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

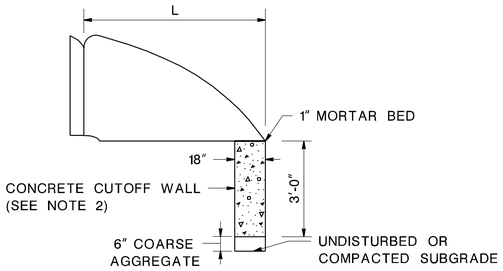
ROUND PIPE

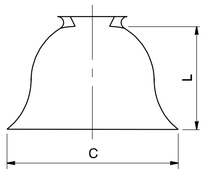
ARCH PIPE DIMENSION (INCHES)		STEEL GA.	ALUM. GA.	DIMENSIONS (INCHES)	
SPAN	RISE			L	C
17	13	16	16	19	44
21	15	16	16	23	50
24	18	16	16	28	58
28	20	16	16	32	66
35	24	14	14	39	80
42	29	14	14	46	99
49	33	12	12	53	111
57	38	12	12	63	126
64	43	12	12	70	138
71	47	12	12	77	150
77	52	12	12	77	162
83	57	12	12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

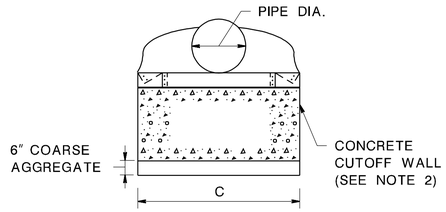
ARCH PIPE

NOTES:

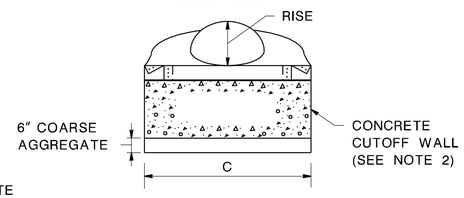
1. MINOR VARIATIONS TO THE ABOVE DIMENSIONS ARE ACCEPTABLE WITH THE EXCEPTION OF THE INSIDE DIAMETER DIMENSION.
2. A 1 INCH THICK MORTAR BED AND A 6 INCH DEEP LAYER OF COURSE AGGREGATE ARE REQUIRED WHEN A PRECAST CONCRETE CUTOFF WALL IS USED.
3. NO SEPARATE PAYMENT WILL BE MADE FOR THE CONCRETE CUTOFF WALL. THE COST OF THE CONCRETE CUTOFF WALL SHALL BE INCLUDED IN THE COST OF THE END SECTION.
4. REFER TO NOTE 4, CD-602-1.2 FOR SIZE OF CONCRETE CUTOFF WALL.







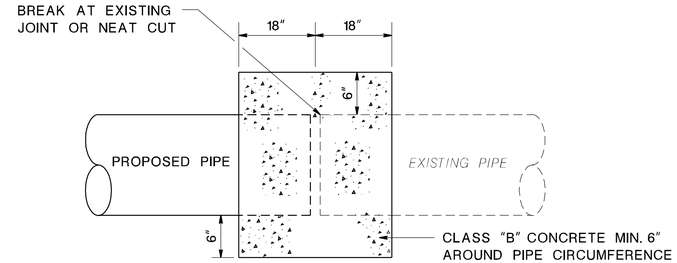
ELEVATION



ELEVATION

END SECTIONS FOR METAL PIPE

CD-602-1.1



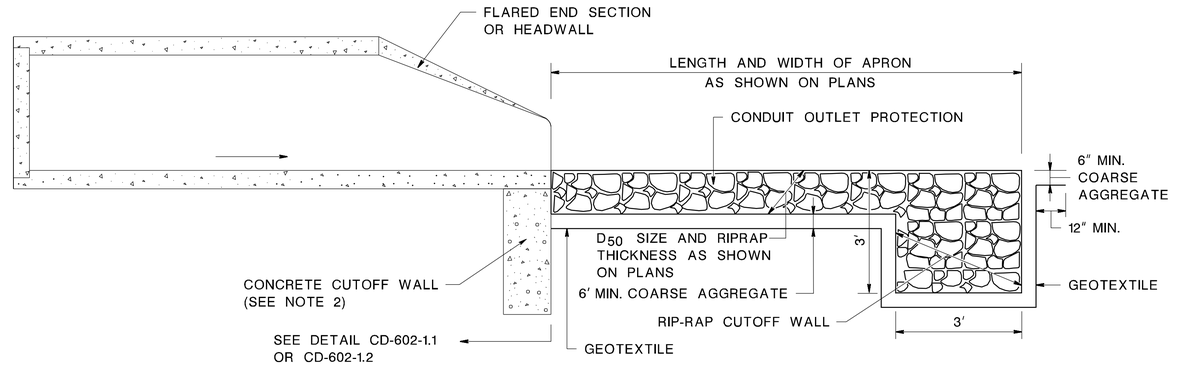
NOTE:

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

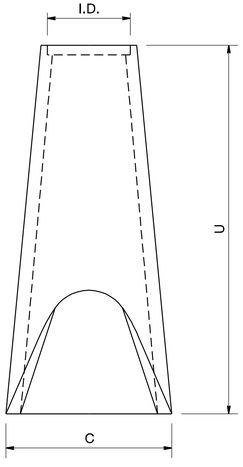
(FOR JOINING PROPOSED PIPE TO EXISTING PIPE)

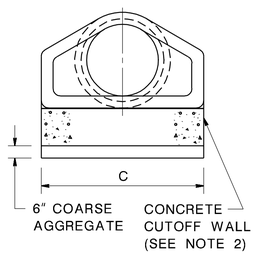
CD-602-1.3

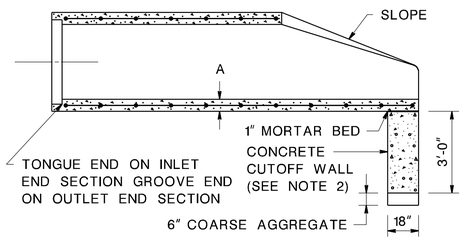


STORMWATER OUTFALL PROTECTION

CD-602-1.4







END SECTIONS FOR CONCRETE PIPE

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. NO SEPARATE PAYMENT WILL BE MADE FOR THE CONCRETE CUTOFF WALL. THE COST OF THE CONCRETE CUTOFF WALL SHALL BE INCLUDED IN THE COST OF THE END SECTION.
4. THE WIDTH OF THE CONCRETE CUTOFF WALL SHALL 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 SHALL EQUAL THE ACTUAL MAXIMUM WIDTH OF THE END SECTION.

CD-602-1.2

PIPE END SECTIONS

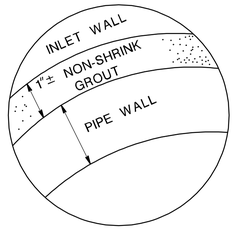
N.T.S.

CD-602-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

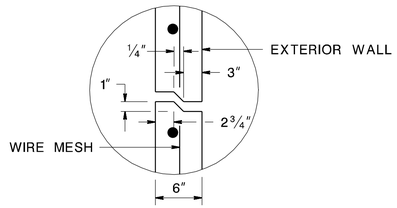
CONSTRUCTION DETAILS

BDC02D-01 - CD-602-1.3
BDC00D-1 - ORIGINAL SHEET



CONNECTION OF PIPE AND INLET FOR PRECAST INLET

CD-603-1.1

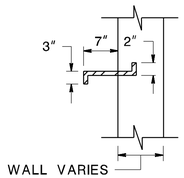


RISER JOINT DETAIL FOR PRECAST INLETS

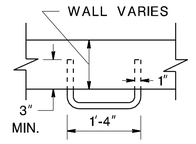
NOTE:

JOINT TO BE SECURELY MORTARED BY CONTRACTOR

CD-603-1.2



ELEVATION



PLAN

NOTE:

LADDER RUNGS FACING TRAFFIC 12" C TO C

LADDER RUNG DETAIL

CD-603-1.3

GENERAL NOTES

1. INLETS MAY BE CONSTRUCTED OF BRICK, CONCRETE, CONCRETE BLOCK OR PRECAST CONCRETE. WALLS SHALL BE 8 INCHES THICK IF BRICK AND 6 INCHES THICK IF CONCRETE, CONCRETE BLOCK OR PRECAST CONCRETE. INLET FOUNDATIONS AND INVERTS SHALL 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 SHALL BE CONSTRUCTED IN TWO STAGES, AND THE BOTTOM OF THE FOOTINGS SHALL 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 SHALL BE 12 INCHES THICK AND THE DEPTH OF FOUNDATION INCREASED TO 12 INCHES. WHEN ROCK IS ENCOUNTERED, THE DEPTH OF THE FOUNDATION SHALL NOT BE INCREASED.
5. INLET FOUNDATIONS WHICH ARE PRECAST SHALL BE PLACED ON A 6 INCH THICK BED OF COMPACTED COARSE AGGREGATE SIZE NO. 57. THE COARSE AGGREGATE SHALL EXTEND 6 INCHES BEYOND THE HORIZONTAL LIMITS OF THE INLET FOUNDATION.
6. CASTINGS FOR PRECAST INLETS SHALL BE ADJUSTED 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 SHALL BE INCREASED TO 12 INCHES. WHEN ROCK IS ENCOUNTERED, THE DEPTH OF THE FOUNDATION SHALL NOT 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″

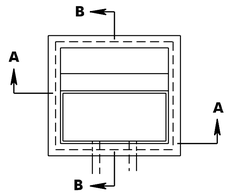
REINFORCING SHOWN FOR PRECAST INLETS IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING FOR HANDLING IS THE RESPONSIBILITY OF THE CONTRACTOR.

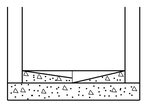
ALTERNATE REINFORCEMENT

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 BAR @ 18″ HORIZONTAL.
15′1″ TO 20′0″	WWF 3 x 6 W6 ADD #10 BAR @ 9″ HORIZONTAL OR ADD #13 BAR AT 15″ HORIZONTAL.

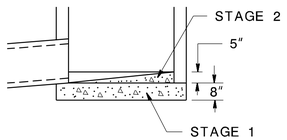
9. ALL INLETS AND MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND ITS AMENDMENTS.
10. FOR CAST IRON CLASS 30B ONLY. ANY OTHER CLASS OF CAST IRON OR TYPE OF MATERIAL MUST BE ON THE BUREAU OF MATERIALS APPROVED PRODUCTS LIST OR NEW TECHNOLOGYS AND PRODUCTS APPROVED PRODUCTS LIST.

CD-603-1.6





SECTION A–A



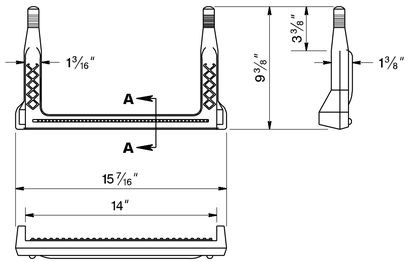
SECTION B–B

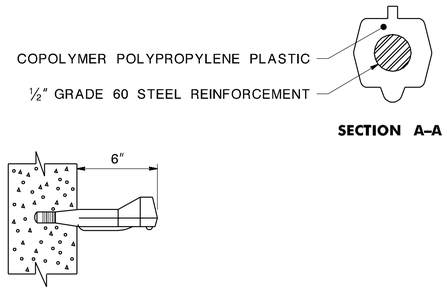
NOTE:

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-603-1.4

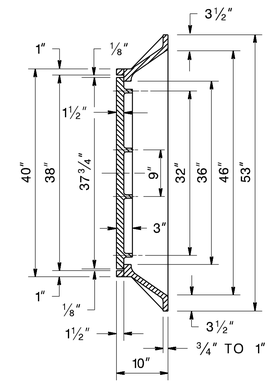


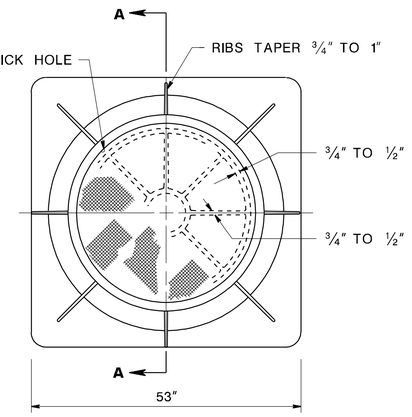


SECTION A–A

COPOLYMER POLYPROPYLENE PLASTIC LADDER RUNG

CD-603-1.5





NOTE:

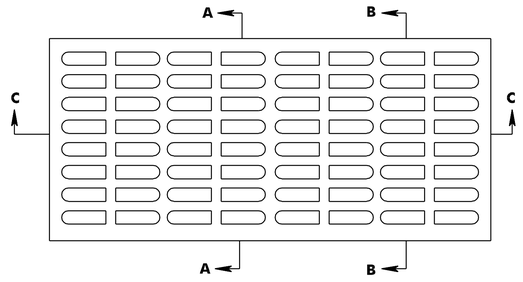
SEE GENERAL NOTE 10, CD-603-1.6

MINIMUM WEIGHTS

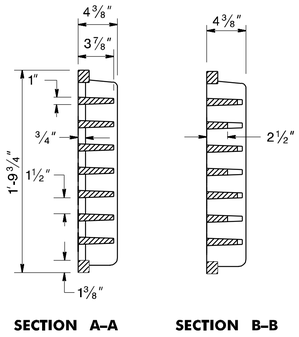
WEIGHT OF FRAME = 630#
WEIGHT OF COVER = 400#

NEW MANHOLE CASTINGS, SQUARE FRAME, CIRCULAR COVER

CD-603-1.7

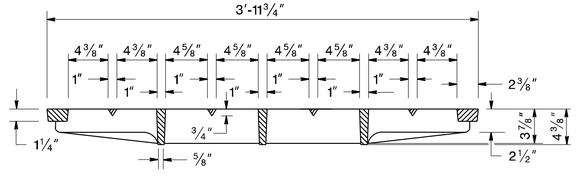


MIN. WEIGHT 325 LBS.



SECTION A–A

SECTION B–B



SECTION C–C

NOTE:

SEE GENERAL NOTE 10, CD-603-1.6

BICYCLE SAFE GRATES (CAST IRON)

CD-603-1.8

NOTE:

REINFORCING BARS ARE IN METRIC UNITS.

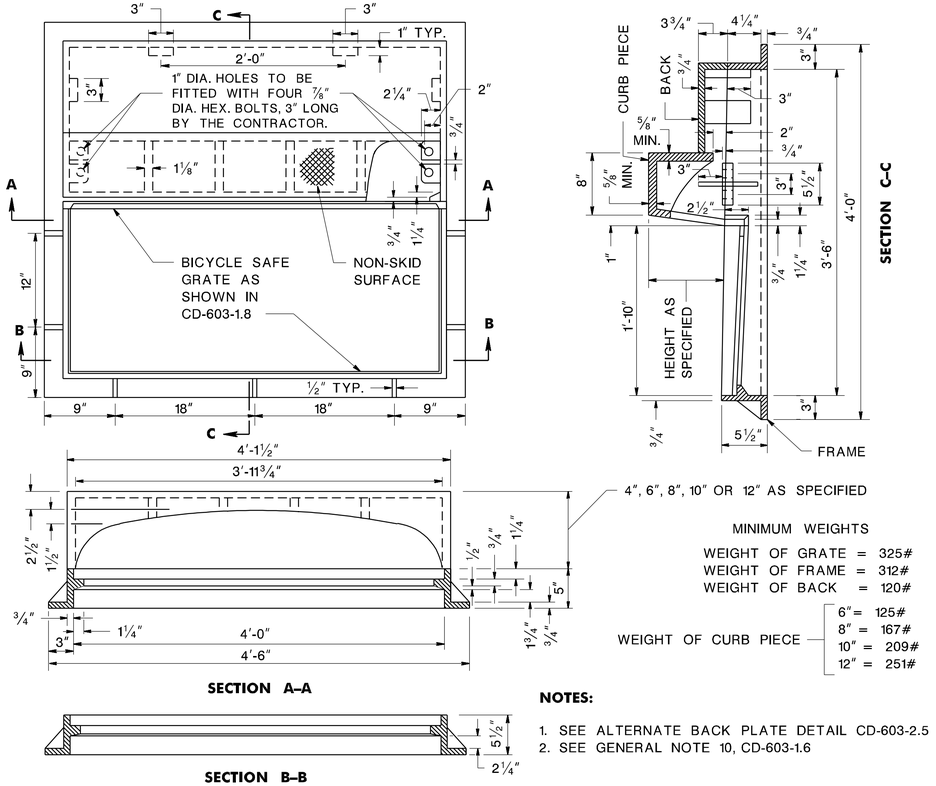
INLET GENERAL DETAILS

N.T.S.

CD-603-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

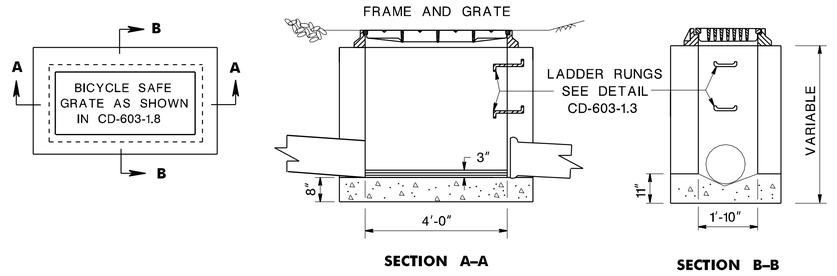


NOTES:

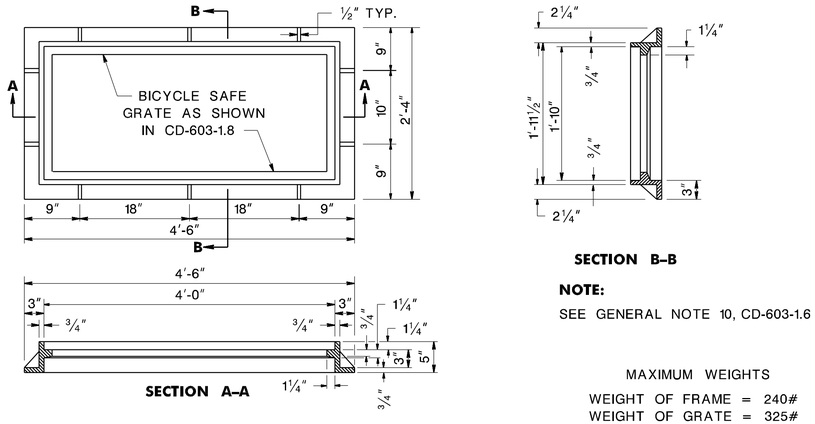
1. SEE ALTERNATE BACK PLATE DETAIL CD-603-2.5
2. SEE GENERAL NOTE 10, CD-603-1.6

FRAME–BACK–CURB PIECE FOR INLET TYPE B AND TYPE C

CD-603-2.1



INLETS, TYPE A



NOTE:

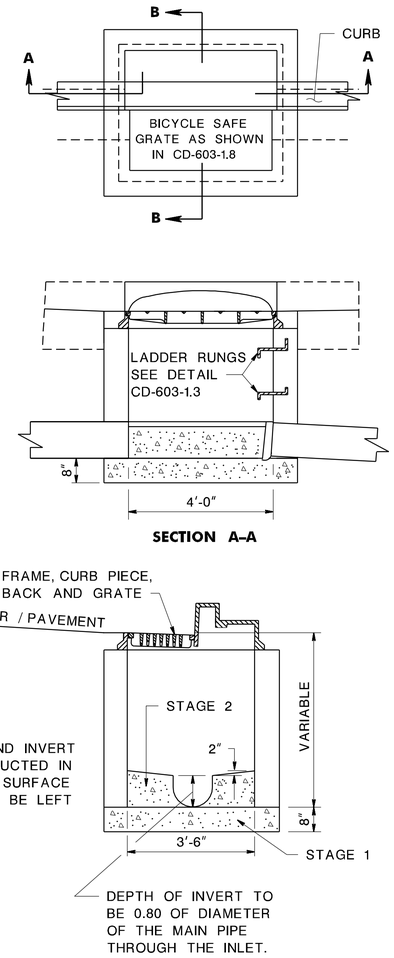
SEE GENERAL NOTE 10, CD-603-1.6

MAXIMUM WEIGHTS

WEIGHT OF FRAME = 240#
WEIGHT OF GRATE = 325#

FRAME FOR INLETS, TYPE A

CD-603-2.4

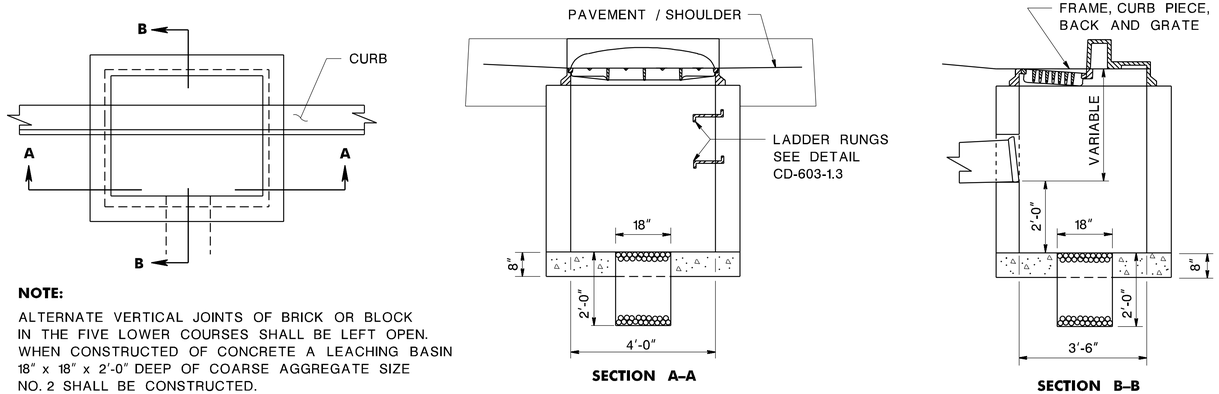


NOTE:

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

INLETS, TYPE B WITH C.I. CURB PIECE–BACK–FRAME AND GRATE

CD-603-2.6



NOTE:

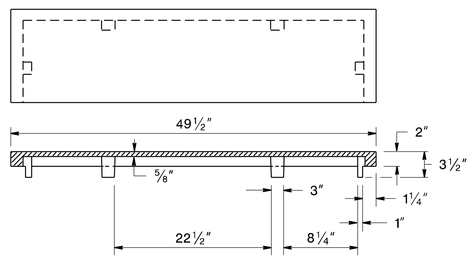
ALTERNATE VERTICAL JOINTS OF BRICK OR BLOCK IN THE FIVE LOWER COURSES SHALL BE LEFT OPEN. WHEN CONSTRUCTED OF CONCRETE A LEACHING BASIN 18" x 18" x 2'-0" DEEP OF COARSE AGGREGATE SIZE NO. 2 SHALL BE CONSTRUCTED.

INLETS, TYPE C WITH C.I. CURB PIECE–BACK–FRAME AND GRATE

CD-603-2.2

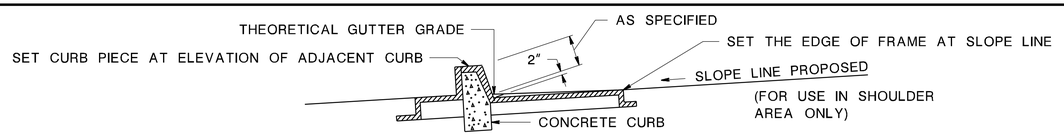
NOTES:

1. MINIMUM WEIGHT = 120#
2. SEE GENERAL NOTE 10, CD-603-1.6



ALTERNATE BACK PLATE

CD-603-2.5



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

CD-603-2.3

INLETS, TYPE A, B & C

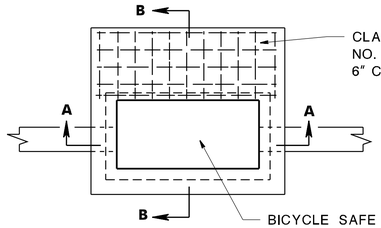
N.T.S.

CD-603-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

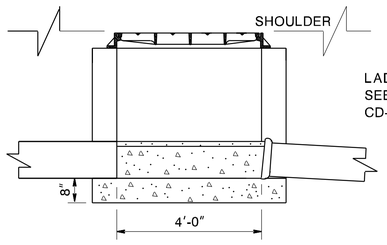
CONSTRUCTION DETAILS

pen table=F:\z_System\plot\TRLA\Roadway\basic.tbl
scale=30.000000:1.000000
date=05-FEB-2003 16:34
ID=TP2CHEM
BDC002D-01 - CD-603-2.1, CD-603-2.4 & CD-603-2.5
BDC00-1 - ORIGINAL SHEET
file=F:\Details\StdDet\cd6032.dgn

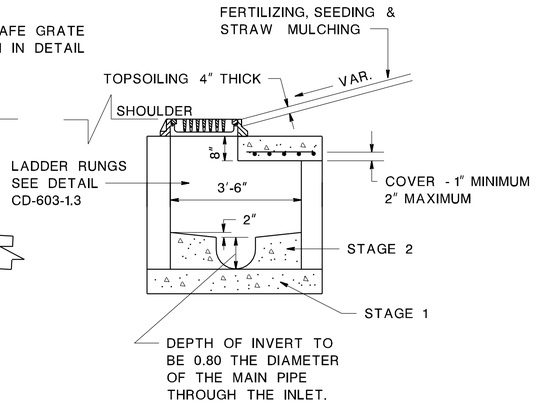


NOTE:

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



SECTION A–A

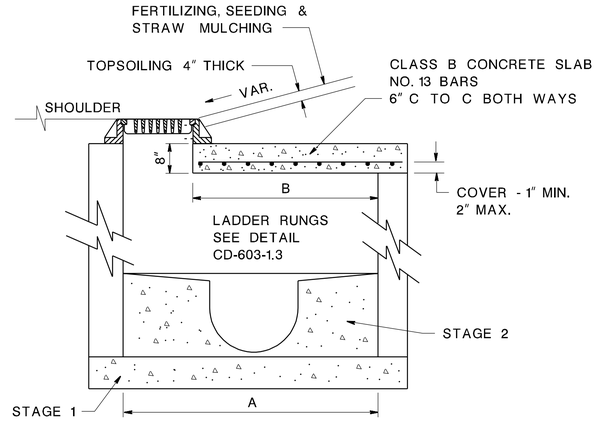


SECTION B–B

INLETS, TYPE B MODIFIED

CD-603-3.1

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

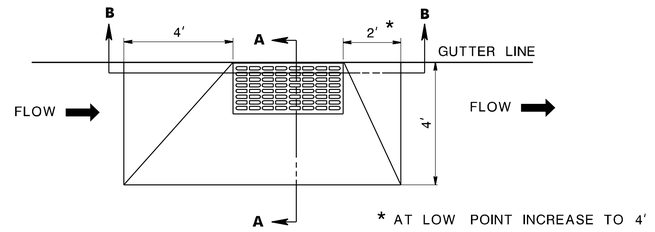


INLET TYPE	DIMENSION A	DIMENSION B
B1 MODIFIED	4′-6″	2′-8″
B2 MODIFIED	5′-6″	3′-8″

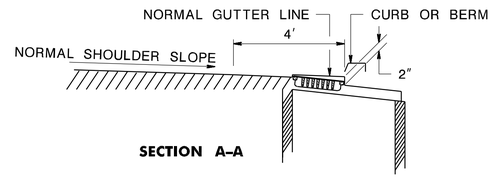
FOUNDATION AND INVERT TO BE CONSTRUCTED IN TWO STAGES. TOP SURFACE OF STAGE 1 TO BE LEFT ROUGH.

INLETS, TYPE B1 MODIFIED AND TYPE B2 MODIFIED

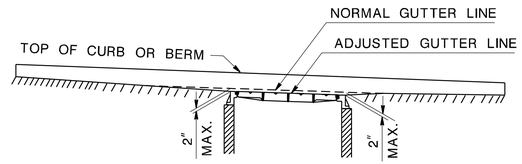
CD-603-3.2



PLAN



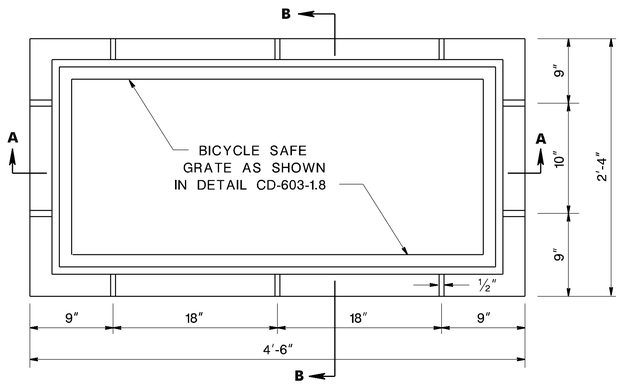
SECTION A–A

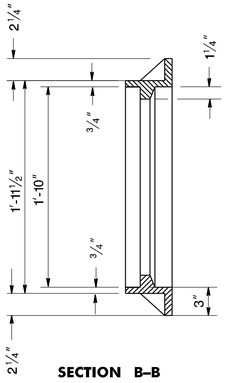


SECTION B–B

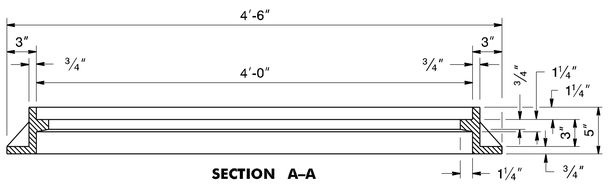
METHOD OF DEPRESSING INLETS AT SHOULDERS

CD-603-3.3





SECTION B–B



SECTION A–A

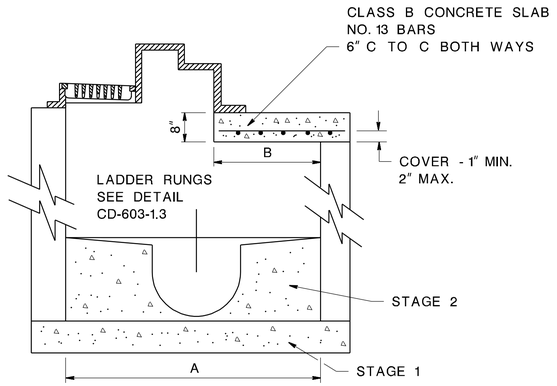
NOTE:

SEE GENERAL NOTE 10, CD-603-1.6

FRAME TO BE USED FOR INLETS, TYPE B MODIFIED

CD-603-3.4

INLETS TYPE B1 OR TYPE B2 SHALL 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″

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

INLETS, TYPE B1 AND TYPE B2

CD-603-3.5

NOTE:

REINFORCING BARS ARE IN METRIC UNITS.

INLETS, TYPE B1, B2, & B, B1, & B2 MODIFIED

N.T.S.

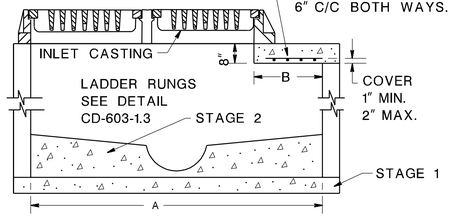
CD-603-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

ID=TP2CIEM date=15-FEB-2003 16:35 scale=30.000000:1.000000 pen table=F:\z_System\plot\TRLA\Roadway\basic.tbl
BDC02D-01 - CD-603-3.1, CD-603-3.2, CD-603-3.4 &
CD-603-3.5
BDC00D-1 - ORIGINAL SHEET
file=F:\Details\StdDet\cd6033.dgn

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

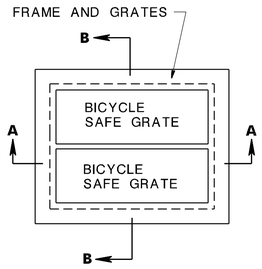


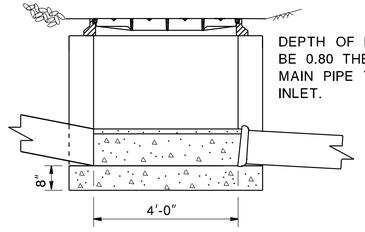
NOTE:
FOUNDATION AND INVERT TO BE CONSTRUCTED IN TWO STAGES. TOP SURFACE OF STAGE 1 TO BE LEFT ROUGH.

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

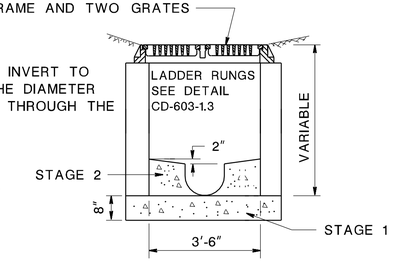
INLETS, TYPE E1 AND TYPE E2

CD-603-4.1





SECTION A–A

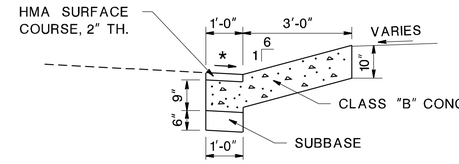


SECTION B–B

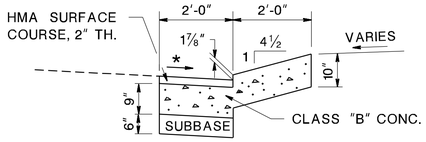
NOTE:
FOUNDATION AND INVERT TO BE CONSTRUCTED IN 2 STAGES. TOP SURFACE OF STAGE 1 TO BE LEFT ROUGH.

INLETS, TYPE E

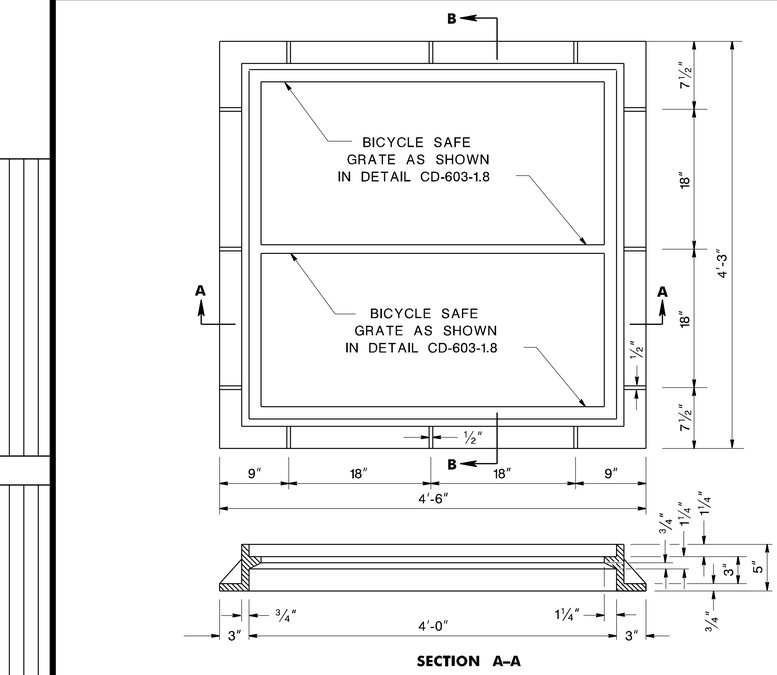
CD-603-4.2



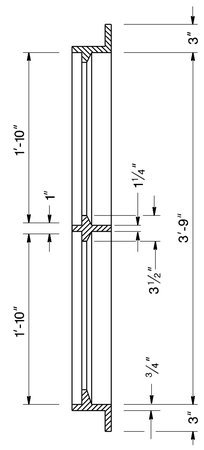
SECTION A–A



SECTION B–B



SECTION A–A



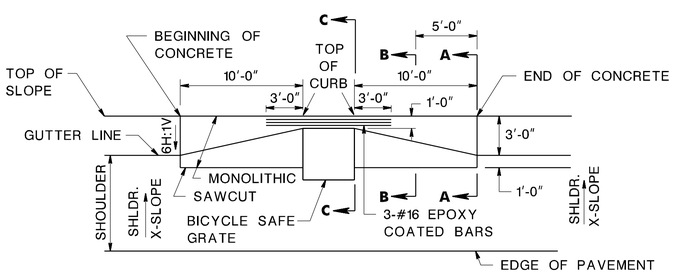
SECTION B–B

WEIGHT OF FRAME = 435#
WEIGHT OF EACH GRATE = 325#

NOTE:
SEE GENERAL NOTE 10, CD-603-1.6

FRAME FOR INLETS, TYPE E

CD-603-4.3



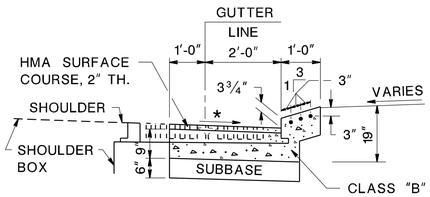
PLAN VIEW

NOTE:
THE UNDERLYING MATERIAL SHALL BE SHAPED AND COMPACTED TO A FIRM, EVEN SURFACE.

NOTE:
ITEM INCLUDES EXCAVATION
SUBBASE DES I-1 OR I-2, 6" TH.
CLASS B CONCRETE (RDWY)
HMA CONCRETE SURFACE COURSE
UNDERLAYER PREPARATION
TACK COAT
INLET, TYPE "E" WITH CASTING.

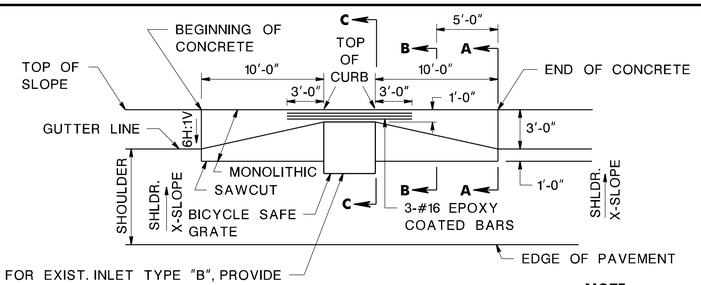
INLETS, TYPE ES

CD-603-4.4



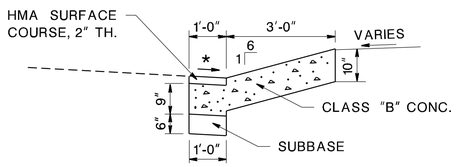
SECTION C–C

NOTE:
ITEM INCLUDES EXCAVATION SUBBASE DES I-1 OR I-2, 6 INCHES THICK. CLASS B CONCRETE (RDWY) HMA SURFACE COURSE UNDERLAYER PREPARATION TACK COAT INLET CASTING, TYPE "E" REMOVAL OF EXISTING CLASS B CONCRETE IF REQUIRED.

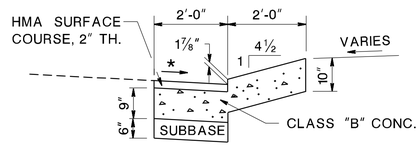


PLAN VIEW

NOTE:
THE UNDERLYING MATERIAL SHALL BE SHAPED AND COMPACTED TO A FIRM, EVEN SURFACE.



SECTION A–A



SECTION B–B

* SAME X-SLOPE AS ADJOINING SHOULDER

INLET CASTINGS, TYPE ES

CD-603-4.5

NOTE:
REINFORCING BARS ARE IN METRIC UNITS.
HMA = HOT MIX ASPHALT

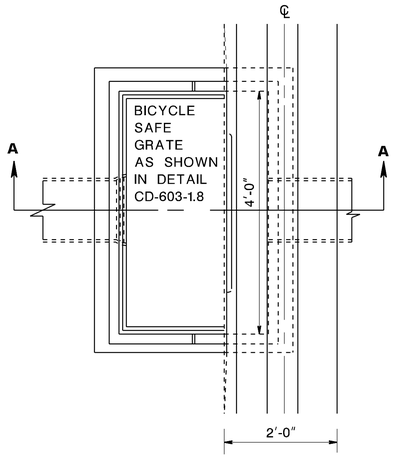
INLETS, TYPE E, E1, E2, & ES

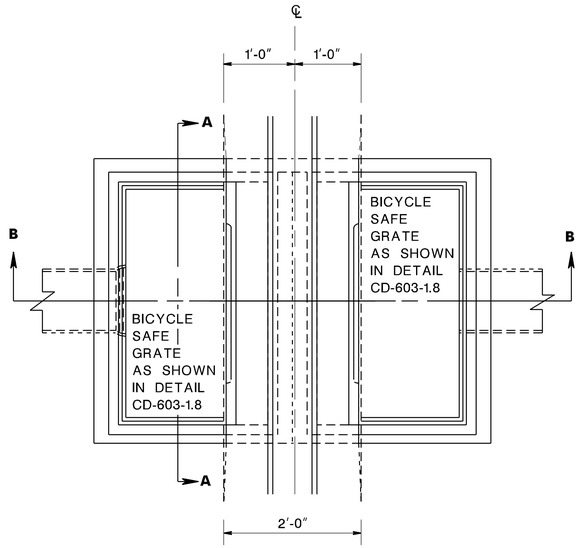
N.T.S.

CD-603-4

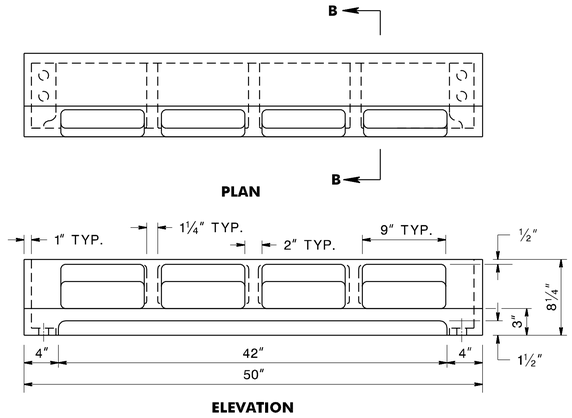
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS





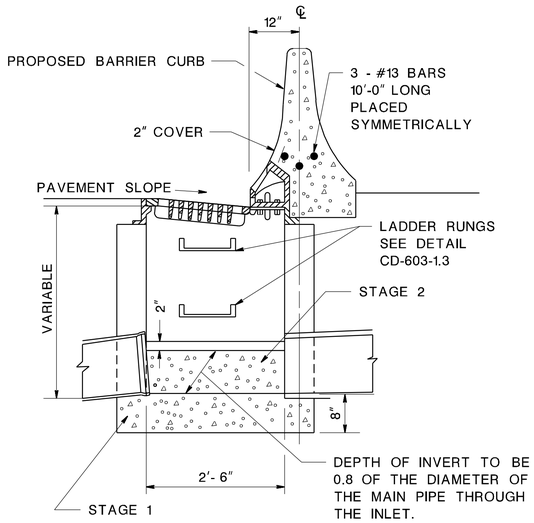
PLAN



NOTE:
SEE GENERAL NOTE 10, CD-603-1.6

CAST IRON CURB PIECE FOR INLETS, TYPE D1 AND D2

CD-603-5.3

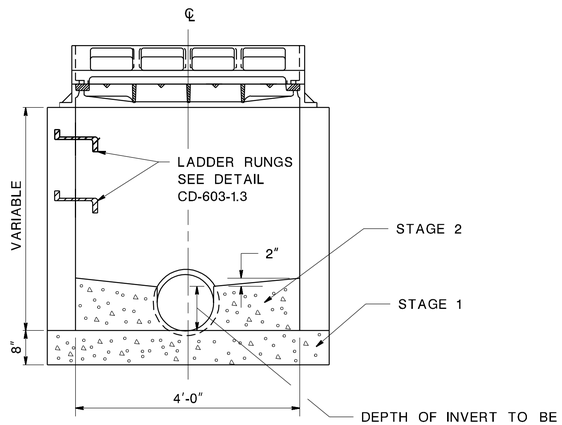


SECTION A–A

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

INLETS TYPE D–1

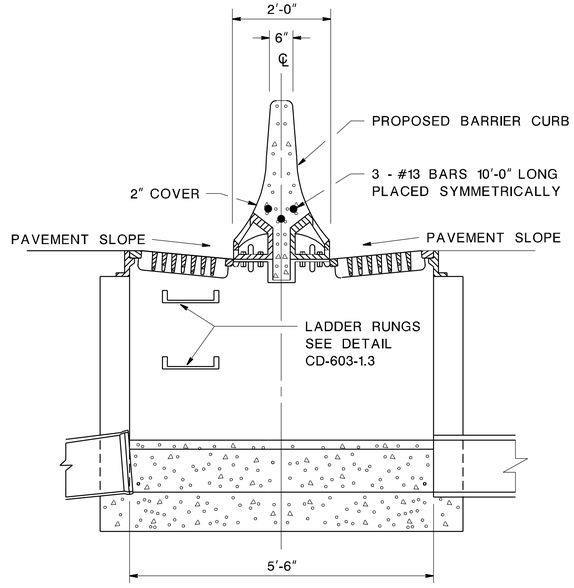
CD-603-5.1



SECTION A–A

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

INLETS TYPE D–2



SECTION B–B

NOTE:
REINFORCING BARS ARE IN METRIC UNITS.

INLETS, TYPE D1 & D2

N.T.S.

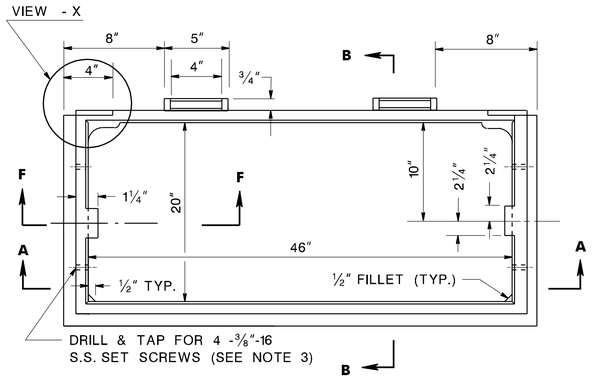
CD-603-5

NEW JERSEY DEPARTMENT OF TRANSPORTATION

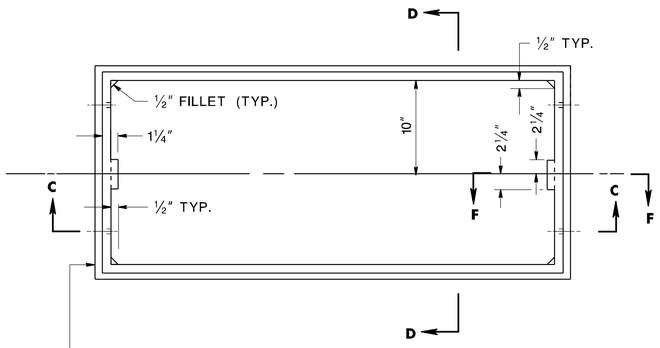
CONSTRUCTION DETAILS

CD-603-5.2

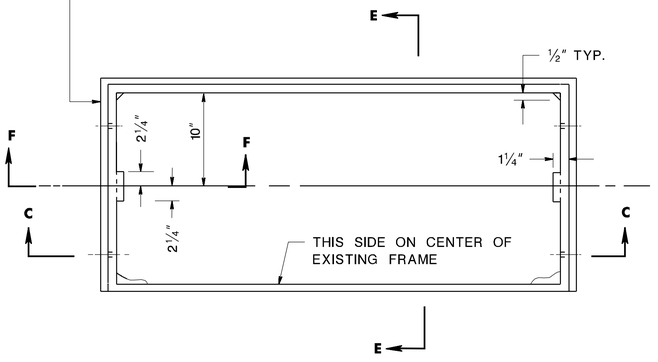
28
129



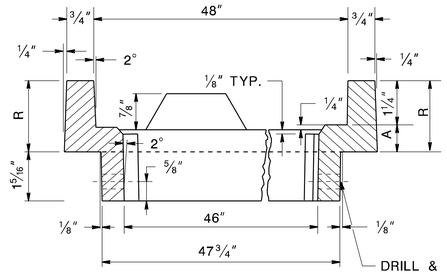
EXTENSION FRAMES FOR INLETS, TYPE B & C AND INLETS, TYPE D-1 & D-2



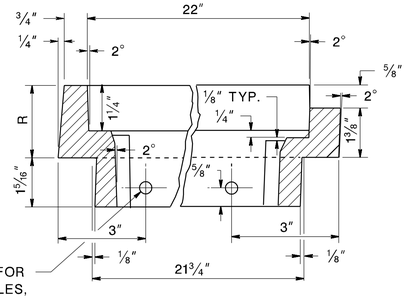
EXTENSION FRAMES FOR INLETS, TYPE A AND B MODIFIED



EXTENSION FRAMES FOR INLETS, TYPE E (HALF ONLY)

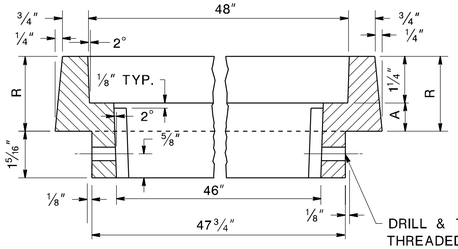


SECTION A–A

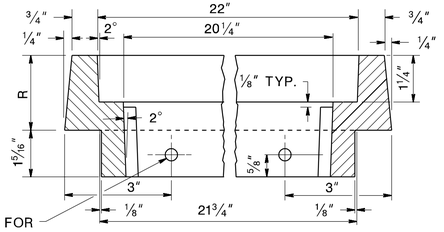


SECTION B–B

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

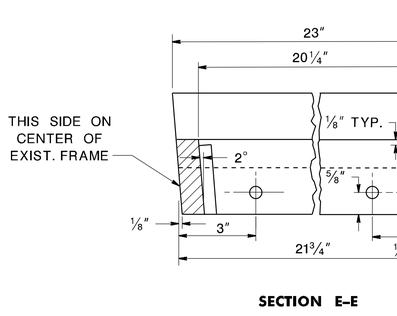


SECTION C–C

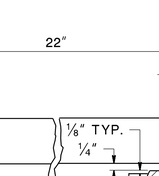


SECTION D–D

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

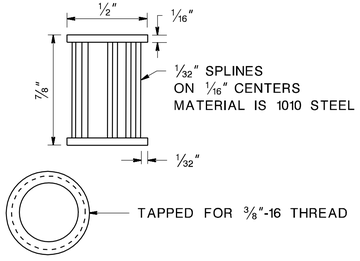


SECTION E–E

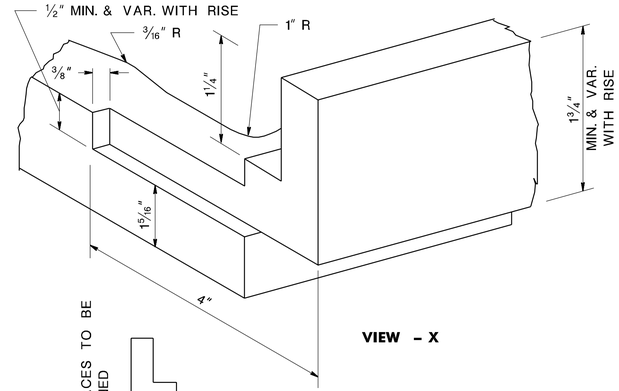


THIS LUG IS ONLY NECESSARY WHEN A BICYCLE SAFE-GRATE (CAST IRON) IS USED

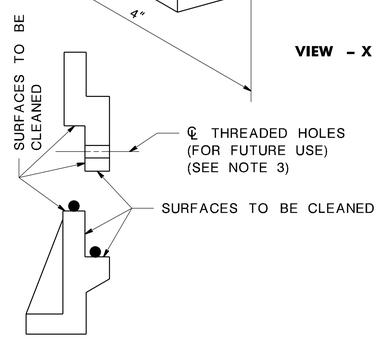
SECTION F–F



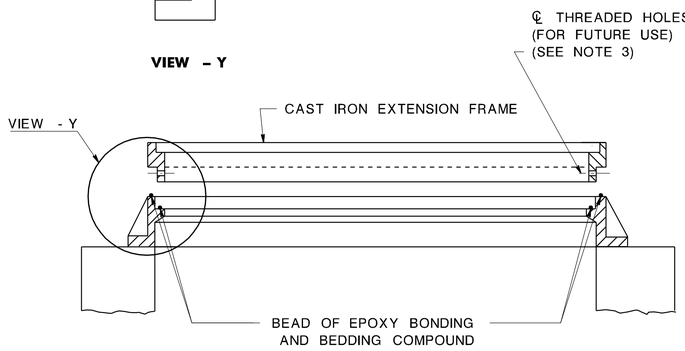
THREADED INSERT FOR EXTENSION FRAMES ALTERNATE



VIEW – X



VIEW – Y



METHOD OF ATTACHING EXTENSION FRAMES

NOTES:

1. THE CONTRACTOR SHALL 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 10, CD-603-1.6

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

CAST IRON EXTENSION FRAMES FOR EXISTING INLETS

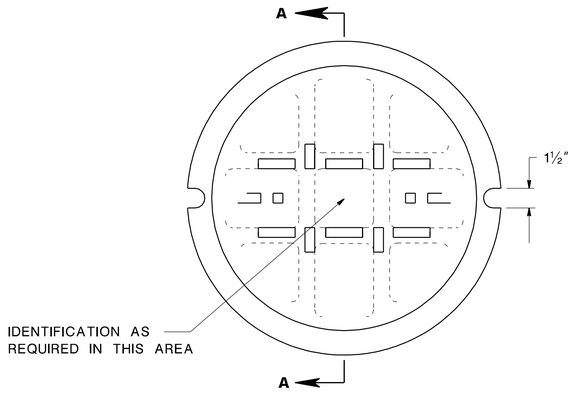
N.T.S.

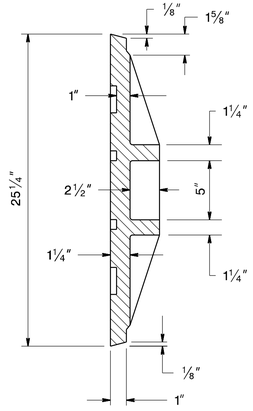
CD-603-6

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

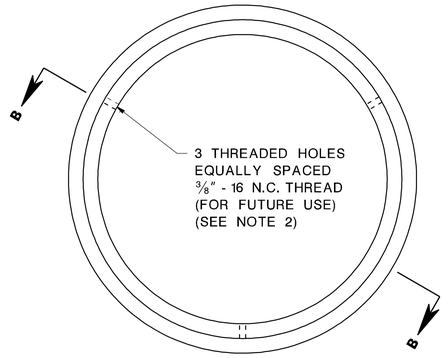
CD-603-6.1

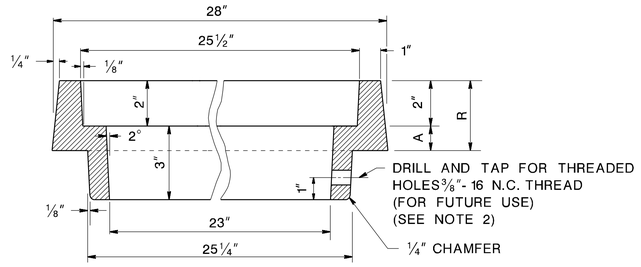




HEAVY DUTY COVER

SECTION A–A

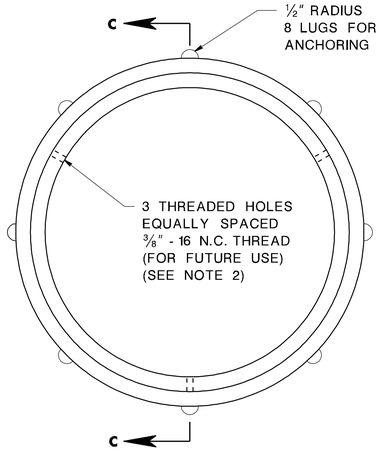


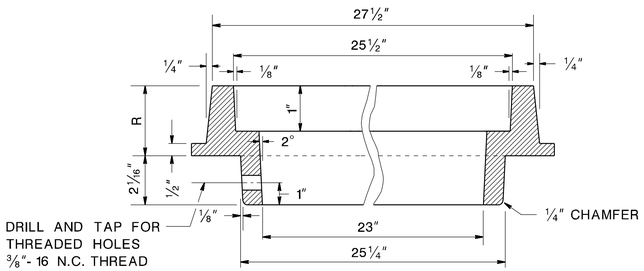


SECTION B–B

R = RISE R = A + 2"	A
2½"	½"
3"	1"
3½"	1½"

EXTENSION RING FOR STANDARD COVER



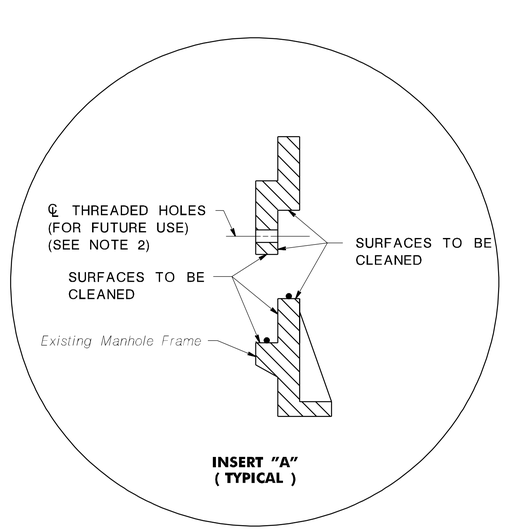


R = RISE
1½"
1¾"
2"

SECTION C–C

EXTENSION RING FOR HEAVY DUTY COVER

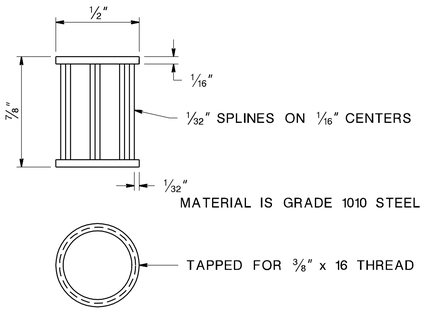
(SEE NOTE 3)



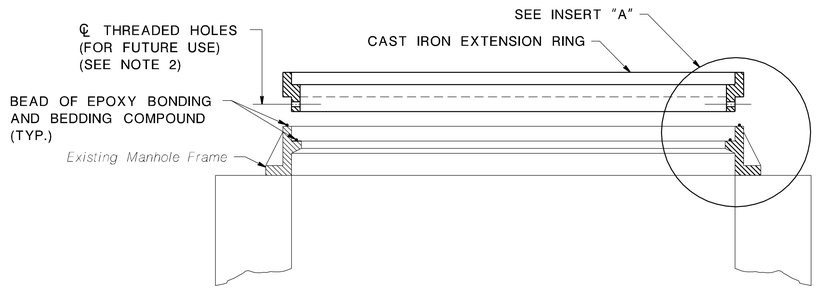
INSERT "A"
(TYPICAL)

NOTES:

1. THE CONTRACTOR SHALL 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 SHALL BE USED FOR A RISE OF 1½" TO 2¼" INCLUSIVE.
4. SEE GENERAL NOTE 10, CD-603-1.6



THREADED INSERT FOR EXTENSION RINGS, ALTERNATE



METHOD OF ATTACHING EXTENSION RINGS

CAST IRON EXTENSION RINGS FOR EXISTING MANHOLES

N.T.S.

CD-603-7

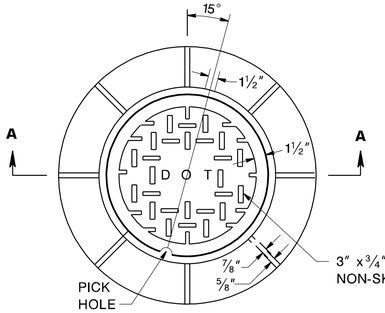
NEW JERSEY DEPARTMENT OF TRANSPORTATION

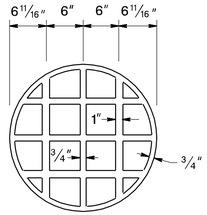
CONSTRUCTION DETAILS

CD-603-7.1

30
129

BDC02D-01 - CD-603-7.1
BDC00D-01 - ORIGINAL SHEET

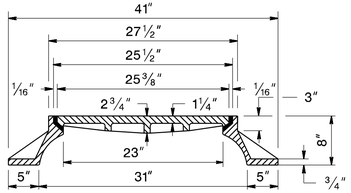




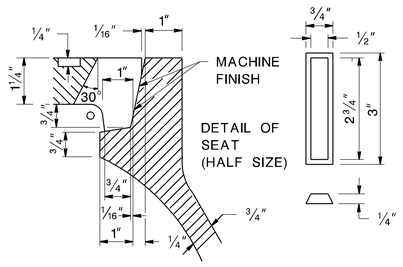
UNDERSIDE OF COVER

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

NOTE:
SEE GENERAL NOTE 10, CD-603-1.6



SECTION A–A



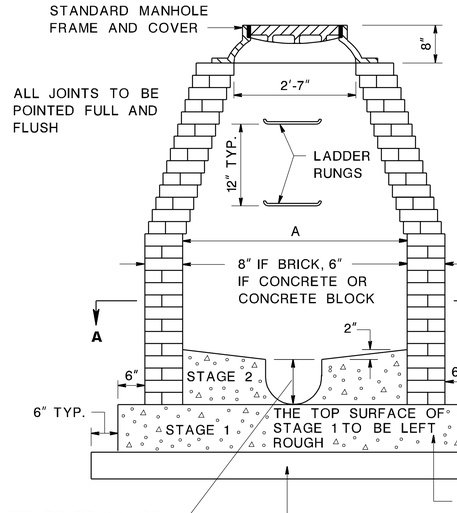
STANDARD MANHOLE FRAME AND COVER

CD-603-8.1

GENERAL NOTES

1. MANHOLES 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 SHALL BE 12 INCHES THICK. THE OVERALL HORIZONTAL DIMENSIONS SHALL 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 SHALL NOT 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. CASTINGS OF PRECAST MANHOLES SHALL BE ADJUSTED 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, THE INVERT SHALL BE CONSTRUCTED IN TWO STAGES.
6. AS AN ALTERNATIVE, COPOLMYER POLYPROPYLENE PLASTIC LADDER RUNGS MY BE FURNISHED IN PRECAST MANHOLES AND INLETS.
7. STANDARD MANHOLE FRAME AND COVER SHOWN IN CD-603-8.1 SHALL BE DESIGNED FOR THE TRUCK LIVE LOAD (HS-25 TRUCK WHEEL LOAD) AS ADOPTED FOR NJDOT BRIDGES. IF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS ARE USED THEN THE DESIGN SHALL CONFORM TO THE AASHTO LRFD HL-93 AEHICULAR LIVE LOADING OR THE NJDOT PERMIT VEHICLE, WHICHEVER GOVERNS.

CD-603-8.3

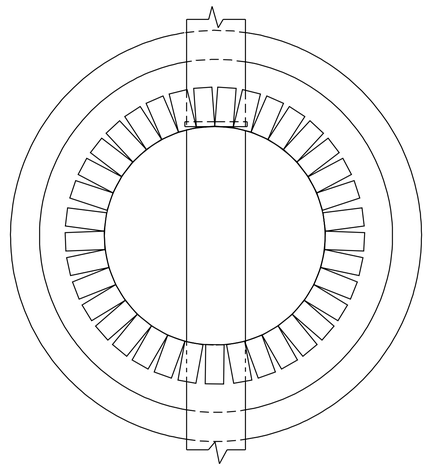


ITEM	DIMENSION A
MANHOLES	4'-0"
MANHOLES 5'-0" DIA.	5'-0"
MANHOLES 6'-0" DIA.	6'-0"

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

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

NOTE:
FOUNDATION AND INVERT TO BE CONSTRUCTED IN TWO STAGES.



SECTION A–A

MANHOLES, MANHOLES 5 FOOT DIAMETER, MANHOLES 6 FOOT DIAMETER

CD-603-8.2

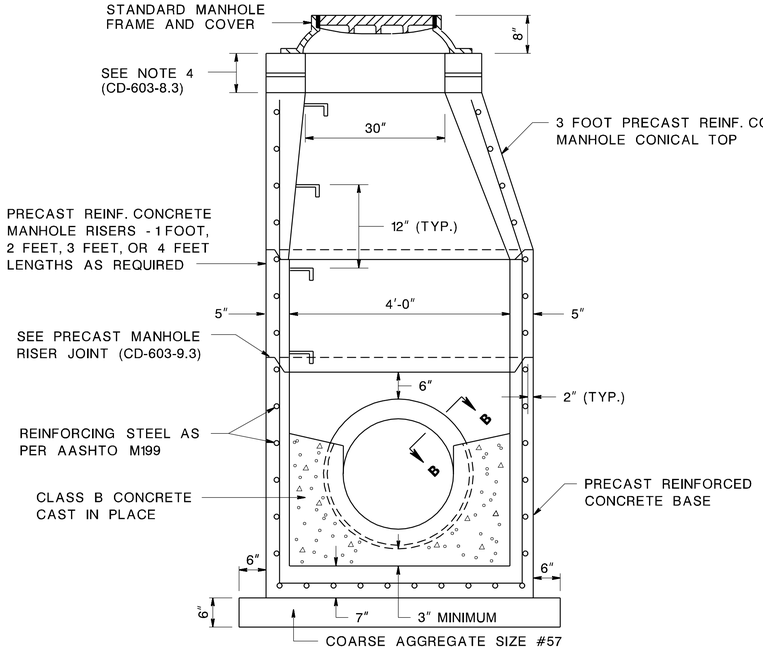
MANHOLES
N.T.S.

CD-603-8

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

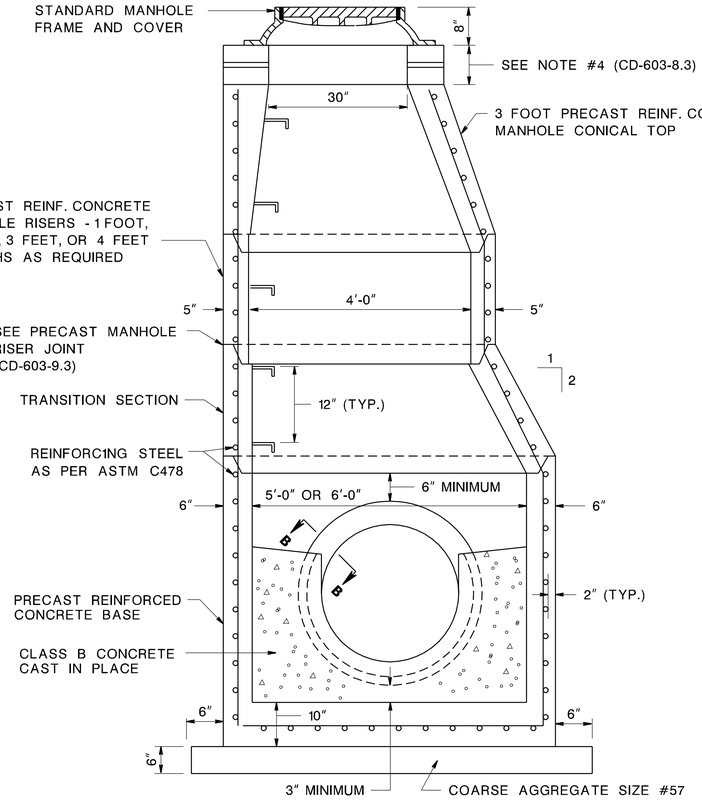
ID=TP2GIEM date=05-FEB-2003 16:38 scale=30.000000:1.000000 pen table=F:\z_System\Iplot\TBLs\Roadway\basic.tbl
BDC02D-01 - CD-603-8.1 & CD-603-8.2
BDC00D-1 - ORIGINAL SHEET
file=F:\Details\StdDet\cd6038.dgn



PRECAST REINFORCED CONCRETE MANHOLE SECTIONS SHALL CONFORM TO AASHTO M199

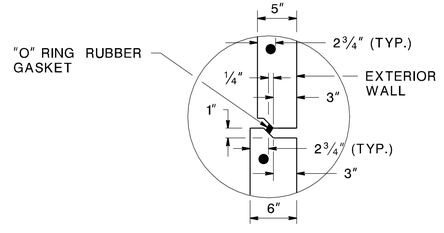
MANHOLES
PRECAST CONCRETE

SECTION B–B



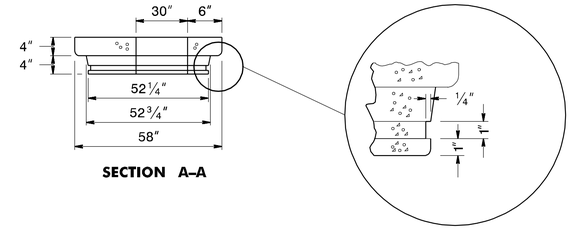
MANHOLES 5' DIAMETER, MANHOLES 6' DIAMETER
PRECAST CONCRETE

CD-603-9.1



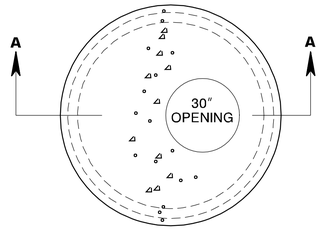
PRECAST MANHOLE RISER JOINT

CD-603-9.3



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-603-9.2

PRECAST MANHOLES
N.T.S.

CD-603-9

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

BDC02D-01 - CD-603-9.1
BDC00D-1 - ORIGINAL SHEET

GENERAL NOTES APPLYING TO ALL TYPES OF DOWELLED CURBS

TRANSVERSE JOINTS SHALL BE INSTALLED IN THE CURBS AT AND DIRECTLY OVER TRANSVERSE JOINTS IN THE PAVEMENT. DEFINITE CRACKS THRU THE PAVEMENT SHALL BE TREATED AS JOINTS. ADDITIONAL JOINTS SHALL BE CONSTRUCTED IN THE CURB SO SPACED AS TO MAKE EQUAL SECTIONS NOT OVER 15 FEET IN LENGTH

THE TRANSVERSE JOINTS SHALL BE CONSTRUCTED AS SPECIFIED FOR THE CURB, EXCEPT THAT THE THICKNESS OF THE JOINT FILLER IN THE CURB SHALL 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.

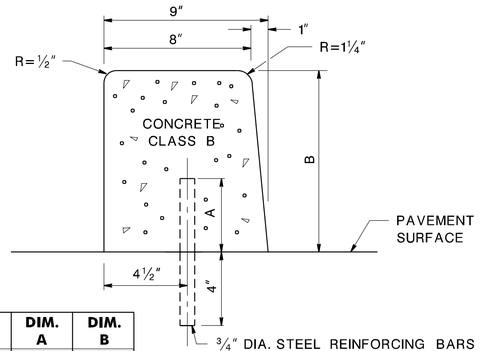
1 INCH OVER PAVEMENT JOINTS WHERE SLAB LENGTH IS MORE THAN 50 FEET VARIABLE IN MULTIPLES OF ½ INCH BUT NOT LESS THAN THE EXISTING WIDTH OF THE TRANSVERSE JOINTS IN BRIDGES AND THE JOINTS BETWEEN THE APPROACH SLABS AND BRIDGES.

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 ENGINEER. WHERE THE REQUIRED JOINT OPENING EXCEEDS 1 INCH, THE CONTRACTOR MAY CONSTRUCT OPEN JOINTS, IF DESIRED.

WHERE THE CURB IS TO BE CONSTRUCTED ON EXISTING CONCRETE PAVEMENT SURFACE OR CONCRETE BASE COURSE, THE SURFACE OF THE CONCRETE PAVEMENT OR CONCRETE BASE SHALL BE CLEANED IN ACCORDANCE WITH STANDARD SPECIFICATIONS PRIOR TO CONSTRUCTION OF THE CURB THEREON.

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 SHALL BE OMITTED AND THE CURB IN THE PORTION OF THE PANEL SHALL BE CONSTRUCTED WITH 45# SMOOTH ROLL ROOFING BETWEEN IT AND THE EXISTING PAVEMENT.

CD-605-1.1

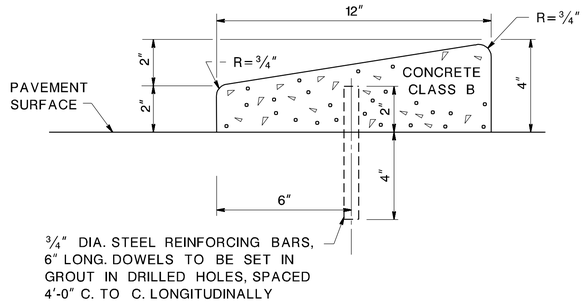


CURB SIZE	DIM. A	DIM. B
9"x4"	2"	4"
9"x6"	4"	6"

¾" DIA. STEEL REINFORCING BARS 6" OR 8" LONG. DOWELS TO BE SET IN GROUT IN DRILLED HOLES, SPACED 4'-0" C. TO C. LONGITUDINALLY.

9" x __ CONCRETE / WHITE CONCRETE VERTICAL CURB, DOWELLED

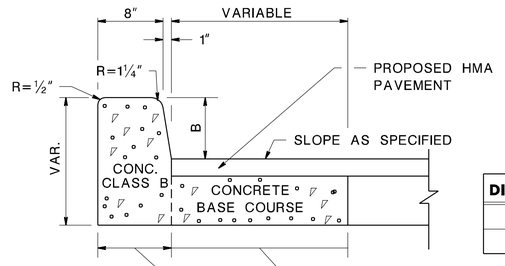
CD-605-1.2



¾" DIA. STEEL REINFORCING BARS, 6" LONG. DOWELS TO BE SET IN GROUT IN DRILLED HOLES, SPACED 4'-0" C. TO C. LONGITUDINALLY

12" x 3" CONCRETE / WHITE CONCRETE SLOPING CURB, DOWELLED

CD-605-1.3



DIM. B
4"
6"

THIS PORTION TO BE PAID FOR AS CONCRETE / WHITE CONCRETE VERTICAL CURB

THIS PORTION TO BE PAID FOR AS CONCRETE BASE COURSE

NOTES:

EXPANSION JOINTS ½ INCH WIDE IN THE CURB, AND EXPANSION JOINTS TYPE A IN THE MONOLITHIC PAVEMENT STRIP SHALL BE DIRECTLY OPPOSITE EVERY TRANSVERSE JOINT IN THE CENTRAL PAVEMENT STRIPS.

JOINT MATERIAL IN THE CURB SHALL BE AS SPECIFIED FOR CONCRETE / WHITE CONCRETE VERTICAL CURB. THE TRANSVERSE EXPANSION JOINT MATERIAL SHALL NOT EXTEND THRU THE CURB.

CONCRETE / WHITE CONCRETE VERTICAL CURB MONOLITHIC WITH CONCRETE BASE COURSE

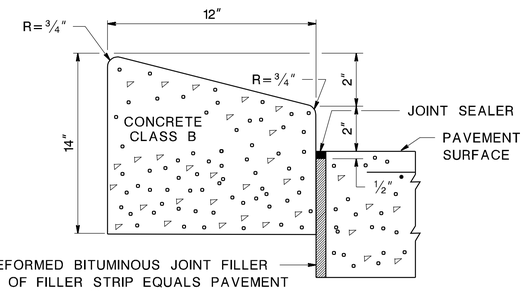
CD-605-1.4

NOTES:

½ INCH PREFORMED EXPANSION JOINT FILLER, BITUMINOUS TYPE, TO BE INSTALLED BETWEEN THE CURB AND CONCRETE PAVEMENT OR CONCRETE BASE COURSE.

TRANSVERSE JOINTS ½ INCH WIDE SHALL BE INSTALLED IN THE CURB 20 FEET APART AND SHALL BE FILLED WITH PREFORMED BITUMINOUS-IMPREGNATED FIBER JOINT RECESSED ¼ INCH IN FROM FRONT FACE AND TOP OF CURB.

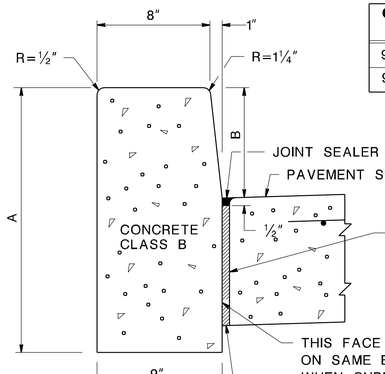
EXPANSION JOINTS THRU AND ADJACENT TO THE CURB SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CURB.



½" PREFORMED BITUMINOUS JOINT FILLER DEPTH OF FILLER STRIP EQUALS PAVEMENT THICKNESS LESS ½". TO BE INSTALLED BETWEEN CURB AND CONCRETE PAVEMENT OR CONCRETE BASE COURSE

12" x 13" CONCRETE / WHITE CONCRETE SLOPING CURB

CD-605-1.5



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

DEPTH OF JOINT FILLER STRIP EQUAL TO THE THICKNESS OF THE PAVEMENT LESS ½"

THIS FACE MAY BE CONSTRUCTED ON SAME BATTER AS UPPER FACE WHEN CURB IS CONSTRUCTED ADJACENT TO HMA PAVEMENT.

½" PREFORMED EXPANSION JOINT FILLER, BITUMINOUS TYPE, TO BE INSTALLED BETWEEN CURB AND CONCRETE PAVEMENT OR CONCRETE BASE COURSE.

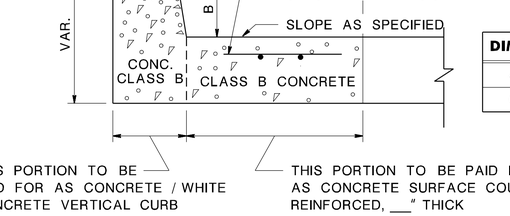
NOTES:

TRANSVERSE JOINTS ½" WIDE SHALL BE INSTALLED IN THE CURB 20 FEET APART AND SHALL BE FILLED WITH PREFORMED BITUMINOUS-IMPREGNATED FIBER JOINT FILLER RECESSED ¼" IN FROM FRONT FACE AND TOP OF CURB.

EXPANSION JOINTS THRU AND ADJACENT TO THE CURB SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CURB.

CONCRETE / WHITE CONCRETE VERTICAL CURB

CD-605-1.6



DIM. B
4"
6"

THIS PORTION TO BE PAID FOR AS CONCRETE / WHITE CONCRETE VERTICAL CURB

THIS PORTION TO BE PAID FOR AS CONCRETE SURFACE COURSE, REINFORCED, __" THICK

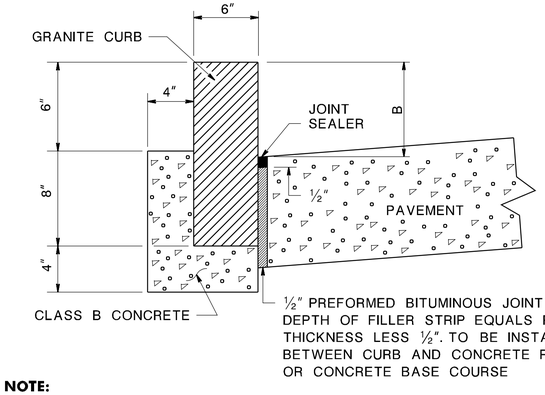
NOTES:

EXPANSION JOINTS ½ INCH WIDE IN THE CURB, AND EXPANSION JOINTS TYPE A IN THE MONOLITHIC PAVEMENT STRIP SHALL BE DIRECTLY OPPOSITE EVERY TRANSVERSE JOINT IN THE CENTRAL PAVEMENT STRIPS.

JOINT MATERIAL IN THE CURB SHALL BE AS SPECIFIED FOR CONCRETE / WHITE CONCRETE VERTICAL CURB. THE TRANSVERSE EXPANSION JOINT MATERIAL SHALL NOT EXTEND THRU THE CURB.

CONCRETE / WHITE CONCRETE VERTICAL CURB MONOLITHIC WITH CONCRETE PAVEMENT

CD-605-1.7



DIM. B
4"
6"

½" PREFORMED BITUMINOUS JOINT FILLER DEPTH OF FILLER STRIP EQUALS PAVEMENT THICKNESS LESS ½". TO BE INSTALLED BETWEEN CURB AND CONCRETE PAVEMENT OR CONCRETE BASE COURSE

NOTE:

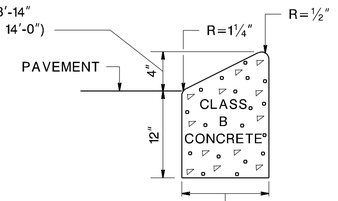
FOUNDATION TO BE INSTALLED THE ENTIRE LENGTH OF THE GRANITE CURB.

NEW OR RESET GRANITE CURB

CD-605-1.8

ATTACHMENT TABLE		
CD NO.	ATTACH. TYPE	WIDTH
612-13	B	11¼"
612-15	A	7"
612-15	B	11¼"
612-16	A	7"
612-16	B	11¼"

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

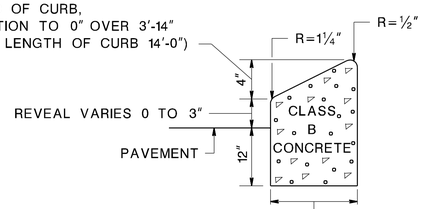


WIDTH VARIES (SEE ATTACHMENT TABLE)

NOTE:

PAYMENT FOR LIP CURB WILL BE MADE UNDER 9" x __" CONCRETE / WHITE CONCRETE VERTICAL CURB.

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



WIDTH IS 10½" FOR CD 612-13, TYPE (A) ATTACHMENT ONLY

LIP CURB

CD-605-1.9

CONCRETE AND GRANITE CURB

N.T.S.

NOTES:

REINFORCING BARS ARE IN METRIC UNITS.

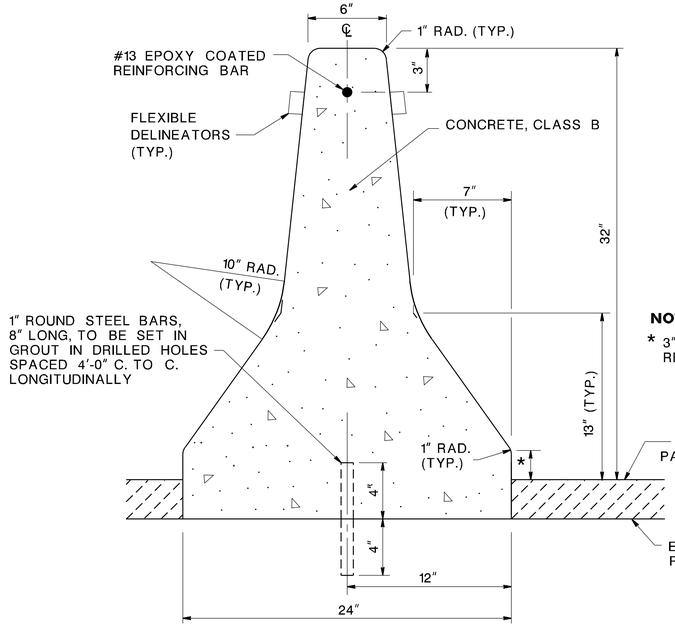
HMA = HOT MIX ASPHALT

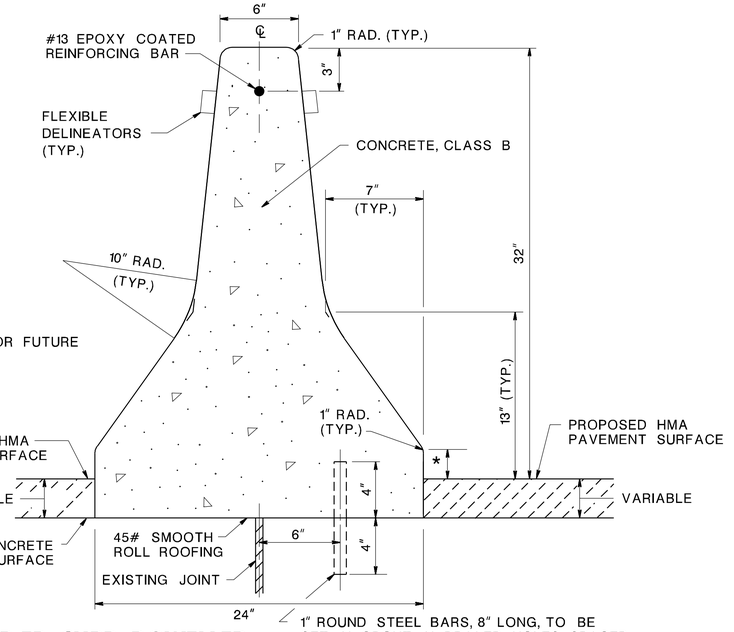
CD-605-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

BDC02D-01 - CD-605-1.8
BDC00D-1 - ORIGINAL SHEET





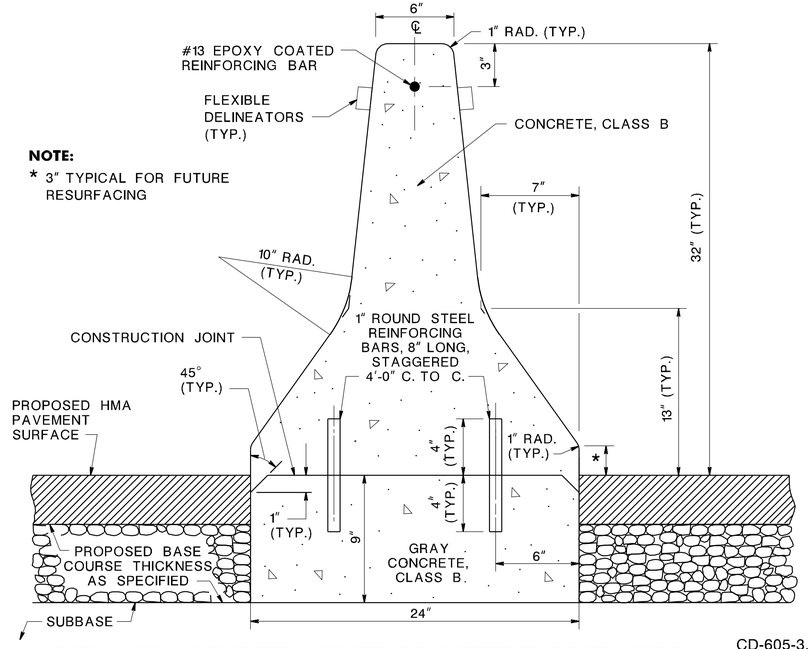
NOTE:

* 3" TYPICAL FOR FUTURE RESURFACING

24" x __" CONCRETE / WHITE CONCRETE BARRIER CURB, DOWELLED

1" ROUND STEEL BARS, 8" LONG, TO BE SET IN GROUT IN DRILLED HOLES SPACED 4'-0" C. TO C. LONGITUDINALLY

CD-605-3.1



NOTE:

* 3" TYPICAL FOR FUTURE RESURFACING

24" x 41" CONCRETE / WHITE CONCRETE BARRIER CURB

CD-605-3.4

GENERAL NOTES

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

TRANSVERSE JOINTS SHALL BE INSTALLED IN THE CURBS AT AND DIRECTLY OVER TRANSVERSE JOINTS IN THE PAVEMENT. DEFINITE CRACKS THROUGH THE PAVEMENT SHALL ALSO BE TREATED AS JOINTS. ADDITIONAL JOINTS SHALL ALSO BE CONSTRUCTED IN THE CURB SO SPACED AS TO MAKE EQUAL SECTIONS NOT OVER 15'-0" IN LENGTH.

THE TRANSVERSE JOINTS SHALL BE FILLED 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 COST OF THE TRANSVERSE EXPANSION JOINTS IN THE CURB SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE BARRIER CURB. THE THICKNESS OF THE TRANSVERSE EXPANSION JOINT FILLER SHALL BE 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 ENGINEER. WHERE THE REQUIRED JOINT OPENING EXCEEDS 1 INCH, THE CONTRACTOR MAY CONSTRUCT OPEN JOINTS.

THE SURFACE OF THE EXISTING CONCRETE PAVEMENT OR CONCRETE BASE COURSE SHALL BE CLEANED IN ACCORDANCE WITH THE NJDOT SPECIFICATIONS PRIOR TO THE CONSTRUCTION OF THE CURB THEREON.

(A) CONT.
WHERE DOWELLED CURB IS TO BE CONSTRUCTED ACROSS A LONGITUDINAL JOINT IN THE EXISTING CONCRETE OR BASE COURSE.THE DOWELS IN THE SHORTER PORTION OF THE CURB PANEL SHALL BE OMITTED AND THE CURB IN THIS PORTION OF THE PANEL SHALL BE CONSTRUCTED WITH 45# SMOOTH ROLL ROOFING BETWEEN IT AND THE EXISTING PAVEMENT.

(B) WHERE BARRIER CURB IS TO BE CONSTRUCTED ON PROPOSED CONCRETE BASE.

TRANSVERSE JOINTS ½" WIDE SHALL BE INSTALLED IN THE BASE 20'-0" APART AND IN THE BARRIER CURB DIRECTLY OVER JOINTS IN THE BASE. THE JOINTS SHALL BE FILLED 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 COST OF THE TRANSVERSE EXPANSION JOINTS IN THE BASE AND IN THE CURB SHALL BE INCLUDED IN THE UNIT PRICE FOR THE BARRIER CURB.

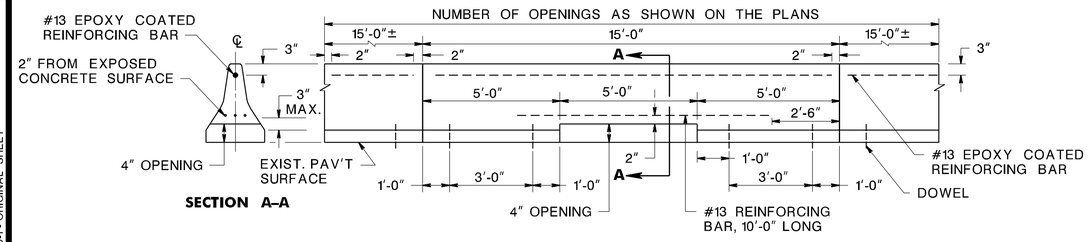
(C) GENERAL

THE FINISHED SURFACE OF THE BARRIER CURB SHALL BE SMOOTH, DENSE UNPITTED AND FREE FROM AIR BUBBLE POCKETS, DEPRESSIONS, AND HONEYCOMBS. IF THE ENGINEER DEEMS IT NECESSARY, THE CURB SHALL BE GIVEN A WOOD FLOAT FINISH RUBBED WITH A MIXTURE OF CEMENT, SAND, AND WATER TO OBTAIN THE ABOVE-MENTIONED FINISHED SURFACE.

(D) DELINEATORS

THE ITEM FLEXIBLE DELINEATORS, BARRIER CURB MOUNTED SHALL BE INSTALLED ON ALL BARRIER CURB IN ACCORDANCE WITH SECTION 620 OF THE N.J.D.O.T. SPECIFICATIONS.

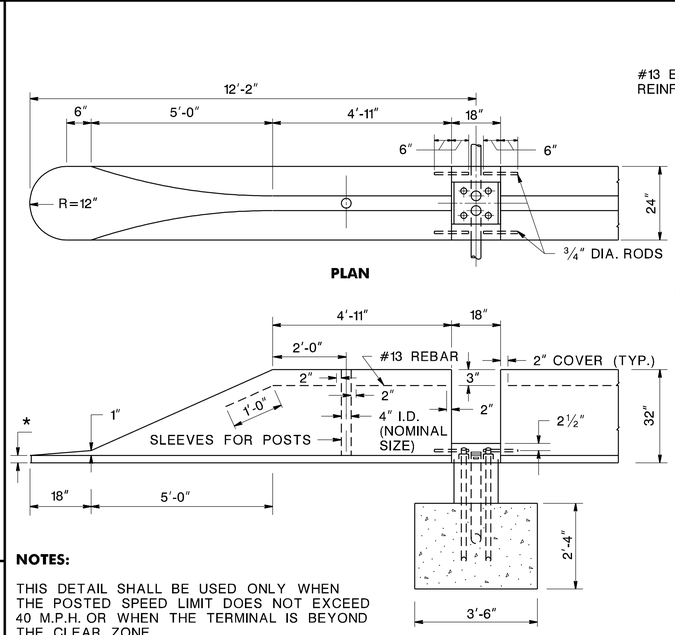
CD-605-3.2



SECTION A–A

OPENINGS TO BE CONSTRUCTED IN BARRIER CURB

CD-605-3.3



NOTES:

THIS DETAIL SHALL 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

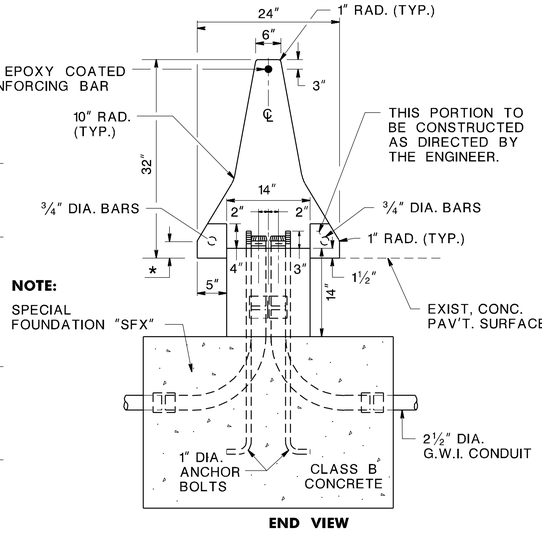
ELEVATION

BARRIER CURB AT LIGHTING POLE BASE INSTALLATION

NOTES:

REINFORCING BARS ARE IN METRIC UNITS.
HMA = HOT MIX ASPHALT

CD-605-3.5



NOTE:

END VIEW

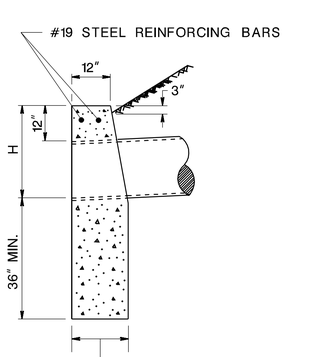
BARRIER CURB

N.T.S.

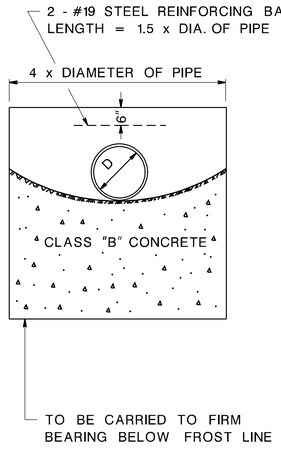
CD-605-3

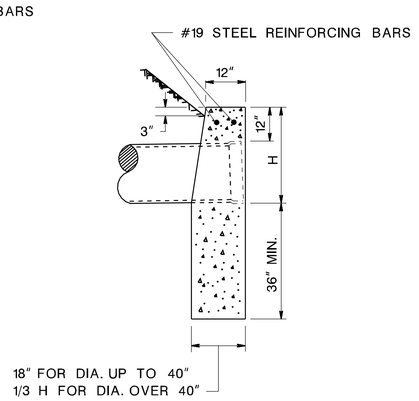
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS



OUTLET





INLET

CONCRETE HEADWALLS

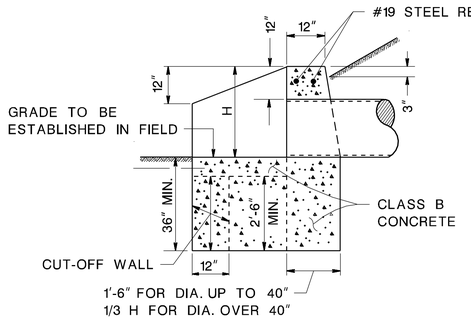
HEADWALL QUANTITY IN CUBIC YARDS

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

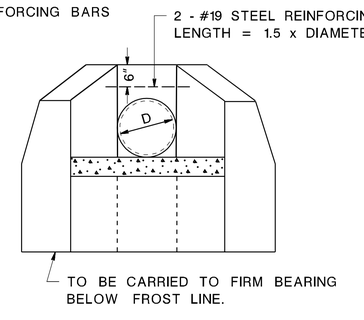
GENERAL NOTES:

1. THE RUBBING OF HEADWALLS TO REMOVE FORM MARKS AS REQUIRED IN THE NJDOT SPECIFICATIONS FOR CONCRETE STRUCTURES, WILL NOT BE REQUIRED FOR HEADWALLS AT THE BOTTOM OF EMBANKMENT 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 SHALL BE SET 2 x DIAMETER OFF THE CENTERLINE OF THE CONTROLLING PIPE.

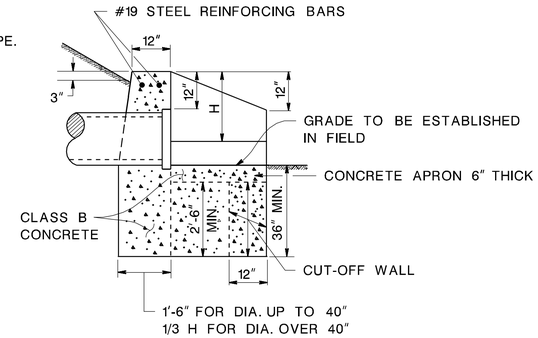
CD-610-1.1



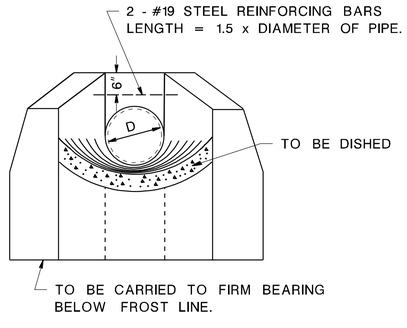
OUTLET END



END VIEW OF OUTLET END



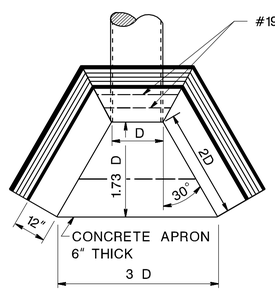
INLET END



END VIEW OF INLET END ONLY

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 HEADWALLS AND APRONS

GENERAL NOTES:

1. ALL EDGES TO BE CHAMFERED 1 INCH.
2. THE RUBBING OF HEADWALLS TO REMOVE FORM MARKS AS REQUIRED IN THE NJDOT SPECIFICATIONS FOR CONCRETE STRUCTURES, WILL NOT BE REQUIRED FOR HEADWALLS AT THE BOTTOM OF EMBANKMENTS IN RURAL AREAS.
3. FOR SLOPE DRAIN HEADWALLS, DIMENSIONS AND APRON GRADES SHALL BE SET BY ENGINEER.
4. FOR MORE THAN ONE PIPE, SET THE PIPES A MINIMUM OF ONE FOOT APART (OUTSIDE BARREL TO OUTSIDE BARREL); THERE SHALL BE 12 INCHES ABOVE THE TOP OF A PIPE IN A WING-WALL: THE TERMINUS OF THE WINGWALL SHALL BE 2 X DIAMETER FROM THE CENTERLINE OF THE PIPE IN A WINGWALL.
5. THE TERMINUS FOR OUTLET AND INLET APRONS SHALL BE SET BY EXTENDING THE PIPE GRADE AHEAD AND BACK, RESPECTIVELY.
6. FOR ARCH PIPE, THE SPAN SHALL BE SUBSTITUTED FOR D.

CD-610-1.2

NOTES:

REINFORCING BARS ARE IN METRIC UNITS.

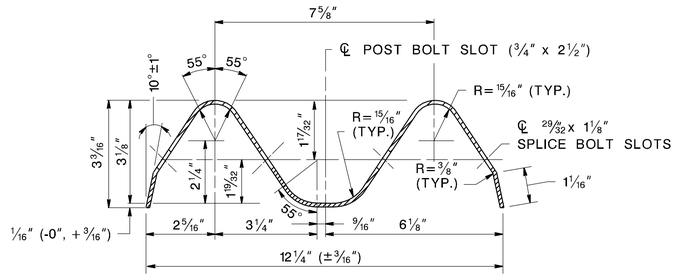
CONCRETE HEADWALLS AND APRONS

N.T.S.

CD-610-1

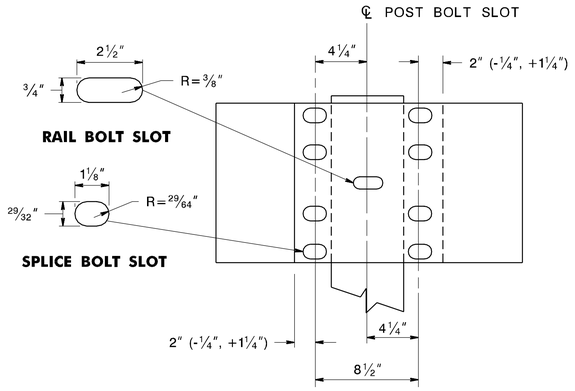
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

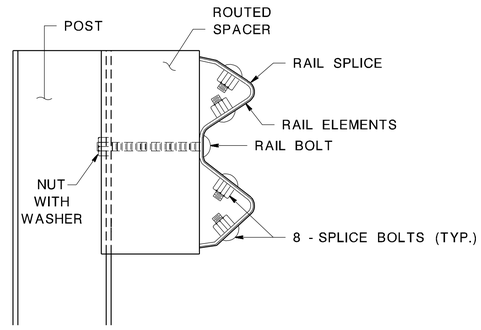


RAIL ELEMENT SHALL BE SUPPLIED IN LENGTHS OF 13'- 6½" OR 26'-½"

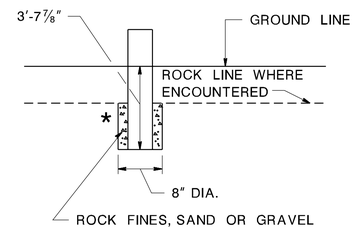
W–BEAM RAIL ELEMENT



RAIL SPLICE



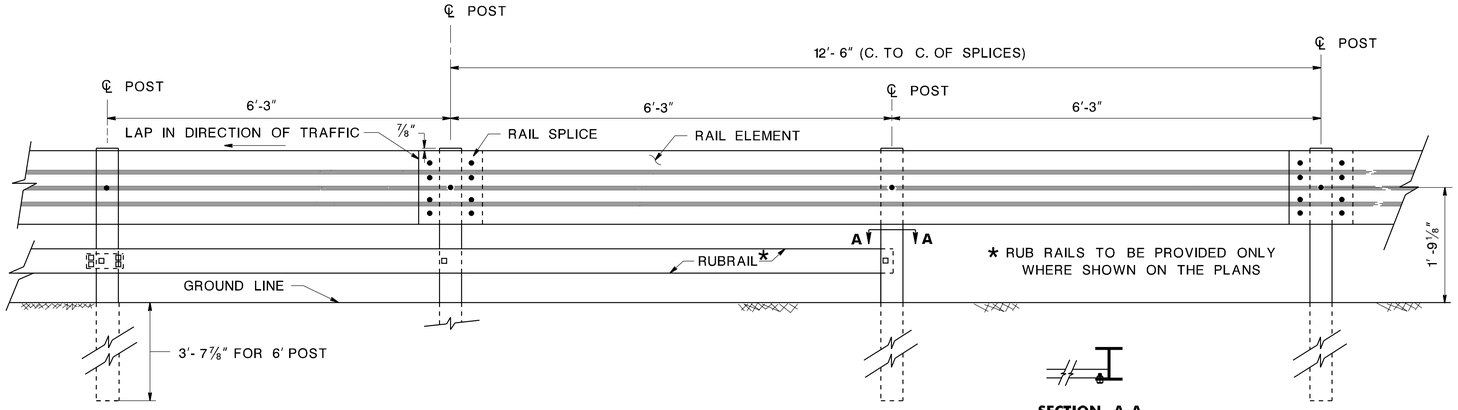
BEAM GUIDE RAIL POST ASSEMBLY



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

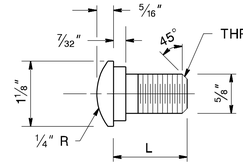
GUIDE RAIL POST INSTALLATION IN ROCK

CD–612–1.2

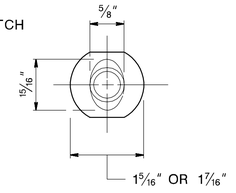


BEAM GUIDE RAIL

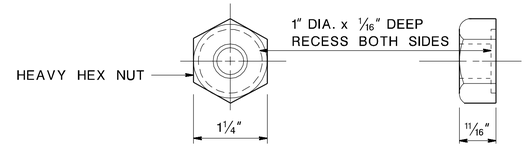
SECTION A–A



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

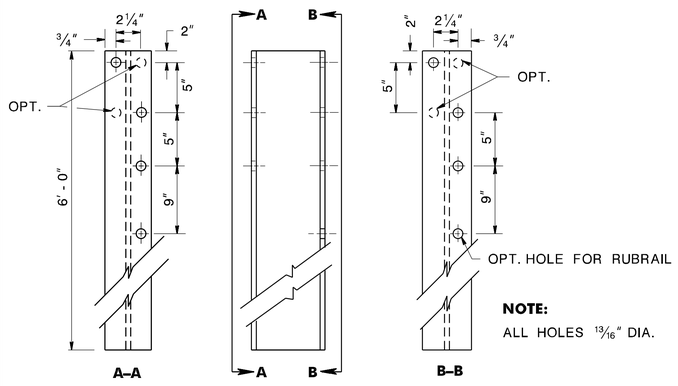


5/8" DIA. BUTTON HEAD BOLT



5/8" DIA. RECESS NUT

SPLICE & RAIL NUT & BOLT



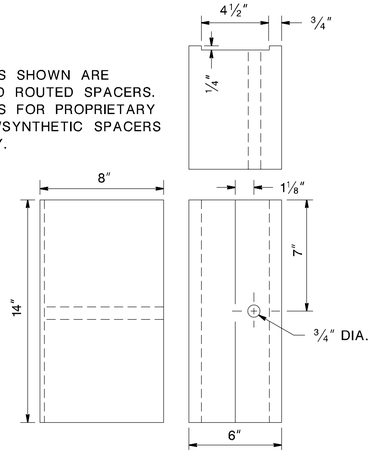
NOTE:
ALL HOLES 13/16" DIA.

6" x 4" Steel I, 8.5# or 9# per FOOT

6' POST

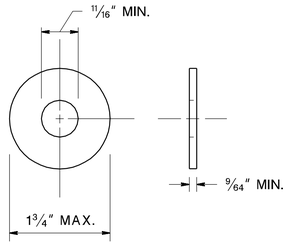
NOTE:

DIMENSIONS SHOWN ARE FOR WOOD ROUTED SPACERS. DIMENSIONS FOR PROPRIETARY RECYCLED/SYNTHETIC SPACERS MAY VARY.



WOOD OR APPROVED RECYCLED/ SYNTHETIC MATERIALS

14" ROUTED SPACER



STEEL WASHER

GENERAL NOTES:

1. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
2. RAIL ELEMENTS SHALL BE FURNISHED SHOPCURVED, CONCAVE OR CONVEX, FOR RADII LESS THAN 150 FEET.
3. THE STEEL FOR RAIL ELEMENTS AND BOLTS SHALL CONFORM TO NJDOT STANDARD SPECIFICATIONS AND ITS AMENDMENTS.

CD–612–1.1

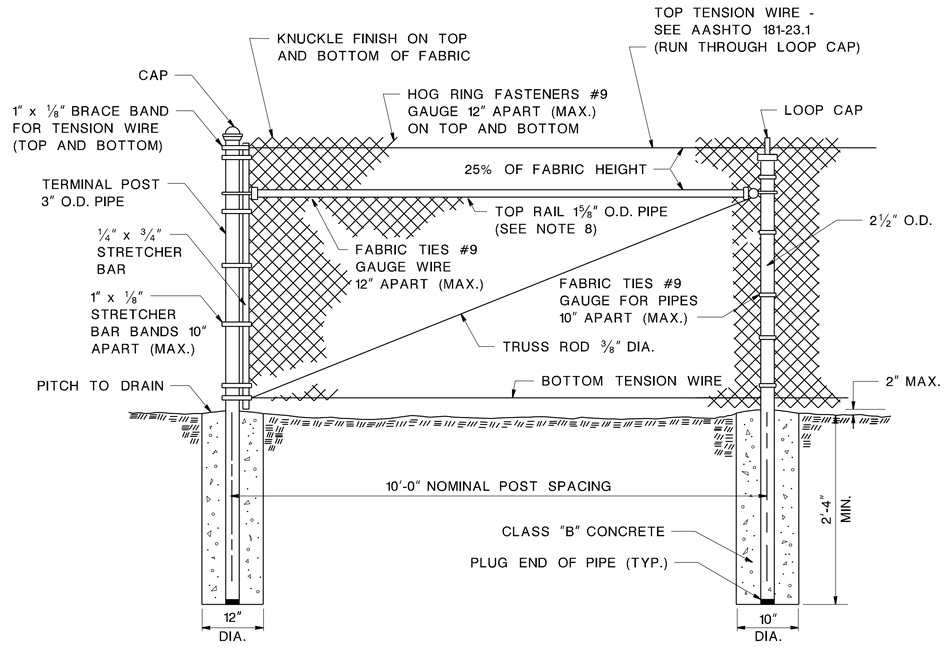
BEAM GUIDE RAIL

N.T.S.

CD-612-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS



CHAIN-LINK FENCE, ___ ' HIGH

CD-614-1.1

GENERAL NOTES

1. CHAIN-LINK FENCE FABRIC, POSTS, RAILS, TIES, BANDS, BARS, RODS, AND OTHER FITTINGS AND HARDWARE SHALL CONFORM TO AASHTO M 181 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	2 1/2" O.D. PIPE	1 5/8" 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 SHALL BE 9 GAUGE CORE WIRE, 2 INCH MESH
   TYPE IV FABRIC SHALL BE CLASS A OR B.
   TYPE IV FABRIC SHALL BE GREY IN COLOR, AND SHALL MATCH FEDERAL STANDARD 595A, COLOR CHIP NO. 26493 (SEMI-GLOSS), UNLESS OTHERWISE SPECIFIED IN THE SPECIAL PROVISIONS.

4. THE CENTERLINE OF ALL POSTS SHALL NOT BE LESS THAN 8" INSIDE R.O.W.

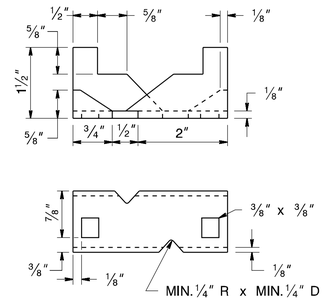
5. THE DEPTH OF CONCRETE FOOTINGS IN SOLID ROCK MAY BE REDUCED TO ONE FOOT BELOW THE TOP OF ROCK AND THE DIAMETER OF THE HOLE IN ROCK MAY BE REDUCED TO 3 1/2".

6. BRACE BANDS AND STRETCHER BAR BANDS SHALL BE FURNISHED WITH 5/16" DIA. CARRIAGE BOLTS AND ELASTIC STOP NUTS.

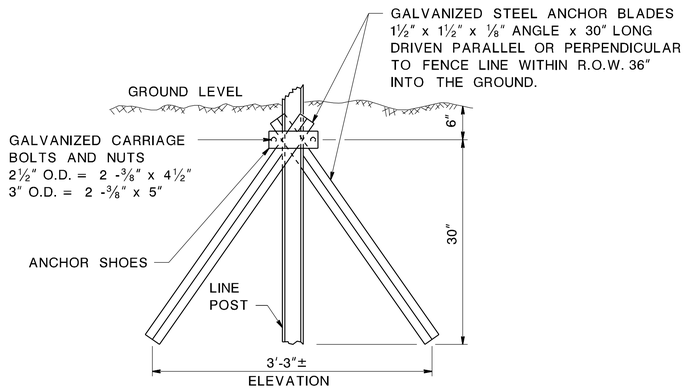
7. DRIVE ANCHOR SHOE ASSEMBLY ONLY TO BE USED IN WET AREAS AND WITH PRIOR APPROVAL OF THE ENGINEER.

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

CD-614-1.4



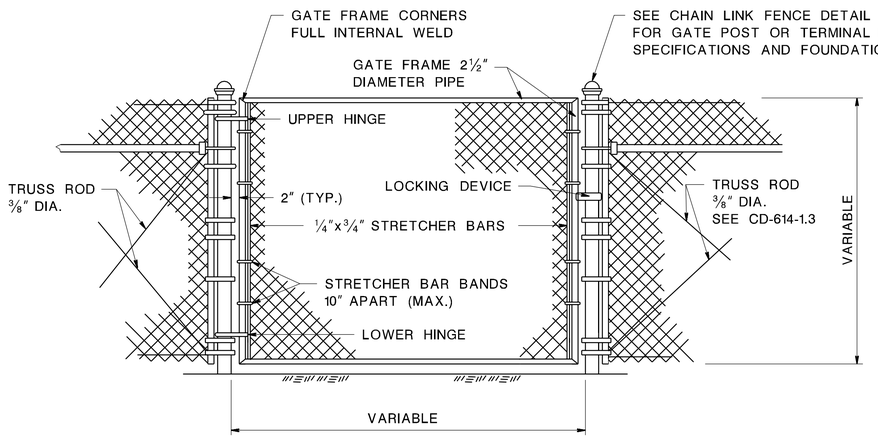
ANCHOR SHOE



DRIVE ANCHOR SHOE ASSEMBLY

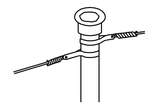
(SEE NOTE 7)

CD-614-1.2

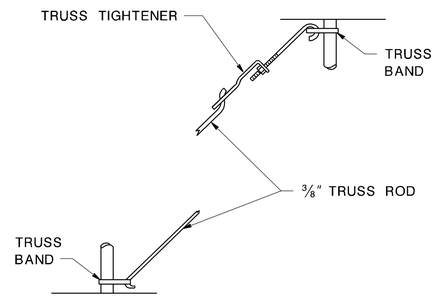


GATES, CHAIN-LINK FENCE, ___ ' WIDE

CD-614-1.5



TENSION WIRE CONNECTION AT ROUND INTERMEDIATE OR CORNER POST



3/8" TRUSS ROD ASSEMBLY

CHAIN-LINK FENCE ASSEMBLIES

CD-614-1.3

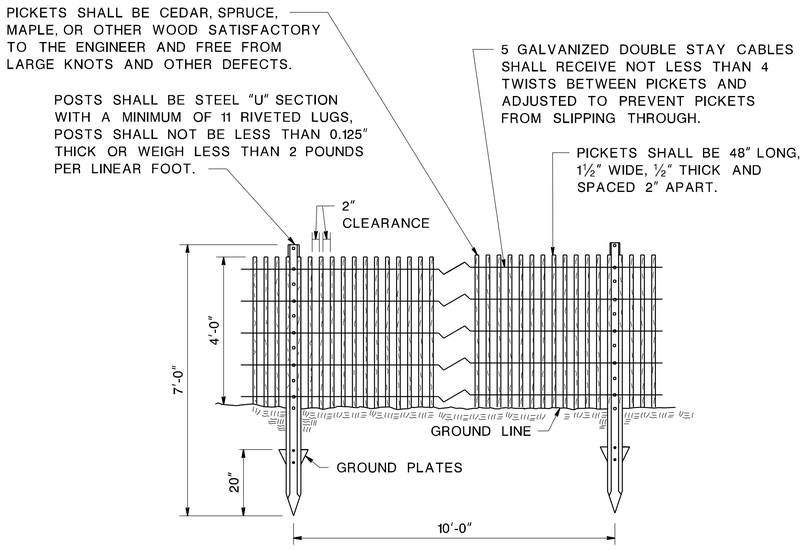
CHAIN-LINK FENCE

N.T.S.

CD-614-1

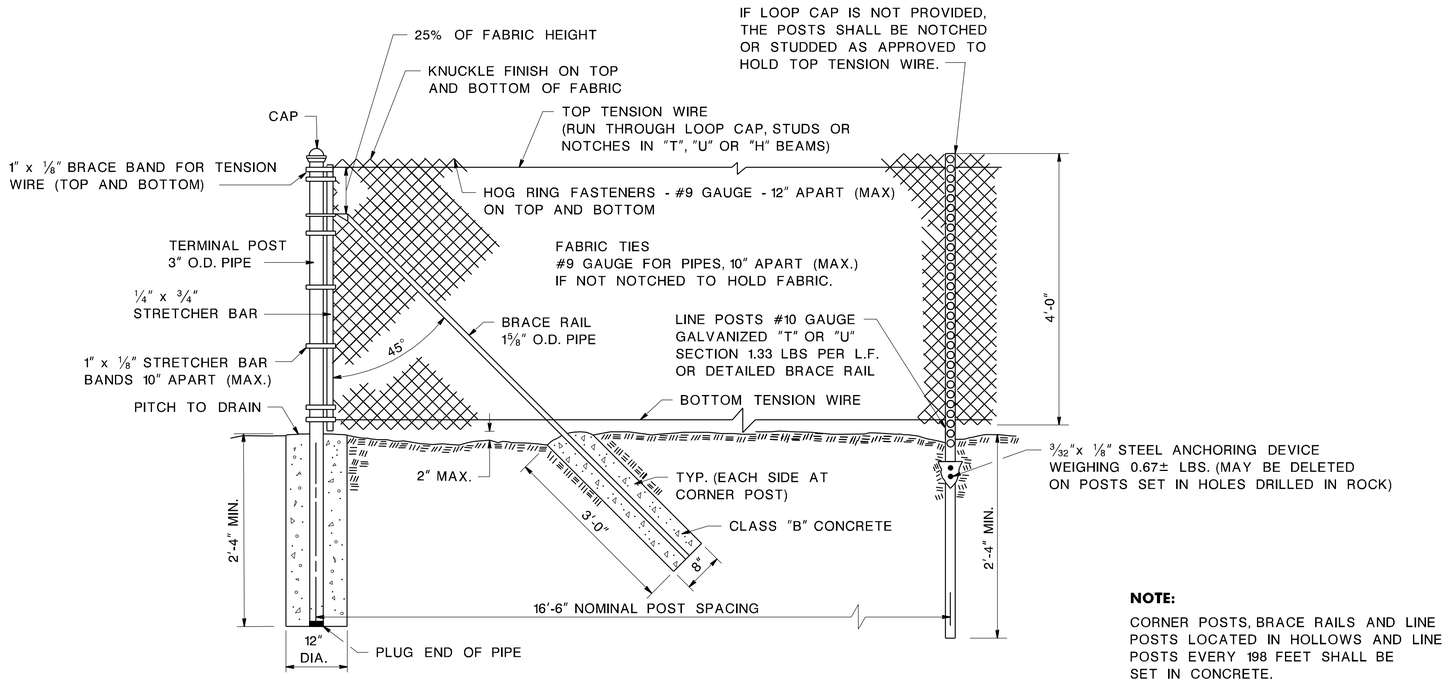
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS



SNOW FENCE

CD-614-2.1

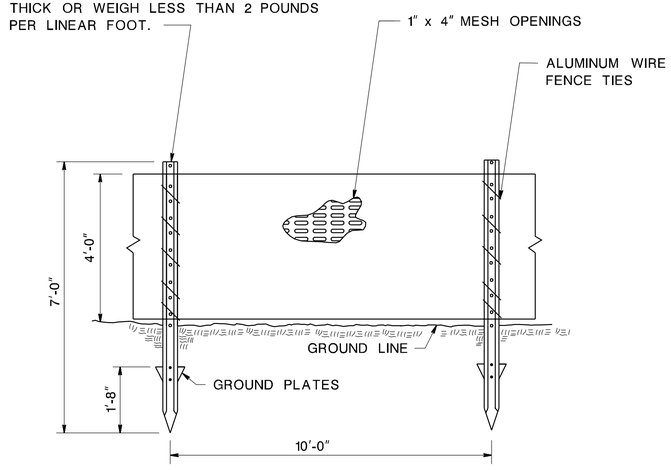


NOTE:

CORNER POSTS, BRACE RAILS AND LINE POSTS LOCATED IN HOLLOWS AND LINE POSTS EVERY 198 FEET SHALL BE SET IN CONCRETE.

CHAIN–LINK FARM–TYPE FENCE

CD-614-2.2



SNOW FENCE, PLASTIC

CD-614-2.3

CHAIN–LINK AND SNOW FENCE

N.T.S.

CD-614-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

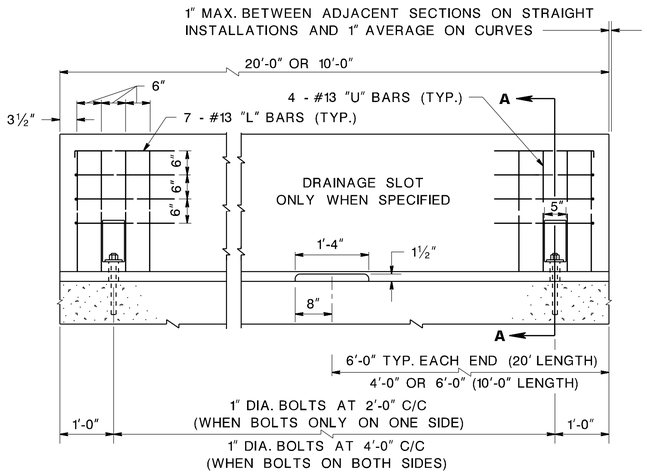
CONSTRUCTION DETAILS

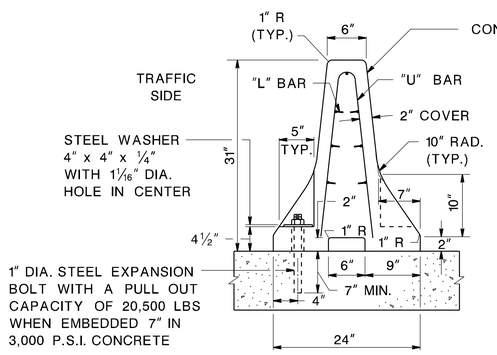
60
129

BDC02D-01 - CD-614-2
BDC00D-1 - ORIGINAL SHEET

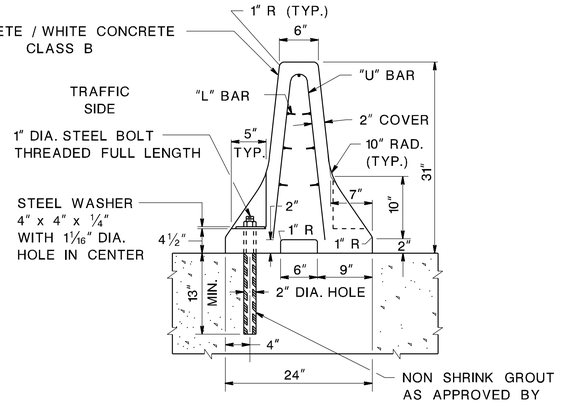
ID=TP2GIEM date=05-FEB-2003 16:44 scale=30.000000:1.000000 pen table=F:\z_System\tplot\TBLs\Roadway\basic.tbl

file=F:\Details\StdDet\cd6142.dgn

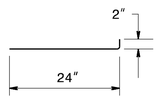




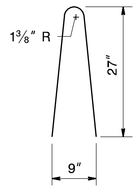
VIEW A–A
CONCRETE PAVEMENT



VIEW A–A
HMA PAVEMENT



"L" BAR



"U" BAR

NOTES:

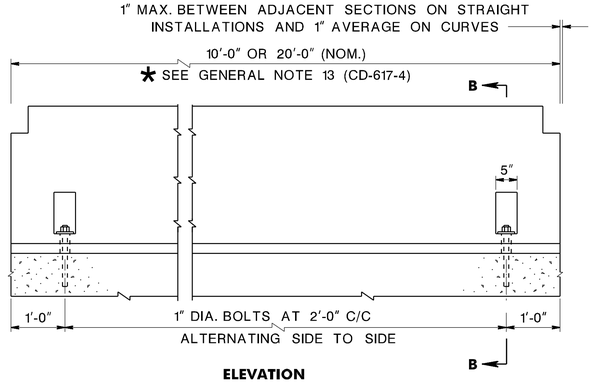
1. THE APPROACH END OF THE PRECAST CONCRETE CURB, CONSTRUCTION BARRIER SHOULD BE FLARED AWAY FROM TRAFFIC AT A RATE OF 20:1. WHERE POSTED SPEEDS ARE LESS THAN 50 M.P.H., A FLARE RATE OF 15:1 MAY BE USED. ON CURVED ROADWAYS, KINKS IN THE BARRIER ALIGNMENT SHOULD BE AVOIDED.
2. REINFORCING SHOWN IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING NECESSARY FOR HANDLING SHALL BE THE OPTION AND RESPONSIBILITY OF THE CONTRACTOR.
3. IF TRAFFIC WILL BE ON BOTH SIDES OF THE BARRIER, THE CONTRACTOR SHALL PROVIDE BOLT RECESSES SO THE BOLTS CAN BE INSTALLED AT 4 FEET C. TO C. ON EACH SIDE. AT THE OPTION OF THE CONTRACTOR, BOLT RECESSES AND BOLTS MAY BE PROVIDED AT 4 FEET C. TO C. ON EACH SIDE WHEN TRAFFIC IS ONLY ON ONE SIDE OF THE BARRIER.
4. WHEN THE BARRIER HAS BEEN REMOVED, THE BOLTS SHALL BE REMOVED OR CUT OFF TO A LEVEL OF ½" MINIMUM BELOW THE PAVEMENT SURFACE AND THE HOLES SHALL BE FILLED TO THE SATISFACTION OF THE ENGINEER.
5. BOLTS, OTHER THAN EXPANSION BOLTS, SHALL BE THREADED RODS MADE FROM ASTM GRADE 250 STEEL. NUTS SHALL CONFORM TO ASTM A 307.
6. VARIATIONS TO THE DETAILS SHALL BE SUBJECT TO APPROVAL.
7. FOR INSTALLATION ON BRIDGE DECKS, REFER TO BRIDGE PLANS FOR NECESSARY MODIFICATIONS, AS REQUIRED.
8. REINFORCEMENT STEEL SHALL CONFORM TO SUBSECTION 915.01 A, DEFORMED BARS.

PRECAST CONCRETE CURB, CONSTRUCTION BARRIER, TYPE 1

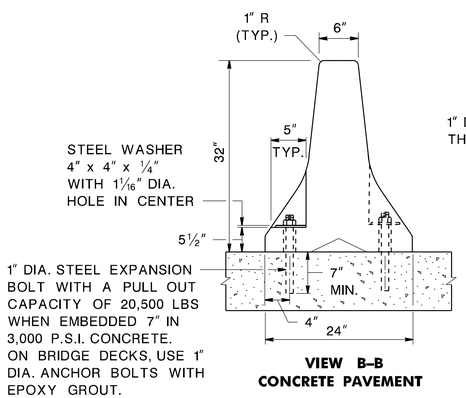
CD-617-3.1

NOTES:

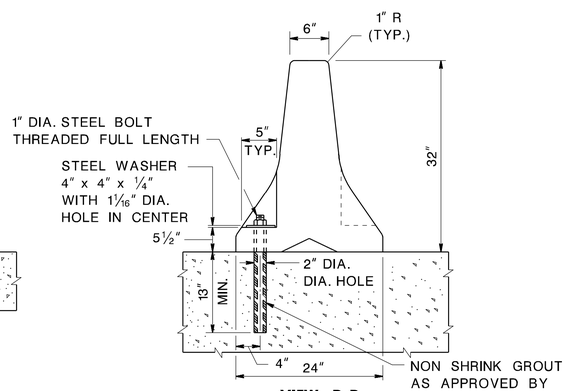
1. BOLTS AND NUTS SHALL CONFORM TO ASTM A 307.
2. BOLTS SHALL BE REQUIRED IN EVERY ANCHOR POCKET HOLE.
3. CONNECTION KEY SHALL BE USED WITH TYPE 1 APPLICATION.
4. WHEN BARRIER HAS BEEN REMOVED, THE BOLTS SHALL BE REMOVED OR CUT OFF TO A LEVEL OF ½" MINIMUM BELOW THE SURFACE AND THE HOLE FILLED TO THE SATIFICATION OF THE ENGINEER.



ELEVATION



VIEW B–B
CONCRETE PAVEMENT



VIEW B–B
HMA PAVEMENT

ANCHORAGE FOR TYPE 4 BARRIER USED AS TYPE 1

CD-617-3.2

NOTES:
REINFORCING BARS ARE IN METRIC UNITS.
HMA = HOT MIX ASPHALT

PRECAST CONCRETE CURB, CONSTRUCTION BARRIER, TYPE 1

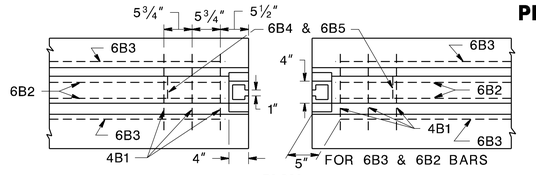
N.T.S.

CD-617-3

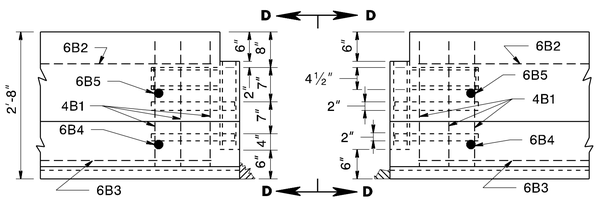
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

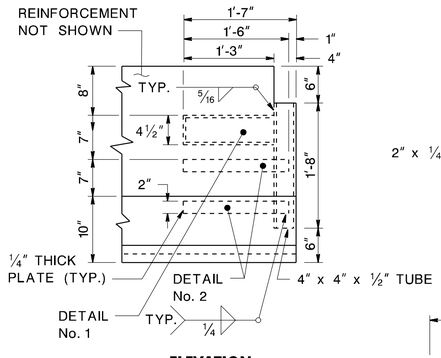
PRECAST CONCRETE CURB, CONSTRUCTION BARRIER JOINT CONNECTION DETAILS



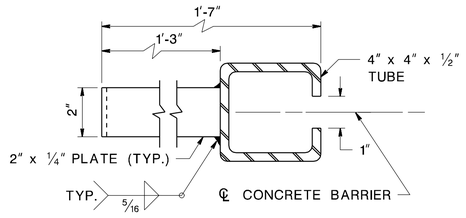
PLAN



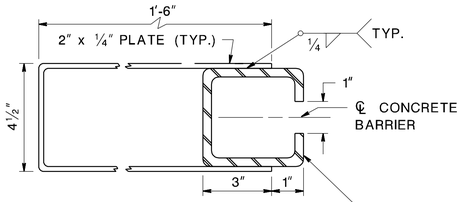
ELEVATION



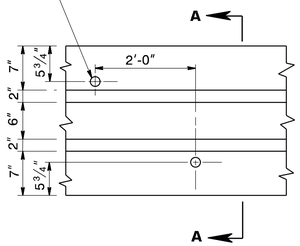
ELEVATION



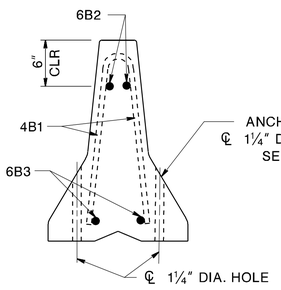
PLAN VIEW
DETAIL No. 1



PLAN VIEW
DETAIL No. 2

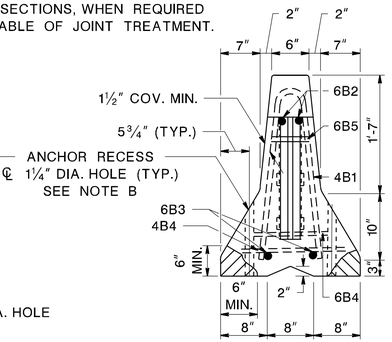


PLAN–ANCHOR RECESS



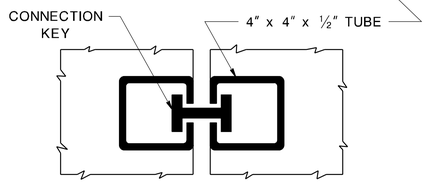
SECTION A–A

PLACE GROUT IN HATCHED AREAS BETWEEN SECTIONS, WHEN REQUIRED BY THE TABLE OF JOINT TREATMENT.



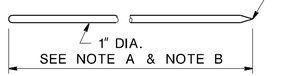
SECTION D–D

ANCHOR RECESS
℄ 1¼" DIA. HOLE (TYP.)
SEE NOTE B



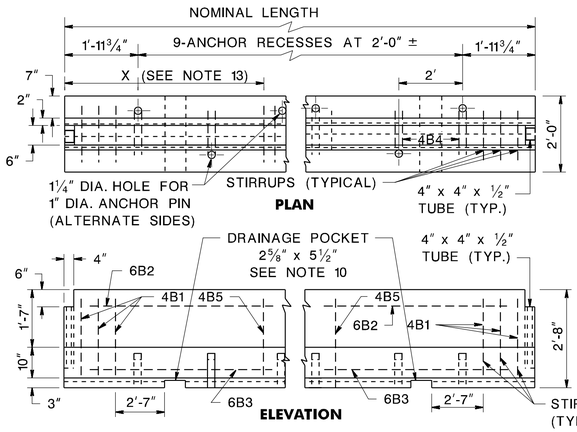
KEY IN PLACE

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



ANCHOR PIN

JOINT CLASS	TABLE OF JOINT AND ANCHORAGE TREATMENTS FOR TYPE 4 APPLICATIONS ONLY JOINT TREATMENT
A	CONNECTION KEY ONLY
B	CONNECTION KEY AND GROUT IN EVERY JOINT
C	CONNECTION KEY AND GROUT IN EVERY JOINT AND PIN EVERY OTHER UNIT. IN UNITS THAT ARE TO BE ANCHORED, PINS SHALL BE REQUIRED IN EVERY ANCHOR PIN RECESS

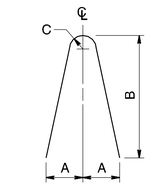


ELEVATION

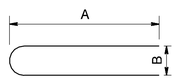
CONCRETE BARRIER

TABLE OF VARIABLE BARS			
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 BAR			

BARS 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 13	3′-1″	II	15½″	4″		STIRRUPS
4B5	#13	SEE NOTE 13	4′-11″	I	5″	26″	2″	STIRRUPS
6B2	#19	2	SEE NOTE 13	STR.				LONGITUDINAL (TOP) NORMAL SECTION
6B3	#19	2	SEE NOTE 13	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" BAR



TYPE "II" BAR

GENERAL NOTES:

1. STEEL PLATE SHALL BE ASTM A36, A588, A441 OR A572 GRADE 50.
2. REINFORCING BARS SHALL BE ASTM A615, GRADE 60.
3. CONCRETE SHALL BE CONCRETE / WHITE CONCRETE CLASS B.
4. CONCRETE CLEAR COVER FOR REINFORCING BARS SHALL BE 1½″ (MIN.).
5. A MINIMUM OF (2) TWO RECESSED LIFTING DEVICES SHALL BE USED ON EACH SECTION. EACH LIFTING DEVICE SHALL HAVE A MINIMUM CAPACITY OF 6 TONS.
6. TUBE STEEL SHALL BE ASTM A500, GRADE B OR C.
7. ANCHOR PINS SHALL BE 1 INCH DIA. ASTM A36.
8. ANCHOR PINS ARE NOT REQUIRED IN EVERY UNIT. SEE TABLE OF JOINT TREATMENTS.
9. ALL END SECTIONS SHALL BE PINNED UNLESS OTHERWISE NOTED.
10. 2⅝″ X 5½″ DRAINAGE POCKETS - TWO REQUIRED IN SECTIONS 12 FEET AND GREATER. ONE REQUIRED IN 8 FOOT AND 10 FOOT SECTIONS.
11. 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 IT'S LONGITUDINAL AXIS.
12. THE PRECAST CONCRETE CURB, CONSTRUCTION BARRIER SHALL BE CAST IN STEEL FORMS.
13. THE PRECAST CONCRETE CURB SHALL BE UNITS OF 20 FEET, HOWEVER, OTHER LENGTHS MAY BE USED TO MEET FIELD CONDITIONS, THE NUMBER AND PLACEMENT OF THE 4B4 AND 4B5 BARS WILL VARY WITH THE LENGTH OF THE BARRIER UNIT AS SHOWN ON THE TABLE OF VARIABLE BARS. THE 6B2 AND 6B3 BARS SHALL BE 10 INCHES SHORTER THAN THE NOMINAL LENGTH OF THE BARRIER UNITS.
14. REINFORCING SHOWN IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING NECESSARY FOR HANDLING SHALL BE THE OPTION AND RESPONSIBILITY OF THE CONTRACTOR.
15. WELDING AND FABRICATION OF STEEL STRUCTURES SHALL BE IN ACCORDANCE WITH SECTIONS 1 THRU 6 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE AND SECTION 10 OF THE ANSI/AWS D.1 STRUCTURAL WELDING CODE. SURFACES TO BE WELDED SHALL BE FREE OF SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER MATERIAL THAT WILL PREVENT PROPER WELDING OR PRODUCE OBJECTIONAL FUMES. WELDING SHALL BE SHIELDED METAL ARC WELDING USING PROPERLY DRIED 5/32″ DIA. E7018 ELECTRODES.
16. AFTER REMOVAL OF THE BARRIER, THE HOLES IN THE SURFACE ON WHICH THE BARRIER SAT WHICH WERE USED TO ANCHOR THE SYSTEM, SHALL BE FILLED. THE ONLY EXCEPTION IS WHEN THE HOLES ARE IN AN AREA WHICH IS TO BE REMOVED. HOLES IN FLEXIBLE PAVEMENT, OR UNPAVED AREAS SHALL BE FILLED AS DIRECTED. HOLES IN PORTLAND CEMENT CONCRETE PAVEMENTS OR STRUCTURAL DECKS, SHALL BE FILLED WITH NON-SHRINK GROUT MATERIAL MEETING THE REQUIREMENTS OF SECTION 914.03, EXCEPT THAT IN LATEX MODIFIED CONCRETE BRIDGE DECK, A COMPATIBLE NON-SHRINK GROUT MATERIAL SHALL BE USED.

NOTE A

THE LENGTH OF THE ANCHOR PINS SHALL BE SUCH THAT THE FOLLOWING MINIMUM EMBEDMENT LENGTHS ARE OBTAINED:
(a) INTO PORTLAND CEMENT CONCRETE PAVEMENT 0′-5″.
(b) INTO FLEXIBLE PAVEMENT 1′-6″
(c) INTO UNPAVED AREA 2′-6″

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

HOLES IN BRIDGE DECKS SHALL 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

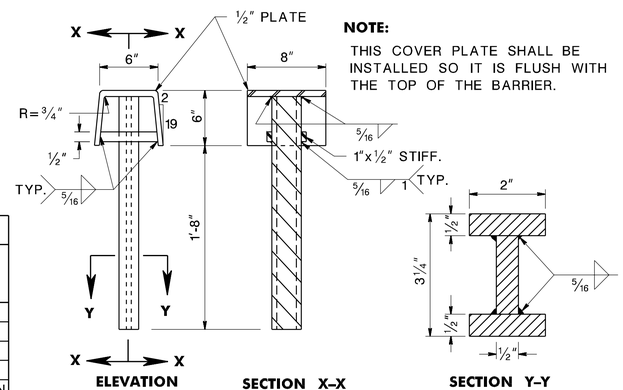
IN UNITS THAT ARE TO BE ANCHORED, PINS SHALL BE REQUIRED IN EVERY ANCHOR RECESS.

NOTE C

FOR INSTALLATION ON BRIDGE DECKS REFER TO BRIDGE PLANS FOR NECESSARY MODIFICATIONS AS REQUIRED AND GENERAL NOTE 16.

NOTES:

REINFORCING BARS ARE IN METRIC UNITS.



NOTE:
THIS COVER PLATE SHALL BE INSTALLED SO IT IS FLUSH WITH THE TOP OF THE BARRIER.

ELEVATION SECTION X–X SECTION Y–Y

CONNECTION KEY

CD-617-4.1

PRECAST CONCRETE CURB, CONSTRUCTION BARRIER, TYPE 4 (ALTERNATE A)

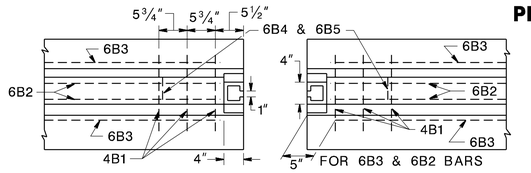
N.T.S.

CD-617-4

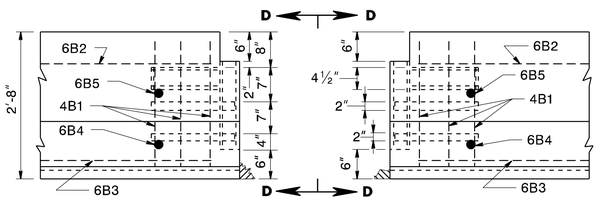
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

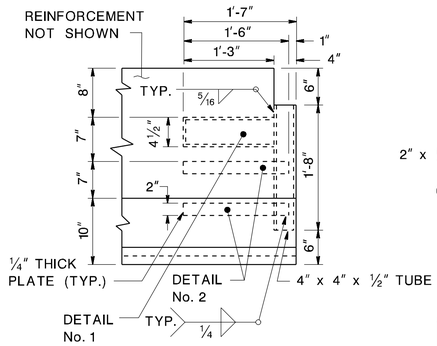
PRECAST CONCRETE CURB, CONSTRUCTION BARRIER JOINT CONNECTION DETAILS



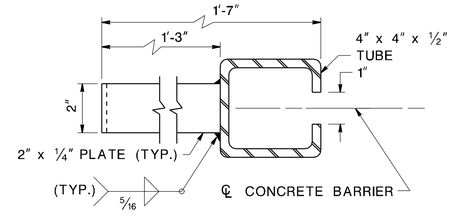
PLAN



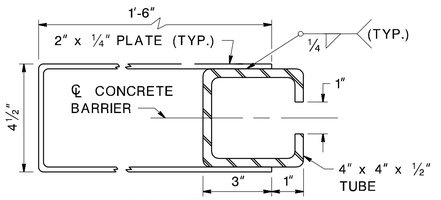
ELEVATION



ELEVATION

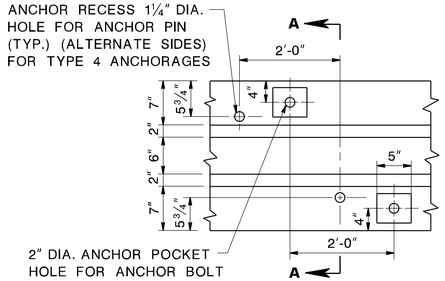


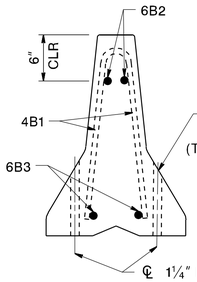
PLAN VIEW
DETAIL No. 1



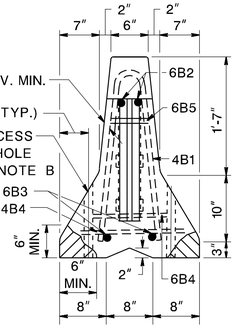
PLAN VIEW
DETAIL No. 2

PLACE GROUT IN HATCHED AREAS BETWEEN SECTIONS, WHEN REQUIRED BY THE TABLE OF JOINT TREATMENT.

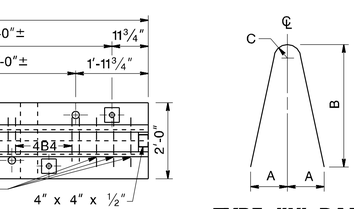




SECTION A–A

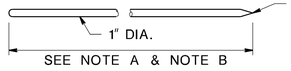


SECTION D–D



KEY IN PLACE

PLAN–ANCHOR RECESS/POCKET

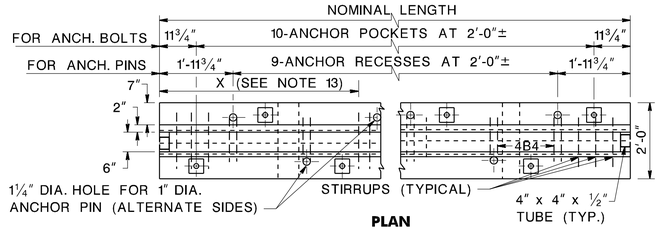


FOR ANCHORING IN CONCRETE SLABS, THE TIP MAY BE OMITTED.

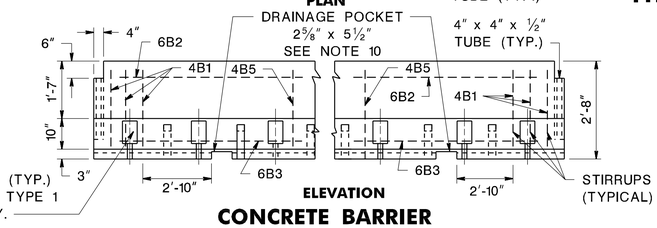
ANCHOR PIN

JOINT CLASS	TABLE OF JOINT AND ANCHORAGE TREATMENTS FOR TYPE 4 APPLICATIONS ONLY JOINT TREATMENT
A	CONNECTION KEY ONLY
B	CONNECTION KEY AND GROUT IN EVERY JOINT
C	CONNECTION KEY AND GROUT IN EVERY JOINT AND PIN EVERY OTHER UNIT. IN UNITS THAT ARE TO BE ANCHORED, PINS SHALL BE REQUIRED IN EVERY ANCHOR PIN RECESS
D	CONNECTION KEY AND GROUT EVERY JOINT, BOLT EVERY ANCHOR POCKET HOLE IN EVERY UNIT.

TABLE OF VARIABLE BARS			
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 BAR			



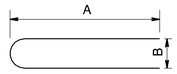
PLAN



ELEVATION

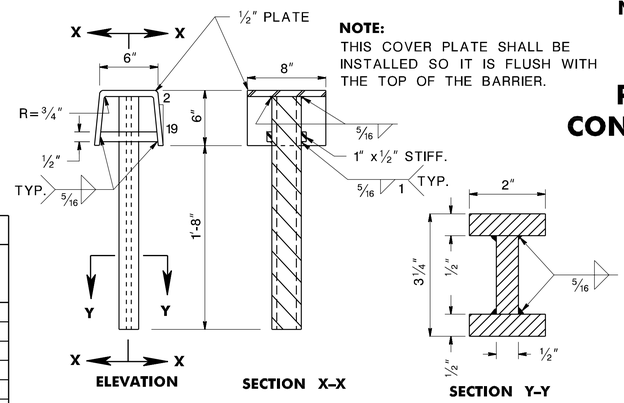
CONCRETE BARRIER

TYPE "I" BAR



TYPE "II" BAR

BARS 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 13	3′-1″	II	15½″	4″		STIRRUPS
4B5	#13	SEE NOTE 13	4′-11″	I	5″	26″	2″	STIRRUPS
6B2	#19	2	SEE NOTE 13	STR.				LONGITUDINAL (TOP) NORMAL SECTION
6B3	#19	2	SEE NOTE 13	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



ELEVATION SECTION X–X SECTION Y–Y

CONNECTION KEY

NOTE:
THIS COVER PLATE SHALL BE INSTALLED SO IT IS FLUSH WITH THE TOP OF THE BARRIER.

GENERAL NOTES:

1. STEEL PLATE SHALL BE ASTM A36, A588, A441 OR A572 GRADE 50.
2. REINFORCING BARS SHALL BE AASHTO M31M, GRADE 420.
3. CONCRETE SHALL BE CONCRETE / WHITE CONCRETE CLASS B.
4. CONCRETE CLEAR COVER FOR REINFORCING BARS SHALL BE 1½″ (MIN.)
5. A MINIMUM OF (2) TWO RECESSED LIFTING DEVICES SHALL BE USED ON EACH SECTION. EACH LIFTING DEVICE SHALL HAVE A MINIMUM CAPACITY OF 6 TONS.
6. TUBE STEEL SHALL BE ASTM A500, GRADE B OR C.
7. ANCHOR PINS SHALL BE 1 INCH DIA. ASTM A36.
8. ANCHOR PINS ARE NOT REQUIRED IN EVERY UNIT. SEE TABLE OF JOINT TREATMENTS.
9. ALL END SECTIONS SHALL BE PINNED UNLESS OTHERWISE NOTED.
10. 2⅝″ X 5½″ DRAINAGE POCKETS - TWO REQUIRED IN SECTIONS 12 FEET AND GREATER. ONE REQUIRED IN 8 FOOT AND 10 FOOT SECTIONS.
11. 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 IT'S LONGITUDINAL AXIS.
12. THE PRECAST CONCRETE CURB, CONSTRUCTION BARRIER SHALL BE CAST IN STEEL FORMS.
13. THE PRECAST CONCRETE CURB SHALL BE UNITS OF 20 FEET, HOWEVER, OTHER LENGTHS MAY BE USED TO MEET FIELD CONDITIONS. THE NUMBER AND PLACEMENT OF THE 4B4 AND 4B5 BARS WILL VARY WITH THE LENGTH OF THE BARRIER UNIT AS SHOWN ON THE TABLE OF VARIABLE BARS. THE 6B2 AND 6B3 BARS SHALL BE 10 INCHES SHORTER THAN THE NOMINAL LENGTH OF THE BARRIER UNITS.
14. REINFORCING SHOWN IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING NECESSARY FOR HANDLING SHALL BE THE OPTION AND RESPONSIBILITY OF THE CONTRACTOR.
15. WELDING AND FABRICATION OF STEEL STRUCTURES SHALL BE IN ACCORDANCE WITH SECTIONS 1 THRU 6 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE AND SECTION 10 OF THE ANSI/AWS D.1 STRUCTURAL WELDING CODE. SURFACES TO BE WELDED SHALL BE FREE OF SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER MATERIAL THAT WILL PREVENT PROPER WELDING OR PRODUCE OBJECTIONAL FUMES. WELDING SHALL BE SHIELDED METAL ARC WELDING USING PROPERLY DRIED 5⁄32″ DIA. E7018 ELECTRODES.
16. AFTER REMOVAL OF THE BARRIER, THE HOLES IN THE SURFACE ON WHICH THE BARRIER SAT WHICH WERE USED TO ANCHOR THE SYSTEM, SHALL BE FILLED. THE ONLY EXCEPTION IS WHEN THE HOLES ARE IN AN AREA WHICH IS TO BE REMOVED. HOLES IN FLEXIBLE PAVEMENT, OR UNPAVED AREAS SHALL BE FILLED AS DIRECTED. HOLES IN PORTLAND CEMENT CONCRETE PAVEMENTS OR STRUCTURAL DECKS, SHALL BE FILLED WITH NON-SHRINK GROUT MATERIAL MEETING THE REQUIREMENTS OF SECTION 914.03, EXCEPT THAT IN LATEX MODIFIED CONCRETE BRIDGE DECK, A COMPATIBLE NON-SHRINK GROUT MATERIAL SHALL BE USED.
17. ONLY THE TYPE 4, JOINT CLASS D, SHALL BE USED AS BRIDGE PARAPETS.

NOTE A

THE LENGTH OF THE ANCHOR PINS SHALL BE SUCH THAT THE FOLLOWING MINIMUM EMBEDMENT LENGTHS ARE OBTAINED:
(a) INTO PORTLAND CEMENT CONCRETE PAVEMENT 0′-5″.
(b) INTO FLEXIBLE PAVEMENT 1′-6″
(c) INTO UNPAVED AREA 2′-6″

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

HOLES IN BRIDGE DECKS SHALL 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

IN UNITS THAT ARE TO BE ANCHORED, PINS SHALL BE REQUIRED IN EVERY ANCHOR RECESS.

NOTE C

FOR INSTALLATION ON BRIDGE DECKS REFER TO BRIDGE PLANS FOR NECESSARY MODIFICATIONS AS REQUIRED AND GENERAL NOTES 16 & 17.

NOTES:

REINFORCING BARS ARE IN METRIC UNITS.

PRECAST CONCRETE CURB, CONSTRUCTION BARRIER, TYPE 4 (ALTERNATE B)

N.T.S.

CD-617-5

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-617-5.1