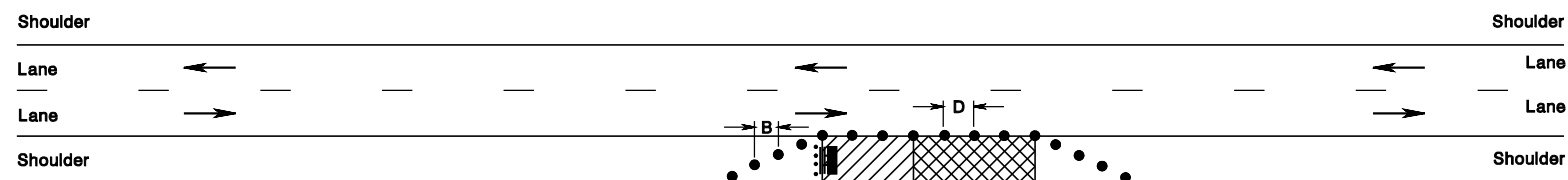
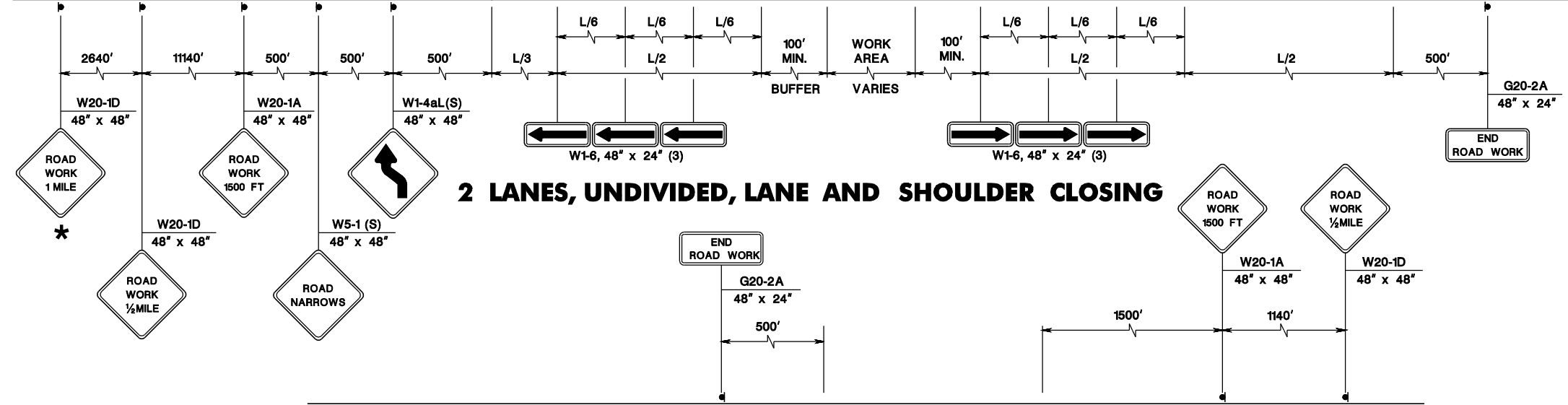
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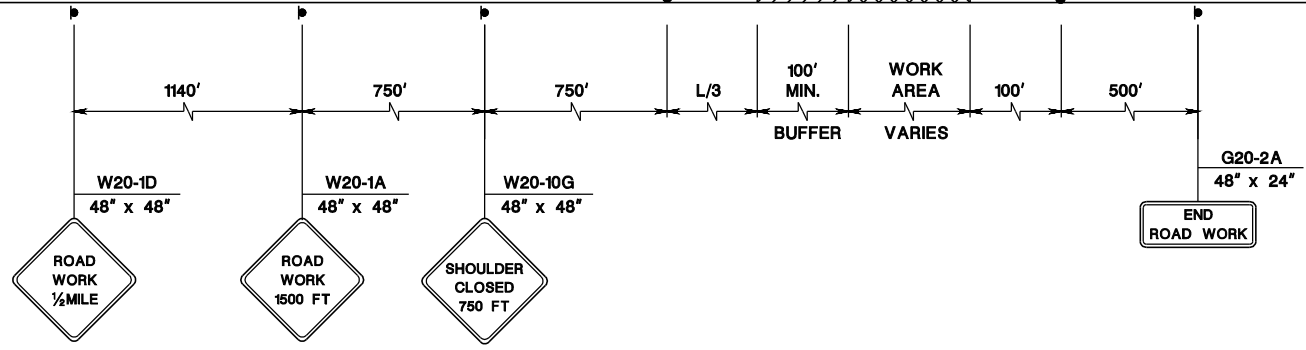
BD-CRD-01-ORIGINAL SHEET



2 LANES, UNDIVIDED, LANE AND SHOULDER CLOSING



2 LANES, UNDIVIDED, SHOULDER CLOSING



* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

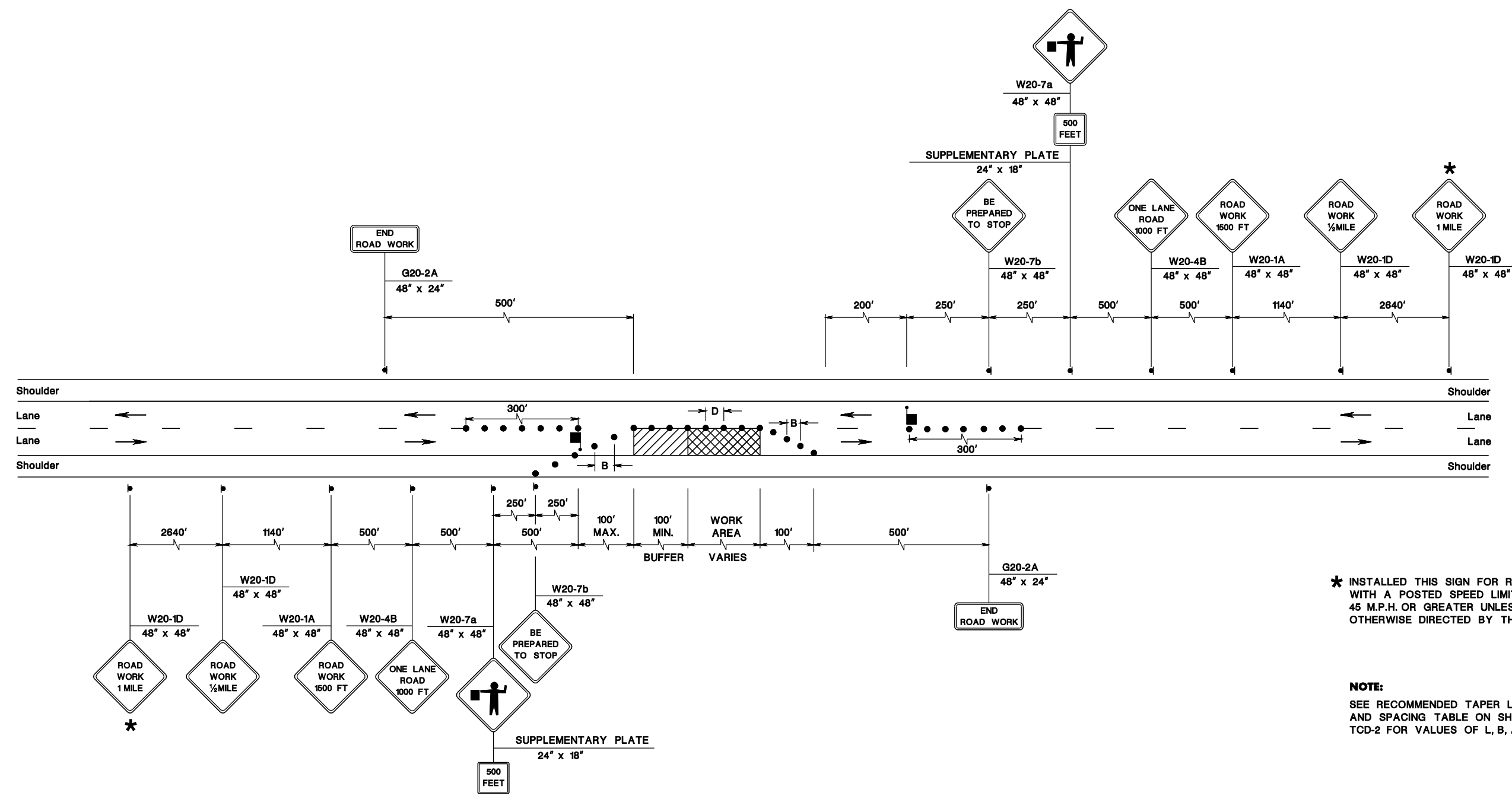
NOTE:
SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

N.T.S.

TCD-3
NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

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 ID=TP2VLL
 BDC\RD-01-ORIGINAL SHEET



* INSTALLED THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

NOTE:
 SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

2 LANES, UNDIVIDED, LANE AND SHOULDER CLOSING WITH FLAGGING

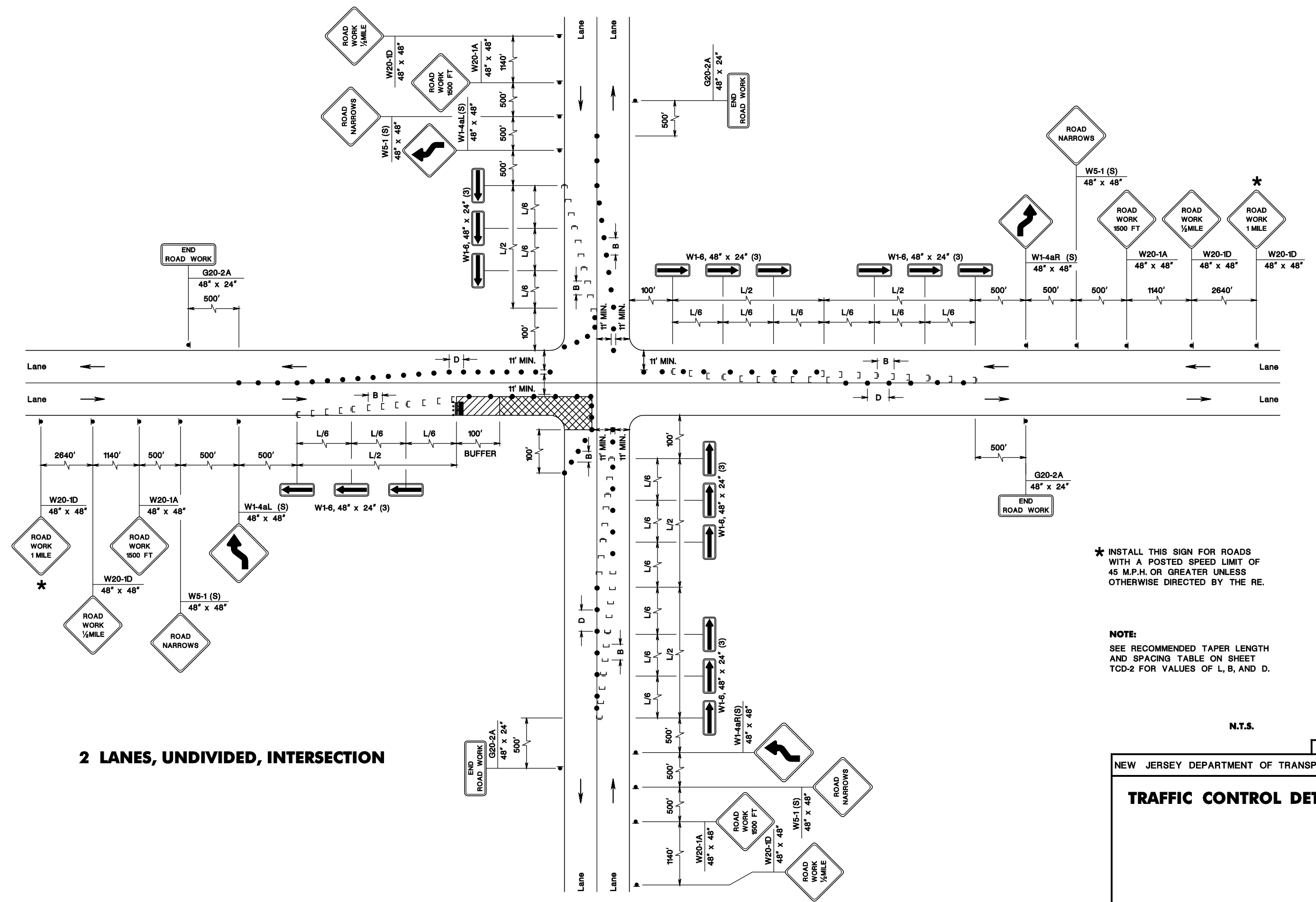
N.T.S.

TCD-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

2 LANES, UNDIVIDED, INTERSECTION



* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

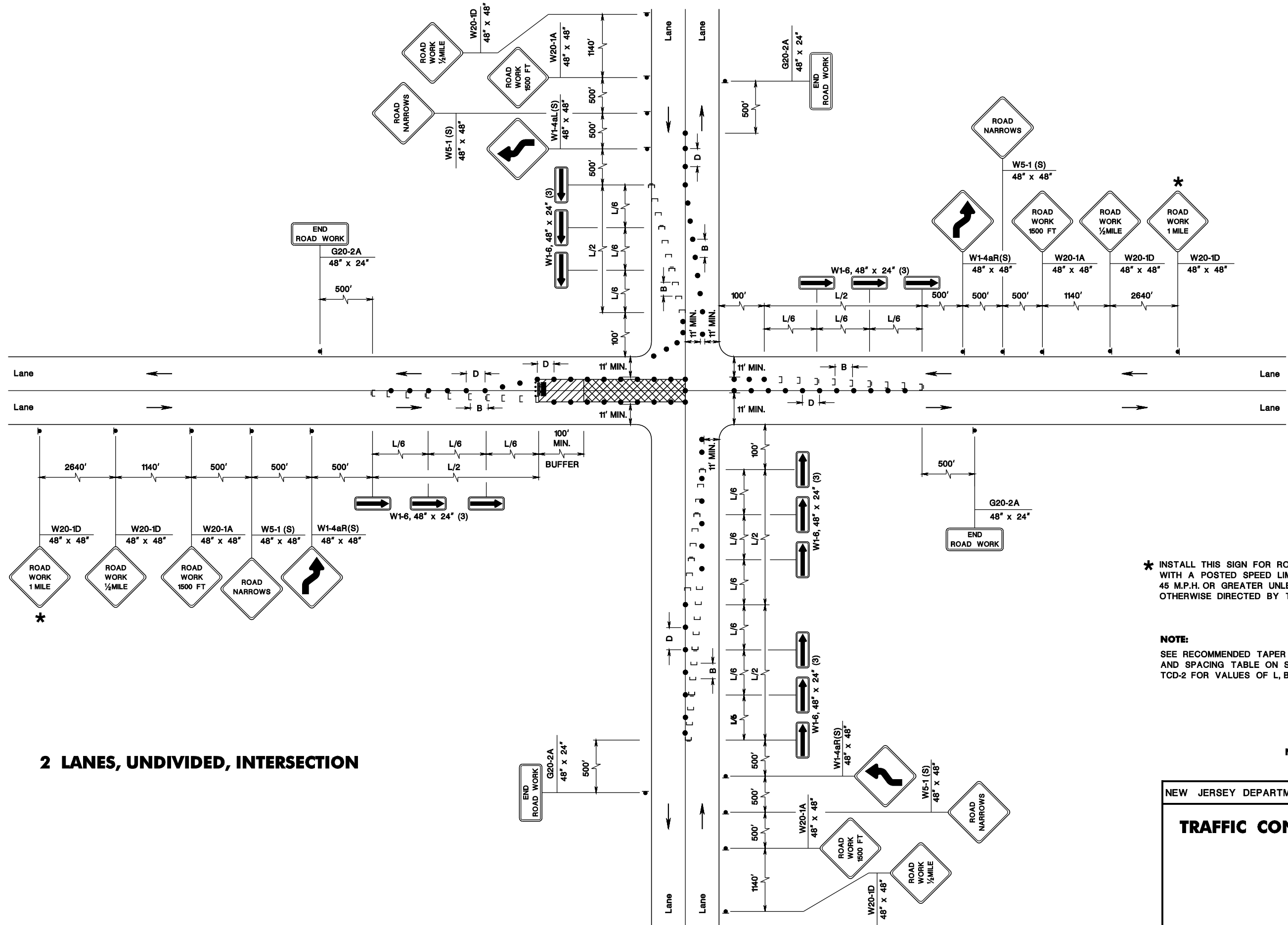
NOTE:
SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

N.T.S.

TCD-5
NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

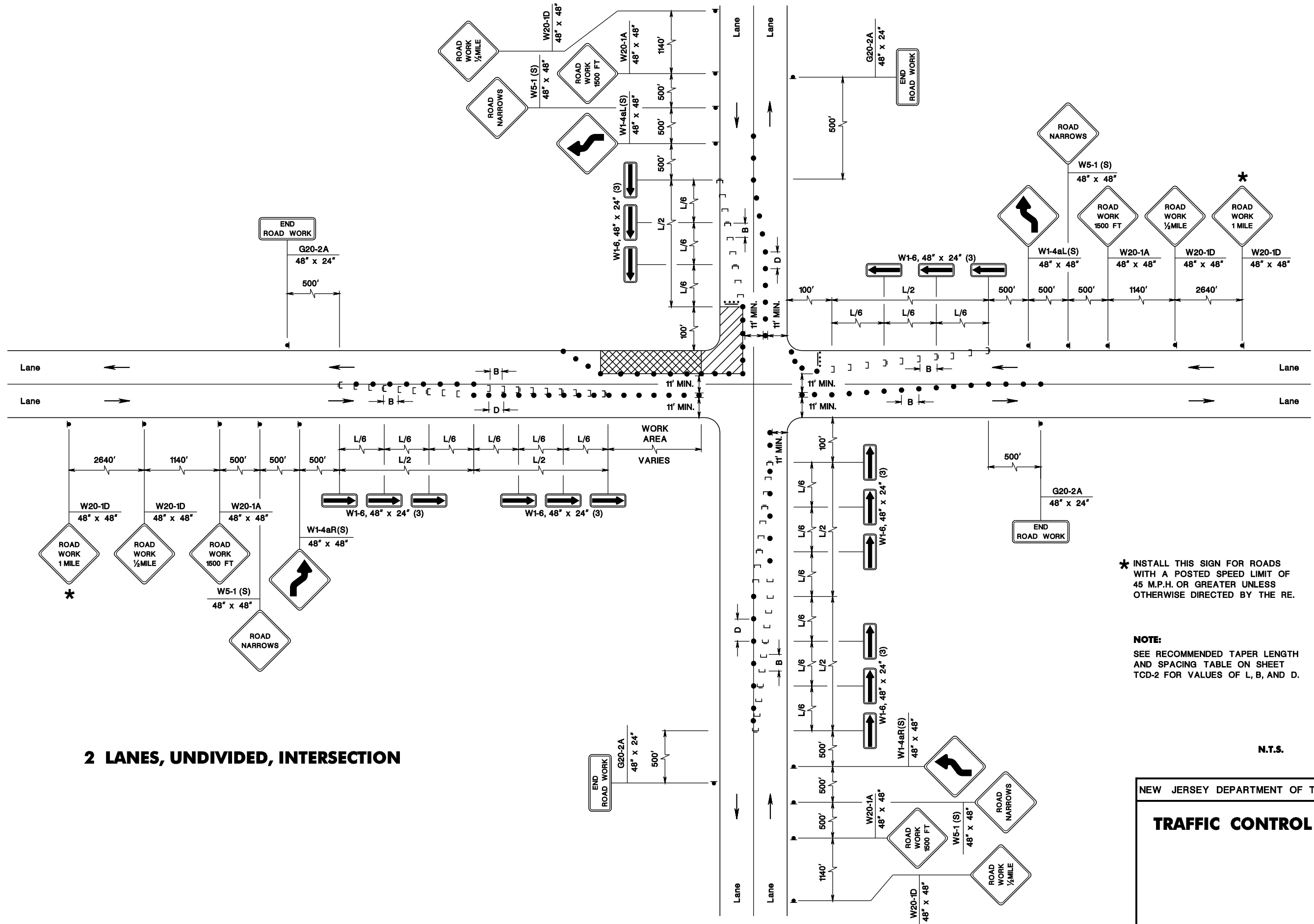
2 LANES, UNDIVIDED, INTERSECTION



* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

NOTE:
SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

N.T.S.



2 LANES, UNDIVIDED, INTERSECTION

* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

NOTE:
SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

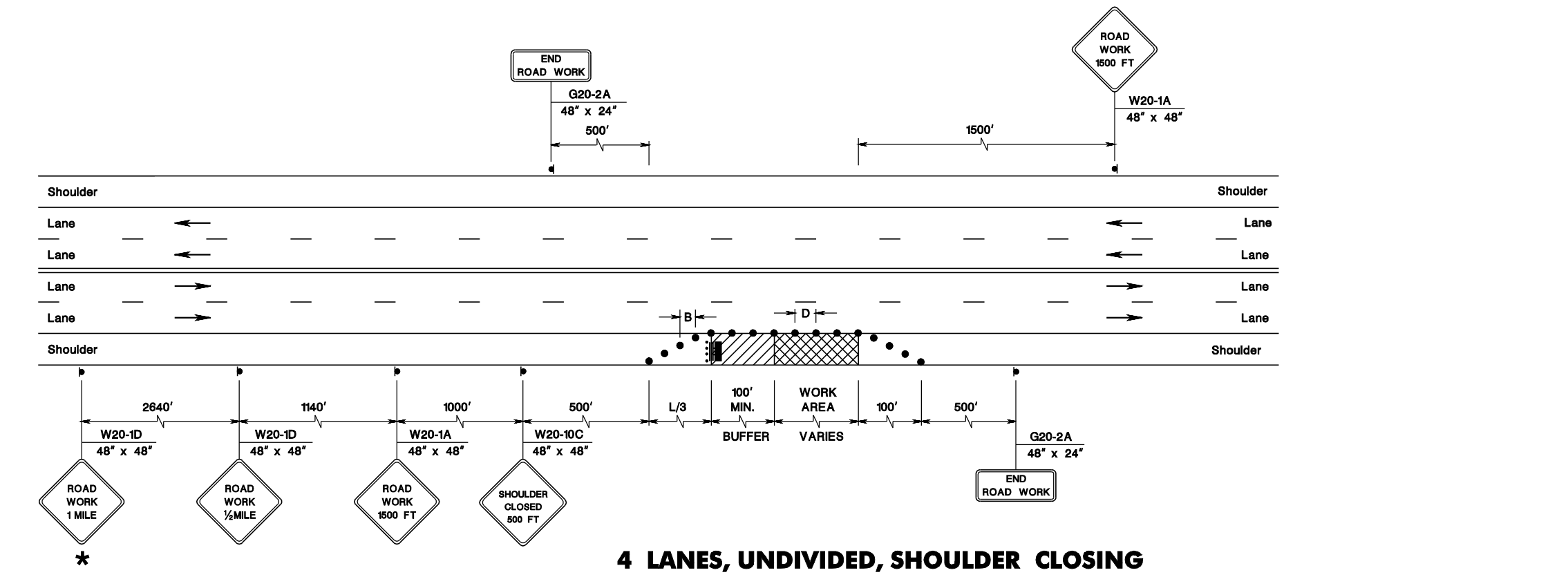
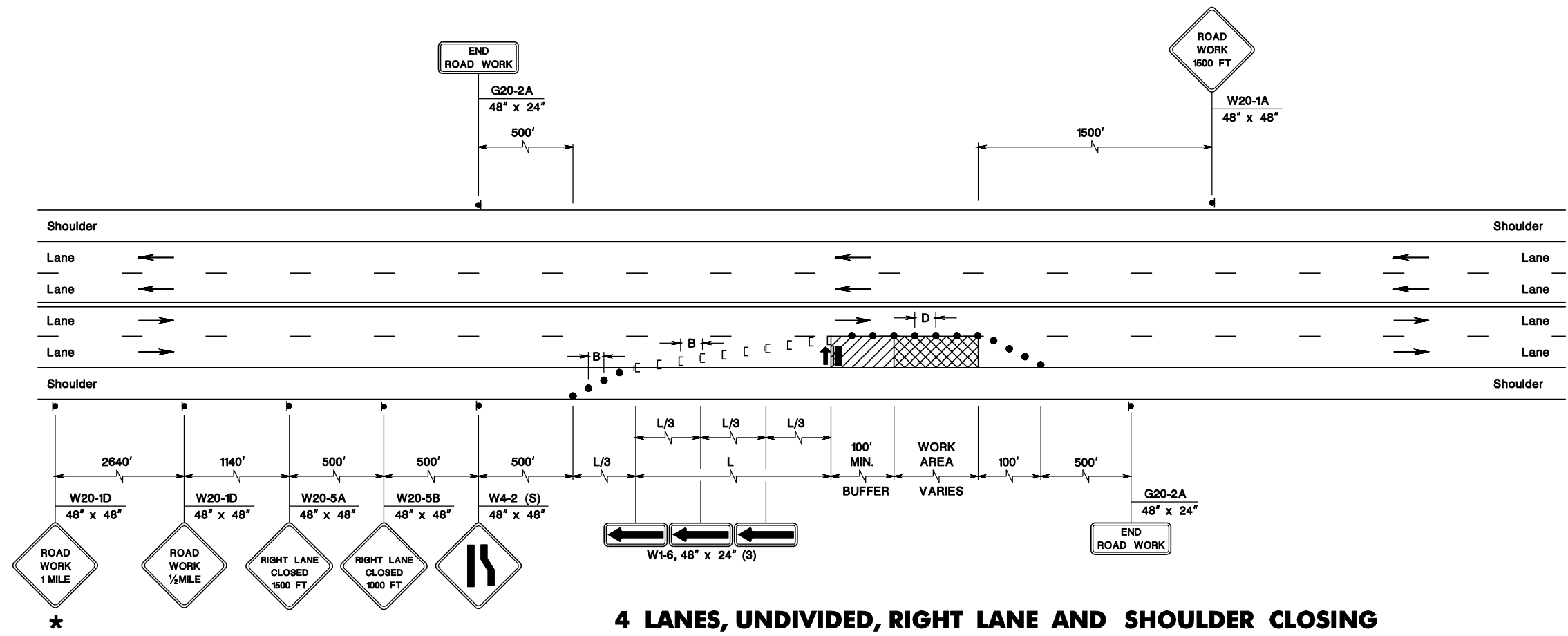
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

TCD-7

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 BDC\RD-01-ORIGINAL SHEET



* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

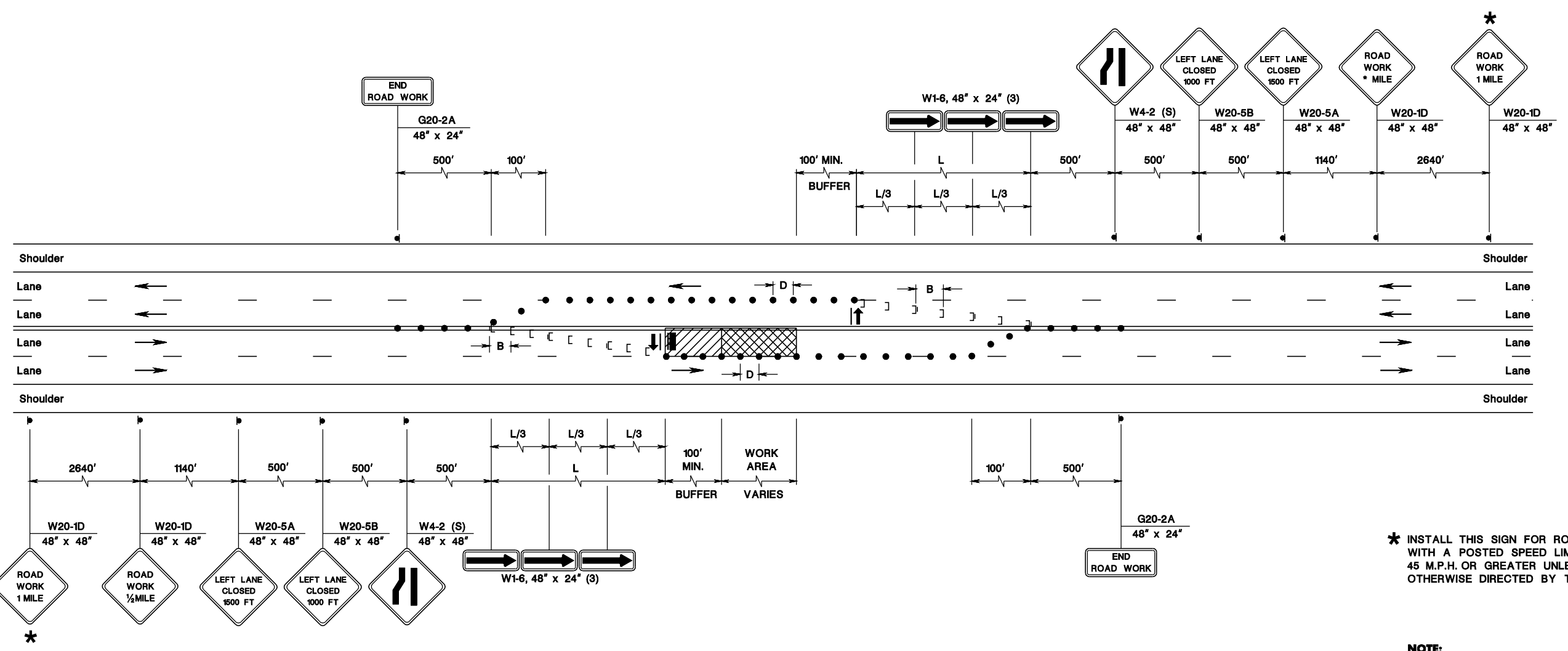
NOTE:
 SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

N.T.S.

TCD-8
 NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

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 ID=TP2VLL
 BDC\RD-01-ORIGINAL SHEET



* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

NOTE:
 SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

4 LANES, UNDIVIDED, LEFT LANE CLOSING

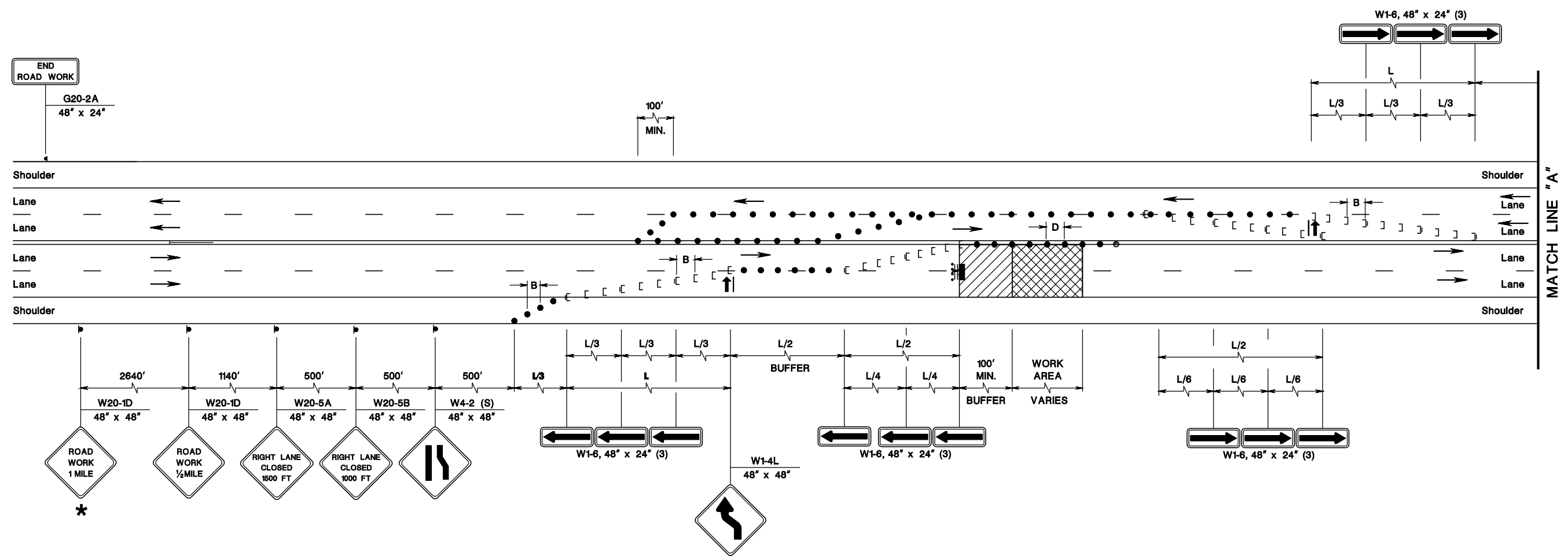
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

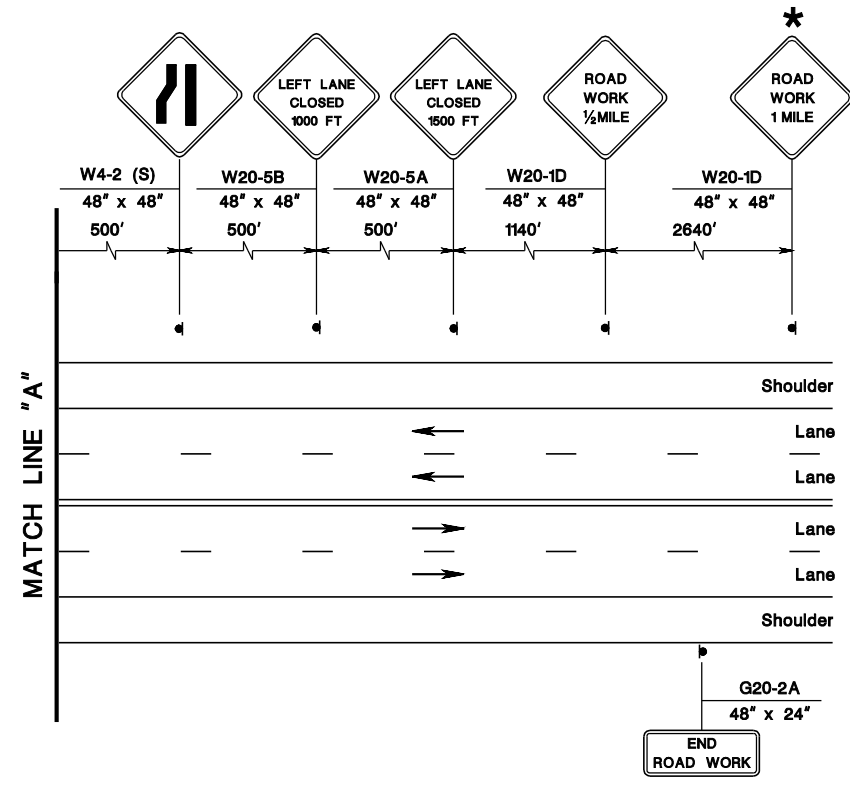
TRAFFIC CONTROL DETAILS

TCD-9

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 ID=TP2VLL
 BDC\RD-01-ORIGINAL SHEET



4 LANES, UNDIVIDED, 2 LANES AND SHOULDER ONE DIRECTION CLOSING



* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

NOTE:
 SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

N.T.S.

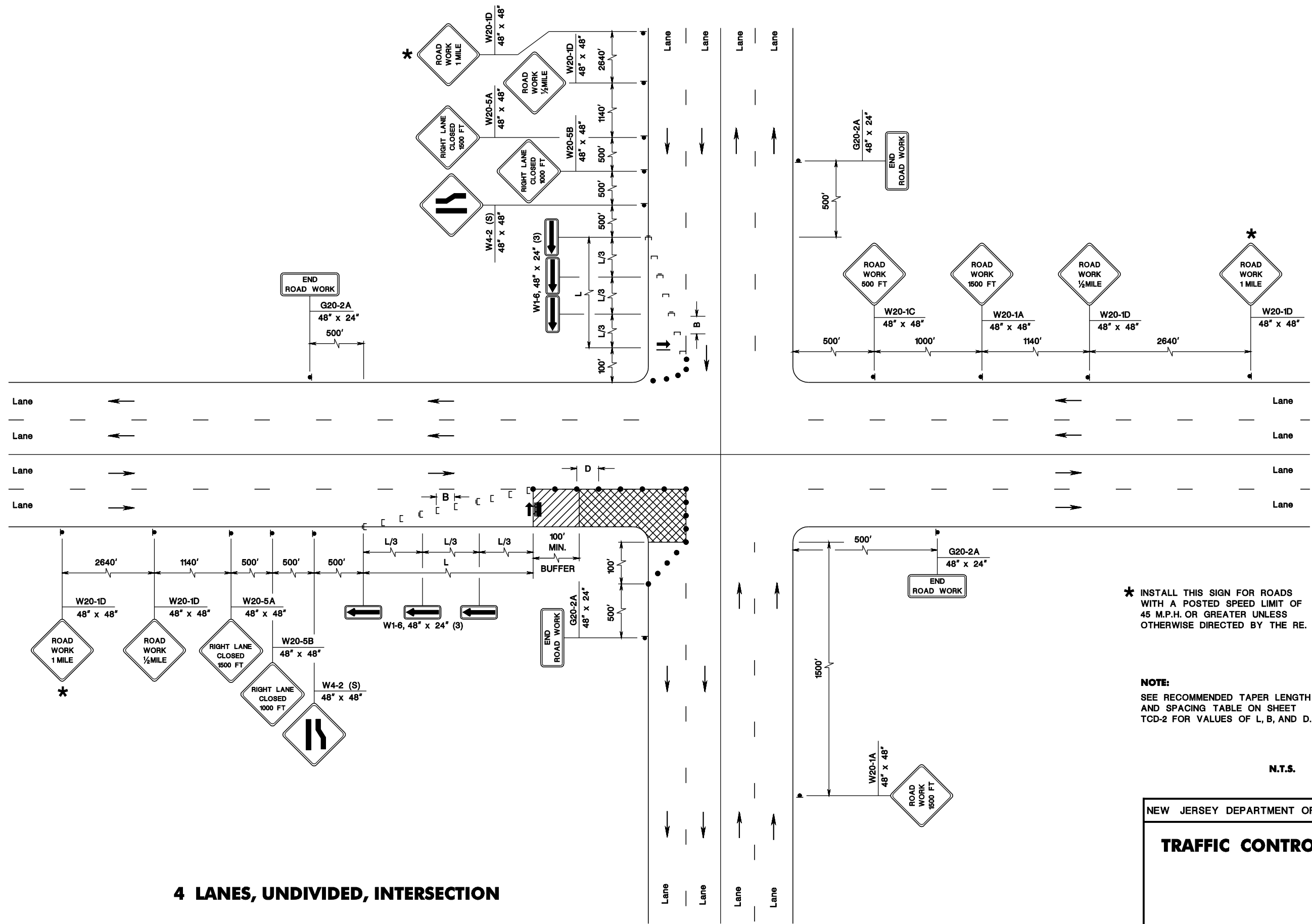
NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

TCD-10

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BDC\RD-01-ORIGINAL SHEET



4 LANES, UNDIVIDED, INTERSECTION

* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

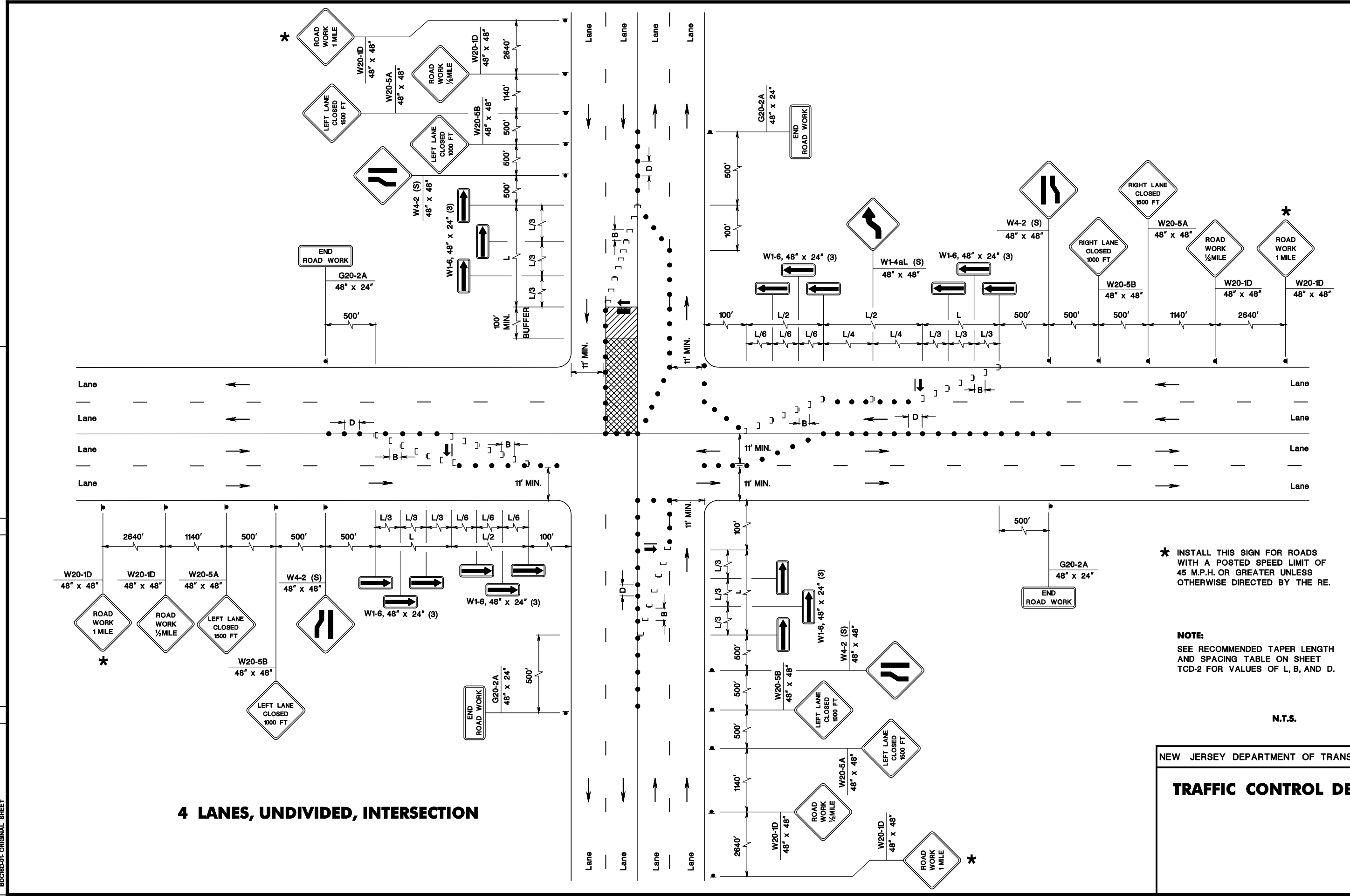
NOTE:
 SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

TCD-11



* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

NOTE:
SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

N.T.S.

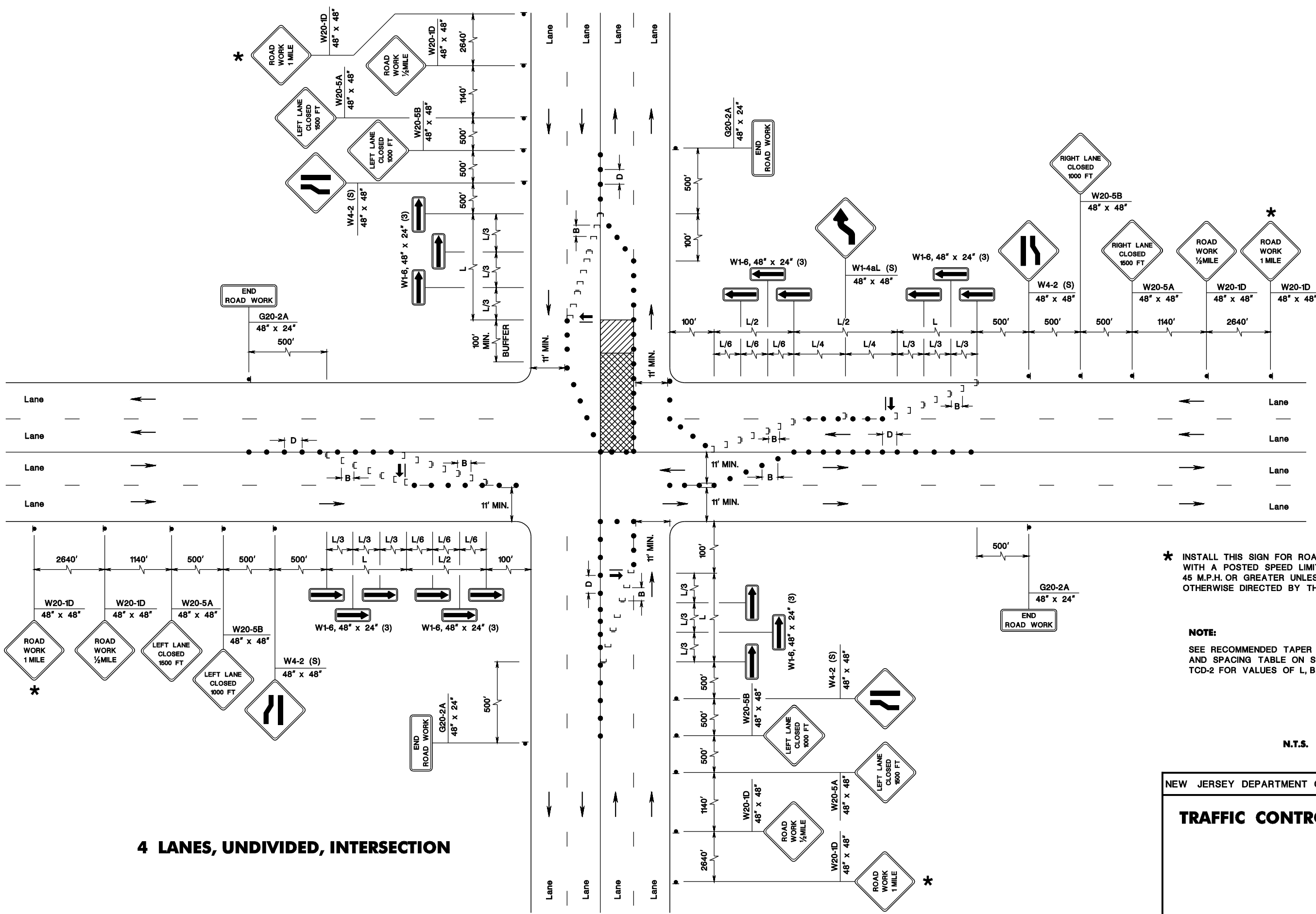
4 LANES, UNDIVIDED, INTERSECTION

TCD-12
NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

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BDC\RD-01-ORIGINAL SHEET



4 LANES, UNDIVIDED, INTERSECTION

* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

NOTE:
 SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

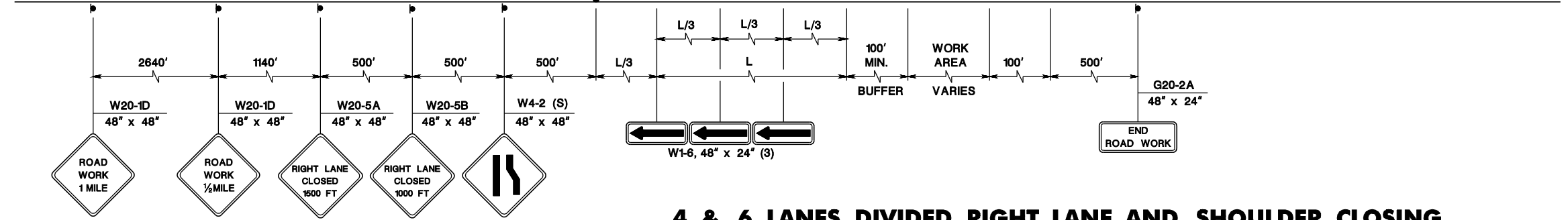
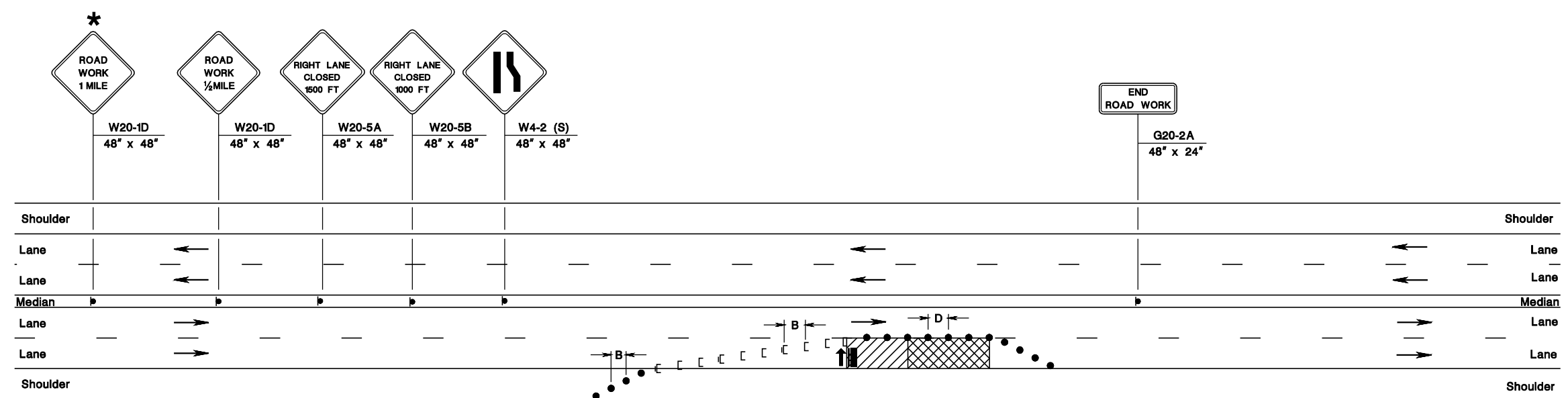
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

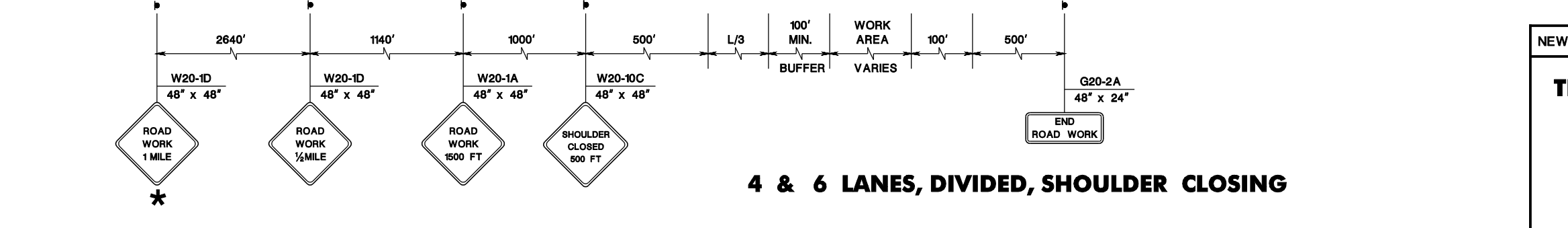
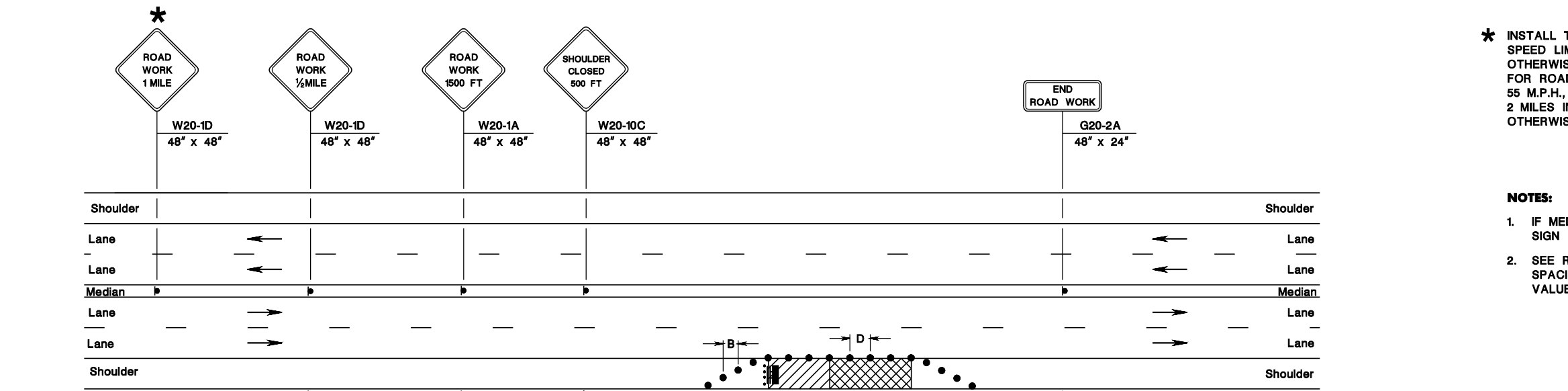
TRAFFIC CONTROL DETAILS

TCD-13

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4 & 6 LANES, DIVIDED, RIGHT LANE AND SHOULDER CLOSING



4 & 6 LANES, DIVIDED, SHOULDER CLOSING

* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.
 FOR ROADS WITH A SPEED LIMIT GREATER THAN 55 M.P.H., ALSO INSTALL A "ROAD WORK 2 MILES" SIGN 2 MILES IN ADVANCE OF LANE CLOSING UNLESS OTHERWISE DIRECTED BY THE RE.

- NOTES:**
- IF MEDIAN IS NARROWER THAN WIDTH OF SIGN PLUS 2 FEET, OMIT MEDIAN SIGNING.
 - SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

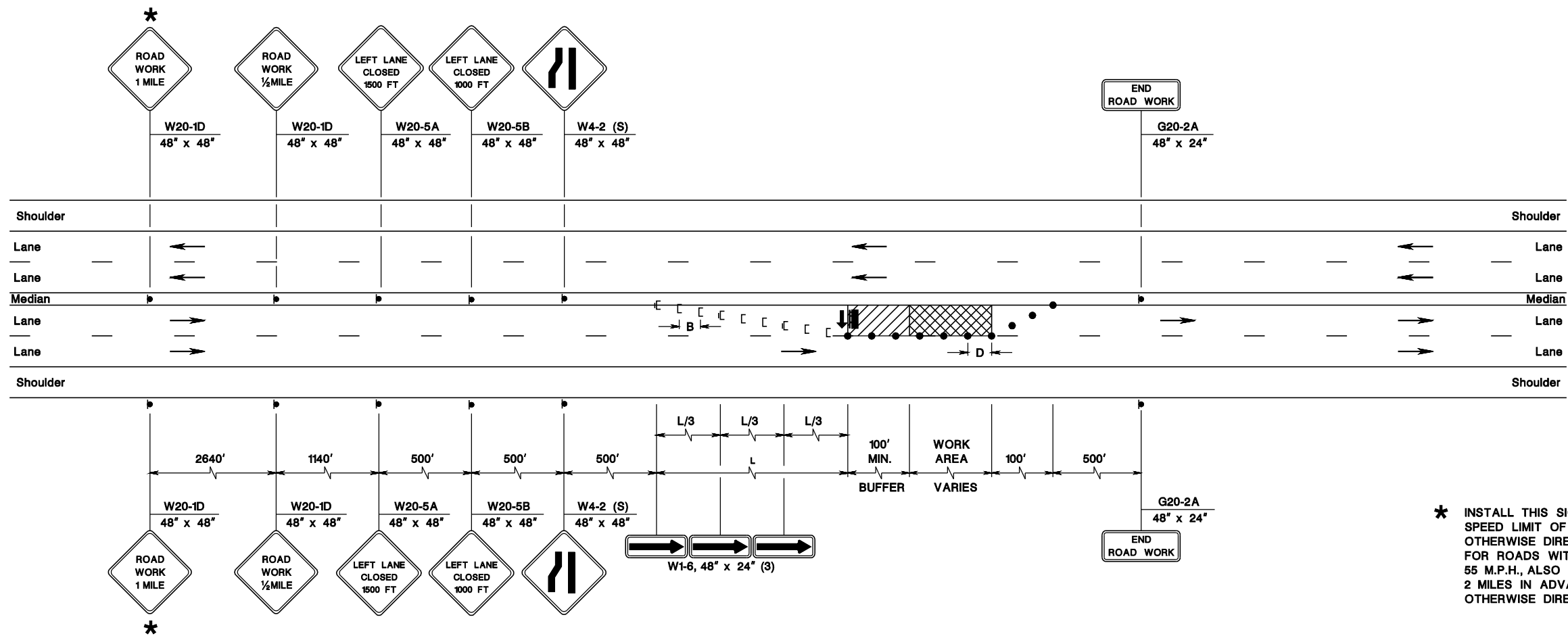
N.T.S.

TCD-14

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

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 ID=TP2VLL
 BDC\RD-01-ORIGINAL SHEET



4 & 6 LANES, DIVIDED, LEFT LANE CLOSING

* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE. FOR ROADS WITH A SPEED LIMIT GREATER THAN 55 M.P.H., ALSO INSTALL A "ROAD WORK 2 MILES" SIGN 2 MILES IN ADVANCE OF LANE CLOSING UNLESS OTHERWISE DIRECTED BY THE RE.

NOTES:

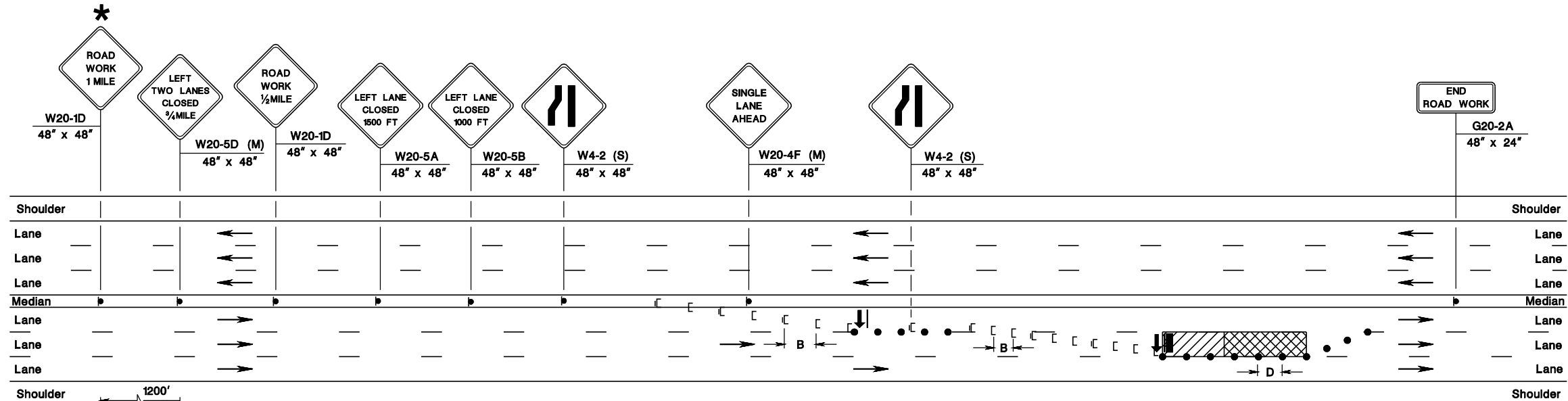
1. IF MEDIAN IS NARROWER THAN WIDTH OF SIGN PLUS 2 FEET, OMIT MEDIAN SIGNING.
2. IF WORK INTERFERES WITH OPPOSING TRAFFIC, CLOSE OPPOSITE LEFT LANE USING SAME CONFIGURATION.
3. SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

N.T.S.

TCD-15
 NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

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 BDC\RD-01-ORIGINAL SHEET

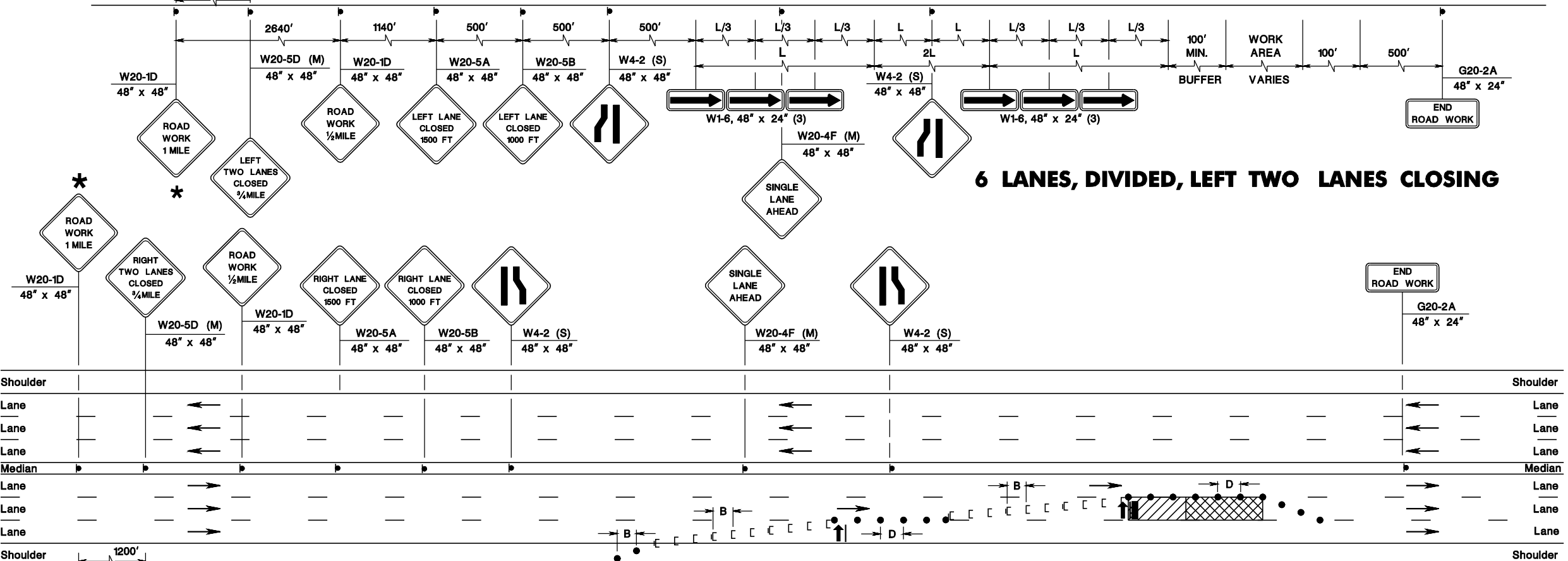


6 LANES, DIVIDED, LEFT TWO LANES CLOSING

* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE. FOR ROADS WITH A SPEED LIMIT GREATER THAN 55 M.P.H., ALSO INSTALL A "ROAD WORK 2 MILES" SIGN 2 MILES IN ADVANCE OF LANE CLOSING UNLESS OTHERWISE DIRECTED BY THE RE.

- NOTES:**
- IF MEDIAN IS NARROWER THAN WIDTH OF SIGN PLUS 2 FEET, OMIT MEDIAN SIGNING.
 - SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

N.T.S.



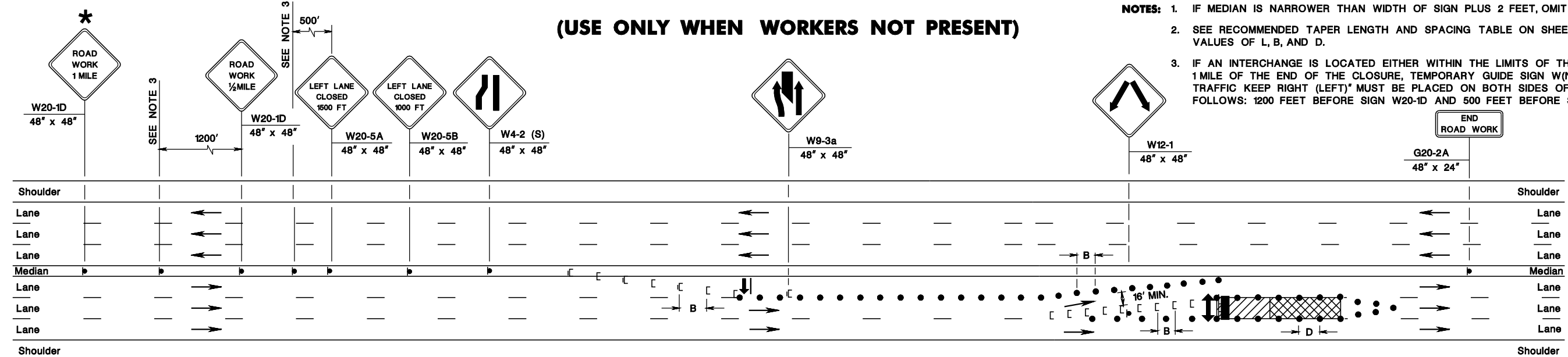
6 LANES, DIVIDED, RIGHT TWO LANES CLOSING

TCD-16
 NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

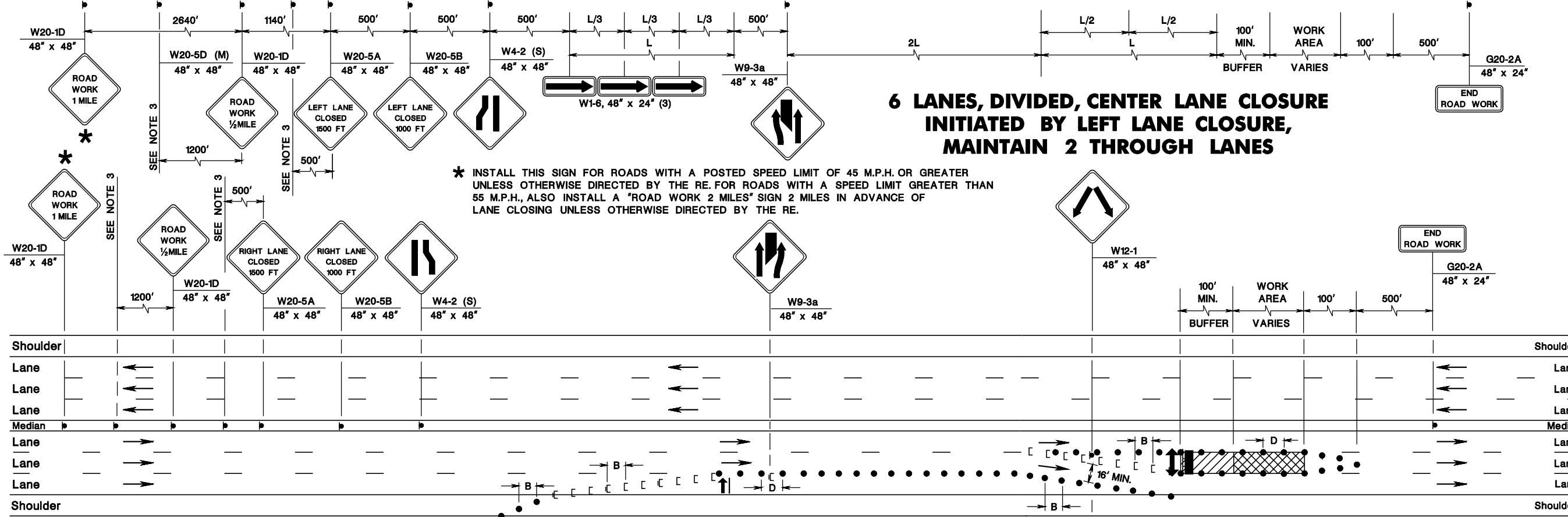
(USE ONLY WHEN WORKERS NOT PRESENT)

- NOTES:**
1. IF MEDIAN IS NARROWER THAN WIDTH OF SIGN PLUS 2 FEET, OMIT MEDIAN SIGNING.
 2. SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.
 3. IF AN INTERCHANGE IS LOCATED EITHER WITHIN THE LIMITS OF THE CLOSURE OR WITHIN 1 MILE OF THE END OF THE CLOSURE, TEMPORARY GUIDE SIGN W(NJ) 100-1(L), "ALL EXITING TRAFFIC KEEP RIGHT (LEFT)" MUST BE PLACED ON BOTH SIDES OF THE ROADWAY AS FOLLOWS: 1200 FEET BEFORE SIGN W20-1D AND 500 FEET BEFORE SIGN W20-5A.



6 LANES, DIVIDED, CENTER LANE CLOSURE INITIATED BY LEFT LANE CLOSURE, MAINTAIN 2 THROUGH LANES

* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE. FOR ROADS WITH A SPEED LIMIT GREATER THAN 55 M.P.H., ALSO INSTALL A "ROAD WORK 2 MILES" SIGN 2 MILES IN ADVANCE OF LANE CLOSING UNLESS OTHERWISE DIRECTED BY THE RE.



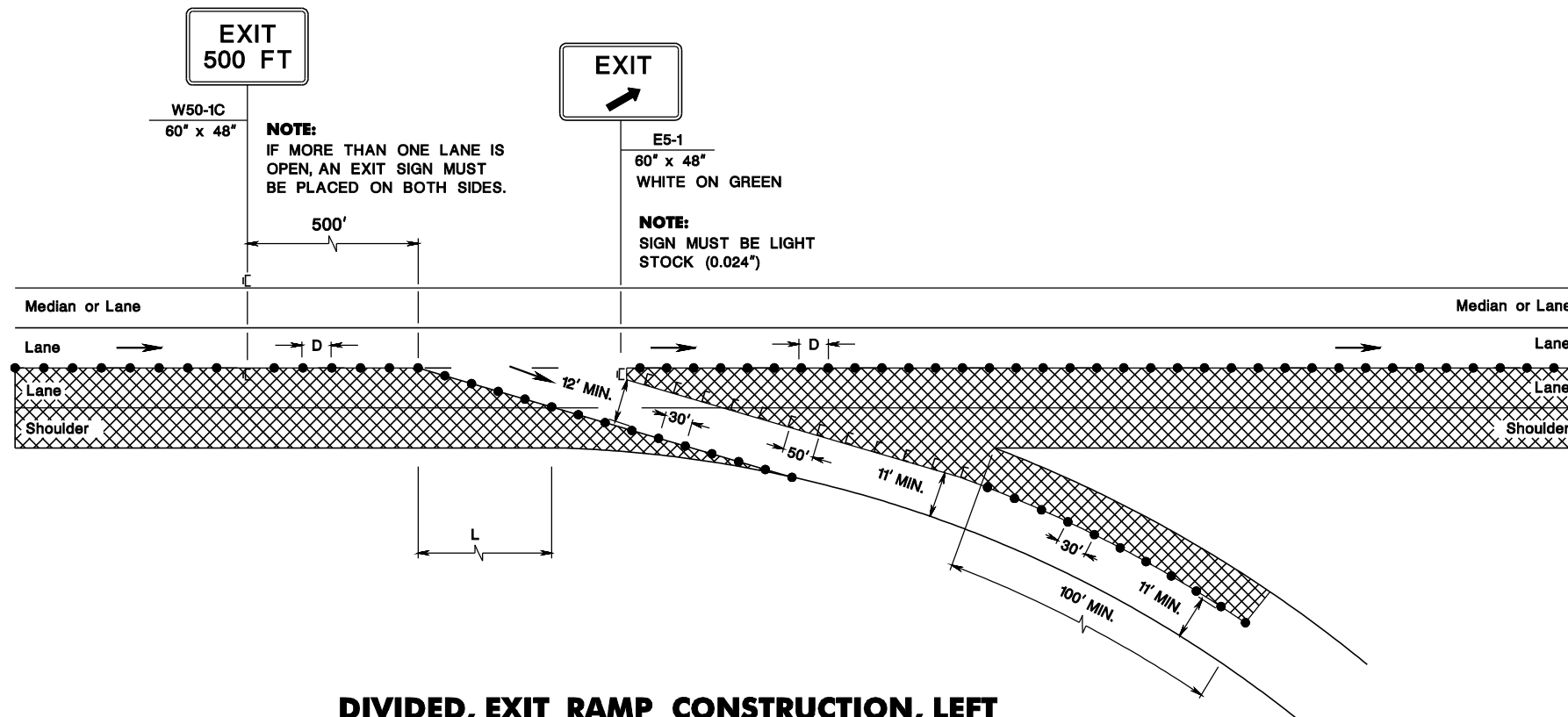
6 LANES, DIVIDED, CENTER LANE CLOSURE INITIATED BY RIGHT LANE CLOSURE, MAINTAIN 2 THROUGH LANES

(USE ONLY WHEN WORKERS NOT PRESENT)

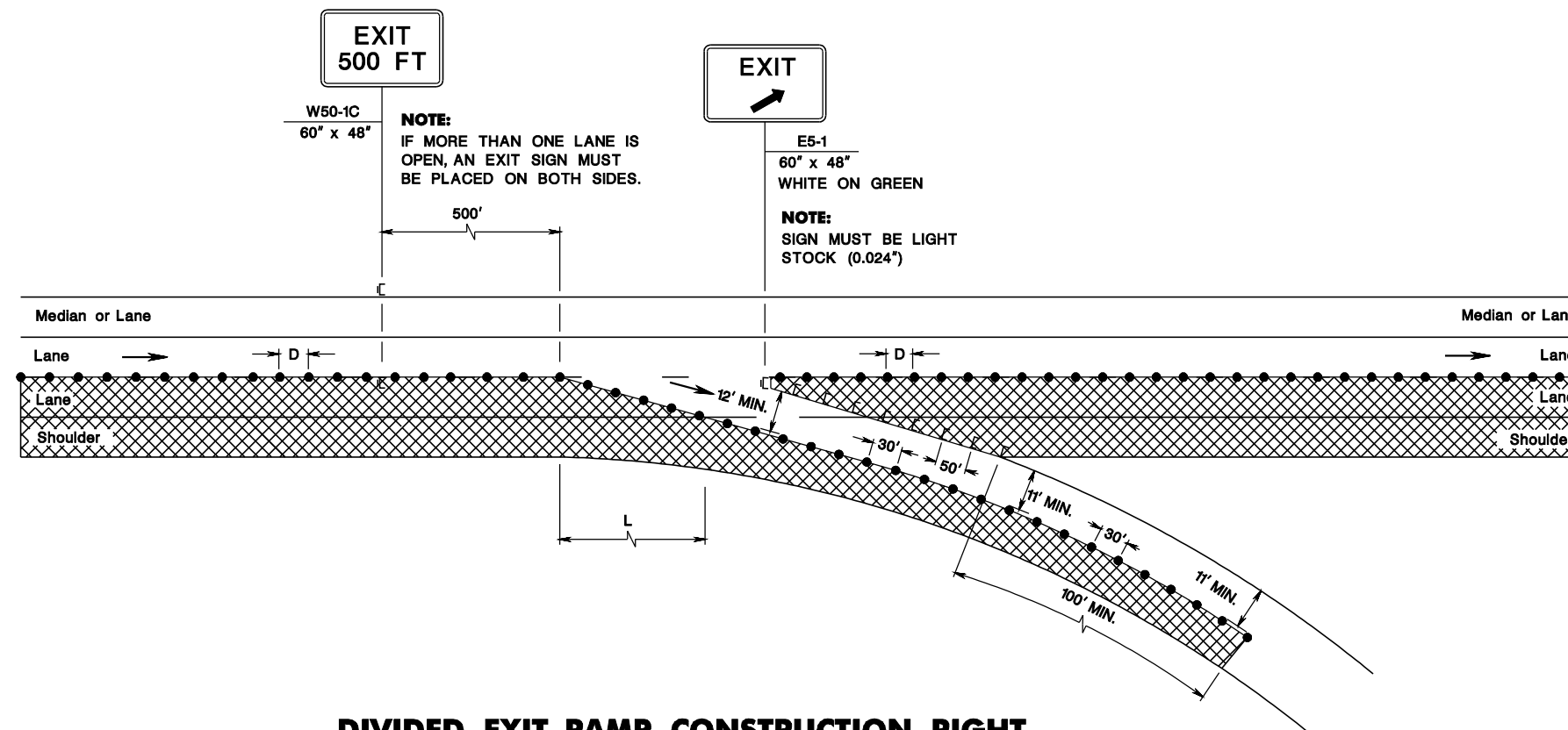
N.T.S. TCD-17
NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

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BDC:RD-01-ORIGINAL-SHEET



DIVIDED, EXIT RAMP CONSTRUCTION, LEFT



DIVIDED, EXIT RAMP CONSTRUCTION, RIGHT

NOTE:
SEE RECOMMENDED TAPER LENGTH
AND SPACING TABLE ON SHEET
TCD-2 FOR VALUES OF L, B, AND D.

N.T.S.

TCD-18

NEW JERSEY DEPARTMENT OF TRANSPORTATION

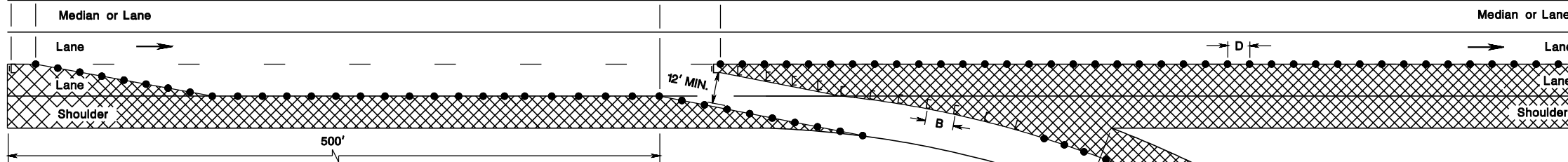
TRAFFIC CONTROL DETAILS

EXIT
500 FT

W50-1C
60" x 48"

NOTE:
IF MORE THAN ONE LANE IS OPEN, AN EXIT
SIGN MUST BE PLACED ON BOTH SIDES.

MATCH EXISTING DECELERATION LANE LENGTH



EXIT
↗

E5-1
60" x 48"
WHITE ON GREEN

NOTE:
SIGN MUST BE LIGHT STOCK (0.024")

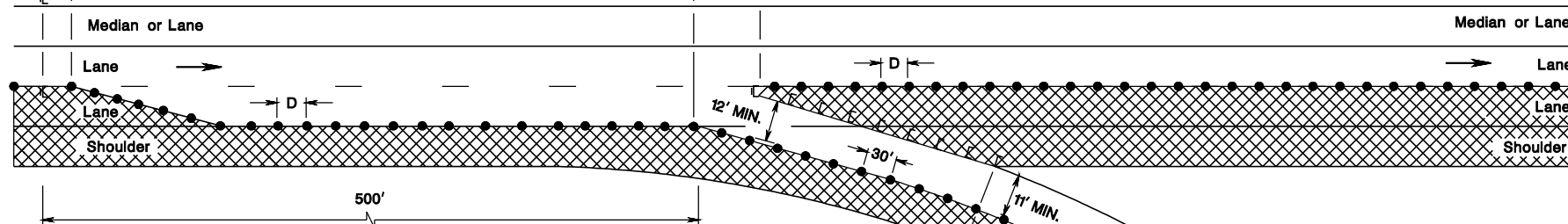
DIVIDED, EXIT RAMP CONSTRUCTION, LEFT WITH DECELERATION LANE

EXIT
500 FT

W50-1C
60" x 48"

NOTE:
IF MORE THAN ONE LANE IS OPEN, AN EXIT
SIGN MUST BE PLACED ON BOTH SIDES.

MATCH EXISTING DECELERATION LANE LENGTH



EXIT
↗

E5-1
60" x 48"
WHITE ON GREEN

NOTE:
SIGN MUST BE LIGHT STOCK (0.024")

DIVIDED, EXIT RAMP CONSTRUCTION, RIGHT WITH DECELERATION LANE

NOTE:
SEE RECOMMENDED TAPER LENGTH
AND SPACING TABLE ON SHEET
TCD-2 FOR VALUES OF L, B, AND D.

N.T.S.

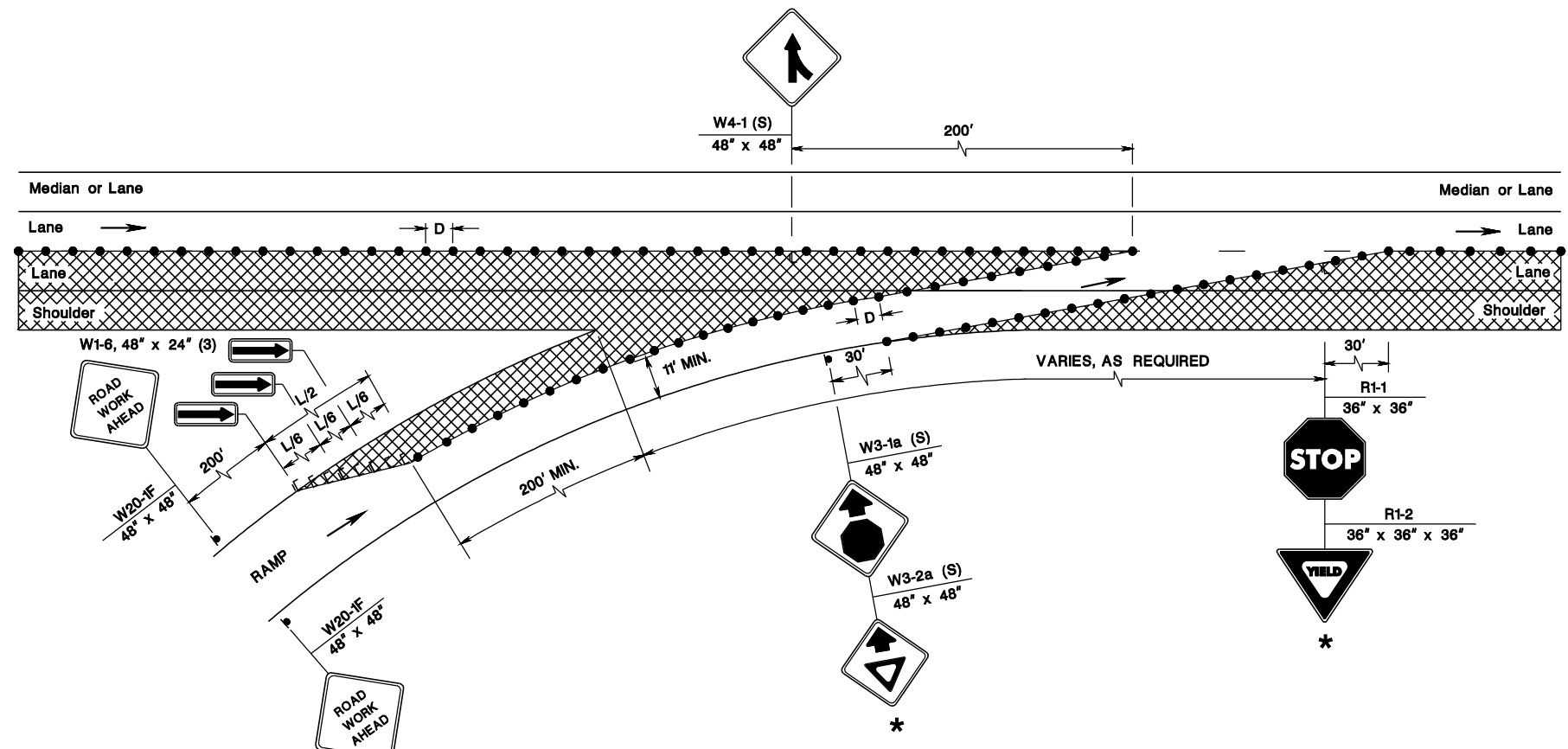
TCD-19

NEW JERSEY DEPARTMENT OF TRANSPORTATION

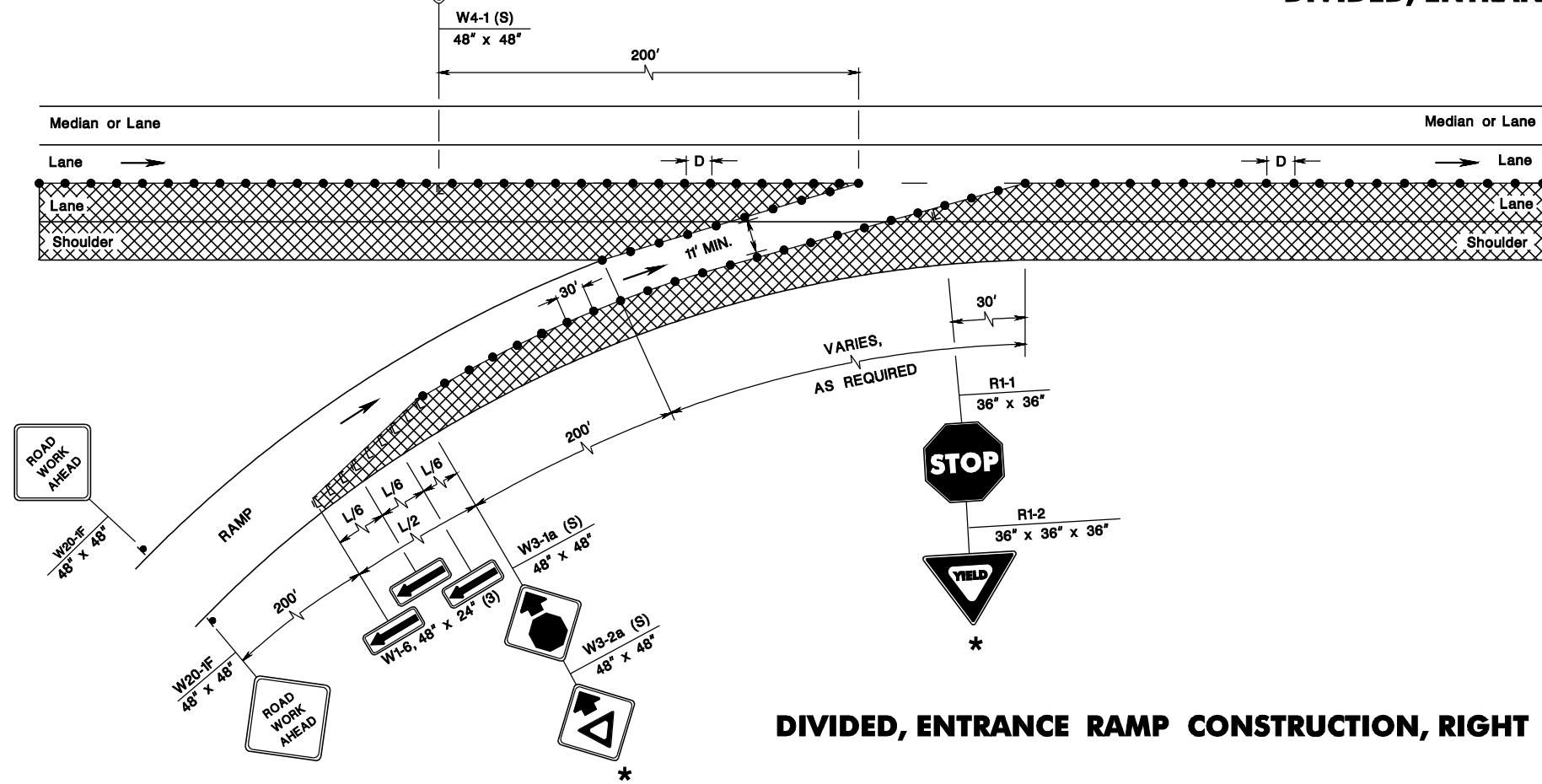
TRAFFIC CONTROL DETAILS

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 scale=63.073306:1.000000
 date=28-SEP-2016 14:24
 ID=TP2VLL
 BDC\RD-01-ORIGINAL SHEET



DIVIDED, ENTRANCE RAMP CONSTRUCTION, LEFT



DIVIDED, ENTRANCE RAMP CONSTRUCTION, RIGHT

* STOP SIGN OR YIELD SIGN TO BE DETERMINED BY REGIONAL TRAFFIC ENGINEER. SIGNS MUST BE LIGHT STOCK (0.024")

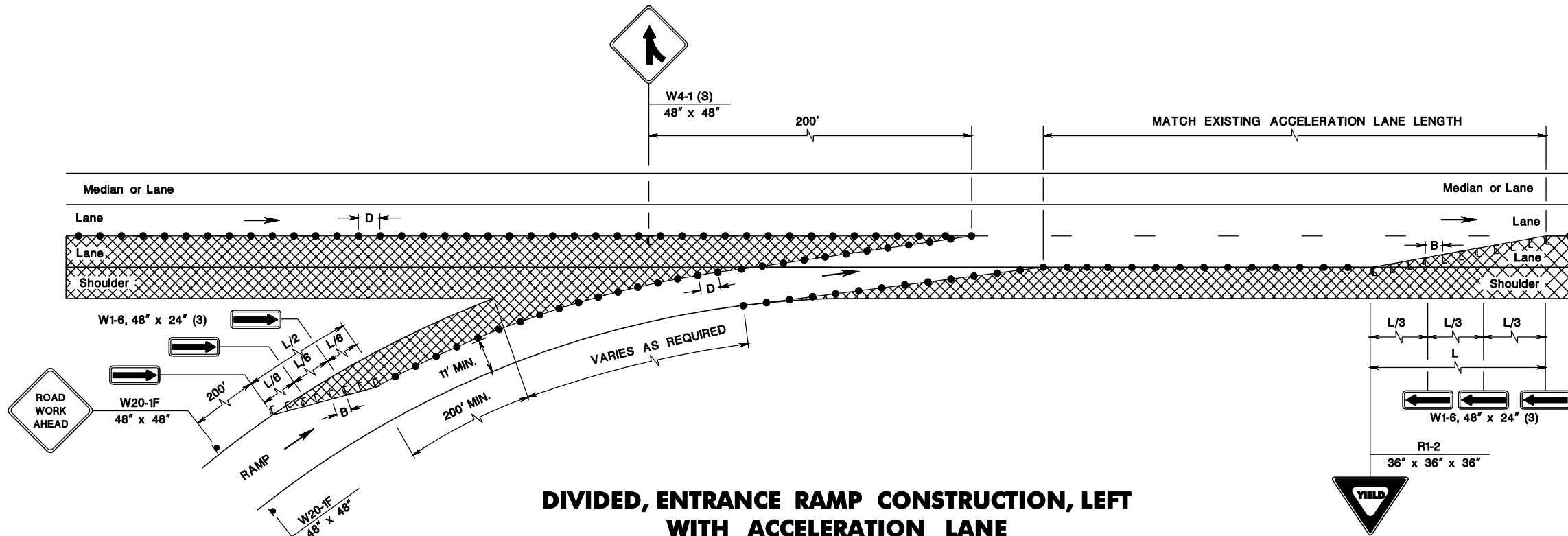
- NOTE:**
1. PROVIDE AN ACCELERATION LANE WHERE POSSIBLE. SEE TCD-21.
 2. SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

N.T.S.

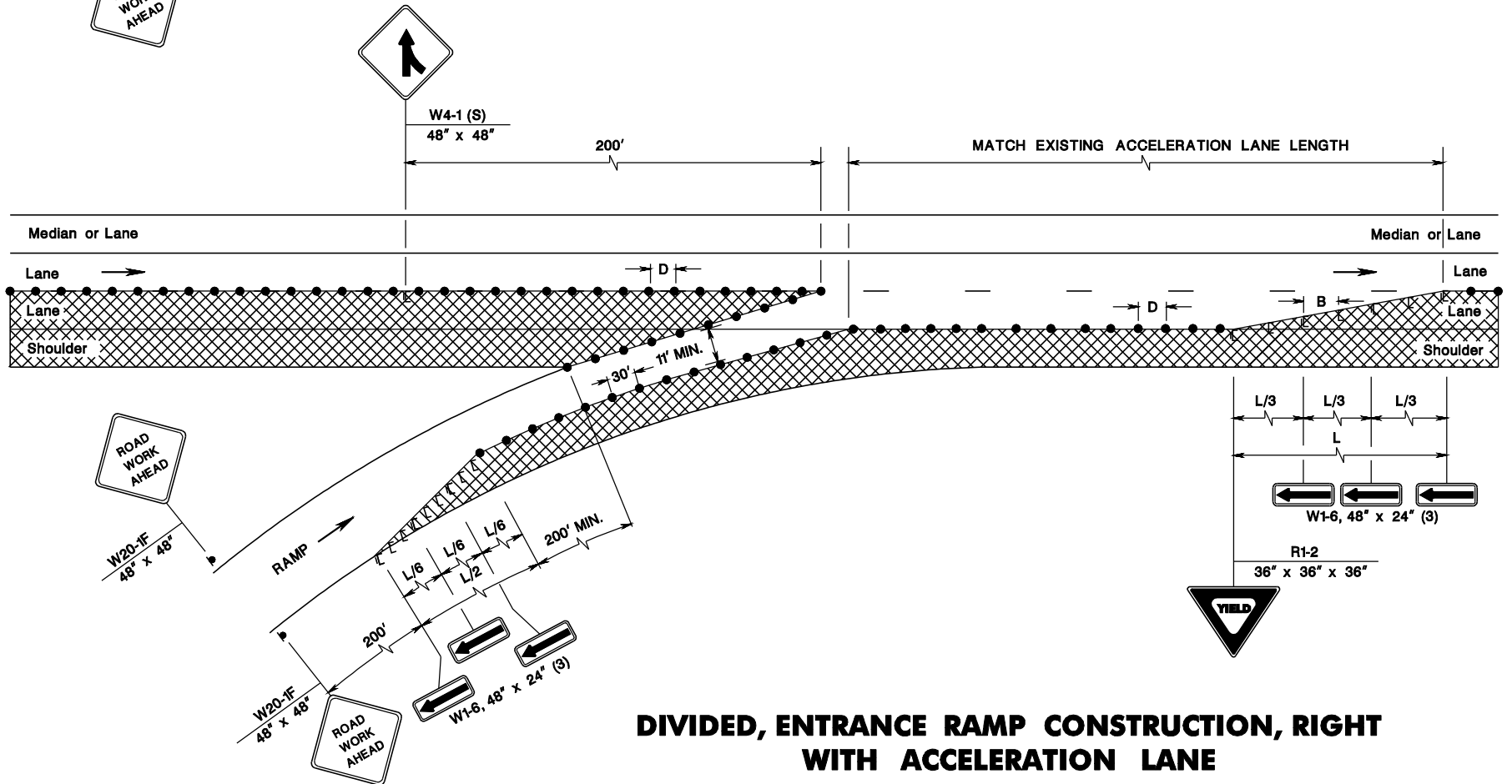
TCD-20
 NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

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 BDC\RD-01-ORIGINAL SHEET



DIVIDED, ENTRANCE RAMP CONSTRUCTION, LEFT WITH ACCELERATION LANE



DIVIDED, ENTRANCE RAMP CONSTRUCTION, RIGHT WITH ACCELERATION LANE

NOTE:
 SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B, AND D.

N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

TCD-21

LEGEND

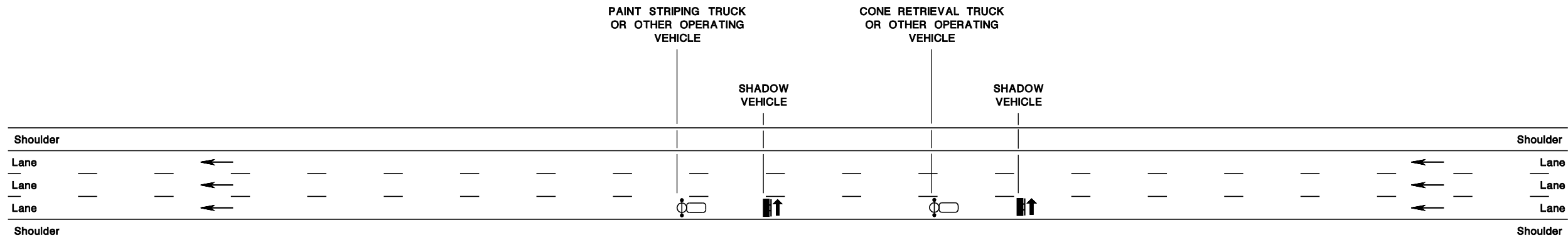
"W" IS THE WIDTH OF LANE CLOSURE IN FEET

"L" IS THE LENGTH OF TAPER

"#" IS NUMBER OF CONES IN TAPER AT 40' SPACING

LENGTH OF TAPER CHART FOR MOVING OPERATIONS

W	25 M.P.H.		30 M.P.H.		35 M.P.H.		40 M.P.H.		45 M.P.H.		50 M.P.H.		55 M.P.H.	
	L	#	L	#	L	#	L	#	L	#	L	#	L	#
1	10	2	15	2	20	2	30	2	45	3	50	3	55	3
2	25	2	30	2	45	3	55	3	90	4	100	4	110	4
3	35	2	45	3	65	3	80	3	135	5	150	5	165	5
4	45	3	60	3	85	4	110	4	180	6	200	6	220	7
5	55	3	75	3	105	4	135	5	225	7	250	7	275	8
6	65	3	90	4	125	5	160	5	270	8	300	9	330	9
10	105	4	150	5	205	6	270	8	450	13	500	14	550	15
11	115	4	165	5	225	7	295	9	495	14	550	15	605	16
12	125	5	180	6	245	7	320	9	540	15	600	16	660	18



MULTI-LANE ROAD MOVING OPERATION

NOTE:

SHADOW VEHICLE TO MAINTAIN A DISTANCE OF 70 FEET MINIMUM TO A MAXIMUM OF 150 FEET BEHIND THE OPERATING VEHICLE.

N.T.S.

TCD-22

NEW JERSEY DEPARTMENT OF TRANSPORTATION

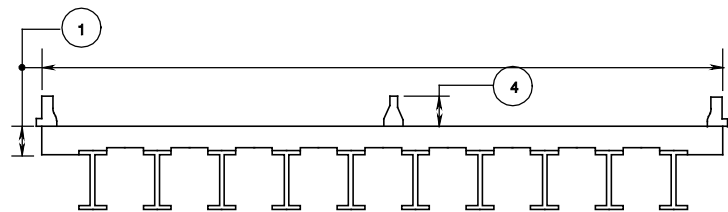
TRAFFIC CONTROL DETAILS

INDEX FOR STANDARD BRIDGE CONSTRUCTION DETAILS

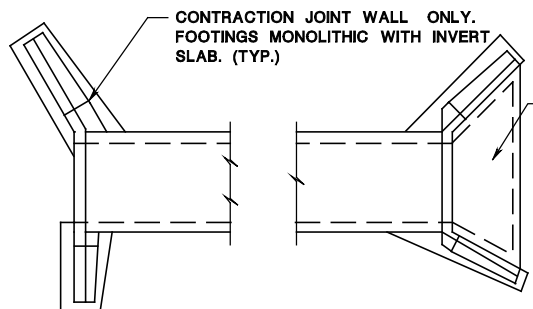
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BCD-980-ORIGINAL SHEET

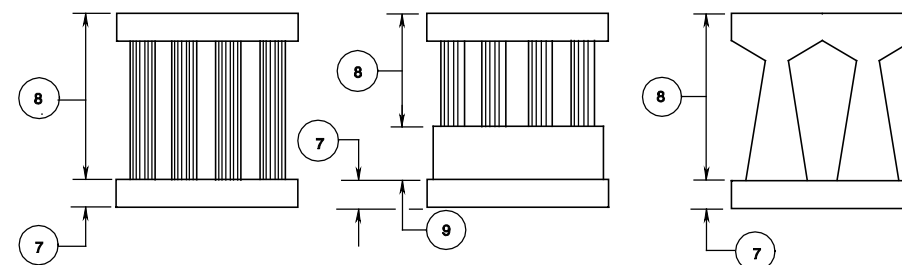


TYPICAL SECTION - BRIDGE DECK

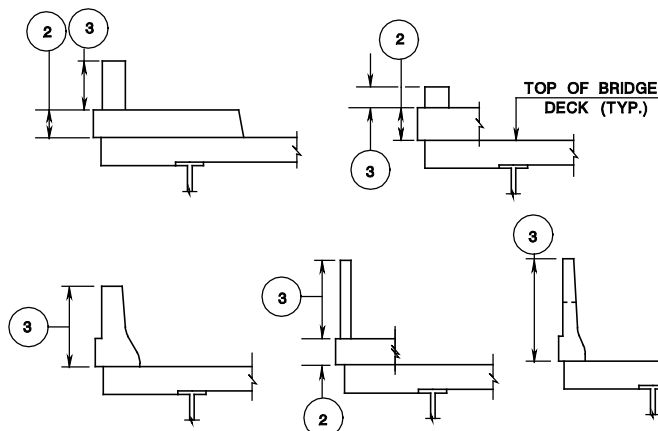


TYPICAL PLAN - CULVERT AND HEADWALLS

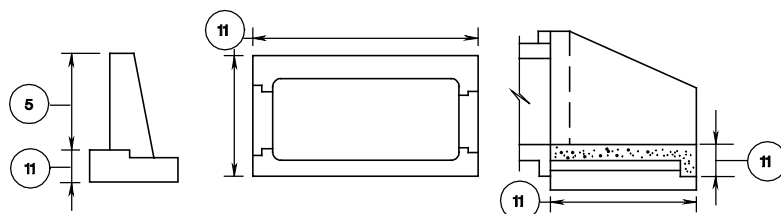
APRON (WHEN REQUIRED BY HYDRAULIC DESIGN) SEE CONSTRUCTION PLANS.



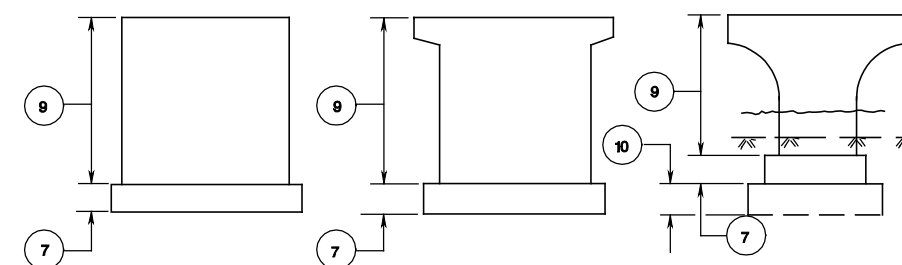
TYPICAL RIGID FRAME TYPE PIER - ELEVATIONS



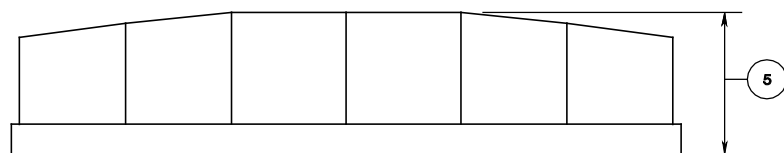
TYPICAL SECTION - BRIDGE PARAPETS



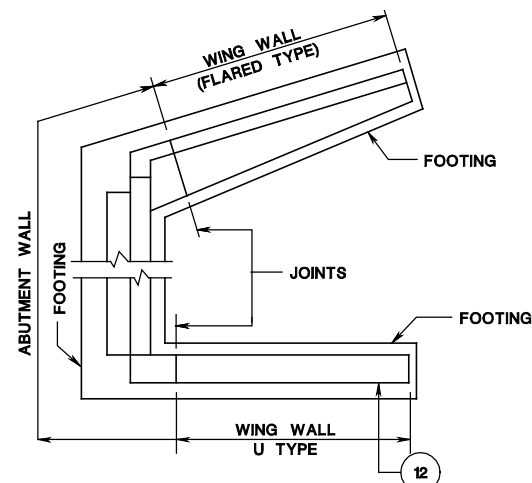
TYPICAL SECTION - CULVERT AND HEADWALLS



TYPICAL SOLID SHAFT TYPE PIER - ELEVATIONS

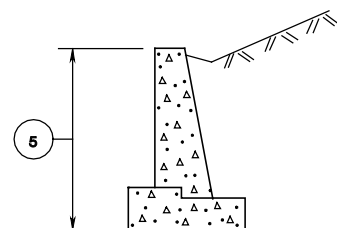


TYPICAL ELEVATION - RETAINING WALL

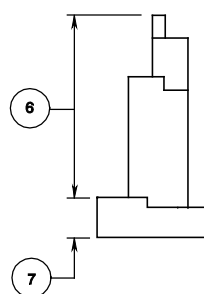


TYPICAL PLAN - ABUTMENTS

ITEM	CONCRETE CLASS	DESCRIPTION
1	HPC-1	CONCRETE DECK
2	HPC-1	CONCRETE BRIDGE SIDEWALK
3	HPC-1	CONCRETE BRIDGE PARAPET
4	B	__" X __" CONCRETE BARRIER CURB
5	B	RETAINING WALL, LOCATION NO. ____
6	B	CONCRETE ABUTMENT WALL
7	B	CONCRETE FOOTING
8	A	CONCRETE PIER COLUMNS AND CAP
9	B	CONCRETE PIER SHAFT
10	B	PERMANENT COFFERDAM
11	P	PRECAST CONCRETE CULVERT
12	B	CONCRETE WINGWALL



TYPICAL SECTION - RETAINING WALL



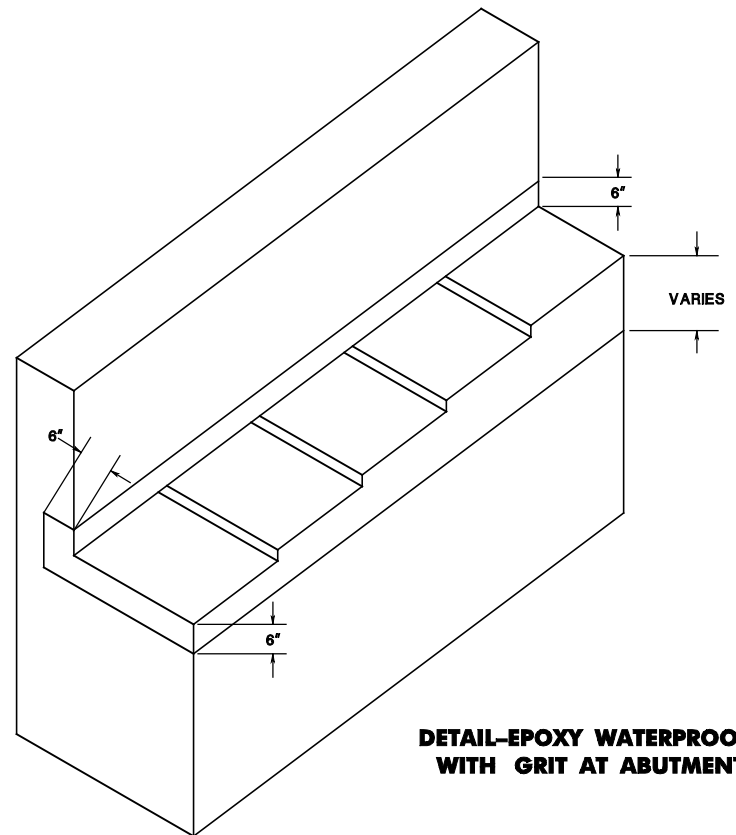
TYPICAL SECTION

CONCRETE CLASSES
N.T.S.

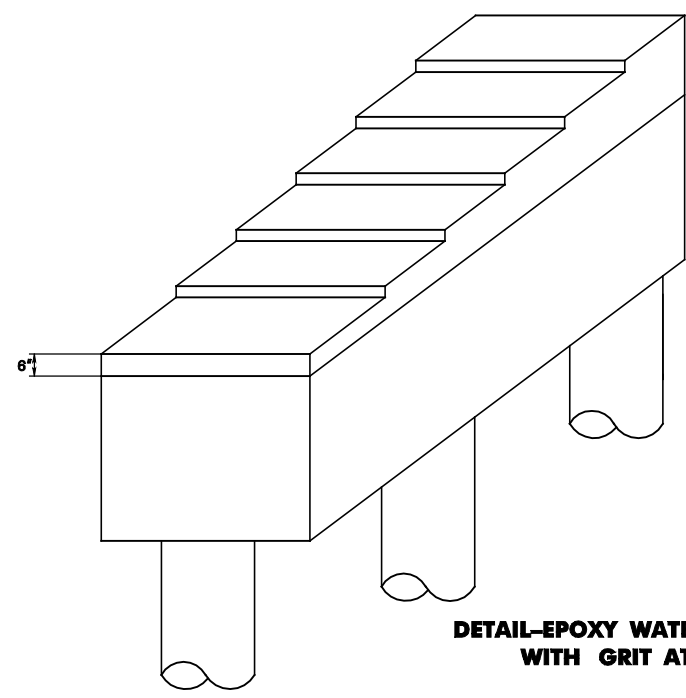
BCD-504-1
NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BCD-504-1.1

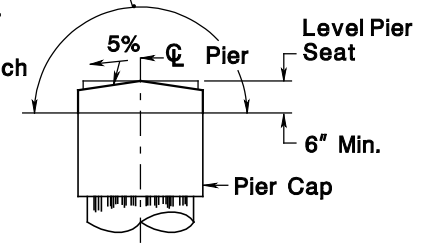


DETAIL-EPOXY WATERPROOFING WITH GRIT AT ABUTMENTS

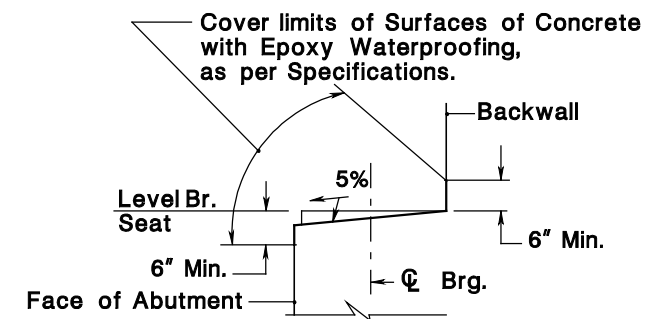


DETAIL-EPOXY WATERPROOFING WITH GRIT AT PIERS

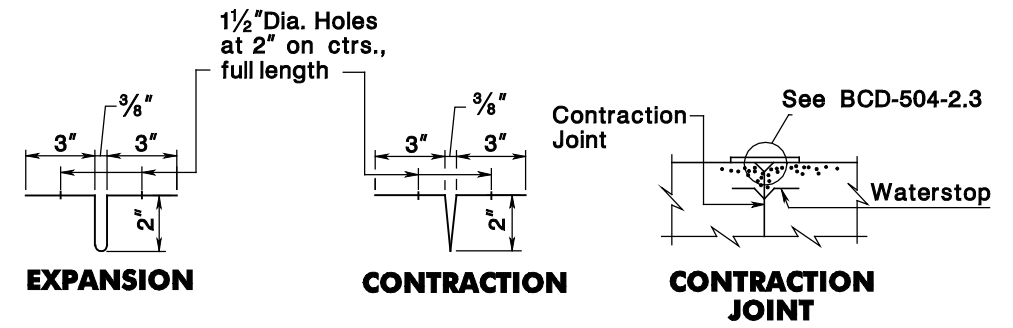
Epoxy Limits
 1. Full length for Simple Span.
 2. From end of Pier Cap to 2'-0" inside the centerline of each Fascia Stringer for continuous deck.



LIMITS AT PIER

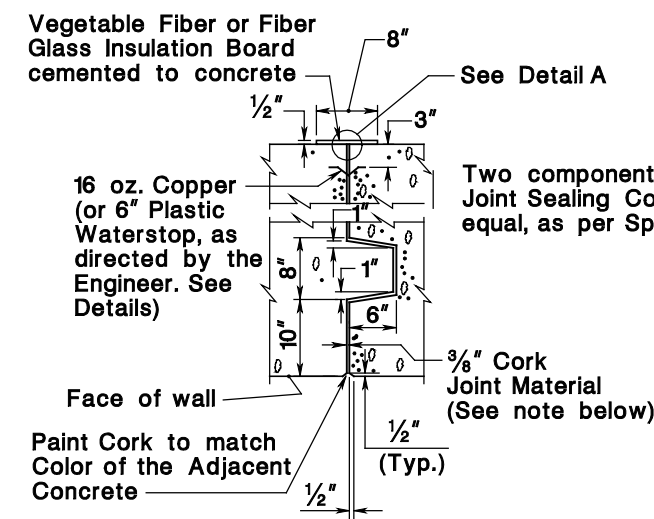


LIMITS AT ABUTMENT



16 OZ. COPPER WATERSTOP-10" WIDE

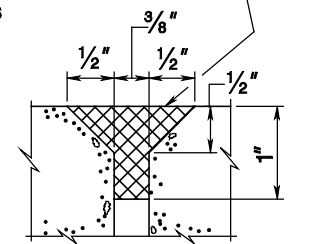
BCD-504-2.2



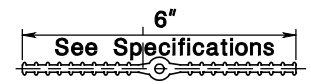
SECTION - WALL JOINT

Cork Joint Material: conforming to AASHTO Specifications, Designation M153, Type 2, where joint is noted as Expansion Joint. Tighten the contraction joints and coat it with paraffin.

DETAILS OF WATERSTOP



DETAIL A SEALER



DETAIL 6" PLASTIC WATERSTOP

BCD-504-2.3

TYPICAL DETAILS
 N.T.S.

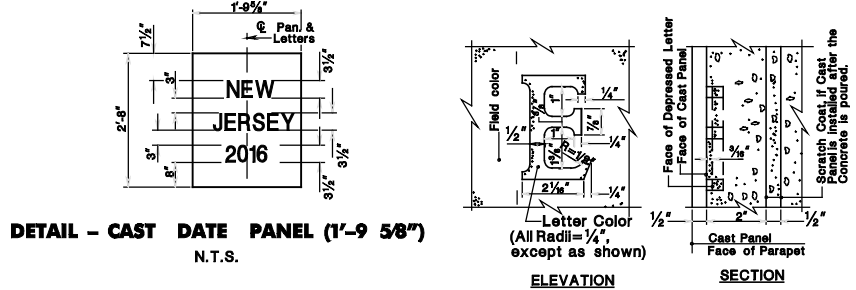
NEW JERSEY DEPARTMENT OF TRANSPORTATION
 BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BCD-504-2

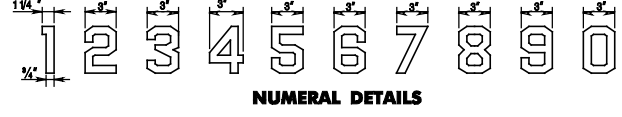
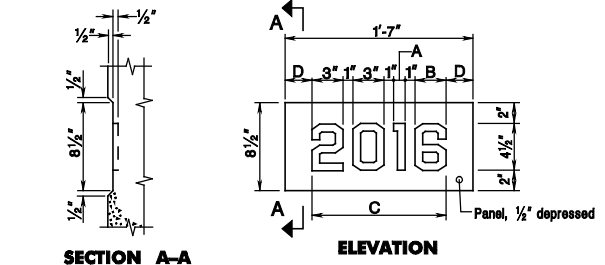
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 BDCBD-ORIGINAL SHEET

BCD-504-2.1



NOTES:
Cast date panels in one piece with the exposed aggregate as per Specifications. Ensure that the surface Finish for the Field is a medium feature exposed aggregate with a reddish-brown coloration. Ensure that the surface Finish for Letters and Numbers is light green crushed quartz. Take care to prevent mortar discoloration of exposed surfaces of the panel. Provide one date panel on right side of the parapet at the entrance end as directed by the RE.
The year of Bridge completion is the Date on the panel.

DATE PANEL
(USE ON BRIDGES WITH SPECIAL REQUIREMENTS)



LEGEND

YEAR	A (IN.)	B (IN.)	C (IN.)	D (IN.)
2012-2019	1 1/4	3	13 1/4	2 1/2
2020	3	3	15	2
2022-2030, 2032-2040, 2042-2050	3	3	15	2
2021, 2031, 2041, 2051	3	1 1/4	13 1/4	2 1/2

- NOTES:**
- Year of Completion of Structure is the DATE on the panel.
 - Submit NUMERALS proposed for use to the RE for approval.
 - Two (2) Panels required.
 - Provide one numeral panel on right side of the parapet at the entrance end as directed by the RE.

NUMERAL PANEL
(USE ON ALL OTHER BRIDGES)

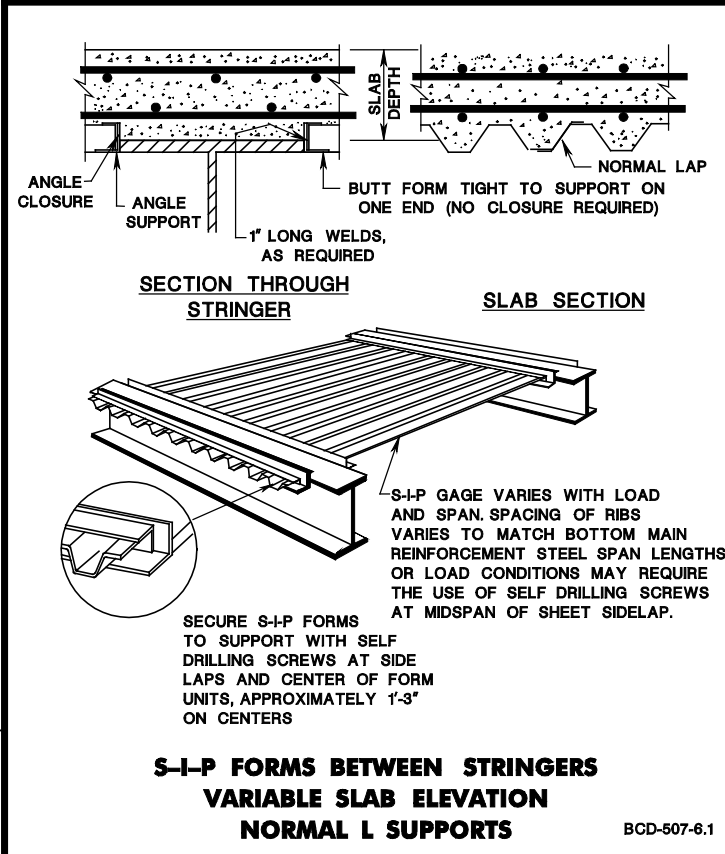
BCD-507-1.1

BCD-507-1.2

DATE AND NUMERAL PANEL
N.T.S.

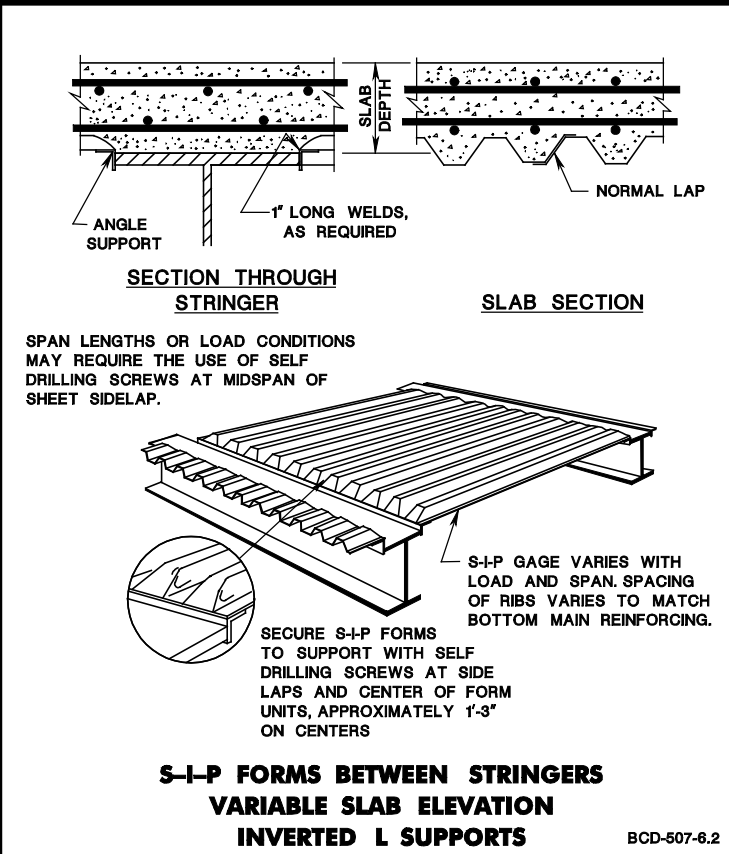
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NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS



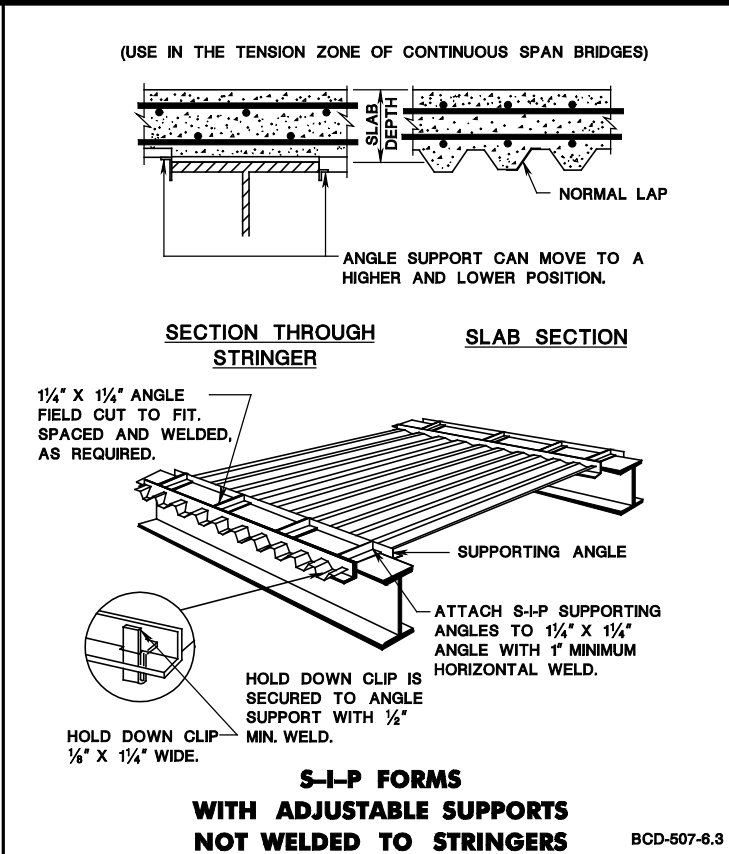
**S-I-P FORMS BETWEEN STRINGERS
VARIABLE SLAB ELEVATION
NORMAL L SUPPORTS**

BCD-507-6.1



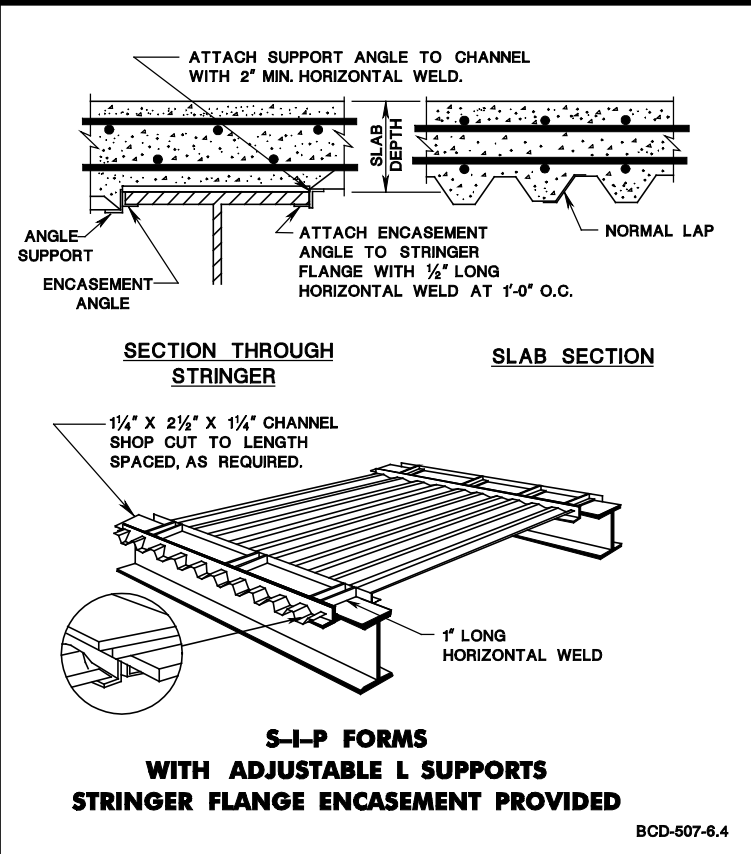
**S-I-P FORMS BETWEEN STRINGERS
VARIABLE SLAB ELEVATION
INVERTED L SUPPORTS**

BCD-507-6.2



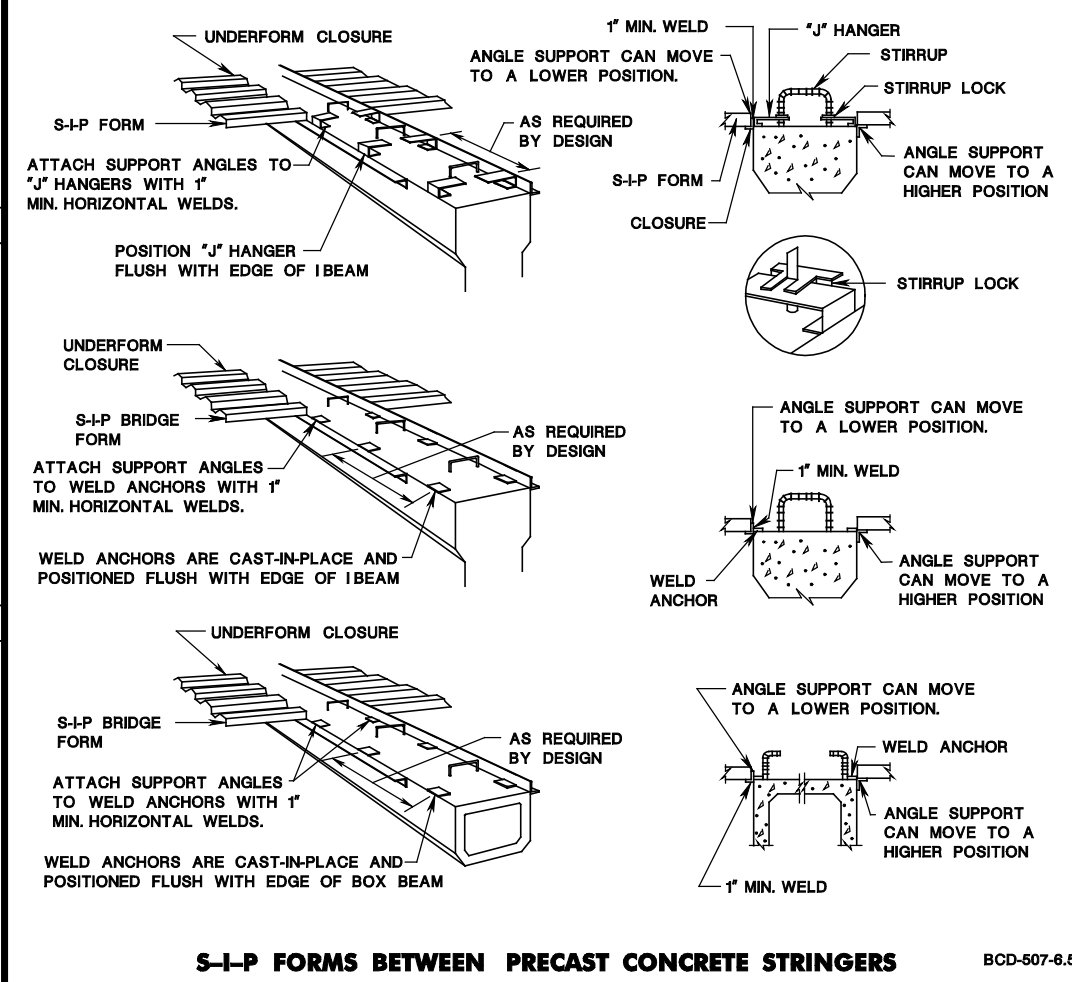
**S-I-P FORMS
WITH ADJUSTABLE SUPPORTS
NOT WELDED TO STRINGERS**

BCD-507-6.3



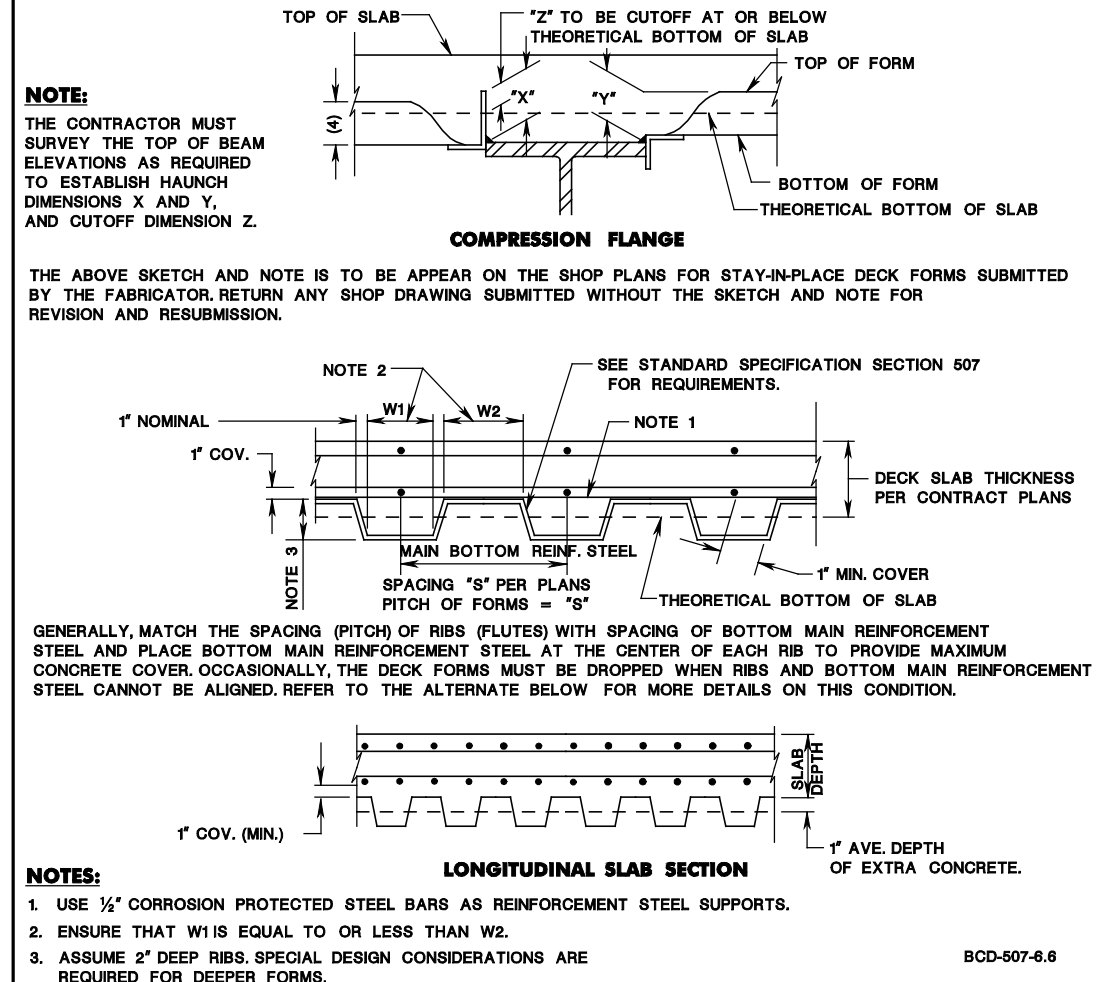
**S-I-P FORMS
WITH ADJUSTABLE L SUPPORTS
STRINGER FLANGE ENCASEMENT PROVIDED**

BCD-507-6.4



S-I-P FORMS BETWEEN PRECAST CONCRETE STRINGERS

BCD-507-6.5



LONGITUDINAL SLAB SECTION

NOTES:
1. USE 1/2" CORROSION PROTECTED STEEL BARS AS REINFORCEMENT STEEL SUPPORTS.
2. ENSURE THAT W1 IS EQUAL TO OR LESS THAN W2.
3. ASSUME 2" DEEP RIBS. SPECIAL DESIGN CONSIDERATIONS ARE REQUIRED FOR DEEPER FORMS.

BCD-507-6.6

NOTES:
1. THE DETAILS SHOWN ARE GENERAL. SUBMIT WORKING DRAWINGS ACCORDING TO THE NJDOT SPECIFICATIONS FOR ACTUAL DETAILS.
2. LAP S-I-P FORM PLACEMENT IN DIRECTION OF CONCRETE POUR.

STAY-IN-PLACE FORMS
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

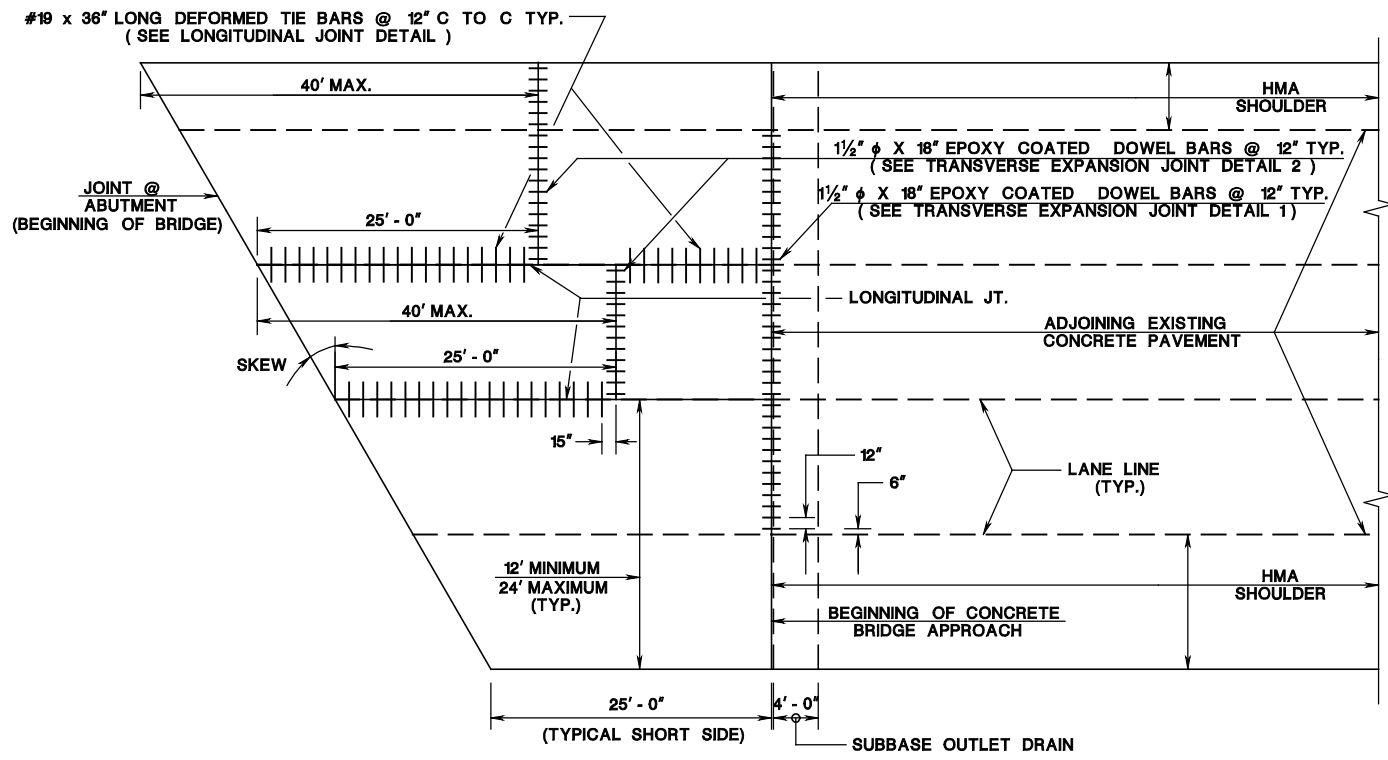
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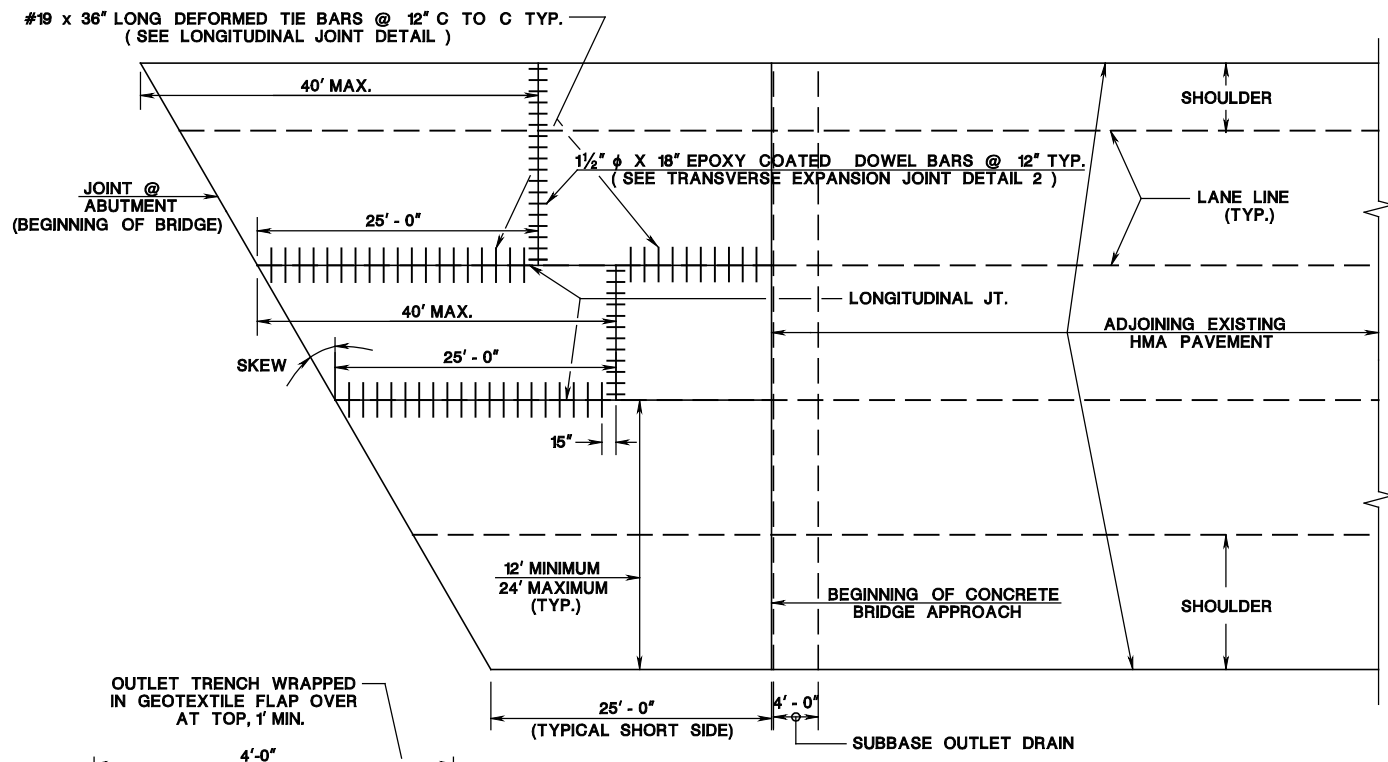
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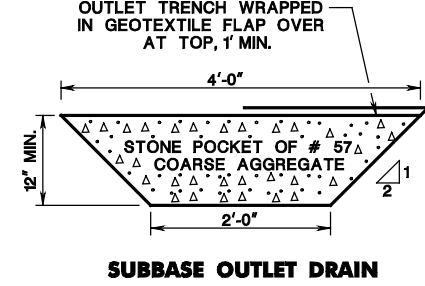
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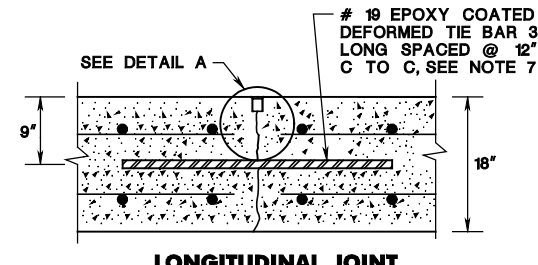
CONCRETE BRIDGE APPROACH ADJOINING CONCRETE PAVEMENT



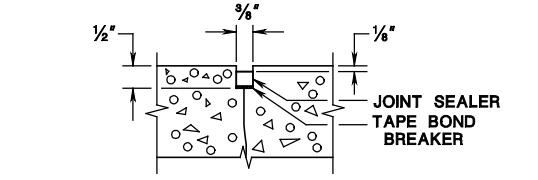
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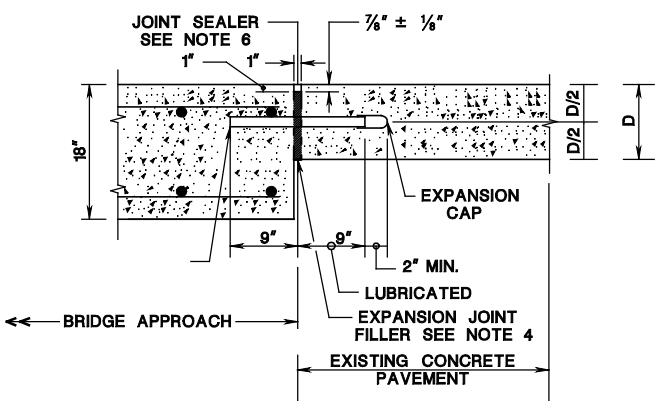
SUBBASE OUTLET DRAIN



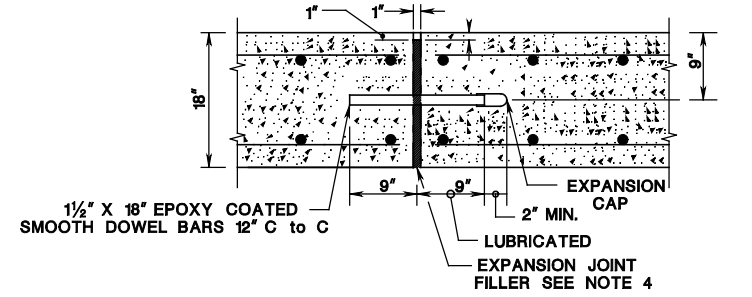
LONGITUDINAL JOINT



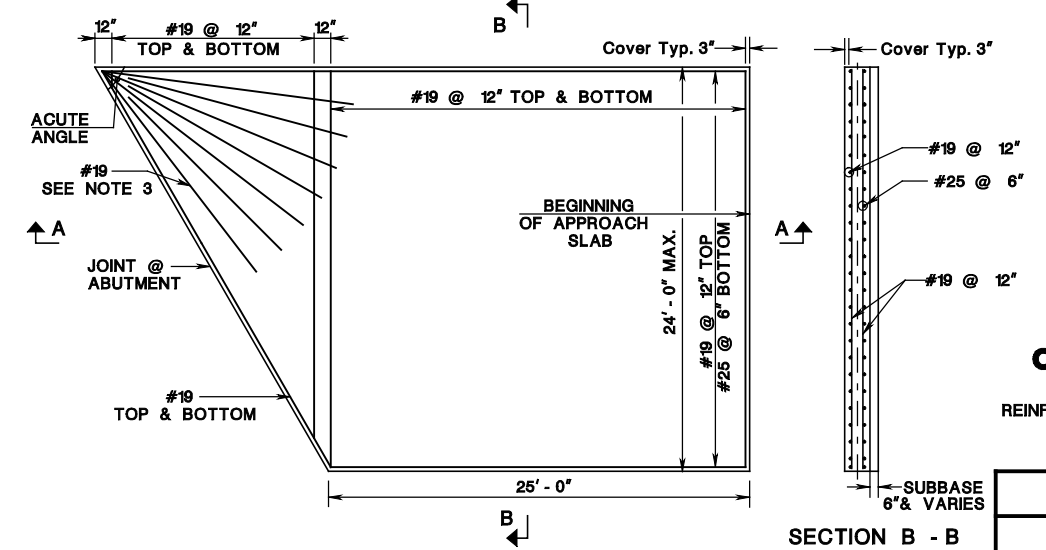
DETAIL A HOT-POURED JOINT SEALER



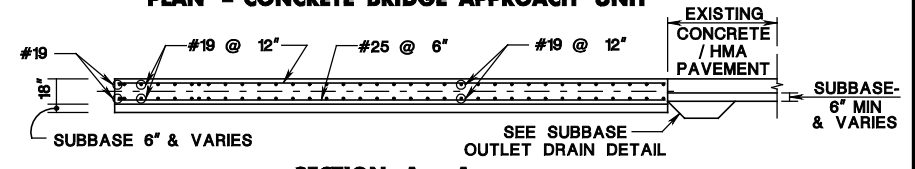
TRANSVERSE EXPANSION JOINT DETAIL 1



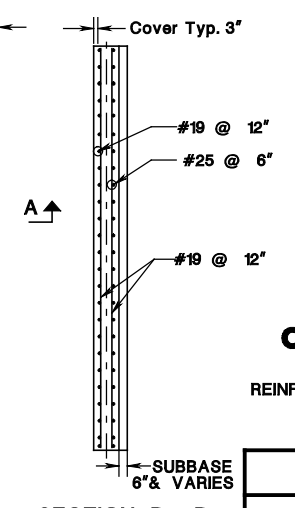
TRANSVERSE EXPANSION JOINT DETAIL 2



PLAN - CONCRETE BRIDGE APPROACH UNIT



SECTION A - A



SECTION B - B

- NOTES:**
- CONSTRUCT LONGITUDINAL JOINTS IN THE CONCRETE BRIDGE APPROACH ALONG THE LANE AND SHOULDER LINES. THIS MAY REQUIRE USING COUPLERS FOR THE STAGE CONSTRUCTION.
 - ENSURE THAT ALL REINFORCEMENT STEEL IS CORROSION PROTECTED.
 - FOR APPROACH SLAB CORNER WITH AN ACUTE ANGLE LESS THAN 65 DEGREE, PROVIDE 7 # 19 BARS, 15' LONG DIRECTLY UNDER THE TOP LAYER OF BARS IN A FANNED ARRANGEMENT.
 - CUT EXPANSION JOINT FILLER MATERIAL IN STRIPS EQUAL TO THE WIDTH OF APPROACH SLAB. MAKE THE TOP SURFACE SMOOTH AND HAVE HOLES PUNCHED FOR THE DOWEL BARS.
 - PLACE CLOSED-END EXPANSION CAP OVER THE LUBRICATED END OF ALL PLAIN DOWEL BARS AND PROVIDE 2" CLEARANCE POCKET ASSURED BY MEANS OF A POSITIVE SPACING DEVICE.
 - INSTALL TOP OF THE JOINT SEALING MATERIAL 1/4" +/- 1/8" BELOW THE SURFACE OF THE PAVEMENT.
 - PLACE DEFORMED BAR PERPENDICULAR TO AND CENTERED OVER THE LONGITUDINAL JOINT.
 - THE QUANTITY OF REINFORCEMENT STEEL, FOR THE CONCRETE BRIDGE APPROACH, IS APPROXIMATELY 7.00 LBS / CU. FT. DEVELOP ORDER LENGTHS OF REINFORCEMENT BARS IN ACCORDANCE WITH DETAILS SHOWN HERE AND THE JOINT LAYOUT DETAILS SHOWN ON THE CONTRACT PLANS.
 - FOR LAYOUT OF LONGITUDINAL JOINTS AND TRANSVERSE JOINTS REFER TO CONTRACT PLANS.

CONCRETE BRIDGE APPROACH
N.T.S.
REINFORCEMENT STEEL IS DESIGNATED IN METRIC UNITS.

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BCD-507-7

BCD-507-7.1

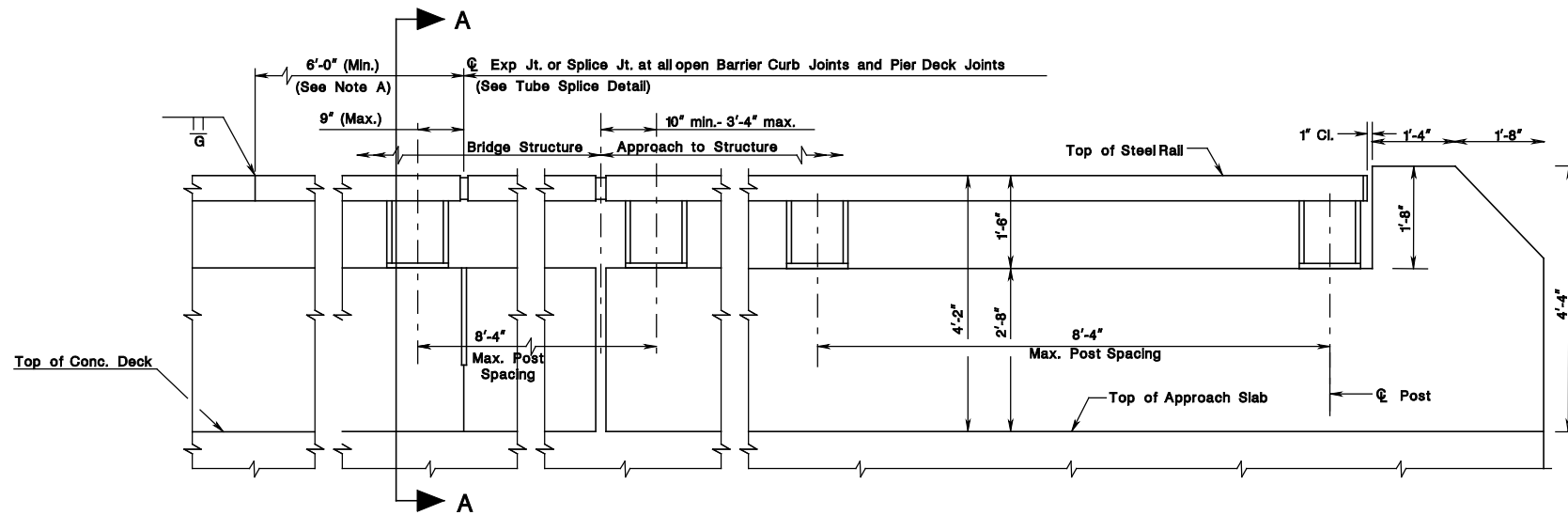
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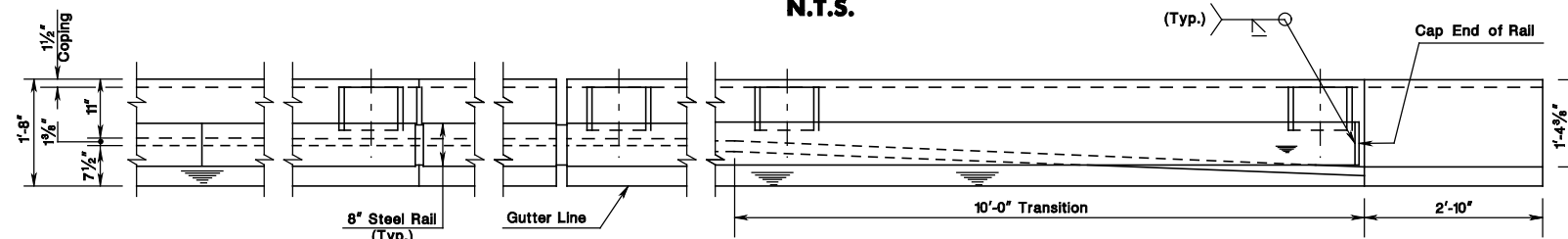
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PARAPET ELEVATION VIEW

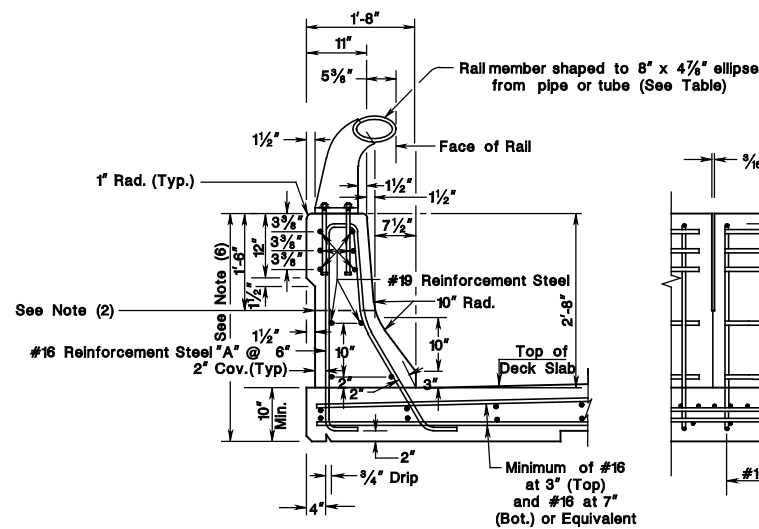
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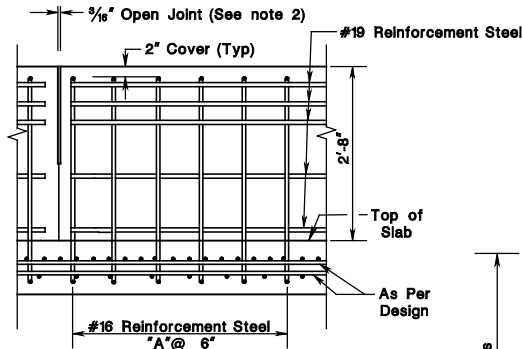
PARAPET PLAN VIEW

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.

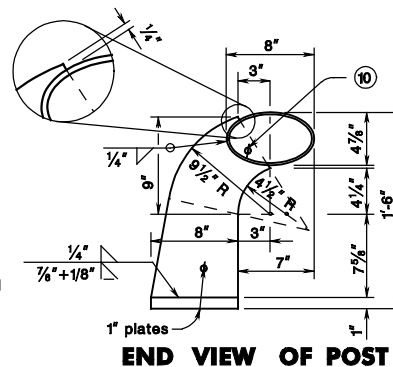


SECTION A-A

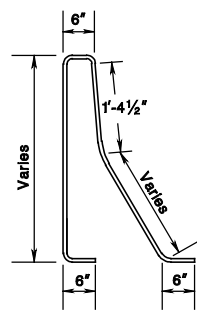


ELEVATION

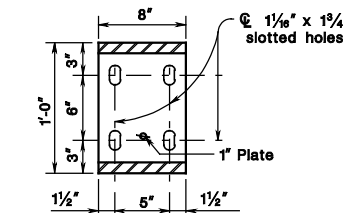
(Showing Reinforcement)



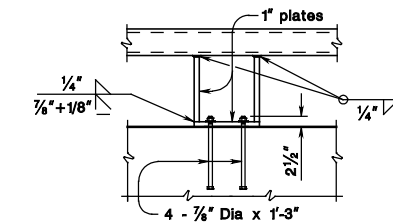
END VIEW OF POST



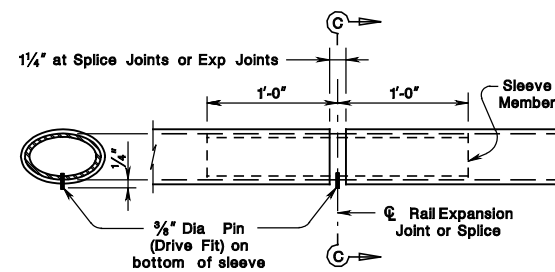
REINFORCEMENT STEEL "A"
BENDING DETAIL



BASE PLATE DETAIL



POST ELEVATION



SECTION C-C AT SPLICE OR EXPANSION JOINTS

TUBE SPLICE DETAIL

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 $1\frac{1}{4}$ " 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.

TUBE & SLEEVE MEMBERS		
8" x 4 1/8" 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 1/8" O.D. x 0.188" Tube API-5LX52	API-5LX52	0.224"
	ASTM-A53-B	0.339"
	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.

BCD-507-8

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

TEST LEVEL 5
BCD-507-8.1

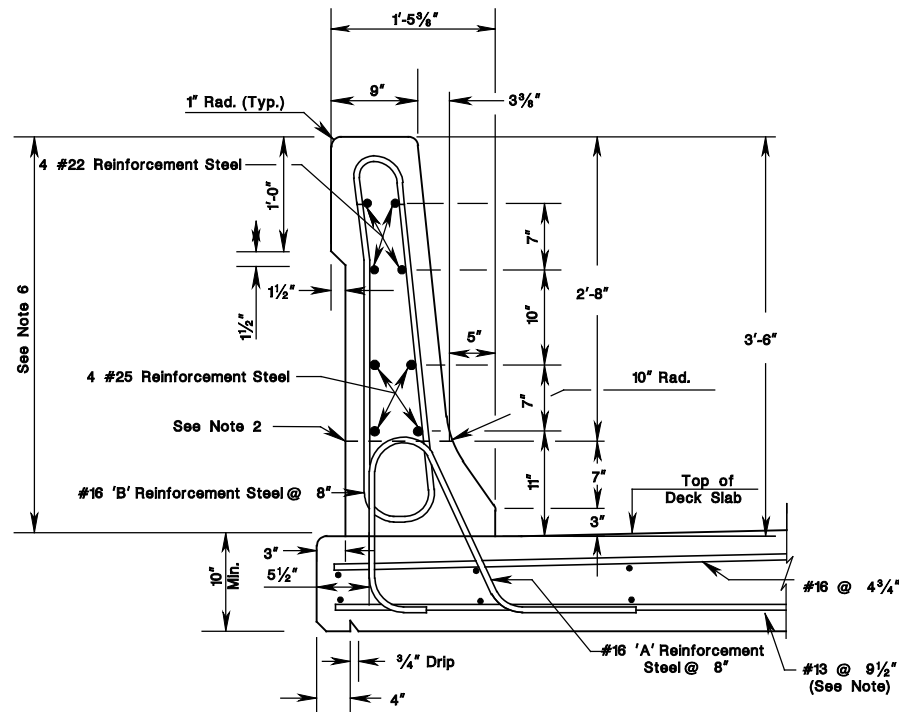
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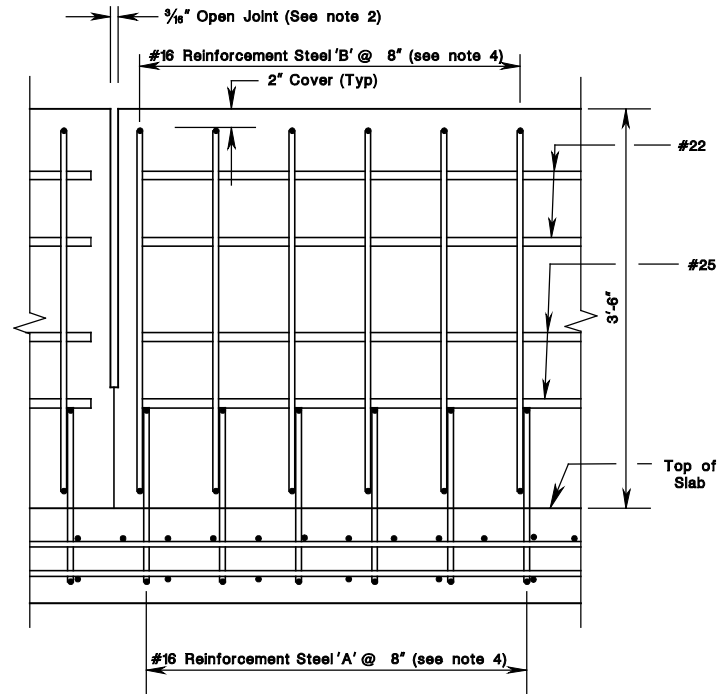
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BCD-507-ORIGINAL SHEET



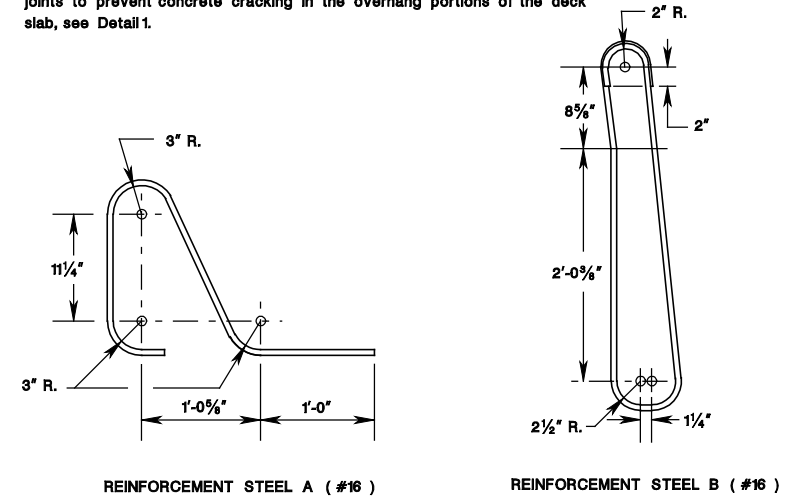
3'-6" HIGH F-SHAPE PARAPET



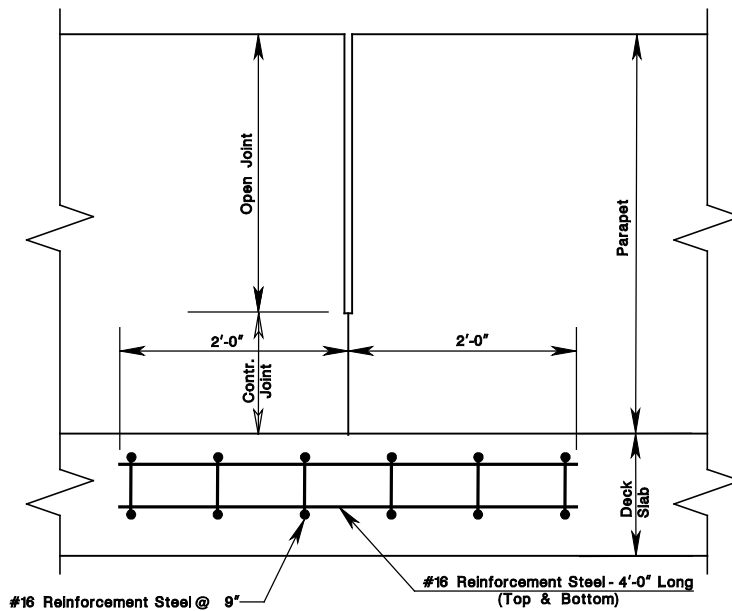
ELEVATION
(Showing Reinforcement steel)

NOTES:

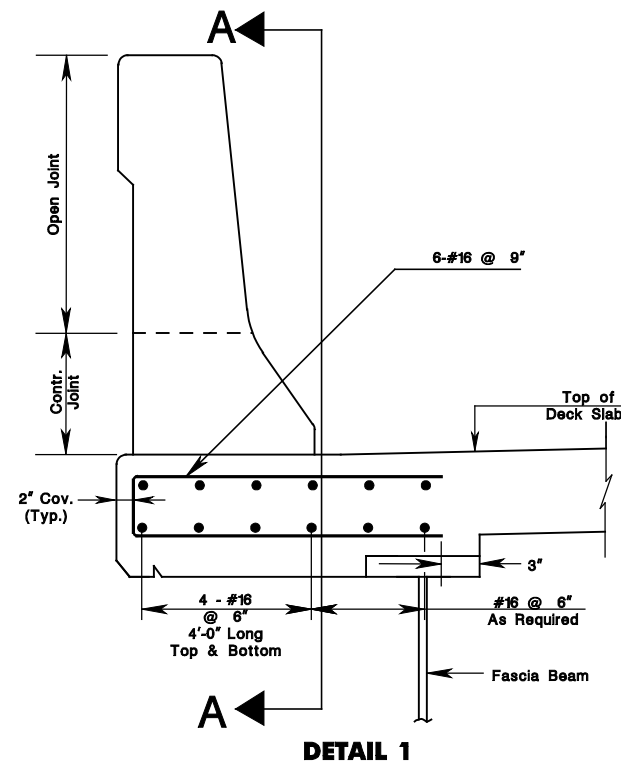
1. Provide $\frac{3}{16}$ " open deflection joint in parapets at intervals not exceeding 20'-0" and contraction joints at the midpoint between the open joints.
2. Stop $\frac{3}{16}$ " open joint at the line indicated and provide a contraction joint below that line.
3. Provide full depth joints at location 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.



REINFORCEMENT STEEL BENDING DETAILS



SECTION A-A



DETAIL 1
DECK REINFORCEMENT STEEL AT PARAPET JOINTS

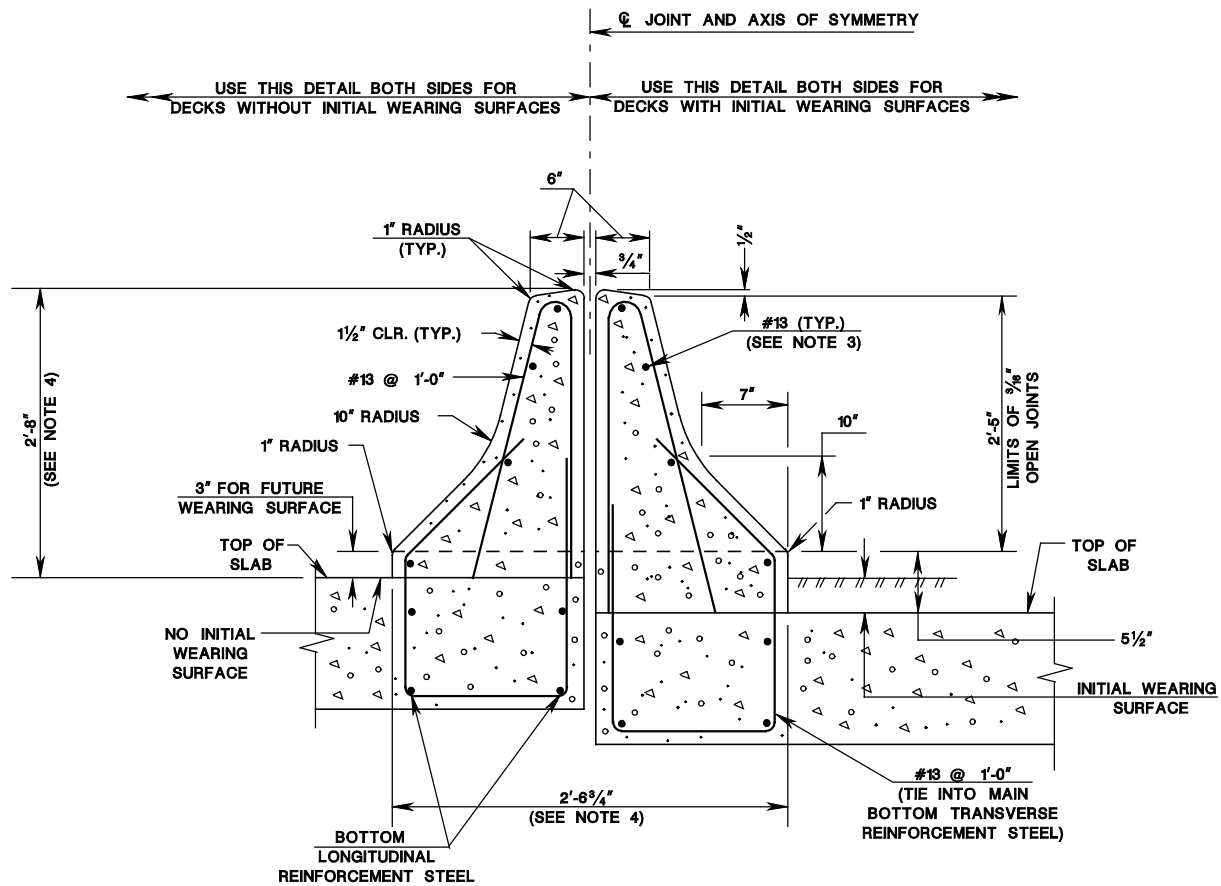
3'-6" HIGH F-SHAPE PARAPET DETAILS
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

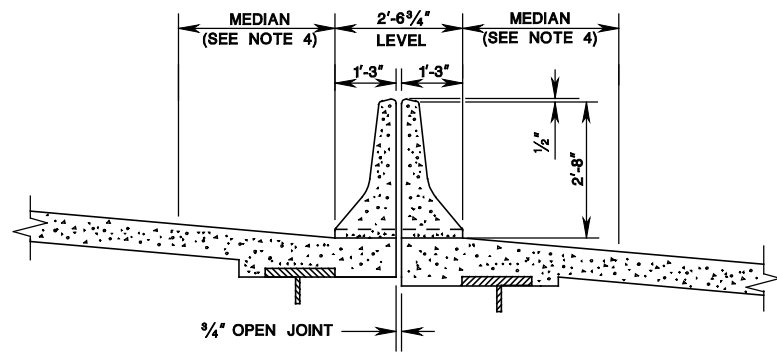
BCD-507-9

BRIDGE CONSTRUCTION DETAILS

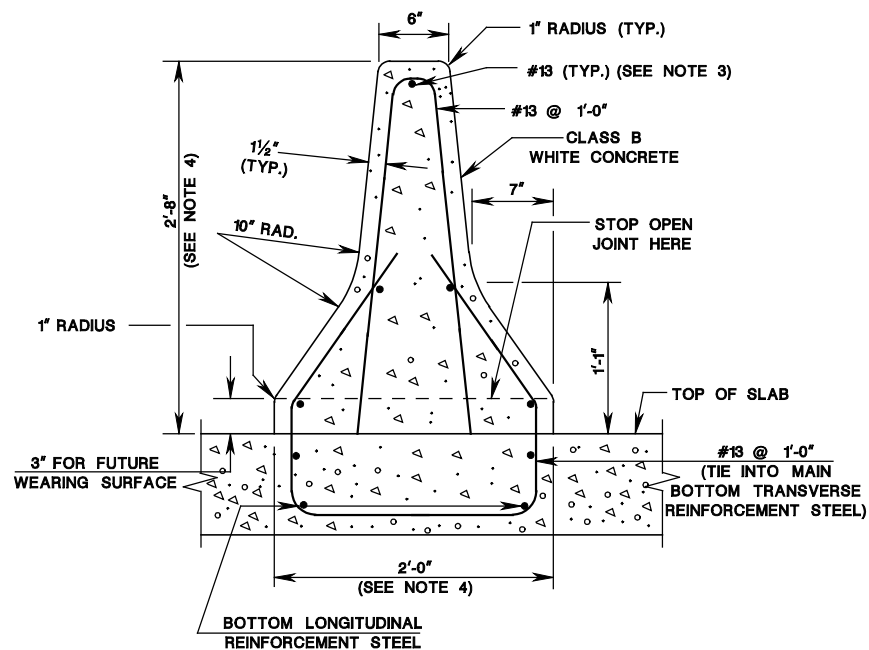
TEST LEVEL 5
BCD-507-9.1



TYPICAL SECTION



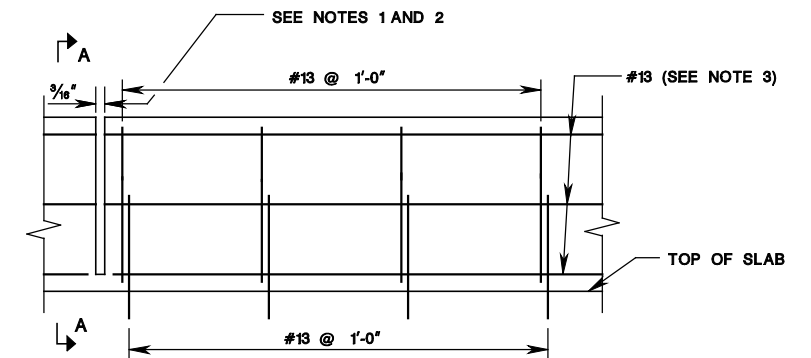
CROSS-SECTION
2'-3" HIGH SPLIT MEDIAN BARRIER ON BRIDGE



SECTION A-A
2'-8" HIGH MEDIAN BARRIER ON BRIDGE

NOTES:

1. PROVIDE $\frac{3}{16}$ " OPEN DEFLECTION JOINT AT INTERVALS NOT EXCEEDING 15'-0". THERE ARE NO CONTRACTION JOINTS BETWEEN THE OPEN JOINTS AND NO CONTRACTION JOINTS LOCATED BELOW THE OPEN DEFLECTION JOINTS.
2. 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.
3. ENSURE THAT ALL REINFORCEMENT STEEL IN MEDIAN BARRIER IS DESIGNATED IN METRIC UNITS AND CORROSION PROTECTED.
4. DETERMINE WIDTH AND HEIGHT BY ROADWAY APPROACH BARRIER. REINFORCEMENT STEEL MUST BE ADJUSTED ACCORDINGLY.
5. IF CONDUITS ARE USED WITHIN THE MEDIAN BARRIER, PROVIDE A SLEEVE OF SUFFICIENT LENGTH TO ACCOMMODATE MAXIMUM EXPANSION OF THE EXPANSION JOINT. (REFER TO STANDARD ELECTRICAL DETAILS FOR CONDUIT EXPANSION FITTINGS.)



ELEVATION

BRIDGE MEDIAN BARRIER
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

TEST LEVEL 4
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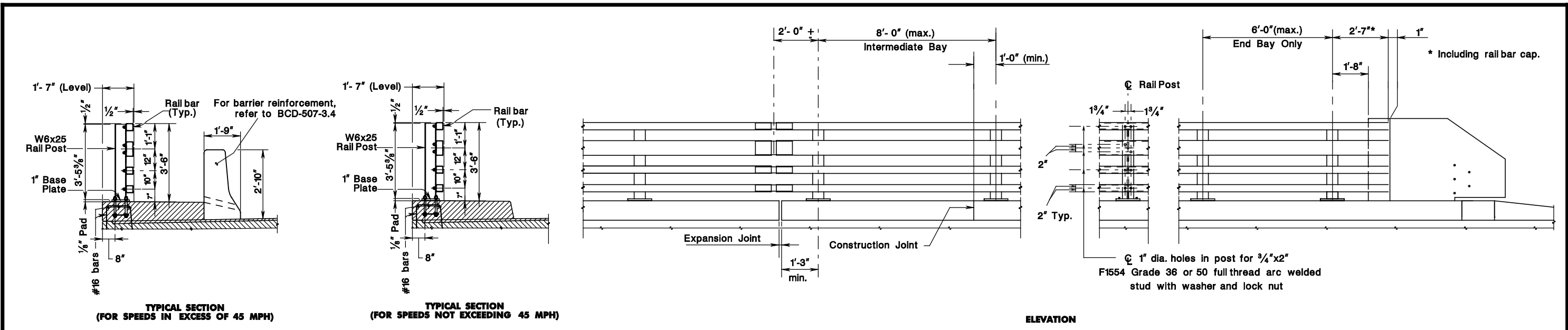
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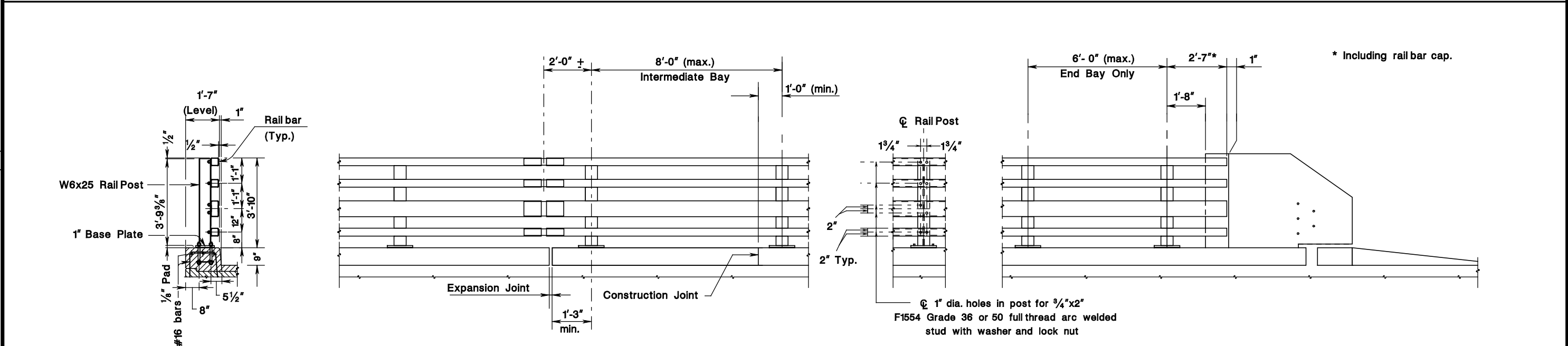
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Vehicular Traffic / Pedestrian Traffic Configuration

- Rail Bars
- TS8x4x5/16" (1)
- TS4x4x1/4" (3)

TEST LEVEL 4
BCD-507-11.1



Vehicular Traffic / Bicycle Traffic Configuration

STEEL 4 - BAR BRIDGE RAILING, TYPICAL SECTION AND ELEVATIONS

N.T.S. BCD-507-11

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

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BCD-507-11.2

139
164

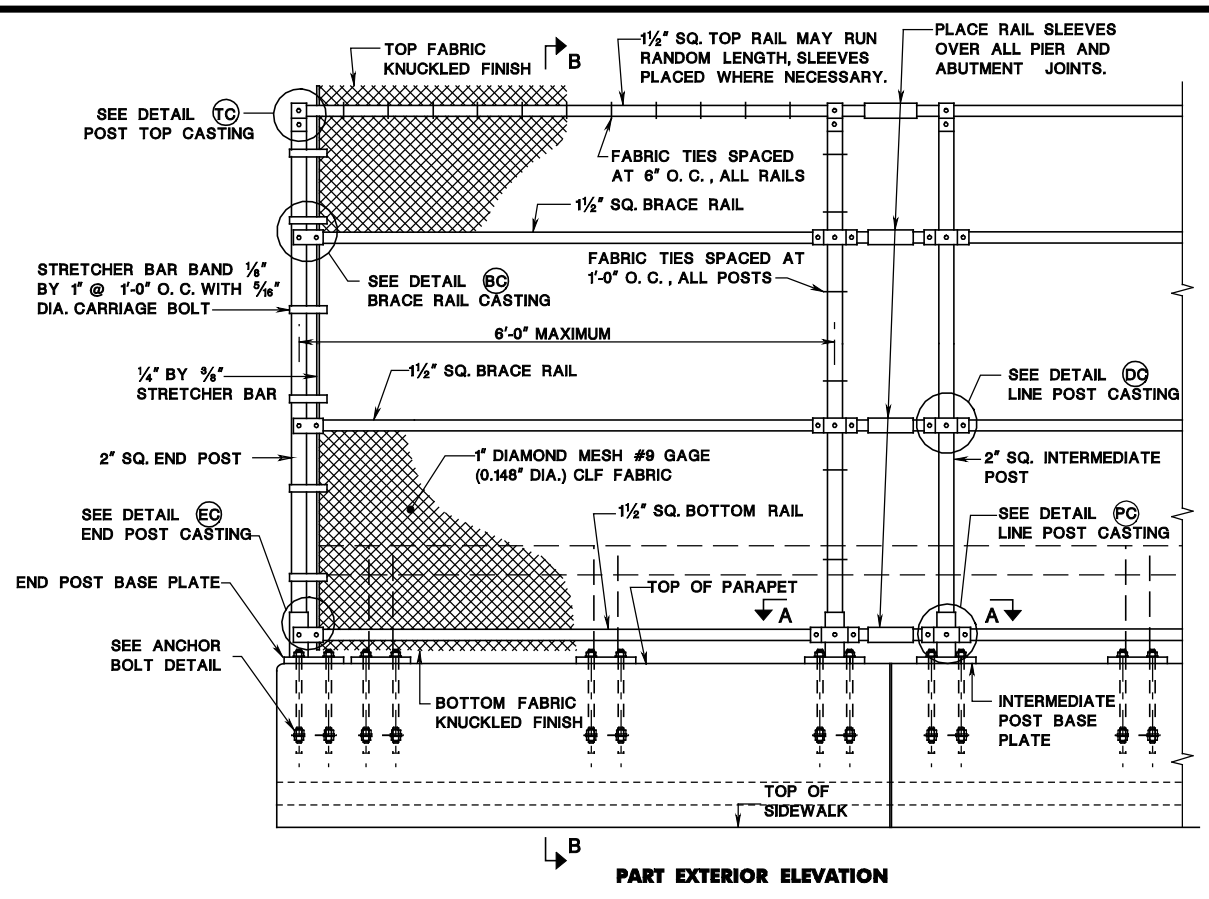
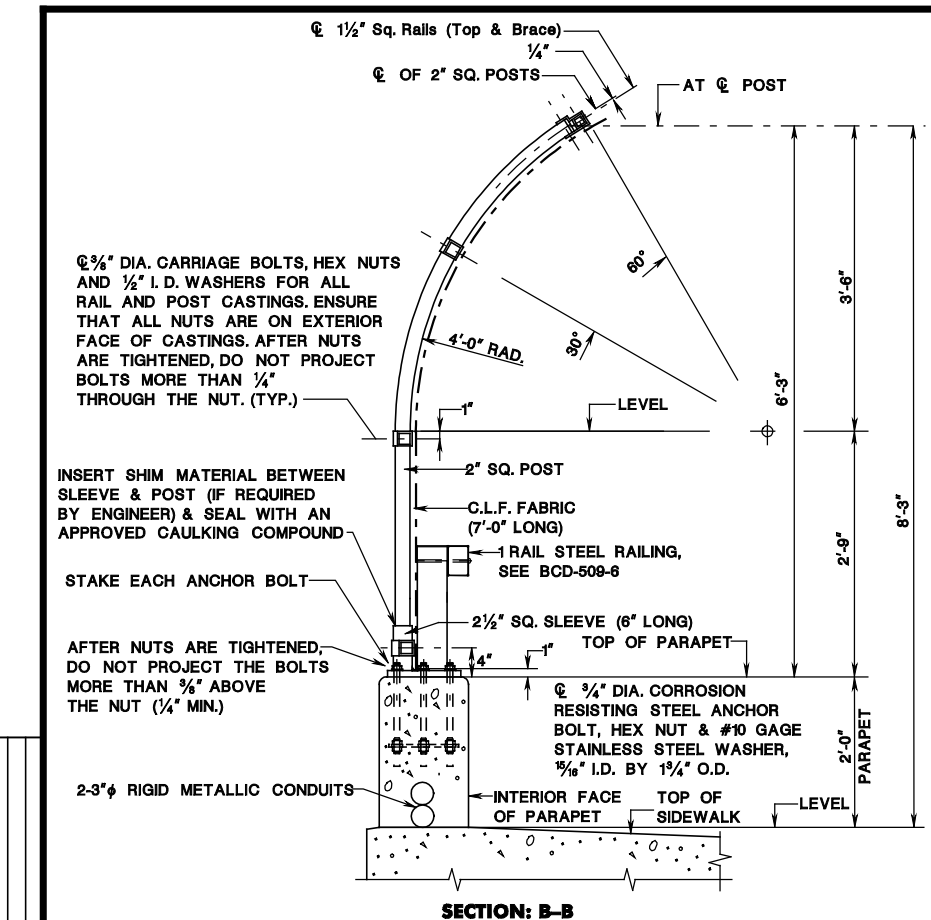
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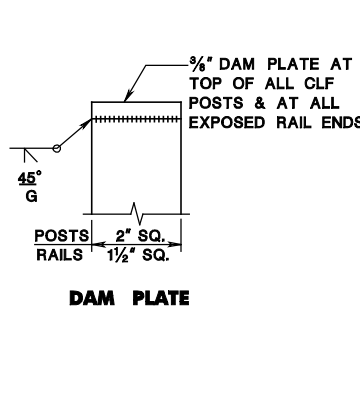
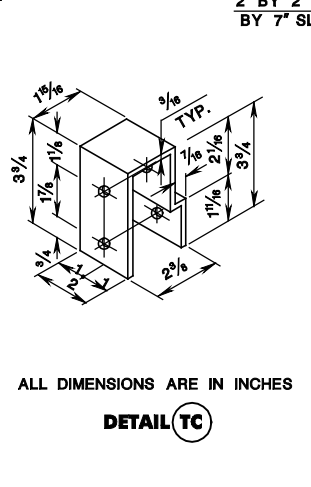
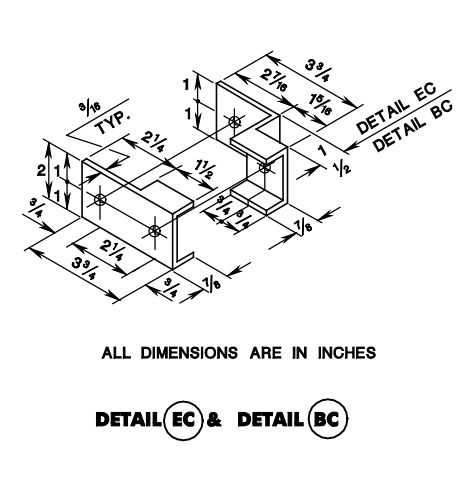
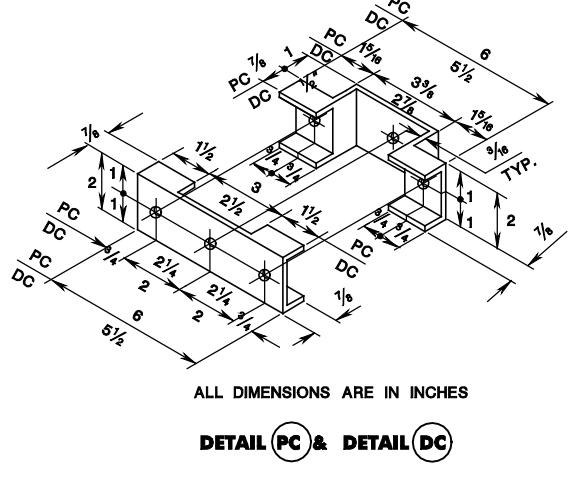
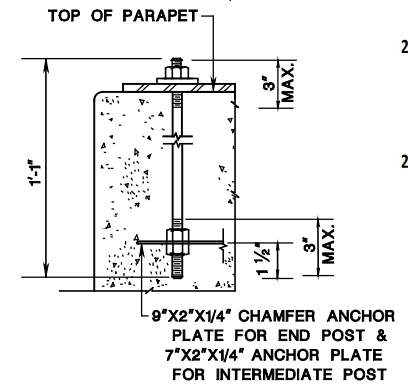
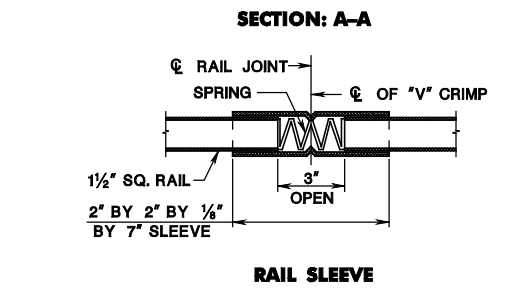
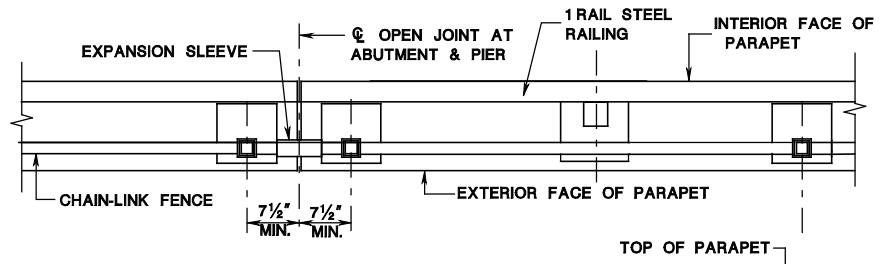
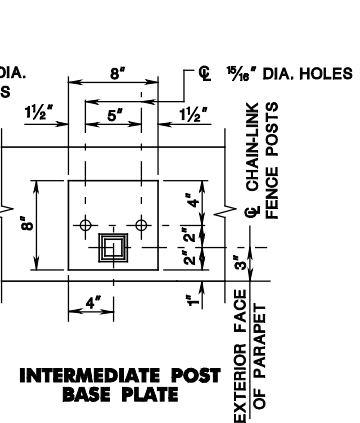
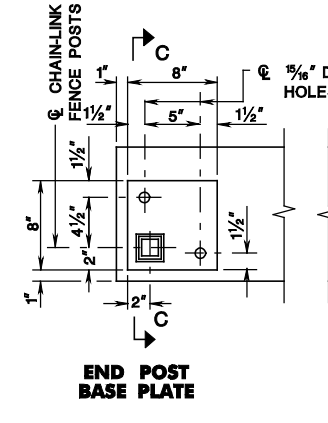
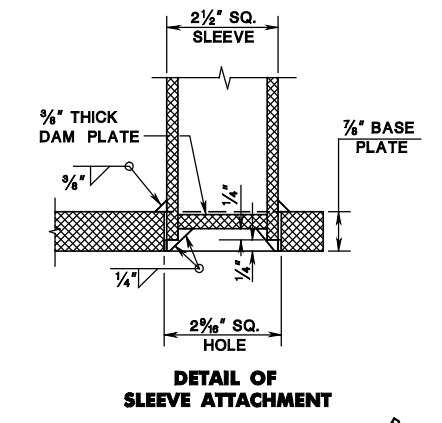
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NOTES:

- CONFORM MATERIALS FOR CHAIN-LINK FENCE (CLF) FABRIC, BASE PLATES, ANCHOR PLATES, POSTS, RAILS, TIES, BANDS, BARS, RODS AND ANY OTHER FITTINGS, AND HARDWARE TO AASHTO M181 AND COMPOSED OF ONE OF THE FOLLOWING TYPES OF MATERIAL, AS SPECIFIED:
TYPE I - ZINC-COATED STEEL,
TYPE II - ALUMINUM COATED STEEL,
TYPE III - ALUMINUM ALLOY, AND
TYPE IV - POLYVINYL CHLORIDE (PVC) COATED STEEL.
- CONFORM ALL WELDING TO AWS D1.1 FOR STEEL AND AWS D1.2 FOR ALUMINUM.
- IF ALUMINUM CASTINGS ARE USED WITH TYPE I, TYPE II OR TYPE IV FENCE, USE PVC OR OTHER ORGANIC POLYMER COATED. MATCH COLOR TO THE REST OF THE FENCE COMPONENTS.
- IF TYPE III FENCE IS USED, PROVIDE 1/8" THICK NEOPRENE PAD BETWEEN BASE PLATE AND TOP OF CONCRETE PARAPET.
- CONFORM STAINLESS STEEL WASHER TO ASTM F436, TYPE 1 AND GALVANIZED.
- CONFORM ANCHOR BOLTS TO ASTM F1554, GRADE 55 AND GALVANIZED. TIGHTENING PROCEDURE TO FOLLOW AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS.
- USE 2 1/2" SQUARE AND 6" LONG POST SLEEVES. USE 7/32" THICK WALL FOR ALUMINUM AND 3/16" FOR STEEL.
- POSTS SPACINGS NOT TO EXCEED 6'-0".
- USE 2" SQ., 1/4" THICK POSTS, SET PLUMB.
- USE SHIM MATERIAL WHERE NECESSARY FOR POST ALIGNMENT.
- USE 1 1/2" SQ., 1/8" THICK, HORIZONTAL RAILS (TOP, BOTTOM, AND BRACE).
- WELD DAM PLATES (3/8" THICK) TO CLOSE ALL EXPOSED ENDS OF RAIL TUBES AND TOP OF CHAIN-LINK FENCE POSTS.
- INSTALL BRACE RAILS THROUGHOUT THE LENGTH OF THE FENCE.
- USE 2" SQ. X 7" LONG, RAILING EXPANSION SLEEVES, WITH HOT-DIP GALVANIZED SPRING IN SLEEVE, SPRING NOT TO EXCEED 1 1/2" FULLY COMPRESSED. ENSURE THAT THE RAIL ENDS 3" APART IN SLEEVE AT CENTER LINE SLEEVE "V" CRIMP.
- USE #9 GAGE (0.148" DIA.) FABRIC TIES. A MINIMUM OF ONE (1) COMPLETE TURN IS REQUIRED AT ENDS OF ALL TIES.
- USE #9 GAGE (0.148" DIA.) CLF FABRIC, HAVING A 1" DIAMOND MESH, TOP AND BOTTOM SELVAGE IS KNUCKLED. CONTINUE FABRIC ACROSS ALL JOINTS.
- ENSURE THAT STRETCHER BAR BAND FASTENERS ARE 5/16" DIA. BY 1 1/4" CARRIAGE BOLTS.
- STAKE EACH ANCHOR BOLT AT ONE (1) POINT ONLY.
- ENSURE THAT ALL HOLES IN CASTINGS ARE 7/16" DIA. DESIGN ALL CASTINGS TO ACCOMMODATE RAILS AT GRADES, AS REQUIRED.
- AFTER ERECTION, CAULK ALL ANCHOR BOLT HOLES AND SPACES BETWEEN BASE PLATE AND CONCRETE WITH A COLD-POURED JOINT SEALER CONFORMING TO SUBSECTION 914.02 OF NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, JOINT MATERIAL ASTM D5893, TYPE NS.
- AFTER ERECTION OF POSTS, DRILL 3/8" DIA. HOLE THROUGH POST SLEEVE AND POST, 1/2" ABOVE BASE PLATE FOR DRAINAGE. LOCATE HOLE PARALLEL TO FENCING. IF TYPE I, TYPE II OR TYPE IV FENCE IS USED, APPLY CORROSION PROTECTIVE COATING OVER DRILLED HOLES IN ACCORDANCE WITH ASTM A780.
- PROVIDE WING AT BOTH ENDS OF PARAPET / FENCE AS SHOWN ON BCD-509-3.



**CHAIN-LINK FENCE, BRIDGE
6'-3" HIGH, CURVED TOP**

N.T.S. BCD-509-1

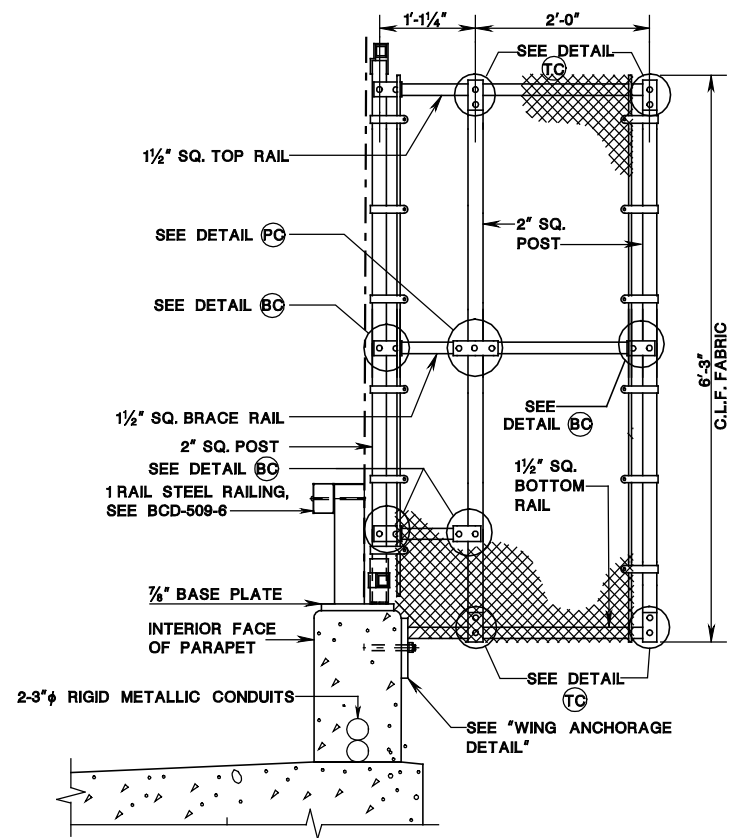
NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

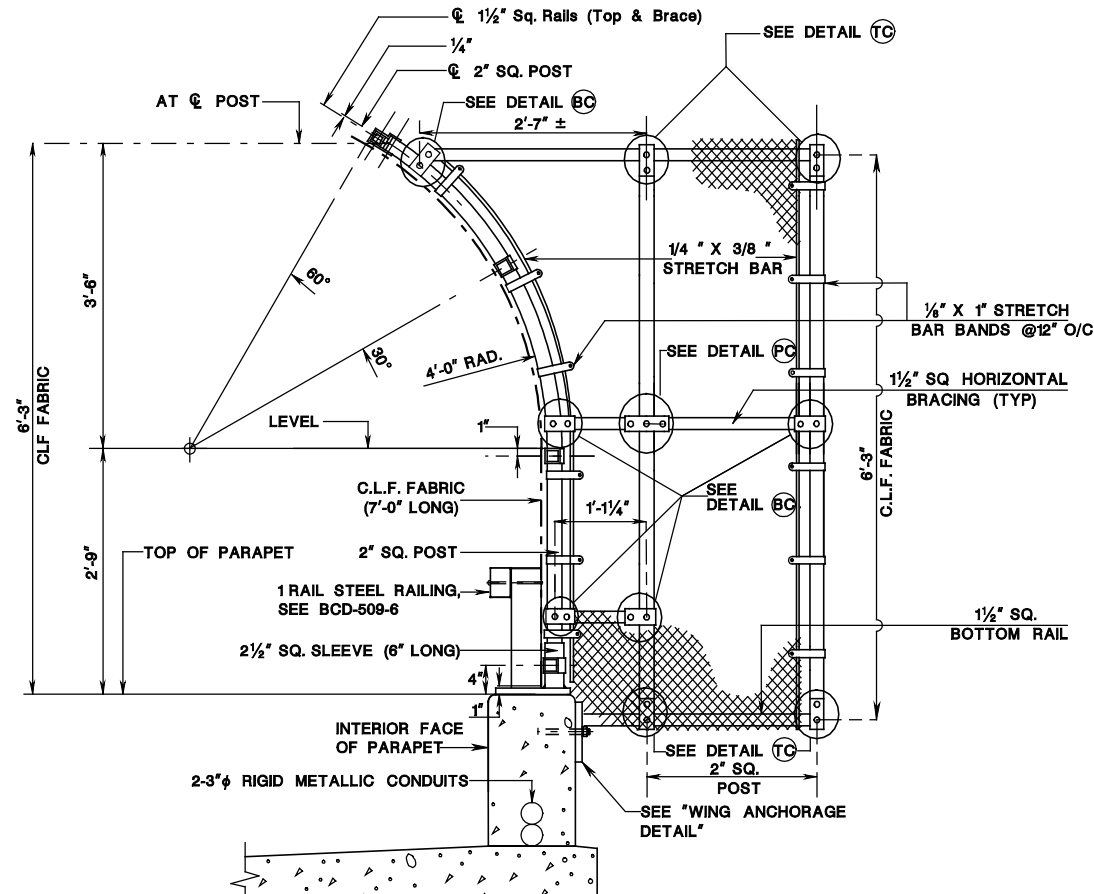
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141
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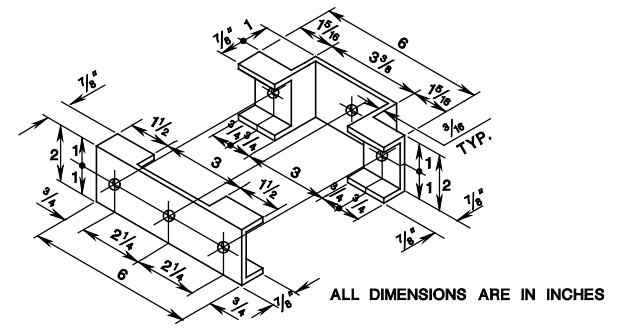
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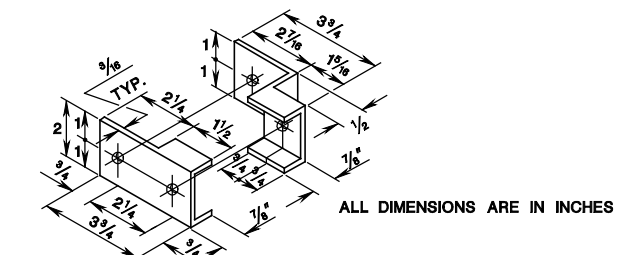
ELEVATION OF WING FOR 6'-3" HIGH STRAIGHT CHAIN-LINK FENCE



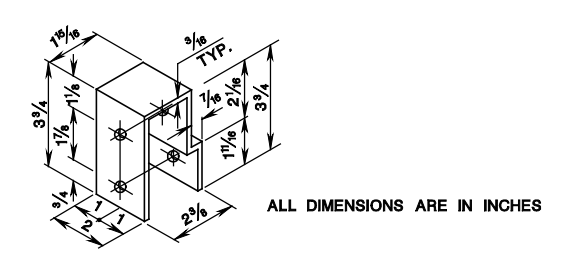
ELEVATION OF WING FOR 6'-3" HIGH CURVED TOP CHAIN-LINK FENCE



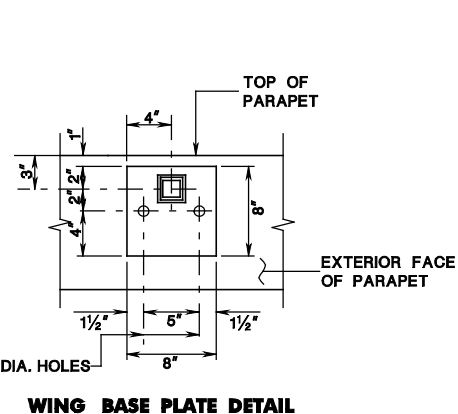
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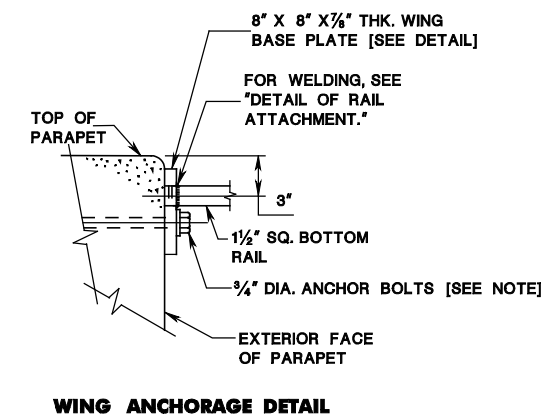
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DETAIL TC

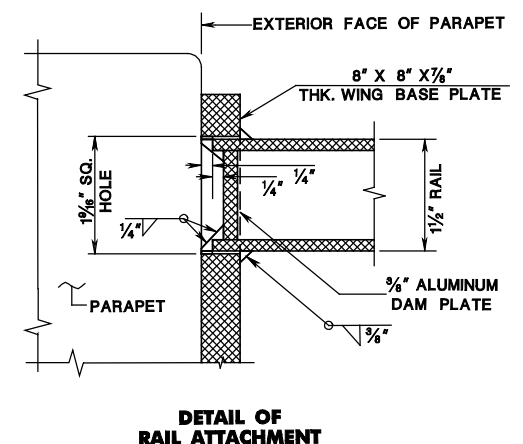


WING BASE PLATE DETAIL



WING ANCHORAGE DETAIL

NOTE:
ENSURE THAT ANCHOR BOLTS ARE INSTALLED IN CORED HOLES NO GREATER THAN THE BOLT DIAMETER PLUS 1/4". ENSURE THAT THE EMBEDMENT DEPTH IS AS PER MANUFACTURER'S RECOMMENDATION AND DESIGN OF THE EMBEDMENT DEPTH IS BASED ON A CONCRETE COMPRESSIVE STRENGTH OF 4000PSI. USE EPOXY GROUTED BOLTS IN PLACE AS PER MANUFACTURER'S RECOMMENDATION. TEST ADHESIVE ANCHOR SYSTEM IN ACCORDANCE WITH SUBSECTION 908.01.04 OF NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.



DETAIL OF RAIL ATTACHMENT

WING FOR CHAIN-LINK FENCE, STRAIGHT AND CURVED TOP

N.T.S.

BCD-509-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

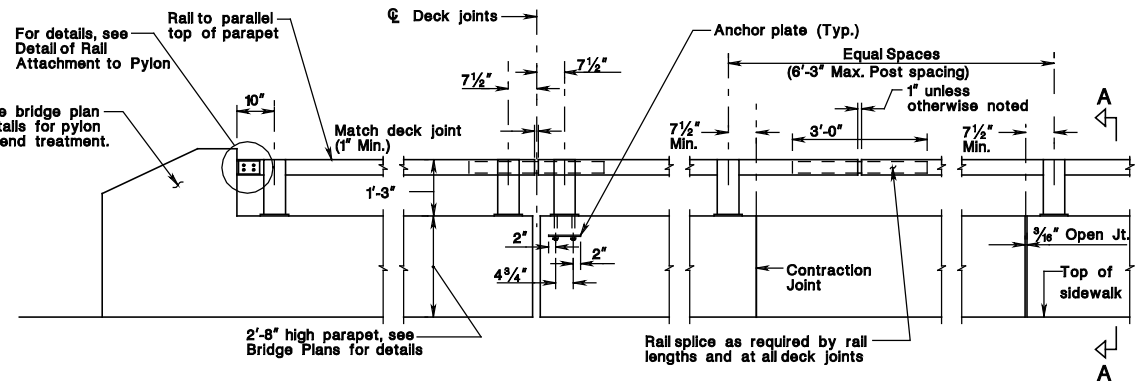
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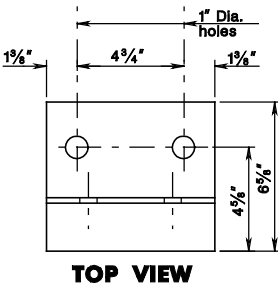
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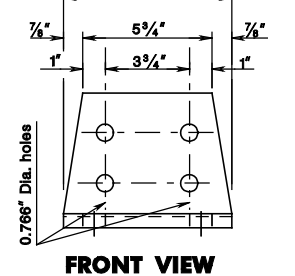
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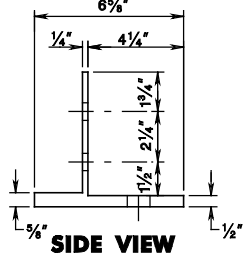
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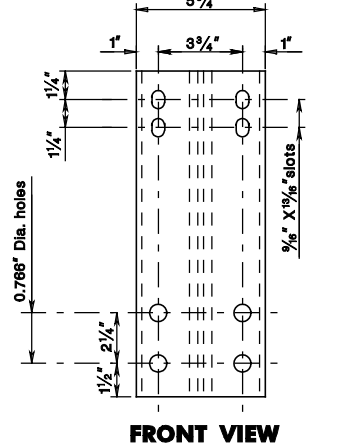
TOP VIEW



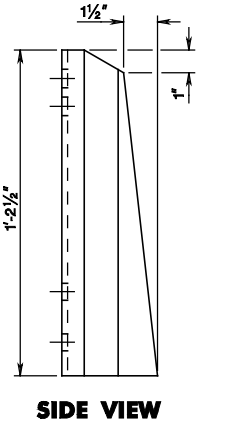
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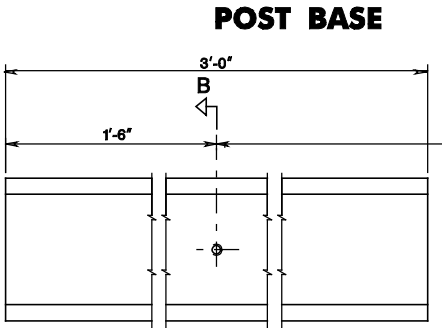
SIDE VIEW



FRONT VIEW

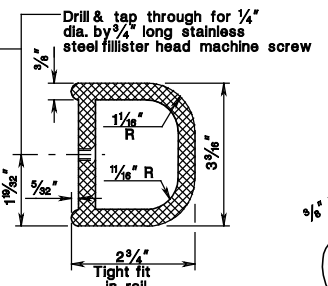


SIDE VIEW

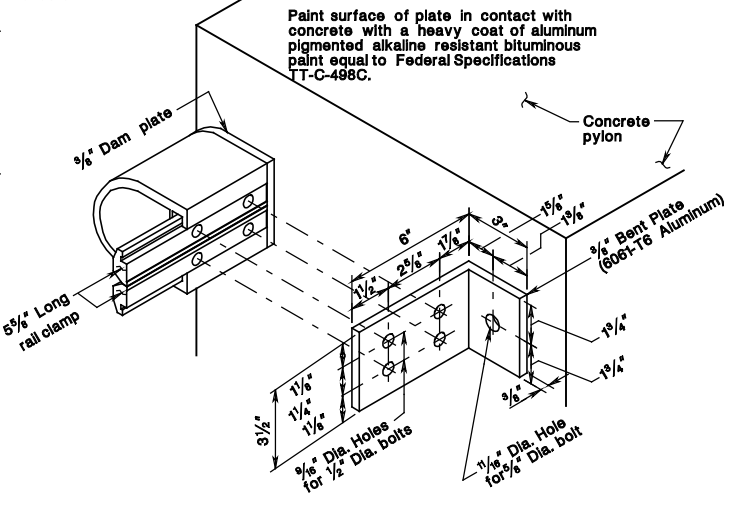


ELEVATION

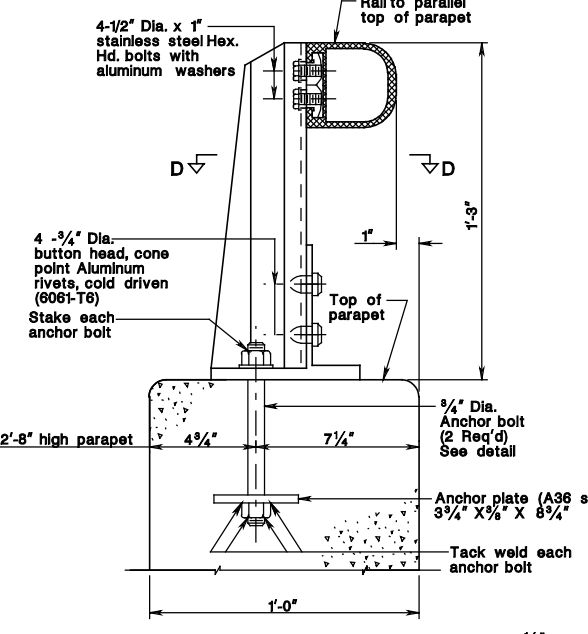
DETAIL OF RAIL SPLICE



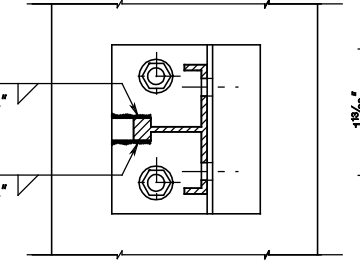
SECTION B-B



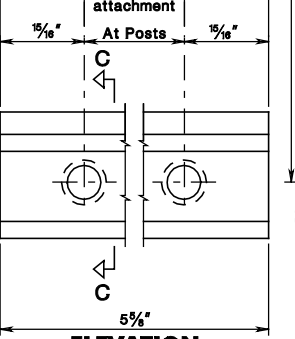
DETAIL OF RAIL ATTACHMENT TO PYLON



SECTION A-A

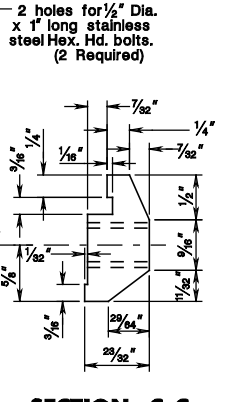


SECTION D-D

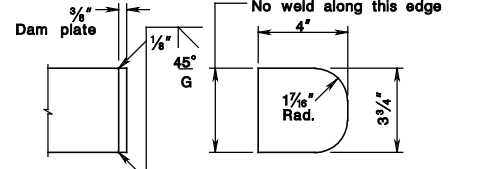


ELEVATION

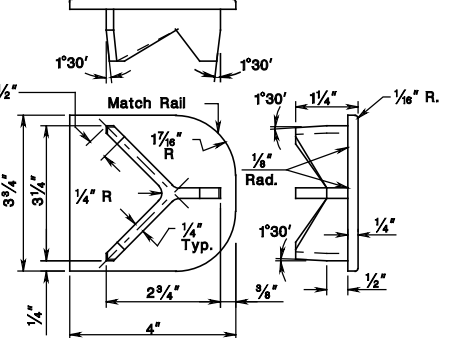
DETAILS OF RAIL CLAMP



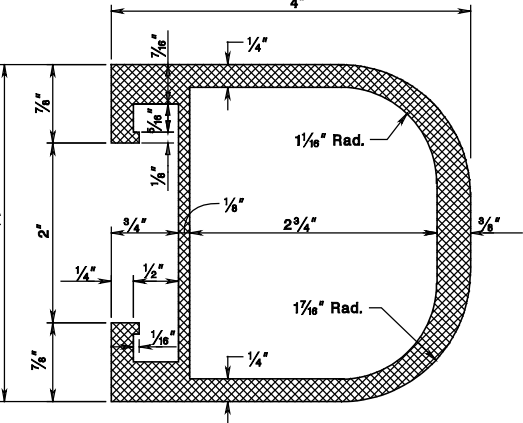
SECTION C-C



DAM PLATE DETAIL



ALTERNATE DETAIL - END CAP



SECTION THROUGH RAIL

ANCHOR BOLT DETAIL

NOTES:

1. Use material for posts, bases, rails, and rail clamps conforming to ASTM B221 aluminum alloy 6061-T6.
2. Use washers conforming to ASTM B209 Alclad 2024-T3 and nuts conforming to ASTM B211, aluminum Alloy 6061-T6.
3. Use anchor bolts conforming to ASTM A276 stainless steel, Type 302, Type 304 or Type 430. Use top nuts, Aluminum thick nuts ASTM B211 or B316 Alloy 6061-T6 Class 2 thread. Use bottom nuts conforming to ASTM A194.
4. Use dam plates to close all open railing ends. Use material conforming to ASTM B209 Aluminum Alloy 6061-T6. As an alternate, drive-in end caps may be used. Use caps conforming to aluminum alloy sand mold castings complying with ASTM B26, alloy SG 356.6-T6.
5. Weld end caps to the rails.
6. Use Aluminum Alloy shim material where necessary for post alignment and required by the Engineer. Use shim material conforming to ASTM B209, Alloy 1100-0.
7. Paint underside of base with a heavy coat of non-aluminum epoxy mastic primer.
8. Ensure that all anchor bolt holes and spaces between base plates and concrete are thoroughly caulked with a cold-poured joint sealer conforming to Subsection 914.02 of N.J.DOT Standard Specifications, Joint Material ASTM D 5893, Type NS.

1-RAIL ALUMINUM RAILING (FOR USE ON NON-NHS BRIDGES ONLY)

N.T.S.

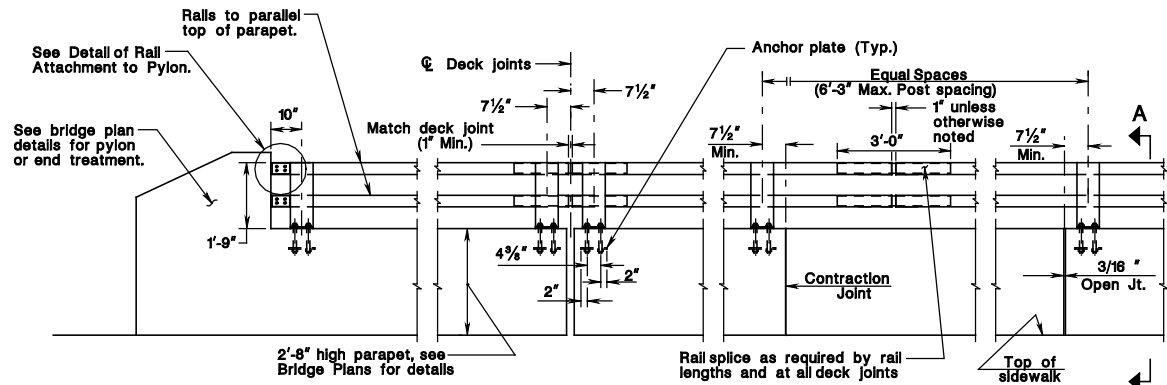
BCD-509-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

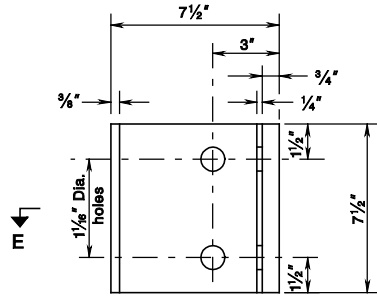
BRIDGE CONSTRUCTION DETAILS

BCD-509-4.1

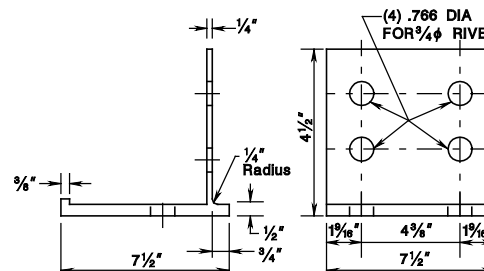
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 BCD-509-5 ORIGINAL SHEET



TYPICAL EXTERIOR ELEVATION OF CONTINUOUS RAILING SYSTEM



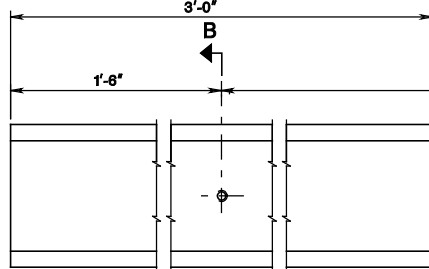
TOP VIEW



SECTION E-E

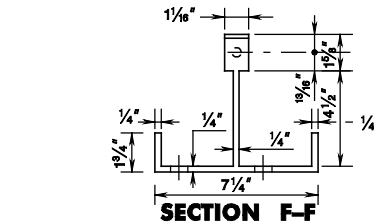
FRONT VIEW

POST BASE

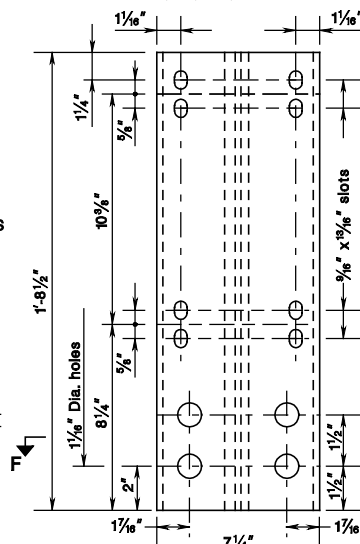


ELEVATION

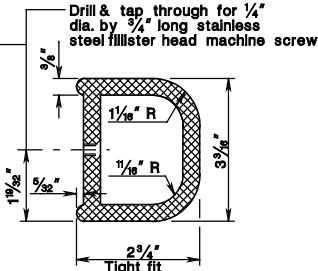
DETAIL OF RAIL SPLICE



SECTION F-F

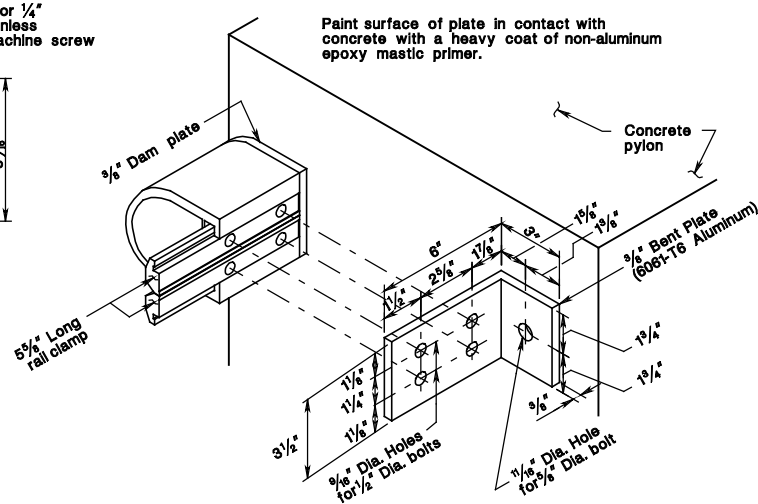


FRONT VIEW POST STEM



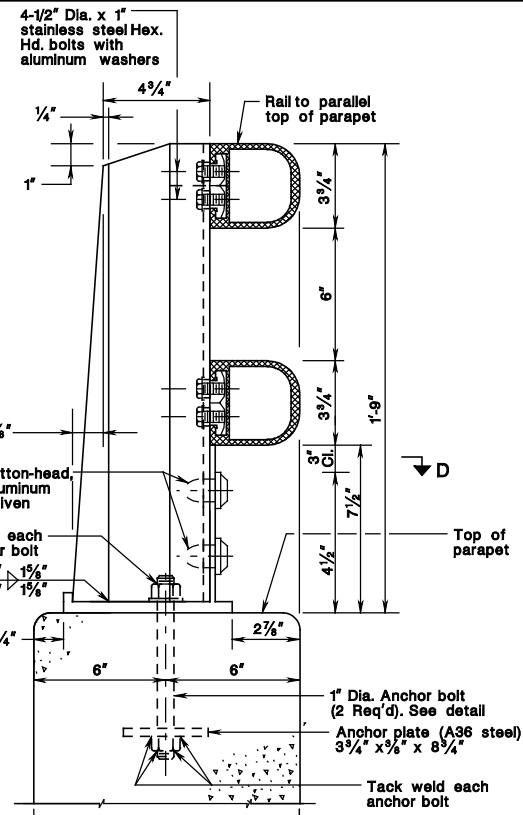
SECTION B-B

DETAIL OF RAIL SPLICE

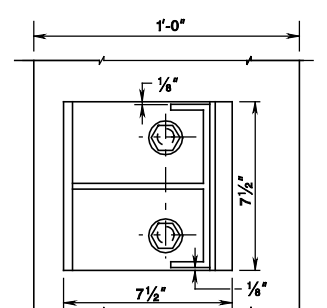


DETAIL OF RAIL ATTACHMENT TO PYLON

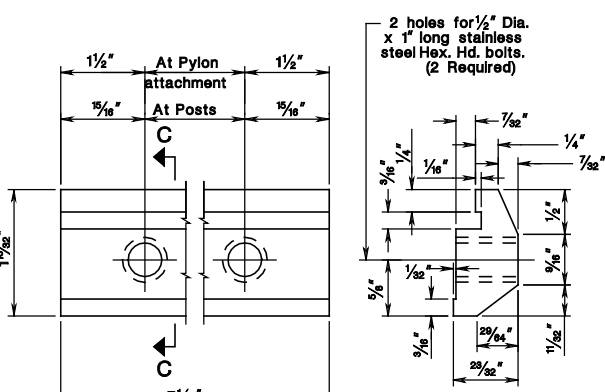
Paint surface of plate in contact with concrete with a heavy coat of non-aluminum epoxy mastic primer.



SECTION A-A

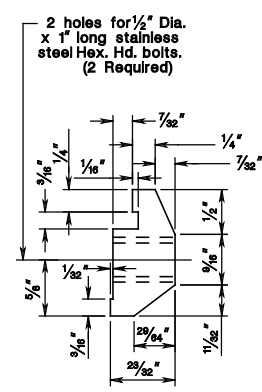


SECTION D-D

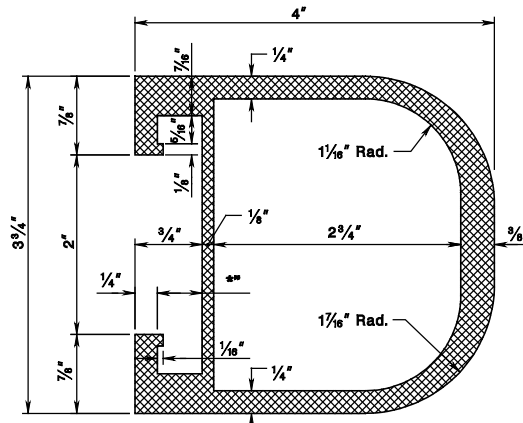


ELEVATION

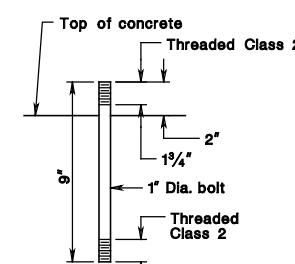
DETAILS OF RAIL CLAMP



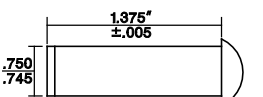
SECTION C-C



SECTION THROUGH RAIL



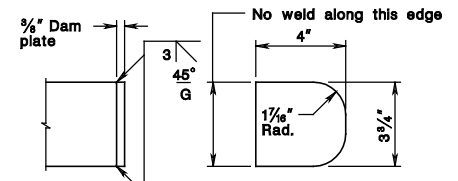
ANCHOR BOLT DETAIL



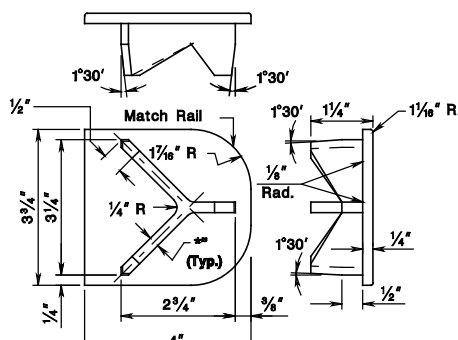
RIVET DETAIL

NOTES:

1. Use material for posts, bases, rails, and rail clamps conforming to ASTM B221, Aluminum Alloy 6061-T6.
2. Use washers conforming to ASTM B209 Alclad 2024-T3 and nuts conforming to ASTM B211, Aluminum Alloy 6061-T6.
3. Use anchor bolts conforming to ASTM A320, Type 1 Class B8. Use top nuts conforming to Aluminum thick nuts ASTM B211 Alloy 6061-T6 Class 2 thread. Use bottom nuts conforming to ASTM A194.
4. Use dam plates to close all open railing ends. Use material conforming to ASTM B209 Aluminum Alloy 6061-T6. As an alternate, drive-in end caps may be used. Use caps conforming to aluminum alloy sand mold castings complying with ASTM B26, alloy SG 356.0-T6.
5. Weld end caps to the rails.
6. Use aluminum alloy shim material for post alignment, where necessary and required by the Engineer. Use shim material conforming to ASTM B209, Alloy 1100-0.
7. Paint underside of base with a heavy coat of non-aluminum epoxy mastic primer.
8. Ensure that all anchor bolt holes and spaces between base plates and concrete are thoroughly caulked with a cold-poured joint sealer conforming to subsection 814.02 of NJDOT Standard Specifications, joint material ASTM D 5893, type NS.



DAM PLATE DETAIL



ALTERNATE DETAIL - END CAP

2-RAIL ALUMINUM RAILING (FOR USE ON NON-NHS BRIDGES ONLY)

N.T.S.

BCD-509-5

NEW JERSEY DEPARTMENT OF TRANSPORTATION
 BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BCD-509-5.1

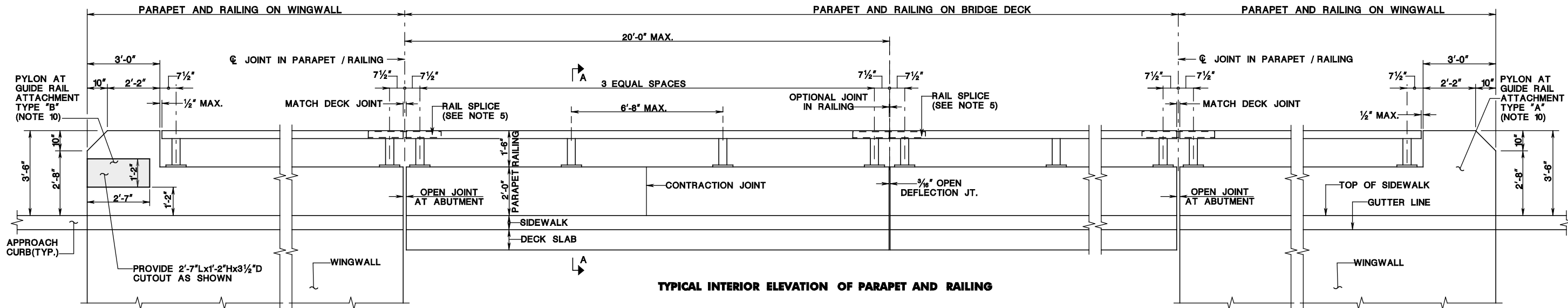
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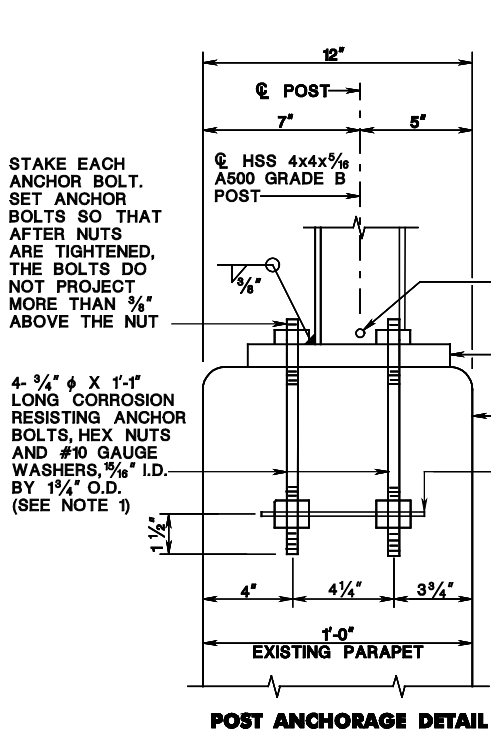
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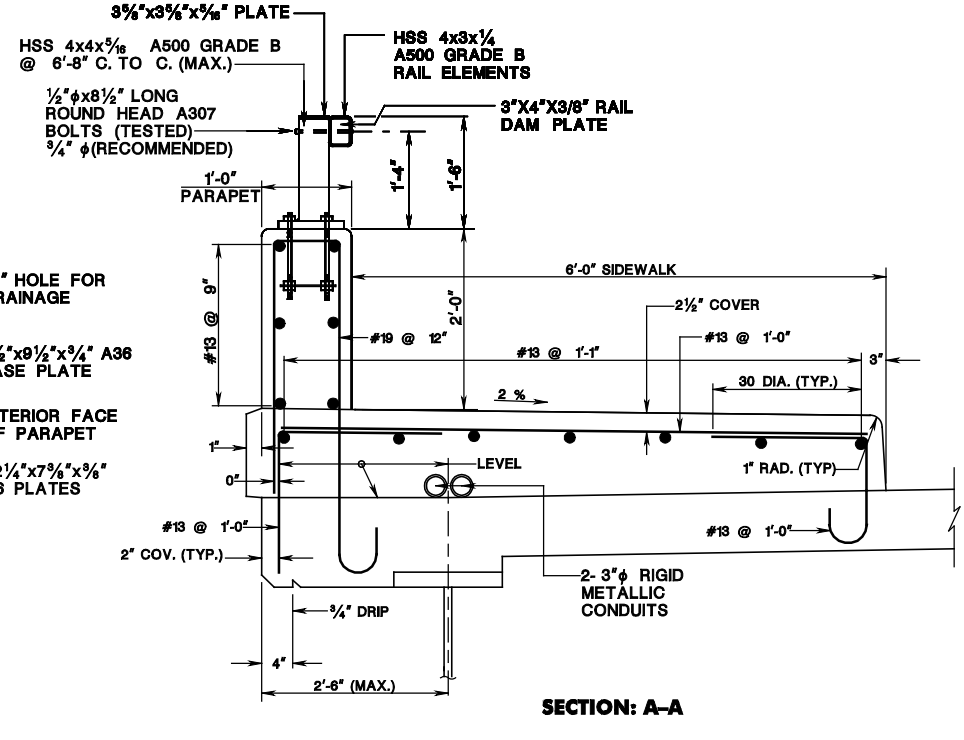
BD-509-6 ORIGINAL SHEET



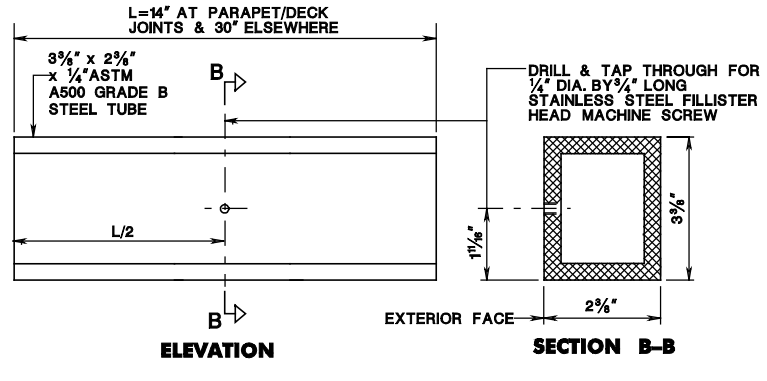
TYPICAL INTERIOR ELEVATION OF PARAPET AND RAILING



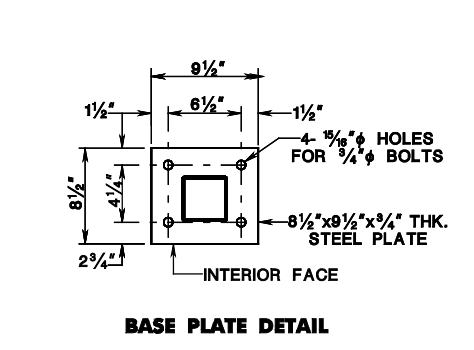
POST ANCHORAGE DETAIL



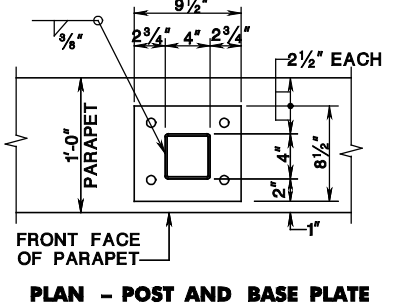
SECTION: A-A



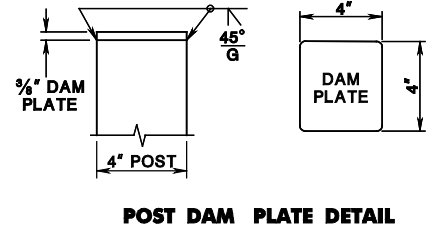
**ELEVATION SECTION B-B
DETAIL OF RAIL SPLICE FOR 4\" X 3\" TOP RAIL**



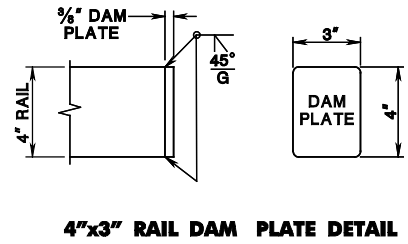
BASE PLATE DETAIL



PLAN - POST AND BASE PLATE



POST DAM PLATE DETAIL



4\" x 3\" RAIL DAM PLATE DETAIL

- NOTES:**
- ENSURE THAT ANCHOR BOLTS ARE 3/4\" phi x 1'-1\" LONG AND TO BE SET BY THE CONTRACTOR WITH 2\" OF CLEAR THREADS SET CLEAN.
 - CONFORM WELDING OF POSTS TO BASE PLATES TO THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.
 - CONFORM STEEL BOLTS, NUTS, AND WASHERS TO ASTM A307. CONFORM STRUCTURAL STEEL PLATES AND SHAPES TO ASTM A36, AND GALVANIZED AS PER ASTM A123.
 - DRILL 3/8\" phi HOLE IN THE POST, 1/2\" BOVE BASE PLATE FOR DRAINAGE.
 - PROVIDE SPLICES IN THE RAIL AT ALL DECK JOINTS AND AS REQUIRED BY RAIL LENGTHS.
 - PROVIDE 3/8\" phi HOLES EVERY 7' ON BOTTOM OF RAILS FOR DRAINAGE.
 - USE DAM PLATES TO CLOSE ALL OPEN RAILING AND POST ENDS. AS AN ALTERNATE DRIVE-IN END CAPS MAY BE USED. WELD END CAPS TO THE RAILS AND POST.
 - WHERE NECESSARY FOR POST ALIGNMENT, USE SHIM MATERIAL AS APPROVED BY THE RE.
 - ENSURE THAT ALL ANCHOR BOLT HOLES AND SPACES BETWEEN BASE PLATES AND CONCRETE ARE THOROUGHLY CAULKED WITH A COLD-POURED JOINT SEALER CONFORMING TO SUBSECTION 914.02 OF NJDOT STANDARD SPECIFICATION.
 - FOR GUIDE RAIL ATTACHMENT AND LIP CURB DETAILS, REFER TO CD-609-15.

1-RAIL STEEL RAILING

N.T.S.

BCD-509-6

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

TEST LEVEL 4
BCD-509-6.1

146
164

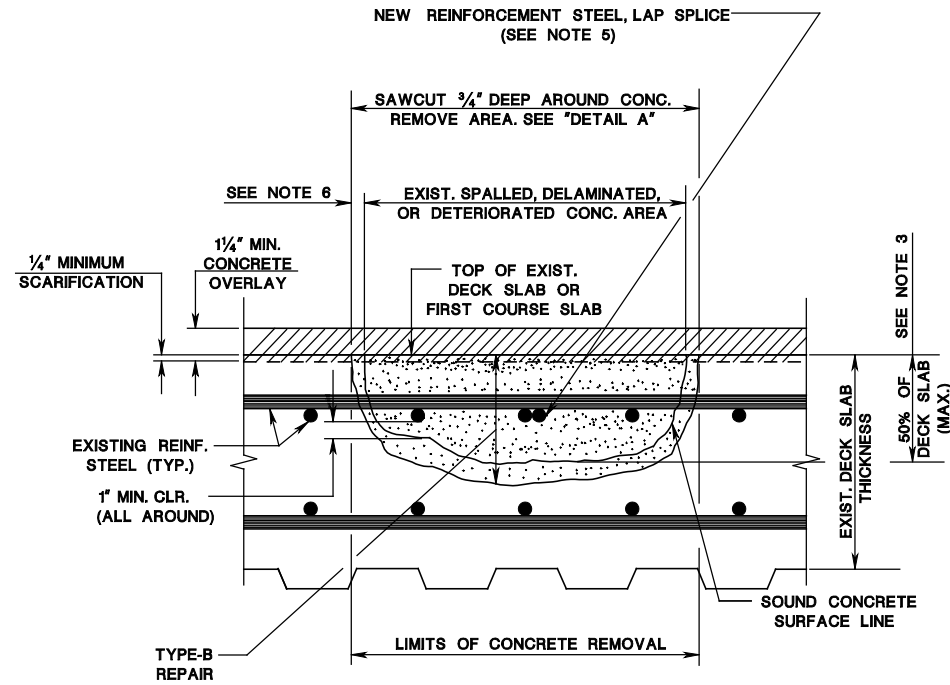
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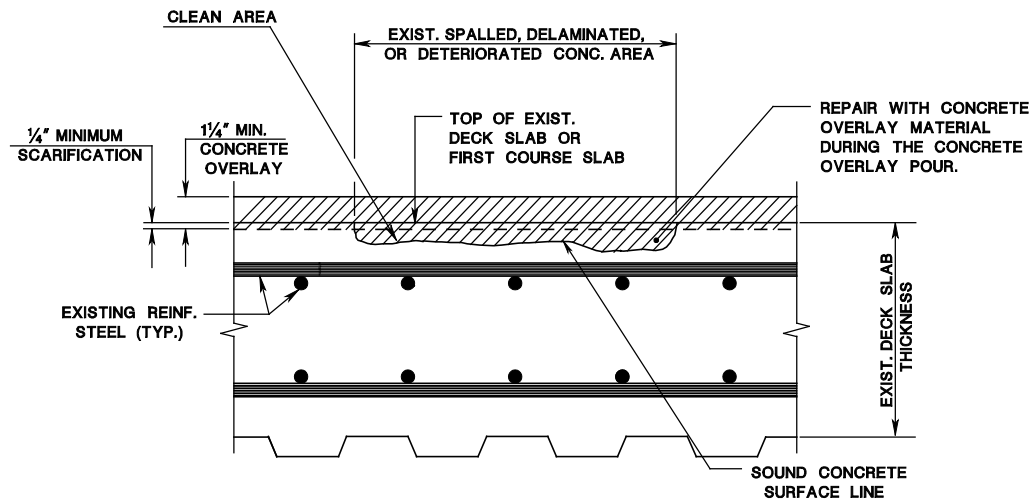
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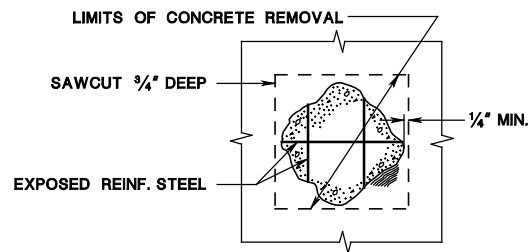
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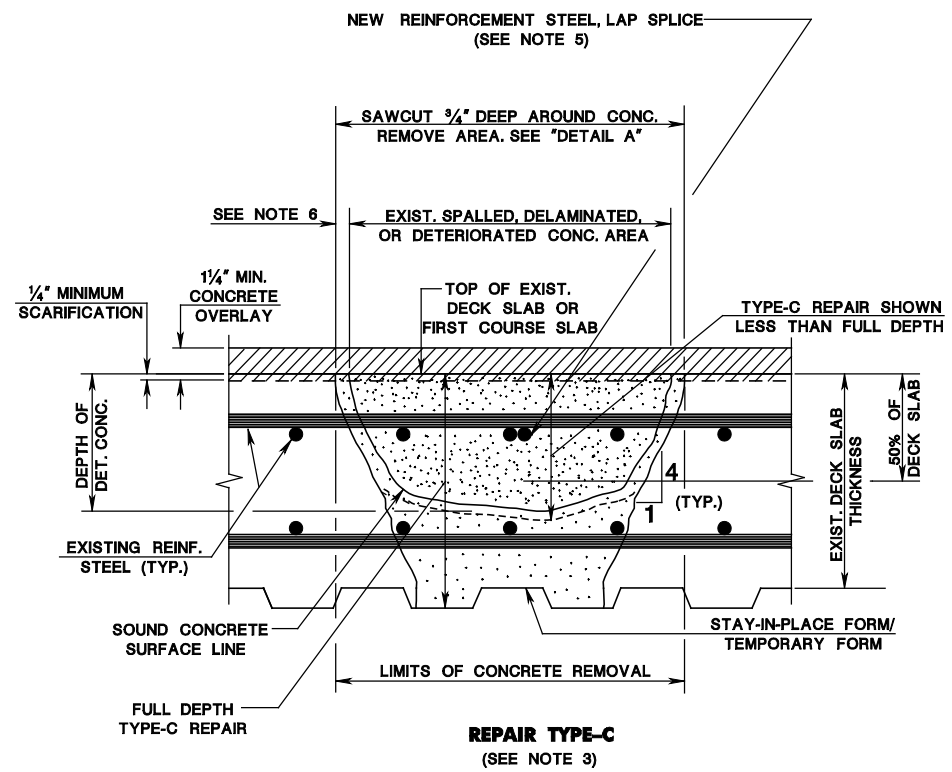
REPAIR TYPE-B
(SEE NOTE 2)



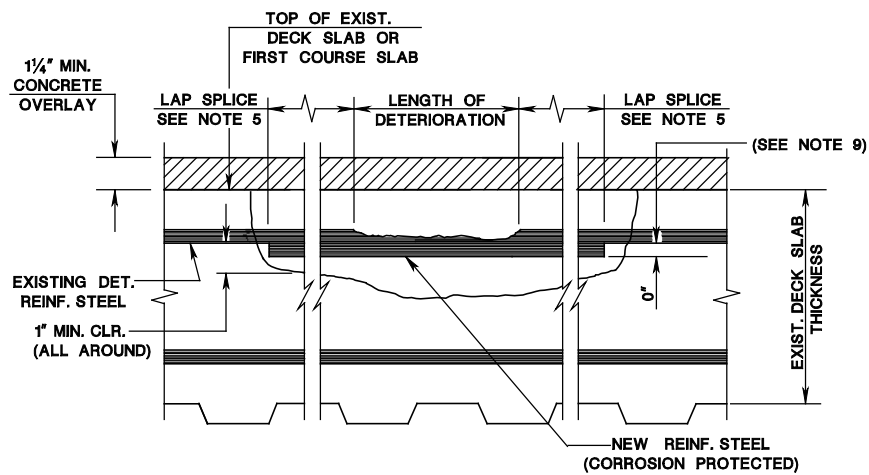
TYPICAL REPAIR DETAIL FOR MINOR SPALLED AREAS
(SEE NOTE 1)



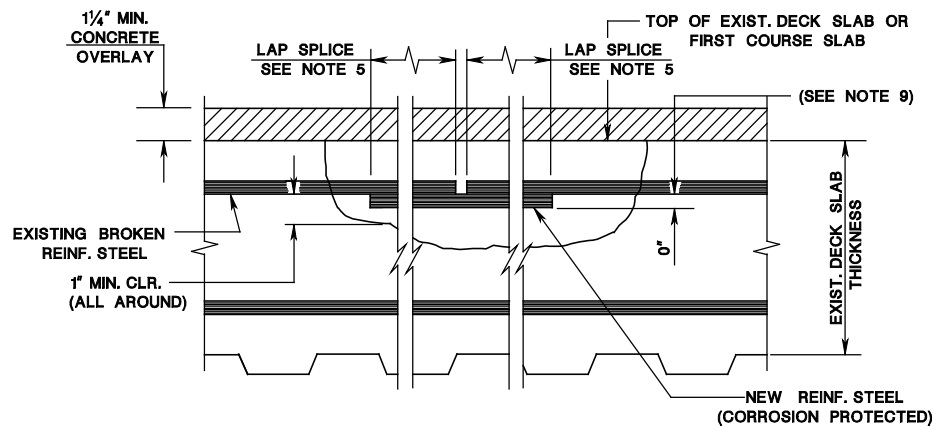
LIMITS OF REPAIR AREA (PLAN VIEW)
(SEE NOTE 7)



REPAIR TYPE-C
(SEE NOTE 3)



DETERIORATED REINFORCEMENT STEEL REPAIR



BROKEN REINFORCEMENT STEEL REPAIR

NOTES:

- CLEAN SPALLED, DELAMINATED, AND DETERIORATED CONCRETE AREAS AND REPAIRED WITH THE CONCRETE OVERLAY TYPE USED FOR THE OVERLAY PLACEMENT, OR CLASS A CONCRETE MAY BE USED.
- REPAIR TYPE-B:** REMOVE ALL DETERIORATED AND DELAMINATED CONCRETE TO A MINIMUM DEPTH OF 1" BELOW THE BOTTOM OF THE TOP LAYER OF EXISTING REINFORCEMENT STEEL TO A MAXIMUM OF 50% OF THE THICKNESS OF THE EXISTING CONCRETE DECK.
- REPAIR TYPE-C:** REMOVE ALL DETERIORATED AND DELAMINATED CONCRETE, AND IF THE SOUND CONCRETE SURFACE IS LOCATED AT A DEPTH GREATER THAN 50% OF THE DECK THICKNESS WHEN MEASURED FROM THE TOP OF THE DECK, PERFORM TYPE-C REPAIR UPON APPROVAL OF THE RE, AS SHOWN IN THE DETAIL "REPAIR TYPE-C". IF THE BOTTOM MAT OF THE DECK REINFORCEMENT STEEL IS EXPOSED, REPLACE THE DECK SLAB TO FULL DEPTH IN THIS AREA OF EXPOSURE.
- ENSURE THAT THE TOP SURFACE OF THE CONCRETE FOR TYPE-B AND TYPE-C REPAIRS IS EVEN WITH THE ADJACENT TOP OF EXISTING DECK SLAB AND TO MAINTAIN THE EXISTING GRADES AND CROSS SLOPES.
- PLACE NEW CORROSION PROTECTED REINFORCEMENT STEEL TO SUPPLEMENT AN EXISTING REINFORCEMENT STEEL WHEN AN EXISTING ONE HAS A SECTION LOSS OF 25% OR MORE OF THE ORIGINAL CROSS SECTION, AS DETERMINED BY THE RE, OR THE EXISTING REINFORCEMENT STEEL IS BROKEN. THE NEW ONE TO EXTEND 30 BAR DIAMETERS IN EACH DIRECTION FROM WHERE THE SECTION LOSS OR BREAK ENDS. MODIFY THE LIMITS OF THE REPAIR AREA TO MEET THE REINFORCEMENT STEEL SPLICE LAP REQUIREMENTS.
- REMOVE FOR REPAIR TYPE-B AND TYPE-C SOUND CONCRETE TO A DEPTH OF 1/4" MINIMUM TO 1" MAXIMUM IN ALL DIRECTIONS, EXCEPT THAT THE MAXIMUM LIMIT MAY BE MODIFIED UPON APPROVAL OF THE RE.
- UPON APPROVAL OF THE RE, MODIFY THE LIMITS OF CONCRETE REMOVAL AS SHOWN IN THE "LIMITS OF REPAIR AREA (PLAN VIEW)" WHEN SUPPLEMENTARY REINFORCEMENT STEEL IS REQUIRED.
- DECK REINFORCEMENT STEEL DETAILS SHOWN ARE GENERAL. ACTUAL REINFORCEMENT STEEL SPACINGS AND LOCATIONS WILL VARY FROM BRIDGE TO BRIDGE.
- PLACE NEW REINFORCEMENT STEEL AT THE SAME LEVEL ALONGSIDE THE EXISTING DETERIORATED OR BROKEN REINFORCEMENT STEEL.
- BEFORE PLACEMENT OF THE OVERLAY, REMOVE ALL PREVIOUSLY PATCHED AREAS COMPLETELY.

BRIDGE DECK REHABILITATION WITH CONCRETE OVERLAY

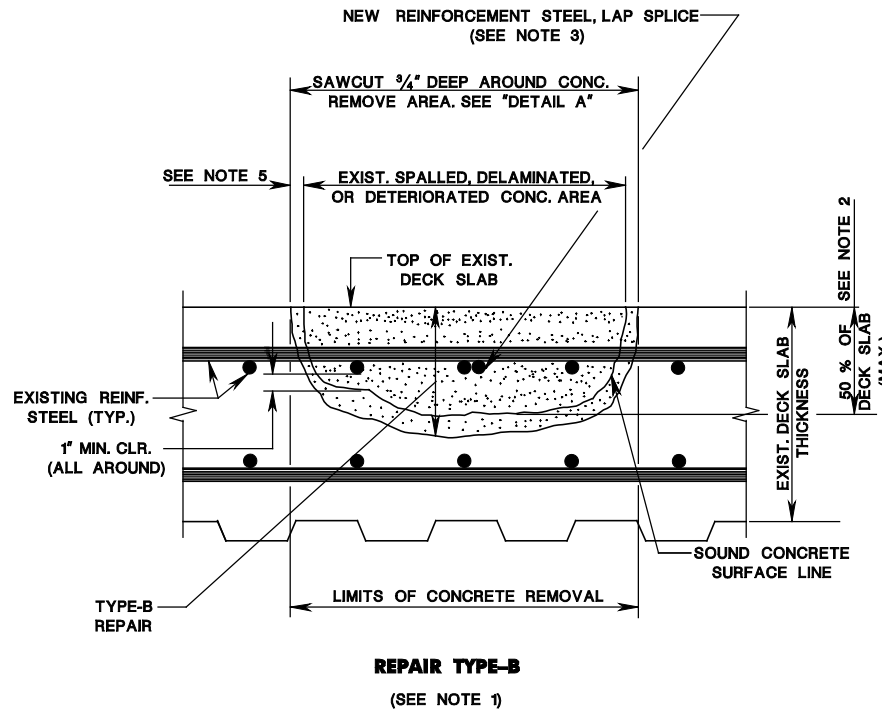
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BCD-551-1

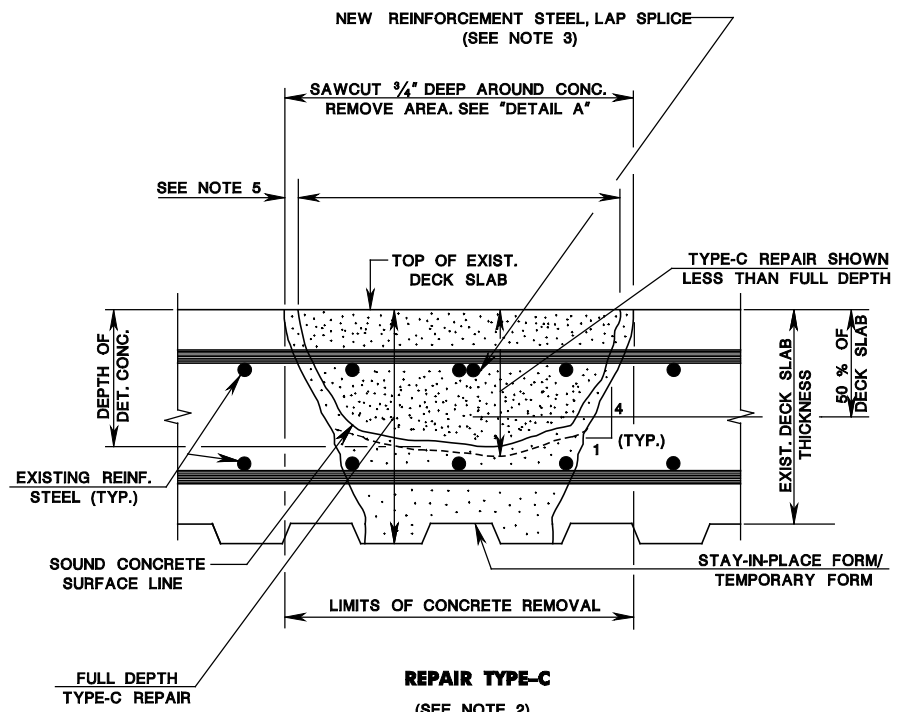
NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

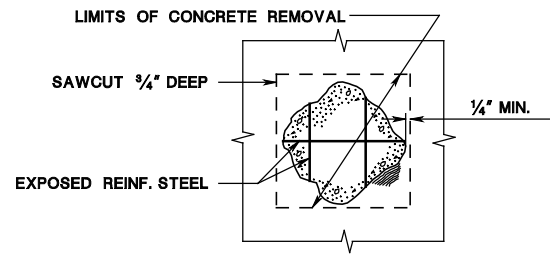
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REPAIR TYPE-B
(SEE NOTE 1)



REPAIR TYPE-C
(SEE NOTE 2)



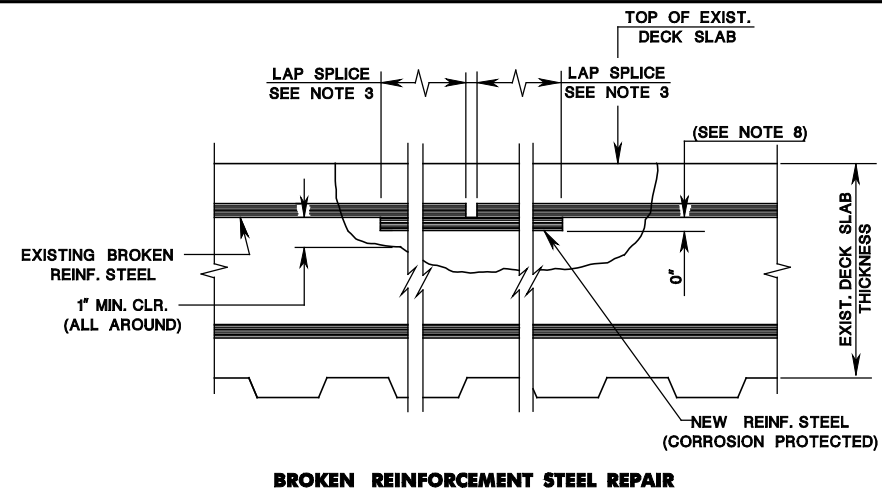
LIMITS OF REPAIR AREA (PLAN VIEW)
(SEE NOTE 6)

BCD-551-2.1

NOTES:

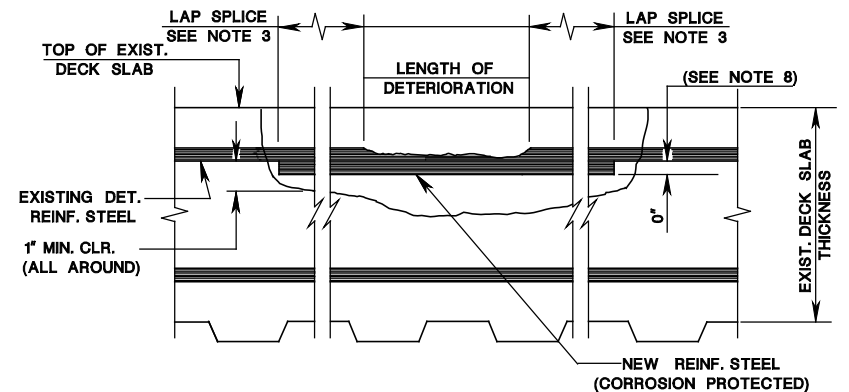
1. REPAIR TYPE-B: REMOVE ALL DETERIORATED AND DELAMINATED CONCRETE TO A MINIMUM DEPTH OF 1" BELOW THE BOTTOM OF THE TOP LAYER OF EXISTING REINFORCEMENT STEEL OR UP TO A MAXIMUM OF 50% OF THE THICKNESS OF THE EXISTING CONCRETE DECK.
2. REPAIR TYPE-C: REMOVE ALL DETERIORATED AND DELAMINATED CONCRETE. IF THE SOUND CONCRETE SURFACE IS LOCATED AT A DEPTH GREATER THAN 50% OF THE DECK THICKNESS WHEN MEASURED FROM THE TOP OF THE DECK, PERFORM TYPE-C REPAIR UPON APPROVAL OF THE RE, AS SHOWN IN THE DETAIL "REPAIR TYPE-C". IF THE BOTTOM MAT OF THE DECK REINFORCEMENT STEEL IS EXPOSED, REPLACE THE DECK SLAB TO FULL DEPTH IN THIS AREA OF EXPOSURE.
3. PLACE NEW CORROSION PROTECTED REINFORCEMENT STEEL TO SUPPLEMENT AN EXISTING REINFORCEMENT STEEL WHEN AN EXISTING ONE HAS A SECTION LOSS OF 25% OR MORE OF THE ORIGINAL CROSS SECTION, AS DETERMINED BY THE RE, OR THE EXISTING REINFORCEMENT STEEL IS BROKEN. THE NEW ONE TO EXTEND 30 BAR DIAMETERS IN EACH DIRECTION FROM WHERE THE SECTION LOSS OR BREAK ENDS. MODIFY THE LIMITS OF THE REPAIR AREA TO MEET THE REINFORCEMENT STEEL SPLICE LAP REQUIREMENTS.
4. ENSURE THAT THE TOP SURFACE OF THE CONCRETE FOR TYPE-B AND TYPE-C REPAIRS IS EVEN WITH THE ADJACENT TOP OF EXISTING DECK SLAB AND TO MAINTAIN THE EXISTING GRADES AND CROSS SLOPES.
5. FOR REPAIR TYPE-B AND TYPE-C REMOVE SOUND CONCRETE TO A DEPTH OF 1/4" MINIMUM TO 1" MAXIMUM IN ALL DIRECTIONS, EXCEPT THAT THE MAXIMUM LIMIT MAY BE MODIFIED UPON APPROVAL OF THE RE.
6. UPON APPROVAL OF THE RE, MODIFY THE LIMITS OF CONCRETE REMOVAL AS SHOWN IN THE "LIMITS OF REPAIR AREA (PLAN VIEW)" WHEN SUPPLEMENTARY REINFORCEMENT STEEL ARE REQUIRED.
7. DECK REINFORCEMENT STEEL DETAILS SHOWN ARE GENERAL. ACTUAL REINFORCEMENT STEEL SPACINGS AND LOCATIONS WILL VARY FROM BRIDGE TO BRIDGE.
8. PLACE THE NEW REINFORCEMENT STEEL AT THE SAME LEVEL ALONGSIDE THE EXISTING DETERIORATED OR BROKEN REINFORCEMENT STEEL.
9. REFER TO THE NJDOT STANDARD SPECIFICATIONS FOR GUIDANCE AS TO THE SELECTION OF A QUICK-SETTING PATCH MATERIAL PRODUCT.

BCD-551-2.2



BROKEN REINFORCEMENT STEEL REPAIR

BCD-551-2.3



DETERIORATED REINFORCEMENT STEEL REPAIR

BCD-551-2.4

**BRIDGE DECK REHABILITATION
WITHOUT CONCRETE OVERLAY**
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

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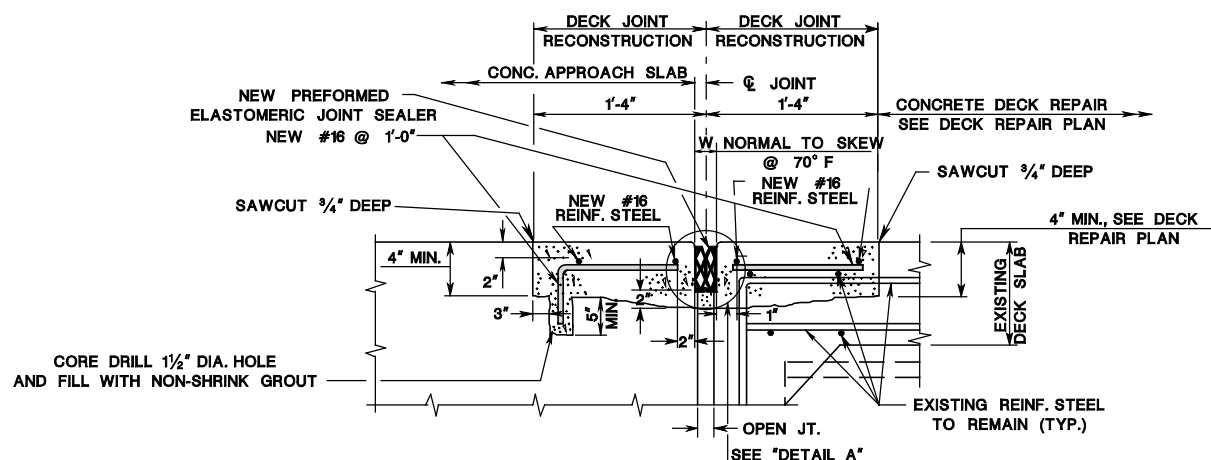
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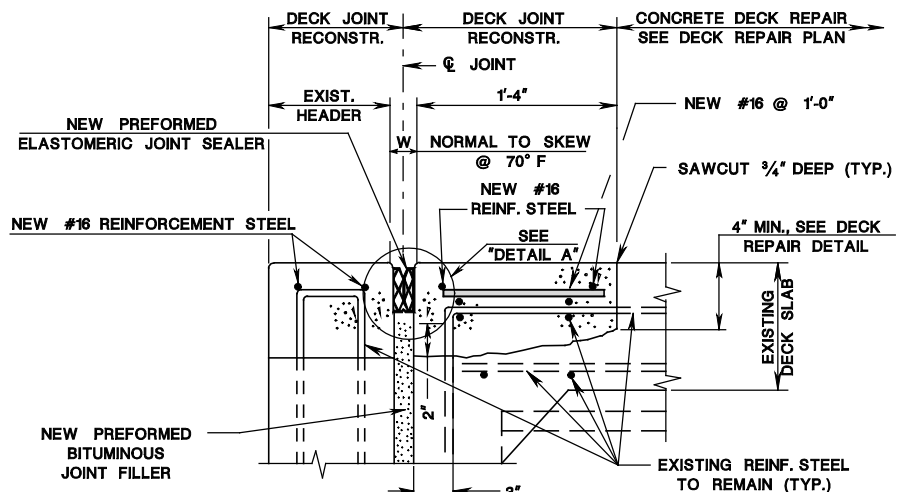
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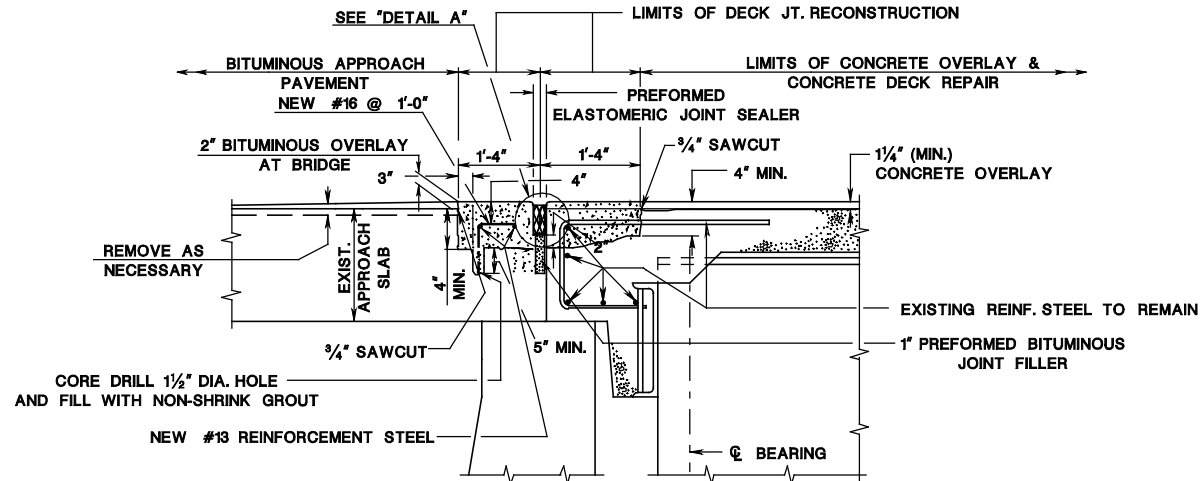
DECK JOINT AT ABUTMENT WITH APPROACH SLAB

BCD-551-3.1



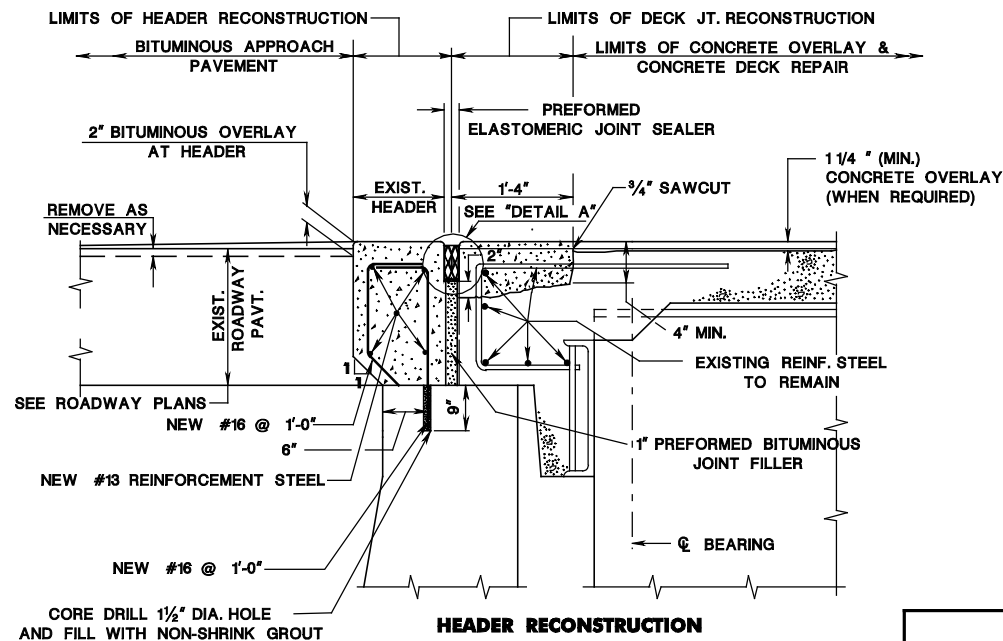
DECK JOINT AT ABUTMENT WITH HEADER

BCD-551-3.1

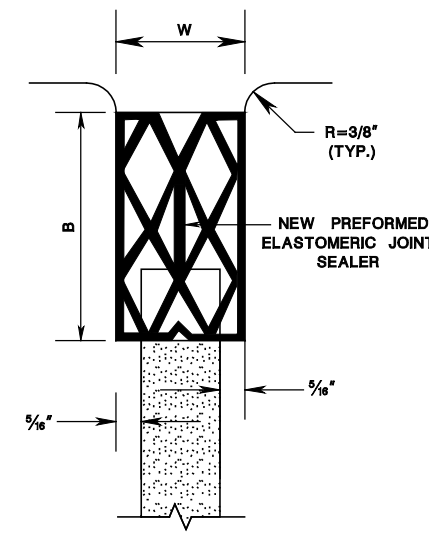


DECK JOINT AT ABUTMENT (WITH APPROACH SLAB AND CONCRETE OVERLAY)

BCD-551-3.3



HEADER RECONSTRUCTION



DETAIL A

DIMENSIONS W AND B VARY DEPENDING ON THE JOINT SEALER MANUFACTURER.

BCD-551-3.4

NOTES:

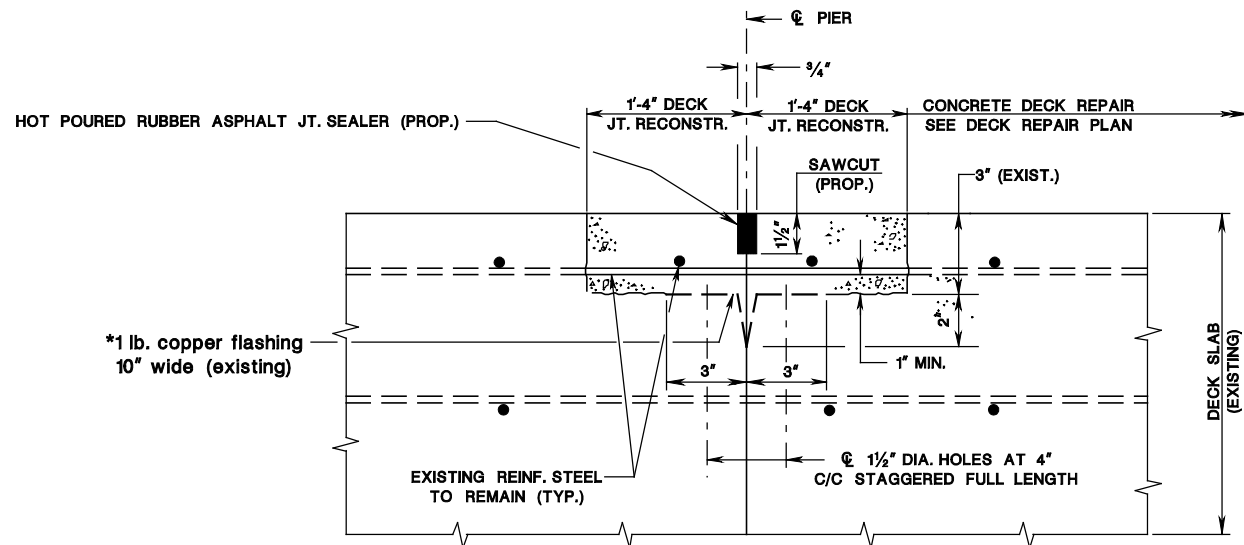
1. ALL NEW REINFORCEMENT STEEL IS DESIGNATED IN METRIC UNITS AND TO BE CORROSION PROTECTED.
2. MECHANICAL COUPLERS MAY BE NECESSARY IF CONSTRUCTION IS STAGED.
3. PROVIDE AS REQUIRED ARMORED JOINT.

**BRIDGE DECK REHABILITATION
DECK JOINT REPAIR (SHEET 1 OF 2)**
N.T.S.

BCD-551-3

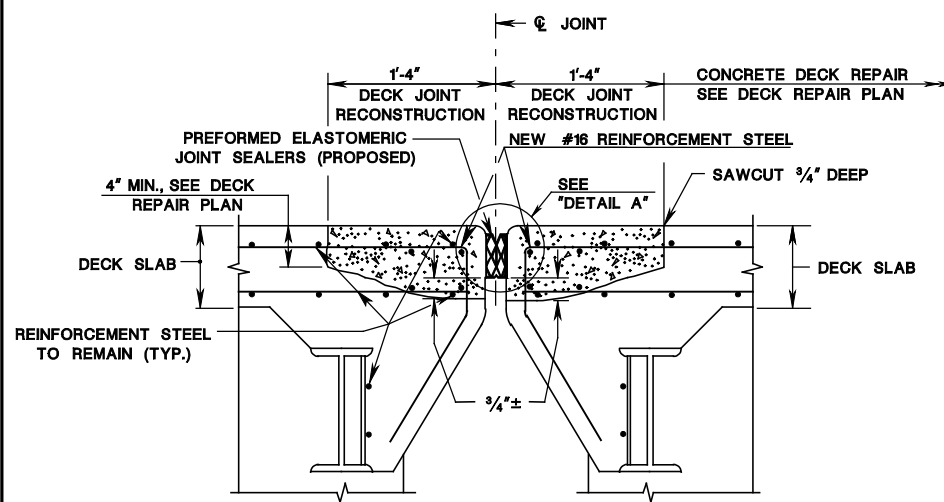
NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS



FIXED DECK JOINT AT PIER

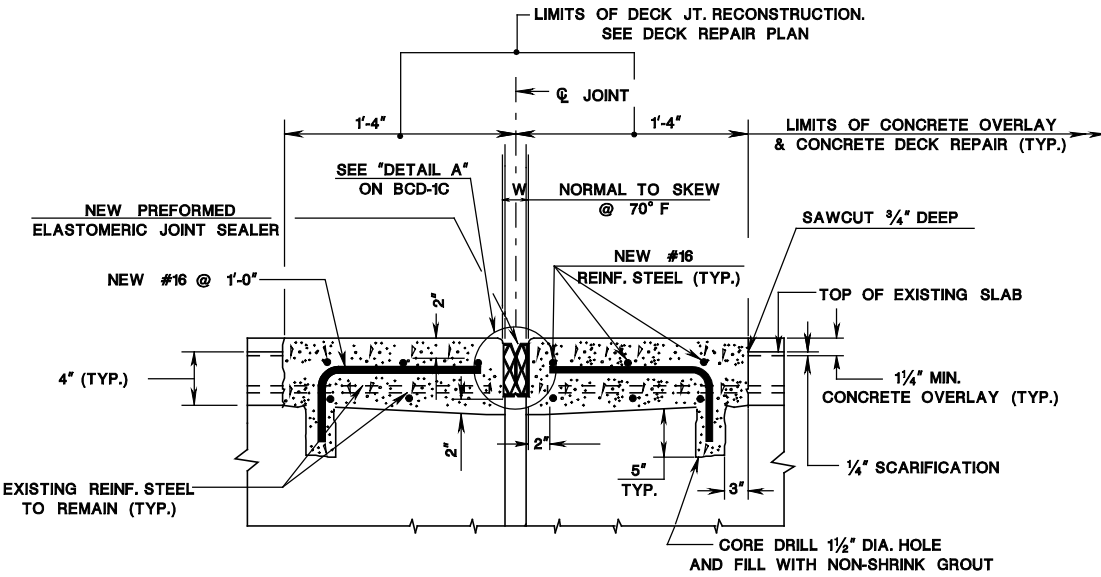
BCD-551-3.2



EXPANSION DECK JOINT AT PIER

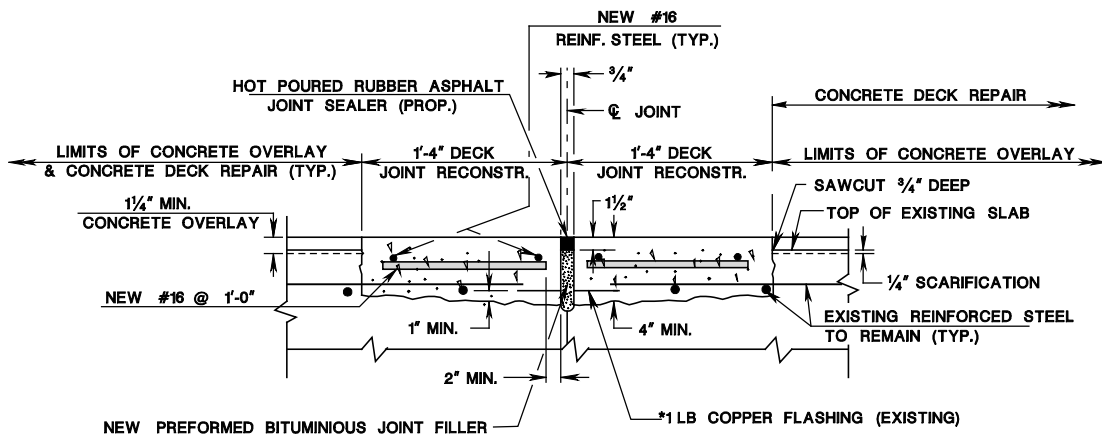
BCD-551-3.5

*THE CONTRACTOR MUST REPLACE THE EXISTING COPPER FLASHING DURING DECK JOINT RECONSTRUCTION ONLY IF THE AREA OF REPAIR WARRANTS IT BELOW COPPER FLASHING, OR IF EXISTING REINFORCEMENT STEEL IS LESS THAN 1" ABOVE TOP OF FLASHING.



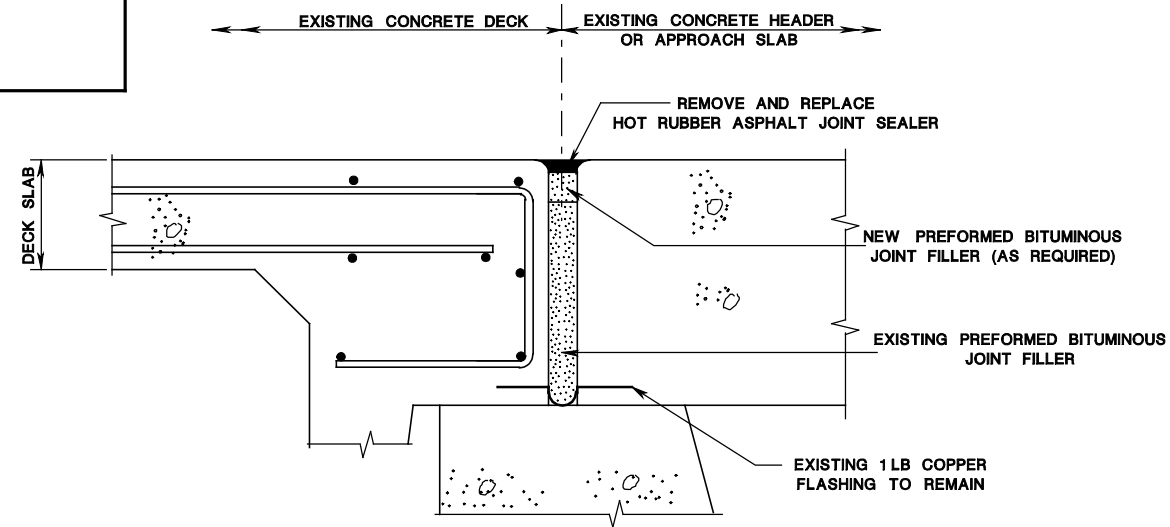
EXPANSION DECK JOINT AT PIER WITH CONCRETE OVERLAY

BCD-551-4.1



FIXED JOINT AT PIER WITH CONCRETE OVERLAY.

*THE CONTRACTOR MUST REPLACE THE EXISTING COPPER FLASHING DURING DECK JOINT RECONSTRUCTION ONLY IF THE CONCRETE BELOW COPPER FLASHING IS DETERIORATED OR IF EXISTING REINFORCEMENT STEEL IS LESS THAN 1\"/>



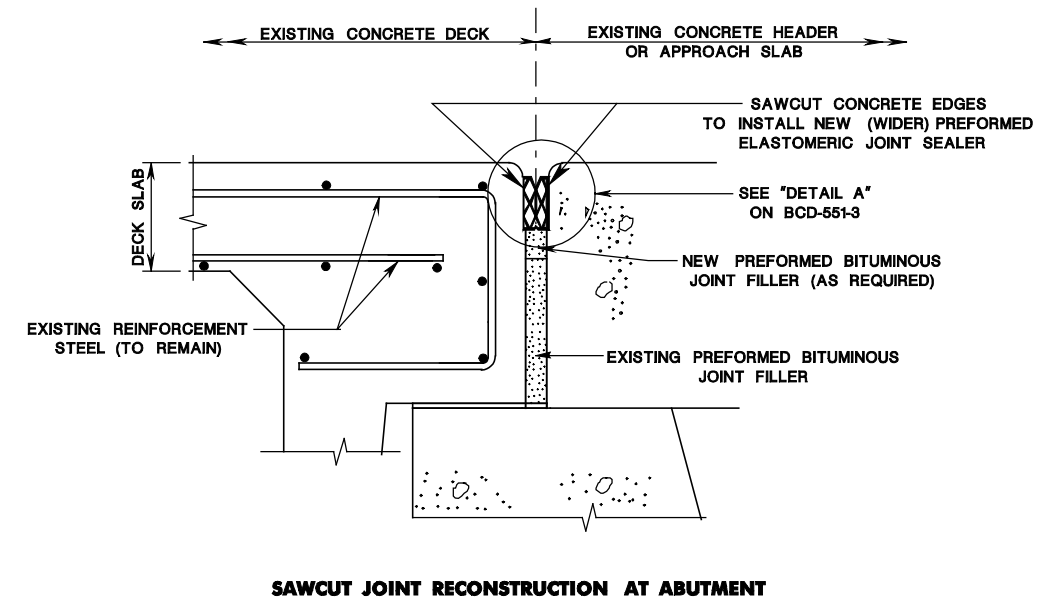
DECK JOINT RE-SEAL AT ABUTMENT

BCD-551-4.5

NOTES:

1. ENSURE THAT ALL NEW REINFORCEMENT STEEL IS DESIGNATED IN METRIC UNITS AND CORROSION PROTECTED.
2. "DECK JOINT RECONSTRUCTION" AND "HEADER RECONSTRUCTION" MUST INCLUDE:
 - A. 3/4" SAWCUT AS SHOWN IN JOINT DETAILS.
 - B. REMOVE CONCRETE AND DISPOSE OF MATERIALS TO LIMITS SHOWN AND REPLACE WITH CONCRETE.
 - C. REMOVE PREFORMED BITUMINOUS JOINT FILLER (IF ANY) TO DEPTH SHOWN OR AS DIRECTED BY THE RE.
 - D. BLOCKING FOR PROPOSED PREFORMED ELASTOMERIC JOINT SEALER.
 - E. REPLACEMENT OF CORROSION PROTECTED REINFORCEMENT STEEL.
 - F. PROPOSED PREFORMED BITUMINOUS JOINT FILLER WHERE REQUIRED.
 - G. DRILL AND FILL HOLES WITH NON-SHRINK GROUT.
 - H. SAWCUTTING THE CURB AND SIDEWALK TO INSTALL THE SEALER.
3. PROVIDE AS REQUIRED ARMORED JOINT.

BCD-551-4.3



SAWCUT JOINT RECONSTRUCTION AT ABUTMENT

BCD-551-4.4

**BRIDGE DECK REHABILITATION
DECK JOINT REPAIR (SHEET 2 OF 2)
N.T.S.**

BCD-551-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

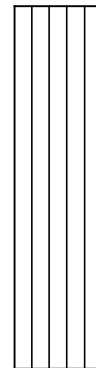
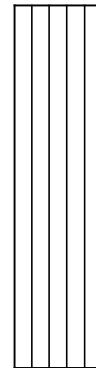
BRIDGE CONSTRUCTION DETAILS

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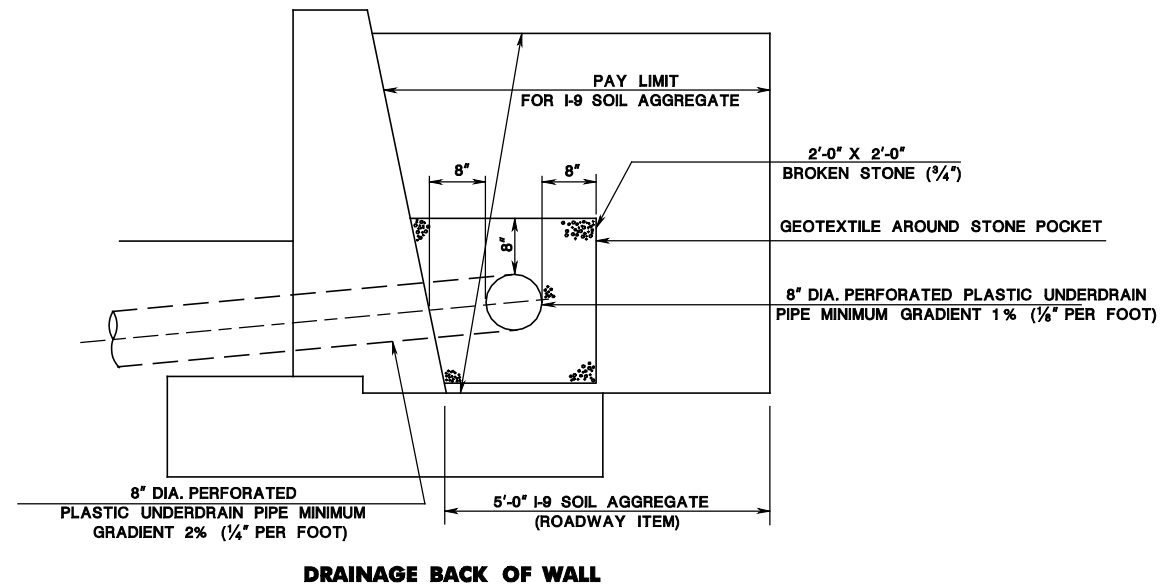
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BCD-602-ORIGINAL SHEET

file =



NOTE:
DRAINAGE FOR ABUTMENT WALL STEMS ARE SIMILAR.

DRAINAGE BACK OF WALL
N.T.S.

BCD-602-1
NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BCD-602-1.1

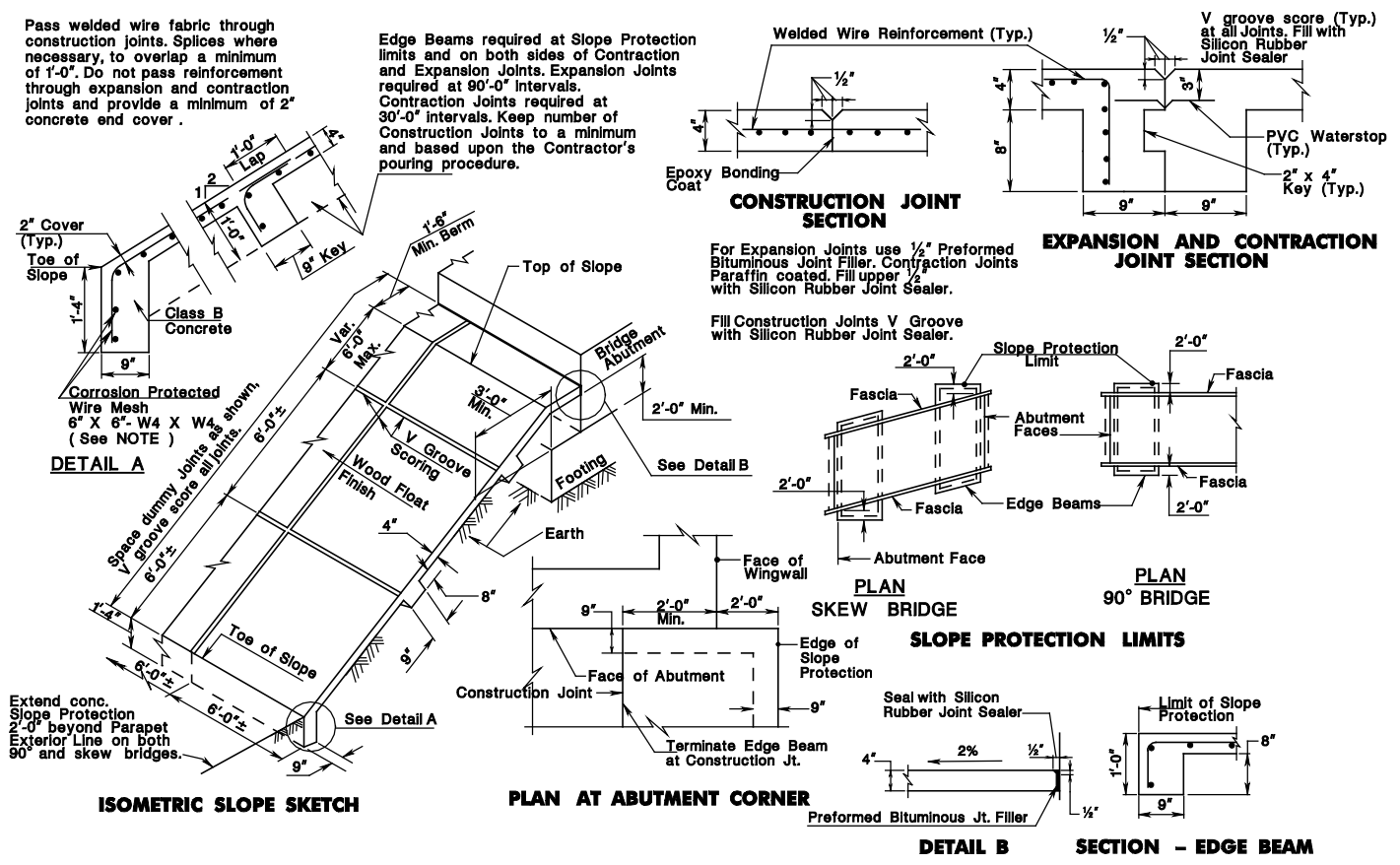
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BCD-603-ORIGINAL SHEET



DETAILS OF CONCRETE SLOPE PROTECTION

CONCRETE SLOPE PROTECTION

N.T.S.

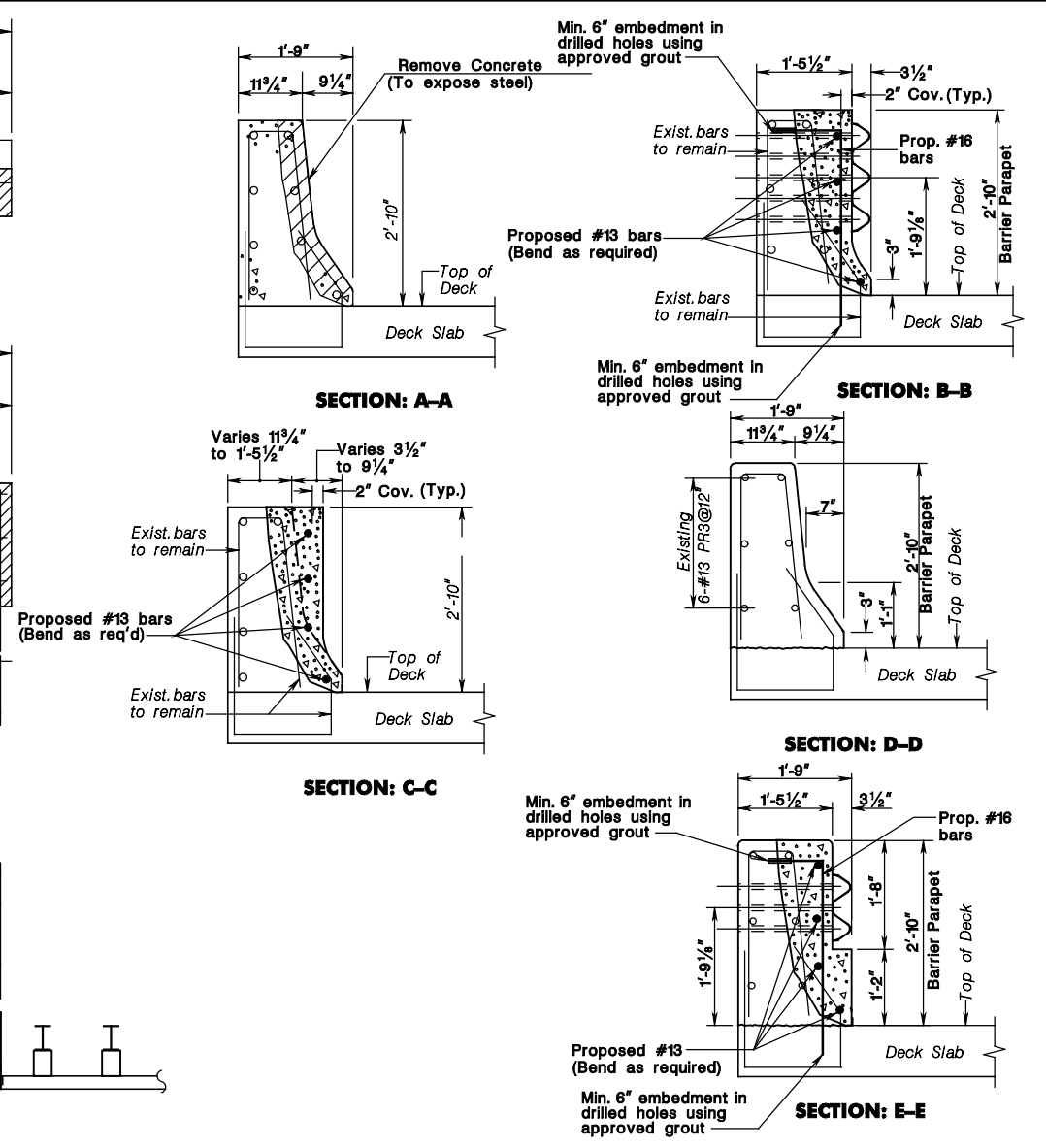
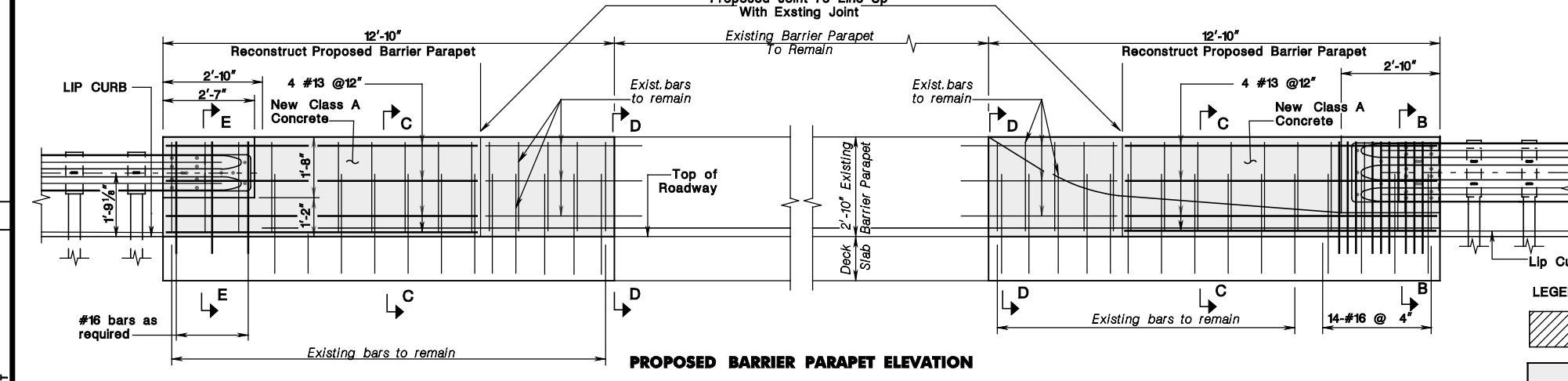
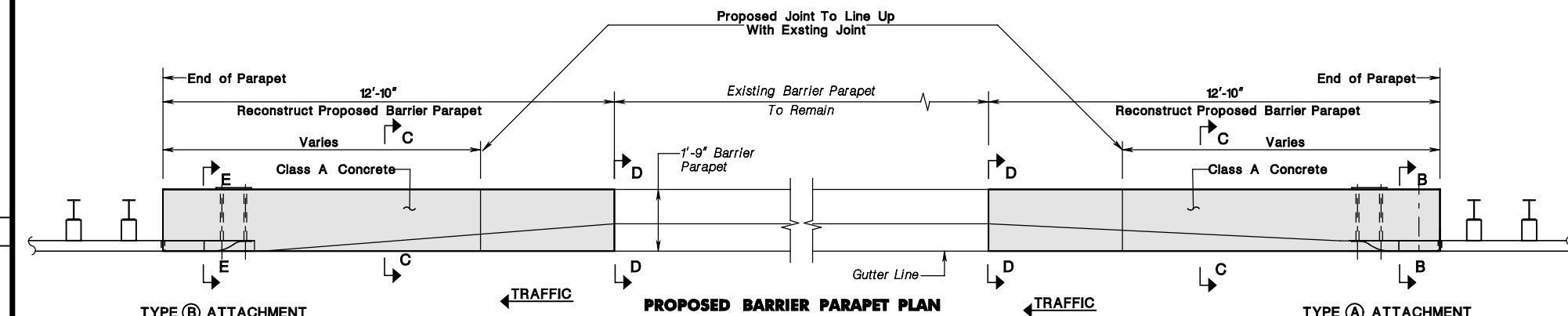
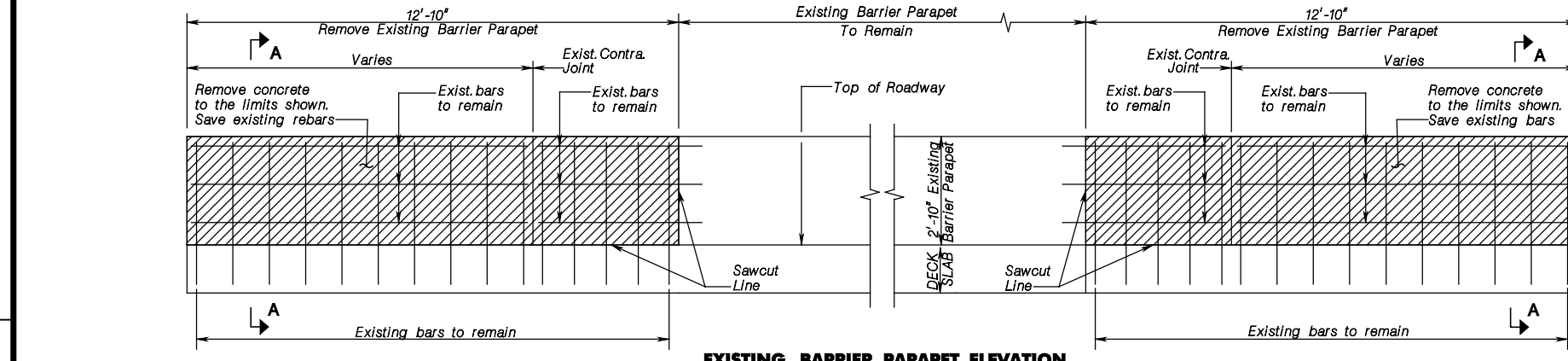
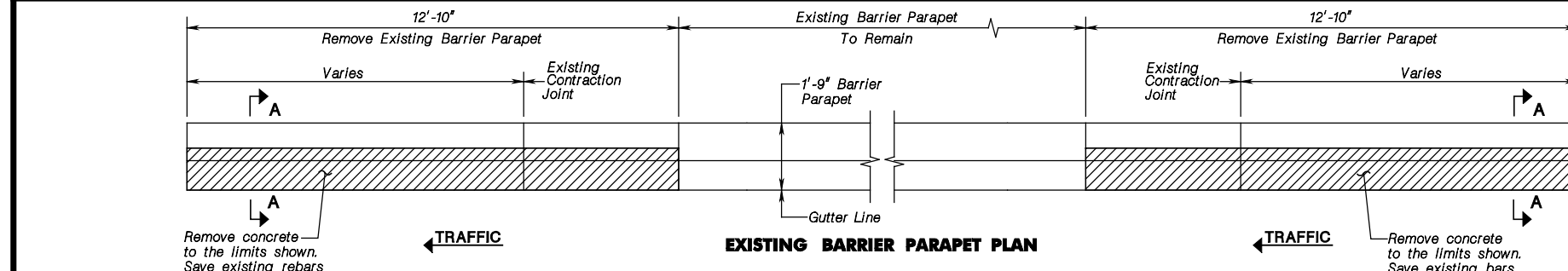
BCD-603-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BCD-603.1.1

BCD-BD-ORIGINAL SHEET



NOTE:
Refer to CD-609-14 for guide rail attachment and lip curb details.

LEGEND

[Hatched Box]	REMOVE
[Solid Grey Box]	RECONSTRUCT
[Dotted Box]	PROPOSED CLASS A CONCRETE

GUIDE RAIL ATTACHMENT - EXISTING STRUCTURES
NEW JERSEY BARRIER SHAPE PARAPET ON BRIDGE DECK WITHOUT ROADWAY CURBING ON APPROACH

BARRIER PARAPET MODIFICATION FOR GUIDE RAIL
N.T.S.
NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BCD-609-1.1

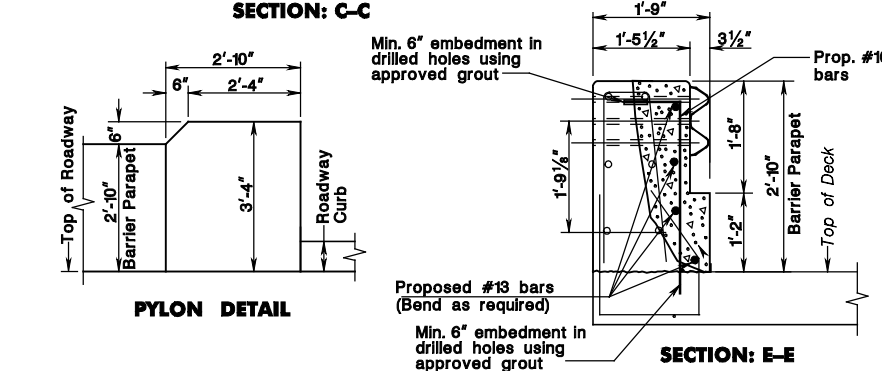
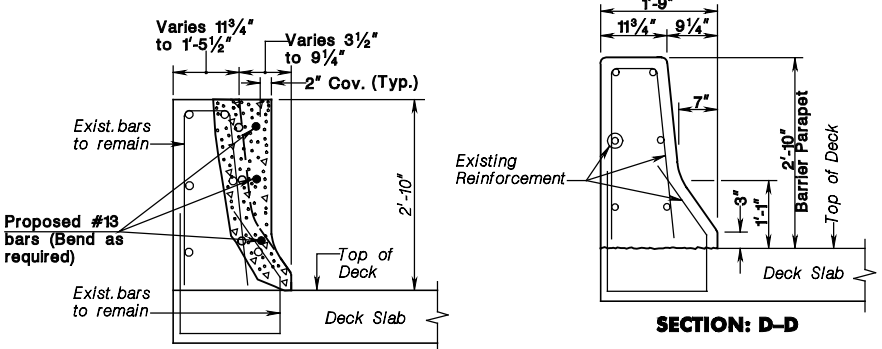
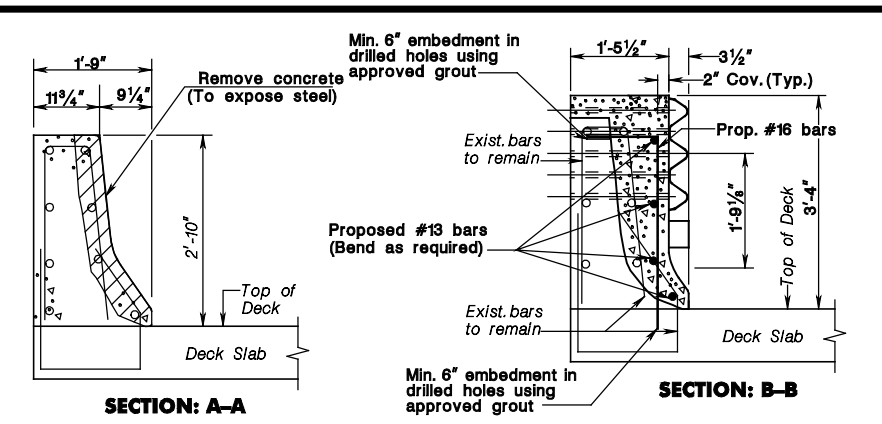
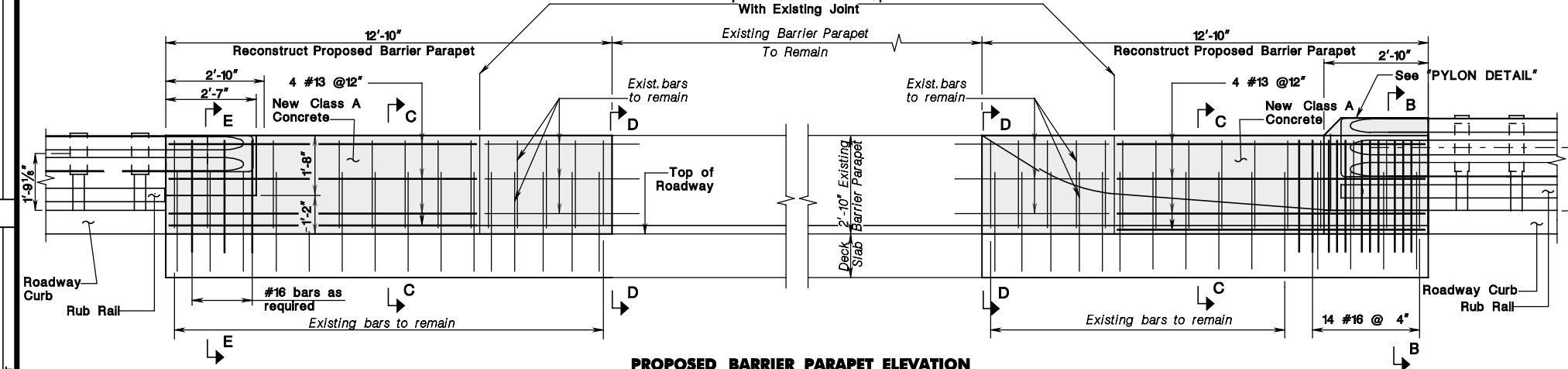
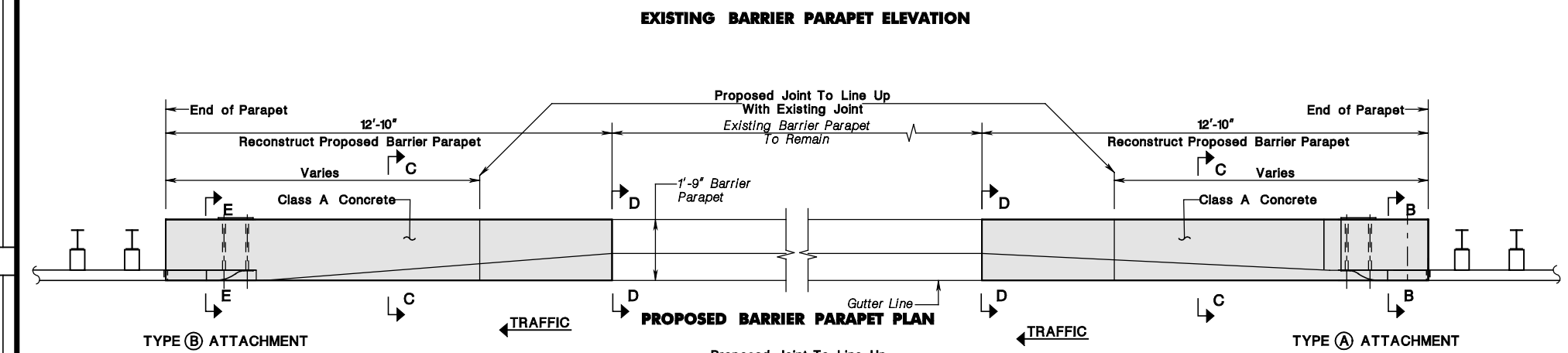
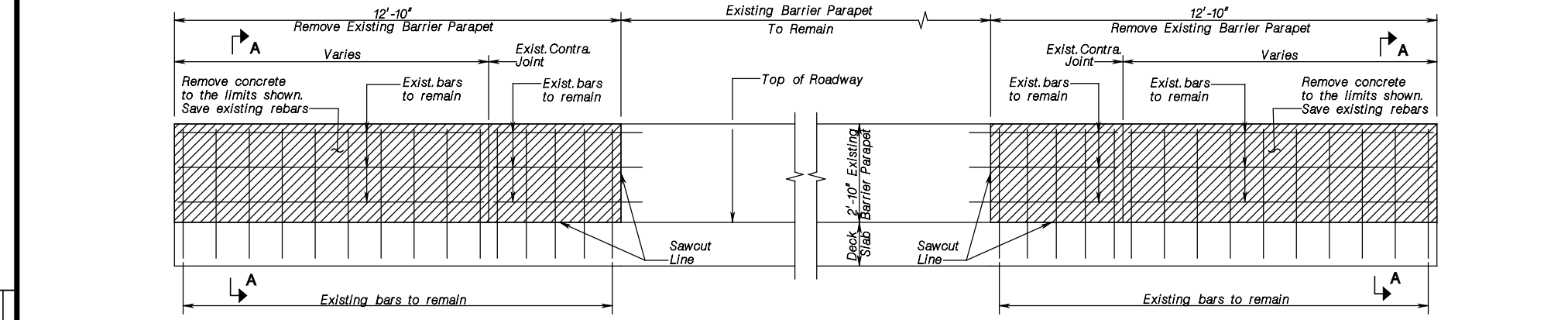
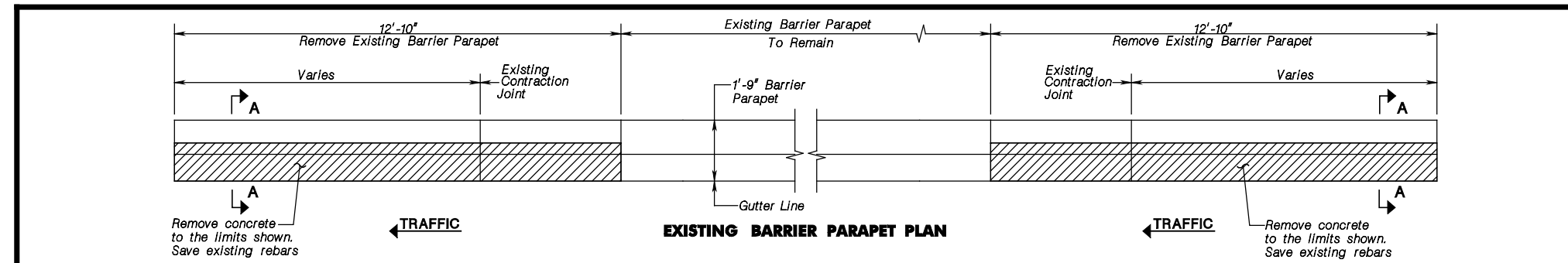
BCD-609-1

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NOTE:
Refer to CD-609-15 for guide rail attachment and details.

- LEGEND**
- REMOVE
 - RECONSTRUCT
 - PROPOSED CLASS A CONCRETE

BARRIER PARAPET MODIFICATION FOR GUIDE RAIL
N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

GUIDE RAIL ATTACHMENT - EXISTING STRUCTURES
NEW JERSEY BARRIER SHAPE PARAPET ON BRIDGE DECK WITH ROADWAY CURBING ON APPROACH

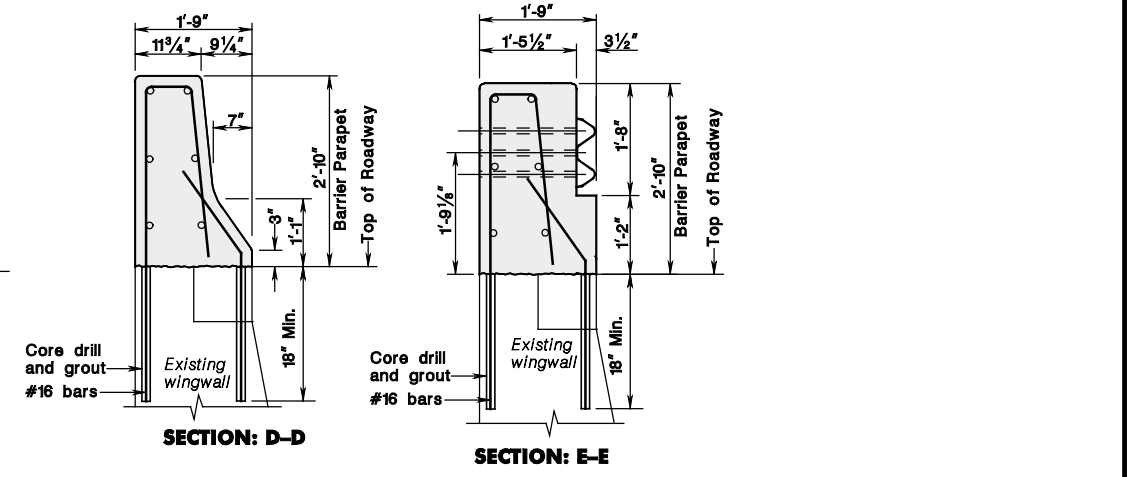
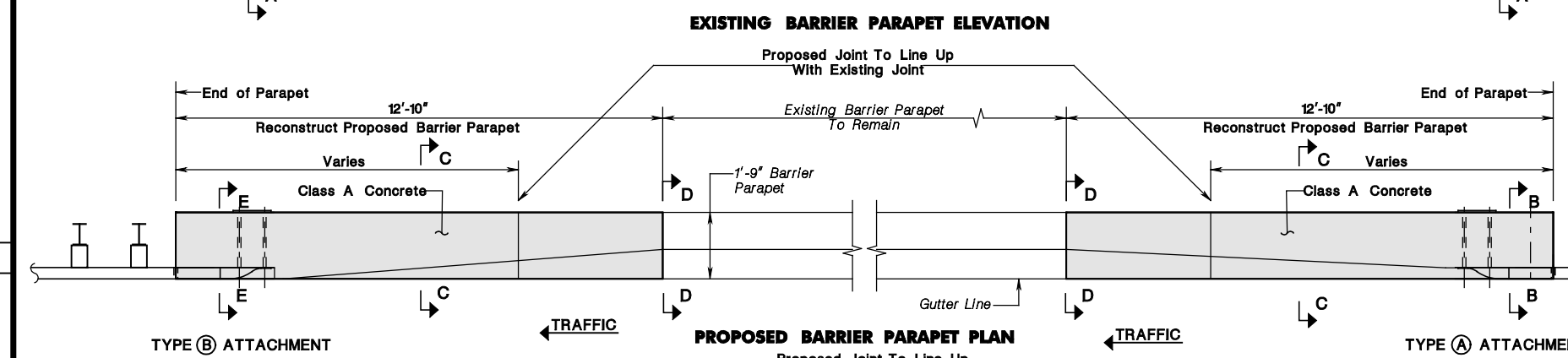
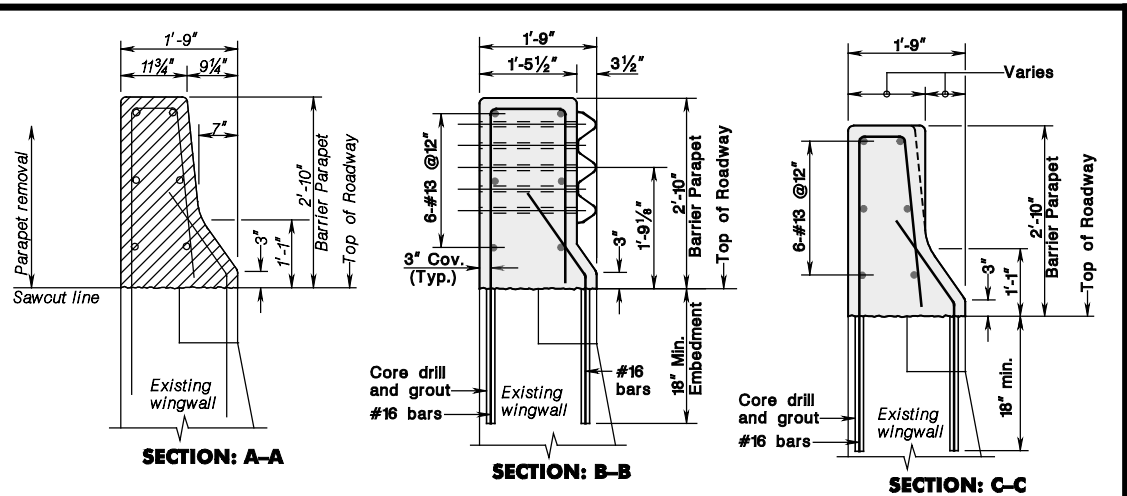
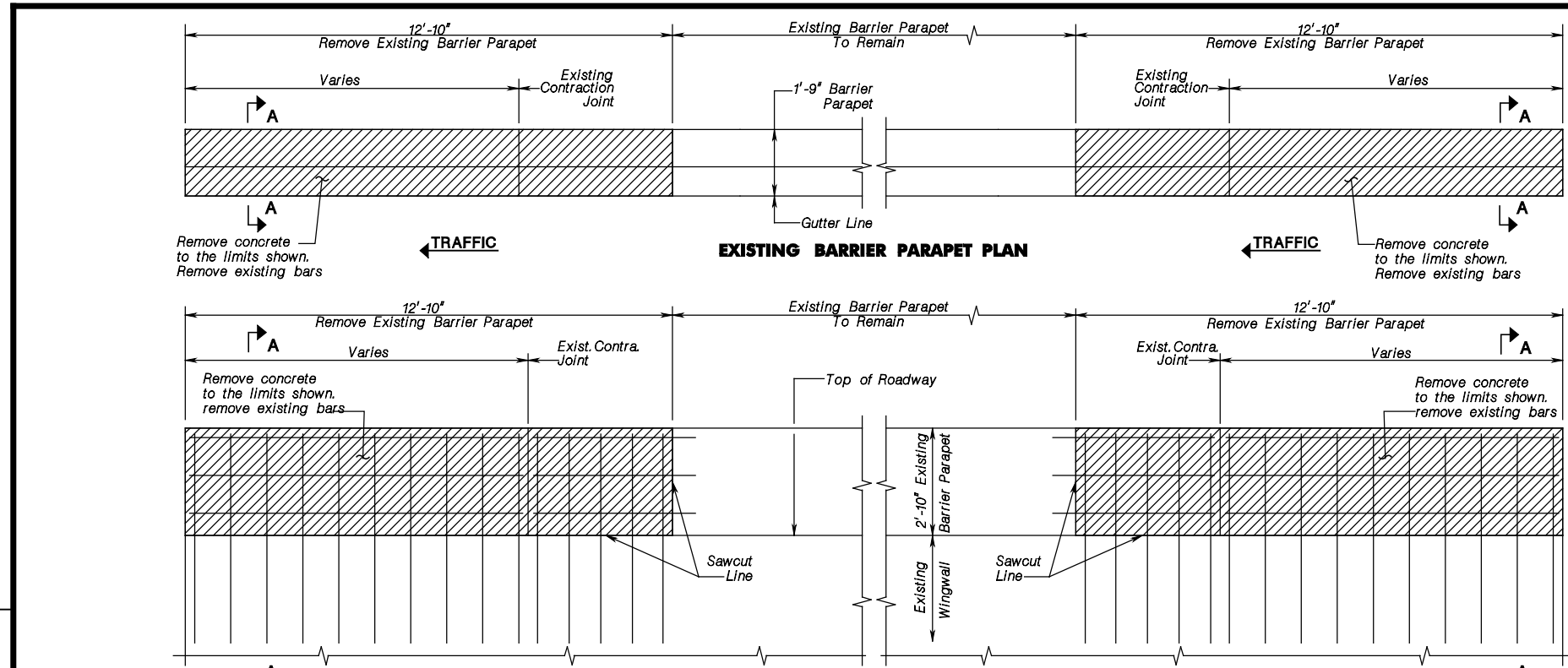
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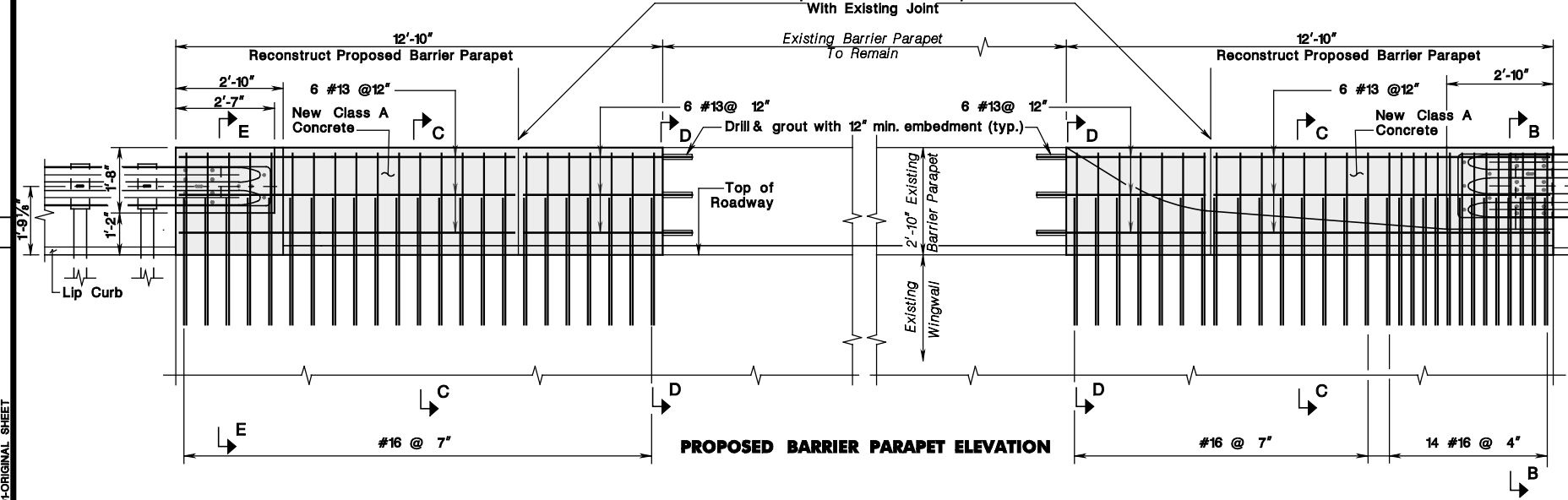
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NOTE:
Refer to CD-609-14 for guide rail attachment and lip curb details.



LEGEND

	REMOVE
	RECONSTRUCT
	PROPOSED CLASS A CONCRETE

BARRIER PARAPET MODIFICATION FOR GUIDE RAIL
N.T.S.

BCD-609-3
NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BCD-609-3.1

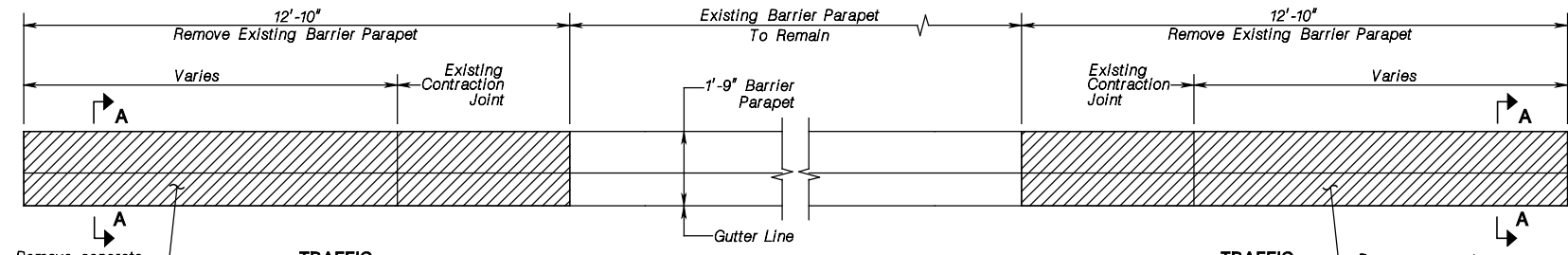
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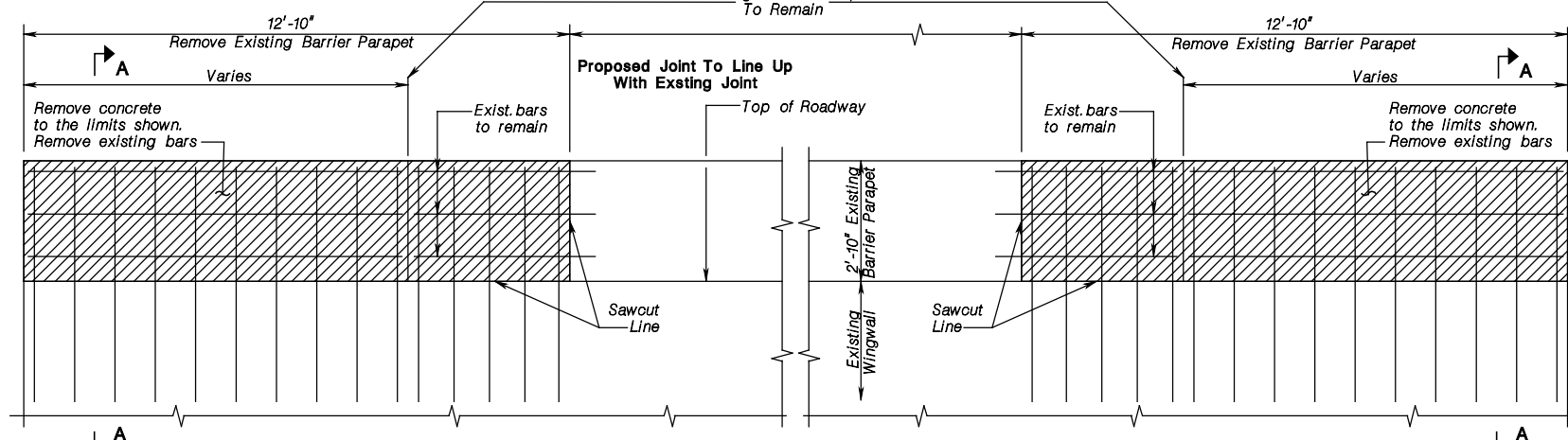
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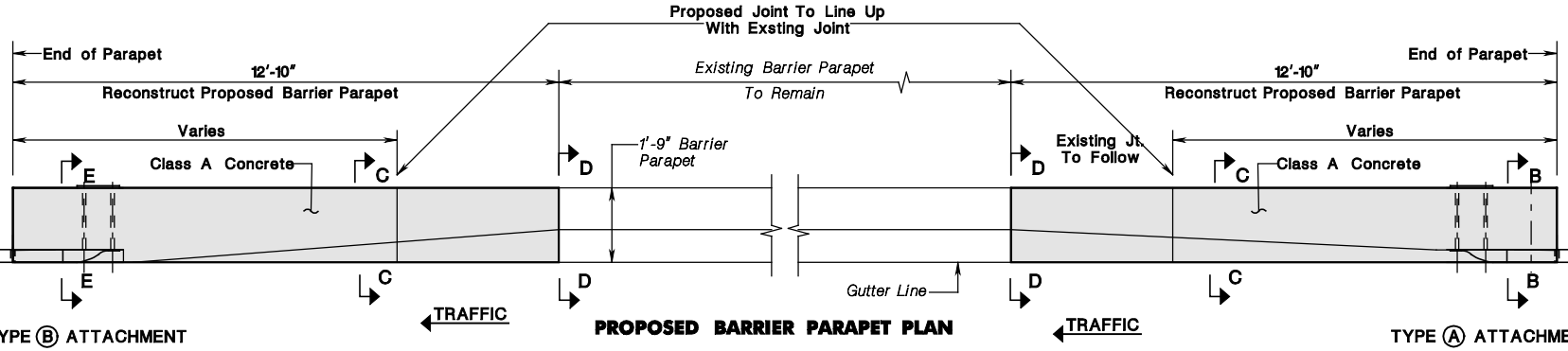
BCD-609-4 ORIGINAL SHEET



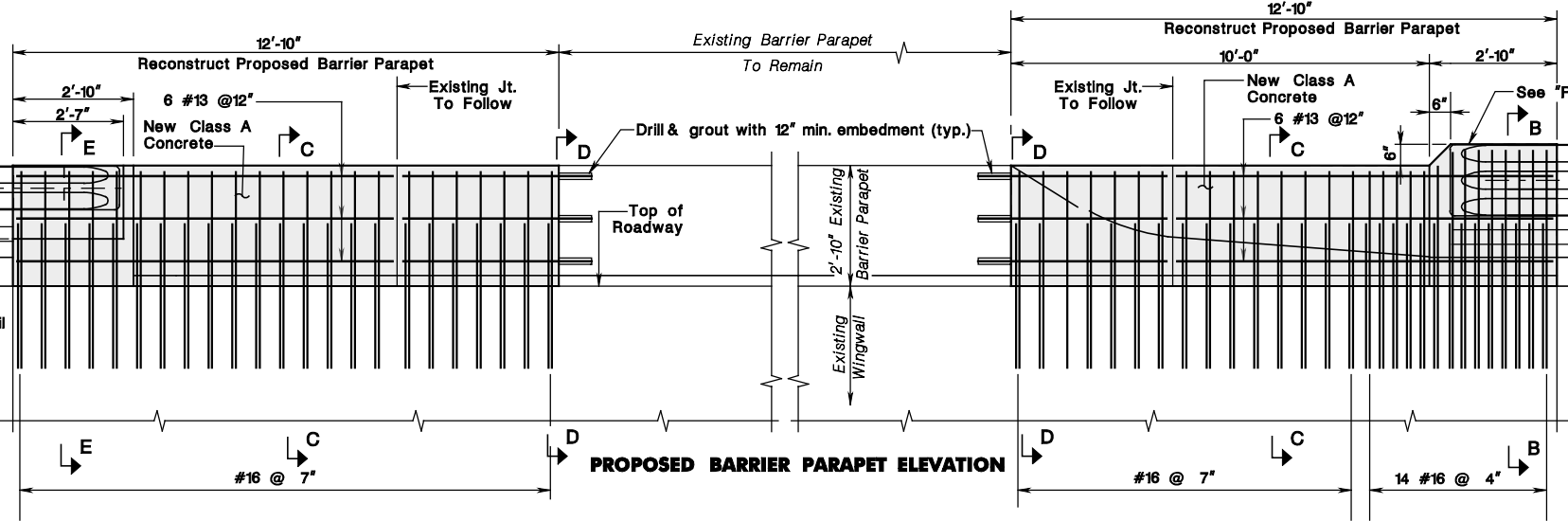
EXISTING BARRIER PARAPET PLAN



EXISTING BARRIER PARAPET ELEVATION

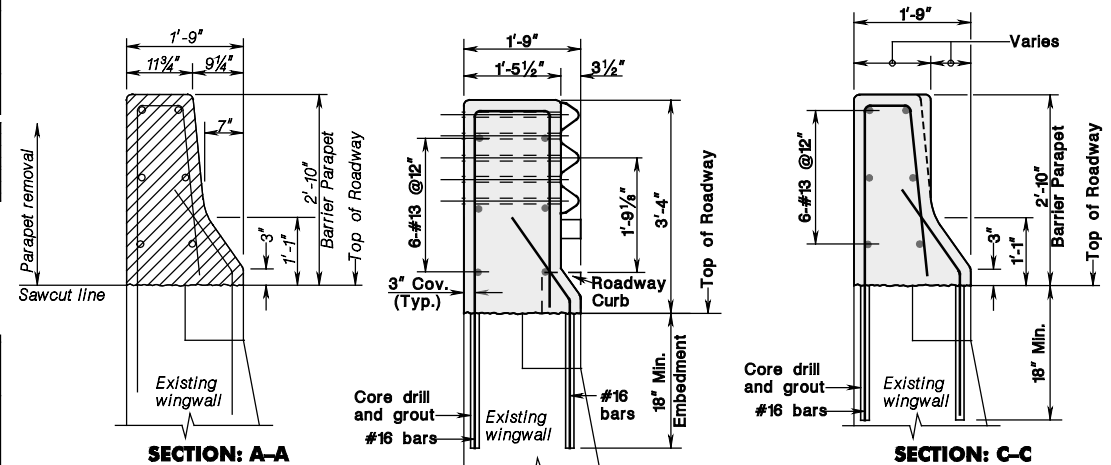


PROPOSED BARRIER PARAPET PLAN



GUIDE RAIL ATTACHMENT - EXISTING STRUCTURES

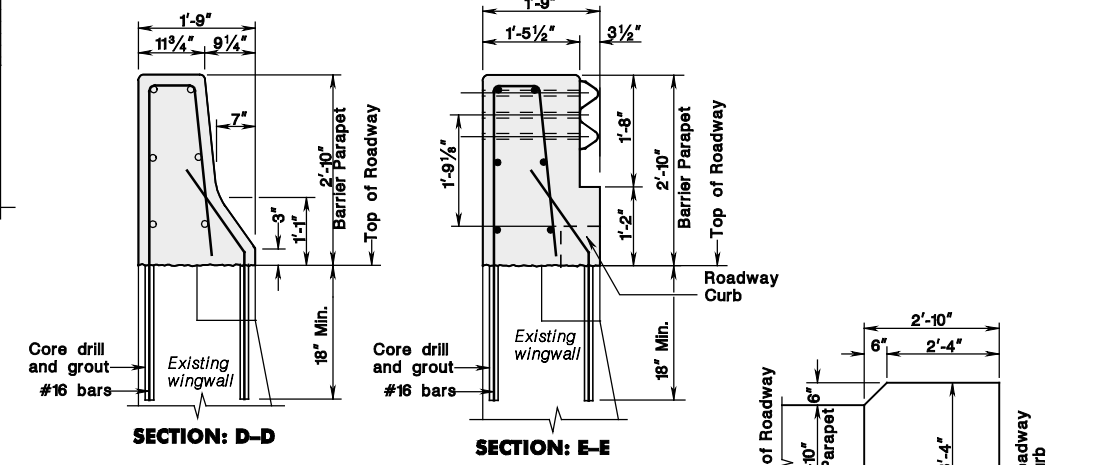
NEW JERSEY BARRIER SHAPE PARAPET ON WINGWALL WITH ROADWAY CURBING ON APPROACH



SECTION: A-A

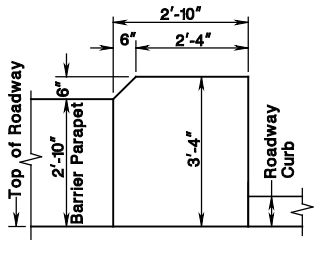
SECTION: B-B

SECTION: C-C



SECTION: D-D

SECTION: E-E



PYLON DETAIL

NOTE: Refer to CD-609-15 for guide rail attachment and details.

BARRIER PARAPET MODIFICATION FOR GUIDE RAIL N.T.S.

- LEGEND
- REMOVE
 - RECONSTRUCT
 - PROPOSED CLASS A CONCRETE

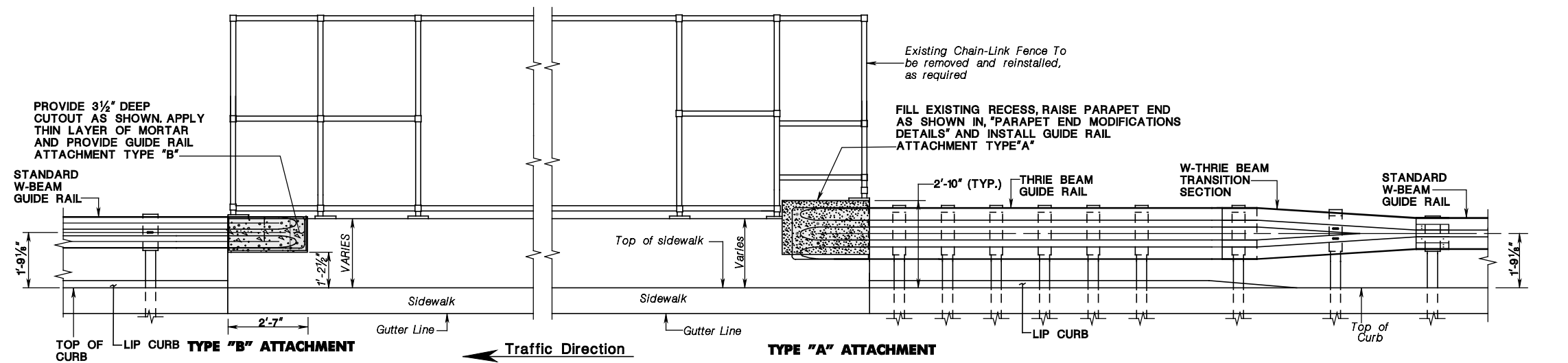
NEW JERSEY DEPARTMENT OF TRANSPORTATION BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

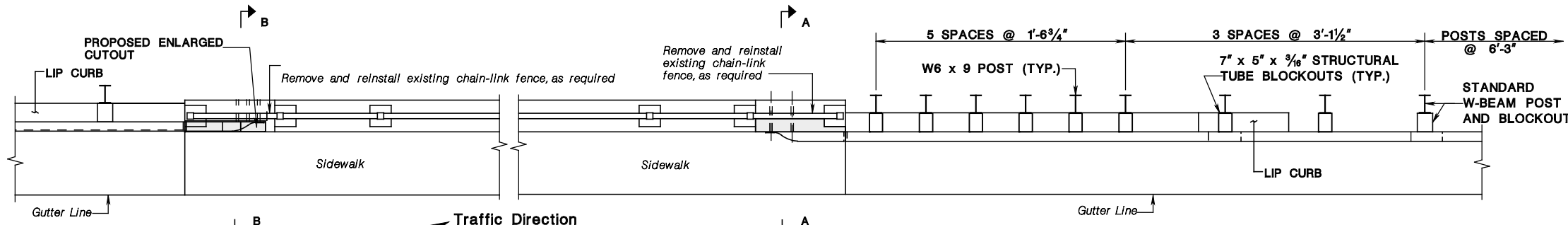
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156
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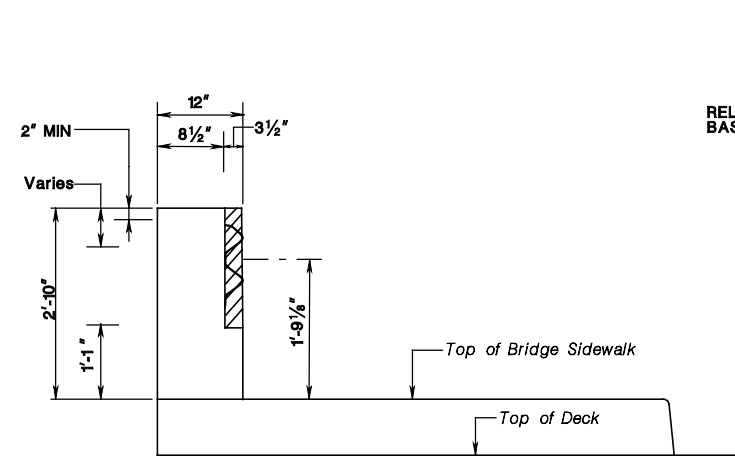


ELEVATION

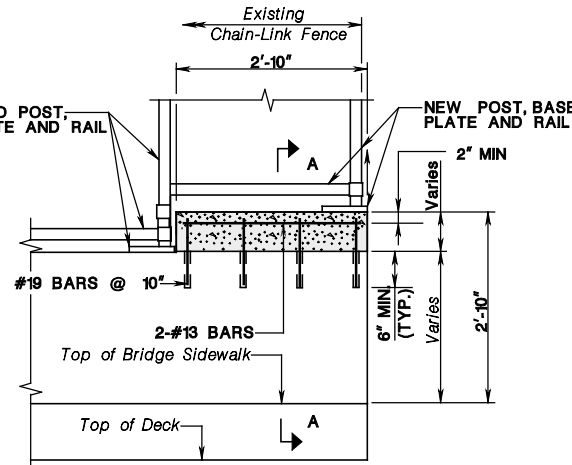


**PLAN
PROPOSED GUIDE RAIL ATTACHMENT**

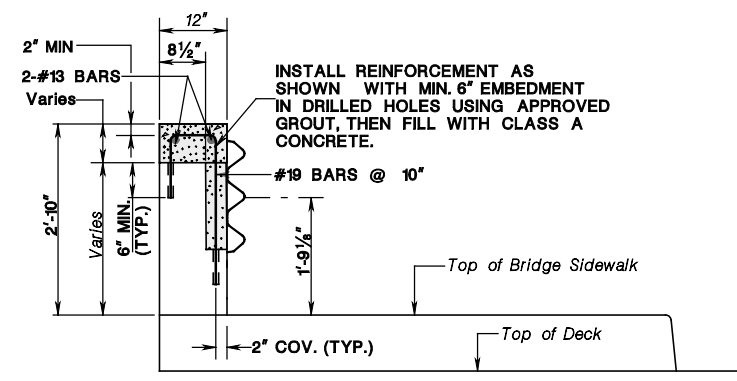
NOTE:
FOR BRIDGE ATTACHMENT TYPES AND ADDITIONAL DETAILS,
REFER TO CD-609-16.



SECTION: B-B



**ELEVATION AT TYPE "A" ATTACHMENT
(GUIDE RAIL NOT SHOWN FOR CLARITY)**



SECTION: A-A

PARAPET END MODIFICATIONS DETAILS

GUIDE RAIL ATTACHMENT - EXISTING STRUCTURE WITH FENCE

LEGEND

	REMOVE
	PROPOSED CLASS A CONCRETE

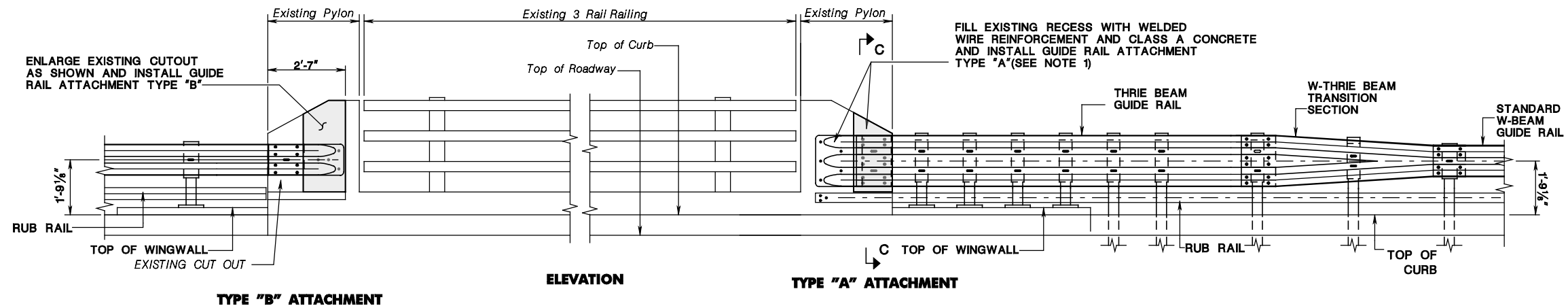
PARAPET AND SIDEWALK WITH CHAIN-LINK FENCE

N.T.S. BCD-609-6

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

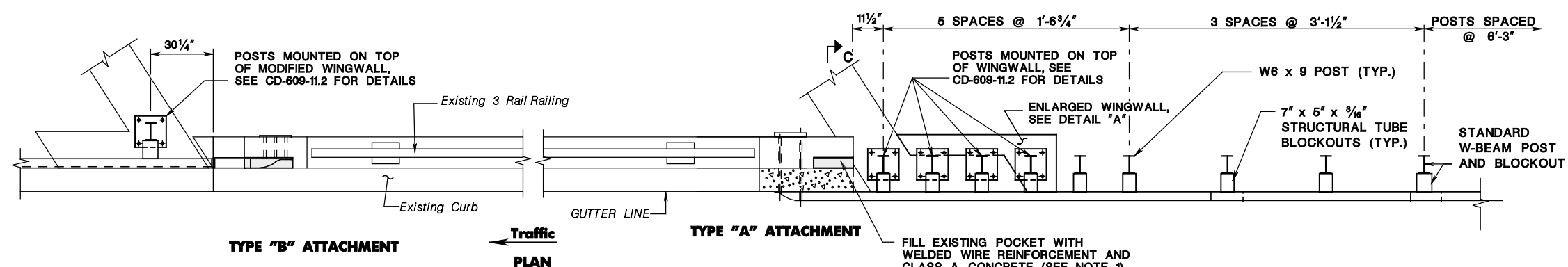
BCD-609-6.1



TYPE "B" ATTACHMENT

ELEVATION

TYPE "A" ATTACHMENT



TYPE "B" ATTACHMENT

TYPE "A" ATTACHMENT

PROPOSED GUIDE RAIL ATTACHMENTS AT EXISTING PYLON

Traffic

PLAN

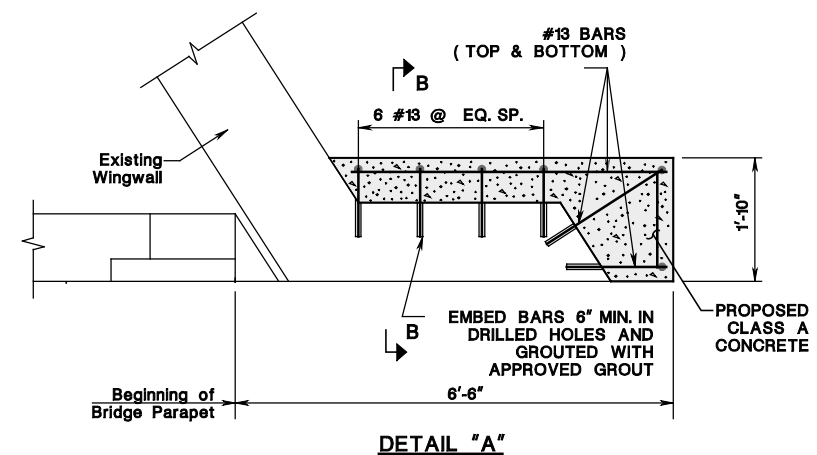
FILL EXISTING POCKET WITH WELDED WIRE REINFORCEMENT AND CLASS A CONCRETE (SEE NOTE 1)

LEGEND

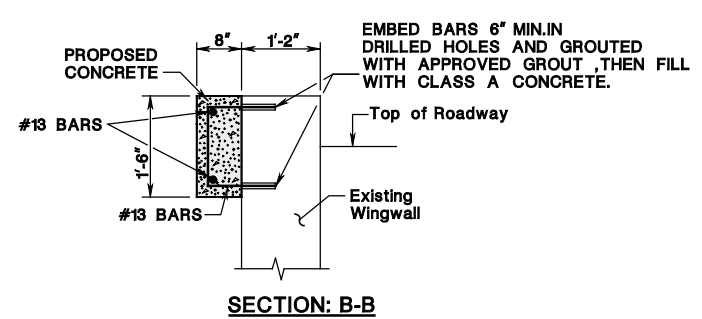
PROPOSED CLASS A CONCRETE

NOTES:

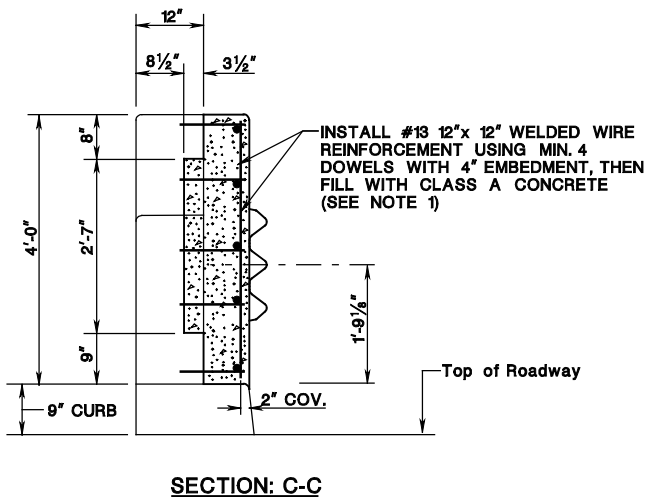
1. CONFORM WELDED WIRE REINFORCEMENT TO SUBSECTION 905.01.03 OF NJDOT STANDARD SPECIFICATION.
2. FOR BRIDGE ATTACHMENT TYPES AND ADDITIONAL DETAILS, REFER TO CD-609-17.



DETAIL "A"



SECTION: B-B



SECTION: C-C

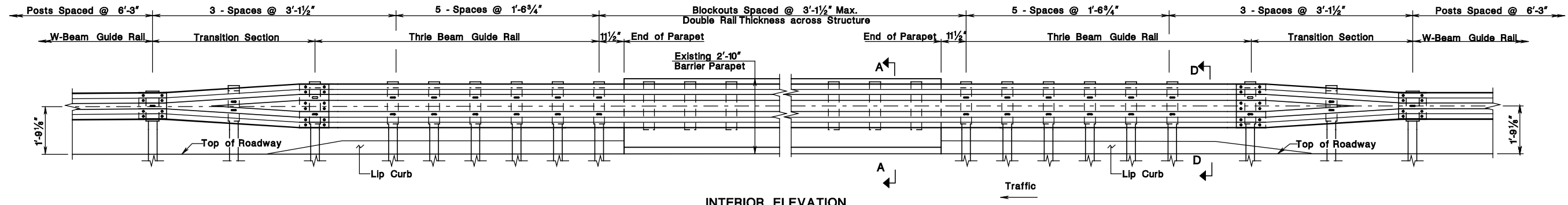
3-RAIL RAILING WITH PYLON
N.T.S.

BCD-609-7
NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

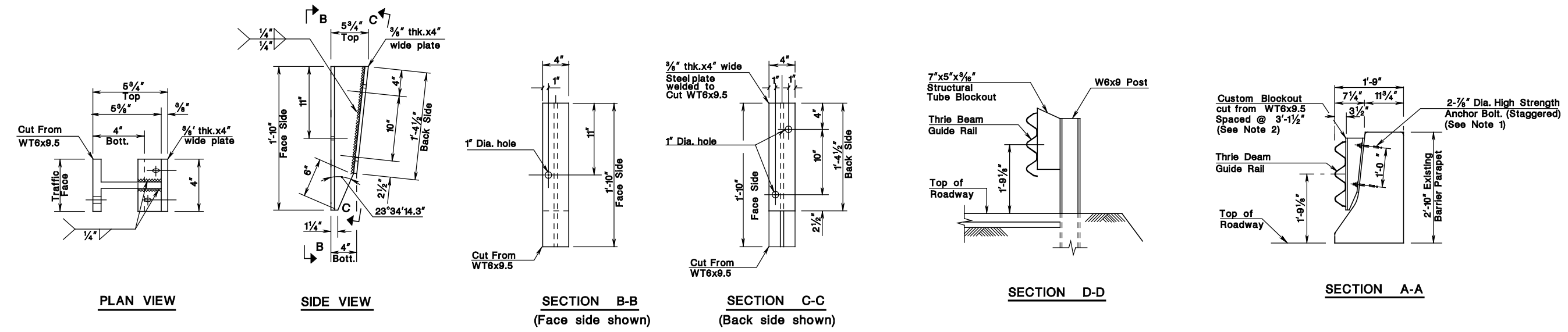
BRIDGE CONSTRUCTION DETAILS

GUIDE RAIL ATTACHMENT - EXISTING STRUCTURE WITH APPROACH AND/OR TRAILING WINGWALLS AND APPROACH CURB

BCD-609-7.1



INTERIOR ELEVATION



CUSTOM BLOCKOUT DETAIL

NOTES:

- Fully thread and install high strength anchor bolts in cored holes no greater than the bolt diameter plus 1/4". Take care to avoid damage to existing reinforcement and conduits. Minimum embedment length is 6". Epoxy grout bolts in place per manufacturer's recommendations to attain a minimum pullout strength of 24,000 lbs.
- Blockouts are spaced @ 3'-1 1/2". For post and blockout spacing on approaches see, CD-609-12. Use double rail element across structure.
- Galvanize custom blockout after fabrication.
- Use this detail on existing short span structures where construction of barrier shaped parapet transitions are impractical.
- For additional thrie beam and w-beam details, refer to CD-609-1 and CD-609-13.
- For lip curb details, refer to CD-609-14.

GUIDE RAIL ACROSS BARRIER PARAPET

N.T.S.

BCD-609-8

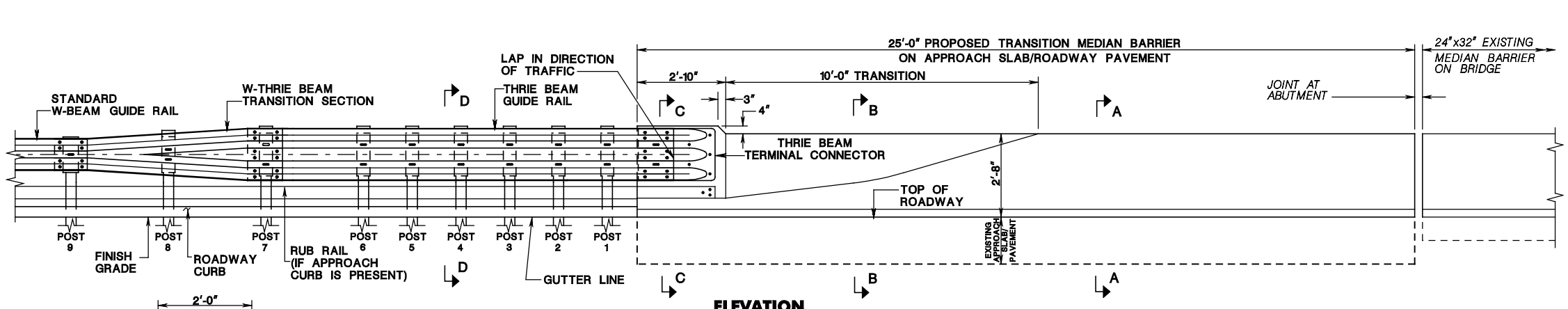
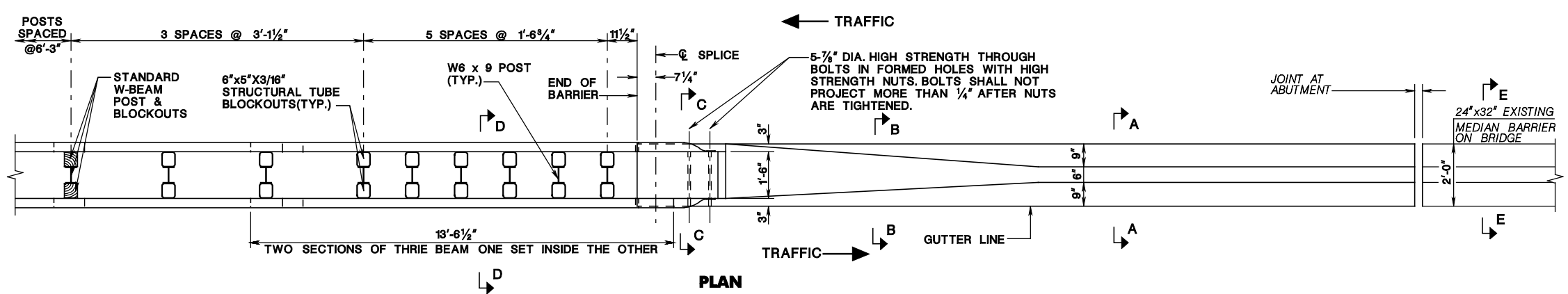
NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

GUIDE RAIL ATTACHMENT - EXISTING SHORT SPAN NJ BARRIER PARAPET STRUCTURE (FOR STRUCTURE LENGTH <40') NO APPROACH CURB

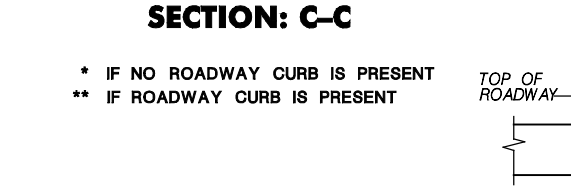
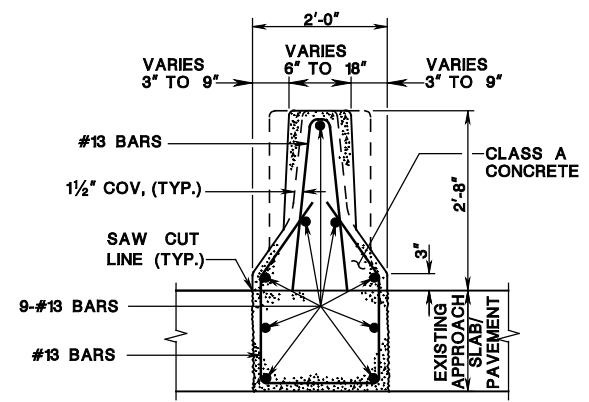
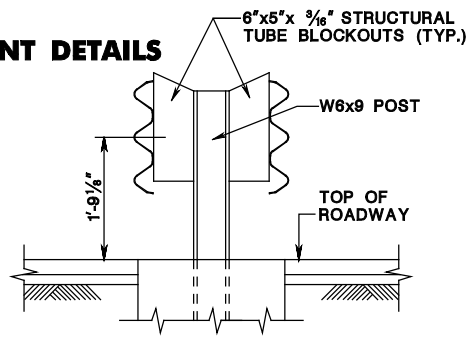
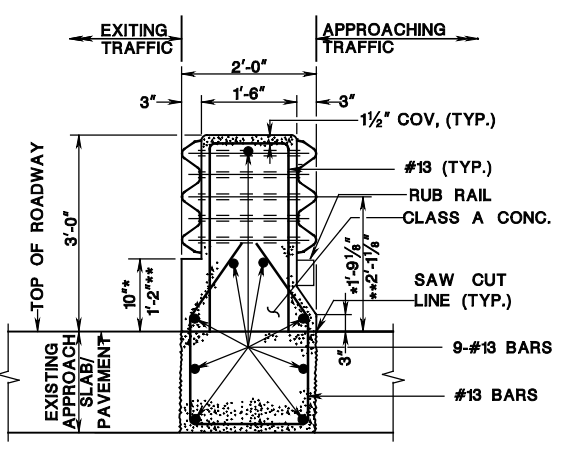
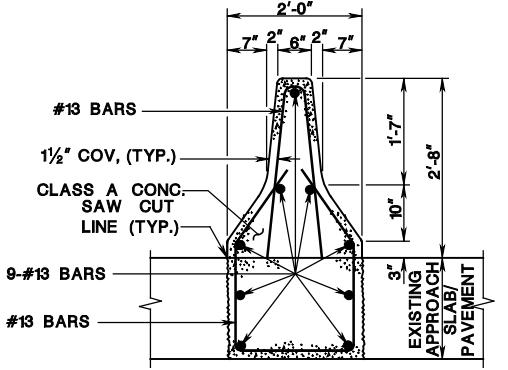
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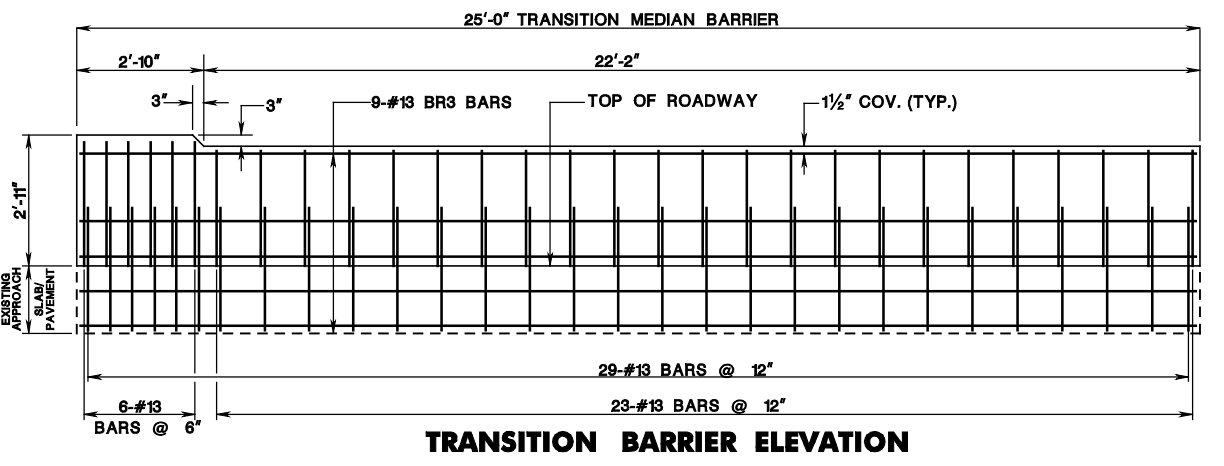


- NOTES:**
- THIS GUIDE RAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A VERTICAL CONCRETE SHAPE AND NOT CONNECTED DIRECTLY TO A CONCRETE SAFETY SHAPE. TRANSITION CONCRETE SAFETY BARRIER TO A VERTICAL SHAPE AT THE GUIDE RAIL CONNECTION.
 - ENSURE THAT ALL CROSS SLOPES BETWEEN THE PAVEMENT EDGE AND POSTS ARE 10H:1V OR FLATTER.
 - EMBANKMENT MATERIAL CONFORMING TO THE NJDOT STANDARD SPECIFICATIONS SECTION 203 IS EXTEND FLAT BEHIND THE POSTS AT LEAST 2'-0" AT WHICH POINT A SLOPE OF NO STEEPER THAN 2H:1V, EXTEND A MINIMUM OF 4'-0" FURTHER.
 - AT TYPE (A) ATTACHMENTS, THRIE BEAM RAIL ELEMENT REQUIRES ADDITIONAL POST MOUNTING HOLES FOR POST #1, #3 AND #5. CAUTION, HOLES ARE PUNCHED OR DRILLED BEFORE GALVANIZATION. NO FIELD DRILLING IS PERMITTED.
 - POSTS 1 THROUGH 7 IS 7'-2" LONG WITH 4'-10" POST EMBEDMENT. POST 8 IS 6'-8" LONG WITH 4'-6" POST EMBEDMENT. POST 9 IS 6'-8" LONG WITH 4'-4" POST EMBEDMENT.
 - LOCATE CONDUIT AT END OF BARRIER PARAPETS SO AS NOT TO INTERFERE WITH GUIDE RAIL POST SPACING.
 - LOCATE DRAINAGE INLETS AND ELECTRICAL JUNCTION BOXES ON APPROACHES SO AS NOT TO INTERFERE WITH GUIDE RAIL POST SPACING.
 - CONFORM STRUCTURAL STEEL PLATES AND SHAPES TO AASHTO M270 AND GALVANIZED PER AASHTO M111.
 - CONFORM HIGH STRENGTH STEEL BOLTS, NUTS AND WASHERS TO AASHTO M164. TREAT ZINC COATED BOLTS, NUTS AND WASHERS ACCORDING TO AASHTO M232M.
 - ENSURE THAT THE THICKNESS OF THRIE BEAM, W-BEAM AND W-THRIE BEAM TRANSITION IS 12-GAUGE.
 - FOR ADDITIONAL THRIE BEAM AND W-BEAM DETAILS REFER TO CD-609-13.
 - CONFORM REINFORCEMENT STEEL TO ASTM A615 (GRADE 60).

BIDIRECTIONAL BEAM GUIDE RAIL ATTACHMENT DETAILS



* IF NO ROADWAY CURB IS PRESENT
 ** IF ROADWAY CURB IS PRESENT



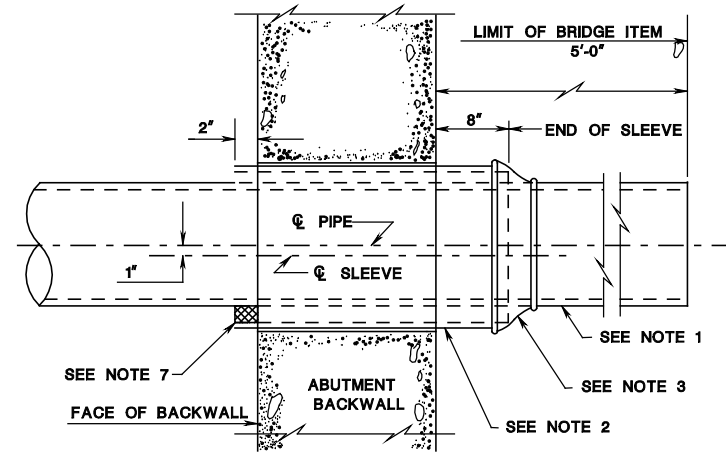
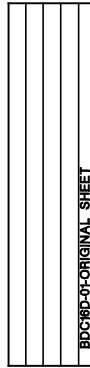
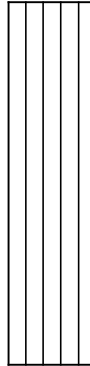
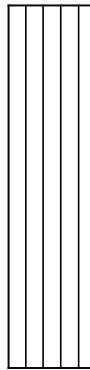
TRANSITION MEDIAN BARRIER
N.T.S.

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BRIDGE CONSTRUCTION DETAILS

BCD-609-9.1

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SLEEVE DETAIL FOR STEEL GAS MAINS

NOTE:

1. GAS MAIN FURNISHED AND INSTALLED BY UTILITY COMPANY.
2. GALVANIZED SLEEVE FURNISHED AND INSTALLED BY CONTRACTOR.
3. CASING SEAL FURNISHED AND INSTALLED BY UTILITY COMPANY.
4. CUT ENDS OF SLEEVE, SQUARE AND FREE FROM BURRS.
5. ENSURE THAT THE GRADE (SLOPE) OF SLEEVE IS SAME AS GRADE OF GAS MAIN.
6. INSTALL ϕ OF GAS MAIN 1" HIGHER THAN ϕ OF SLEEVE.
7. BLOCK INSTALLED TO INITIALLY POSITION THE PIPE AND REMOVED AFTER GAS MAIN APPROACH ROAD HAS BEEN CONNECTED AND BACKFILLED, AND COMPACTED FOR BOTTOM HALF OF THE PIPE.
8. PLUG PIPE AND SLEEVE TEMPORARILY.
9. PACK OPENING BETWEEN THE PIPE AND THE SLEEVE WITH HEMP, JUTE, OR SIMILAR MATERIAL TO PREVENT LEAKAGE THROUGH THE BACKWALL.

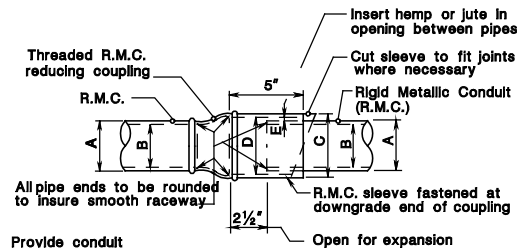
STEEL GAS MAIN
N.T.S.

BCD-653-1

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BRIDGE CONSTRUCTION DETAILS

BCD-653-1.1



Provide conduit with approved ground strap across expansion sleeve

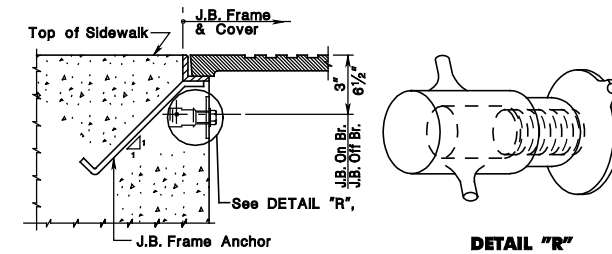
ELEVATION

Nom. Dia.	R. M. C.		SLEEVE			Nominal Reducing Coupling	Clearance E
	Ext. Dia. A	Int. Dia. B	Nom. Dia. C	Ext. Dia. D	Int. Dia. E		
1½"	1.900	1.610	2½"	2.875	2.489	2½" to 1½"	½"
2"	2.375	2.067	3"	3.500	3.068	3" to 2"	½"
3"	3.500	3.068	4"	4.500	4.026	4" to 3"	¼"
4"	4.500	4.026	5"	5.563	5.047	5" to 4"	¼"

Install Expansion sleeves at all Fixed and Expansion joints and elsewhere as shown or approved. R.M.C. and hot-dip galvanize all fittings.

DETAILS OF R.M.C. EXPANSION SLEEVE

BCD-701-1.1



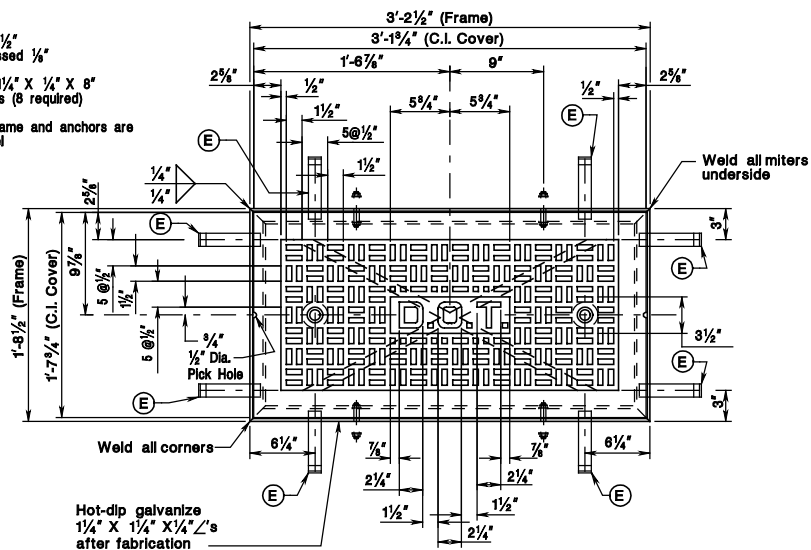
SECTION THROUGH FRAME

DETAILS OF ALTERNATE CABLE RACK SUPPORT

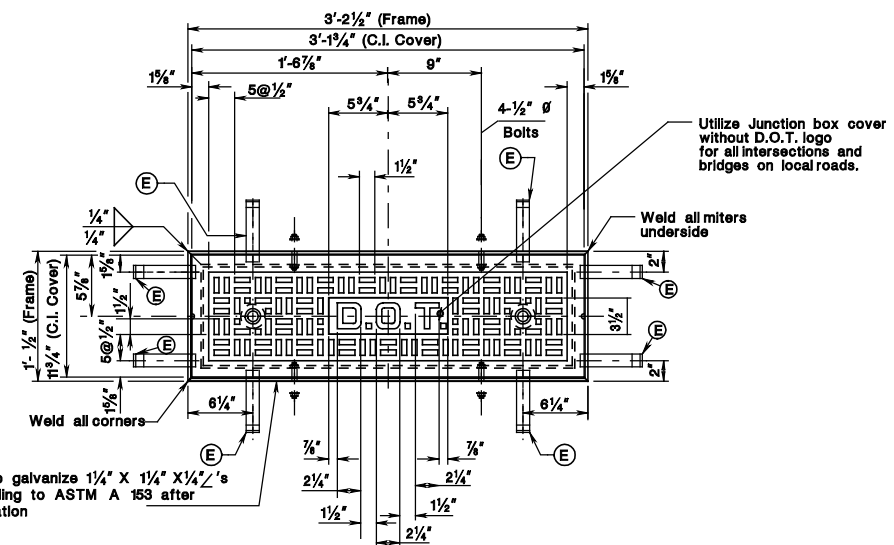
BCD-701-1.2

NOTES:

- Letters have ¼" stroke, depressed ¼"
- (E) Denotes 1¼" X 1¼" X 8" Steel anchors (8 required)
- Ensure that frame and anchors are structural steel



PLAN-FRAME AND COVER FOR 18" X 36" JUNCTION BOX



PLAN-FRAME AND COVER FOR 10" X 36" JUNCTION BOX

R.M.C. AND JUNCTION BOX DETAILS

N.T.S.

USE NOMINAL DIMENSIONS OF JUNCTION BOX SIZES FOR REFERENCE PURPOSES. REFER TO DETAILS ON THIS SHEET FOR ACTUAL DIMENSIONS.

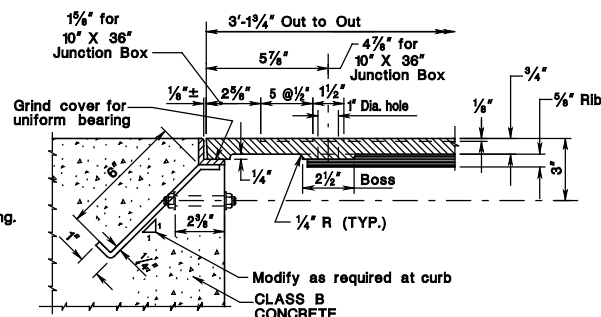
DETAILS OF JUNCTION BOX

CABLE RACK SUPPORT

Galvanize coupling, bolts & washers according to ASTM A 153. Ensure that coupling is hexagonal shaped, threaded continuously with ½" Dia. N.C. Class 2 Free Fit. Use ½" Dia bolts, N.C. Class 2 Free Fit with hexagonal heads ½" long. Use ½" O.D. flat washers.

NOTE:

Supports in side walls only.



END SECTION THROUGH JUNCTION BOXES

18" X 36" SHOWN, 10" X 36" SIMILAR EXCEPT AS NOTED

BCD-701-1

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BRIDGE CONSTRUCTION DETAILS

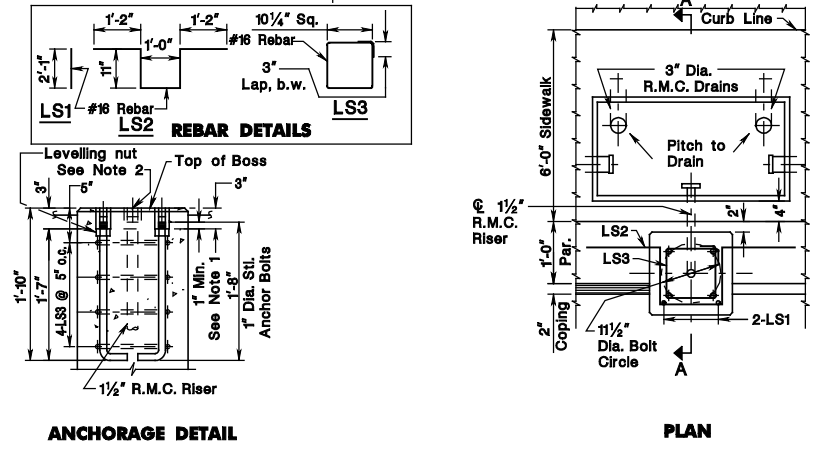
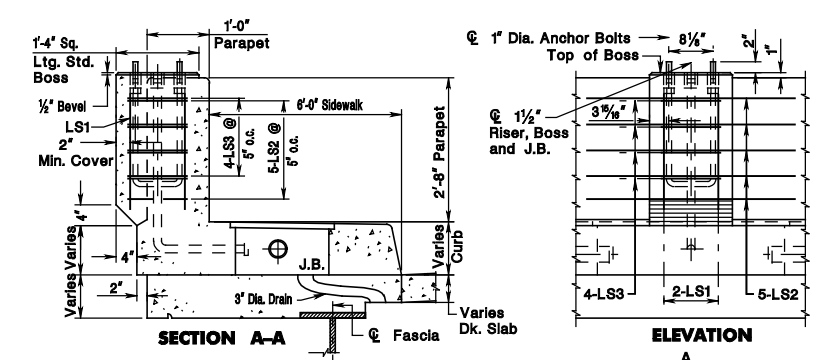
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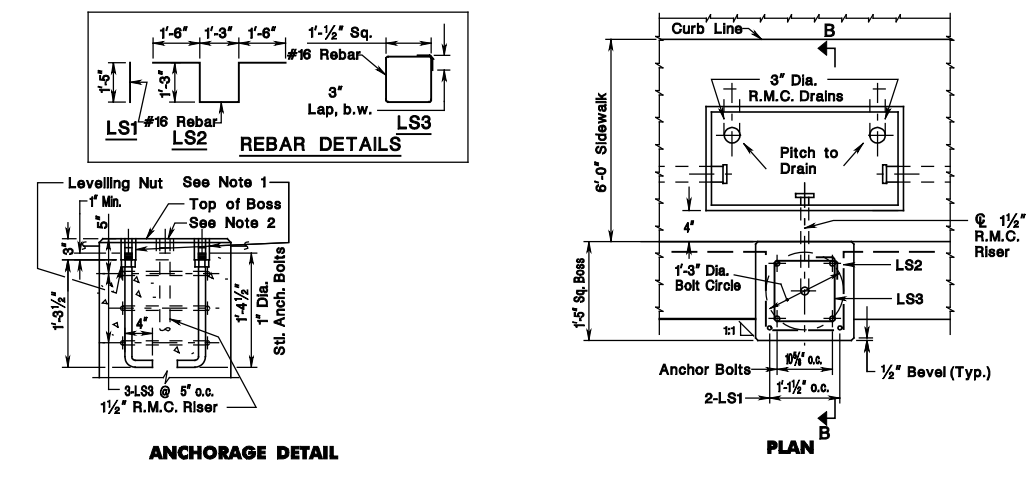
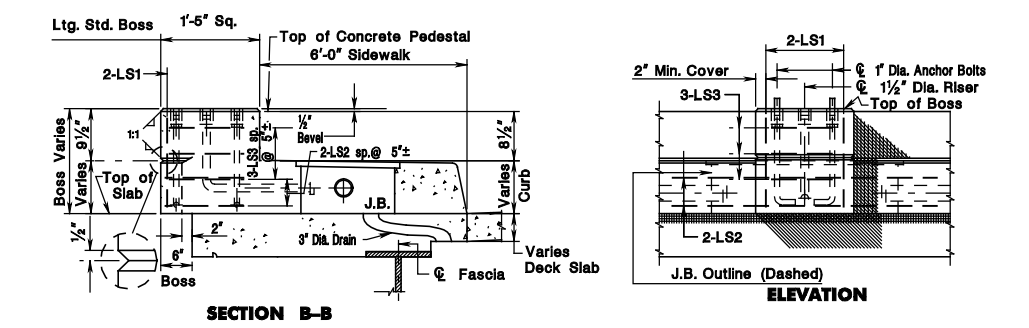
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DETAILS OF LIGHTING STANDARD BOSS ON 2'-8" PARAPET

- NOTES:**
- 1" Dia., 8-NC-2, threaded Galv. Sleeve, Hex. Couplings set flush with top of conc., plug with std. Hex Galv. Socket Screws
 - 1 1/2" Galv. Cond. Pipe Coupling, set flush. Plug with Galv. recessed Plug

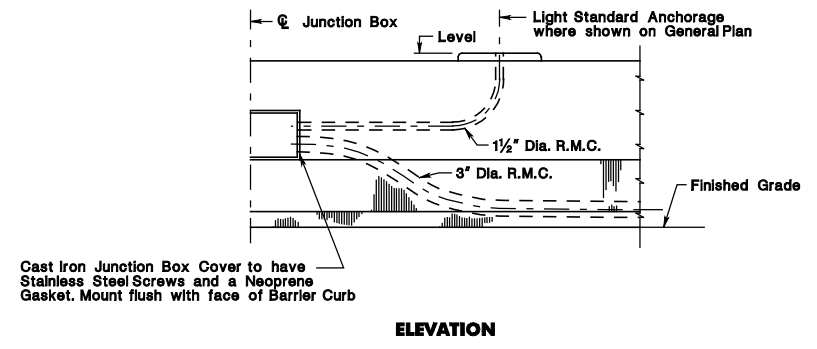
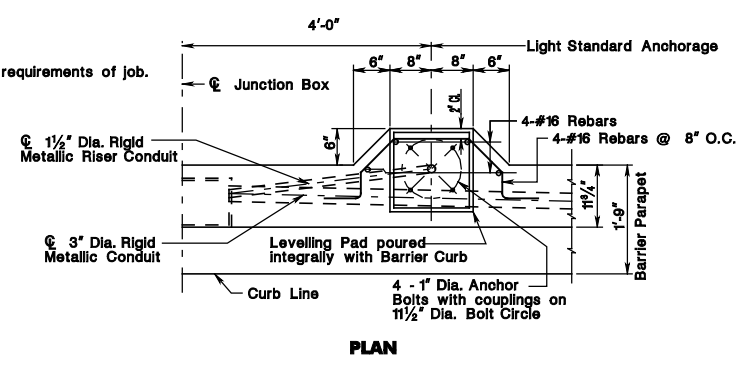
BCD-703-1



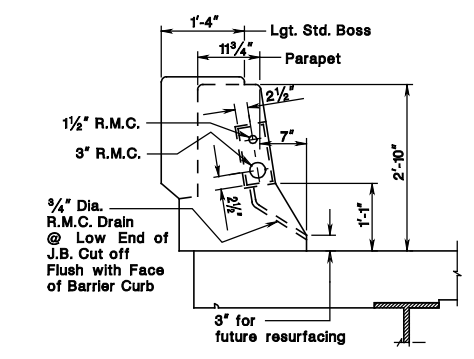
DETAILS OF LIGHTING STANDARD BOSS ON 8 1/2" PEDESTAL

BCD-703-12

REINFORCING NOTE:
Bars detailed with other steel requirements of job.



Cast Iron Junction Box Cover to have Stainless Steel Screws and a Neoprene Gasket. Mount flush with face of Barrier Curb



TYPICAL SECTION THROUGH PARAPET SHOWING JUNCTION BOX
DETAIL OF LIGHTING STANDARD BOSS FOR 2'-10" BARRIER PARAPET

HIGHWAY LIGHTING
N.T.S.

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BRIDGE CONSTRUCTION DETAILS

BCD-703-13