New Jersey Department of Transportation

STANDARD CONSTRUCTION DETAILS

• Roadway • Traffic Control • Bridge

2016

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Celebrating 50 Years of Service to New Jersey

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ABBREVIATIONS

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

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CONSTRUCTION BARRIER CURB WITH BOX BEAM STIFFENER	CD-159-3.1
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CONSTRUCTION BARRIER CURB (ALTERNATE B)	CD-159-5.1
TEMPORARY CRASH CUSHION, COMPRESSIVE BARRIER SUMMARY TABLE	CD-159-10.1
UNDERDRAINS	
UNDERDRAIN TYPE F	CD-601-1.1
UNDERDRAIN TYPE X	CD-601-1.2
SUBBASE OUTLET DRAIN	CD-601-1.3
COMBINED STORM DRAIN AND OUTLET TRENCH IN ROCK AREAS	CD-601-1.4

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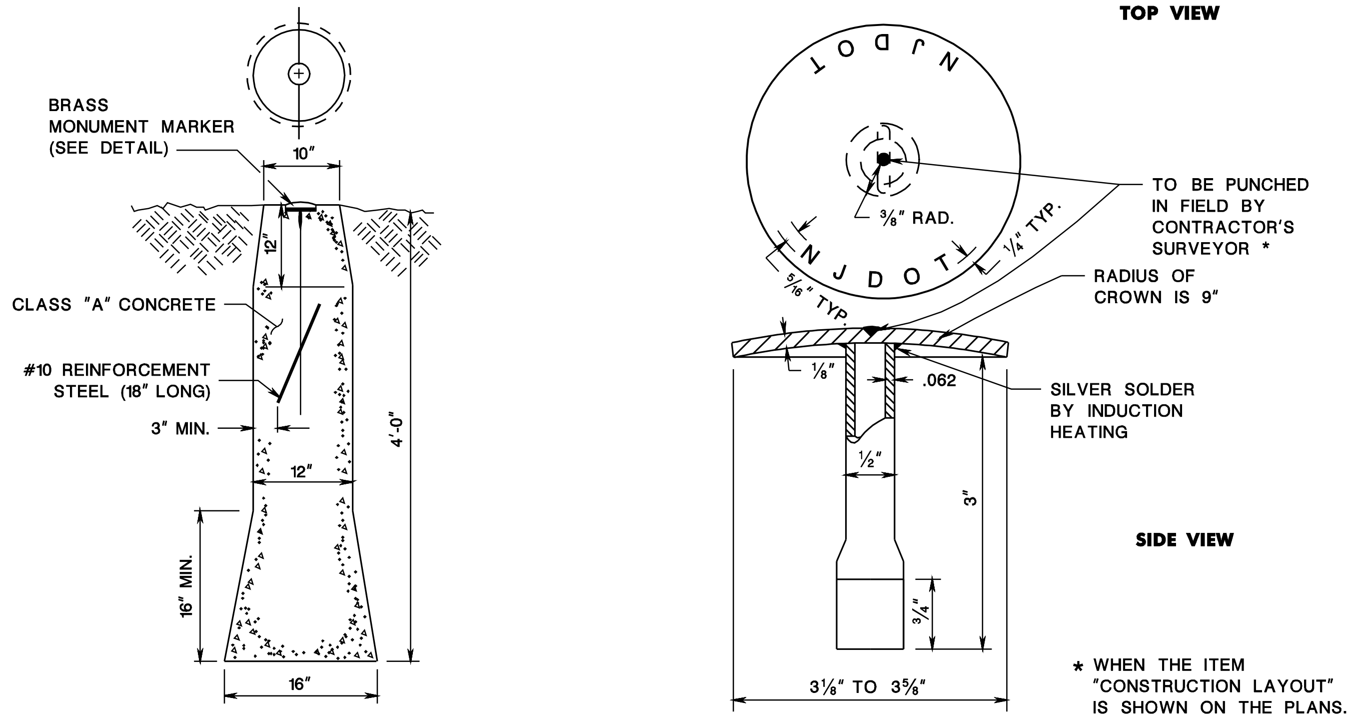


MONUMENT TO BE SET FLUSH WITH GROUND

GENERAL NOTES:

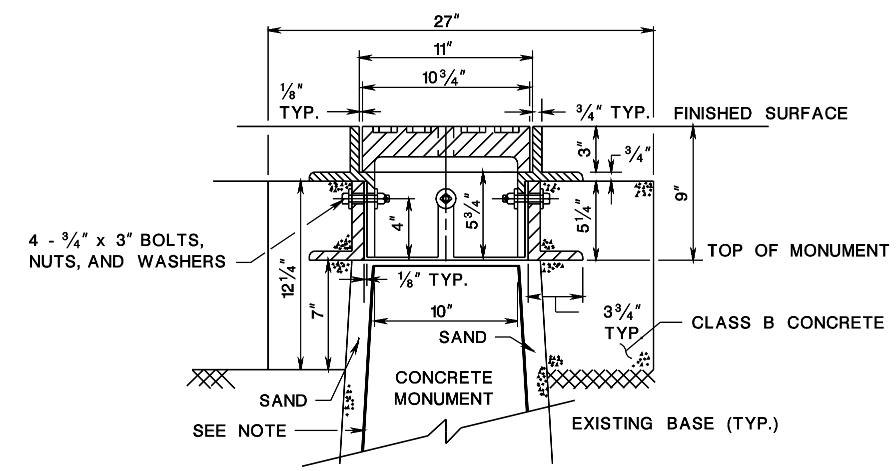
THE MONUMENT IS TO BE POURED IN PLACE AND THE MARKER PLUMBED INTO POSITION AND SET IN THE CONCRETE IN SUCH A MANNER THAT NO AIR WILL BE TRAPPED ON THE UNDERSIDE OF THE MARKER.

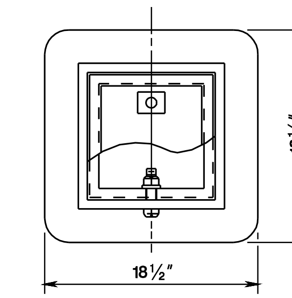
#10 REINFORCEMENT STEEL, 18" LONG, TO BE PLACED AT THE TIME OF CONCRETE POUR.

ENSURE THAT THE MONUMENT MARKER IS MADE OF BRASS, CONFORMING TO ASTM B-19.

MONUMENT

CD-157-1.1





TOP VIEW OF CASTING

NOTE:

A LAYER OF FELT, NYLON, OR TAR PAPER NEEDED BETWEEN SAND AND CONCRETE MONUMENT.

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

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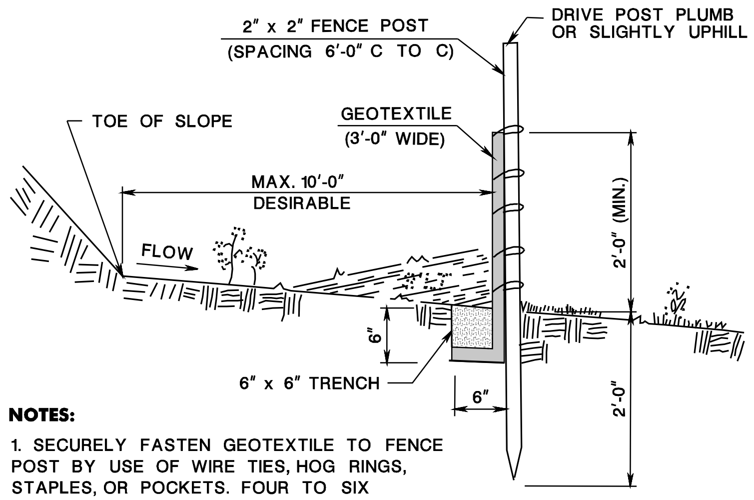
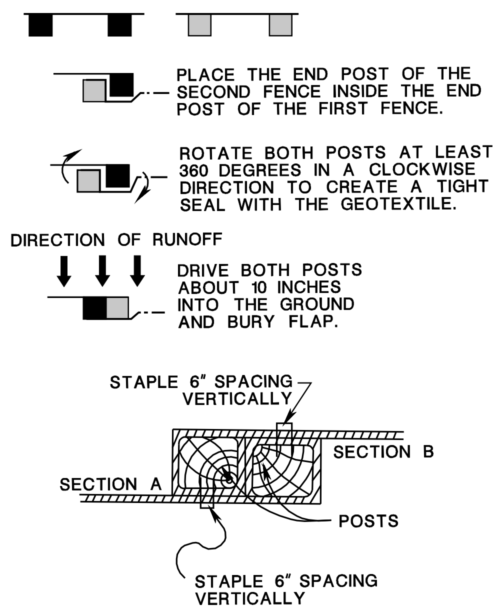


NOTES:

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.

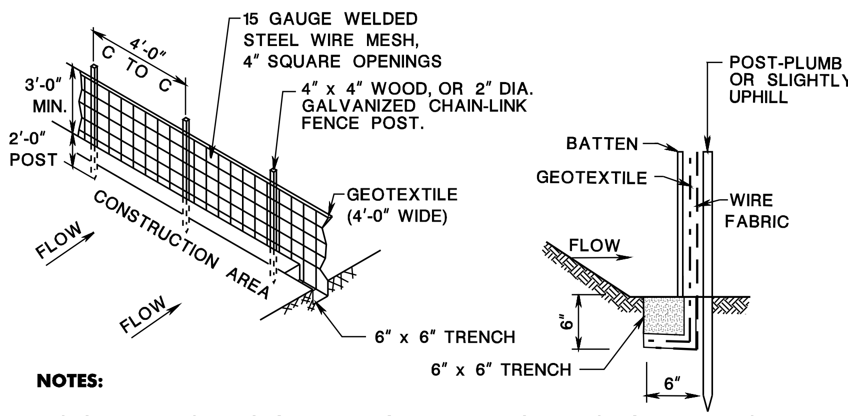
SILT FENCE

CD-158-1.1



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

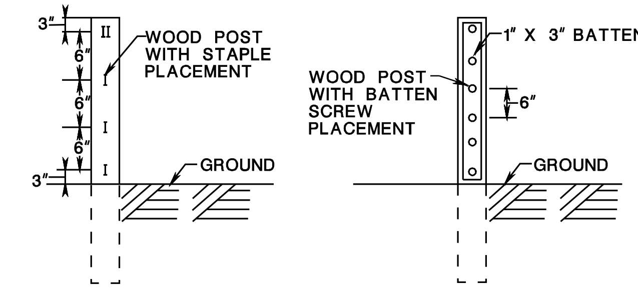
CD-158-1.3

FASTENERS FOR WOOD POSTS

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

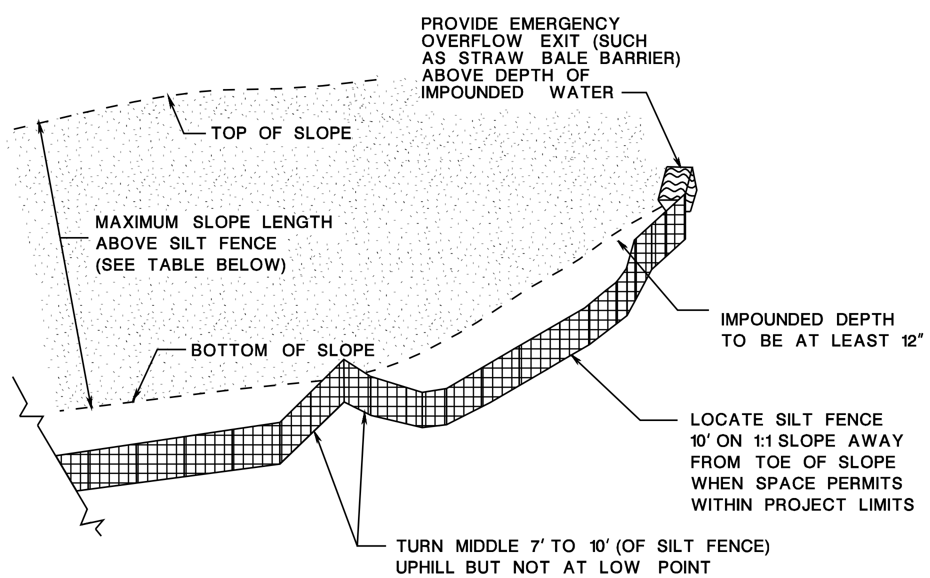
SOURCE: GA SWCC

FASTENER PLACEMENT



SILT FENCE FASTENER REQUIREMENTS

CD-158-1.4



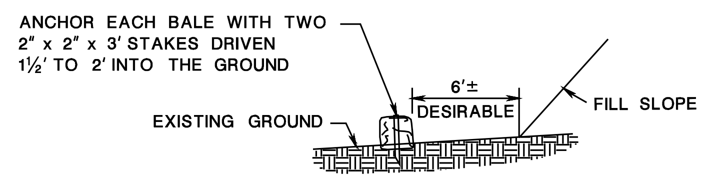
CRITERIA FOR SILT FENCE PLACEMENT

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.

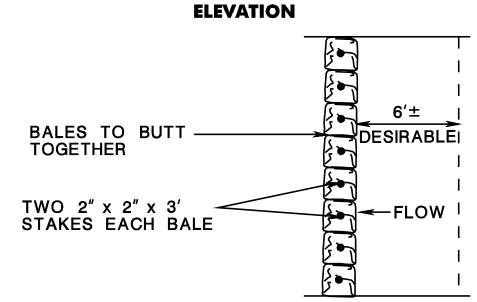
SILT FENCE ON A STEEP OR LONG GRADE

CD-158-1.5



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

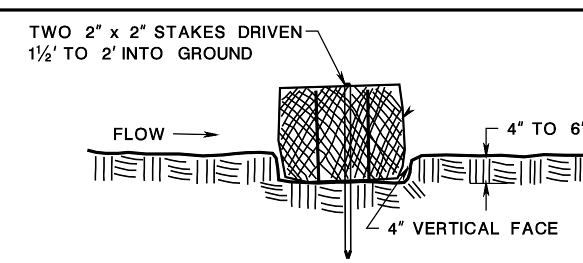
ELEVATION



PLAN

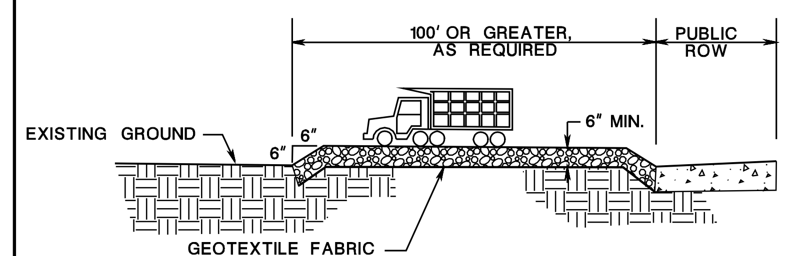
HAYBALES

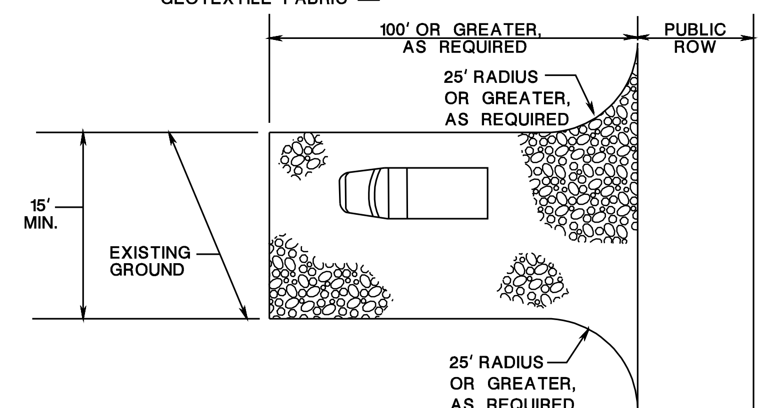
CD-158-1.6



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.

CD-158-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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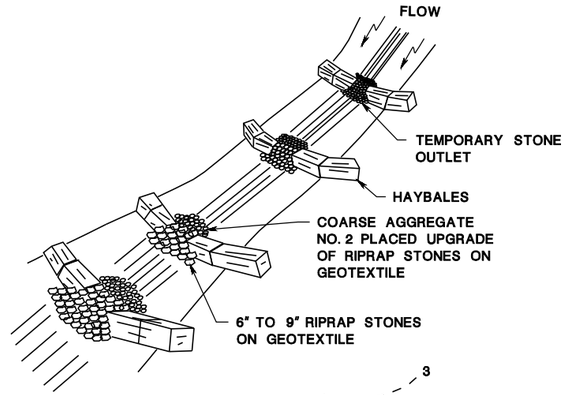
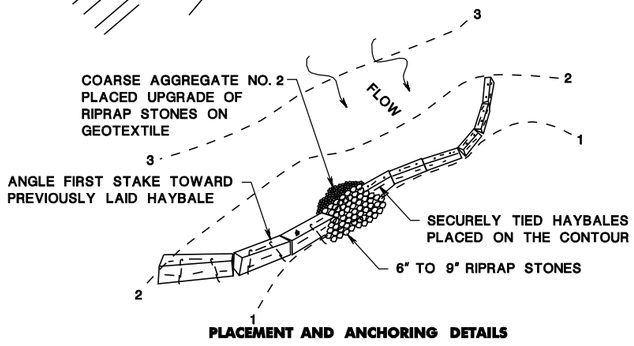
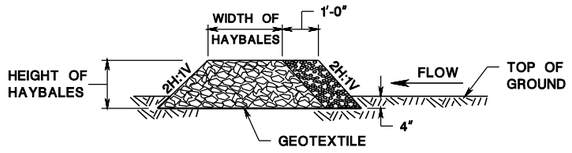




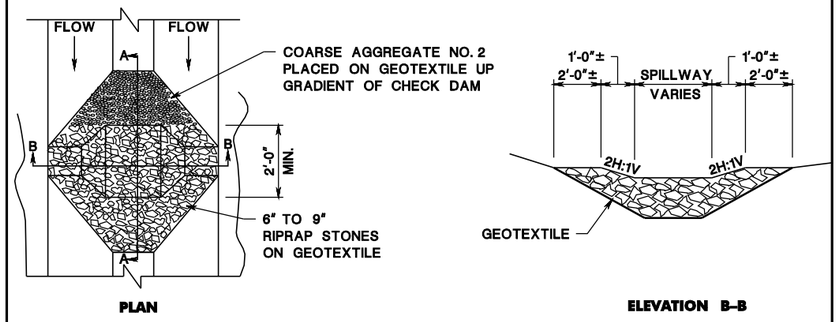
PLACEMENT AND ANCHORING DETAILS



STONE OUTLET SECTION DETAIL

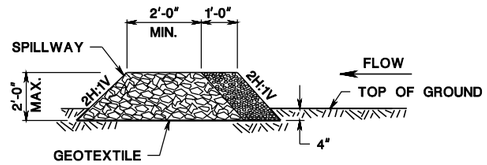
HAYBALE CHECK DAM WITH TEMPORARY STONE OUTLET

CD-158-2.1



PLAN

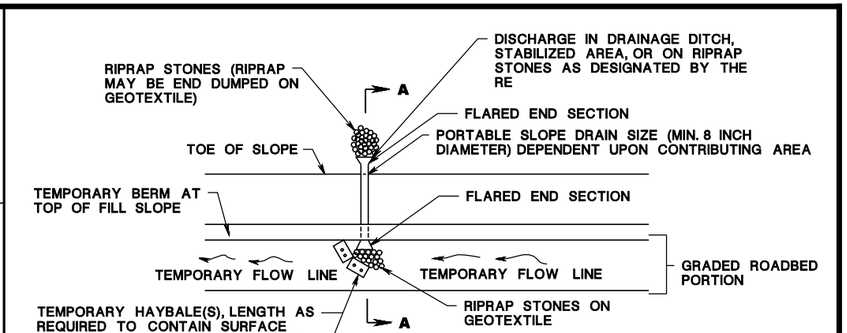
ELEVATION B–B



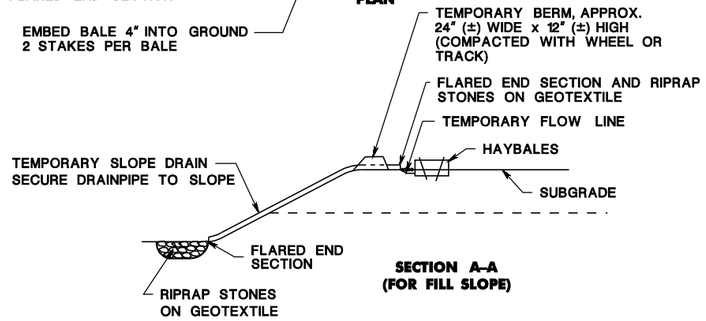
ELEVATION A–A

STONE CHECK DAM

CD-158-2.2



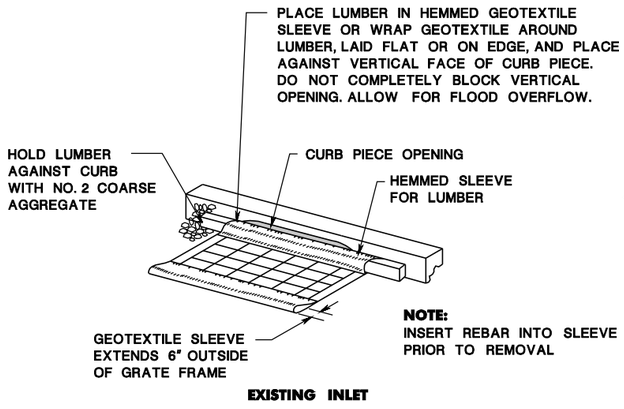
PLAN



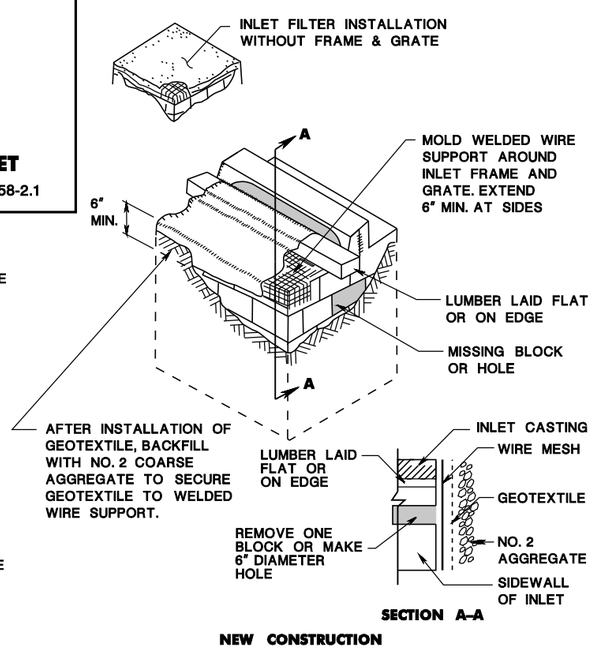
SECTION A–A (FOR FILL SLOPE)

SLOPE DRAIN

CD-158-2.3



EXISTING INLET

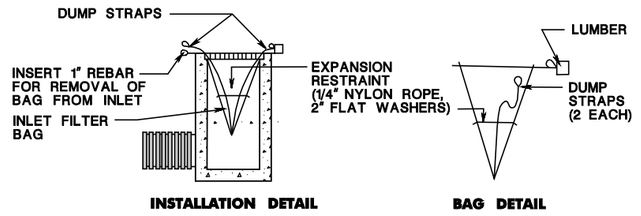


SECTION A–A

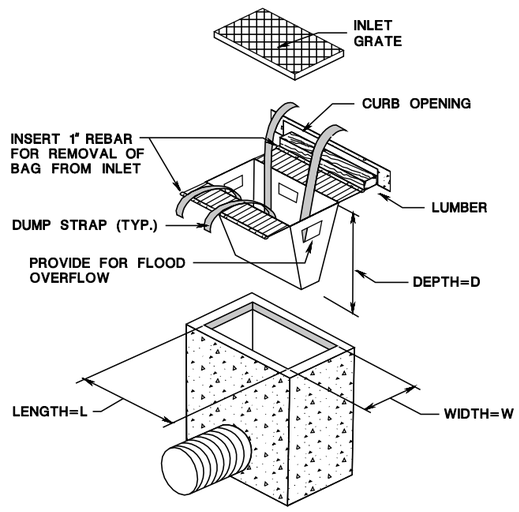
NEW CONSTRUCTION

INLET FILTERS, TYPE 1

CD-158-2.4



INSTALLATION DETAIL **BAG DETAIL**



INLET FILTERS, TYPE 2

CD-158-2.5

SOIL EROSION AND SEDIMENT CONTROL MEASURES

N.T.S.

CD-158-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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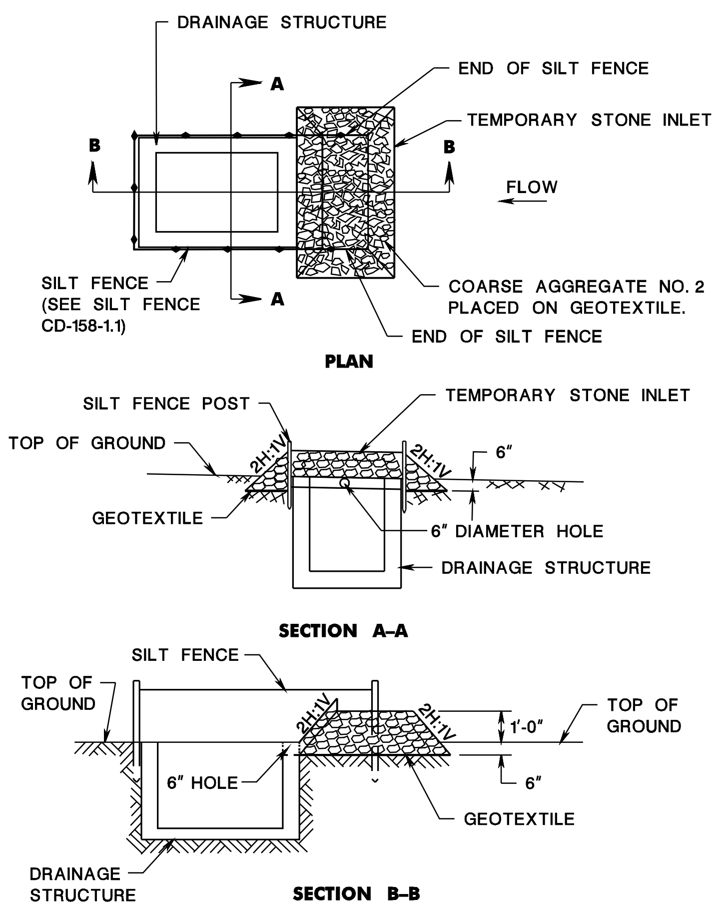
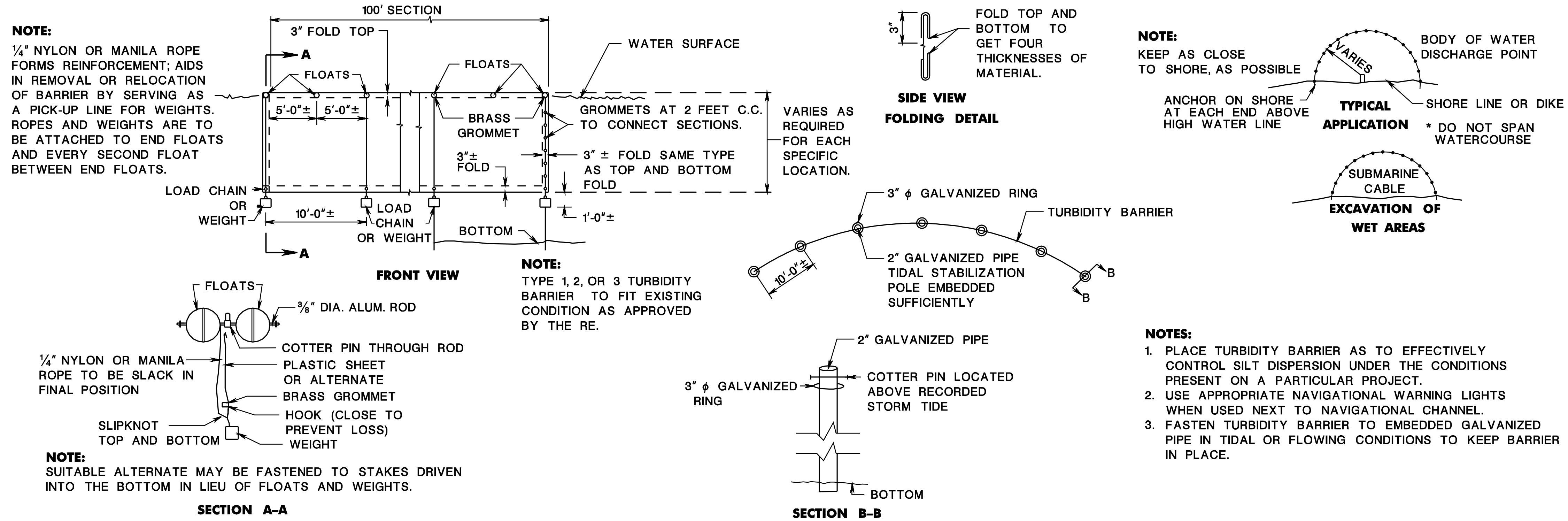


NOTE:
REFER TO CD-158-2.4 SECTION A-A FOR TREATMENT OF 6" HOLE.

INLET SEDIMENT TRAP

CD-158-3.1



NOTE:
1/4" NYLON OR MANILA ROPE FORMS REINFORCEMENT; AIDS IN REMOVAL OR RELOCATION OF BARRIER BY SERVING AS A PICK-UP LINE FOR WEIGHTS. ROPES AND WEIGHTS ARE TO BE ATTACHED TO END FLOATS AND EVERY SECOND FLOAT BETWEEN END FLOATS.

NOTE:
TYPE 1, 2, OR 3 TURBIDITY BARRIER TO FIT EXISTING CONDITION AS APPROVED BY THE RE.

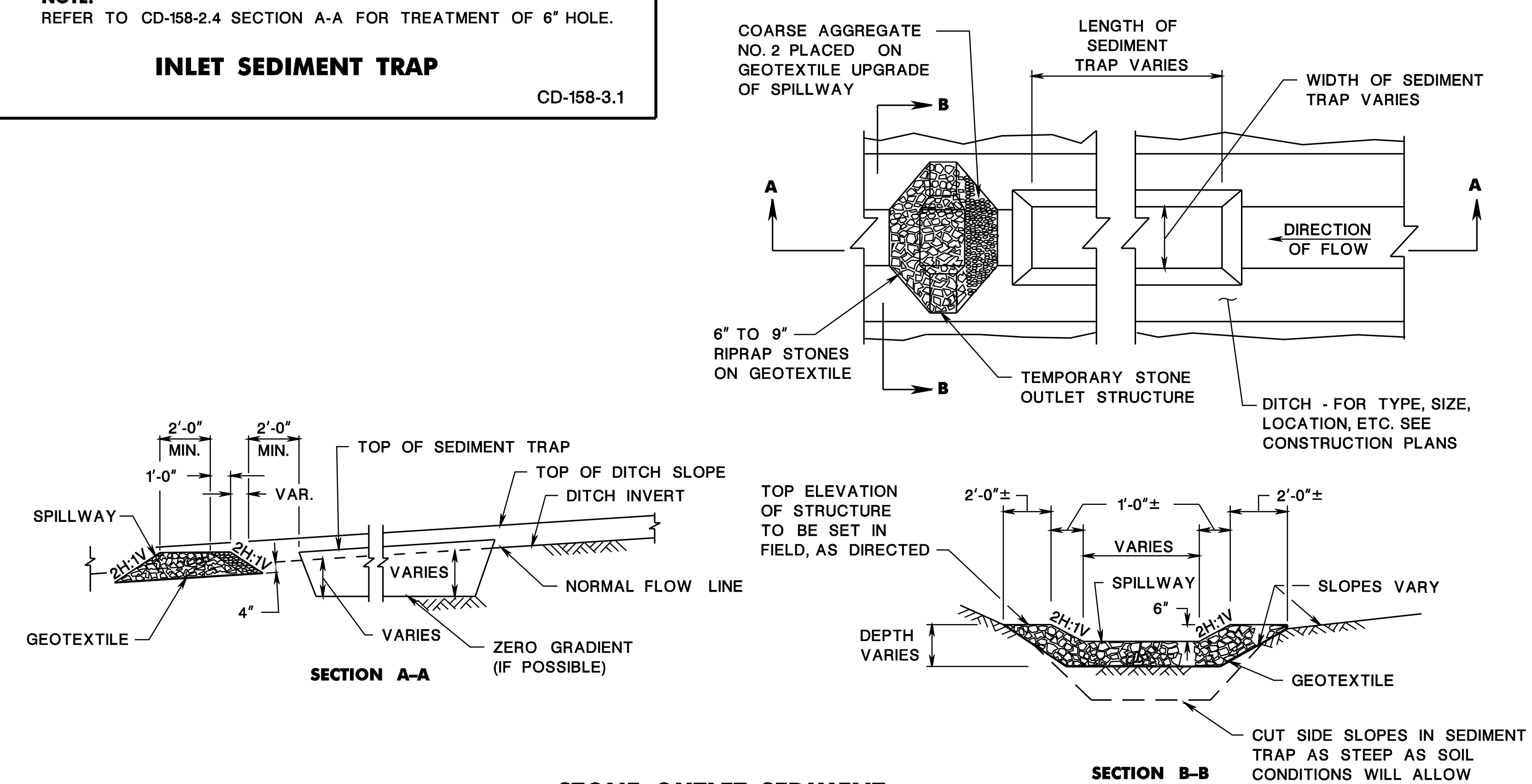
NOTE:
SUITABLE ALTERNATE MAY BE FASTENED TO STAKES DRIVEN INTO THE BOTTOM IN LIEU OF FLOATS AND WEIGHTS.

NOTE:
KEEP AS CLOSE TO SHORE, AS POSSIBLE

NOTES:
1. PLACE TURBIDITY BARRIER AS TO EFFECTIVELY CONTROL SILT DISPERSION UNDER THE CONDITIONS PRESENT ON A PARTICULAR PROJECT.
2. USE APPROPRIATE NAVIGATIONAL WARNING LIGHTS WHEN USED NEXT TO NAVIGATIONAL CHANNEL.
3. FASTEN TURBIDITY BARRIER TO EMBEDDED GALVANIZED PIPE IN TIDAL OR FLOWING CONDITIONS TO KEEP BARRIER IN PLACE.

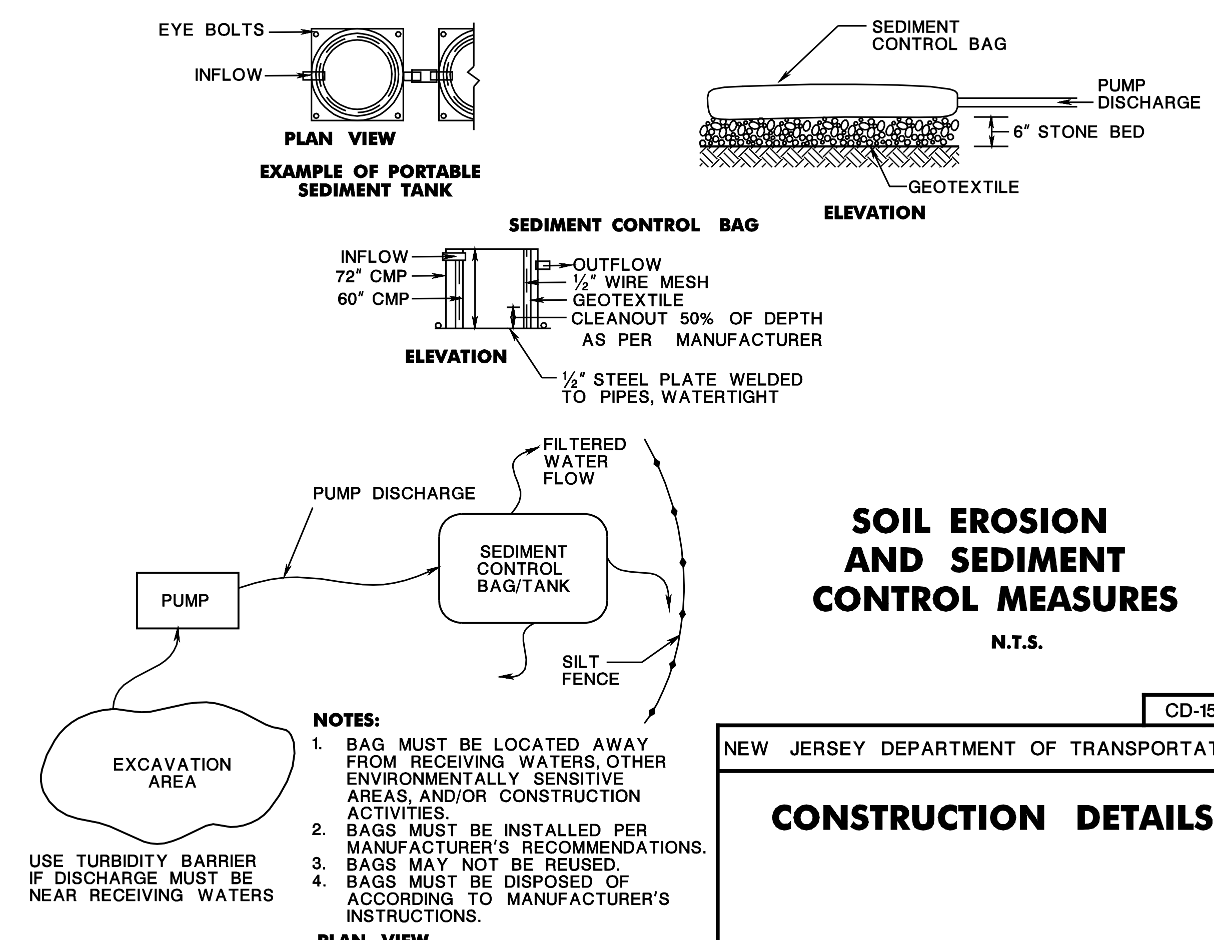
FLOATING TURBIDITY BARRIER

CD-158-3.2



STONE OUTLET SEDIMENT TRAPS, ___' x ___'

CD-158-3.3



NOTES:
1. BAG MUST BE LOCATED AWAY FROM RECEIVING WATERS, OTHER ENVIRONMENTALLY SENSITIVE AREAS, AND/OR CONSTRUCTION ACTIVITIES.
2. BAGS MUST BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
3. BAGS MAY NOT BE REUSED.
4. BAGS MUST BE DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTIONS.

SEDIMENT CONTROL TANK OR BAG

CD-158-3.4

SOIL EROSION AND SEDIMENT CONTROL MEASURES

N.T.S.

CD-158-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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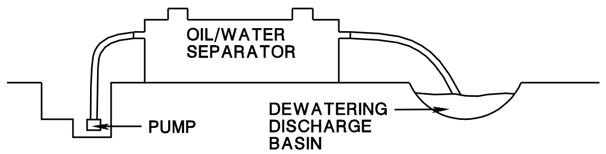
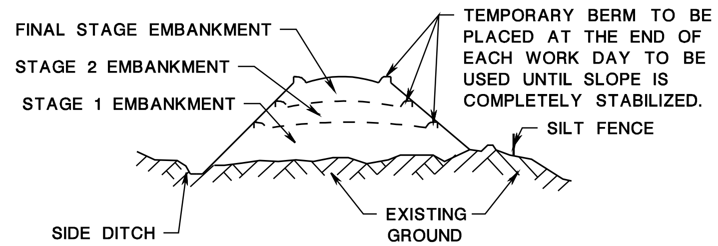


NOTES:

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

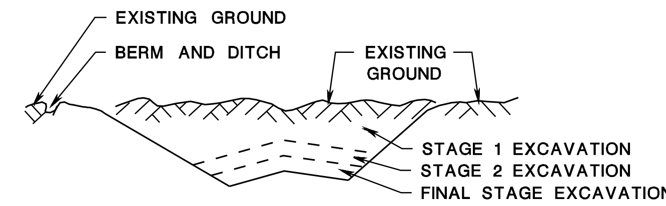
CD-158-4.1



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

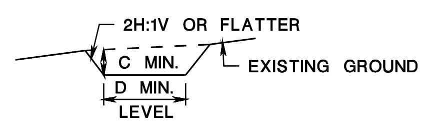
BEFORE BEGINNING ANY EARTHWORK, EXCAVATE AND STABILIZE SIDE DITCHES AND INSTALL PERIMETER CONTROLS (SILT FENCE, ETC.). SLOPES GREATER THAN 25 FEET IN HEIGHT ARE TO BE EXCAVATED AND STABILIZED IN STAGES OF EQUAL INCREMENTS NOT TO EXCEED 15 FEET.

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.

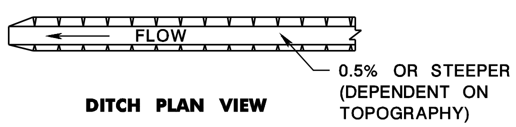
ROADWAY GRADING

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"

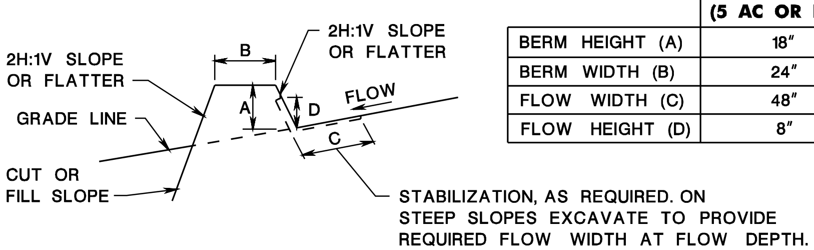


DITCH CROSS SECTION



DITCH PLAN VIEW

	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"



BERM CROSS SECTION

NOTE:

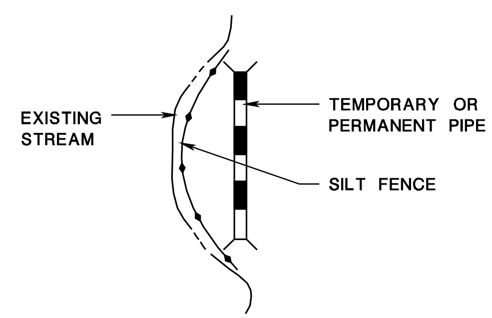
ADJUST FIELD LOCATION AS NEEDED TO ACHIEVE A STABILIZED OUTLET.

STABILIZATION FOR DITCH OR BERM

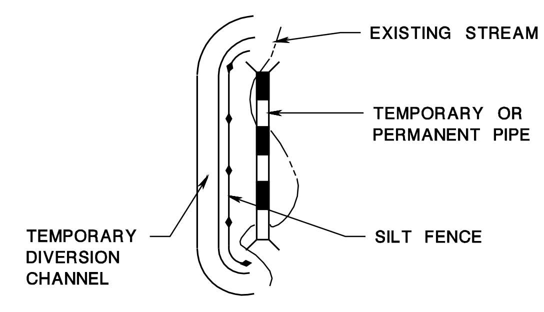
TYPE OF TREATMENT	GRADE	A - (5 AC OR LESS)	B - (5 - 10 AC)
1	0.5 - 5.0%	SEED USED WITH TOPSOIL STABILIZATION MATTING	SEED USED WITH TOPSOIL STABILIZATION MATTING
2	5.1 - 8.0%	SEED USED WITH TOPSOIL STABILIZATION MATTING	LINED 6"- 9" RIPRAP
3	8.1 - 20.0%	LINED 6"- 9" RIPRAP	ENGINEERED DESIGN

TEMPORARY RUNOFF DIVERSION

CD-158-4.3



METHOD A



METHOD B

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.

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

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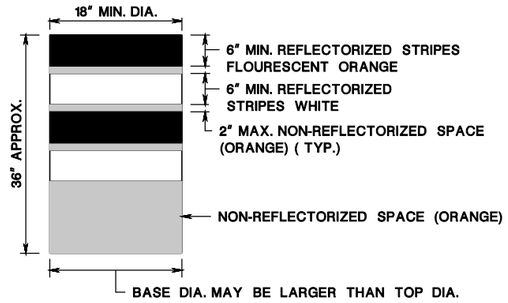
ENSURE DRUMS ARE MADE OF ORANGE PLASTIC WITH A MINIMUM OF FOUR ALTERNATE FLUORESCENT ORANGE AND WHITE RETROREFLECTIVE STRIPES. IF THERE ARE NON-REFLECTORIZED SPACES BETWEEN THE STRIPES, THEY ARE TO BE NO MORE THAN 2" WIDE. ENSURE RETROREFLECTIVE SHEETING FOR STRIPES CONFORMS WITH ASTM D4956 TYPE VII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

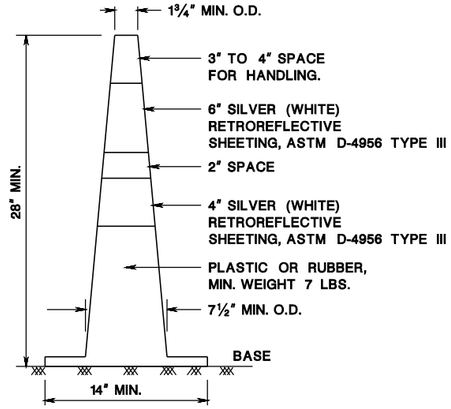
CD-159-1.1

NOTES:

TRAFFIC CONES MUST BE PREDOMINATELY ORANGE IN COLOR.

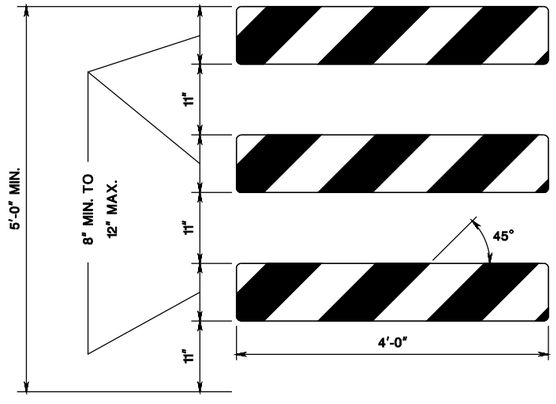
BASES MAY BE OF BREAKAWAY BALLASTED TYPE.

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

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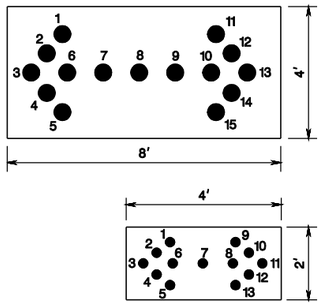


4' x 8' BOARD

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

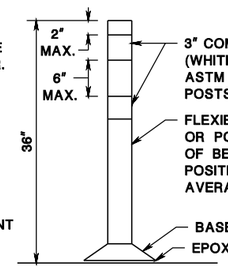
2' x 4' BOARD

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 POLYETHELENE, 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:

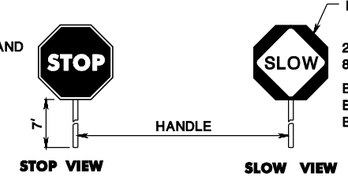
MINOR MANUFACTURER'S VARIATIONS MAY BE ACCEPTABLE UPON APPROVAL OF THE RE.

CHANNELIZING GUIDE POSTS

CD-159-2.2

R 1 - 1
24"x 24",
8" C LETTERS

WHITE MESSAGE AND BORDER ON RED BACKGROUND.



NON-REFLECTIVE BLACK

24"x 24",
8" B LETTERS

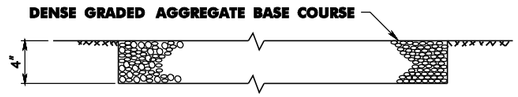
BLACK MESSAGE AND BORDER ON ORANGE BACKGROUND.

NOTE:

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

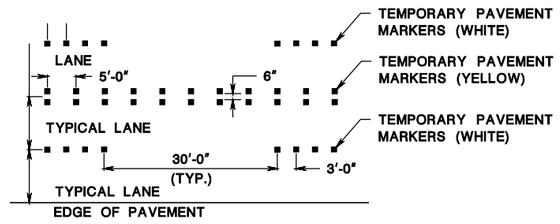
STOP / SLOW PADDLE

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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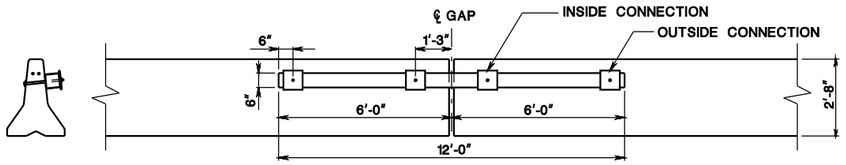
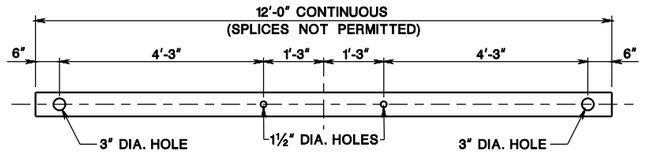
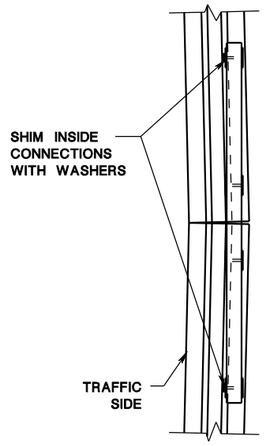


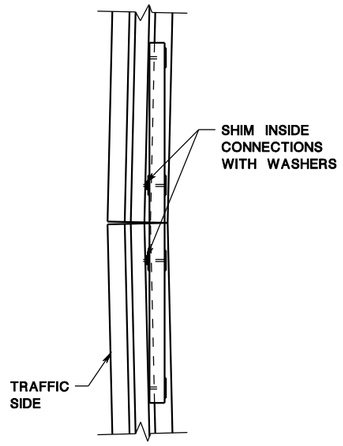
SIDE VIEW
(CONSTRUCTION SIDE)



BOX BEAM
HOLE LAYOUT DETAIL



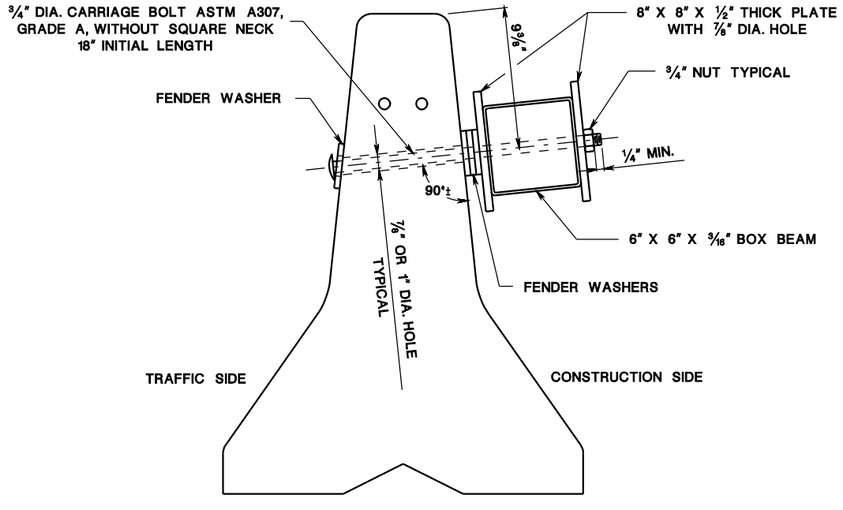
PLAN VIEW
CONSTRUCTION BARRIER CURB
CURVING TOWARD TRAFFIC



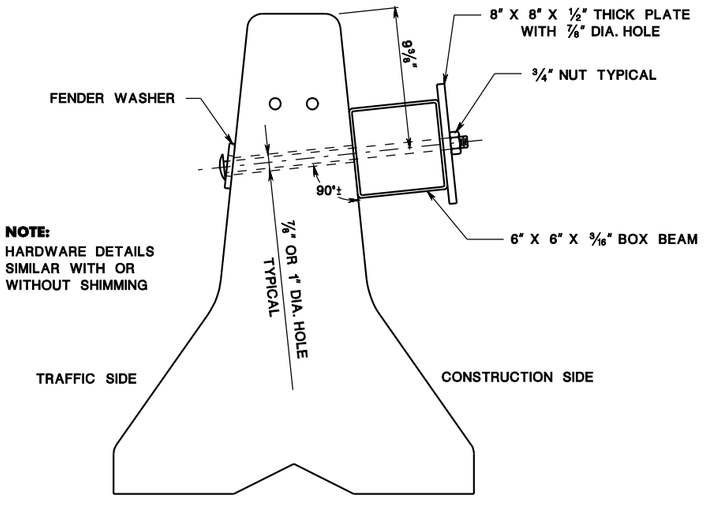
PLAN VIEW
CONSTRUCTION BARRIER
CURVING AWAY FROM TRAFFIC

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 RADII: 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 ½" 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.

CD-159-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-159-3.1

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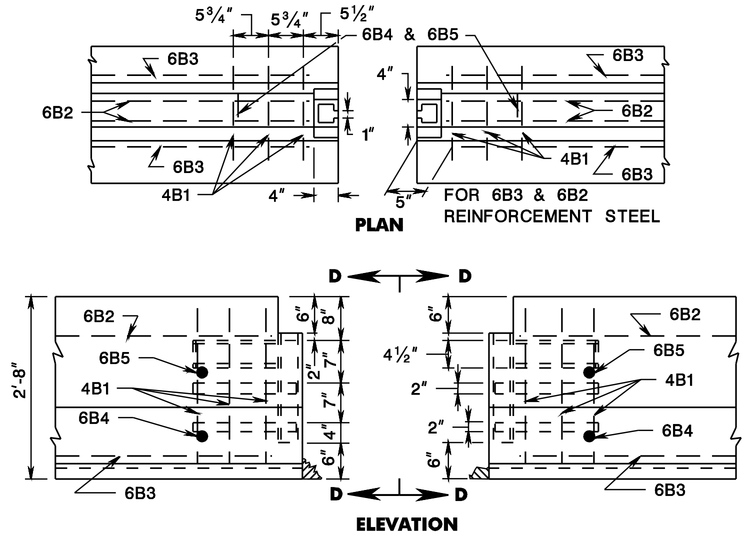
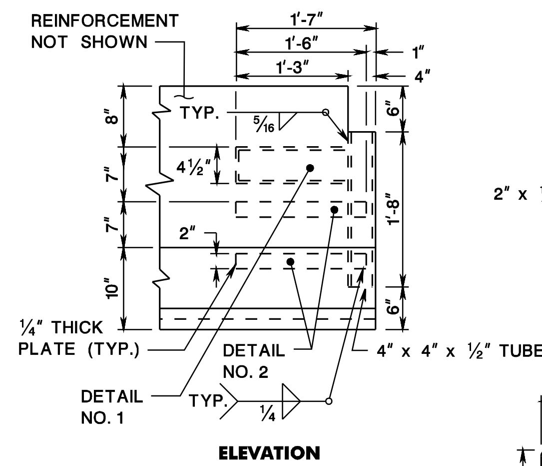
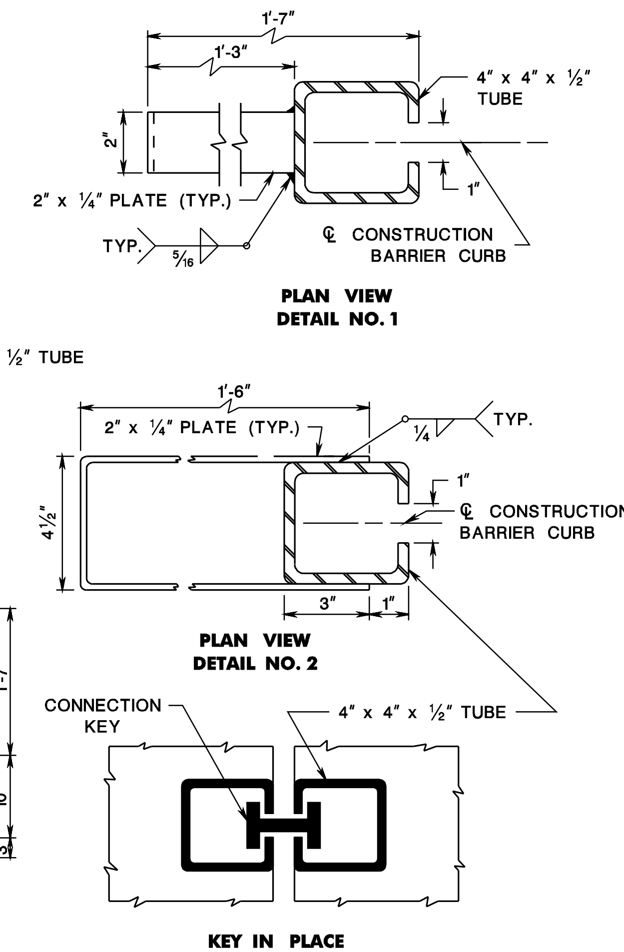
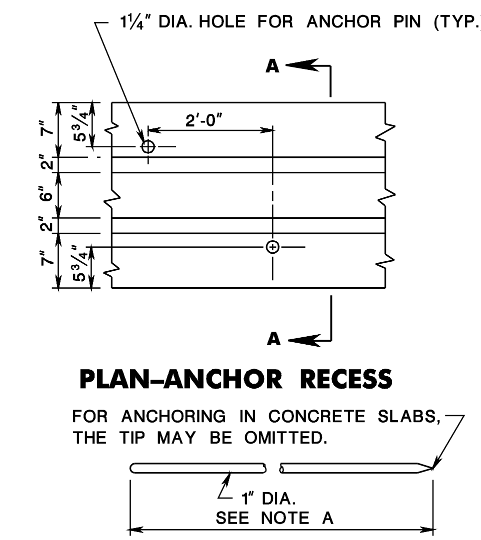
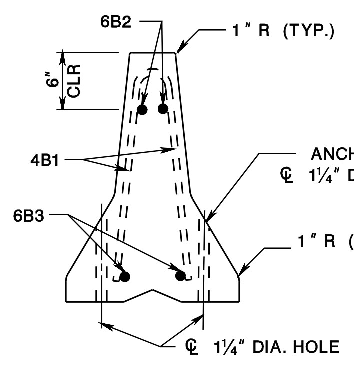


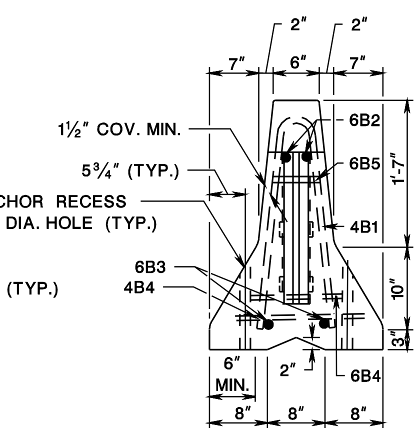
CONSTRUCTION BARRIER CURB CONNECTION DETAILS

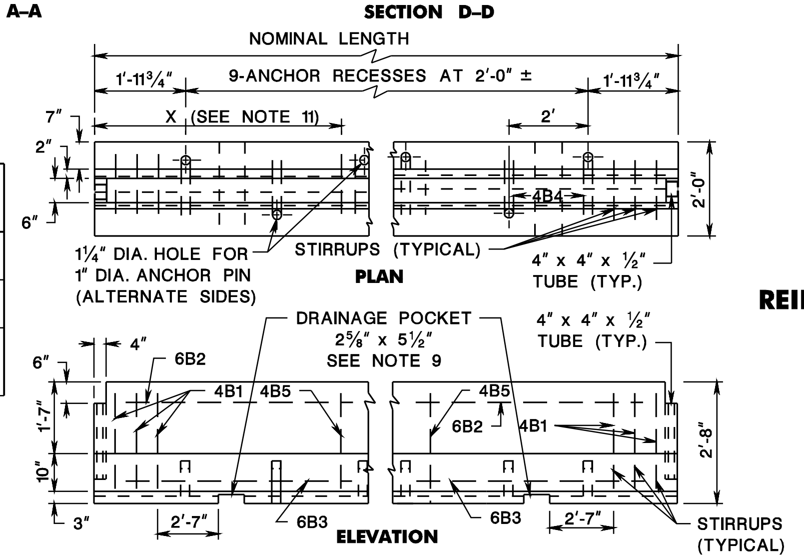




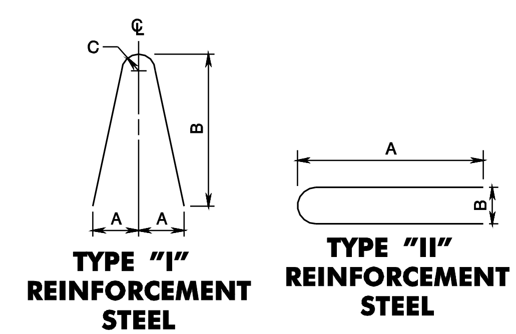


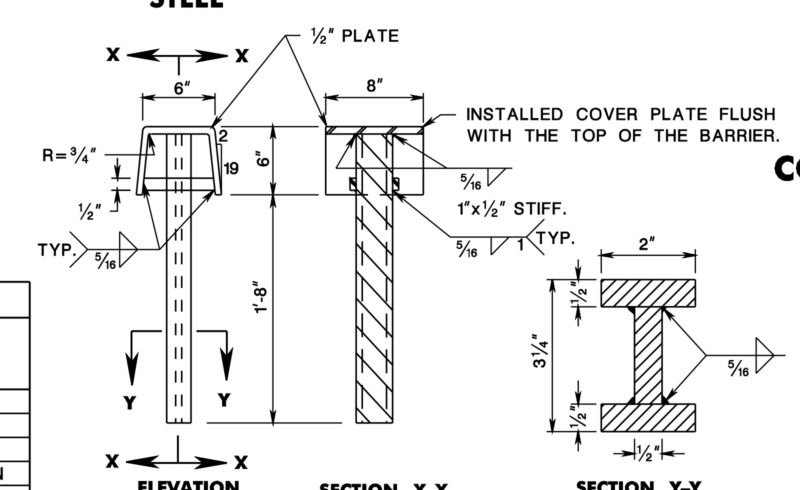






CONSTRUCTION BARRIER CURB





CONNECTION KEY

CD-159-4.1

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

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

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

GENERAL NOTES:

1. STEEL PLATE TO BE ASTM A36, A588, A441, OR A572 GRADE 50.
2. USE REINFORCEMENT STEEL ASTM A615, GRADE 60.
3. USE CONCRETE CLASS B.
4. CONCRETE CLEAR COVER FOR REINFORCEMENT STEEL IS 1 1/2" (MIN.).
5. USE TUBE STEEL ASTM A500, GRADE B OR C.
6. USE ANCHOR PINS AND BOLTS, 1 INCH DIA. ASTM A36.
7. ANCHOR PINS ARE NOT REQUIRED IN EVERY UNIT. SEE TABLE OF JOINT AND ANCHORAGE TREATMENTS.
8. PIN ALL END SECTIONS UNLESS OTHERWISE NOTED.
9. 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.
10. 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.
11. THE CONSTRUCTION BARRIER CURB TO BE CAST IN STEEL FORMS.
12. 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.
13. REINFORCING SHOWN IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING NECESSARY FOR HANDLING IS THE OPTION AND RESPONSIBILITY OF THE CONTRACTOR.
14. 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.
15. 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.
16. 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.

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 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.

CD-159-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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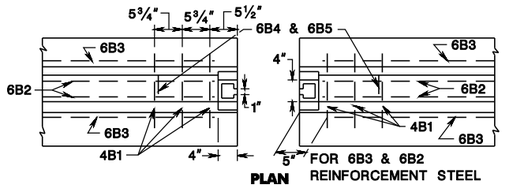
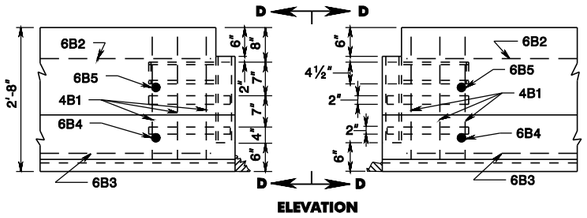
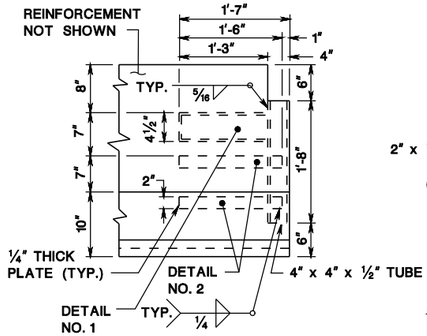
CONSTRUCTION BARRIER CURB CONNECTION DETAILS



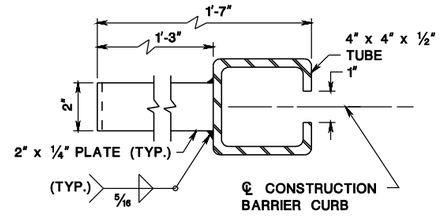
PLAN



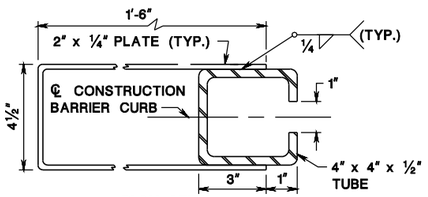
ELEVATION



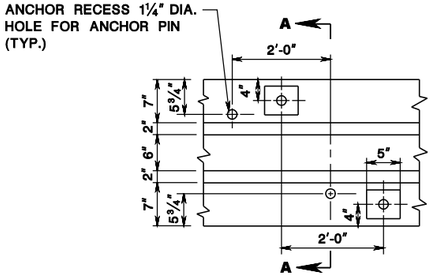
ELEVATION



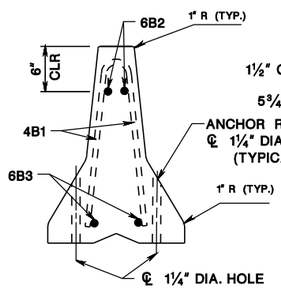
PLAN VIEW
DETAIL NO. 1



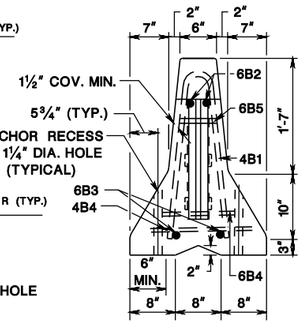
PLAN VIEW
DETAIL NO. 2



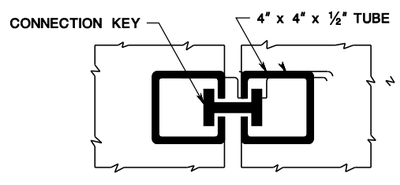
PLAN–ANCHOR RECESS/POCKET



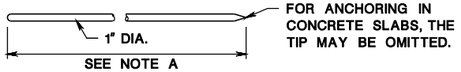
SECTION A–A



SECTION D–D



KEY IN PLACE



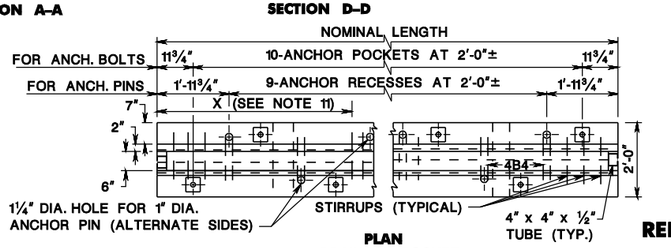
FOR ANCHORING IN CONCRETE SLABS, THE TIP MAY BE OMITTED.

ANCHOR PIN

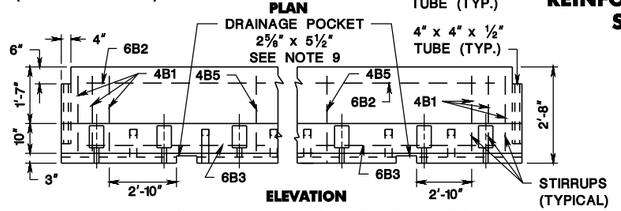
CONNECTION TYPE	TABLE OF JOINT AND ANCHORAGE TREATMENTS CONSTRUCTION BARRIER CURB
A	CONNECTION KEY AND BARRIER END SECTIONS FULLY PINNED*
B	CONNECTION KEY, 6" X 6" BOX BEAM, AND BARRIER END SECTIONS FULLY PINNED*
C	CONNECTION KEY, CONSTRUCTION SIDE OF ALL SECTIONS PINNED, AND BARRIER END SECTIONS FULLY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

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

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			



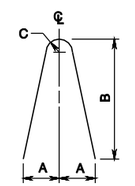
PLAN



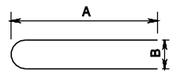
ELEVATION

CONSTRUCTION BARRIER CURB

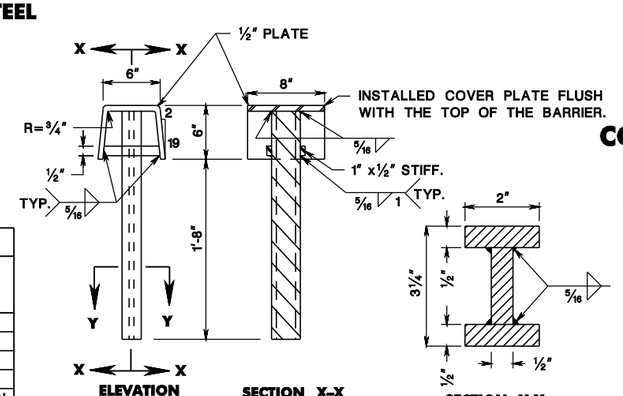
REINFORCEMENT STEEL LIST (EACH BARRIER SECTION)								
MARK	SIZE	NUMBER IN EACH SECTION	LENGTH	TYPE	A	B	C	LOCATION
4B1	#13	6	4'-11"	I	5"	26"	2"	STIRRUPS
4B4	#13	SEE NOTE 12	3'-1"	II	15½"	4"		STIRRUPS
4B5	#13	SEE NOTE 12	4'-11"	I	5"	26"	2"	STIRRUPS
6B2	#19	2	SEE NOTE 12	STR.				LONGITUDINAL (TOP) NORMAL 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



TYPE "I" REINFORCEMENT STEEL



TYPE "II" REINFORCEMENT STEEL



ELEVATION SECTION X–X SECTION Y–Y

CONNECTION KEY

CD-159-5.1

GENERAL NOTES:

1. STEEL PLATE TO BE ASTM A36, A588, A441, OR A572 GRADE 50.
2. USE REINFORCEMENT STEEL ASTM A615, GRADE 60.
3. USE CONCRETE CLASS B.
4. CONCRETE CLEAR COVER FOR REINFORCEMENT STEEL IS 1½" (MIN.).
5. USE TUBE STEEL ASTM A500, GRADE B OR C.
6. USE ANCHOR PINS AND BOLTS, 1 INCH DIA. ASTM A36.
7. ANCHOR PINS ARE NOT REQUIRED IN EVERY UNIT. SEE TABLE OF JOINT AND ANCHORAGE TREATMENTS.
8. PIN ALL END SECTIONS UNLESS OTHERWISE NOTED.
9. 2⅝" X 5½" DRAINAGE POCKETS - TWO REQUIRED IN SECTIONS 12 FEET AND GREATER. ONE REQUIRED IN 8 FOOT AND 10 FOOT SECTIONS.
10. 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.
11. THE CONSTRUCTION BARRIER CURB TO BE CAST IN STEEL FORMS.
12. 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.
13. REINFORCING SHOWN IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING NECESSARY FOR HANDLING IS THE OPTION AND RESPONSIBILITY OF THE CONTRACTOR.
14. 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.
15. 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.
16. 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.

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 1¼" 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 B)

N.T.S.

CD-159-5

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

17
164

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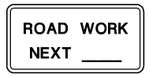
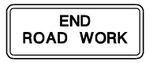


G20 - 1 [60" x 24"]
(10 S.F.)



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

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.)

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

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

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

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

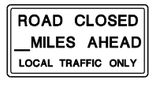
M4 - 11 (S) [48" x 36"]
(12 S.F.)

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

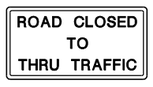
R2 - 1 (S) [48" x 60"]
(20 S.F.)

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

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



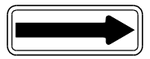
R11 - 3 [60" x 30"]
(12.5 S.F.)



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

(L OR R)

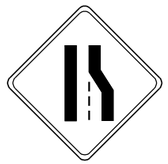
W1 - 4a [48" x 48"]
(16 S.F.)



(L OR R)

W1- 6 [48" x 24"]
(8 S.F.)

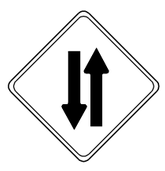
W1 - 6 (S) [60" x 30"]
(12.5 S.F.)



(L OR R)

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

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



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

W20 - 7b [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 - 1A [48" x 48"]
(16 S.F.)

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

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

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

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

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

W21 - 5 (S) [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

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

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

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

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

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

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

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

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

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

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

NOTE:

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

GENERAL NOTES:

1. 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".
2. (S) REPRESENTS A SPECIAL SIZE SIGN.
3. LETTERS AND NUMERALS TO CONFORM TO THE CURRENT MANUAL, "STANDARD ALPHABETS FOR HIGHWAY SIGNS" U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.
4. 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.
5. 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	___MILE
E	___MILES AHEAD
F	AHEAD

BACKING MATERIAL

1. 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

1. USE WELL SEASONED LUMBER FOR SIGN SUPPORTS, FREE OF SPLITS, KNOTS AND WARPS, OR OF STEEL COMPONENTS.
2. 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 1½ INCH DIAMETER HOLES 4 INCHES AND 18 INCHES ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.
3. 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.
4. USE STEEL POSTS IN ACCORDANCE WITH THE STANDARD DETAIL FOR U-POST SIGN SUPPORT.
5. TEMPORARY SIGN SUPPORTS NOT MEETING THIS CRITERIA TO BE SHIELDED BY A LONGITUDINAL BARRIER OR CRASH CUSHIONS.
6. USE WOOD POST ONLY ON TEMPORARY SIGN SUPPORT.

SIGN FACES

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

FASTENING

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

CONSTRUCTION SIGNS

N.T.S.

CD-159-6

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-159-6.1

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

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

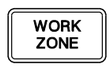
W5 - 4 [48" x 48"]
(16 S.F.)

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

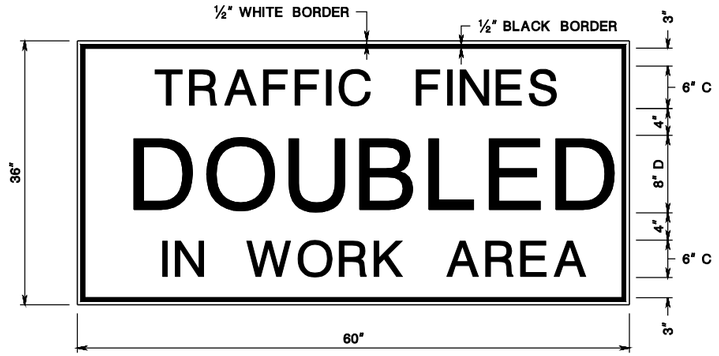
W20 - 10(G) [48" x 48"]
(16 S.F.)

6"C
6"C
6"C

EP1
60" X 36"
(15 S.F.)
BLACK ON ORANGE

6"C
6"C
6"C

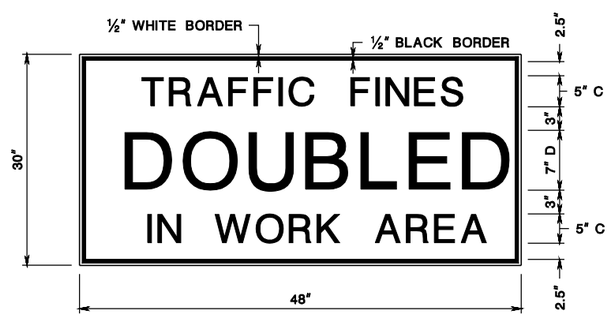
EP2
60" X 36"
(15 S.F.)
BLACK ON ORANGE



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:

1. 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".
2. LETTERS AND NUMERALS TO CONFORM TO THE CURRENT MANUAL, "STANDARD ALPHABETS FOR HIGHWAY SIGNS" U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.
3. 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.
4. 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	___MILE
E	___MILES AHEAD
F	AHEAD

BACKING MATERIAL

1. 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

1. USE WELL SEASONED LUMBER SIGN SUPPORTS, FREE OF SPLITS, KNOTS AND WARPS, OR OF STEEL COMPONENTS.
2. 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 1½ INCH DIAMETER HOLES 4 INCHES AND 18 INCHES ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.
3. 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.
4. USE STEEL POSTS IN ACCORDANCE WITH THE STANDARD DETAIL FOR U-POST SIGN SUPPORT.
5. TEMPORARY SIGN SUPPORTS NOT MEETING THIS CRITERIA TO BE SHIELDED BY A LONGITUDINAL BARRIER OR CRASH CUSHIONS.
6. USE WOOD POST ONLY ON TEMPORARY SIGN SUPPORT.

SIGN FACES

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

FASTENING

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

CONSTRUCTION SIGNS

N.T.S.

CD-159-7

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-159-7.1

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BDC959-01-ORIGINAL SHEET
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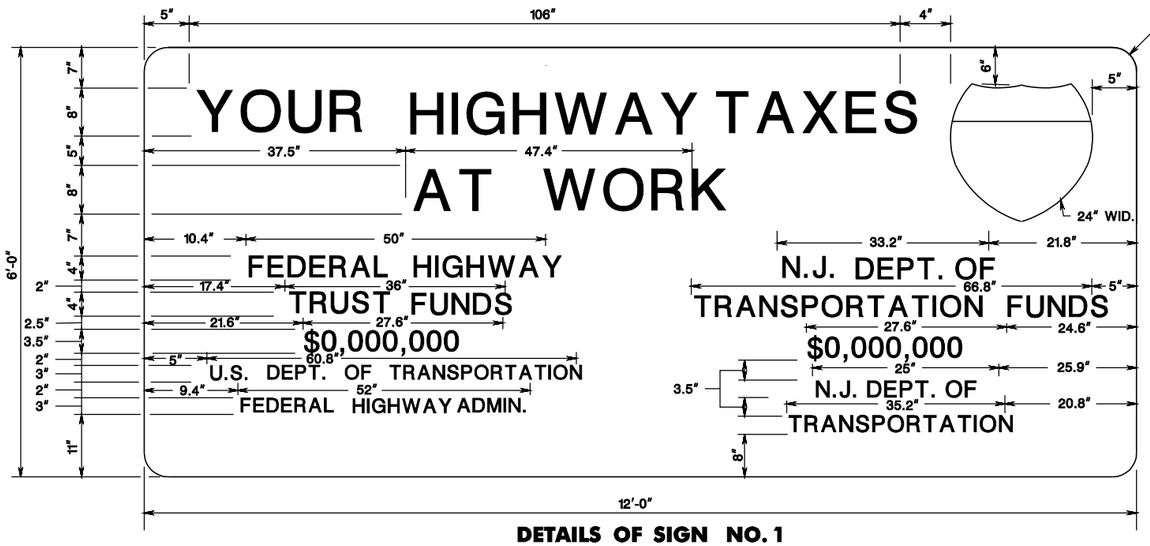
SIGN NO. 1 (INTERSTATE)



DETAILS OF SIGN NO. 1

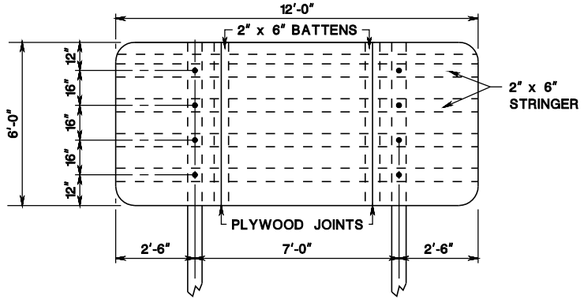
NOTE:
USE RED, WHITE, AND BLUE SHIELD INSIGNIA WHEN POSTING INTERSTATE SHIELD.

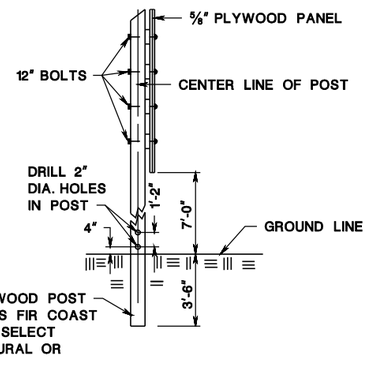
NOTES:

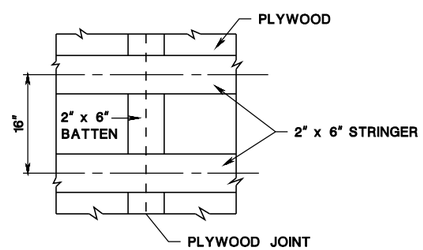
1. USE PLYWOOD PANELS CONFORMING TO THE REQUIREMENTS FOR HIGH DENSITY OVERLAY AS SET FORTH IN COMMERCIAL STANDARD CS 45-60 FOR DOUGLAS FIR PLYWOOD AND ALL AMENDMENTS THERETO.
2. COSTS LISTED ON SIGNS TO BE FURNISHED BY THE DEPARTMENT AFTER AWARD OF CONTRACT.
3. SIGNS TO BE LOCATED AS SHOWN ON PLANS OR 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







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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BDC16D-01-ORIGINAL SHEET
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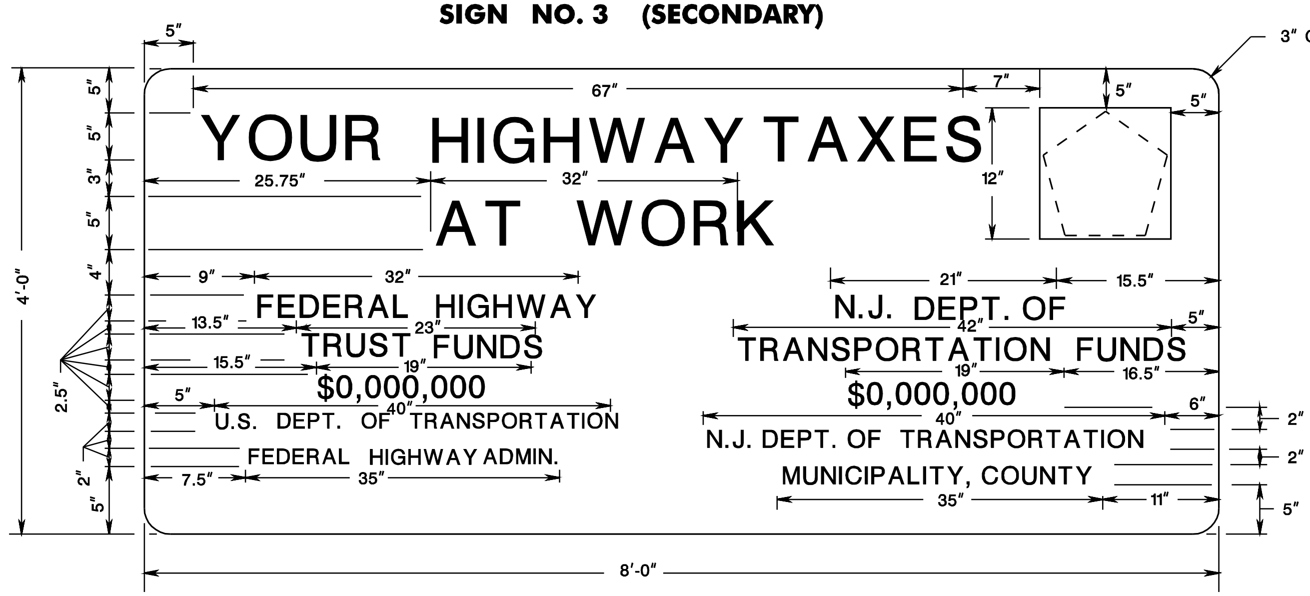
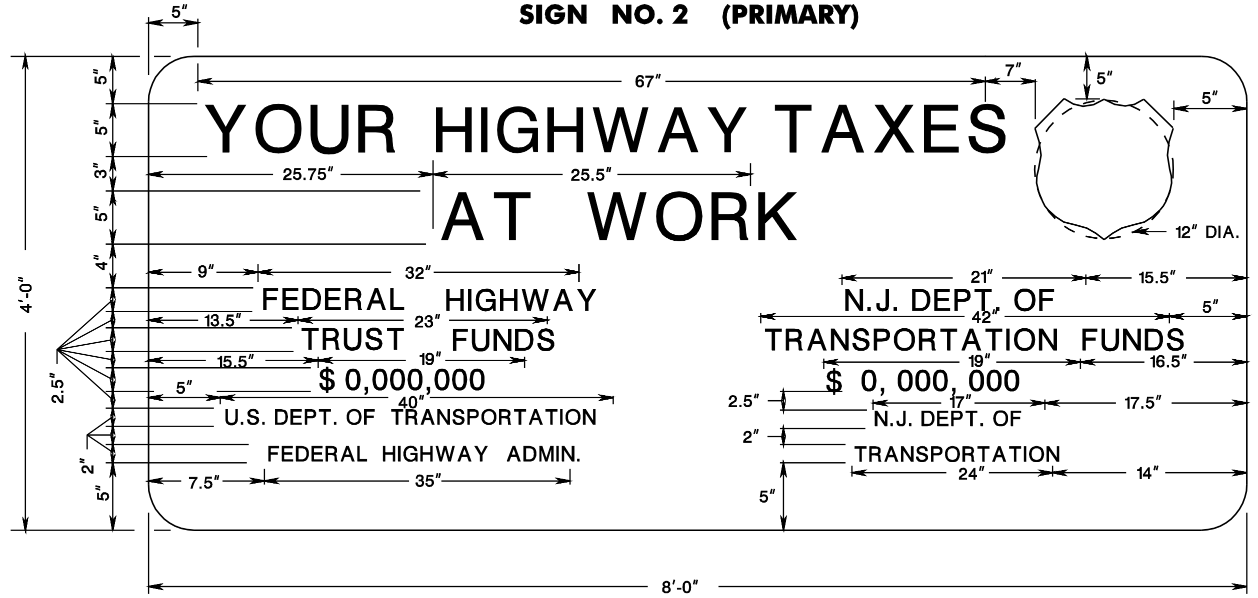
SIGN NO. 3 (SECONDARY)



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

SIGN NO. 2 (PRIMARY)



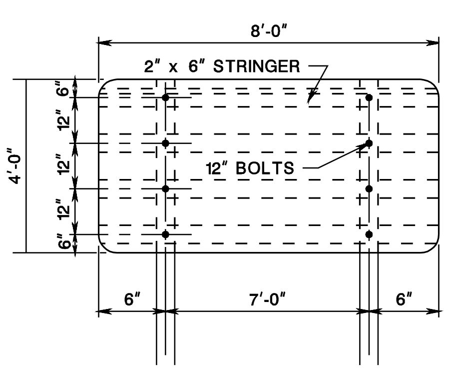
NOTE:
USE BLACK, RED, WHITE, AND BLUE SHIELD INSIGNIA WHEN POSTING U. S. ROUTES.
USE BLACK ON WHITE CIRCLE INSIGNIA WHEN POSTING STATE ROUTES.

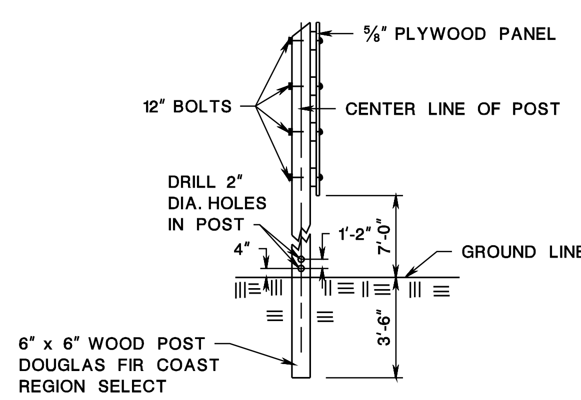
NOTES:

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).

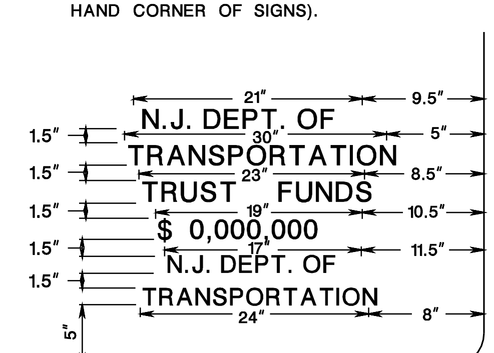
NOTE:
ON PROJECTS WITH NO FEDERAL FUNDING DO NOT INCLUDE ON THE SIGN THE REFERENCE
FEDERAL HIGHWAY TRUST FUNDS
$0,000,000
U.S. DEPT. OF TRANSPORTATION
FEDERAL HIGHWAY ADMIN.

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.

CD-159-9

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-159-9.1

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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:

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

TEMPORARY CRASH CUSHION,
COMPRESSIVE BARRIER
SUMMARY TABLE

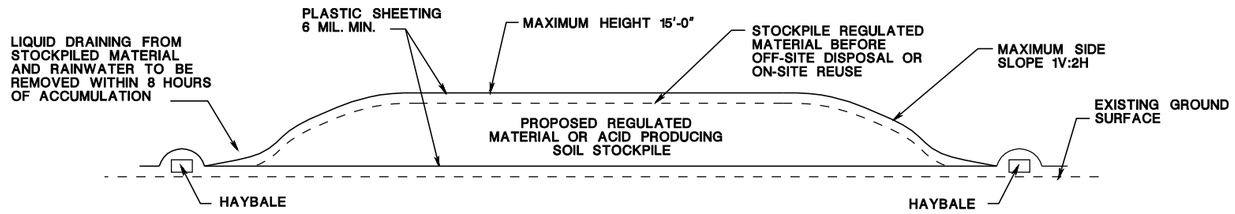
N.T.S.

CD-159-10

NEW JERSEY DEPARTMENT OF TRANSPORTATION

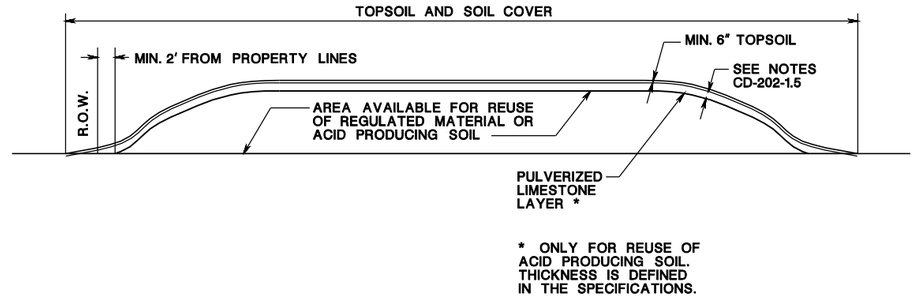
CONSTRUCTION DETAILS

CD-159-10.1



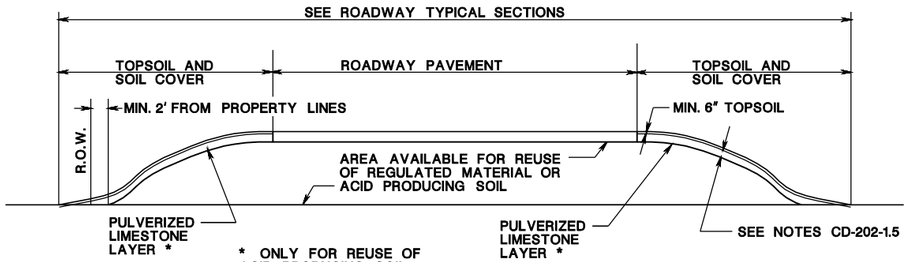
TEMPORARY STOCKPILING OF REGULATED MATERIAL OR ACID PRODUCING SOIL

CD-202-1.1



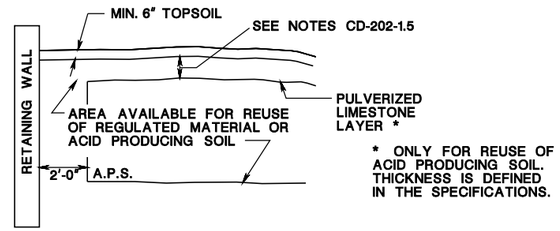
REUSE OF REGULATED MATERIAL OR ACID PRODUCING SOIL IN UNPAVED AREAS TYPICAL CROSS-SECTION

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.

CD-202-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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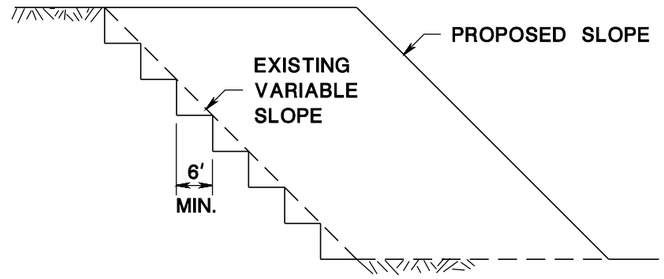
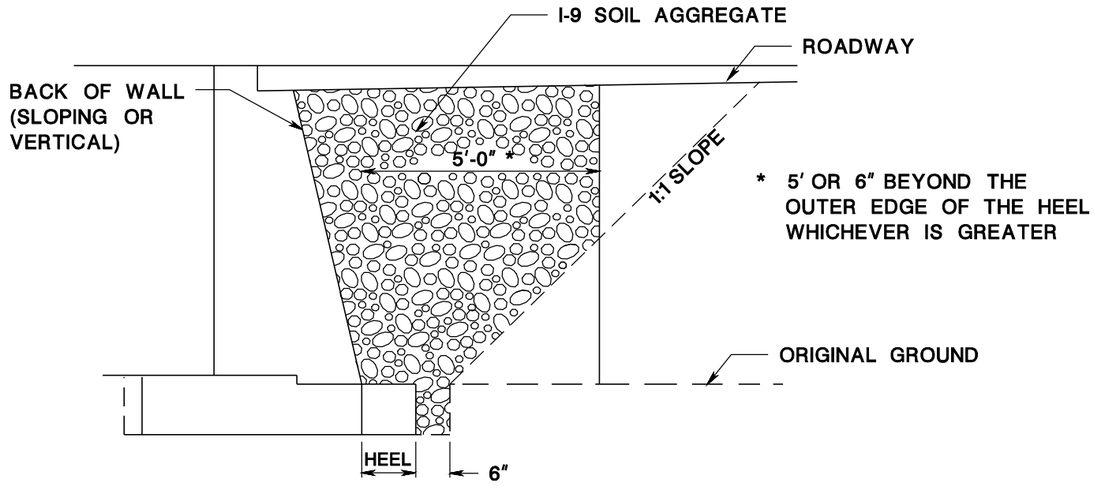


EMBANKMENT ON EXISTING SLOPES

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

CD-203-1.2

I-9 SOIL AGGREGATE AND EMBANKMENT

N.T.S.

CD-203-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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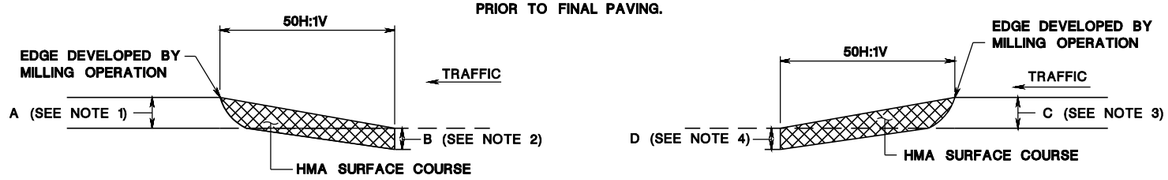
HMA SURFACE COURSE TO BE REMOVED AND THE RADIUS CAUSED BY MILLING SQUARED PRIOR TO FINAL PAVING.

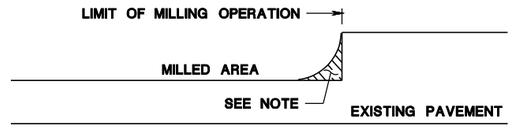


NOTES:

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

BDC18D-01-ORIGINAL SHEET

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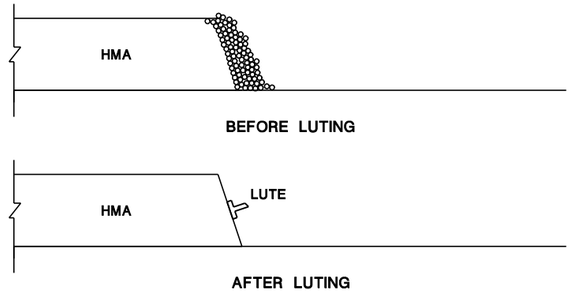
WEDGE JOINT
(NOTE 1) CD-401-2.6

CD-401-2.1

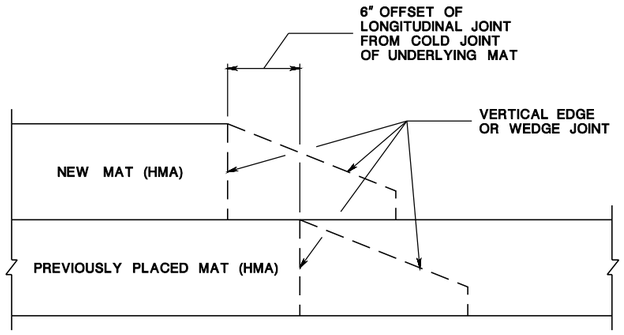


COMPACTION OF UNCONFINED VERTICAL EDGE
(NOTE 3) CD-401-2.6

CD-401-2.4

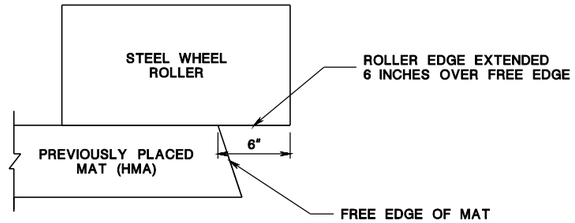
NOTES:
1. WHEN HMA LIFT THICKNESS IS GREATER THAN 2¼ INCHES AND WHEN TRAFFIC IS TO BE MAINTAINED, CONSTRUCT A WEDGE JOINT.
2. ENSURE THAT THE JOINT IN THE HMA SURFACE COURSE IS OFFSET FROM THE LANE LINES BY 6 INCHES. IN THE CENTERLINE OF A ROADWAY, ENSURE THAT THE JOINT FALLS BETWEEN THE DOUBLE YELLOW 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



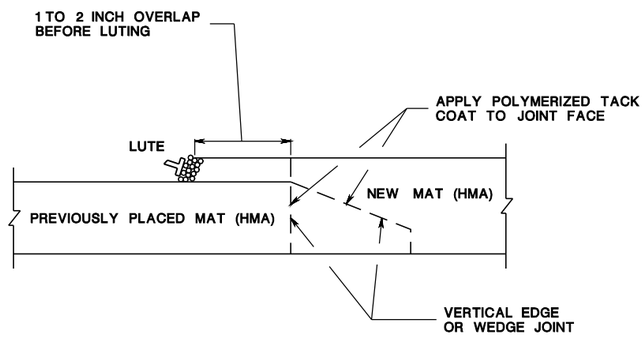
OFFSET OF JOINTS
(NOTE 2) CD-401-2.6

CD-401-2.2

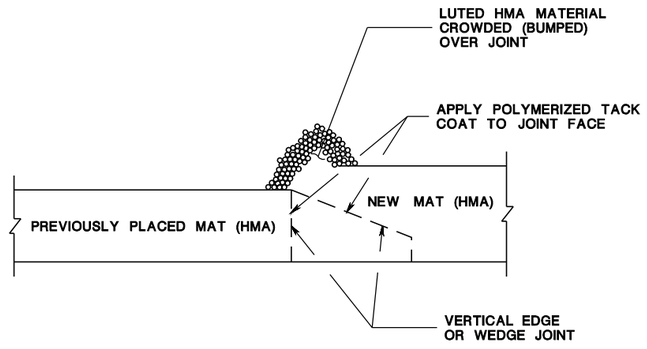


ROLLER PLACEMENT FOR COMPACTING ALONG THE UNCONFINED VERTICAL EDGE
(NOTE 6) CD-401-2.6

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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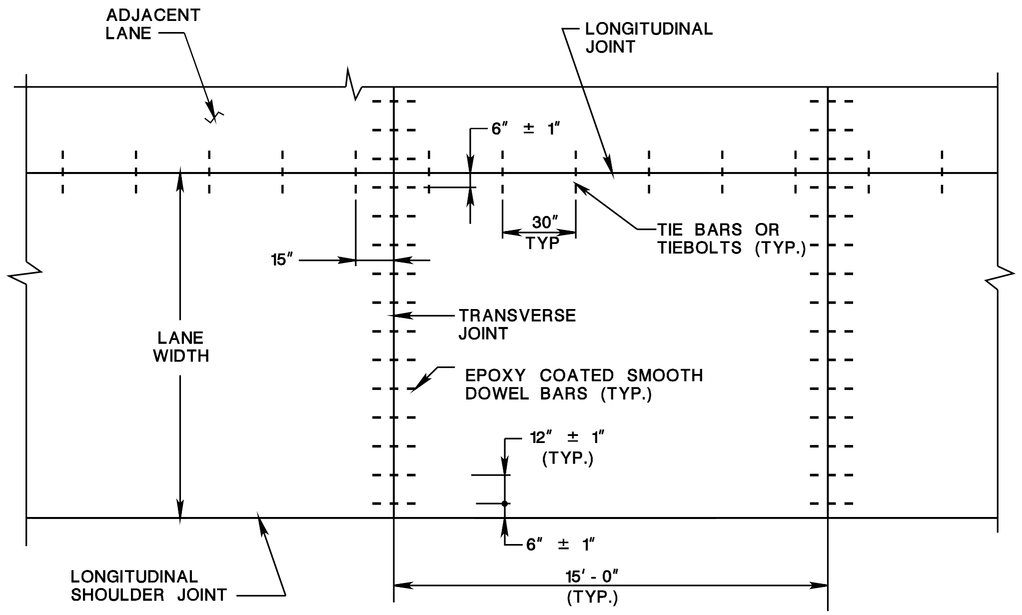


TYPICAL LAYOUT

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

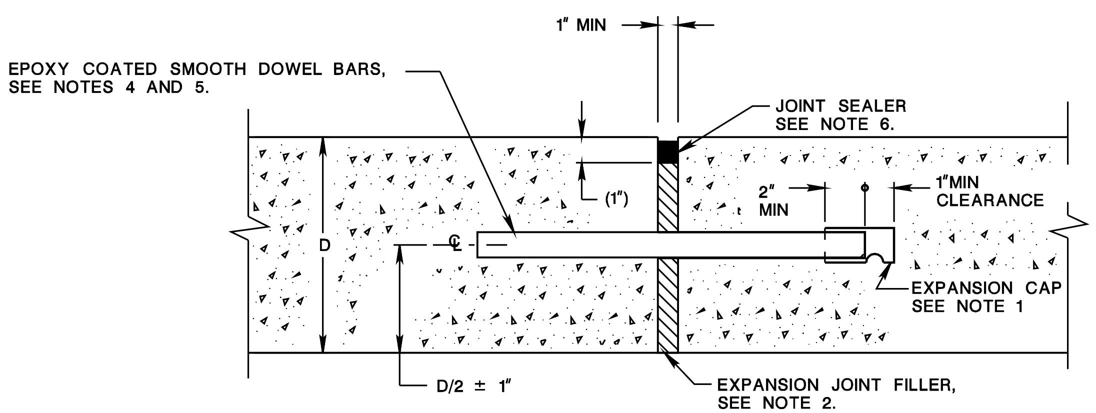
* LENGTH OF PAVEMENT BETWEEN BRIDGES

CD-405-1.2

NOTES:

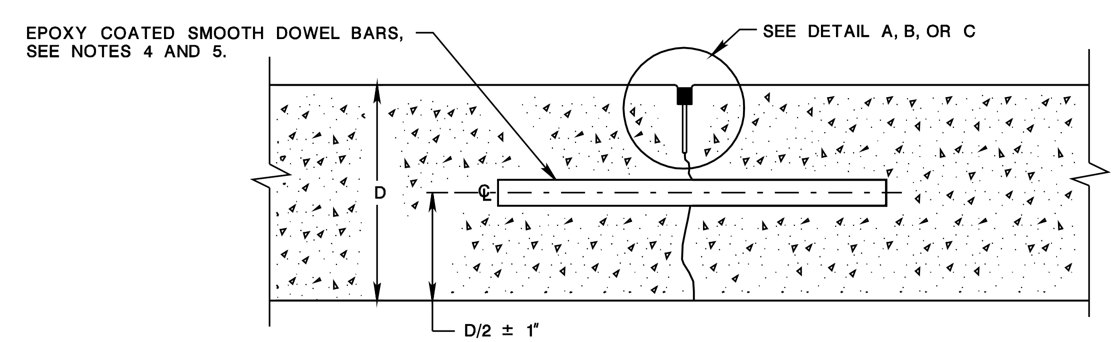
1. PLACE A CLOSED-END EXPANSION CAP OVER THE LUBRICATED END OF ALL DOWEL BARS USED IN TRANSVERSE EXPANSION JOINTS AND PROVIDE A MINIMUM 1" CLEARANCE POCKET ASSURED BY MEANS OF A POSITIVE SPACING DEVICE.
2. CUT EXPANSION JOINT FILLER MATERIAL TO CONFORM TO THE CROSS-SECTION OF THE PAVEMENT AND FURNISH 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 1¼"ϕ x18" LONG EPOXY COATED SMOOTH DOWEL BARS FOR PAVEMENT DEPTHS 10" OR LESS, AND MINIMUM 1½" 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 ¼" ±⅛" 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



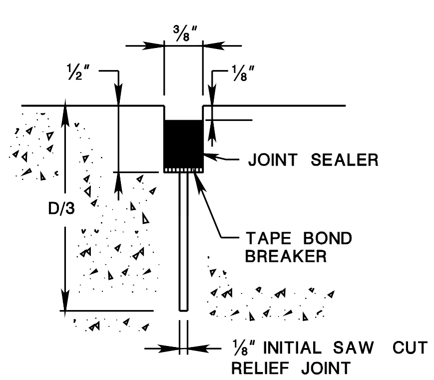
TRANSVERSE EXPANSION JOINT

CD-405-1.4



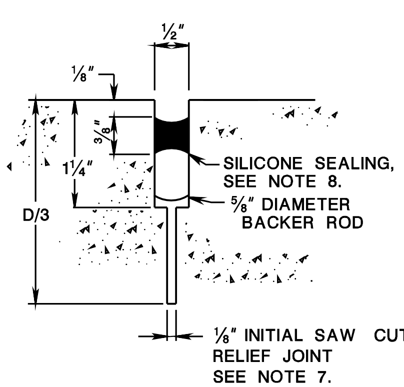
TRANSVERSE CONTRACTION JOINT

CD-405-1.5



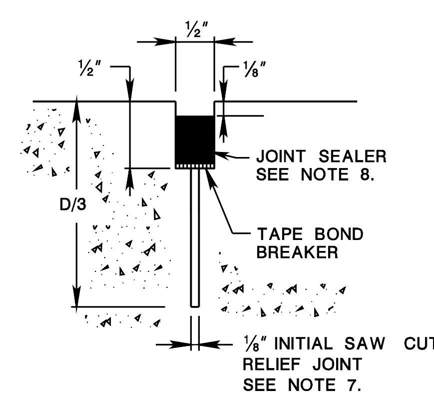
DETAIL A
HOT–POURED JOINT SEALER

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

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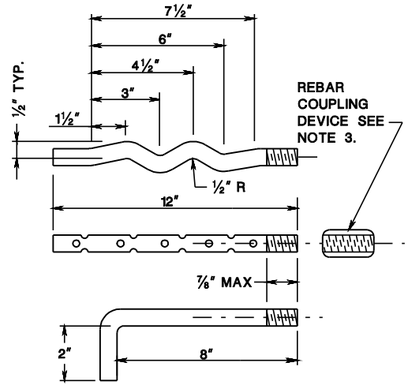
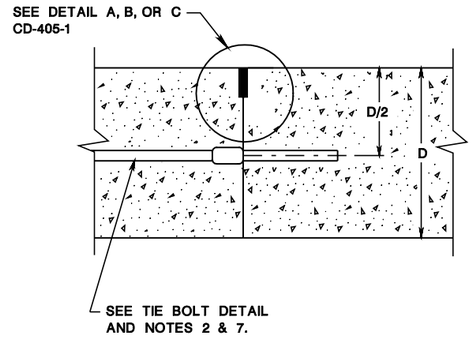


MAKE TIE BOLTS ⅝" ϕ BAR WITH ROLLED THREADS OR ⅝" ϕ BAR WITH CUT THREADS.

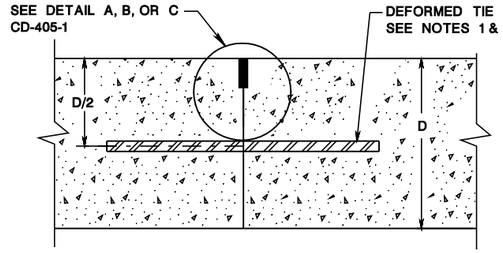
TIE BOLT DETAIL

CD-405-2.1



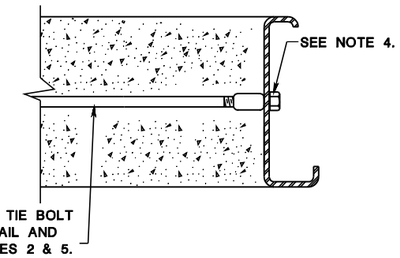
CONSTRUCTION JOINT TIE BOLT

CD-405-2.2



CONSTRUCTION JOINT TIE BAR

CD-405-2.3



STATIONARY FORMING

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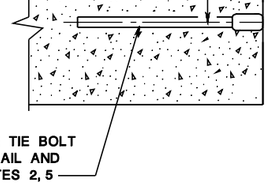
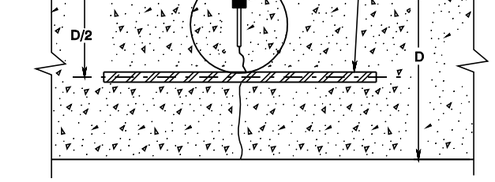


SLIP FORMING

CD-405-2.5



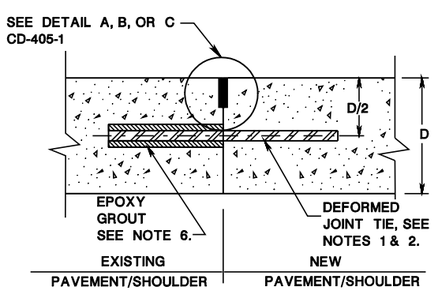
CONTRACTION JOINT

CD-405-2.6

NOTES:

1. SPECIFY #6 TIE BARS 30" ±¼" LONG, SPACED 30" CENTER TO CENTER MAXIMUM. FOR JOINT TIES SPECIFY #6 BARS 18" ±¼" 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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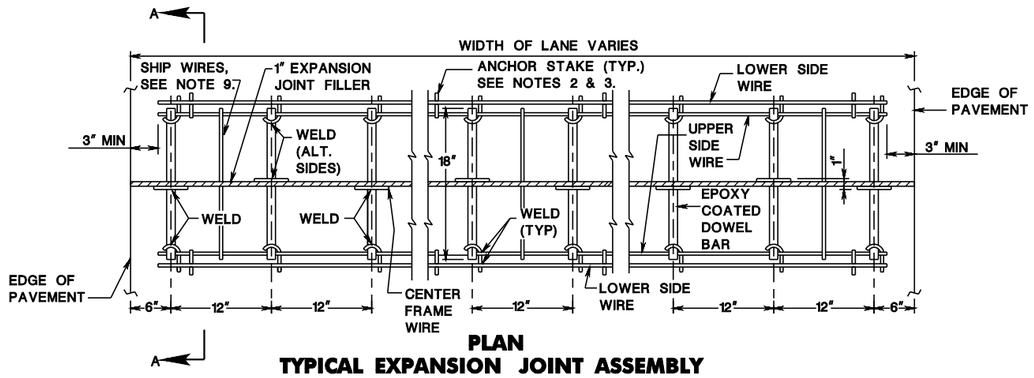

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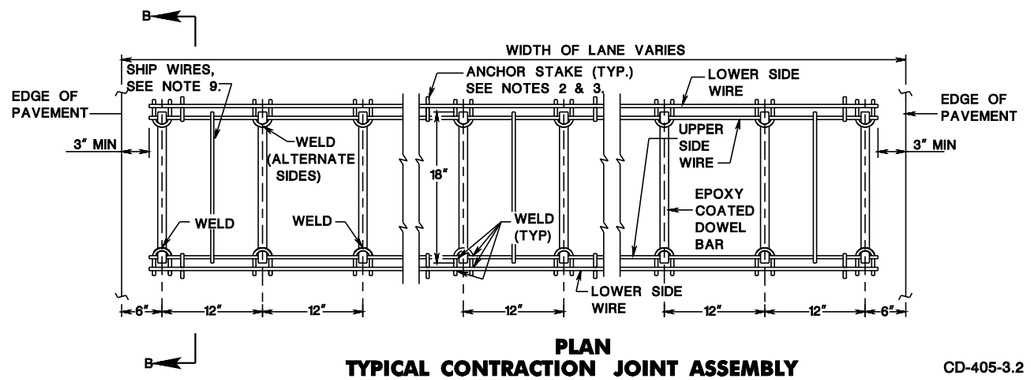
TYPICAL EXPANSION JOINT ASSEMBLY

CD-405-3.1



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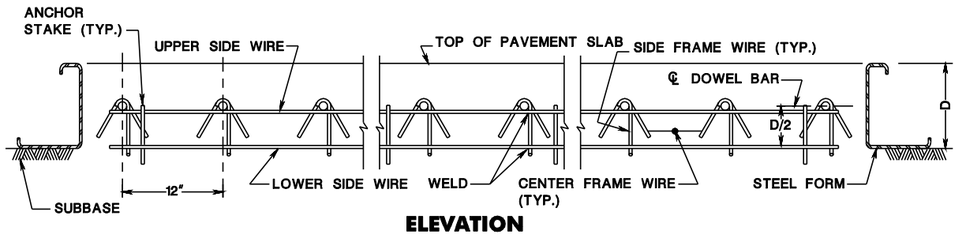
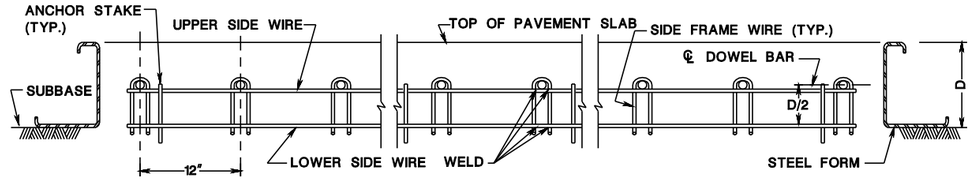
TYPICAL CONTRACTION JOINT ASSEMBLY

CD-405-3.2



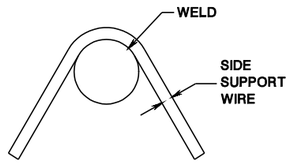
ELEVATION
EXPANSION JOINT ASSEMBLY

CD-405-3.3



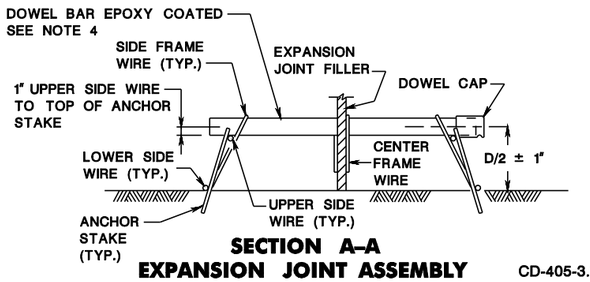
ELEVATION
CONTRACTION JOINT ASSEMBLY

CD-405-3.4



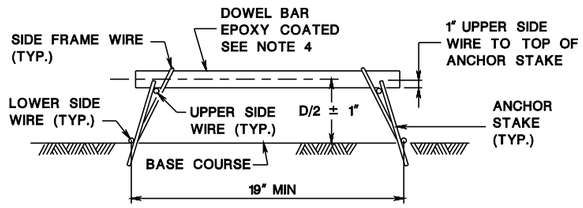
CENTER FRAME WIRE DETAIL

CD-405-3.5



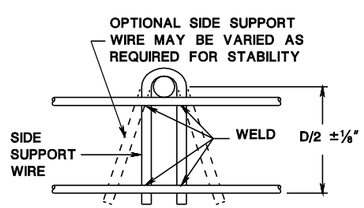
SECTION A–A
EXPANSION JOINT ASSEMBLY

CD-405-3.6



SECTION B–B
CONTRACTION JOINT ASSEMBLY

CD-405-3.7



"A" DESIGN
TYPICAL SIDE FRAME DETAILS

CD-405-3.8

NOTES:

1. 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.
2. 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.
3. 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.
4. PROVIDE DOWEL BARS PARALLEL TO THE CENTERLINE AND TO THE PAVEMENT SURFACE. TOLERANCE OF THIS PLACEMENT TO BE WITHIN ¼ INCH PER DOWEL BAR.
5. 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

6. PROVIDE DOWEL BARS PARALLEL TO THE CENTERLINE AND TO THE PAVEMENT SURFACE. MAKE TOLERANCE OF THIS PLACEMENT WITHIN ±¼" PER DOWEL BAR.
7. 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.

8. WIRE TOLERANCES PER ASTM 510M IS 0.003 in.
9. 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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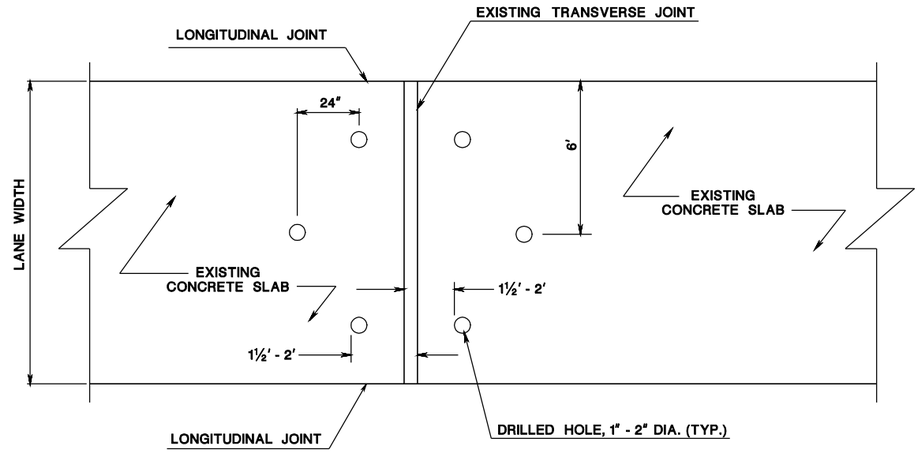
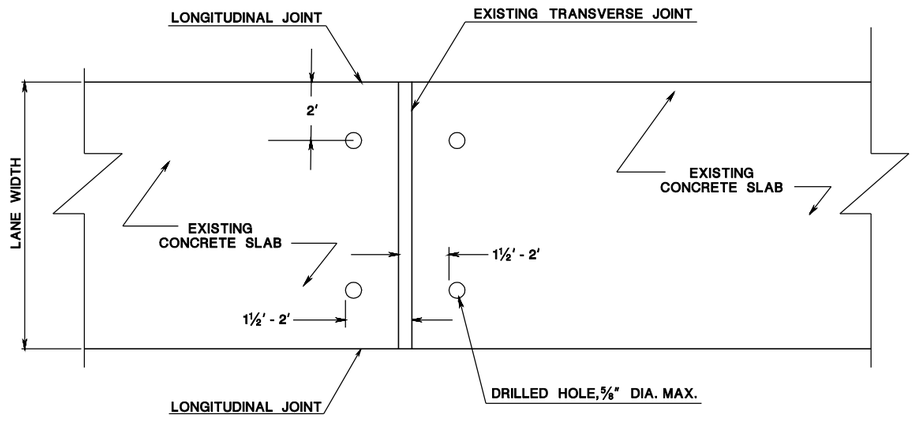


TYPICAL HOLE PATTERN
USED FOR SLAB STABILIZATION, POZZOLAN GROUT



SLAB STABILIZATION, POLYURETHANE GROUT

SLAB STABILIZATION

N.T.S.

CD-451-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

30
164

CD-451-1

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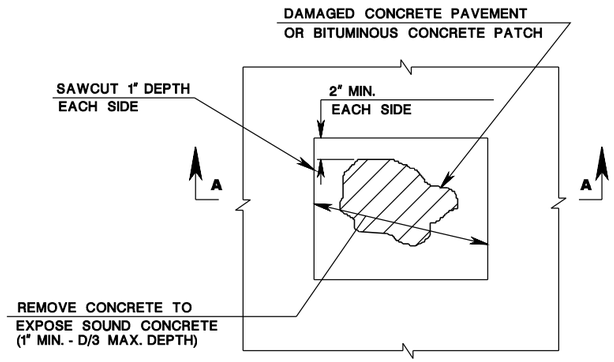

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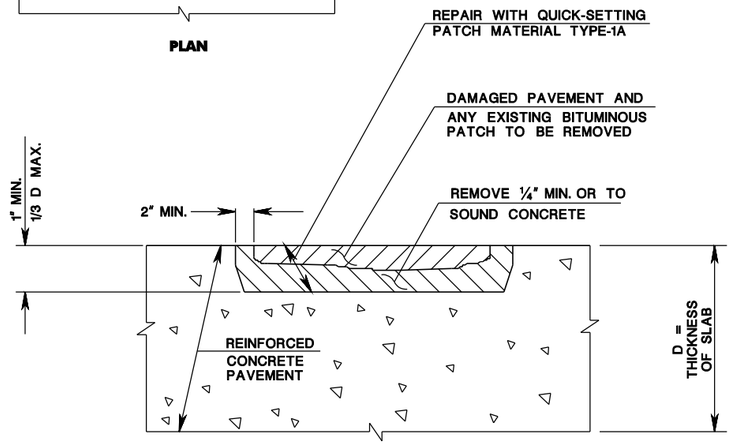

SECTION A–A

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.

CD-452-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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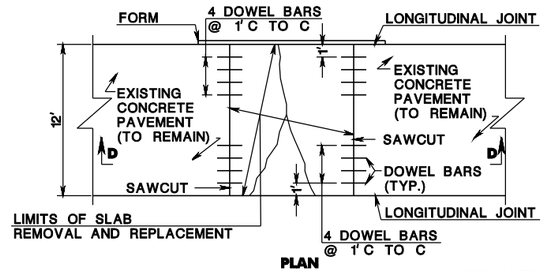

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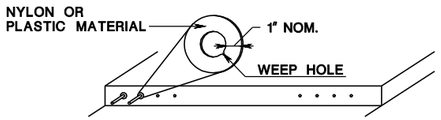
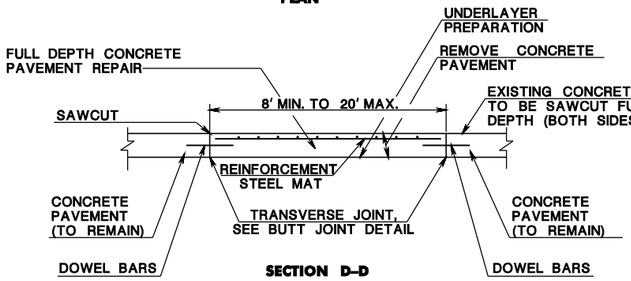


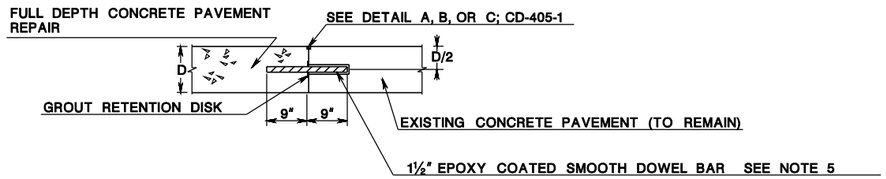
GROUT RETENTION DISK FOR 1 1/2 " EPOXY COATED SMOOTH DOWEL BAR



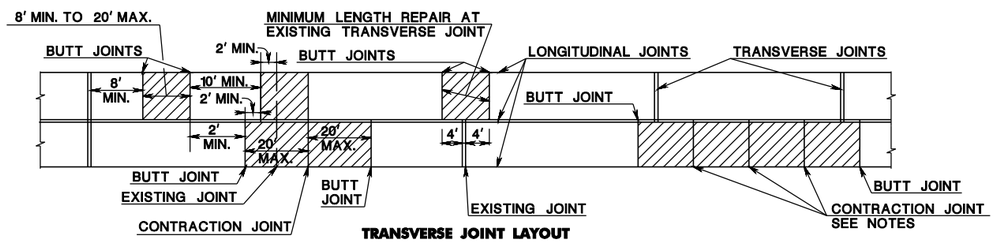
SECTION D–D

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 1⅝" HOLES FOR THE DOWEL BARS. EPOXY GROUT DOWEL BARS INTO DRILLED HOLES.



BUTT JOINT DETAIL



TRANSVERSE JOINT LAYOUT

FULL DEPTH CONCRETE PAVEMENT REPAIR

N.T.S.

CD-453-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-453-1.1

32
164

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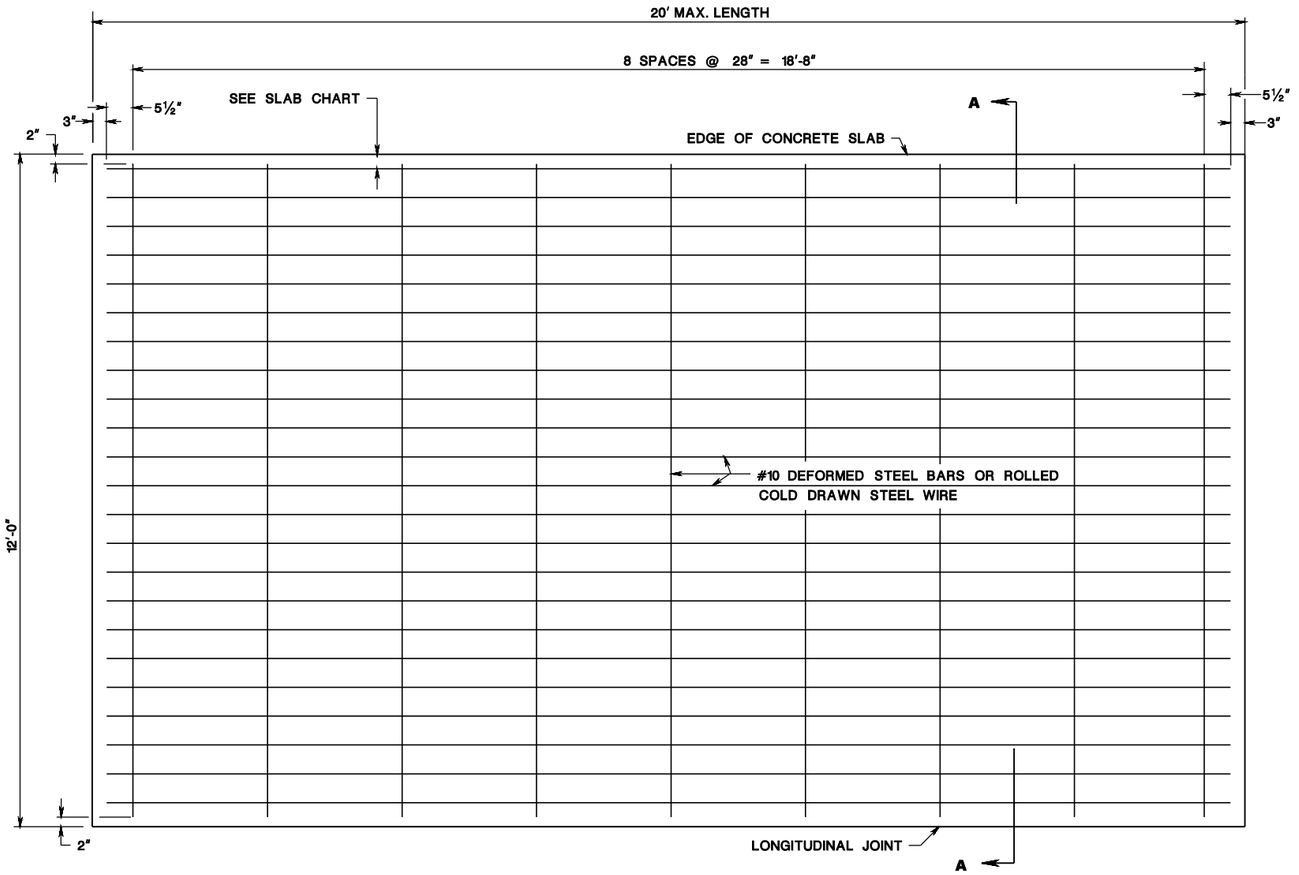


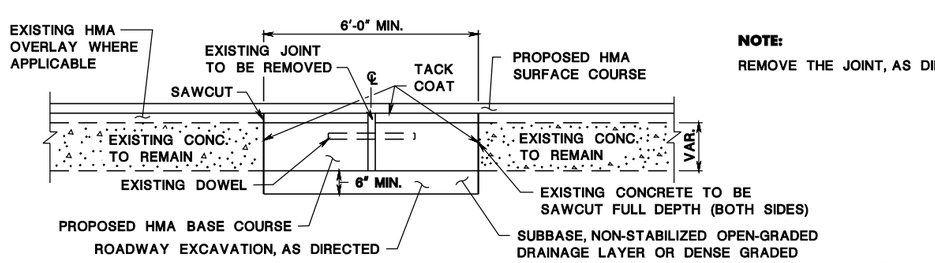
REINFORCEMENT STEEL FOR 12'-0" WIDTH SLAB

NOTES:

1. REINFORCEMENT STEEL MATS DIFFERING WITH RESPECT TO THEIR LENGTH, SPACING OF TRANSVERSE REINFORCEEMENT 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 7½" FOR SLABS WITH A THICKNESS OF LESS THAN 10" AND 6" FOR SLABS WITH A THICKNESS OF 10" OR GREATER.



NOTE:
REMOVE THE JOINT, AS DIRECTED.

FULL DEPTH CONCRETE PAVEMENT REPAIR, HMA

CD-453-2.2

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.

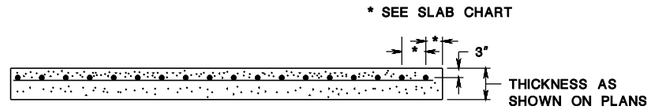
ENSURE THAT THE EDGE CLEARANCES 3 INCHES FOR OUTSIDE LONGITUDINAL WIRE.

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 __

NOTE:
REINFORCEMENT STEEL ARE IN METRIC UNITS.

CD-453-2.1

FULL DEPTH CONCRETE PAVEMENT REPAIR

N.T.S.

CD-453-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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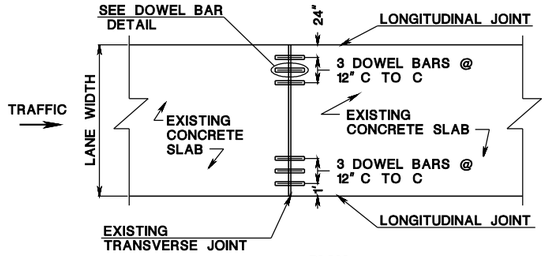

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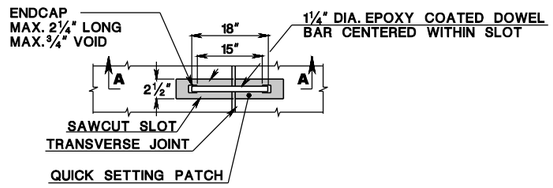
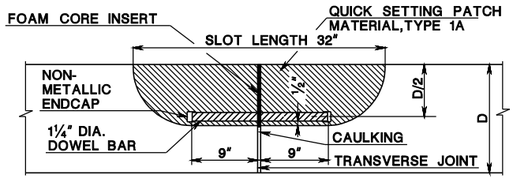


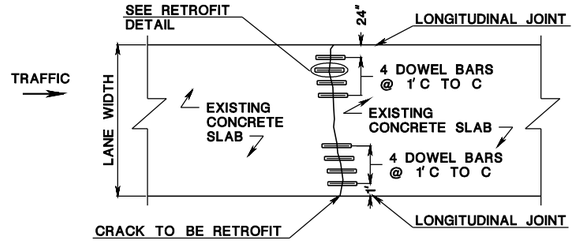
DOWEL BAR DETAIL



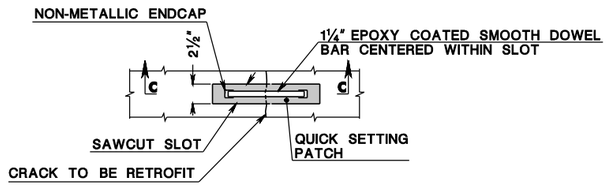
SECTION B–B

RETROFIT DOWEL BARS AT EXISTING JOINT

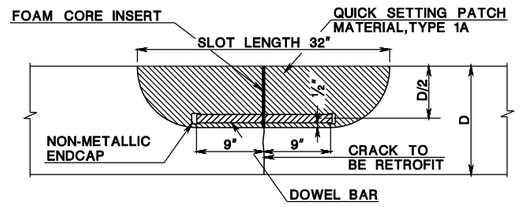
CD-454-1.1



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

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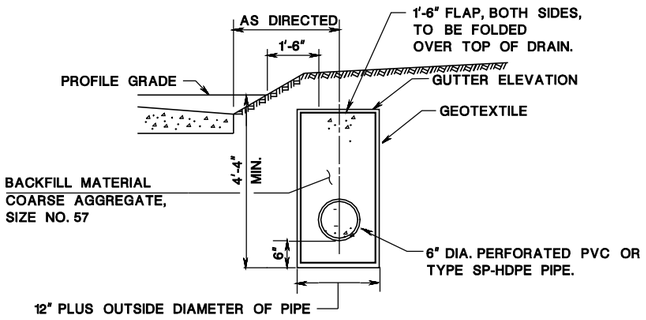
NOTES:

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



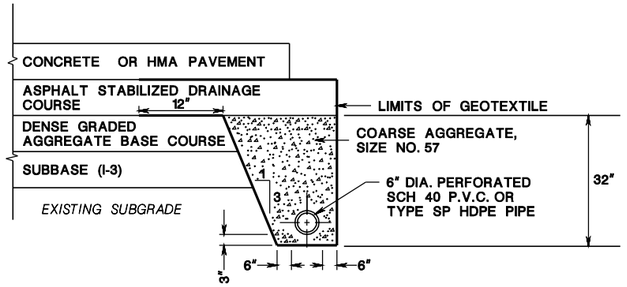
UNDERDRAIN TYPE F

CD-601-1.1

NOTES:

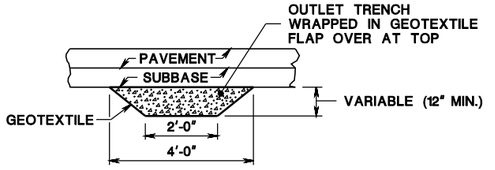
AFTER PLACING ASPHALT STABILIZED DRAINAGE COURSE, OVERLAP WITH GEOTEXTILE TO PROTECT THE EXPOSED SURFACE.

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.

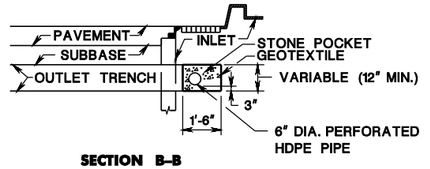


UNDERDRAIN TYPE X

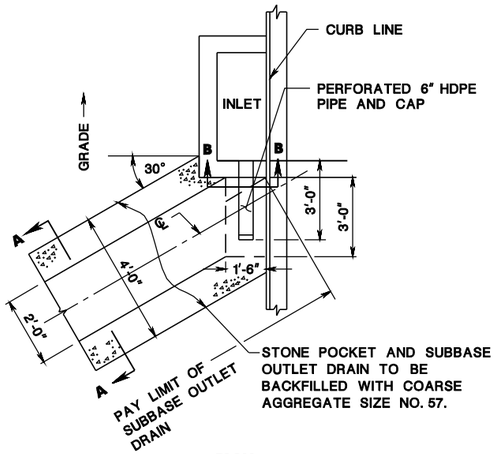
CD-601-1.2



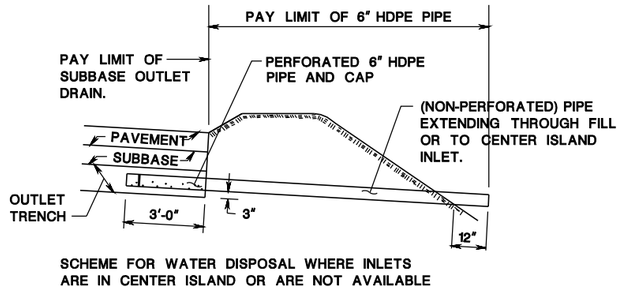
SECTION A–A



SECTION B–B



PLAN



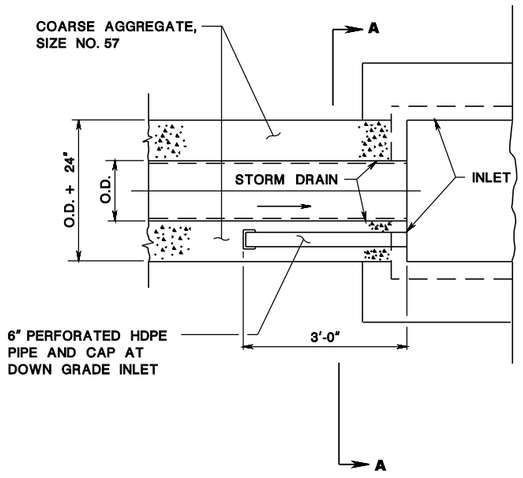
SCHEME FOR WATER DISPOSAL WHERE INLETS ARE IN CENTER ISLAND OR ARE NOT AVAILABLE

NOTES:

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

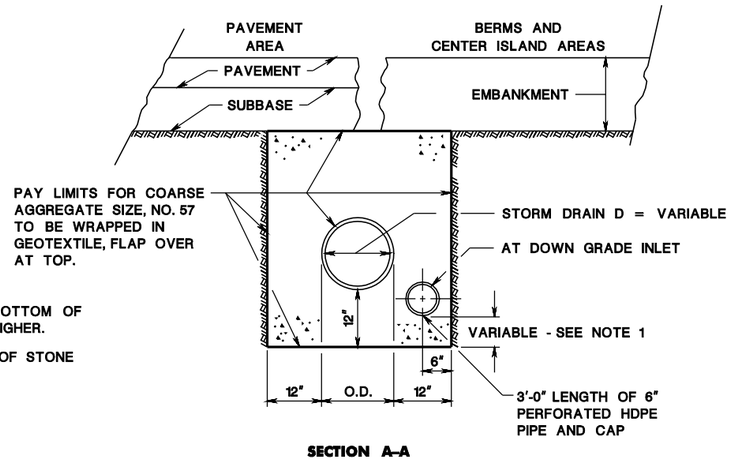
SUBBASE OUTLET DRAIN

CD-601-1.3



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.



SECTION A–A

COMBINED STORM DRAIN AND OUTLET TRENCH IN ROCK AREAS

CD-601-1.4

UNDERDRAINS

N.T.S.

CD-601-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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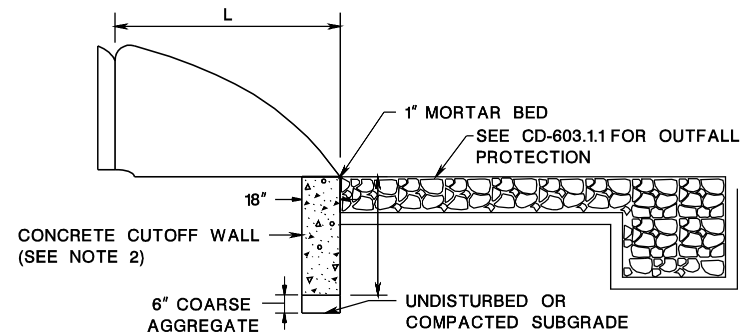
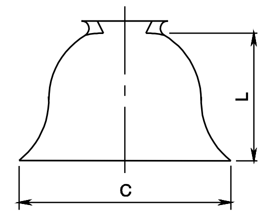
PIPE DIAMETER (INCHES)	STEEL GA.	ALUM. GA.	DIMENSIONS (INCHES)	
			L	C
12	16	16	21	36
15	16	16	26	44
18	16	16	31	52
21	16	16	36	60
24	16	16	41	68
30	14	14	51	84
36	14	12	60	100
42	12	12	69	116
48	12	12	78	126
54	12	12	84	138
60	12	12	87	150
66	12	12	87	156
72	12	12	87	162
78	12	12	87	168
84	12	12	87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

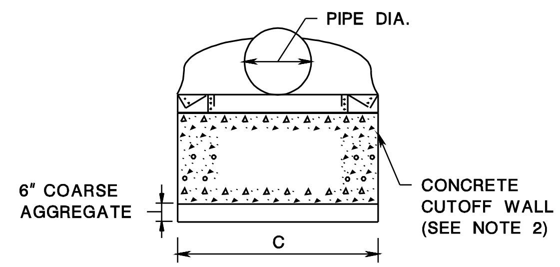
ROUND PIPE

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

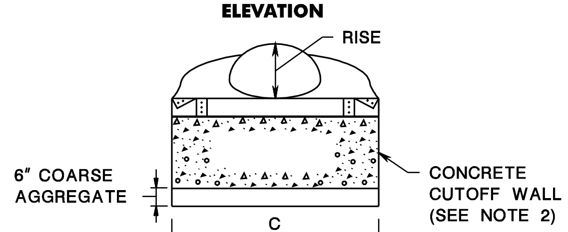
ARCH PIPE







ELEVATION



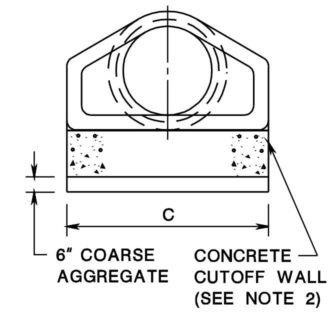
ELEVATION

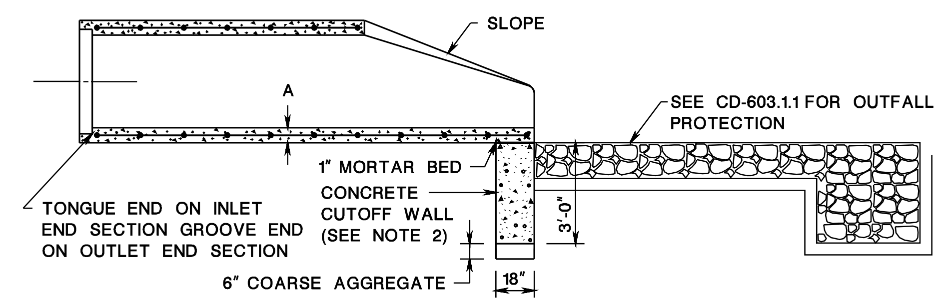
NOTES:

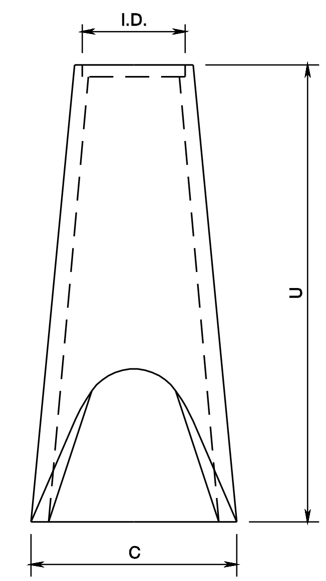
1. MINOR VARIATIONS TO THE ABOVE DIMENSIONS ARE ACCEPTABLE WITH THE EXCEPTION OF THE INSIDE DIAMETER DIMENSION.
2. A 1 INCH THICK MORTAR BED AND A 6 INCH DEEP LAYER OF COURSE AGGREGATE ARE REQUIRED WHEN A PRECAST CONCRETE CUTOFF WALL IS USED.
3. REFER TO NOTE 3, CD-601-2.2 FOR SIZE OF CONCRETE CUTOFF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

CORRUGATED ALUMINUM ALLOY END SECTION

CD-601-2.1







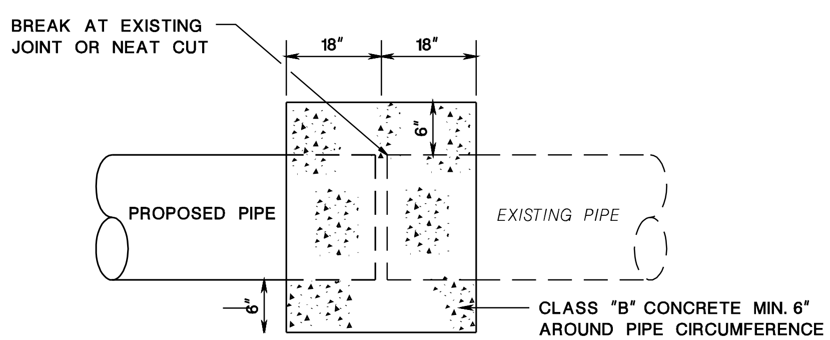
DIMENSIONS (INCHES)												
I.D.	12	15	18	21	24	27	30	36	42	48	54	60
A	2	2¼	2½	2¾	3	3¼	3½	4	4½	5	5½	6
U	72	72	72	72	72	72	72	96	96	96	96	96
C	28	34.5	41	47.5	54	60.5	67	80	87	94	101	108

NOTES:

1. MINOR VARIATIONS TO THE ABOVE DIMENSIONS ARE ACCEPTABLE WITH THE EXCEPTION OF THE INSIDE DIAMETER DIMENSION.
2. A 1 INCH THICK MORTAR BED AND A 6 INCH DEEP LAYER OF COARSE AGGREGATE ARE REQUIRED WHEN A PRECAST CONCRETE CUTOFF WALL IS USED.
3. 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

N.T.S.

CD-601-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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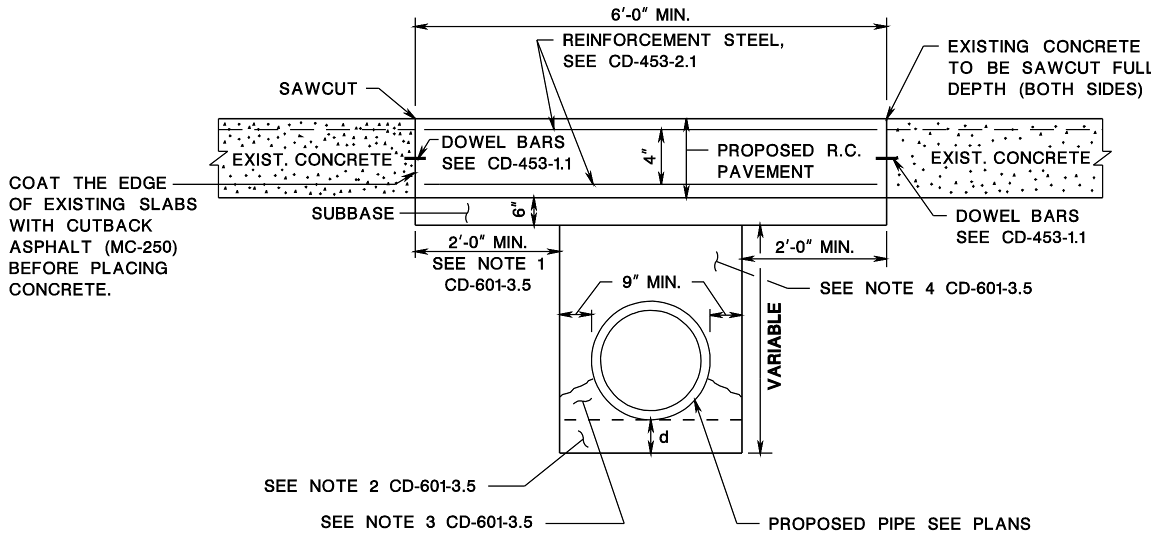
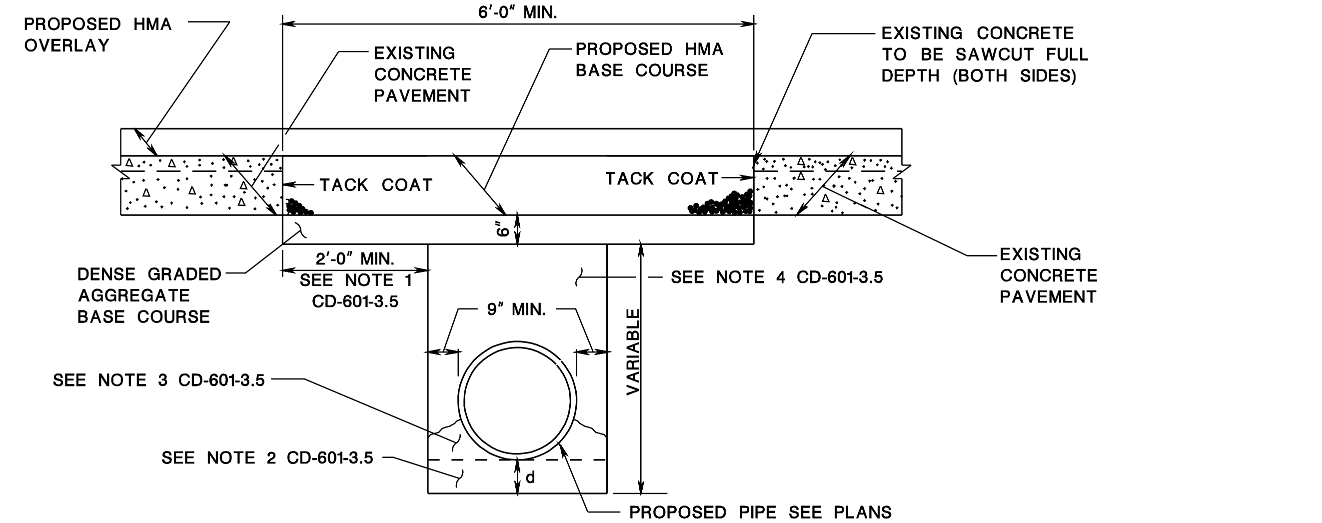


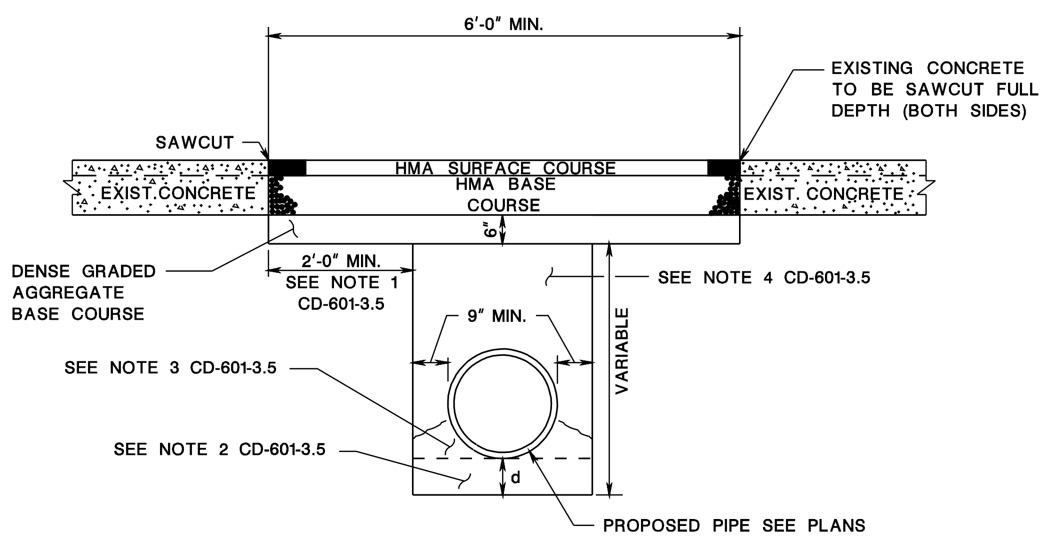
CONCRETE SURFACE COURSE
REPLACEMENT AT CROSS DRAIN OR UTILITY TRENCH

CD-601-3.1



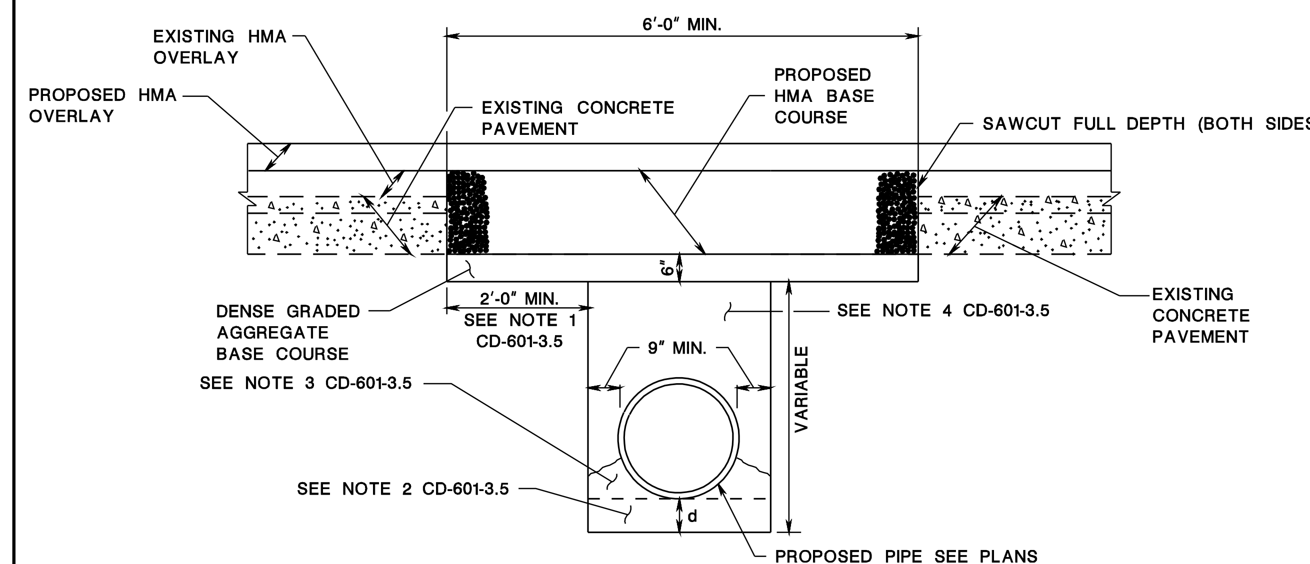
HMA REPLACEMENT WHERE EXISTING
CONCRETE COURSE IS REMOVED AT CROSS DRAIN
OR UTILITY TRENCH WITH PROPOSED RESURFACING

CD-601-3.2



HMA REPLACEMENT WHERE CONCRETE COURSE
IS REMOVED AT CROSS DRAIN OR UTILITY TRENCH

CD-601-3.3



HMA REPLACEMENT WHERE EXISTING
OVERLAY AND CONCRETE COURSE IS REMOVED AT
CROSS DRAIN OR UTILITY TRENCH WITH PROPOSED RESURFACING

CD-601-3.4

NOTES:

1. SAWCUT THE EXISTING PAVEMENT A MINIMUM OF 2'-0" FROM THE SIDES OF THE PROPOSED CROSS DRAIN OR UTILITY TRENCH EXCAVATION ON BOTH SIDES.
2. ADDITIONAL EXCAVATION REQUIRED WHEN PIPE BEDDING IS DESIGNATED, OR WHEN ROCK OR OTHER HARD MATERIAL IS ENCOUNTERED.
3. BACKFILL TO BE PLACED SO AS TO ENSURE SUFFICIENT COMPACTION UNDER PIPE HAUNCHES.
4. 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

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

CROSS DRAIN OR UTILITY TRENCH CONSTRUCTION

N.T.S.

CD-601-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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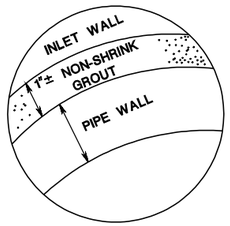
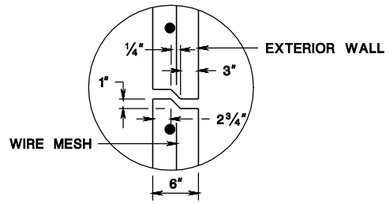


CONNECTION OF PIPE AND INLET FOR PRECAST INLET

CD-602-1.1

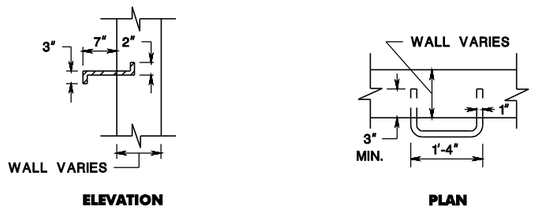


RISER JOINT DETAIL FOR PRECAST INLETS

NOTE:

JOINT TO BE GROUTED WITH MORTAR BY CONTRACTOR

CD-602-1.2

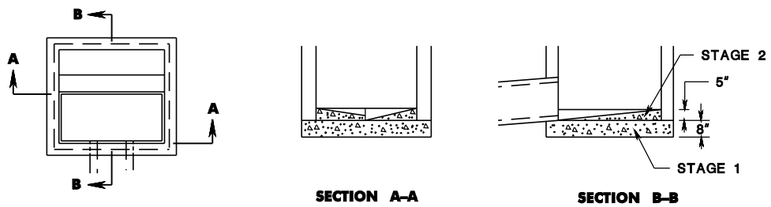


NOTE:

LADDER RUNGS FACING TRAFFIC 12" C TO C

LADDER RUNG DETAIL

CD-602-1.3

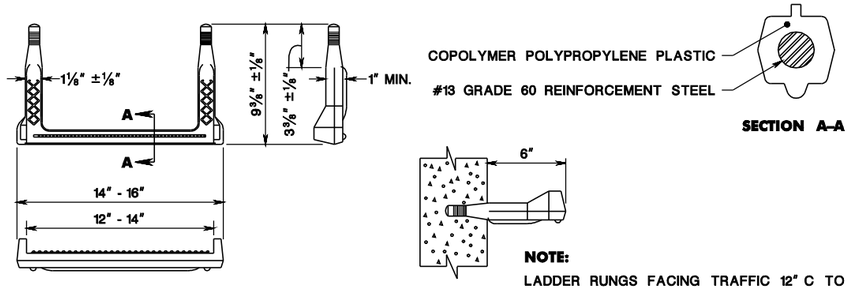


NOTE:

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

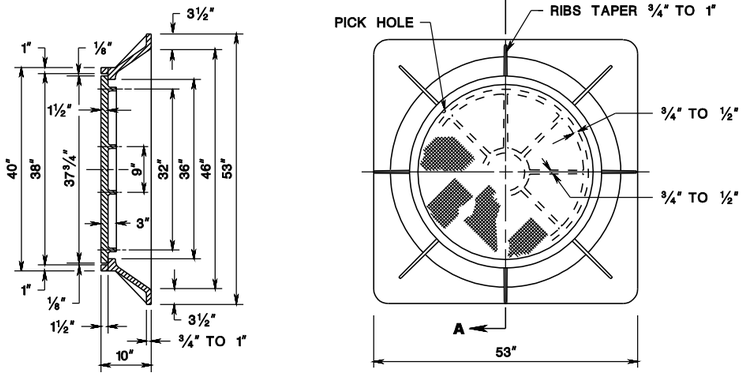
DETAIL OF INVERT FOR INLET WITHOUT CONTINUOUS PIPE

CD-602-1.4



COPOLYMER POLYPROPYLENE PLASTIC LADDER RUNG

CD-602-1.5



NOTE:

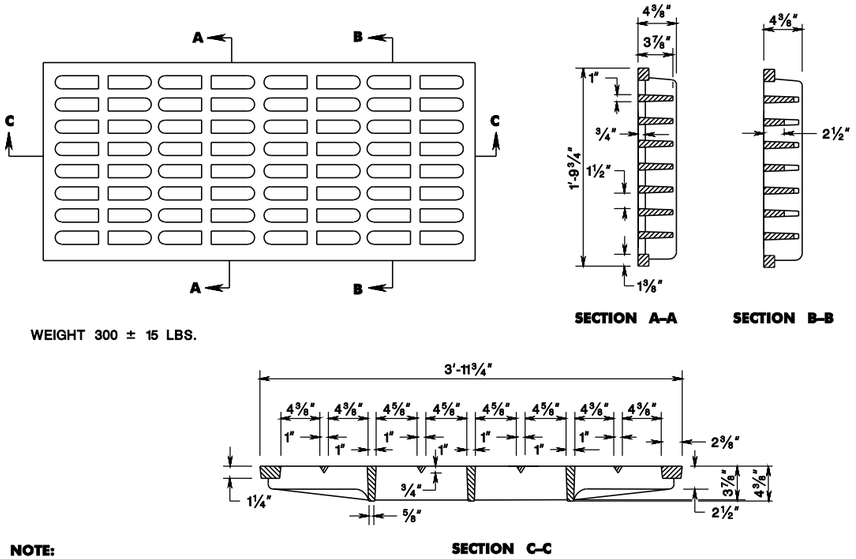
SEE GENERAL NOTE 9, CD-602-1.6

MINIMUM WEIGHTS

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

SQUARE FRAMED MANHOLE CASTING, CIRCULAR COVER

CD-602-1.7



NOTE:

SEE GENERAL NOTE 9, CD-602-1.6

BICYCLE SAFE GRATE (CAST IRON)

CD-602-1.8

GENERAL NOTES:

1. 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.
2. CORBELLING OF INLET WALLS WILL BE PERMITTED AT THE RATE OF ½ INCH PER 8 INCHES OF HEIGHT; MAXIMUM CORBEL 6 INCHES PER WALL.
3. 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.
4. 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.
5. 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.
6. ADJUST CASTINGS FOR PRECAST INLETS TO GRADE WITH COURSES OF BRICK, AS REQUIRED, 12 INCHES MAXIMUM.
7. 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.
8. 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	
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.

9. 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

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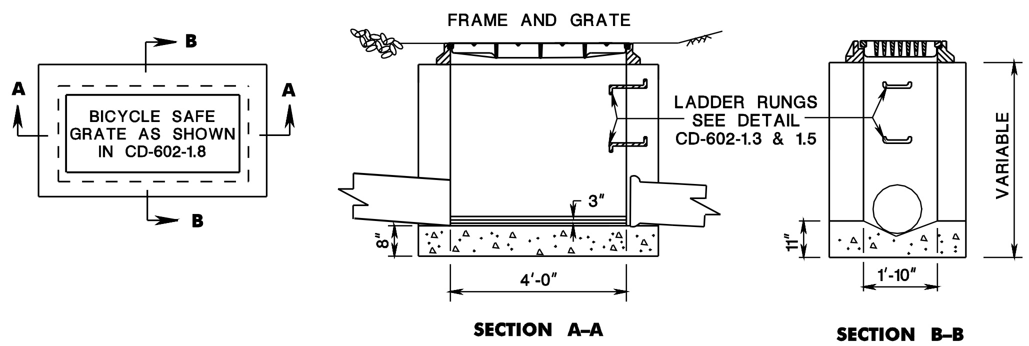
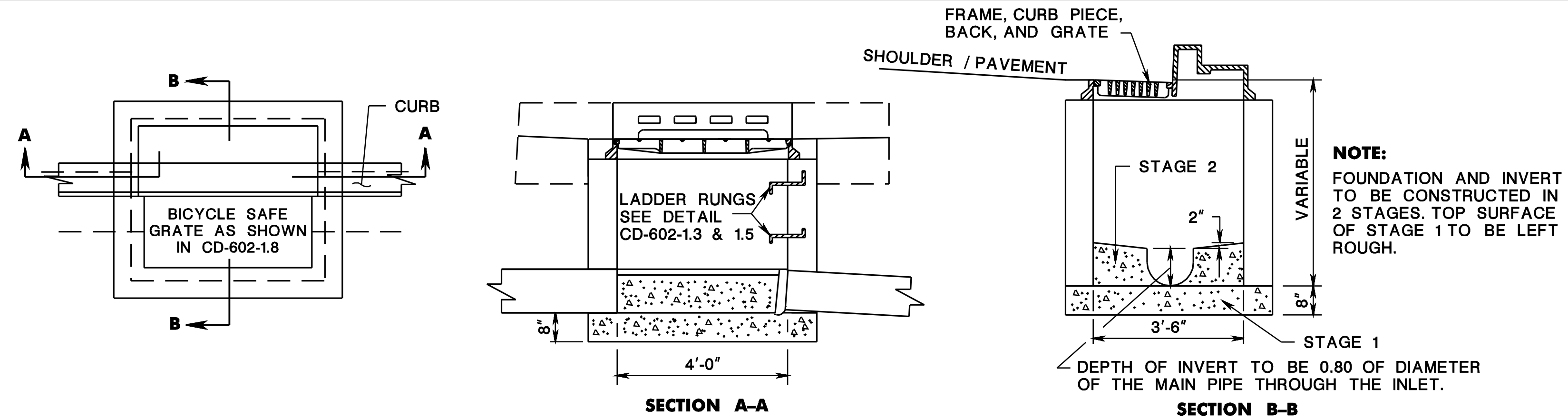


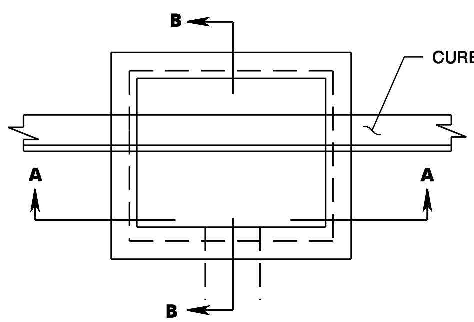
INLET TYPE A

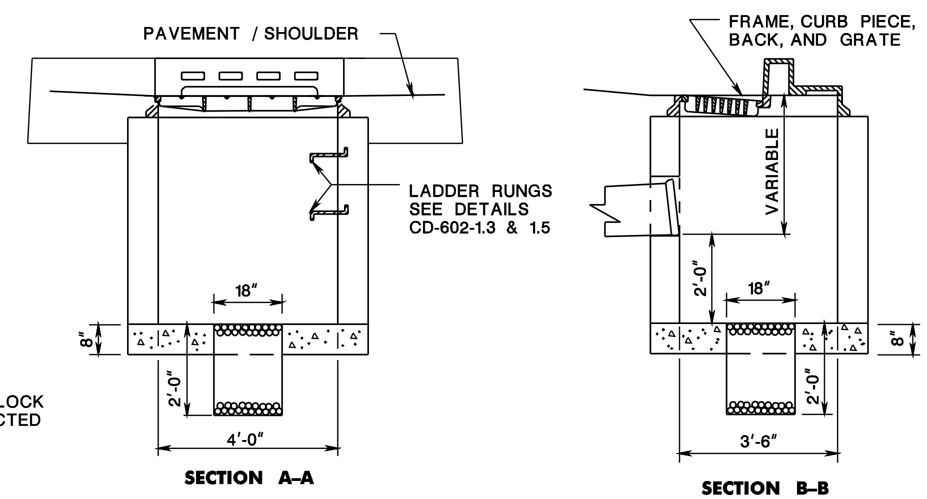
CD-602-2.1



INLET TYPE B

CD-602-2.2

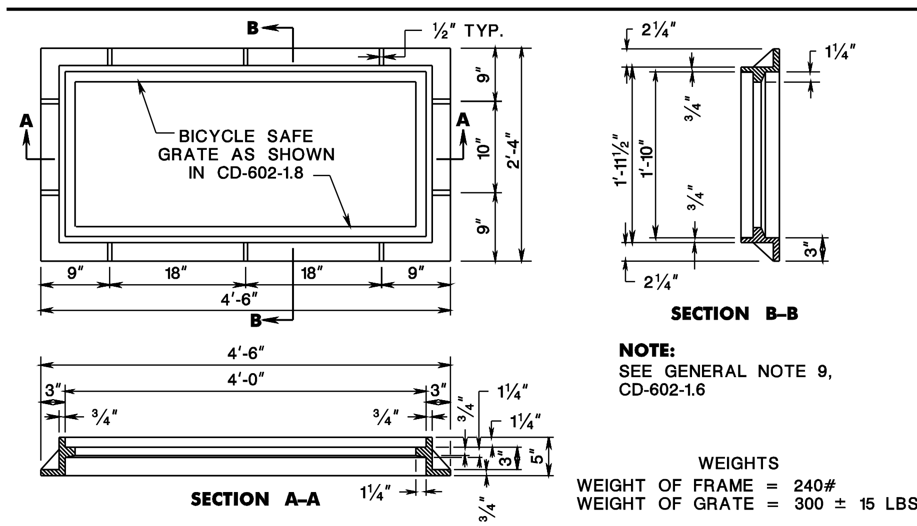




NOTE:
LEAVE ALTERNATE VERTICAL JOINTS OF BRICK OR BLOCK OPEN IN THE FIVE LOWER COURSES. WHEN CONSTRUCTED OF CONCRETE, CONSTRUCT A LEACHING BASIN 18" x 18" x 2'-0" DEEP OF COARSE AGGREGATE #57.

INLET TYPE C

CD-602-2.3



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

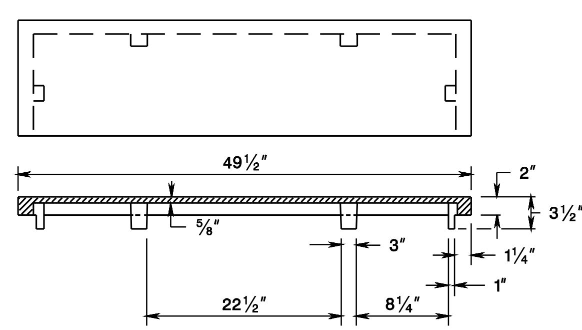
WEIGHTS
WEIGHT OF FRAME = 240#
WEIGHT OF GRATE = 300 ± 15 LBS

INLET TYPE A CASTING

CD-602-2.4

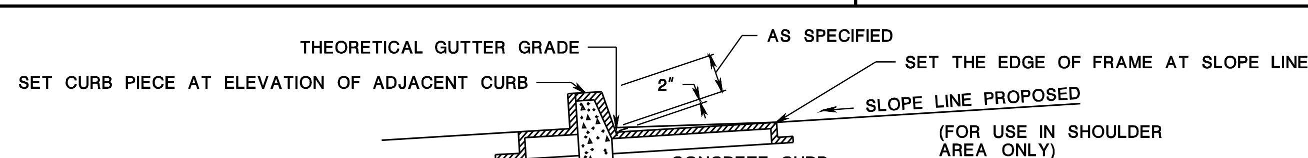
NOTES:

1. MINIMUM WEIGHT = 120#
2. SEE GENERAL NOTE 10, CD-602-1.6



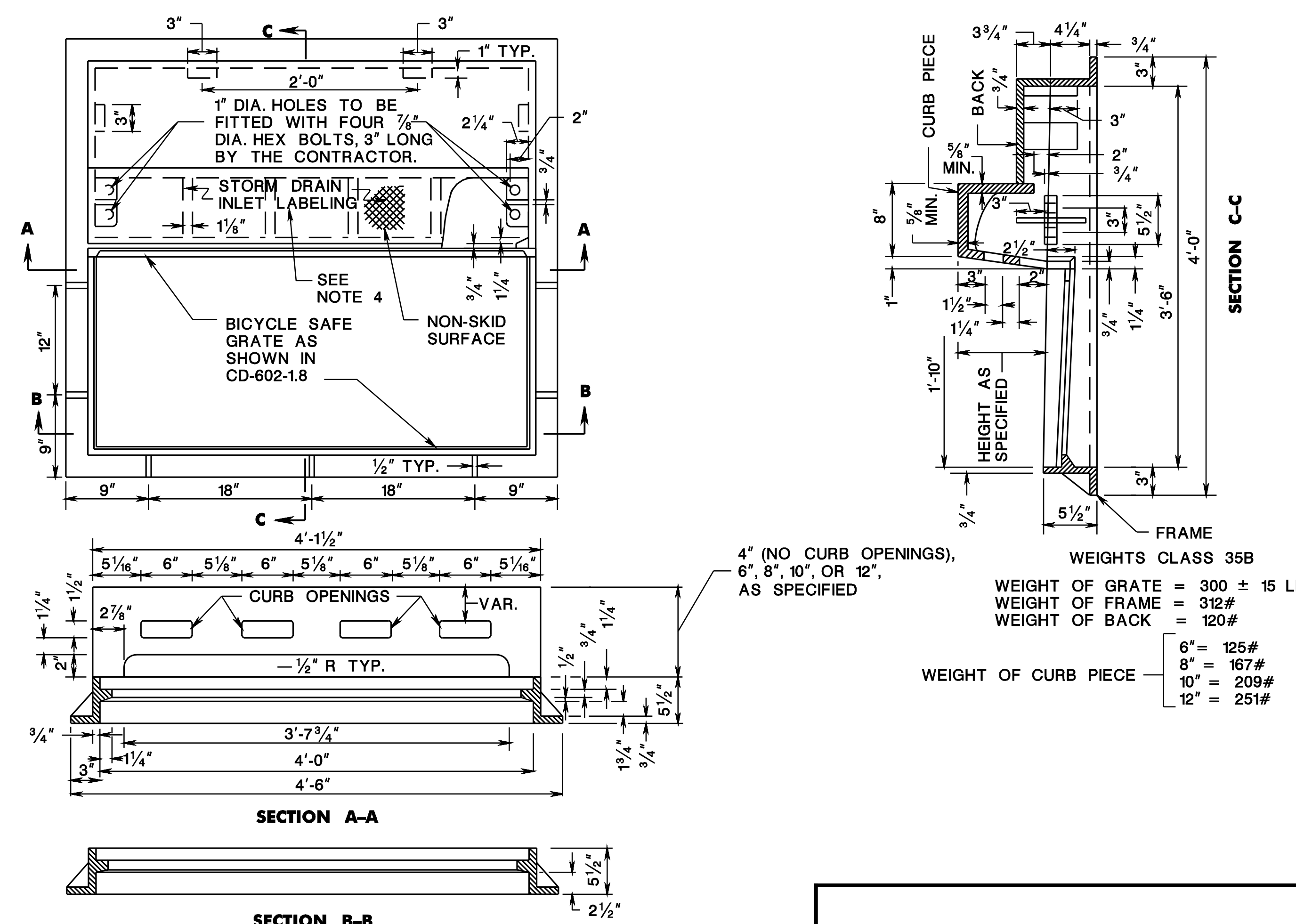
ALTERNATE BACK PLATE

CD-602-2.5



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

CD-602-2.7



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#

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.

INLET TYPE B AND TYPE C CASTING

CD-602-2.6

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

CD-602-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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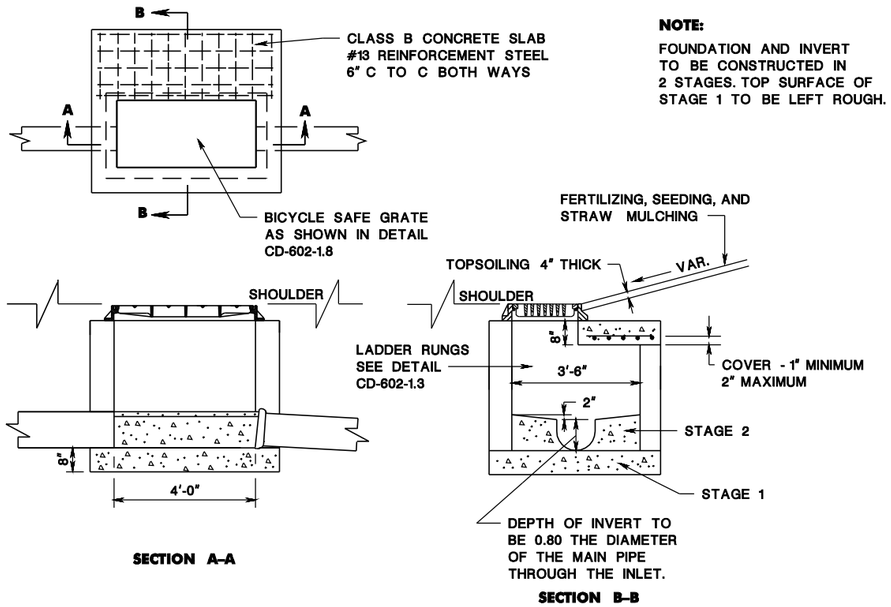


NOTE:

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

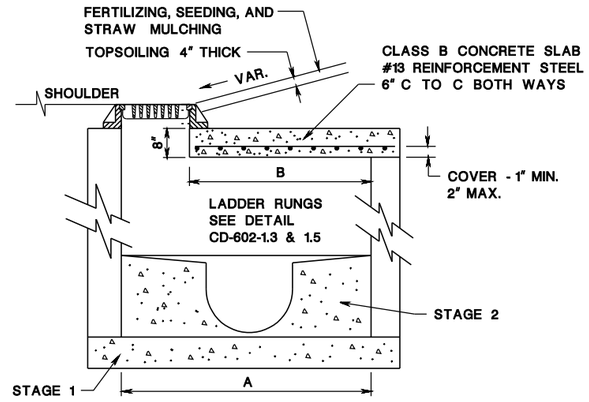
SECTION A–A

SECTION B–B

INLET, TYPE B MODIFIED

CD-602-3.1

INLETS TYPE B1 MODIFIED OR TYPE B2 MODIFIED TO BE OF SAME CONSTRUCTION AND DIMENSIONS AS INLET TYPE B MODIFIED, EXCEPT AS OTHERWISE INDICATED BELOW

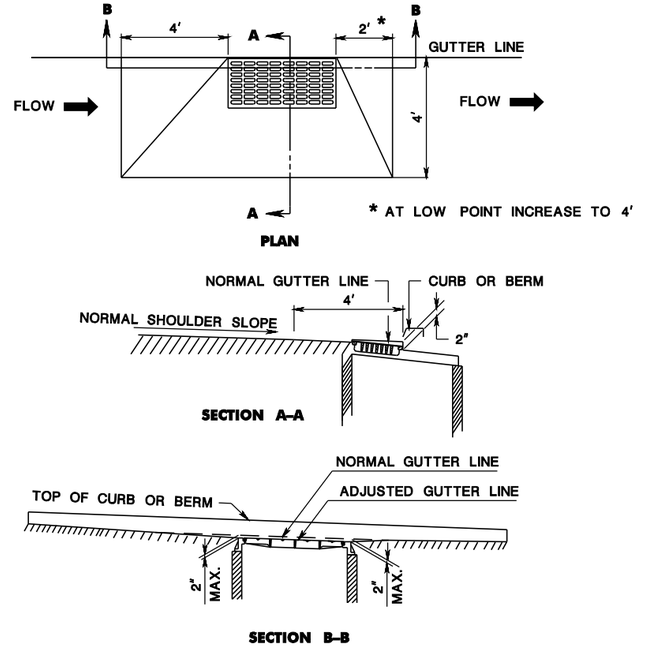


INLET TYPE	DIMENSION A	DIMENSION B
B1 MODIFIED	4'-6"	2'-8"
B2 MODIFIED	5'-6"	3'-8"

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

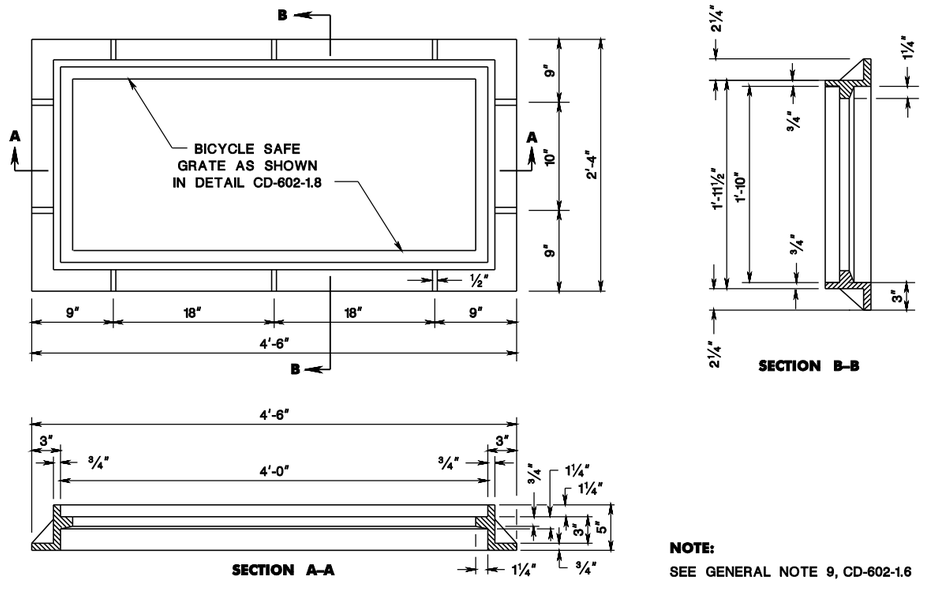
INLETS, TYPE B1 MODIFIED AND TYPE B2 MODIFIED

CD-602-3.2



METHOD OF DEPRESSING INLETS AT SHOULDERS

CD-602-3.3



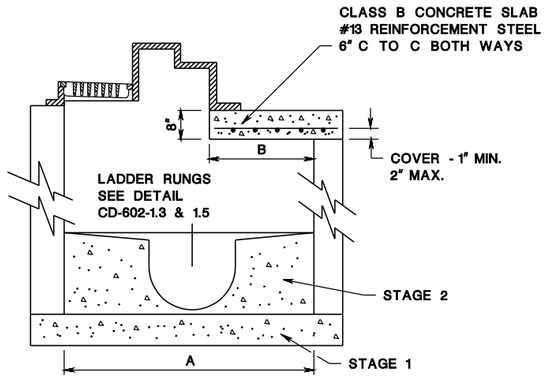
NOTE:

SEE GENERAL NOTE 9, CD-602-1.6

FRAME TO BE USED FOR INLET, TYPE B MODIFIED

CD-602-3.4

INLETS TYPE B1 OR TYPE B2 TO BE OF SAME CONSTRUCTION AND DIMENSIONS AS INLET TYPE B, EXCEPT AS OTHERWISE INDICATED BELOW.



INLET TYPE	DIMENSION A	DIMENSION B
B1	4'-6"	1'-0"
B2	5'-6"	2'-0"

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

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

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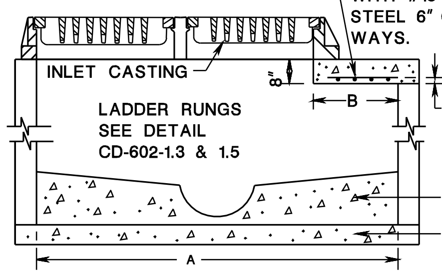
file=

INLETS, TYPE E1 AND TYPE E2

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

NOTE:

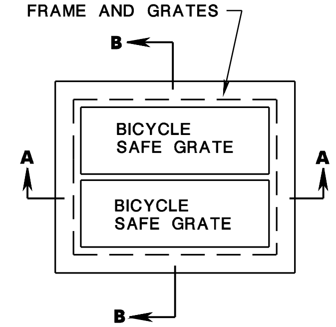
CONSTRUCT FOUNDATION AND INVERT IN TWO STAGES. LEAVE TOP SURFACE OF STAGE 1 ROUGH.

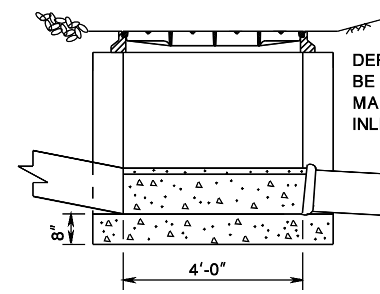


INLET TYPE	DIMENSION A	DIMENSION B
E 1	4'-6"	1'-0"
E 2	5'-6"	2'-0"

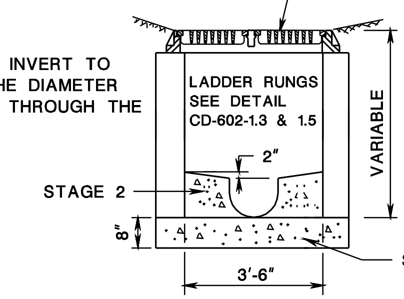
CD-602-4.1

INLET, TYPE E





SECTION A–A

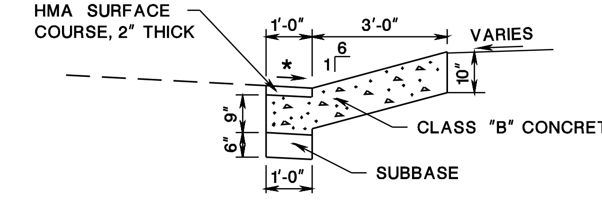


SECTION B–B

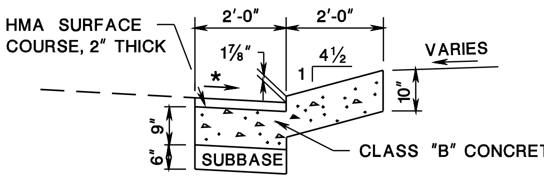
NOTE:

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

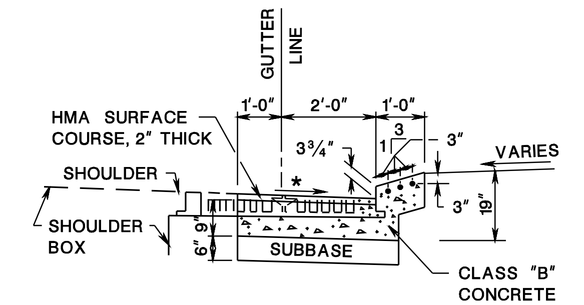
CD-602-4.2



SECTION A–A



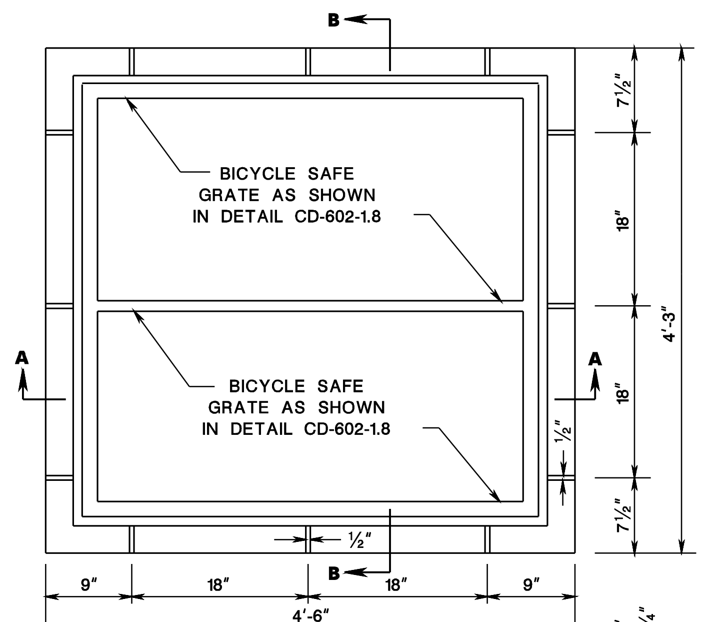
SECTION B–B

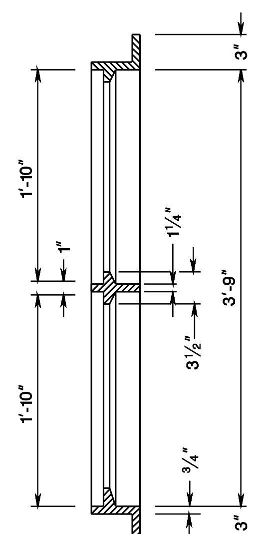


SECTION C–C

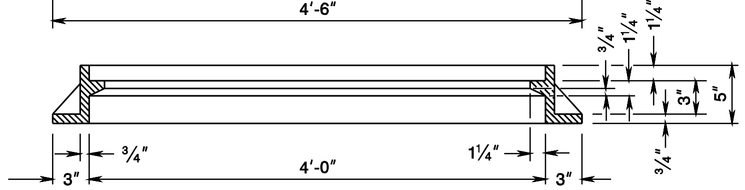
* SAME CROSS-SLOPE AS ADJOINING SHOULDER

FRAME FOR INLET, TYPE E





SECTION B–B



SECTION A–A

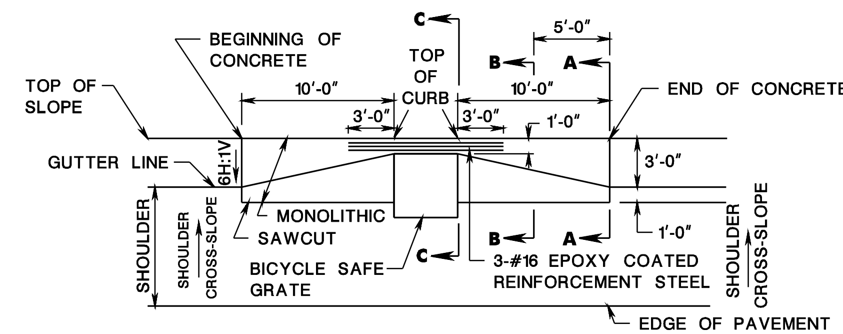
WEIGHT OF FRAME = 435#
WEIGHT OF EACH GRATE = 300 ± 15 LBS

NOTE:

SEE GENERAL NOTE 9, CD-602-1.6

CD-602-4.3

INLET, TYPE ES



PLAN VIEW

NOTE:

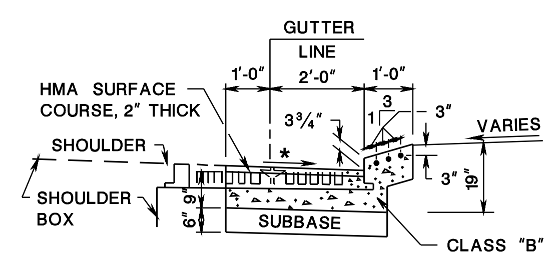
SHAPE THE UNDERLYING MATERIAL AND COMPACTED TO A FIRM, EVEN SURFACE.

NOTE:

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

CD-602-4.4

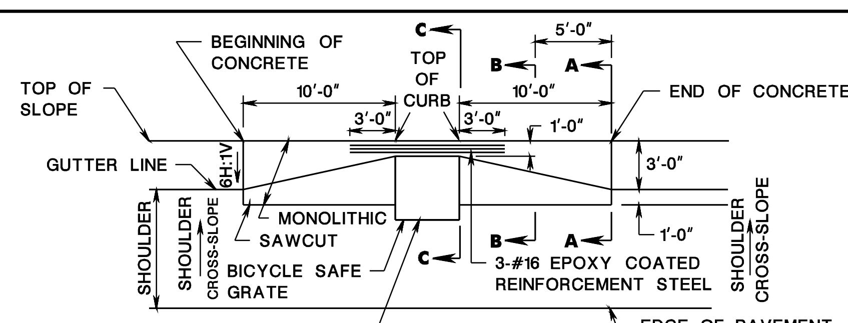
SET INLET TYPE ES, CASTING



SECTION C–C

NOTE:

ITEM INCLUDES EXCAVATION SUBBASE SOIL AGGREGATE I-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.

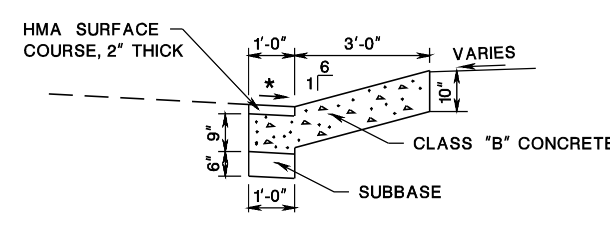


FOR EXISTING INLET TYPE "B", PROVIDE NEW INLET CASTING TYPE "E".
FOR EXISTING INLET TYPE "E" OR "ES" USE EXISTING CASTING.

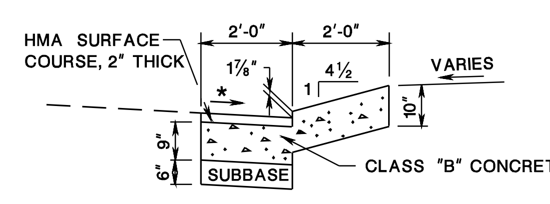
PLAN VIEW

NOTE:

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



SECTION A–A



SECTION B–B

* SAME CROSS-SLOPE AS ADJOINING SHOULDER

CD-602-4.5

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

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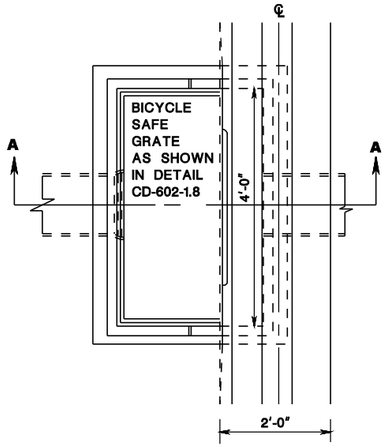
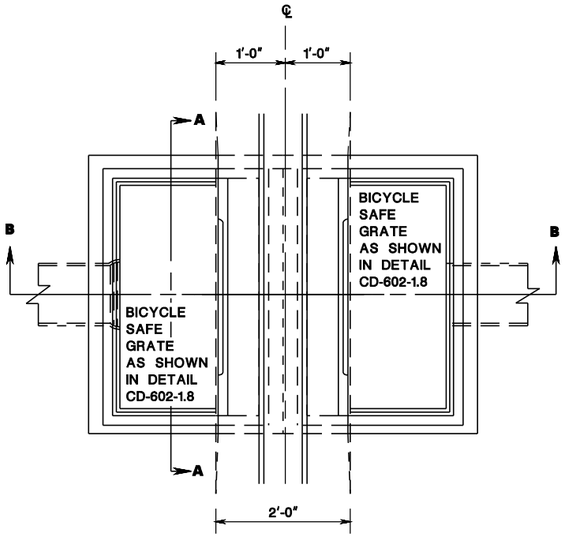
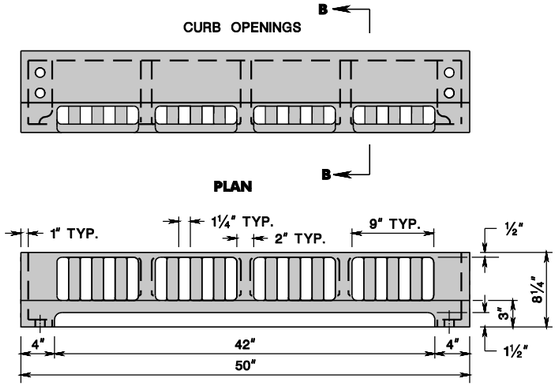
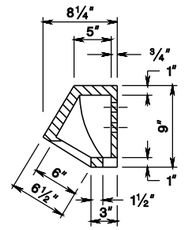




PLAN





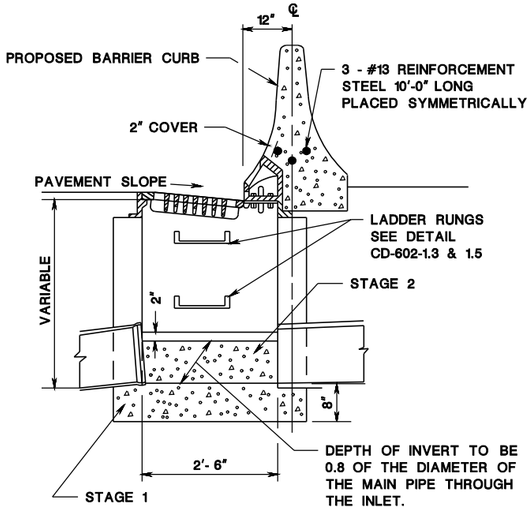
SECTION B–B

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

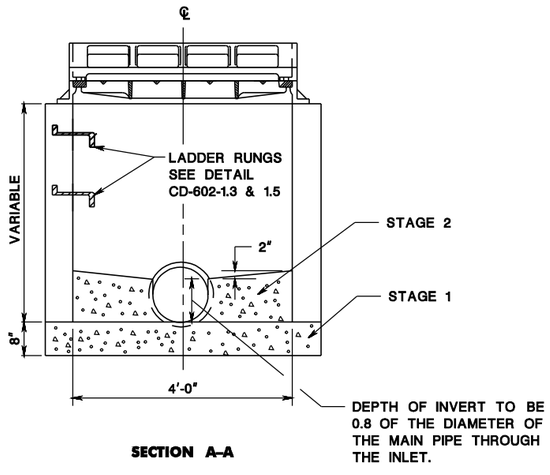


SECTION A–A

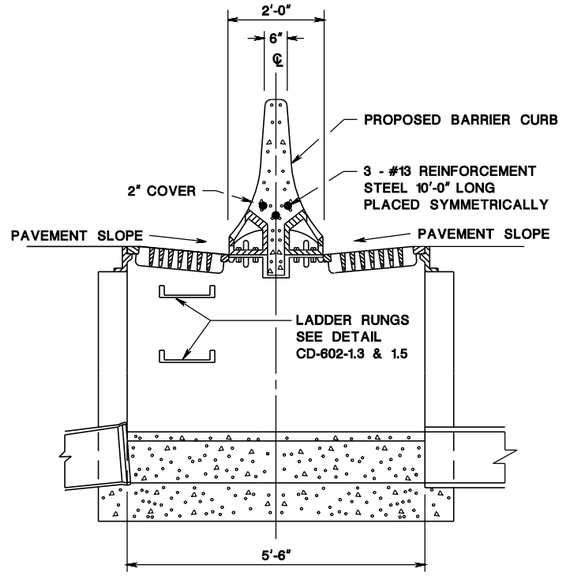
NOTE:
CONSTRUCT FOUNDATION AND INVERT IN 2 STAGES.
LEAVE TOP SURFACE OF STAGE 1 ROUGH.

INLET, TYPE D1

CD-602-5.1



SECTION A–A



SECTION B–B

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

INLET, TYPE D2

CD-602-5.2

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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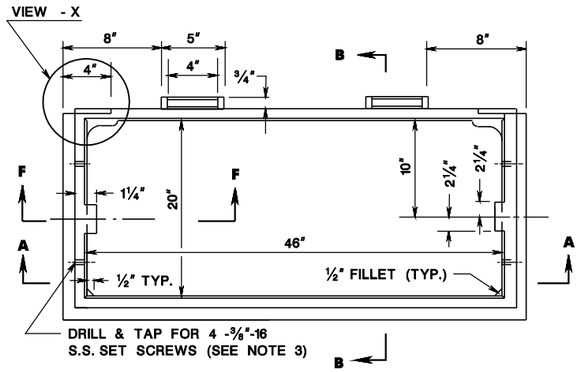
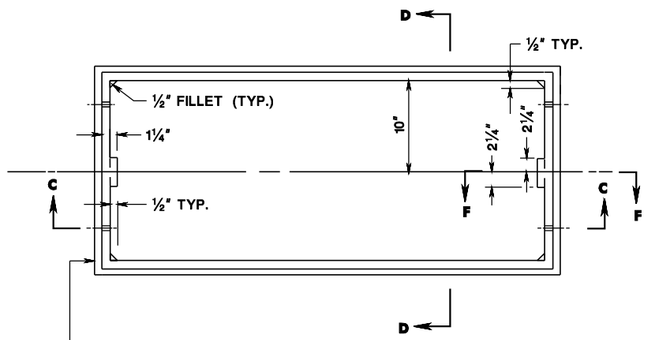
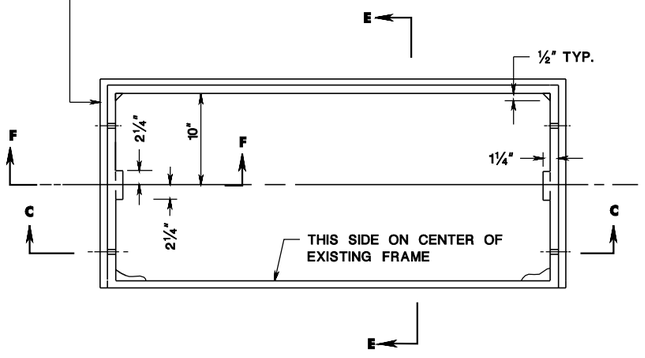


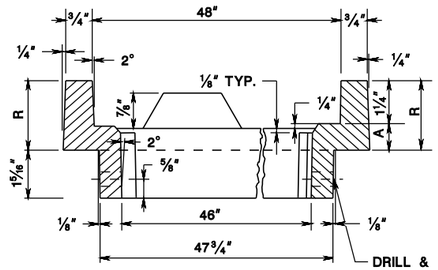
EXTENSION FRAMES FOR INLETS, TYPE B & C AND INLETS, TYPE D1 & D2



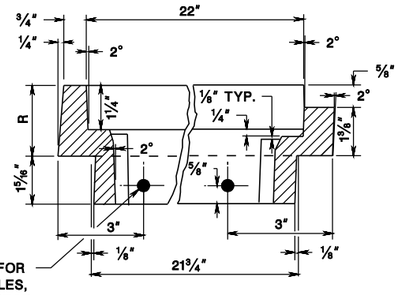
EXTENSION FRAMES FOR INLETS, TYPE A AND B MODIFIED



EXTENSION FRAMES FOR INLET, TYPE E (HALF ONLY)

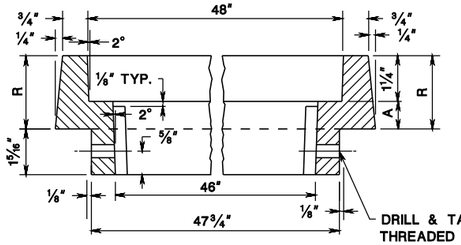


SECTION A–A

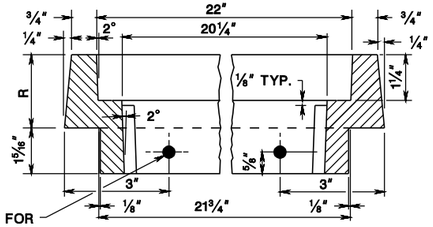


SECTION B–B

DRILL & TAP FOR THREADED HOLES, ⅜" - 16 N.C. THREAD (FOR FUTURE USE) (SEE NOTE 3)



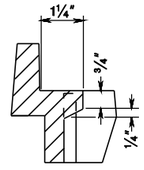
SECTION C–C



SECTION D–D

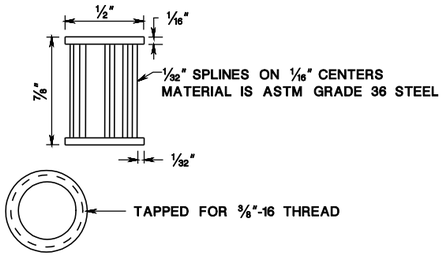
DRILL & TAP FOR THREADED HOLES, ⅜" - 16 N.C. THREAD (FOR FUTURE USE) (SEE NOTE 3)

SECTION E–E

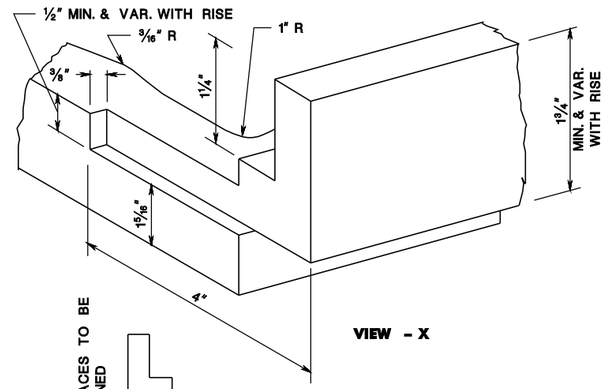


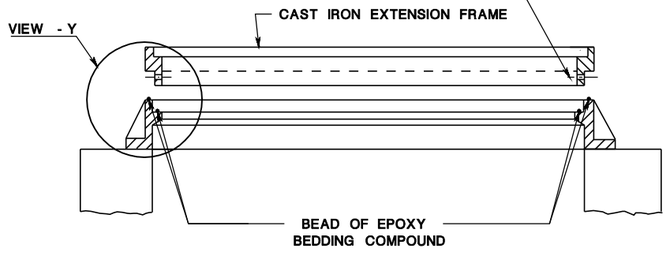
THIS LUG IS ONLY NECESSARY WHEN A BICYCLE SAFE GRATE (CAST IRON) IS USED

SECTION F–F



THREADED INSERT FOR EXTENSION FRAMES ALTERNATE





METHOD OF ATTACHING EXTENSION FRAMES

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-602-1.6

RISE = R	A
1¾"	½"
2"	¾"
2½"	1¼"
3"	1¾"
3½"	2¼"

CD-602-6.1

EXTENSION FRAMES FOR EXISTING INLETS

N.T.S.

CD-602-6

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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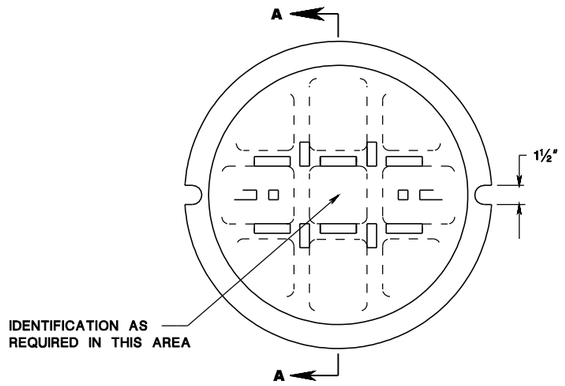
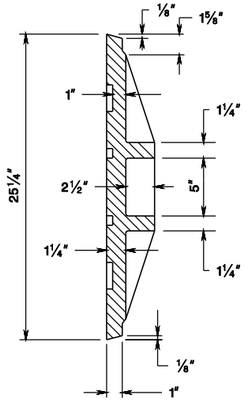
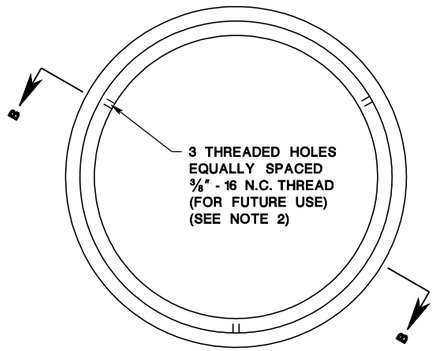
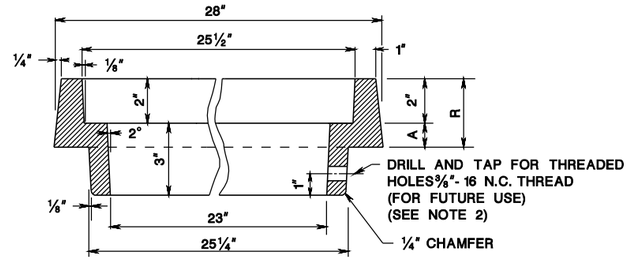




HEAVY DUTY COVER

SECTION A–A

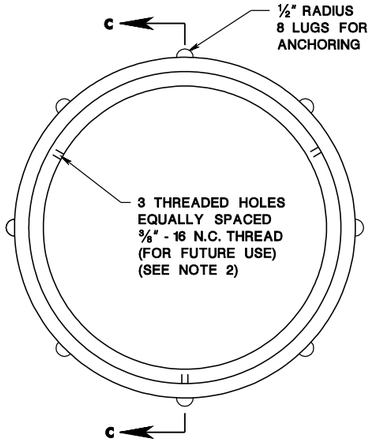


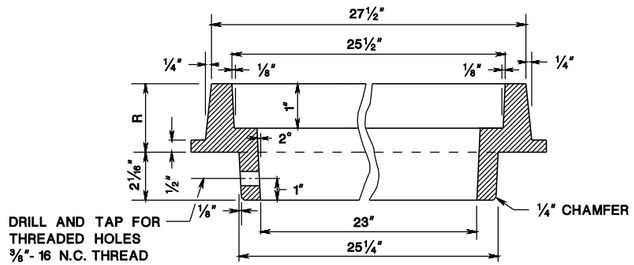


SECTION B–B

R=RISE R=A+2"	A
2½"	½"
3"	1"
3½"	1½"

EXTENSION RING FOR MANHOLE COVER

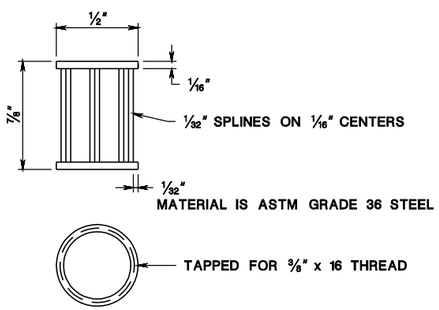




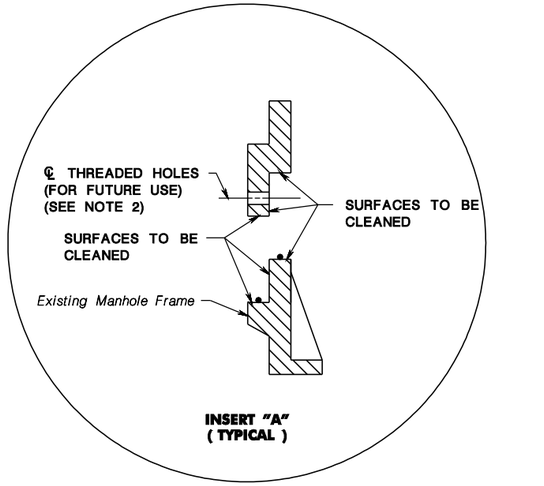
R=RISE
1½"
1¾"
2"

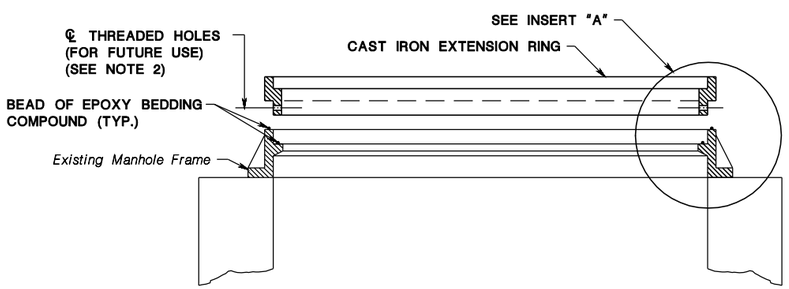
SECTION C–C

EXTENSION RING FOR HEAVY DUTY COVER
(SEE NOTE 3)



THREADED INSERT FOR EXTENSION RING, ALTERNATE





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 1½" TO 2¼" INCLUSIVE.
4. SEE GENERAL NOTE 9, CD-602-1.6.

EXTENSION RING FOR EXISTING MANHOLE

N.T.S.

CD-602-7

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-602-7.1

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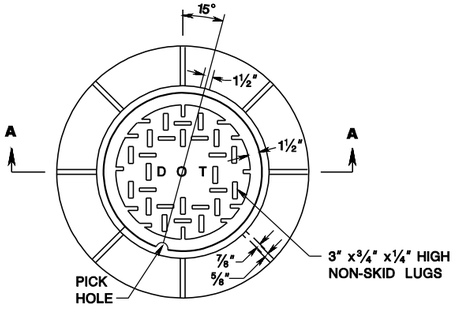
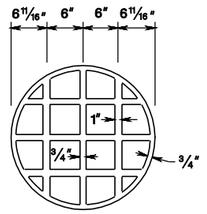
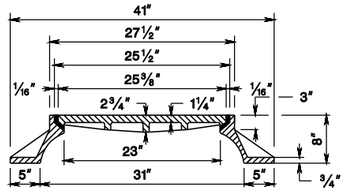




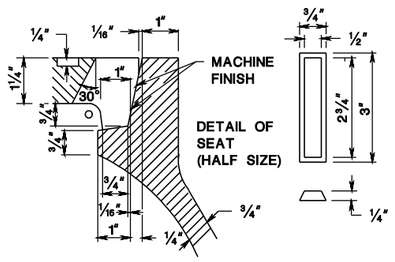
UNDERSIDE OF COVER

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

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



SECTION A–A



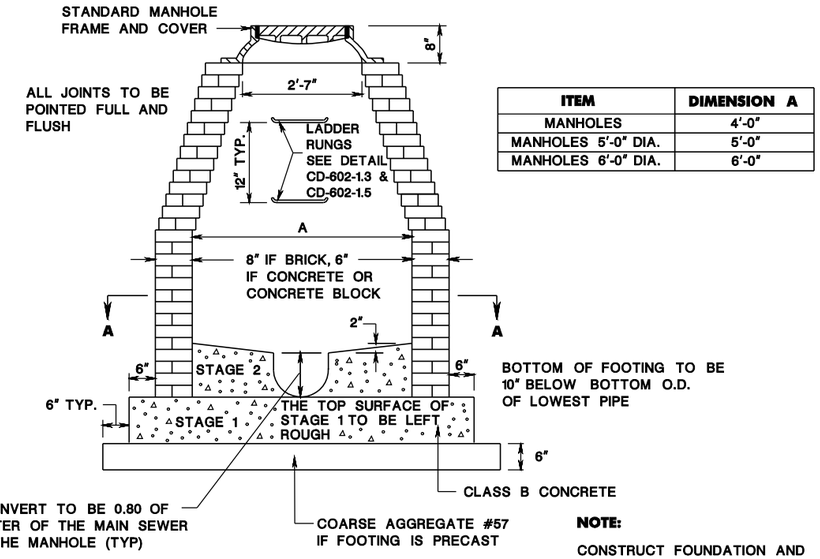
MANHOLE FRAME AND COVER

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, COPOLMYER POLYPROPYLENE PLASTIC LADDER RUNGS MAY BE FURNISHED IN PRECAST MANHOLES AND INLETS.

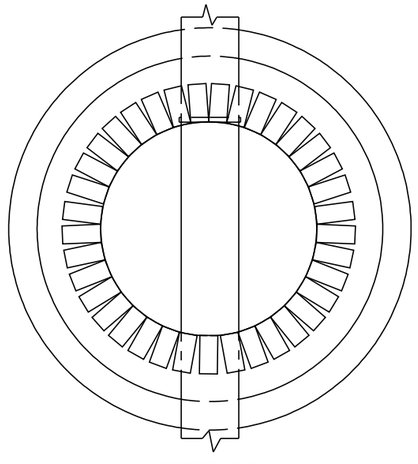
CD-602-8.3



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)

NOTE:
CONSTRUCT FOUNDATION AND INVERT IN TWO STAGES.



SECTION A–A

MANHOLE 5 FOOT DIAMETER, MANHOLE 6 FOOT DIAMETER

CD-602-8.2

MANHOLE
N.T.S.

CD-602-8

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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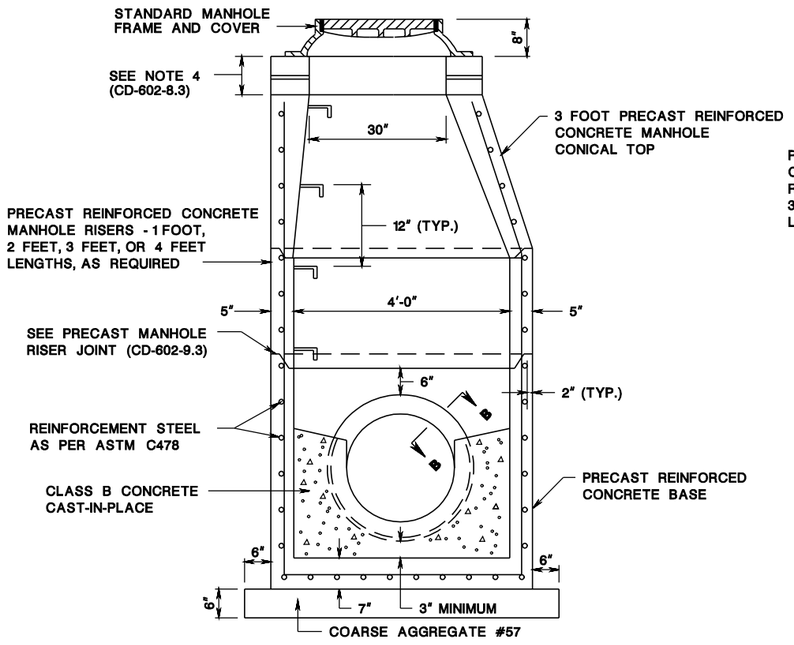
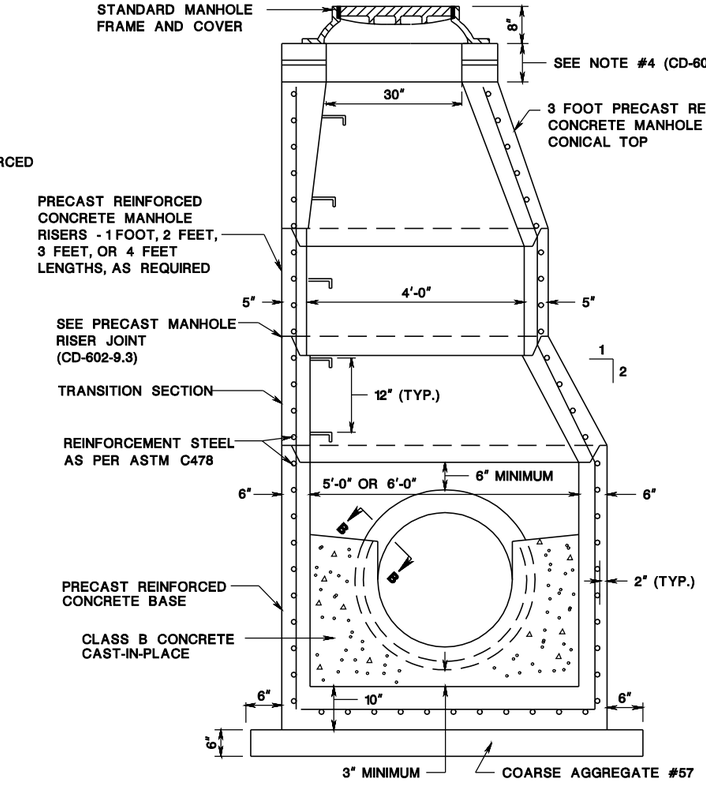


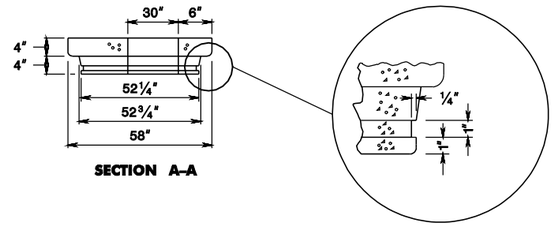
PRECAST REINFORCED CONCRETE MANHOLE SECTIONS TO CONFORM TO ASTM C478

MANHOLE PRECAST CONCRETE



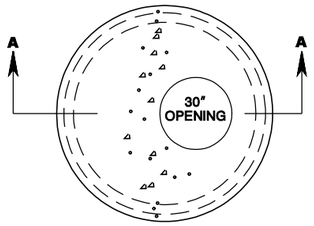
MANHOLE 5' DIAMETER, MANHOLE 6' DIAMETER PRECAST CONCRETE

CD-602-9.1



SECTION A–A

GROOVE FOR "O" RING RUBBER GASKET



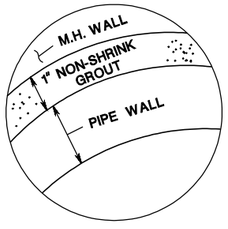
PLAN

NOTE:

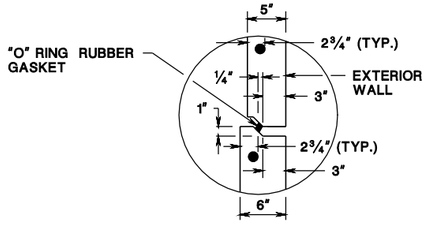
USE IN LIEU OF CONICAL SECTION WHEN HEIGHT OF MANHOLE IS LESS THAN 4 FEET

48" PRECAST REINFORCED CONCRETE MANHOLE FLAT TOP

CD-602-9.2



SECTION B–B



PRECAST MANHOLE RISER JOINT

CD-602-9.3

PRECAST MANHOLE

N.T.S.

CD-602-9

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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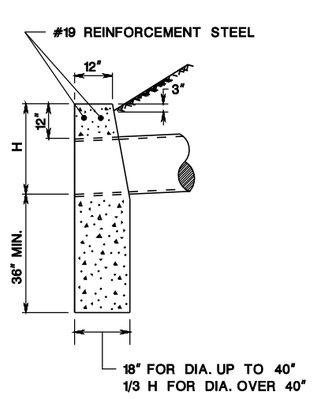
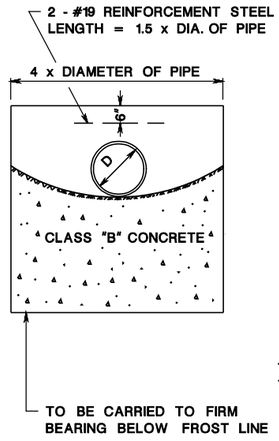
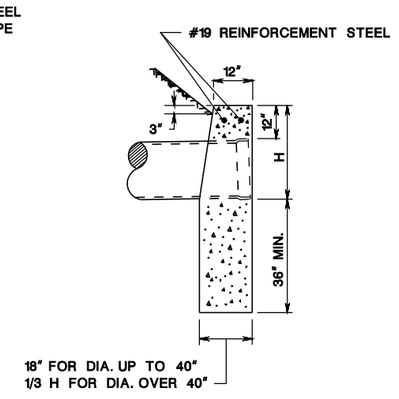


OUTLET





INLET

CONCRETE HEADWALL

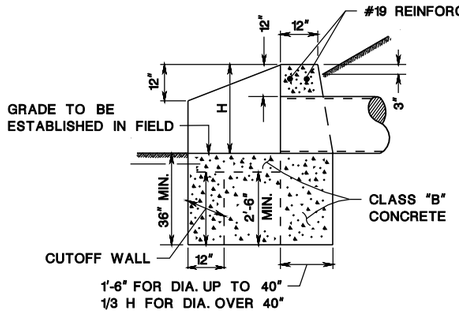
HEADWALL QUANTITY IN CUBIC YARDS

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

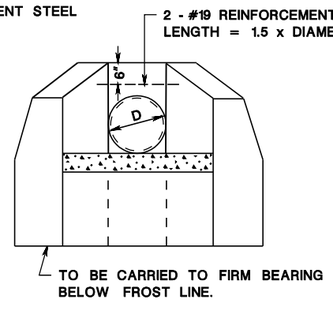
GENERAL NOTES:

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 + 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 x DIAMETER OFF THE CENTERLINE OF THE CONTROLLING PIPE.

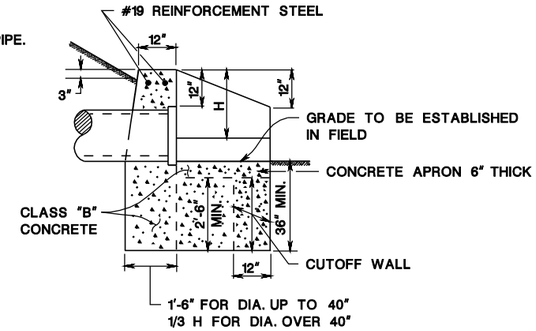
CD-602-10.1



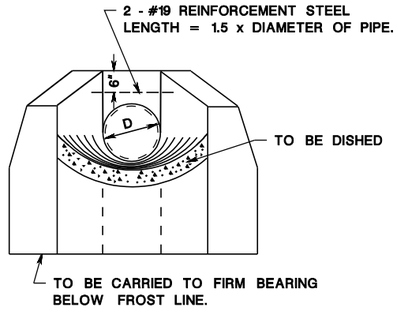
OUTLET END



END VIEW OF OUTLET END



INLET END

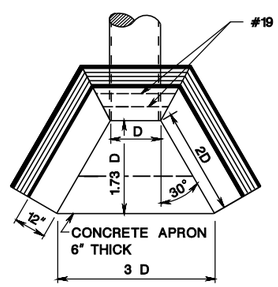


END VIEW OF INLET END ONLY

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



PLAN

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 X 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.

CD-602-10.2

CONCRETE HEADWALL AND APRON

N.T.S.

CD-602-10

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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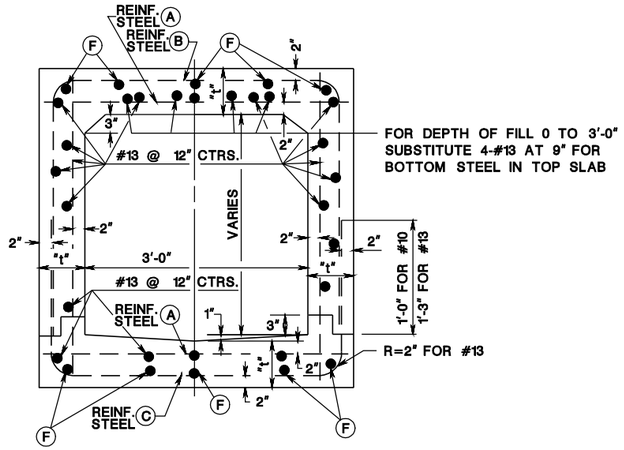
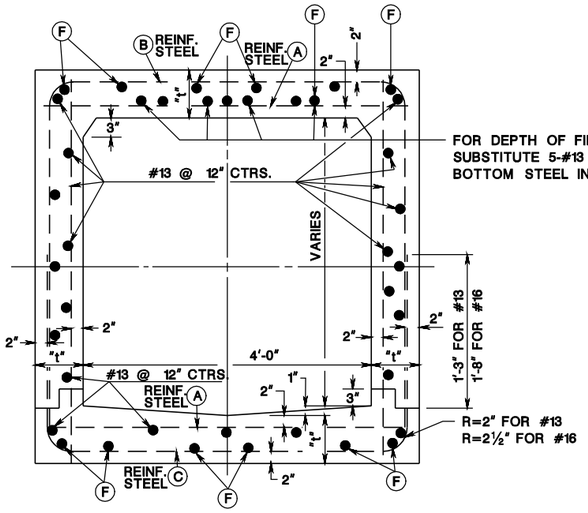
STANDARD 3′–0″ CONCRETE CULVERT



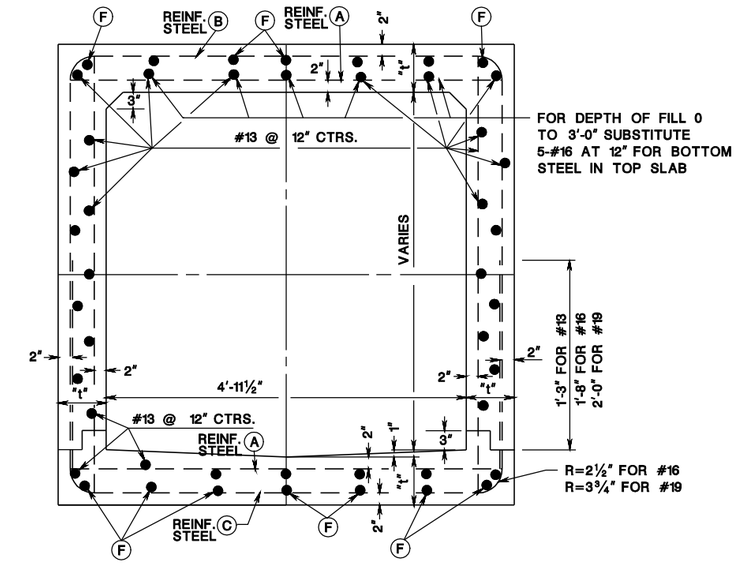
DEPTH OF FILL		REINF. STEEL	SPAN 3 FT.		THICKNESS "t"
MIN.	MAX.		REINF. STEEL	SPACING	
0	3′-0″	A	#13	5″	8″
		B&C	#13	12″	
3′-1″	10′-0″	A	#13	12″	8″
		B&C	#13	12″	
10′-1″	15′-0″	A	#13	9″	8″
		B&C	#13	10″	
15′-1″	20′-0″	A	#13	7″	8″
		B&C	#13	9″	
20′-1″	25′-0″	A	#13	6″	8″
		B&C	#13	7″	

STANDARD 4′–0″ CONCRETE CULVERT



DEPTH OF FILL		REINF. STEEL	SPAN 4 FT.		THICKNESS "t"
MIN.	MAX.		REINF. STEEL	SPACING	
0	3′-0″	A	#13	4″	8″
		B&C	#13	10″	
3′-1″	10′-0″	A	#13	9″	8″
		B&C	#13	12″	
10′-1″	15′-0″	A	#13	6″	8″
		B&C	#13	9″	
15′-1″	20′-0″	A	#16	7″	8″
		B&C	#16	10″	
20′-1″	25′-0″	A	#16	6″	9″
		B&C	#16	10″	

STANDARD 4′ –11 1/2″ CONCRETE CULVERT



DEPTH OF FILL		REINF. STEEL	SPAN 4′–11 1/2″		THICKNESS "t"
MIN.	MAX.		REINF. STEEL	SPACING	
0	3′-0″	A	#16	5″	8″
		B&C	#16	12″	
3′-1″	10′-0″	A	#13	6″	8″
		B&C	#13	9″	
10′-1″	15′-0″	A	#16	7″	9″
		B&C	#16	12″	
15′-1″	20′-0″	A	#16	7″	10″
		B&C	#16	10″	
20′-1″	25′-0″	A	#16	5″	10″
		B&C	#16	8″	
25′-1″	40′-0″	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.

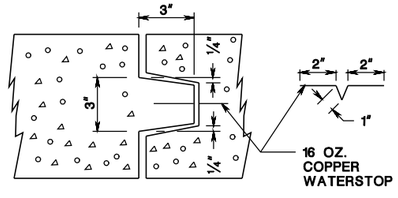
NOTE:
REINFORCEMENT STEEL IS IN METRIC UNITS.

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″					
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.



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

CONCRETE CULVERT

N.T.S.

CD-602-11

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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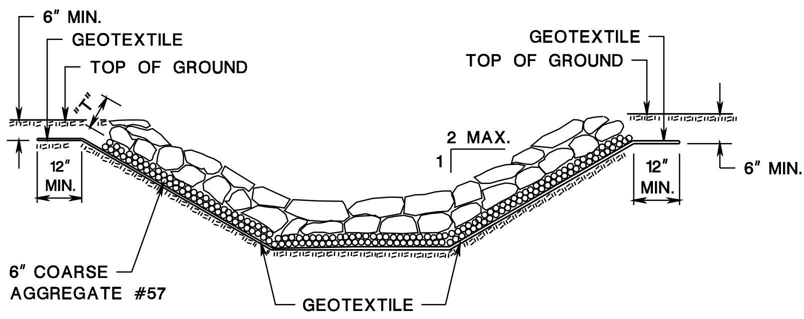
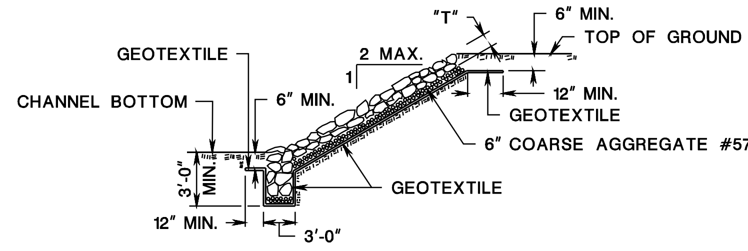
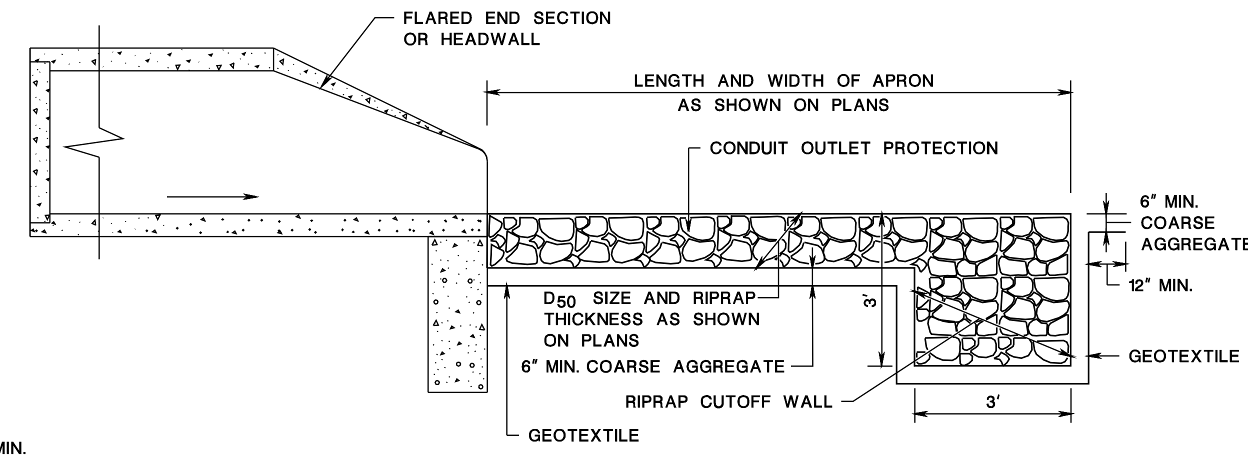


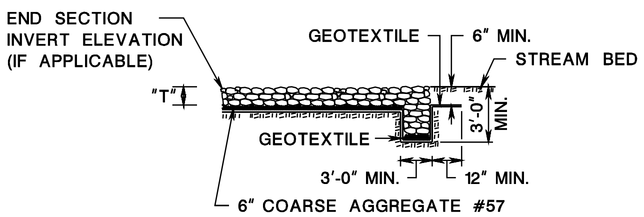
CHANNEL PROTECTION



SLOPE PROTECTION



OUTFALL PROTECTION



END TREATMENT FOR CHANNEL PROTECTION

NOTE:

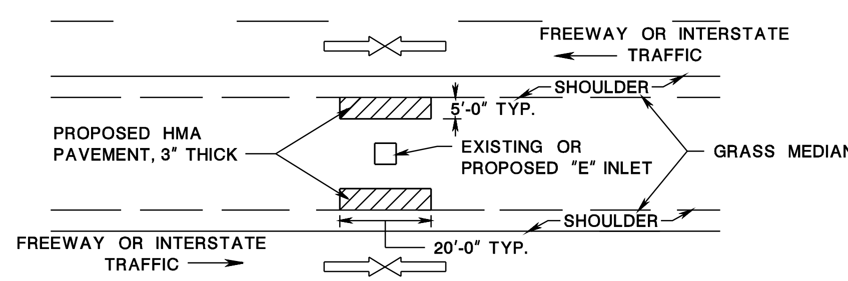
FOR WIDTHS AND SLOPES REFER TO CONSTRUCTION PLANS

$"T" = 2d_{50}$

d_{50} = DESIGNATED MEDIAN STONE SIZE, 6" MIN.

RIPRAP STONE PROTECTION (CHANNEL / SLOPE / OUTFALL)

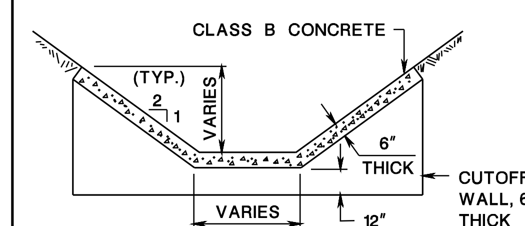
CD-603-1.1



MEDIAN EDGE OF MAINLINE PAVEMENT

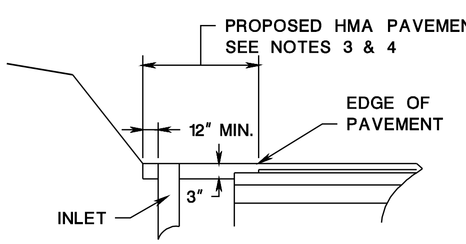
NOTES:

1. FOR SLOPES, REFER TO PLANS.
2. WHERE GUIDE RAIL EXISTS AT THE LOW POINT, THE PROPOSED HMA PAVEMENT HAS PREFERENCE OVER NON - VEGETATIVE SURFACE.
3. 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.
4. IN CUT SECTIONS GRADE THE HMA PAVEMENT TO DRAIN TOWARD THE INLET.

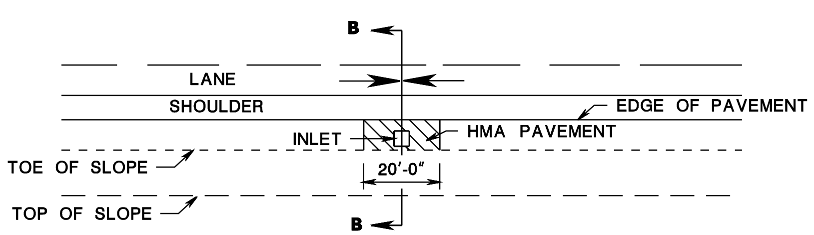


CONCRETE SLOPE GUTTER, 6" THICK

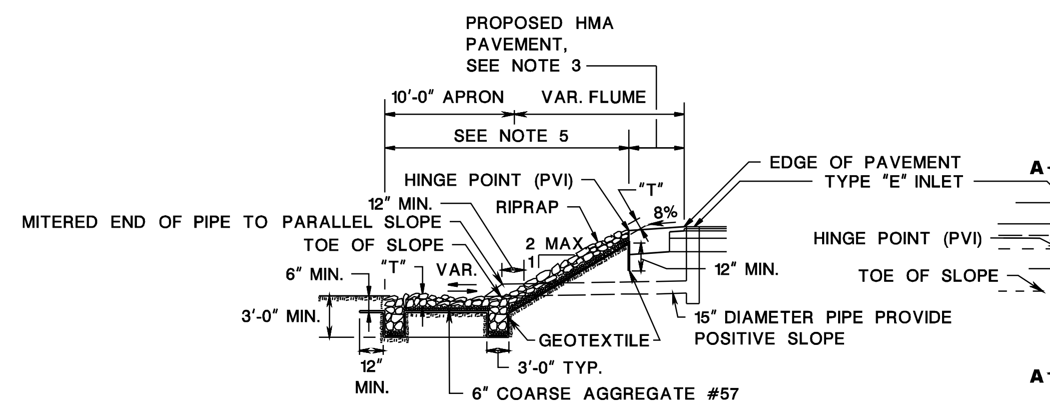
CD-603-1.3



SECTION B–B



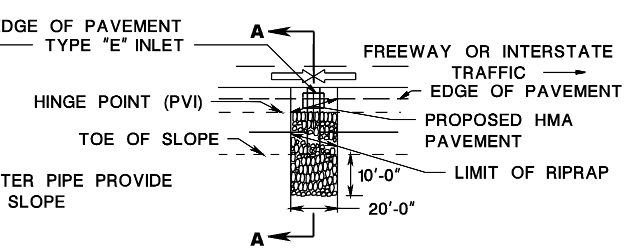
EDGE OF RAMP OR OUTSIDE EDGE OF MAINLINE PAVEMENT IN CUT



SECTION A–A

$"T" = 2d_{50}$

D_{50} = DESIGNATED MEDIAN STONE SIZE (8" MIN")



PLAN VIEW

EDGE OF RAMP OR OUTSIDE EDGE OF MAINLINE PAVEMENT IN FILL

SLOPE PROTECTION AT LOW POINTS OF UMBRELLA SECTIONS

CD-603-1.2

SLOPE, OUTFALL, AND CHANNEL PROTECTION

N.T.S.

HMA = HOT MIX ASPHALT

CD-603-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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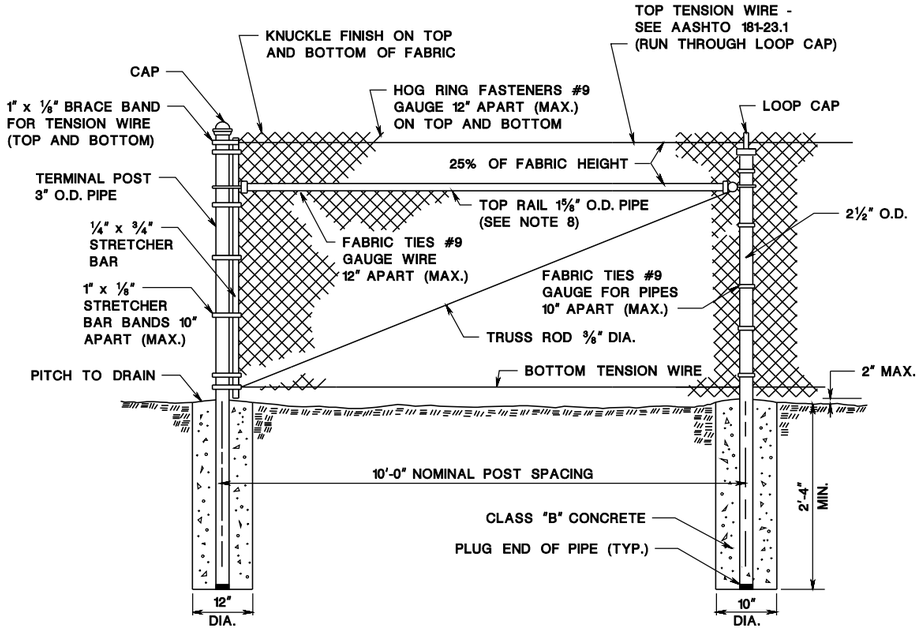


CHAIN–LINK FENCE, ___ ' HIGH

CD-605-1.1

GENERAL NOTES

1. 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.

2. POSTS:

	TERMINAL, CORNER, AND GATE POSTS	LINE POSTS	TOP OR BRACE RAIL
	3" O.D. PIPE	2½" O.D. PIPE	1⅝" 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	1.660
WALL THICKNESS (IN.)	GRADE 1 = .203 GRADE 2 = .160	GRADE 1 = .154 GRADE 2 = .120	GRADE 1 = .140 GRADE 2 = .111

3. 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.

4. THE CENTERLINE OF ALL POSTS NOT TO BE LESS THAN 8" INSIDE ROW.

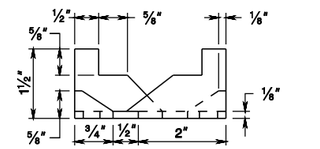
5. THE DEPTH OF CONCRETE FOOTINGS IN SOLID ROCK MAY BE REDUCED TO ONE FOOT BELOW THE TOP OF ROCK AND THE DIAMETER OF THE HOLE IN ROCK MAY BE REDUCED TO 3½".

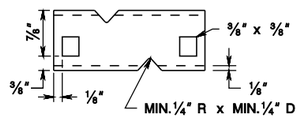
6. FURNISH BRACE BANDS AND STRETCHER BAR BANDS WITH ⅝" DIA. CARRIAGE BOLTS AND ELASTIC STOP NUTS.

7. USE DRIVE ANCHOR SHOE ASSEMBLY ONLY IN WET AREAS AND WITH PRIOR APPROVAL OF THE RE.

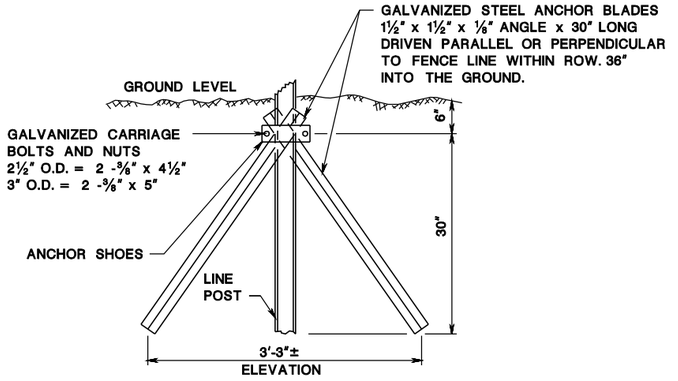
8. WHEN THE PLANS INDICATE A TERMINAL OR CORNER POST DESIGNATED TYPE NR, THE TOP RAIL IS TO BE ELIMINATED FROM THIS SECTION OF FENCE.

CD-605-1.4





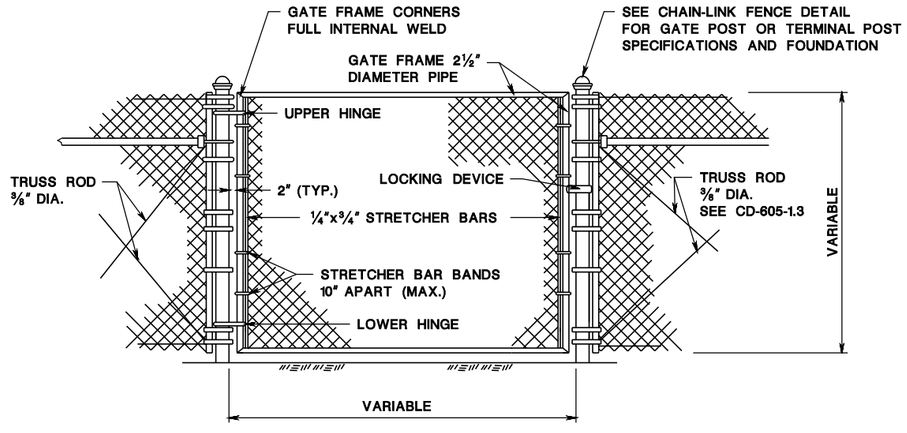
ANCHOR SHOE



DRIVE ANCHOR SHOE ASSEMBLY

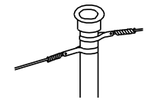
(SEE NOTE 7)

CD-605-1.2

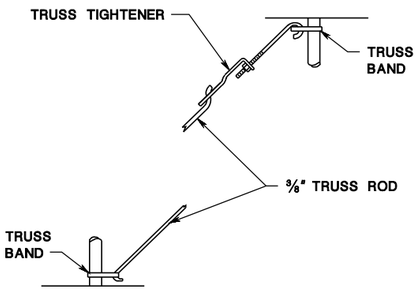


GATES, CHAIN–LINK FENCE, ___ ' WIDE

CD-605-1.5



TENSION WIRE CONNECTION AT ROUND INTERMEDIATE OR CORNER POST



⅜" TRUSS ROD ASSEMBLY

CHAIN–LINK FENCE ASSEMBLIES

CD-605-1.3

CHAIN–LINK FENCE

N.T.S.

CD-605-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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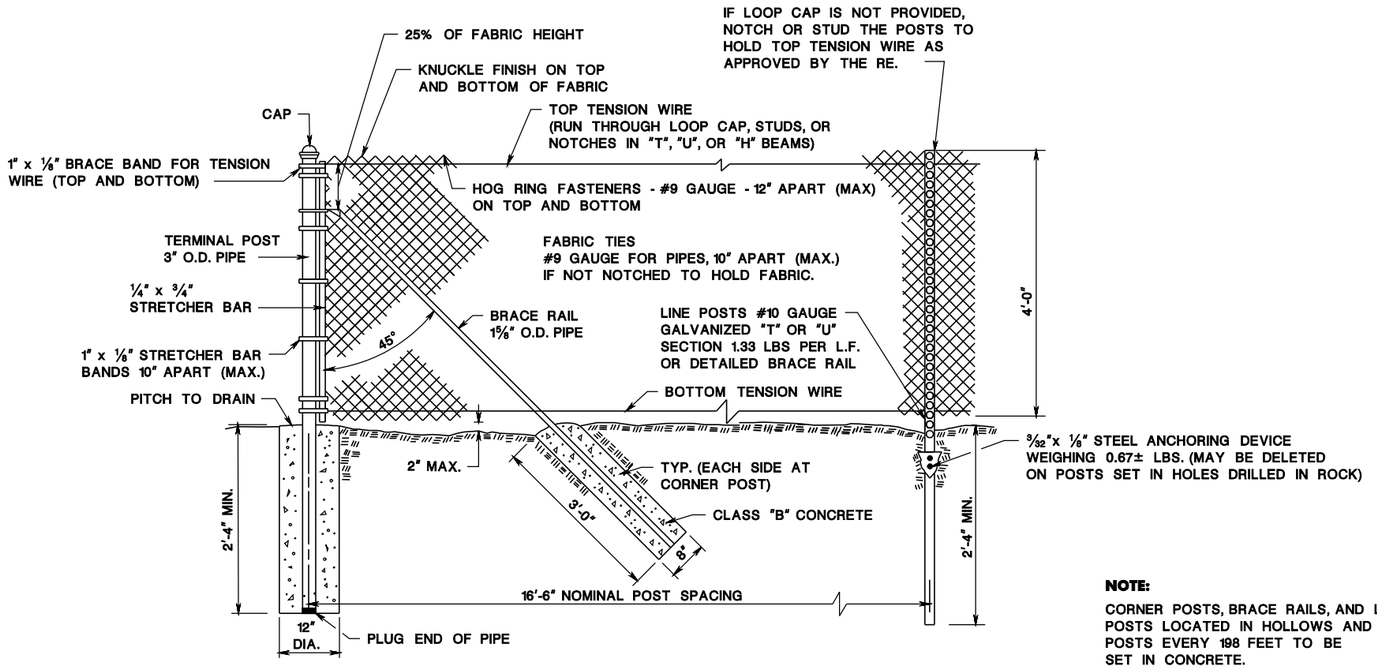

NOTE:

CORNER POSTS, BRACE RAILS, AND LINE POSTS LOCATED IN HOLLOWS 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

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-605-2.1

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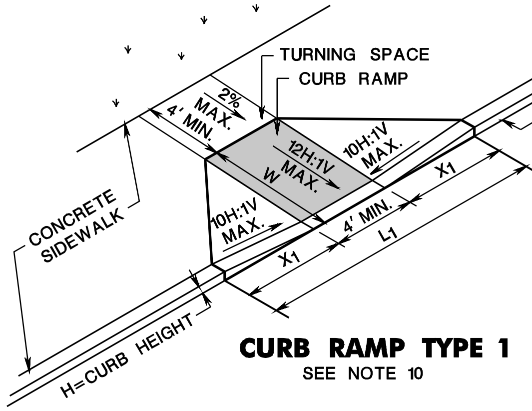
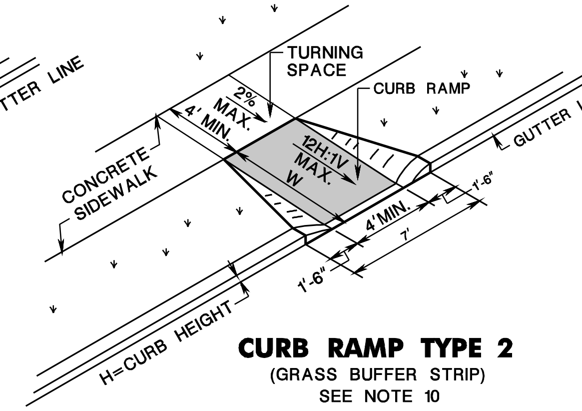
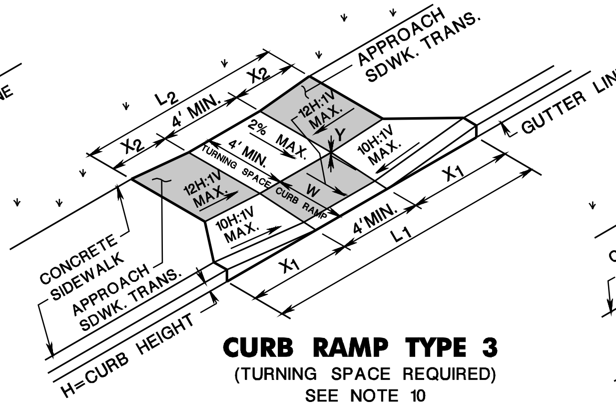


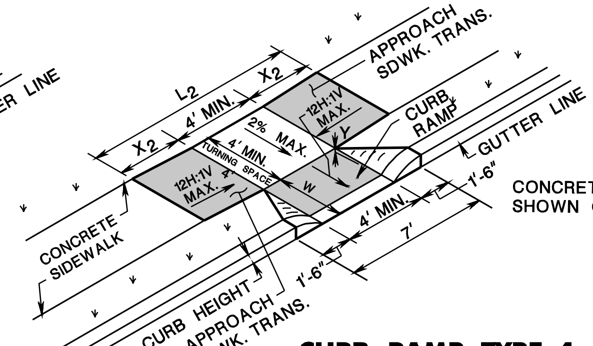
CURB RAMP TYPE 1
SEE NOTE 10



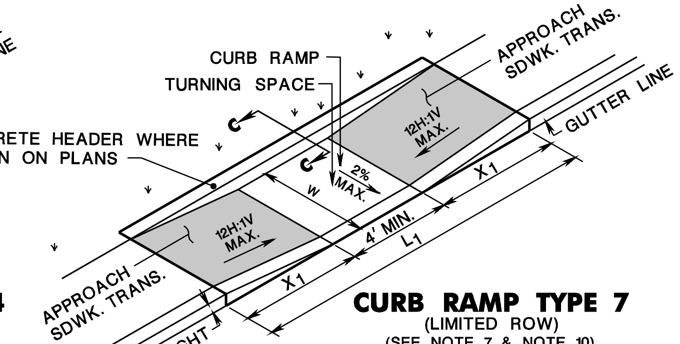
CURB RAMP TYPE 2
(GRASS BUFFER STRIP)
SEE NOTE 10



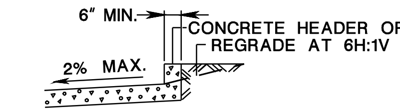
CURB RAMP TYPE 3
(TURNING SPACE REQUIRED)
SEE NOTE 10



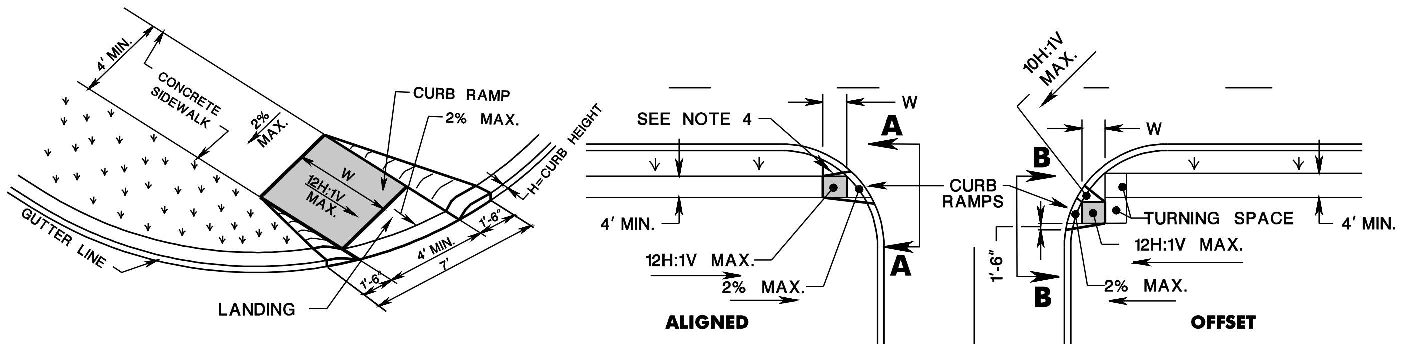
CURB RAMP TYPE 4
(GRASS BUFFER STRIP WITH TURNING SPACE REQUIRED)
SEE NOTE 10



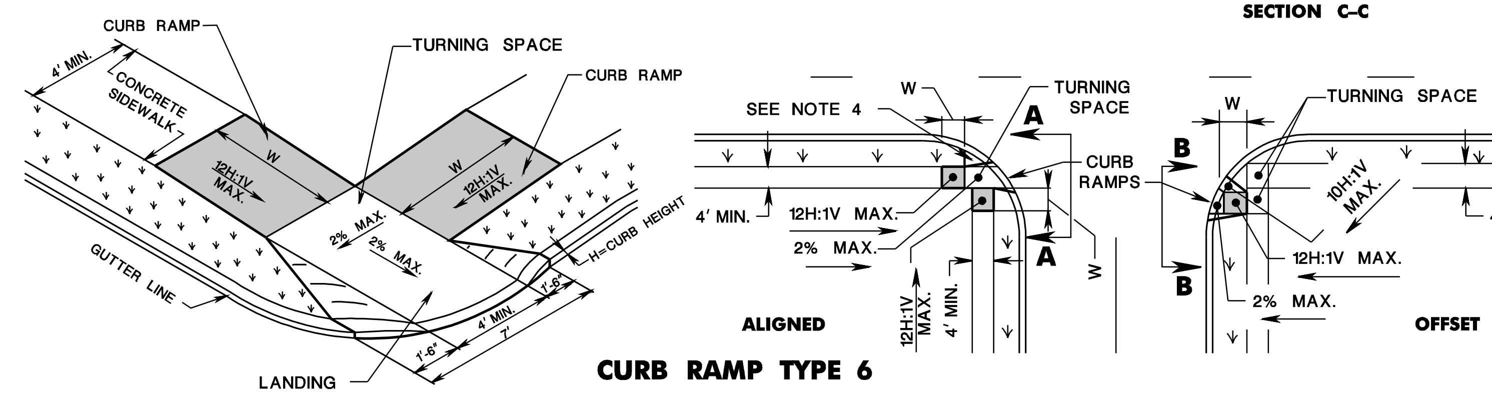
CURB RAMP TYPE 7
(LIMITED ROW)
(SEE NOTE 7 & NOTE 10)



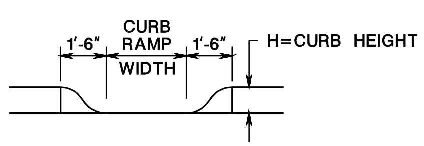
SECTION C–C



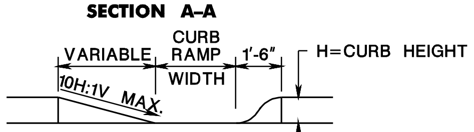
CURB RAMP TYPE 5



CURB RAMP TYPE 6

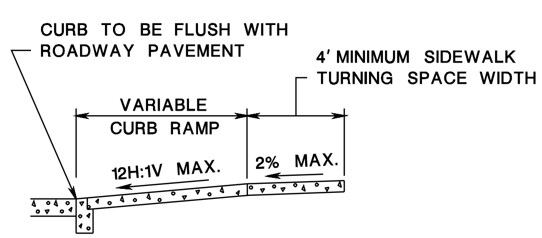


SECTION A–A

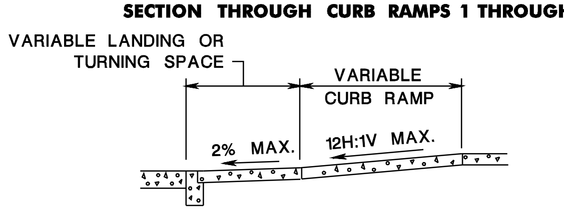


SECTION B–B

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



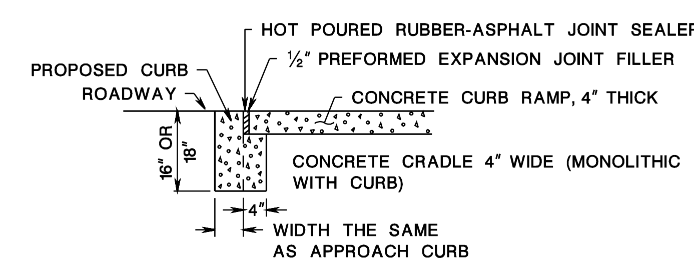
SECTION THROUGH CURB RAMPS 1 THROUGH 4



SECTION THROUGH CURB RAMPS 5 AND 6

NOTES:

1. KEEP TURNING SPACE, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP CLEAR OF OBSTRUCTIONS THAT PROTRUDE ABOVE THE SURFACE.
2. FOR DIMENSIONS SEE CD-606-3 AND CD-606-4
3. CURB (DROPPED CURB) GUTTERLINE TO BE FLUSH WITH ROADWAY PAVEMENT THE ENTIRE WIDTH OF THE RAMP (4 FEET MIN.) AT ALL CURB RAMPS.
4. FOR CURB RAMP TYPES 5 AND 6, IF A GRASS BUFFER DOES NOT EXIST, SLOPE CURB TO EQUAL SLOPE OF ADJACENT CURB RAMP.
5. SIDEWALK AND CURB RAMP WITHIN AREA ENCLOSED BY HEAVY LINES INDICATES THE PAY LIMIT FOR CONCRETE SIDEWALK OF THE APPROPRIATE ADJACENT THICKNESS.
6. 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.
7. 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.
8. CROSSWALKS AND STOP LINES MAY BE MARKED OR UNMARKED. SEE PLANS.
9. 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.
10. 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

CURB RAMPS
CD-606-1.1

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

CD-606-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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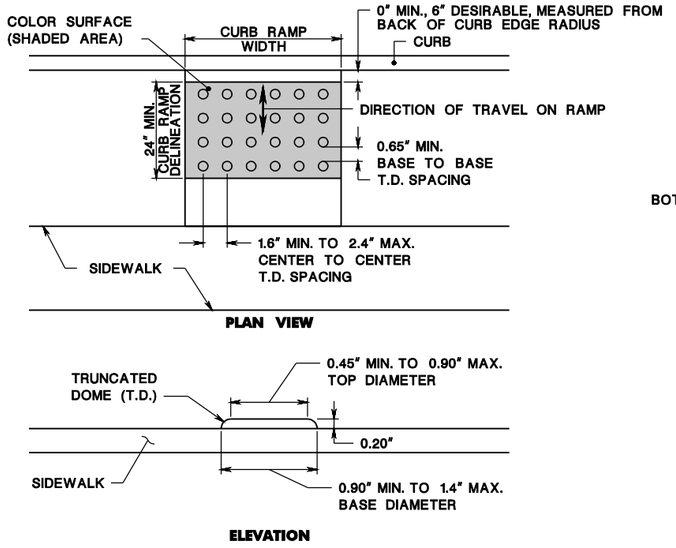
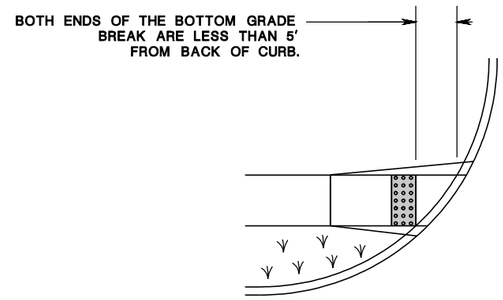
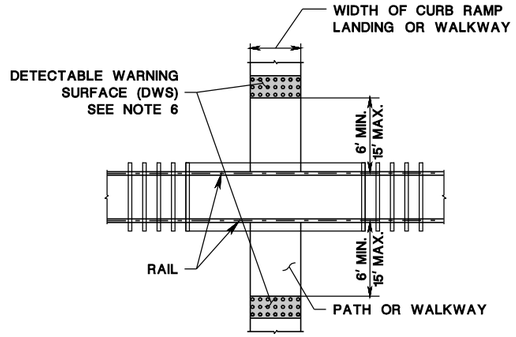
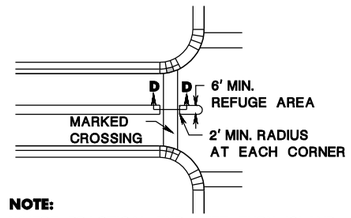


DETECTABLE WARNING SURFACE

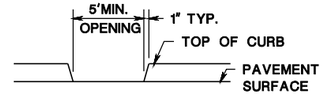




PEDESTRIAN RAILROAD CROSSING



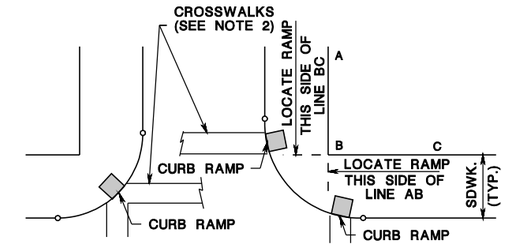
NOTE:
WHERE PRACTICAL, END LEFT TURN ISLAND OR DIVISIONAL ISLAND BEFORE CROSSWALK TO ELIMINATE CUT-THROUGH



SECTION D–D

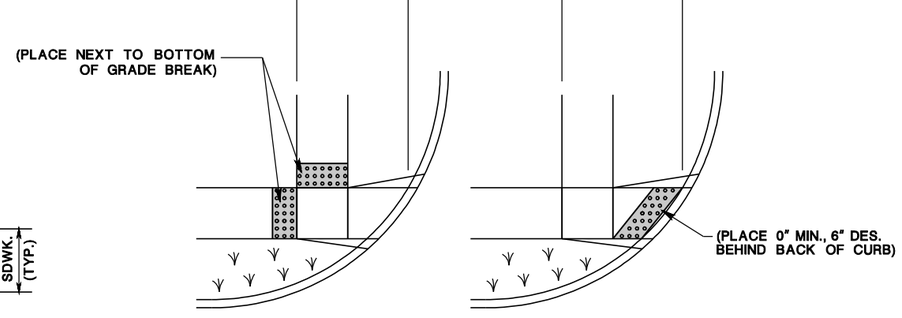
NOTE:
5'MIN. WIDE OPENING TO BE FLUSH WITH ROADWAY PAVEMENT

PEDESTRIAN REFUGE ISLAND WALKWAY OPENING AT INTERSECTIONS



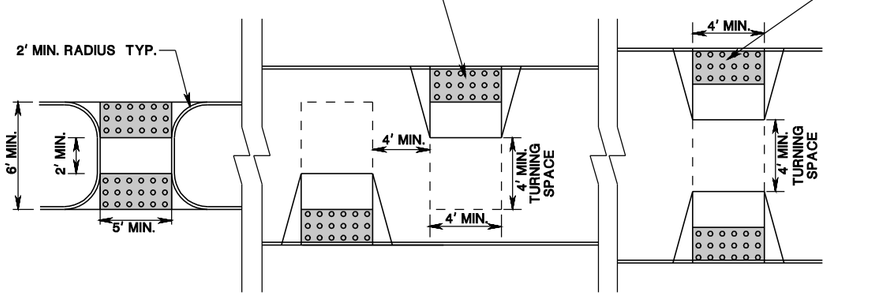
ALTERNATE TREATMENT (SEE NOTE 5) **PREFERRED TREATMENT** (SEE NOTE 5)

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



PREFERRED TREATMENT **ALTERNATE TREATMENT** (SEE NOTE 7)

PLACEMENT OF DETECTABLE WARNING SURFACE FOR CURB RAMP TYPE 5 AND 6



NARROW ISLAND WIDTH (SEE NOTE 3) **MEDIUM ISLAND WIDTH** (SEE NOTE 4) **LARGE ISLAND WIDTH** (SEE NOTE 4)

PEDESTRIAN REFUGE ISLAND

NOTES:

1. KEEP TURNING SPACE, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP CLEAR OF OBSTRUCTIONS THAT PROTRUDE ABOVE THE SURFACE.
2. CROSSWALKS AND STOP LINES MAY BE MARKED OR UNMARKED, SEE PLANS.
3. FOR NARROW ISLAND WIDTH, SEE PEDESTRIAN REFUGE ISLAND WALKWAY OPENING AT INTERSECTIONS DETAIL.
4. FOR MEDIUM AND LARGE ISLAND WIDTH, SEE CURB RAMP TYPE 1 ON CD-606-1.
5. CONSTRUCT CURB RAMP TYPES 1, 2, 3, 4, & 7 PERPENDICULAR TO CURBLINE, AS SHOWN.
6. 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.
7. 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.

DETECTABLE WARNING SURFACE

N.T.S.

CD-606-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

ID=TP2VILL date=21-SEP-2016 11:26 scale=63.073306:1.000000 pen table=\\NJDOTTRJW9\V8system\NJDOTW9\Projects\NJDOTEssex\plot\TELA\Roadway\Details_11x17.tbl
BDC16D-01-ORIGINAL SHEET
file=

CURB RAMP TYPE 1

0.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET
3	3	2.50	2.50	9.00
4	4	3.33	3.33	10.67
5	5	4.17	4.17	12.33
6	6	5.00	5.00	14.00
7	7	5.83	5.83	15.67
8	8	6.67	6.67	17.33
9	9	7.50	7.50	19.00

1.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET
3	3	2.78	2.27	9.05
4	4	3.70	3.03	10.73
5	5	4.63	3.79	12.42
6	6	5.56	4.55	14.10
7	7	6.48	5.30	15.78
8	8	7.41	6.06	17.47
9	9	8.33	6.82	19.15

2.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET
3	3	3.13	2.08	9.21
4	4	4.17	2.78	10.94
5	5	5.21	3.47	12.68
6	6	6.25	4.17	14.42
7	7	7.29	4.86	16.15
8	8	8.33	5.56	17.89
9	9	9.38	6.25	19.63

3.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET
3	3	3.57	1.92	9.49
4	4	4.76	2.56	11.33
5	5	5.95	3.21	13.16
6	6	7.14	3.85	14.99
7	7	8.33	4.49	16.82
8	8	9.52	5.13	18.65
9	9	10.71	5.77	20.48

4.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET
3	3	4.17	1.79	9.95
4	4	5.56	2.38	11.94
5	5	6.94	2.98	13.92
6	6	8.33	3.57	15.90
7	7	9.72	4.17	17.89
8	8	11.11	4.76	19.87
9	9	12.50	5.36	21.86

5.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET
3	3	5.00	1.67	10.67
4	4	6.67	2.22	12.89
5	5	8.33	2.78	15.11
6	6	10.00	3.33	17.33
7	7	11.67	3.89	19.56
8	8	13.33	4.44	21.78
9	9	15.00	5.00	24.00

6.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET
3	3	6.25	1.56	11.81
4	4	8.33	2.08	14.42
5	5	10.42	2.60	17.02
6	6	12.50	3.13	19.63
7	7	14.58	3.65	22.23
8	8	15.00	4.17	23.17
9	9	15.00	4.69	23.69

7.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET
3	3	8.33	1.47	13.80
4	4	11.11	1.96	17.07
5	5	13.89	2.45	20.34
6	6	15.00	2.94	21.94
7	7	15.00	3.43	22.43
8	8	15.00	3.92	22.92
9	9	15.00	4.41	23.41

CURB RAMP TYPE 3

0.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	2.50	2.50	9.00	2.75	0.91	0.91	5.82
4		3.33	3.33	10.67		1.91	1.91	7.82
5		4.17	4.17	12.33		2.91	2.91	9.82
6		5.00	5.00	14.00		3.91	3.91	11.83
7		5.83	5.83	15.67		4.91	4.91	13.83
8		6.67	6.67	17.33		5.91	5.91	15.83
9		7.50	7.50	19.00		6.91	6.91	17.83
3	3.0	*	*	*	3.0	*	*	*
4		3.33	3.33	10.67		1.72	1.72	7.44
5		4.17	4.17	12.33		2.72	2.72	9.44
6		5.00	5.00	14.00		3.72	3.72	11.45
7		5.83	5.83	15.67		4.72	4.72	13.45
8		6.67	6.67	17.33		5.72	5.72	15.45
9		7.50	7.50	19.00		6.72	6.72	17.45
3	3.5	*	*	*	3.5	*	*	*
4		3.33	3.33	10.67		1.34	1.34	6.68
5		4.17	4.17	12.33		2.34	2.34	8.68
6		5.00	5.00	14.00		3.34	3.34	10.69
7		5.83	5.83	15.67		4.34	4.34	12.69
8		6.67	6.67	17.33		5.34	5.34	14.69
9		7.50	7.50	19.00		6.34	6.34	16.69
3	4.0	*	*	*	4.0	*	*	*
4		*	*	*		*	*	*
5		4.17	4.17	12.33		1.96	1.96	7.92
6		5.00	5.00	14.00		2.96	2.96	9.93
7		5.83	5.83	15.67		3.96	3.96	11.93
8		6.67	6.67	17.33		4.96	4.96	13.93
9		7.50	7.50	19.00		5.96	5.96	15.93

1.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	2.78	2.27	9.05	2.75	1.04	0.81	5.85
4		3.70	3.03	10.73		2.17	1.71	7.88
5		4.63	3.79	12.42		3.31	2.60	9.91
6		5.56	4.55	14.10		4.45	3.49	11.94
7		6.48	5.30	15.78		5.58	4.39	13.97
8		7.41	6.06	17.47		6.72	5.28	16.00
9		8.33	6.82	19.15		7.86	6.17	18.03
3	3.0	2.78	2.27	9.05	3.0	0.82	0.64	5.46
4		3.70	3.03	10.73		1.96	1.54	7.49
5		4.63	3.79	12.42		3.09	2.43	9.52
6		5.56	4.55	14.10		4.23	3.32	11.55
7		6.48	5.30	15.78		5.37	4.22	13.58
8		7.41	6.06	17.47		6.50	5.11	15.61
9		8.33	6.82	19.15		7.64	6.00	17.64
3	3.5	2.78	2.27	9.05	3.5	0.39	0.30	4.69
4		3.70	3.03	10.73		1.53	1.20	6.72
5		4.63	3.79	12.42		2.66	2.09	8.75
6		5.56	4.55	14.10		3.80	2.98	10.78
7		6.48	5.30	15.78		4.94	3.88	12.81
8		7.41	6.06	17.47		6.07	4.77	14.84
9		8.33	6.82	19.15		7.21	5.66	16.87
3	4.0	*	*	*	4.0	*	*	*
4		3.70	3.03	10.73		1.09	0.86	5.95
5		4.63	3.79	12.42		2.23	1.75	7.98
6		5.56	4.55	14.10		3.37	2.65	10.01
7		6.48	5.30	15.78		4.50	3.54	12.04
8		7.41	6.06	17.47		5.64	4.43	14.07
9		8.33	6.82	19.15		6.78	5.32	16.10

2.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	3.13	2.08	9.21	2.75	1.20	0.73	5.93
4		4.17	2.78	10.94		2.52	1.54	8.06
5		5.21	3.47	12.68		3.83	2.35	10.18
6		6.25	4.17	14.42		5.15	3.16	12.30
7		7.29	4.86	16.15		6.47	3.96	14.43
8		8.33	5.56	17.89		7.78	4.77	16.55
9		9.38	6.25	19.63		9.10	5.58	18.67
3	3.0	3.13	2.08	9.21	3.0	0.95	0.58	5.53
4		4.17	2.78	10.94		2.27	1.39	7.65
5		5.21	3.47	12.68		3.58	2.20	9.78
6		6.25	4.17	14.42		4.90	3.00	11.90
7		7.29	4.86	16.15		6.22	3.81	14.02
8		8.33	5.56	17.89		7.53	4.62	16.15
9		9.38	6.25	19.63		8.85	5.42	18.27
3	3.5	3.13	2.08	9.21	3.5	0.45	0.28	4.72
4		4.17	2.78	10.94		1.77	1.08	6.85
5		5.21	3.47	12.68		3.08	1.89	8.97
6		6.25	4.17	14.42		4.40	2.70	11.09
7		7.29	4.86	16.15		5.72	3.50	13.22
8		8.33	5.56	17.89		7.03	4.31	15.34
9		9.38	6.25	19.63		8.35	5.12	17.46
3	4.0	*	*	*	4.0	*	*	*
4		4.17	2.78	10.94		1.27	0.78	6.04
5		5.21	3.47	12.68		2.58	1.58	8.16
6		6.25	4.17	14.42		3.90	2.39	10.29
7		7.29	4.86	16.15		5.22	3.20	12.41
8		8.33	5.56	17.89		6.53	4.00	14.53
9		9.38	6.25	19.63		7.85	4.81	16.66

3.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	3.57	1.92	9.49	2.75	1.42	0.67	6.09
4		4.76	2.56	11.33		2.99	1.41	8.39
5		5.95	3.21	13.16		4.55	2.14	10.69
6		7.14	3.85	14.99		6.11	2.88	12.99
7		8.33	4.49	16.82		7.68	3.61	15.29
8		9.52	5.13	18.65		9.24	4.35	17.59
9		10.71	5.77	20.48		10.81	5.08	19.89
3	3.0	3.57	1.92	9.49	3.0	1.13	0.53	5.66
4		4.76	2.56	11.33		2.69	1.27	7.96
5		5.95	3.21	13.16		4.25	2.00	10.26
6		7.14	3.85	14.99		5.82	2.74	12.55
7		8.33	4.49	16.82		7.38	3.47	14.85
8		9.52	5.13	18.65		8.94	4.21	17.15
9		10.71	5.77	20.48		10.51	4.94	19.45
3	3.5	3.57	1.92	9.49	3.5	0.53	0.25	4.78
4		4.76	2.56	11.33		2.10	0.99	7.08
5		5.95	3.21	13.16		3.66	1.72	9.38
6		7.14	3.85	14.99		5.22	2.46	11.68
7		8.33	4.49	16.82		6.79	3.19	13.98
8		9.52	5.13	18.65		8.35	3.93	16.28
9		10.71	5.77	20.48		9.91	4.66	18.58
3	4.0	*	*	*	4.0	*	*	*
4		4.76	2.56	11.33		1.50	0.71	6.21
5		5.95	3.21	13.16		3.07	1.44	8.51
6		7.14	3.85	14.99		4.63	2.18	10.81
7		8.33	4.49	16.82		6.19	2.91	13.11
8		9.52	5.13	18.65		7.76	3.65	15.41
9		10.71	5.77	20.48		9.32	4.38	17.71

4.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	4.17	1.79	9.95	2.75	1.75	0.62	6.37
4		5.56	2.38	11.94		3.68	1.29	8.97
5		6.94	2.98	13.92		5.60	1.97	11.57
6		8.33	3.57	15.90		7.53	2.64	14.17
7		9.72	4.17	17.89		9.45	3.32	16.77
8		11.11	4.76	19.87		11.38	4.00	19.37
9		12.50	5.36	21.86		13.30	4.67	21.97
3	3.0	4.17	1.79	9.95	3.0	1.39	0.49	5.88
4		5.56	2.38	11.94		3.31	1.16	8.48
5		6.94	2.98	13.92		5.24	1.84	11.08
6		8.33	3.57	15.90		7.16	2.52	13.68
7		9.72	4.17	17.89		9.09	3.19	16.28
8		11.11	4.76	19.87		11.01	3.87	18.88
9		12.50	5.36	21.86		12.94	4.54	21.48
3	3.5	4.17	1.79	9.95	3.5	0.66	0.23	4.89
4		5.56	2.38	11.94		2.58	0.91	7.49
5		6.94	2.98	13.92		4.51	1.58	10.09
6		8.33	3.57	15.90		6.43	2.26	12.69
7		9.72	4.17	17.89		8.36	2.93	15.29
8		11.11	4.76	19.87		10.28	3.61	17.89
9		12.50	5.36	21.86		12.20	4.29	20.49
3	4.0	*	*	*	4.0	*	*	*
4		5.56	2.38	11.94		1.85	0.65	6.50
5		6.94	2.98	13.92		3.78	1.33	9.10
6		8.33	3.57	15.90		5.70	2.00	11.70
7		9.72	4.17	17.89		7.62	2.68	14.30
8		11.11	4.76	19.87		9.55	3.35	16.90
9		12.50	5.36	21.86		11.47	4.03	19.50

5.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	5.00	1.67	10.67	2.75	2.28	0.57	6.85
4		6.67	2.22	12.89		4.78	1.19	9.98
5		8.33	2.78	15.11		7.29	1.82	13.10
6		10.00	3.33	17.33		9.79	2.45	16.23
7		11.67	3.89	19.56		12.29	3.07	19.36
8		13.33	4.44	21.78		14.79	3.70	22.49
9		15.00	5.00	24.00		15.00	4.32	23.32
3	3.0	5.00	1.67	10.67	3.0	1.80	0.45	6.26
4		6.67	2.22	12.89		4.31	1.08	9.38
5		8.33	2.78	15.11		6.81	1.70	12.51
6		10.00	3.33	17.33		9.31	2.33	15.64
7		11.67	3.89	19.56		11.81	2.95	18.77
8		13.33	4.44	21.78		14.32	3.58	21.89
9		15.00	5.00	24.00		15.00	4.20	23.20
3	3.5	5.00	1.67	10.67	3.5	0.85	0.21	5.07
4		6.67	2.22	12.89		3.36	0.84	8.20
5		8.33	2.78	15.11		5.86	1.46	11.32
6		10.00	3.33	17.33		8.36	2.09	14.45
7		11.67	3.89	19.56		10.86	2.71	17.58
8		13.33	4.44	21.78		13.37	3.34	20.71
9		15.00	5.00	24.00		15.00	3.96	22.96
3	4.0	*	*	*	4.0	*	*	*
4		6.67	2.22	12.89		2.41	0.60	7.01
5		8.33	2.78	15.11		4.91	1.23	10.14
6		10.00	3.33	17.33		7.41	1.85	13.26
7		11.67	3.89	19.56		9.91	2.48	16.39
8		13.33	4.44	21.78		12.42	3.10	19.52
9		15.00	5.00	24.00		14.92	3.73	22.65

6.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	6.25	1.56	11.81	2.75	3.26	0.53	7.79
4		8.33	2.08	14.42		6.84	1.11	11.95
5		10.42	2.60	17.02		10.41	1.69	16.10
6		12.50	3.13	19.63		13.99	2.27	20.26
7		14.58	3.65	22.23		15.00	2.86	21.86
8		15.00	4.17	23.17		15.00	3.44	22.44
9		15.00	4.69	23.69		15.00	4.02	23.02
3	3.0	6.25	1.56	11.81	3.0	2.58	0.42	7.00
4		8.33	2.08	14.42		6.16	1.00	11.16
5		10.42	2.60	17.02		9.73	1.58	15.31
6		12.50	3.13	19.63		13.31	2.16	19.47
7		14.58	3.65	22.23		15.00	2.75	21.75
8		15.00	4.17	23.17		15.00	3.33	22.33
9		15.00	4.69	23.69		15.00	3.91	22.91
3	3.5	6.25	1.56	11.81	3.5	1.22	0.20	5.42
4		8.33	2.08	14.42		4.80	0.78	9.58
5		10.42	2.60	17.02		8.37	1.36	13.74
6		12.50	3.13	19.63		11.95	1.94	17.89
7		14.58	3.65	22.23		15.00	2.52	21.52
8		15.00	4.17	23.17		15.00	3.11	22.11
9		15.00	4.69	23.69		15.00	3.69	22.69
3	4.0	*	*	*	4.0	*	*	*
4		8.33	2.08	14.42		3.44	0.56	8.00
5		10.42	2.60	17.02		7.02	1.14	12.16
6		12.50	3.13	19.63		10.59	1.72	16.31
7		14.58	3.65	22.23		14.17	2.30	20.47
8		15.00	4.17	23.17		15.00	2.89	21.89
9		15.00	4.69	23.69		15.00	3.47	22.47

7.0 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	8.33	1.47	13.80	2.75	5.71	0.50	10.20
4		11.11	1.96	17.07		11.97	1.04	17.01
5		13.89	2.45	20.34		15.00	1.58	20.58
6		15.00	2.94	21.94		15.00	2.13	21.13
7		15.00	3.43	22.43		15.00	2.67	21.67
8		15.00	3.92	22.92		15.00	3.21	22.21
9		15.00	4.41	23.41		15.00	3.76	22.76
3	3.0	8.33	1.47	13.80	3.0	4.52	0.39	8.91
4		11.11	1.96	17.07		10.78	0.94	15.72
5		13.89	2.45	20.34		15.00	1.48	20.48
6		15.00	2.94	21.94		15.00	2.02	21.02
7		15.00	3.43	22.43		15.00	2.57	21.57
8		15.00	3.92	22.92		15.00	3.11	22.11
9		15.00	4.41	23.41		15.00	3.65	22.65
3	3.5	8.33	1.47	13.80	3.5	2.14	0.19	6.32
4		11.11	1.96	17.07		8.40	0.73	13.13
5		13.89	2.45	20.34		14.67	1.27	19.94
6		15.00	2.94	21.94		15.00	1.82	20.82
7		15.00	3.43	22.43		15.00	2.36	21.36
8		15.00	3.92	22.92		15.00	2.90	21.90
9		15.00	4.41	23.41		15.00	3.45	22.45
3	4.0	*	*	*	4.0	*	*	*
4		11.11	1.96	17.07		6.03	0.52	10.55
5		13.89	2.45	20.34		12.29	1.07	17.36
6		15.00	2.94	21.94		15.00	1.61	20.61
7		15.00	3.43	22.43		15.00	2.15	21.15
8		15.00	3.92	22.92		15.00	2.70	21.70
9		15.00	4.41	23.41		15.00	3.24	22.24

CURB RAMP TYPE 2

0-8 % GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET
3	3	1.50	1.50	7.00
4	4	1.50	1.50	7.00
5	5	1.50	1.50	7.00
6	6	1.50	1.50	7.00
7	7	1.50	1.50	7.00
8	8	1.50	1.50	7.00
9	9	1.50	1.50	7.00

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. THE ABOVE TABLES TO BE USED BY THE DESIGNERS AND CONTRACTORS TO GET APPROXIMATE DIMENSIONS OF THE CURB RAMP AT EACH LOCATION. FINAL DIMENSIONS WILL BE DETERMINED BY ACTUAL MEASUREMENTS IN THE FIELD DURING CONSTRUCTION.
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. 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. THE TABLES ALREADY APPLY THE 15 FEET RULE FOR THOSE CALCULATED LENGTHS WHICH EXCEED 15 FEET.
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

CD-606-3.1

CONCRETE SIDEWALK

(PUBLIC SIDEWALK CURB RAMP TABLES)

N.T.S.

CD-606-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

BDC16D-01-ORIGINAL SHEET

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CURB RAMP TYPE 4

0.0 % GUTTER LINE PROFILE					
H INCHES	W FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	2.75	0.91	0.91	5.82
4			1.91	1.91	7.82
5			2.91	2.91	9.82
6			3.91	3.91	11.82
7			4.91	4.91	13.83
8			5.91	5.91	15.83
9			6.91	6.91	17.83
3	3.0	3.0	**	**	**
4			1.72	1.72	7.44
5			2.72	2.72	9.44
6			3.72	3.72	11.45
7			4.72	4.72	13.45
8			5.72	5.72	15.45
9			6.72	6.72	17.45
3	3.5	3.5	**	**	**
4			1.34	1.34	6.68
5			2.34	2.34	8.68
6			3.34	3.34	10.69
7			4.34	4.34	12.69
8			5.34	5.34	14.69
9			6.34	6.34	16.69
3	4.0	4.0	**	**	**
4			**	**	**
5			1.96	1.96	7.92
6			2.96	2.96	9.93
7			3.96	3.96	11.93
8			4.96	4.96	13.93
9			5.96	5.96	15.93

1.0 % GUTTER LINE PROFILE					
H INCHES	W FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	2.75	1.04	0.81	5.85
4			2.17	1.71	7.88
5			3.31	2.60	9.91
6			4.45	3.49	11.94
7			5.58	4.39	13.97
8			6.72	5.28	16.00
9			7.86	6.17	18.03
3	3.0	3.0	0.82	0.64	5.46
4			1.96	1.54	7.49
5			3.09	2.43	9.52
6			4.23	3.32	11.55
7			5.37	4.22	13.58
8			6.50	5.11	15.61
9			7.64	6.00	17.64
3	3.5	3.5	0.39	0.30	4.69
4			1.53	1.20	6.72
5			2.66	2.09	8.75
6			3.80	2.98	10.78
7			4.94	3.88	12.81
8			6.07	4.77	14.84
9			7.21	5.66	16.87
3	4.0	4.0	**	**	**
4			1.09	0.86	5.95
5			2.23	1.75	7.98
6			3.37	2.65	10.01
7			4.50	3.54	12.04
8			5.64	4.43	14.07
9			6.78	5.32	16.10

2.0 % GUTTER LINE PROFILE					
H INCHES	W FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	2.75	1.20	0.73	5.93
4			2.52	1.54	8.06
5			3.83	2.35	10.18
6			5.15	3.16	12.30
7			6.47	3.96	14.43
8			7.78	4.77	16.55
9			9.10	5.58	18.67
3	3.0	3.0	0.95	0.58	5.53
4			2.27	1.39	7.65
5			3.58	2.20	9.78
6			4.90	3.00	11.90
7			6.22	3.81	14.02
8			7.53	4.62	16.15
9			8.85	5.42	18.27
3	3.5	3.5	0.45	0.28	4.72
4			1.77	1.08	6.85
5			3.08	1.89	8.97
6			4.40	2.70	11.09
7			5.72	3.50	13.22
8			7.03	4.31	15.34
9			8.35	5.12	17.46
3	4.0	4.0	**	**	**
4			1.27	0.78	6.04
5			2.58	1.58	8.16
6			3.90	2.39	10.29
7			5.22	3.20	12.41
8			6.53	4.00	14.53
9			7.85	4.81	16.66

3.0 % GUTTER LINE PROFILE					
H INCHES	W FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	2.75	1.42	0.67	6.09
4			2.99	1.41	8.39
5			4.55	2.14	10.69
6			6.11	2.88	12.99
7			7.68	3.61	15.29
8			9.24	4.35	17.59
9			10.81	5.08	19.89
3	3.0	3.0	1.13	0.53	5.66
4			2.69	1.27	7.96
5			4.25	2.00	10.26
6			5.82	2.74	12.55
7			7.38	3.47	14.85
8			8.94	4.21	17.15
9			10.51	4.94	19.45
3	3.5	3.5	0.53	0.25	4.78
4			2.10	0.99	7.08
5			3.66	1.72	9.38
6			5.22	2.46	11.68
7			6.79	3.19	13.98
8			8.35	3.93	16.28
9			9.91	4.66	18.58
3	4.0	4.0	**	**	**
4			1.50	0.71	6.21
5			3.07	1.44	8.51
6			4.63	2.18	10.81
7			6.19	2.91	13.11
8			7.76	3.65	15.41
9			9.32	4.38	17.71

4.0 % GUTTER LINE PROFILE					
H INCHES	W FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	2.75	1.75	0.62	6.37
4			3.68	1.29	8.97
5			5.60	1.97	11.57
6			7.53	2.64	14.17
7			9.45	3.32	16.77
8			11.38	4.00	19.37
9			13.30	4.67	21.97
3	3.0	3.0	1.39	0.49	5.88
4			3.31	1.16	8.48
5			5.24	1.84	11.08
6			7.16	2.52	13.68
7			9.09	3.19	16.28
8			11.01	3.87	18.88
9			12.94	4.54	21.48
3	3.5	3.5	0.66	0.23	4.89
4			2.58	0.91	7.49
5			4.51	1.58	10.09
6			6.43	2.26	12.69
7			8.36	2.93	15.29
8			10.28	3.61	17.89
9			12.20	4.29	20.49
3	4.0	4.0	**	**	**
4			1.85	0.65	6.50
5			3.78	1.33	9.10
6			5.70	2.00	11.70
7			7.62	2.68	14.30
8			9.55	3.35	16.90
9			11.47	4.03	19.50

5.0 % GUTTER LINE PROFILE					
H INCHES	W FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	2.75	2.28	0.57	6.85
4			4.78	1.19	9.98
5			7.29	1.82	13.10
6			9.79	2.45	16.23
7			12.29	3.07	19.36
8			14.79	3.70	22.49
9			15.00	4.32	23.32
3	3.0	3.0	1.80	0.45	6.26
4			4.31	1.08	9.38
5			6.81	1.70	12.51
6			9.31	2.33	15.64
7			11.81	2.95	18.77
8			14.32	3.58	21.89
9			15.00	4.20	23.20
3	3.5	3.5	0.85	0.21	5.07
4			3.36	0.84	8.20
5			5.86	1.46	11.32
6			8.36	2.09	14.45
7			10.86	2.71	17.58
8			13.37	3.34	20.71
9			15.00	3.96	22.96
3	4.0	4.0	**	**	**
4			2.41	0.60	7.01
5			4.91	1.23	10.14
6			7.41	1.85	13.26
7			9.91	2.48	16.39
8			12.42	3.10	19.52
9			14.92	3.73	22.65

6.0 % GUTTER LINE PROFILE					
H INCHES	W FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	2.75	3.26	0.53	7.79
4			6.84	1.11	11.95
5			10.41	1.69	16.10
6			13.99	2.27	20.26
7			15.00	2.86	21.86
8			15.00	3.44	22.44
9			15.00	4.02	23.02
3	3.0	3.0	2.58	0.42	7.00
4			6.16	1.00	11.16
5			9.73	1.58	15.31
6			13.31	2.16	19.47
7			15.00	2.75	21.75
8			15.00	3.33	22.33
9			15.00	3.91	22.91
3	3.5	3.5	1.22	0.20	5.42
4			4.80	0.78	9.58
5			8.37	1.36	13.74
6			11.95	1.94	17.89
7			15.00	2.52	21.52
8			15.00	3.11	22.11
9			15.00	3.69	22.69
3	4.0	4.0	**	**	**
4			3.44	0.56	8.00
5			7.02	1.14	12.16
6			10.59	1.72	16.31
7			14.17	2.30	20.47
8			15.00	2.89	21.89
9			15.00	3.47	22.47

7.0 % GUTTER LINE PROFILE					
H INCHES	W FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.75	2.75	5.71	0.50	10.20
4			11.97	1.04	17.01
5			15.00	1.58	20.58
6			15.00	2.13	21.13
7			15.00	2.67	21.67
8			15.00	3.21	22.21
9			15.00	3.76	22.76
3	3.0	3.0	4.52	0.39	8.91
4			10.78	0.94	15.72
5			15.00	1.48	20.48
6			15.00	2.02	21.02
7			15.00	2.57	21.57
8			15.00	3.11	22.11
9			15.00	3.65	22.65
3	3.5	3.5	2.14	0.19	6.32
4			8.40	0.73	13.13
5			14.67	1.27	19.94
6			15.00	1.82	20.82
7			15.00	2.36	21.36
8			15.00	2.90	21.90
9			15.00	3.45	22.45
3	4.0	4.0	**	**	**
4			6.03	0.52	10.55
5			12.29	1.07	17.36
6			15.00	1.61	20.61
7			15.00	2.15	21.15
8			15.00	2.70	21.70
9			15.00	3.24	22.24

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. THE ABOVE TABLES TO BE USED BY THE DESIGNERS AND CONTRACTORS TO GET APPROXIMATE DIMENSIONS OF THE CURB RAMP AT EACH LOCATION. FINAL DIMENSIONS WILL BE DETERMINED BY ACTUAL MEASUREMENTS IN THE FIELD DURING CONSTRUCTION.
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. 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. THE TABLES ALREADY APPLY THE 15 FEET RULE FOR THOSE CALCULATED LENGTHS WHICH EXCEED 15 FEET.
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

CD-606-4.1

CURB RAMP TYPE 7

0.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET
3	4' MIN. 7' MAX.	3.00	3.00	10.00
4		4.00	4.00	12.00
5		5.00	5.00	14.00
6		6.00	6.00	16.00
7		7.00	7.00	18.01
8		8.00	8.00	20.01
9		9.00	9.00	22.01

1.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET
3	4' MIN. 7' MAX.	3.41	2.68	10.09
4		4.55	3.57	12.12
5		5.68	4.47	14.15
6		6.82	5.36	16.18
7		7.96	6.25	18.21
8		9.10	7.15	20.24
9		10.23	8.04	22.27

2.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET
3	4' MIN. 7' MAX.	3.95	2.42	10.37
4		5.27	3.23	12.49
5		6.58	4.03	14.62
6		7.90	4.84	16.74
7		9.22	5.65	18.86
8		10.53	6.45	20.99
9		11.85	7.26	23.11

3.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET
3	4' MIN. 7' MAX.	4.69	2.21	10.90
4		6.25	2.94	13.20
5		7.82	3.68	15.49
6		9.38	4.41	17.79
7		10.94	5.15	20.09
8		12.51	5.88	22.39
9		14.07	6.62	24.69

4.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L1 FEET
3	4' MIN. 7' MAX.	5.77	2.03	11.80
4		7.70	2.70	14.40
5		9.62	3.38	17.00
6		11.55	4.06	19.60
7		13.47	4.73	22.20
8		15.40	5.41	24.80
9		17.32	6.08	27.40

5.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L1 FEET
3	4' MIN. 7' MAX.	7.51	1.88	13.38
4		10.01	2.50	16.51
5		12.51	3.13	19.64
6		15.00	3.75	22.75
7		15.00	4.38	23.38
8		15.00	5.00	24.00
9		15.00	5.63	24.63

6.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L1 FEET
3	4' MIN. 7' MAX.	10.73	1.74	16.47
4		14.31	2.33	20.63
5		15.00	2.91	21.91
6		15.00	3.49	22.49
7		15.00	4.07	23.07
8		15.00	4.65	23.65
9		15.00	5.23	24.23

7.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L1 FEET
3	4' MIN. 7' MAX.	15.00	1.63	20.63
4		15.00	2.17	21.17
5		15.00	2.72	21.72
6		15.00	3.26	22.26
7		15.00	3.81	22.81
8		15.00	4.35	23.35
9		15.00	4.89	23.89

CONCRETE SIDEWALK

(PUBLIC SIDEWALK CURB RAMP TABLES)

N.T.S.

CD-606-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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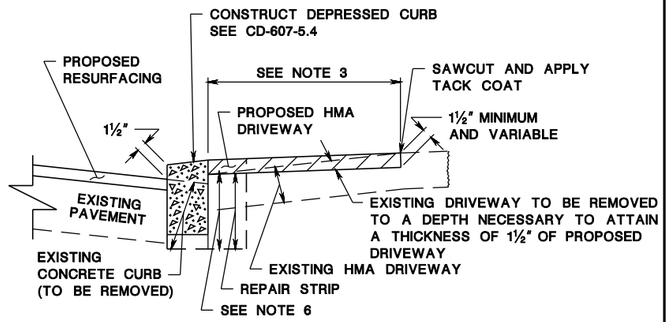
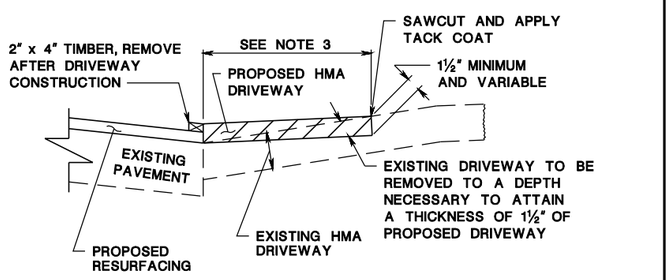


TYPE (A)

RESURFACING OF EXISTING HMA DRIVEWAY
(WITH DEPRESSED CURB)

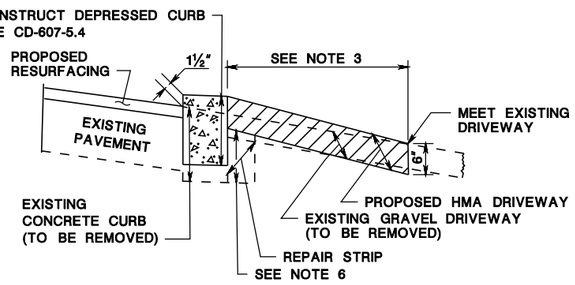
CD-606-5.1



TYPE (B)

RESURFACING OF EXISTING HMA DRIVEWAY
(WITHOUT DEPRESSED CURB)

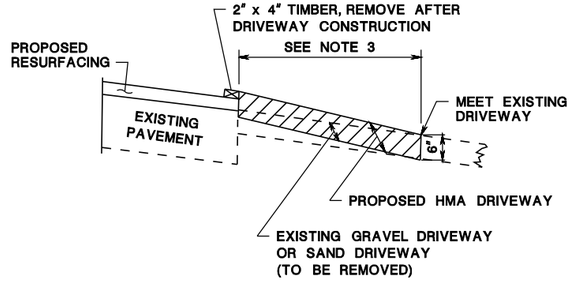
CD-606-5.2



TYPE (C)

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

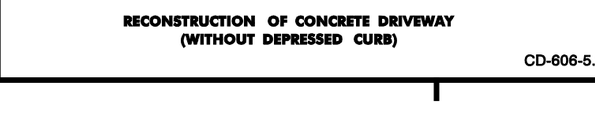
CD-606-5.3



TYPE (D)

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

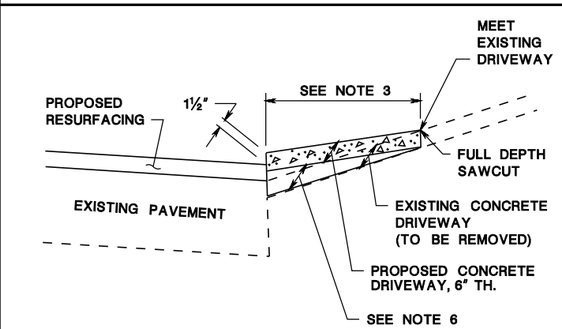
CD-606-5.4



TYPE (E)

RECONSTRUCTION OF CONCRETE DRIVEWAY
(WITH DEPRESSED CURB)

CD-606-5.5



TYPE (F)

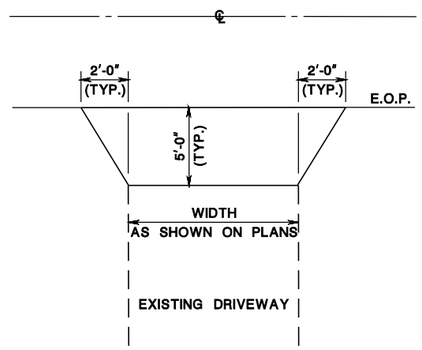
RECONSTRUCTION OF CONCRETE DRIVEWAY
(WITHOUT DEPRESSED CURB)

CD-606-5.6

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.

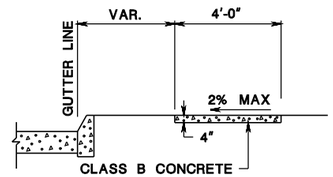
CD-606-5.7



TYPICAL DRIVEWAY TREATMENT

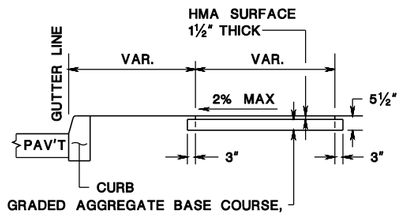
PLAN VIEW

CD-606-5.8



CONCRETE SIDEWALK, 4" THICK

CD-606-5.9



DENSE GRADED AGGREGATE BASE COURSE,
4" THICK OR AGGREGATE BASE COURSE.
4" THICK AGGREGATE BASE COURSE IS
SOIL AGGREGATE, DESIGNATION I-5.

HMA SIDEWALK, 5 1/2" THICK

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

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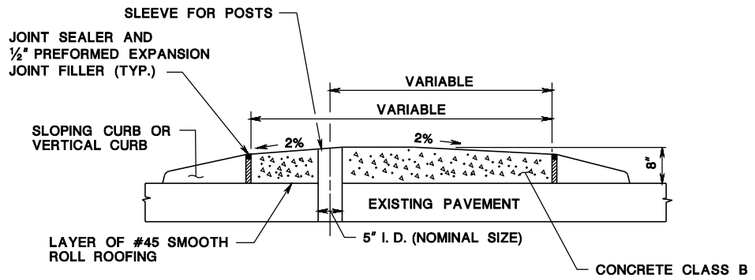
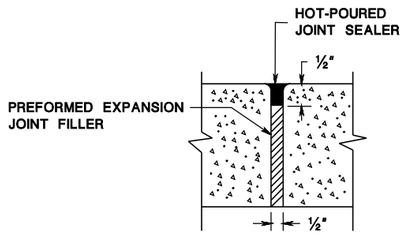


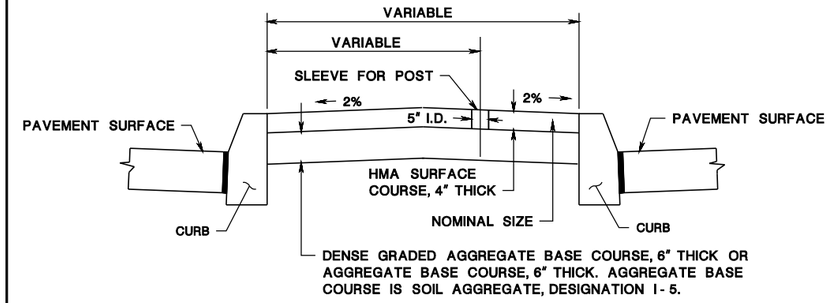
CONCRETE ISLAND ON EXISTING PAVEMENT

CD-606-6.1



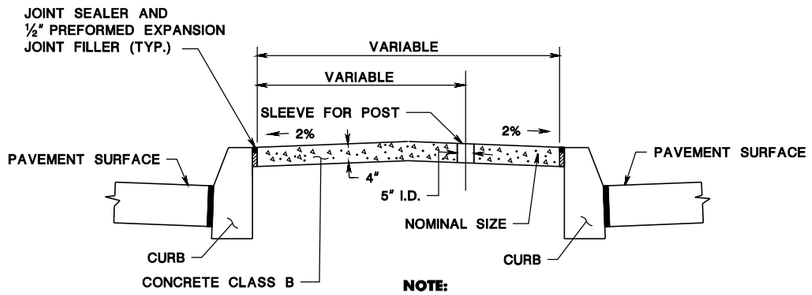
LONGITUDINAL AND TRANSVERSE JOINT TREATMENT FOR CONCRETE ISLAND

CD-606-6.2



HMA ISLAND, 10" THICK

CD-606-6.3



NOTE:

TRANSVERSE JOINTS TO BE AS CONSTRUCTED FOR CONCRETE VERTICAL CURB.

CONCRETE ISLAND, 4" THICK

CD-606-6.4

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:

½ INCH FOR INTERMEDIATE JOINTS AND JOINTS OVER DEFINITE CRACKS.

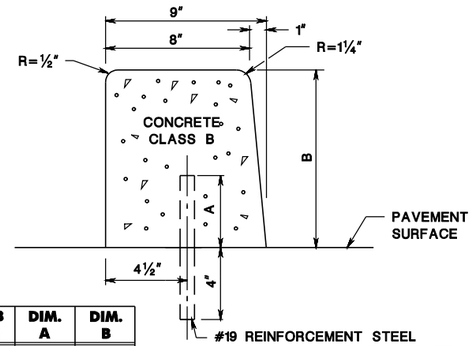
½ INCH OVER PAVEMENT JOINTS WHERE SLAB LENGTH IS 50 FEET OR LESS.

1 INCH OVER PAVEMENT JOINTS WHERE SLAB LENGTH IS MORE THAN 50 FEET VARIABLE IN MULTIPLES OF ½ 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 ½ 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.

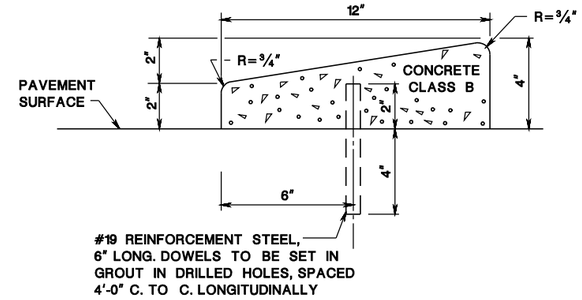
CD-607-1.1



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

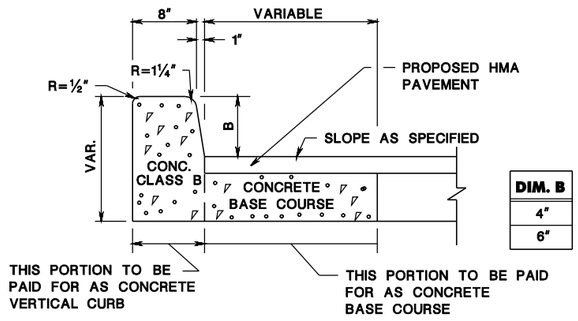
9″ x __″ CONCRETE VERTICAL CURB, DOWELLED

CD-607-1.2



12″ x 3″ CONCRETE SLOPING CURB, DOWELLED

CD-607-1.3



DIM. B
4″
6″

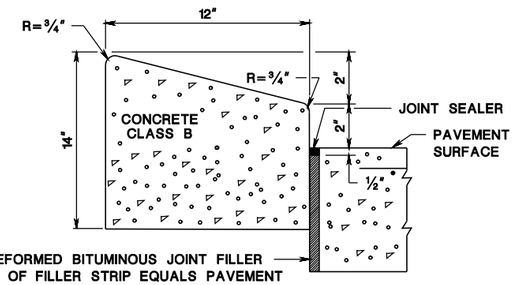
NOTES:

EXPANSION JOINTS ½ 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.

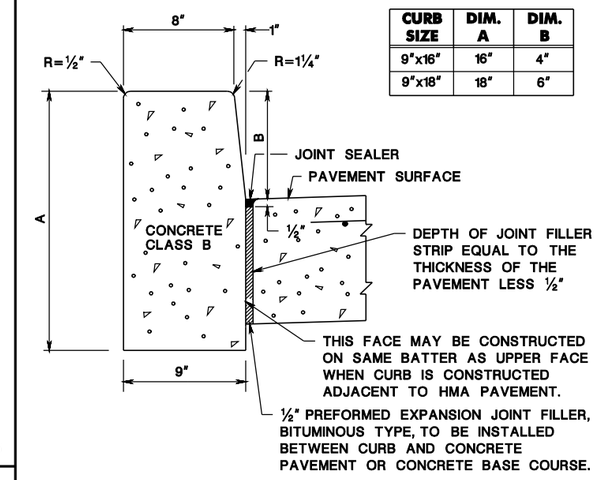
CONCRETE VERTICAL CURB MONOLITHIC WITH CONCRETE BASE COURSE

CD-607-1.4



12″ x 13″ CONCRETE SLOPING CURB

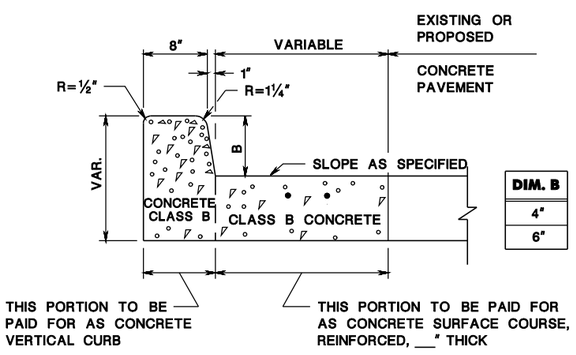
CD-607-1.5



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

CONCRETE VERTICAL CURB

CD-607-1.6



DIM. B
4″
6″

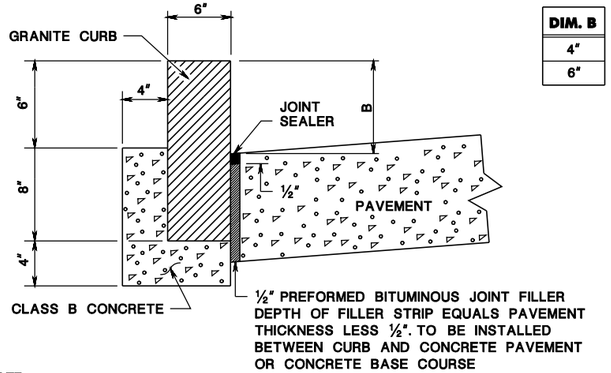
NOTES:

EXPANSION JOINTS ½ 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″

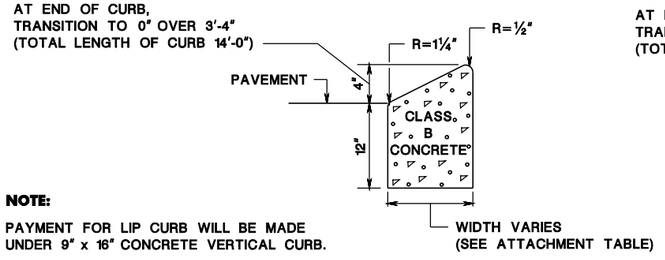
NOTE:

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	11¼″
609-15	A	7″
609-15	B	11¼″
609-16	A	7″
609-16	B	11¼″



NOTE:

PAYMENT FOR LIP CURB WILL BE MADE UNDER 9″ x 16″ CONCRETE VERTICAL CURB.

LIP CURB FOR BEAM GUIDE RAIL ATTACHMENTS

CD-607-1.9

CONCRETE AND GRANITE CURB

N.T.S.

NOTE:

REINFORCEMENT STEEL IS IN METRIC UNITS.

HMA = HOT MIX ASPHALT

CD-607-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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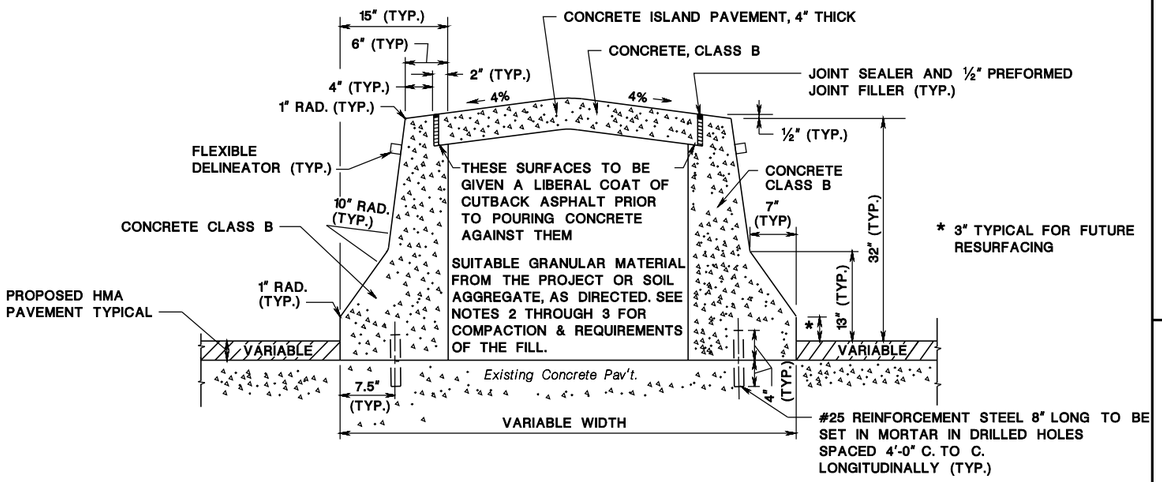
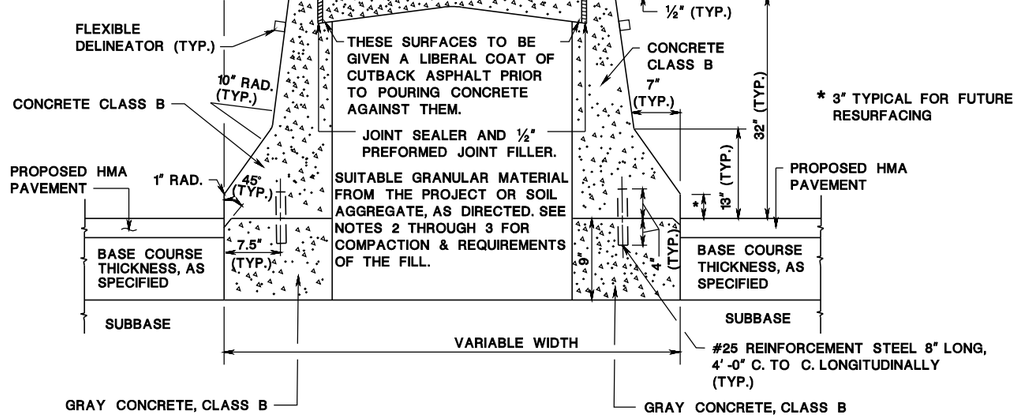


15" x VARIABLE HEIGHT CONCRETE BARRIER CURB, DOWELLED

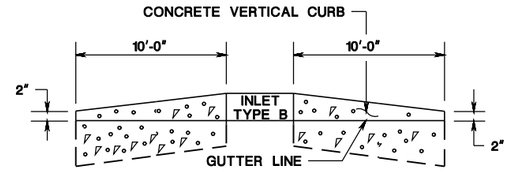


15" x 41" CONCRETE BARRIER CURB

NOTES:

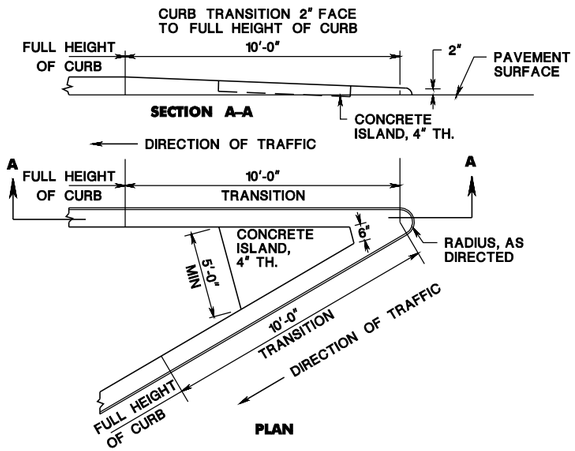
1. SEE GENERAL NOTES APPLYING TO ALL BARRIER CURB CD-607-3.2.
2. COMPACT ACCORDING TO SUBSECTION 202.03.
3. SHAPE AND COMPACT THE FILL BETWEEN THE CURBS TO A FIRM EVEN SURFACE. REMOVE UNSUITABLE MATERIAL AND REPLACE WITH ACCEPTABLE MATERIAL AND COMPACT.

CD-607-2.1



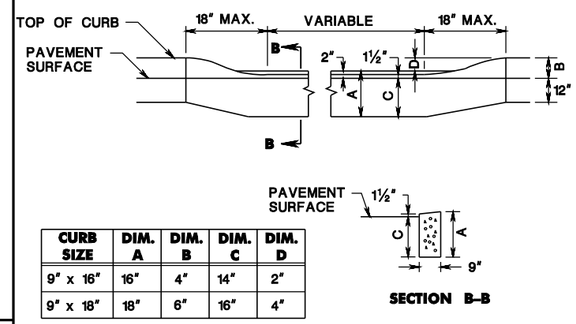
CURB TREATMENT AT BERM SECTION AND ALL CURB ENDS

CD-607-2.2



APPROACH CURBED GORE AREA TREATMENT

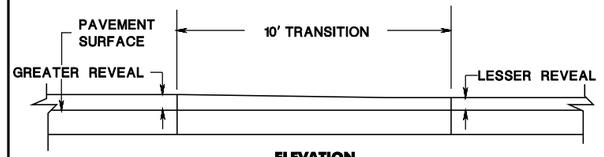
CD-607-2.3



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

METHOD OF DEPRESSING CURB AT DRIVEWAYS

CD-607-2.4



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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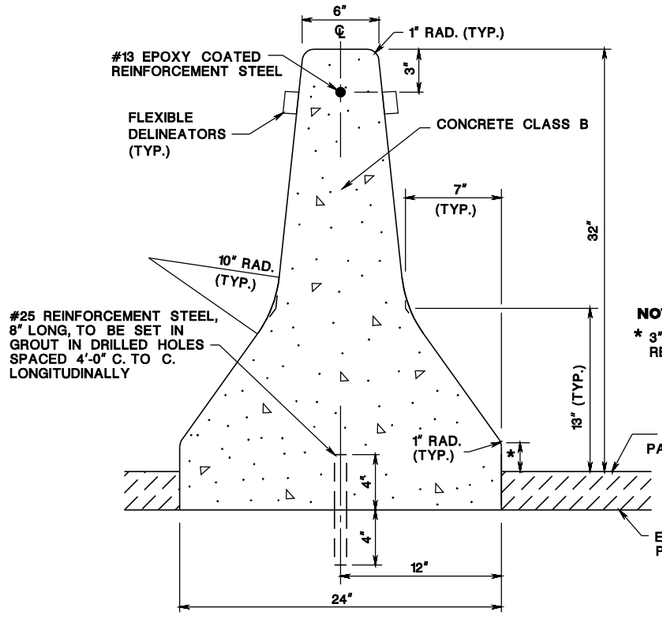
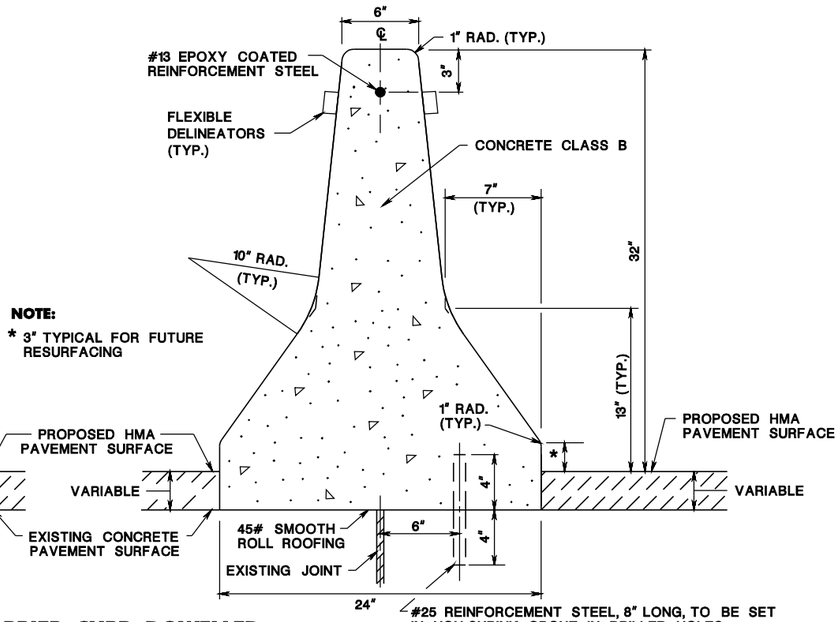
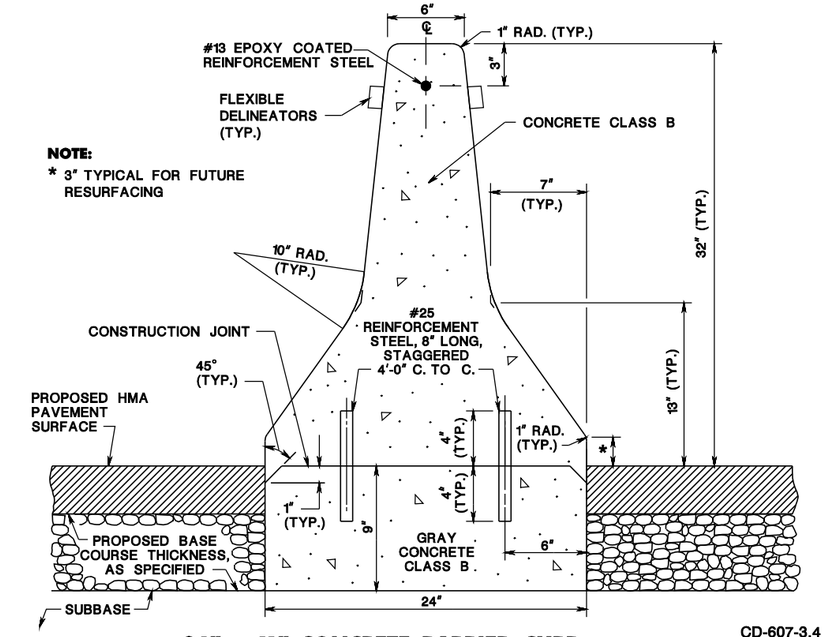




24" x ___ " CONCRETE BARRIER CURB, DOWELLED

CD-607-3.1



24" x 41" CONCRETE BARRIER CURB

CD-607-3.4

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 ¼" IN FROM FACES AND TOP OF CURB. THE THICKNESS OF THE TRANSVERSE EXPANSION JOINT FILLER IS AS FOLLOWS:

½" FOR IMMEDIATE JOINTS AND JOINTS OVER DEFINITE CRACKS.
½" 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 ½" 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 ½" 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 ½" 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 ¼" IN FROM FACES AND TOP OF CURB.

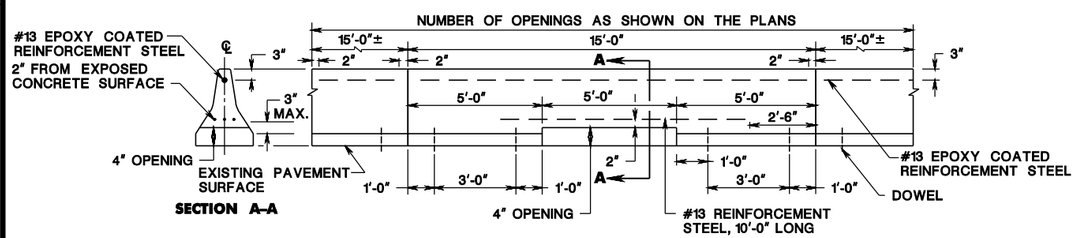
(C) GENERAL:

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:

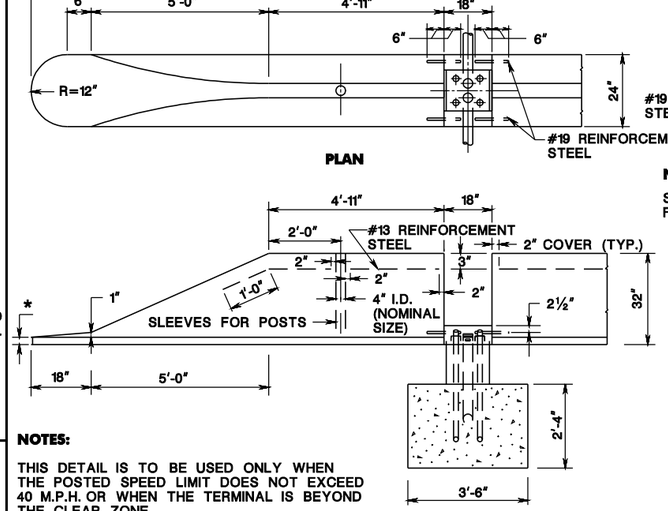
INSTALL FLEXIBLE DELINEATORS ON BARRIER CURB.

CD-607-3.2



OPENINGS TO BE CONSTRUCTED IN BARRIER CURB

CD-607-3.3



NOTES:

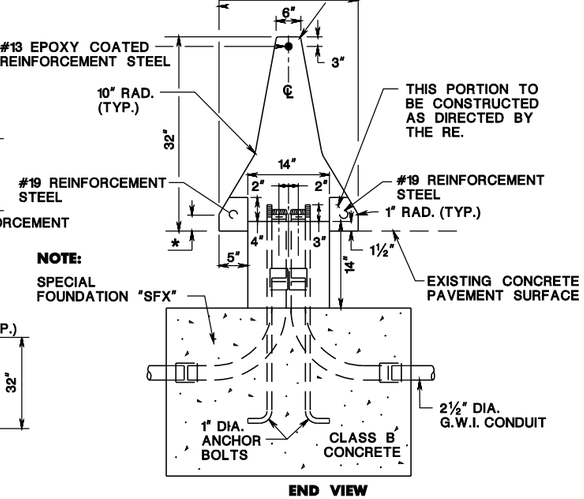
THIS DETAIL IS TO BE USED ONLY WHEN THE POSTED SPEED LIMIT DOES NOT EXCEED 40 M.P.H. OR WHEN THE TERMINAL IS BEYOND THE CLEAR ZONE.

* 3" TYPICAL FOR FUTURE RESURFACING

BARRIER CURB AT LIGHTING POLE BASE INSTALLATION

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

CD-607-3.5



END VIEW

BARRIER CURB

N.T.S.

CD-607-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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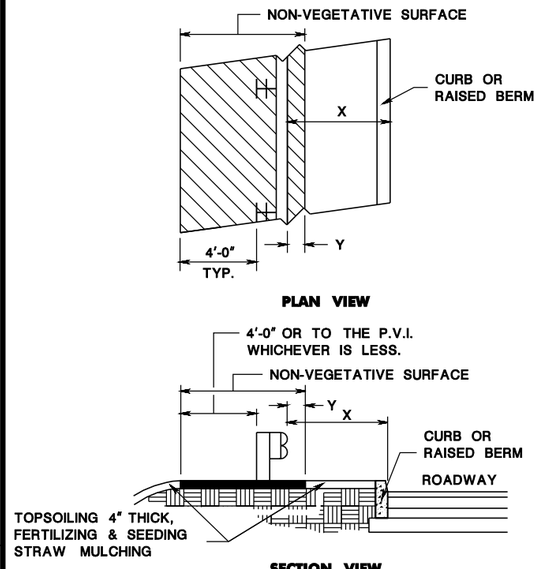
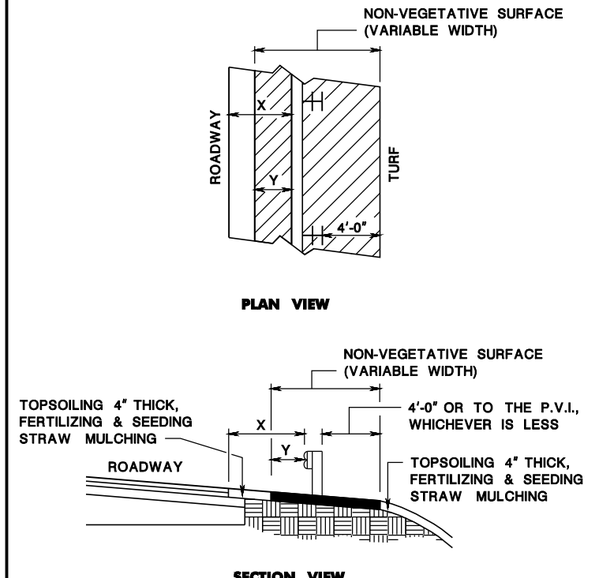


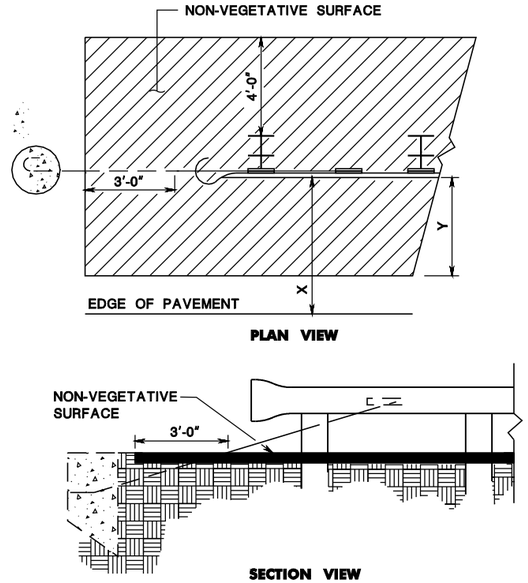
NON-VEGETATIVE SURFACES AROUND GUIDE RAIL BEHIND CURB OR RAISED BERM

CD-608-1.1



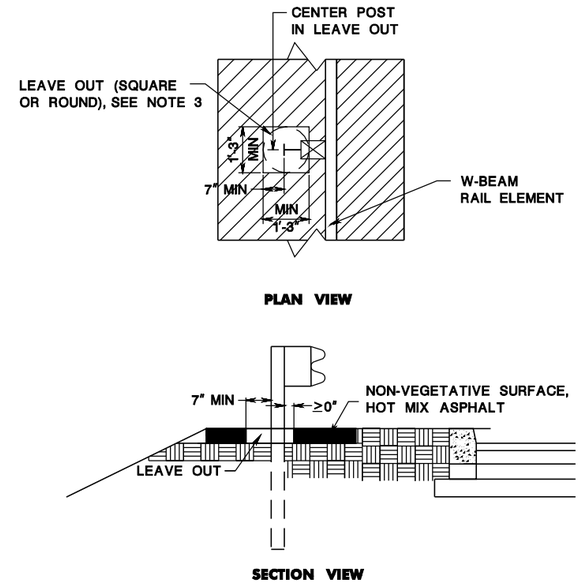
NON-VEGETATIVE SURFACE AT EDGE OF PAVEMENT ON UMBRELLA SECTION WHERE GUIDE RAIL IS USED

CD-608-1.2



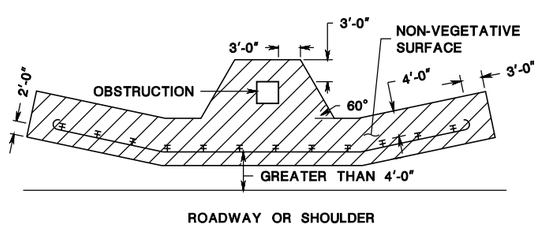
NON-VEGETATIVE SURFACES AROUND GUIDE RAIL ANCHORAGE

CD-608-1.3



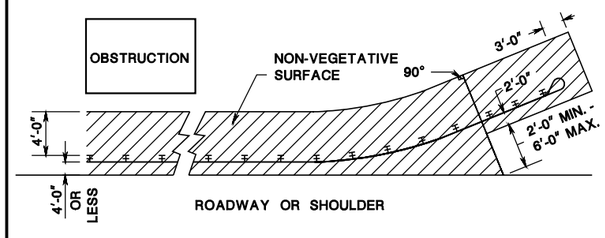
LEAVE OUT FOR NON-VEGETATIVE SURFACE, HOT MIX ASPHALT ONLY

CD-608-1.4



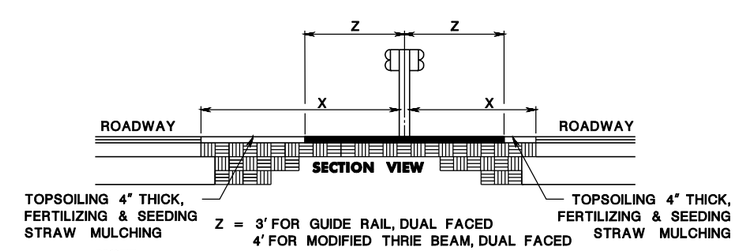
NON-VEGETATIVE SURFACE AROUND FLARED GUIDE RAIL WHERE GUIDE RAIL OFFSET FROM EDGE OF PAVEMENT IS GREATER THAN 4'-0"

CD-608-1.5



NON-VEGETATIVE SURFACE AROUND FLARED GUIDE RAIL WHERE GUIDE RAIL OFFSET FROM EDGE OF PAVEMENT IS 4'-0" OR LESS

CD-608-1.6



Z = 3' FOR GUIDE RAIL, DUAL FACED
4' FOR MODIFIED THRIE BEAM, DUAL FACED

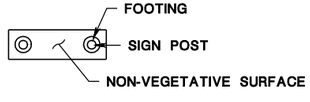
NOTE:
WHERE X IS LESS THAN OR EQUAL TO 4', USE Y TO DETERMINE NON-VEGETATIVE SURFACE TREATMENT FOR THAT SIDE OF GUIDE RAIL.

NON-VEGETATIVE SURFACE, UNDER MEDIAN GUIDE RAIL

CD-608-1.7

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"

CD-608-1.8



THE NON-VEGETATIVE SURFACE IS TO FORM A RECTANGULAR PAD WHOSE OUTSIDE LIMITS EXTEND A MINIMUM OF 3'-0" BEYOND THE POST FOOTING.

PLAN VIEW

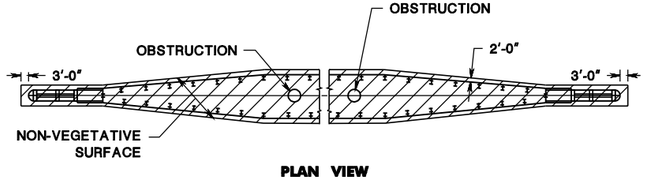
NON-VEGETATIVE SURFACE AROUND OVERHEAD SIGN FOUNDATIONS AND UNDER LARGE GROUND MOUNTED SIGNS

CD-608-1.9

GENERAL NOTES:

1. 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.
2. SEE TYPICAL SECTIONS FOR CROSS SLOPES IN ROADSIDE (BORDER OR SIDEWALK AREA).
3. LEAVE OUTS CAN BE FILLED WITH:
   1. 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 902; OR
   2. 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 AT MEDIAN GUIDE RAIL

CD-608-1.11

NON-VEGETATIVE SURFACE

N.T.S.

CD-608-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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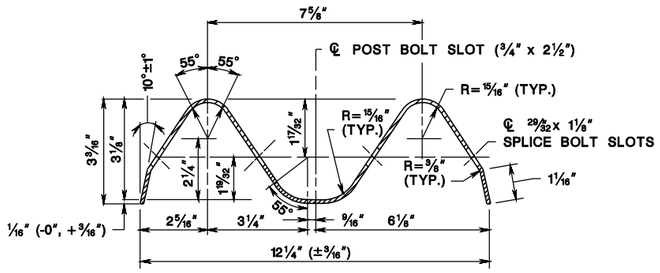
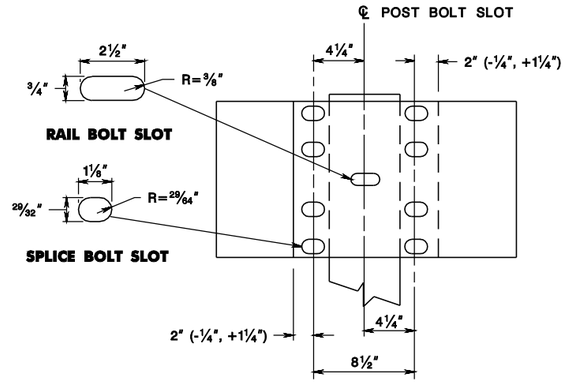
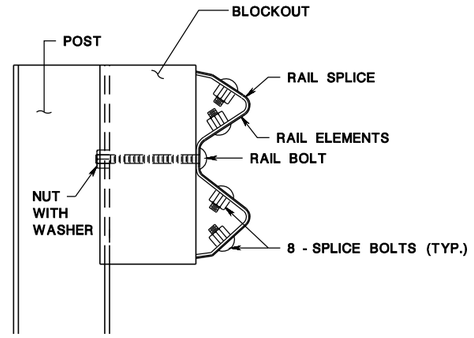


RAIL ELEMENT TO BE SUPPLIED IN LENGTHS OF 13'- 6½" OR 26'-½"

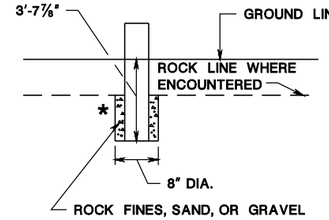
W-BEAM RAIL ELEMENT



RAIL SPLICE



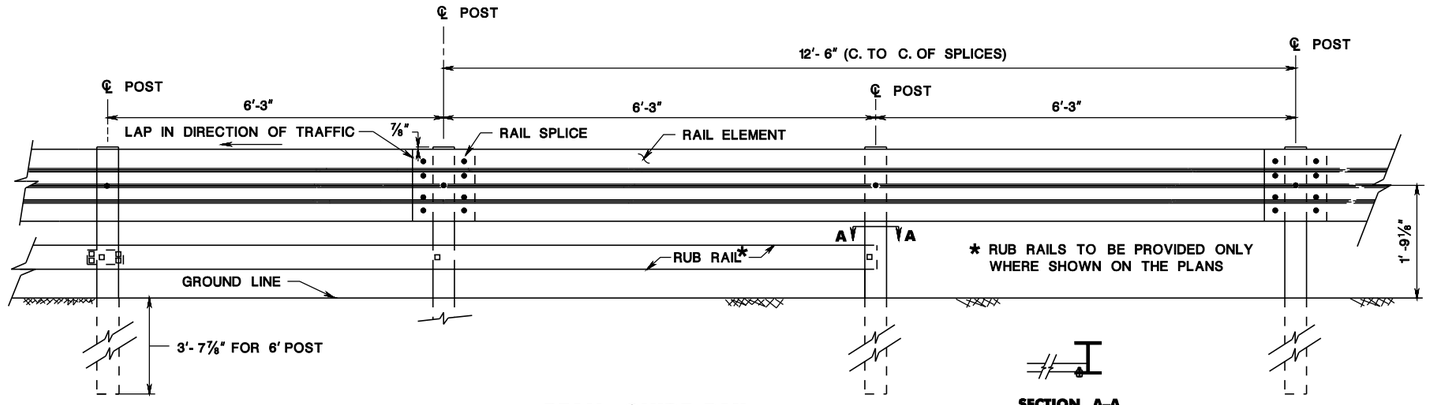
BEAM GUIDE RAIL POST ASSEMBLY



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

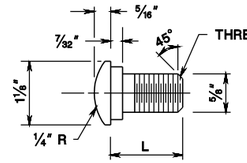
GUIDE RAIL POST INSTALLATION IN ROCK

CD-609-1.2

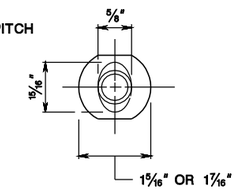


BEAM GUIDE RAIL

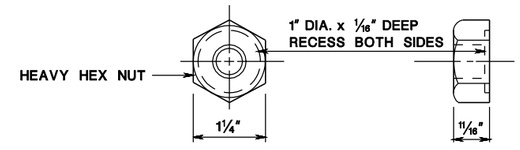
SECTION A-A



TYPE	L	MIN. THREAD LENGTH
SPLICE	1¼"	FULL LENGTH THREAD
RAIL	9½"	1¾"

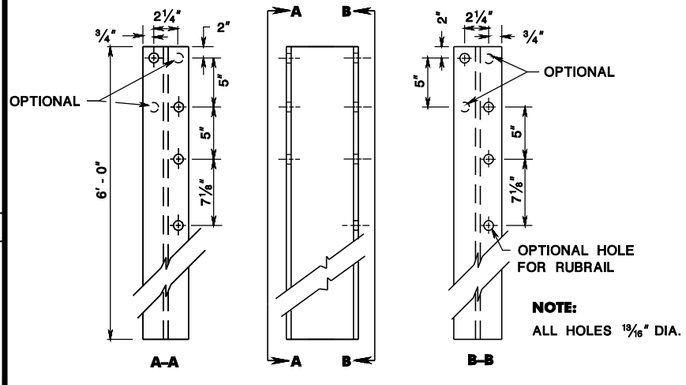


5/8" DIA. BUTTON HEAD BOLT



5/8" DIA. RECESS NUT

SPLICE AND RAIL NUT AND BOLT

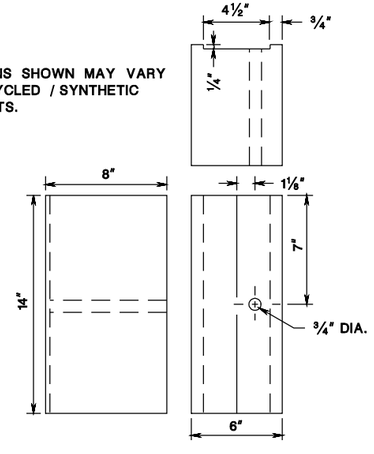


NOTE:
ALL HOLES 13/16" DIA.

W6 x 8.5 OR W6 x 9 STEEL POST

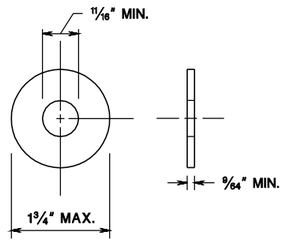
6' POST

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



APPROVED RECYCLED/ SYNTHETIC MATERIALS

14" BLOCKOUT



STEEL WASHER

GENERAL NOTES:

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

CD-609-1.1

BEAM GUIDE RAIL

N.T.S.

CD-609-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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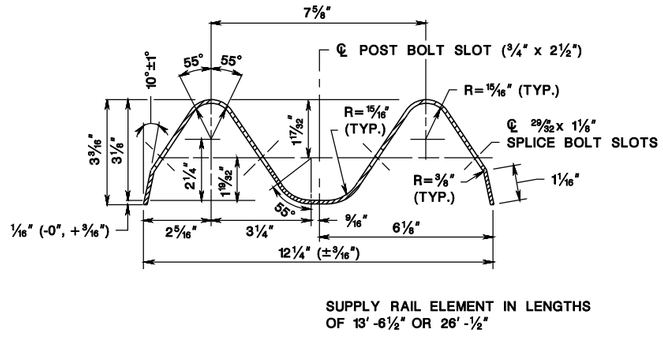
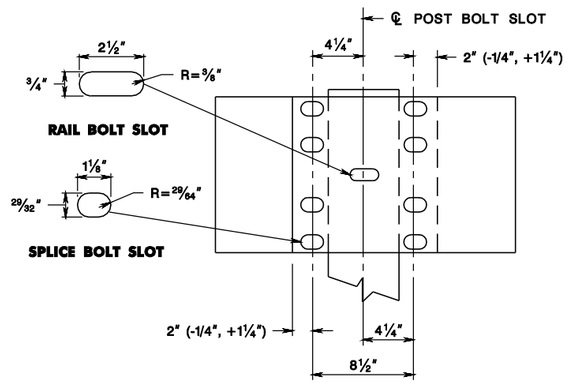
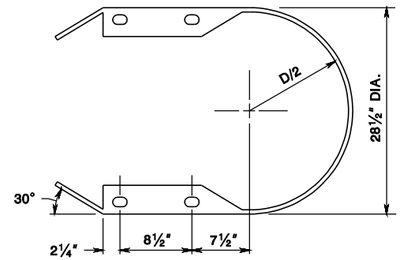


SUPPLY RAIL ELEMENT IN LENGTHS OF 13' -6½" OR 26' -½"

W-BEAM RAIL ELEMENT



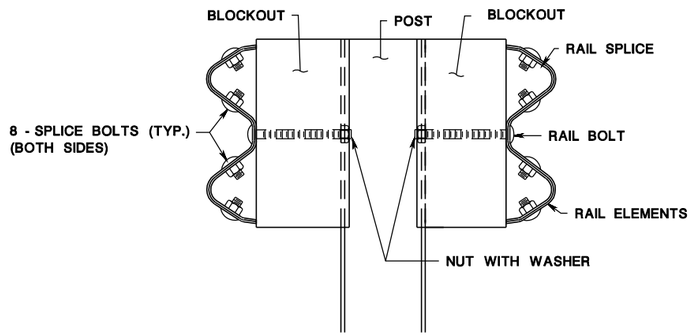
RAIL SPLICE



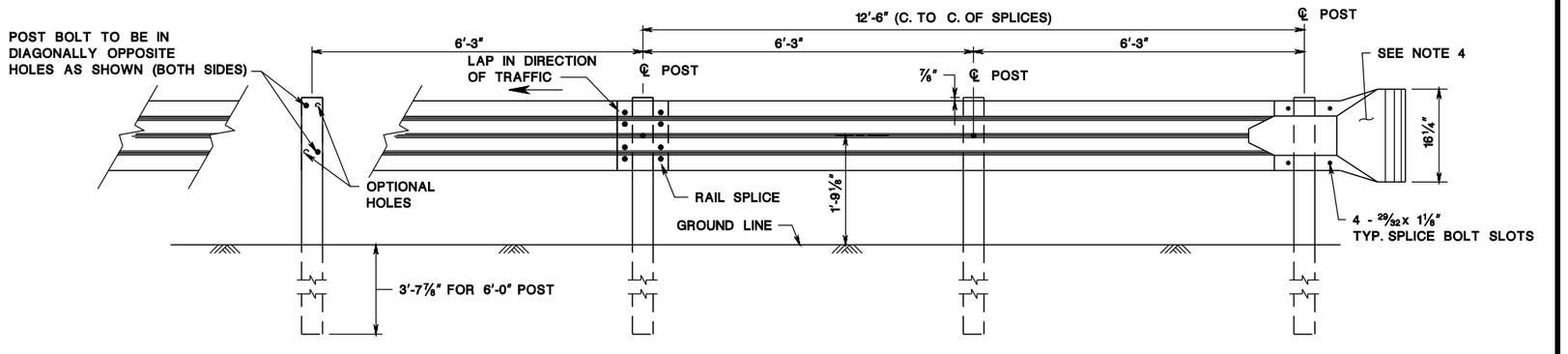
END SECTION (BUFFER)

GENERAL NOTES:

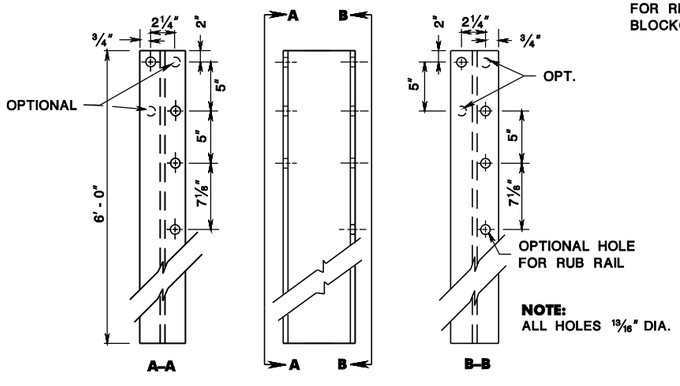
1. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
2. RAIL ELEMENTS TO BE FURNISHED SHOPCURVED, CONCAVE, OR CONVEX FOR RADII BETWEEN 20 FEET AND 150 FEET.
3. USE END SECTION (BUFFER) UNLESS THE CONSTRUCTION PLANS CALL FOR ANOTHER TYPE OF END TREATMENT.



POST ASSEMBLY, DUAL FACED



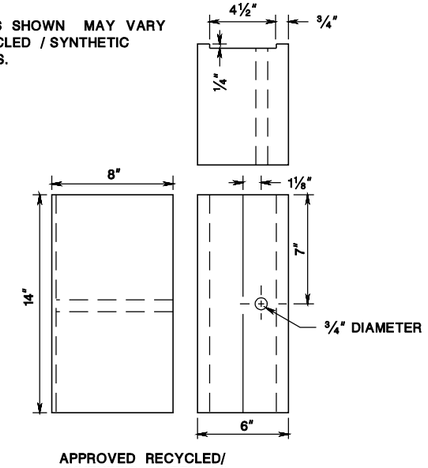
BEAM GUIDE RAIL, DUAL FACED



W6 x 8.5 OR W6 x 9 STEEL POST

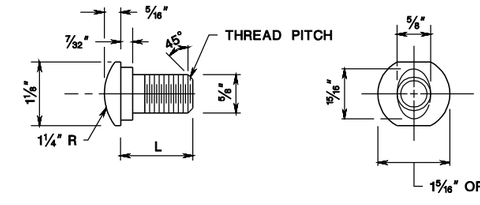
6' POST

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



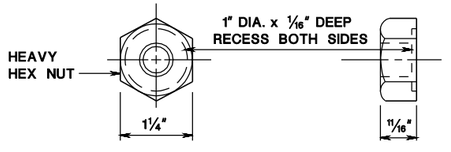
APPROVED RECYCLED/ SYNTHETIC MATERIALS

14" BLOCKOUT



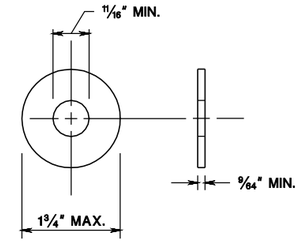
5⁄8" DIA. BUTTON HEAD BOLT

TYPE	L	MIN. THREAD LENGTH
SPLICE	1¼"	FULL LENGTH THREAD
RAIL	9½"	1¾"



5⁄8" DIA. RECESS NUT

SPLICE AND RAIL NUT AND BOLT



STEEL WASHER

BEAM GUIDE RAIL, DUAL FACED

N.T.S.

CD-609-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-609-2.1

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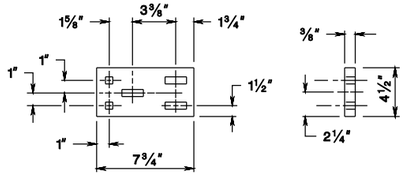
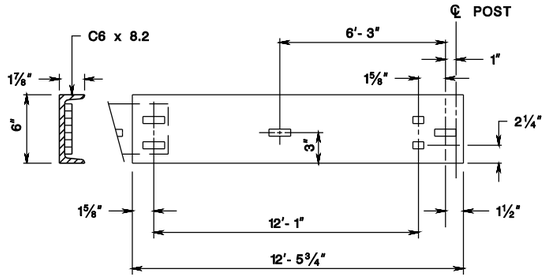


SPLICE PLATE



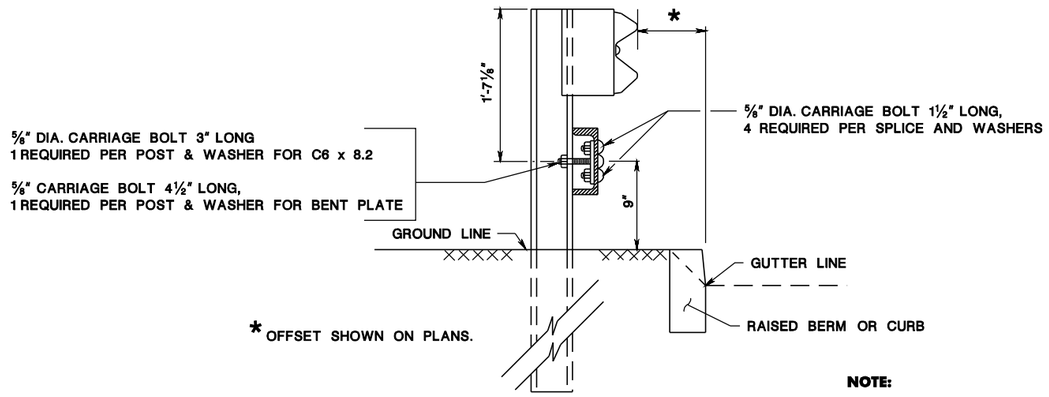
RUB RAIL MAY BE SUPPLIED IN LENGTHS OF 12'- 5¾" OR 24'- 11¾"

NOTE:
ALL RECTANGULAR SLOTS ARE 11⁄16" x 2"
ALL SQUARE HOLES ARE 11⁄16"

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

C6 x 8.2

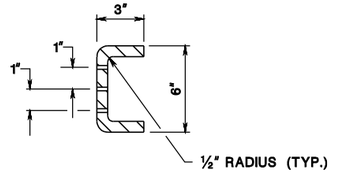
CD-609-3.1



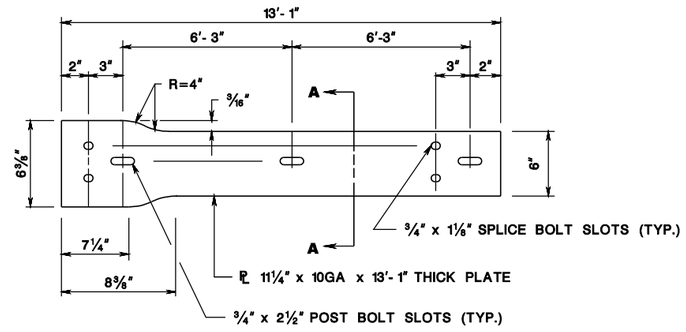
NOTE:
USE EITHER C6 x 8.2 OR BENT PLATE FOR RUB RAIL

RUB RAIL SECTION

CD-609-3.2



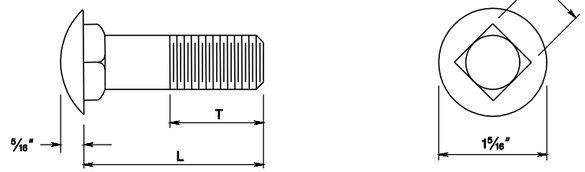
SECTION A-A



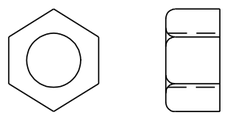
NOTE:
USE EITHER C6 x 8.2 OR BENT PLATE FOR RUB RAIL

BENT PLATE

CD-609-3.3



⅝" DIA. CARRIAGE BOLT

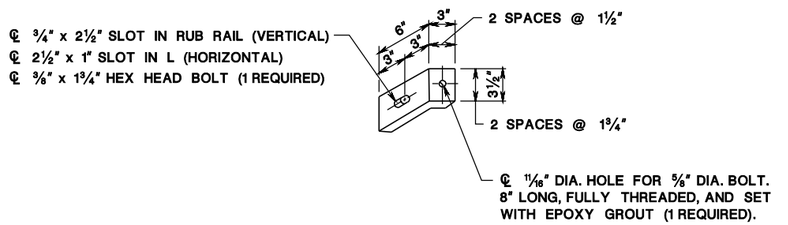


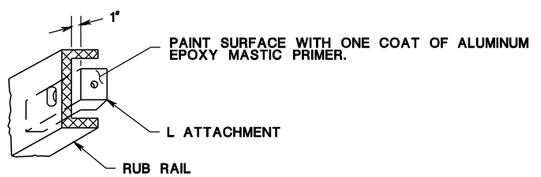
⅝" DIA. HEX NUT

L	THREAD LENGTH (T)
1½"	FULL LENGTH
3"	1½" MIN.
4½"	1½" 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

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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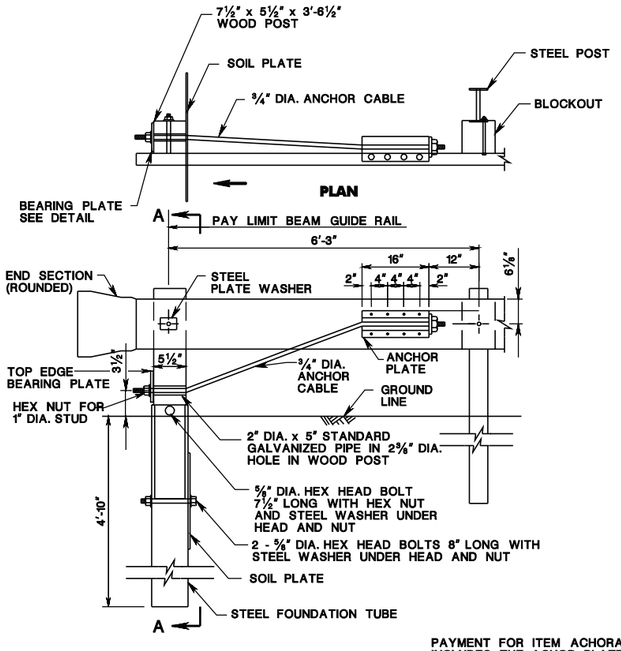
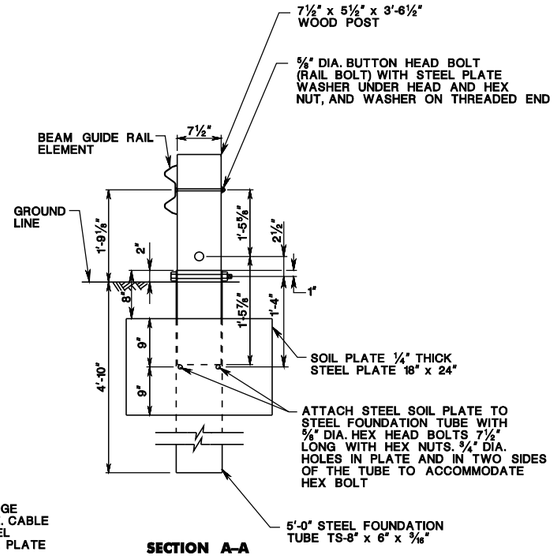
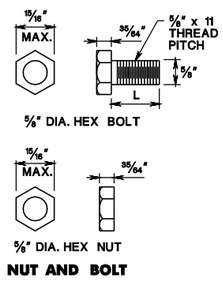
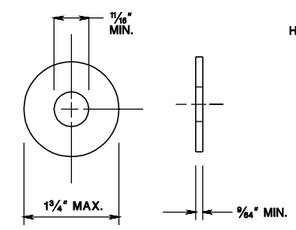


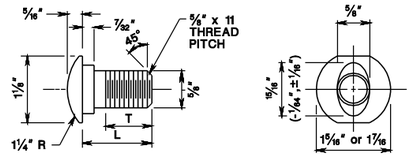
PAYMENT FOR ITEM ACHORAGE INCLUDES THE ACHOR PLATE. CABLE ASSEMBLY, WOOD POST, STEEL FOUNDATION TUBE AND SOIL PLATE

BEAM GUIDE RAIL ANCHORAGE

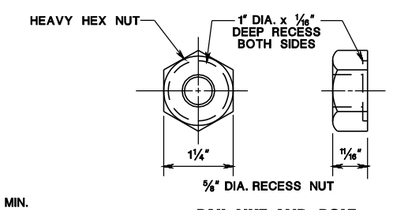


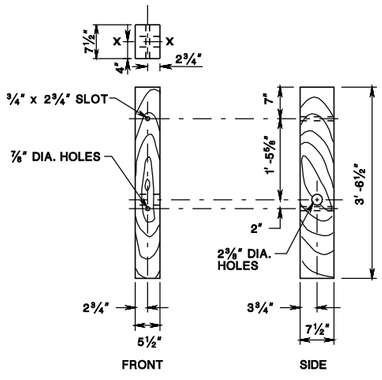


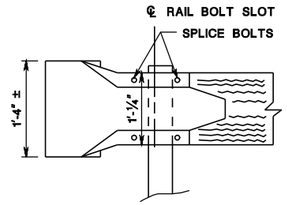


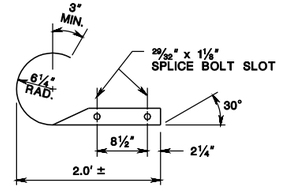


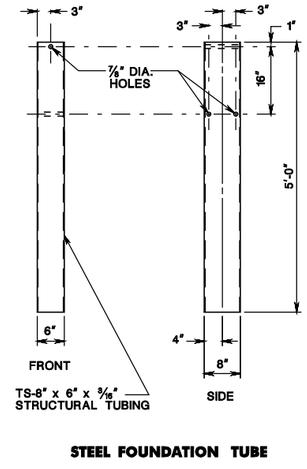
TYPE	L	MIN. THREAD LENGTH (T)
RAIL	10"	4"
Ssplice	1¼"	1¼"

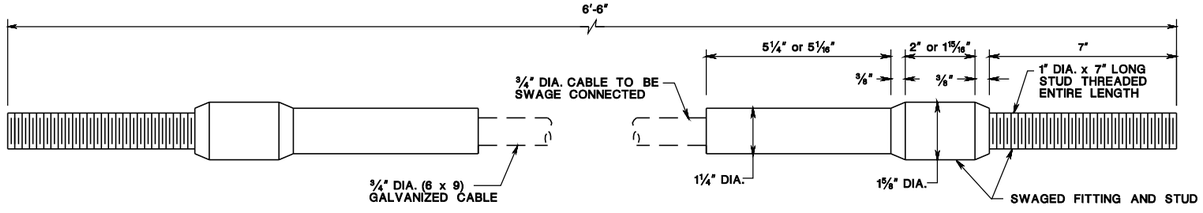


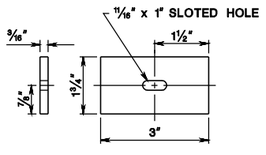


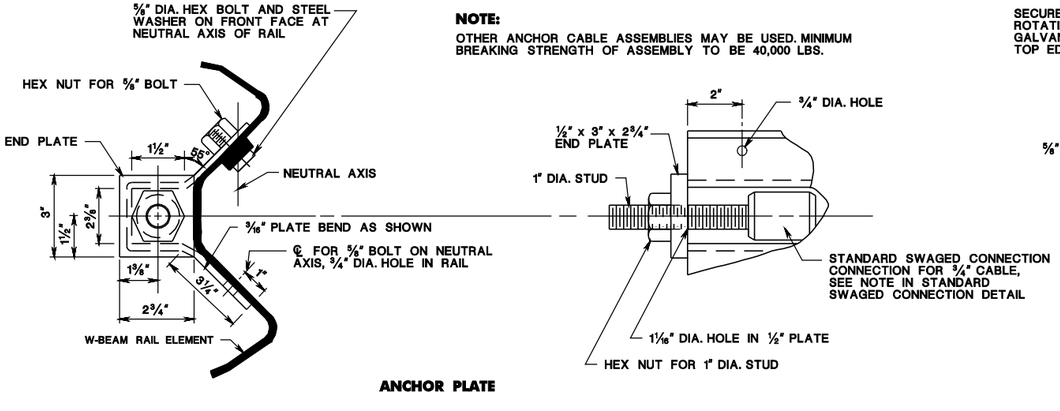






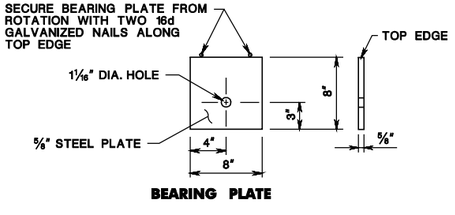


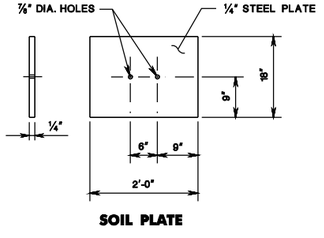




NOTE:

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





BEAM GUIDE RAIL ANCHORAGE

N.T.S.

CD-609-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-609-4.1

65
164

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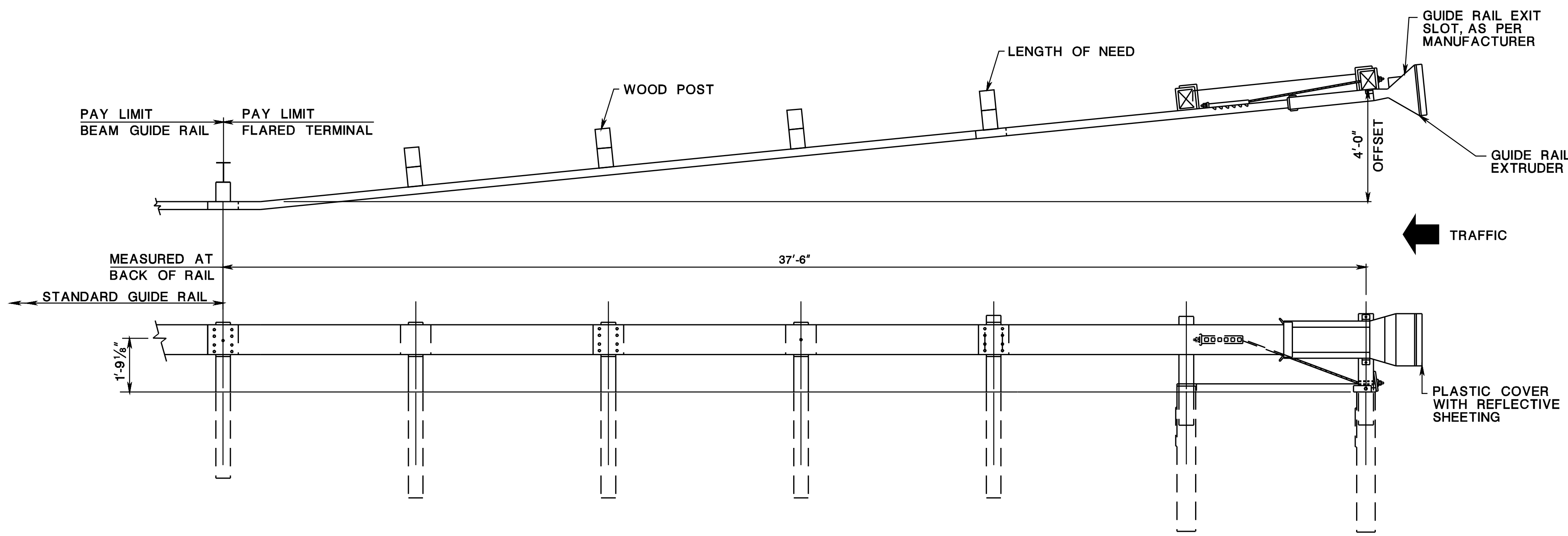
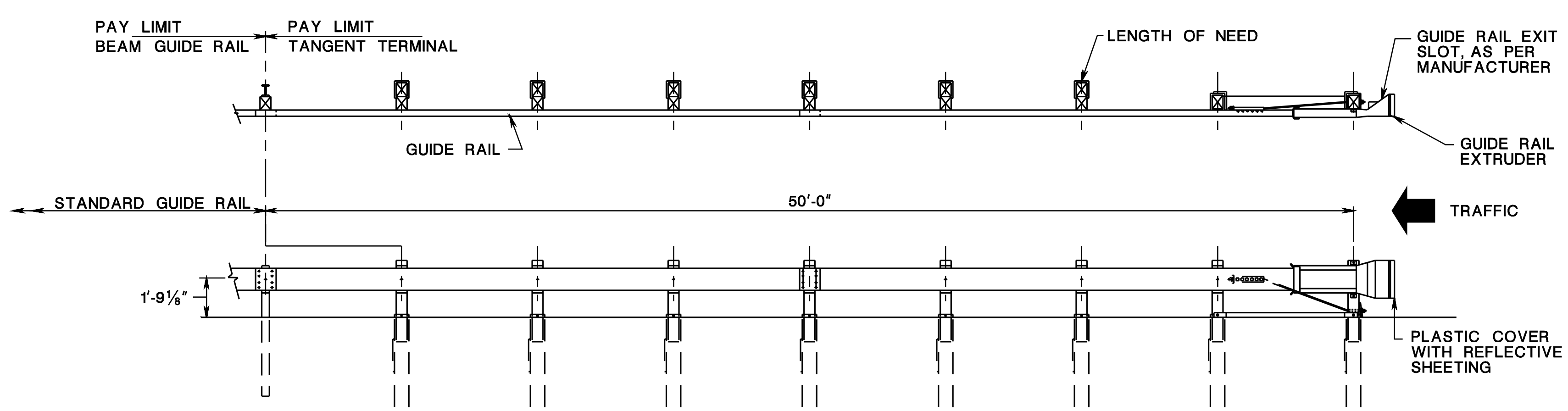


FLARED GUIDE RAIL TERMINAL

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

CD-609-5.2

FLARED GUIDE RAIL TERMINAL AND TANGENT GUIDE RAIL TERMINAL

N.T.S.

CD-609-5

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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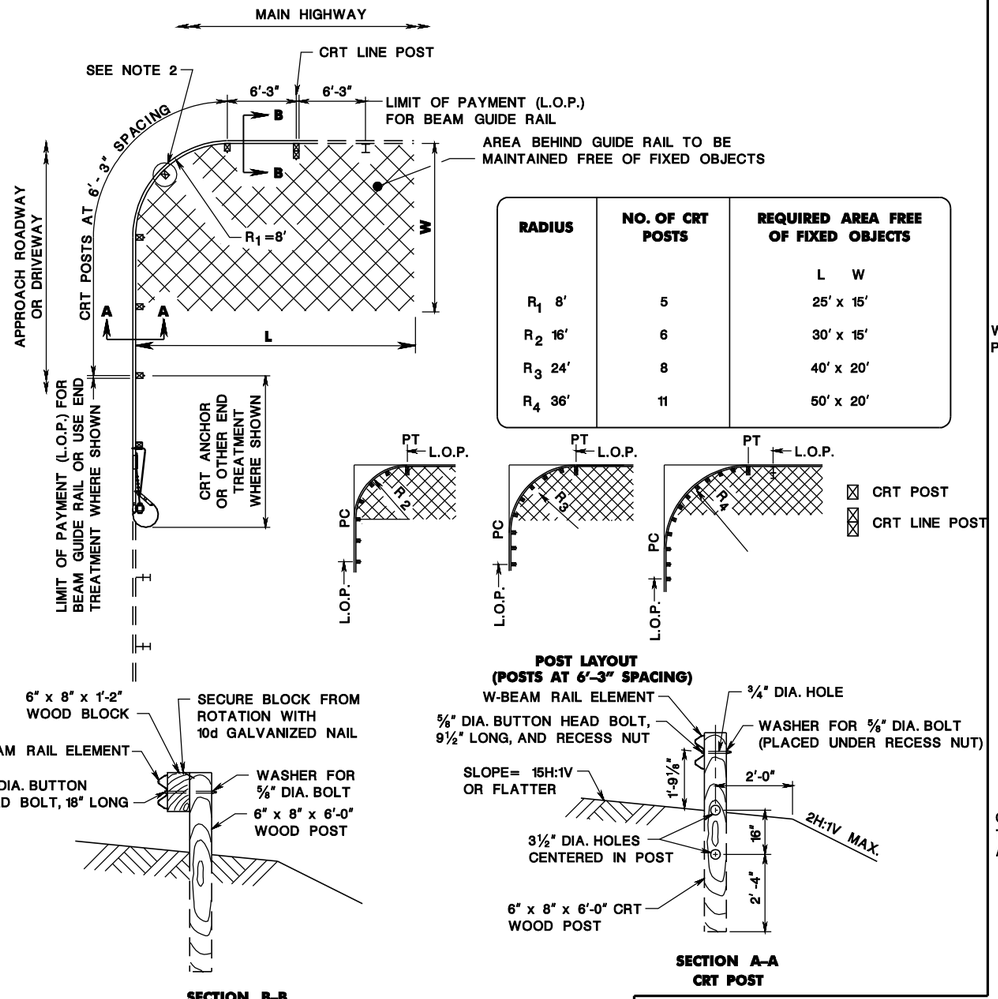
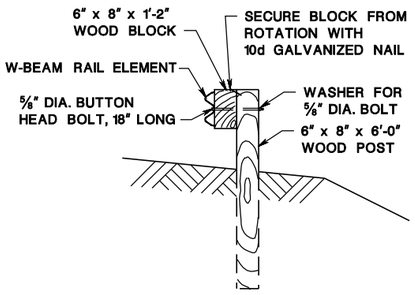
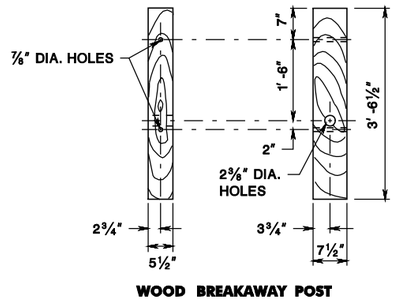


RADIUS	NO. OF CRT POSTS	REQUIRED AREA FREE OF FIXED OBJECTS
		L W
R_1 8′	5	25′ x 15′
R_2 16′	6	30′ x 15′
R_3 24′	8	40′ x 20′
R_4 36′	11	50′ x 20′

POST LAYOUT
(POSTS AT 6′-3″ SPACING)



SECTION B–B
CRT LINE POST

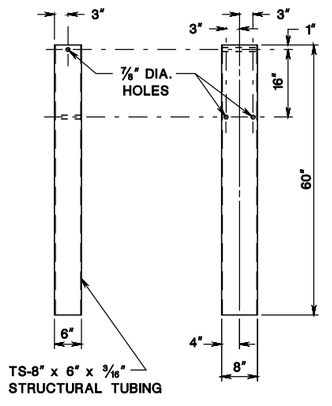


WOOD BREAKAWAY POST

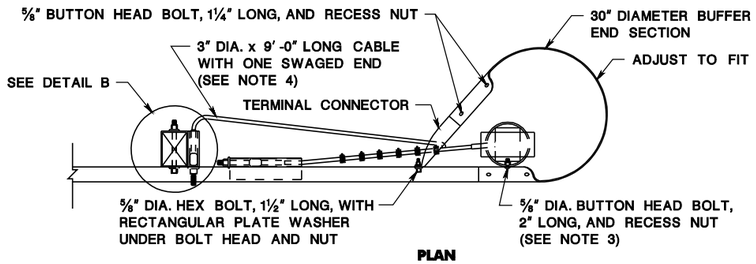
CONTROLLED RELEASE TERMINALS

CD-609-6.1

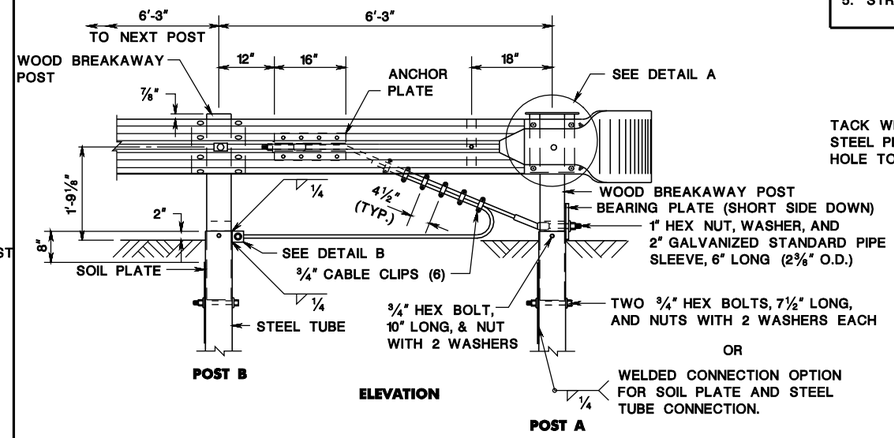
SECTION A–A
CRT POST



STEEL TUBE



PLAN

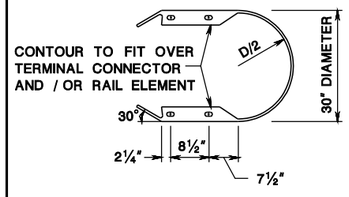


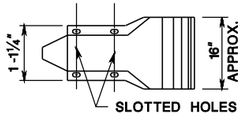
POST B

ELEVATION

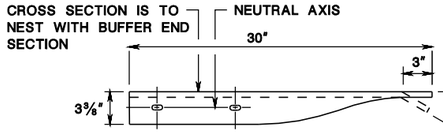
POST A

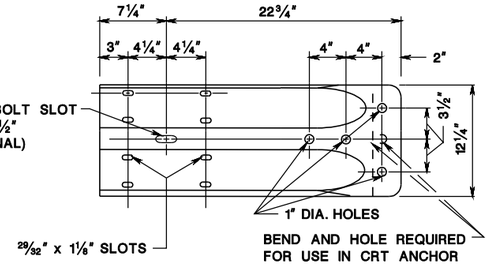
CRT ANCHOR





30" DIA. BUFFER END SECTION





TERMINAL CONNECTOR

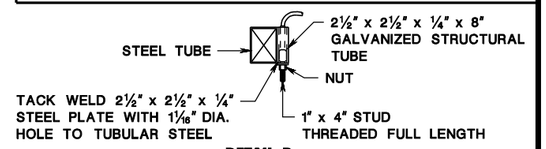
CONTROLLED RELEASE TERMINAL ANCHORAGE

CD-609-6.2

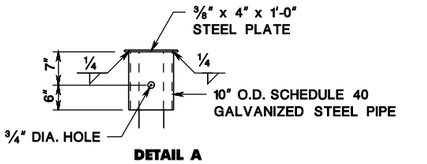
GENERAL NOTES:

1. NO WASHERS ARE USED ON THE 5/8" DIA. BUTTON HEAD BOLTS CONNECTING THE RAIL TO THE CONTROLLED RELEASE TERMINAL (CRT) POSTS.
2. FOR 8 FOOT RADIUS, THE RAIL ELEMENT NOT TO BE BOLTED TO THE CRT POST AT THE CENTER OF THE NOSE, AS SHOWN.
3. ATTACH W-BEAM TO STEEL PIPE WITH BUTTON HEAD BOLT WITH NO WASHER. NO CONNECTION TO POST IS REQUIRED.
4. 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.
5. STRUCTURAL TUBING TO CONFORM TO ASTM A500.

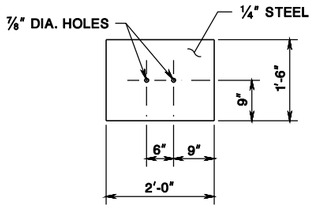
CD-609-6.3



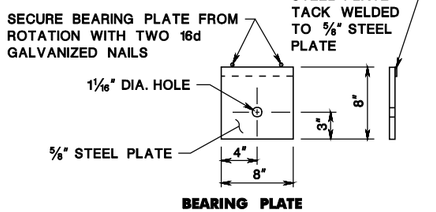
DETAIL B



DETAIL A



SOIL PLATE



BEARING PLATE

CONTROLLED RELEASE TERMINALS

N.T.S.

CD-609-6

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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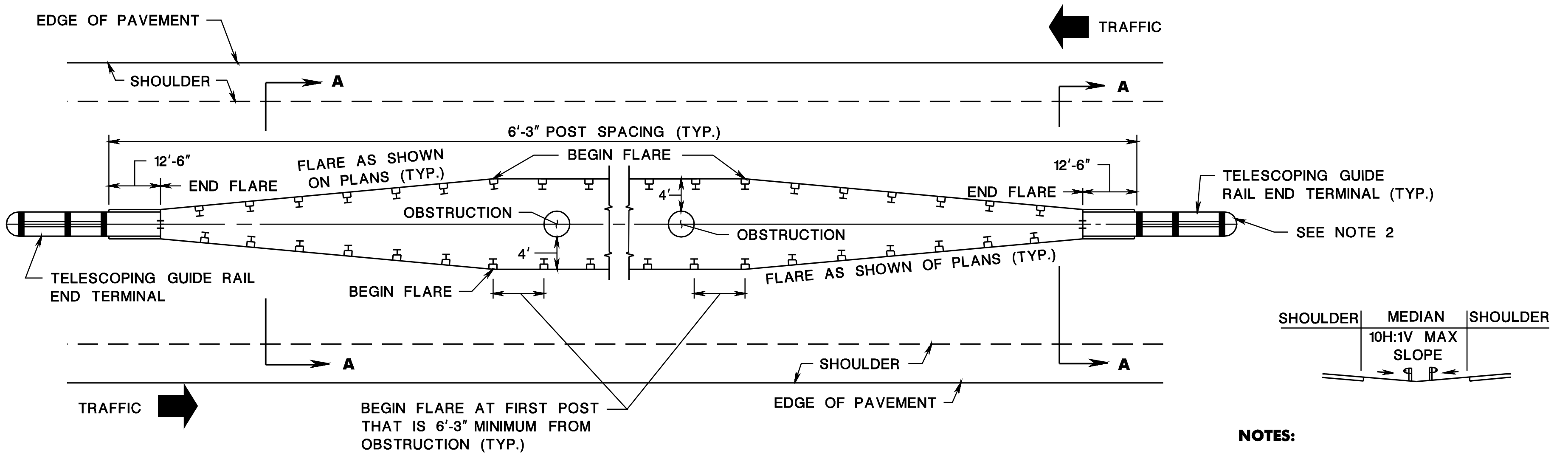
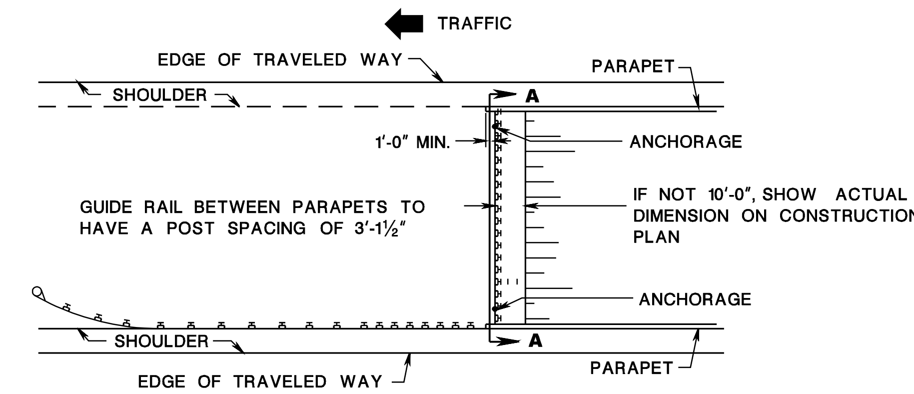


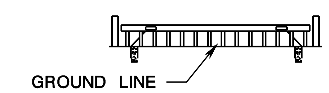
NOTES:

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

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

CD-609-7.1

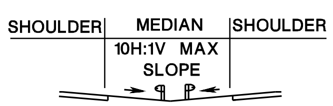




SECTION A–A

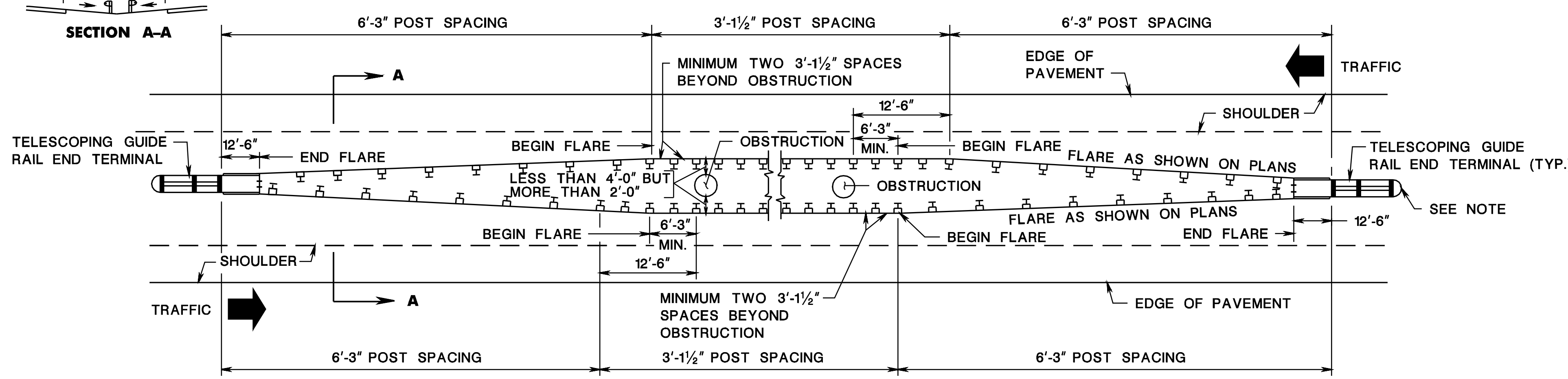
MEDIAN GUIDE RAIL TREATMENT AT ADJACENT BRIDGES

CD-609-7.4



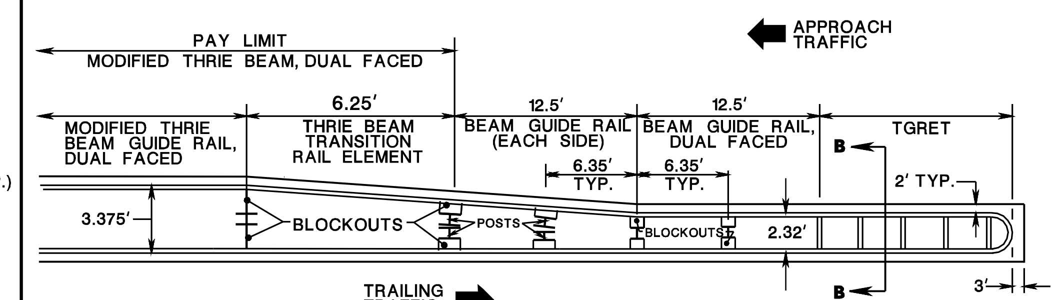
SECTION A–A

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



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

CD-609-7.2

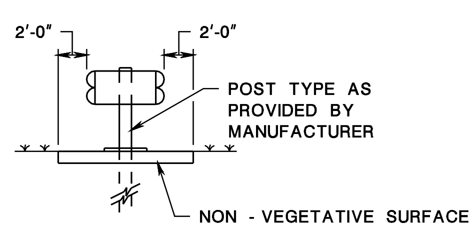


NOTES:

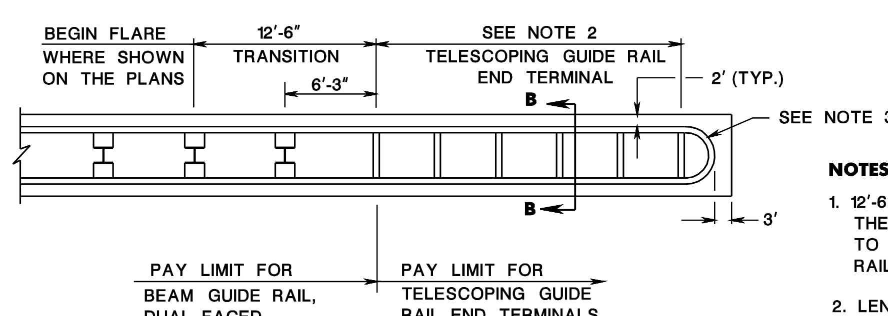
1. SEE NOTES AND SECTION B-B IN CD-609-7.3
2. THE DIRECTION OF THE APPROACH TRAFFIC AND TRAILING TRAFFIC SHOWN ABOVE IS THE PREFERRED TREATMENT

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

CD-609-7.5



SECTION B–B



NOTES:

1. 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.
2. LENGTH OF TGRET AS PER MANUFACTURER, SEE QUALIFIED PRODUCTS LIST (QPL).
3. INSTALL HIGH INTENSITY SHEETING ON FRONT FACE OF TGRET.

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

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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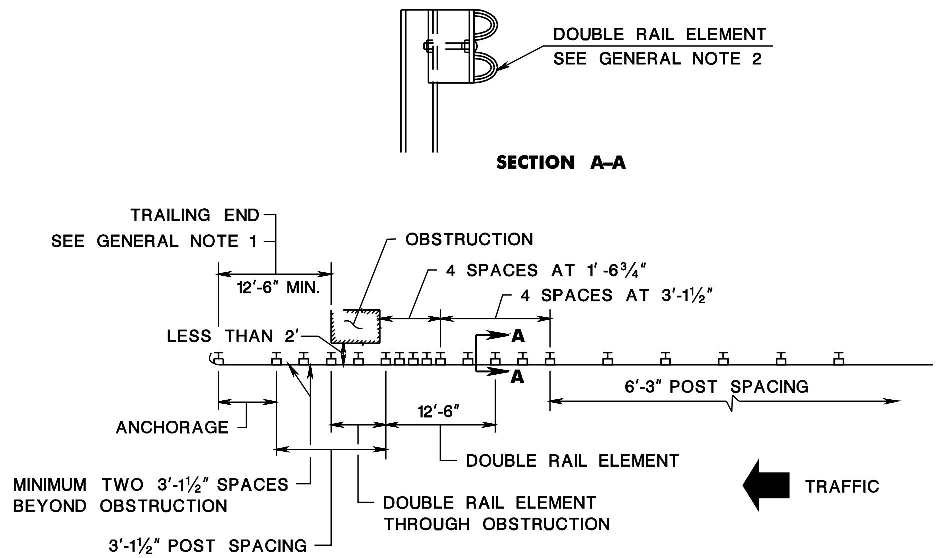
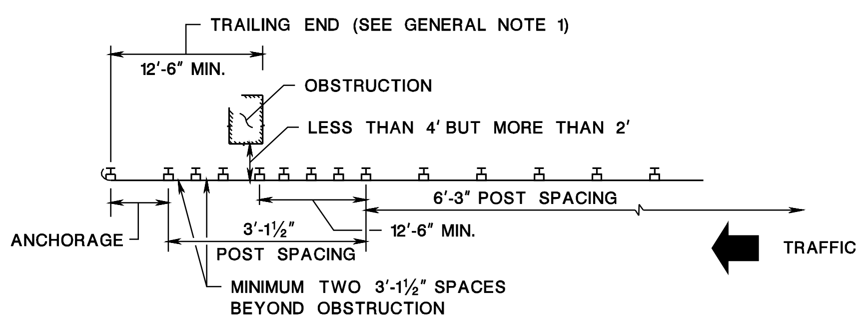


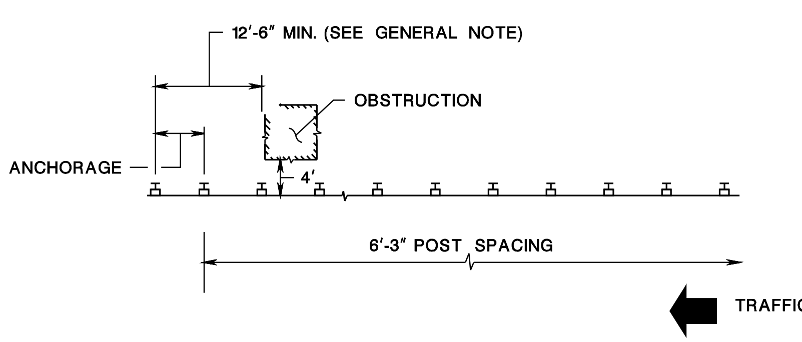
WHERE CLEARANCE FROM BACK OF RAIL TO OBSTRUCTION IS LESS THAN 2'

CD-609-8.1



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

CD-609-8.2

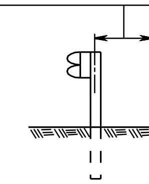


WHERE CLEARANCE FROM BACK OF RAIL TO OBSTRUCTION IS 4' OR GREATER

CD-609-8.3

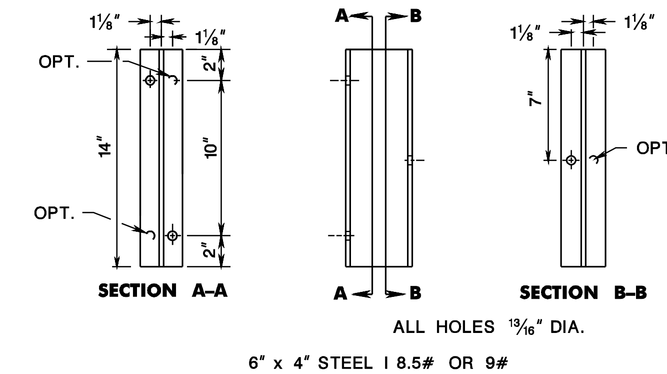
IF LESS THAN 2'

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'

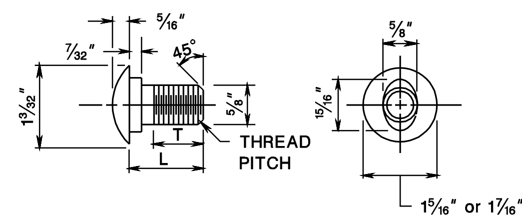


ADDITIONAL LENGTH BEAM GUIDE RAIL POSTS

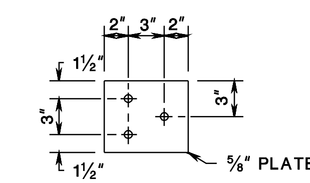
CD-609-8.4



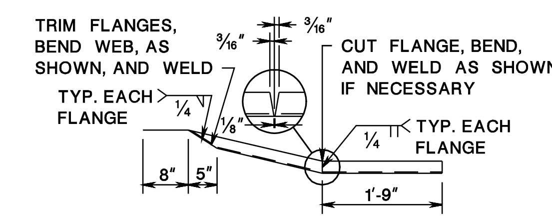
14" SPACER

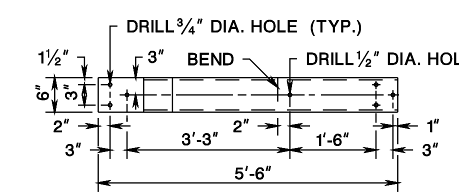


5/8" BUTTON HEAD BOLT



RUB RAIL BACKUP PLATE

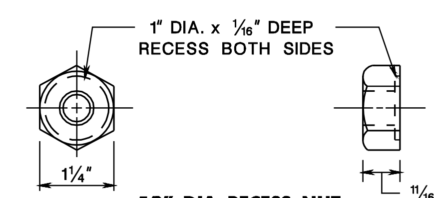




DETAIL A

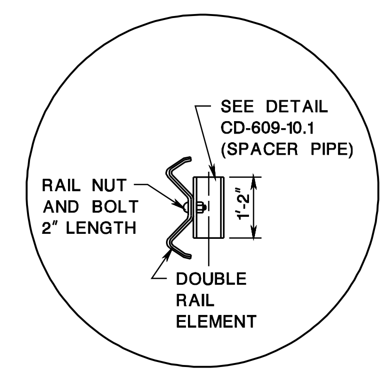
C6 x 8.2 RUB RAIL

TYPE	L	MIN. THREAD LENGTH
SPLICE	1⅜"	1 3/16"
RAIL	2"	1½"

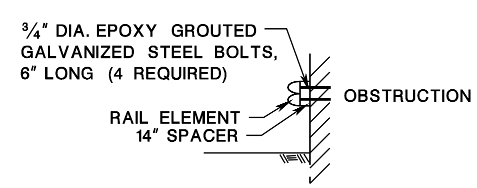


5/8" DIA. RECESS NUT

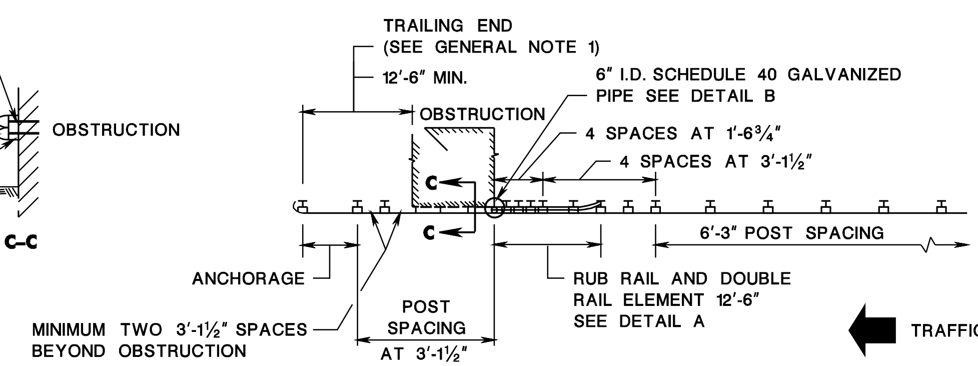
SPLICE AND RAIL NUT AND BOLT



DETAIL B



SECTION C–C



WHERE RAIL ELEMENT WITH SPACER IS ATTACHED TO OBSTRUCTION

CD-609-8.5

GENERAL NOTES:

1. 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.
2. 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

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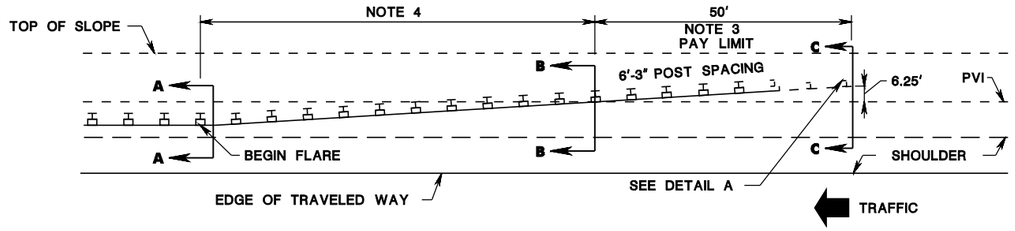
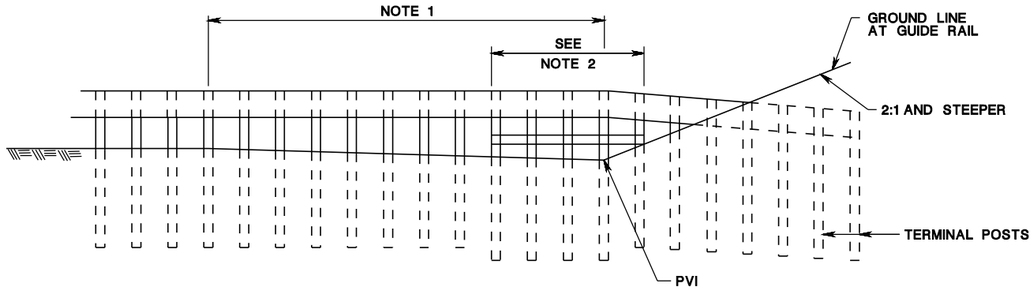
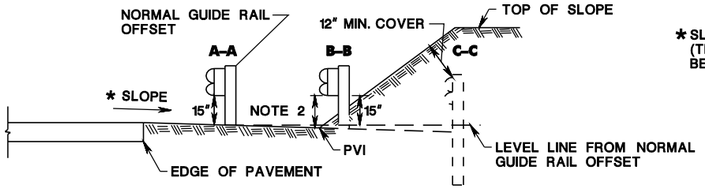


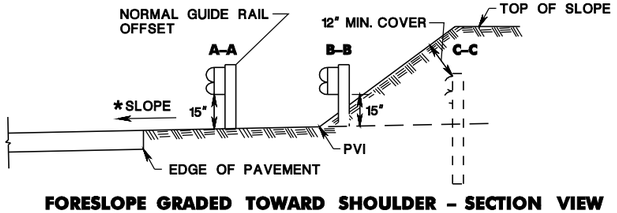
PLAN VIEW



FORESLOPE GRADED AWAY FROM SHOULDER – ELEVATION VIEW



FORESLOPE GRADED AWAY FROM SHOULDER – SECTION VIEW

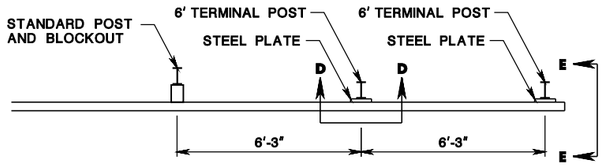


FORESLOPE GRADED TOWARD SHOULDER – SECTION VIEW

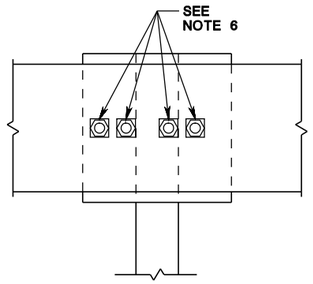
* SLOPE AS SHOWN ON PLANS. (THE SLOPE ON APPROACH SHOULD BE NO GREATER THAN 4:1).

NOTES:

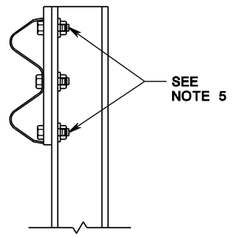
1. TOP OF GUIDE RAIL TO BE PARALLEL TO ROADWAY GRADE WHERE FORESLOPE IS GRADED AWAY FROM SHOULDER.
2. WHEN CLEARANCE FROM BOTTOM OF RAIL TO GROUND EXCEEDS 18", ADD RUB RAIL AND 8' LONG POSTS.
3. TAPER GUIDE RAIL HEIGHT TO PROVIDE 1' MINIMUM COVER AT LAST POST.
4. FLARE AS SHOWN ON CONSTRUCTION PLAN.
5. ATTACH STEEL PLATE TO POST WITH FOUR - ⅝" x 1½" LONG HEX HEAD BOLTS WITH HEX HEAD NUTS.
6. ATTACH RAIL TO STEEL PLATE WITH FOUR - ⅝" x 2" LONG HEX BOLTS WITH SQUARE WASHER AND NUT.
7. DRILL 3 - 1" DIA. HOLES IN BEAM GUIDE RAIL.



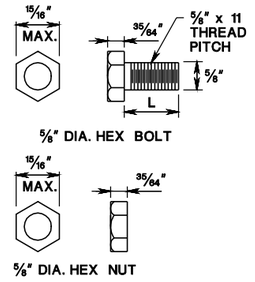
DETAIL A



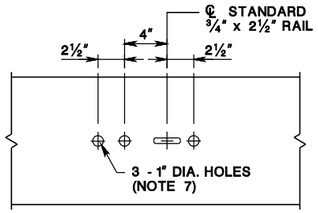
SECTION D–D



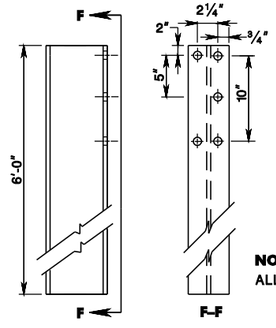
SECTION E–E



NUT AND BOLT



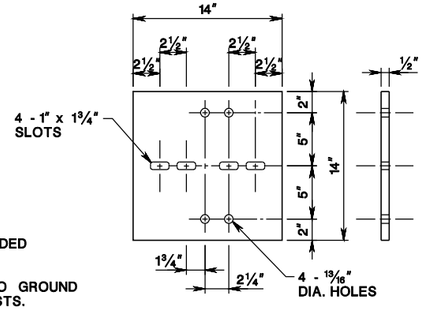
BEAM GUIDE RAIL TERMINAL HOLES



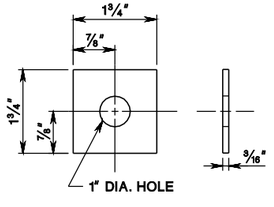
NOTE:
ALL HOLES 13/16" DIA.

W6 x 8.5 OR W6 x 9 STEEL POST

6' TERMINAL POST



STEEL PLATE



SQUARE WASHER

BURIED GUIDE RAIL TERMINAL

N.T.S.

CD-609-9

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-609-9.1

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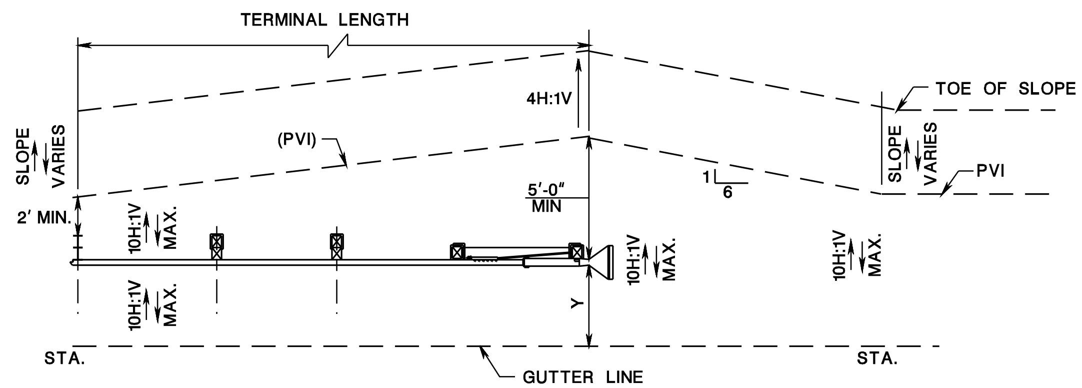
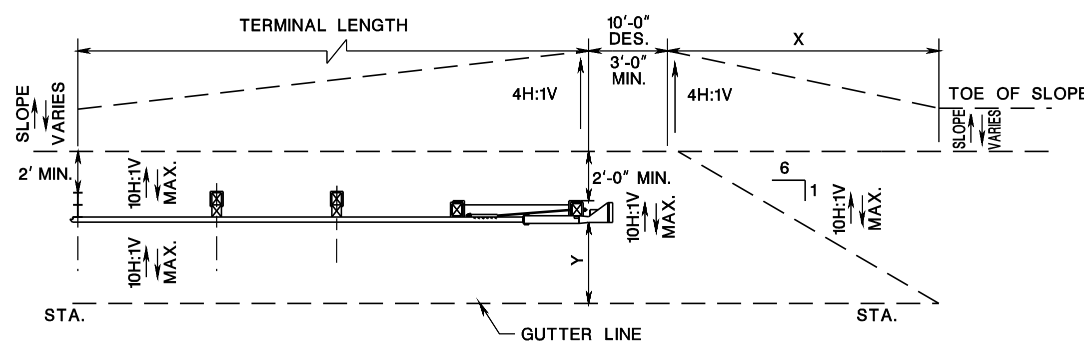


STANDARD GRADING FOR FLARED AND TANGENT TERMINALS



ALTERNATE GRADING FOR TANGENT TERMINALS ONLY

GRADING	STANDARD /ALTERNATE
STATION TO STATION	

Y = OFFSET FROM GUTTER LINE	X	X + 10' (DES.)
* 1'-0"	24'-0"	34'-0"
4'-0"	42'-0"	52'-0"
7'-0"	60'-0"	70'-0"
10'-0"	78'-0"	88'-0"

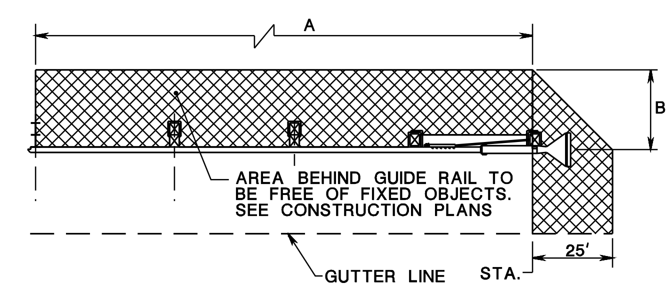
GRADING TREATMENT AT FLARED AND TANGENT GUIDE RAIL TERMINALS

***NOTE:**

WHERE GUIDE RAIL IS INSTALLED FLUSH WITH THE GUTTER LINE, THE TANGENT TERMINAL TO BE CONSTRUCTED WITH A 50:1 STRAIGHT FLARE FOR ITS ENTIRE LENGTH SO THAT THE EXTRUDER HEAD DOES NOT PROTRUDE INTO THE ROADWAY.

CD-609-10.1

ROADSIDE RECOVERY AREA		
STATION	A	B



NOTE:

NO FIXED OBJECTS IN FRONT OF THE GUIDE RAIL FOR ITS ENTIRE LENGTH ARE PERMITTED.

RECOVERY AREA AT FLARED AND TANGENT GUIDE RAIL TERMINALS

CD-609-10.2

GRADING AND ROADSIDE RECOVERY AREA AT FLARED AND TANGENT GUIDE RAIL TERMINALS

CD-609-10

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.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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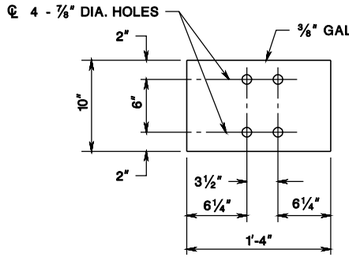
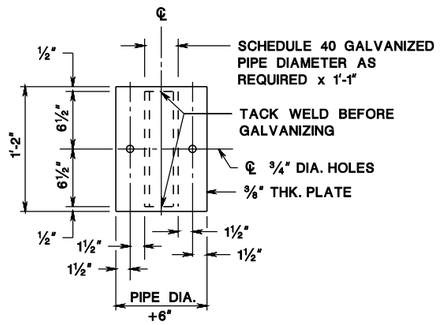
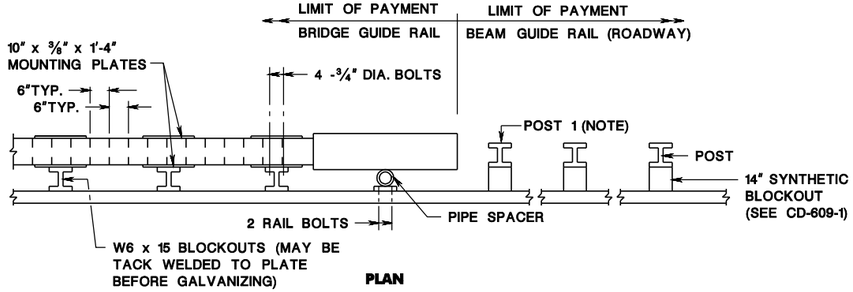


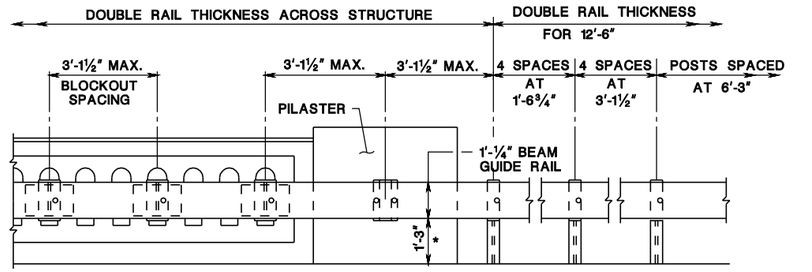
MOUNTING PLATE



PIPE SPACER



PLAN

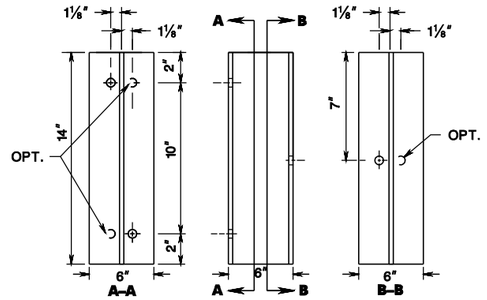


*MEASURED FROM TOP OF CURB IF ROADWAY CURB EXISTS, OTHERWISE MEASURED FROM GUTTERLINE.

ELEVATION

SEE CD-609-12.2 FOR GENERAL NOTES

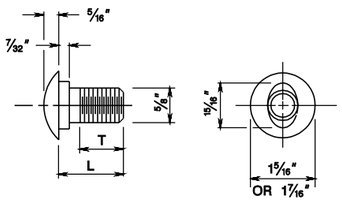
BEAM GUIDE RAIL ATTACHMENT TO EXISTING BALUSTRADE



14" BLOCKOUT
W6 x 15 STEEL POST

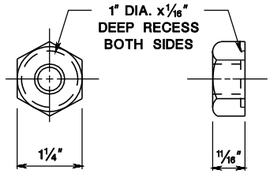
NOTES:

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.



⅝" BUTTON HEAD BOLT

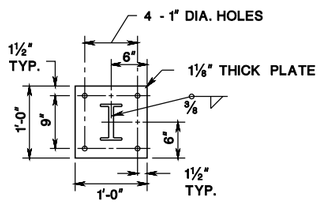
TYPE	L	T
SPLICE	1¼"	1¼"
RAIL	2"	1½"



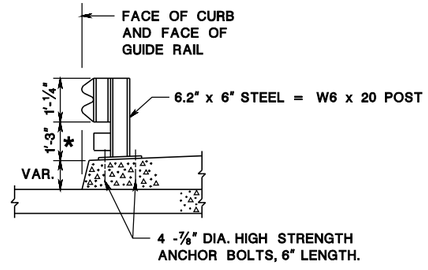
⅝" DIA. RECESS NUT

SPLICE AND RAIL NUT AND BOLT

CD-609-11.1



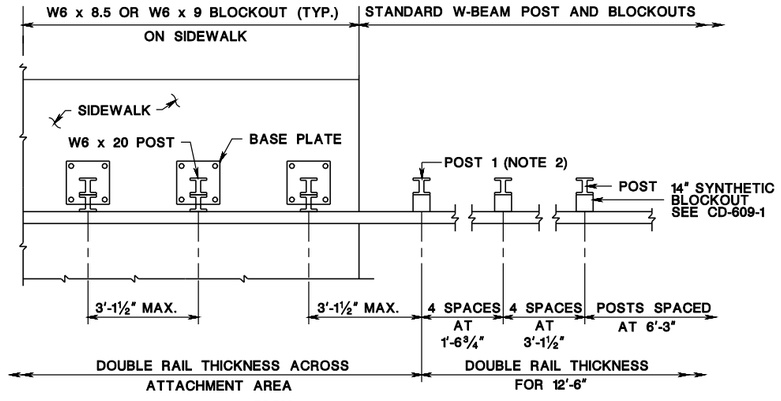
BASE PLATE



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

BEAM GUIDE RAIL SECTION

SEE CD-609-12.2 FOR GENERAL NOTES

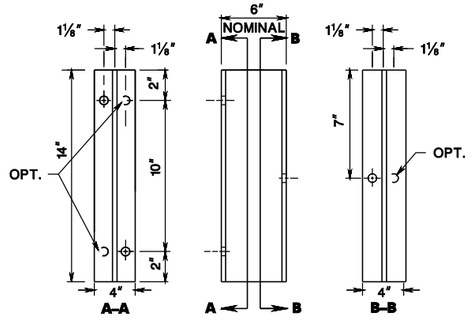


PLAN

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.



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

CD-609-11.2

BEAM GUIDE RAIL ATTACHMENTS

N.T.S.

CD-609-11

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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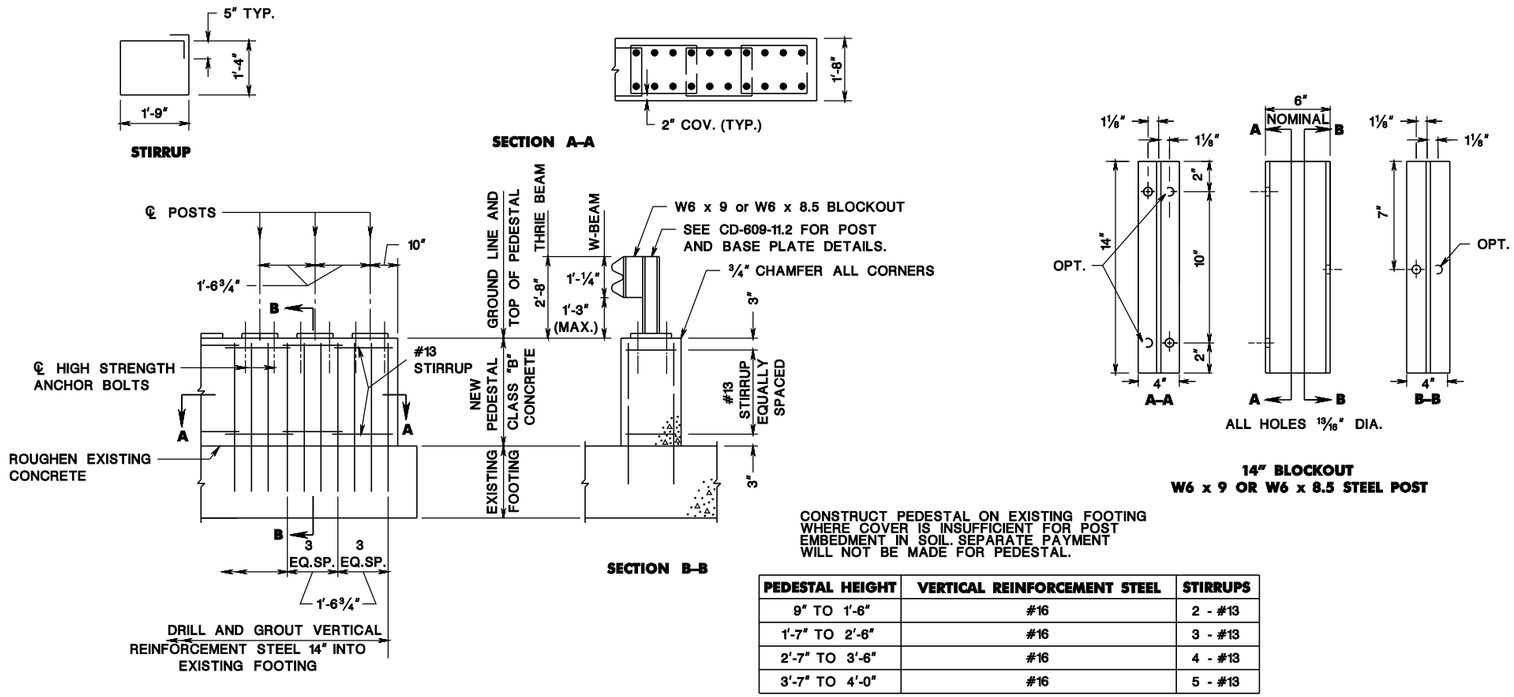


CONSTRUCT PEDESTAL ON EXISTING FOOTING WHERE COVER IS INSUFFICIENT FOR POST EMBEDMENT IN SOIL. SEPARATE PAYMENT WILL NOT BE MADE FOR PEDESTAL.

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

GENERAL NOTES:

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

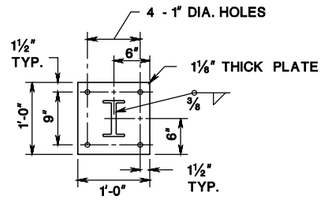
STEEL BOLTS, NUTS, AND WASHERS TO CONFORM TO ASTM A307, UNLESS DESIGNATED AS HIGH STRENGTH. HIGH STRENGTH BOLTS, NUTS, AND WASHERS TO CONFORM TO ASTM A325. HARDWARE TO BE GALVANIZED PER ASTM A153.

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.

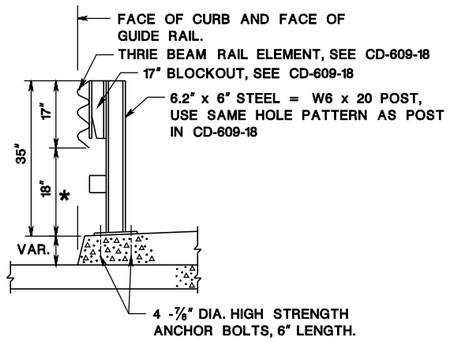
FOR CD-609-12.1, HIGH STRENGTH BOLTS FOR BASE PLATE ANCHORAGE MAY BE CAST-IN-PLACE IN FRESH CONCRETE WITH A MINIMUM EMBEDMENT LENGTH OF 20".

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

CD-609-12.2



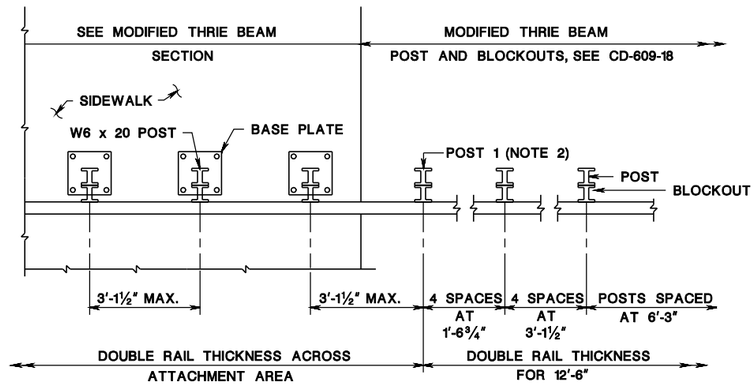
BASE PLATE



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

MODIFIED THRIE BEAM SECTION

SEE CD-609-12.2 FOR GENERAL NOTES



PLAN

MODIFIED THRIE BEAM GUIDE RAIL ATTACHMENT TO SIDEWALK

NOTES:

1. 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.
2. 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.

CD-609-12.3

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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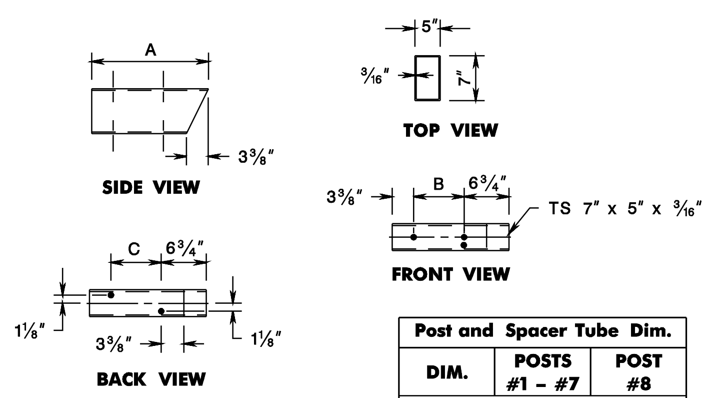
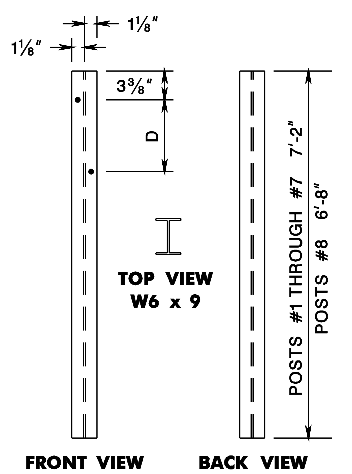


SPACER TUBE

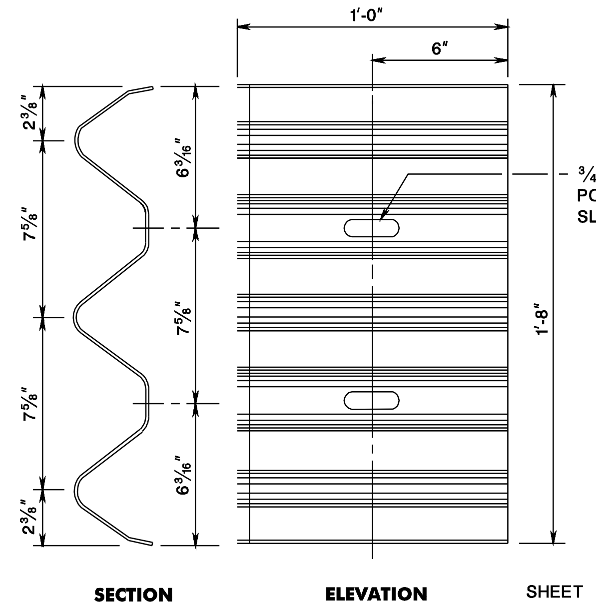
Post and Spacer Tube Dim.		
DIM.	POSTS #1 – #7	POST #8
A	1′-5¾″	1′-1⅞″
B	7⅝″	3¾″
C	7⅝″	3¾″
D	7⅝″	3¾″

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 ¾″ DIA.
5. WELDING OF SPACER TUBE TO BE DONE ACCORDING TO THE ANSI/ AWS D1.1 STRUCTURAL WELDING CODE.

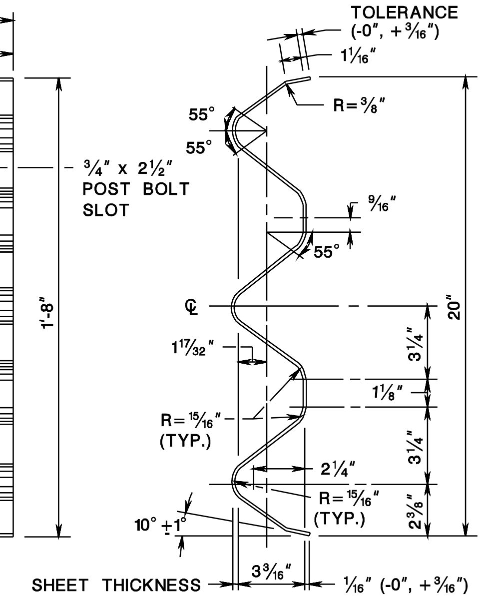


POSTS

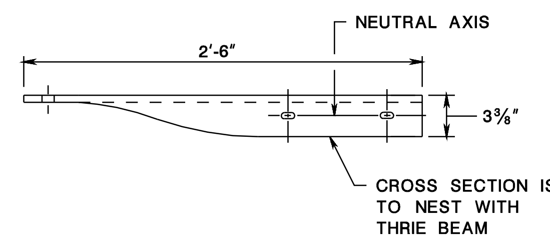


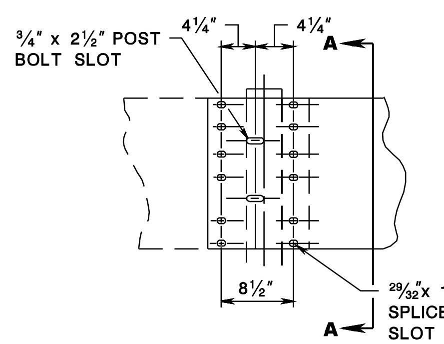
(AASHTO M180, CLASS A, TYPE 1)

BACKUP PLATE AT NON SPLICE POSTS



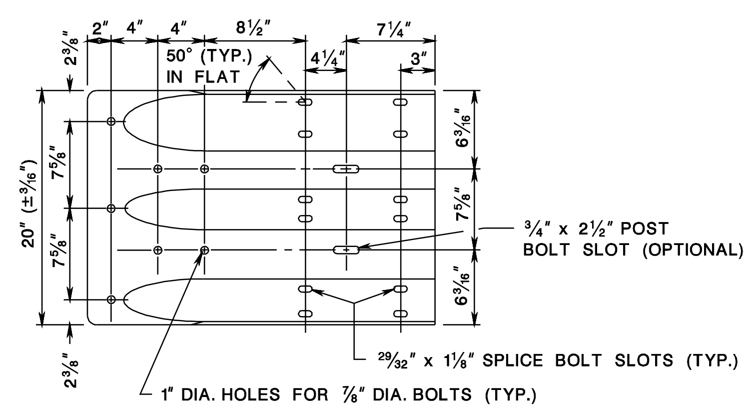
SECTION A–A





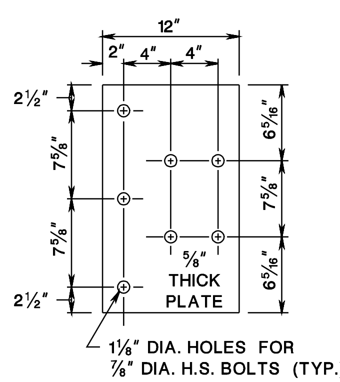
(AASHTO M180, CLASS A, TYPE 1)

ELEVATION
THRIE BEAM SPLICE

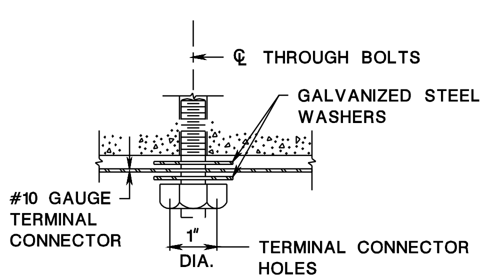


(AASHTO M180, CLASS B, TYPE 1)

TERMINAL CONNECTOR

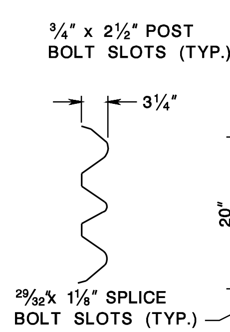


BACKUP PLATE FOR TERMINAL CONNECTOR

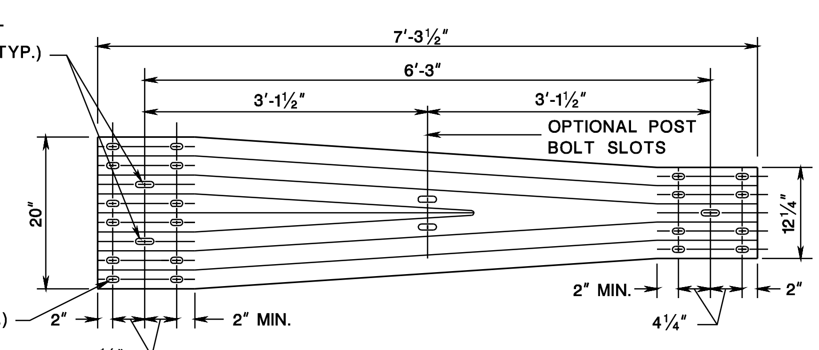


TERMINAL ANCHORAGE

SEE CD-609-12.2 FOR GENERAL NOTES



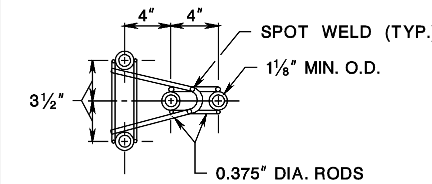
THRIE BEAM



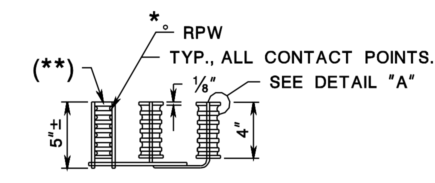
(AASHTO M180, CLASS A, TYPE I)

W–THRIE BEAM TRANSITION SECTION

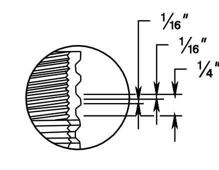
CD-609-13.1



PLAN



ELEVATION



DETAIL "A"

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 2½″ FOR USE WITH ⅞″ - 9 x 2½″ GALVANIZED H.S. HEX BOLT AND A 15⁄16″ I.D., 2¼″ 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.

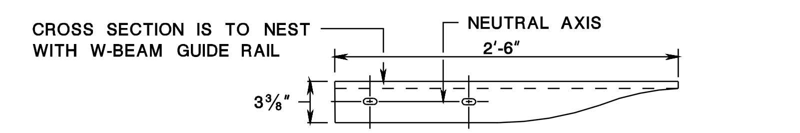
ENSURE THAT THE STEEL FERRULES CONFORMS TO ASTM A108, GRADE 12L14. INSERTS TO BE TAPPED TO THE DIMENSIONAL REQUIREMENTS SPECIFIED IN ASTM A563 FOR NUTS RECEIVING GALVANIZED BOLTS.

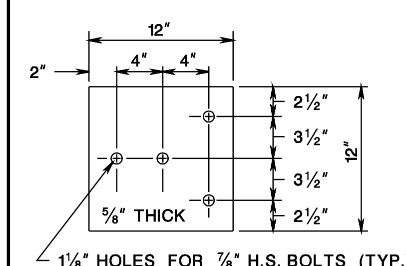
BOLTS TO CONFORM TO THE REQUIREMENTS OF ASTM A325 OR A449 AND BE THREADED FULL LENGTH. WASHERS TO BE MADE OF STEEL AND MEET THE DIMENSIONAL REQUIREMENTS OF ASTM B272 TYPE A PLAIN WASHERS. BOTH TO BE GALVANIZED IN ACCORDANCE WITH ASTM A153.

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.

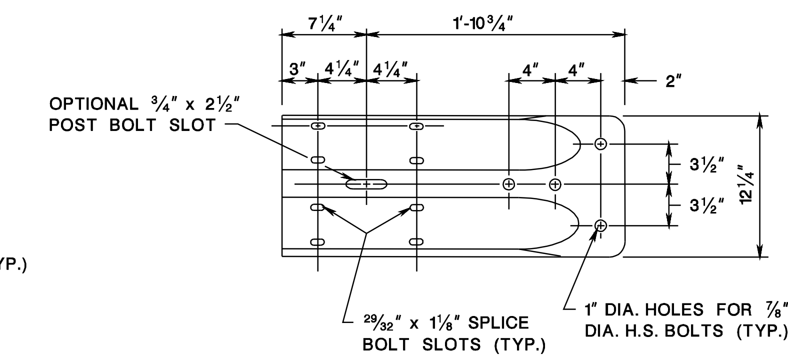
SEE CD-609-13.1 FOR TERMINAL ANCHORAGE





BACKUP PLATE FOR TERMINAL CONNECTOR

SEE CD-609-12.2 FOR GENERAL NOTES



(AASHTO M180, CLASS B, TYPE 1)

TERMINAL CONNECTOR

W–BEAM TERMINAL CONNECTOR

CD-609-13.2

THRIE BEAM AND W–BEAM TERMINAL CONNECTOR

N.T.S.

CD-609-13

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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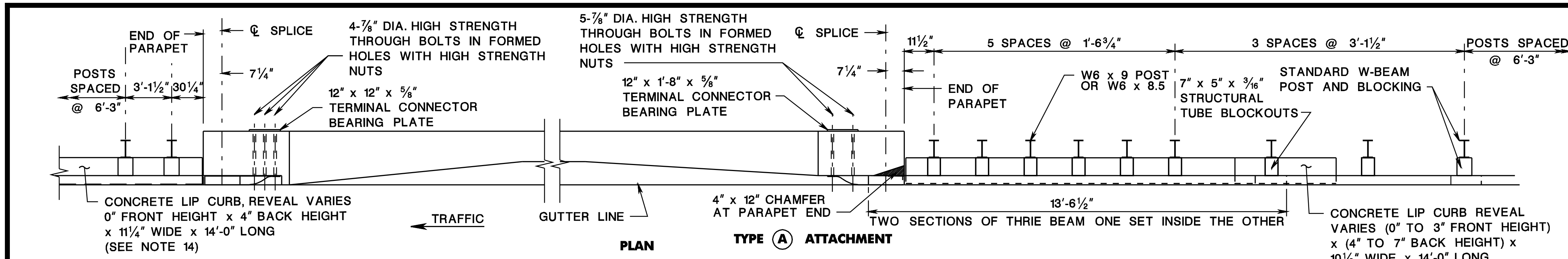
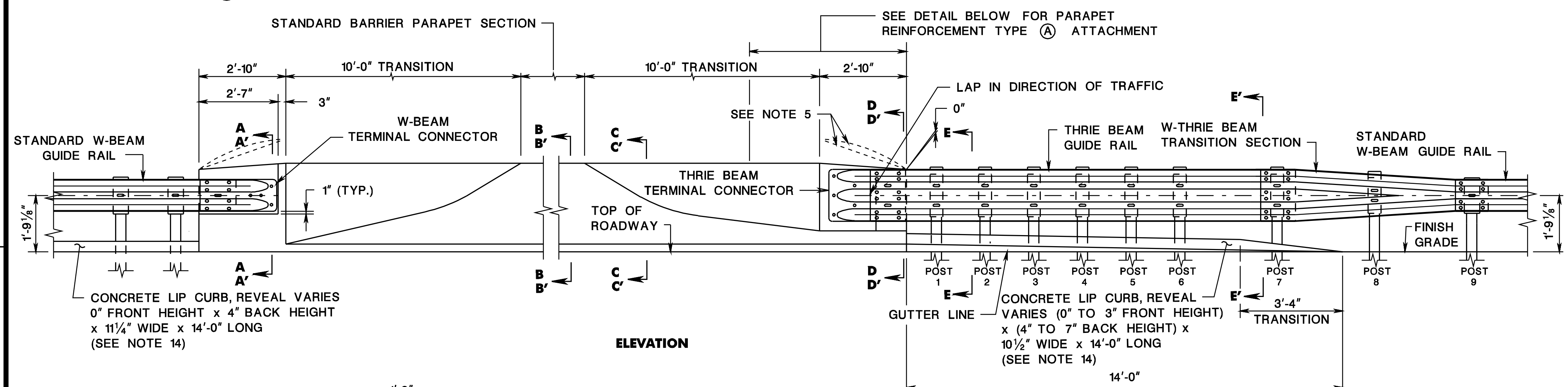
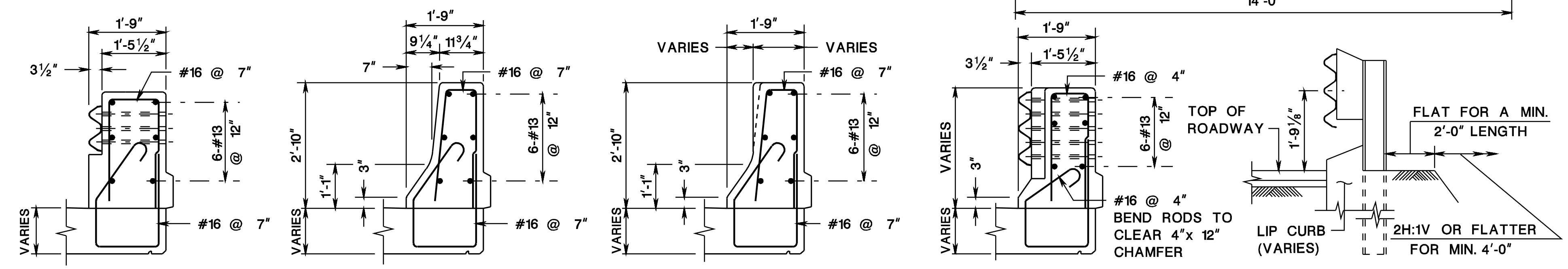


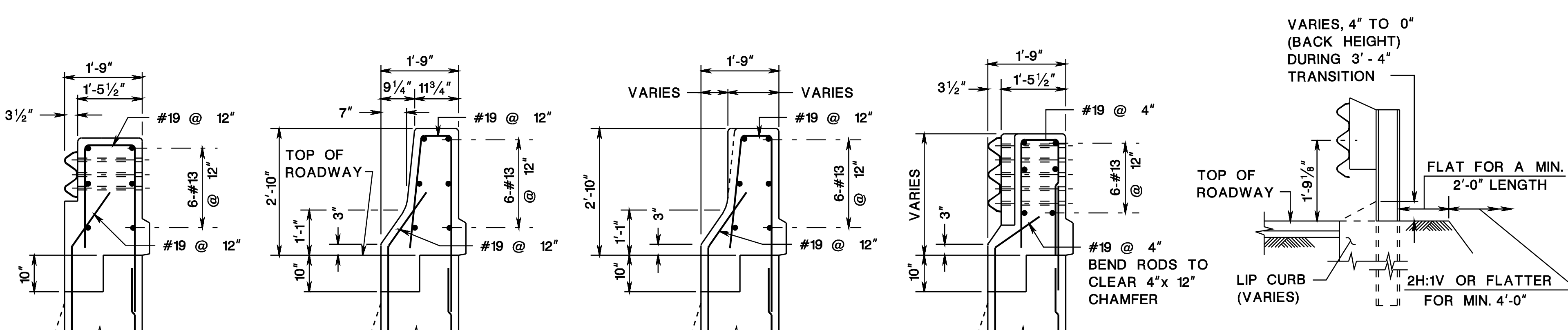
TYPE (B) ATTACHMENT **PLAN** **TYPE (A) ATTACHMENT**



ELEVATION

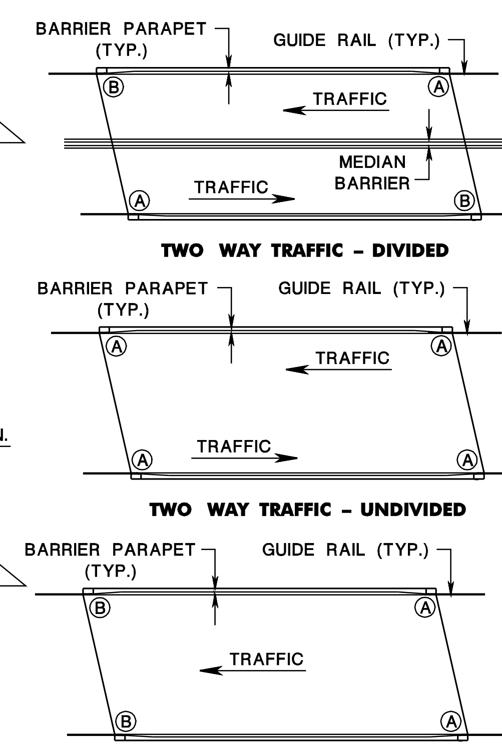


SECTION: A–A (ON SPAN) **SECTION: B–B (ON SPAN)** **SECTION: C–C (ON SPAN)** **SECTION: D–D (ON SPAN)** **SECTION: E–E**



SECTION A'–A' (ON WIINGWALL) **SECTION: B'–B' (ON WINGWALL)** **SECTION: C'–C' (ON WINGWALL)** **SECTION: D'–D' (ON WINGWALL)** **SECTION: E'–E'**

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

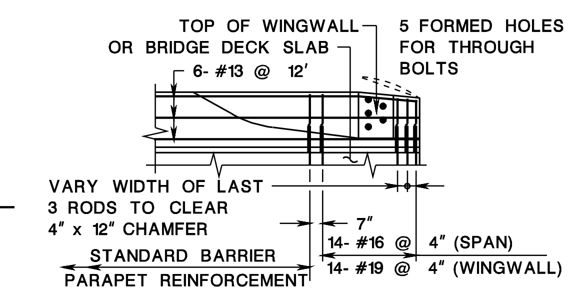


BRIDGE ATTACHMENT TYPES

CD-609-14.1

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.



INTERIOR ELEVATION PARAPET REINFORCEMENT TYPE (A) ATTACHMENT

NOTE:
REINFORCEMENT STEEL IS IN METRIC UNITS.

BEAM GUIDE RAIL ATTACHMENTS

N.T.S.

CD-609-14

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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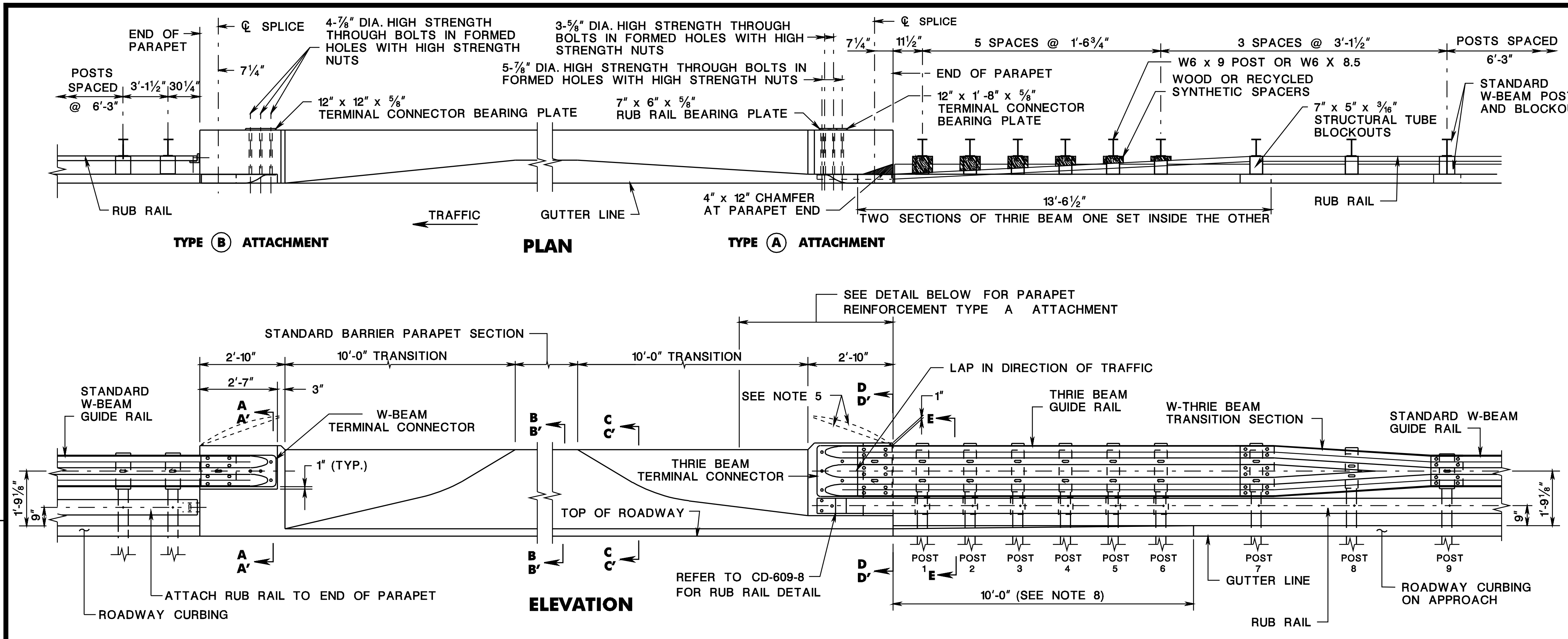
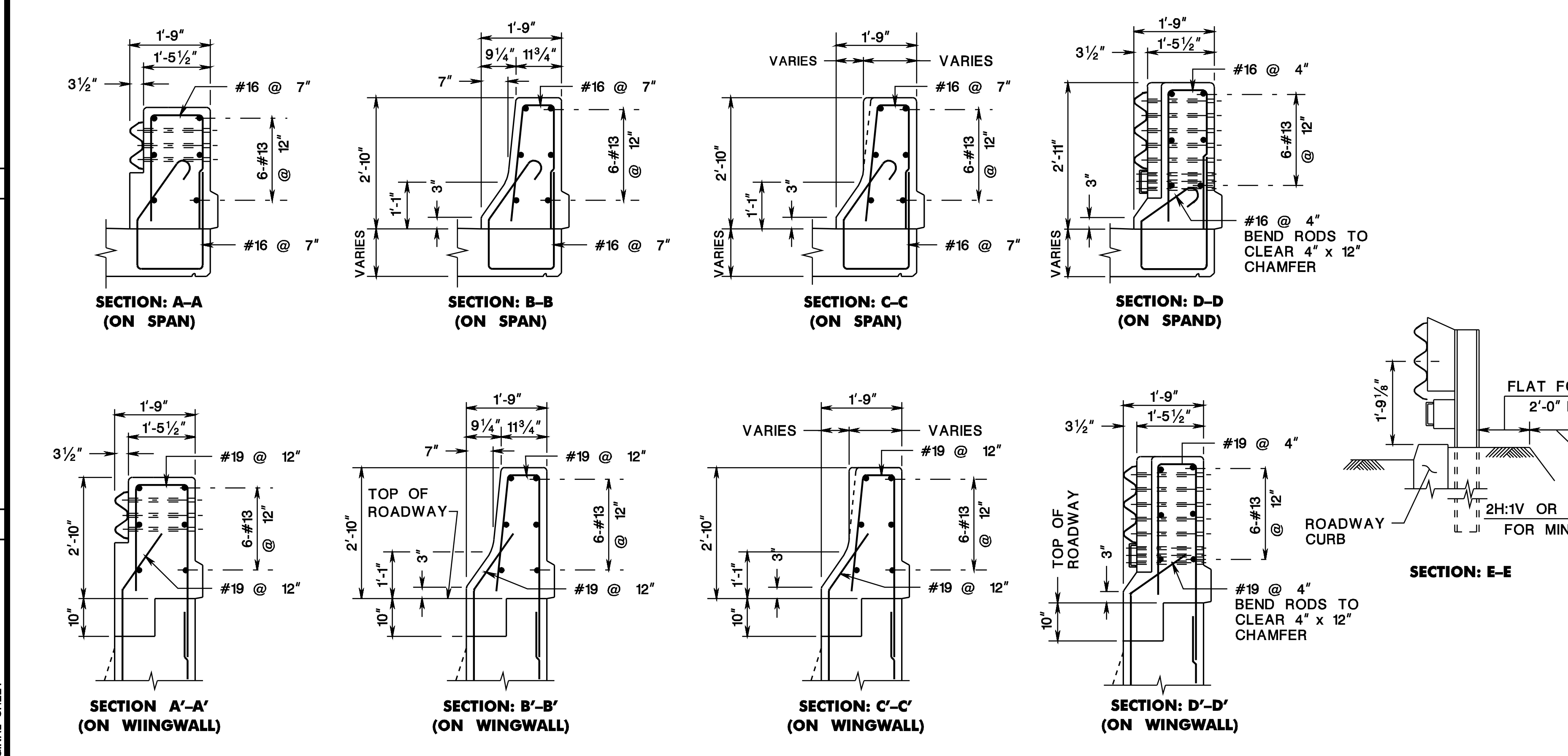
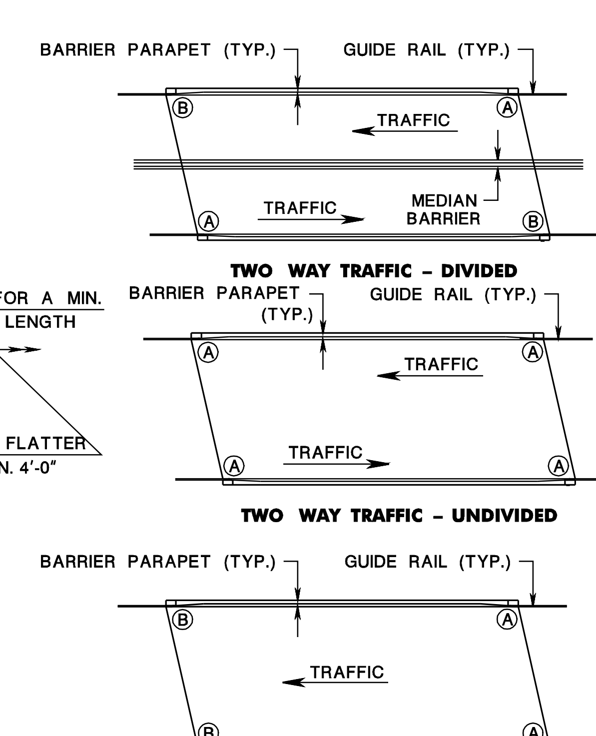




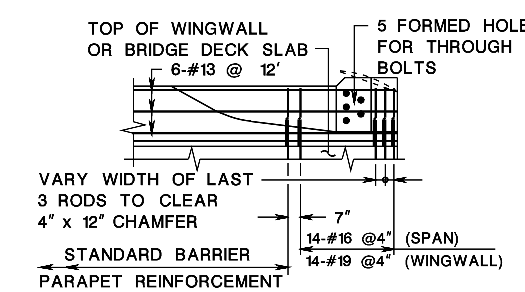
NOTES:

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 M111.
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.



BRIDGE ATTACHMENT TYPES

CD-609-15.1



INTERIOR ELEVATION PARAPET REINFORCEMENT TYPE (A) ATTACHMENT

NOTE: REINFORCEMENT STEEL IS IN METRIC UNITS.

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

BEAM GUIDE RAIL ATTACHMENTS

N.T.S.

CD-609-15

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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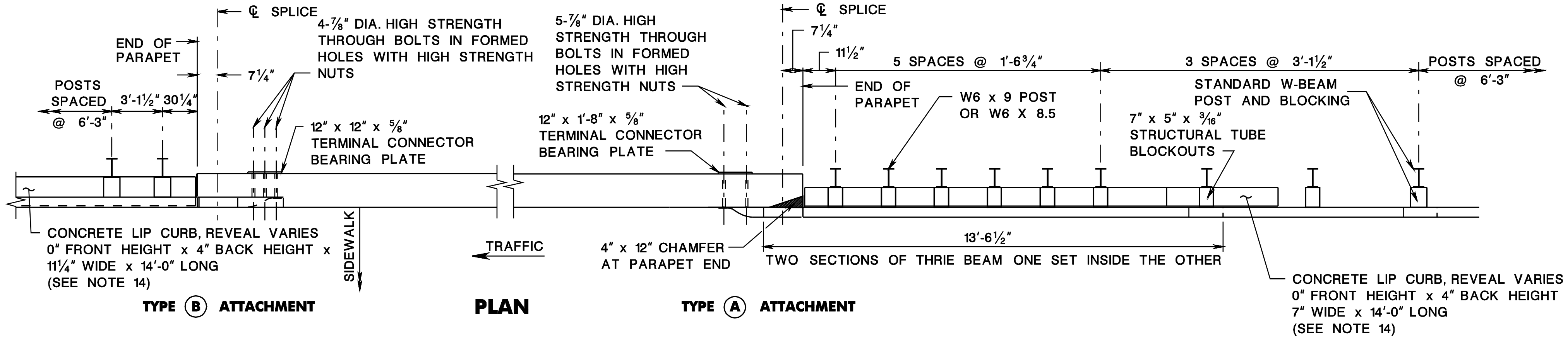
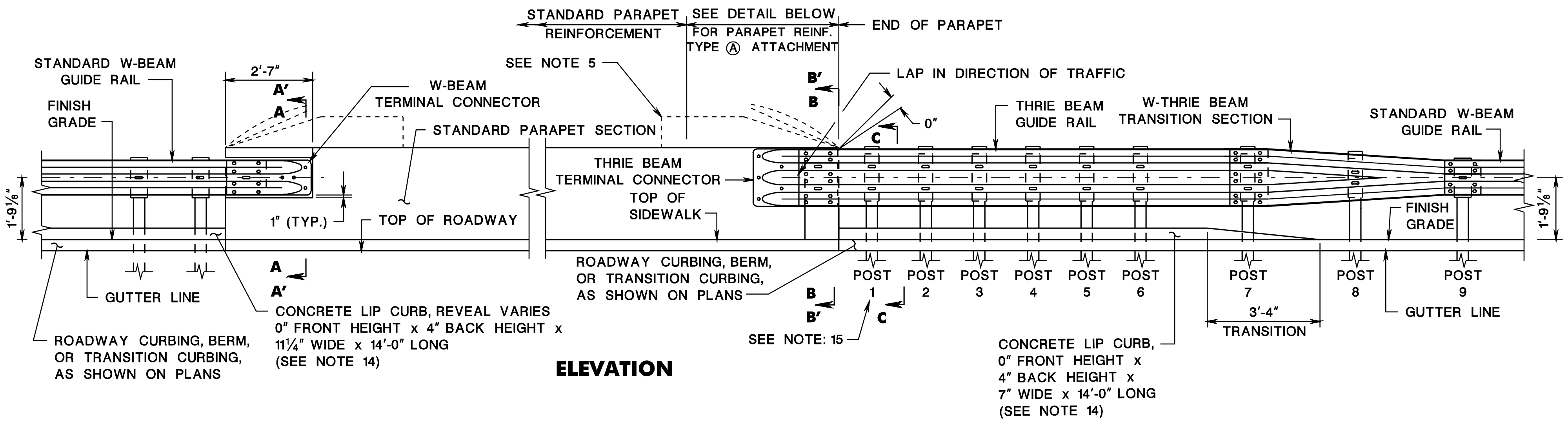
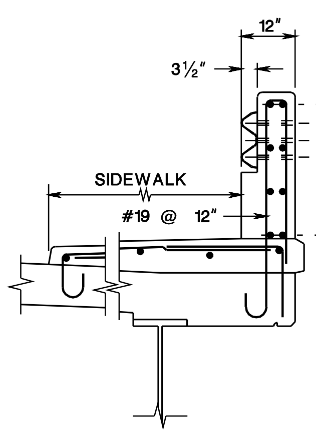


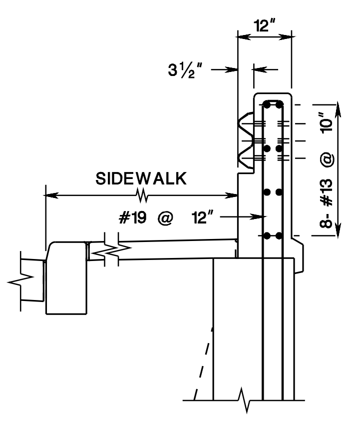
PLAN



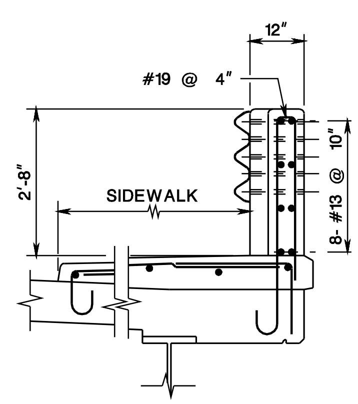
ELEVATION



SECTION: A–A (ON SPAN)



SECTION: A'–A' (ON WINGWALL)



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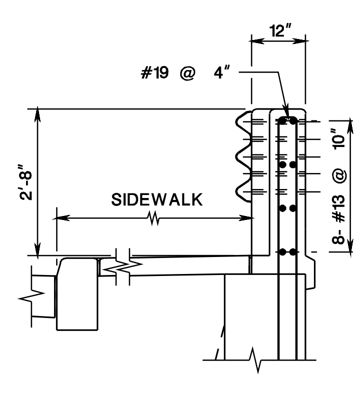
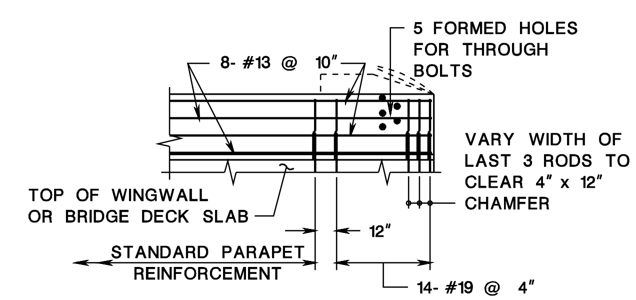
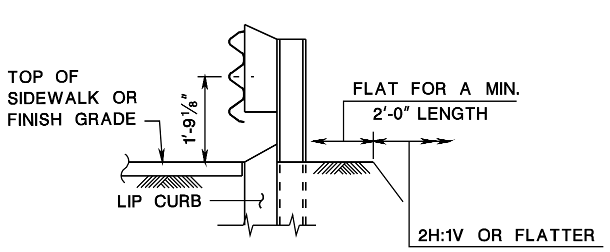


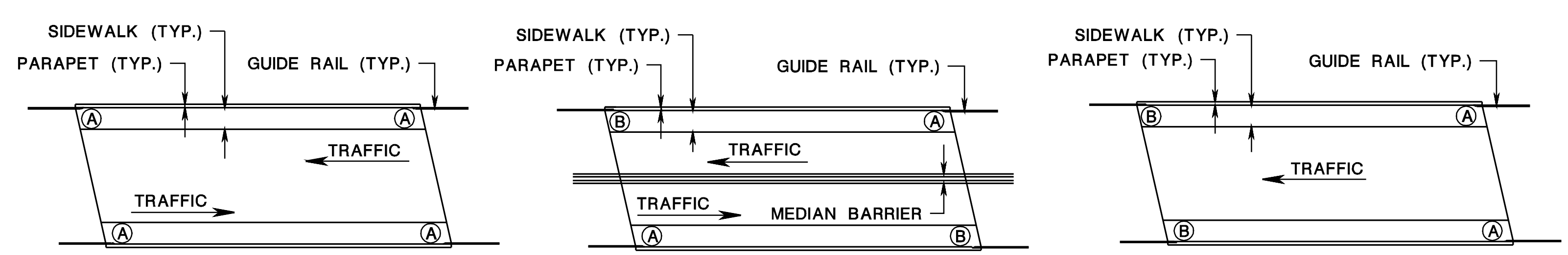
SECTION: B'–B' (ON WINGWALL)



INTERIOR ELEVATION PARAPET REINFORCEMENT TYPE Ⓐ ATTACHMENT



SECTION: C–C



TWO WAY TRAFFIC – UNDIVIDED **TWO WAY TRAFFIC – DIVIDED** **ONE WAY TRAFFIC**

BRIDGE ATTACHMENT TYPES

NOTES:

1. THIS GUIDE RAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A VERTICAL CONCRETE SHAPE.
2. FOR RECOMMENDED ATTACHMENT TYPE, 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. 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.
6. AT TYPE Ⓐ 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.
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 PYLON SO AS NOT TO INTERFERE WITH GUIDE RAIL POST SPACING.
9. LOCATE DRAINAGE INLETS AND ELECTRIC 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 ACCORDING TO 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.

GUIDE RAIL ATTACHMENT – NEW CONSTRUCTION (SIDEWALK WITH PARAPET)

NOTE:
REINFORCEMENT STEEL IS IN METRIC UNITS.

BEAM GUIDE RAIL ATTACHMENTS

N.T.S.

CD-609-16

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-609-16.1

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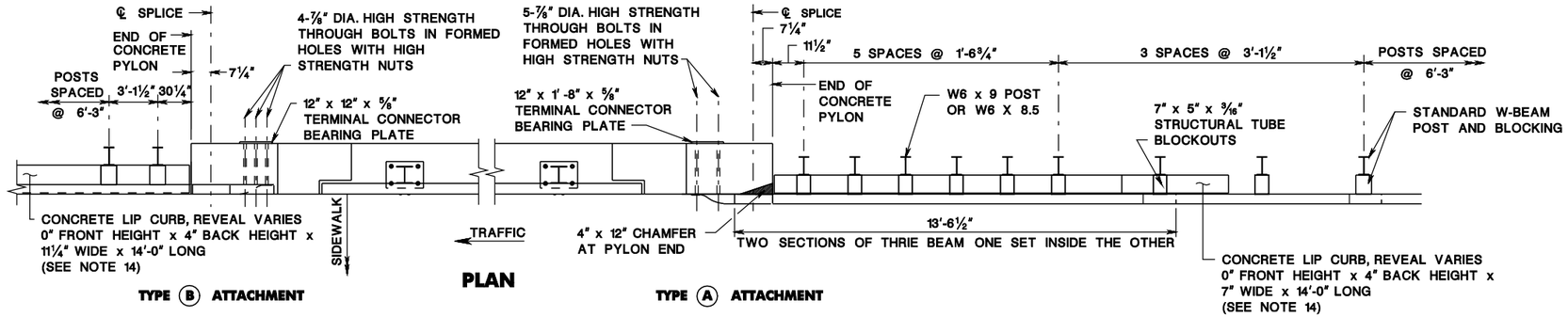
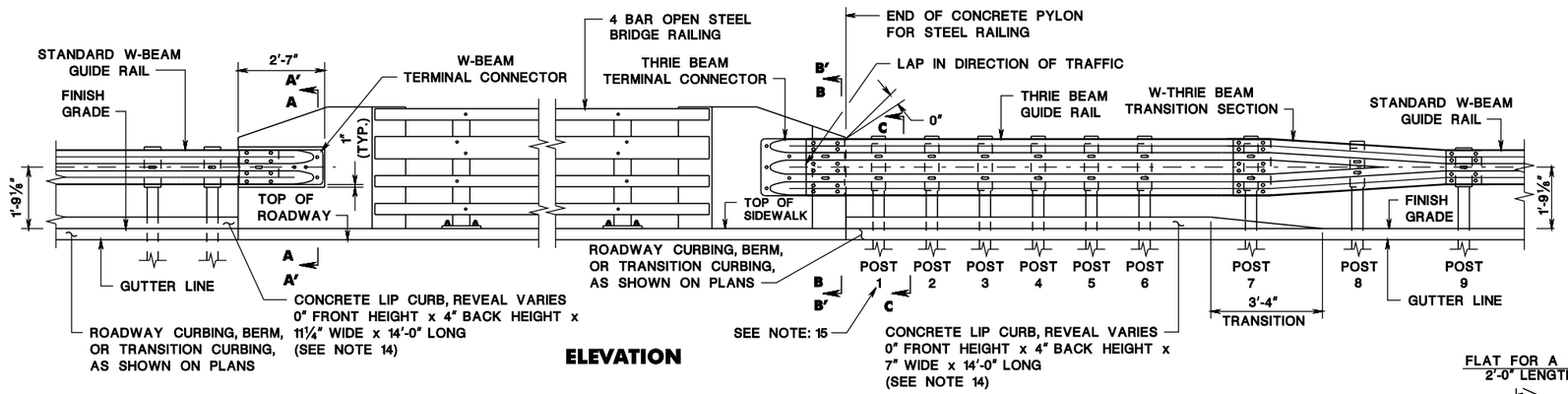
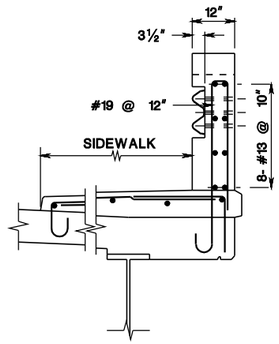
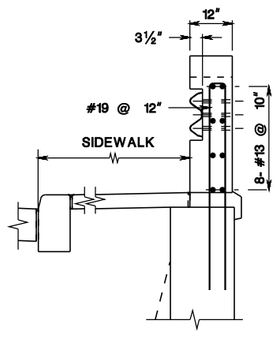




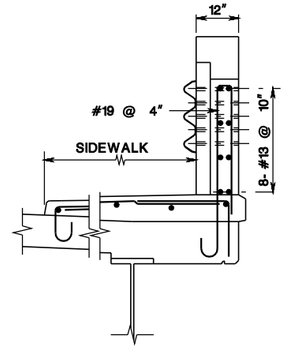
ELEVATION



SECTION: A–A (ON SPAN)



SECTION: A'–A' (ON WINGWALL)



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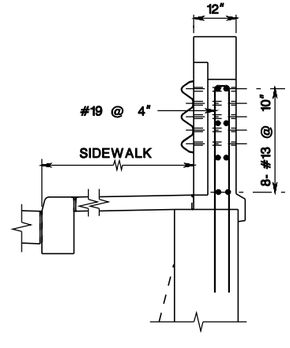

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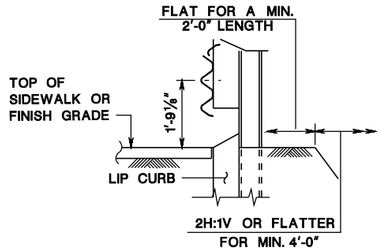
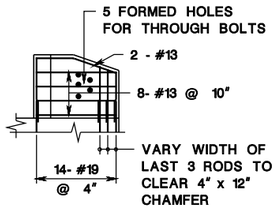
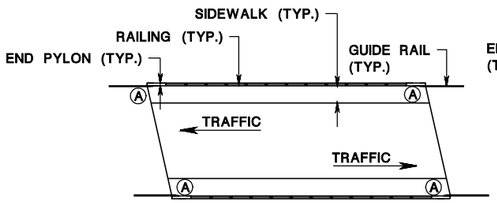


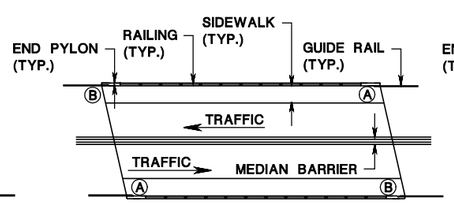
SECTION: C–C



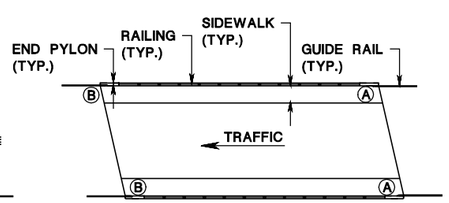
INTERIOR ELEVATION PYLON REINFORCEMENT TYPE (A) ATTACHMENT



TWO WAY TRAFFIC – UNDIVIDED



TWO WAY TRAFFIC – DIVIDED



ONE WAY TRAFFIC

BRIDGE ATTACHMENT TYPES

NOTES:

1. THIS GUIDE RAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A VERTICAL CONCRETE SHAPE.
2. FOR RECOMMENDED ATTACHMENT TYPE, 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. CONCRETE PYLONS TO BE CONSTRUCTED AT ALL ENDS OF STEEL RAILING. ATTACH GUIDE RAIL TO THE PYLONS.
6. 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.
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 PYLON SO AS NOT TO INTERFERE WITH GUIDE RAIL POST SPACING.
9. LOCATE DRAINAGE INLETS AND ELECTRIC 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 ACCORDING TO 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.

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

NOTE:
REINFORCEMENT STEEL IS IN METRIC UNITS.

BEAM GUIDE RAIL ATTACHMENTS

N.T.S.

CD-609-17

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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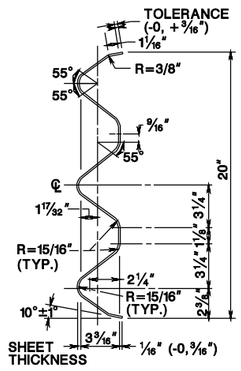
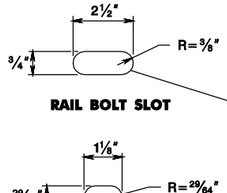
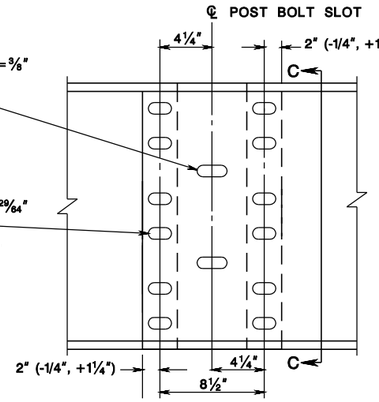


SECTION C–C

THRIE BEAM RAIL ELEMENT

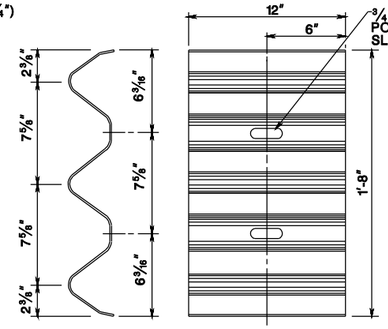
RAIL ELEMENT TO BE SUPPLIED
IN LENGTHS OF 13'-6½" OR 25'-0¼"





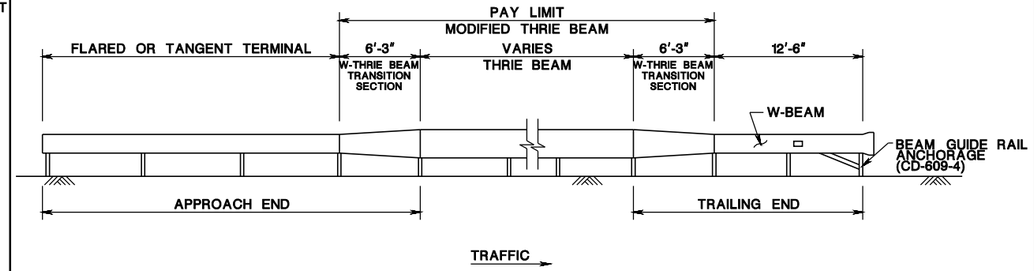
ELEVATION

THRIE BEAM RAIL SPLICE



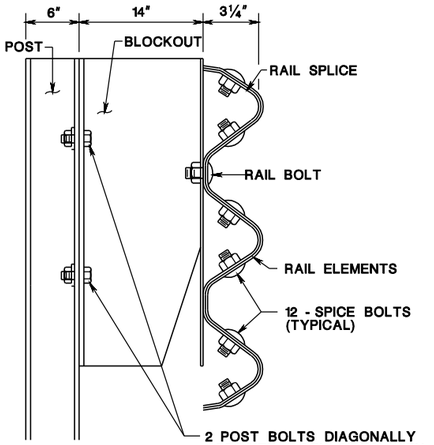
SECTION **ELEVATION**

BACKUP PLATE AT NON-SPLICE POSTS

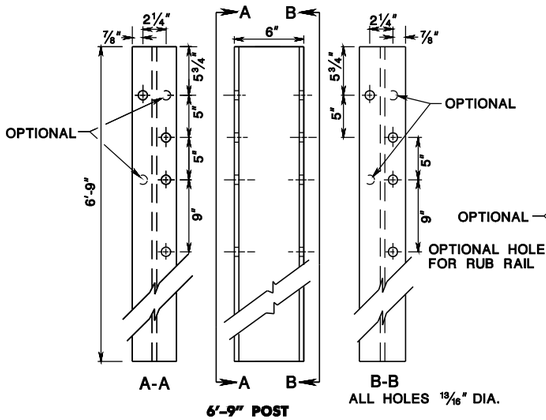


TERMINAL TREATMENT

CD-609-18.2

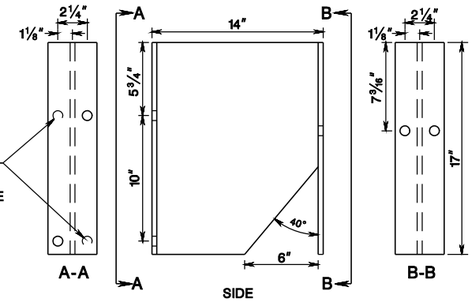


POST ASSEMBLY



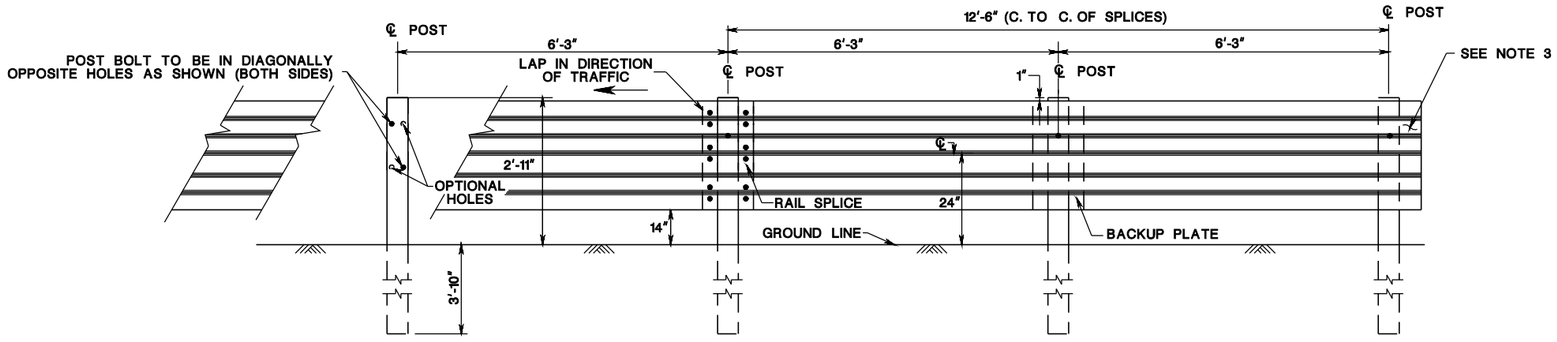
6'–9" POST

W6X9 OR W6X8.5 STRUCTURAL SHAPE

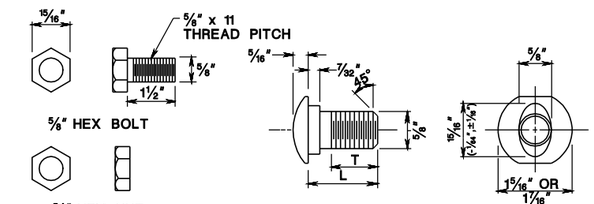


17" BLOCKOUT

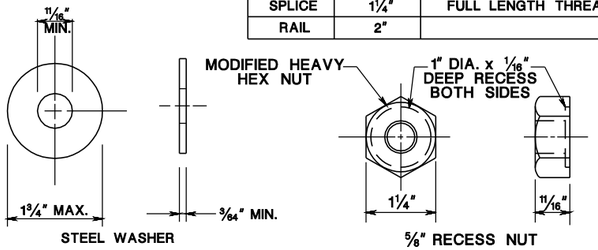
M14X18 STRUCTURAL SHAPE
OR
W14X22 STRUCTURAL SHAPE



MODIFIED THRIE BEAM GUIDE RAIL



TYPE	L	MIN. THREAD LENGTH (T)
SPLICE	1¼"	FULL LENGTH THREAD
RAIL	2"	



NOTES:

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

MODIFIED THRIE BEAM GUIDE RAIL

N.T.S.

CD-609-18

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-609-18.1

79
164

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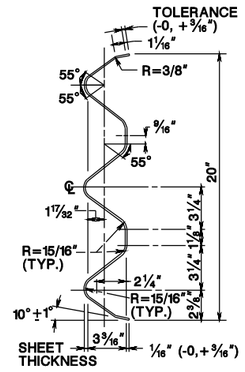
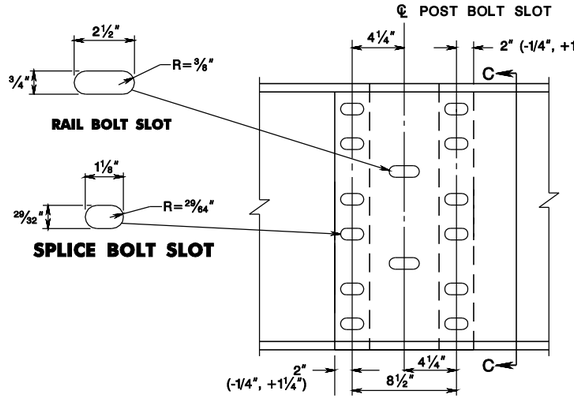


SECTION C–C

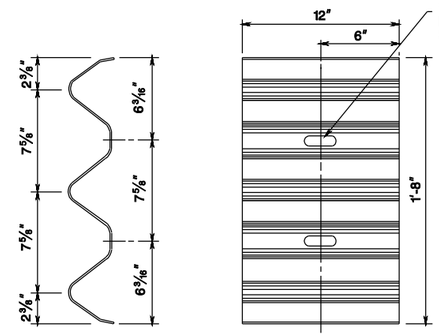
THRIE BEAM RAIL ELEMENT

RAIL ELEMENT TO BE SUPPLIED IN LENGTHS OF 13'-6 1/2" OR 25'-0 1/4"



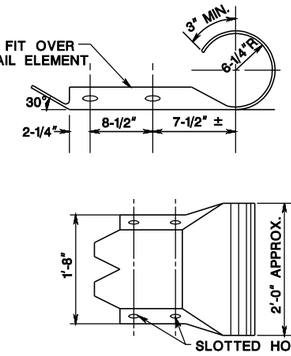
ELEVATION

THRIE BEAM RAIL SPLICE

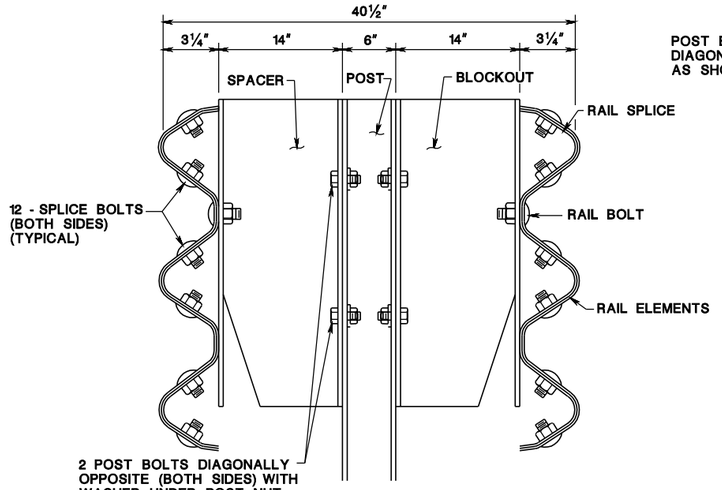


SECTION **ELEVATION**

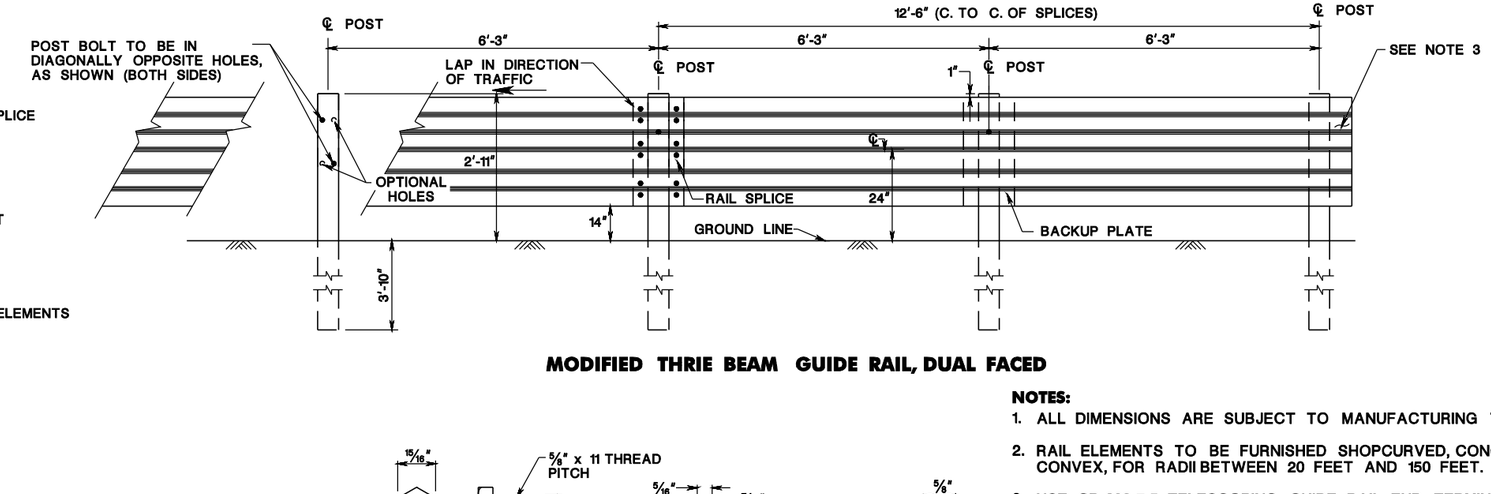
BACKUP PLATE AT NON–SPLICE POSTS



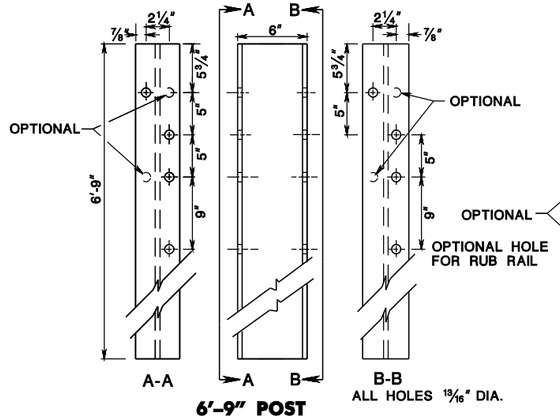
THRIE BEAM END SECTION (ROUNDED) SEE NOTE 5



DUAL FACED POST ASSEMBLY

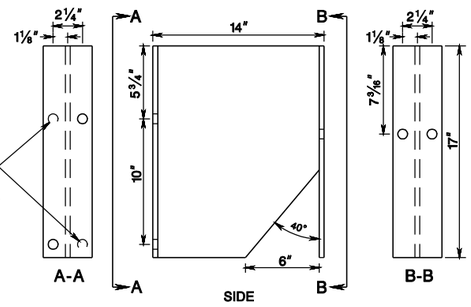


MODIFIED THRIE BEAM GUIDE RAIL, DUAL FACED



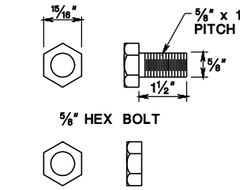
6'–9" POST

W6X9 OR W6X8.5 STRUCTURAL SHAPE

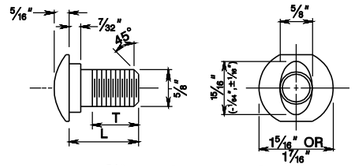


17" BLOCKOUT

M14X18 STRUCTURAL SHAPE
OR
W14X22 STRUCTURAL SHAPE

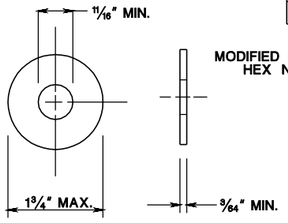


POST NUT AND BOLT



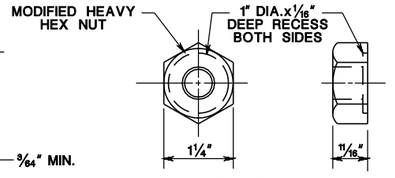
5/8" BUTTON HEAD BOLT

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



STEEL WASHER

WASHER



5/8" RECESS NUT

SPLICE AND RAIL NUT AND BOLT

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

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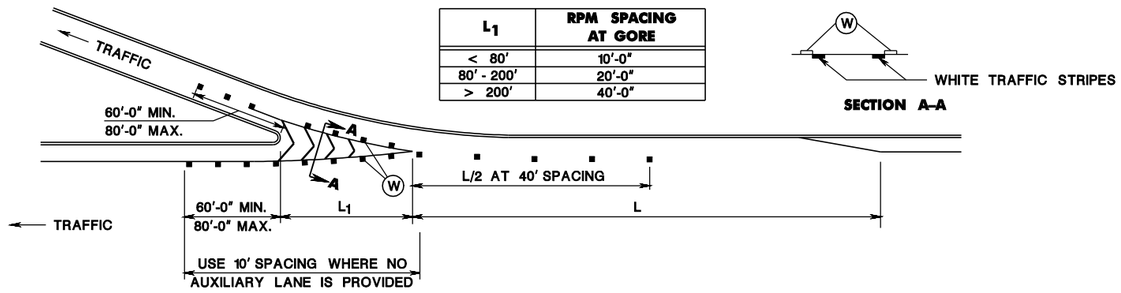


L_1	RPM SPACING AT GORE
< 80'	10'-0"
80' - 200'	20'-0"
> 200'	40'-0"

TYPICAL DECELERATION LANE TREATMENT

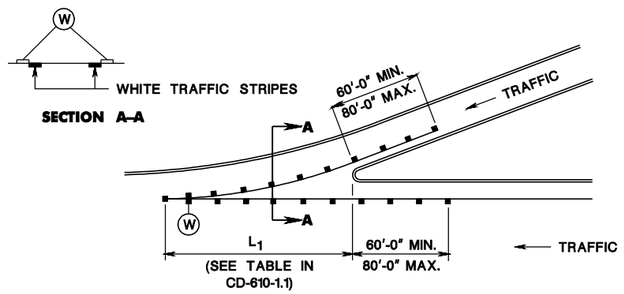
CD-610-1.1

LEGEND

(W) RPM, MONO-DIRECTIONAL WHITE LENS

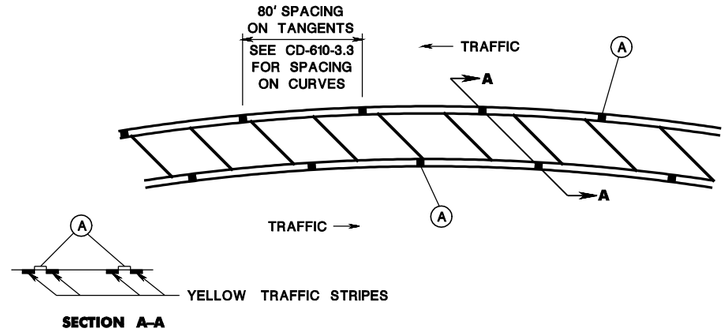
(A) RPM, MONO-DIRECTIONAL AMBER LENS

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

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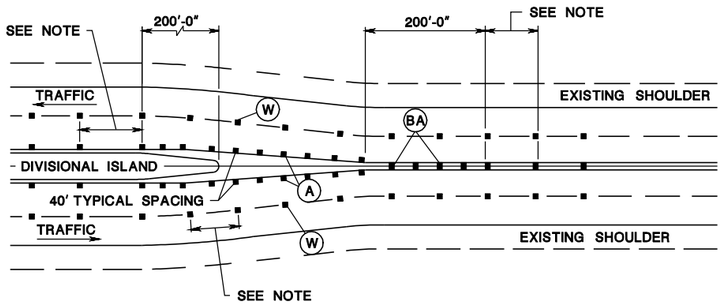
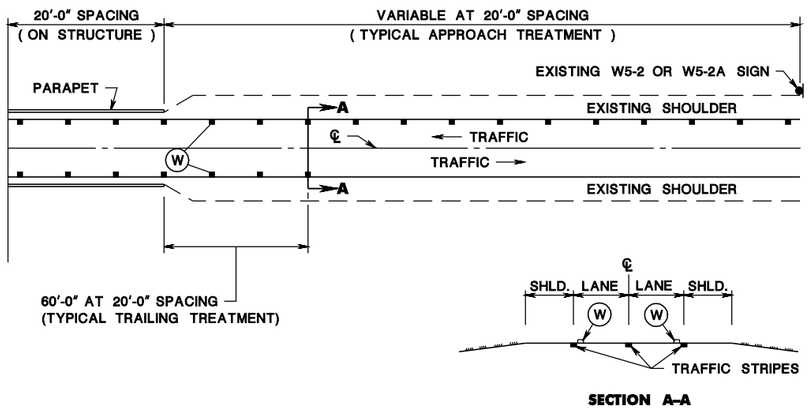


NOTE:
80 FOOT SPACING ON TANGENT FOR SPACING ON CURVES SEE CD-610-3.3

TYPICAL DIVISIONAL ISLAND TREATMENT

CD-610-2.1



SECTION A–A

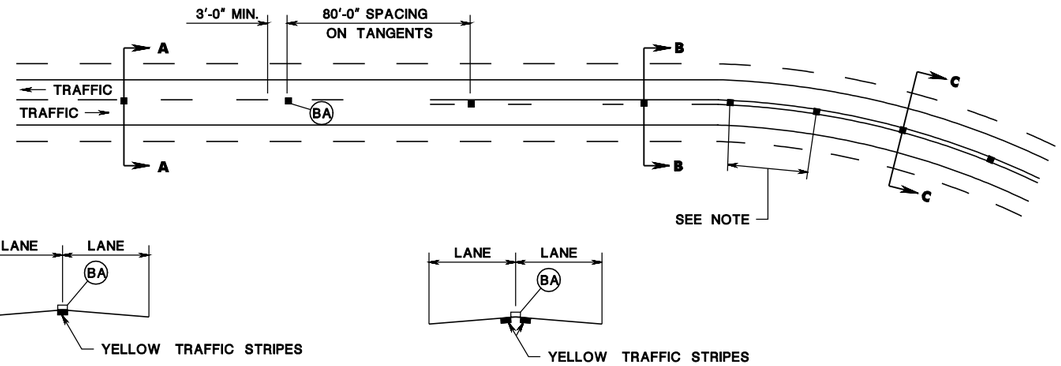
NARROW BRIDGE OR CULVERT TREATMENT

CD-610-2.2

LEGEND

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

CD-610-2.3



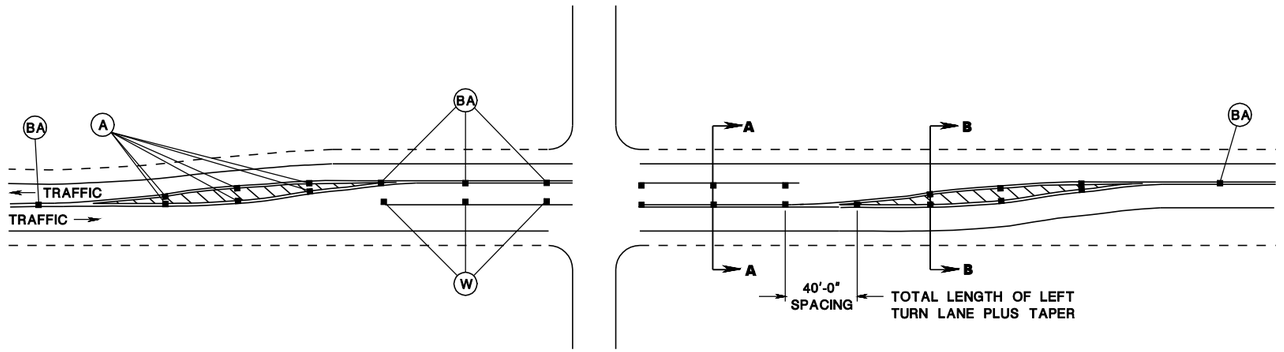
SECTION A–A

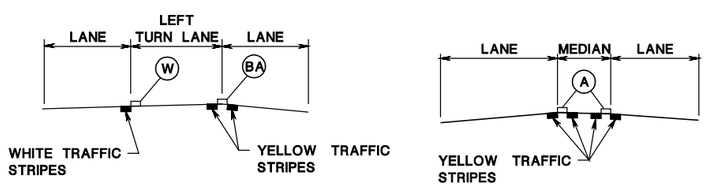
SECTION B–B & SECTION C–C

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

TYPICAL TWO LANE SECTION

CD-610-2.4





SECTION A–A

SECTION B–B

TYPICAL LEFT TURN LANE SECTION

CD-610-2.5

RAISED PAVEMENT MARKER (RPM), LOCATION

N.T.S.

CD-610-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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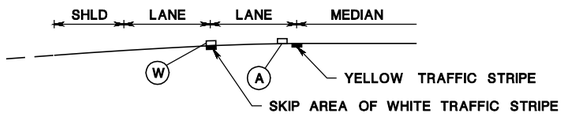
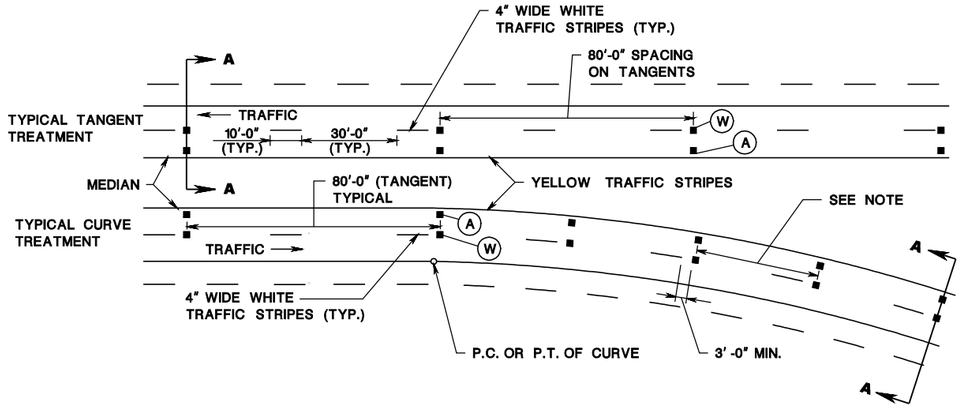


SECTION A–A (TYP.)

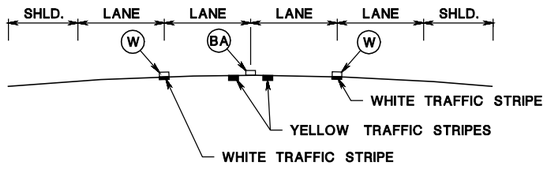


TYPICAL MULTI–LANE DIVIDED SECTION

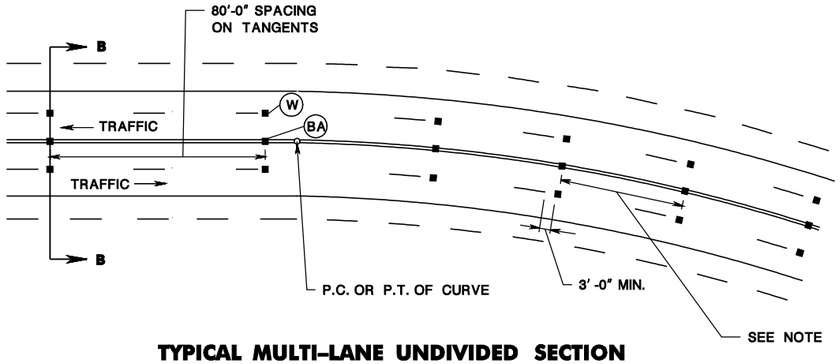
NOTE:

FOR SPACING ON CURVES SEE CD-610-3.3

CD-610-3.1



SECTION B–B

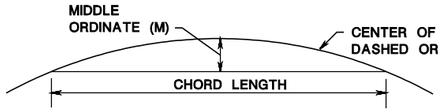


TYPICAL MULTI–LANE UNDIVIDED SECTION

NOTE:

FOR SPACING ON CURVES SEE CD-610-3.3

CD-610-3.2



CHORD LENGTH	MIDDLE ORDINATE	RADIUS	REFLECTOR SPACING
200'-0"	M ≥ 2'-7"	R ≤ 1910'	40'-0"
200'-0"	M < 2'-7"	R > 1910'	80'-0"

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.

< LESS THAN
≤ EQUAL TO OR LESS THAN
> GREATER THAN
≥ 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

RAISED PAVEMENT MARKER (RPM), LOCATION

N.T.S.

CD-610-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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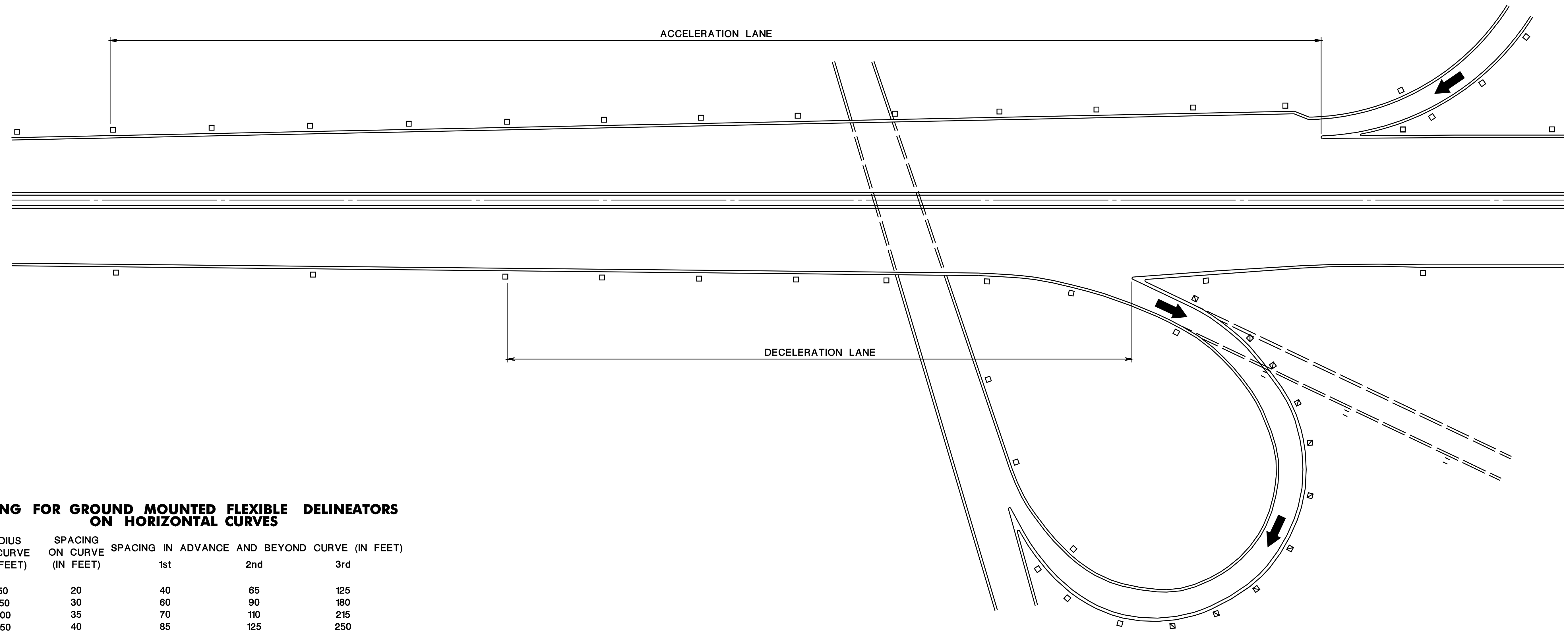

SPACING FOR GROUND MOUNTED FLEXIBLE DELINEATORS ON HORIZONTAL CURVES

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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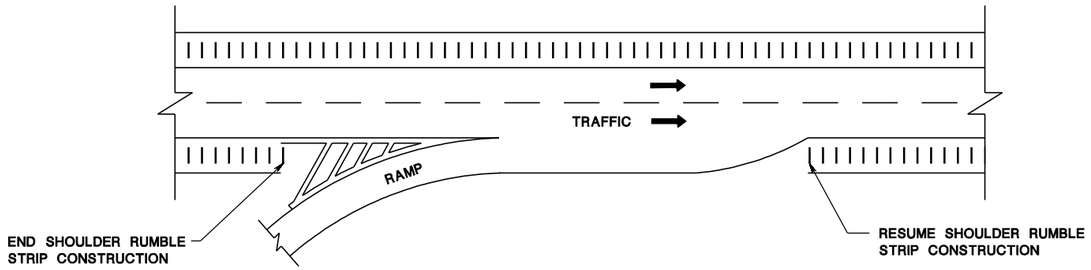
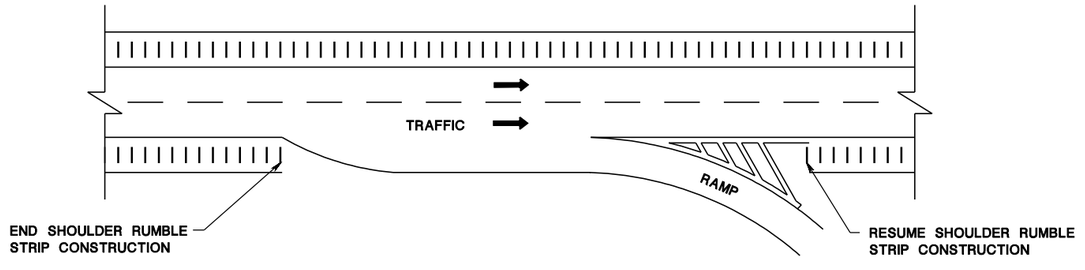


SHOULDER RUMBLE STRIP AT ACCELERATION LANE



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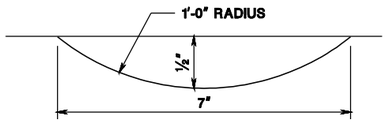
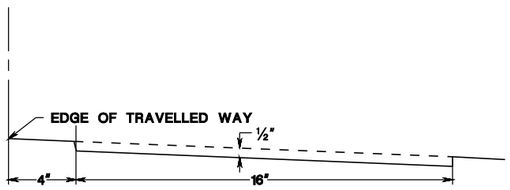
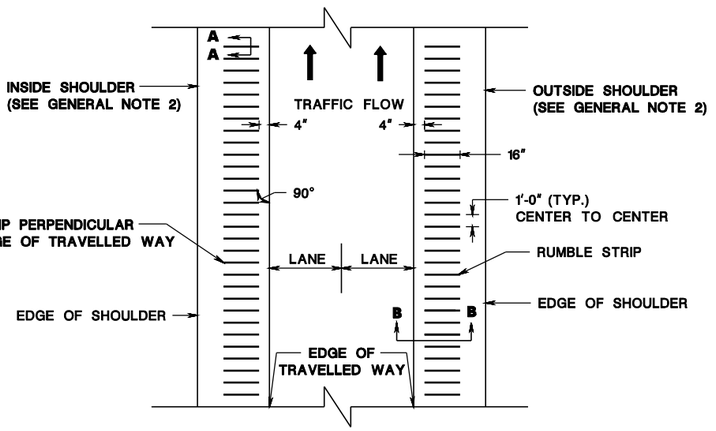


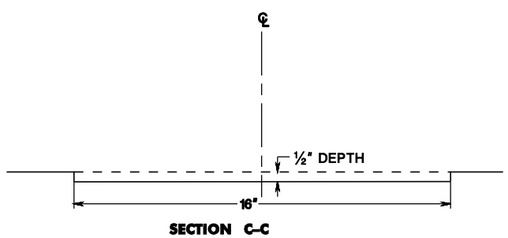
SECTION A–A



SECTION B–B



SHOULDER RUMBLE STRIP PLACEMENT



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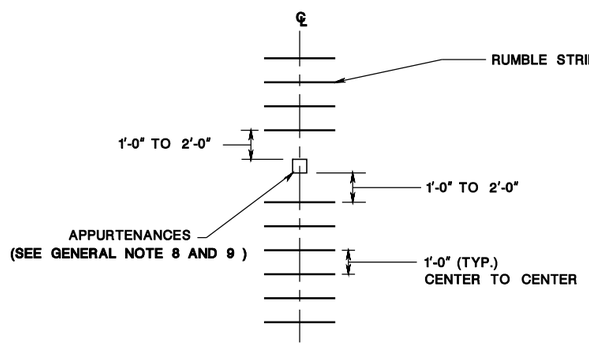
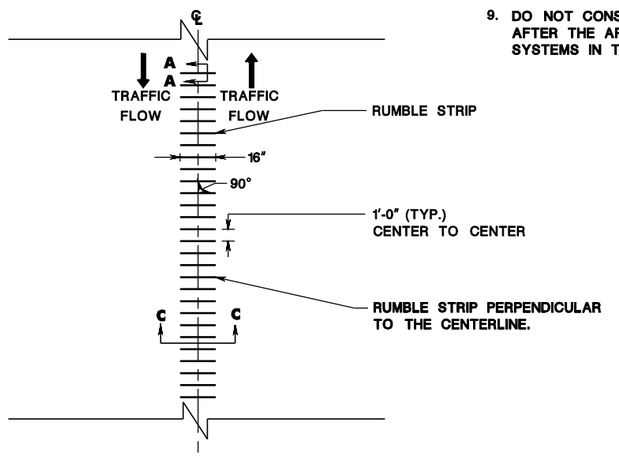


COMBINED CENTERLINE RUMBLE STRIP AND APPURTENANCES



CENTERLINE 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.

NOTE:
HMA = HOT MIX ASPHALT

RUMBLE STRIPS

N.T.S.

CD-610-5

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-610-5.1

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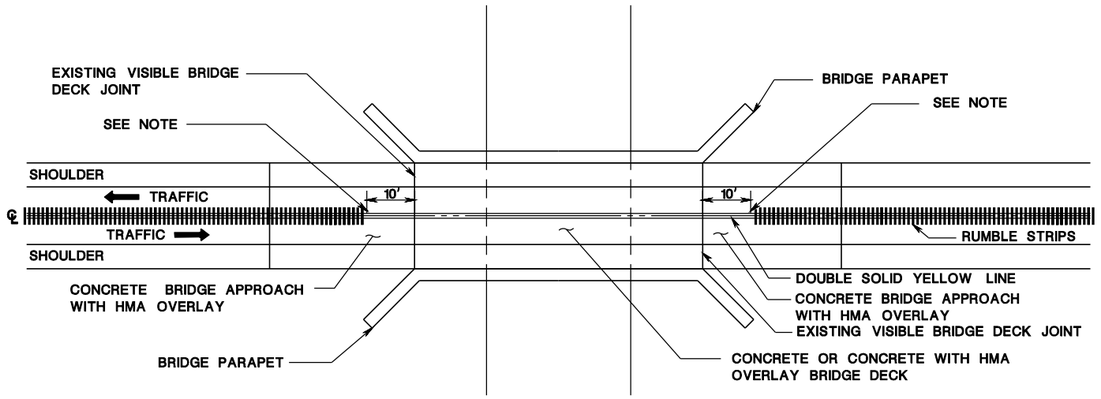
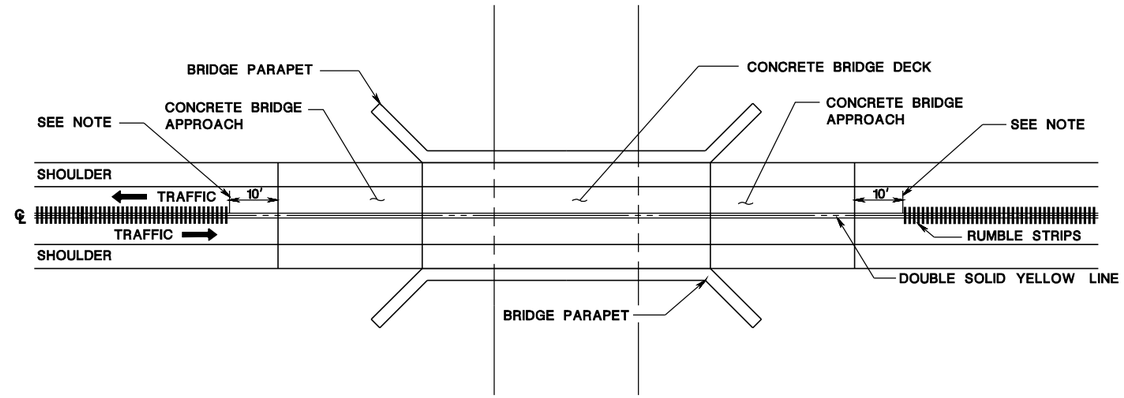


CONCRETE BRIDGE APPROACH WITH HMA OVERLAY

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

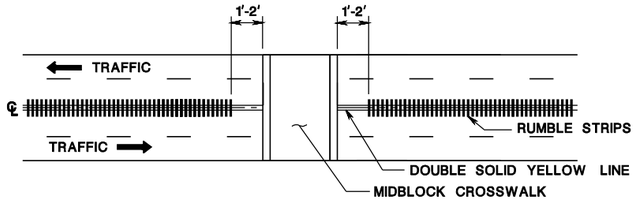
CD-610-6.1



CONCRETE BRIDGE APPROACH WITHOUT HMA OVERLAY

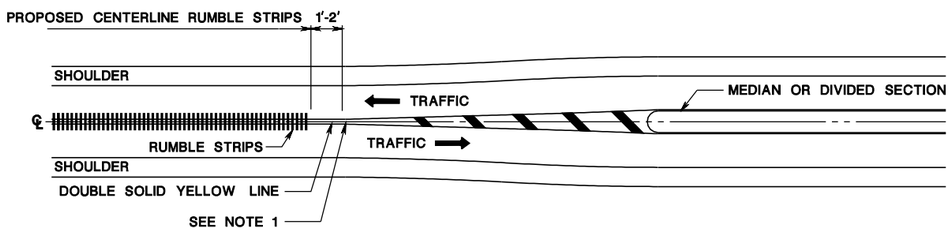
NOTE:
TERMINATE CENTERLINE RUMBLE STRIPS 10 FEET FROM CONCRETE BRIDGE APPROACH.

CD-610-6.2



MIDBLOCK CROSSWALK

CD-610-6.4

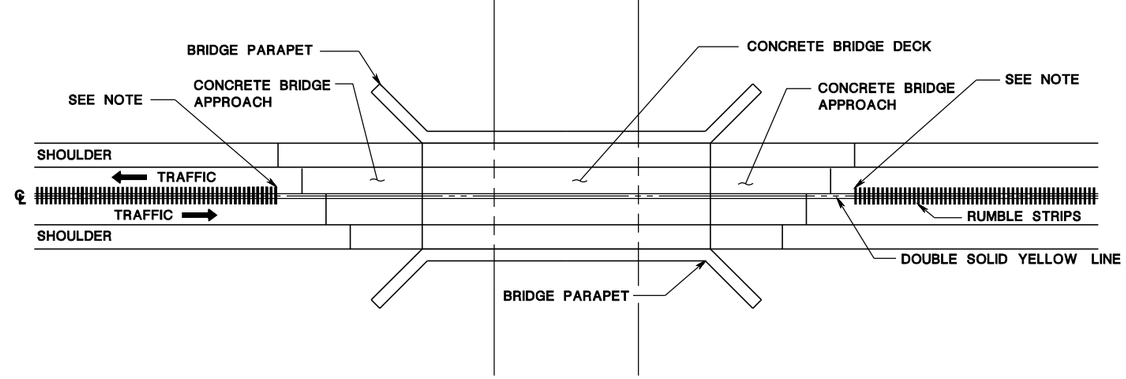


APPROACH TO MEDIAN OR DIVIDED HIGHWAY WITH A PHYSICAL ISLAND

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

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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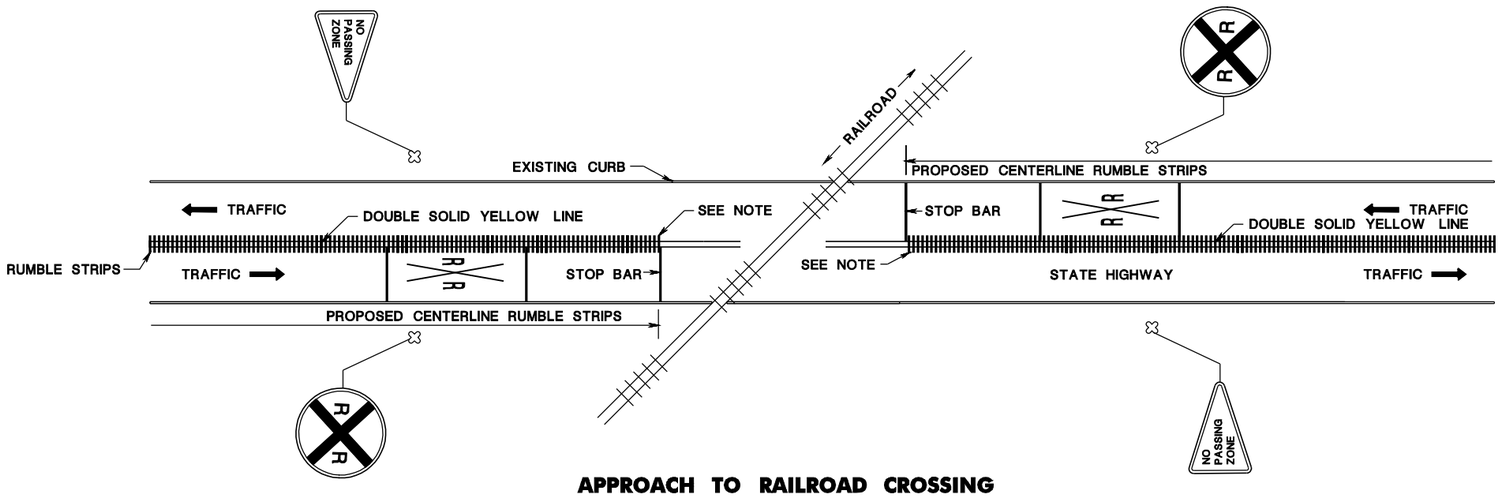
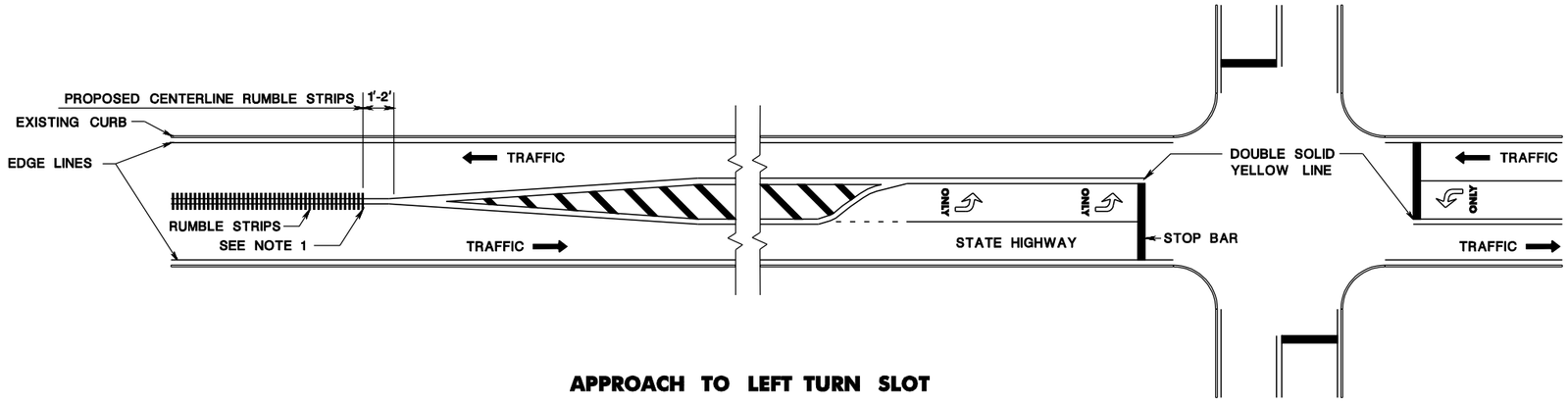


APPROACH TO RAILROAD CROSSING

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.

CD-610-7.2

CENTERLINE RUMBLE STRIP

N.T.S.

CD-610-7

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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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

CD-611-1.1

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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.)

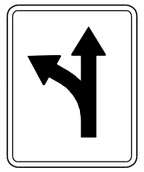
M6 - 3 (S) [32" x 23"]
(5.1 S.F.)

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

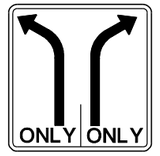


R3 - 6 [30" x 36"]
(7.5 S.F.)
OVERHEAD

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

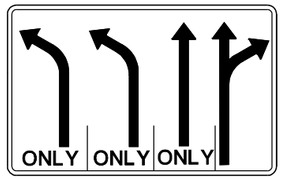
R3 - 8 [30" x 30"]
(6.3 S.F.)

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

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STOP
R1 - 1 [30"x 30"]
(5.5 S.F.)
YIELD
R1 - 2
[36" x 36" x 36"]
(3.9 S.F.)
(L OR R)
W1 - 1 [30"x30"]
(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" X30"]
(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.)
NO TURNS
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" X36"]
(9.S.F.)
W3 - 3 [36" X 36"]
(9 S.F.)
W3 - 3 (S) [48" X 48"]
(16 S.F.)
LEFT LANE MUST TURN LEFT
(L or R)
R3 - 7 [30" X 30"]
(6.3 S.F.)
DO NOT ENTER
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.)
WRONG WAY
R5 - 1a [36" X 24"]
(6 S.F.)
R5 - 1a (S) [30" X 18"]
(3.8 S.F.)
ONE WAY
(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.)
NO TURN ON RED
R10 - 11a [24" X 30"]
(5 S.F.)
SPEED LIMIT
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" X36"]
(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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W5 - 1 [36" x 36"]
(9 S.F.)

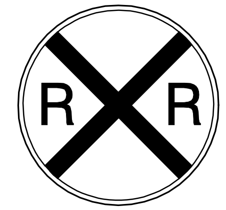
W5 - 1 (S) [48" x 48"]
(16 S.F.)

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

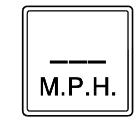
W6 - 1 (S) [48" x 48"]
(16 S.F.)

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.)

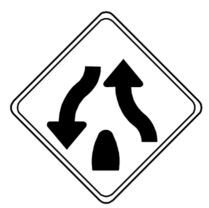
W13 - 1 (S) [24" x 24"]
(4 S.F.)

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.)



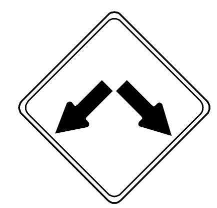
W6 - 2 [36" x 36"]
(9 S.F.)

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

(L OR R)

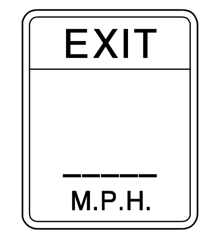
W9 - 1 [36" x 36"]
(9 S.F.)

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.)



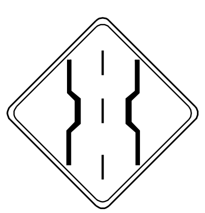
W13 - 2 [48" x 60"]
(20 S.F.)

W13 - 2 (EXPWY) [36" x 48"]
(12 S.F.)

W13 - 2 (S) [24" x 30"]
(5 S.F.)

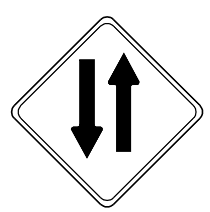
W14 - 2 [30" x 30"]
(6.3 S.F.)

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.)



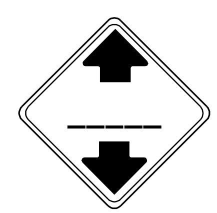
W6 - 3 [30" x 30"]
(6.3 S.F.)

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

(L OR R)

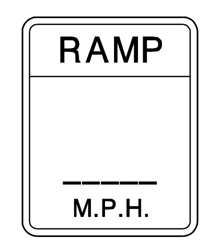
W9 - 2 [36" x 36"]
(9 S.F.)

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.

CD-612-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-612-3.1

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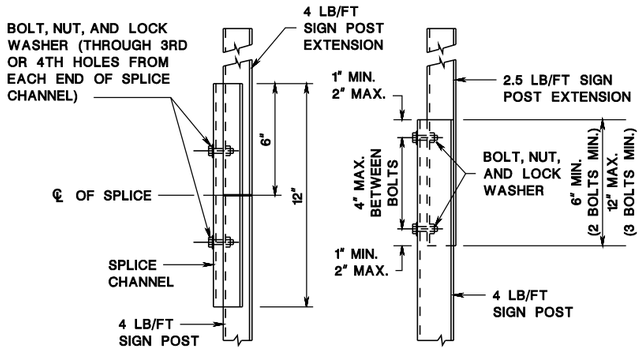
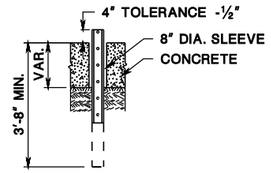
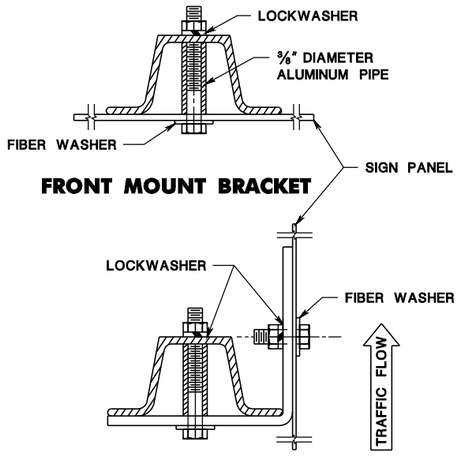


SIGN POST EXTENSION SPLICE DETAILS

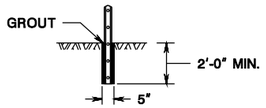


CONCRETE INSTALLATION

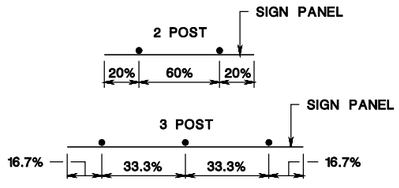


FRONT MOUNT BRACKET

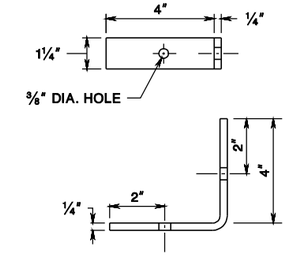
SIDE MOUNT BRACKET



ROCK INSTALLATION



STEEL U-POST SPACING

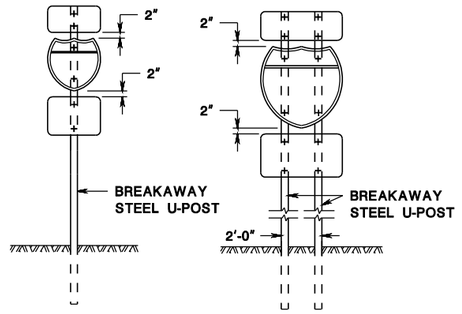


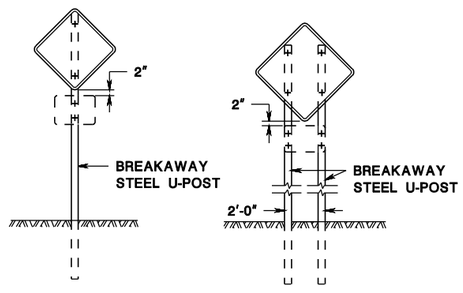
DETAIL OF BRACKET FOR SIDE MOUNTED SIGNS

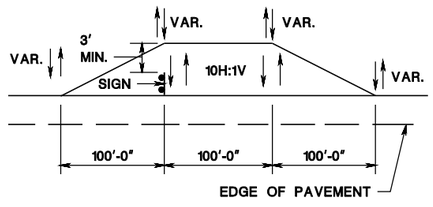
PANEL SIZE (W x H)	# OF POSTS	POST SIZE (LB/FT)
18" x 18"	1	2.5
18" x 24"	1	2.5
24" x 24"	1	2.5
24" x 30"	1	2.5
24" x 36"	1	2.5
30" x 24"	1	2.5
30" x 30"	1	2.5
36" x 12"	2	2.5
36" x 36" x 36"	2	2.5
30" x 36"	1	4.0

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







STEEL U-POST GRADING DETAIL

GENERAL NOTES:

1. 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.
2. ALL SMALL SIGN SUPPORTS TO BE OF THE BREAKAWAY TYPE WITH EXCEPTION OF THOSE INSTALLED BEHIND GUIDE RAIL OR OTHER ROADSIDE BARRIER.
3. ALL STEEL POSTS AND BRACKETS TO BE CUT, BENT, AND HOLES PUNCHED AND DRILLED BEFORE GALVANIZING. GALVINIZING TO BE ACCORDING TO ASTM A123.
4. 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.
5. SIGN PANEL SIZES ARE TO DETERMINE POST TYPE AND NUMBER AS SHOWN ON THIS DETAIL.
6. BOLTS ARE NOT TO PROTRUDE MORE THAN ¾" BEYOND THE NUT WHEN TIGHT, BUT ARE TO ENGAGE ALL THREADS IN THE NUT.
7. 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.
8. 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.
9. 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).
10. EXTRUDED ALUMINUM SIGN PANELS ARE NOT PERMITTED FOR USE WITH STEEL U-POST SIGN SUPPORTS.
11. DO NOT PLACE STEEL U-POST SIGN SUPPORTS IN FRONT OF GUIDE RAIL AND THE POSTS MUST NOT STRADDLE GUIDE RAIL.
12. 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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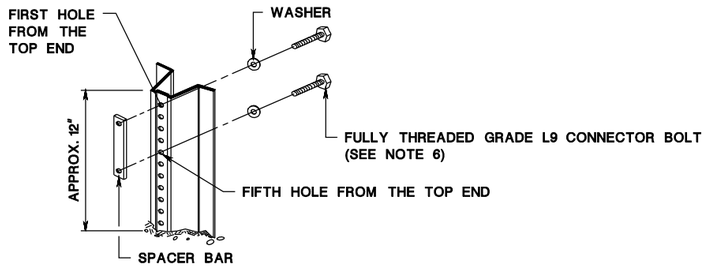
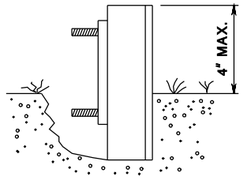
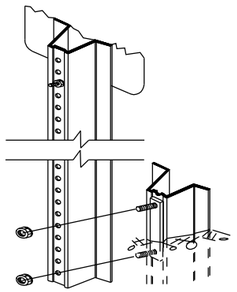


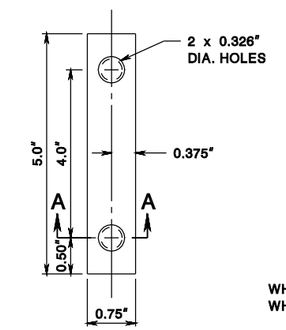


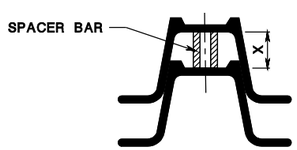


NOTES:

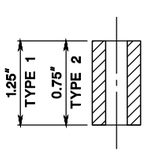
1. DRIVE ANCHOR POST ASSEMBLY TO WITHIN APPROXIMATELY 12 INCHES ABOVE GROUND LEVEL. PLACE BOLT AND WASHER IN FIRST AND FIFTH HOLES FROM THE TOP END, AND SECURE BOLTS ONTO SPACER.
2. DRIVE ANCHOR POST ASSEMBLY TO WITHIN A MAXIMUM OF 4 INCHES ABOVE GROUND LEVEL.
3. DIG OUT AROUND BACK OF ANCHOR POST ASSEMBLY 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, 5⁄16" x 1½"
   SIZE OF CONNECTOR BOLT FOR TYPE 2, 5⁄16" 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



SECTION A–A

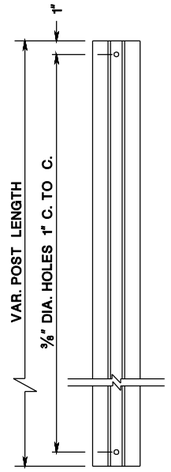
SPACER BAR

CD-612-5.1

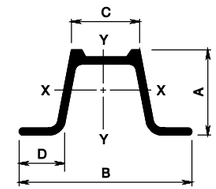
WEIGHT * LBS./FT.	DIMENSIONS (IN)				AREA IN.^{2}	X–X AXIS **		Y–Y AXIS	
	"A"	"B"	"C"	"D"		I(IN.^{4})	S(IN.^{3})	I(IN.^{4})	S(IN.^{3})
2.50	1.516	3.062	1.278	0.669	0.760	0.228	0.313	0.539	0.352
4.00	1.968	3.500	1.336	0.834	1.187	0.611	0.707	1.161	0.664

* ± 5%
** GOVERNING SECTION

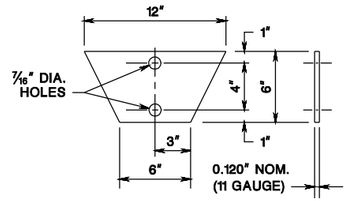
TYPE 1 STEEL U–POST PROPERTIES



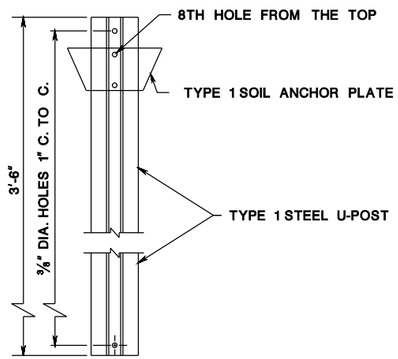
TOP POST U–POST



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.

CD-612-5.2

STEEL U–POST SIGN SUPPORTS

N.T.S.

CD-612-5

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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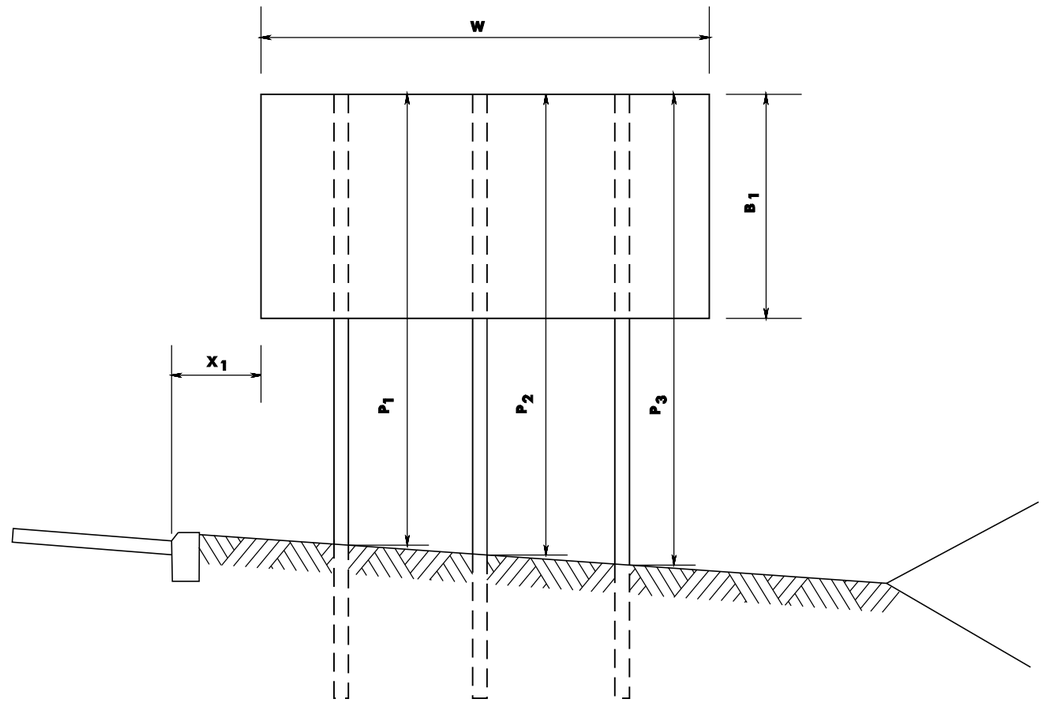
STEEL U–POST SIGN SUPPORT DATA TABLE

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	



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.

STEEL U–POST SIGN SUPPORTS

N.T.S.

CD-612-6

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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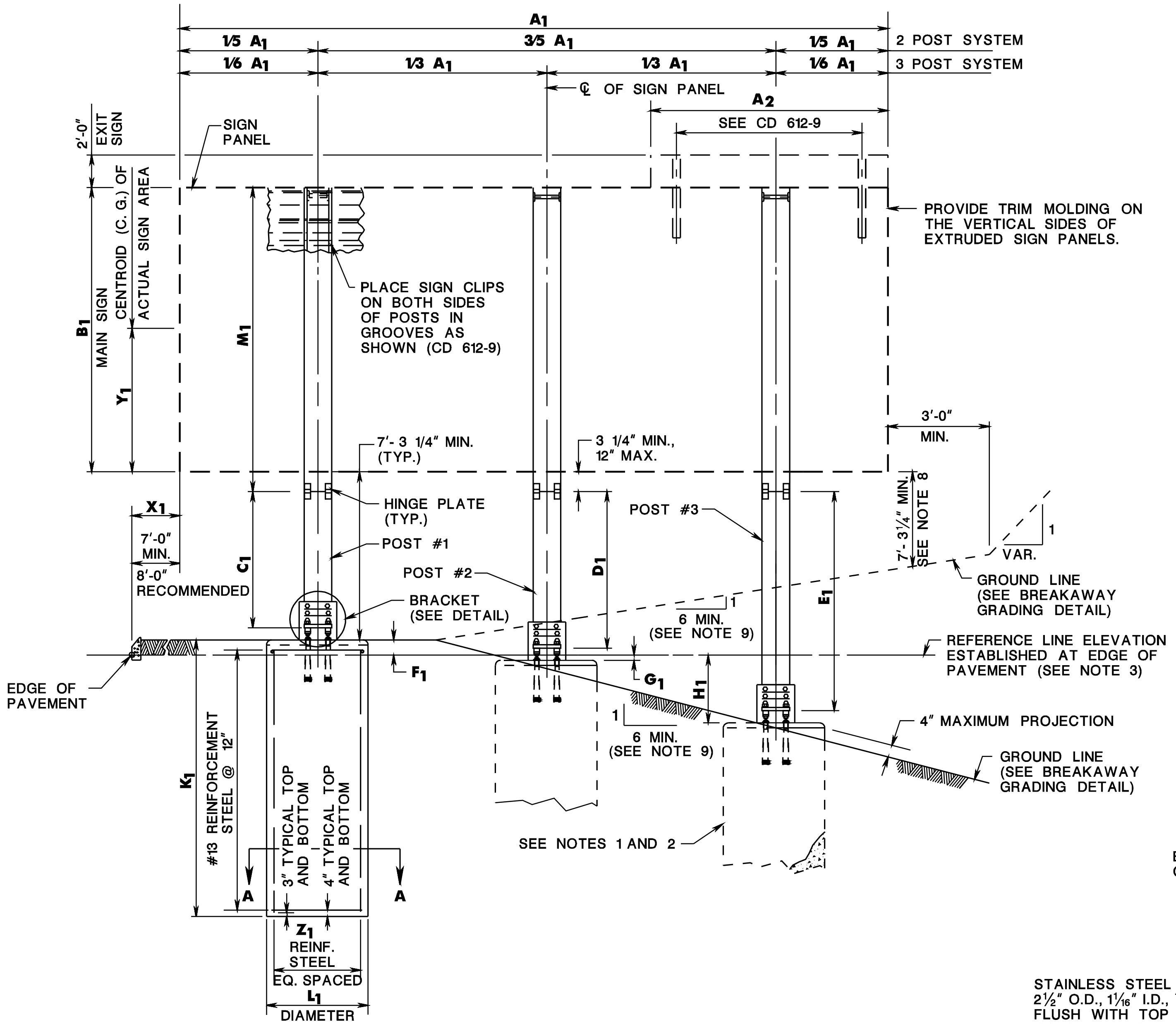
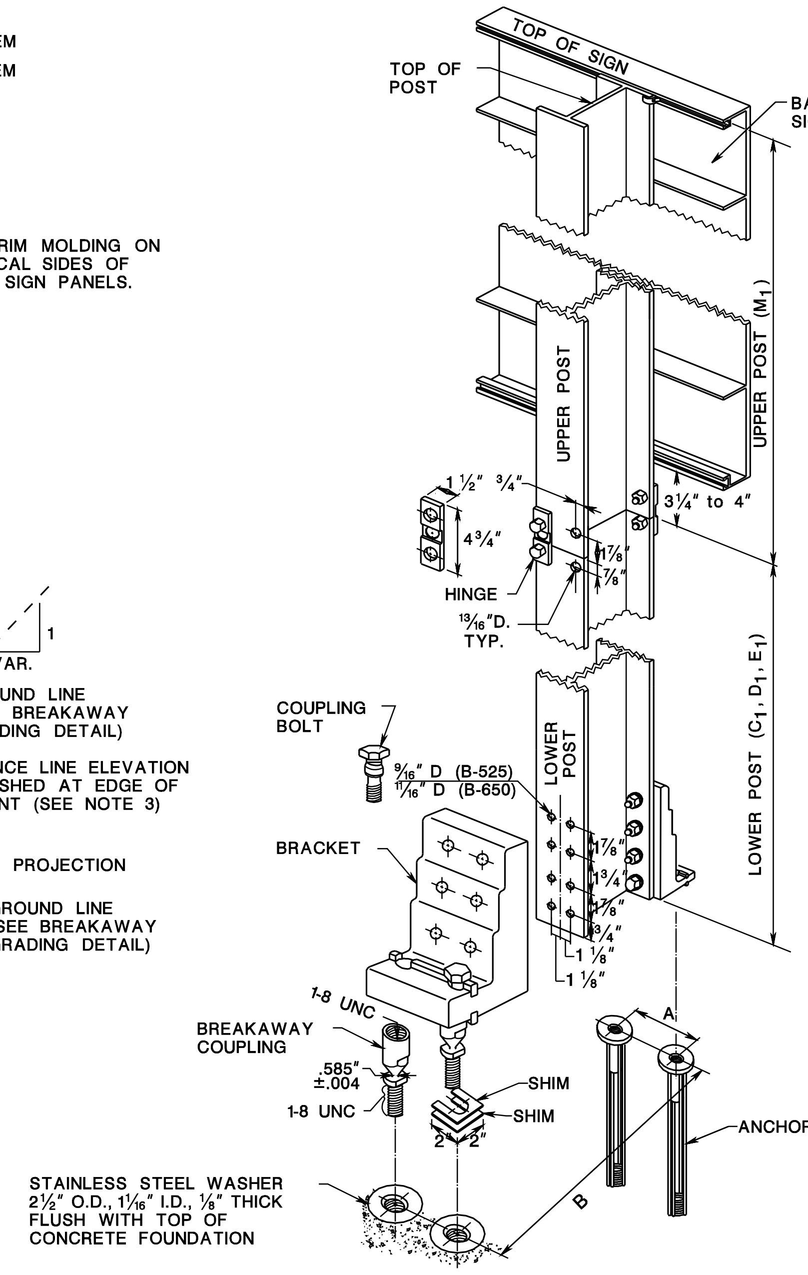
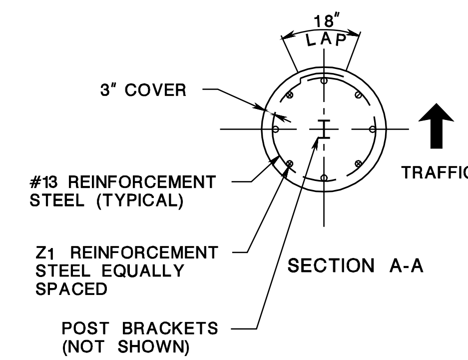




BREAKAWAY COUPLING AND HINGE PLATE ASSEMBLY (TYPICAL)

GENERAL NOTES:

1. USE CLASS B CONCRETE IN ALL FOOTINGS, AS SPECIFIED IN SECTION 903 OF THE STANDARD SPECIFICATIONS.
2. PLACE ALL FOOTINGS AGAINST UNDISTURBED EARTH, EXCEPT FOR FOOTING TOPS WHICH ARE TO BE FORMED TO A DEPTH OF 3 INCHES BELOW GROUND LINE.
3. TOPS OF FOOTINGS ABOVE REFERENCE LINE ARE INDICATED BY PLUS (+) VALUE AND BELOW BY MINUS (-) VALUE.
4. UNUSUAL FOUNDATION CONDITIONS MAY REQUIRE REDESIGNING OF FOOTINGS AND SUCH CONDITIONS ARE TO BE BROUGHT TO THE ATTENTION OF THE RE.
5. FOR Z_1, L_1, & K_1, REFER TO CD-612-10 "SIGN SUPPORT DATA TABLE".
6. USE GALVANIZED POSTS.
7. BREAKAWAY GRADING DETAIL, FOOTING / STUB PROJECTION DETAIL, AND FOOTING BEVEL DETAIL, DO NOT APPLY TO SIGNS BEHIND GUIDE RAIL OR BEYOND THE CLEAR ZONE.
8. SIGN UNDERCLEARANCE AT FAR END OF SIGN IS 1 FOOT MINIMUM WHEN SIGN IS BEHIND GUIDE RAIL OR BEYOND THE CLEAR ZONE.
9. BACK SLOPE MAY BE 2H: 1V MAXIMUM WHEN SIGN IS BEHIND GUIDE RAIL OR BEYOND CLEAR ZONE.

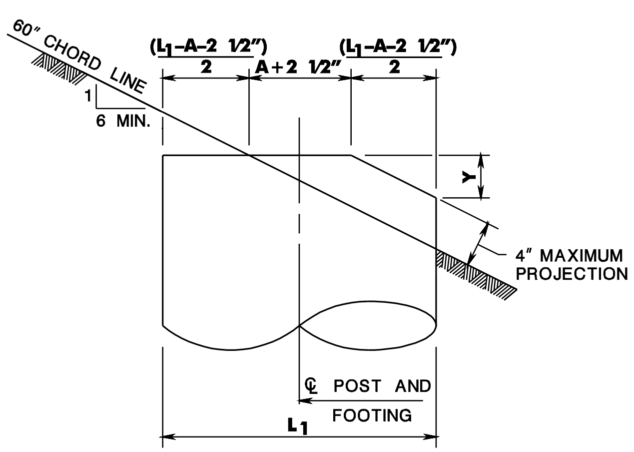


SECTION A-A

ANCHOR SPACING

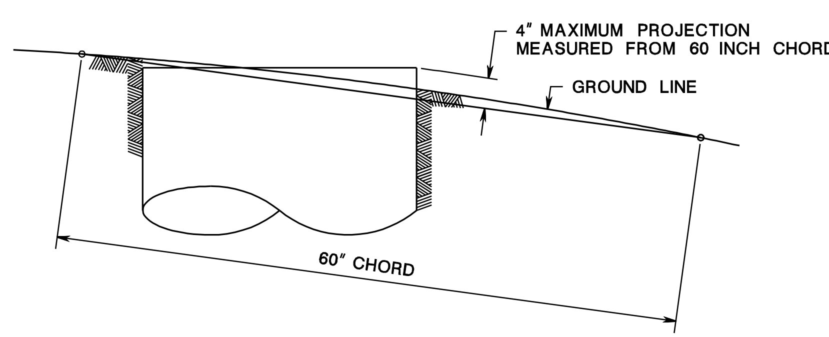
A	(MODEL B525) =	3"
A	(MODEL B650) =	4"
B	(BRACKET No. 1) =	DEPTH OF POST + 7 15/16"
B	(BRACKET No. 2) =	DEPTH OF POST + 8 1/16"
B	(BRACKET No. 3) =	DEPTH OF POST + 8⅛"

NOTE:
REINFORCEMENT STEEL IS IN METRIC UNITS

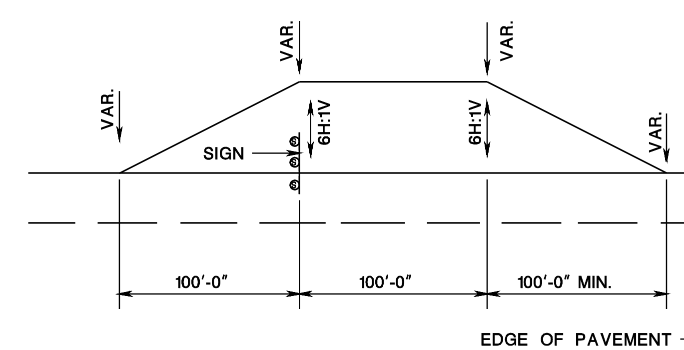


(BEND REINFORCEMENT STEEL TO FIT)

FOOTING BEVEL DETAIL (SEE NOTE 7)



FOOTING / STUB PROJECTION DETAIL (SEE NOTE 7)



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

BREAKAWAY SIGN SUPPORTS FOR GROUND MOUNTED SIGNS

N.T.S.

CD-612-7

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-612-7.1

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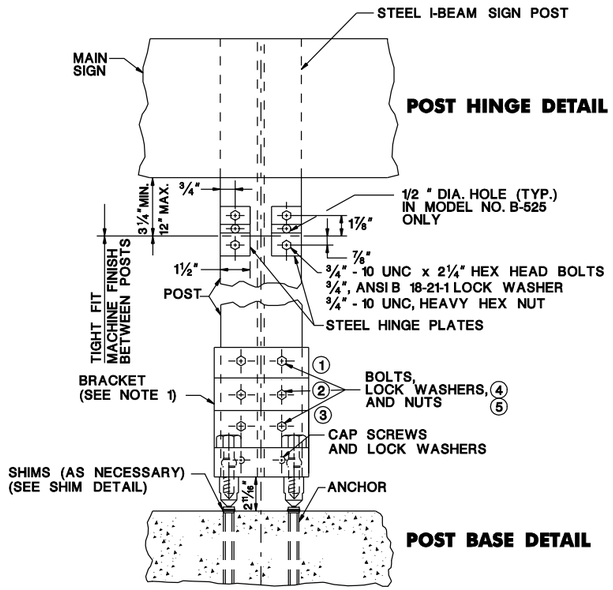
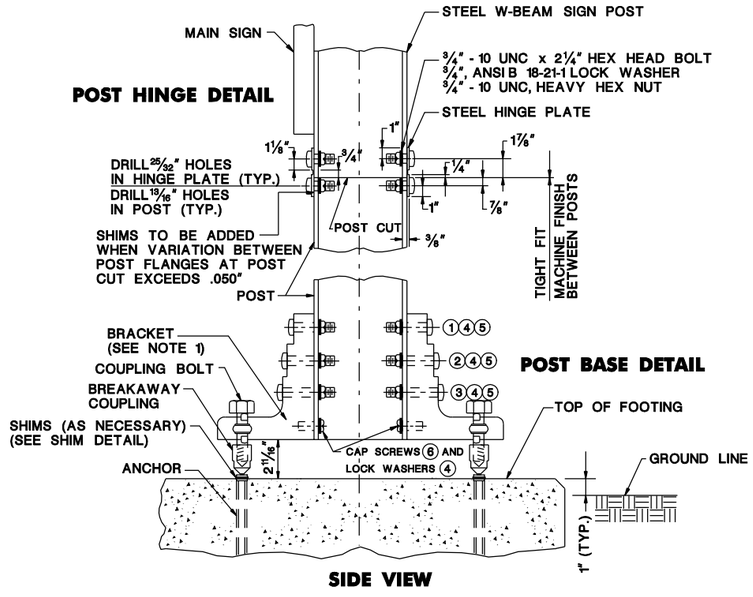


FRONT VIEW
BREAKAWAY ASSEMBLIES



SIDE VIEW
BREAKAWAY ASSEMBLIES

BOLTS, LOCK WASHERS, NUTS, & CAP SCREWS

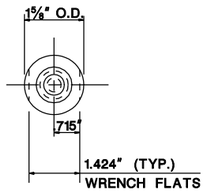
MODEL 525

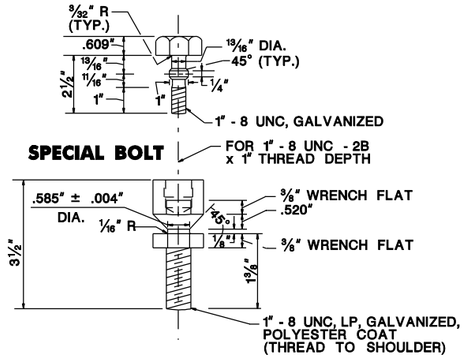
① ½" - 13 UNC x 2½" HEX HEAD BOLT, GALVANIZED
② ½" - 13 UNC x 2¾" HEX HEAD BOLT, GALVANIZED
③ ½" - 13 UNC x 3" HEX HEAD BOLT, GALVANIZED
④ ½", ANSI B 18-21-1 LOCK WASHER, GALVANIZED
⑤ ½" - 13 UNC, HEAVY HEX NUT, GALVANIZED
⑥ ½" - 13 UNC x 1 1/4" HEX HEAD CAP SCREW, GALVANIZED

MODEL 650

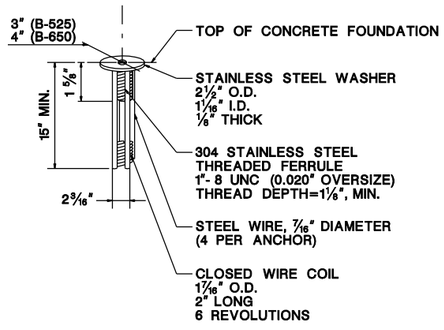
① ⅝" - 11 UNC x 2¾" HEX HEAD BOLT, GALVANIZED
② ⅝" - 11 UNC x 3" HEX HEAD BOLT, GALVANIZED
③ ⅝" - 11 UNC x 3¼" HEX HEAD BOLT, GALVANIZED
④ ⅝", ANSI B 18-21-1 LOCK WASHER, GALVANIZED
⑤ ⅝" - 11 UNC, HEAVY HEX NUT, GALVANIZED
⑥ ⅝" - 11 UNC x 1 1/4" HEX HEAD CAP SCREW, GALVANIZED

SPECIAL BOLT, ANCHOR AND COUPLING DETAIL

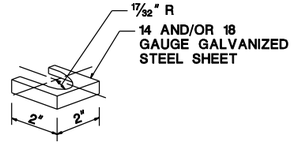




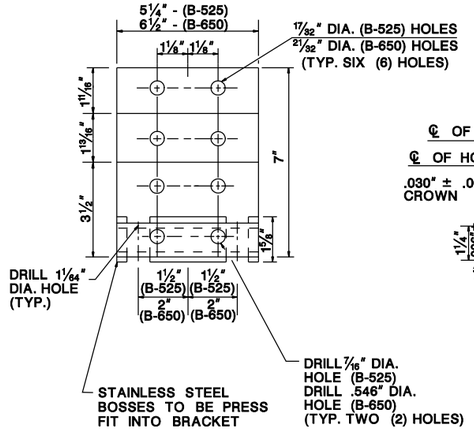
COUPLING



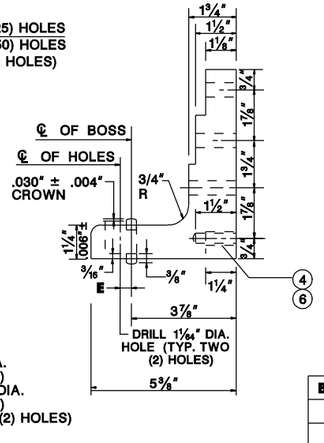
ANCHOR



SHIM DETAIL



FRONT VIEW

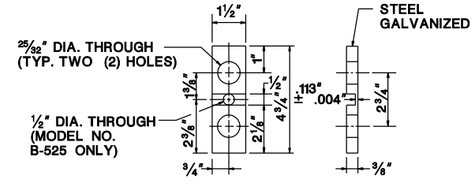


SIDE VIEW

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

SEE NOTE 7.

BRACKET DETAIL



STEEL HINGE PLATE 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" AND 8" BEAM SIZES.
5. DESIGNATION B-650 IS FOR 10", 12", 14", 16", 18", AND 21" BEAM SIZES.
6. DO NOT PLACE TORQUE WRENCH ACROSS NECK OF COUPLING.
7. THE TOLERANCE OF DIMENSION "E" IS +/- 0.004".

BREAKAWAY SIGN SUPPORTS FOR GROUND MOUNTED SIGNS

N.T.S.

CD-612-8

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-612-8.1

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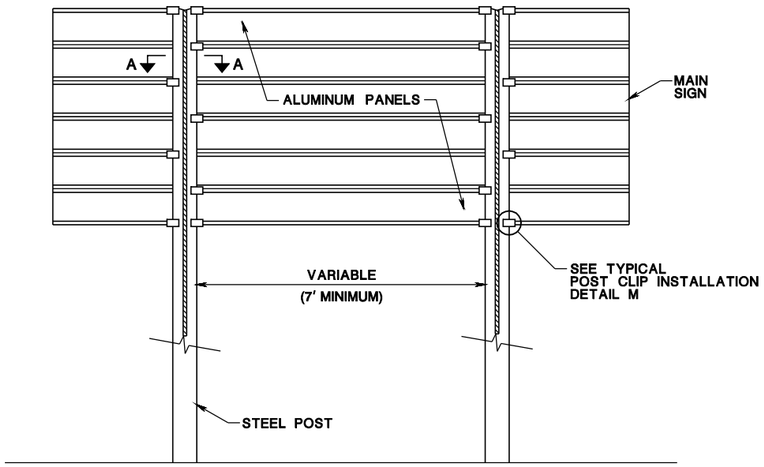
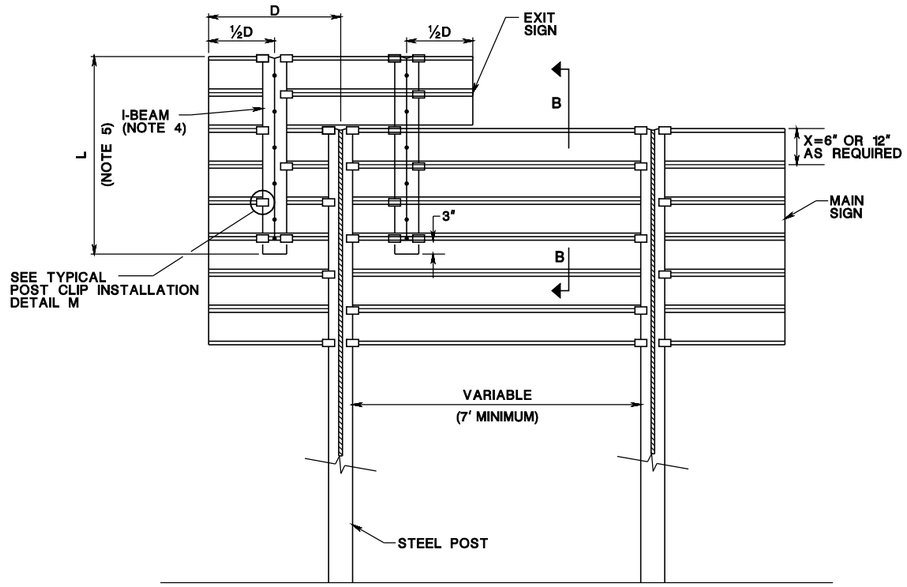


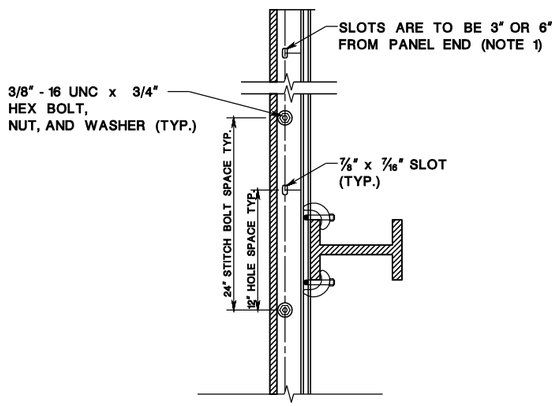
SIGN WITHOUT EXIT SIGN



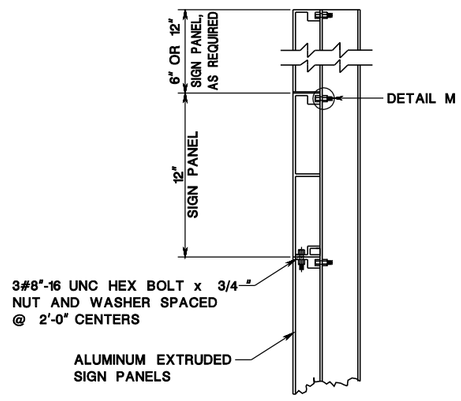
SIGN WITH EXIT SIGN

NOTES:

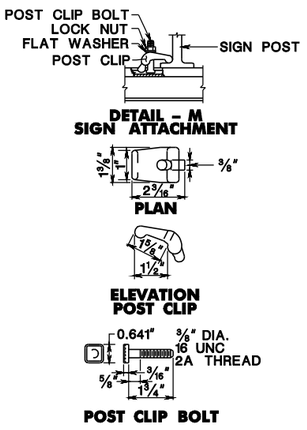
1. EXTRUDED SIGN PANEL SECTIONS TO BE BOLTED TOGETHER WITH 3/8 -16 UNC x 3/4 HEX BOLTS. A HEX BLOT TO BE INSTALLED IN THE FIRST HOLE FROM THE PANEL END AND AT 24" C TO C THEREAFTER.
2. INSTALL HEX BOLTS IN ACCORDANCE WITH NOTE 1 BETWEEN SIGN PANEL AND EXIT PANEL (WHEN PROVIDED)
3. EXIT SIGN TO BE PLACED 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)



BREAKAWAY SIGN SUPPORTS FOR GROUND MOUNTED SIGNS

N.T.S.

CD-612-9

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-612-9.1

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BDC16D-01-ORIGINAL SHEET
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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.	$\frac{(L_1 - A - 2\ 1/2")}{2}$	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

CD-612-10.1

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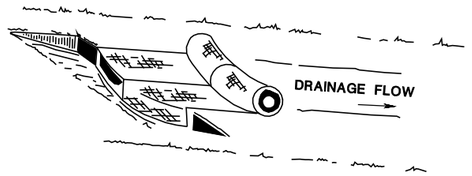
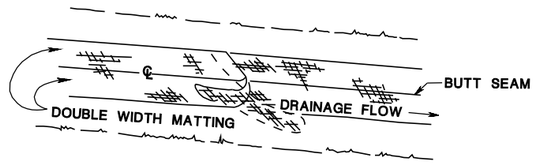
SWALE OR DITCH

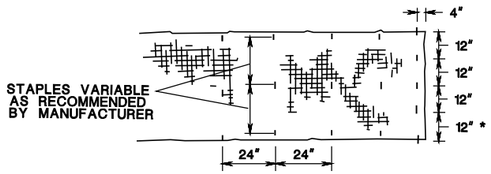
DOUBLE WIDTH MATTING AND BLANKETS IN SWALE, USE 3'-6" OVERLAP WHERE TWO OR MORE STRIPS ARE REQUIRED, AND STAPLE ON 2'-0" CENTERS



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.

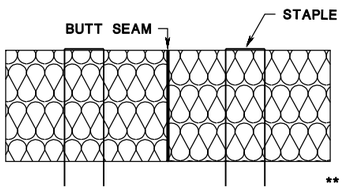


OVERLAP: BURY UPPER END OF LOWER STRIP AS PER ABOVE DETAIL. OVERLAP END OF TOP STRIP 6" AND STAPLE EITHER SIDE OF JOINT.



* DEPENDANT ON WIDTH OF PRODUCT

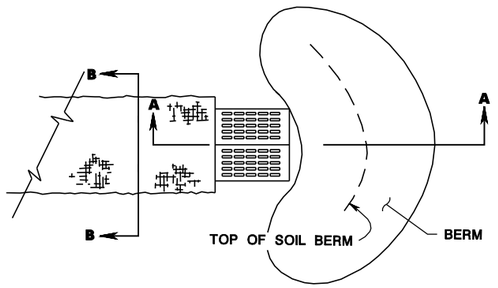
SECURE MATTING AND BLANKETS WITH STAPLES SPACED 24" APART ALONG THE SIDES AND DOWN THE CENTER. AT THE ENDS OF THE MATTING AND AT 50 FOOT INTERVALS STAPLES SHALL BE PLACED 12" APART ACROSS THE WIDTH.

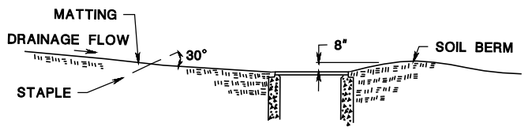


EXCELSIOR BUTT SEAM

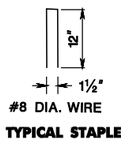
** REFER TO SE&SC MANUAL FOR WHERE THIS TREATMENT IS TO BE USED.

INLET AND MOUND

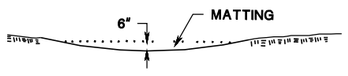




SECTION A-A



TYPICAL STAPLE



SECTION B-B

TOPSOIL STABILIZATION MATTING

TOPSOIL STABILIZATION

N.T.S.

CD-807-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-807-1.1

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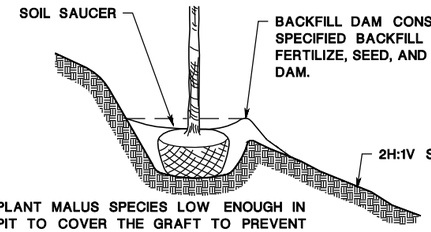


PLANT MALUS SPECIES LOW ENOUGH IN PIT TO COVER THE GRAFT TO PREVENT SPROUTING FROM THE ROOT STOCK.

TREE PLANTING – 2H:1V SLOPE

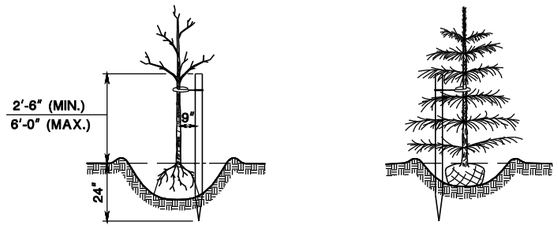
CD-811-1.1

IMMEDIATELY PRIOR TO PLANTING, MAKE 3 VERTICAL CUTS EQUIDISTANT AND ½" DEEP INTO ROOT MASS.

CONTAINERIZED PLANTING DETAIL

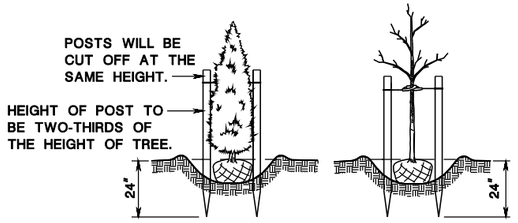
CD-811-1.3

POSTS - 2" x 2" x 8 FOOT LUMBER, STAINED DARK BROWN, OR 8 FOOT WHITE CEDAR POST 2" TO 3" DIAMETER AT THE THINNER (LOWER) END OF THE POST.



TREES REQUIRING ONE STAKE

DECIDUOUS TREES (EXCEPT SALIX) 1" TO 1½" CALIPER, INCLUSIVE. CONE TYPE (PYRAMIDAL) TREES 3 FEET TO 5 FEET HIGH, AND COLUMNAR EVERGREEN TREES 4 FEET TO 7 FEET HIGH, INCLUSIVE.



TREES REQUIRING TWO STAKES

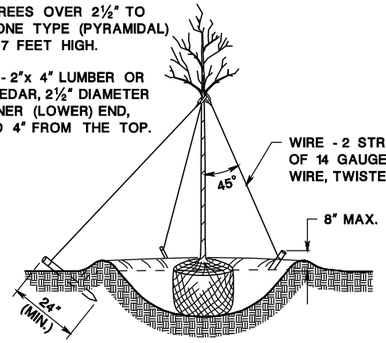
DECIDUOUS TREES OVER 1½" TO 2½" CALIPER, INCLUSIVE. ALL SALIX REGARDLESS OF HEIGHT, CALIPER, BARE ROOT OR BALLED, AND BURLAPPED. CONE TYPE (PYRAMIDAL) TREES 5 FEET TO 7 FEET HIGH AND COLUMNAR EVERGREEN TREES 7 FEET TO 9 FEET HIGH, INCLUSIVE.

STAKING DETAILS

CD-811-1.5

DECIDUOUS TREES OVER 2½" TO 4" CALIPER, CONE TYPE (PYRAMIDAL) TREES OVER 7 FEET HIGH.

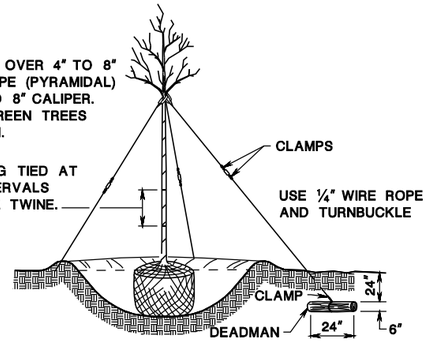
STAKES - 2"x 4" LUMBER OR WHITE CEDAR, 2½" DIAMETER AT THINNER (LOWER) END, NOTCHED 4" FROM THE TOP.



TREES REQUIRING THREE GUYS AND STAKES

DECIDUOUS TREES OVER 4" TO 8" CALIPER. CONE TYPE (PYRAMIDAL) TREES OVER 4" TO 8" CALIPER. COLUMNAR EVERGREEN TREES OVER 9 FEET HIGH.

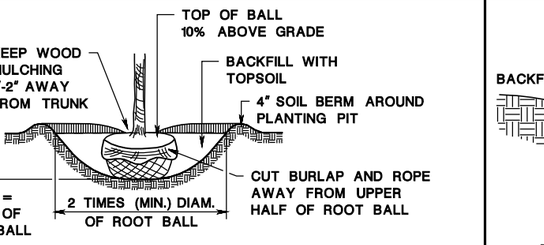
BURLAP WRAPPING TIED AT MAXIMUM 24" INTERVALS WITH 2 PLY JUTE TWINE.



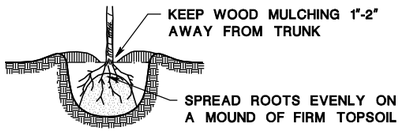
TREES REQUIRING THREE GUYS AND DEADMEN

GUYING DETAILS

CD-811-1.6



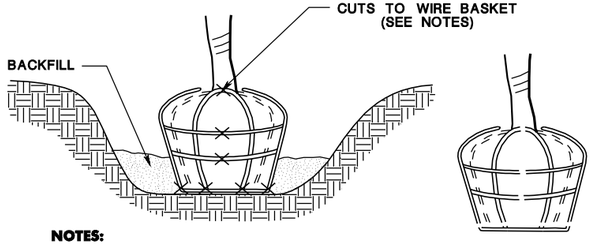
B & B MATERIAL



BARE ROOT MATERIAL

TREE AND SHRUB PLANTING DETAIL

CD-811-1.2

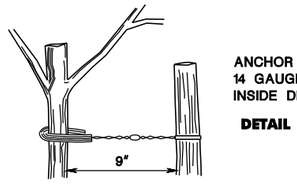


NOTES:

1. CUT OUT BOTTOM LOOPS PRIOR TO SETTING PLANT IN PLANTING PIT.
2. SET PLANT AND BACKFILL HALFWAY UP THE BALL. TAMP AND WATER BACKFILL.
3. CUT REMAINING HORIZONTAL BAND DOWN ONE SIDE.
4. REMOVE REMAINDER OF WIRE BASKET.
5. COMPLETE BACKFILLING AND PROVIDE INITIAL WATERING.

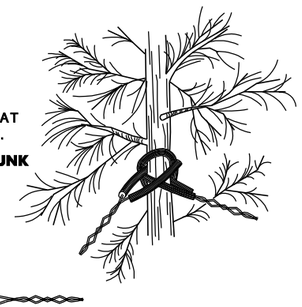
WIRE BASKET REMOVAL

CD-811-1.4



ANCHOR TREE TO POST(S) USING 14 GAUGE STEEL WIRE AND ⅜" MIN INSIDE DIAMETER CORDED RUBBER.

DETAIL OF POST AND GUY WIRE



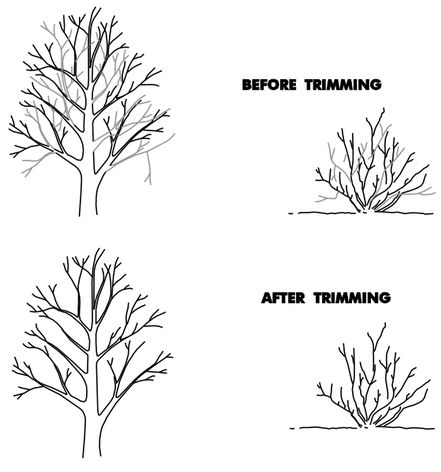
GUY WIRES SHOULD BE PLACED AT LEAST HALF WAY UP THE TRUNK.

DETAIL OF GUY WIRES AROUND TRUNK

WHEN GUYING, LEAVE ROOM FOR GROWTH OF TREE

FASTENING DETAIL

CD-811-1.7

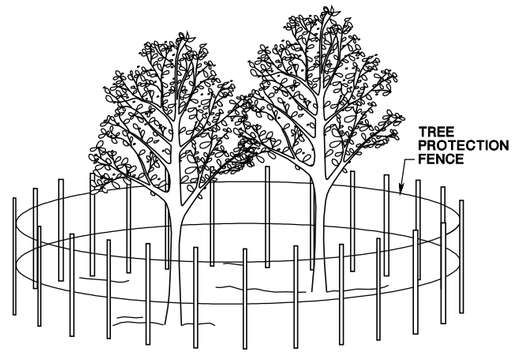


DAMAGED BRANCHES TO BE TRIMMED OFF BELOW THE POINT OF INJURY. THE CENTRAL TRUNK OR "LEADER" SHOULD BE LEFT INTACT. BROKEN ROOTS ARE TO BE CUT OFF ABOVE THE BREAK AND BRUISED ENDS CUT OFF CLEANLY.

WHEN PLANTING A YOUNG SHRUB, PRUNE JUST ABOVE A BUD AND RETAIN THE NATURAL SHAPE OF THE SHRUB.

PRUNING AT TIME OF PLANTING

CD-811-1.8



NOTE:

PLACE FENCE A MINIMUM OF 1'-0" OUTSIDE DRIP LINE OF EXISTING TREE.

TREE PROTECTION DETAIL

CD-811-1.9

PLANTING

N.T.S.

CD-811-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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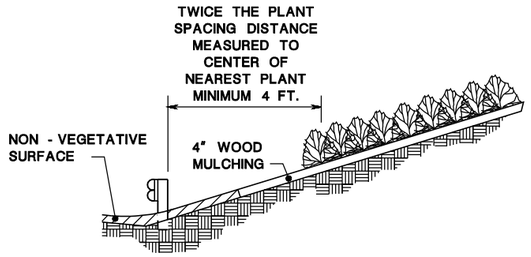
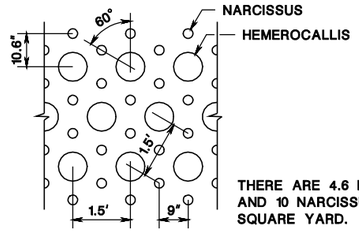


SHRUB PLANTING BEHIND GUIDE RAIL

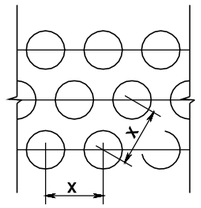
CD-811-2.1



THERE ARE 4.6 HEMEROCALLIS AND 10 NARCISSUS IN A SQUARE YARD.

HEMEROCALLIS AND NARCISSUS BED PLANTING DETAIL

CD-811-2.2



SHRUB BED PLANTING DETAIL

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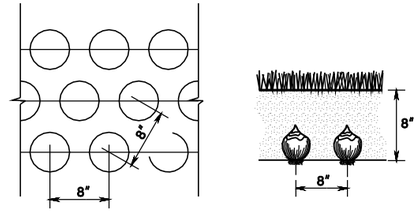
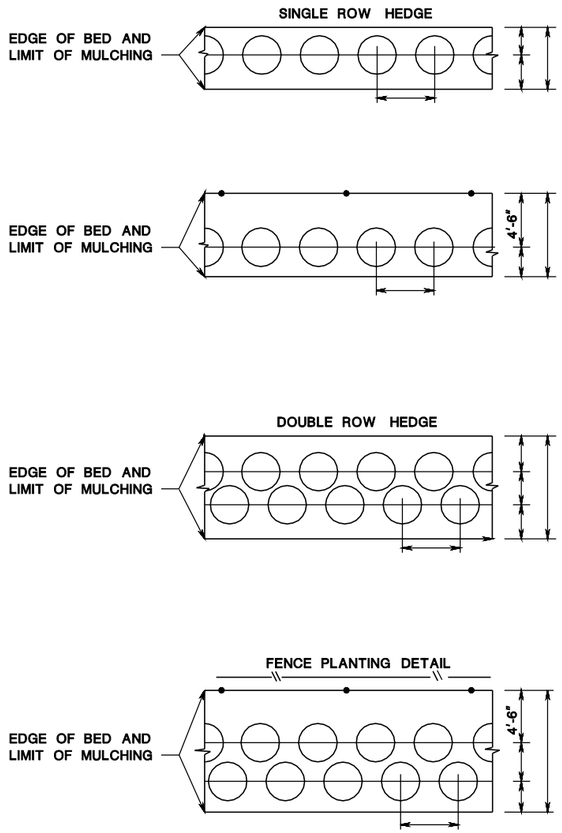


NOTE:
NARCISSUS TO BE PLANTED IN TURF AREAS AND NOT TO RECEIVE WOOD MULCHING.

NARCISSUS IN TURF DETAIL

CD-811-2.4



HEDGE PLANTING DETAILS

CD-811-2.5

NOTE TO DESIGNER:
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PLANTING

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CD-811-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

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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) — 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) — 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 TO 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 W8-14A (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.

NOTE TO DESIGNER:

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TCD-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

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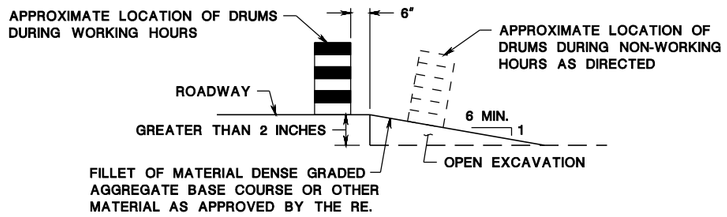


NOTE:

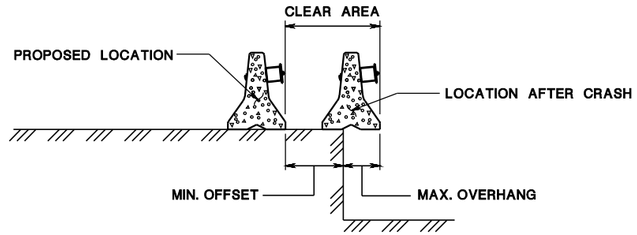
ESCAPE RAMPS MUST BE CONSTRUCTED AND MAINTAINED DURING NON-WORKING HOURS WHERE A VERTICAL DROP GREATER THAN 2 INCHES EXISTS ADJACENT TO TRAVELED LANE.

ESCAPE RAMP DETAIL

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:

1. AVOIDANCE MANEUVER IS FOR A SPEED, PATH, AND / OR DIRECTION CHANGE PRIOR TO THE BEGINNING OF CHANNELIZING TAPERS.
2. RECOMMENDED DISTANCES BETWEEN TWO SEPARATE LANE CLOSURES ARE DOUBLE THE VALUES SHOWN ABOVE.
3. RURAL AND URBAN ROAD DESIGNATIONS ARE AS DEFINED IN THE NJDOT STATE HIGHWAY STRAIGHT LINE DIAGRAMS.
4. 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.
5. LOCATE TAPERS TO MAXIMIZE THE VISIBILITY OF THEIR TOTAL LENGTH.



STAGE	LOCATION	CONNECTION TYPE
	RTE. STA. TO STA.	

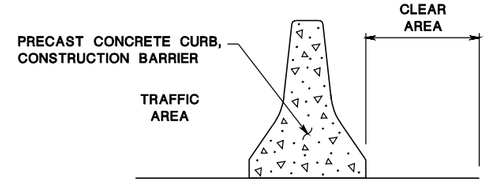
CONNECTION TYPE	MIN. OFFSET	MAX. OVERHANG	CLEAR AREA
B	12"	16"	28"

OPTIONAL CONNECTION TYPE B TREATMENT AT VERTICAL DROP OFF

RECOMMENDED TAPER LENGTH AND SPACING FOR CHANNELIZING TAPERS					RECOMMENDED SPACING ALONG TANGENTS
REGULATORY APPROACH SPEED OF TRAFFIC MILES /HOUR	MINIMUM TAPER RATIO IN LENGTH PER FOOT OF WIDTH	MINIMUM TAPER LENGTH L – FOR LANE WIDTHS			MAXIMUM DEVICE (B) SPACING ALONG TAPERS IN FEET	MAXIMUM DEVICE (D) SPACING ALONG TANGENTS IN FEET
		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.



NOTES:

1. CHANGES TO THE PROPOSED CONNECTION TYPE AT ANY LOCATION MUST BE APPROVED BY THE DEPARTMENT.
2. 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.

STAGE	LOCATION	CONNECTION TYPE
	RTE. STA. TO STA.	

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

CONSTRUCTION BARRIER CURB CONNECTION TYPE AND CLEAR AREA

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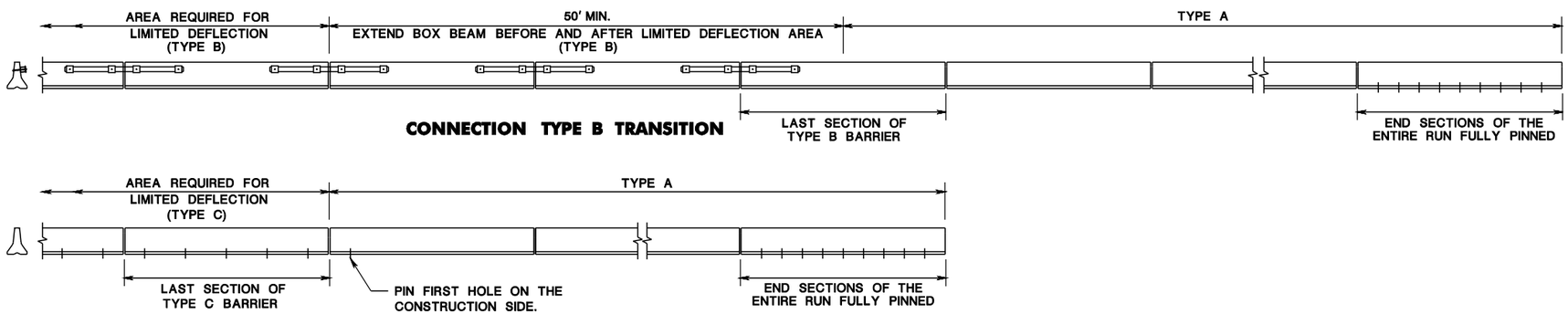

CONNECTION TYPE B TRANSITION

CONNECTION TYPE C TRANSITION

N.T.S.

TCD-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

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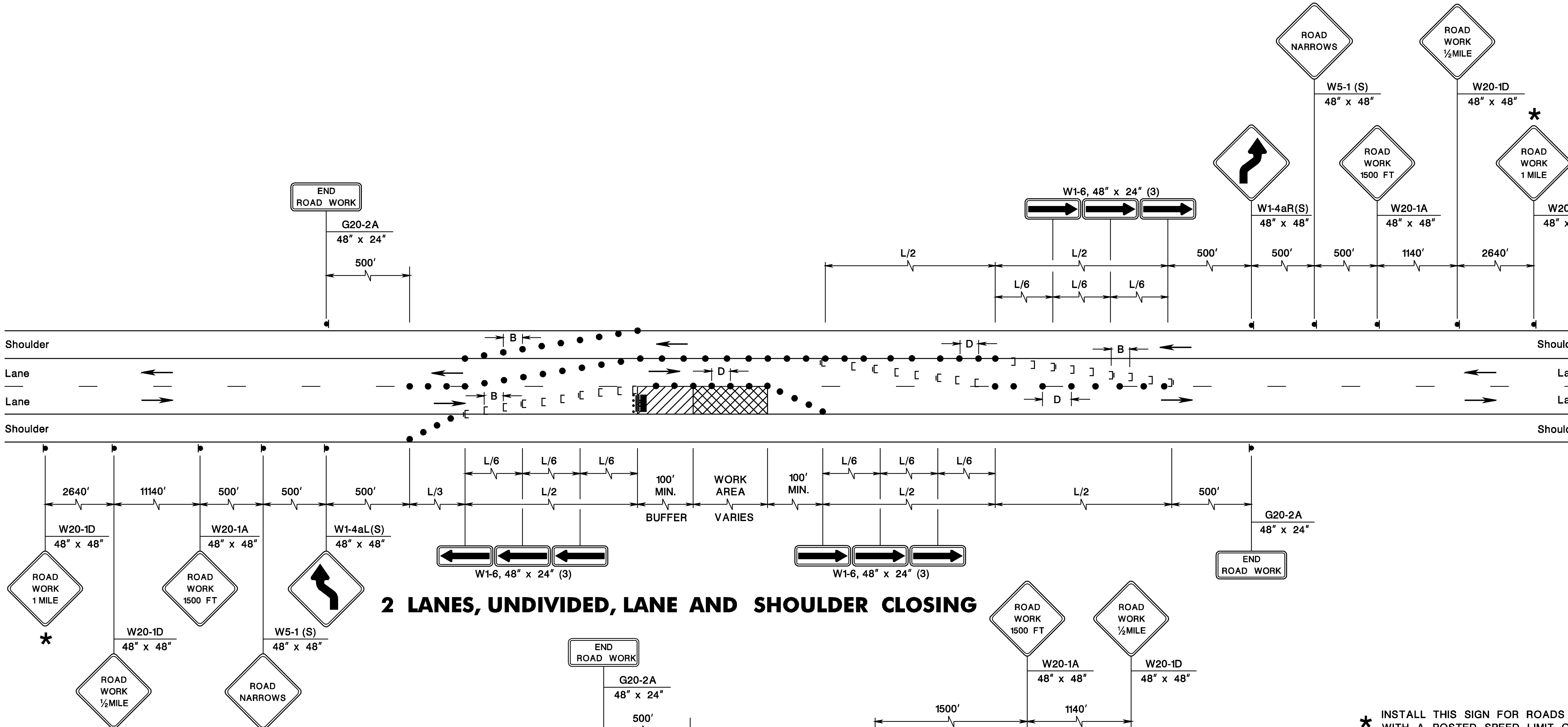
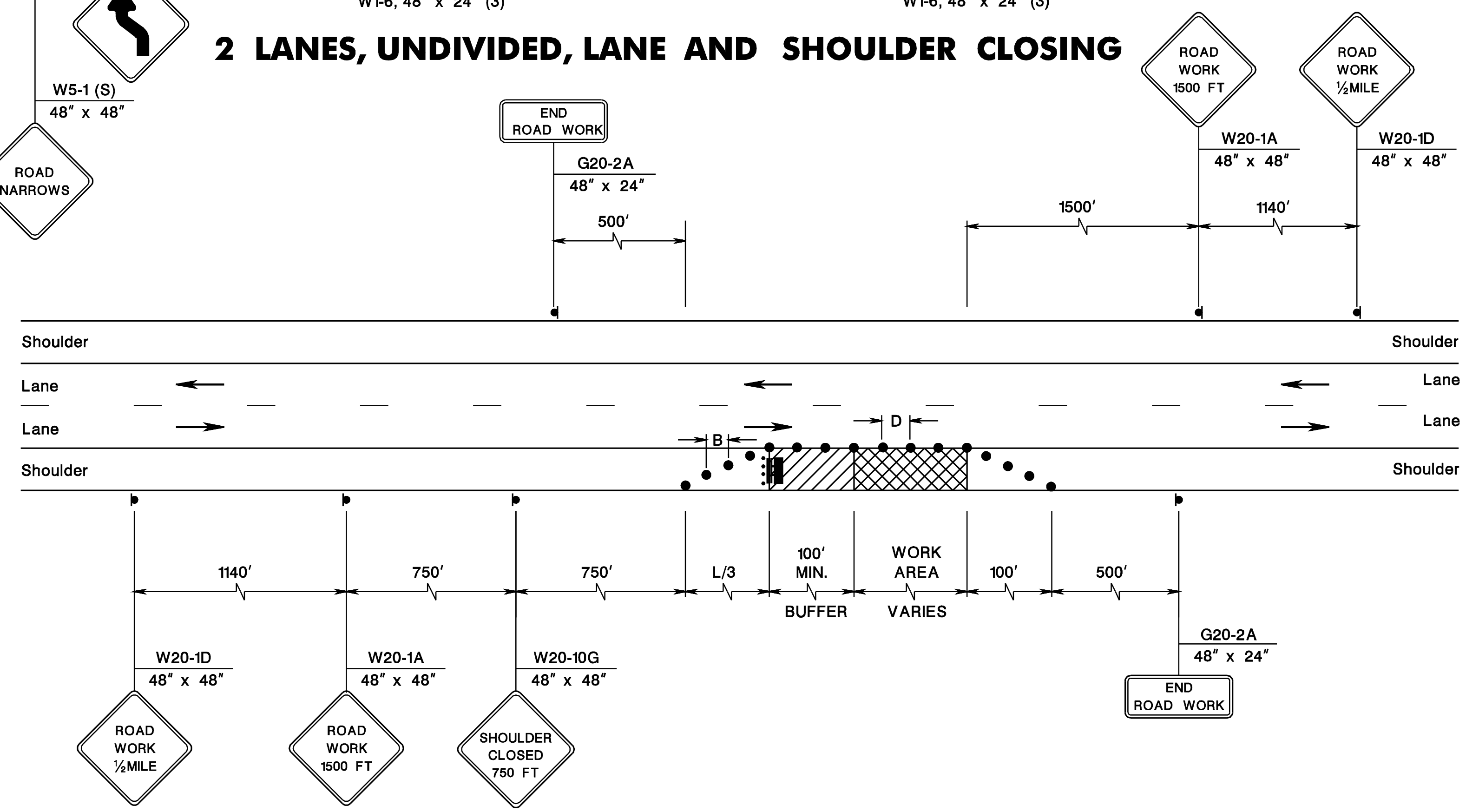


2 LANES, UNDIVIDED, LANE AND SHOULDER CLOSING



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

ID=TP2VILL date=21-SEP-2016 12:03 scale=63.073306:1.000000 pen table=\\NJDOTPRJWS\V8system\NJDOTWS\Projects\NJDOTEng\Iplot\TBLs\Roadway\Details_11x17.tbl
BDC16D-01- ORIGINAL SHEET
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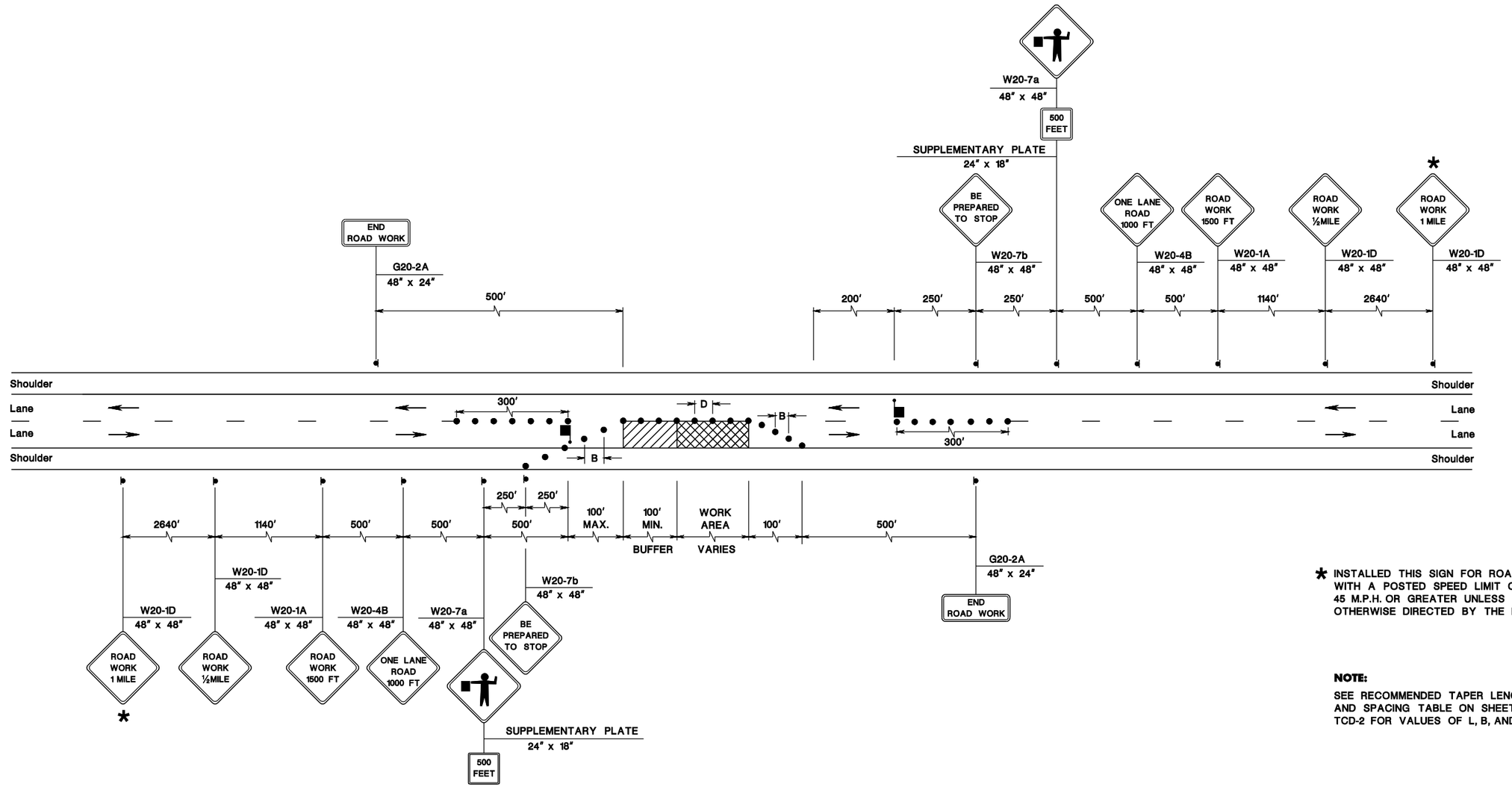

* INSTALLED THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

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

BOC16D-05- ORIGINAL SHEET
ID=TP2VILL date=21-SEP-2016 12:03 scale=63.073306:1.000000 pen table=\\NJDOTTRW9\V8system\NJDOTW9\Projects\NJDOTBag\plot\TBLA\Roadway\Details_11x17.tbl
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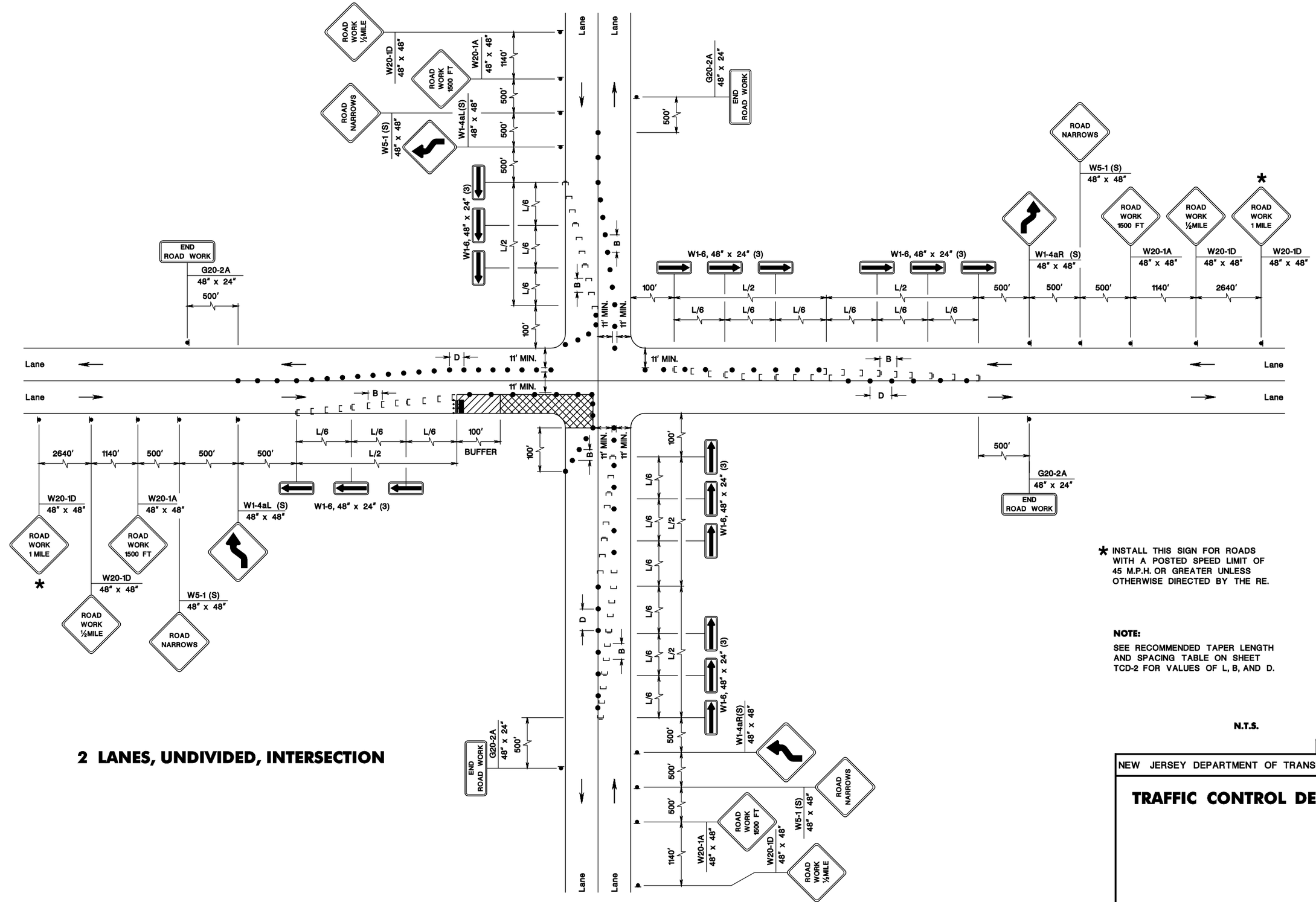

2 LANES, UNDIVIDED, INTERSECTION

* 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

ID= TP2VILL date= 21-SEP-2016 12:03 scale= 63.073306:1.000000 pen table= \\NJDOTRTWS\Projects\NJDOTEng\plot\TBLs\Roadway\Details_11x17.tbl
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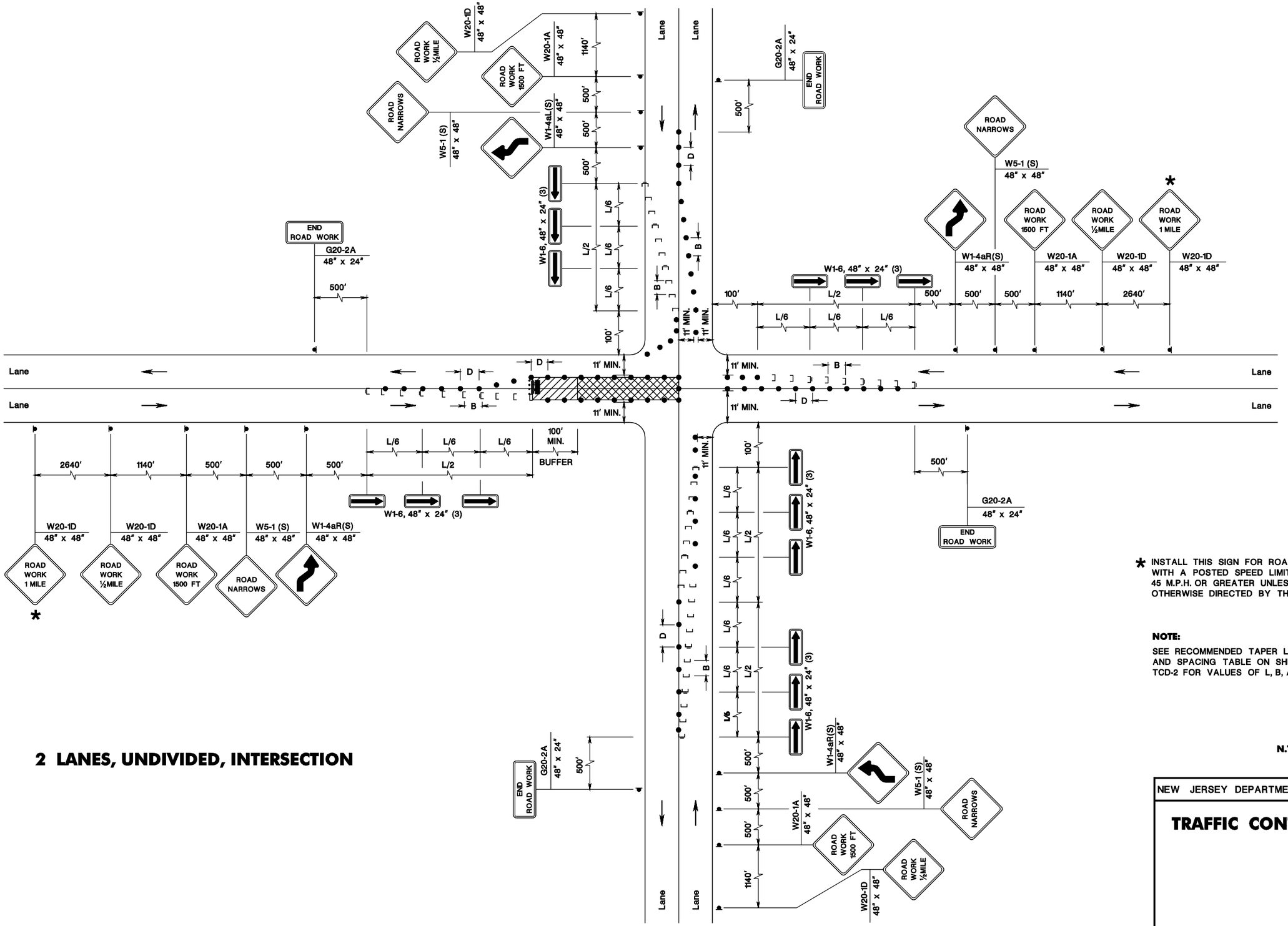

2 LANES, UNDIVIDED, INTERSECTION

* 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-6

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

BDC18D-01 ORIGINAL SHEET

ID=TP2VILL date=21-SEP-2016 12:03 scale=63.073306:1.000000 pen table=\\NJDOTTRJTW9\V8system\NJDOTW9\Projects\NJDOTEsag\plot\TBLs\Roadway\Details_11x17.tbl
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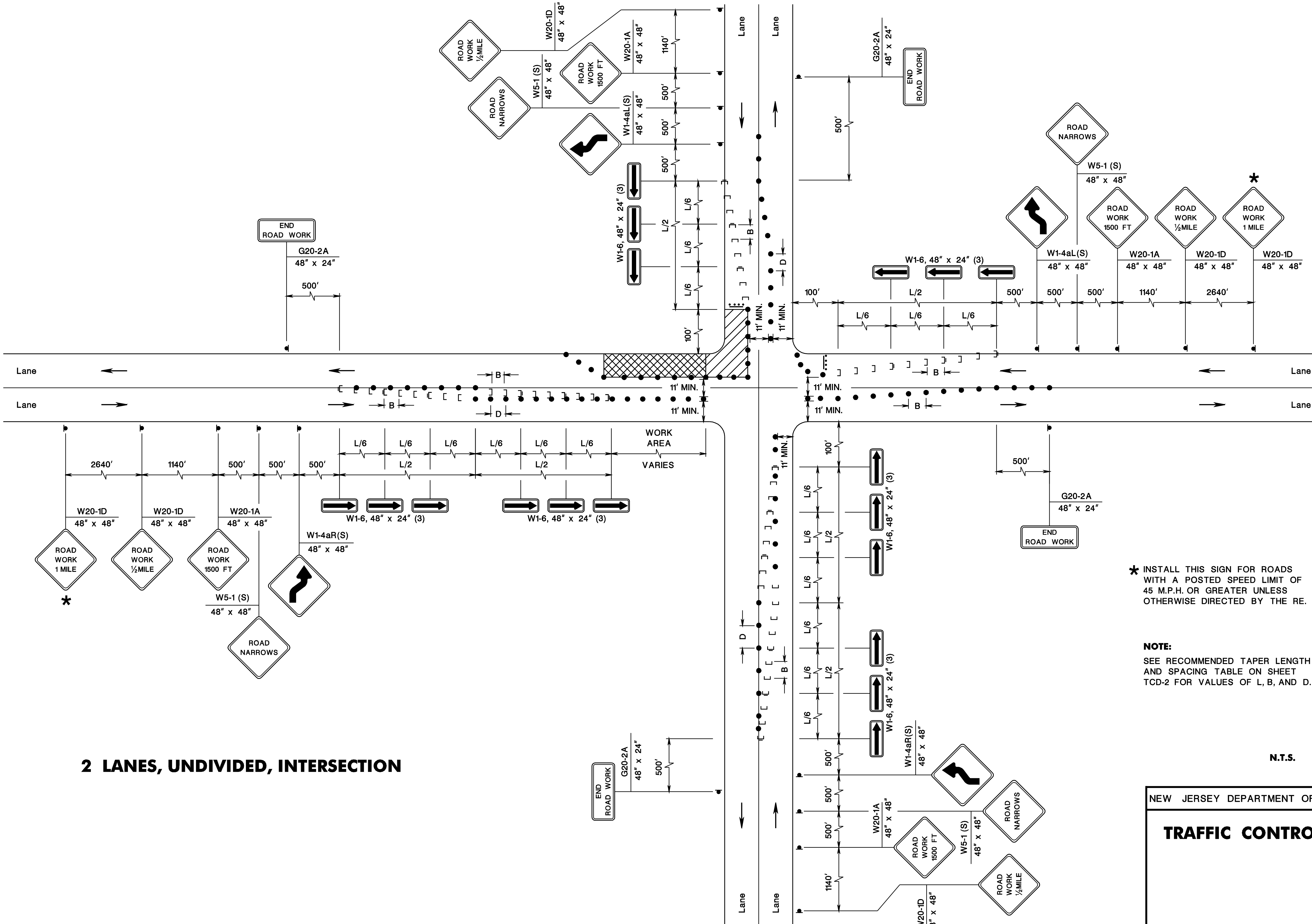

2 LANES, UNDIVIDED, INTERSECTION

* 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-7

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

BDC16D-01- ORIGINAL SHEET

ID=TP2VILL date=21-SEP-2016 12:03 scale=63.073306:1.000000 pen table=\\NJDOTPRJWS\V8system\NJDOTWS\Projects\NJDOTEng\iplot\TBLs\Roadway\Details_11x17.tbl
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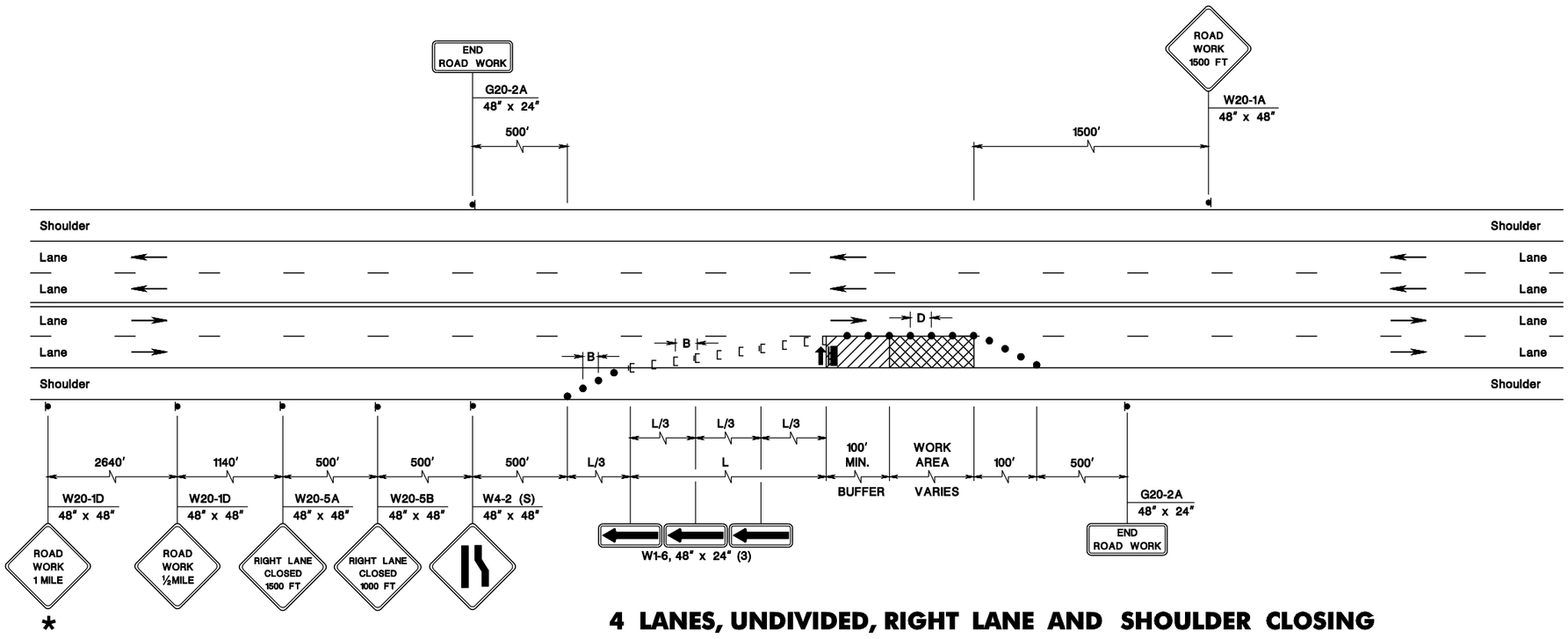
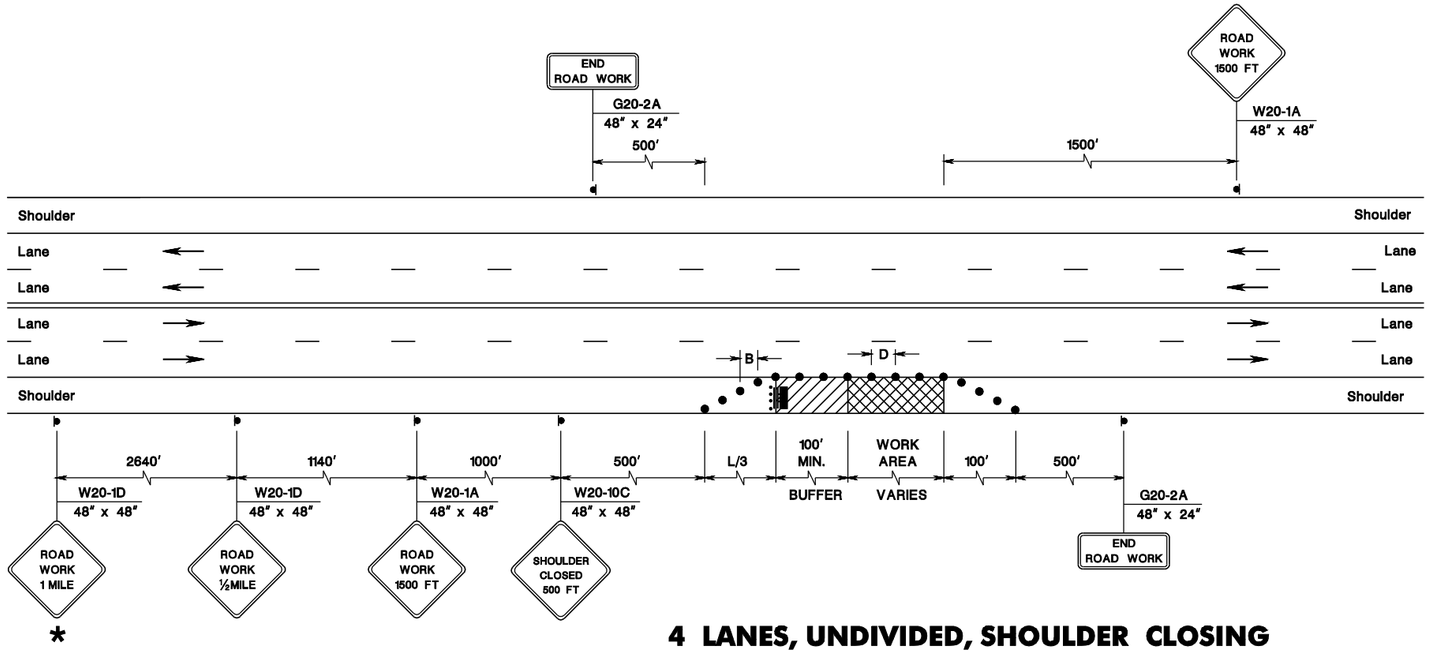


4 LANES, UNDIVIDED, RIGHT LANE AND SHOULDER CLOSING



4 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-8

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

ID=TPZVILL date=21-SEP-2016 12:03 scale=63.073306:1.000000 pen table=\\NJDOTPRJWS\V8system\NJDOTWS\Projects\NJDOTEng\plot\TBLs\Roadway\Details_11x17.tbl
BDC18D-01- ORIGINAL SHEET
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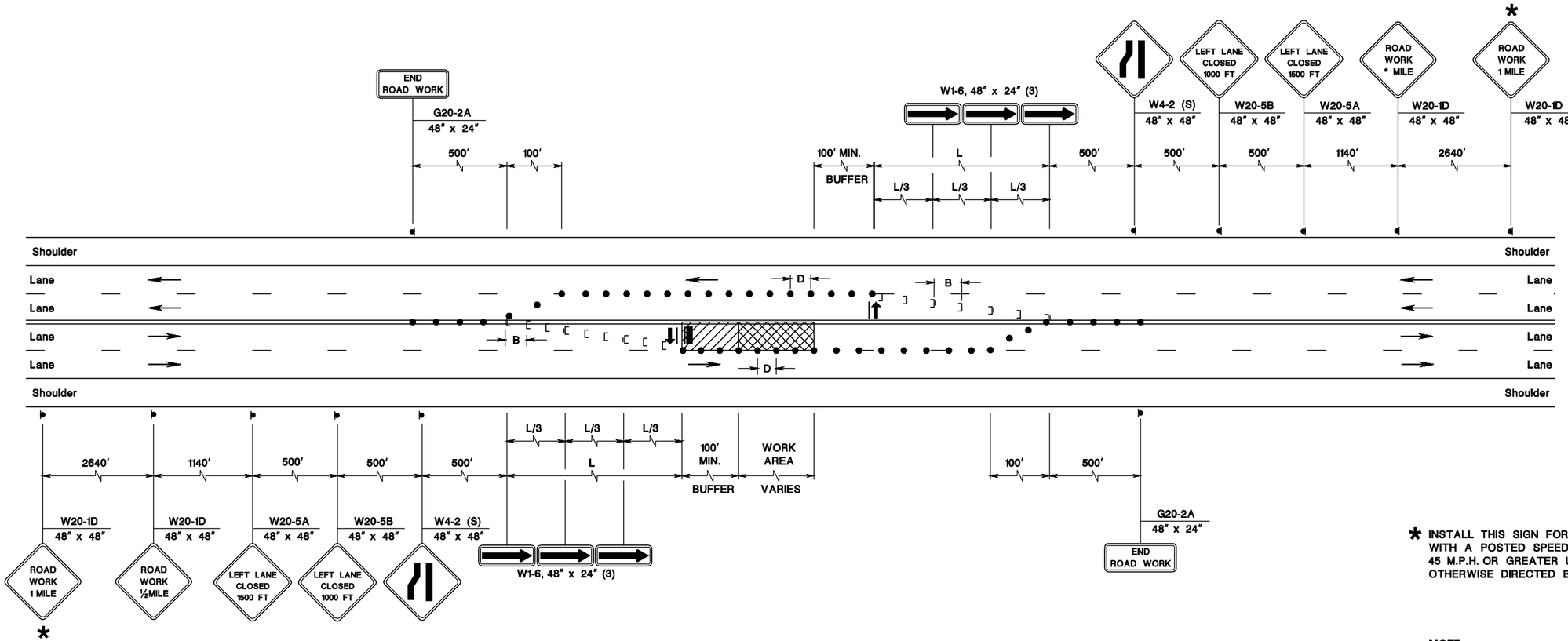

* INSTALL THIS SIGN FOR ROADS WITH A POSTED SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

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.

TCD-9

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

BDC18D-01 ORIGINAL SHEET
ID=TP2VILL date=21-SEP-2016 12:03 scale=63.073306:1.000000 pen table=\\NJDOTTRJW9\V8system\NJDOTW9\Projects\NJDOTEsag\plot\TBLs\Roadway\Details_11x17.tbl
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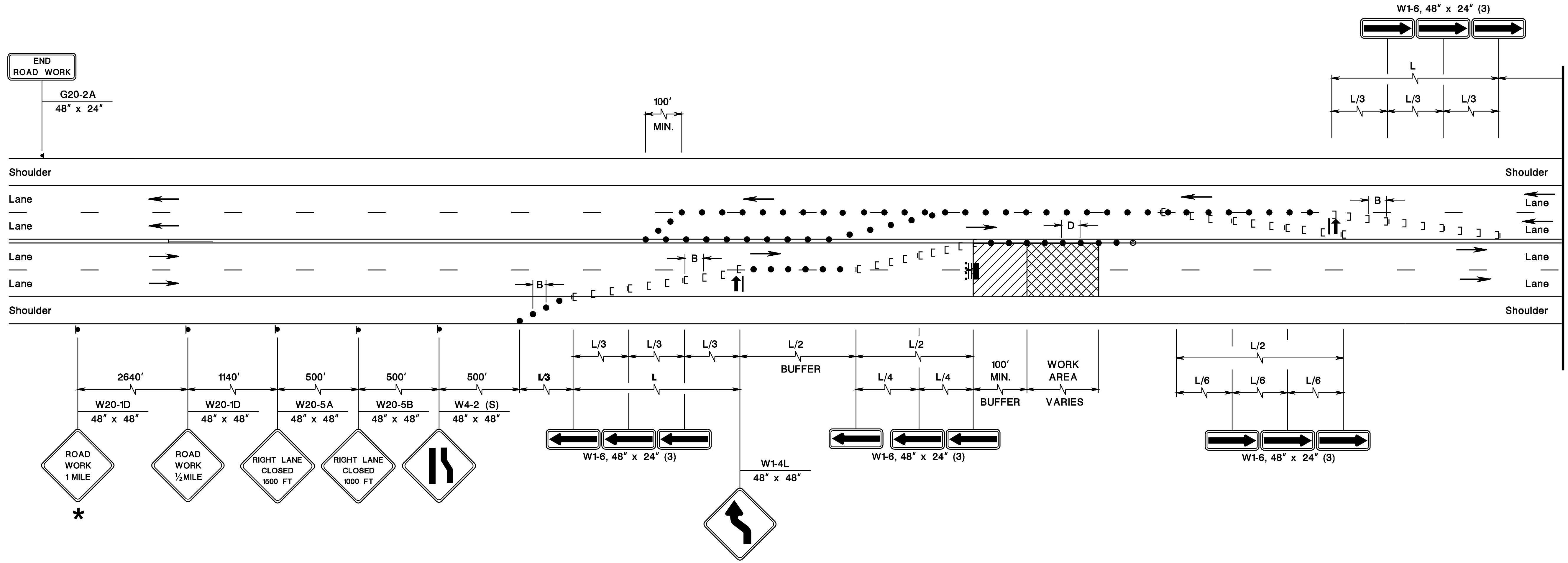
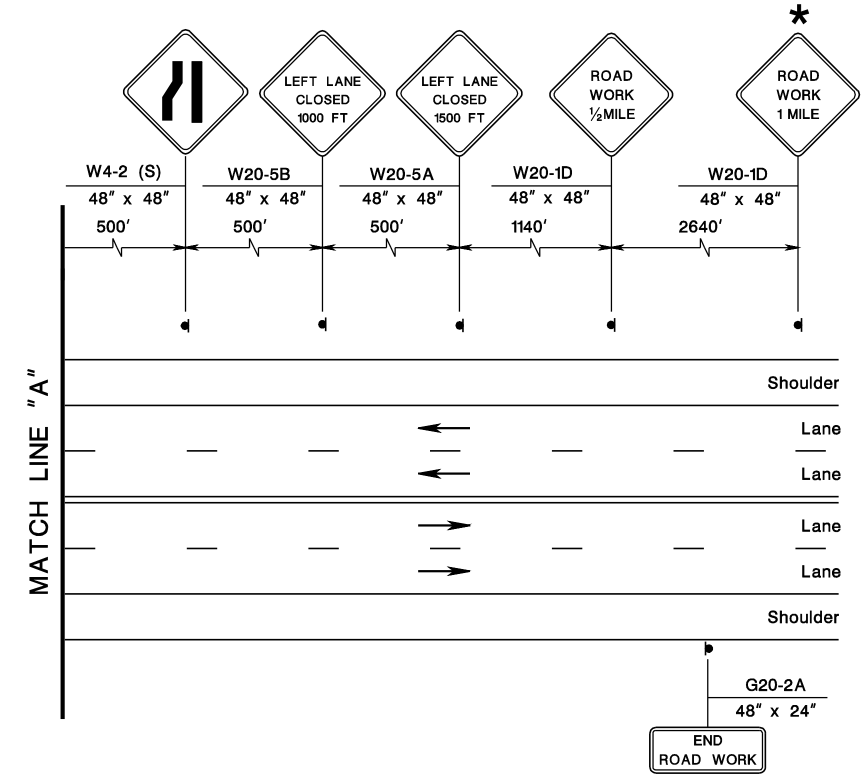


4 LANES, UNDIVIDED, 2 LANES AND SHOULDER ONE DIRECTION CLOSING



* 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.

TCD-10

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

ID=TP2VILL date=21-SEP-2016 12:03 scale=63.073306:1.000000 pen table=\\NJDOTPRJWS\V8system\NJDOTWS\Projects\NJDOTEng\plot\TBLs\Roadway\Details_11x17.tbl
BDC16D-01- ORIGINAL SHEET
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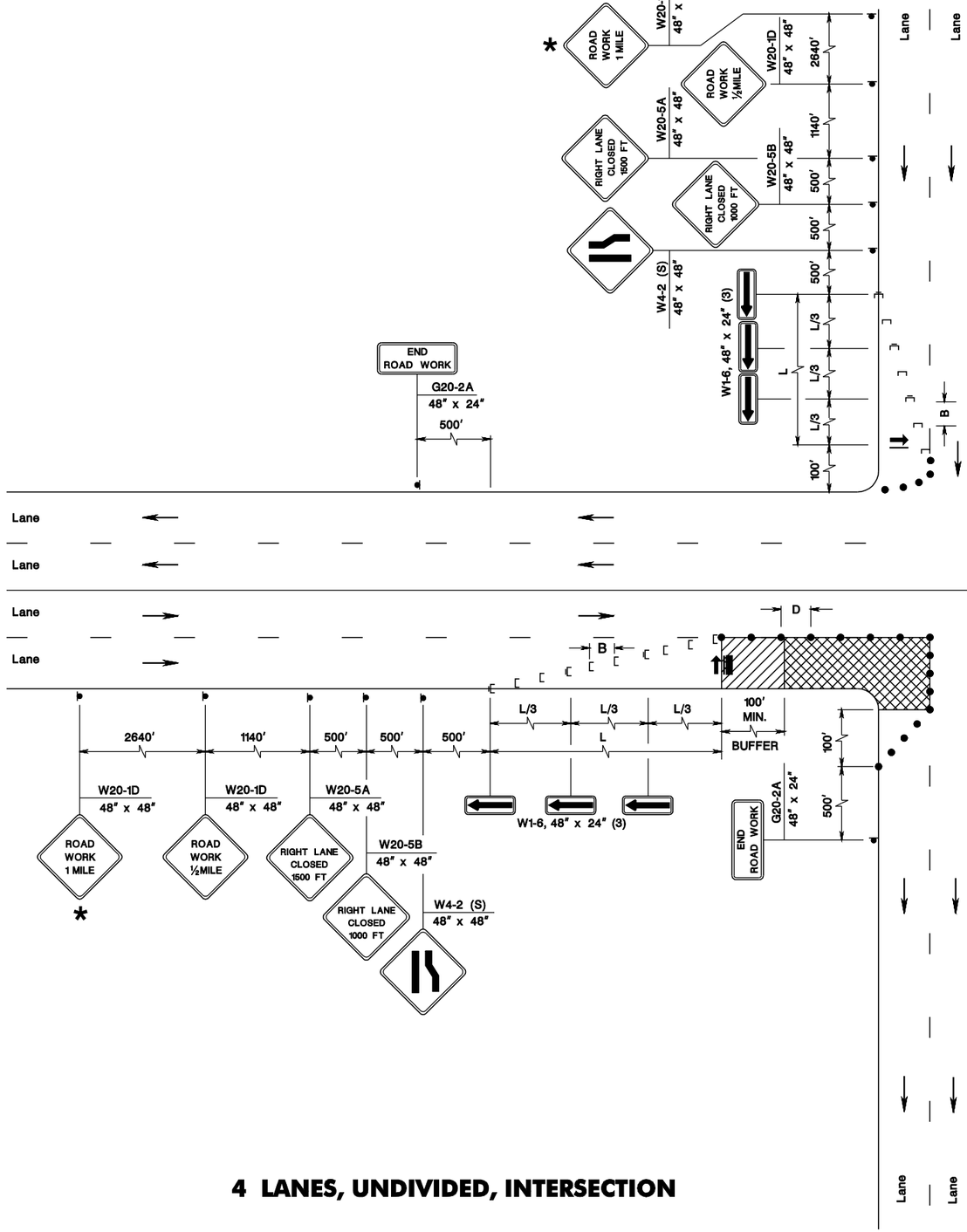


4 LANES, UNDIVIDED, INTERSECTION

* 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.

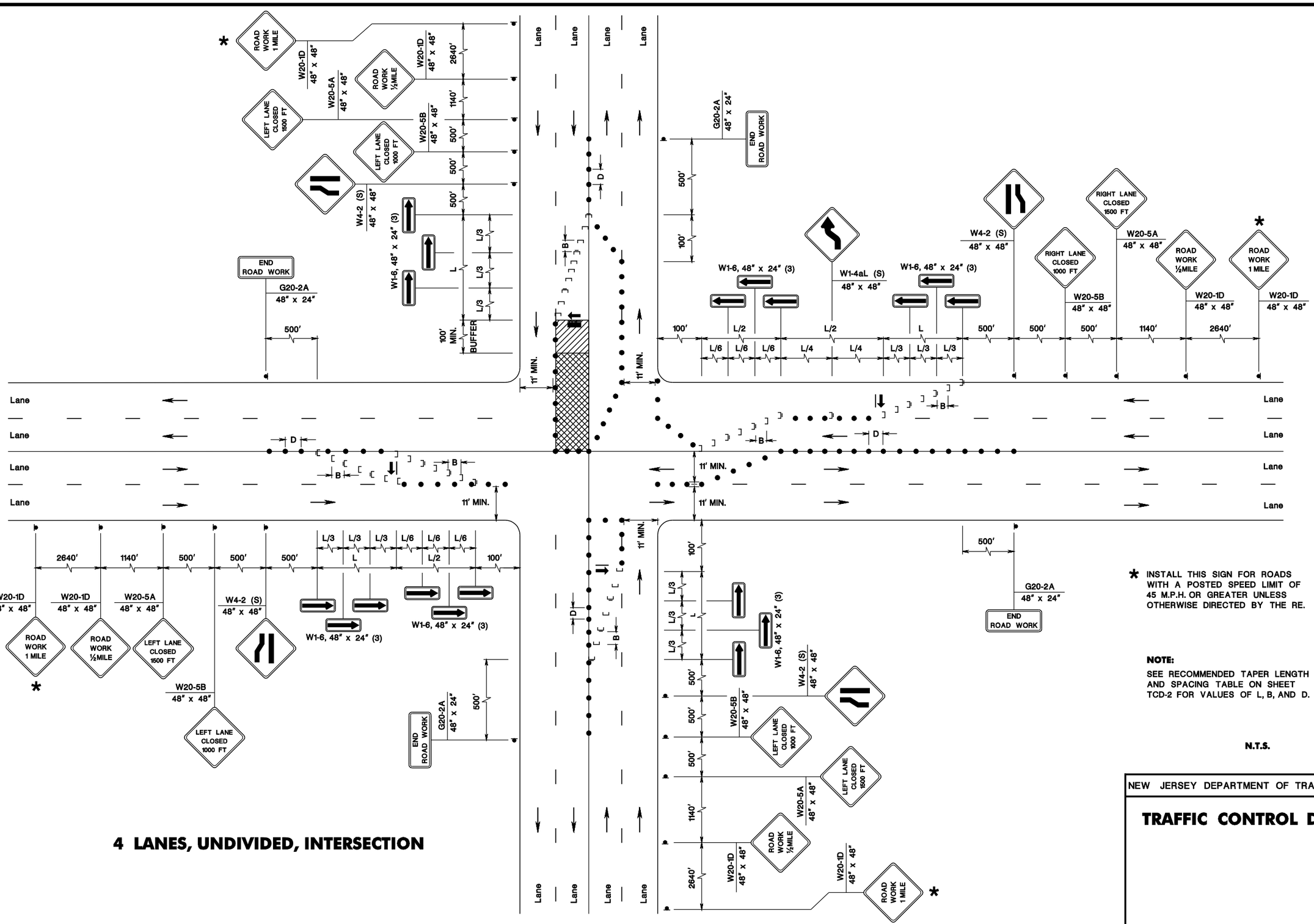
N.T.S.

TCD-11

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

ID=TPeVILL date=21-SEP-2016 12:03 scale=63.073306:1.000000 pen table=\\NJDOTPRJWS\V8system\NJDOTWS\Projects\NJDOTEssex\plot\TBLe\Roadway\Details_11x17.tbl
BDC18D-01: ORIGINAL SHEET
file=



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.

TCD-12

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

BDC18D-01: ORIGINAL SHEET
ID=TP2VILL date=21-SEP-2016 12:03 scale=63.073306:1.000000 pen table=\\NJDOTPRJWS\Projects\NJDOTEng\plot\TRLs\Roadway\Details_11x17.tbl
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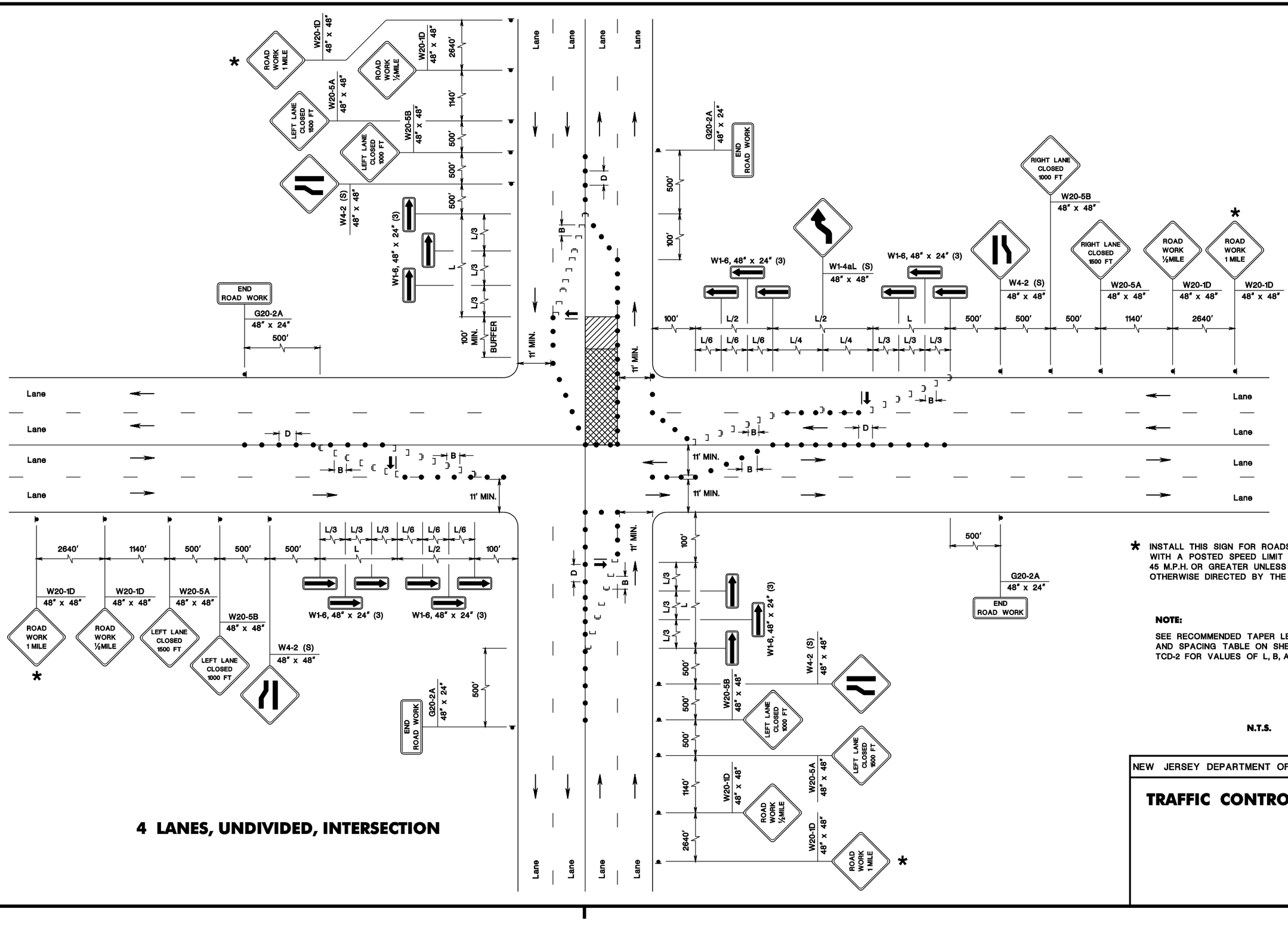

4 LANES, UNDIVIDED, INTERSECTION

* 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.

TCD-13

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

BDCR8D-01-ORIGINAL SHEET

ID=TP2VILL date=21-SEP-2016 12:03 scale=63.073306:1.000000 pen table=\\NJDOTPRJWS\VAsystem\NJDOTWS\Projects\NJDOTEsig\plot\TELA\Roadway\Details_11x17.tbl
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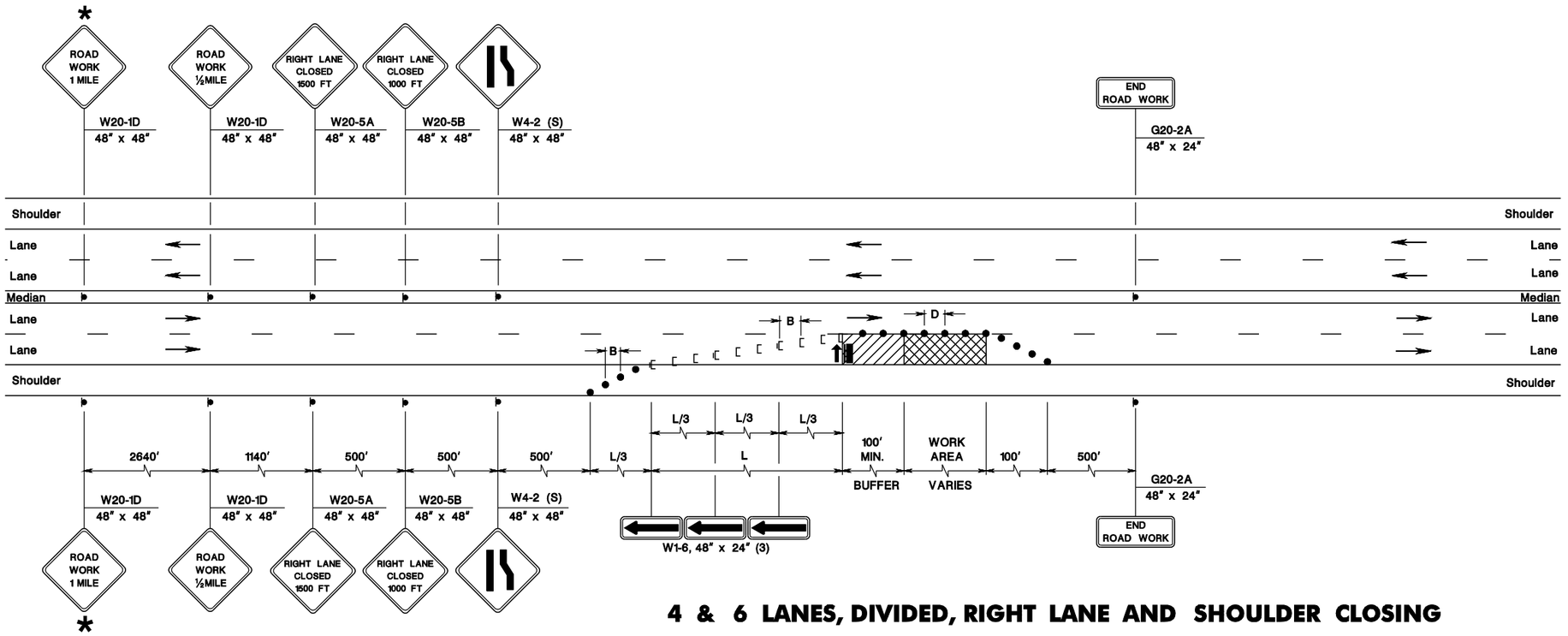
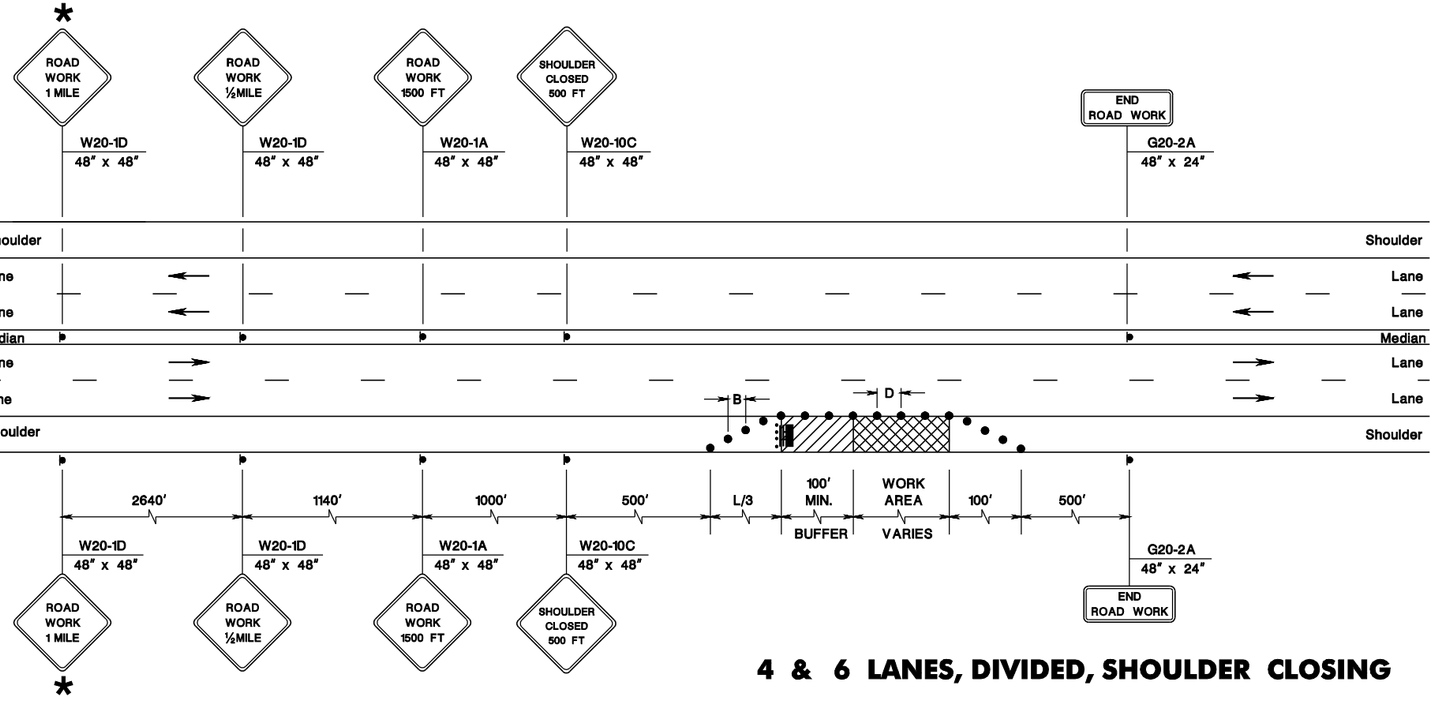


4 & 6 LANES, DIVIDED, RIGHT LANE AND SHOULDER CLOSING



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:

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.

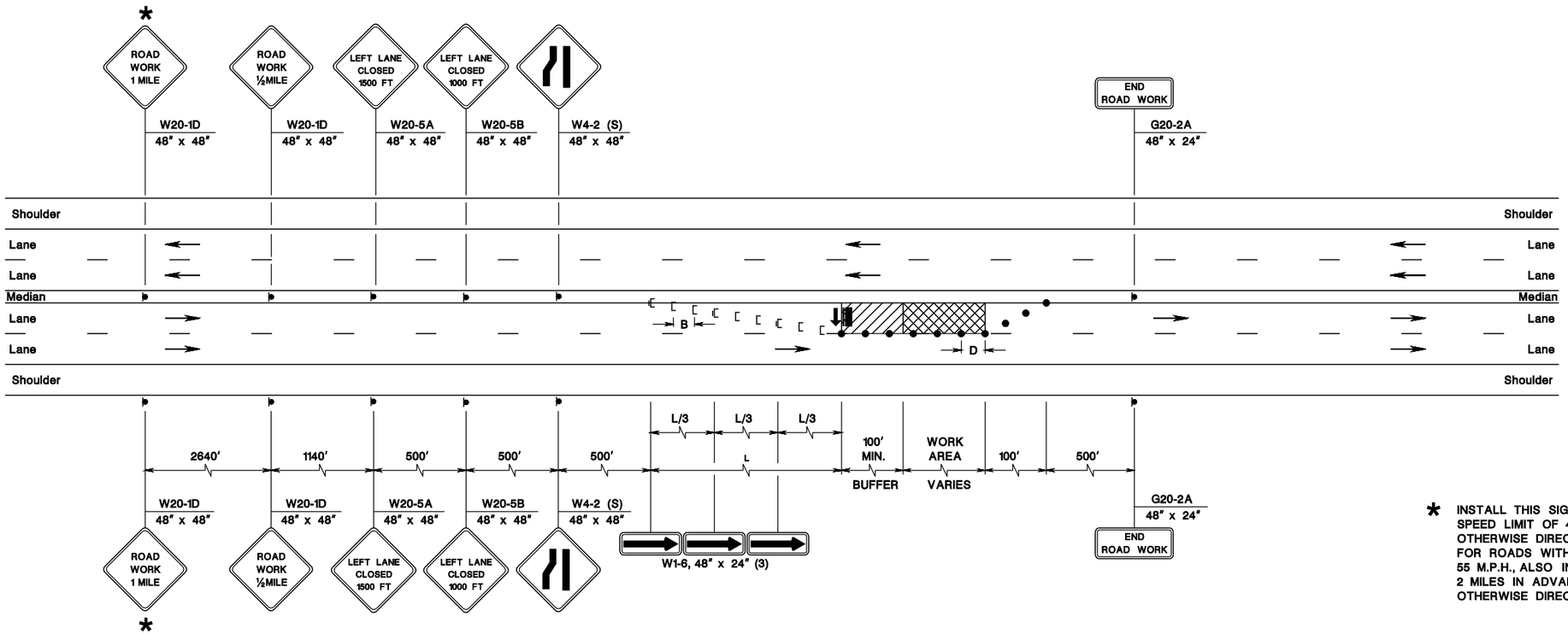
N.T.S.

TCD-14

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

ID=TP2VILL date=21-SEP-2016 12:03 scale=63.073306:1.000000 pen table=\\NJDOTFRJWS\V8system\NJDOTWS\Projects\NJDOT\Eng\plot\TRLs\Roadway\Details_11x17.tbl
BDC18D-01: ORIGINAL SHEET
file=



* 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.

4 & 6 LANES, DIVIDED, LEFT LANE CLOSING

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

ID=TPzVILL date=21-SEP-2016 12:03 scale=63.073306:1.000000 pen table=\\NJDOTFRJTW3\V8system\NJDOTW8\Projects\NJDOTEng\plot\TELA\Roadway\Details_11x17.tbl
BDC18D-CH- ORIGINAL SHEET
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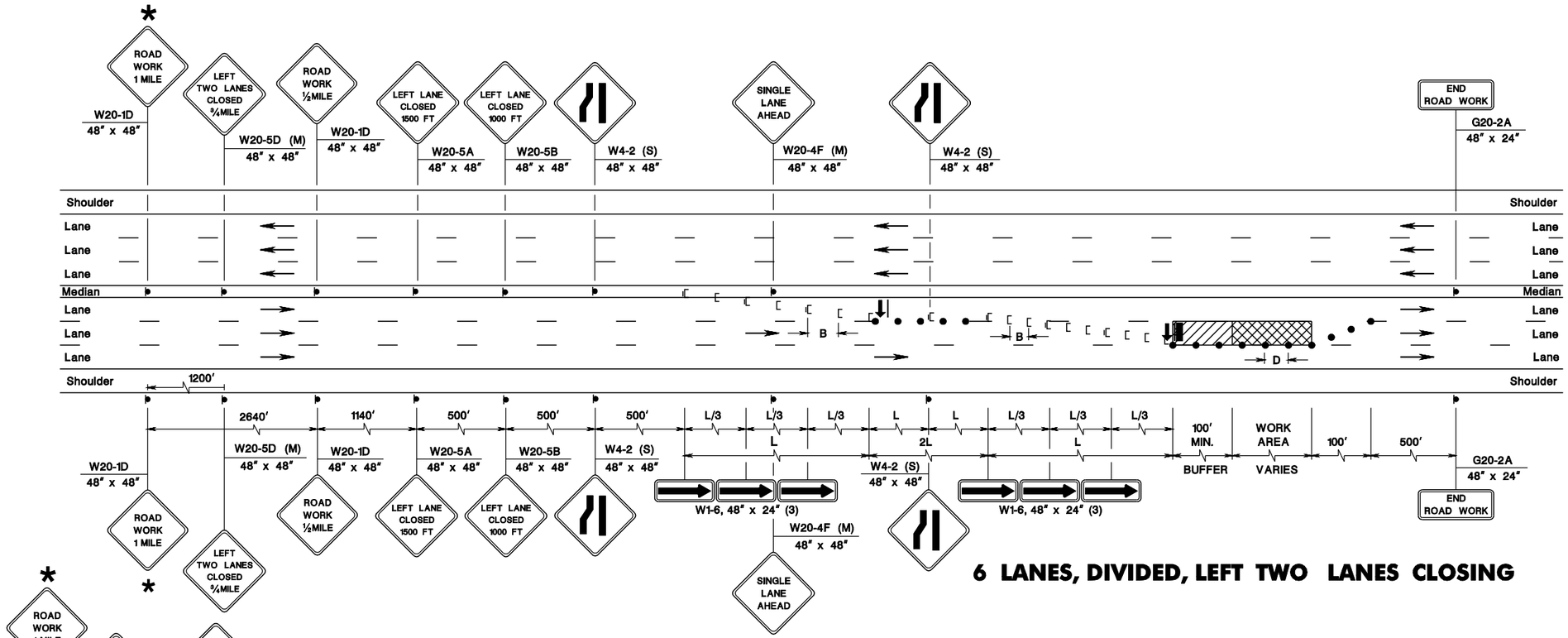
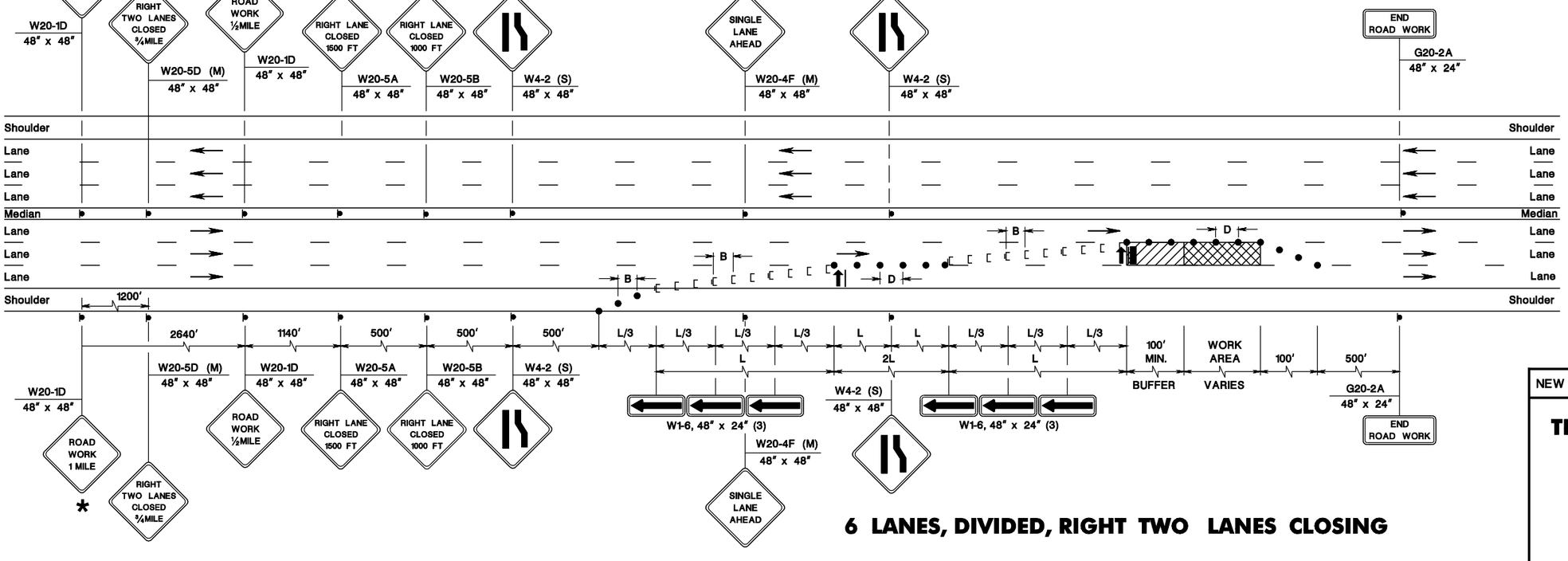


6 LANES, DIVIDED, LEFT TWO LANES CLOSING



6 LANES, DIVIDED, RIGHT 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:

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.

N.T.S.

TCD-16

NEW JERSEY DEPARTMENT OF TRANSPORTATION

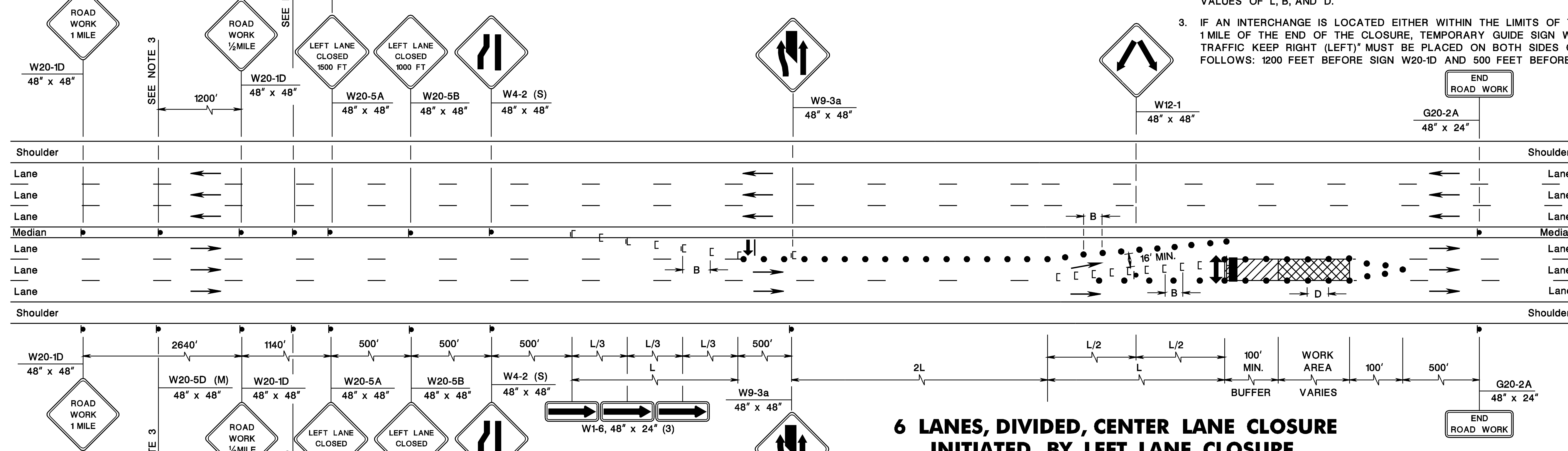
TRAFFIC CONTROL DETAILS

BDC18D-01 ORIGINAL SHEET
ID=TP2VILL date=21-SEP-2016 12:03 scale=63.073306:1.000000 pen table=\\NJDOTPRJWS\VAsystem\NJDOTWS\Projects\NJDOTWS\Projects\NJDOTEng\plot\TRLs\Roadway\Details_11x17.tbl
file=

(USE ONLY WHEN WORKERS NOT PRESENT)

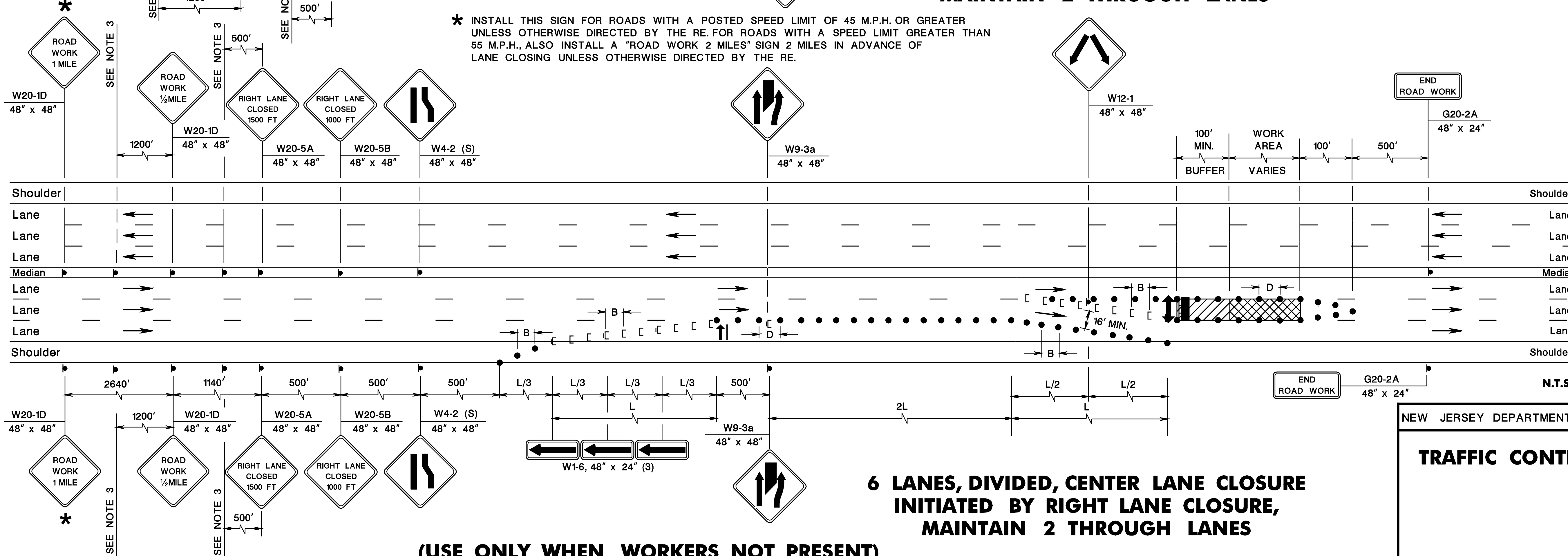
NOTES:

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

BDC16D-01- ORIGINAL SHEET
ID=TP2VILL date=21-SEP-2016 12:03 scale=63.073306:1.000000 pen table=\\NJDOTPRJWS\V8system\NJDOTWS\Projects\NJDOTEng\Iplot\TBLs\Roadway\Details_11x17.tbl
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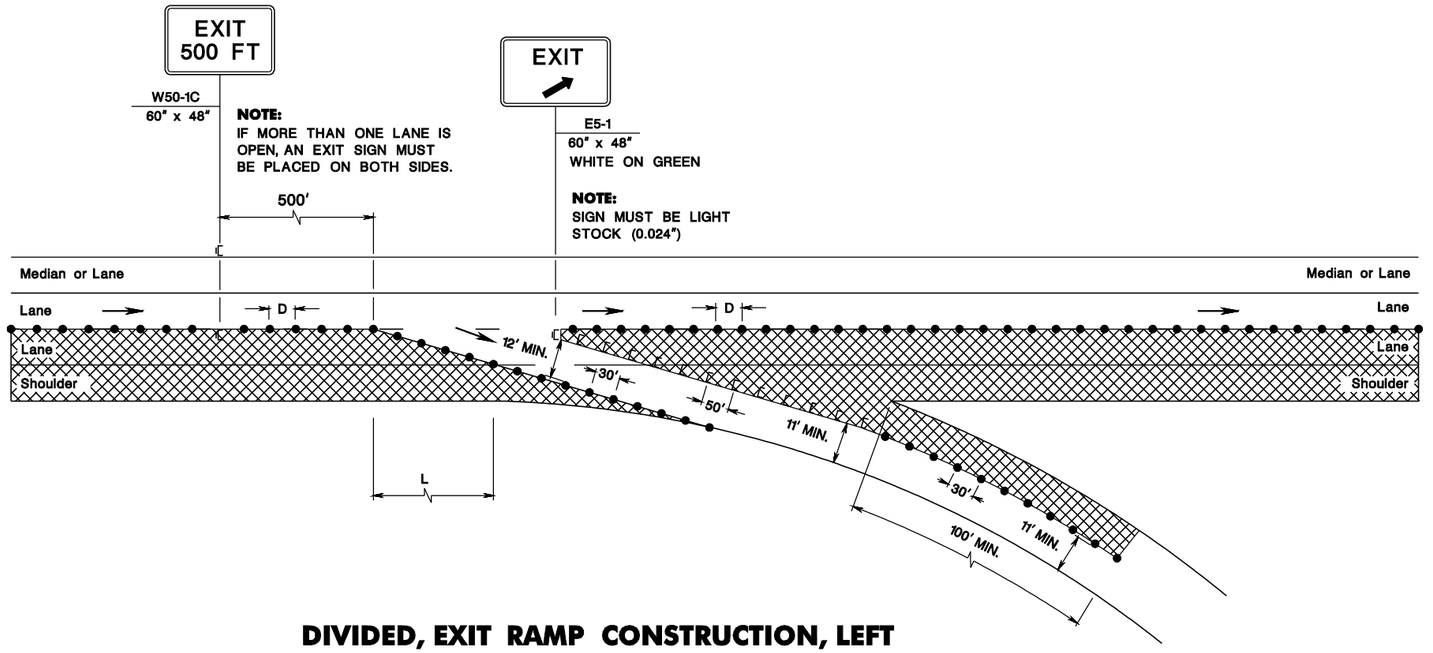
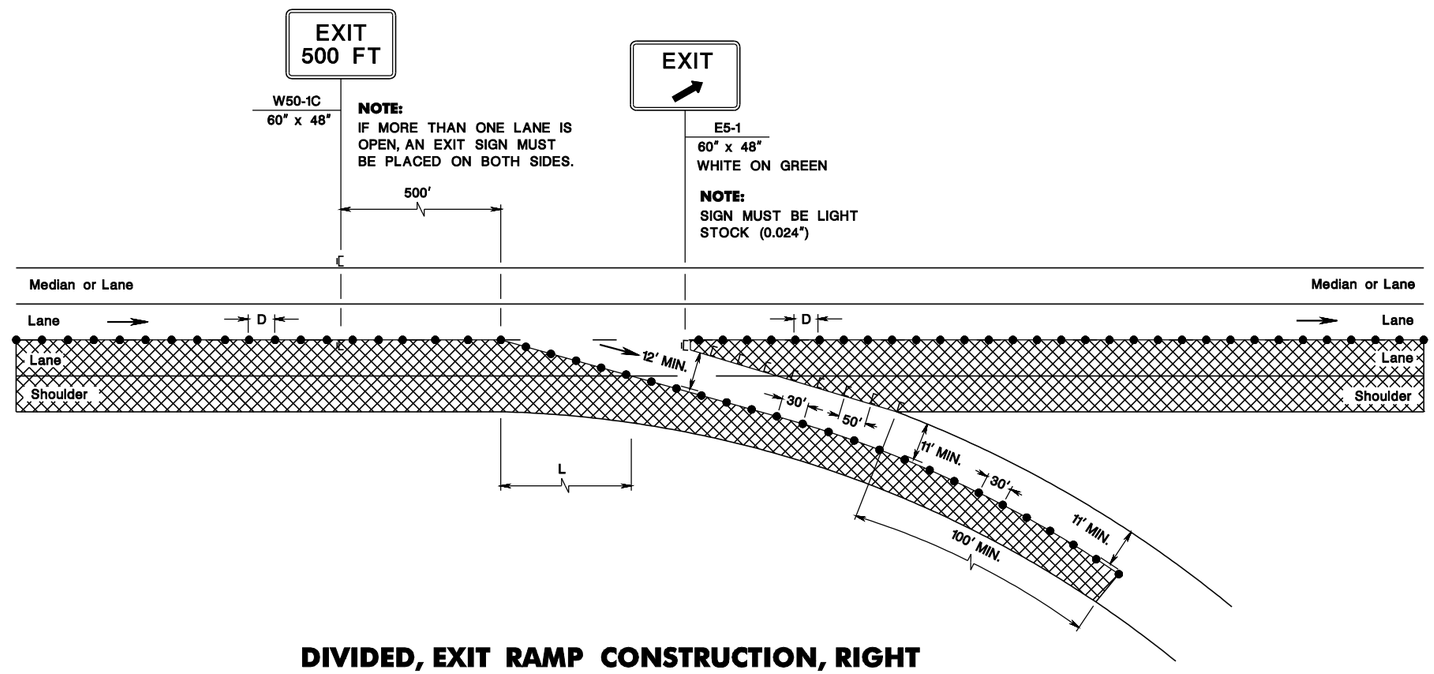


DIVIDED, EXIT RAMP CONSTRUCTION, LEFT



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

ID=TP2VILL date=21-SEP-2016 12:04 scale=63.073306:1.000000 pen table=\\NJDOTPRJW9\V8system\NJDOTW9\Projects\NJDOTEng\plot\TSLA\Roadway\Details_11x17.tbl
BDC18D-01 ORIGINAL SHEET
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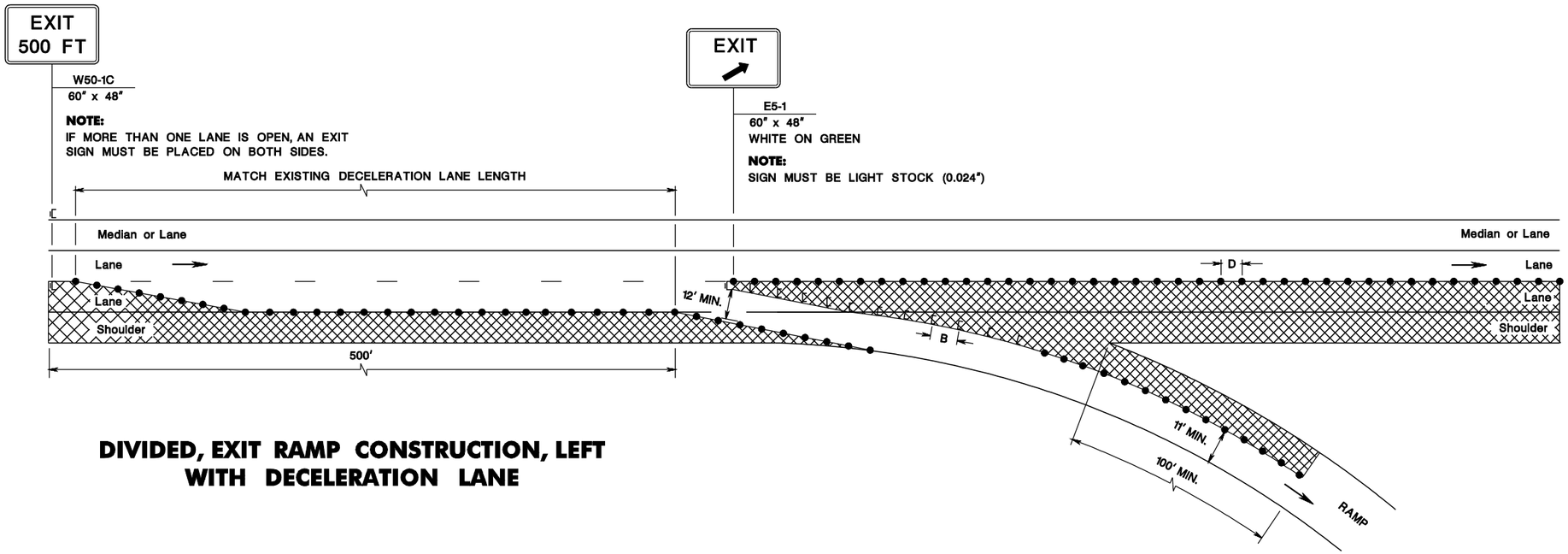
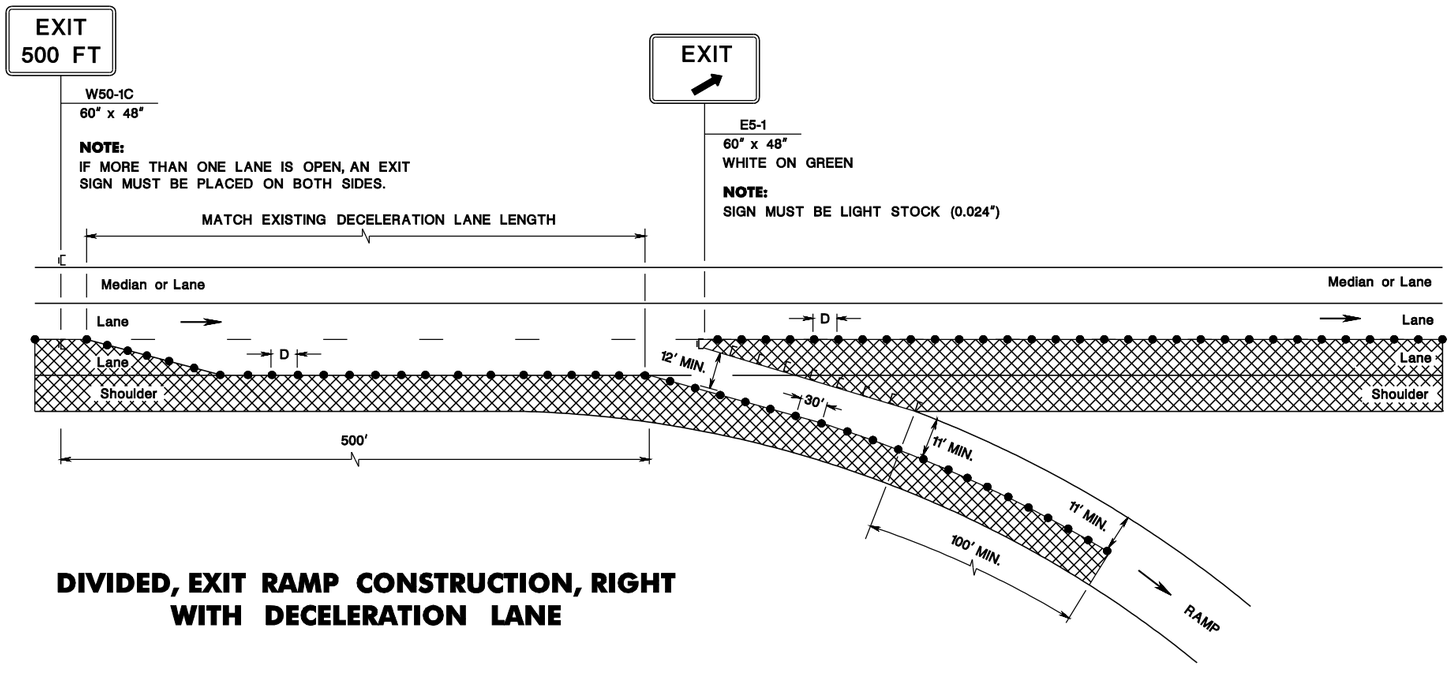


DIVIDED, EXIT RAMP CONSTRUCTION, LEFT WITH DECELERATION LANE



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.

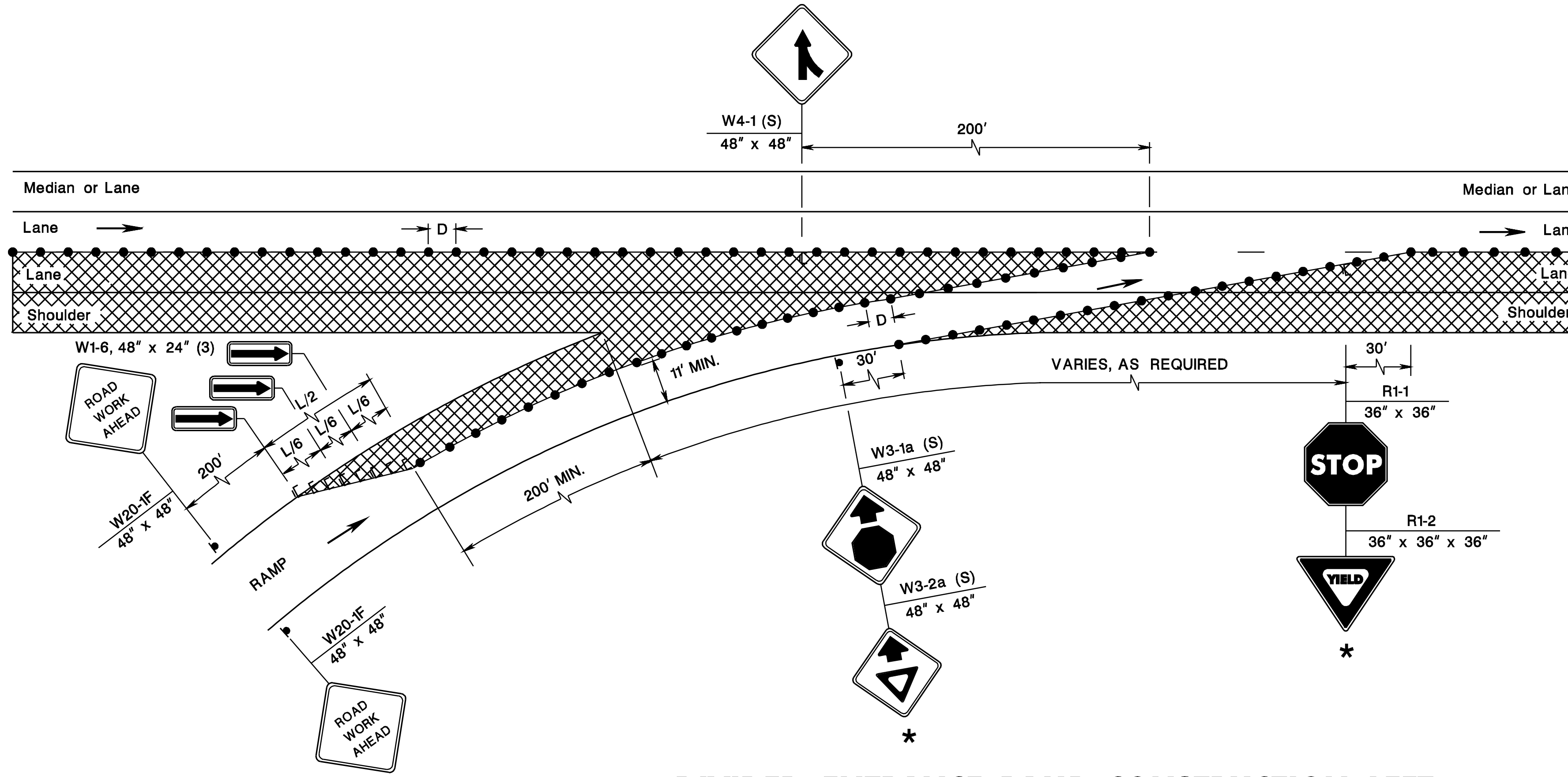
N.T.S.

TCD-19

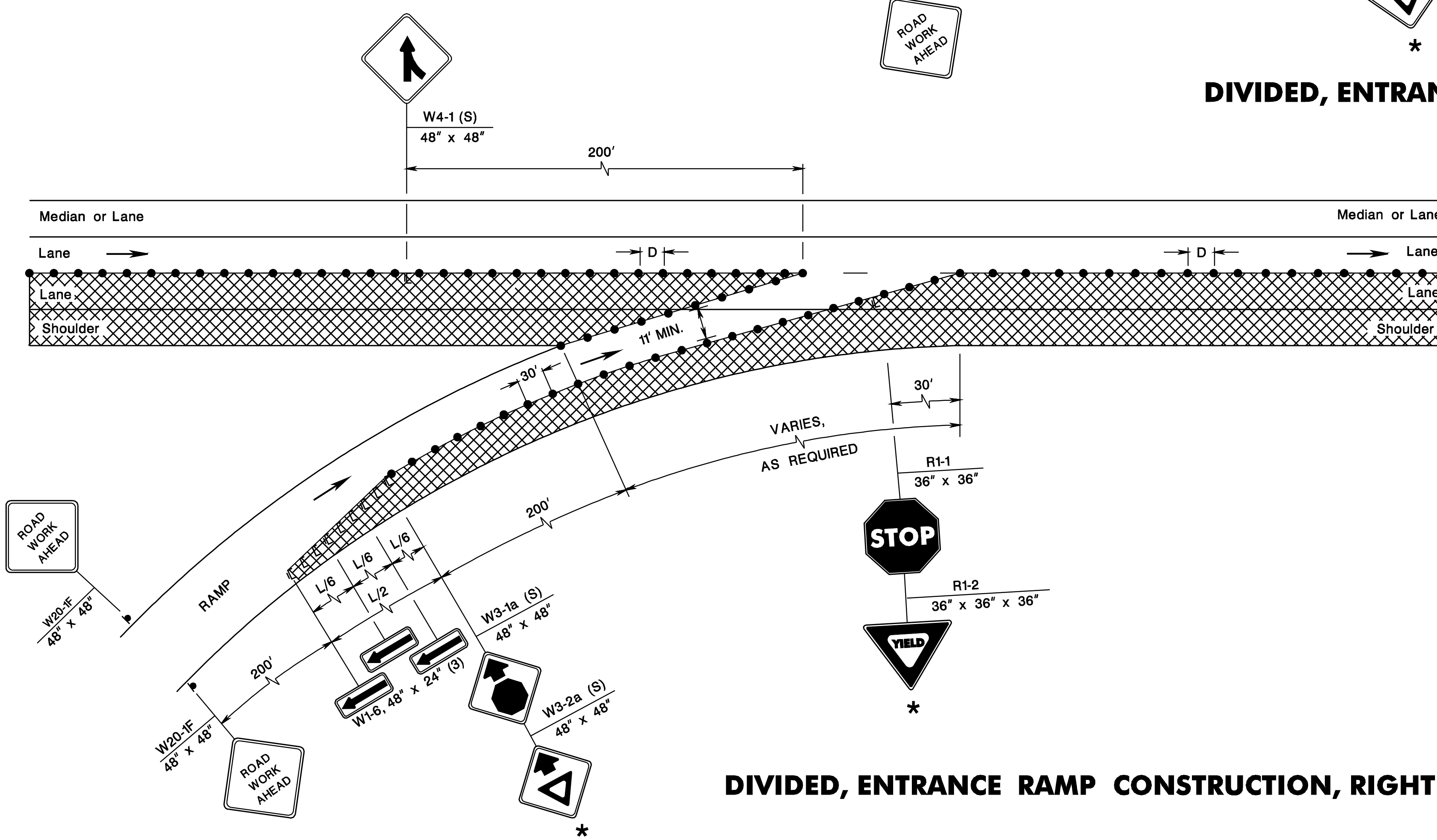
NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

ID=TPzVLL date=21-SEP-2016 12:04 scale=63.073306:1.000000 pen table=\\NJDOTRDWS\V8systems\NJDOTWS\Projects\NJDOTEng\plot\TSLs\Roadway\Details_11x17.tbl
BDC18D-01: ORIGINAL SHEET
file=



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

BDC16D-01- ORIGINAL SHEET

ID=TP2VILL date=21-SEP-2016 12:04 scale=63.073306:1.000000 pen table=\\NJDOTPRJWS\V8system\NJDOTWS\Projects\NJDOTEng\Iplot\TBLs\Roadway\Details_11x17.tbl
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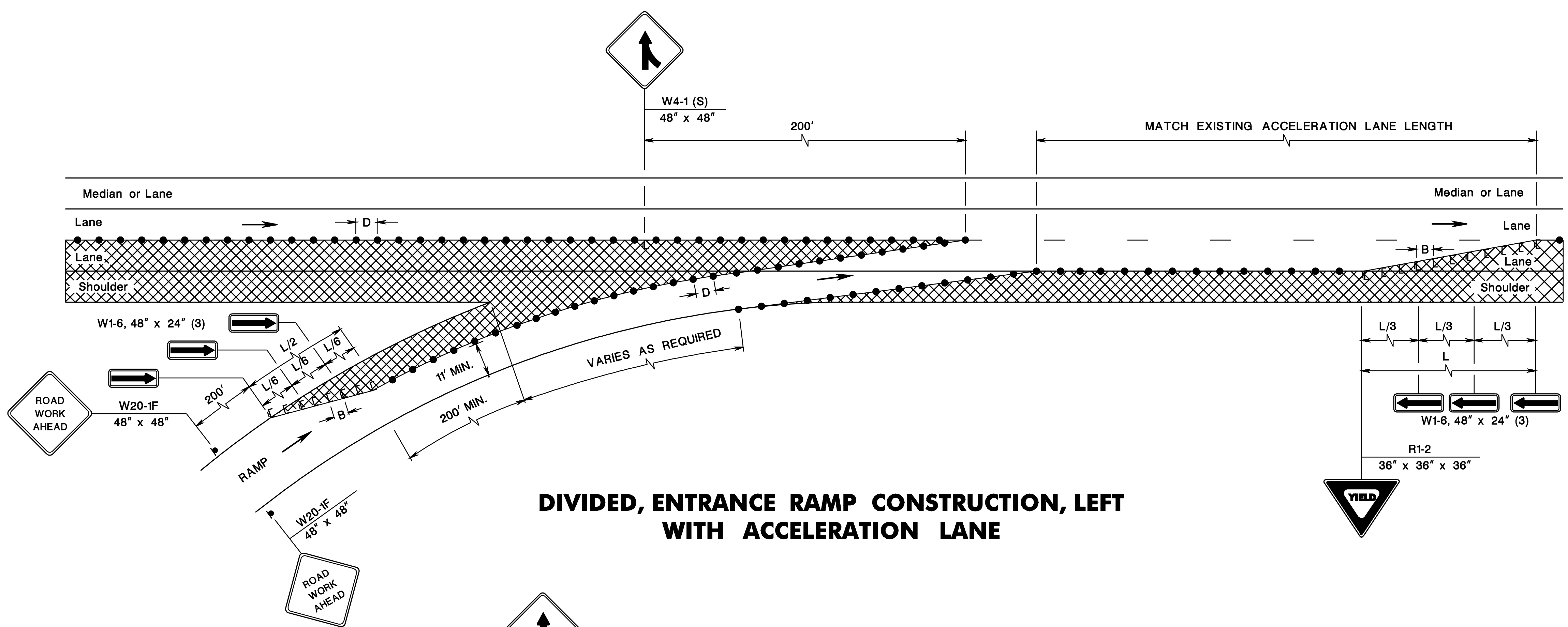
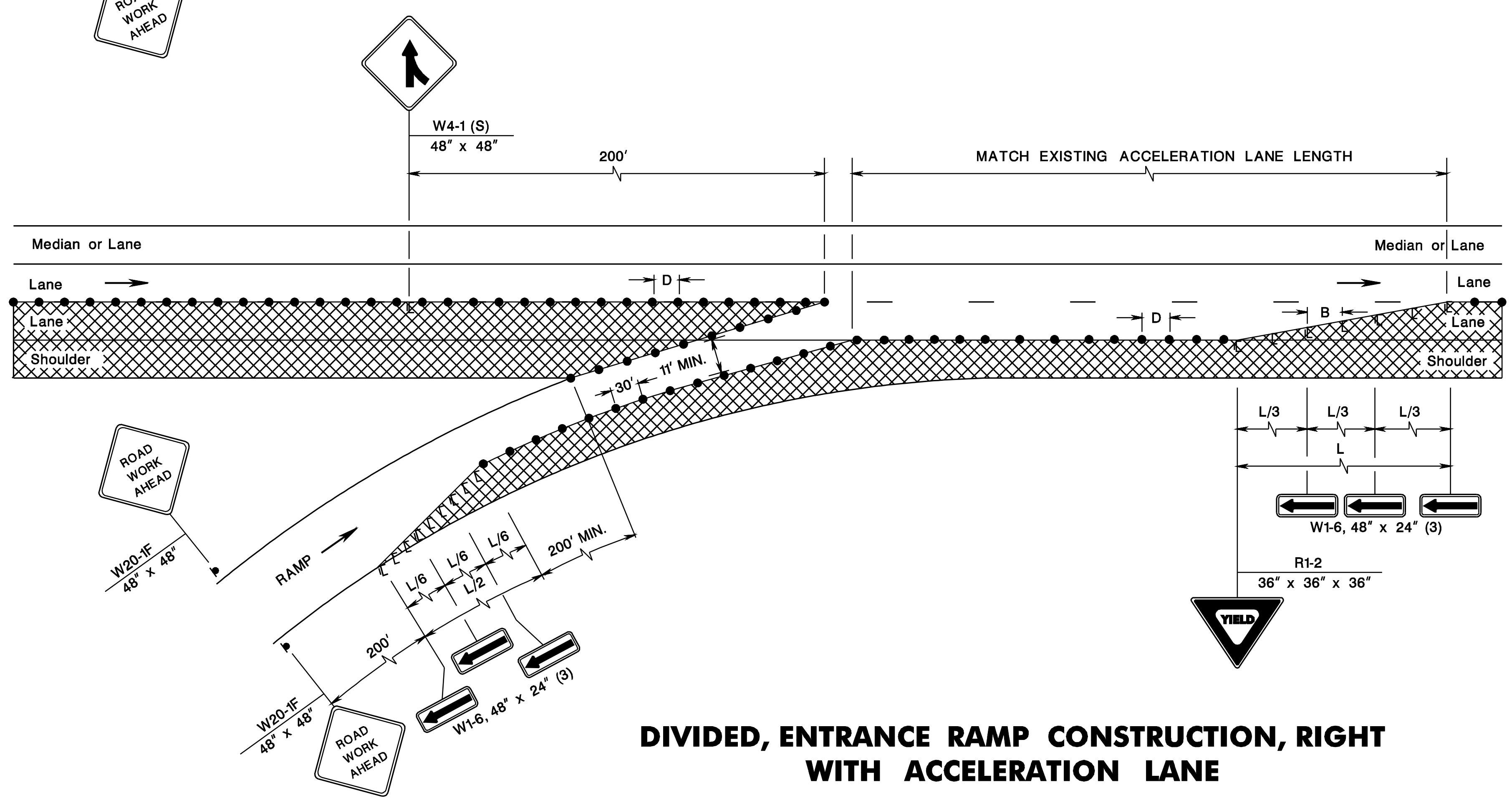


DIVIDED, ENTRANCE RAMP CONSTRUCTION, LEFT WITH ACCELERATION LANE



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.

TCD-21

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

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BDC16D-01- ORIGINAL SHEET
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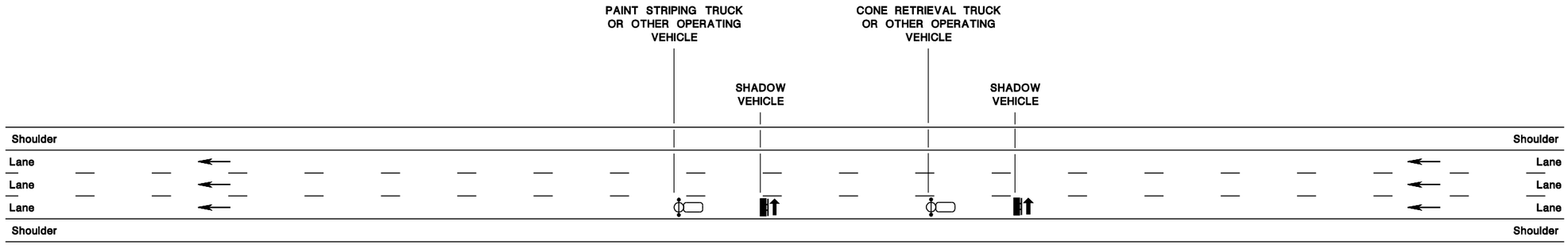
LEGEND

"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

124
164

BDC18D-04- ORIGINAL SHEET

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BDC17D-01-TITLE CHANGE BCD-507-3.1,3.2 & 507-4.2
BDC16D-01-ORIGINAL SHEET

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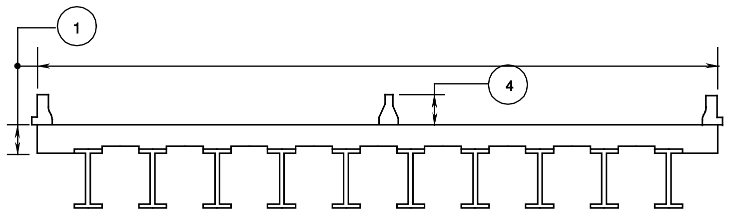
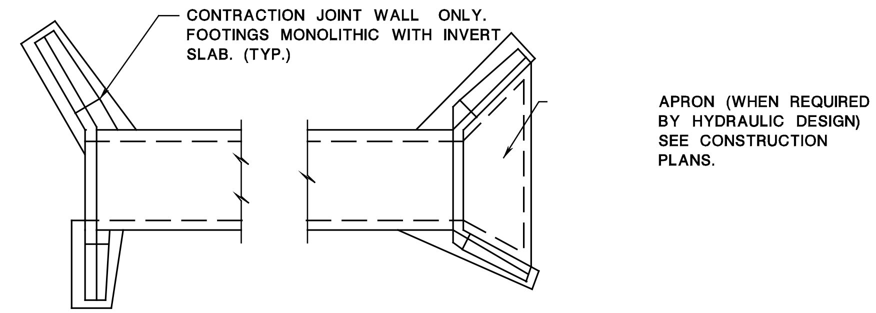
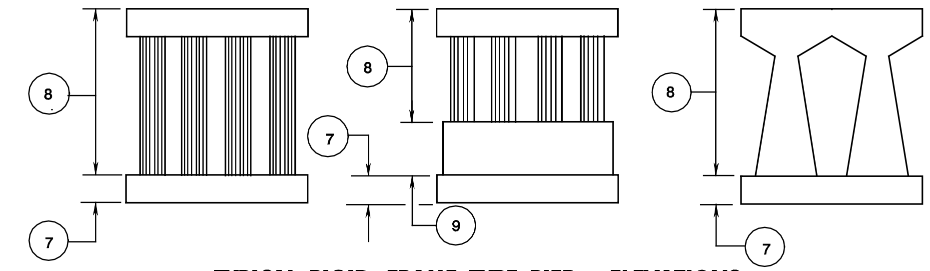


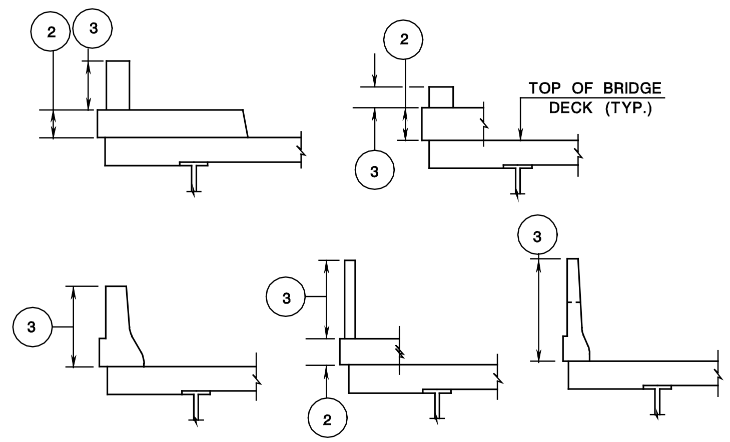
TYPICAL SECTION – BRIDGE DECK



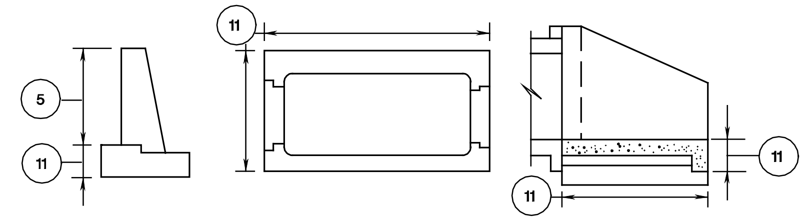
TYPICAL PLAN – CULVERT AND HEADWALLS



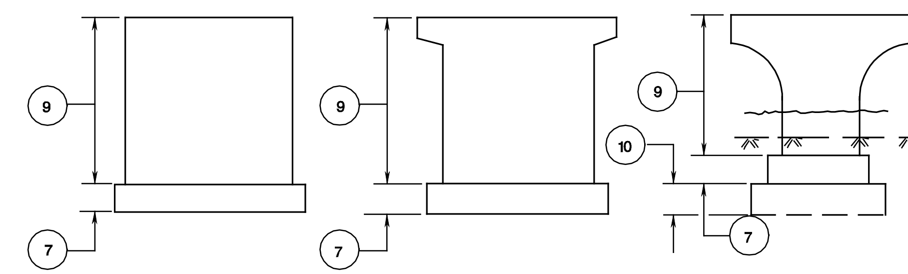
TYPICAL RIGID FRAME TYPE PIER – ELEVATIONS



TYPICAL SECTION – BRIDGE PARAPETS

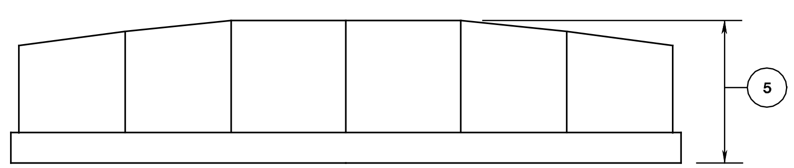


TYPICAL SECTION – CULVERT AND HEADWALLS

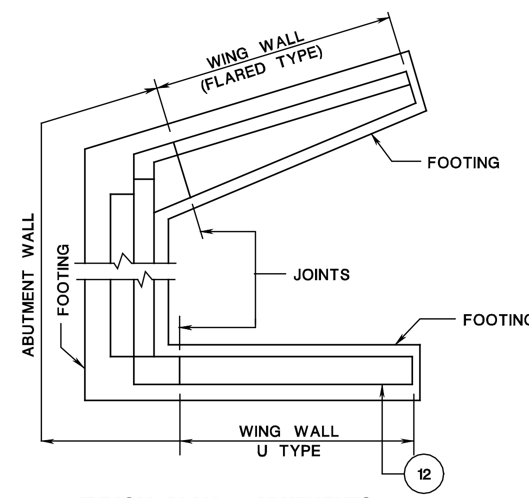


TYPICAL SOLID SHAFT TYPE PIER – ELEVATIONS

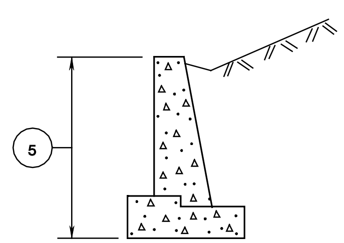
ITEM	CONCRETE CLASS	DESCRIPTION
1	HPC-1	CONCRETE DECK
2	HPC-1	CONCRETE BRIDGE SIDEWALK
3	HPC-1	CONCRETE BRIDGE PARAPET
4	B	___" X ___" CONCRETE BARRIER CURB
5	B	RETAINING WALL, LOCATION NO.______
6	B	CONCRETE ABUTMENT WALL
7	B	CONCRETE FOOTING
8	A	CONCRETE PIER COLUMNS AND CAP
9	B	CONCRETE PIER SHAFT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



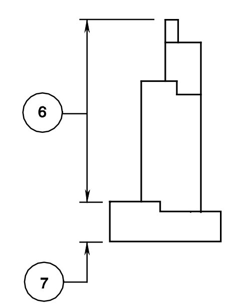
TYPICAL ELEVATION – RETAINING WALL



TYPICAL PLAN – ABUTMENTS



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

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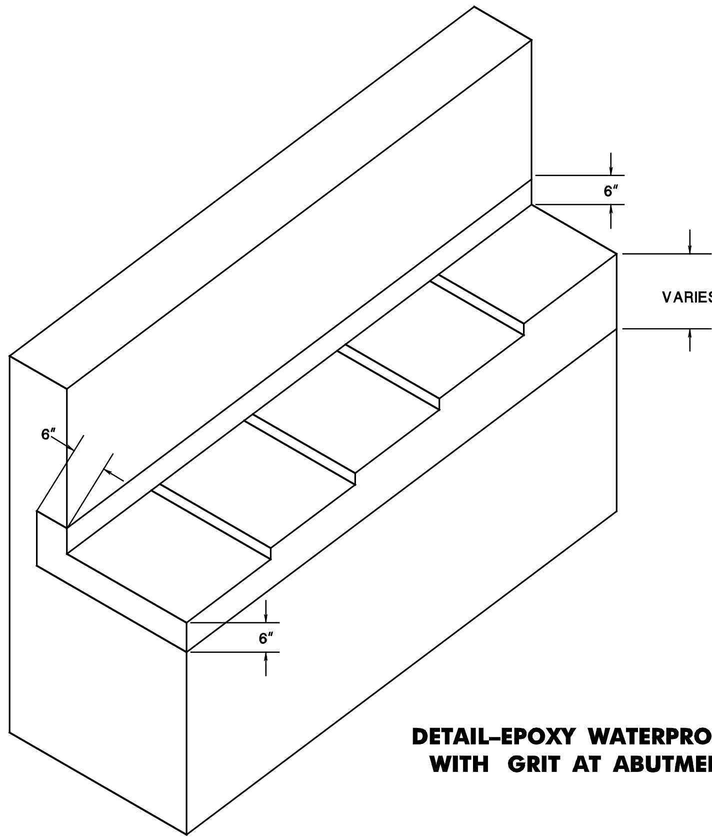
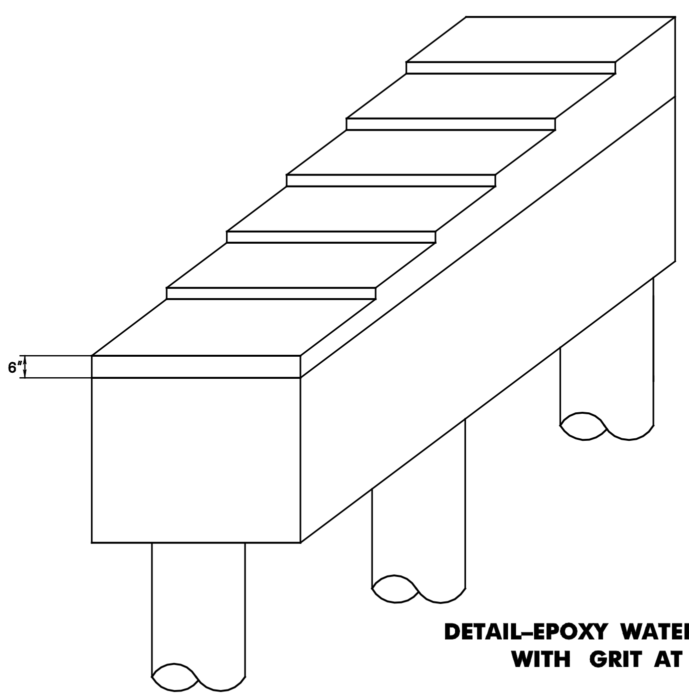
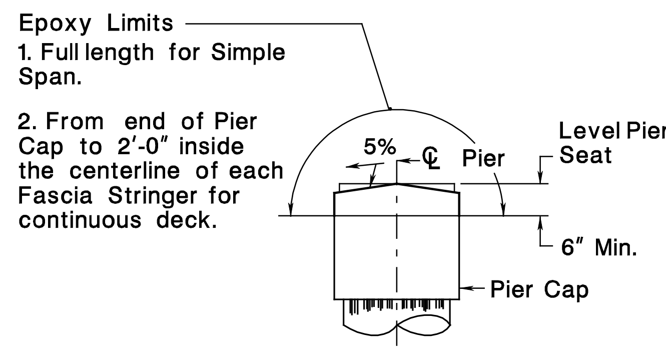


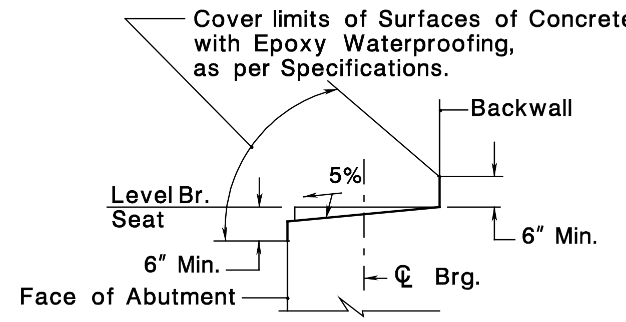
DETAIL–EPOXY WATERPROOFING WITH GRIT AT ABUTMENTS



DETAIL–EPOXY WATERPROOFING WITH GRIT AT PIERS

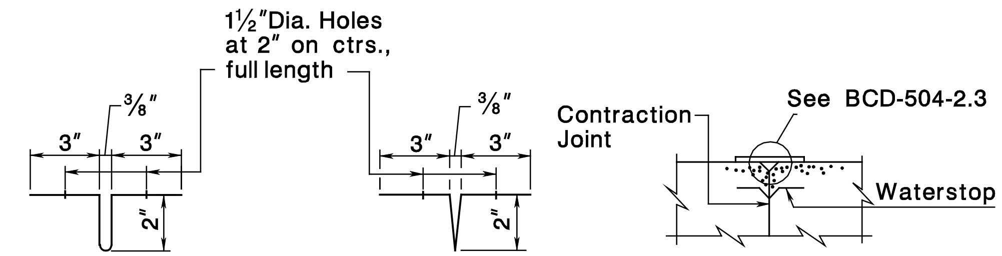


LIMITS AT PIER



LIMITS AT ABUTMENT

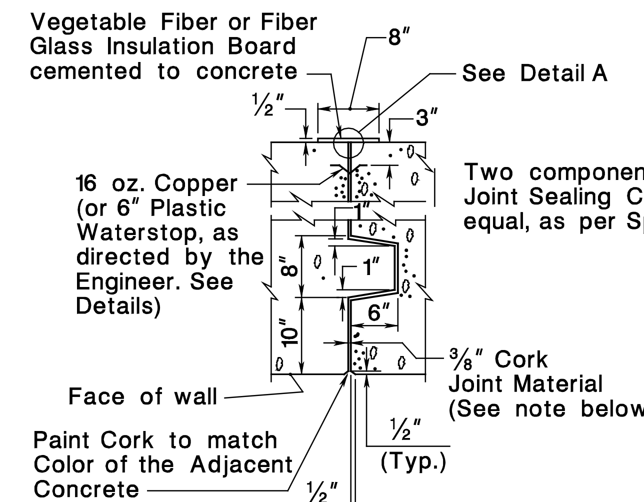
BCD-504-2.1



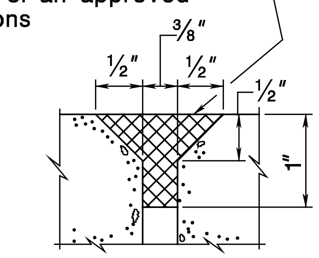
EXPANSION **CONTRACTION** **CONTRACTION JOINT**

16 OZ. COPPER WATERSTOP–10" WIDE

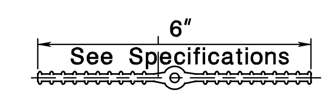
BCD-504-2.2



SECTION – WALL JOINT



DETAIL A SEALER



DETAIL 6" PLASTIC WATERSTOP

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

BCD-504-2.3

TYPICAL DETAILS

N.T.S.

BCD-504-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

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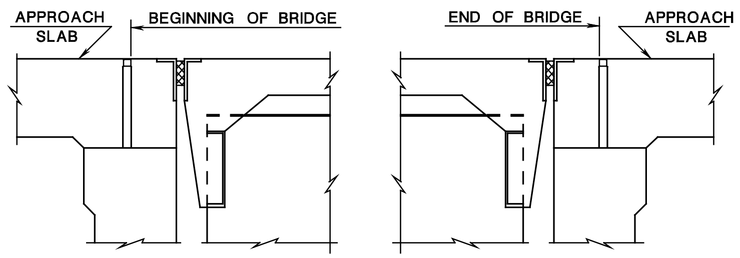
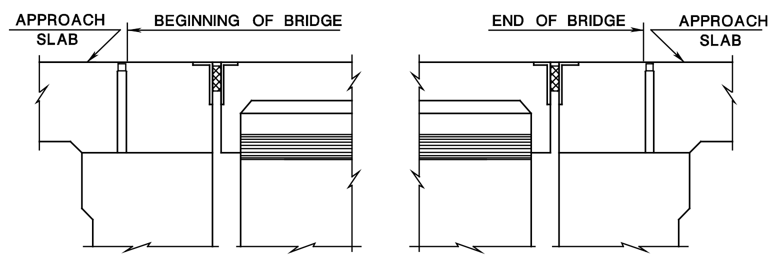
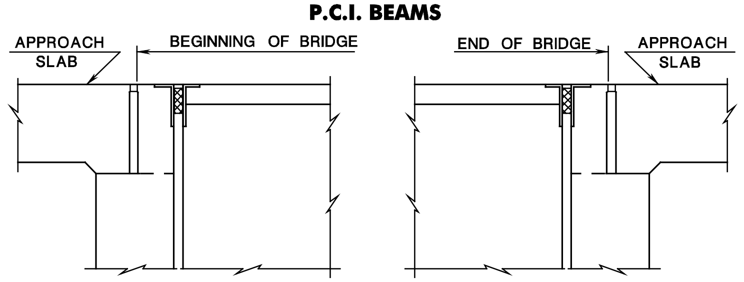


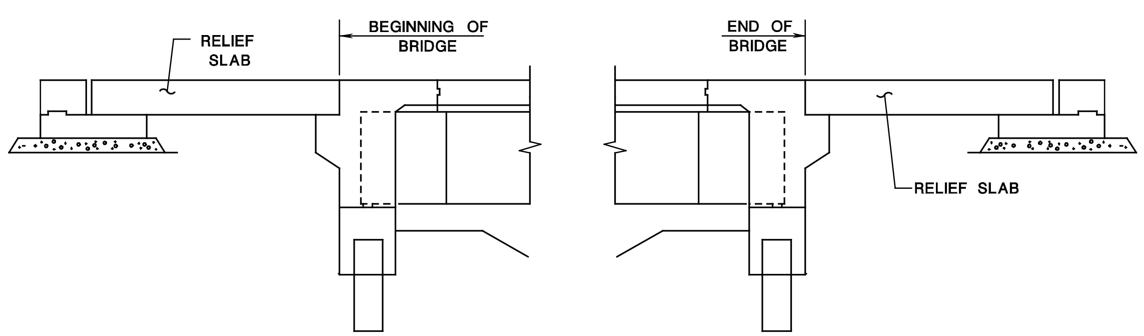
STEEL STRINGERS



P.C.I. BEAMS

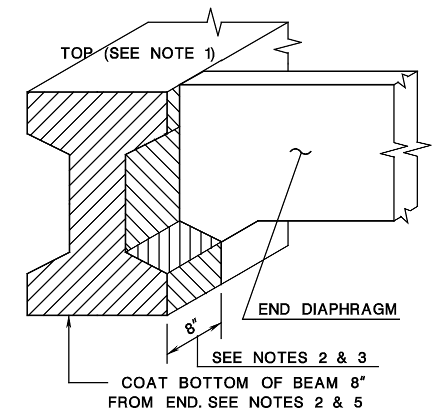


P.C. SLAB AND BOX BEAMS

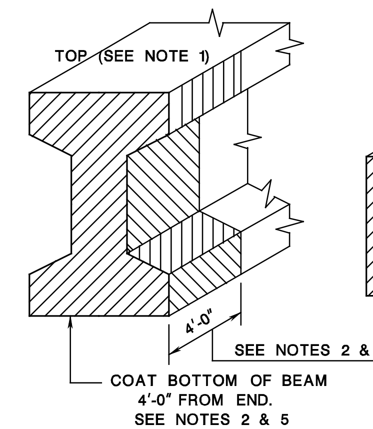


INTEGRAL ABUTMENT BRIDGE LIMITS

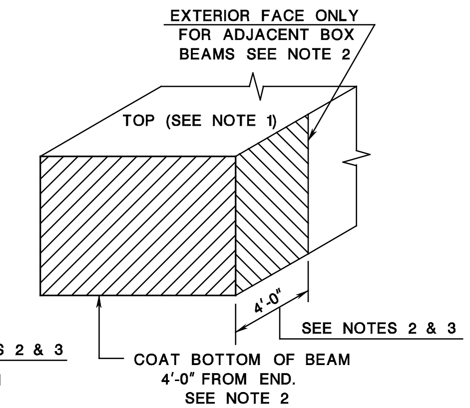
BCD-505-1.1



INTERIOR FACE OF BEAMS



EXTERIOR FACE OF FASCIA BEAMS



EXTERIOR FACE OF FASCIA BOX BEAMS

NOTES:

1. DO NOT APPLY SEALER TO THE TOP SURFACE OF ANY BEAM.
2. APPLY SEALER TO THE ENDS, BOTTOMS AND EXTERIOR SIDES OF FASCIA BEAMS FOR ALL ADJACENT BOX BEAMS. DO NOT COAT SIDES OF INTERIOR BOX BEAMS. APPLY SEALER TO THE ENDS, SIDES AND BOTTOMS OF ALL I-BEAMS.
3. APPLY SEAL COAT ONLY TO BEAM ENDS UNDER DECK JOINTS.
4. VOIDED SLAB BEAMS SIMILAR TO BOX BEAM DETAILS FOR EPOXY WATERPROOFING LIMITS.
5. OMIT EPOXY WATERPROOFING SEAL COAT FROM THE BEARING CONTACT AREAS FOR VARIOUS TYPES OF BEARINGS, CHECK BEARING MANUFACTURER'S RECOMMENDATIONS.

PRESTRESSED CONCRETE I-BEAMS, VOIDED SLAB AND BOX BEAMS EPOXY WATERPROOFING WITH GRIT LIMITS

BCD-505-1.2

MISCELLANEOUS BRIDGE ITEMS

N.T.S.

BCD-505-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

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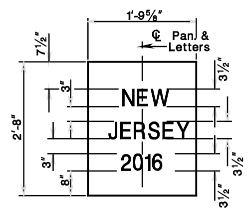
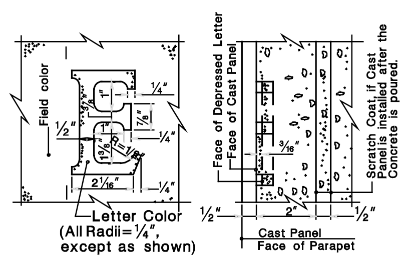


DETAIL – CAST DATE PANEL (1'–9 5/8")

N.T.S.



LETTERING DETAILS

N.T.S.

NOTES:

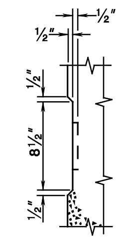
Cast date panels in one piece with the exposed aggregate as per Specifications. Ensure that the surface Finish for the Field is a medium feature exposed aggregate with a reddish-brown coloration. Ensure that the surface Finish for Letters and Numbers is light green crushed quartz. Take care to prevent 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.

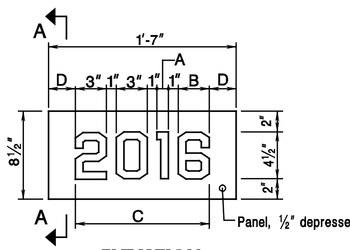
DATE PANEL

(USE ON BRIDGES WITH SPECIAL REQUIREMENTS)

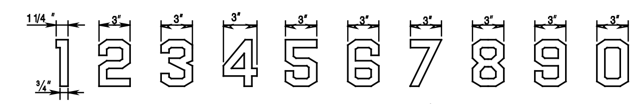
BCD-507-1.1



SECTION A–A



ELEVATION



NUMERAL DETAILS

LEGEND				
YEAR	A (IN.)	B (IN.)	C (IN.)	D (IN.)
2012-2019	1¼	3	13¼	2⅞
2020	3	3	15	2
2022-2030, 2032-2040, 2042-2050	3	3	15	2
2021, 2031, 2041, 2051	3	1¼	13¼	2⅞

NOTES:

1. Year of Completion of Structure is the DATE on the panel.
2. Submit NUMERALS proposed for use to the RE for approval.
3. Two (2) Panels required.
4. 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-507-1.2

DATE AND NUMERAL PANEL

N.T.S.

BCD-507-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BDC16D-01-ORIGINAL SHEET
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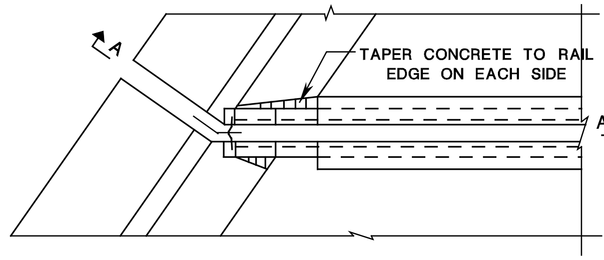
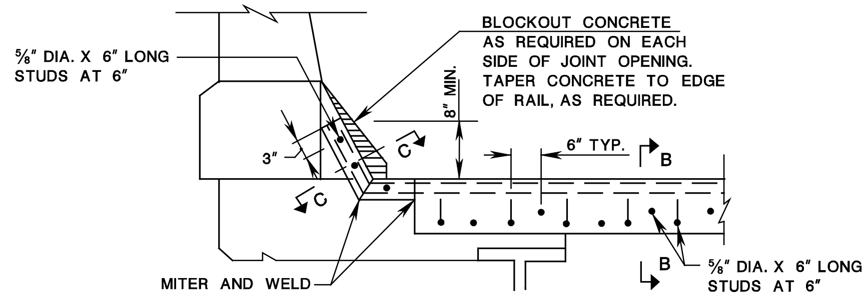
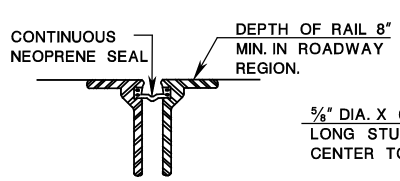


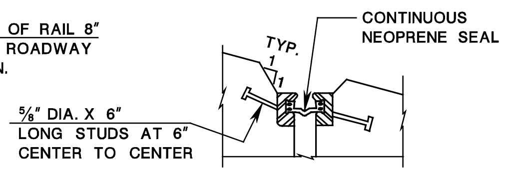
PARAPET PLAN FOR SKEWS ≥ 30°



SECTION A–A



SECTION B–B

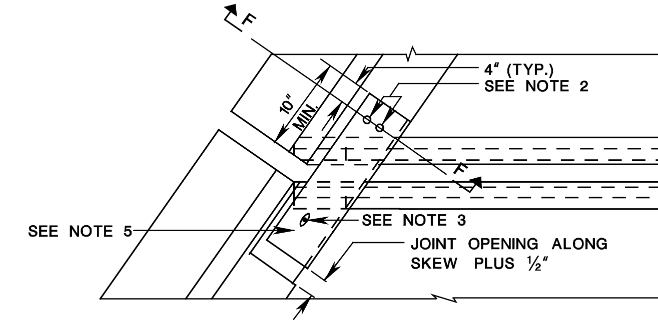


SECTION C–C

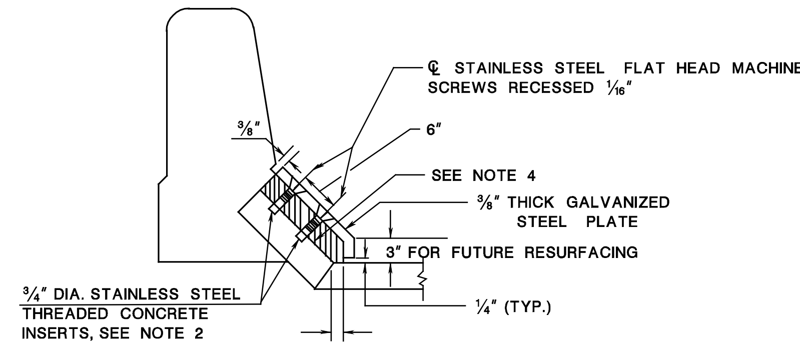
NOTES:

1. THE DETAIL ABOVE IS INTENDED AS A GENERAL GUIDE TO A TYPICAL GLANDULAR TYPE STRIP SEAL SYSTEM. SUBMIT VARIATIONS TO THE GLAND SHAPE, RAIL SHAPE, STUD ARRANGEMENT, AND SUPPORT DETAILS ACCORDING TO THE NJDOT WORKING DRAWING SPECIFICATIONS.
2. DETAILS FOR MEDIAN BARRIER ARE SIMILAR.
3. FOR SKEWS LESS THAN 30 DEGREES, THE JOINT OPENING IN THE PARAPET IS PARALLEL TO THE SKEW.

BCD-507-2.1



PARAPET PLAN

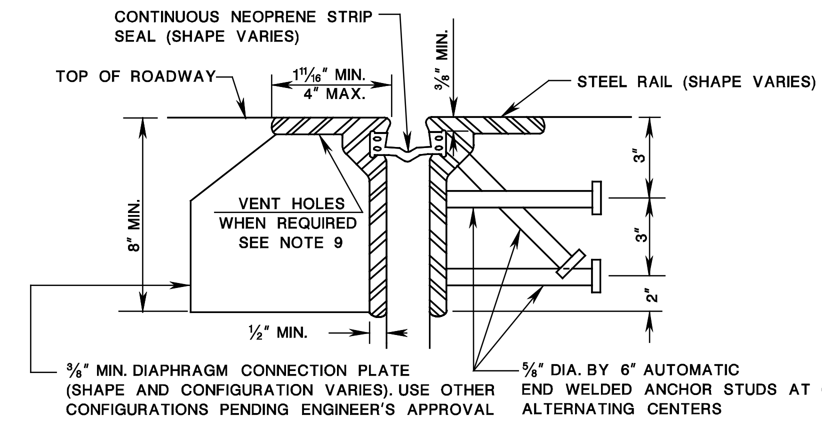


SECTION F–F

NOTES:

1. THE DETAIL ABOVE IS INTENDED AS A GENERAL GUIDE TO A TYPICAL GLANDULAR TYPE STRIP SEAL SYSTEM. SUBMIT VARIATIONS TO THE GLAND SHAPE, RAIL SHAPE, STUD ARRANGEMENT, AND SUPPORT DETAILS ACCORDING TO THE NJDOT WORKING DRAWING SPECIFICATIONS.
2. 2 - ¾″ DIA. X 1½″ STAINLESS STEEL FLAT HEAD MACHINE SCREWS WITH 2 - ¾″ DIA. CAST-IN-PLACE STAINLESS STEEL THREADED CONCRETE INSERTS. RECESS 1/16″ BELOW PLATE SURFACE.
3. 1″ X 5″ SLOTTED HOLE FOR SKEWS TO 45°; 1″ X 6″ SLOTTED HOLE FOR SKEWS OVER 45°. HOLE SLOTTED PARALLEL TO DIRECTION OF MOVEMENT WITH 1 - ¾″ X 1½″ STAINLESS STEEL FLAT HEAD MACHINE SCREW RECESSED 1/16″ BELOW PLATE SURFACE IN ¾″ CAST-IN-PLACE STAINLESS STEEL THREADED CONCRETE INSERT. DO NOT OVERTIGHTEN MACHINE SCREWS.
4. BLOCKOUT CONCRETE AS REQUIRED ABOVE JOINT OPENING.
5. ⅜″ THICK BY 1′-2″ WIDE X (2′-0″ LONG FOR SKEWS TO 45° AND 3′-0″ LONG FOR SKEWS LARGER THAN 45°) GRADE 36 GALVANIZED STEEL PLATE BENT WITH HOLES AS SHOWN.

BCD-507-2.2

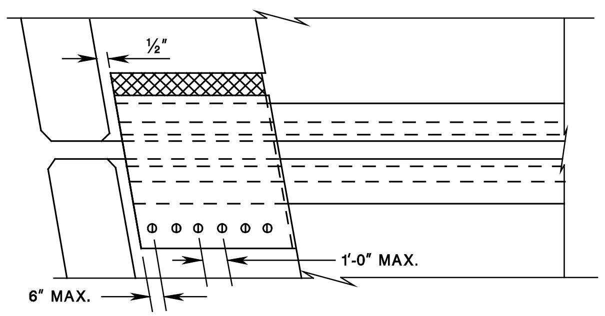


TYPICAL SECTION

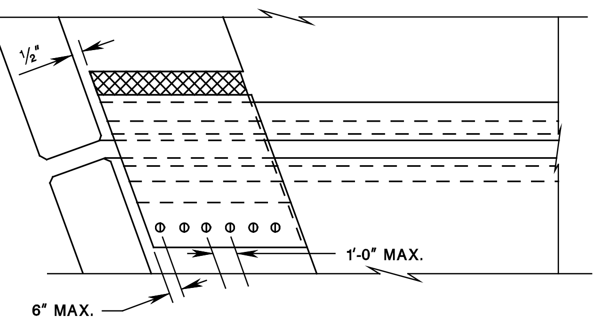
NOTES:

1. THE DETAIL ABOVE IS INTENDED AS A GENERAL GUIDE TO A TYPICAL GLANDULAR TYPE STRIP SEAL SYSTEM. SUBMIT VARIATIONS TO THE GLAND SHAPE, RAIL SHAPE, STUD ARRANGEMENT, AND SUPPORT DETAILS ACCORDING TO THE NJDOT WORKING DRAWING SPECIFICATIONS.
2. USE STEEL RAILS CONFORMING TO AASHTO M270, GRADE 36 OR 50.
3. USE AUTOMATIC END WELDED STUDS CONFORMING TO AASHTO M169 (ASTM A108), GRADES 1015, 1018 OR 1020.
4. USE PLATES, SHAPES, AND OTHER STRUCTURAL STEEL MATERIAL USED IN THE DECK JOINT SYSTEM WITH THE STEEL RAILS CONFORMING TO AASHTO M183.
5. HOT DIP GALVANIZE ALL STRUCTURAL STEEL AFTER FABRICATION PER ASTM A123.
6. PLACE FIELD SPLICES FOR STEEL RAILS AT GRADE BREAKS AND LONGITUDINAL BREAKS IN THE DECK.
7. INSTALL NEOPRENE STRIP SEAL IN A CONTINUOUS LENGTH OVER THE ENTIRE WIDTH OF THE SUPERSTRUCTURE WITH NO FIELD SPLICES PERMITTED. PLACE AN APPROVED LUBRICANT / ADHESIVE FOR THE INSTALLATION AND PERMANENT BONDING TO THE STEEL RAIL PRIOR TO THE STRIP SEAL INSTALLATION.
8. WHERE A LONGITUDINAL AND TRANSVERSE JOINT INTERSECT, MAKE THE JOINT CONTINUOUS SUBJECTED TO THE GREATER MOVEMENT AND THE OTHER SEAL TO BUTT UP AGAINST IT. APPROVE ALL JOINT INTERSECTIONS BY THE ENGINEER.
9. 9/16″ DIA. VENT HOLES SPACED BETWEEN STUDS AT 1′-0″ CENTER TO CENTER MAX. ARE REQUIRED WHEN TOP OF STEEL RAIL IS WIDER THAN 3″.

BCD-507-2.3

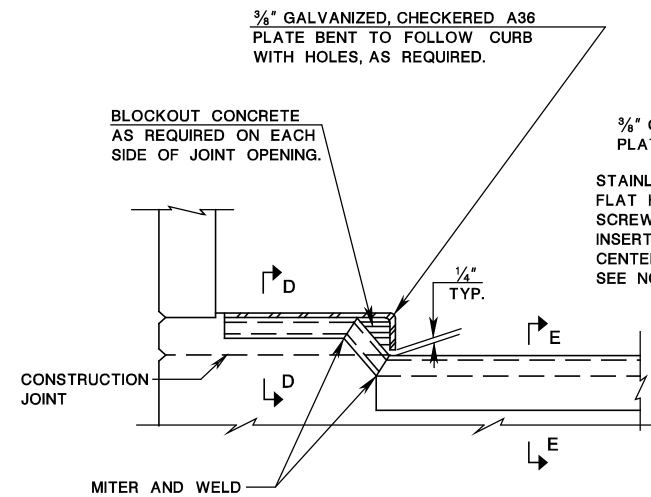


SIDEWALK PLAN
SKEW < 15°

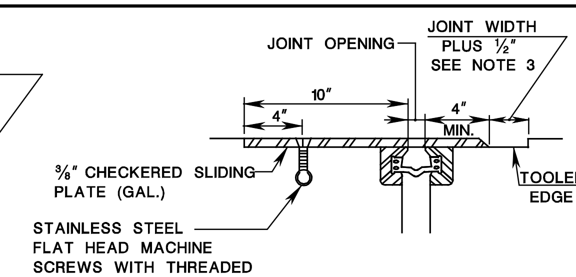


SIDEWALK PLAN
SKEW ≥ 15°

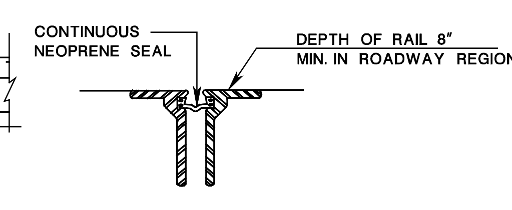
BCD-507-2.4



SIDEWALK ELEVATION



SECTION D–D



SECTION E–E

BCD-507-2.5

NOTES:

1. THE DETAIL SHOWN HERE IS INTENDED AS A GENERAL GUIDE TO A TYPICAL GLANDULAR TYPE STRIP SEAL SYSTEM. SUBMIT VARIATIONS TO THE GLAND SHAPE, RAIL SHAPE, STUD ARRANGEMENT, AND SUPPORT DETAILS ACCORDING TO THE NJDOT WORKING DRAWING SPECIFICATIONS.
2. ¾″ DIA. X 1½″ STAINLESS STEEL FLAT HEAD MACHINE SCREWS WITH ¾″ DIA. CAST-IN-PLACE STAINLESS STEEL THREADED CONCRETE INSERTS. RECESS 1/16″ BELOW PLATE SURFACE.
3. UPON COMPLETION, FILL JOINT OPENING WITH A LOW MODULUS SILICON RUBBER JOINT SEALER CONFORMING TO ASTM D5893 WITH A MIN. ULTIMATE ELONGATION OF 1200 PERCENT. MATCH THE JOINT FILLER TO THE COLOR OF THE CONCRETE.

STRIP SEAL DECK JOINTS

N.T.S.

BCD-507-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BDC16D-01-ORIGINAL SHEET

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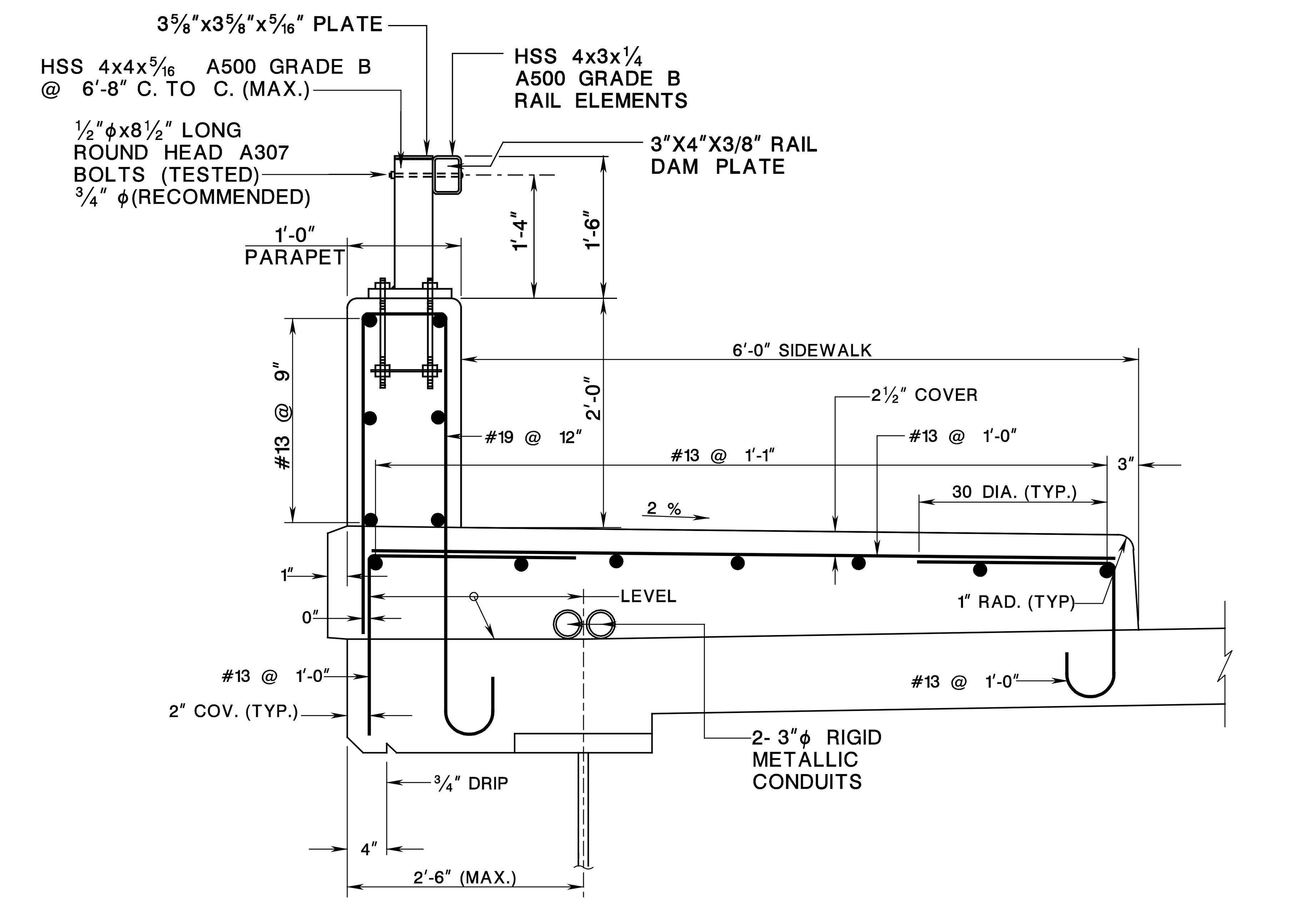
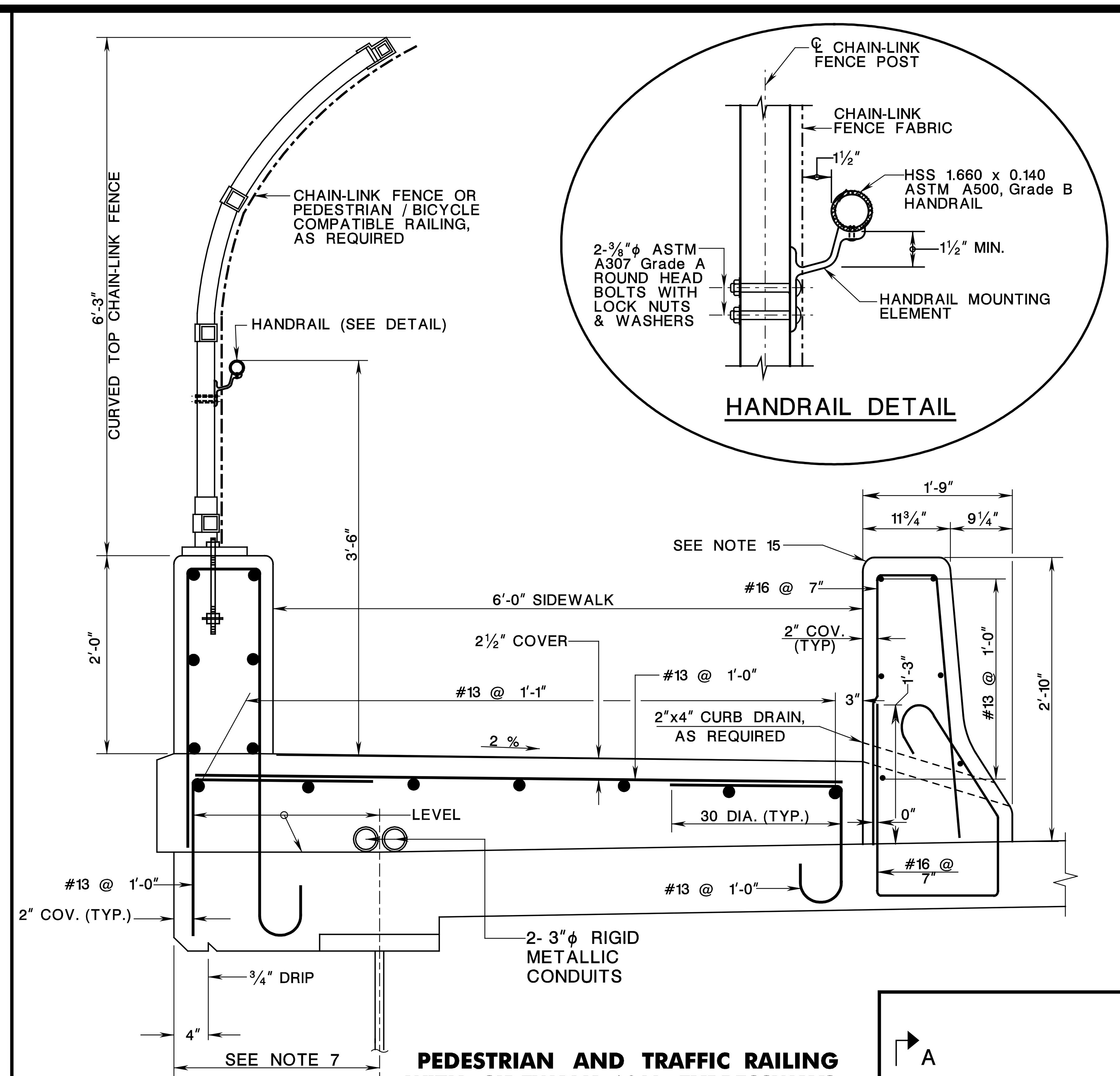


2'–0" PARAPET AND RAILING WITH SIDEWALK

TEST LEVEL 4
BCD-507-3.1



HANDRAIL DETAIL

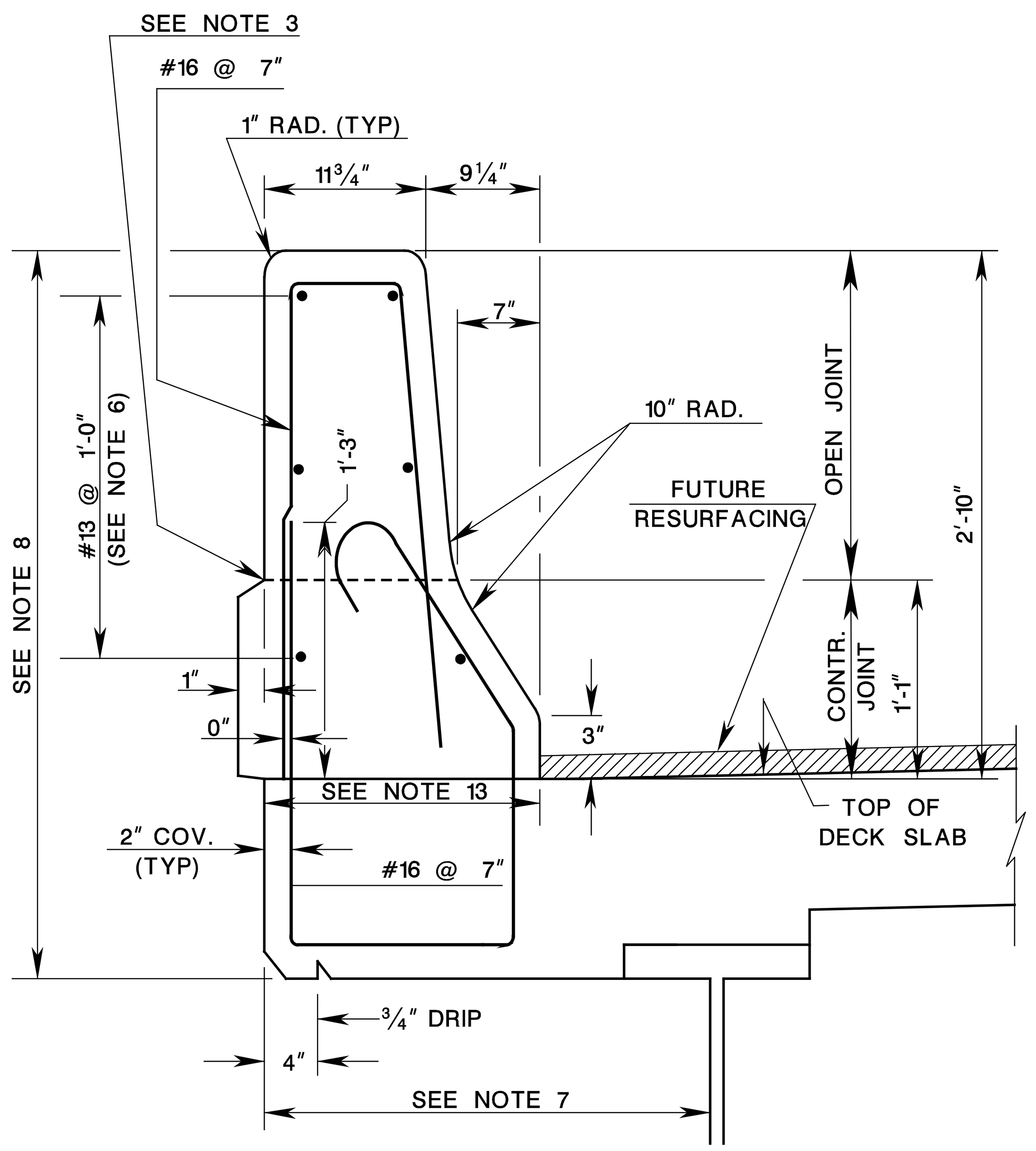
TEST LEVEL 4
BCD-507-3.2

PEDESTRIAN AND TRAFFIC RAILING WITH SIDEWALK (ON EXPRESSWAYS FOR SPEEDS IN EXCESS OF 45 MPH)

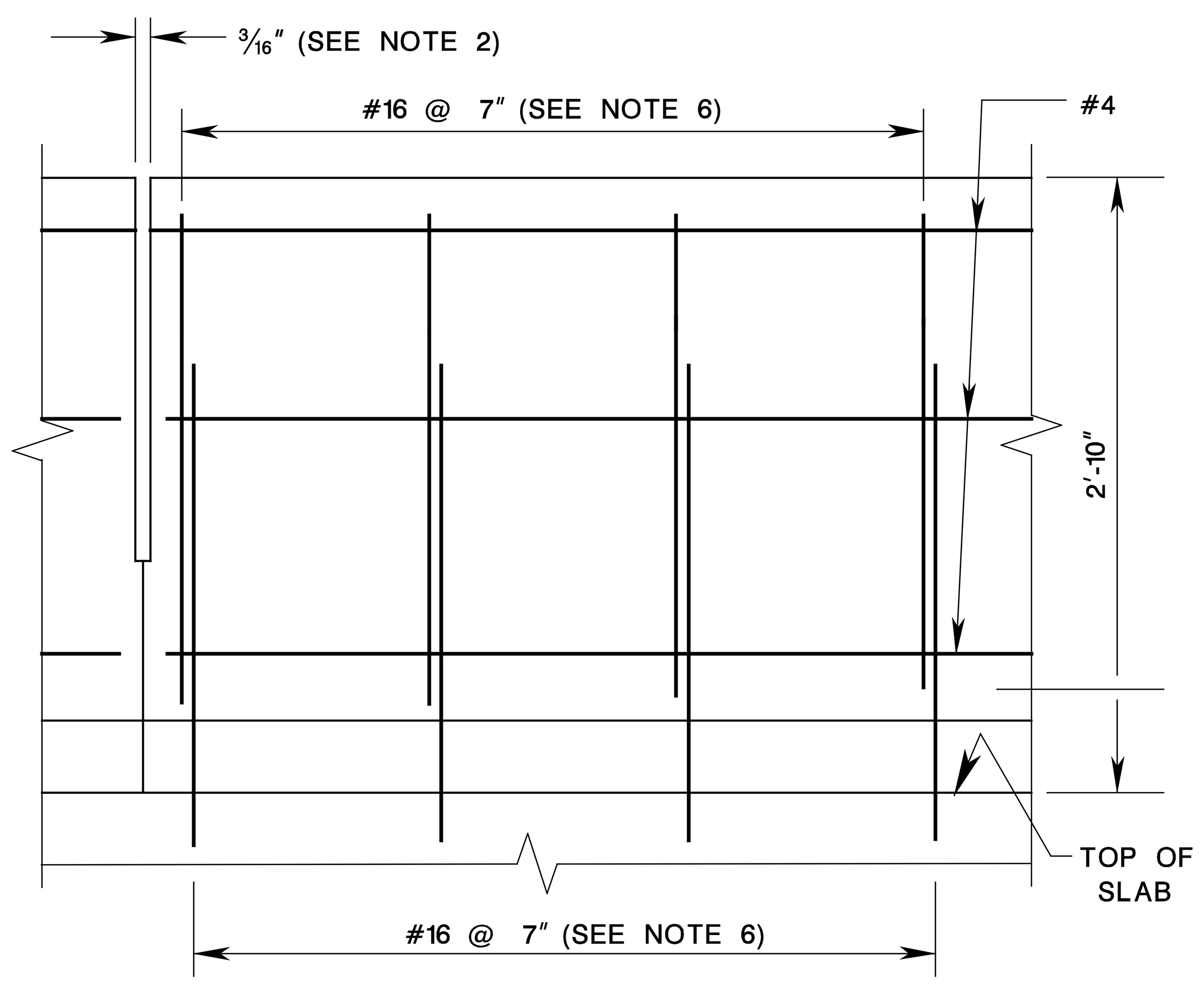
NOTES:

1. REFER TO BRIDGE PLANS FOR CURB HEIGHT. REFER TO CD-607-2.5 FOR LINEAR CURB HEIGHT TRANSITION.
2. PROVIDE 3⁄16" OPEN DEFLECTION JOINT IN PARAPETS AT INTERVALS NOT EXCEEDING 20'-0" AND CONTRACTION JOINTS AT THE MIDPOINT BETWEEN THE OPEN JOINTS.
3. TERMINATE THE 3⁄16" OPEN JOINT AT THE LINE INDICATED AND PROVIDE A CONTRACTION JOINT BELOW THAT LINE.
4. PROVIDE CONTRACTION JOINTS IN SIDEWALKS AT LOCATIONS OF 3⁄16" OPEN PARAPET DEFLECTION JOINTS.
5. PROVIDE FULL DEPTH JOINTS AT LOCATION OF TRANSVERSE DECK JOINTS. THE FULL DEPTH JOINT OPENING WIDTH TO EQUAL THE TRANSVERSE DECK JOINT OPENING WIDTH.
6. ENSURE THAT ALL REINFORCEMENT STEEL IN PARAPET AND SIDEWALK IS CORROSION PROTECTED.
7. PREFERRED MAXIMUM OVERHANG 2'-6". PERMANENT METAL STAY-IN-PLACE FORMS NOT PERMITTED IN THIS AREA.
8. FASCIA RUSTICATION AND CONFIGURATION AS PER NJDOT STANDARD SPECIFICATIONS.
9. AS AN OPTION, THE CONTRACTOR MAY ELIMINATE SPLICES AT EACH END OF THE TOP TRANSVERSE REINFORCEMENT STEEL IN SIDEWALKS BY PROVIDING A SINGLE BAR OF THE SAME CONFIGURATION WITH HOOKS AT EACH END, EMBEDDED IN THE DECK SLAB.
10. IF CONDUITS ARE USED WITHIN THE PARAPET, PROVIDE A SLEEVE OF SUFFICIENT LENGTH TO ACCOMODATE MAXIMUM EXPANSION AND CONTRACTION OF THE EXPANSION JOINT.
11. IN CONSIDERING THE HEIGHT OF THE PARAPET AND RAILING COMBINATION, ENSURE THE MINIMUM HEIGHT OF THE COMBINATION RAILING IS 42" MEASURED FROM THE TOP OF THE WALKWAY FOR PEDESTRIANS AND THE TOP OF THE BIKEWAY SURFACE FOR BICYCLE TRAFFIC.
12. 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."
13. POUR THE BRIDGE DECK PORTION TO LEVEL UNDER THE PARAPET.
14. ALL REINFORCEMENT STEEL IS DESIGNATED IN METRIC UNITS.
15. FOR BARRIER TRANSITION AND GUIDE RAIL ATTACHMENT DETAILS, REFER TO CD-609-14.

BCD-507-3.3

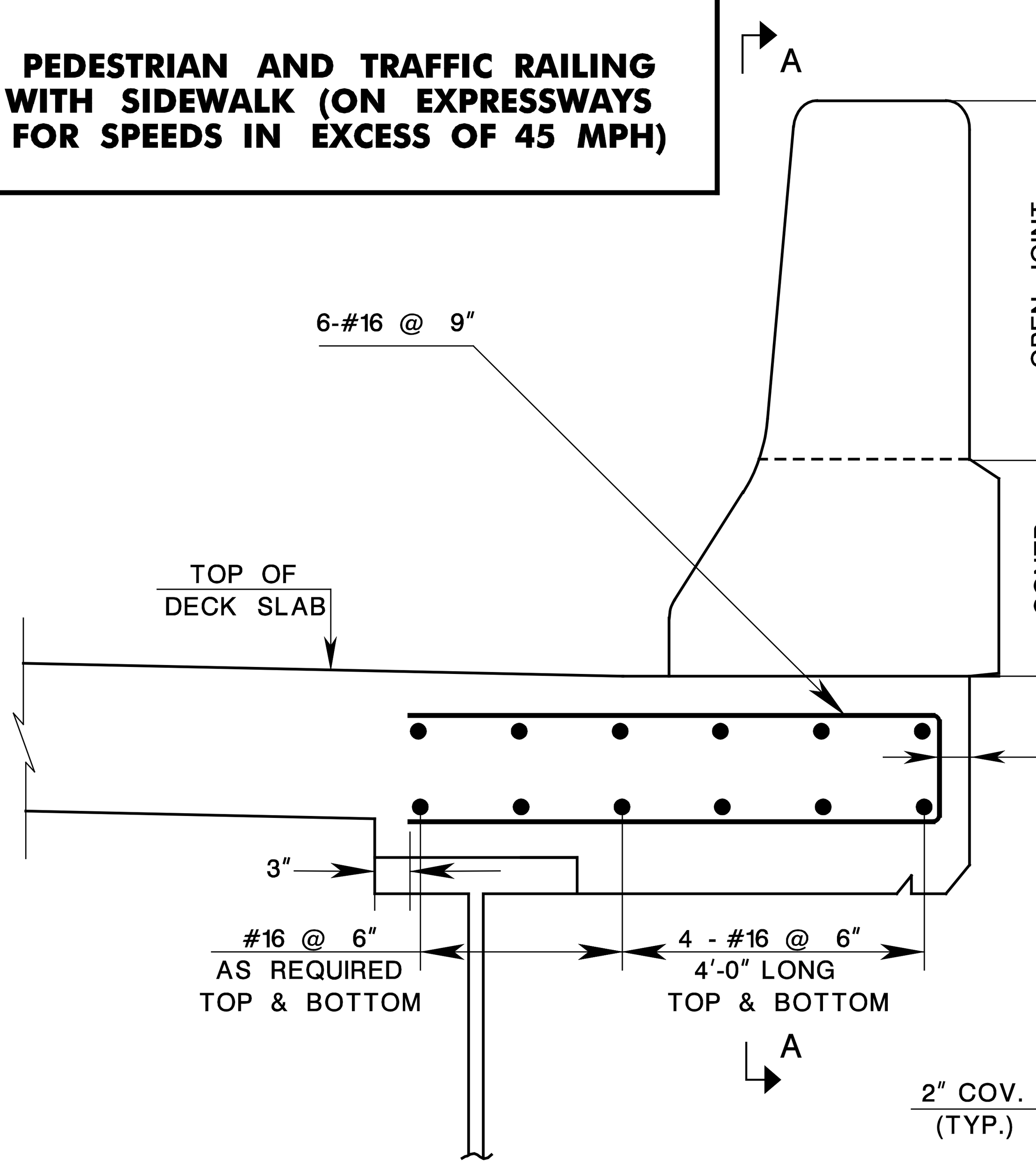


2'–10" HIGH PARAPET WITH BARRIER CURB



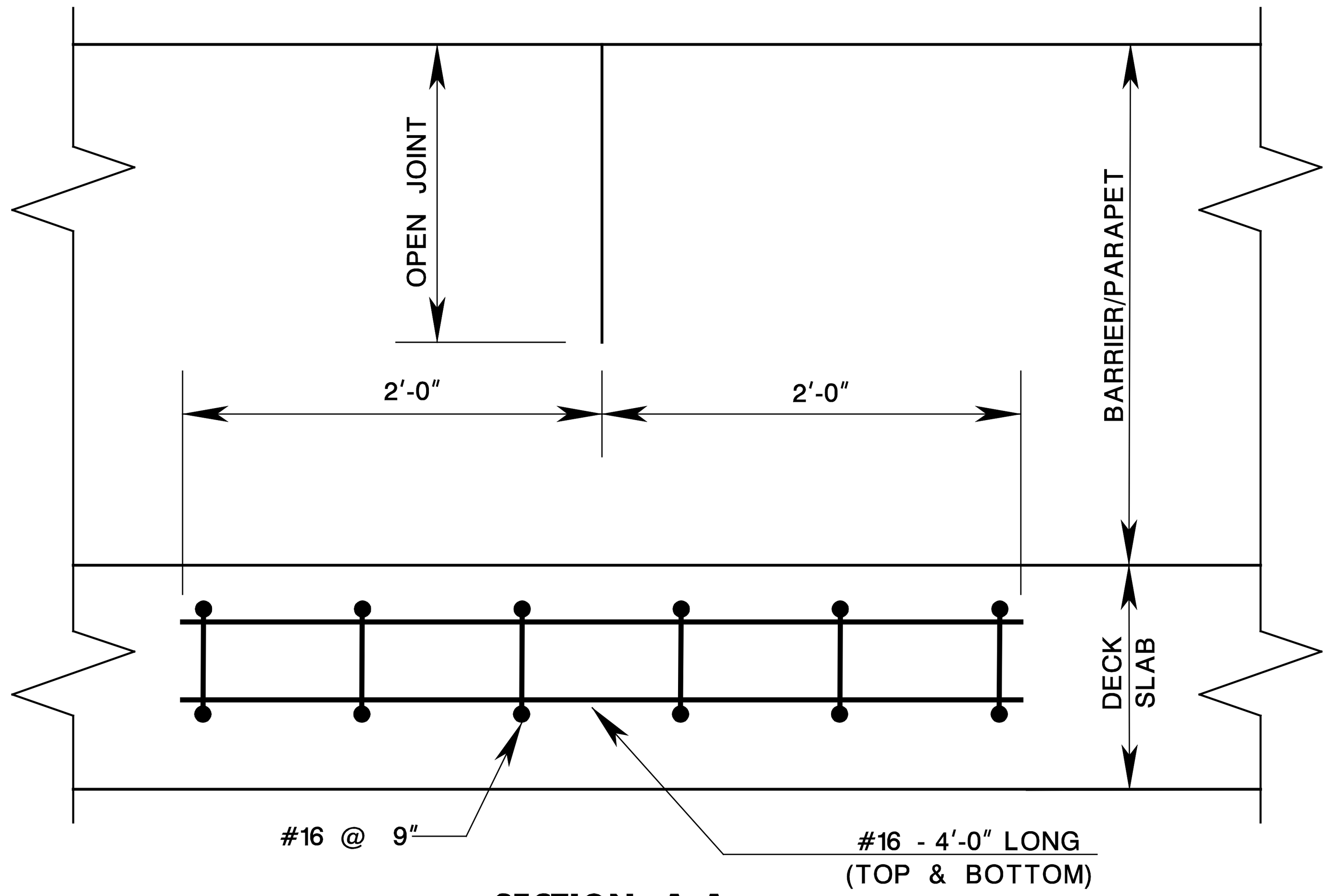
ELEVATION

TEST LEVEL 4
BCD-507-3.4



DETAIL 1

DECK REINFORCEMENT STEEL AT BARRIER / PARAPET JOINTS



SECTION A–A

TEST LEVEL 4
BCD-507-3.5

2'–0" PARAPET, PEDESTRIAN AND TRAFFIC RAILING, AND 2'–10" PARAPET

N.T.S.

BCD-507-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BDC17D-01-TITLE CHANGE BCD-507-3.1 & 507-3.2
BDC16D-01-ORIGINAL SHEET

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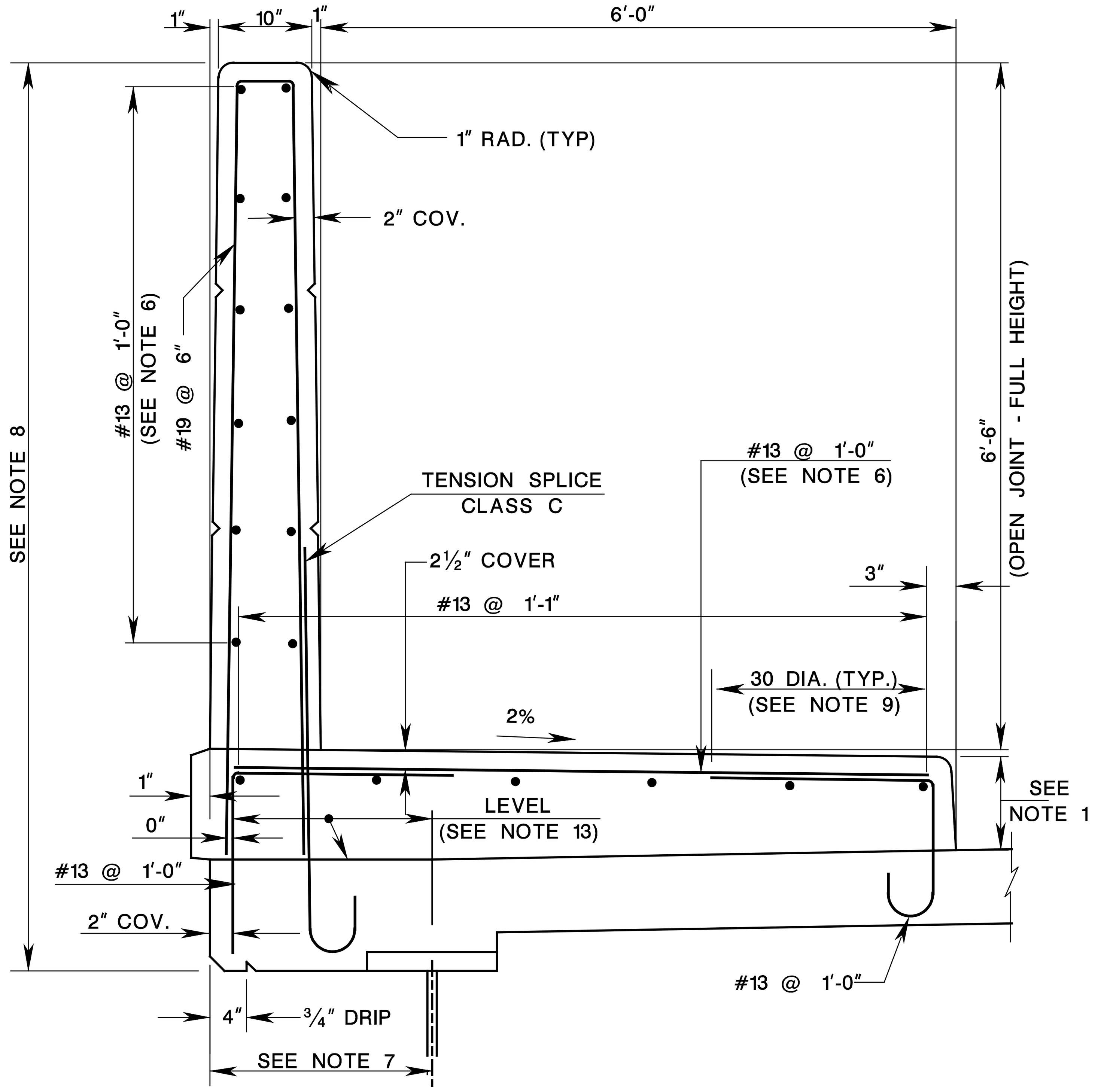
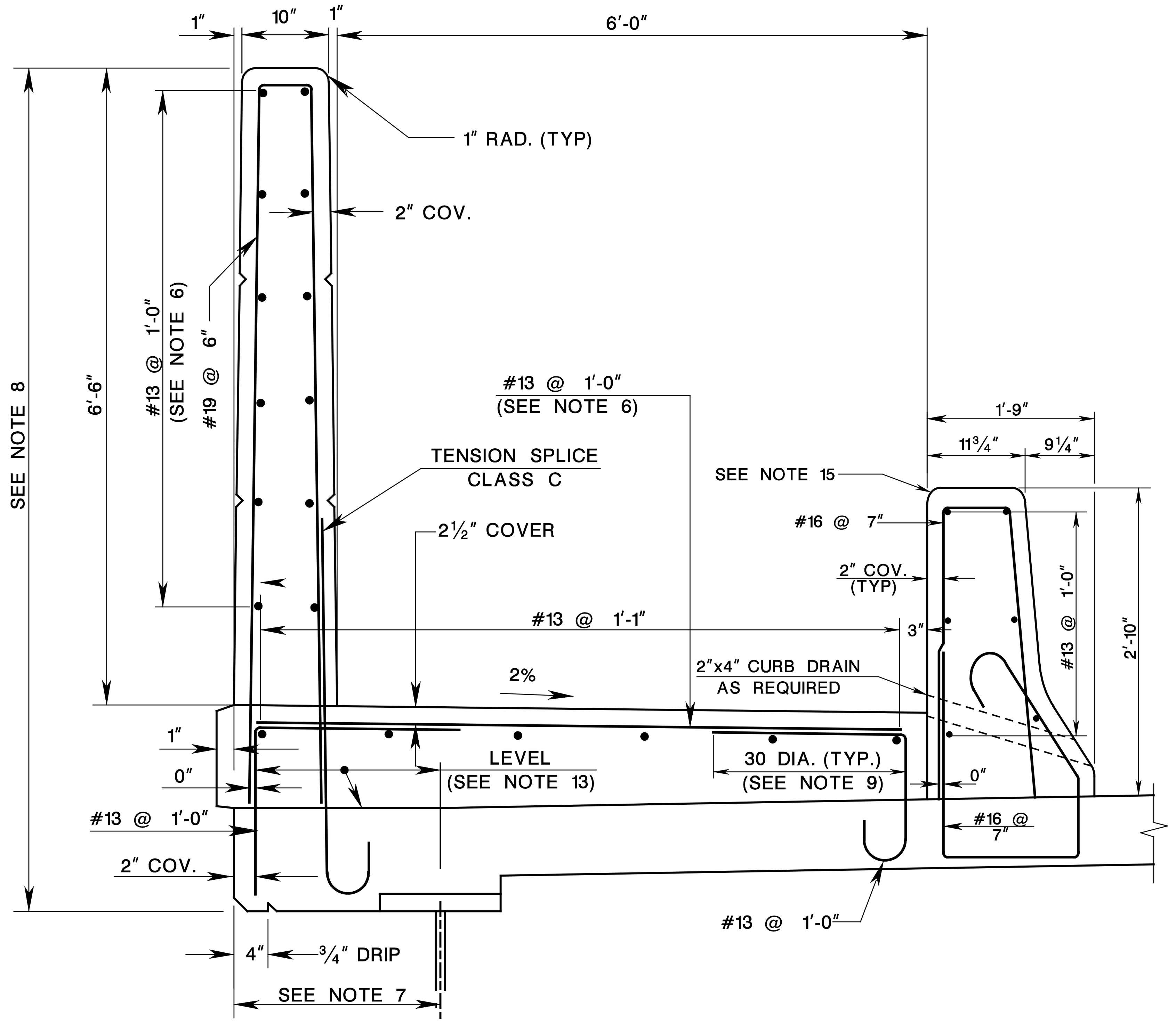


6'–6" HIGH PARAPET WITH SIDEWALK OVER ELECTRIFIED RAILROAD (FOR USE ON NON–NHS BRIDGES ONLY)

BCD-507-4.1



6'–6" HIGH PARAPET WITH SIDEWALK OVER ELECTRIFIED RAILROAD (ON EXPRESSWAYS FOR SPEEDS IN EXCESS OF 45 MPH)

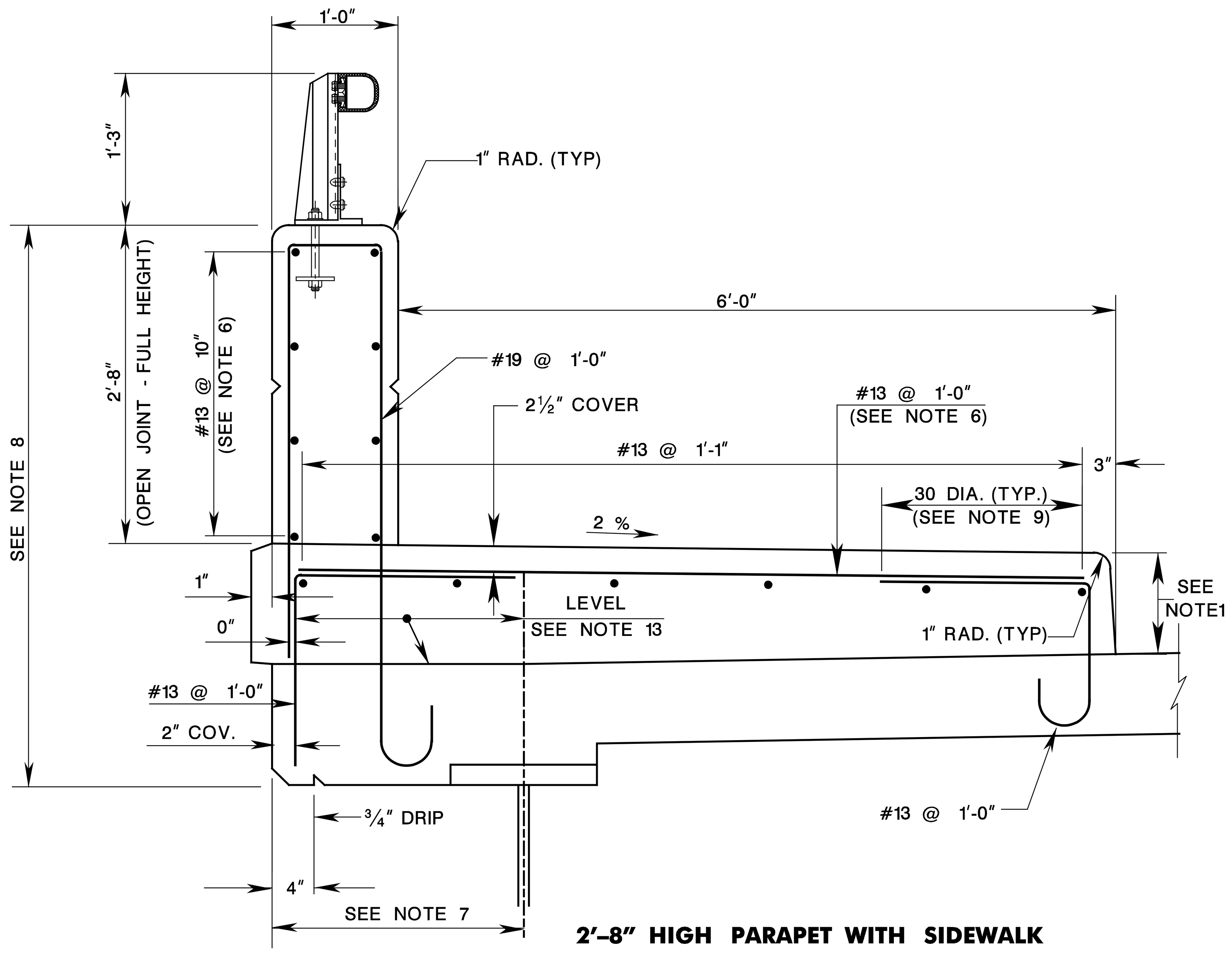
TEST LEVEL 4

BCD-507-4.2

NOTES:

1. REFER TO BRIDGE PLANS FOR CURB HEIGHT. REFER TO CD-607-2.5 FOR LINEAR CURB HEIGHT TRANSITION.
2. 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.
3. TERMINATE THE $\frac{3}{16}$" OPEN JOINT AT THE LINE INDICATED AND PROVIDE A CONTRACTION JOINT BELOW THAT LINE.
4. PROVIDE CONTRACTION JOINTS IN SIDEWALKS AT LOCATIONS OF $\frac{3}{16}$" OPEN PARAPET DEFLECTION JOINTS.
5. PROVIDE FULL DEPTH JOINTS AT LOCATION OF TRANSVERSE DECK JOINTS. THE FULL DEPTH JOINT OPENING WIDTH TO EQUAL THE TRANSVERSE DECK JOINT OPENING WIDTH.
6. ENSURE THAT ALL REINFORCEMENT STEEL IN PARAPET AND SIDEWALK IS CORROSION PROTECTED.
7. PREFERRED MAXIMUM OVERHANG 2'-6". PERMANENT METAL STAY-IN-PLACE FORMS NOT PERMITTED IN THIS AREA.
8. FASCIA RUSTICATION AND CONFIGURATION AS PER NJDOT STANDARD SPECIFICATIONS.
9. AS AN OPTION, THE CONTRACTOR MAY ELIMINATE SPLICES AT EACH END OF THE TOP TRANSVERSE REINFORCEMENT STEEL IN SIDEWALKS BY PROVIDING A SINGLE BAR OF THE SAME CONFIGURATION WITH HOOKS AT EACH END, EMBEDDED IN THE DECK SLAB.
10. IF CONDUITS ARE USED WITHIN THE PARAPET, PROVIDE A SLEEVE OF SUFFICIENT LENGTH TO ACCOMODATE MAXIMUM EXPANSION AND CONTRACTION OF THE EXPANSION JOINT.
11. IN CONSIDERING THE HEIGHT OF THE PARAPET AND RAILING COMBINATION, ENSURE THE MINIMUM HEIGHT OF THE COMBINATION RAILING IS 42" MEASURED FROM THE TOP OF THE WALKWAY FOR PEDESTRIANS AND THE TOP OF THE BIKEWAY SURFACE FOR BICYCLE TRAFFIC.
12. 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."
13. POUR THE BRIDGE DECK PORTION TO LEVEL UNDER THE PARAPET.
14. ALL REINFORCEMENT STEEL IS DESIGNATED IN METRIC UNITS.
15. FOR BARRIER TRANSITION AND GUIDE RAIL ATTACHMENT DETAILS, REFER TO CD-609-14.

BCD-507-4.3



2'–8" HIGH PARAPET WITH SIDEWALK (FOR USE ON NON–NHS BRIDGES ONLY)

BCD-507-4.4

6'–6" AND 2'–8" PARAPET

N.T.S.

BCD-507-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BDC17D-01-TITLE CHANGE BCD-507-4.2
BDC16D-01-ORIGINAL SHEET

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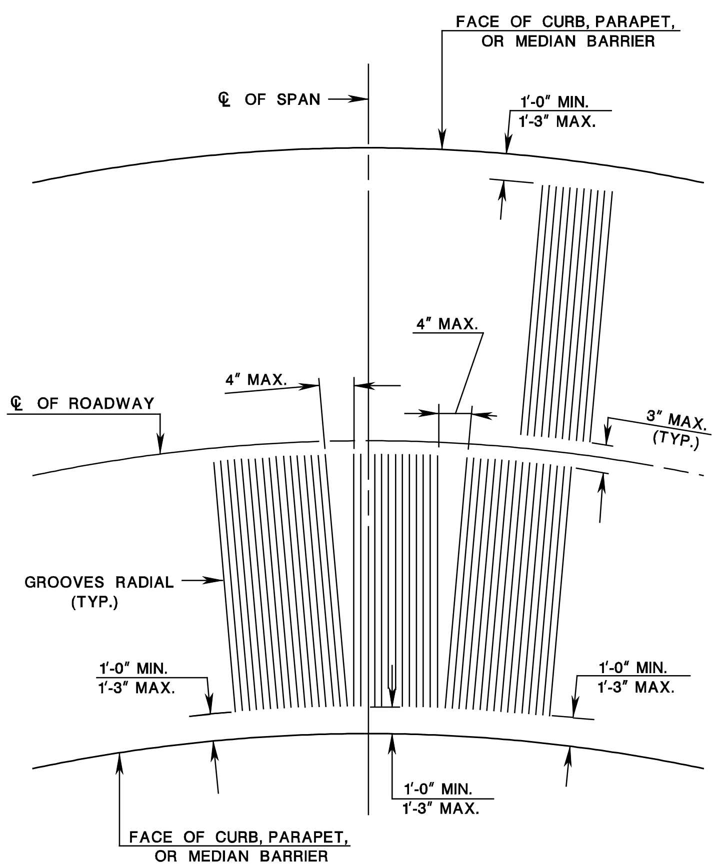
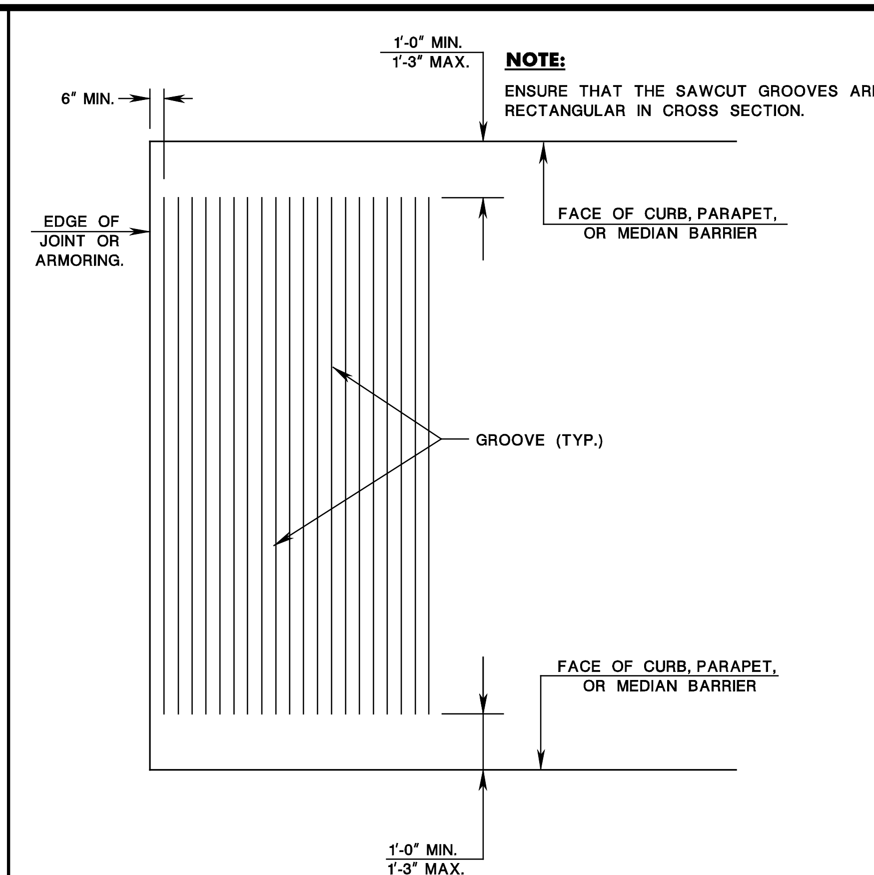


SAWCUT GROOVING FOR BRIDGE DECKS ON CURVED ALIGNMENT

BCD-507-5.1

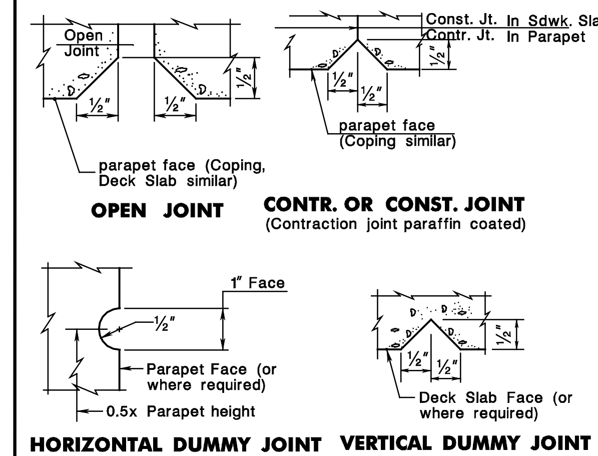


NOTE:

ENSURE THAT THE SAWCUT GROOVES ARE RECTANGULAR IN CROSS SECTION.

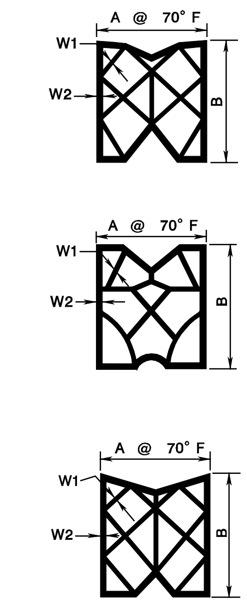
SAWCUT GROOVING FOR BRIDGE DECKS

BCD-507-5.2



DETAILS OF PARAPET AND DECK SCORING

BCD-507-5.5



A = Compressed width of sealer at 70° F.
B = Compressed height of sealer at 70° F.
W1 = Interior membrane minimum thickness.
W2 = Exterior membrane minimum thickness.

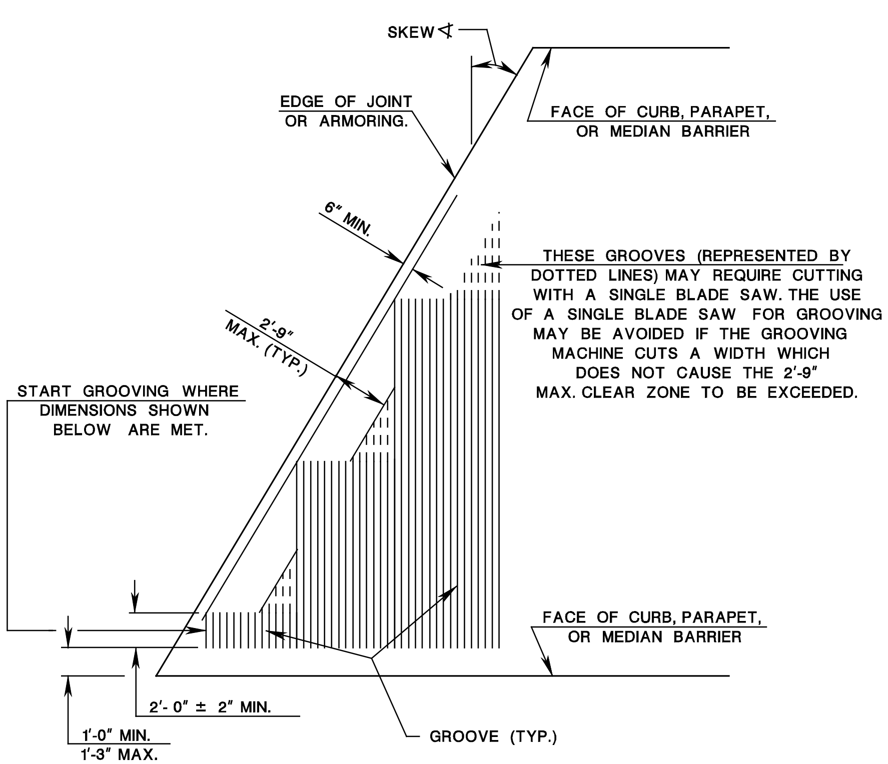
PREFOR. ELASTOMERIC COMPRESSION SEALER	A	B	W1 (min.)	W2 (min.)
NOMINAL SIZE (IN.)	(IN.)	(IN.)	(IN.)	(IN.)
1¾" X 1¾" (1)	1	(2)	1/16	3/32
2½" X 2½" (1)	1⅝	(2)	3/32	3/16

NOTE:

1. The nominal height of compression seals may vary based on manufacturer's specifications. The height may exceed the nominal manufacturer's sealer height by not more than ¼".
2. Dimension "B" varies depending on the joint manufacturer. The depth of embedment of the compression seal in the joint is to be set by the fabricator and is equal to the compressed seal height plus ½" (± ⅛").
3. Conform all preformed elastomeric compression seals to the material requirements of the NJDOT Standard Specifications for Road and Bridge Construction.

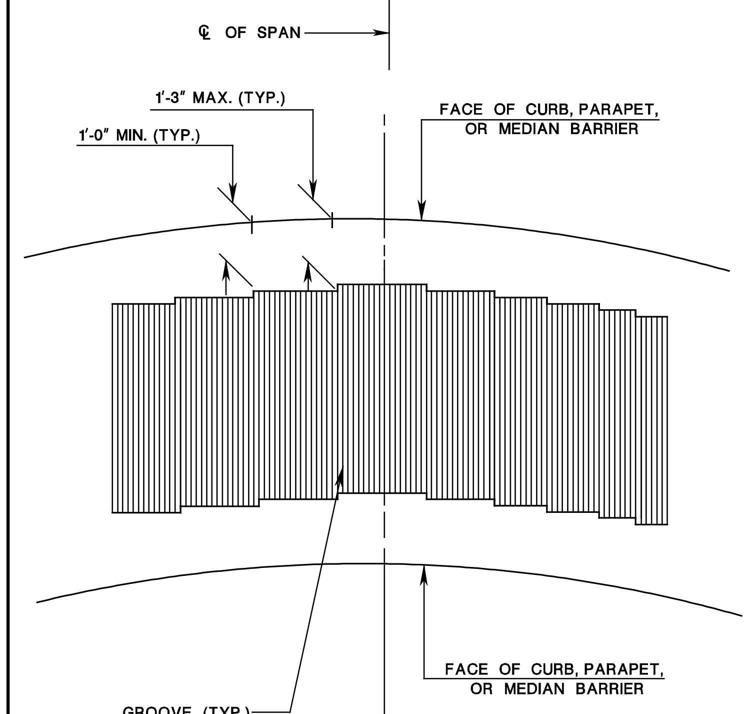
DETAILS OF PREFORMED ELASTOMERIC JOINT SEALER

BCD-507-5.7



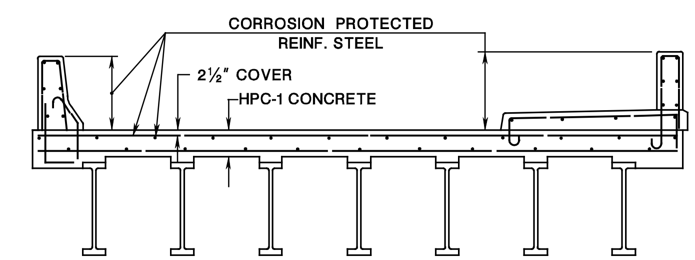
SAWCUT GROOVING FOR SKEWED BRIDGE DECKS

BCD-507-5.3

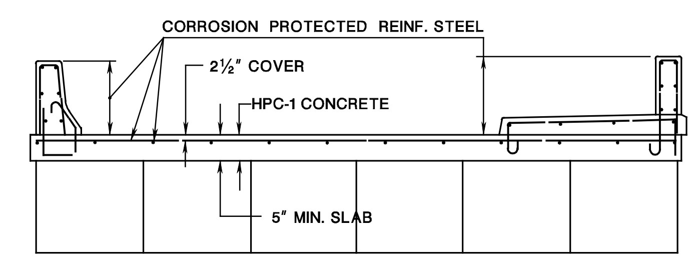


SAWCUT GROOVING FOR BRIDGE DECKS ON TIGHT CURVED ALIGNMENT

BCD-507-5.4



ONE COURSE CONCRETE DECK SLAB



CONCRETE OVERLAY SLAB ON PRESTRESSED CONCRETE VOIDED SLAB OR BOX BEAMS

NOTE:

ENSURE THAT ALL REINFORCEMENT STEEL IN PARAPETS AND SIDEWALKS IS CORROSION PROTECTED.

BRIDGE DECK CONSTRUCTION PROTECTIVE SYSTEMS (NEW BRIDGE DECKS)

BCD-507-5.6

CONCRETE BRIDGE DECKS

N.T.S.

BCD-507-5

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BDC16D-01-ORIGINAL SHEET

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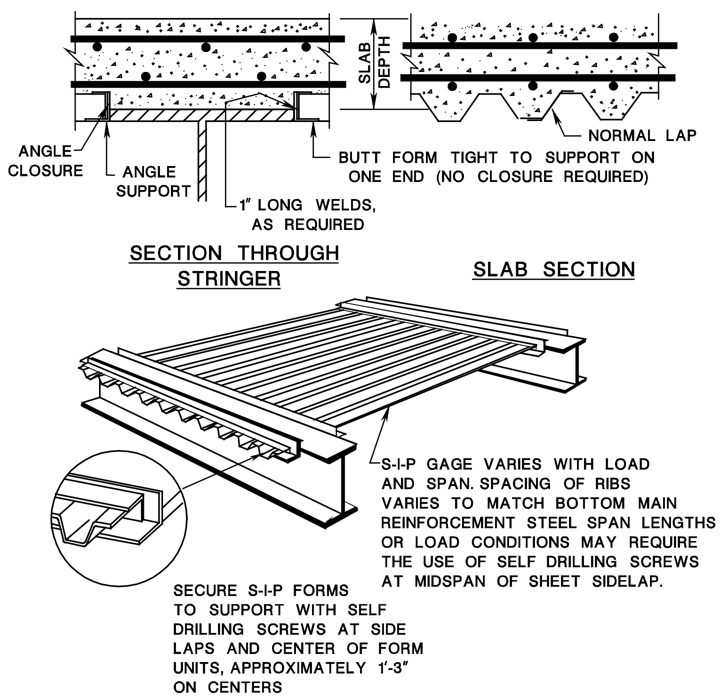
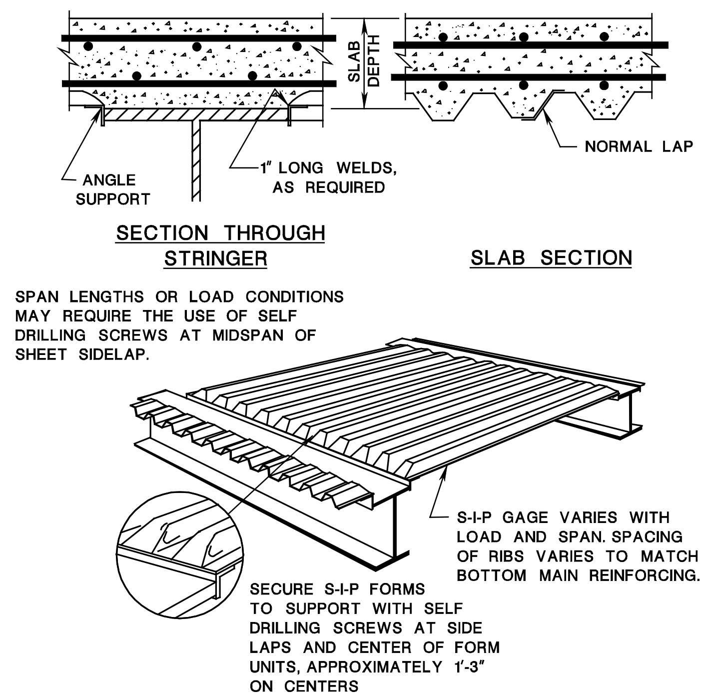


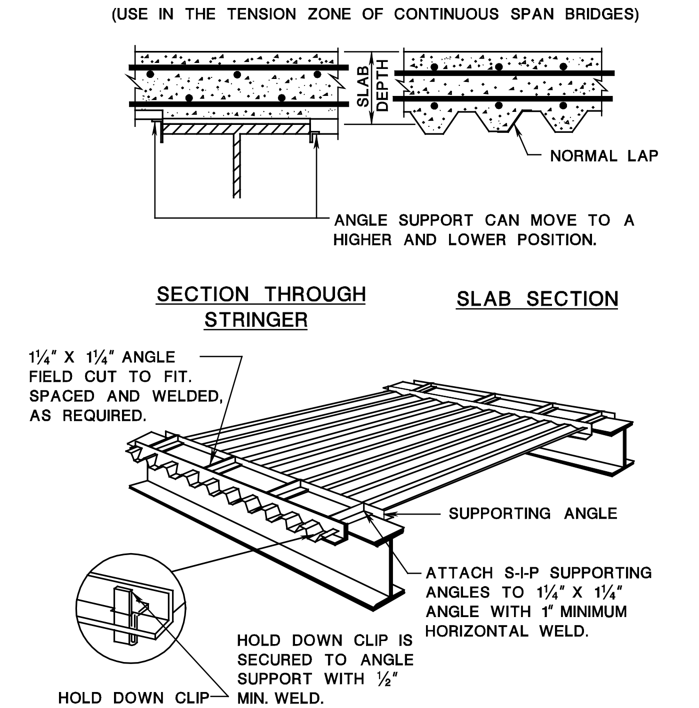
S–I–P FORMS BETWEEN STRINGERS
VARIABLE SLAB ELEVATION
NORMAL L SUPPORTS

BCD-507-6.1



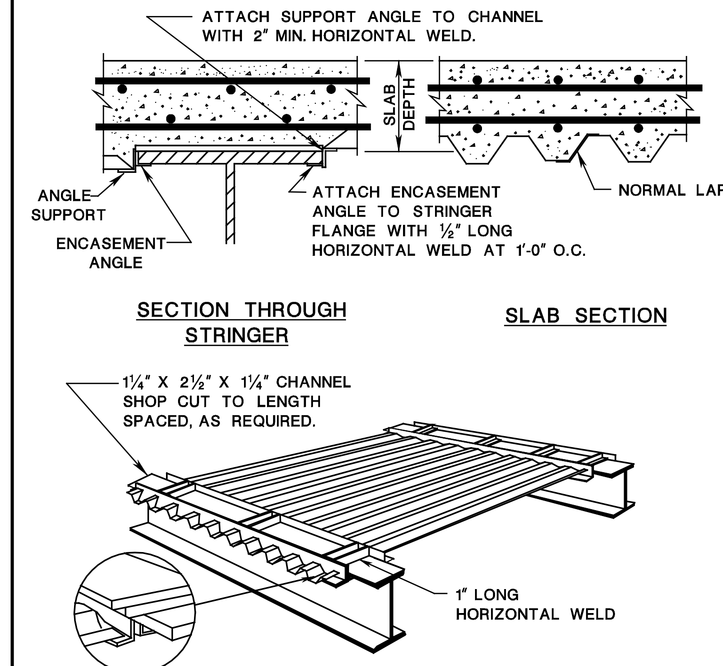
S–I–P FORMS BETWEEN STRINGERS
VARIABLE SLAB ELEVATION
INVERTED L SUPPORTS

BCD-507-6.2



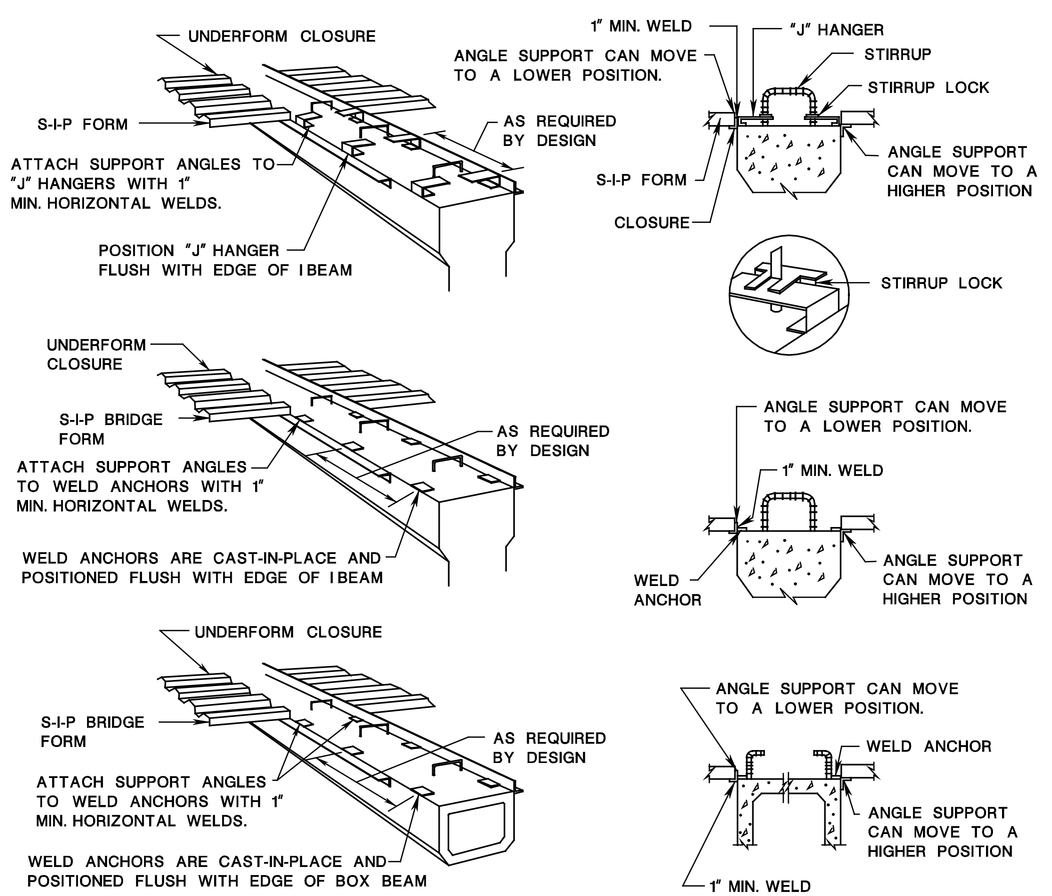
S–I–P FORMS
WITH ADJUSTABLE SUPPORTS
NOT WELDED TO STRINGERS

BCD-507-6.3



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

BCD-507-6.4

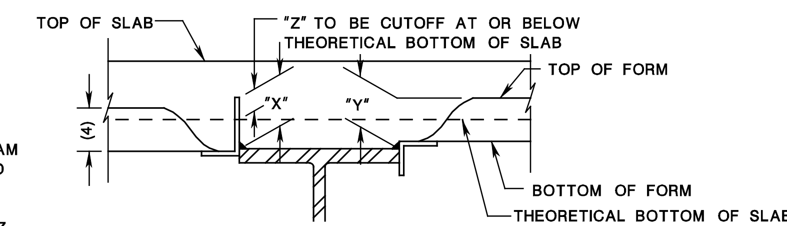


S–I–P FORMS BETWEEN PRECAST CONCRETE STRINGERS

BCD-507-6.5

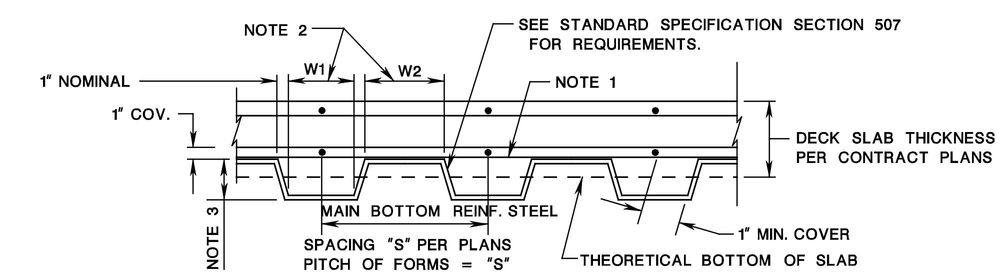
NOTE:

THE CONTRACTOR MUST SURVEY THE TOP OF BEAM ELEVATIONS AS REQUIRED TO ESTABLISH HAUNCH DIMENSIONS X AND Y, AND CUTOFF DIMENSION Z.

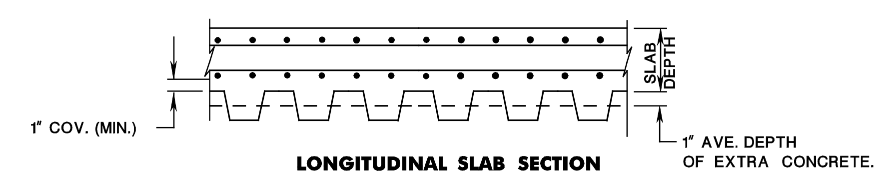


COMPRESSION FLANGE

THE ABOVE SKETCH AND NOTE IS TO BE APPEAR ON THE SHOP PLANS FOR STAY-IN-PLACE DECK FORMS SUBMITTED BY THE FABRICATOR. RETURN ANY SHOP DRAWING SUBMITTED WITHOUT THE SKETCH AND NOTE FOR REVISION AND RESUBMISSION.



GENERALLY, MATCH THE SPACING (PITCH) OF RIBS (FLUTES) WITH SPACING OF BOTTOM MAIN REINFORCEMENT STEEL AND PLACE BOTTOM MAIN REINFORCEMENT STEEL AT THE CENTER OF EACH RIB TO PROVIDE MAXIMUM CONCRETE COVER. OCCASIONALLY, THE DECK FORMS MUST BE DROPPED WHEN RIBS AND BOTTOM MAIN REINFORCEMENT STEEL CANNOT BE ALIGNED. REFER TO THE ALTERNATE BELOW FOR MORE DETAILS ON THIS CONDITION.



LONGITUDINAL SLAB SECTION

NOTES:

1. USE ½" 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.

BCD-507-6

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BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

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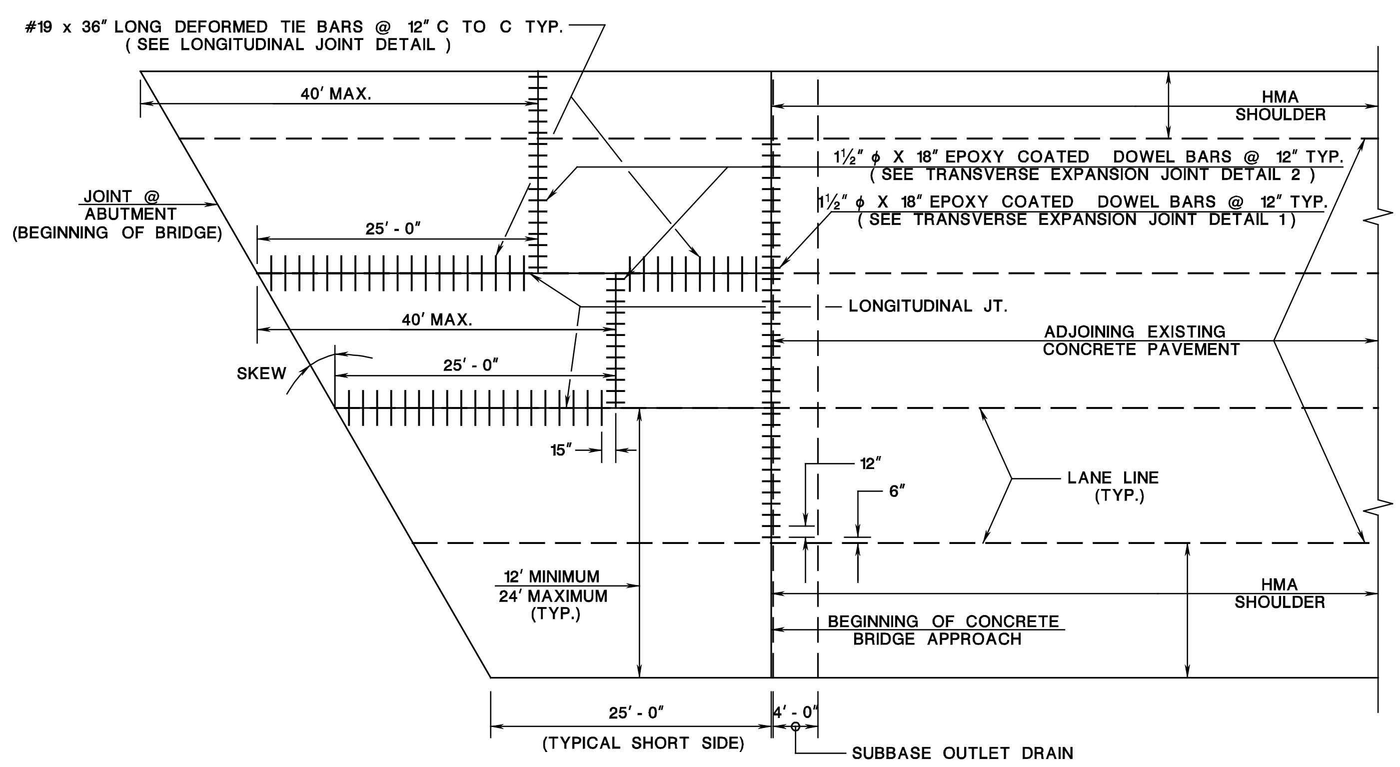
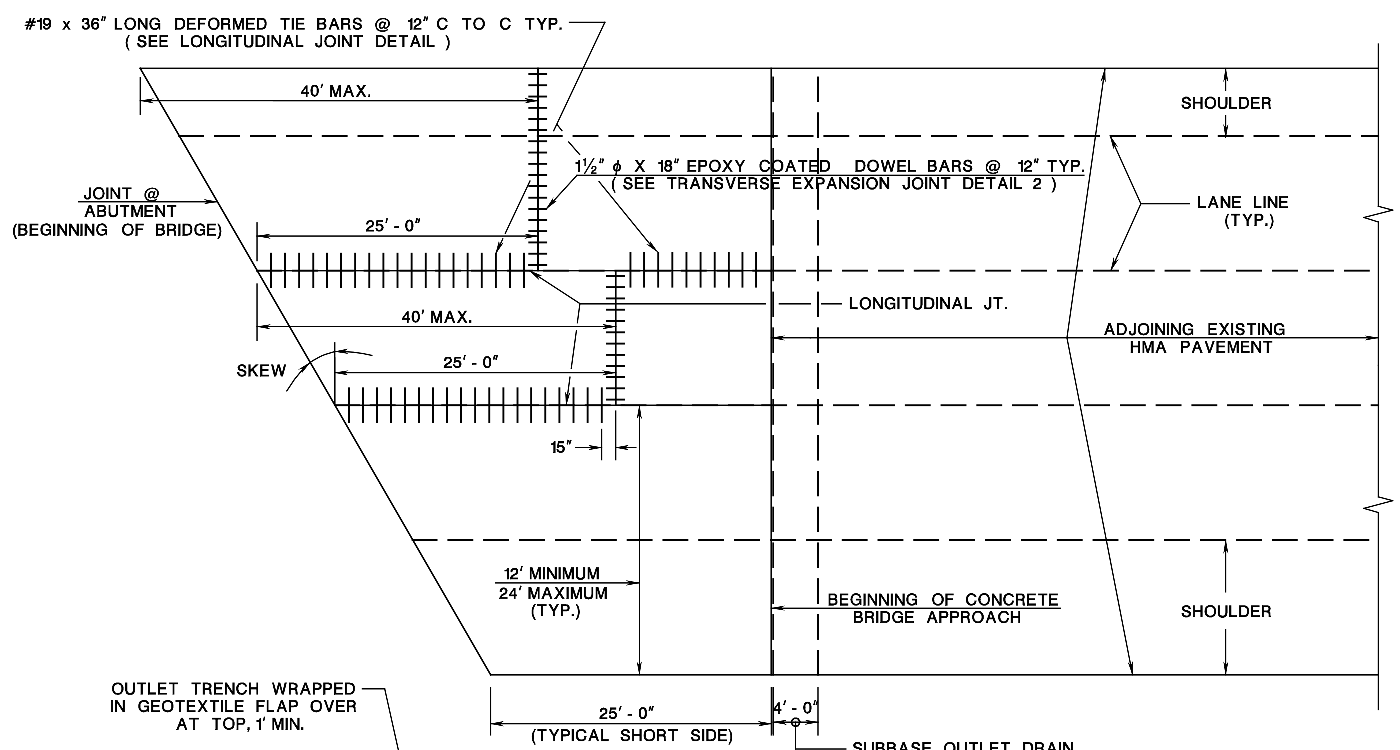
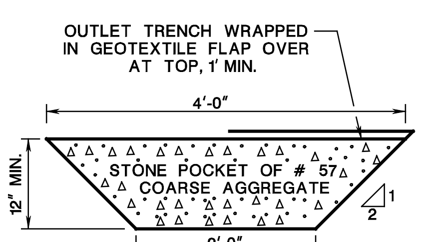


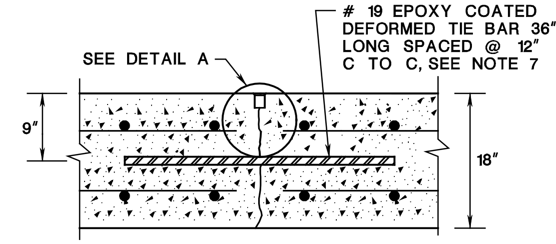
CONCRETE BRIDGE APPROACH ADJOINING CONCRETE PAVEMENT



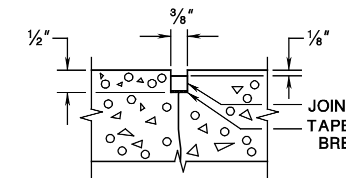
CONCRETE BRIDGE APPROACH ADJOINING HMA PAVEMENT



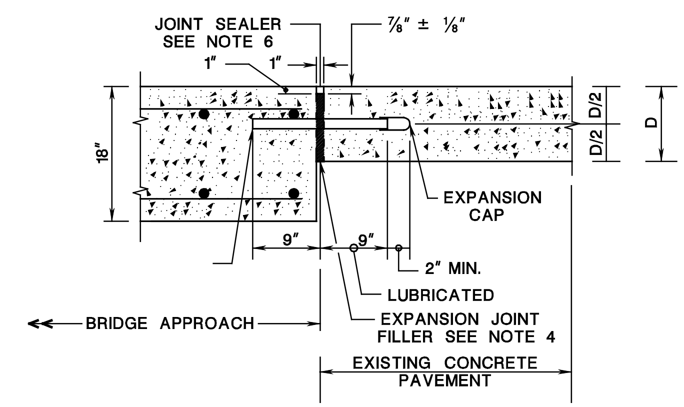
SUBBASE OUTLET DRAIN



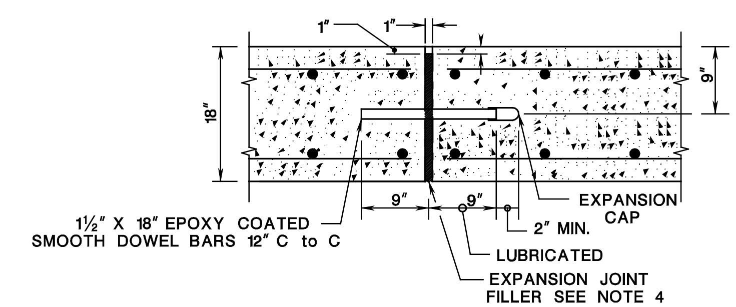
LONGITUDINAL JOINT



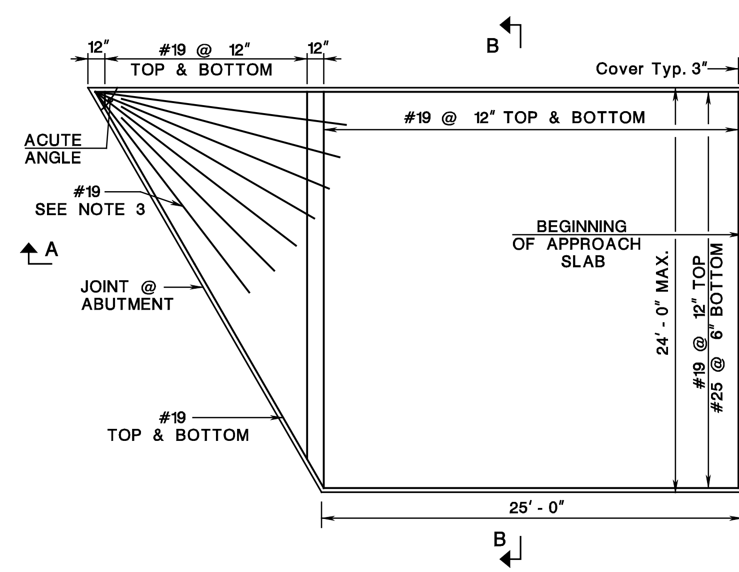
DETAIL A
HOT-POURED JOINT SEALER



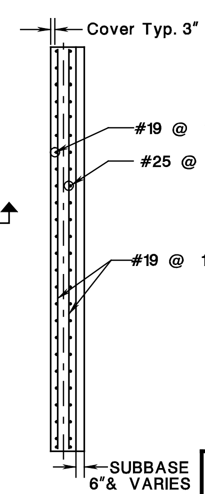
TRANSVERSE EXPANSION JOINT DETAIL 1



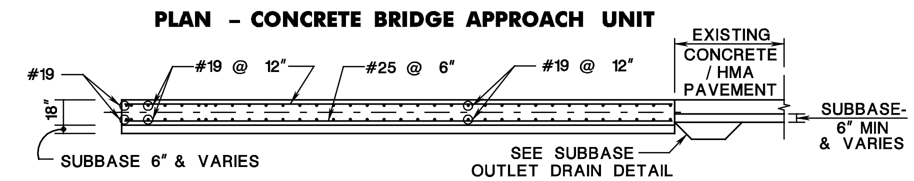
TRANSVERSE EXPANSION JOINT DETAIL 2



PLAN - CONCRETE BRIDGE APPROACH UNIT



SECTION B - B



SECTION A - A

NOTES:

1. CONSTRUCT LONGIDITUDINAL JOINTS IN THE CONCRETE BRIDGE APPROACH ALONG THE LANE AND SHOULDER LINES. THIS MAY REQUIRE USING COUPLERS FOR THE STAGE CONSTRUCTION.
2. ENSURE THAT ALL REINFORCEMENT STEEL IS CORROSION PROTECTED.
3. 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.
4. 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.
5. 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.
6. INSTALL TOP OF THE JOINT SEALING MATERIAL ¼" ± ⅛" BELOW THE SURFACE OF THE PAVEMENT.
7. PLACE DEFORMED BAR PERPENDICULAR TO AND CENTERED OVER THE LONGITUDINAL JOINT.
8. 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.
9. 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.

BCD-507-7

NEW JERSEY DEPARTMENT OF TRANSPORTATION
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BRIDGE CONSTRUCTION DETAILS

BCD-507-7.1

BDC16D-01-ORIGINAL SHEET

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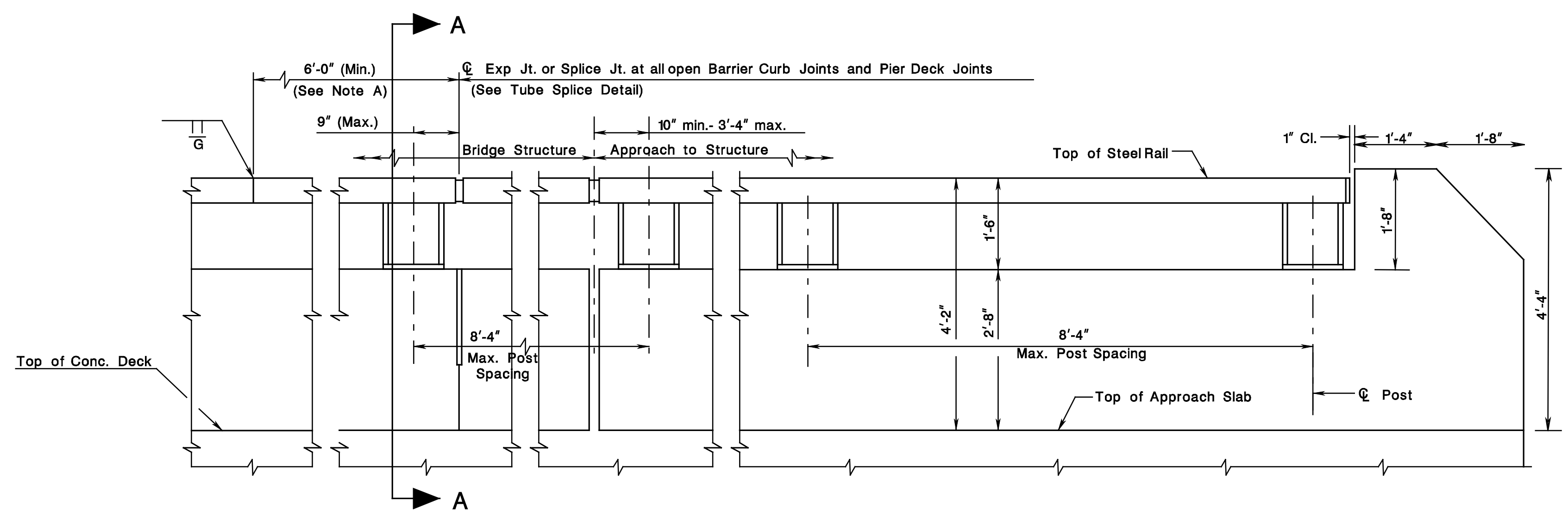
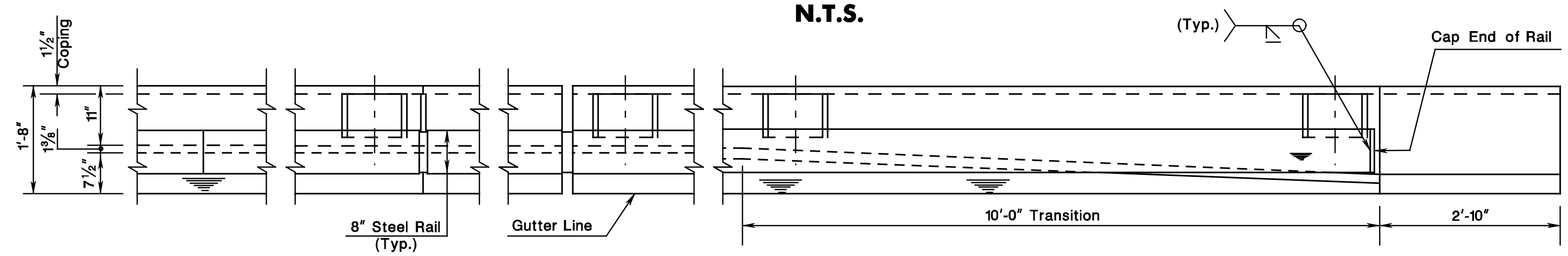


PARAPET ELEVATION VIEW

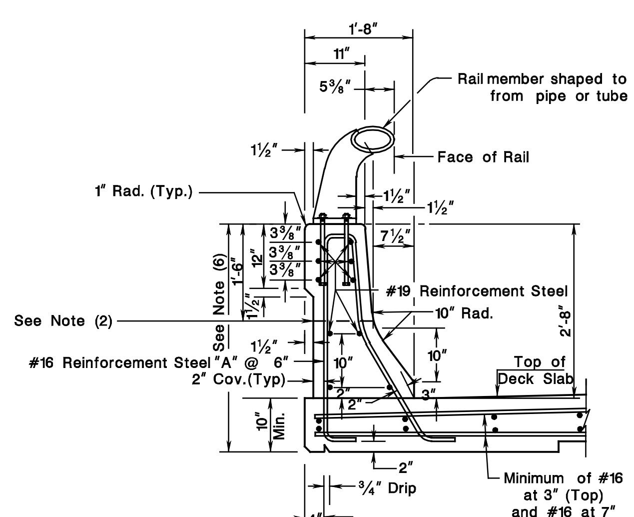
N.T.S.



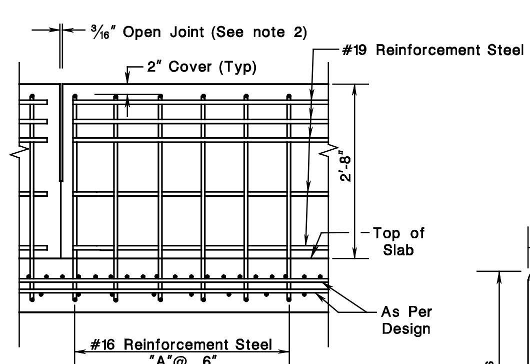
PARAPET PLAN VIEW

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.

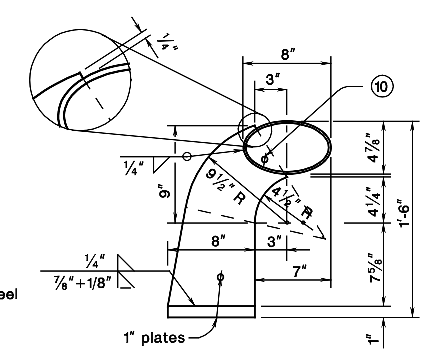


SECTION A–A



ELEVATION

(Showing Reinforcement)



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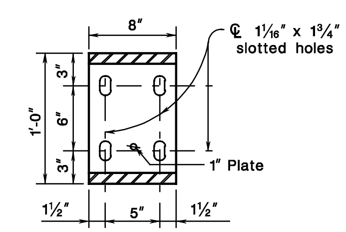
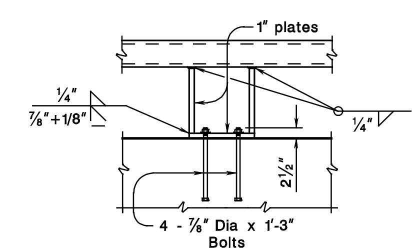
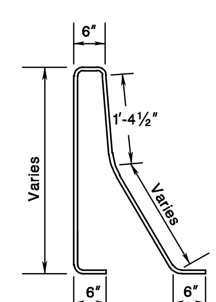


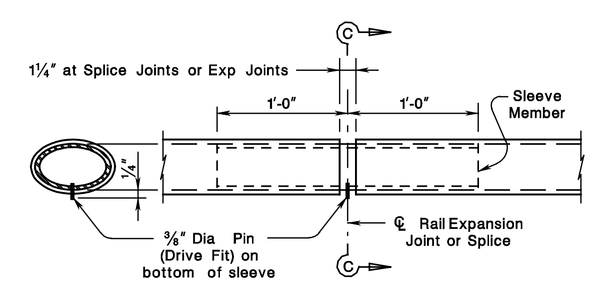
BASE PLATE DETAIL



POST ELEVATION



REINFORCEMENT STEEL "A" BENDING DETAIL



SECTION C–C AT SPLICE OR EXPANSION JOINTS

TUBE SPLICE DETAIL

NOTES:

1. Provide 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 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 ⅞" dia anchor bolts. ASTM F1554 bolts with one hex nut and one 2¼" O.D. washer (3/16" min. thickness) plus one 1¾" O.D. hardened steel washer (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 4⅞" 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"
	API-5LX52	0.224"
6⅝" O.D. x 0.188" Tube API-5LX52	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.

TEST LEVEL 5

BCD-507-8.1

BCD-507-8

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

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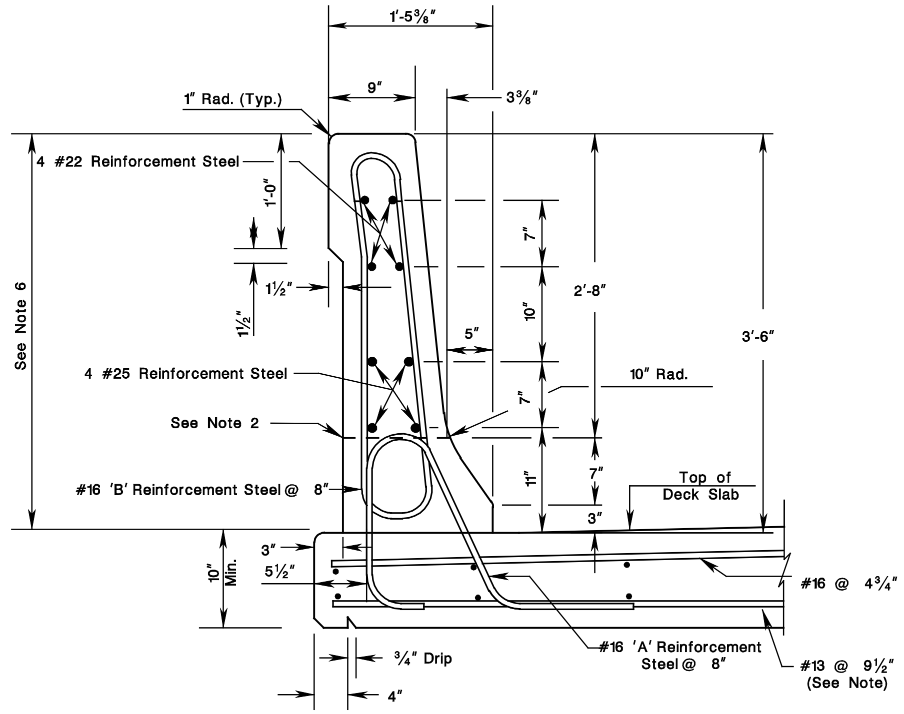
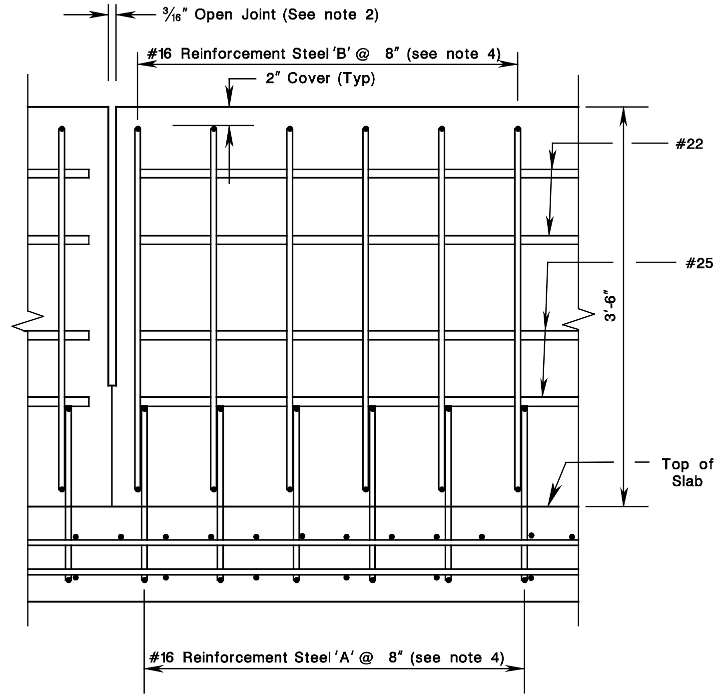


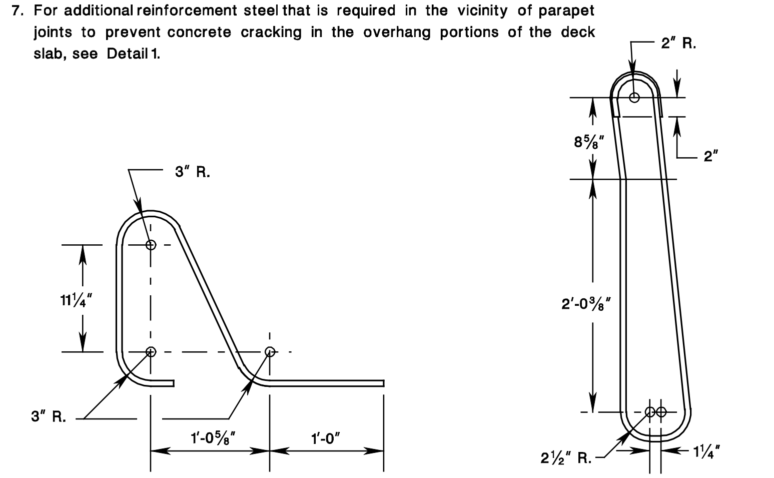
3'–6" HIGH F–SHAPE PARAPET



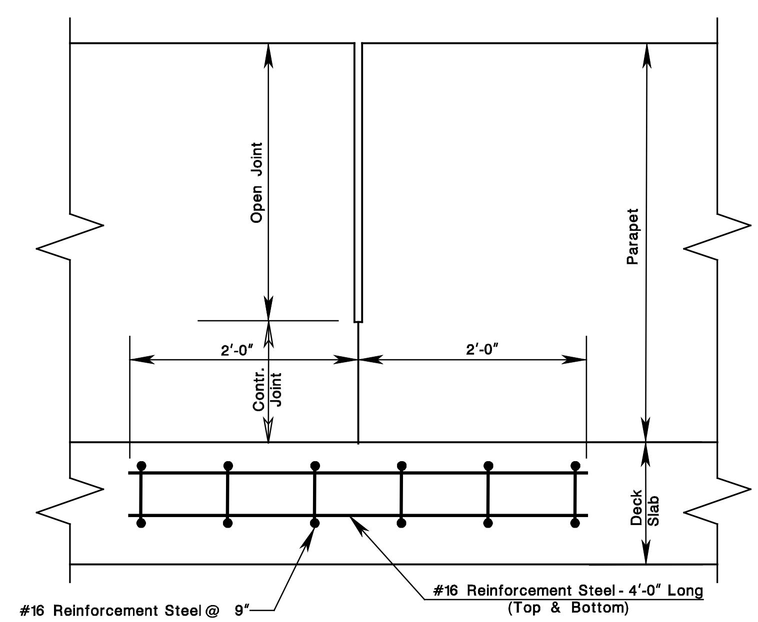
ELEVATION
(Showing Reinforcement steel)

NOTES:

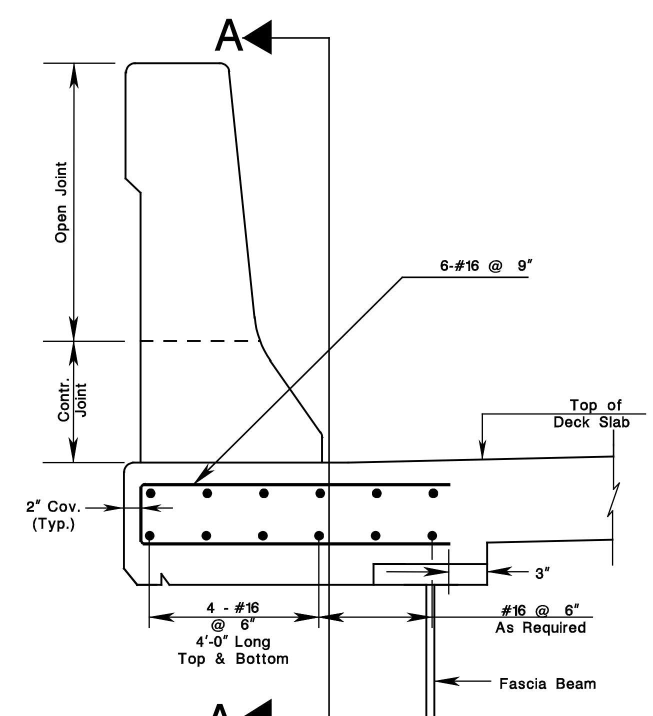
1. Provide 3/16" open deflection joint in parapets at intervals not exceeding 20'-0" and contraction joints at the midpoint between the open joints.
2. Stop 3/16" open joint at the line indicated and provide a contraction joint below that line.
3. Provide full depth joints at location of transverse deck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

TEST LEVEL 5
BCD-507-9.1

3'–6" HIGH F–SHAPE PARAPET DETAILS

N.T.S.

BCD-507-9

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BRIDGE CONSTRUCTION DETAILS

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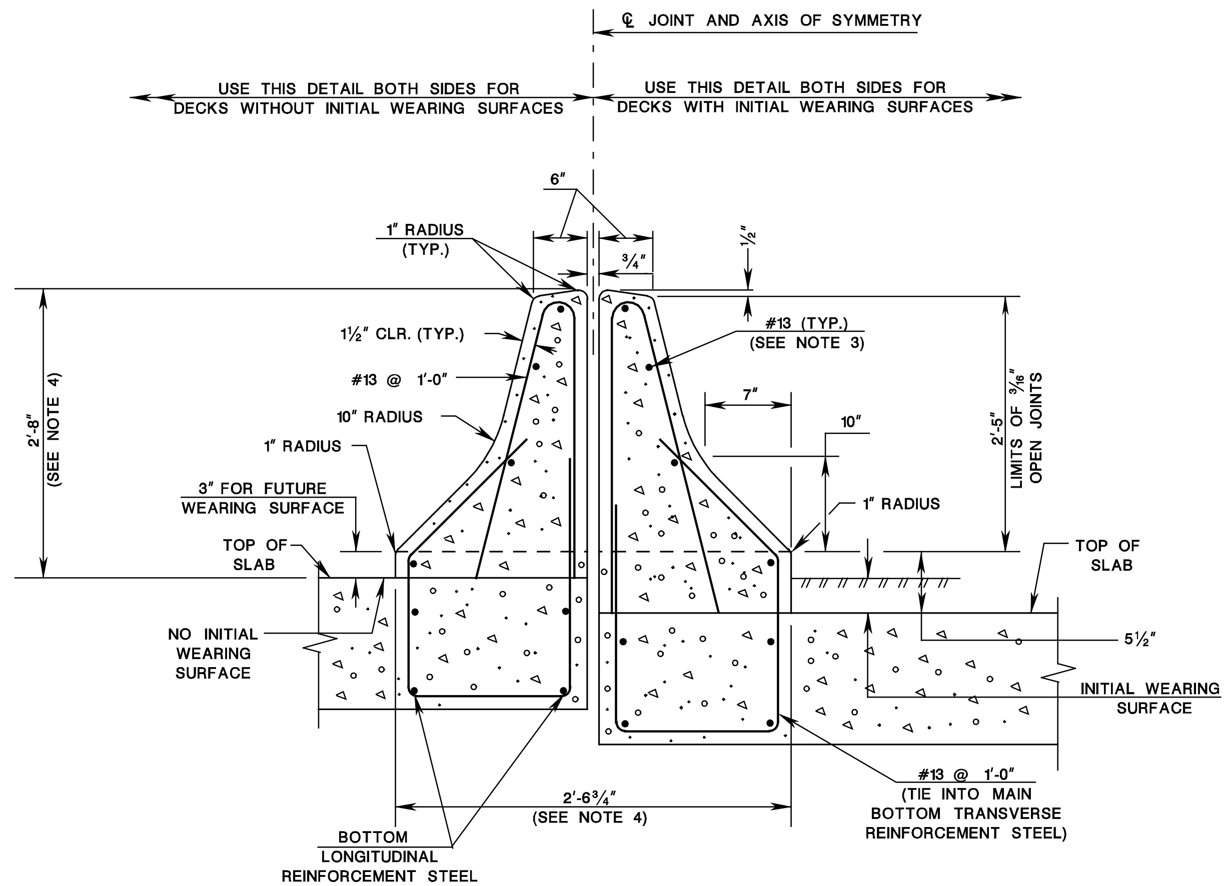
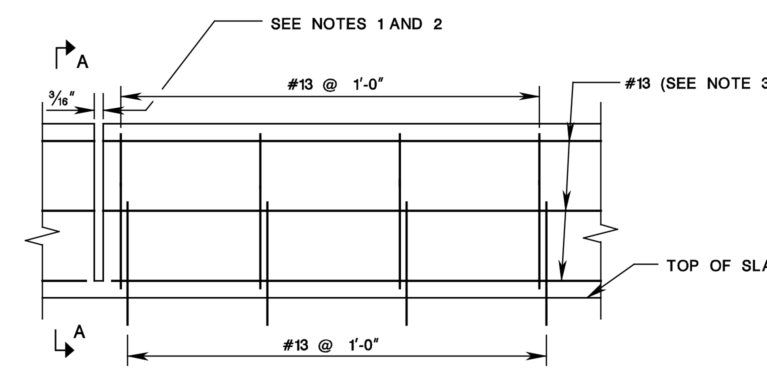


TYPICAL SECTION

NOTES:

1. PROVIDE 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.)



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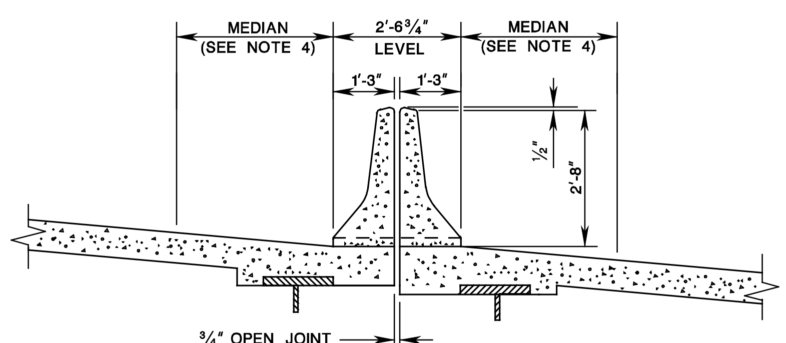
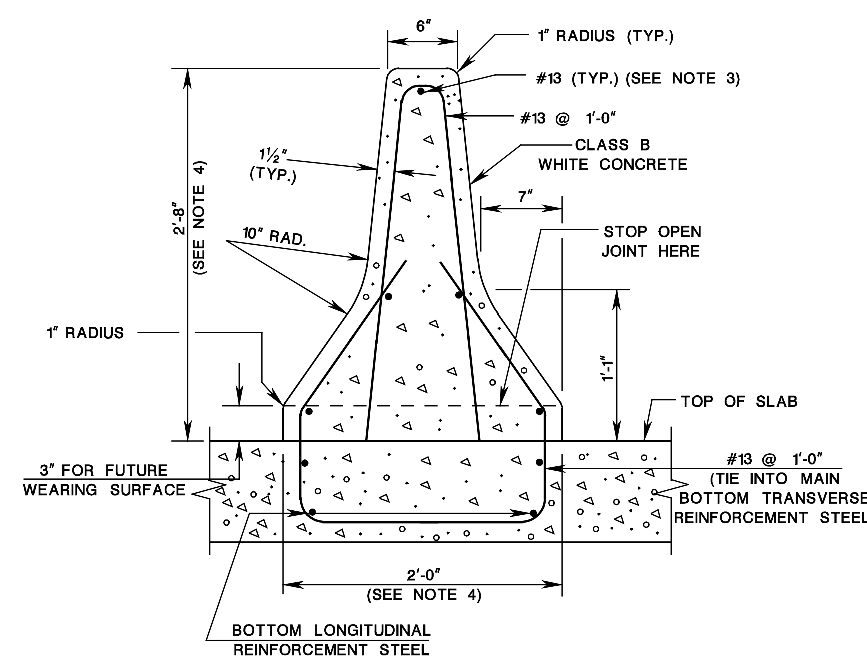


CROSS–SECTION

2′–8″ HIGH SPLIT MEDIAN BARRIER ON BRIDGE



SECTION A–A

2′–8″ HIGH MEDIAN BARRIER ON BRIDGE

BRIDGE MEDIAN BARRIER

N.T.S.

BCD-507-10

NEW JERSEY DEPARTMENT OF TRANSPORTATION
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BRIDGE CONSTRUCTION DETAILS

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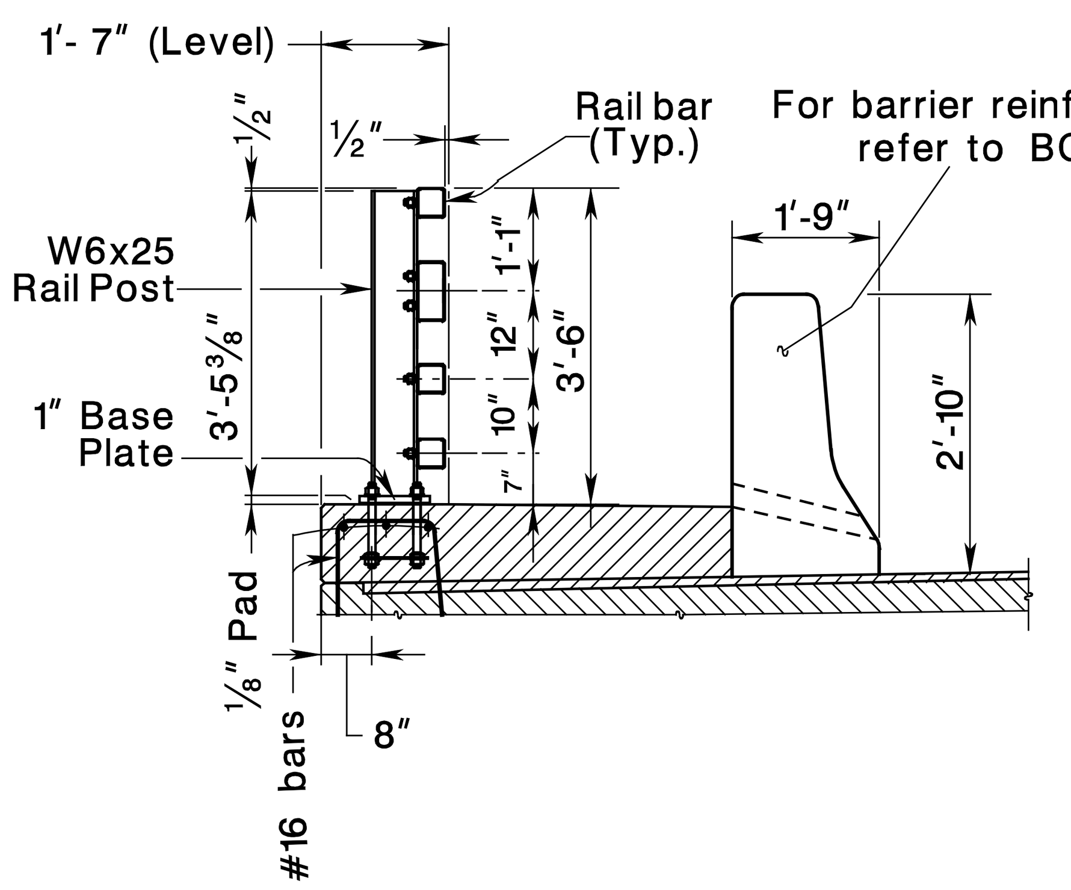
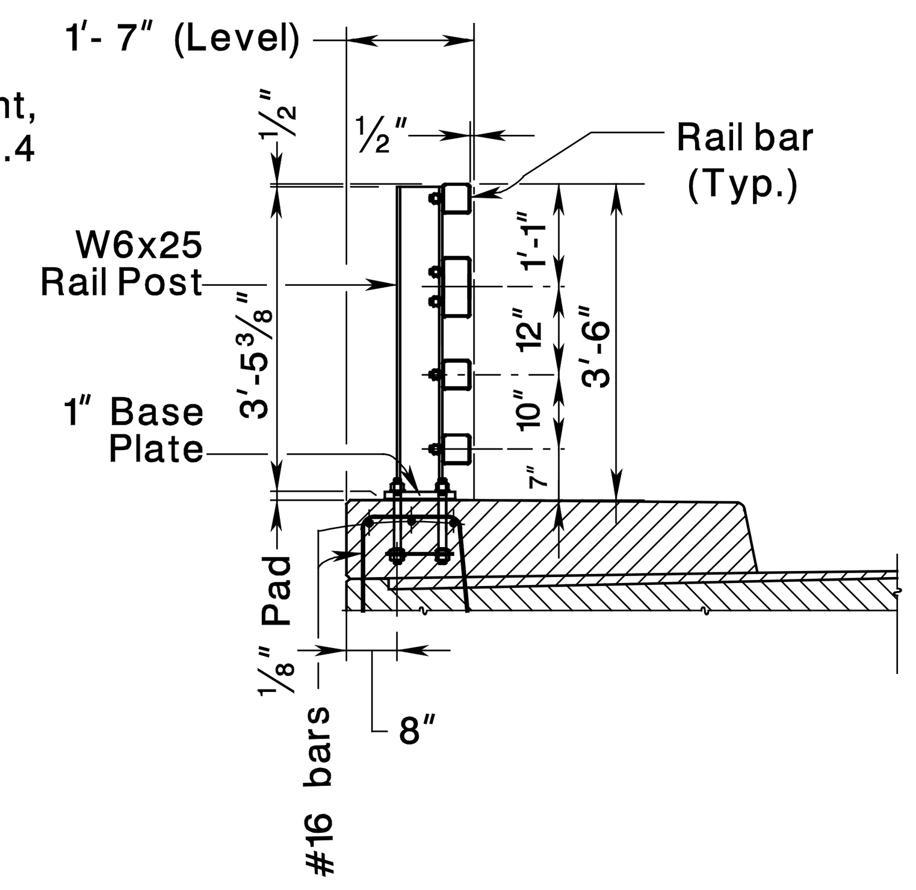


TYPICAL SECTION

(ON EXPRESSWAYS FOR SPEEDS IN EXCESS OF 45 MPH)



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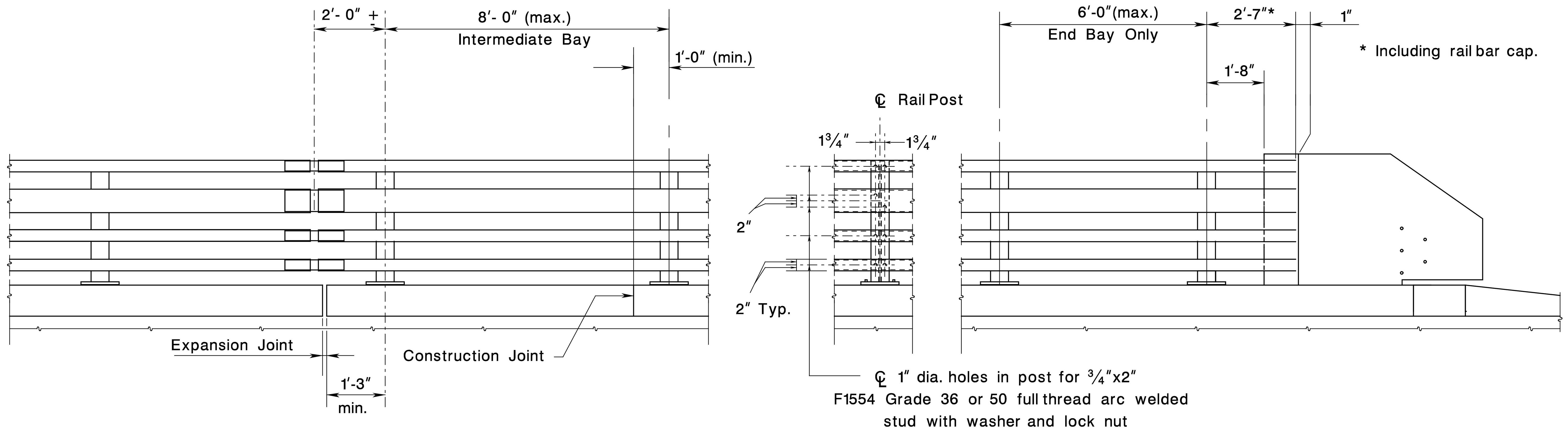
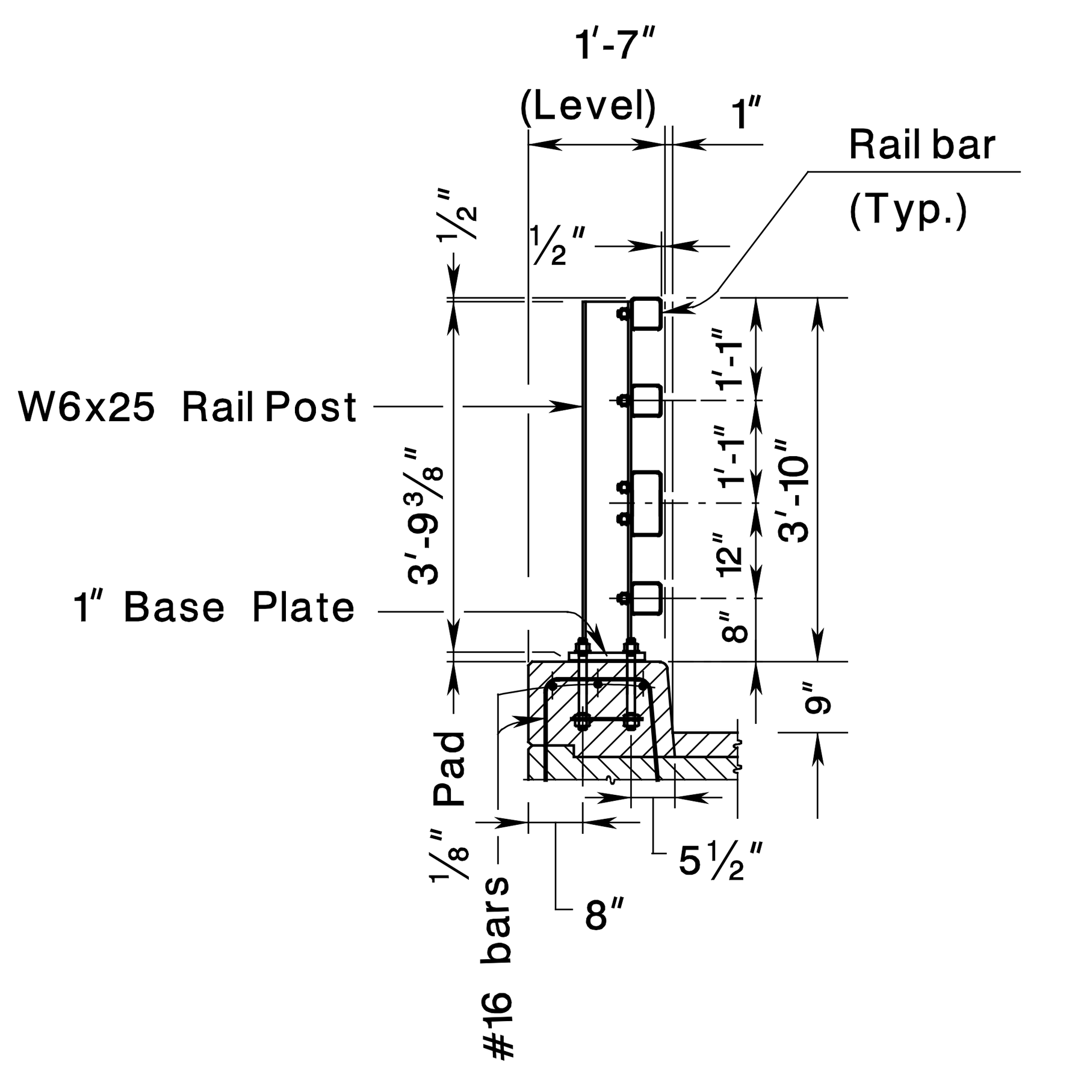


ELEVATION

Vehicular Traffic / Pedestrian Traffic Configuration

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

TEST LEVEL 4
BCD-507-11.1



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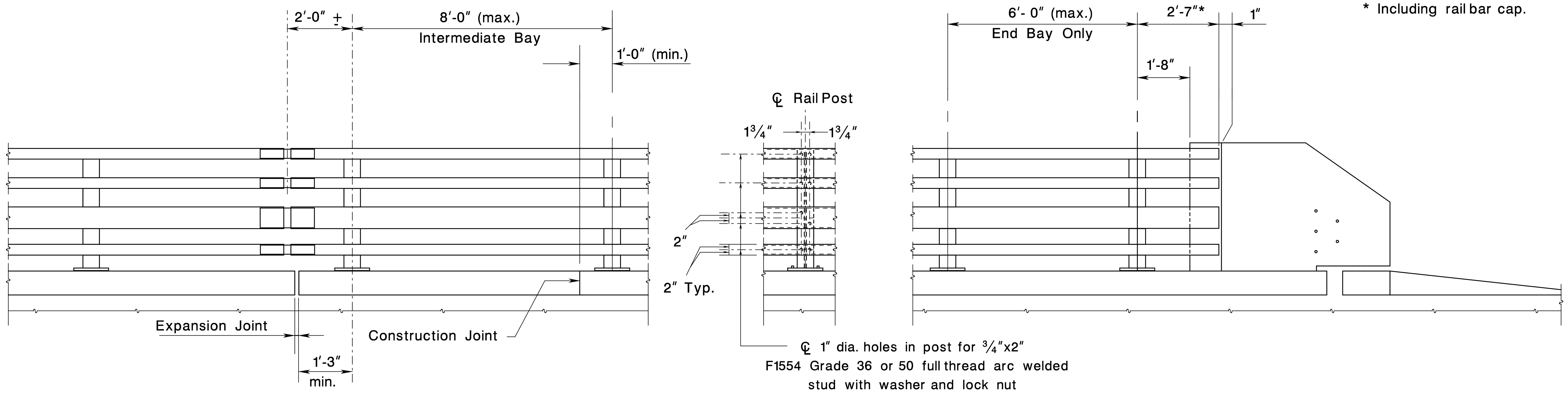

ELEVATION

Vehicular Traffic / Bicycle Traffic Configuration

TEST LEVEL 4
BCD-507-11.2

STEEL 4 – BAR BRIDGE RAILING, TYPICAL SECTION AND ELEVATIONS

N.T.S.

BCD-507-11

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BRIDGE CONSTRUCTION DETAILS

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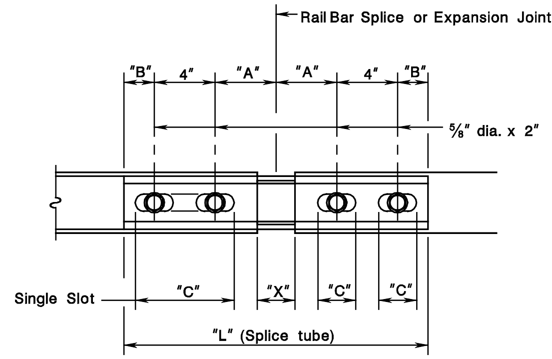


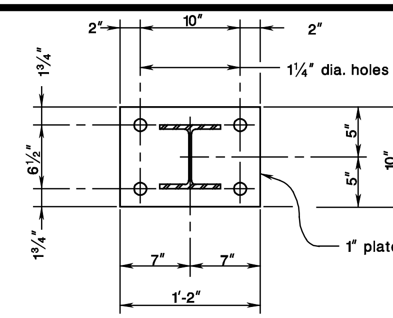
RAIL BAR SPLICE AND EXPANSION JOINT DETAIL

(Bottom View)

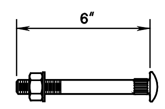
SPLICE TUBE DIMENSIONS		
	TS 8" X 4"	TS 4" X 4"
Top & Bot. Plates	2½" X⅜" "L"	2⅝" X⅜" "L"
Side Plates	6¾" X⅜" "L"	2⅞" X⅜" "L"

SPLICE & EXPANSION JOINT TABLE					
"T"	"A"	"B"	"C"	"L"	"X"
Splice	4"	2"	--	1'-8"	¾"
≤ 4"	4"	2"	2½"	1'-8"	2½"
> 4" ≤ 6½"	5½"	2½"	3½"	2'-0"	3¾"
> 6½" ≤ 9"	6½"	3½"	9" *	2'-4"	5"
> 9" ≤ 13"	8½"	4½"	11" *	2'-10"	7"

T = Total Movement * = Single Slot



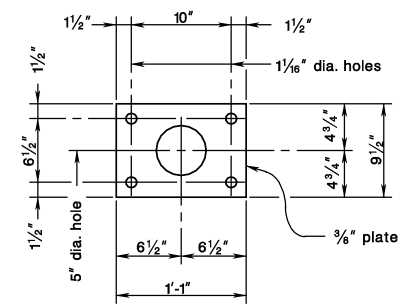
POST AND BASE PLATE PLAN



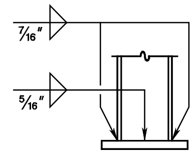
RIBBED NECK BOLT

(with washer & lock nut)

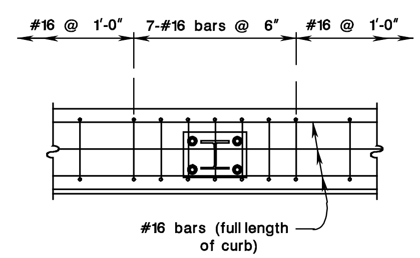
(See Note No. 9)



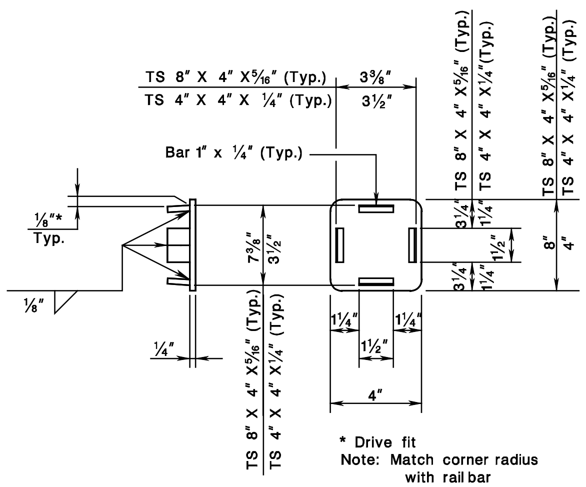
ANCHOR PLATE PLAN



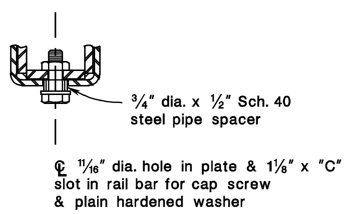
BASE WELD DETAIL



CURB REINFORCEMENT STEEL PLAN

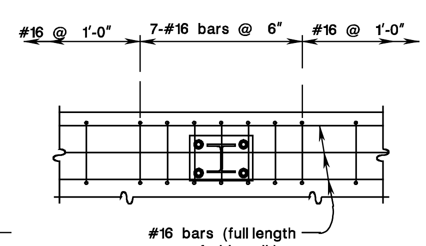


RAIL BAR CAP

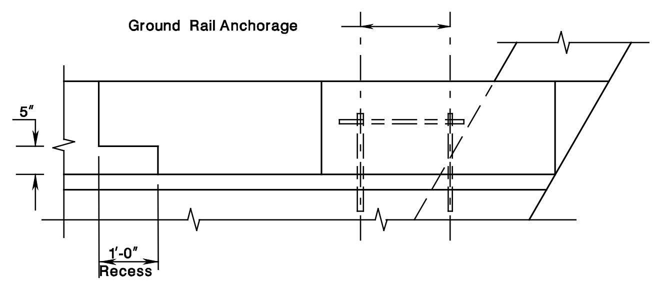


EXPANSION JOINT SECTION

For details not shown, see "Rail Bar Splice Section"

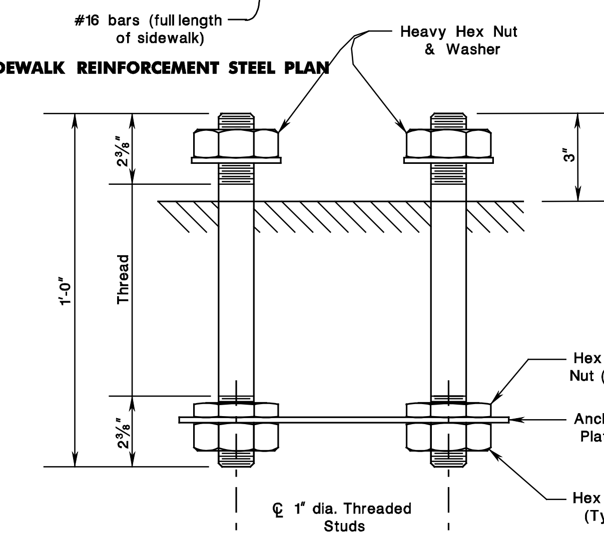


SIDEWALK REINFORCEMENT STEEL PLAN



TRANSITION BARRIER PLAN

(Typical all transition barrier types)



RAIL POST ANCHORAGE

NOTES:

1. Conform all work and materials to the provisions of the Standard Specifications for Road and Bridge Construction.

2. Fabricate and inspect the post-to-base welds in accordance with the latest edition of the AWS D1.5, Bridge Welding Code.

3. Ensure that all exposed cut or sheared edges are rounded and free of burrs.

4. Set rail posts normal to grade unless otherwise shown.

5. Attach lengths of rail bar to a minimum of two rail posts and to at least four posts whenever possible.

6. Provide rail bar expansion joints in any rail bay spanning a superstructure expansion joint. Ensure that expansion joint width is "X" at 45° F and adjusted in the field by the RE. Refer to detail and table for dimension "X".

7. Galvanize all parts after fabrication in accordance with ASTM A123, except that hardware to meet the requirements of either ASTM A153 or ASTM B695, Class 50, Type 1. blast- clean parts except hardware prior to galvanizing in accordance with SSPC - SP6.

8. Set anchor bolts with a template and place securely in their final position prior to the placement of the embedding concrete. Install post anchor assemblies to within ³⁄₁₆ inch of theoretical horizontal and vertical location. Ensure that post bearing areas are dressed smooth and true to grade. Prior to post erection, finish each rail post location to the theoretical elevation determined from profile grade, cross slope and curb height until it is within ³⁄₁₆ inch of theoretical elevation, as measured at the top of concrete. Use preformed pads to adjust the rail posts for height and alignment. Ensure that the preformed pads are neoprene meeting the elastomer properties for Grade 0 or Grade 2 of AASHTO M 251. Ensure that the number of preformed pads supplied is 10% in excess of the theoretical minimum number required. Tight nuts securing the post base plate to a snug fit and given an additional ⅛ turn. After erection of the railing, the contractor must clean the whole assembly, to present a neat and uniform appearance.

9. Attach rail bars alternatively to posts using ⅝" dia. - ASTM F1554, Grade 36 or 50 bolts (5/8" dia. - ASTM A307 bolts may be substituted) inserted through the face of the rail bar. Ensure that bolts are round or dome head and may be rib neck, slotted, wrench head or tension control (TC or twist-off). Use ¹⁄₁₆" larger holes than the diameter of the bolt in posts. Drill holes in rail bars to size as follows:

   Slotted, wrench head or TC bolts --------¹⁄₁₆" larger than bolt diameter
   Rib neck bolts ----- size appropriate to accommodate an interference fit

   Use 6" length bolts for fastening the rail bars to the posts and include a flat washer under the nut.

10. Field - drill holes in rail bars and coat with an approved zinc-rich paint prior to erection.

11. Tight bolts in expansion joints only to a point that will allow rail movement.

12. If there is a conflict between these Standard Details and the Working Drawings, the Contractor must notify the RE immediately.

13. Ensure that ⅛" pads under post base plate are fabric pads conforming to the Standard Specifications.

MATERIALS:

Rail bars ---------------------------------- ASTM A500, Grade B
Rail posts --------------------------------- ASTM A709, Grade 50
All other shapes & plates ----------------- ASTM A709, Grade 36
Anchor bolts ---- ASTM F1554, Grade 55

STEEL 4–BAR BRIDGE RAILING, MISCELLANEOUS DETAILS

N.T.S.

BCD-507-12

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

TEST LEVEL 4
BCD-507-12.1

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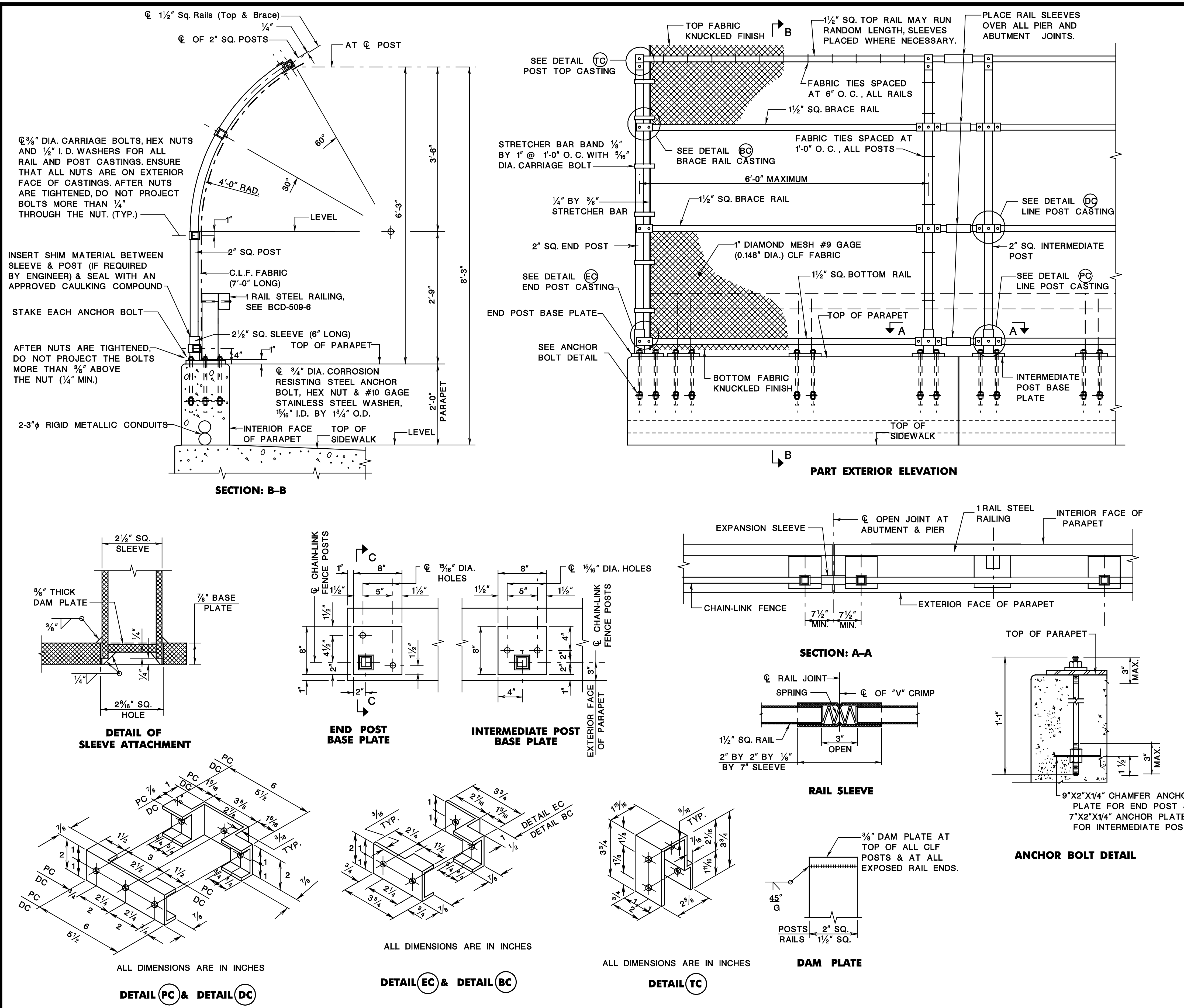


NOTES:

1. 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.
2. CONFORM ALL WELDING TO AWS D1.1 FOR STEEL AND AWS D1.2 FOR ALUMINUM.
3. 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.
4. IF TYPE III FENCE IS USED, PROVIDE 1/8" THICK NEOPRENE PAD BETWEEN BASE PLATE AND TOP OF CONCRETE PARAPET.
5. CONFORM STAINLESS STEEL WASHER TO ASTM F436, TYPE 1 AND GALVANIZED.
6. 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.
7. USE 2 ½" SQUARE AND 6" LONG POST SLEEVES. USE 7/32" THICK WALL FOR ALUMINUM AND 3/16" FOR STEEL.
8. POSTS SPACINGS NOT TO EXCEED 6'-0".
9. USE 2" SQ., 1/4" THICK POSTS, SET PLUMB.
10. USE SHIM MATERIAL WHERE NECESSARY FOR POST ALIGNMENT.
11. USE 1 1/2" SQ., 1/8" THICK, HORIZONTAL RAILS (TOP, BOTTOM, AND BRACE).
12. WELD DAM PLATES (3/8" THICK) TO CLOSE ALL EXPOSED ENDS OF RAIL TUBES AND TOP OF CHAIN-LINK FENCE POSTS.
13. INSTALL BRACE RAILS THROUGHOUT THE LENGTH OF THE FENCE.
14. 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.
15. USE #9 GAGE (0.148" DIA.) FABRIC TIES. A MINIMUM OF ONE (1) COMPLETE TURN IS REQUIRED AT ENDS OF ALL TIES.
16. USE #9 GAGE (0.148" DIA.) CLF FABRIC, HAVING A 1" DIAMOND MESH, TOP AND BOTTOM SELVAGE IS KNUCKLED. CONTINUE FABRIC ACROSS ALL JOINTS.
17. ENSURE THAT STRETCHER BAR BAND FASTENERS ARE 5/16 " DIA. BY 1 1/4 " CARRIAGE BOLTS.
18. STAKE EACH ANCHOR BOLT AT ONE (1) POINT ONLY.
19. ENSURE THAT ALL HOLES IN CASTINGS ARE 7/16 " DIA. DESIGN ALL CASTINGS TO ACCOMMODATE RAILS AT GRADES, AS REQUIRED.
20. 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.
21. 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.
22. PROVIDE WING AT BOTH ENDS OF PARAPET / FENCE AS SHOWN ON BCD-509-3.

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

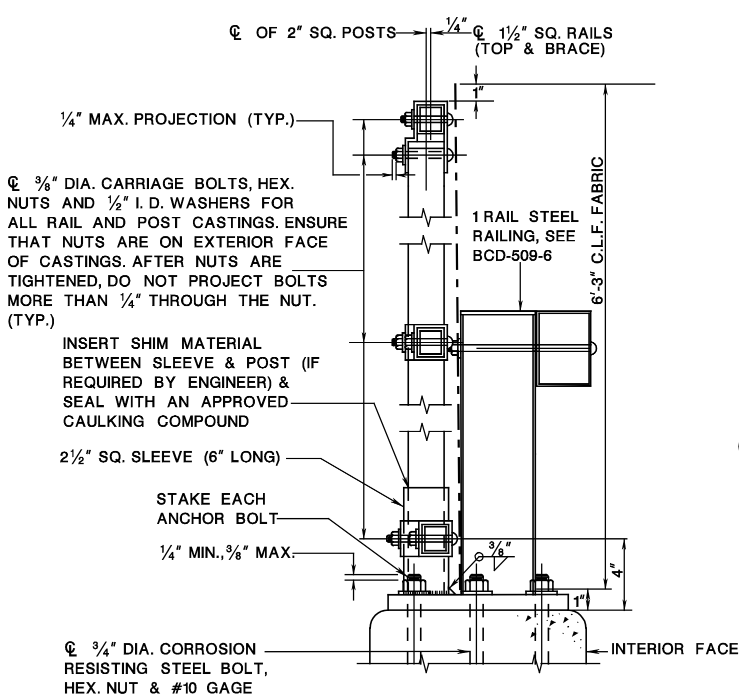
N.T.S.

BCD-509-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

TEST LEVEL 4
BCD-509-1.1



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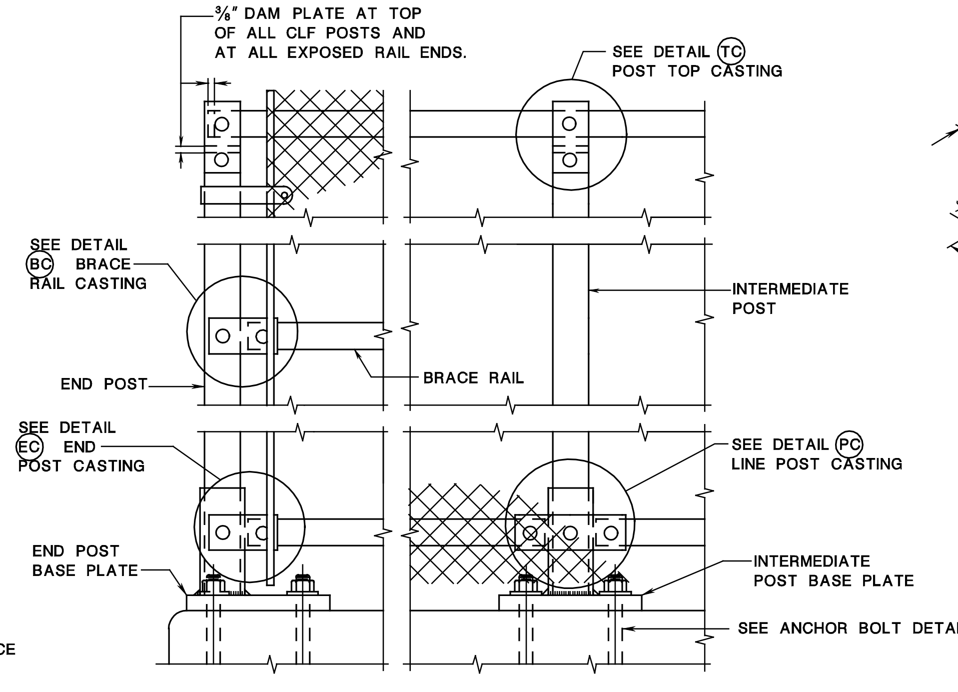
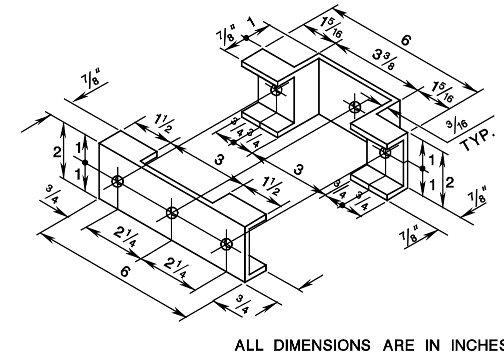
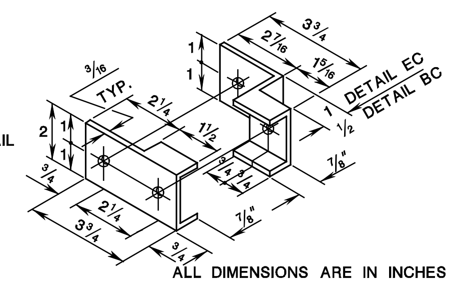


PART INTERIOR ELEVATION OF CHAIN–LINK FENCE

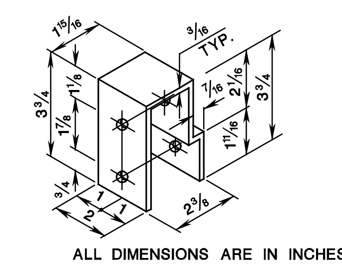
(RAILING NOT SHOWN FOR CLARITY)



DETAIL PC



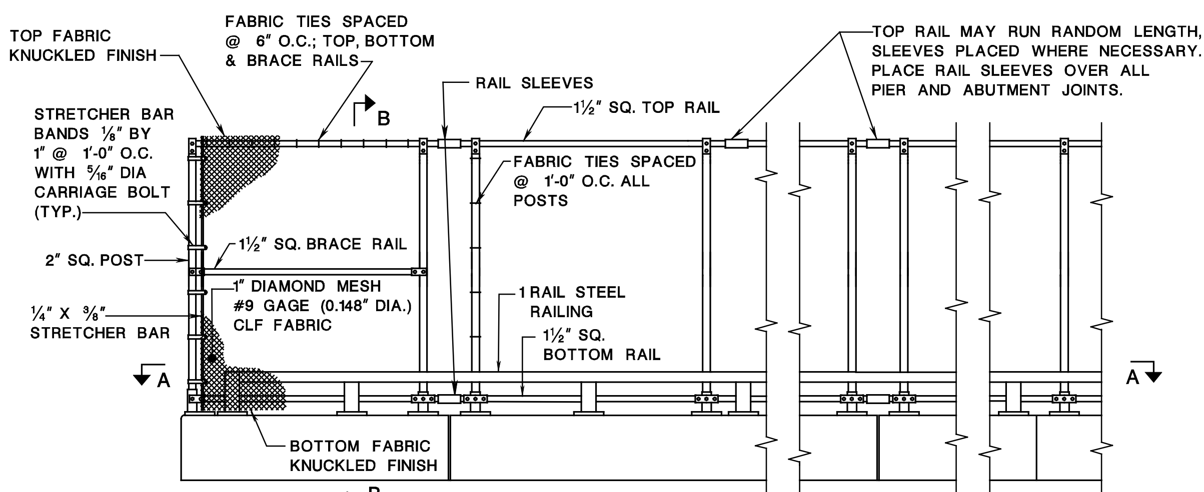
DETAIL EC & DETAIL BC



DETAIL TC

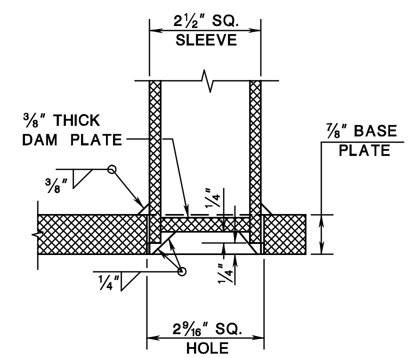
NOTES:

1. 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.
2. CONFORM ALL WELDING TO AWS D1.1 FOR STEEL AND AWS D1.2 FOR ALUMINUM.
3. IF ALUMINUM CASTINGS ARE USED WITH TYPE I, TYPE II OR TYPE IV FENCE, USE PVC COATED. MATCH COLOR TO THE REST OF THE FENCE COMPONENTS.
4. IF TYPE III FENCE IS USED, PROVIDE 1/8" THICK NEOPRENE PAD BETWEEN BASE PLATE AND TOP OF CONCRETE PARAPET.
5. CONFORM STAINLESS STEEL WASHER TO ASTM F436, TYPE 1 AND GALVANIZED.
6. 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.
7. USE 2 ½" SQUARE AND 6" LONG POST SLEEVES. USE 7/32" THICK WALL FOR ALUMINUM AND 3/16" FOR STEEL.
8. POSTS SPACINGS NOT TO EXCEED 6'-0".
9. USE 2" SQ., 1/4" THICK POSTS, SET PLUMB.
10. USE SHIM MATERIAL WHERE NECESSARY FOR POST ALIGNMENT.
11. USE 1 1/2" SQ., 1/8" THICK, HORIZONTAL RAILS (TOP, BOTTOM, AND BRACE).
12. WELD DAM PLATES (3/8" THICK) TO CLOSE ALL EXPOSED ENDS OF RAIL TUBES AND TOP OF CHAIN-LINK FENCE POSTS.
13. INSTALL BRACE RAILS AT END UNITS WHERE CLF FABRIC IS TENSIONED.
14. 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.
15. USE #9 GAGE (0.148" DIA.) FABRIC TIES. A MINIMUM OF ONE (1) COMPLETE TURN IS REQUIRED AT ENDS OF ALL TIES.
16. USE #9 GAGE (0.148" DIA.) CLF FABRIC, HAVING A 1" DIAMOND MESH, TOP AND BOTTOM SELVAGE IS KNUCKLED. CONTINUE FABRIC ACROSS ALL JOINTS.
17. ENSURE THAT STRETCHER BAR BAND FASTENERS ARE 5/16 " DIA. BY 1 1/4 " CARRIAGE BOLTS.
18. STAKE EACH ANCHOR BOLT AT ONE (1) POINT ONLY.
19. ENSURE THAT ALL HOLES IN CASTINGS ARE 7/16" DIA. DESIGN ALL CASTINGS TO ACCOMMODATE RAILS AT GRADES, AS REQUIRED.
20. 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.
21. 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.
22. PROVIDE WING AT BOTH ENDS OF PARAPET / FENCE AS SHOWN ON BCD-509-3.

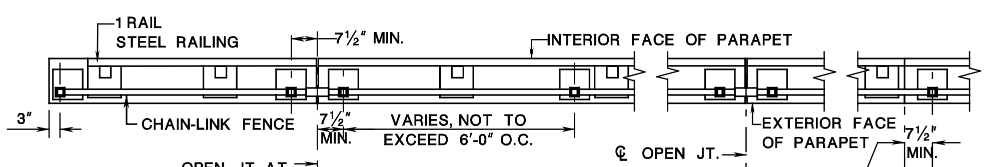


INTERIOR ELEVATION – PARAPET AND CHAIN–LINK FENCE

Scale: ½"=1'-0"



DETAIL OF SLEEVE ATTACHMENT



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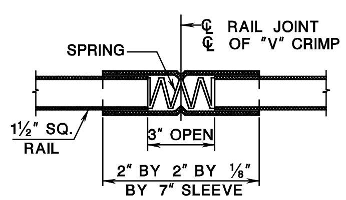
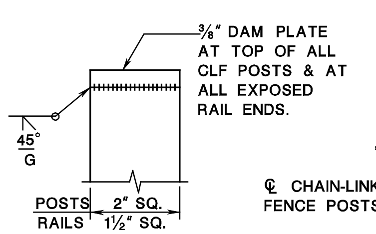
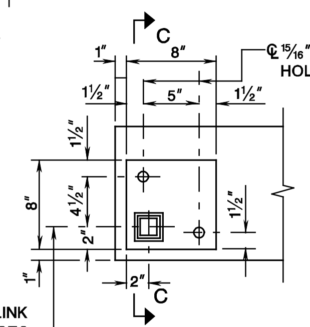


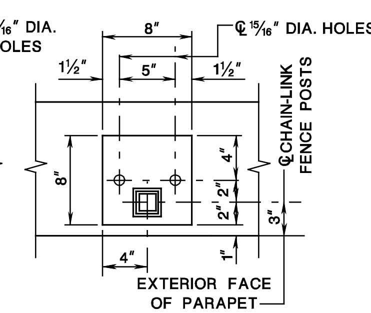
RAIL SLEEVE



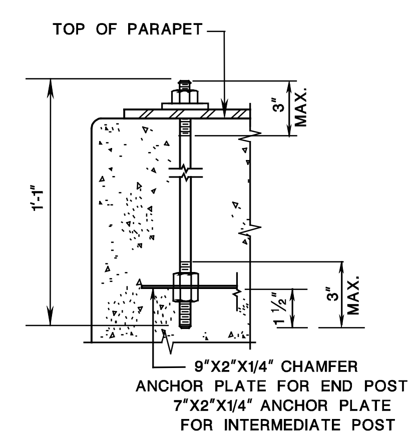
DAM PLATE



END POST BASE PLATE



INTERMEDIATE POST BASE PLATE



ANCHOR BOLT DETAIL

TEST LEVEL 4
BCD-509-2.1

CHAIN–LINK FENCE, BRIDGE 6'–3" HIGH

N.T.S.

BCD-509-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

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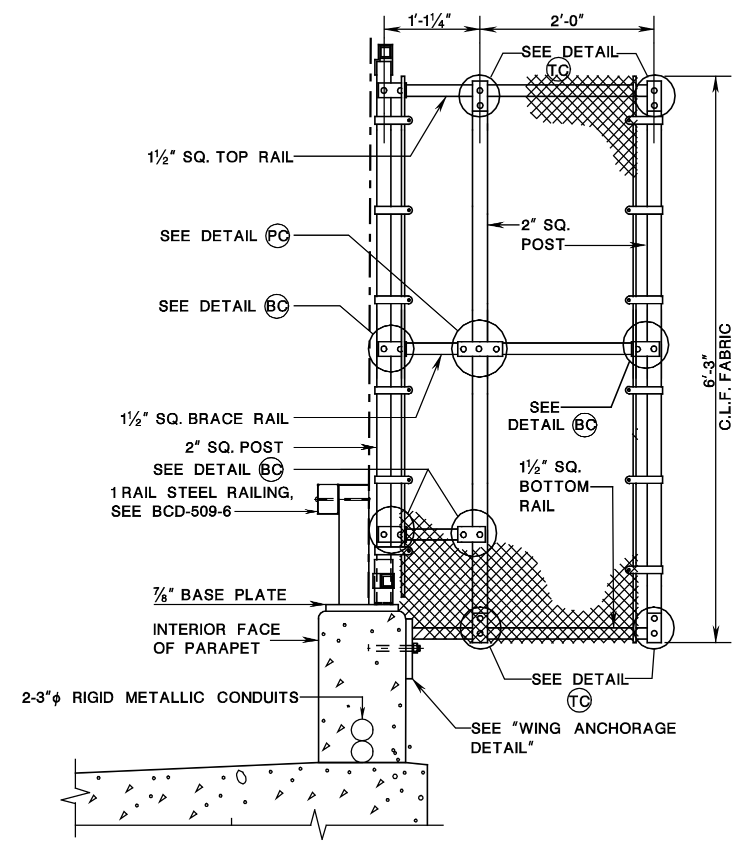
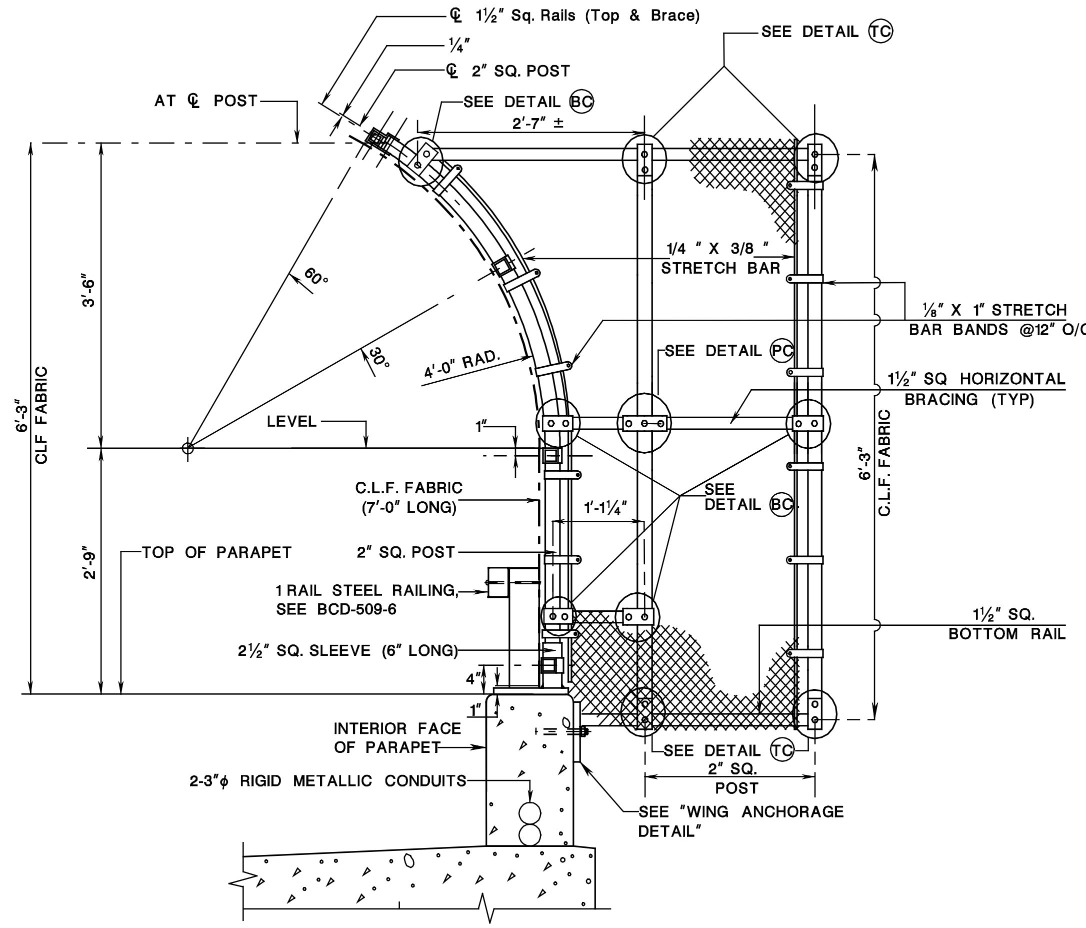
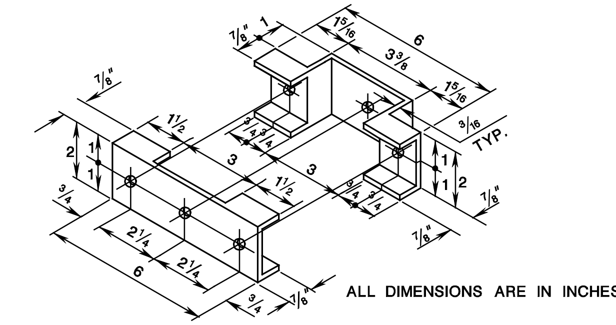


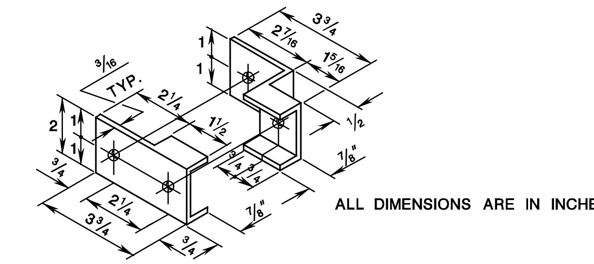
ELEVATION OF WING FOR 6'-3" HIGH STRAIGHT CHAIN-LINK FENCE



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



DETAIL PC



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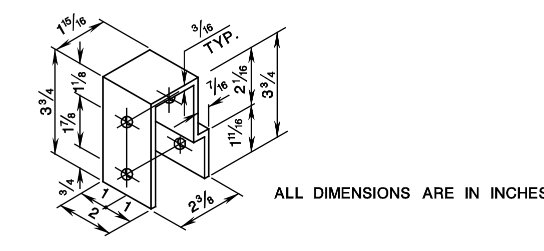
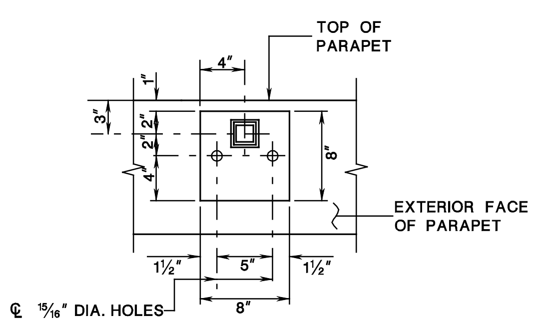
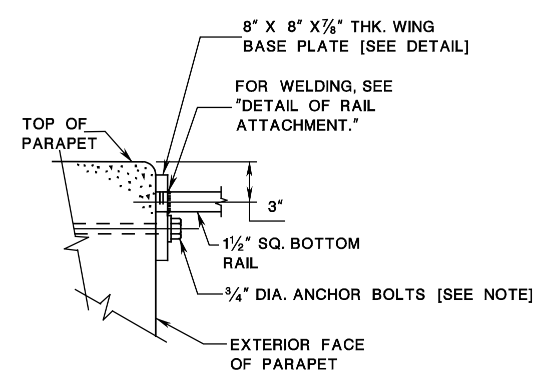


DETAIL TC

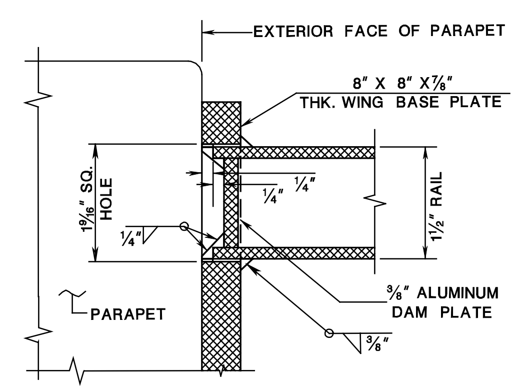


WING BASE PLATE DETAIL



WING ANCHORAGE DETAIL

NOTE:
ENSURE THAT ANCHOR BOLTS ARE INSTALLED IN CORED HOLES NO GREATER THAN THE BOLT DIAMETER PLUS ¼". 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

TEST LEVEL 4
BCD-509-3.1

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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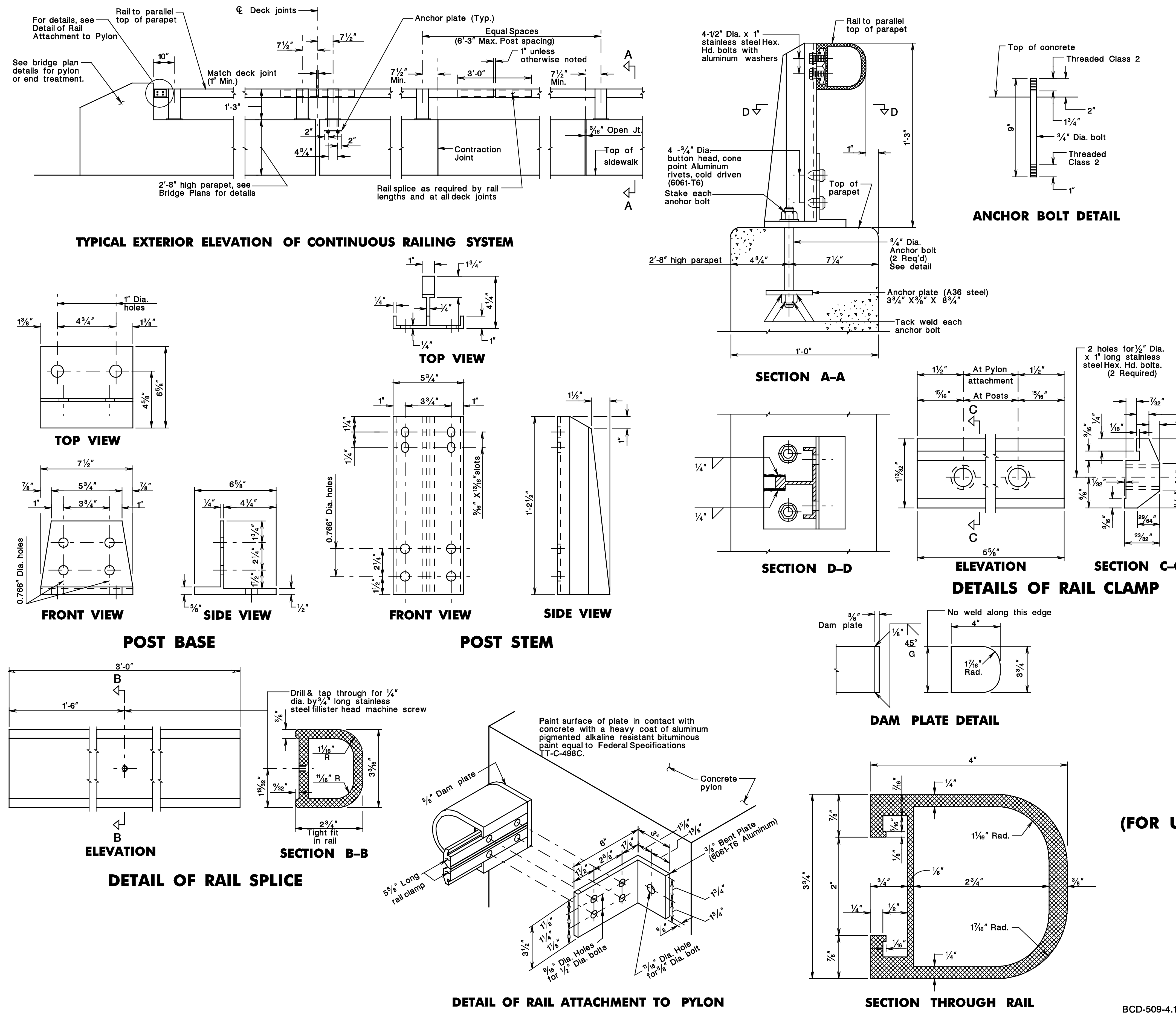
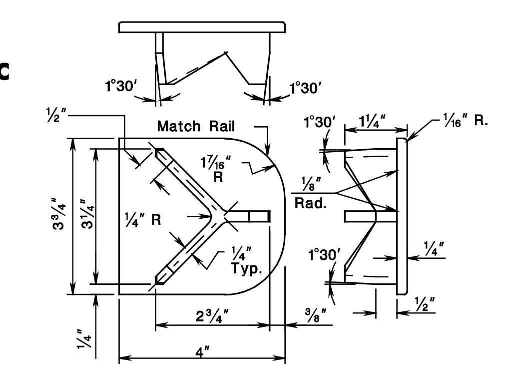


NOTES:

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 alluminum 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 NJDOT 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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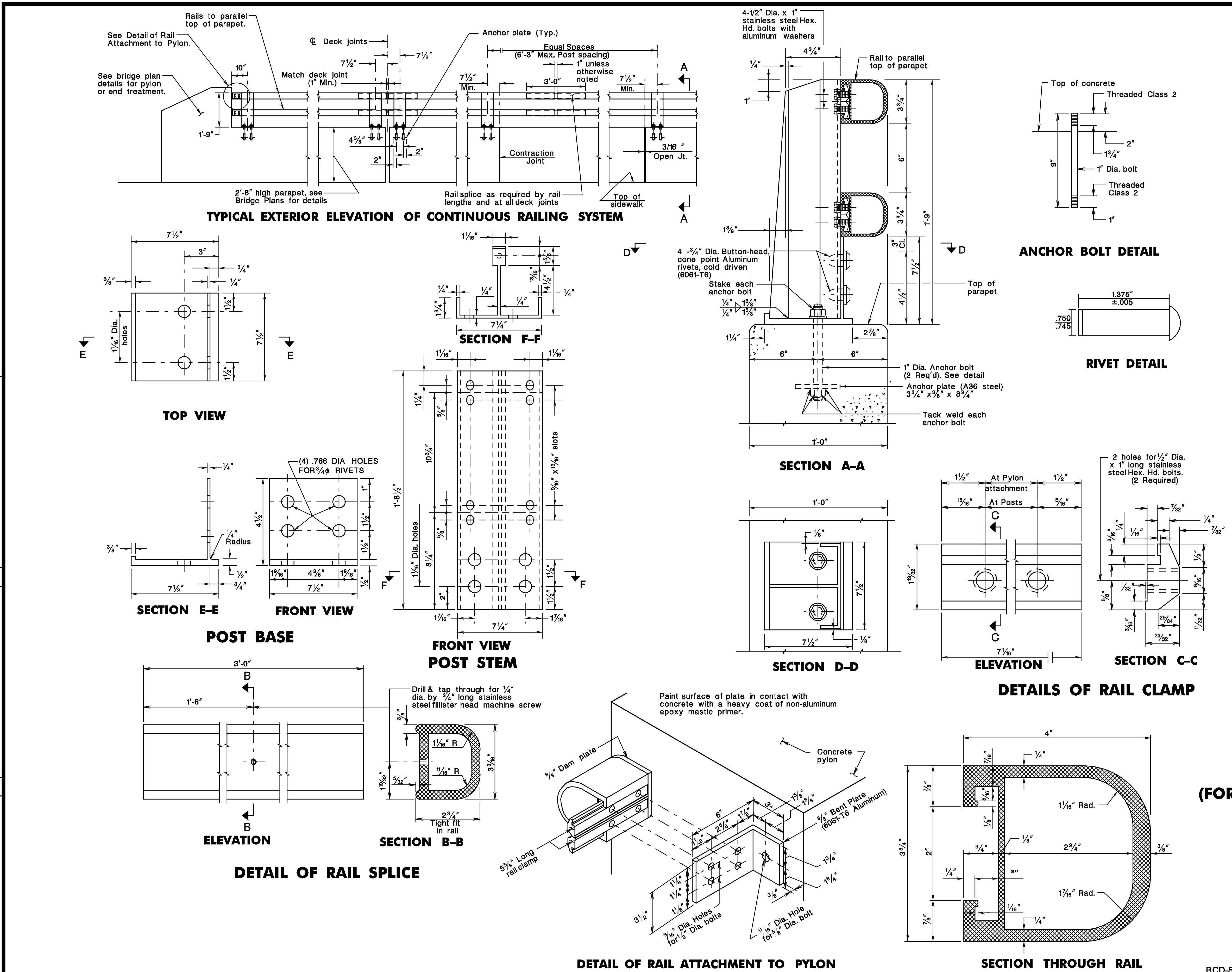
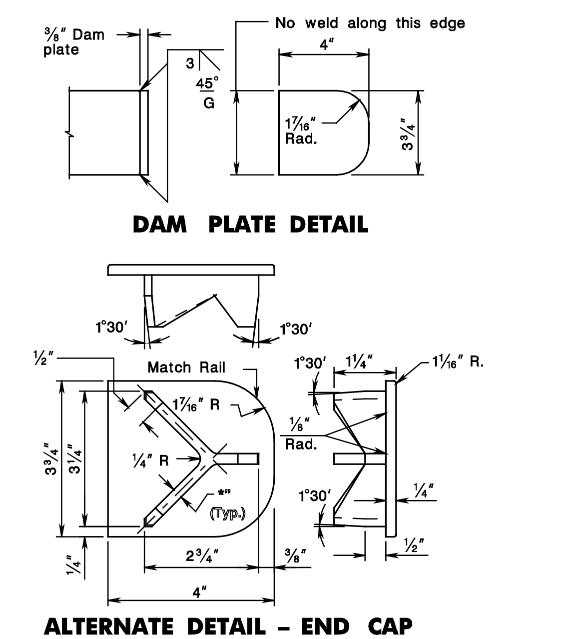


NOTES:

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 alluminum 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 914.02 of NJDOT Standard Specifications, joint material ASTM D 5893, type NS.



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

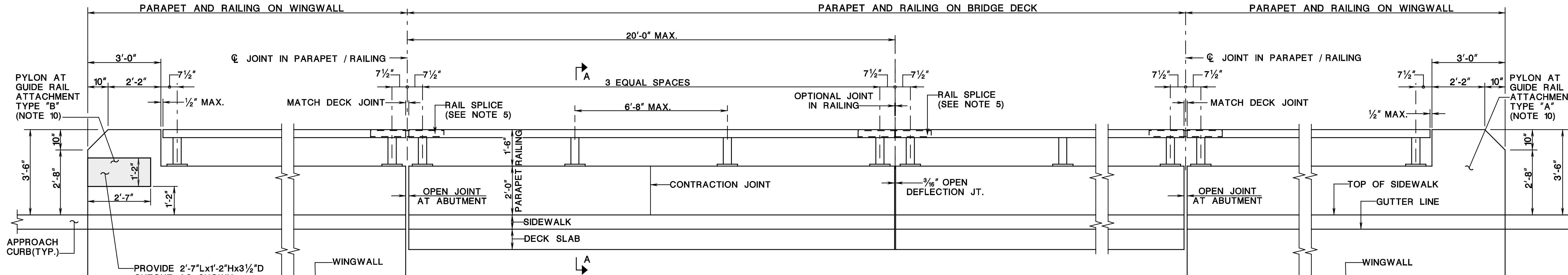
N.T.S.

BCD-509-5

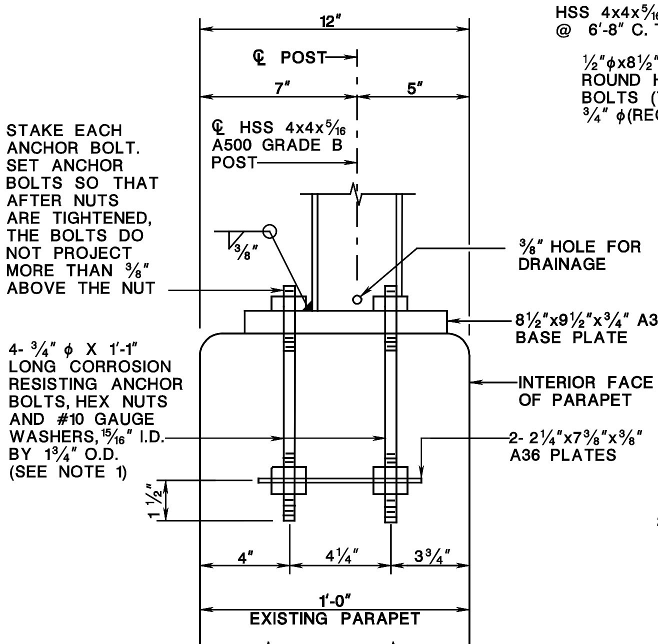
NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

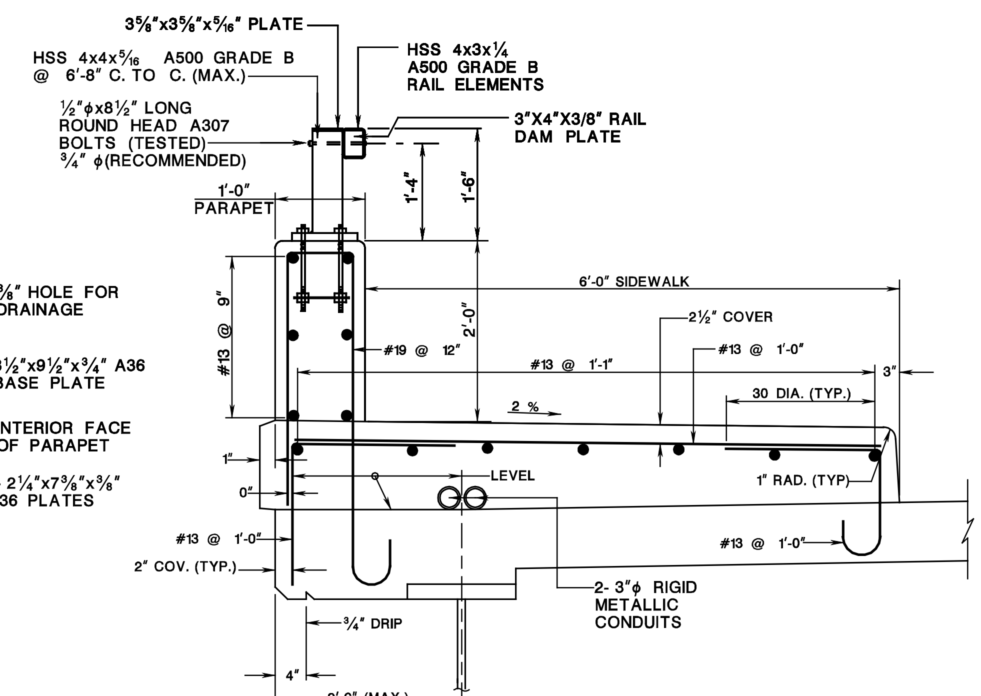
BCD-509-5.1



TYPICAL INTERIOR ELEVATION OF PARAPET AND RAILING



POST ANCHORAGE DETAIL



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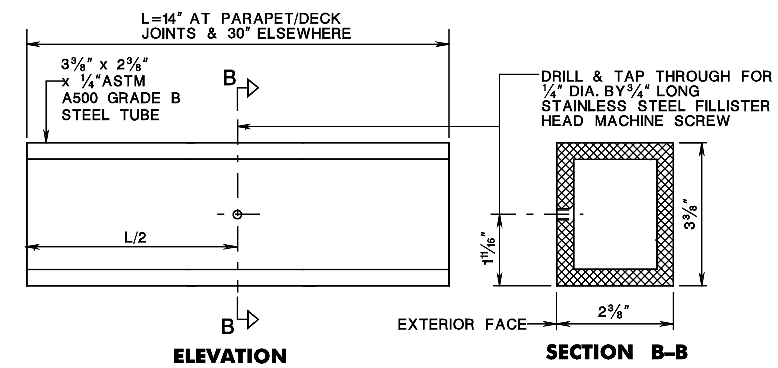
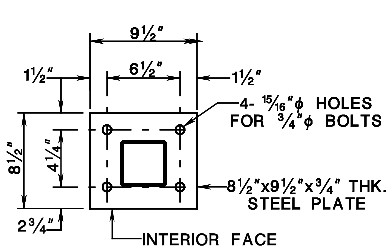


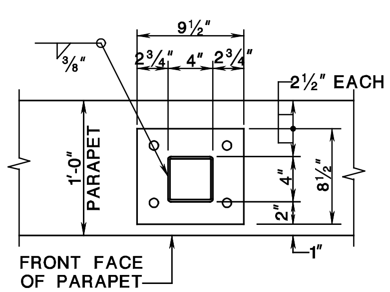
DETAIL OF RAIL SPLICE FOR 4" X 3" TOP RAIL

NOTES:

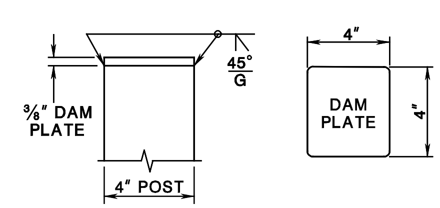
1. ENSURE THAT ANCHOR BOLTS ARE ¾"φX1'-1" LONG AND TO BE SET BY THE CONTRACTOR WITH 2" OF CLEAR THREADS SET CLEAN.
2. CONFORM WELDING OF POSTS TO BASE PLATES TO THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.
3. CONFORM STEEL BOLTS, NUTS, AND WASHERS TO ASTM A307. CONFORM STRUCTURAL STEEL PLATES AND SHAPES TO ASTM A36, AND GALVANIZED AS PER ASTM A123.
4. DRILL ⅜"φ HOLE IN THE POST, ½" BOVE BASE PLATE FOR DRAINAGE.
5. PROVIDE SPLICES IN THE RAIL AT ALL DECK JOINTS AND AS REQUIRED BY RAIL LENGTHS.
6. PROVIDE ⅜"φ HOLES EVERY 7' ON BOTTOM OF RAILS FOR DRAINAGE.
7. 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.
8. WHERE NECESSARY FOR POST ALIGNMENT, USE SHIM MATERIAL AS APPROVED BY THE RE.
9. 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.
10. FOR GUIDE RAIL ATTACHMENT AND LIP CURB DETAILS, REFER TO CD-609-15.



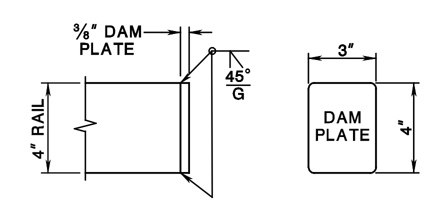
BASE PLATE DETAIL



PLAN – POST AND BASE PLATE



POST DAM PLATE DETAIL



4"x3" RAIL DAM PLATE DETAIL

1–RAIL STEEL RAILING WITH PARAPET AND SIDEWALK

TEST LEVEL 4
BCD-509-6.1

1–RAIL STEEL RAILING

N.T.S.

BCD-509-6

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

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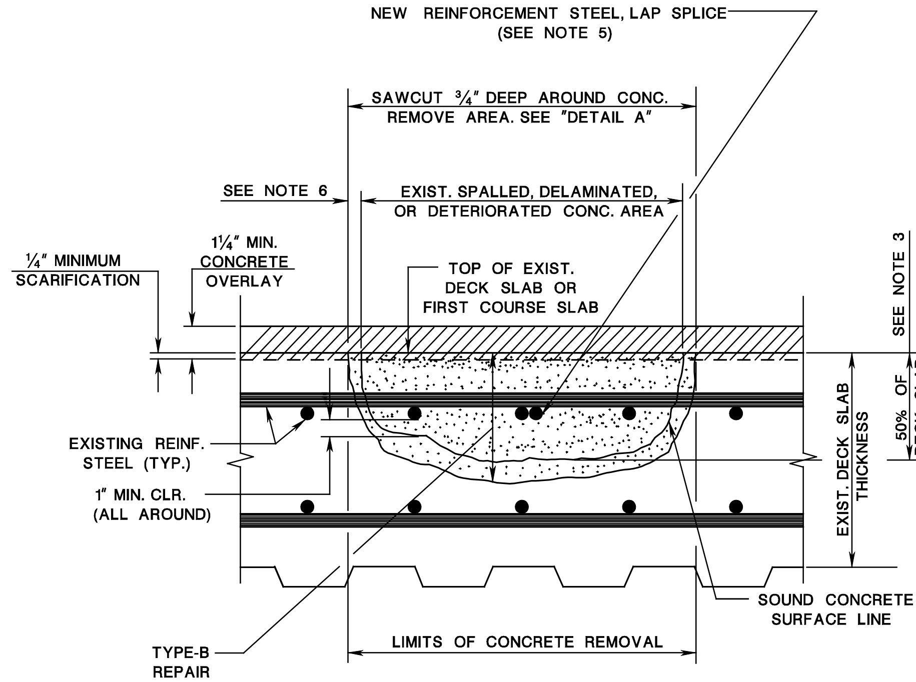
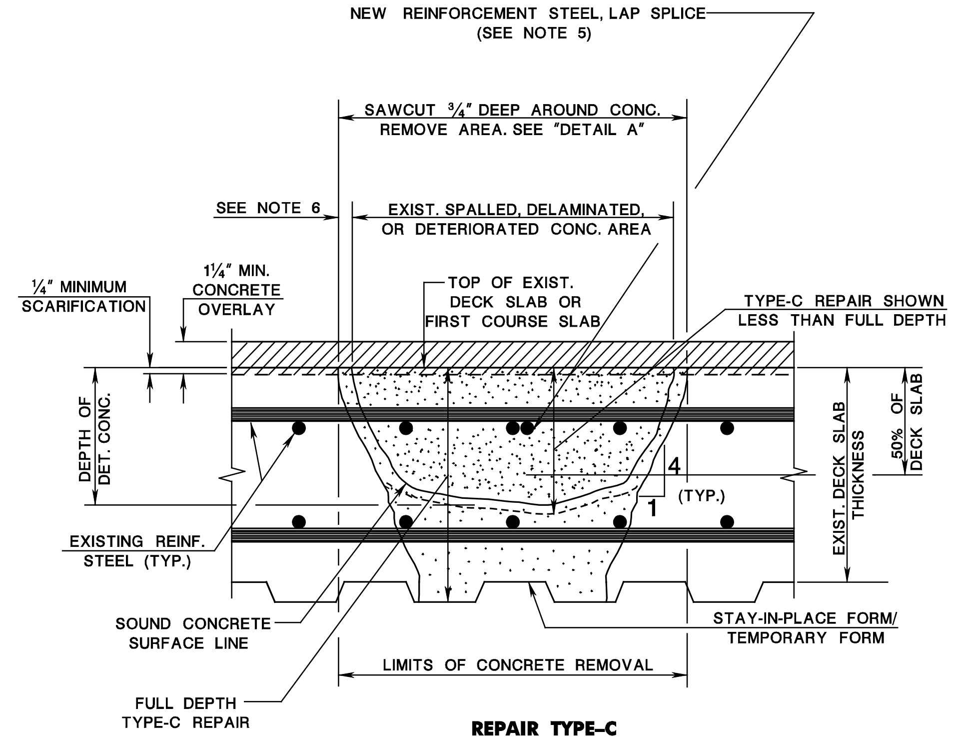
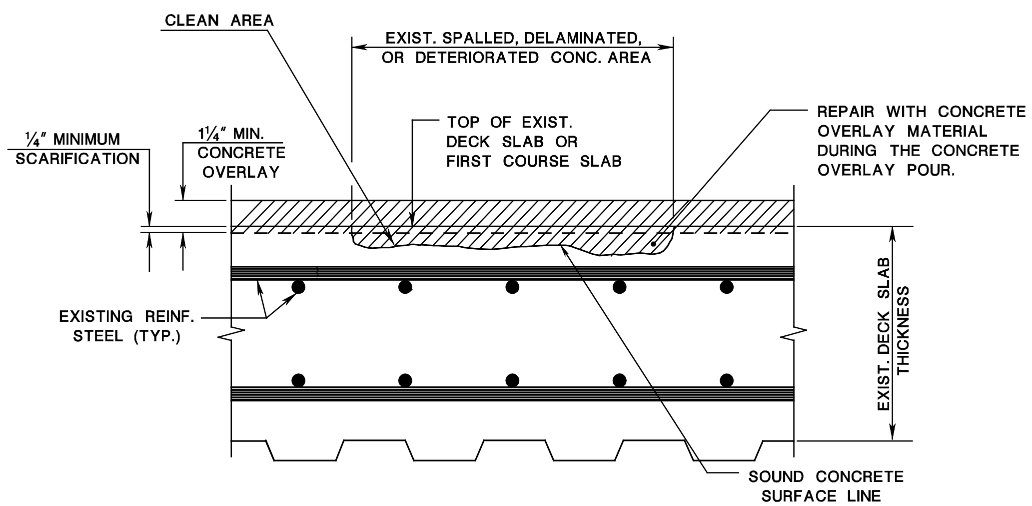


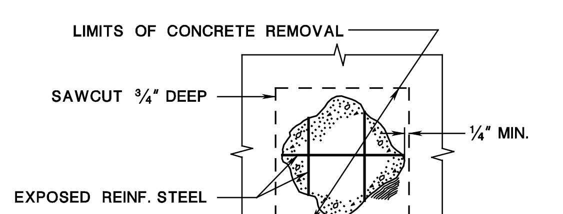
REPAIR TYPE-B
(SEE NOTE 2)



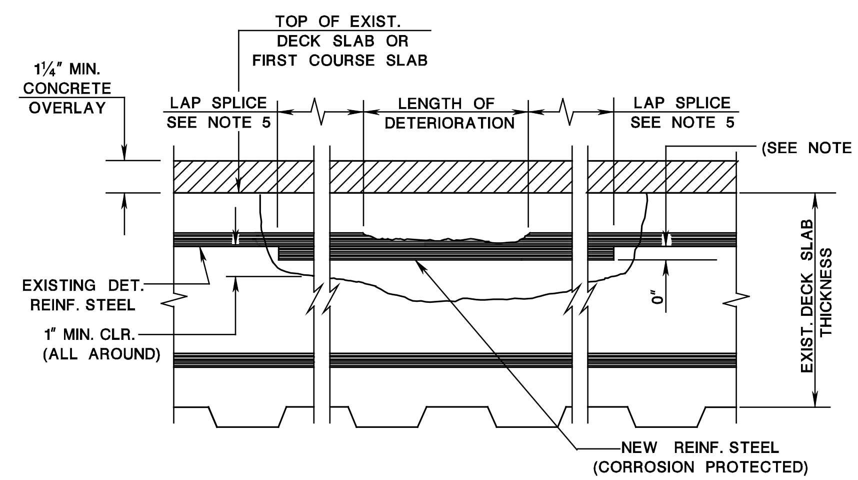
REPAIR TYPE-C
(SEE NOTE 3)



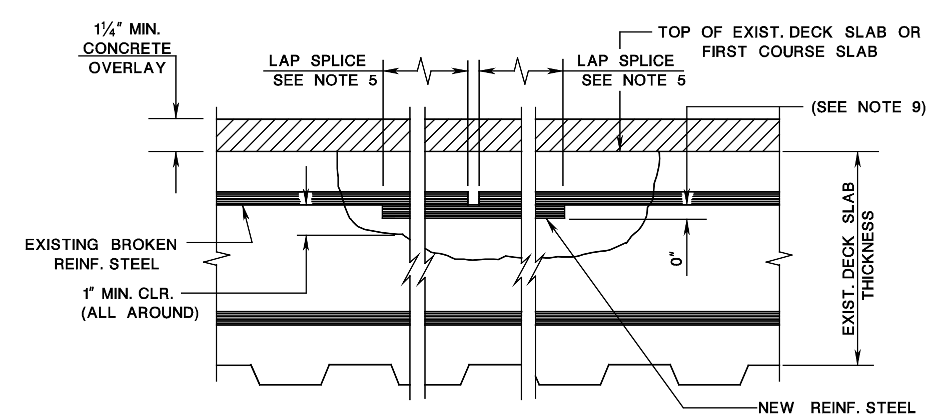
TYPICAL REPAIR DETAIL FOR MINOR SPALLED AREAS
(SEE NOTE 1)



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



DETERIORATED REINFORCEMENT STEEL REPAIR



BROKEN REINFORCEMENT STEEL REPAIR

NOTES:

1. 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.
2. 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.
3. 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.
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. 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.
6. 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.
7. 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.
8. DECK REINFORCEMENT STEEL DETAILS SHOWN ARE GENERAL. ACTUAL REINFORCEMENT STEEL SPACINGS AND LOCATIONS WILL VARY FROM BRIDGE TO BRIDGE.
9. PLACE NEW REINFORCEMENT STEEL AT THE SAME LEVEL ALONGSIDE THE EXISTING DETERIORATED OR BROKEN REINFORCEMENT STEEL.
10. BEFORE PLACEMENT OF THE OVERLAY, REMOVE ALL PREVIOUSLY PATCHED AREAS COMPLETELY.

BRIDGE DECK REHABILITATION WITH CONCRETE OVERLAY

N.T.S.

BCD-551-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BCD-551-1.1

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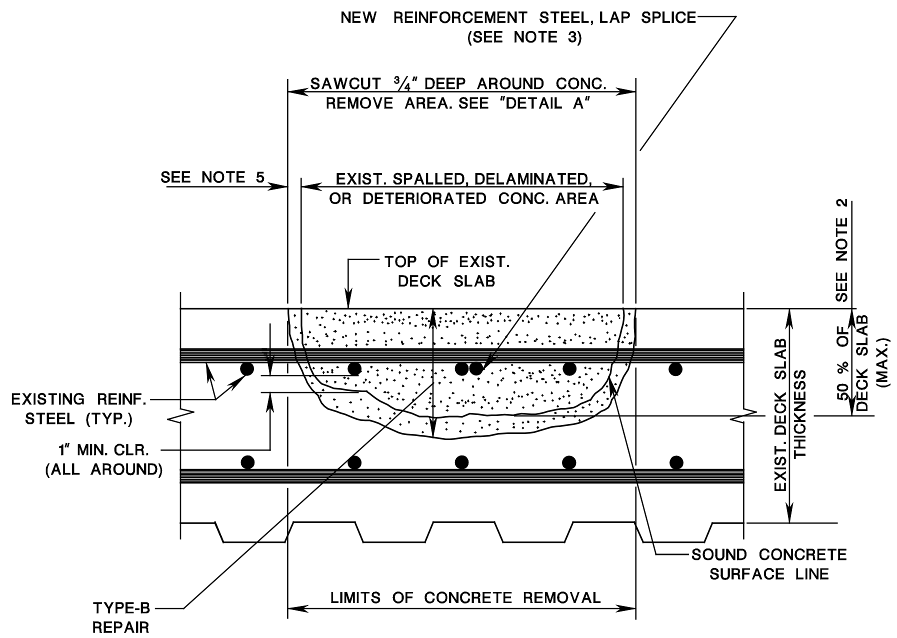
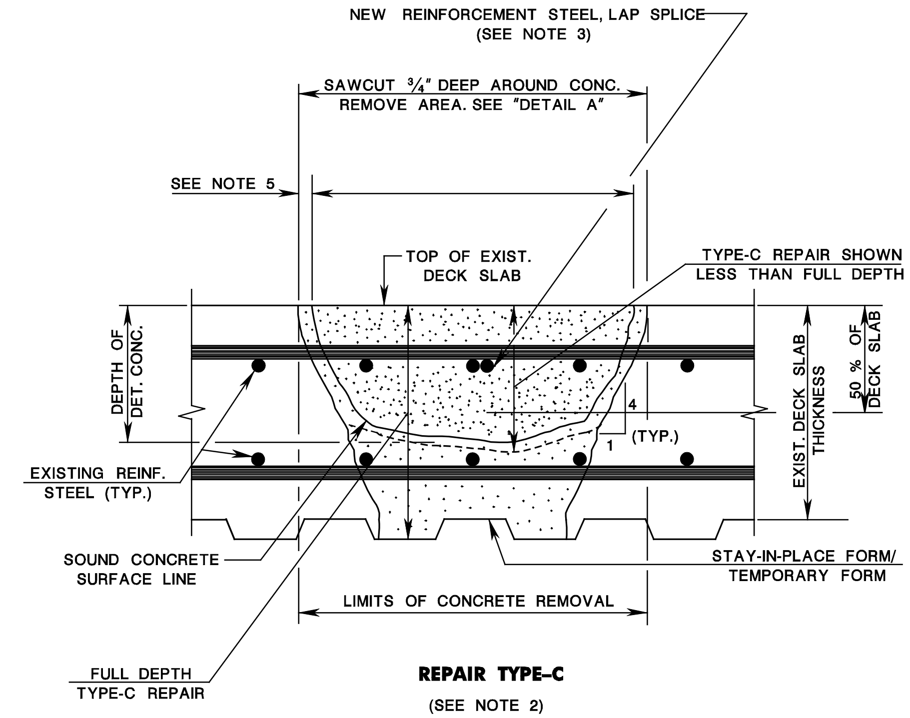


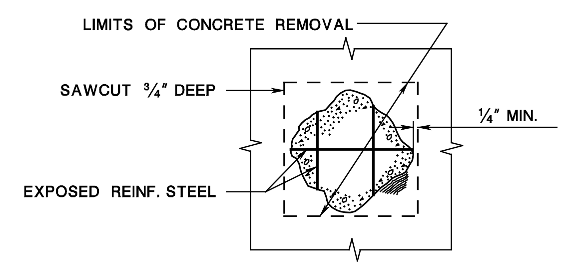
REPAIR TYPE–B

(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 ¼" MINIMUM TO 1" MAXIMUM IN ALL DIRECTIONS, EXCEPT THAT THE MAXIMUM LIMIT MAY BE MODIFIED UPON APPROVAL OF THE RE.

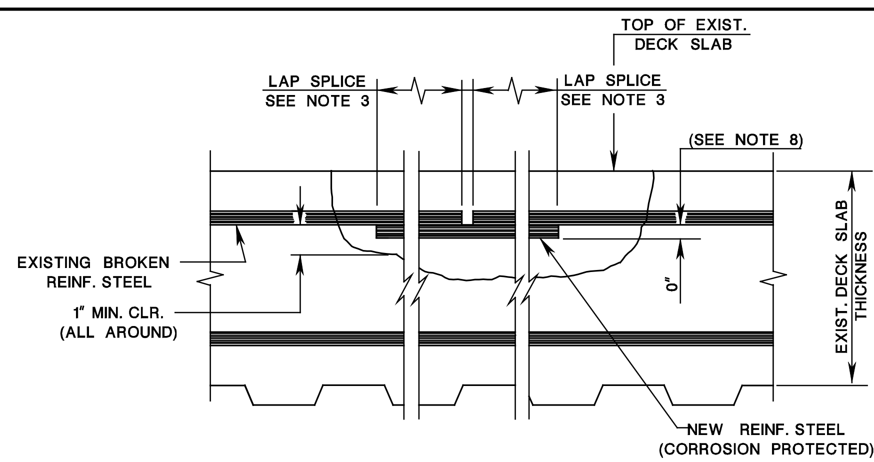
6. UPON APPROVAL OF THE RE, MODIFY THE LIMITS OF CONCRETE REMOVAL AS SHOWN IN THE "LIMITS OF REPAIR AREA (PLAN VIEW)" WHEN SUPPLEMENTARY REINFORCEMENT STEEL ARE REQUIRED.

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.

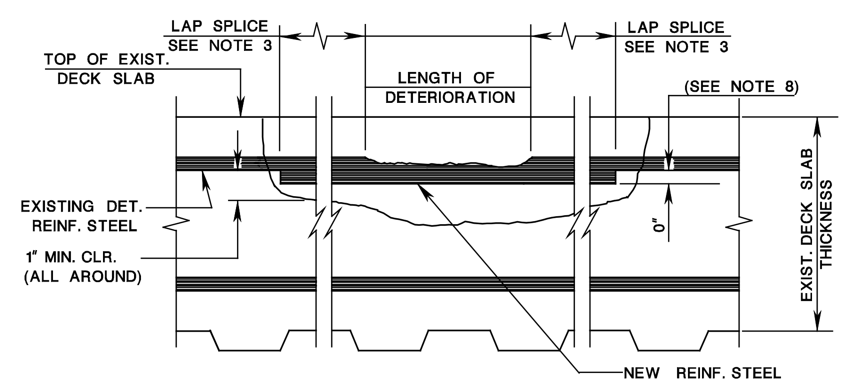
9. REFER TO THE NJDOT STANDARD SPECIFICATIONS FOR GUIDANCE AS TO THE SELECTION OF A QUICK-SETTING PATCH MATERIAL PRODUCT.

BCD-551-2.2



BROKEN REINFORCEMENT STEEL REPAIR

BCD-551-2.3



DETERIORATED REINFORCEMENT STEEL REPAIR

BCD-551-2.4

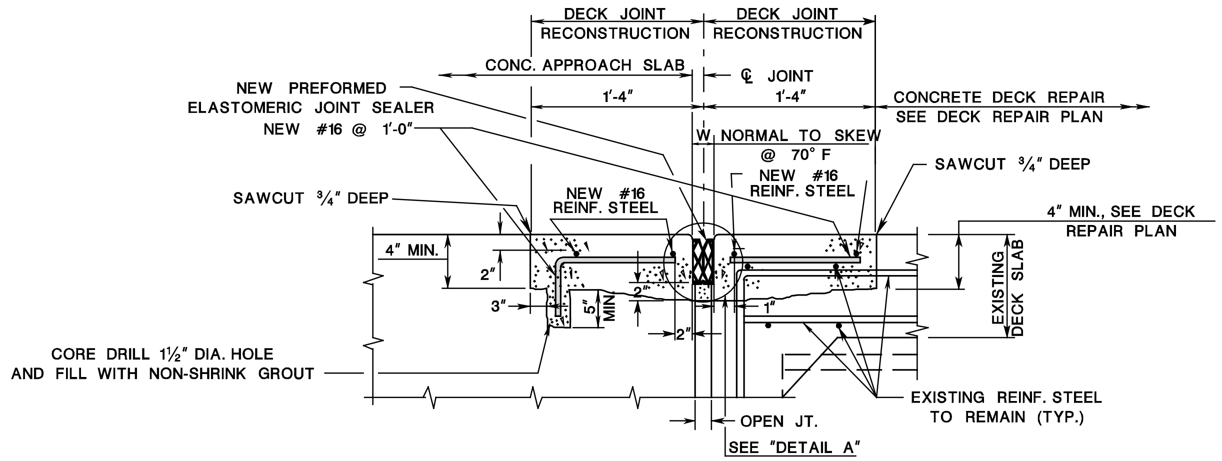
BRIDGE DECK REHABILITATION WITHOUT CONCRETE OVERLAY

N.T.S.

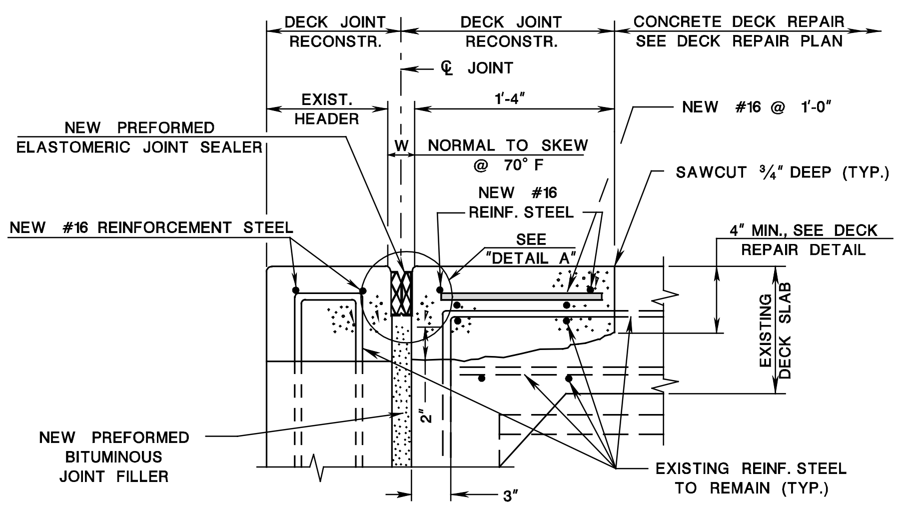
BCD-551-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

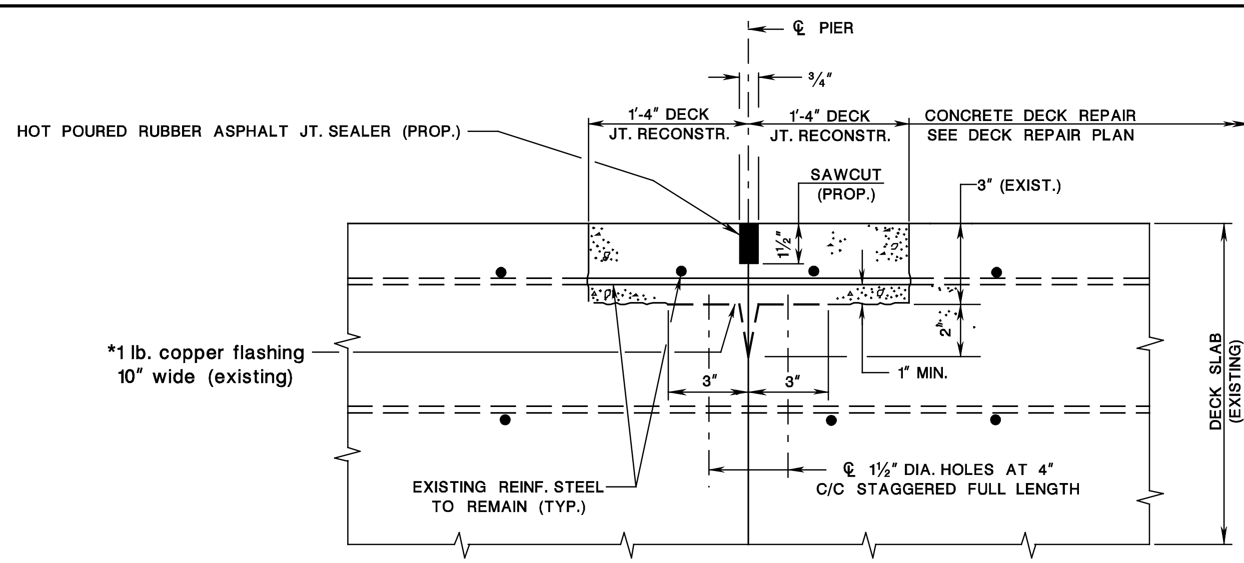


DECK JOINT AT ABUTMENT WITH APPROACH SLAB



DECK JOINT AT ABUTMENT WITH HEADER

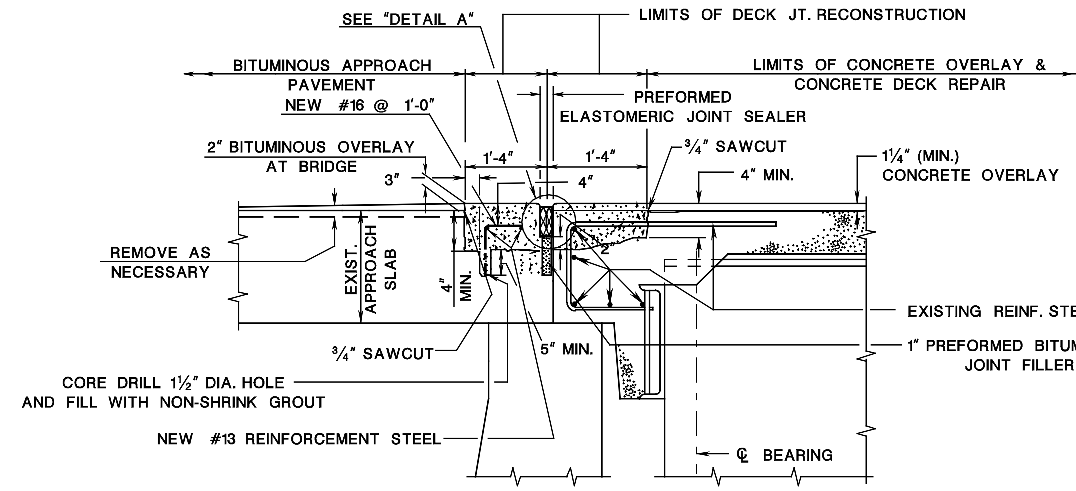
BCD-551-3.1



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

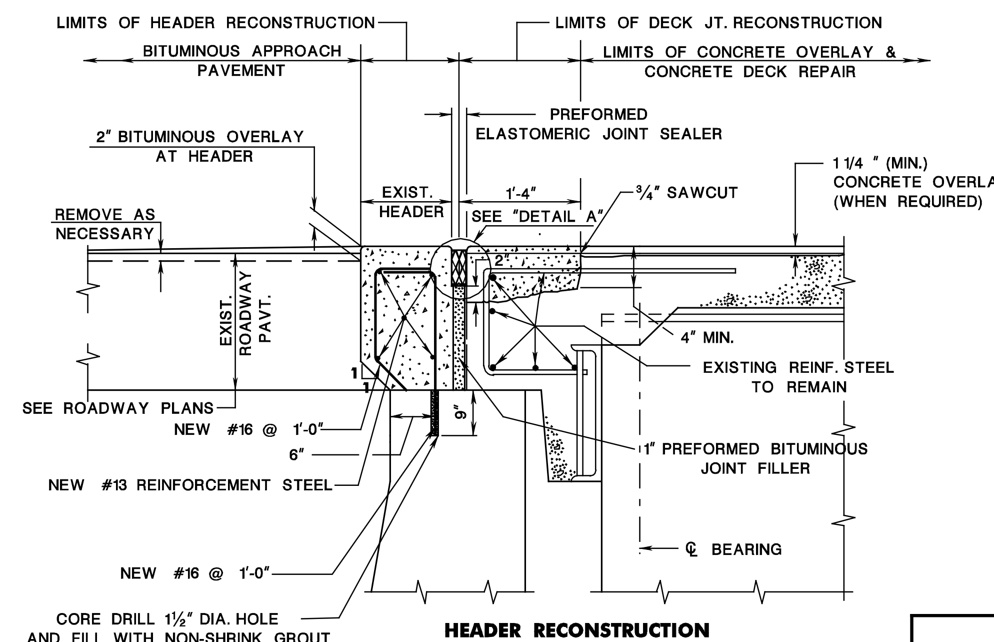
FIXED DECK JOINT AT PIER

BCD-551-3.2

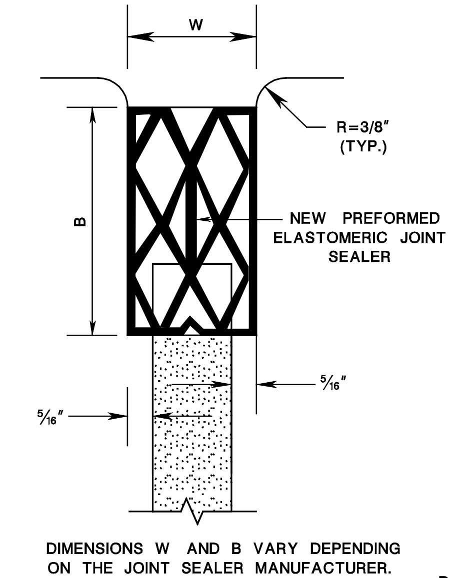


DECK JOINT AT ABUTMENT (WITH APPROACH SLAB AND CONCRETE OVERLAY)

BCD-551-3.3



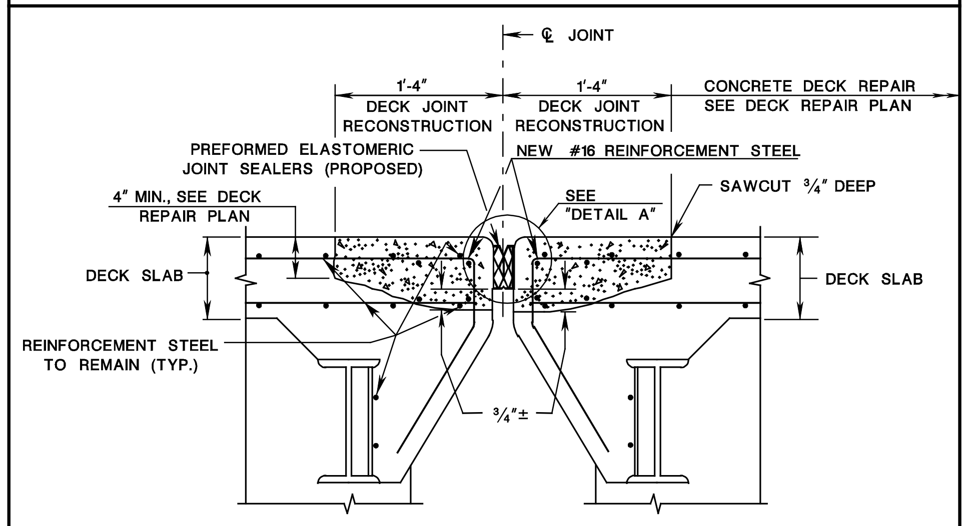
HEADER RECONSTRUCTION



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

DETAIL A

BCD-551-3.4



EXPANSION DECK JOINT AT PIER

BCD-551-3.5

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

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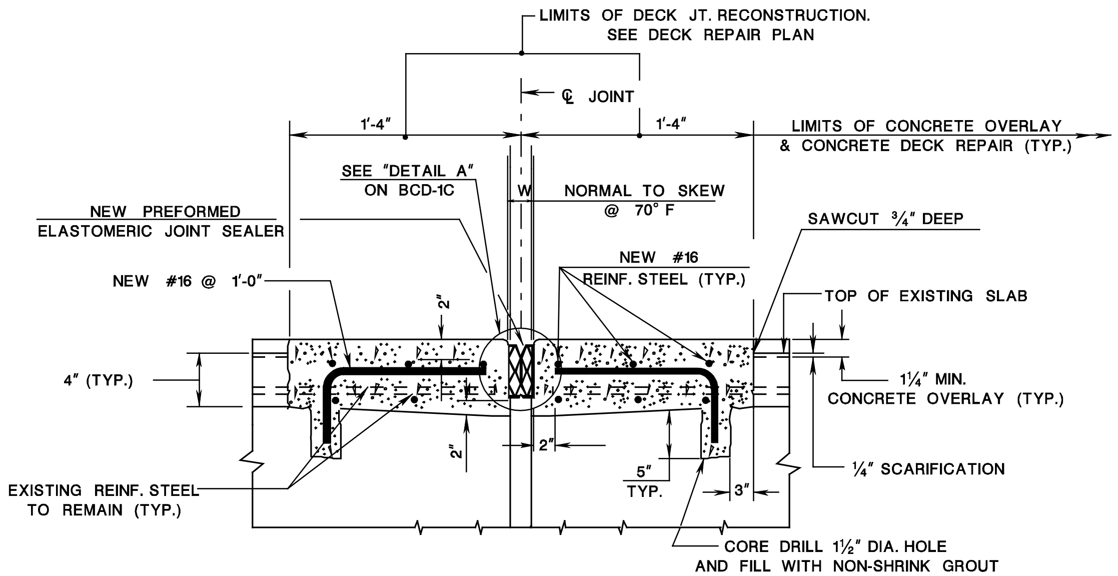
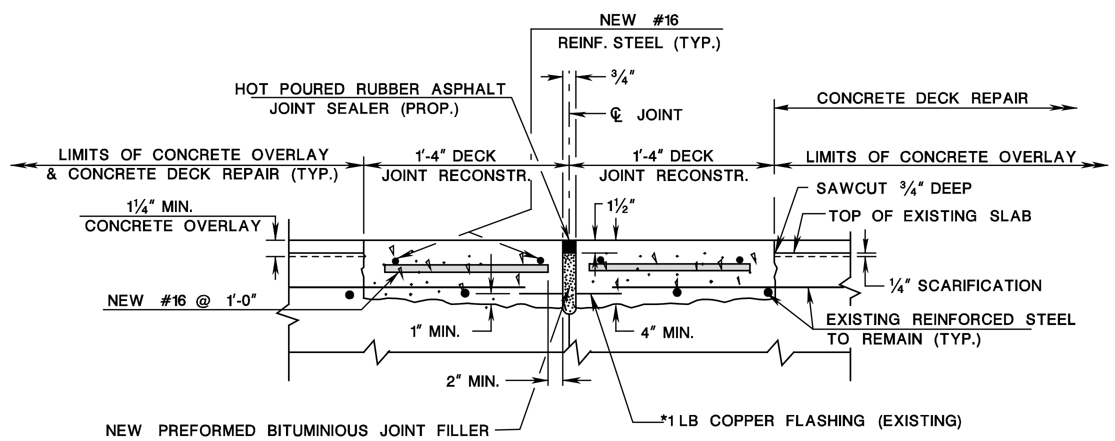


EXPANSION DECK JOINT AT PIER WITH CONCRETE OVERLAY

BCD-551-4.1



BCD-551-4.2

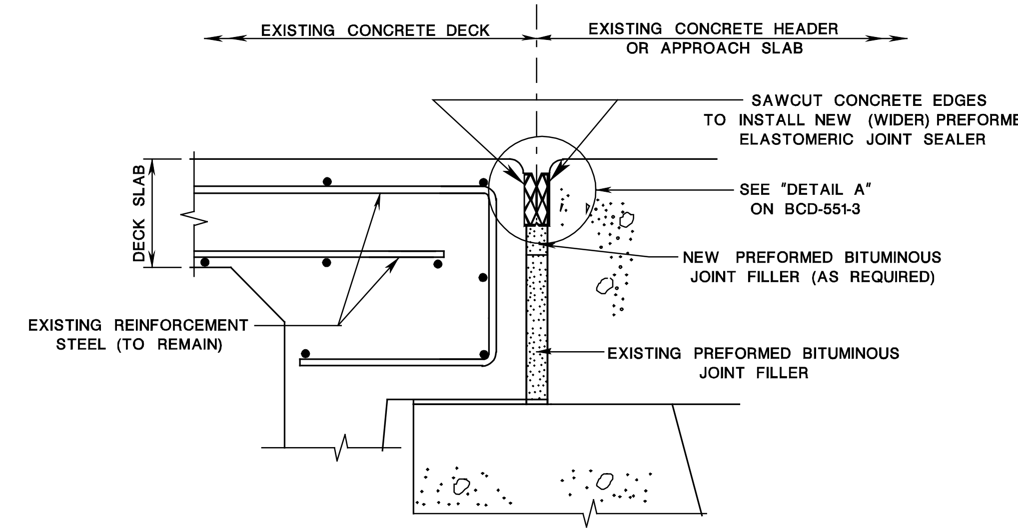
*THE CONTRACTOR MUST REPLACE THE EXISTING COPPER FLASHING DURING DECK JOINT RECONSTRUCTION ONLY IF THE CONCRETE BELOW COPPER FLASHING IS DETERIORATED OR IF EXISTING REINFORCEMENT STEEL IS LESS THAN 1" ABOVE TOP OF FLASHING.

FIXED JOINT AT PIER WITH CONRETE OVERLAY.

NOTES:

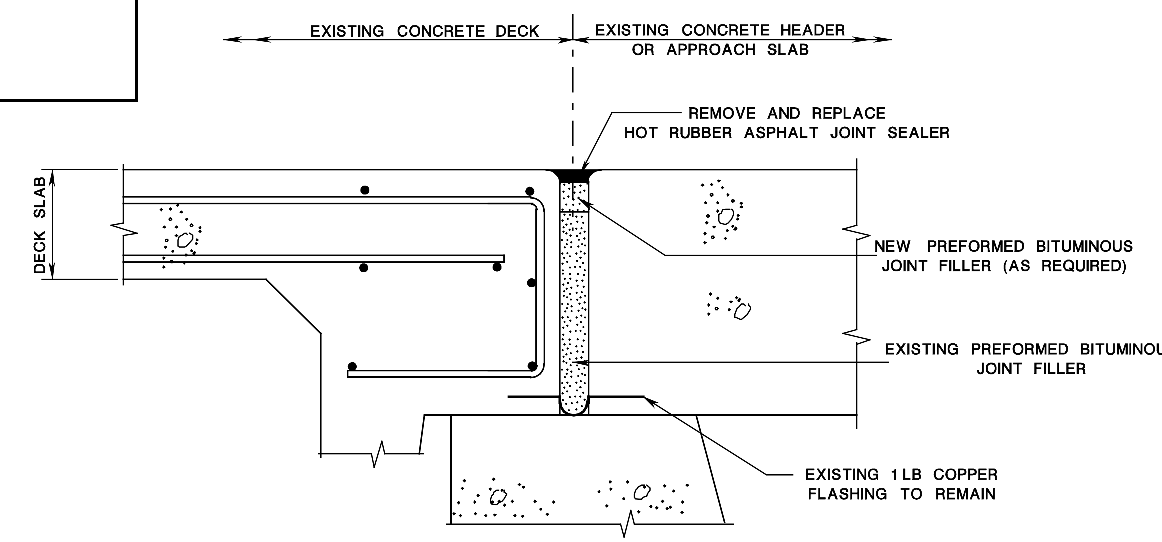
1. ENSURE THAT ALL NEW REINFORCEMENT STEEL IS DESIGNATED IN METRIC UNITS AND CORROSION PROTECTED.
2. "DECK JOINT RECONSTRUCTION" AND "HEADER RECONSTRUCTION" MUST INCLUDE:
   A. ¾" SAWCUT AS SHOWN IN JOINT DETAILS.
   B. REMOVE CONCRETE AND DISPOSE OF MATERIALS TO LIMITS SHOWN AND REPLACE WITH CONCRETE.
   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



DECK JOINT RE-SEAL AT ABUTMENT

BCD-551-4.5

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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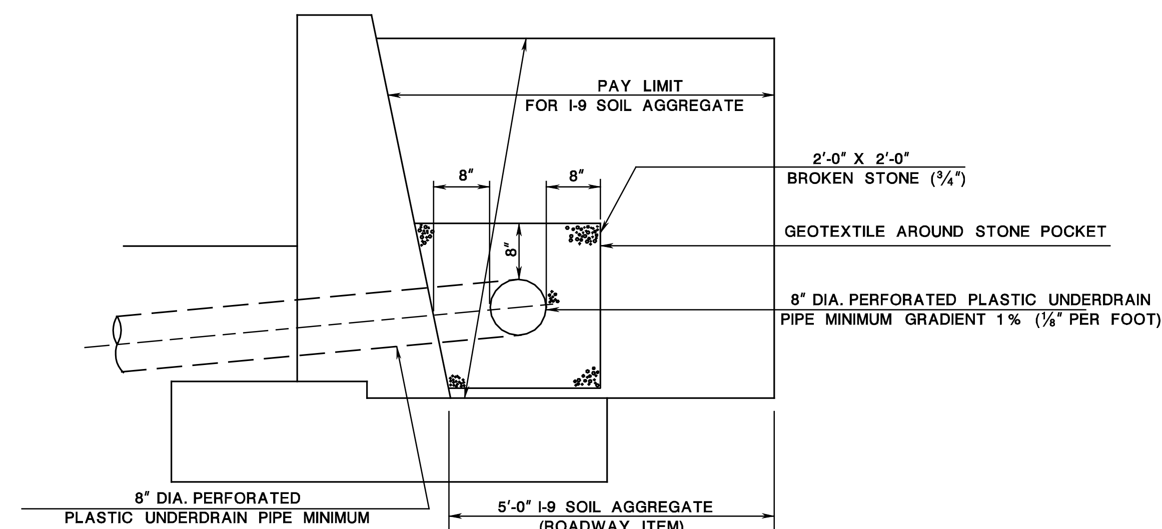

DRAINAGE BACK OF WALL

NOTE:

DRAINAGE FOR ABUTMENT WALL STEMS ARE SIMILAR.

DRAINAGE BACK OF WALL

N.T.S.

BCD-602-1.1

BCD-602-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

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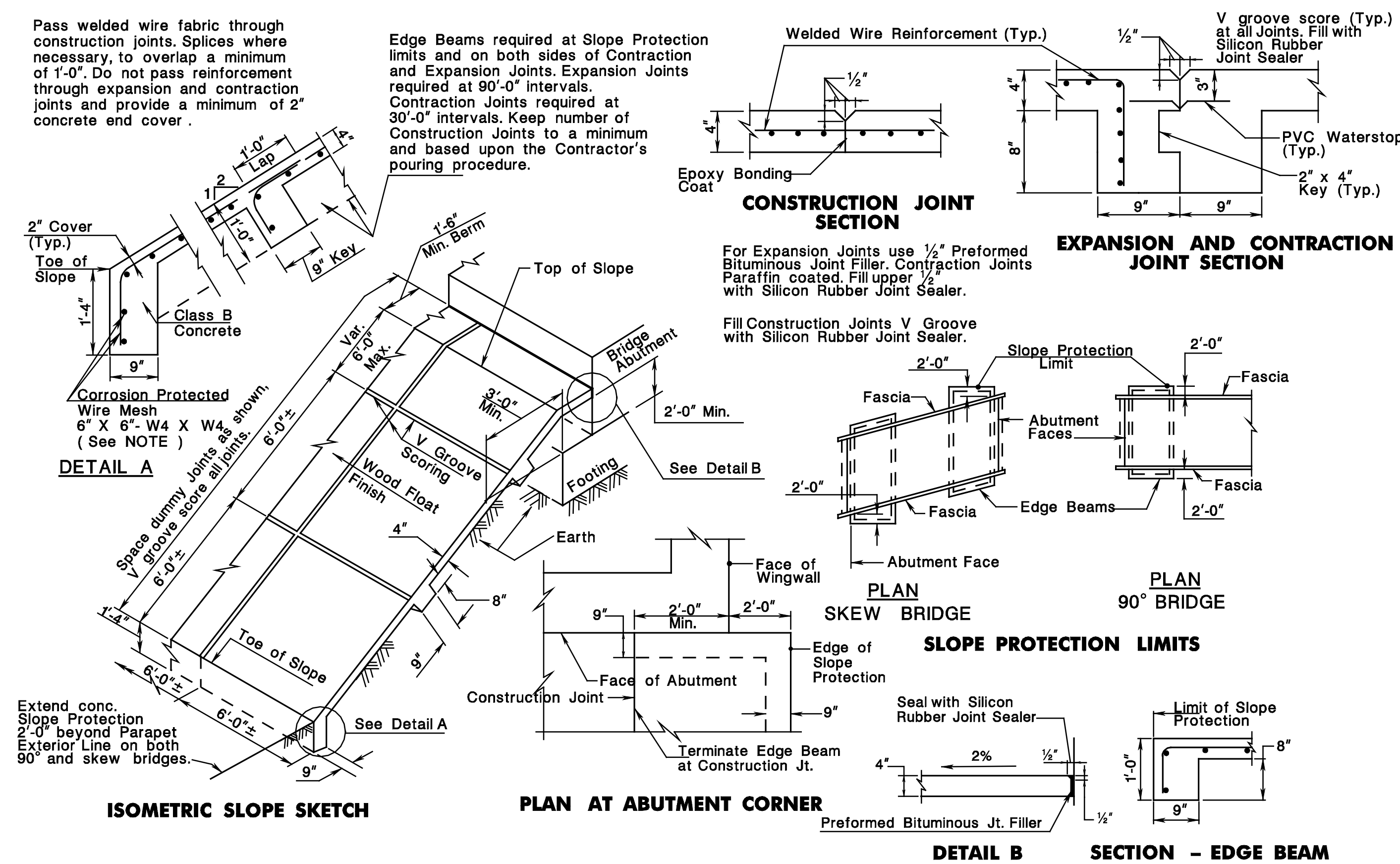

DETAILS OF CONCRETE SLOPE PROTECTION

BCD-603.1.1

CONCRETE SLOPE PROTECTION

N.T.S.

BCD-603-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

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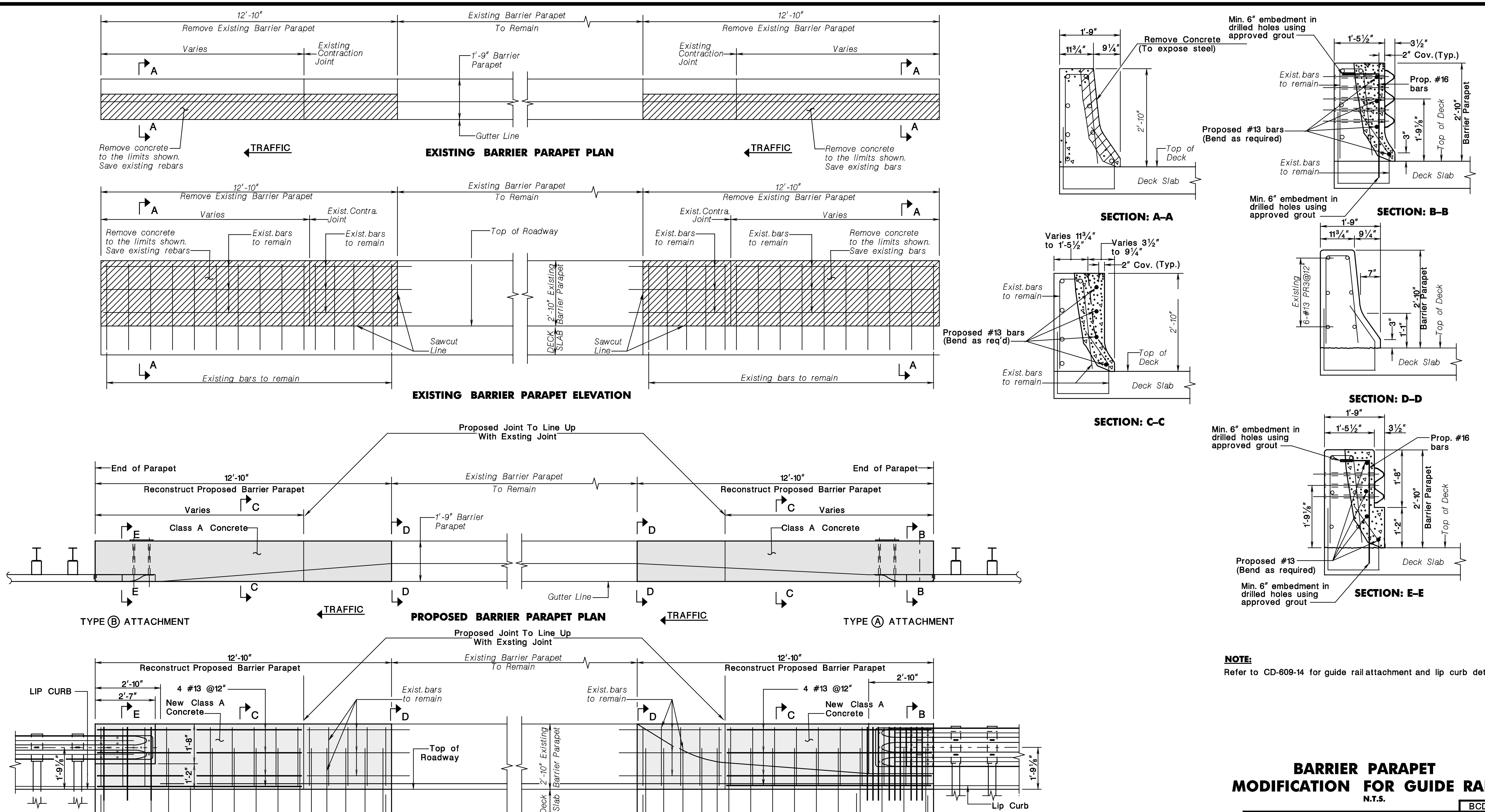

NOTE:

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

LEGEND

- REMOVE
- RECONSTRUCT
- PROPOSED CLASS A CONCRETE

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

BCD-609-1.1

BARRIER PARAPET MODIFICATION FOR GUIDE RAIL

N.T.S.

BCD-609-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

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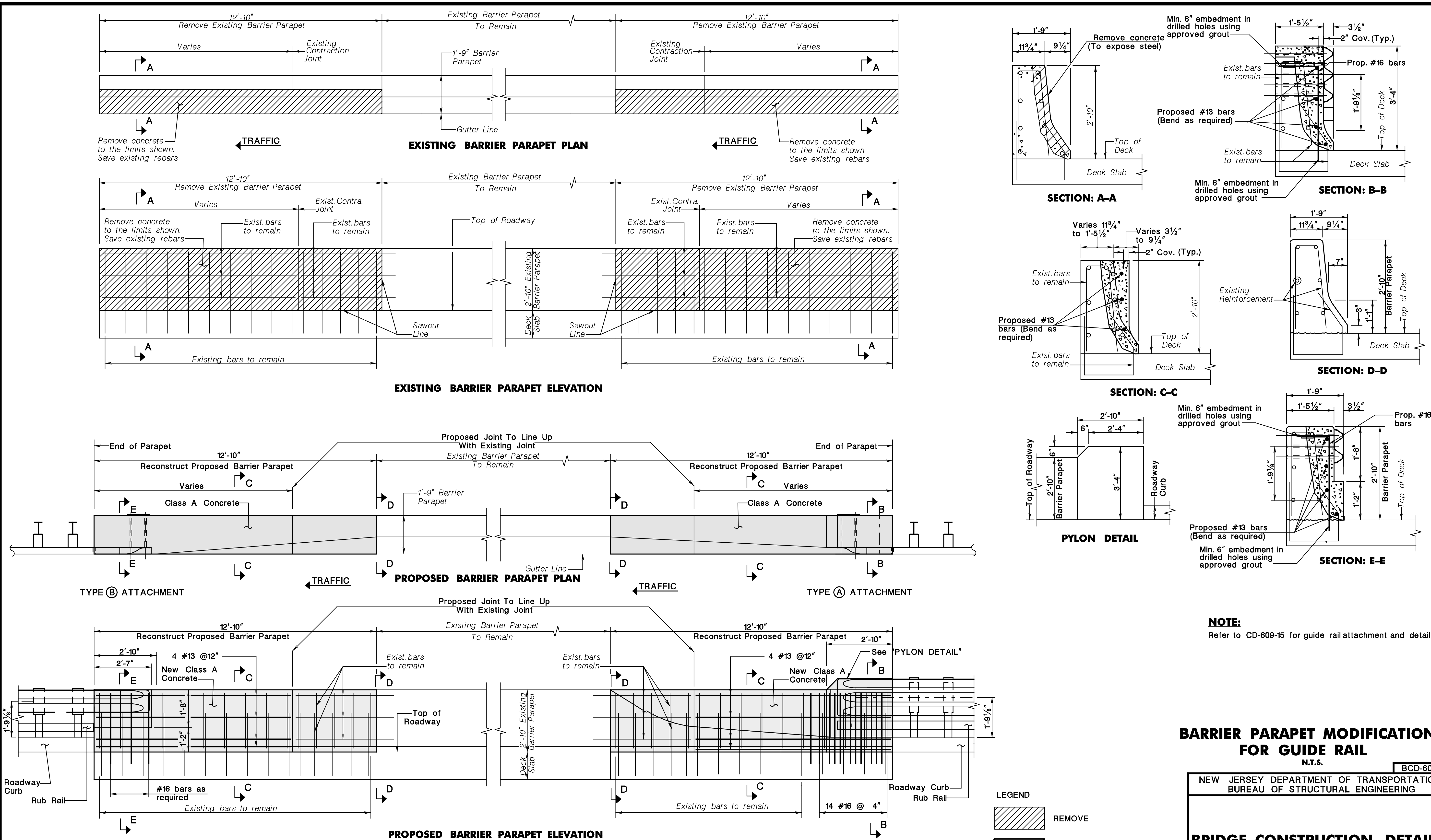

NOTE:

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

LEGEND

REMOVE

RECONSTRUCT

PROPOSED CLASS A CONCRETE

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

BCD-609-2.1

BARRIER PARAPET MODIFICATION FOR GUIDE RAIL

N.T.S.

BCD-609-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

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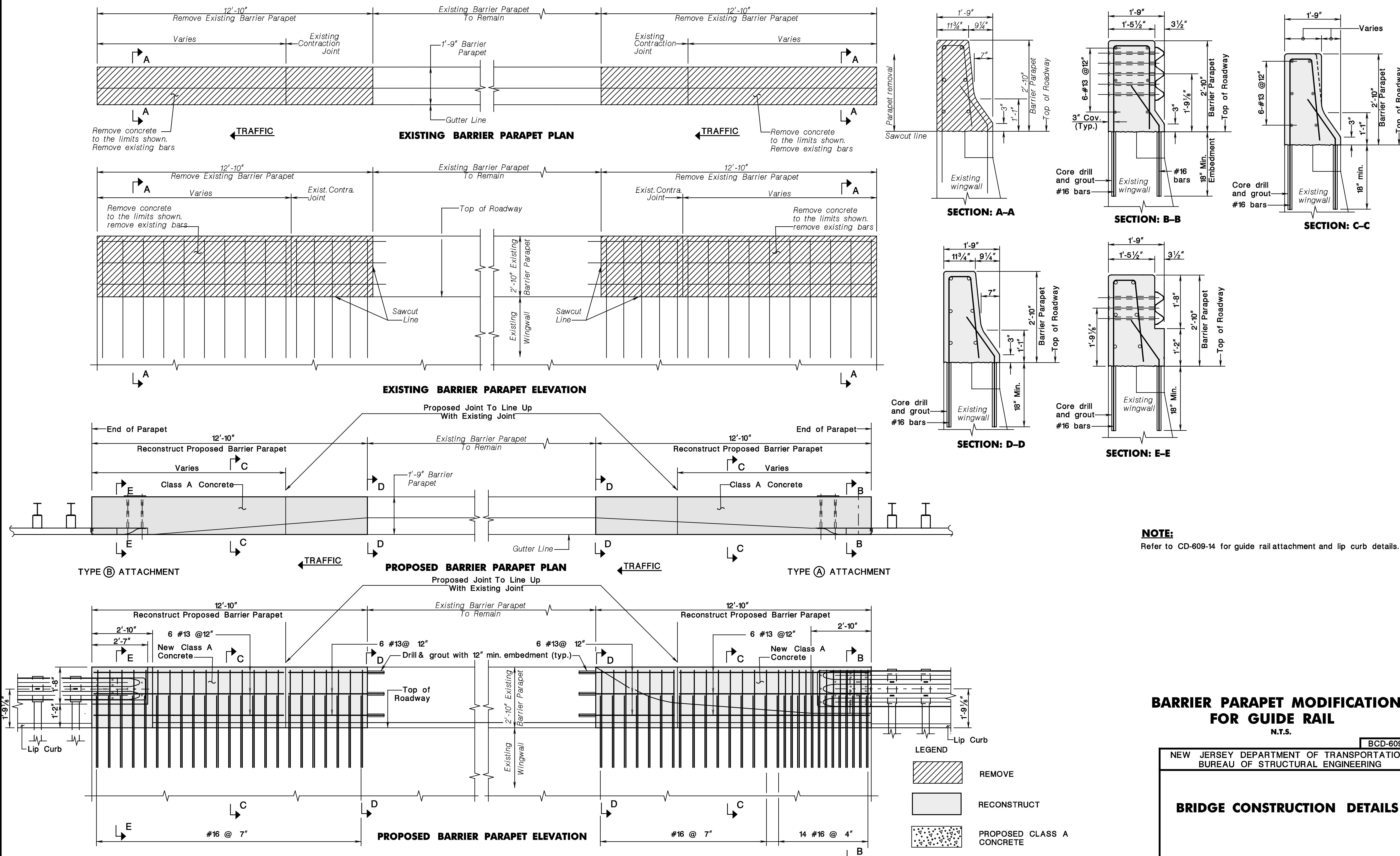

NOTE:
Refer to CD-609-14 for guide rail attachment and lip curb details.

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

GUIDE RAIL ATTACHMENT – EXISTING STRUCTURES
NEW JERSEY BARRIER SHAPE PARAPET ON WINGWALL WITHOUT ROADWAY CURBING ON APPROACH

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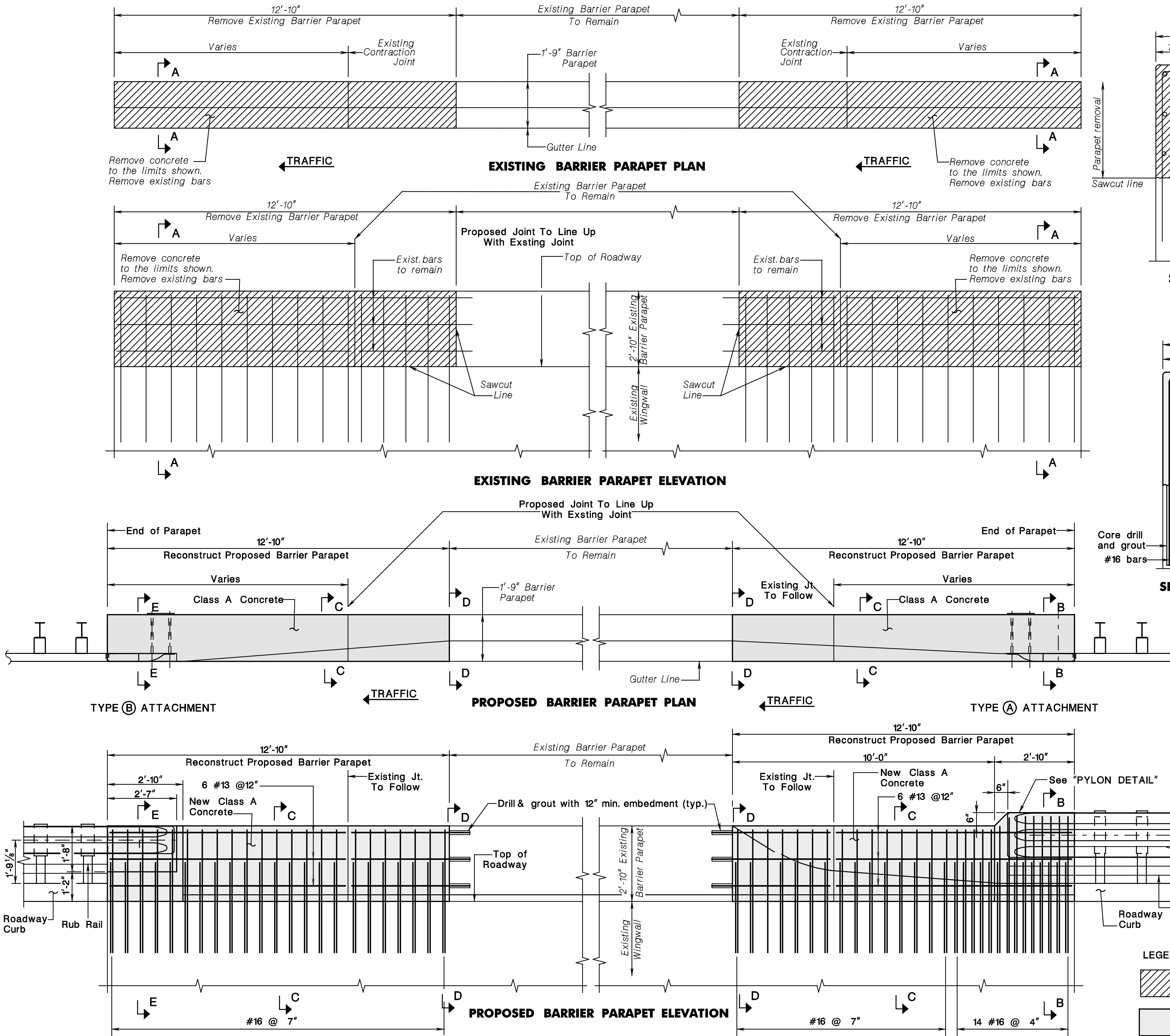
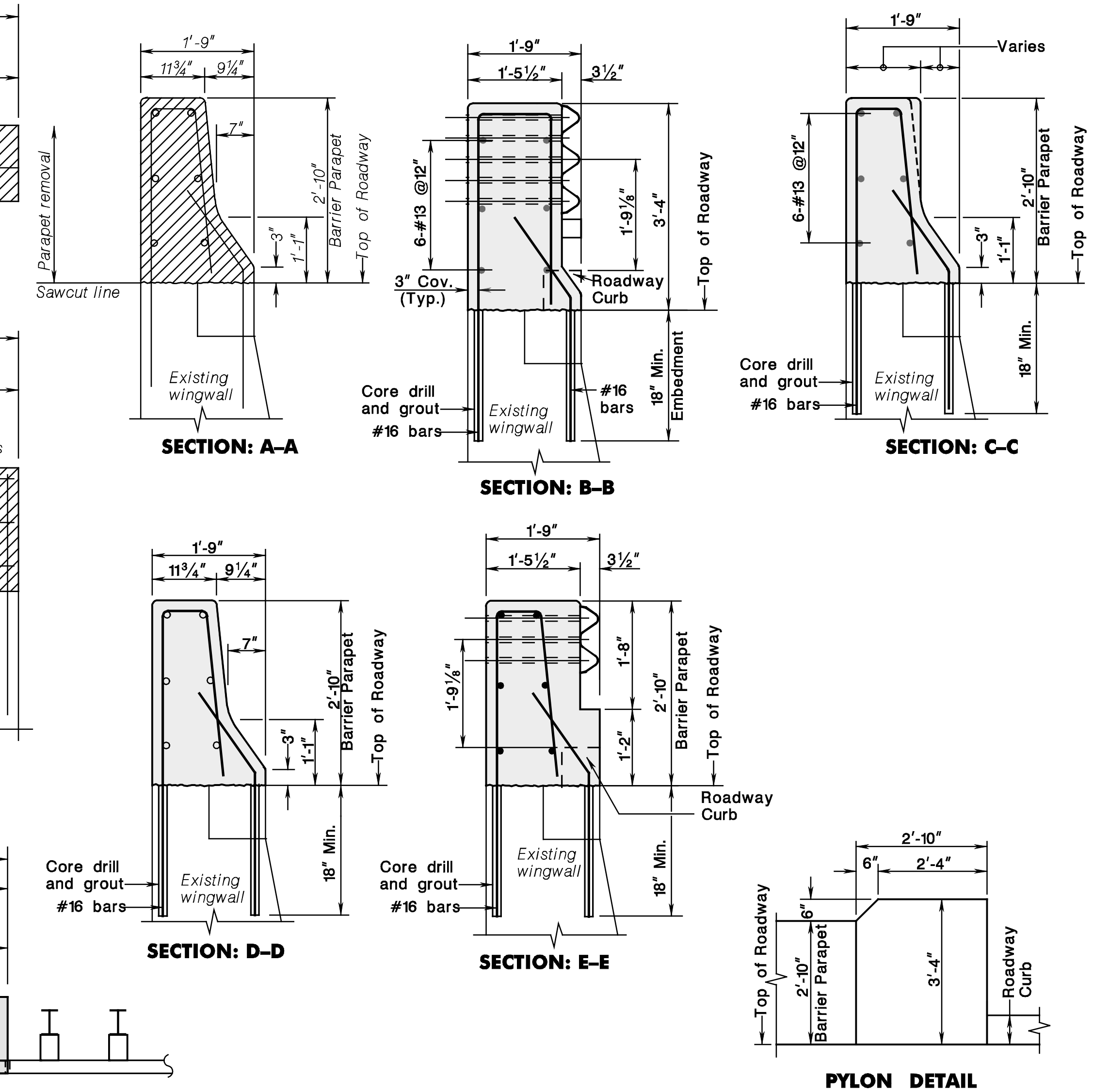


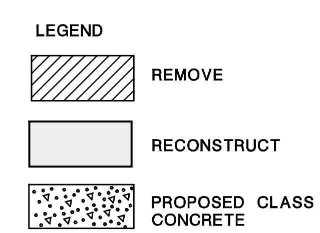


NOTE:

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

BARRIER PARAPET MODIFICATION FOR GUIDE RAIL

N.T.S.



GUIDE RAIL ATTACHMENT – EXISTING STRUCTURES

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

BCD-609-4.1

BCD-609-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

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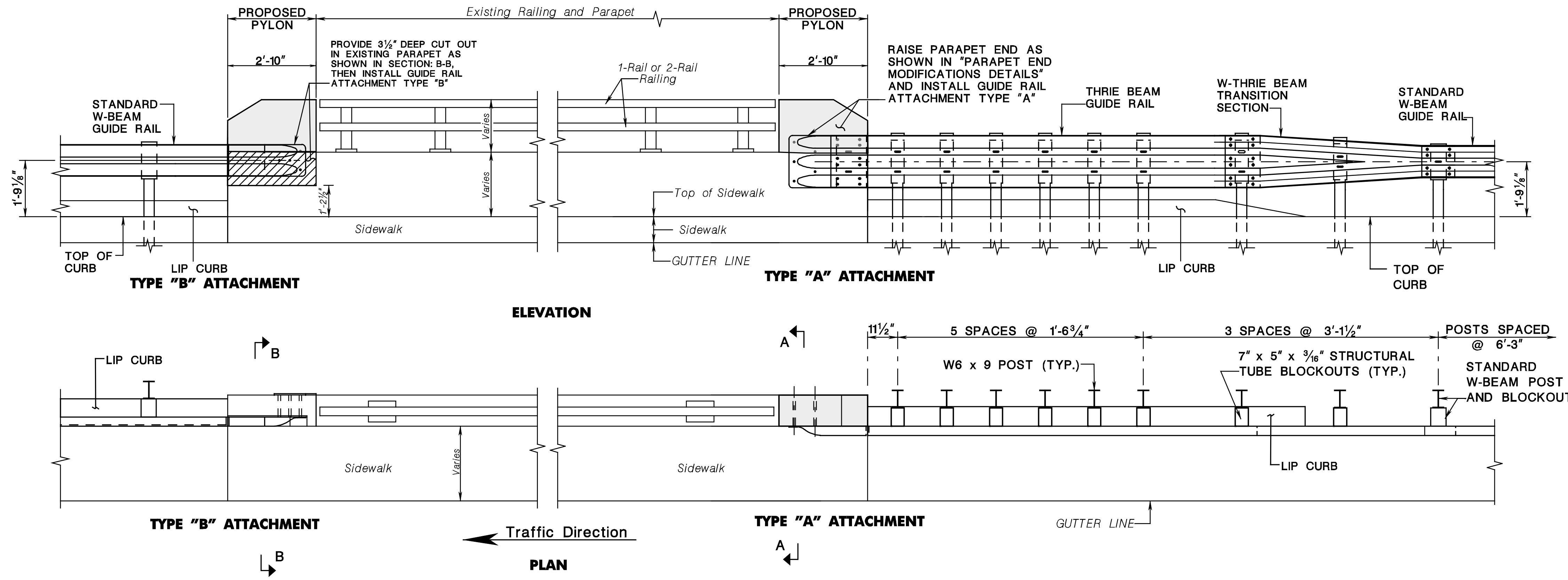
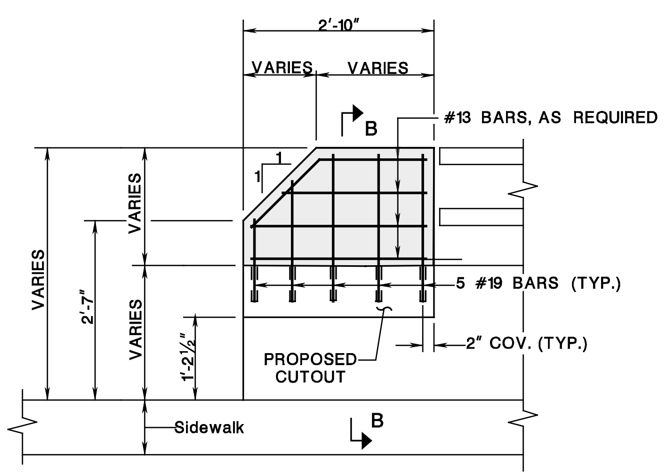


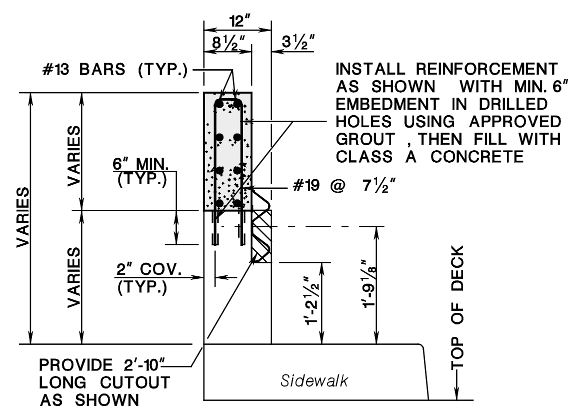
PROPOSED GUIDE RAIL ATTACHMENTS AT MODIFIED PARAPET ENDS

NOTE:

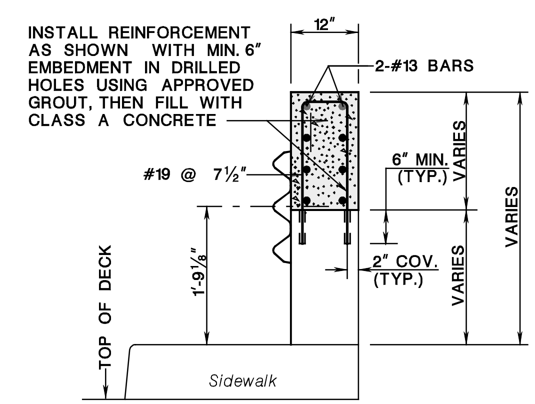
FOR BRIDGE ATTACHMENT TYPES AND ADDITIONAL DETAILS, REFER TO CD-609-16.



ELEVATION AT TYPE "B" ATTACHMENT

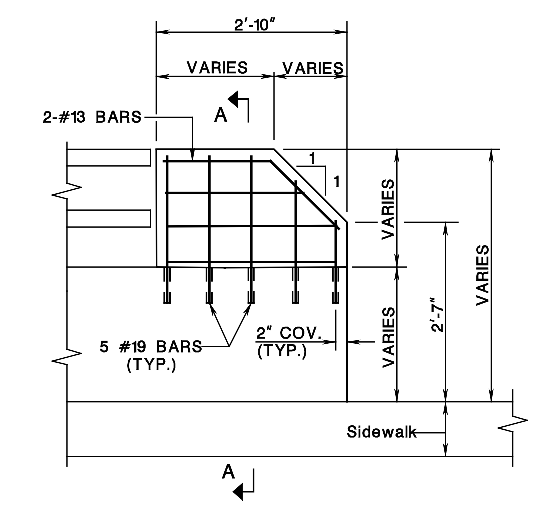


SECTION: B–B



SECTION: A–A

PARAPET END MODIFICATIONS DETAILS



ELEVATION AT TYPE "A" ATTACHMENT

LEGEND

REMOVE

PROPOSED CLASS A CONCRETE

GUIDE RAIL ATTACHMENT WITH SIDEWALK AND WITH CURBING ON APPROACH – EXISTING STRUCTURE WITH RAILING

BCD-609-5.1

PARAPET AND SIDEWALK WITH ONE OR TWO RAIL RAILING

N.T.S.

BCD-609-5

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

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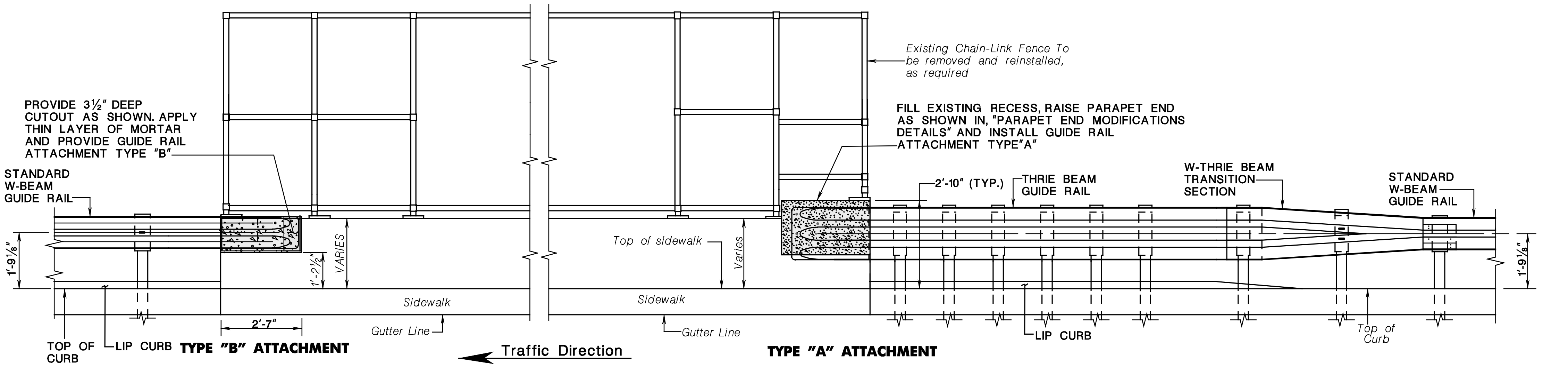
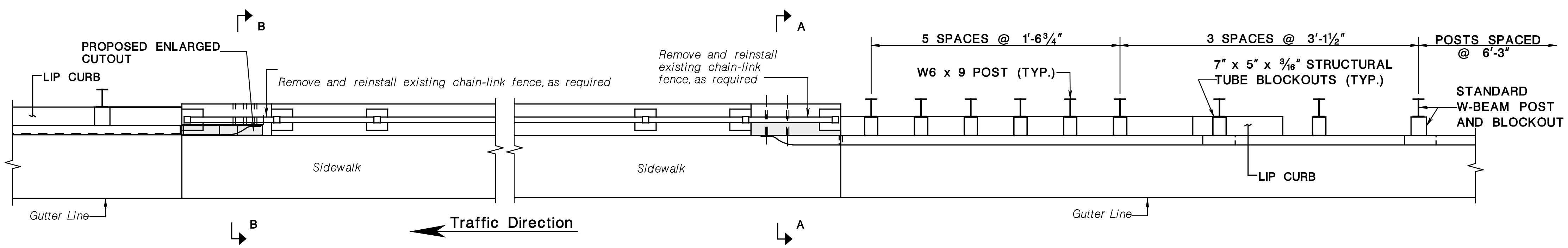


ELEVATION



TYPE "B" ATTACHMENT

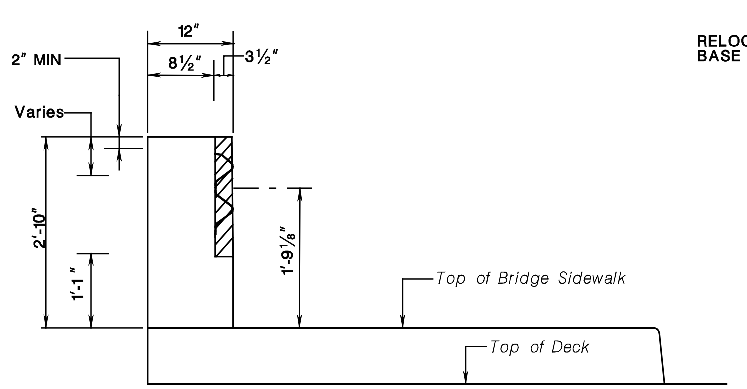
PLAN

TYPE "A" ATTACHMENT

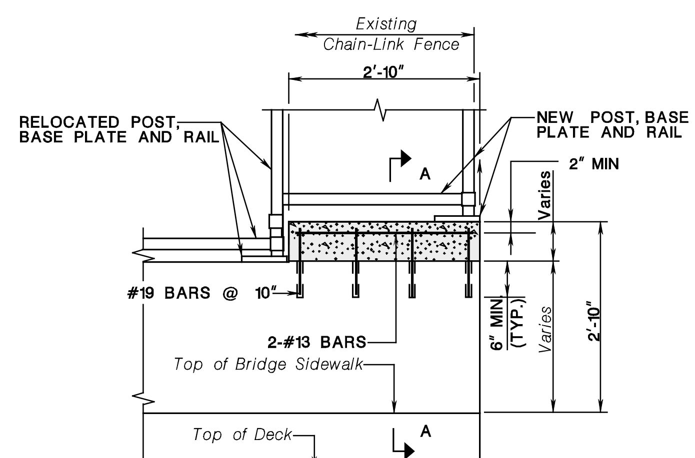
PROPOSED GUIDE RAIL ATTACHMENT

NOTE:

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

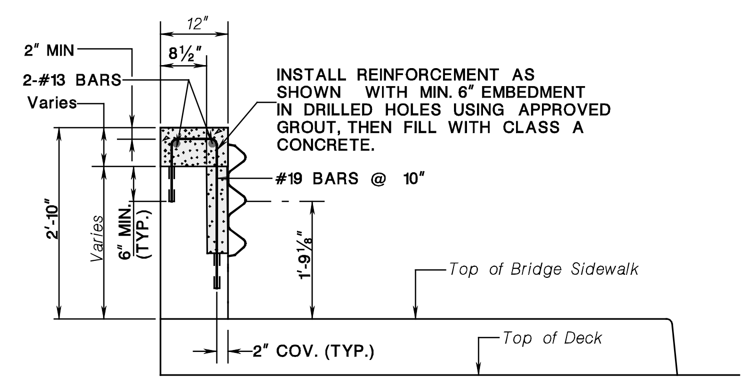


SECTION: B–B



ELEVATION AT TYPE "A" ATTACHMENT

(GUIDE RAIL NOT SHOWN FOR CLARITY)



SECTION: A–A

PARAPET END MODIFICATIONS DETAILS

LEGEND

REMOVE

PROPOSED CLASS A CONCRETE

GUIDE RAIL ATTACHMENT – EXISTING STRUCTURE WITH FENCE

BCD-609-6.1

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

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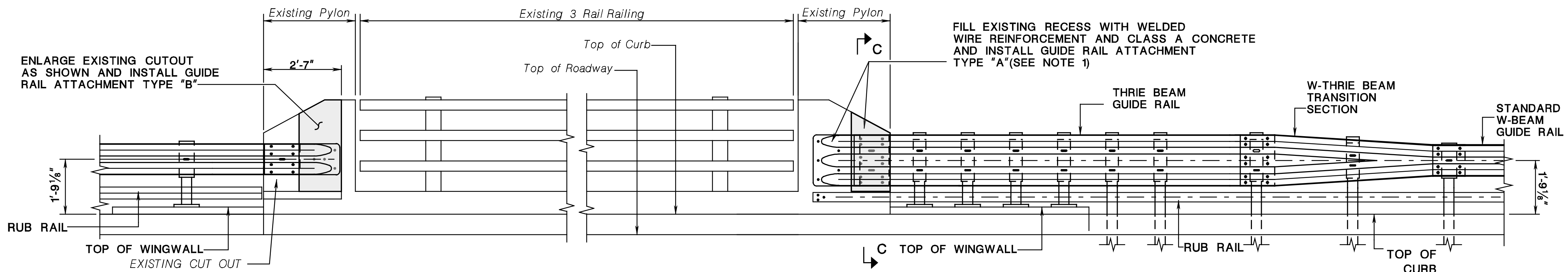
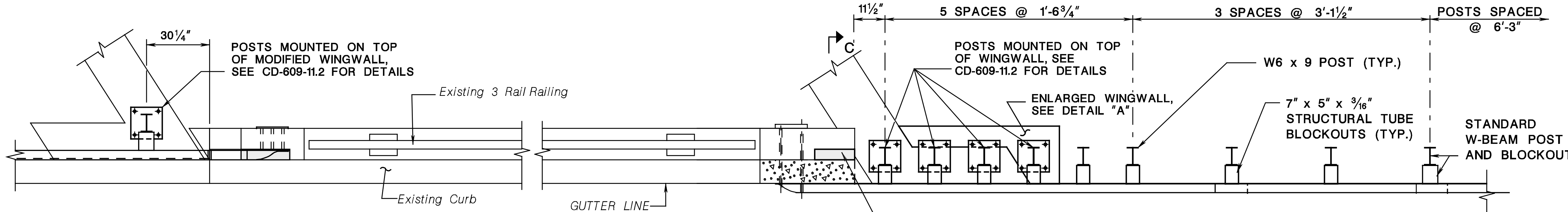
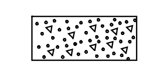


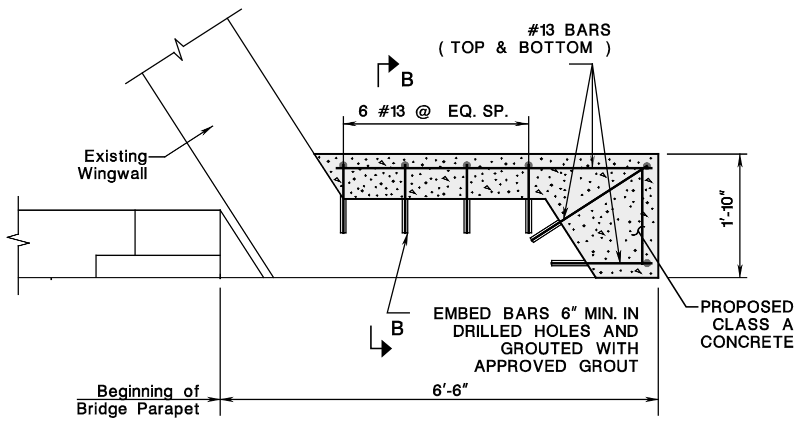


PLAN

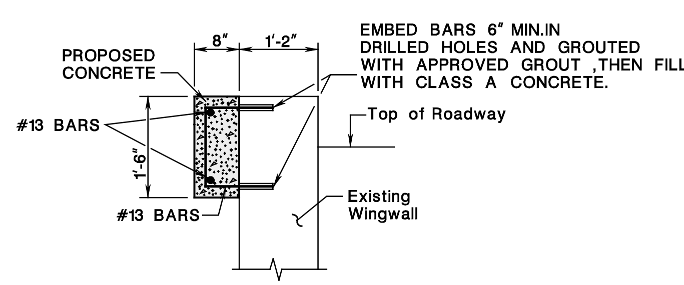
PROPOSED GUIDE RAIL ATTACHMENTS AT EXISTING PYLON

LEGEND

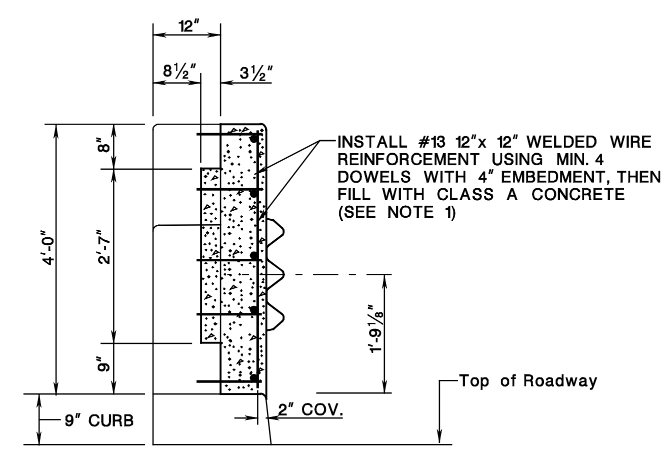

PROPOSED CLASS A CONCRETE



DETAIL "A"



SECTION: B-B



SECTION: C-C

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.

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

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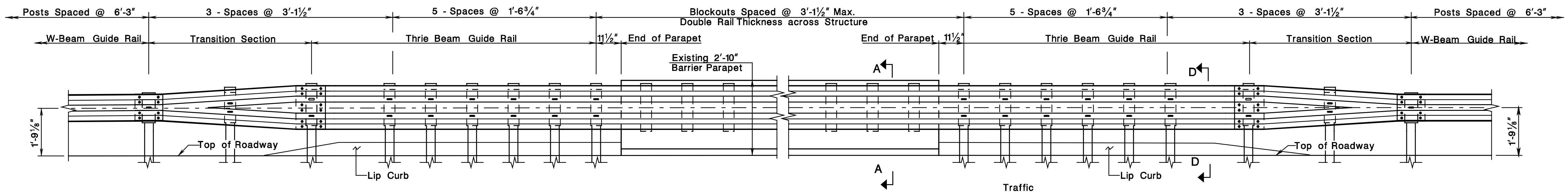
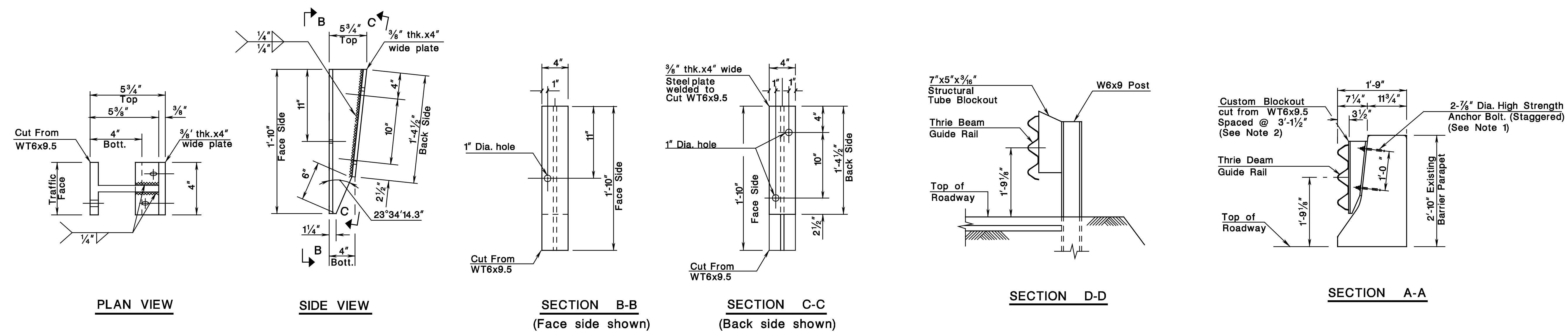


INTERIOR ELEVATION



CUSTOM BLOCKOUT DETAIL

NOTES:

1. Fully thread and install high strength anchor bolts in cored holes no greater than the bolt diameter plus ¼". 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.
2. Blockouts are spaced @ 3'-1½". For post and blockout spacing on approaches see, CD-609-12. Use double rail element across structure.
3. Galvanize custom blockout after fabrication.
4. Use this detail on existing short span structures where construction of barrier shaped parapet transitions are impractical.
5. For additional thrie beam and w-beam details, refer to CD-609-1 and CD-609-13.
6. 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

BCD-609-8.1

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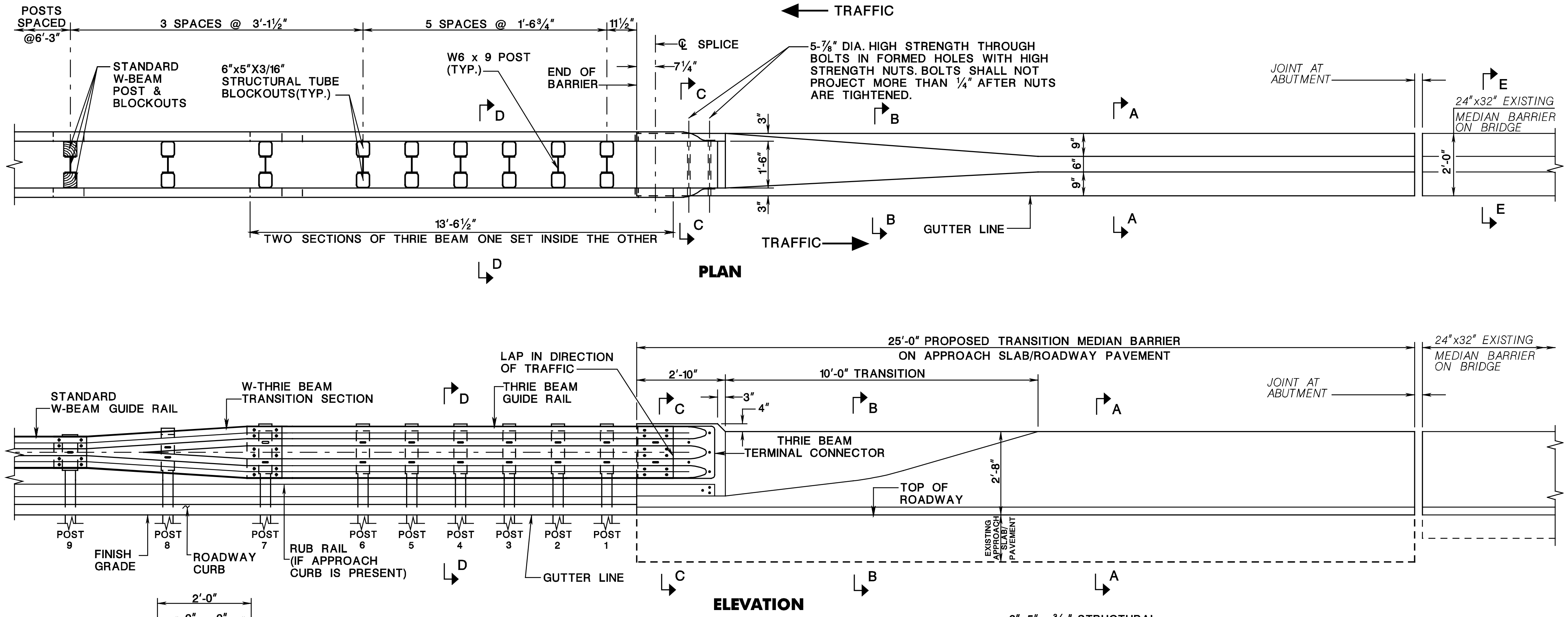
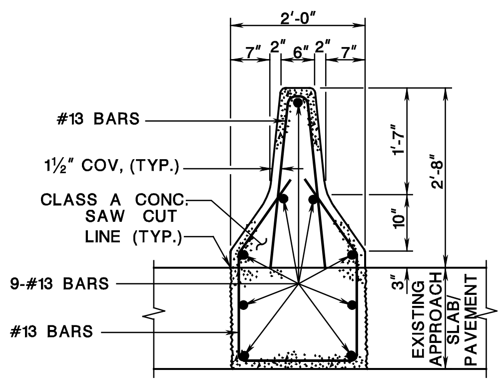
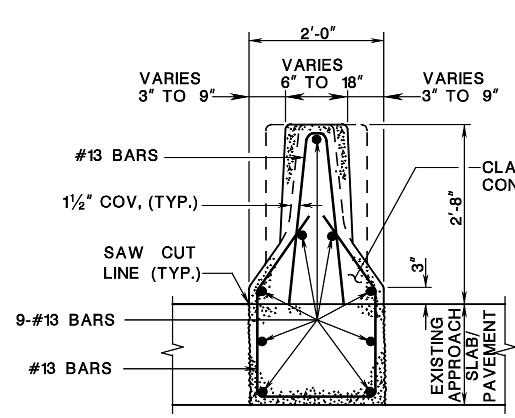


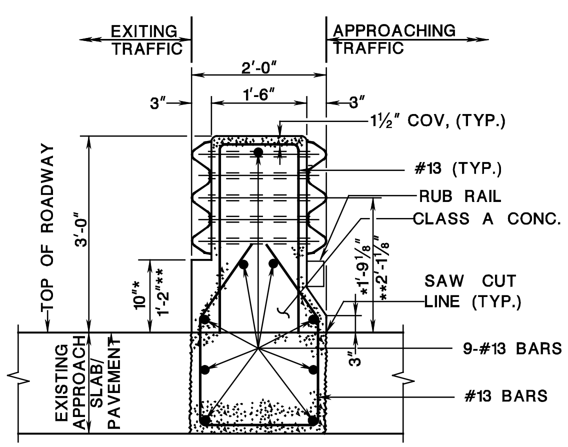
BIDIRECTIONAL BEAM GUIDE RAIL ATTACHMENT DETAILS



SECTION: A–A

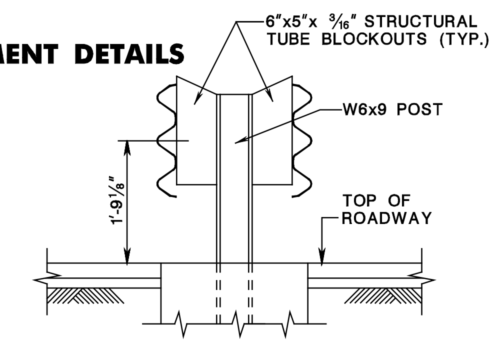


SECTION: B–B



SECTION: C–C

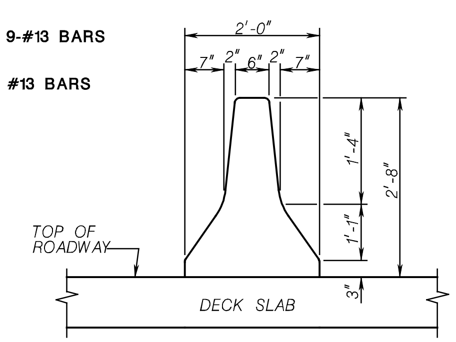
* IF NO ROADWAY CURB IS PRESENT
** IF ROADWAY CURB IS PRESENT



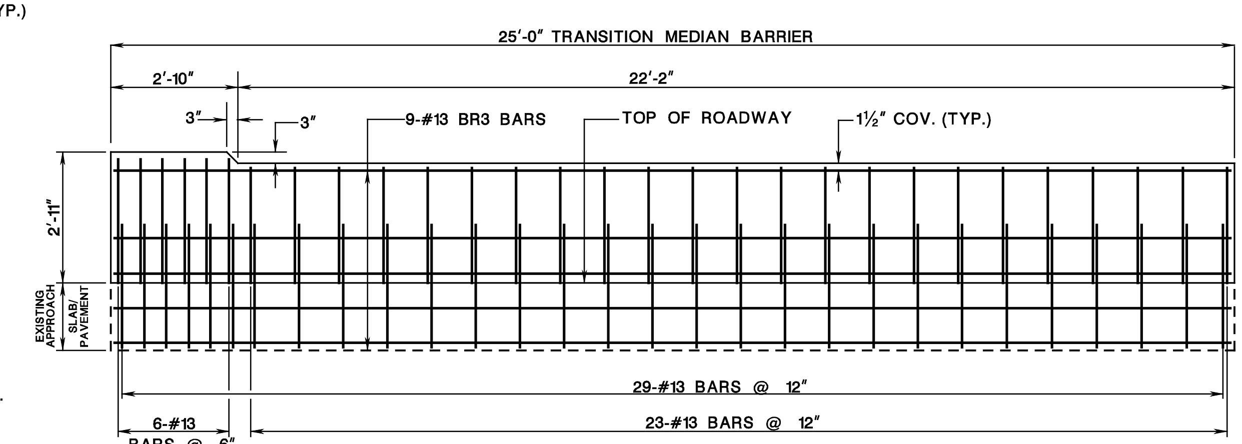
SECTION: D–D

IF NO ROADWAY CURB IS PRESENT, MEASURE HEIGHT FROM TOP OF PAVEMENT.

IF ROADWAY CURB IS PRESENT, MEASURE HEIGHT FROM TOP OF CURB.



SECTION: E–E



TRANSITION BARRIER ELEVATION

NOTES:

1. 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.
2. ENSURE THAT ALL CROSS SLOPES BETWEEN THE PAVEMENT EDGE AND POSTS ARE 10H:1V OR FLATTER.
3. 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.
4. 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.
5. 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.
6. LOCATE CONDUIT AT END OF BARRIER PARAPETS SO AS NOT TO INTERFERE WITH GUIDE RAIL POST SPACING.
7. LOCATE DRAINAGE INLETS AND ELECTRICAL JUNCTION BOXES ON APPROACHES SO AS NOT TO INTERFERE WITH GUIDE RAIL POST SPACING.
8. CONFORM STRUCTURAL STEEL PLATES AND SHAPES TO AASHTO M270 AND GALVANIZED PER AASHTO M111.
9. CONFORM HIGH STRENGTH STEEL BOLTS, NUTS AND WASHERS TO AASHTO M164. TREAT ZINC COATED BOLTS, NUTS AND WASHERS ACCORDING TO AASHTO M232M.
10. ENSURE THAT THE THICKNESS OF THRIE BEAM, W-BEAM AND W-THRIE BEAM TRANSITION IS 12-GAUGE.
11. FOR ADDITIONAL THRIE BEAM AND W-BEAM DETAILS REFER TO CD-609-13.
12. CONFORM REINFORCEMENT STEEL TO ASTM A615 (GRADE 60).

TRANSITION MEDIAN BARRIER

N.T.S.

BCD-609-9

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DEATILS

BCD-609-9.1

BDC16D-01-ORIGINAL SHEET

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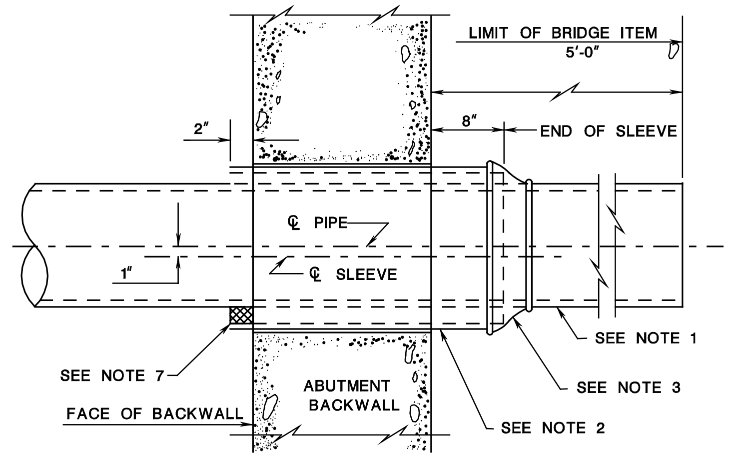

SLEEVE DETAIL FOR STEEL GAS MAINS

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 ℄ OF GAS MAIN 1" HIGHER THAN ℄ 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-653-1.1

BCD-653-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BDC16D-01-ORIGINAL SHEET

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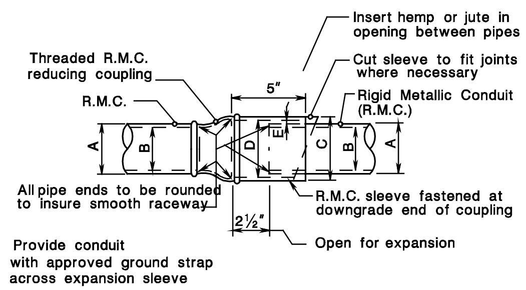


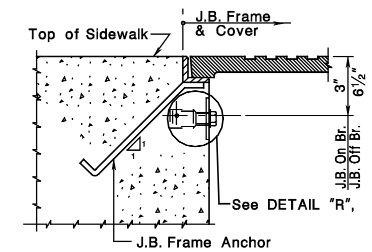
ELEVATION

R. M. C.			SLEEVE			Nominal Reducing Coupling	Clearance
Nom.Dia.	Ext.Dia. A	Int.Dia. B	Nom.Dia.	Ext.Dia. C	Int.Dia. D		E
1½"	1.900	1.610	2½"	2.875	2.469	2½" to 1½"	9/32"
2"	2.375	2.067	3"	3.500	3.068	3" to 2"	11/32"
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"

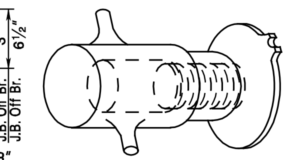
Install Expansion sleeves at all Fixed and Expansion joints and elsewhere as shown or approved. R.M.C. and hot-dip galvanize all fittings.

DETAILS OF R.M.C. EXPANSION SLEEVE

BCD-701-1.1



SECTION THROUGH FRAME



DETAIL "R"

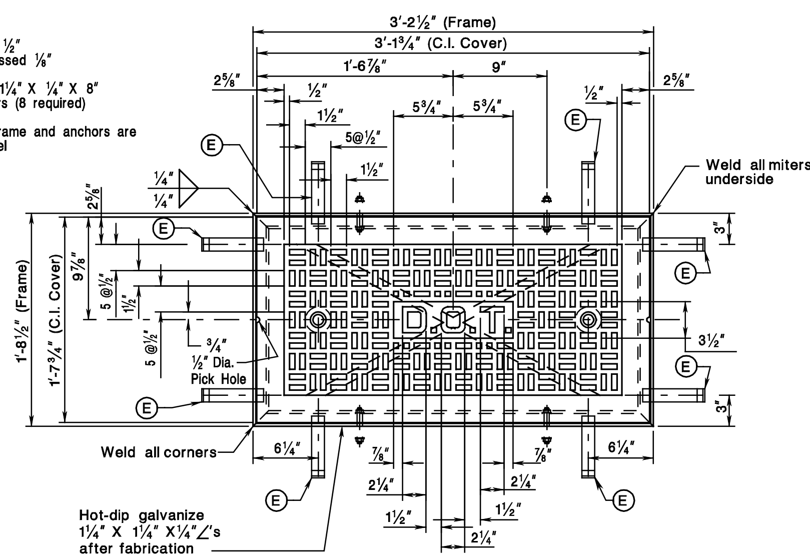
Threaded insert tapped for ½" Dia. bolt N.C., Class 2, free fit thread. Furnish with bolt ½" Dia. N.C., Class 2, free fit thread, thread 1½" long and 1½" O.D. flat washer. Galvanize bolts and washers according to ASTM A 153.

DETAILS OF ALTERNATE CABLE RACK SUPPORT

BCD-701-1.2

NOTES:

1. Letters have ½" stroke, depressed ⅛"
2. (E) Denotes 1¼" X ¼" X 8" Steel anchors (8 required)
3. Ensure that frame and anchors are structural steel



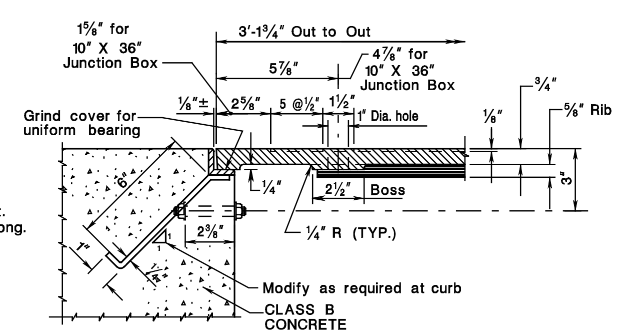
PLAN–FRAME AND COVER FOR 18" X 36" JUNCTION BOX

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 1½" O.D. flat washers.

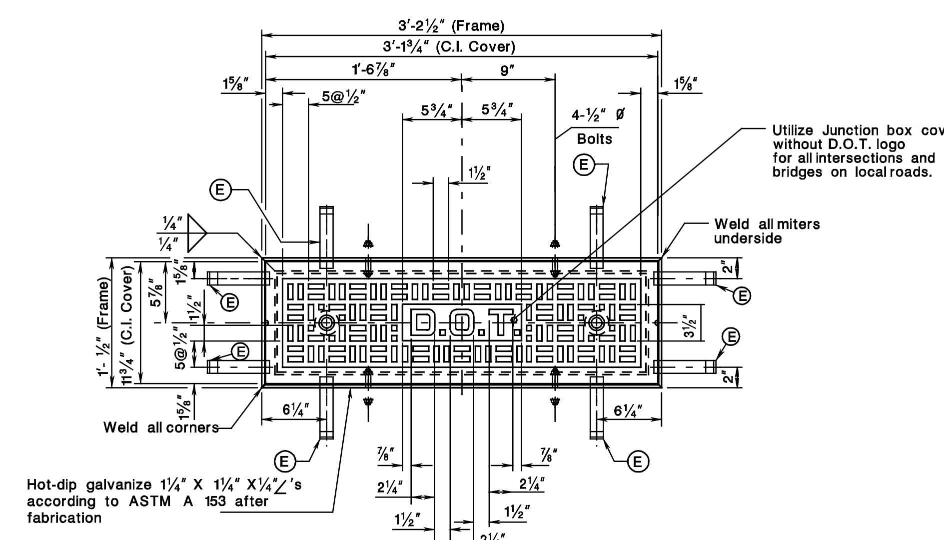
NOTE:

Supports in side walls only.



END SECTION THROUGH JUNCTION BOXES

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



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

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

DETAILS OF JUNCTION BOX

BCD-701-1.3

R.M.C. AND JUNCTION BOX DETAILS

N.T.S.

BCD-701-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BDC16D-01-ORIGINAL SHEET

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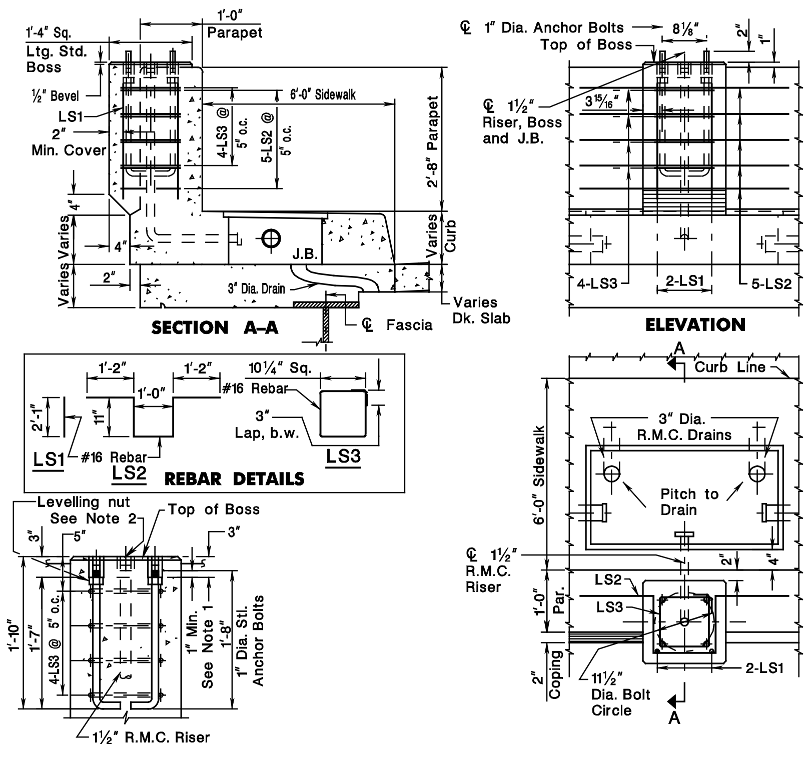
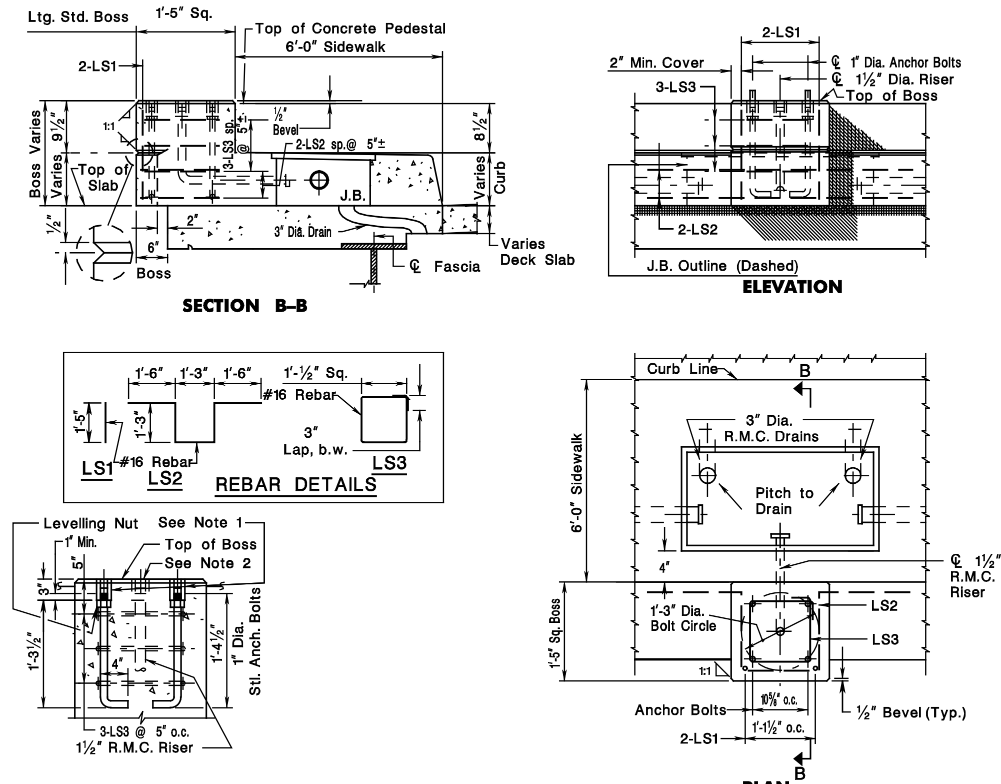


NOTES:

1. 1" Dia., 8-NC-2, threaded Galv. Sleeve, Hex. Couplings set flush with top of conc., plug with std. Hex Galv. Socket Screws
2. 1½" Galv. Cond. Pipe Coupling, set flush. Plug with Galv. recessed Plug

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

BCD-703-1.1



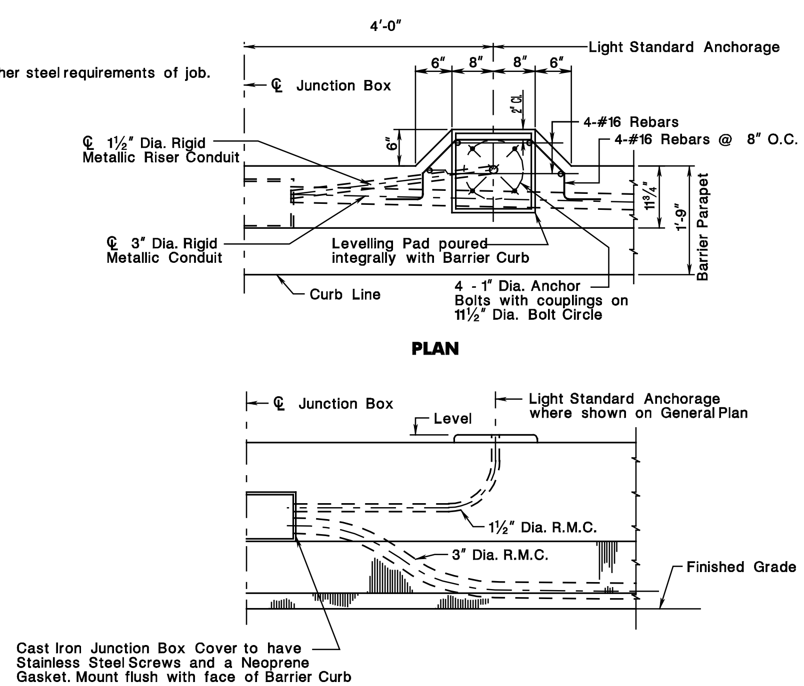
NOTES:

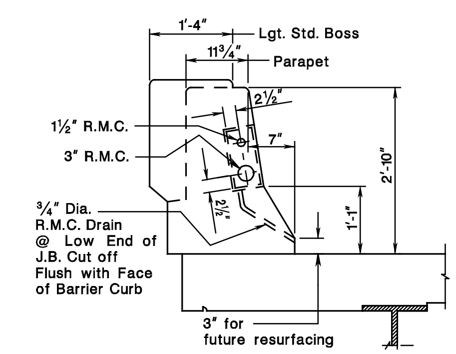
1. 1" Dia., 8-NC-2,threaded Galv. Sleeve, Hex. Couplings set flush with top of conc., plug with std. Hex Galv.Socket Screws
2. 1½" Galv. Cond. Pipe Coupling, set flush. Plug with Galv. recessed Plug

DETAILS OF LIGHTING STANDARD BOSS ON 8 ½" PEDESTAL

BCD-703-1.2

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





TYPICAL SECTION THROUGH PARAPET SHOWING JUNCTION BOX

DETAIL OF LIGHTING STANDARD BOSS FOR 2'–10" BARRIER PARAPET

BCD-703-1.3

HIGHWAY LIGHTING

N.T.S.

BCD-703-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BRIDGE CONSTRUCTION DETAILS

BDC16D-01-ORIGINAL SHEET
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