

New Jersey Turnpike Authority

P.O. Box 5042, Woodbridge, NJ 07095



September 22, 2023

Document Change Announcement

Standard Drawings

Precast Concrete Construction Barrier (PCCB) Update

DCA2023SD-03

Subject: Revisions to

Drawing TP-22 Precast Concrete Construction Barrier - 1

Drawing TP-23 Precast Concrete Construction Barrier - 2

Drawing TP-23A Precast Concrete Construction Barrier - 3

Description of Change:

This DCA updates PCCB and temporary attenuator standards for MASH compliance and is released in conjunction with DCAs for Design Manual and 2016 Standard Supplementary Specifications. Standard Drawings TP-22 and TP-23 are reissued and new drawing TP-23A is issued. Joint and anchorage treatments and minimum clear area behind the PCCB to accommodate the maximum barrier deflection have been updated. Anchorage types were redefined based on the PCCB alternate barrier design required; prior standard Type 4 anchorage is now defined as requiring PCCB Alt A or B and prior standard Type 1 anchorage is now defined as requiring PCCB Alt B.

Notice to New Jersey Turnpike Authority Staff and Design Consultants

Effective immediately, changes must be implemented in all applicable projects that have not entered Phase C development within one month following the date of this DCA. Contact your New Jersey Turnpike Authority Project Manager for instruction.

The revisions may be accessed on the Authority's webpage: <https://www.njta.com/doing-business/professional-services>

Recommended By:

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Lamis T. Malak, P.E.
Deputy Chief Engineer - Design

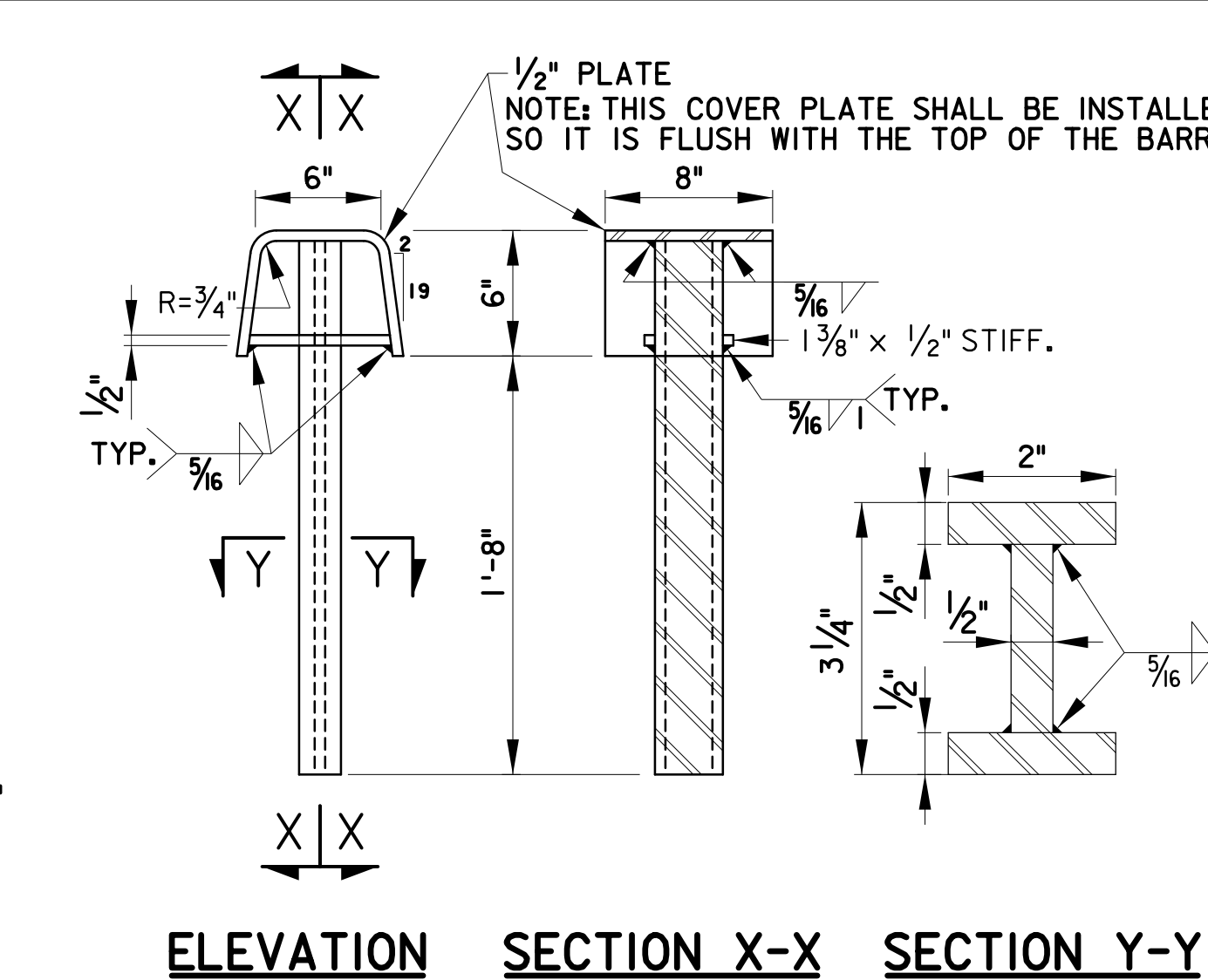
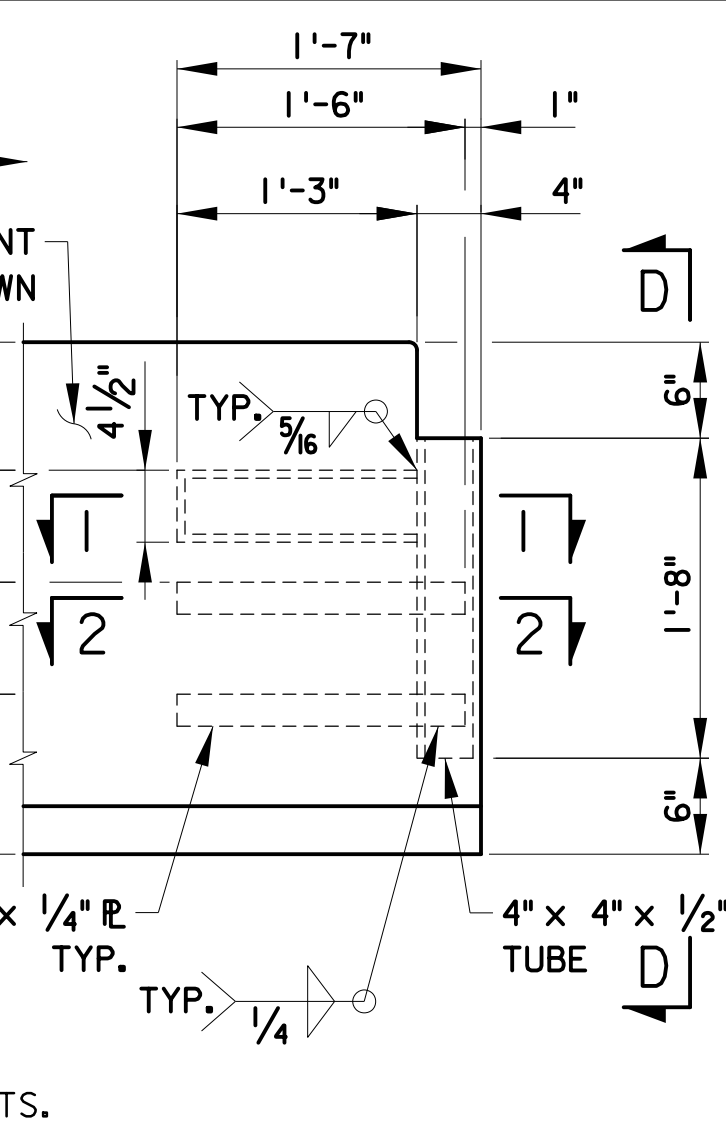
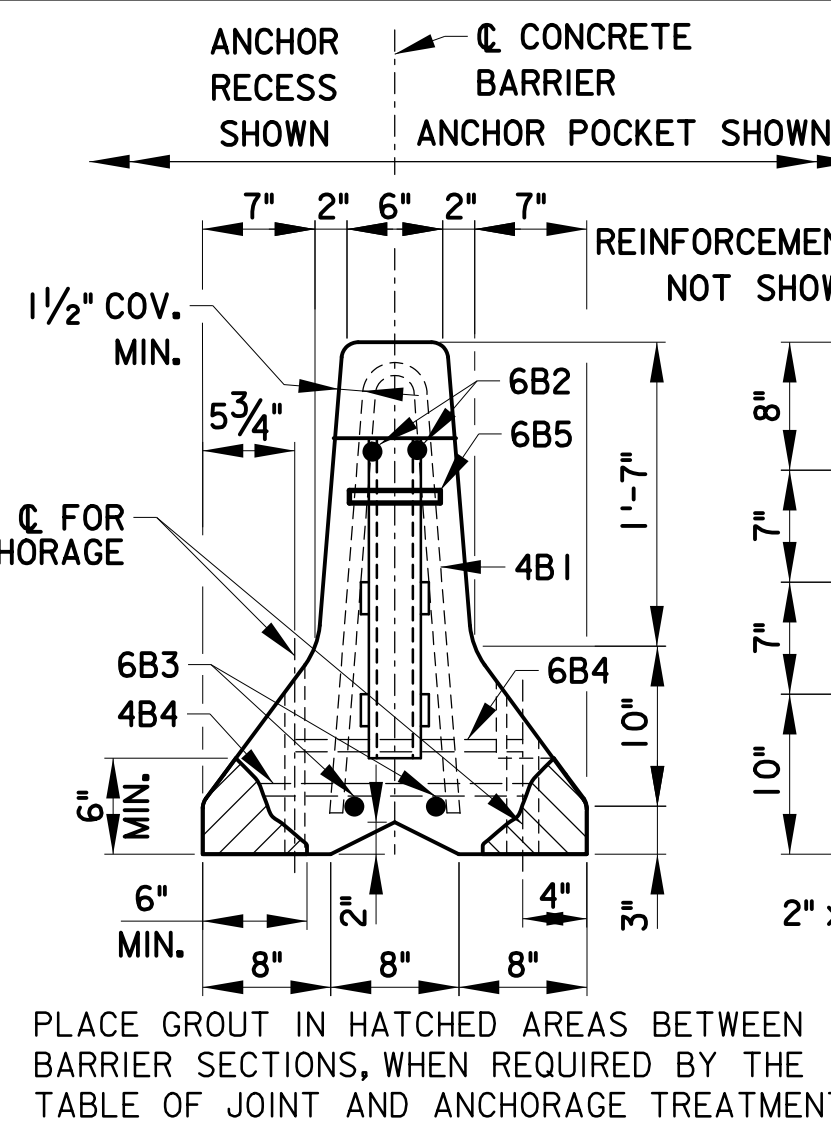
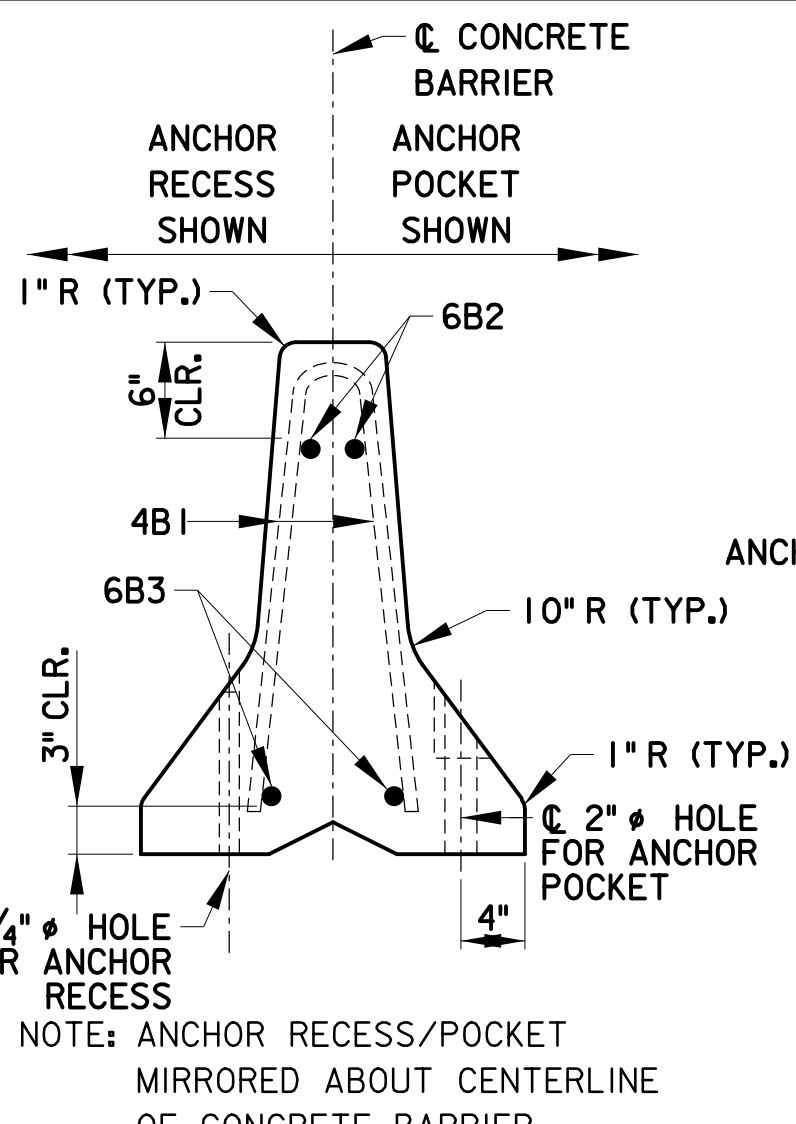
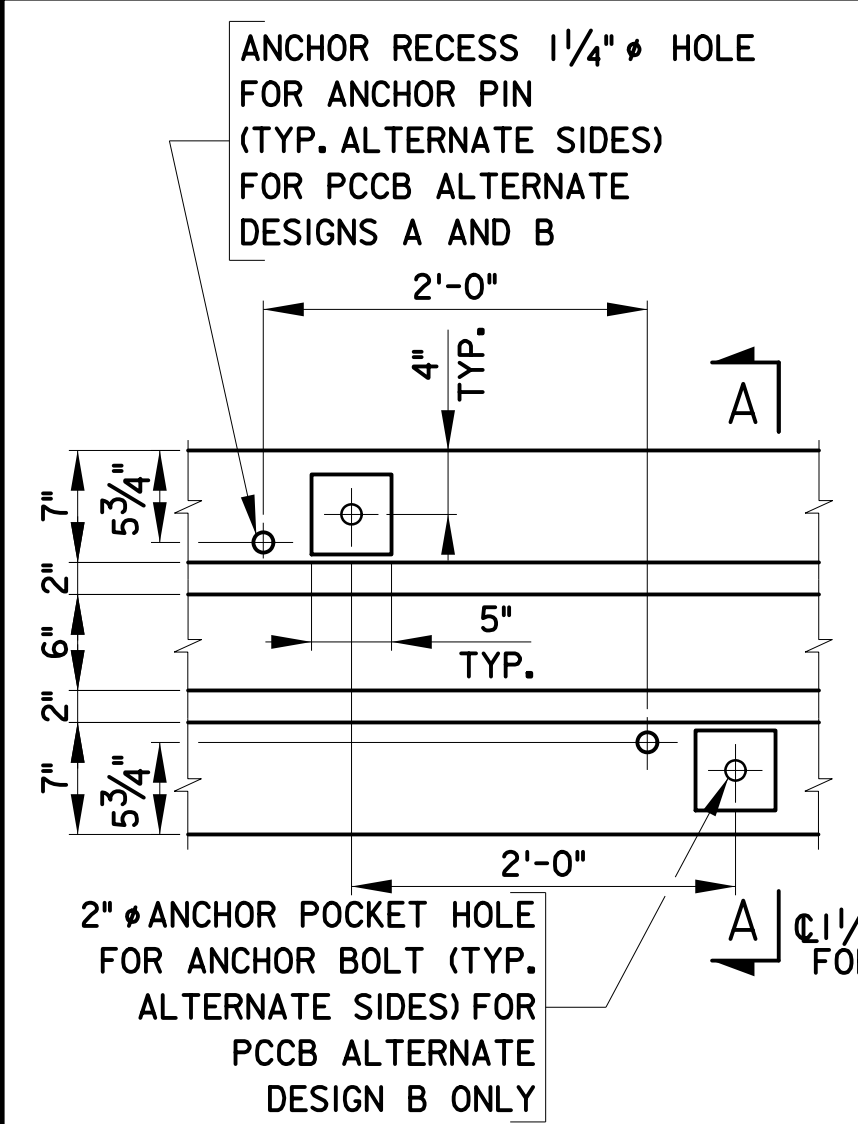
Handwritten signature of Daniel Hesslein in black ink.

Daniel Hesslein, P.E.
Deputy Chief Engineer - Construction

Approved By:

Handwritten signature of Michael Garofalo in blue ink.

Michael Garofalo, P.E.
Chief Engineer



PLAN-ANCHOR RECESS/POCKET
N.T.S.

SECTION A-A
N.T.S.

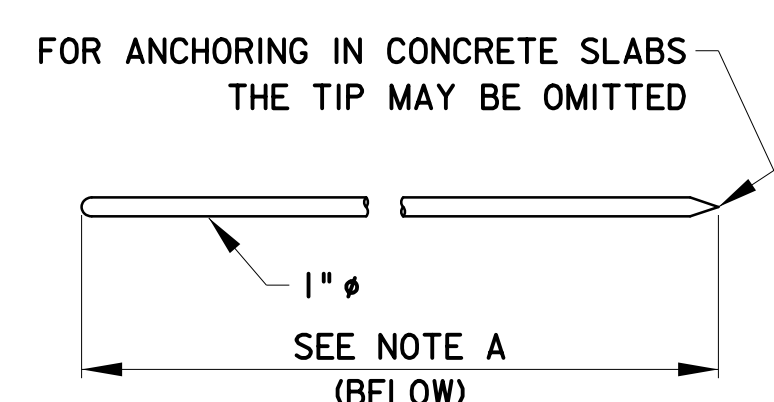
SECTION D-D
N.T.S.

ELEVATION
N.T.S.

ELEVATION CONNECTION KEY
N.T.S.

GENERAL NOTES:

- STEEL PLATE SHALL BE ASTM A36, ASTM A588, OR A572 GRADE 50.
- REINFORCING BARS SHALL BE ASTM A615, GRADE 60.
- CONCRETE SHALL BE WHITE OR GREY CLASS B (4000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS)
- CONCRETE CLEAR COVER FOR REINFORCING BARS SHALL BE 1/2" MIN.
- A MINIMUM OF TWO (2) RECESSED LIFTING DEVICES SHALL BE USED ON EACH SECTION. EACH LIFTING DEVICE SHALL HAVE A MINIMUM CAPACITY OF 6 TON.
- TUBE STEEL SHALL BE ASTM A500, GRADE B OR C.
- ANCHOR PINS SHALL BE 1" Ø ASTM A36. ANCHOR BOLTS SHALL BE 1" Ø ASTM F1554 GRADE 36.
- ANCHOR PINS ARE NOT REQUIRED IN EVERY BARRIER SECTION. SEE TABLE OF JOINT AND ANCHORAGE TREATMENTS.
- ALL BARRIER END SECTIONS SHALL BE PINNED UNLESS OTHERWISE NOTED.
- 2 5/8" X 5 1/2" DRAINAGE POCKETS - TWO (2) REQUIRED IN SECTIONS 12' OR GREATER, ONE (1) REQUIRED IN 8' & 10' SECTIONS.
- AFTER A BARRIER SECTION HAS BEEN PLACED AND THE CONNECTION KEY INSERTED, REMOVE ANY SLACK IN THE JOINT BY PULLING THE SECTION IN A DIRECTION PARALLEL TO ITS LONGITUDINAL AXIS.
- THE PRECAST CONCRETE CONSTRUCTION BARRIER SHALL BE CAST IN STEEL FORMS.
- THE PRECAST CONCRETE CONSTRUCTION BARRIER SHALL TYPICALLY BE FURNISHED IN 20'-0" SECTIONS. OTHER LENGTHS MAY BE USED TO MEET FIELD CONDITIONS. THE AND PLACEMENT OF THE 4B4 AND 4B5 BARS WILL VARY WITH THE LENGTH OF THE BARRIER SECTION 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 SECTION.
- REINFORCING SHOWN IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING NECESSARY FOR HANDLING SHALL BE THE OPTION AND RESPONSIBILITY OF THE CONTRACTOR.
- 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 D1.1 STRUCTURAL WELDING CODE WHICHEVER IS MORE STRICT WHEN THERE IS CONFLICT. 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" Ø E7018 ELECTRODES.
- PRECAST CONCRETE CONSTRUCTION BARRIER (PCCB) ALTERNATE DESIGN A OR B MAY BE USED INTERCHANGEABLY IN ANY LOCATION WHERE JOINT CLASS A, B, OR C HAS BEEN SPECIFIED. ALTERNATE DESIGN B MUST BE USED WHERE JOINT CLASS D IS SPECIFIED.
- SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- PRECAST CONCRETE CONSTRUCTION BARRIER SHALL NOT BE INSTALLED ON SURFACES STEEPER THAN 10H:1V.

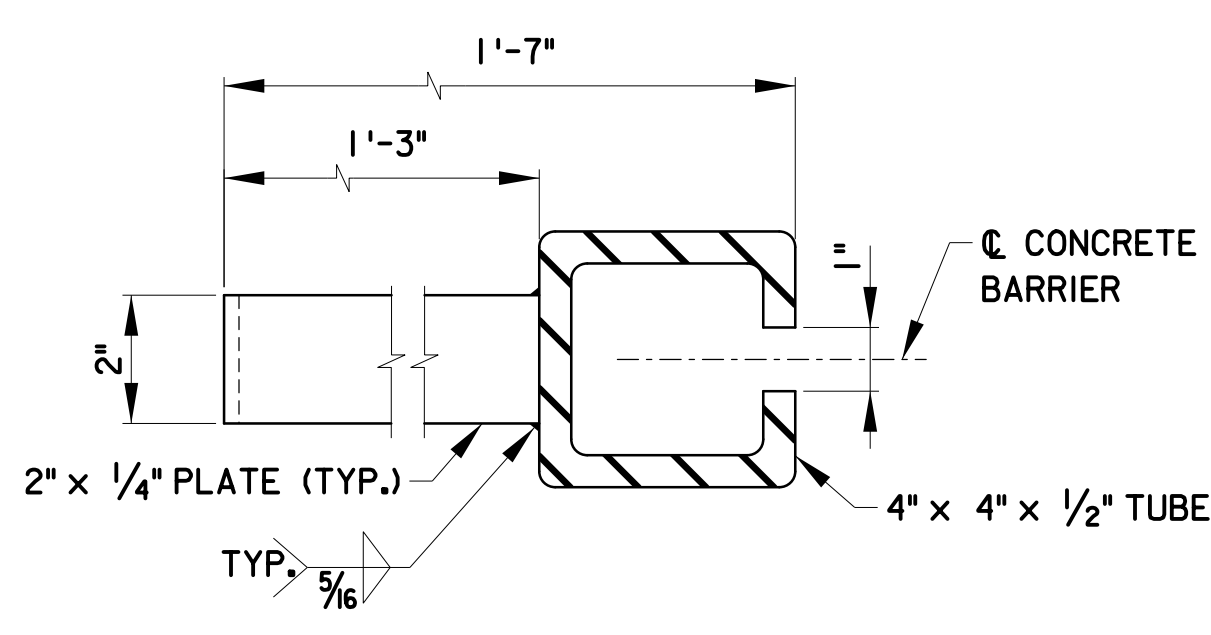


ANCHOR PIN
N.T.S.

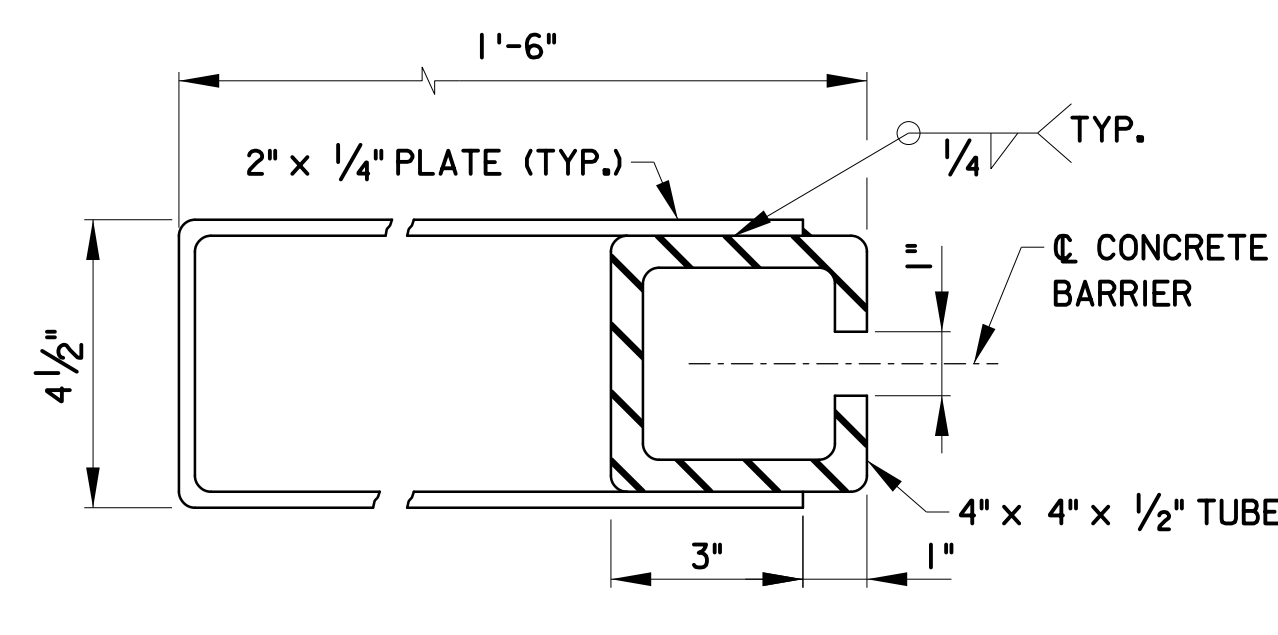
NOTE A:
THE LENGTH OF THE ANCHOR PINS SHALL BE SUCH THAT THE FOLLOWING MINIMUM EMBEDMENT LENGTHS ARE OBTAINED:
(a) INTO MIN. 6" THICK PORTLAND CEMENT CONCRETE PAVEMENTS AND BRIDGE DECKS 5 INCHES EMBEDMENT
(b) INTO FLEXIBLE PAVEMENT 1'-6"
(c) INTO UNPAVED AREA 2'-6"

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

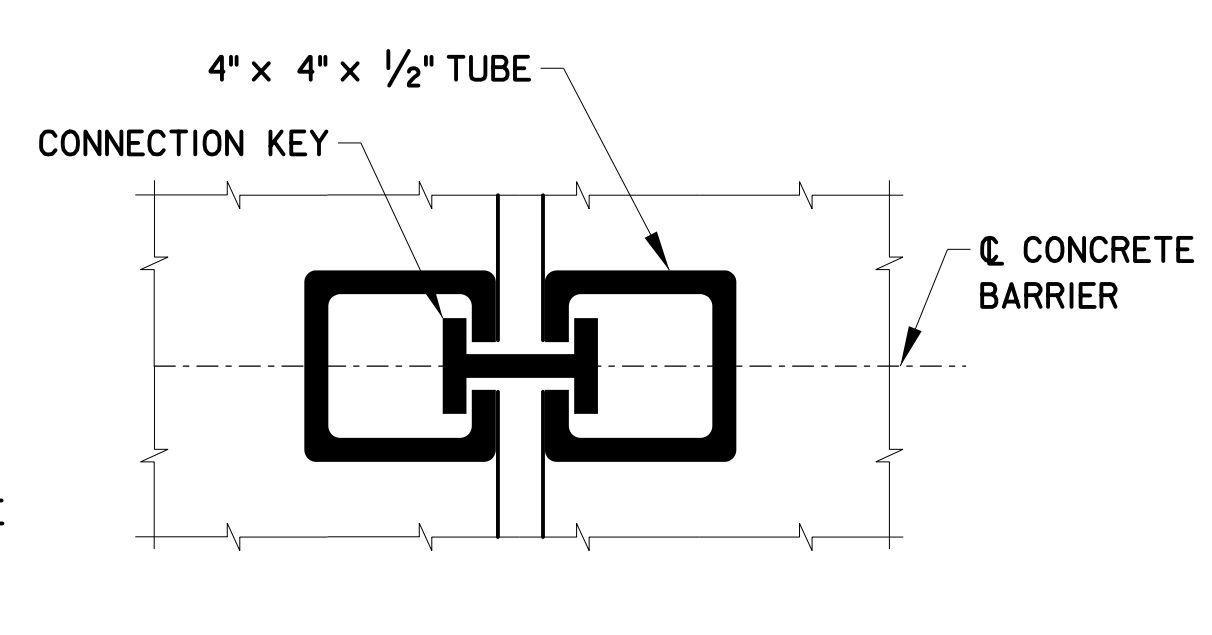
HOLES IN BRIDGE DECKS SHALL BE 1/4" Ø MAXIMUM AND MADE WITH A CORE DRILL OR ANY OTHER APPROVED ROTARY DRILLING DEVICE THAT DOES NOT IMPART AN IMPACT FORCE. HOLES SHALL BE BLOWN CLEAN PRIOR TO PLACEMENT OF THE PINS.



SECTION NO. 1



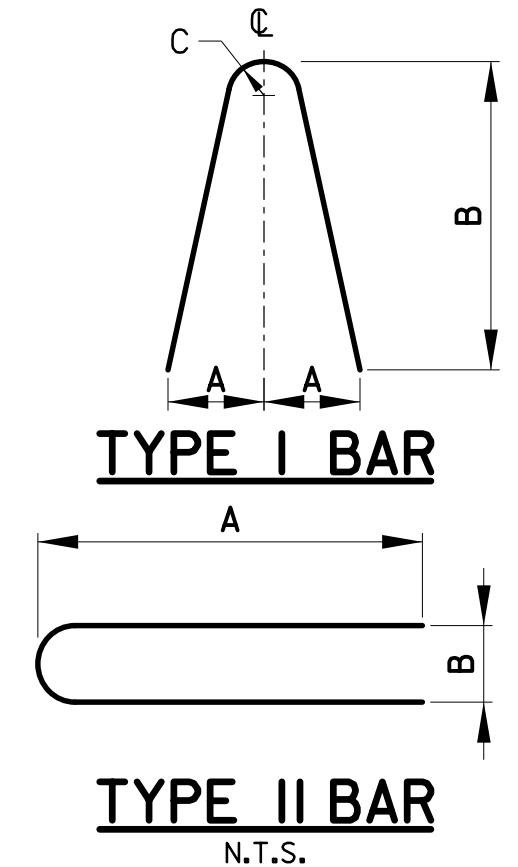
SECTION NO. 2



KEY IN PLACE

PRECAST CONCRETE CONSTRUCTION BARRIER JOIN - ANCHOR AND CONNECTION DETAILS
N.T.S.

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



TYPE I BAR
N.T.S.

TYPE II BAR
N.T.S.

TABLE OF VARIABLE BARS			
NOMINAL LENGTH OF BARRIER SECTION	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

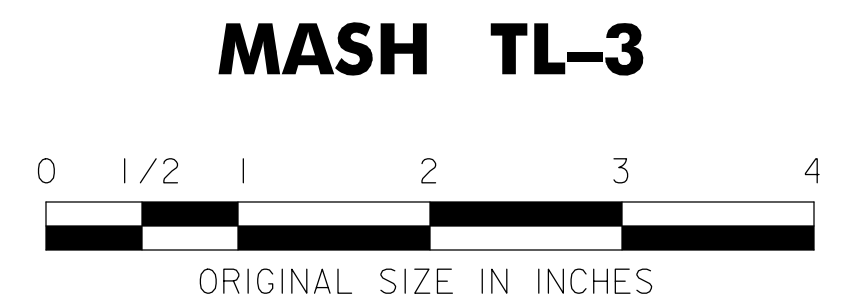
TABLE OF JOINT AND ANCHORAGE TREATMENTS			
JOINT CLASS	TREATMENT	PCCB ALTERNATE DESIGN	MINIMUM CLEAR AREA
A	CONNECTION KEY AND BARRIER END SECTIONS FULLY PINNED*	A,B	39"
B	CONNECTION KEY AND NON-SHRINK GROUT AT EVERY JOINT; 6" X 6" STEEL BOX BEAM SPANNING EACH JOINT; AND BARRIER END SECTIONS FULLY PINNED*	A,B	33"
C	CONNECTION KEY AND NON-SHRINK GROUT AT EVERY JOINT; TRAFFIC SIDE OF ALL BARRIER SECTIONS PINNED; AND BARRIER END SECTIONS FULLY PINNED*	A,B	12"
D	CONNECTION KEY AND NON-SHRINK GROUT AT EVERY JOINT AND BOLT EVERY ANCHOR POCKET HOLE IN EVERY BARRIER SECTION	B	0"

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

GENERAL NOTES, CONT'D:

- 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 SUBSECTION 905.12 AND 905.14, EXCEPT THAT IN LATEX MODIFIED CONCRETE BRIDGE DECK, A COMPATIBLE NON-SHRINK GROUT MATERIAL SHALL BE USED. FOR HOLES WHERE ADHESIVE ANCHORS WERE PLACED, THE HOLES SHALL BE FILLED WITH THE APPROVED ADHESIVE.
- WORK THIS DRAWING WITH STANDARD DRAWINGS TP-23 AND TP-23A.

REV.	DESCRIPTION	DATE
0	REISSUED DRAWING	09/23



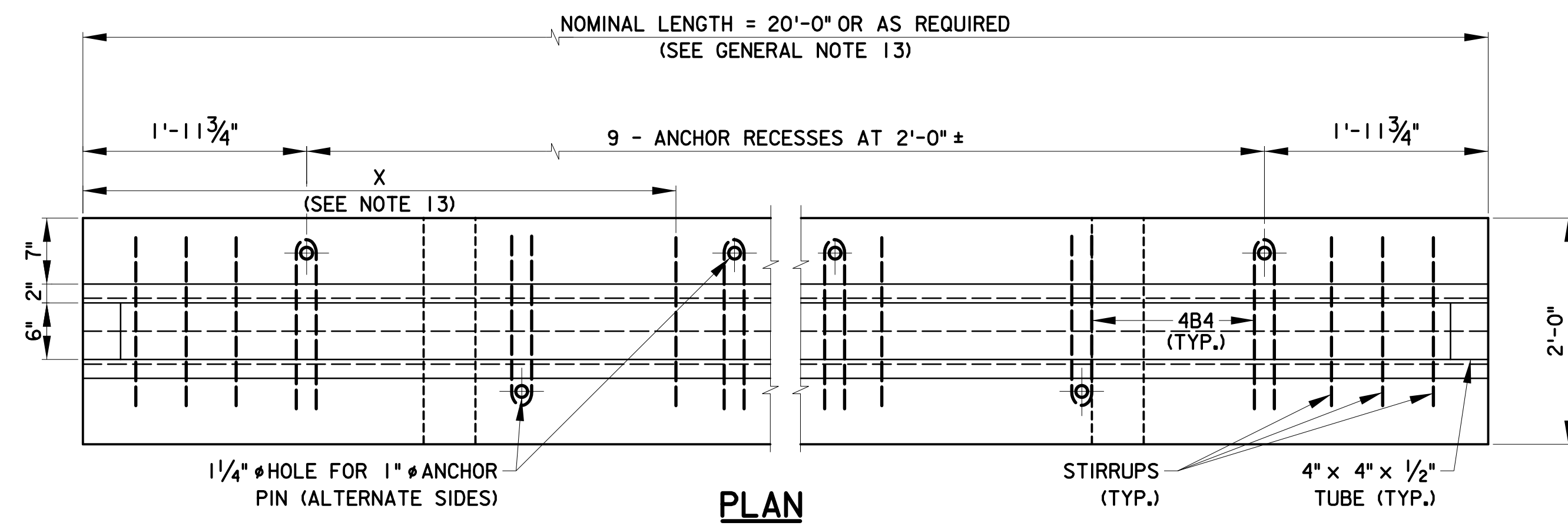
MASH TL-3

NEW JERSEY TURNPIKE AUTHORITY
NEW JERSEY TURNPIKE GARDEN STATE PARKWAY
 STANDARD DRAWINGS

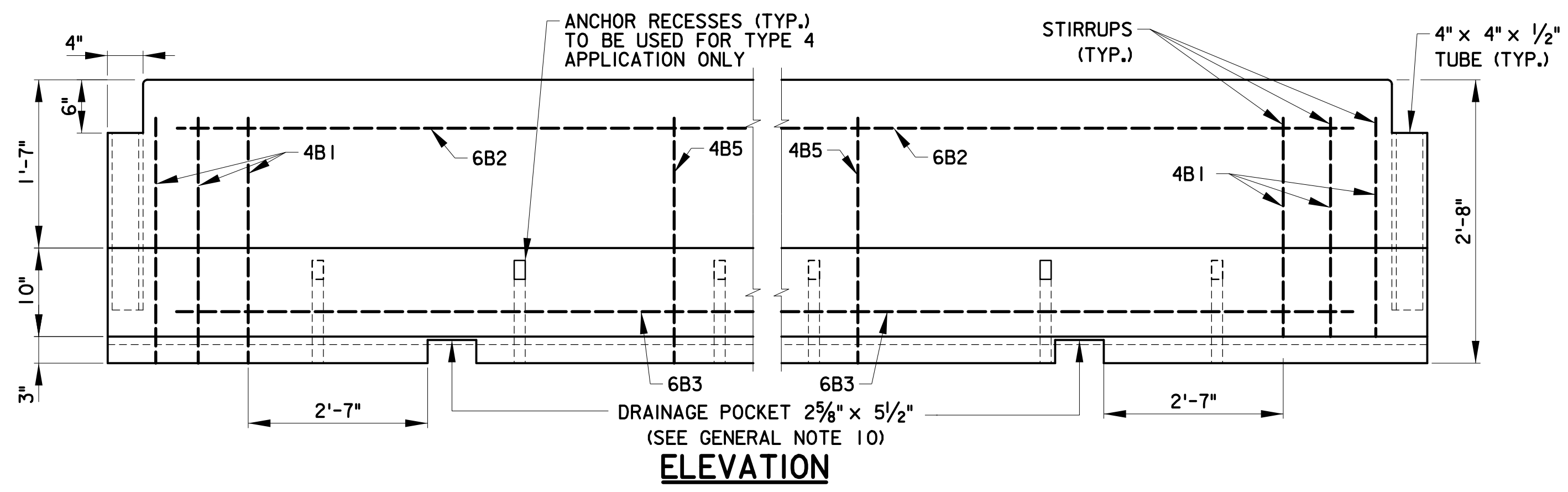
PRECAST CONCRETE CONSTRUCTION BARRIER - 1

OFFICE OF THE CHIEF ENGINEER
 NEW JERSEY TURNPIKE AUTHORITY
 WOODBRIDGE, NEW JERSEY

STANDARD DRAWING
TP-22

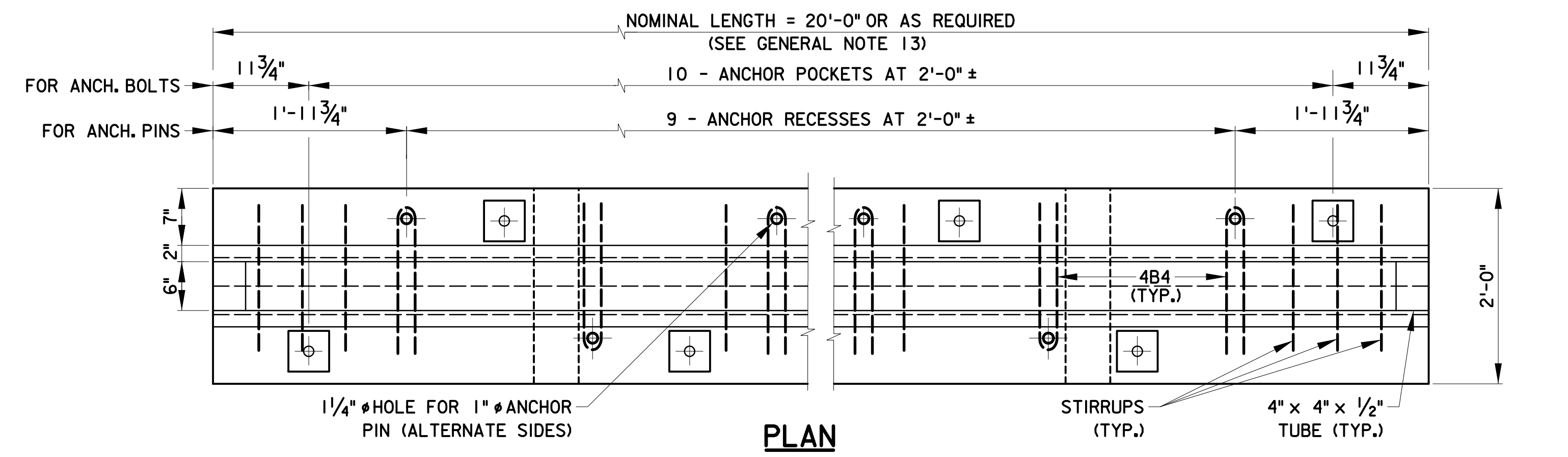


PLAN

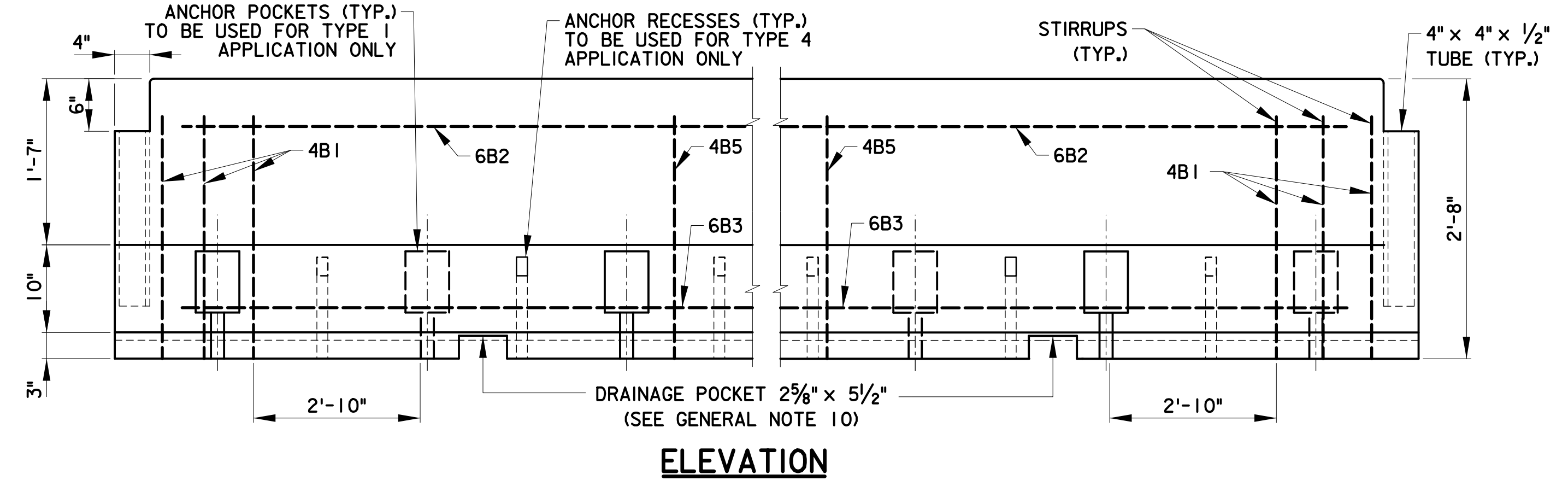


ELEVATION

PRECAST CONCRETE CONSTRUCTION BARRIER - ALTERNATE A
N.T.S.

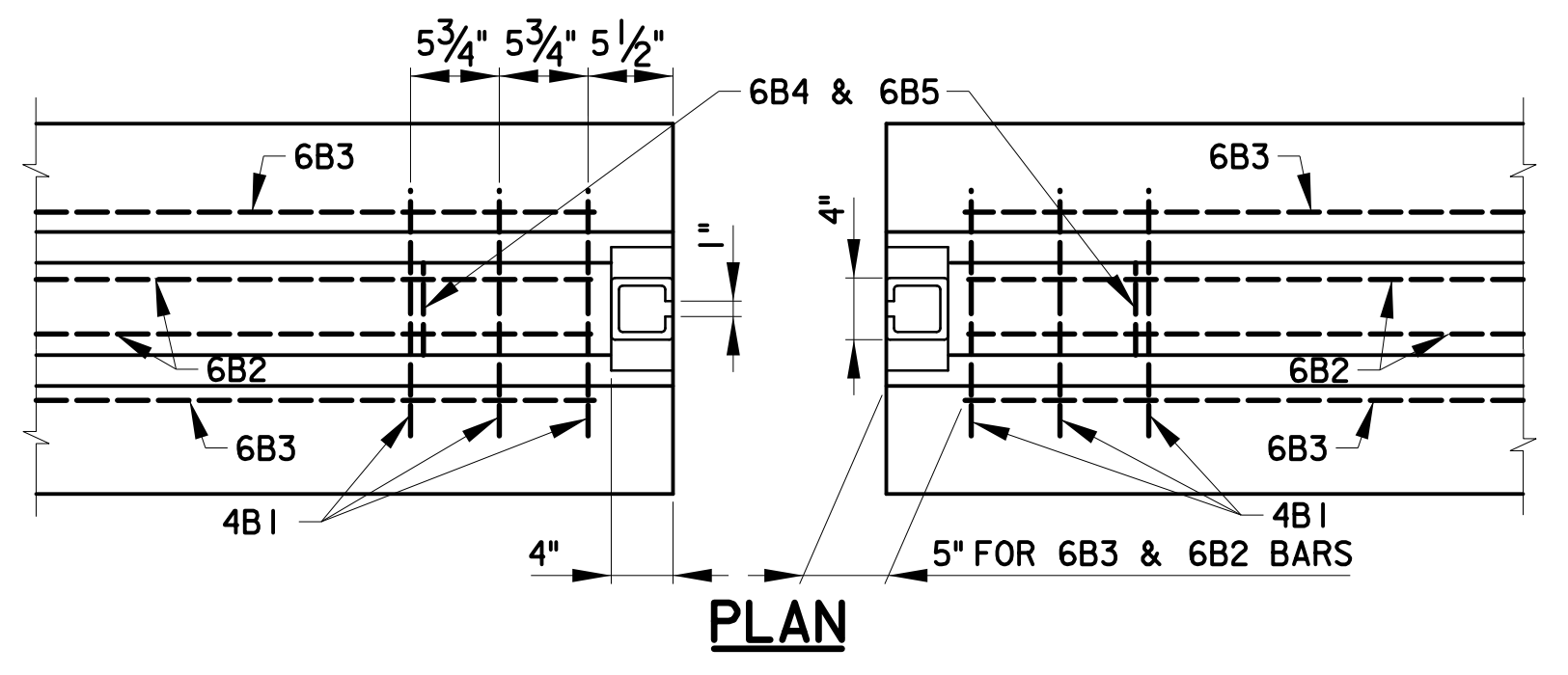


PLAN



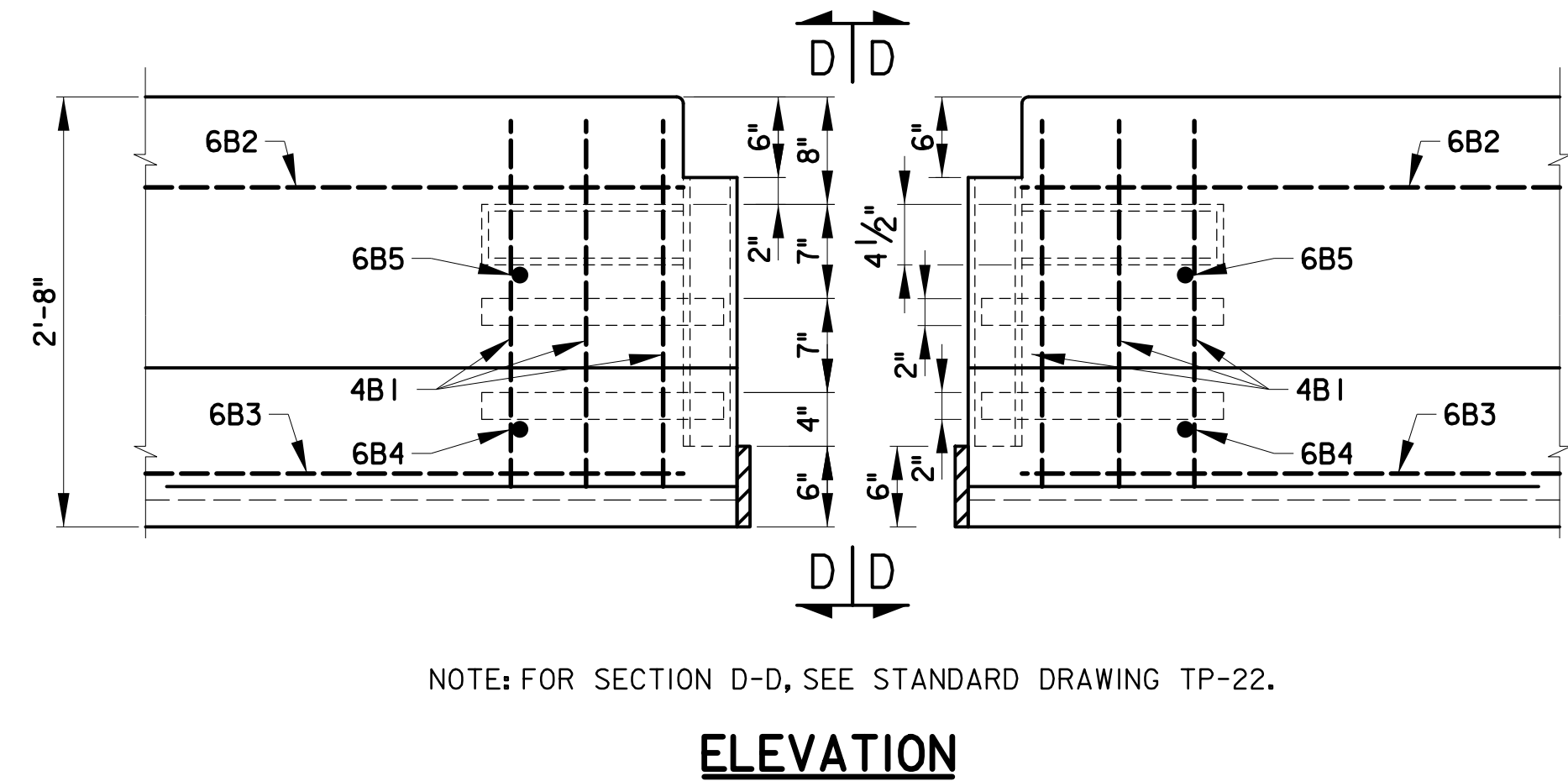
ELEVATION

PRECAST CONCRETE CONSTRUCTION BARRIER - ALTERNATE B
N.T.S.



PLAN

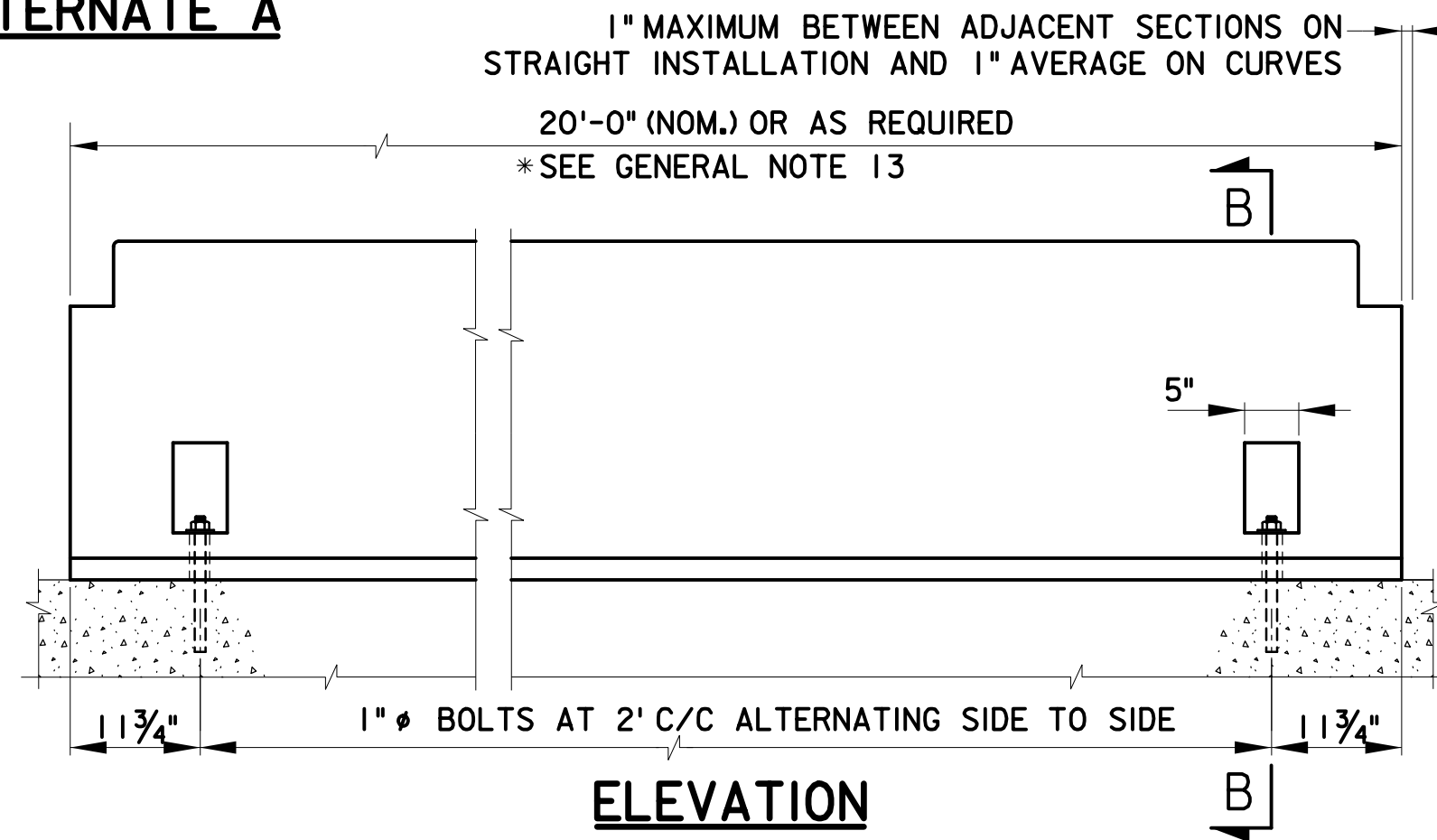
NOTE: ANCHOR RECESS/POCKET NOT SHOWN FOR CLARITY.



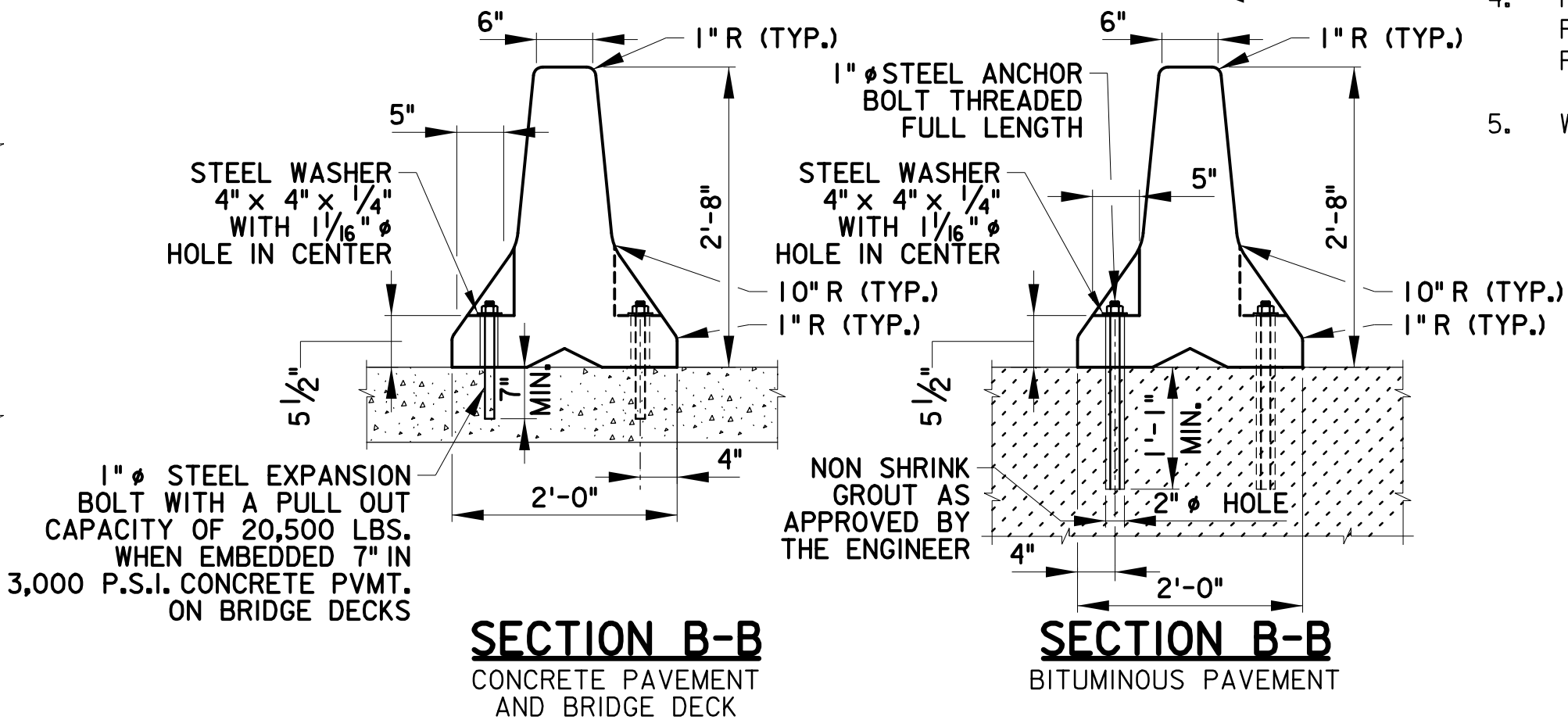
ELEVATION

NOTE: FOR SECTION D-D, SEE STANDARD DRAWING TP-22.

PRECAST CONCRETE CONSTRUCTION BARRIER AT JOINT
N.T.S.



ELEVATION



SECTION B-B
CONCRETE PAVEMENT
AND BRIDGE DECK

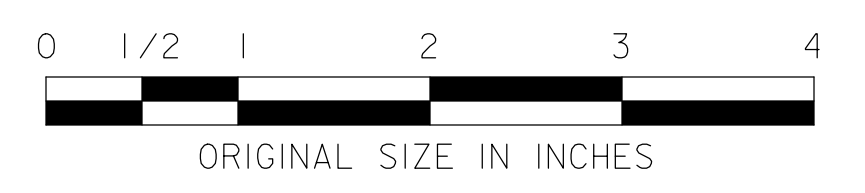
SECTION B-B
BITUMINOUS PAVEMENT

**ANCHORAGE DETAILS FOR
ALTERNATE DESIGN B BARRIER (JOINT CLASS D)**
N.T.S.

GENERAL NOTES:

- FOR PRECAST CONCRETE CONSTRUCTION BARRIER (PCCB) ALTERNATE DESIGN B, JOINT CLASS D, BOLTS SHALL BE REQUIRED IN EVERY ANCHOR POCKET HOLE.
- NUTS SHALL CONFORM TO ASTM A563 AND WASHERS SHALL CONFORM TO ASTM F436.
- HOLE SHALL BE BLOWN CLEAN OF DEBRIS PRIOR TO THE PLACEMENT OF BOLTS.
- REMOVABLE ADHESIVE ANCHORS SHALL MEET THE REQUIREMENTS OF PARAGRAPH 909.02 (F). HOLE DIAMETER PER MANUFACTURER'S RECOMMENDATION.
- WORK THIS DRAWING WITH STANDARD DRAWINGS TP-22 AND TP-23A.

MASH TL-3



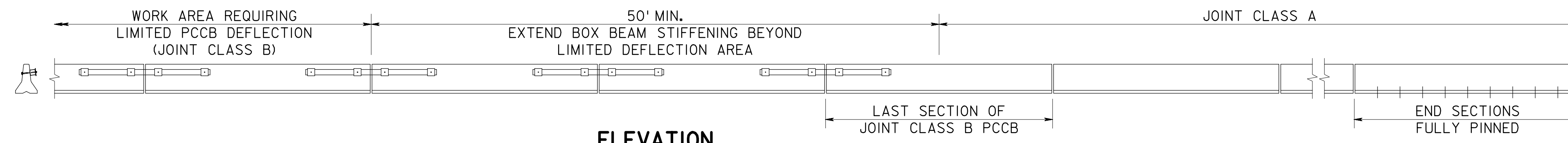
NEW JERSEY TURNPIKE AUTHORITY
**NEW JERSEY TURNPIKE
 GARDEN STATE PARKWAY**
 STANDARD DRAWINGS

PRECAST CONCRETE
 CONSTRUCTION BARRIER - 2

OFFICE OF THE CHIEF ENGINEER
 NEW JERSEY TURNPIKE AUTHORITY
 WOODBRIDGE, NEW JERSEY

STANDARD DRAWING
TP-23

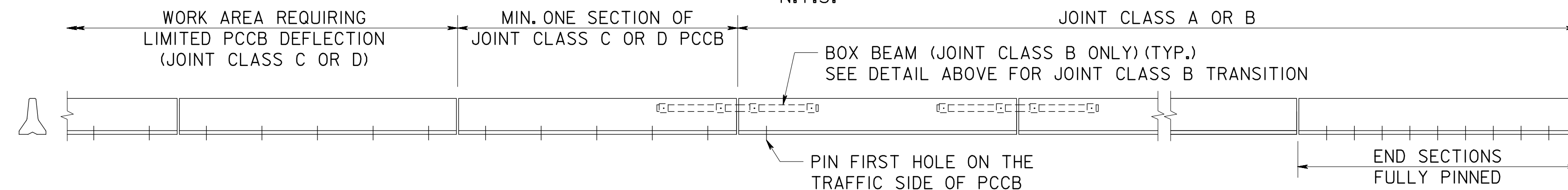
REV.	DESCRIPTION	DATE
0	REISSUED DRAWING	09/23



ELEVATION

PCCB - JOINT CLASS B TRANSITION

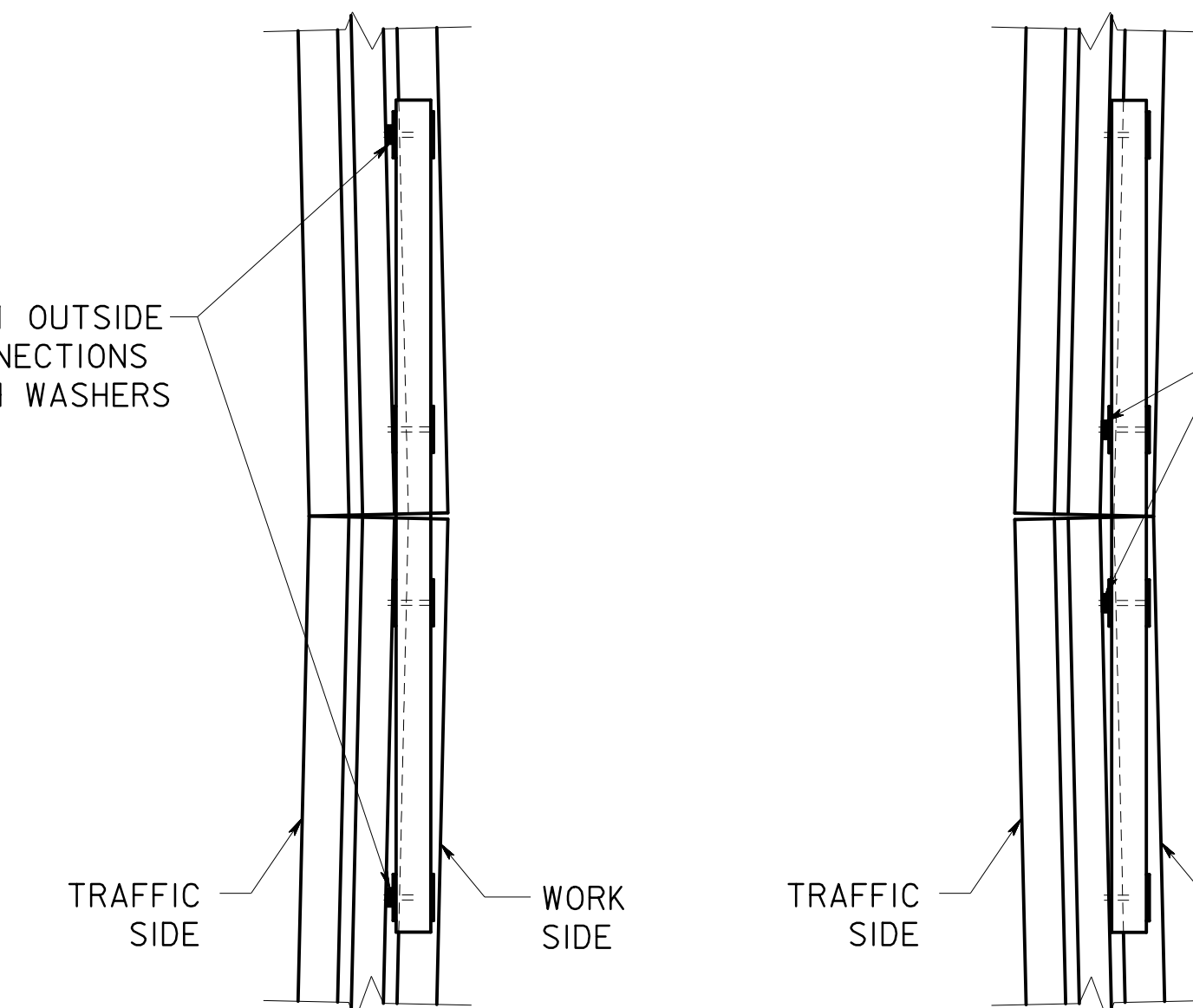
N.T.S.



ELEVATION

PCCB - JOINT CLASS C OR D TRANSITION

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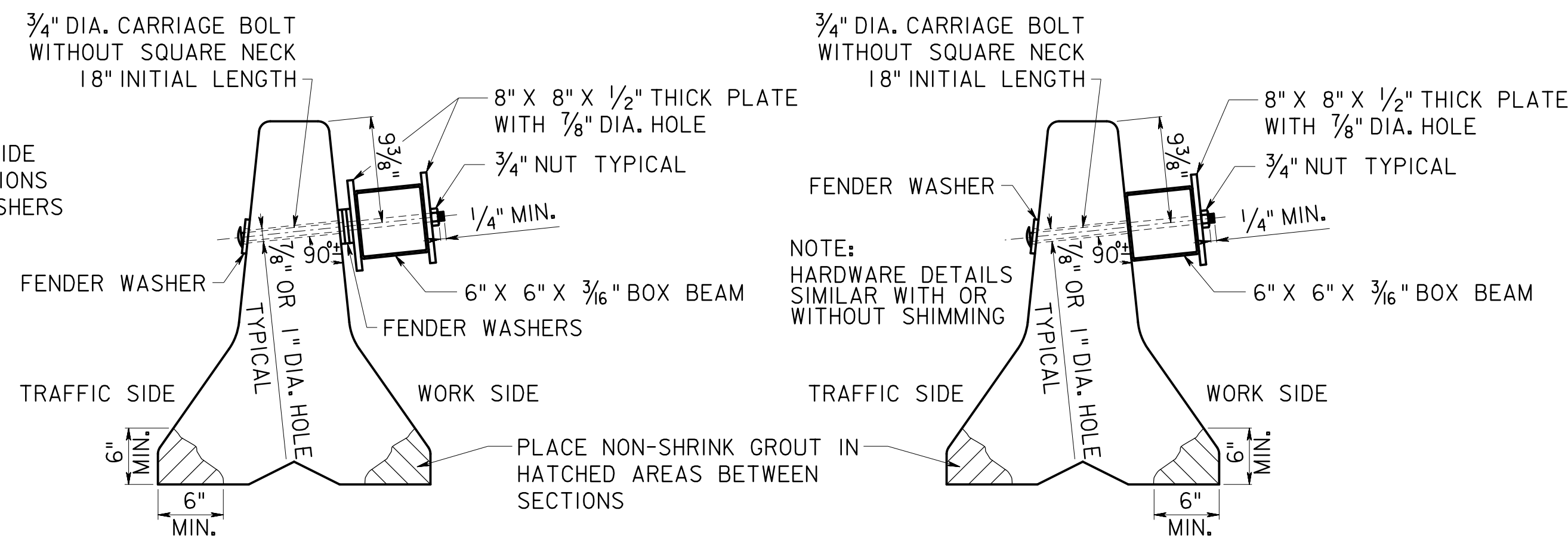
PLAN

PLAN

CURVING TOWARD TRAFFIC CURVING AWAY FROM TRAFFIC

N.T.S.

N.T.S.

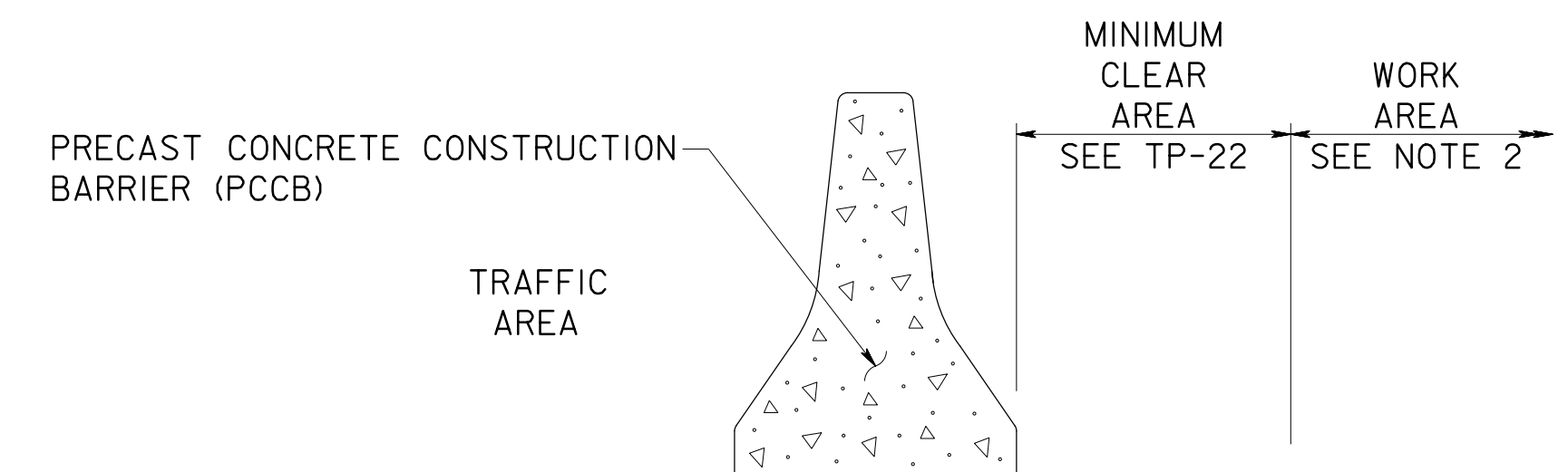


SECTION C-C

WITH SHIMMING
N.T.S.

SECTION C-C

WITHOUT SHIMMING
N.T.S.



NOTES:

1. CHANGES TO THE PROPOSED JOINT CLASS AT ANY LOCATION MUST BE APPROVED BY THE ENGINEER.
2. NO ROADWAY DROP OFFS, OBSTRUCTIONS, STORAGE OF MATERIALS, OR WORK WILL BE PERMITTED IN THE CLEAR AREA UNLESS APPROVED BY THE ENGINEER.

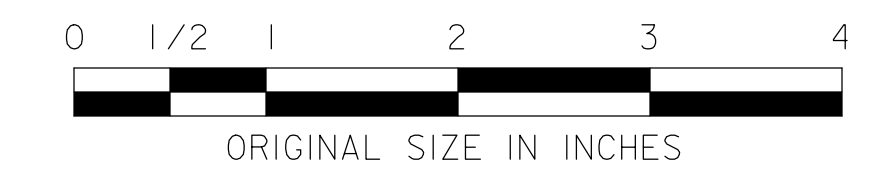
CLEAR AREA TREATMENT (ALL JOINT CLASSES)

N.T.S.

GENERAL NOTES - PRECAST CONCRETE CONSTRUCTION BARRIER (JOINT CLASS B):

1. BOX BEAM IS TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS.
2. PRECAST CONCRETE CONSTRUCTION BARRIER WITH BOX BEAM STIFFENER MAY ONLY BE USED WITH BARRIER SECTIONS 14'-0" OR LONGER.
3. PRECAST CONCRETE CONSTRUCTION BARRIER 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 PRECAST CONCRETE CONSTRUCTION BARRIER IS PLACED ON A RADIUS, THE RESULTING GAPS BETWEEN THE BOX BEAM AND CONCRETE BARRIER TO BE SHIMMED.
5. THE SHIMMING CONSISTS OF 8" X 8" X 1/2" SQUARE PLATE, AND FENDER WASHERS AS NEEDED TO SNUG THE BOX BEAM STIFFENER TO THE CONSTRUCTION BARRIER CURB.
6. FENDER WASHER TO BE 3" NOMINAL O.D.
7. THE PRESENCE OF NORMAL HOLES DRILLED PER THIS SHEET WILL NOT AFFECT THE REUSABILITY OF THE CONCRETE SEGMENTS FOR ANY JOINT CLASS.
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. PRECAST CONCRETE CONSTRUCTION BARRIER, JOINT CLASS B SHALL NOT BE USED AS MEDIAN BARRIER (TRAFFIC ON BOTH SIDES OF THE BARRIER). JOINT CLASS B SHALL ONLY BE USED AS SPECIFIED TO SHIELD TRAFFIC ON ONE SIDE OF THE BARRIER, WITH THE STEEL BOX BEAM STIFFENING ALWAYS ATTACHED TO THE NON-TRAFFIC SIDE OF THE BARRIER.
10. WORK THIS DRAWING WITH STANDARD DRAWINGS TP-22 AND TP-23.

MASH TL-3



NEW JERSEY TURNPIKE AUTHORITY
**NEW JERSEY TURNPIKE
GARDEN STATE PARKWAY**

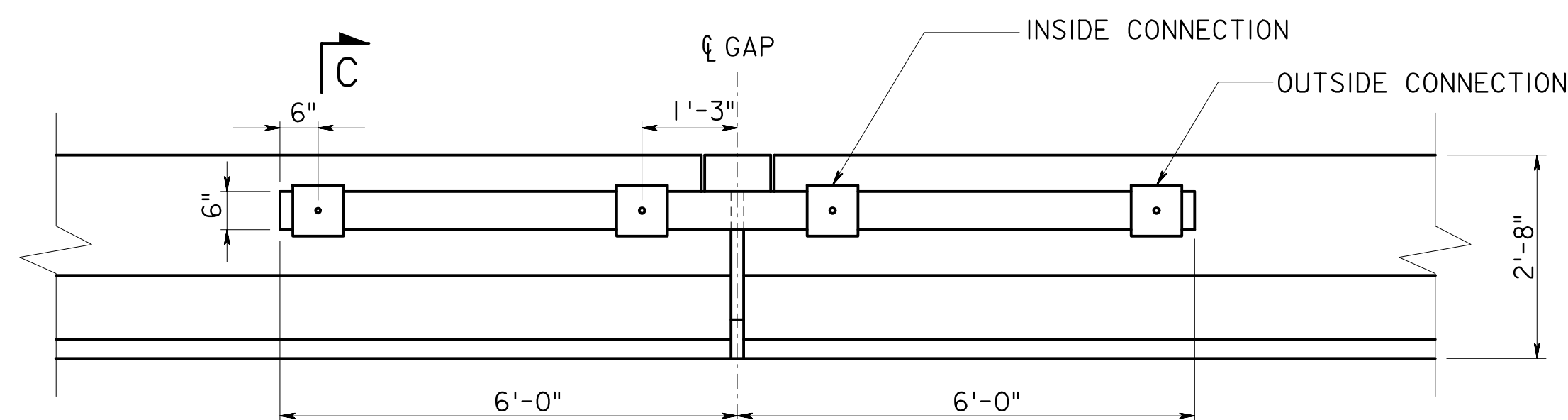
STANDARD DRAWINGS

PRECAST CONCRETE
CONSTRUCTION BARRIER - 3

OFFICE OF THE CHIEF ENGINEER
NEW JERSEY TURNPIKE AUTHORITY
WOODBRIIDGE, NEW JERSEY

STANDARD DRAWING

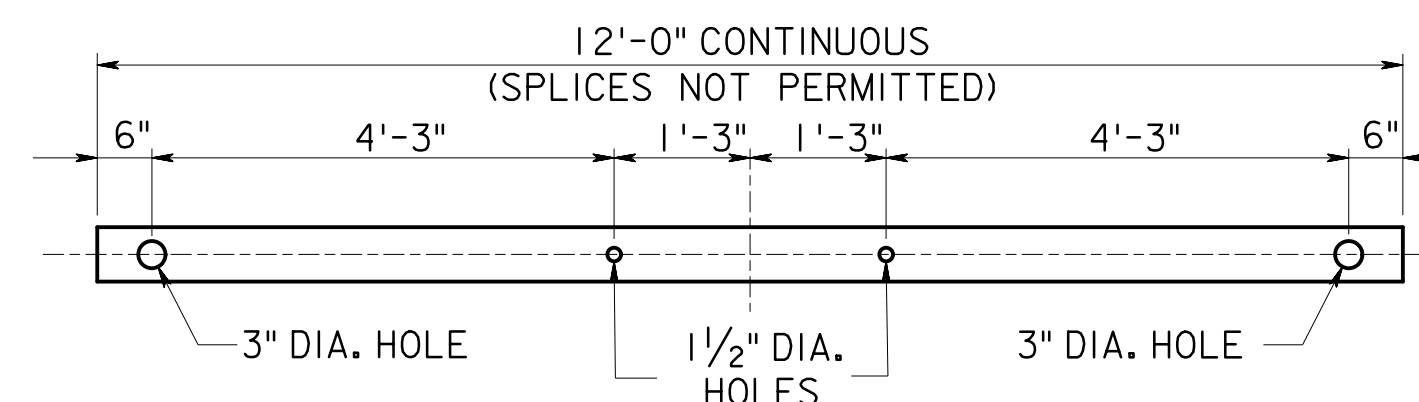
TP-23A



ELEVATION

(CONSTRUCTION SIDE)

N.T.S.



ELEVATION

BOX BEAM HOLE LAYOUT DETAIL

N.T.S.

PCCB - BOX BEAM STIFFENING (JOINT CLASS B)

REV.	DESCRIPTION	DATE
0	ORIGINAL DRAWING	09/23