

**ACCEPTABLE TEMPORARY CONCRETE BARRIER (TCB) TYPES AND ANCHORING DETAILS
BASED ON UNDERLYING SURFACE TYPE AND BARRIER OFFSET FROM DROP-OFF**

UNDERLYING SURFACE	BARRIER OFFSET							
	0" ≤ A < 6"		6" ≤ A < 12"		12" ≤ A < 26"		A ≥ 26"	
	TCB TYPE	DETAIL	TCB TYPE	DETAIL	TCB TYPE	DETAIL	TCB TYPE	DETAIL
BRIDGE DECK (CONCRETE)	L OR S *	3A OR 4A * **	L OR S *	3A OR 4A * **	L	1	***	N/A
BRIDGE DECK (CONCRETE WITH HMA OVERLAY)	L OR S *	3B *	L OR S *	3B *	L	1	***	N/A
ROADWAY (CONCRETE)	L OR S	4A	L OR S	4A	L	1	***	N/A
ROADWAY (HMA)	****	****	L OR S	2	L	1	***	N/A
ROADWAY (CONCRETE WITH HMA OVERLAY)	L OR S	4B	L OR S	4B	L	1	***	N/A

IN REGARDS TO BARRIER OFFSET, "A" IS THE DISTANCE FROM THE OUTSIDE EDGE OF THE TCB TO THE DROP OFF OR THE EDGE OF SLAB.

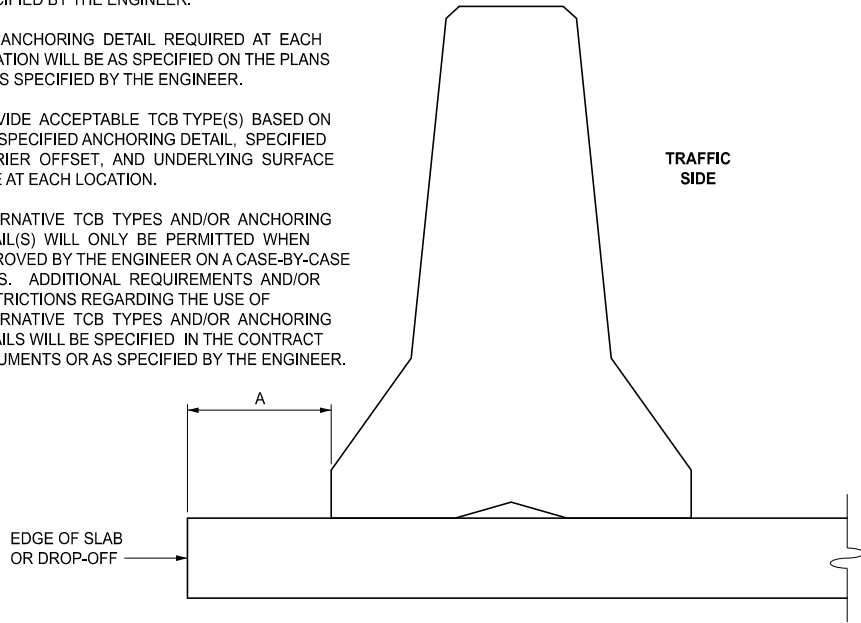
NOTES:

THE CLEAR DIMENSION, A, BETWEEN THE TOE OF THE TCB AND THE DROP-OFF OR EDGE OF SLAB WILL BE AS SPECIFIED ON THE PLANS OR AS SPECIFIED BY THE ENGINEER.

THE ANCHORING DETAIL REQUIRED AT EACH LOCATION WILL BE AS SPECIFIED ON THE PLANS OR AS SPECIFIED BY THE ENGINEER.

PROVIDE ACCEPTABLE TCB TYPE(S) BASED ON THE SPECIFIED ANCHORING DETAIL, SPECIFIED BARRIER OFFSET, AND UNDERLYING SURFACE TYPE AT EACH LOCATION.

ALTERNATIVE TCB TYPES AND/OR ANCHORING DETAIL(S) WILL ONLY BE PERMITTED WHEN APPROVED BY THE ENGINEER ON A CASE-BY-CASE BASIS. ADDITIONAL REQUIREMENTS AND/OR RESTRICTIONS REGARDING THE USE OF ALTERNATIVE TCB TYPES AND/OR ANCHORING DETAILS WILL BE SPECIFIED IN THE CONTRACT DOCUMENTS OR AS SPECIFIED BY THE ENGINEER.



SHEET INDEX	
ITEM	SHEET NUMBER
TYPE L	10
TYPE S	18
TYPE J1	13
TYPE J2	14
DETAIL 1	2, 3, 4
DETAIL 2	5, 8
DETAIL 3A & 3B	6, 8, 9, 11
DETAIL 4A & 4B	7, 8, 9, 11

* USE TYPE J1 AND J2 TCB SECTIONS OVER BRIDGE DECK EXPANSION JOINTS WITH THERMAL EXPANSION FROM 1½" TO 4". DO NOT USE DETAILS 3A, 3B, OR 4A, OVER BRIDGE DECK EXPANSION JOINTS WITH THERMAL EXPANSION GREATER THAN 4". INSTEAD, USE DETAIL 1 AND TYPE L TCB SECTIONS (WITH "A" NOW BEING ≥ 12") OVER THE ENTIRE BRIDGE SPAN WHEN PLACING LIMITED DEFLECTION TCB SECTIONS OVER BRIDGE DECK EXPANSION JOINTS WITH THERMAL EXPANSION GREATER THAN 4". REFER TO TCB SECTION OVER BRIDGE EXPANSION JOINT DETAILS. FOR ADDITIONAL INFORMATION CONTACT THE TRAFFIC AND SAFETY CRASH BARRIER ENGINEER.

** PROVIDE THE ANCHORING DETAIL SPECIFIED ON THE PLANS OR AS SPECIFIED BY THE ENGINEER.

*** USE OF LIMITED DEFLECTION TCB IS NOT REQUIRED WHEN "A" ≥ 26". TYPE L OR TYPE S TCB MAY BE USED WITHOUT ANCHORING TO THE UNDERLYING SURFACE OR BOX-BEAM STIFFENERS. OTHER MDOT APPROVED STANDARD TEMPORARY BARRIER TYPES MAY ALSO BE USED WHEN "A" ≥ 26"

**** DO NOT INSTALL LIMITED DEFLECTION TCB ON HMA ROADWAYS WHEN "A" < 6".

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES



DEPARTMENT DIRECTOR
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APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT

STANDARD PLAN FOR
TEMPORARY CONCRETE BARRIER LIMITED DEFLECTION

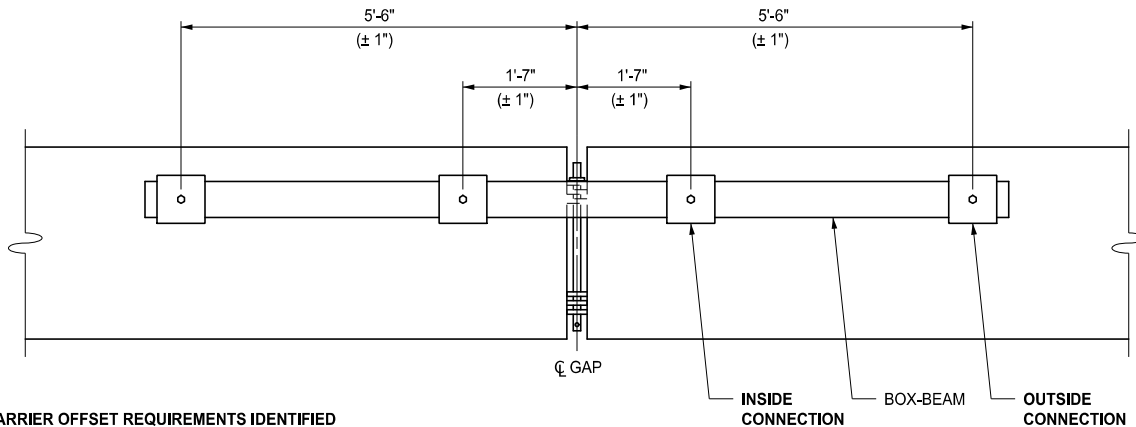
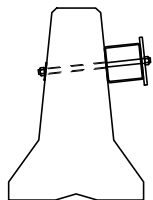
(SPECIAL DETAIL)
FHWA APPROVAL

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BOX BEAM STIFFENED METHOD DETAIL 1



SIDE VIEW
(CONSTRUCTION SIDE)

NOTES:

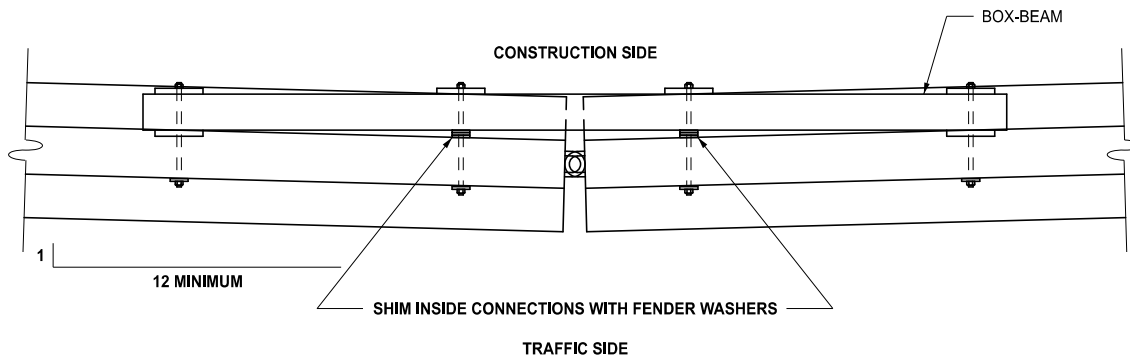
FOLLOW TCB TYPE AND BARRIER OFFSET REQUIREMENTS IDENTIFIED IN TABLE ON SHEET 1.

WHERE TCB WITH BOX-BEAM STIFFENERS (DETAIL 1) IS FLARED OR PLACED ON A RADIUS, THE RESULTING GAPS BETWEEN THE BOX-BEAM AND TCB MUST BE SHIMMED.

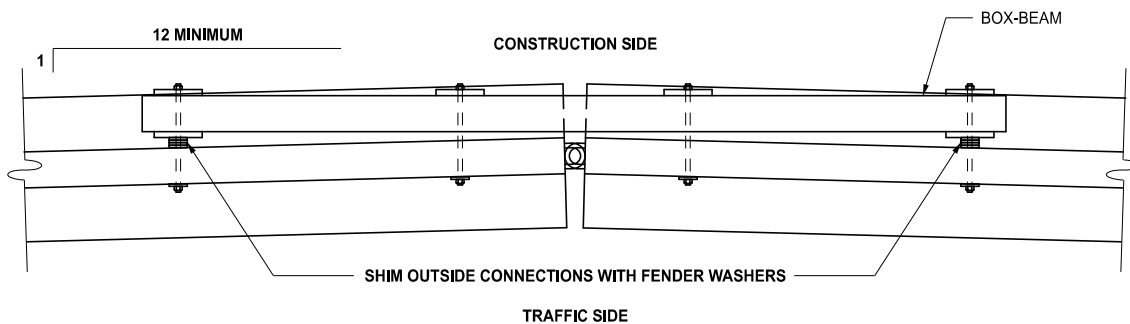
SHIMMING MUST CONSIST OF 8" x 8" x 1/2" SQUARE PLATE AND FENDER WASHERS, AS NEEDED TO SNUG THE BOX-BEAM STIFFENER TO THE TCB.

FENDER WASHERS MUST BE 3" NOMINAL O.D.


INSTALL CONNECTION PINS BETWEEN TCB SECTIONS IN ADDITION TO BOX-BEAM STIFFENERS.



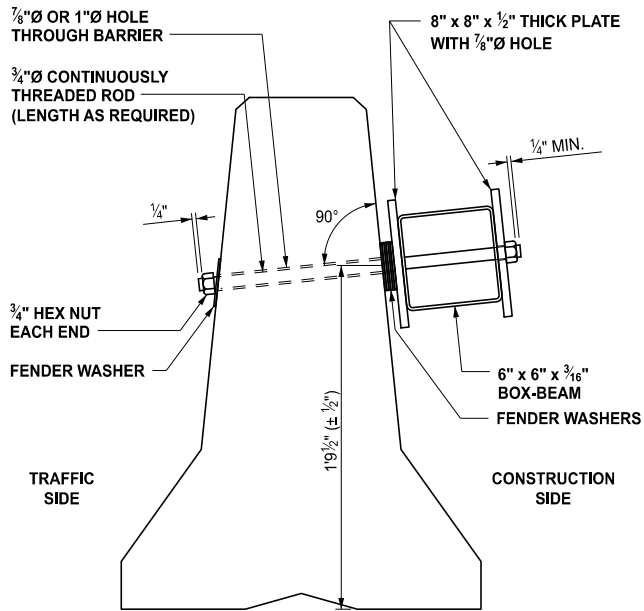
PLAN VIEW TCB CURVING AWAY FROM TRAFFIC



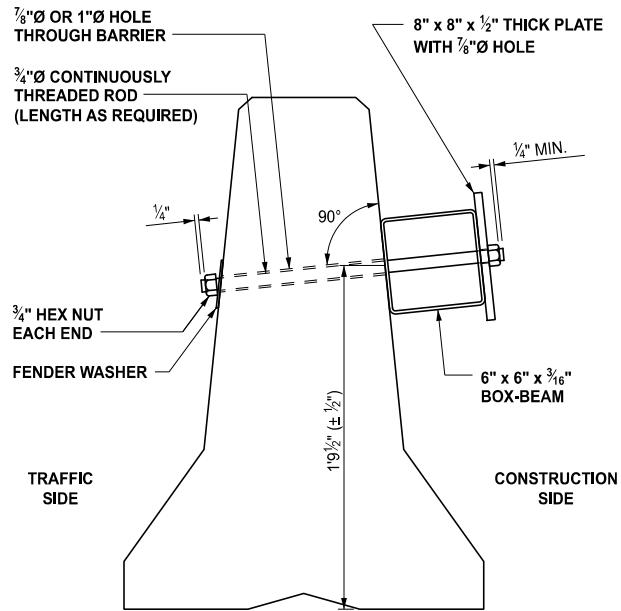
PLAN VIEW TCB CURVING TOWARD TRAFFIC

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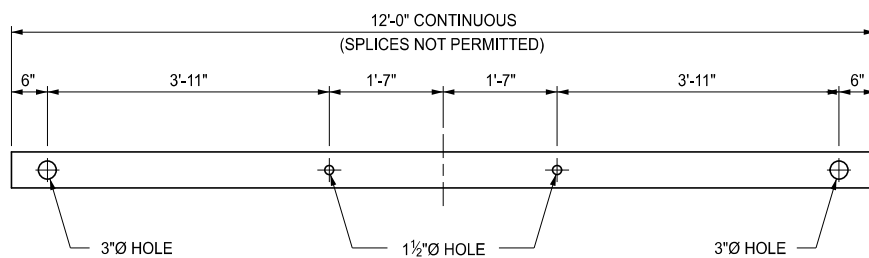
BOX BEAM STIFFENED METHOD DETAIL 1



SECTION WITH SHIMMING



SECTION WITHOUT SHIMMING



BOX-BEAM HOLE LAYOUT DETAIL



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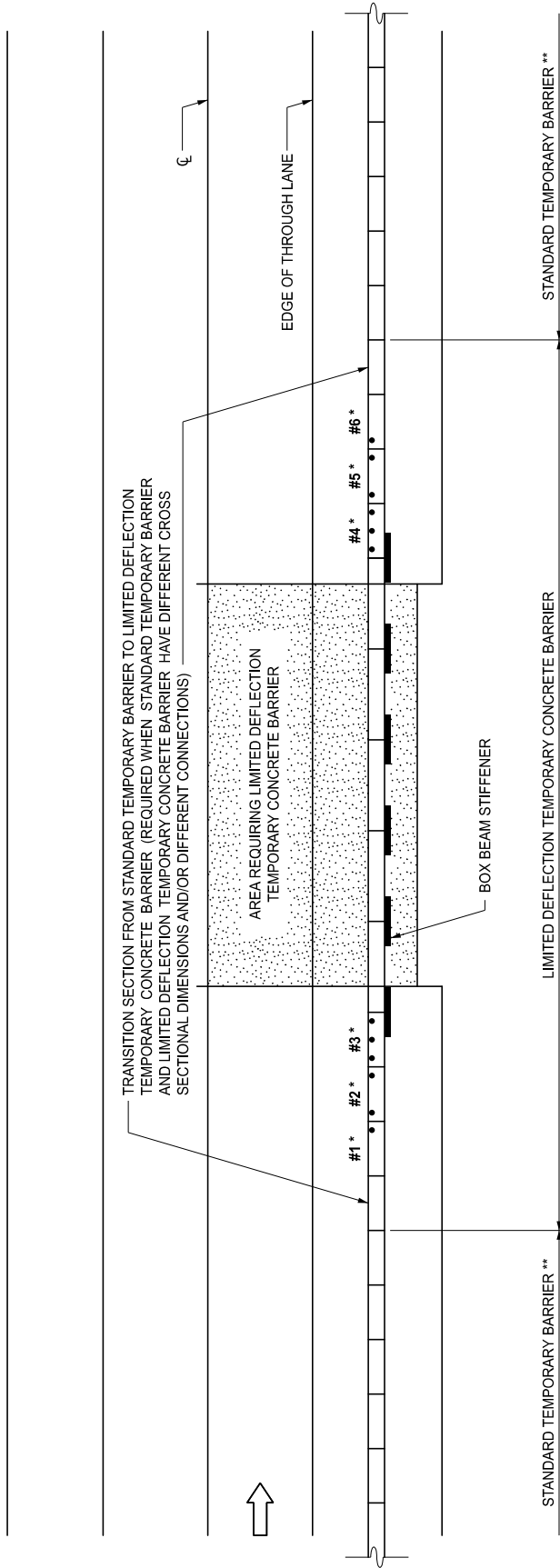
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TRANSITION FROM LIMITED DEFLECTION TEMPORARY CONCRETE BARRIER TO STANDARD TEMPORARY BARRIER WHEN USING DETAIL 1



* INSTALL THE FOLLOWING NUMBER OF ANCHORS OR STAKES EVENLY SPACED (ON THE TRAFFIC SIDE OF THE BARRIER) ON THE FOLLOWING TEMPORARY CONCRETE BARRIER SECTIONS:

	#1	#2	#3	#4	#5	#6
TYPE L	1	2	3	3	2	1
OR						
TYPE S						

** STANDARD TEMPORARY BARRIER CONSISTS OF ANY TEMPORARY BARRIER MEETING MDOT SPECIFICATIONS.

NOTES:

- TGB SECTIONS #3 AND #4 MUST BE LOCATED OUTSIDE THE AREA REQUIRING LIMITED DEFLECTION TEMPORARY CONCRETE BARRIER.
- ANY DEVIATIONS FROM THIS DETAIL REQUIRE APPROVAL FROM THE ENGINEER PRIOR TO INSTALLATION.
- INSTALL BOX-BEAM STIFFENERS BETWEEN TCB SECTIONS AS DEPICTED IN THIS DETAIL.
- USE EITHER TYPE L OR TYPE S TGB FOR SECTIONS #1, #2, #3, #4, #5, AND #6. ALL OTHER LIMITED DEFLECTION TGB SECTIONS, EXCLUDING TRANSITION SECTIONS, MUST CONSIST OF TYPE L TGB WHEN USING DETAIL 1.

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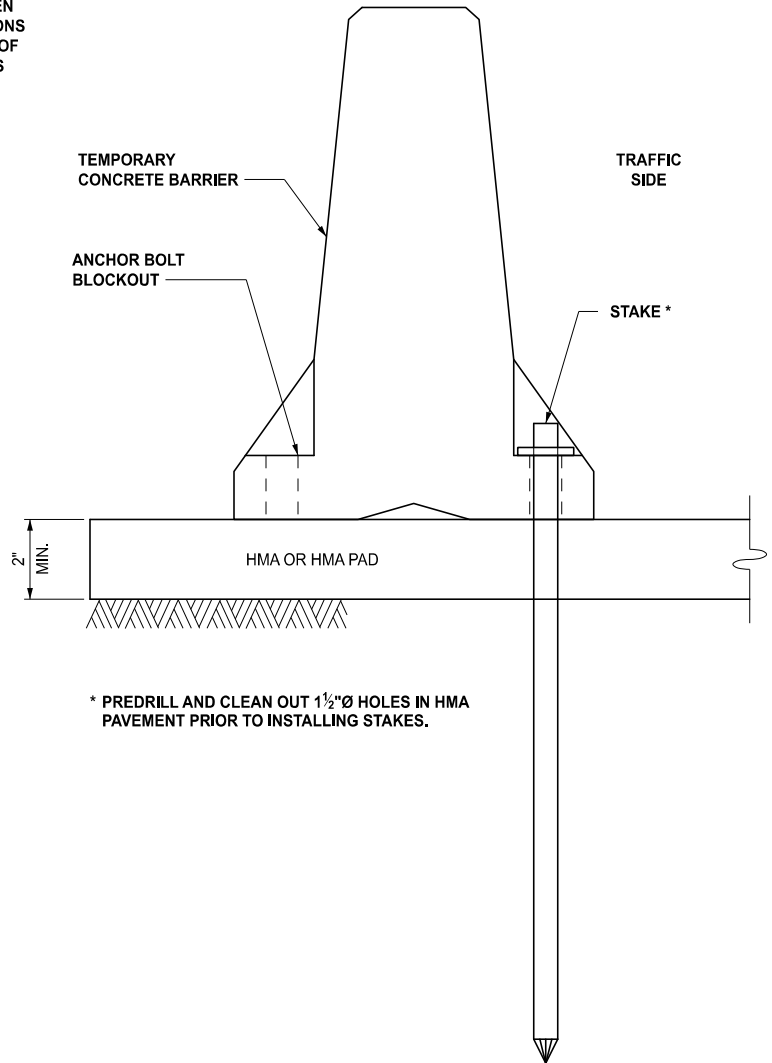
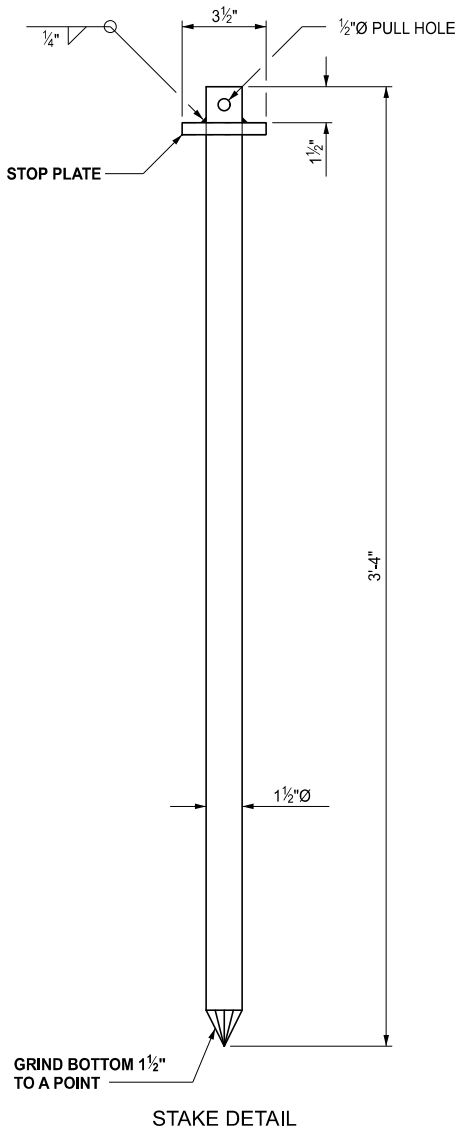
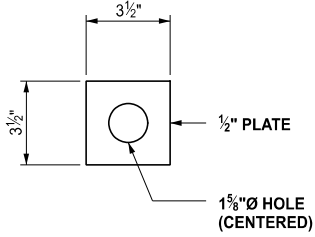
STAKED METHOD DETAIL 2


NOTES:

FOLLOW TCB TYPE AND BARRIER OFFSET REQUIREMENTS IDENTIFIED IN TABLE ON SHEET 1.

INSTALL CONNECTION PINS BETWEEN TCB SECTIONS IN ADDITION TO STAKES.

A MAXIMUM OF TWO STAKES IN A SINGLE TCB SECTION MAY BE OMITTED WHEN NECESSARY TO AVOID IMPACTING UNDERGROUND UTILITIES OR OBSTRUCTIONS WITHIN STAKE DEPTH. HOWEVER, ADJACENT TCB SECTIONS ON BOTH ENDS OF THE PARTIALLY STAKED TCB SECTION MUST BE FULLY STAKED WITH STAKES IN ALL ANCHOR BOLT BLOCKOUTS ON THE TRAFFIC SIDE OF THE BARRIER.



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THROUGH BOLT METHOD DETAILS 3A AND 3B

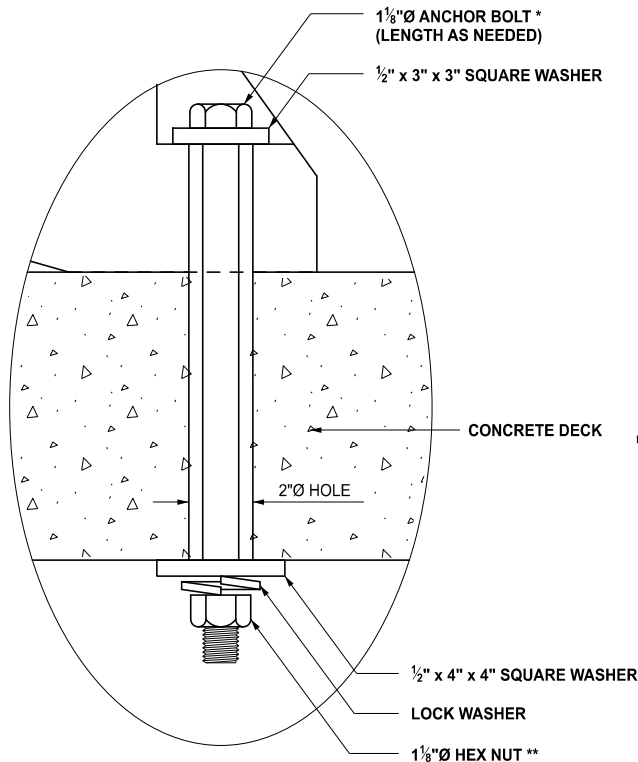
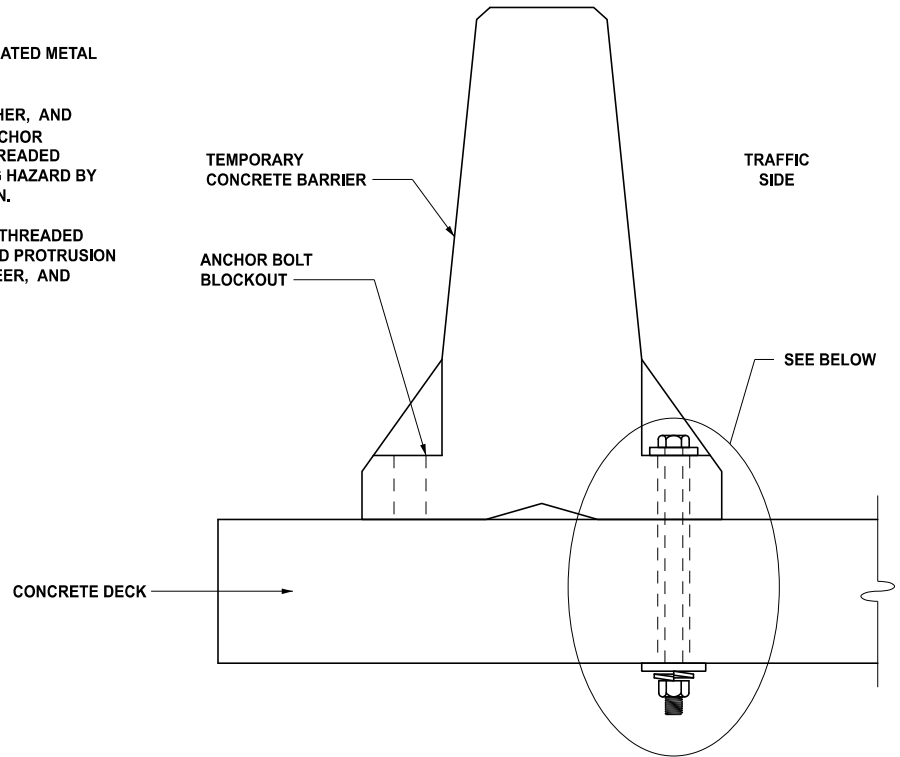
NOTES:

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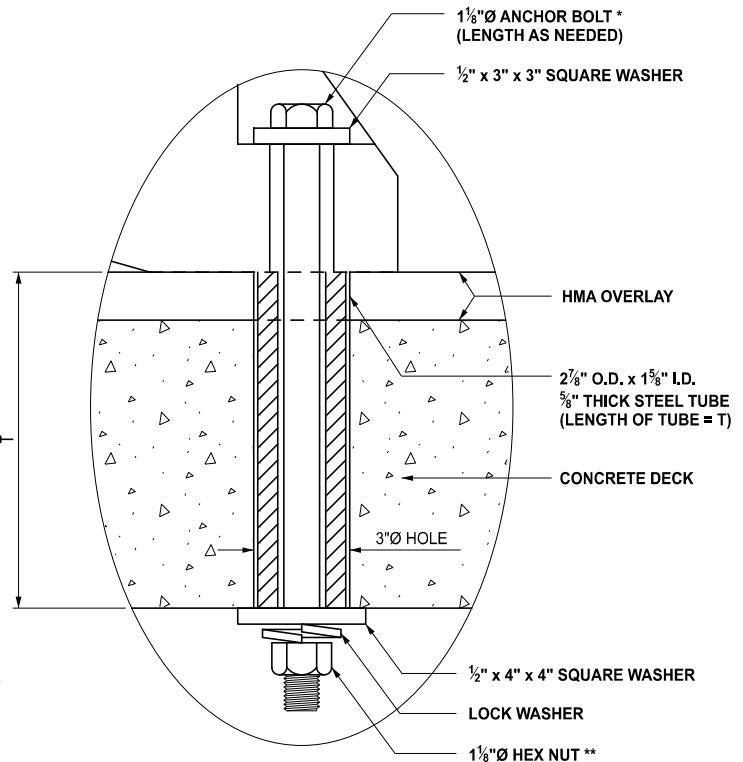
INSTALL CONNECTION PINS BETWEEN TCB SECTIONS IN ADDITION TO ANCHOR BOLTS / THREADED RODS.

DETAILS 3A AND 3B SHOULD NOT BE USED WHEN CORRUGATED METAL BRIDGE DECKING IS PRESENT.


- * 1 1/8" DIAMETER THREADED ROD WITH HEX NUT, LOCK WASHER, AND 1/2" x 3" x 3" SQUARE WASHER MAY BE USED IN LIEU OF ANCHOR BOLT. HEX NUT MUST BE FULLY ENGAGED WITH THE THREADED ROD, BUT THREADED ROD MUST NOT CREATE A SNAGGING HAZARD BY PROTRUDING ABOVE THE SLOPED TOE OF THE TCB SECTION.
- ** HEX NUT MUST BE FULLY ENGAGED WITH ANCHOR BOLT / THREADED ROD. MAXIMUM ALLOWABLE ANCHOR BOLT/THREADED ROD PROTRUSION BELOW THE HEX NUT WILL BE AS SPECIFIED BY THE ENGINEER, AND MAY VARY BY LOCATION.



DETAIL 3A



DETAIL 3B

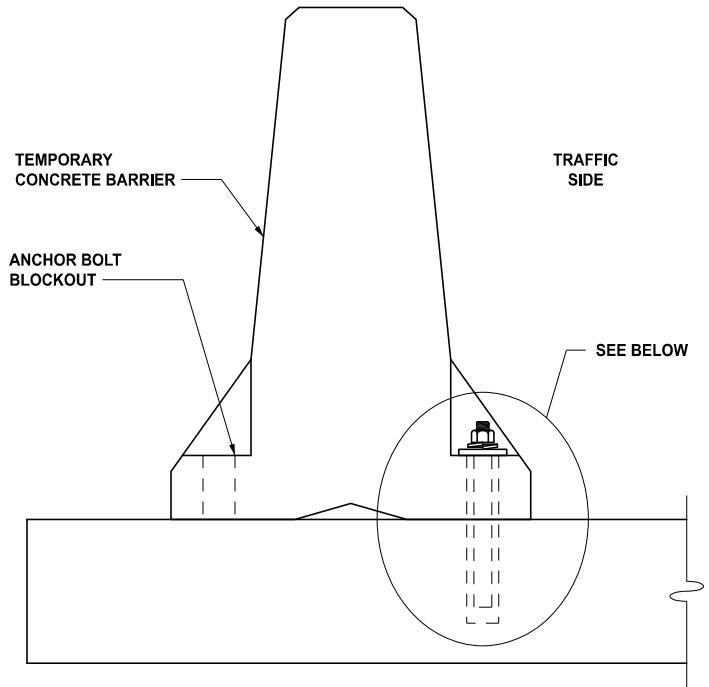
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DRILLED AND GROUTED METHOD DETAILS 4A AND 4B

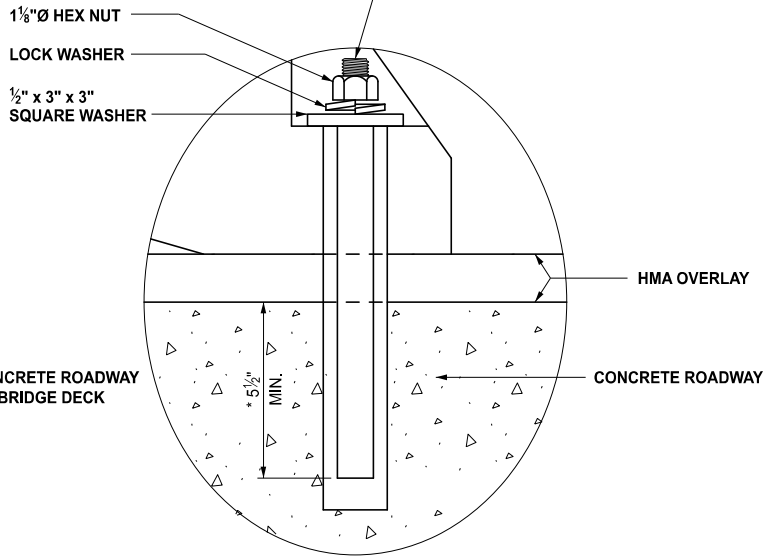
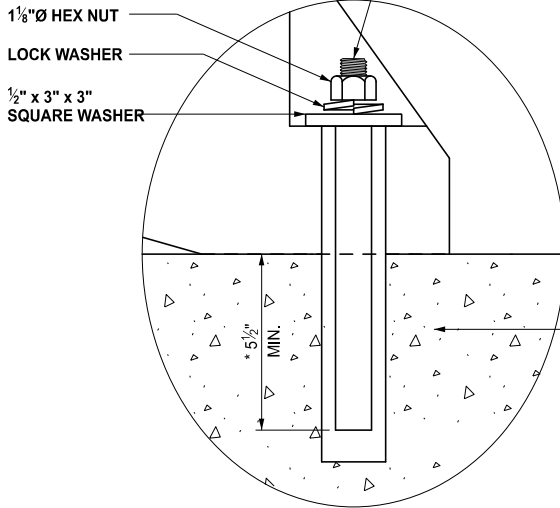
NOTES:

FOLLOW TCB TYPE AND BARRIER OFFSET REQUIREMENTS IDENTIFIED IN TABLE ON SHEET 1.

INSTALL CONNECTION PINS BETWEEN TCB SECTIONS IN ADDITION TO THREADED RODS.



1 1/8" DIAMETER THREADED ROD WITH HEX NUT, LOCK WASHER, AND 1/2" x 3" x 3" SQUARE WASHER. HEX NUT MUST BE FULLY ENGAGED WITH THE THREADED ROD, BUT THREADED ROD MUST NOT CREATE A SNAGGING HAZARD BY PROTRUDING ABOVE THE SLOPED TOE OF THE TCB SECTION.



* EMBEDMENT DEPTH, ALONG WITH DIAMETER AND DEPTH OF HOLE PER (ADHESIVE) MANUFACTURER'S SPECIFICATIONS

DETAIL 4A

CONCRETE ROADWAY OR CONCRETE BRIDGE DECK

(DO NOT USE THIS DETAIL ON CONCRETE BRIDGE DECKS WITH HMA OVERLAY)

DETAIL 4B

CONCRETE ROADWAY WITH HMA OVERLAY

(DO NOT USE THIS DETAIL ON CONCRETE BRIDGE DECKS WITH HMA OVERLAY)



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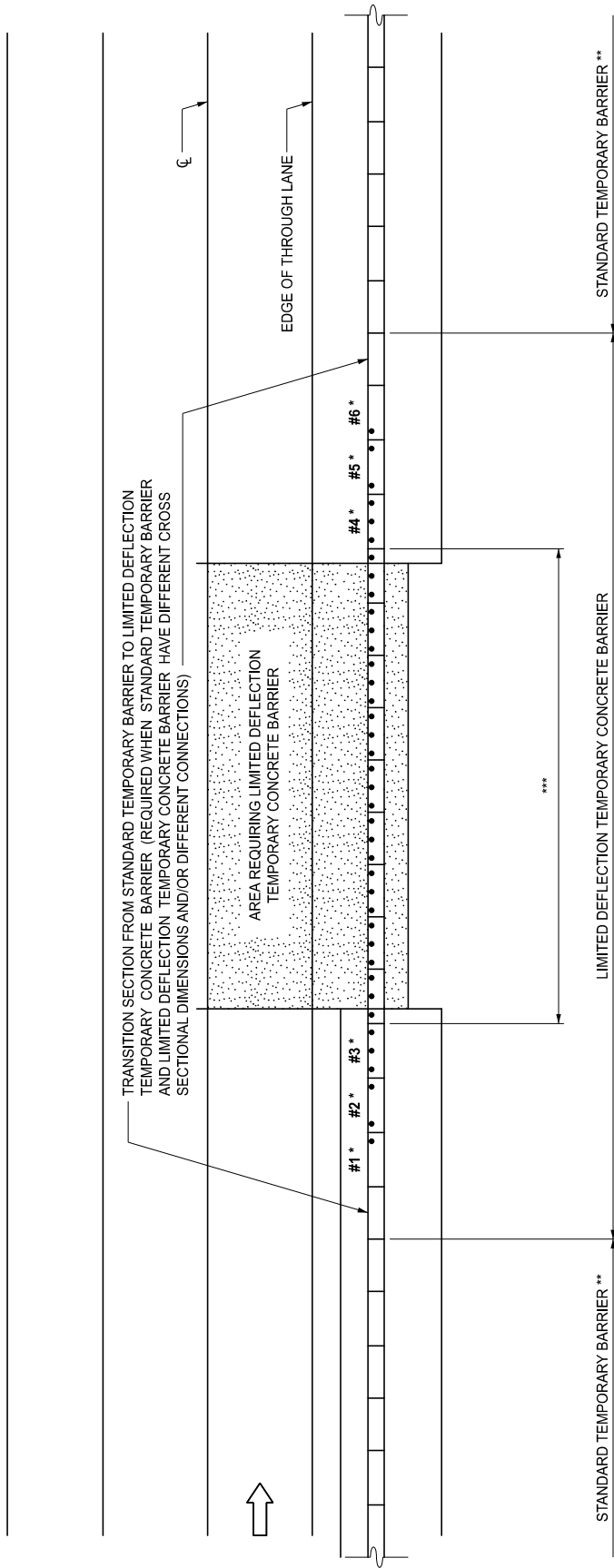
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TRANSITION FROM LIMITED DEFLECTION TEMPORARY CONCRETE BARRIER TO STANDARD TEMPORARY BARRIER WHEN USING DETAIL 2, 3A, 3B, 4A, OR 4B



* INSTALL TYPE L OR TYPE S TEMPORARY CONCRETE BARRIER WITH THE FOLLOWING NUMBER OF ANCHORS OR STAKES (EVENLY SPACED ON THE TRAFFIC SIDE OF THE BARRIER) ON THE FOLLOWING SECTIONS:

	#1	#2	#3	#4	#5	#6
TYPE L OR TYPE S	1	2	3	3	2	1

** STANDARD TEMPORARY BARRIER CONSISTS OF ANY TEMPORARY BARRIER MEETING MDOT SPECIFICATIONS.

*** INSTALL STAKES, ANCHOR BOLTS, OR RODS IN ALL ANCHOR BOLT BLOCKOUTS ON THE TRAFFIC SIDE OF THE BARRIER EXCEPT AS NOTED IN STAKED METHOD DETAIL 2 (SHEET 5 OF 22) AND THE BRIDGE DECK EXPANSION JOINT DETAILS (SHEET 9 AND 11 OF 22).

NOTES:

TCB SECTIONS #3 AND #4 MUST BE LOCATED OUTSIDE THE AREA REQUIRING LIMITED DEFLECTION TEMPORARY CONCRETE BARRIER.

ALL LIMITED DEFLECTION TCB SECTIONS, EXCLUDING TRANSITION SECTIONS AND SECTIONS OVER EXPANSION JOINTS WITH THERMAL EXPANSION 1/2" OR GREATER, MAY BE TYPE L OR TYPE S. INTERMIXING TYPE L AND TYPE S TCB SECTIONS WILL BE PERMITTED.

ANY DEVIATIONS FROM THIS LAYOUT REQUIRE APPROVAL FROM THE ENGINEER PRIOR TO INSTALLATION.



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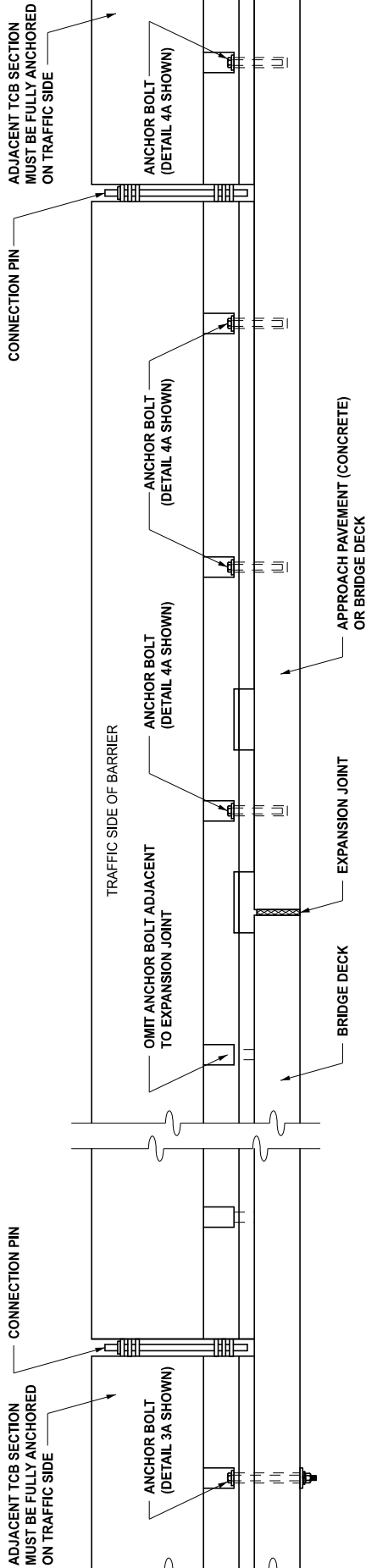
STANDARD PLAN FOR
TEMPORARY CONCRETE BARRIER LIMITED DEFLECTION

(SPECIAL DETAIL)
FHWA APPROVAL

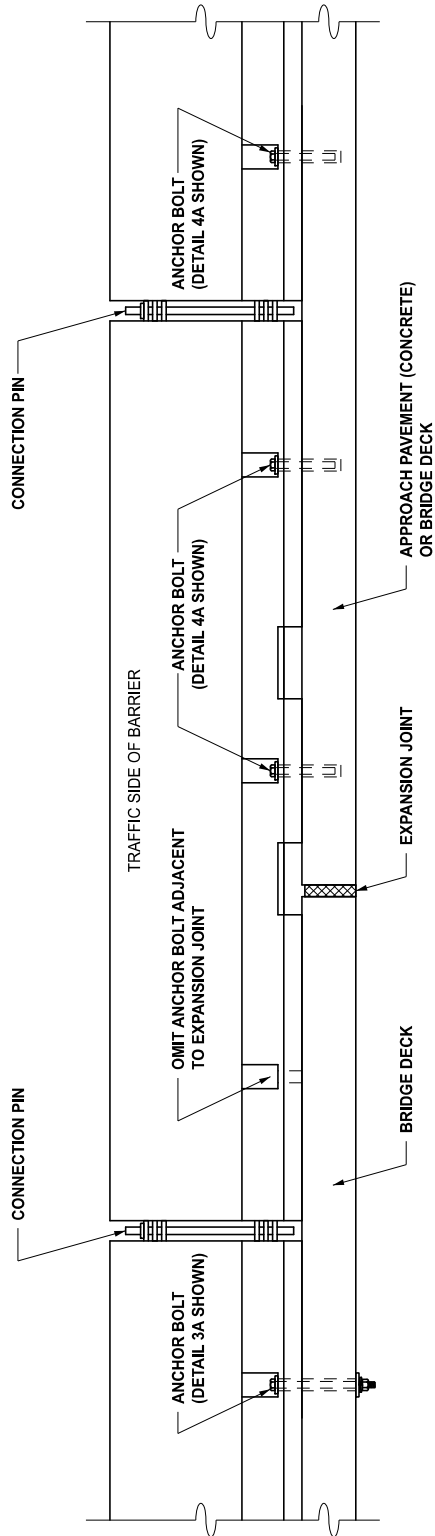
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ELEVATION VIEW
 TYPE L TCB PLACED OVER BRIDGE EXPANSION JOINT WITH THERMAL EXPANSION LESS THAN 1 1/2"



ELEVATION VIEW
 TYPE S TCB PLACED OVER BRIDGE EXPANSION JOINT WITH THERMAL EXPANSION LESS THAN 1 1/2"

TCB SECTION OVER BRIDGE DECK EXPANSION JOINT WITH THERMAL EXPANSION LESS THAN 1 1/2" WHEN USING DETAIL 3A, 3B, OR 4A



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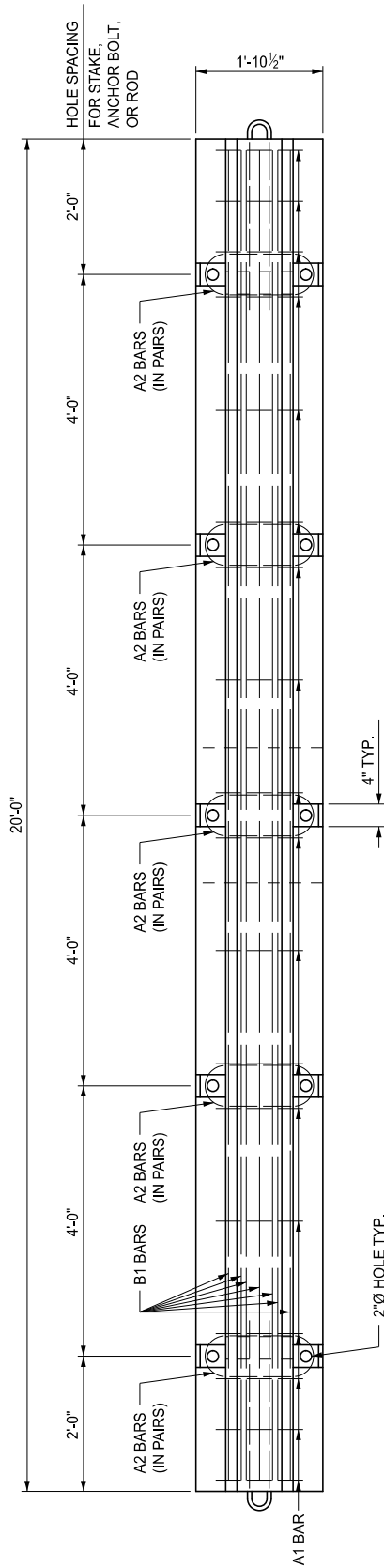
STANDARD PLAN FOR
 TEMPORARY CONCRETE BARRIER LIMITED DEFLECTION

(SPECIAL DETAIL)
 FHWA APPROVAL

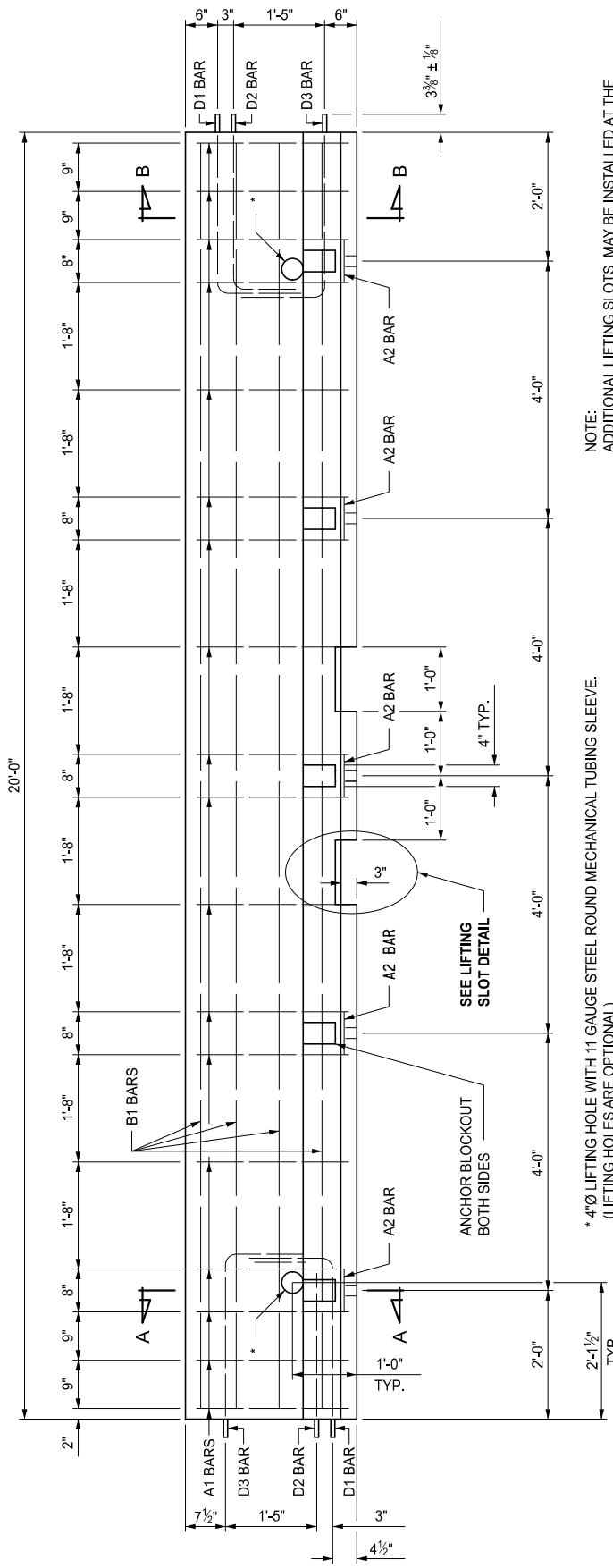
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PLAN VIEW
TEMPORARY CONCRETE BARRIER TYPE L



ELEVATION VIEW
TEMPORARY CONCRETE BARRIER TYPE L

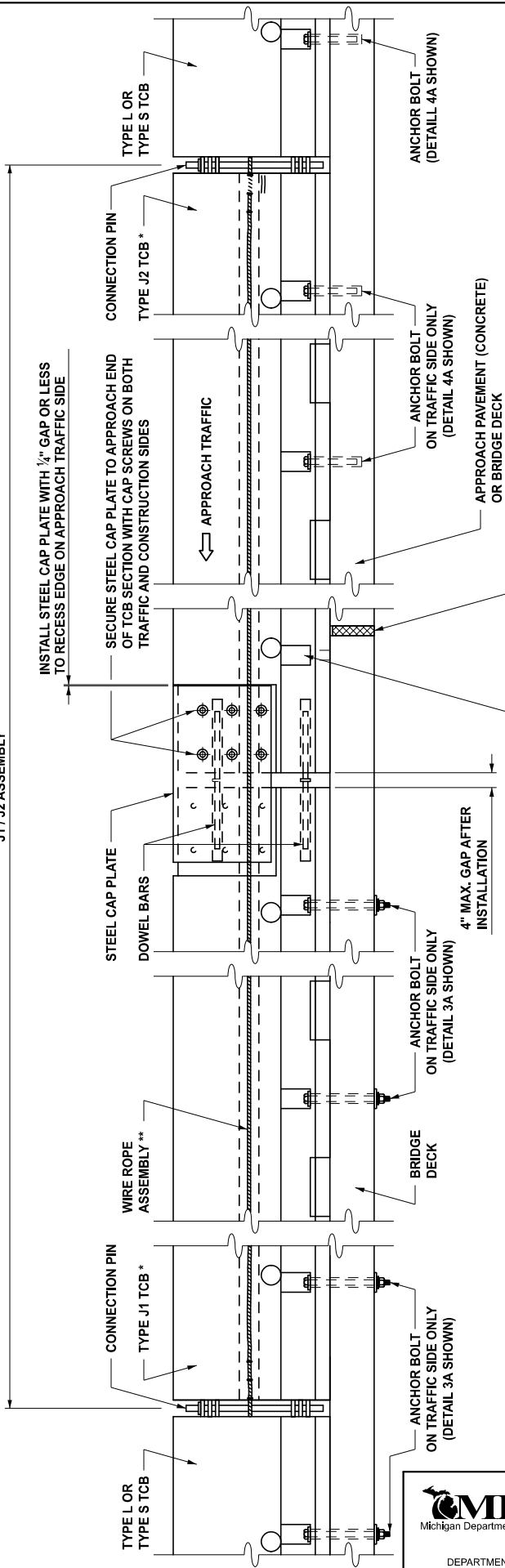
NOTE:
ADDITIONAL LIFTING SLOTS MAY BE INSTALLED AT THE
CONTRACTOR'S OPTION PROVIDED THE ADDITIONAL SLOTS
DO NOT INTERFERE WITH ANCHOR BLOCKOUTS OR STEEL
REINFORCEMENT IN THE TEMPORARY CONCRETE BARRIER
SECTION.

MDOT
Michigan Department of Transportation

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STANDARD PLAN FOR
TEMPORARY CONCRETE BARRIER LIMITED DEFLECTION

(SPECIAL DETAIL) FHWA APPROVAL	08/14/2015 PLAN DATE	R-53-A	SHEET 10 OF 22



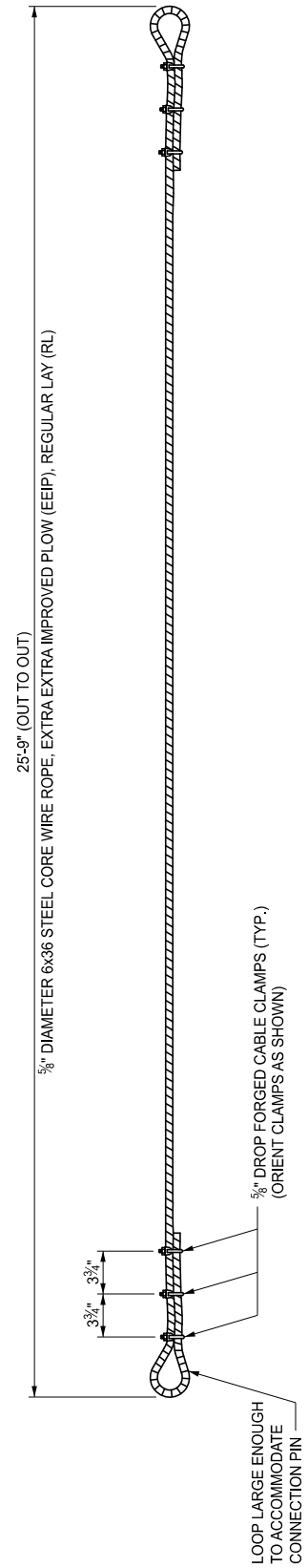
EXPANSION JOINT WITH THERMAL EXPANSION 1 1/2" TO 4"
(PLACE TCB SUCH THAT STEEL CAP PLATE IS AS CLOSE
AS POSSIBLE TO THE EXPANSION JOINT)

OMIT ANCHOR BOLT ADJACENT
TO EXPANSION JOINT **

* TYPE J1 AND J2 TCB SECTIONS MAY BE REVERSED IN ORDER TO MATCH
CONNECTIONS OF ADJACENT TYPE L OR TYPE S TCB SECTIONS.
** IF TWO OR MORE ANCHOR BOLTS ARE OMITTED, INSTALL TWO WIRE ROPE
ASSEMBLIES INSTEAD OF ONE.

ELEVATION VIEW

TCB SECTION OVER BRIDGE DECK EXPANSION JOINT WITH THERMAL EXPANSION 1 1/2" TO 4" WHEN USING DETAIL 3A, 3B, OR 4A



WIRE ROPE ASSEMBLY DETAIL



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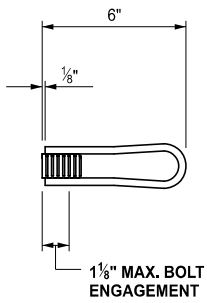
STANDARD PLAN FOR
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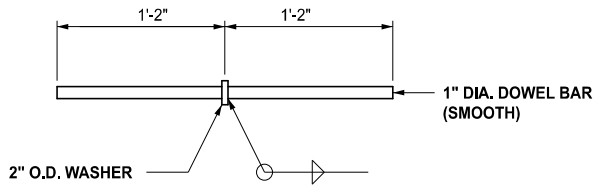
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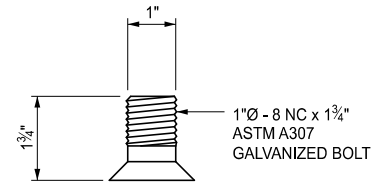
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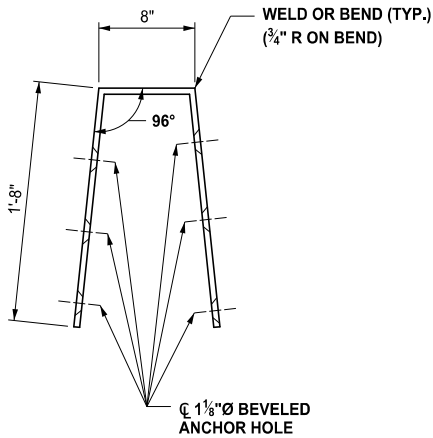
1" DIA. (8-NC) GALVANIZED LOOP FERRULE DETAIL



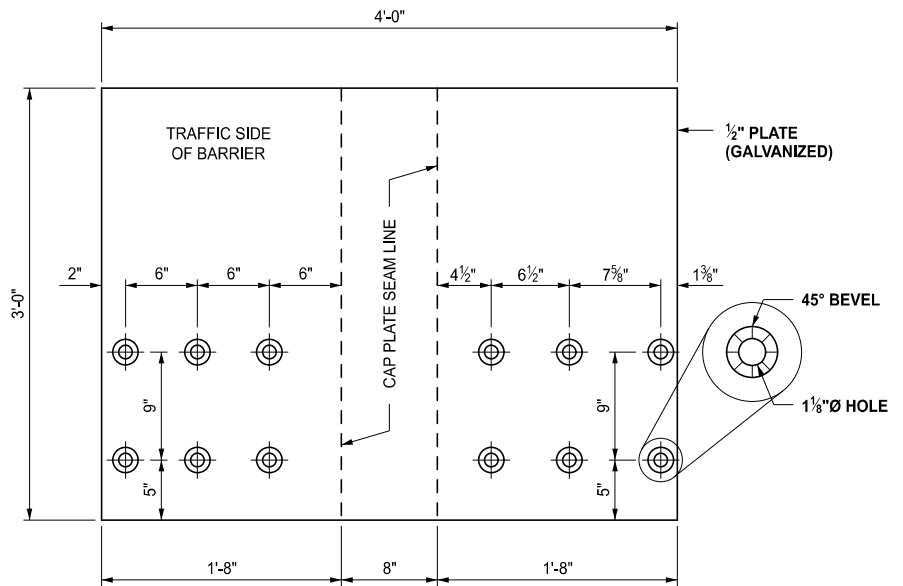
DOWEL BAR DETAIL



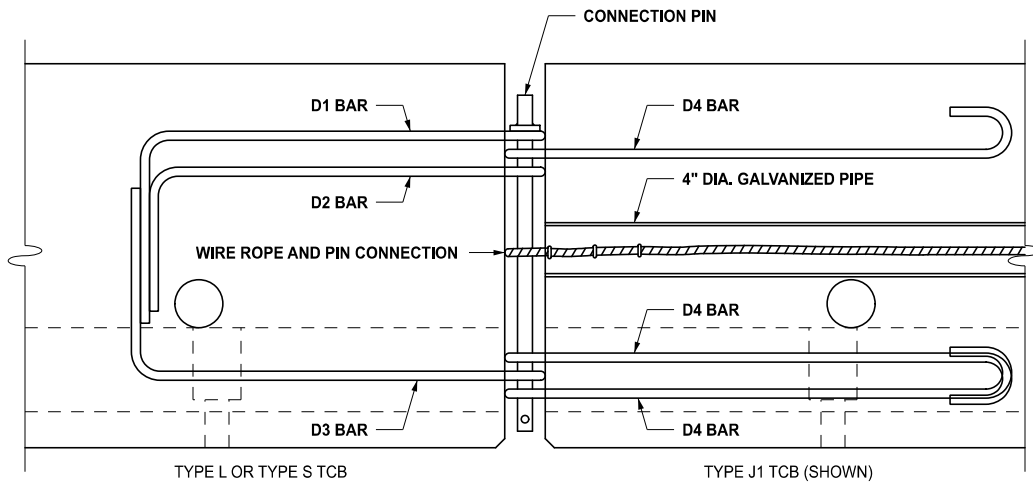
FLAT HEAD SOCKET CAP SCREW DETAIL



END VIEW



STEEL CAP PLATE DETAILS



WIRE ROPE AND PIN CONNECTION DETAIL



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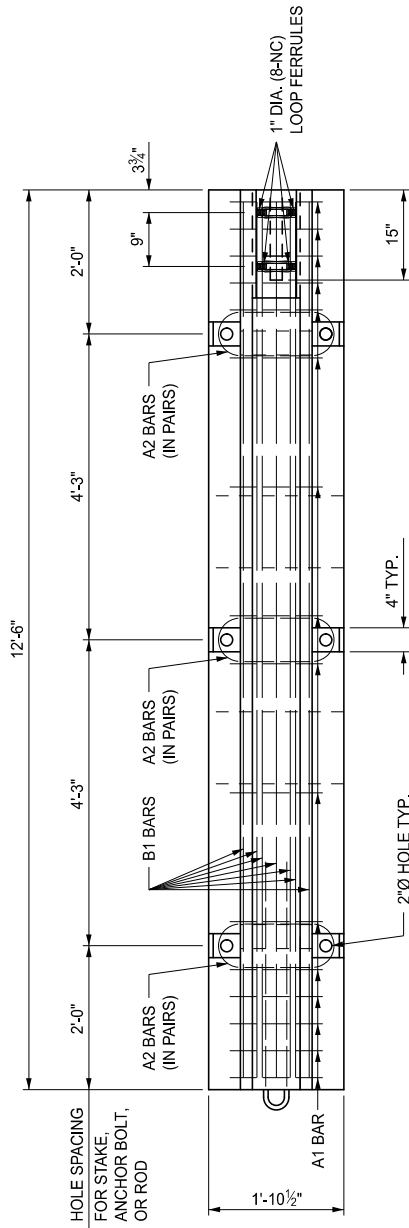
STANDARD PLAN FOR
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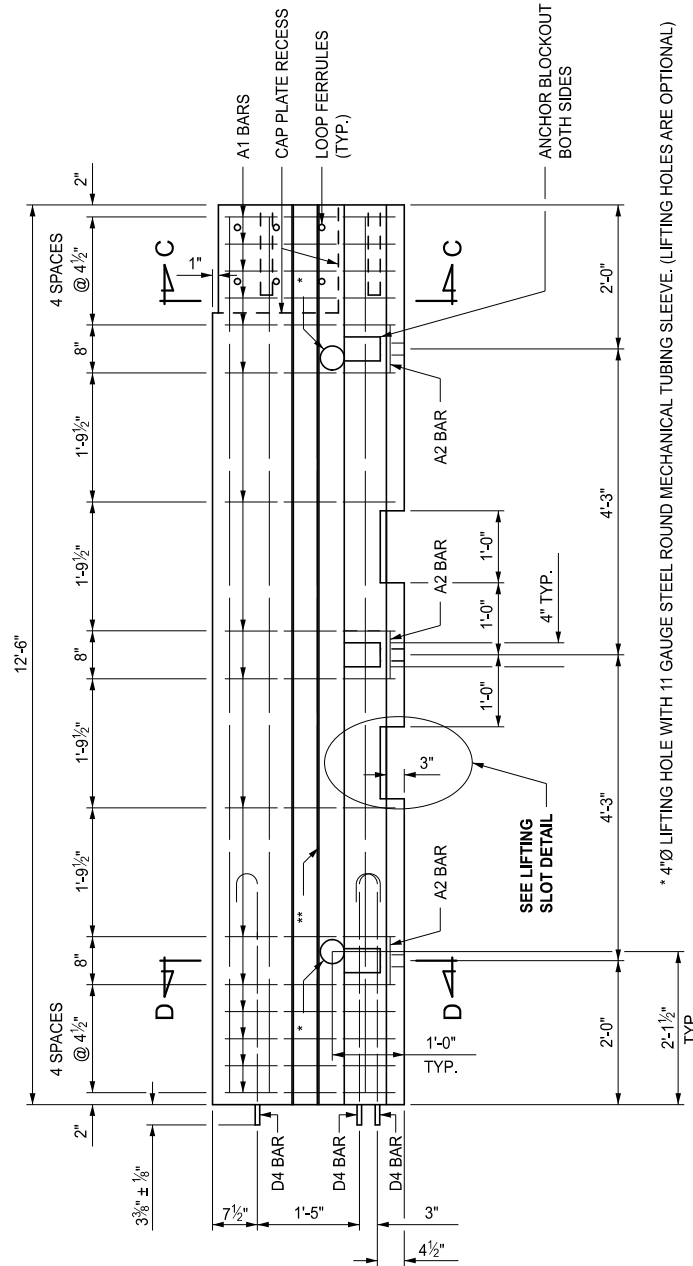
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PLAN VIEW
TEMPORARY CONCRETE BARRIER TYPE J1



ELEVATION VIEW
TEMPORARY CONCRETE BARRIER TYPE J1

* 4" Ø LIFTING HOLE WITH 11 GAUGE STEEL ROUND MECHANICAL TUBING SLEEVE (LIFTING HOLES ARE OPTIONAL)
** 4" Ø x 12'-6" GALVANIZED PIPE



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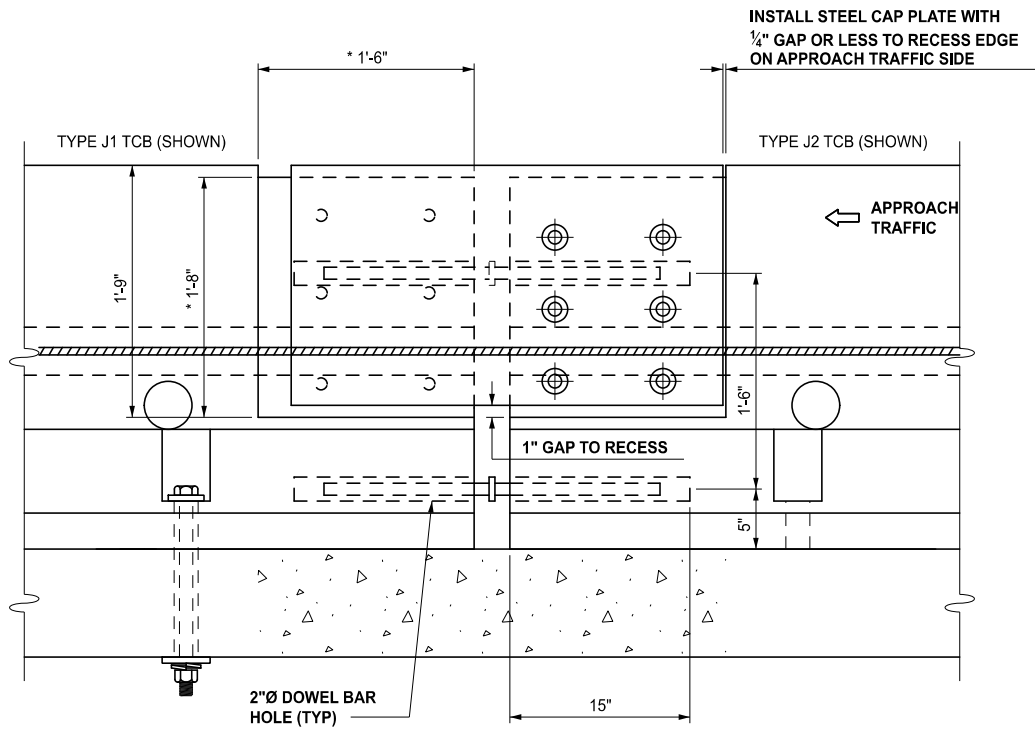
STANDARD PLAN FOR
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(SPECIAL DETAIL)
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* 1'-6" x 1'-9" x 5/8" BARRIER RECESS TO ACCOMODATE 1/2" STEEL CAP PLATE

CAP PANEL RECESS DETAILS

TEMPORARY CONCRETE BARRIER TYPES J1 AND J2



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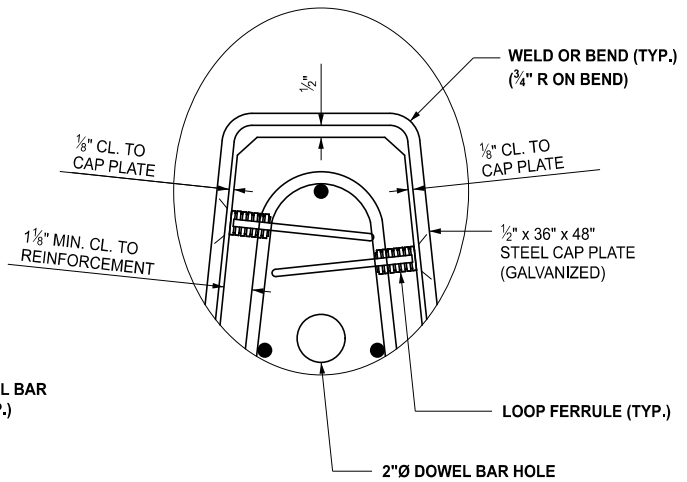
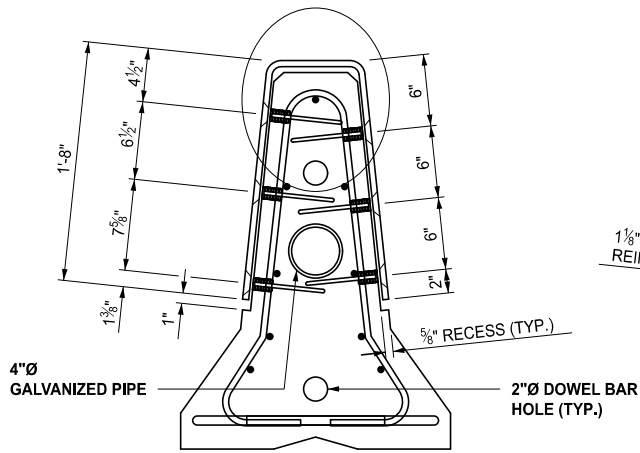
STANDARD PLAN FOR
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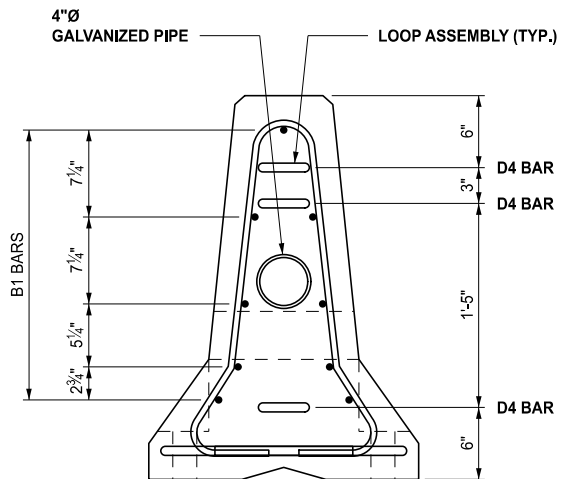
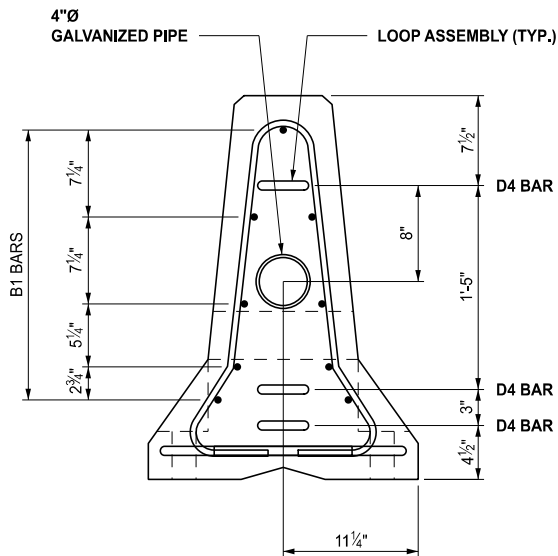
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SECTION C-C
TEMPORARY CONCRETE BARRIER TYPE J1 AND J2



SECTION D-D
TEMPORARY CONCRETE BARRIER TYPE J1 OR TYPE J2

SECTION E-E
TEMPORARY CONCRETE BARRIER TYPE J1 OR TYPE J2



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STANDARD PLAN FOR
TEMPORARY CONCRETE BARRIER LIMITED DEFLECTION





(SPECIAL DETAIL)
FHWA APPROVAL

08/14/2015
PLAN DATE

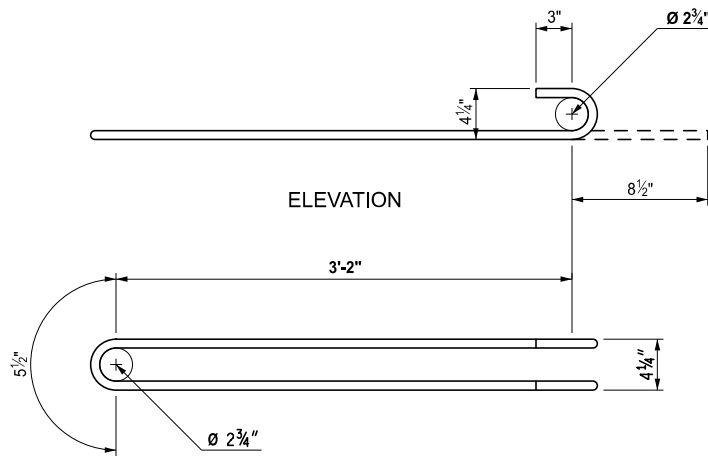
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**STEEL REINFORCEMENT FOR
TEMPORARY CONCRETE BARRIER TYPES J1 & J2**

BAR	BAR SIZE	SHAPE	NUMBER OF BARS	LENGTH (PER BAR)
REINFORCING				
A1	#4		16	6'-0"
A2	#6		6	2'-11"
B1	#5		9	12'-2"
LOOP ASSEMBLY				
D4	#6		3	8'-2"

NOTE: NUMBER OF BARS SPECIFIED ARE PER TEMPORARY CONCRETE BARRIER SECTION.



PLAN
D4 BARS



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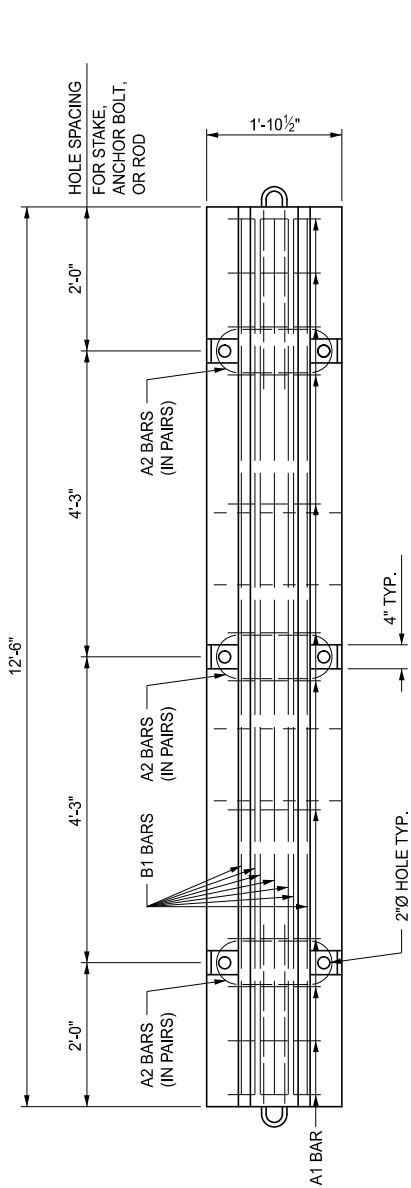
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TEMPORARY CONCRETE BARRIER LIMITED DEFLECTION

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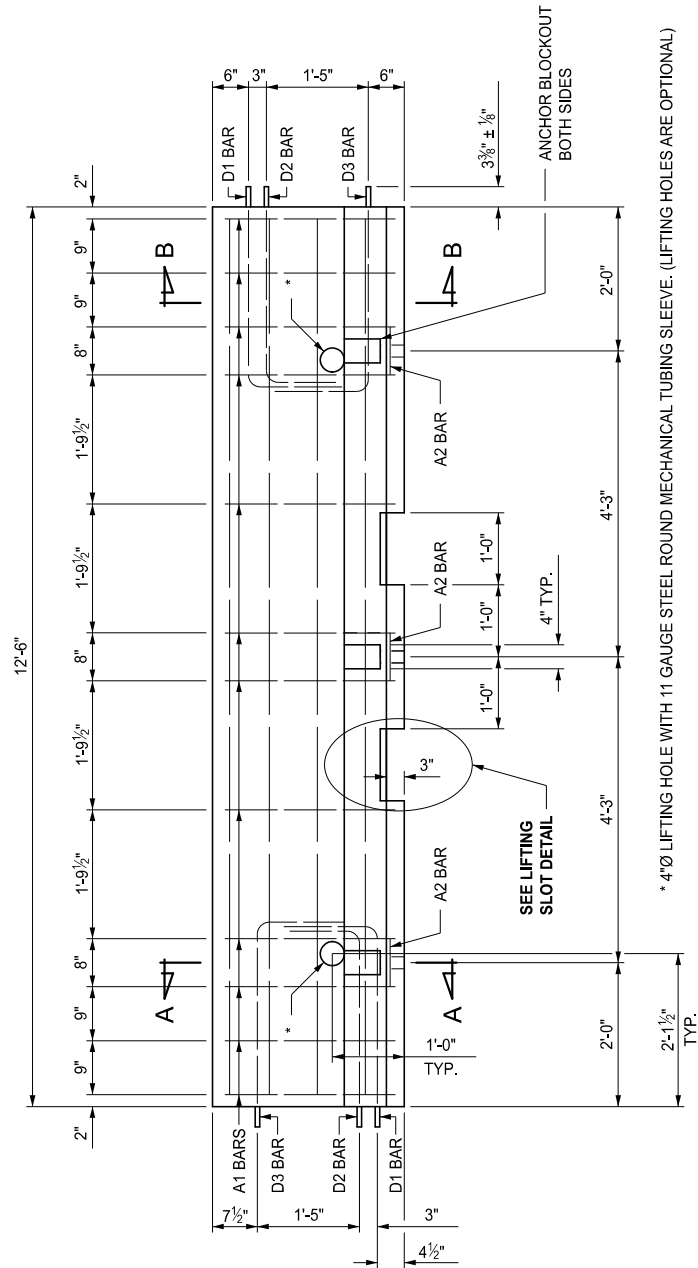
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PLAN VIEW
TEMPORARY CONCRETE BARRIER TYPES



ELEVATION VIEW
TEMPORARY CONCRETE BARRIER TYPES



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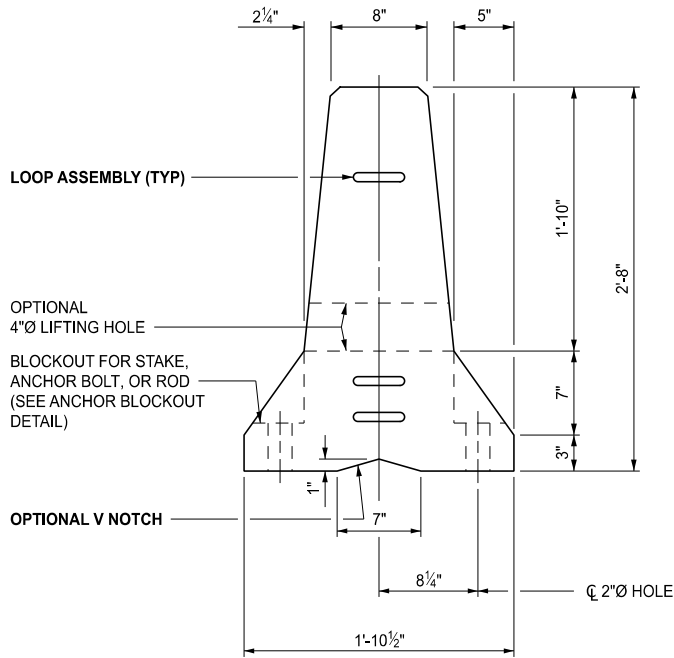
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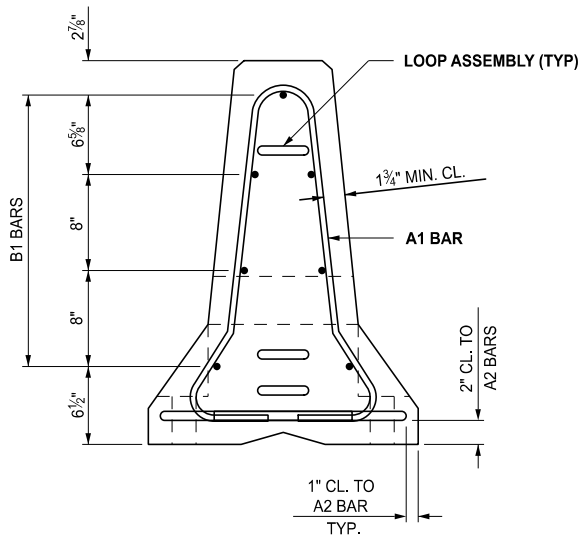
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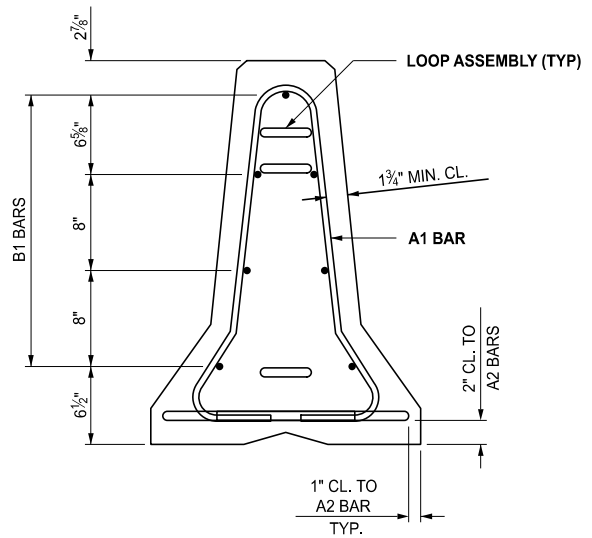
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END VIEW
 TEMPORARY CONCRETE BARRIER TYPE L OR TYPE S



SECTION A-A
 TEMPORARY CONCRETE BARRIER TYPE L OR TYPE S



SECTION B-B
 TEMPORARY CONCRETE BARRIER TYPE L OR TYPE S



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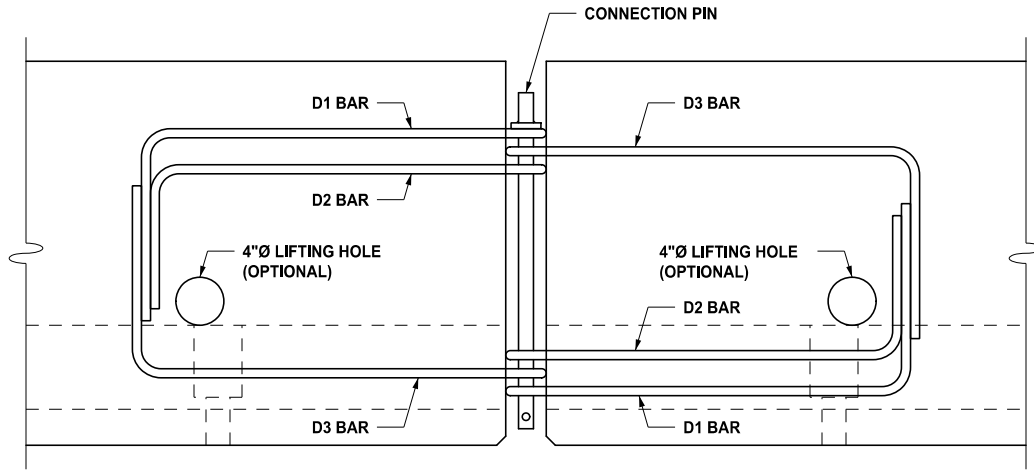
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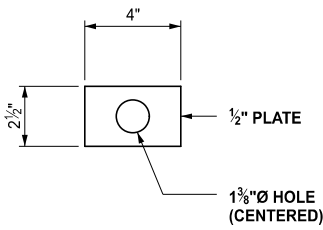
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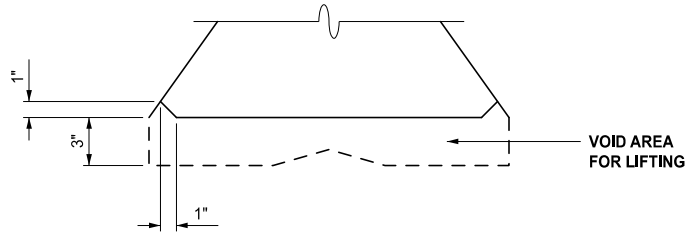
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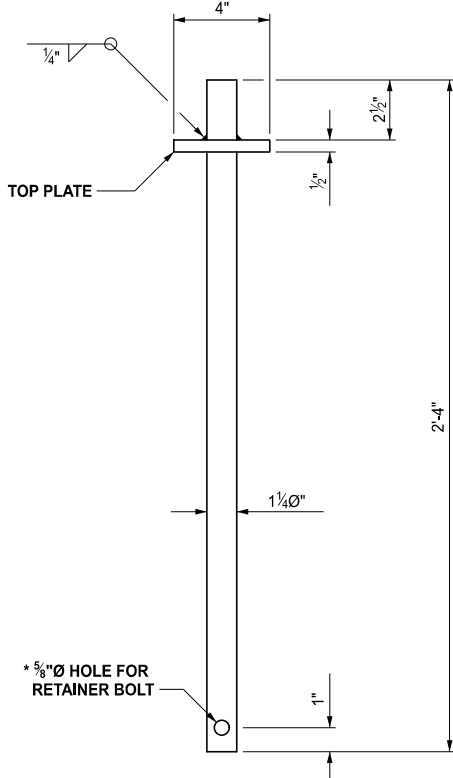
BARRIER CONNECTION DETAIL
 TEMPORARY CONCRETE BARRIER TYPE L OR TYPE S



TOP PLATE DETAIL

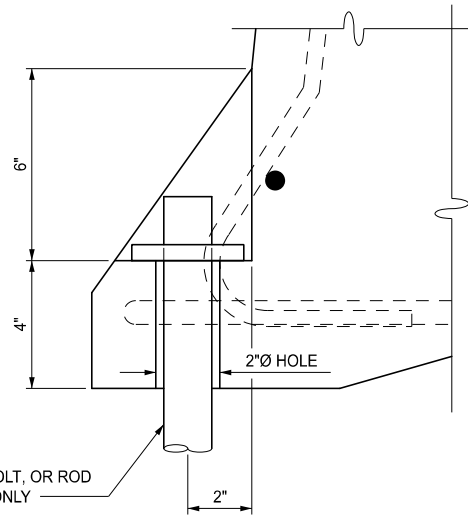


LIFTING SLOT DETAIL
 1" CHAMFER TO PREVENT SPALLING



CONNECTION PIN DETAIL

* RETAINER BOLT AND NUT ARE INSTALLED AT THE CONTRACTOR'S OPTION.



ANCHOR BLOCKOUT DETAIL

SEE TYPE L / TYPE S TCB PLAN AND ELEVATION VIEWS FOR WIDTH AND LOCATION OF ANCHOR BLOCKOUTS



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**STEEL REINFORCEMENT FOR
TEMPORARY CONCRETE BARRIER TYPE S**

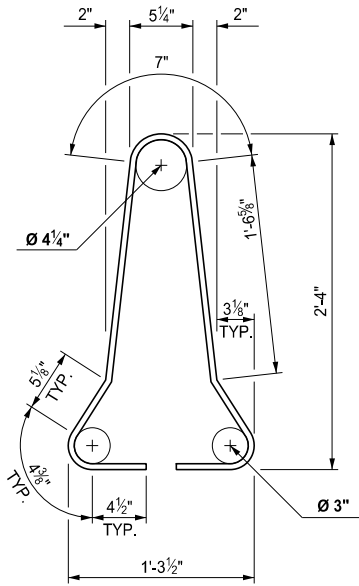
BAR	BAR SIZE	SHAPE	NUMBER OF BARS	LENGTH (PER BAR)
REINFORCING				
A1	#4		12	6'-0"
A2	#6		6	2'-11"
B1	#5		7	12'-2"
LOOP ASSEMBLY				
D1	#6		2	8'-5"
D2	#6		2	7'-7"
D3	#6		2	8'-6"

NOTE: NUMBER OF BARS SPECIFIED ARE PER TEMPORARY CONCRETE BARRIER SECTION.

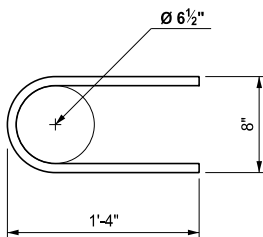
**STEEL REINFORCEMENT FOR
TEMPORARY CONCRETE BARRIER TYPE L**

BAR	BAR SIZE	SHAPE	NUMBER OF BARS	LENGTH (PER BAR)
REINFORCING				
A1	#4		18	6'-0"
A2	#6		10	2'-11"
B1	#5		7	19'-8"
LOOP ASSEMBLY				
D1	#6		2	8'-5"
D2	#6		2	7'-7"
D3	#6		2	8'-6"

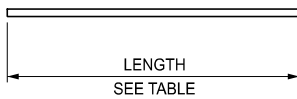
NOTE: NUMBER OF BARS SPECIFIED ARE PER TEMPORARY CONCRETE BARRIER SECTION.



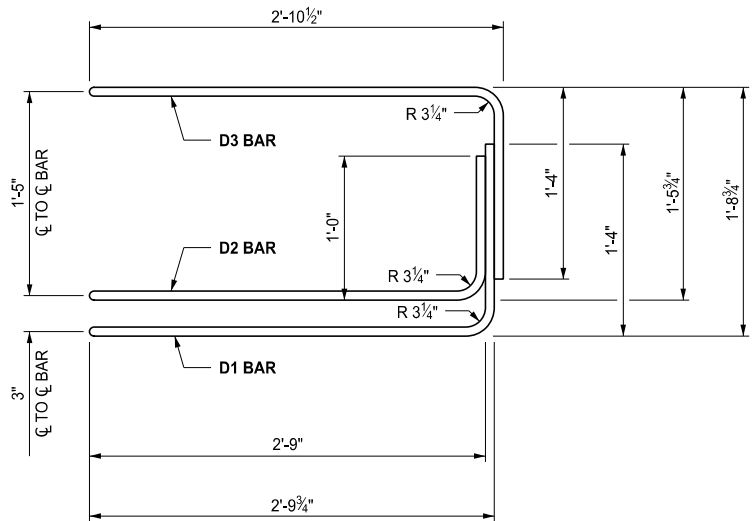
A1 BAR



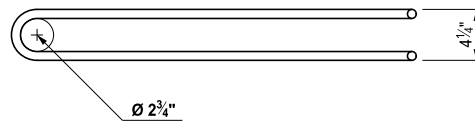
A2 BAR



B1 BAR



ELEVATION



PLAN

LOOP BAR ASSEMBLY (D1, D2 AND D3 BARS)
INVERT ASSEMBLY FOR OPPOSITE END OF BARRIER



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NOTES:

DO NOT LIFT OR MOVE THE TCB SECTIONS BY USE OF THE CONNECTING LOOP BARS; D1, D2, D3 OR D4. DO NOT APPLY EXCESSIVE FORCE TO THE CONNECTING LOOP BARS; D1, D2, D3 OR D4.

CONCRETE CLEAR COVER FOR REINFORCING BARS MUST BE 1½" (MIN.) EXCEPT WHERE OTHERWISE SPECIFIED.

LIFTING SLOTS SHALL BE CONSTRUCTED AS SPECIFIED TO FACILITATE THE DRAINAGE OF WATER AFTER INSTALLATION ON THE ROADWAY.



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