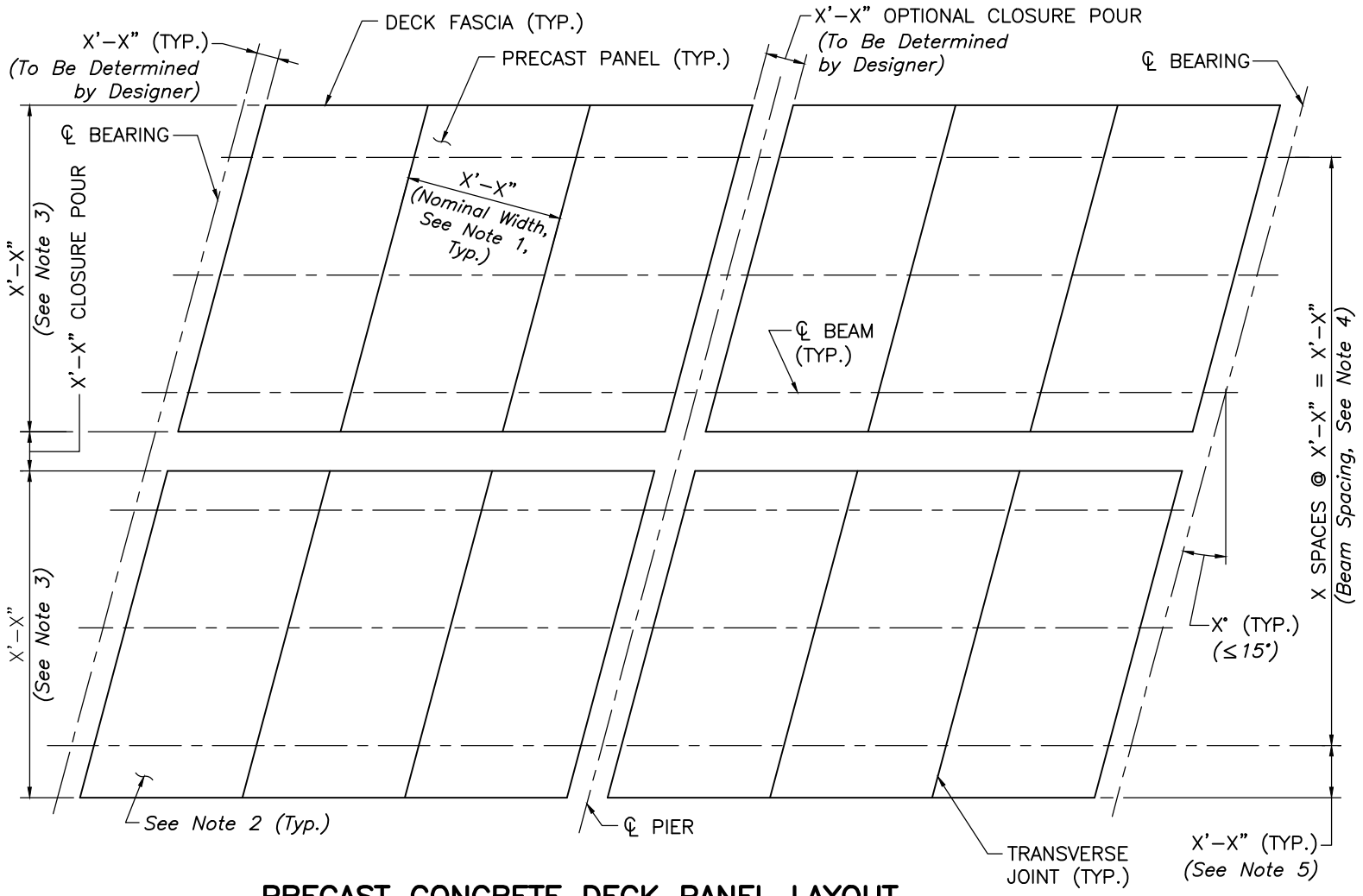
PANEL LAYOUT (SKEW ≤ 15°)

PRECAST CONCRETE DECK PANELS



PRECAST CONCRETE DECK PANEL LAYOUT

SCALE: $\frac{1}{4}$" = 1'–0"

NOTES:

1. *Standard width of Precast Concrete Deck Panels is 8'–0" nominal and 7'–11$\frac{1}{2}$" actual. In general, the panels are to be altered by 2' increments, up to 12'. Deviation from standard panel increments is possible, if needed. The large panel sizes may incur extra shipping cost.*
2. *The width of End Panels may differ from the width of the Typical Panels.*
3. *The maximum length of Precast Concrete Deck Panels is 40'–0".*
4. *If beam spacing exceeds 10' the pretensioning of the deck panels or increase in their thickness may be required.*
5. *The maximum overhang shall be 3'–0" for steel beams; 2'–0" from the edge of the top flange for NEBT beams; and 2'–6" from the outside face of the precast box beams.*
6. *See Dwg. No. 6.1.8 for Precast Concrete Deck Panel Tolerances to be shown on the Construction Drawings.*
7. *Optional closure pour at pier is for longitudinal shear key.*
8. *Erection Tolerance is ±$\frac{1}{4}$" in all directions. Measure layout of panels from a common working line.*

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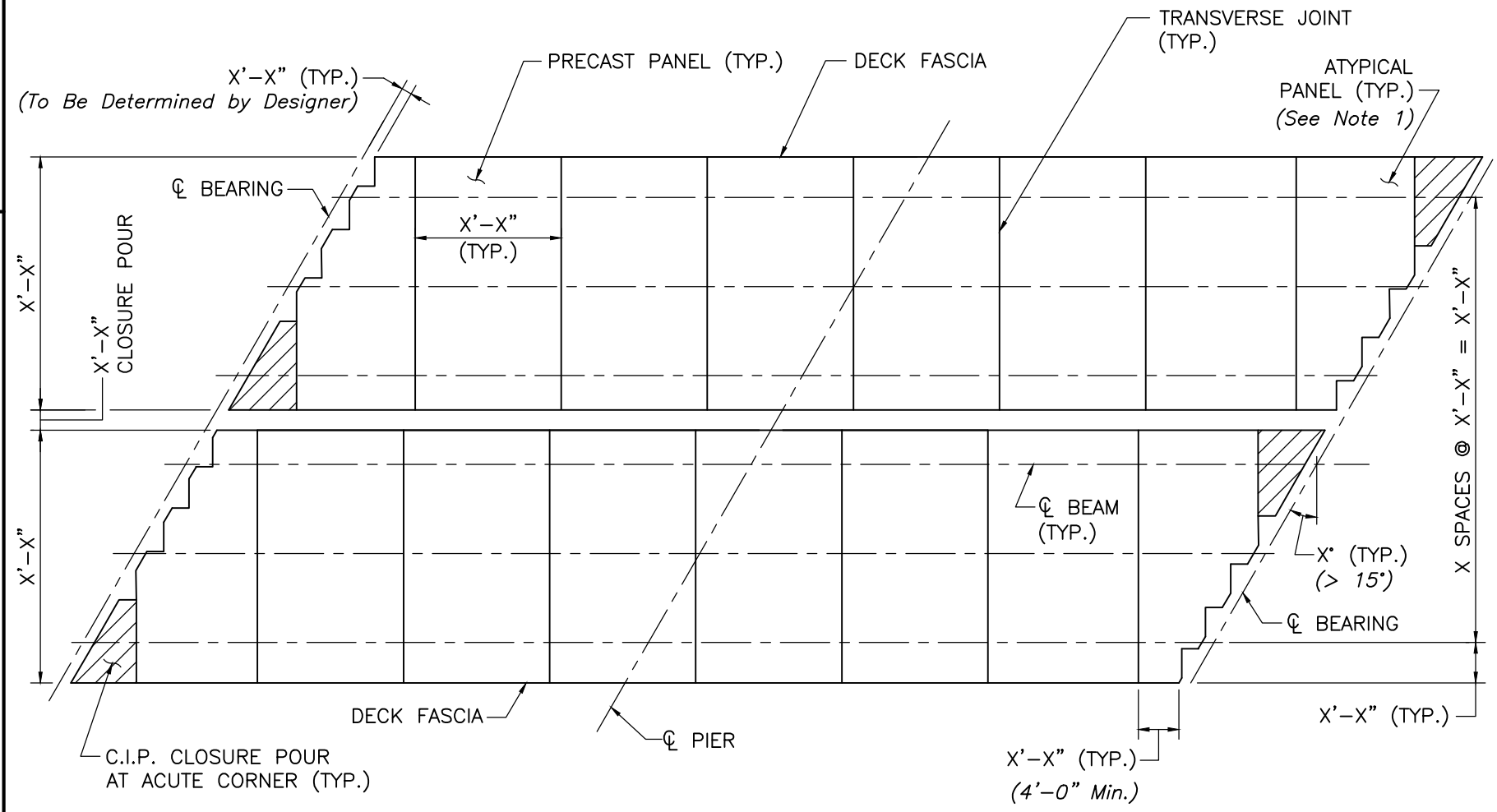
DRAWING NUMBER
5.1.1

PANEL LAYOUT (SKEW > 15°)

PRECAST CONCRETE DECK PANELS



PRECAST CONCRETE DECK PANEL LAYOUT

SCALE: $\frac{1}{4}$" = 1'–0"

NOTES:

1. *The geometry of the Atypical Panels shown is conceptual. The actual configuration and number of these panels shall be as per Contractor and/or Panel Manufacturer.*
2. *For additional Designer Notes See Dwg. No. 5.1.1.*
3. *This detail shows a continuous span structure without a closure pour at the pier. For link slabs or closure pours at the pier Atypical Panels may be used.*
4. *Erection Tolerance is $\pm\frac{1}{4}$" in all directions. Measure layout of panels from a common working line.*

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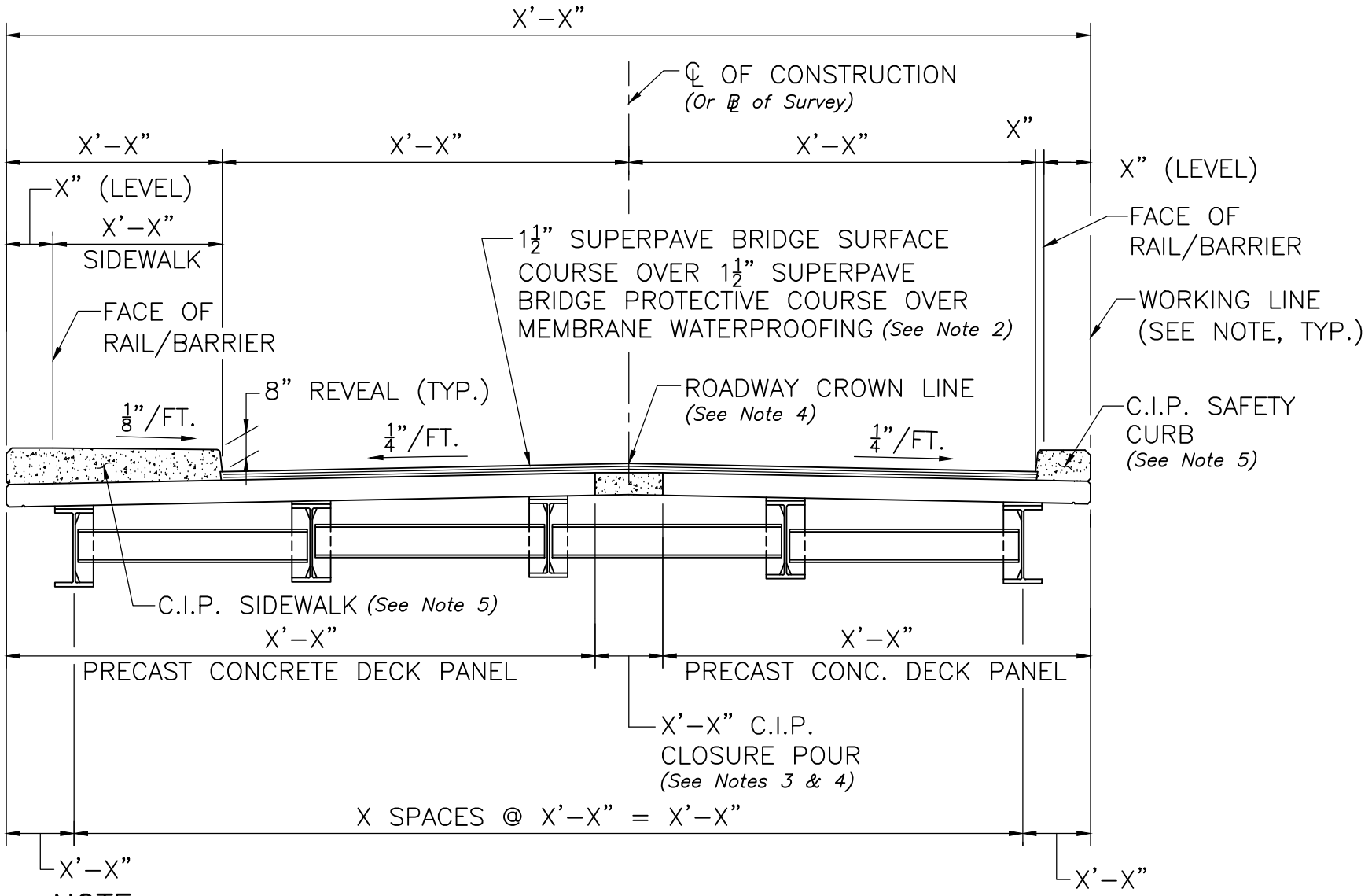
5.1.2

TYPICAL TRANSVERSVE SECTION

PRECAST CONCRETE DECK PANELS



NOTE:

USE FASCIA AS WORKING LINE FOR INSTALLATION OF PRECAST CONCRETE DECK PANELS WITH THE ERECTION TOLERANCE OF ±¼".

TRANSVERSE SECTION

SCALE: ¼" = 1'–0"

NOTE:
For Designer Notes See Dwg. No. 5.1.4.

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DRAWING NUMBER
5.1.3

NOTES: *(For use with details on Dwg. No. 5.1.3)*

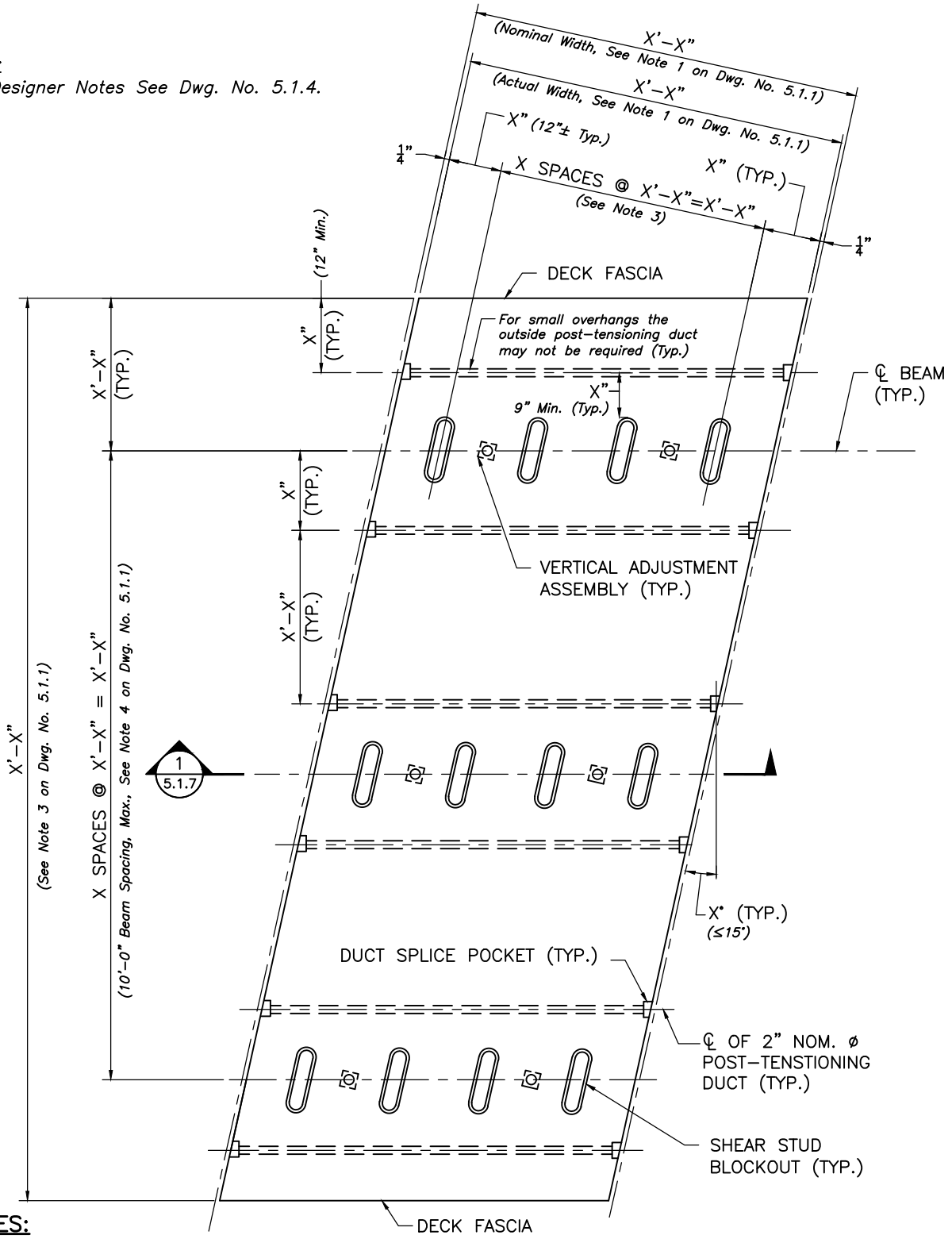
1. *Transverse section shall be drawn to scale on the Construction Drawings. Steel stringer bridge is shown. Modify this transverse section to accommodate other types of bridge superstructure. Show and label all utilities.*
2. *HMA wearing surface shall be placed on all bridges with precast concrete deck panels when the profile slope is less than 4%. When the profile slope is greater than 4% precast deck panels shall not be used. Spray applied membrane waterproofing shall be used on the precast deck panels.*
3. *At closure pour locations the overhanging portion of the precast concrete deck panel shall be designed to carry all applicable loads during construction of the deck.*
4. *Closure pours can be used to accommodate the construction of the following:*
   - *Roadway crowns*
   - *Stage construction joints*
   - *Bridges with total out–to–out width greater than 40 feet*
   - *Bridge widening projects*

   In case of the superelevated deck with no roadway crown and the total out–to–out width of the deck not exceeding 40'–0", the C.I.P. closure pour may be eliminated and a single precast concrete deck panel can be used to cover the entire width of the bridge deck.
5. *Sidewalk and safety curb for S3–TL4 rail are shown. For other barrier systems see Chapter 9 and modify the details to suite the actual bridge project.*

NOTES: *(For use with details on Dwg. No.'s 5.1.5 and 5.1.6)*

1. *The maximum spacing of shear stud blockouts shall be limited to 2'–0" on center where possible.*
2. *For overhangs that do not meet the minimum dimensional requirements the post tensioning duct in the overhang shall be omitted.*
3. *Designer shall determine and detail the spacing of the shear stud blockouts.*

NOTE:
For Designer Notes See Dwg. No. 5.1.4.



NOTES:

1. FABRICATOR SHALL DESIGN THE LIFTING DEVICES AND SHALL DETERMINE THEIR REQUIRED NUMBER AND LOCATIONS, WHICH SHALL BE PROVIDED ON THE SHOP DRAWINGS. DESIGN CALCULATIONS OF THE LIFTING DEVICES WITH ALL SUPPORTING DESIGN INFORMATION (CHARTS, TABLES, ETC.) SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
2. A MINIMUM OF 2 VERTICAL ADJUSTMENT ASSEMBLIES ARE REQUIRED AT CENTERLINE OF EACH BEAM.

TYPICAL PRECAST PANEL

SCALE: 1/2" = 1'-0"

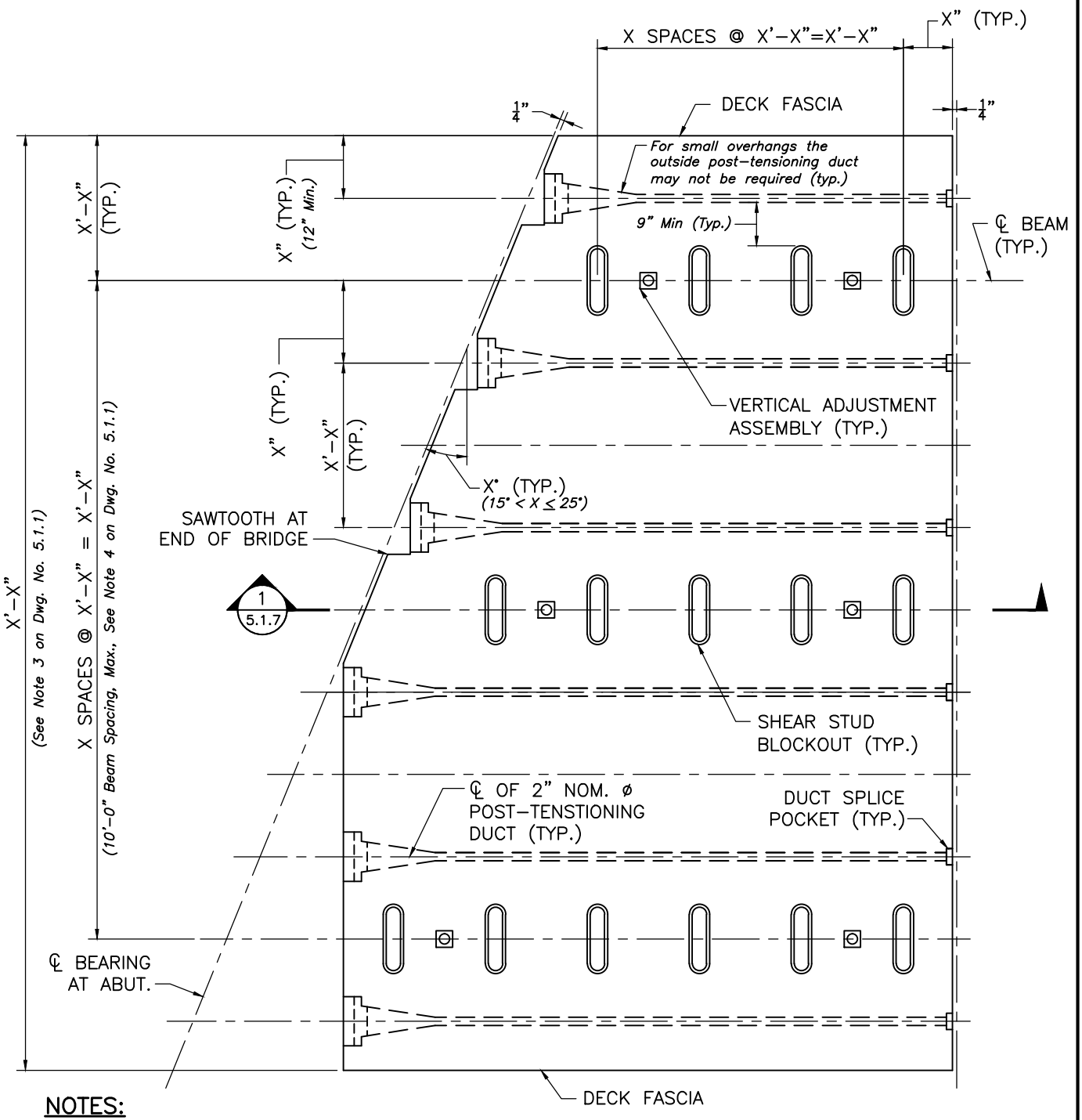
massDOT Highway Division
LRFD BRIDGE MANUAL, PART III

TYPICAL PRECAST PANEL (SKEW ≤ 15°)

PRECAST CONCRETE DECK PANELS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER
5.1.5



NOTES:

1. FABRICATOR SHALL DESIGN THE LIFTING DEVICES AND SHALL DETERMINE THEIR REQUIRED NUMBER AND LOCATIONS WHICH SHALL BE PROVIDED ON THE SHOP DRAWINGS. DESIGN CALCULATIONS OF THE LIFTING DEVICES WITH ALL SUPPORTING DESIGN INFORMATION (CHARTS, TABLES, ETC.) SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
2. A MINIMUM OF 2 VERTICAL ADJUSTMENT ASSEMBLIES ARE REQUIRED AT CENTERLINE OF EACH BEAM.

ATYPICAL PRECAST PANEL

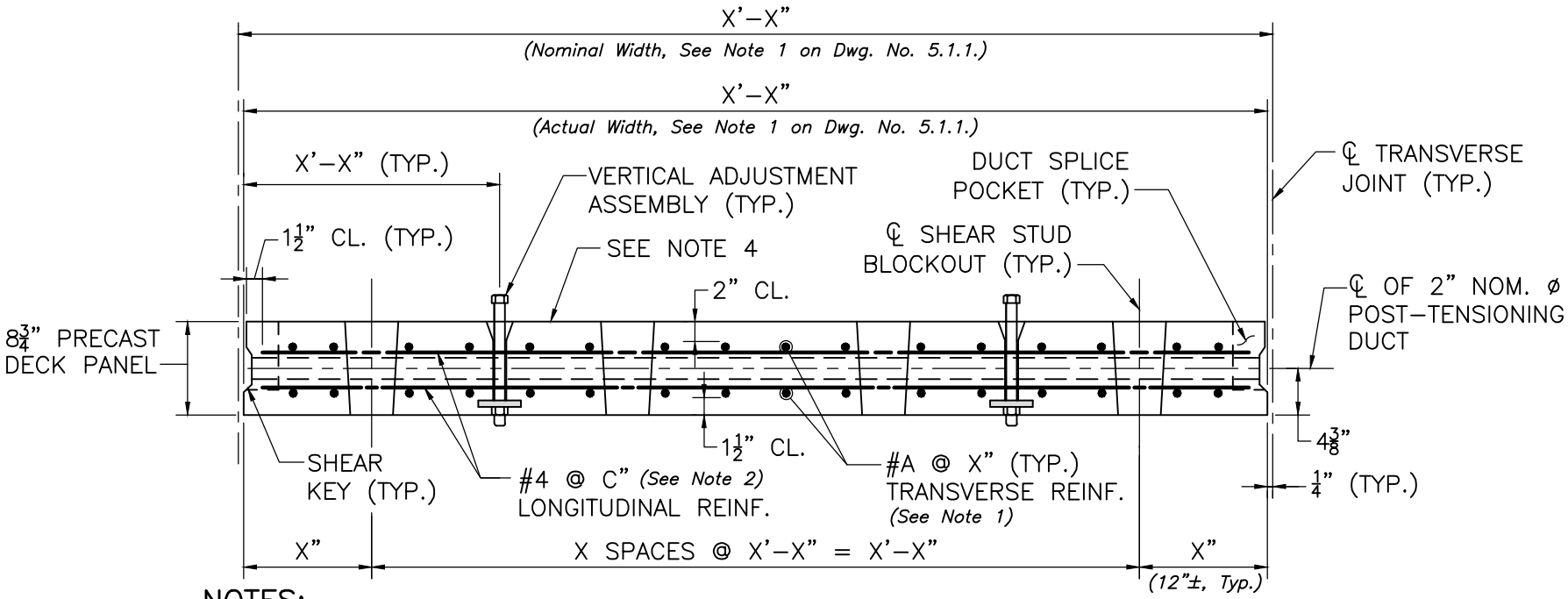
SCALE: 1/2" = 1'–0"

NOTES:

1. *For Designer Notes See Dwg. No. 5.1.4.*
2. *Atypical Precast Panels shall be used for skews up to 25°. For skews larger than 25°, atypical panels shall be cast–in–place.*

LONGITUDINAL SECTION THRU PRECAST PANEL

PRECAST CONCRETE DECK PANELS



NOTES:

1. PRECAST CONCRETE DECK PANELS SHALL BE 4000 PSI, ¾ IN., 585 HP CEMENT CONCRETE. SUBSTITUTIONS OF OTHER MIX DESIGNS WILL NOT BE ALLOWED
2. LONGITUDINAL REINFORCEMENT SHALL BE PLACED PARALLEL TO THE ℄ OF CONSTRUCTION. TRANSVERSE (PRIMARY) REINFORCEMENT SHALL BE PLACED AS FOLLOWS:
   - FOR SKEWS ≤ 15° PLACED ON THE SKEW OF THE PANEL.
   - FOR SKEWS > 15° PERPENDICULAR TO ℄ THE PANEL.
3. ALL REINFORCEMENT SHALL BE EPOXY COATED.
4. THE FINISHED SURFACE OF PRECAST CONCRETE DECK PANELS SHALL BE PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPRAY APPLIED MEMBRANE.

SECTION 1

SCALE: 1" = 1'–0"

NOTES:

1. *#A @ X" = Size and spacing of the primary reinforcement as per Design Tables on Dwg. No. 5.1.30 C" = Spacing of longitudinal reinforcement as per Design Tables on Dwg. No. 5.1.30.*
2. *Primary (transverse) reinforcement shall be placed at average spacing required by design and avoiding conflicts with shear connector pockets.*

DATE OF ISSUE
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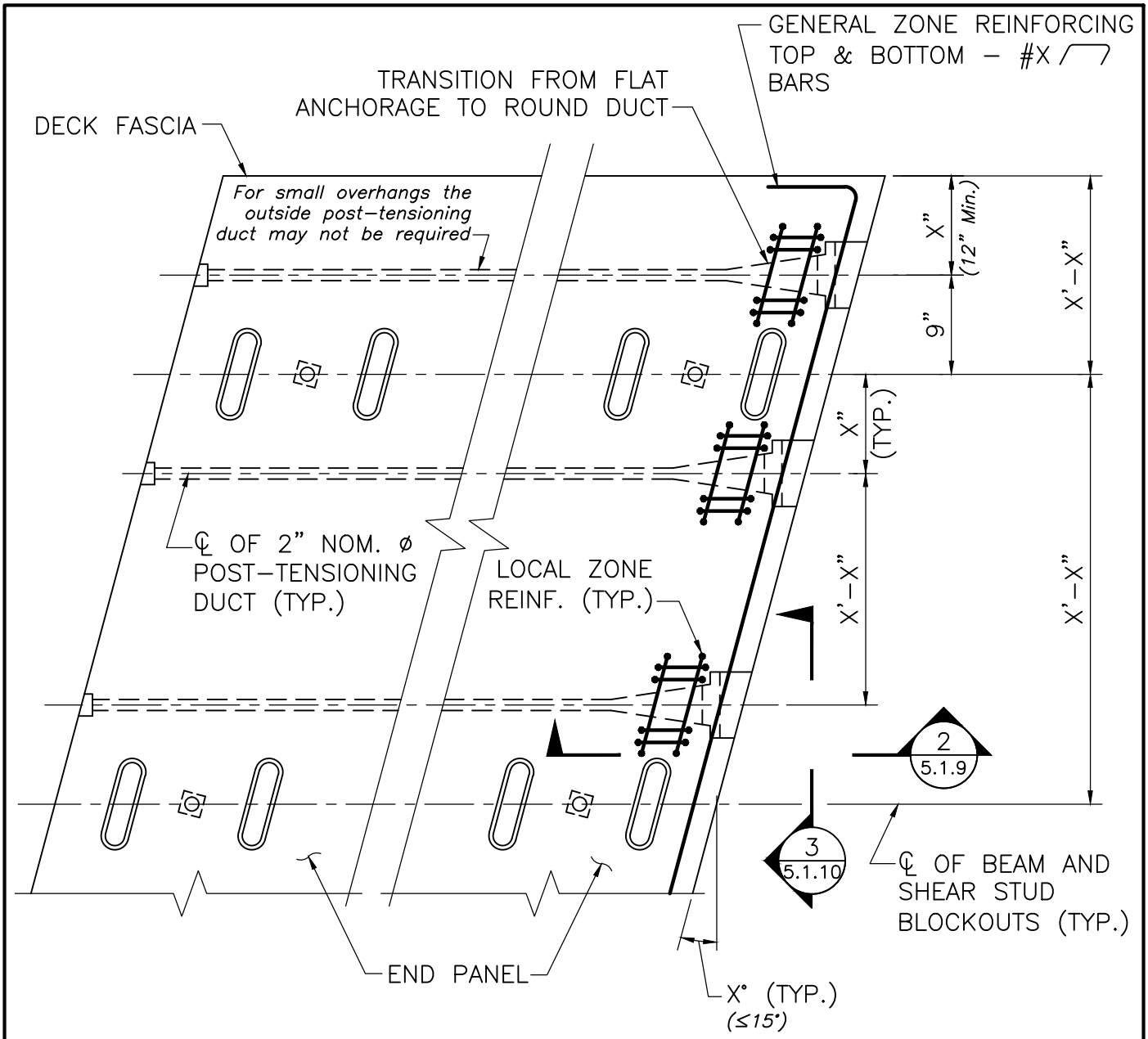
DRAWING NUMBER
5.1.7



NOTE:

LOCAL ZONE REINFORCING TO BE DESIGNED BY THE CONTRACTOR.

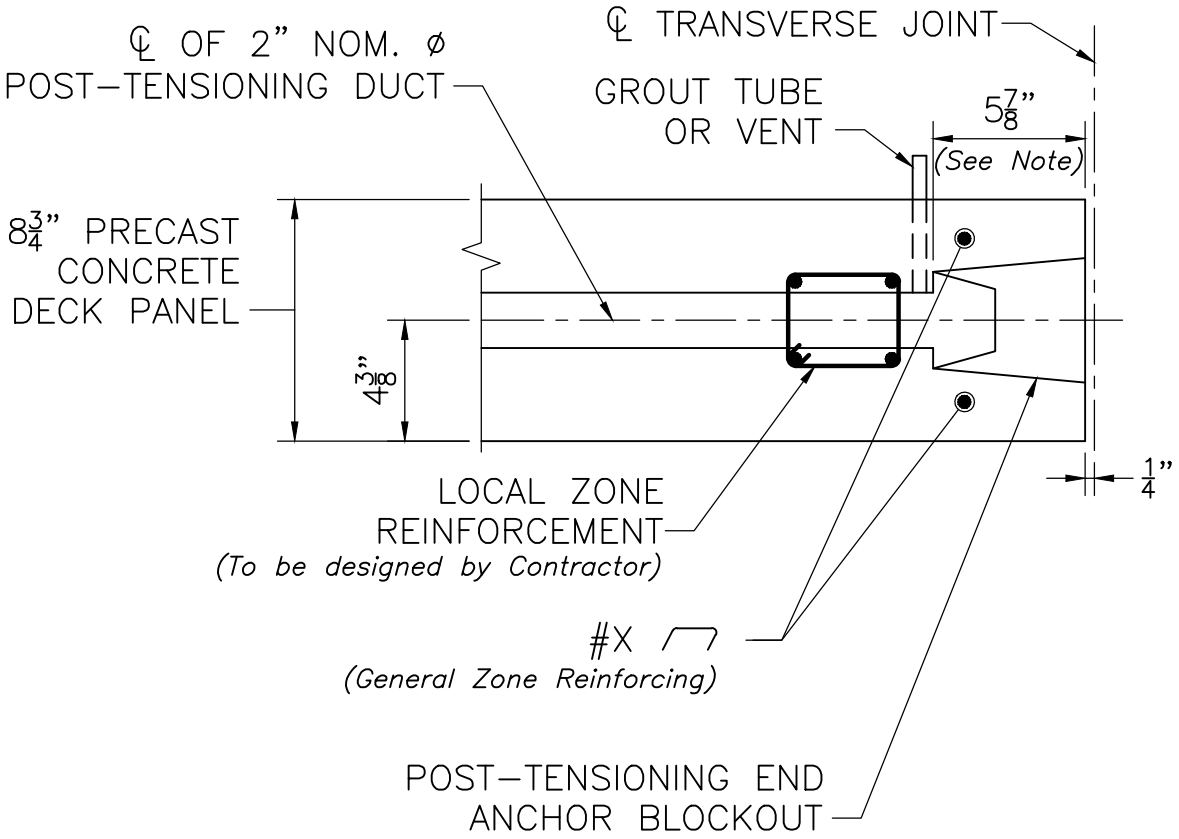
END ANCHORAGE DETAILS FOR POST–TENSIONING

SCALE: $\frac{1}{2}$" = 1'–0"

NOTES:

1. *See Dwg. No's. 5.1.14 and 5.1.15 for Notes to be included on Construction Drawings.*
2. *Local Zone reinforcing comprised of spiral may be used. Consult manufacturer's catalog.*

massDOT Highway Division LRFD BRIDGE MANUAL, PART III	END ANCHORAGE DETAILS FOR POST–TENSIONING PRECAST CONCRETE DECK PANELS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **5.1.8**



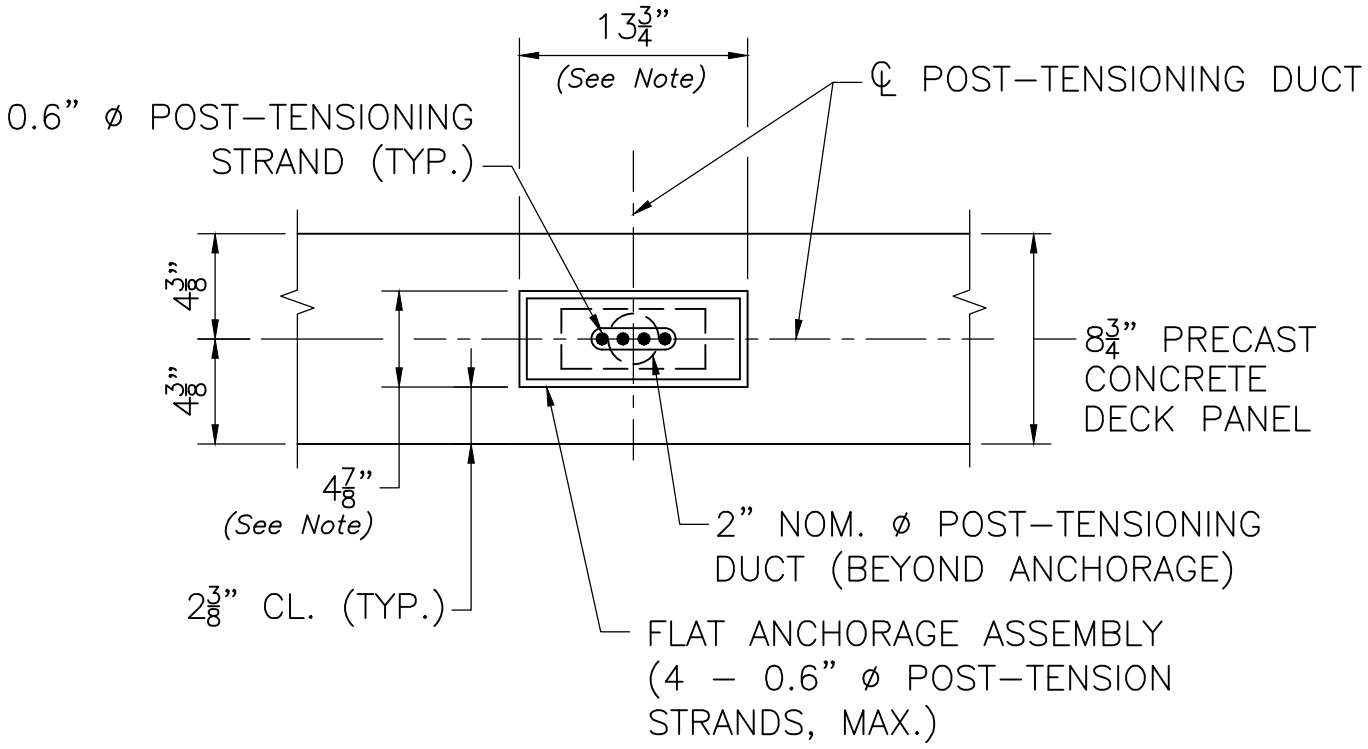
SECTION 2

SCALE: $1\frac{1}{2}$" = 1'–0"

NOTE:

Detail shows maximum size of acceptable anchorage assembly. Actual sizes will be based on the approved post–tensioning designed by the Contractor.

massDOT Highway Division LRFD BRIDGE MANUAL, PART III	LONGITUDINAL SECTION THROUGH POST–TENSIONING ANCHORAGE ASSEMBLY PRECAST CONCRETE DECK PANELS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **5.1.9**



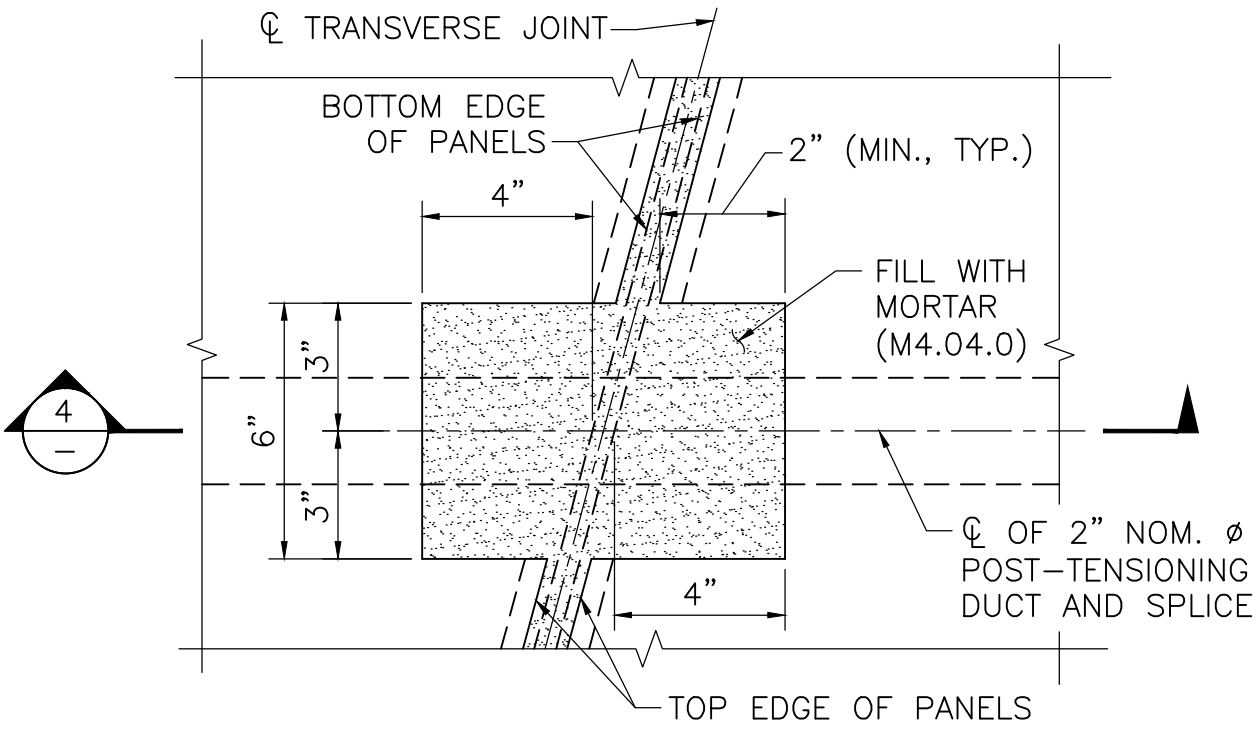
SECTION 3

SCALE: 1½" = 1'–0"

NOTE:

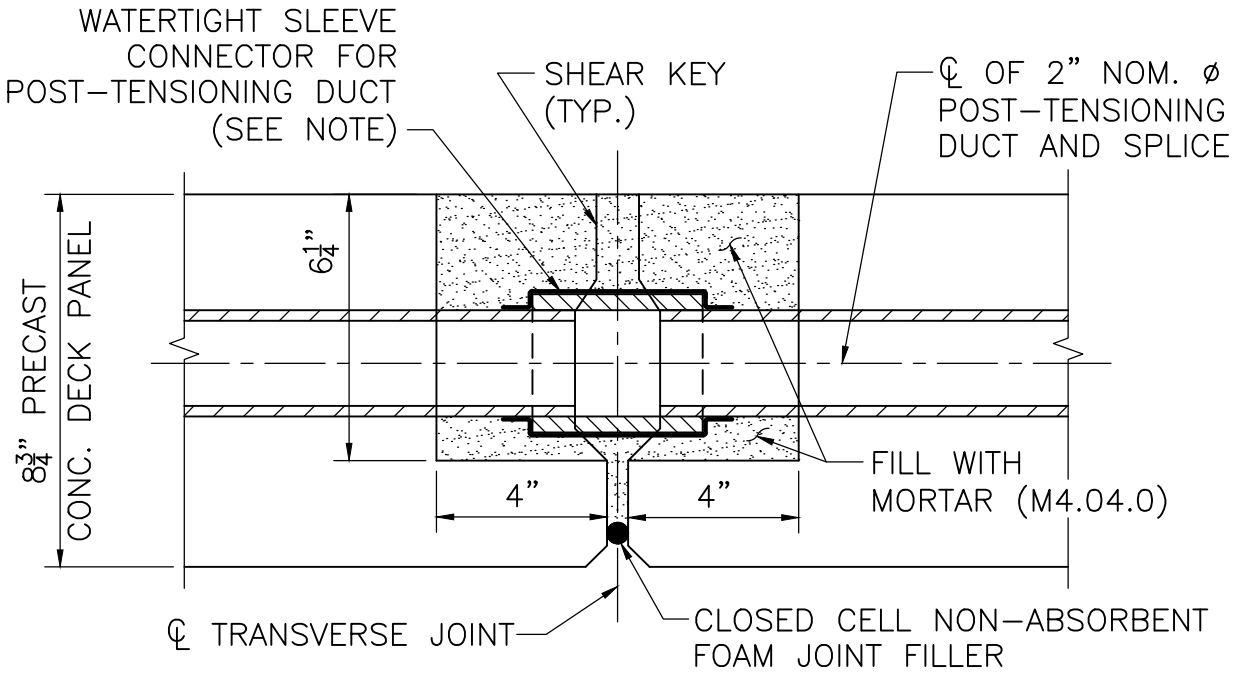
Detail shows maximum size of acceptable anchorage assembly. Actual sizes will be based on the approved post–tensioning designed by the Contractor.

massDOT Highway Division LRFD BRIDGE MANUAL, PART III	END VIEW OF POST–TENSIONING ANCHORAGE ASSEMBLY PRECAST CONCRETE DECK PANELS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **5.1.10**



POST–TENSIONING DUCT CONNECTION – PLAN

SCALE: 3" = 1'–0"

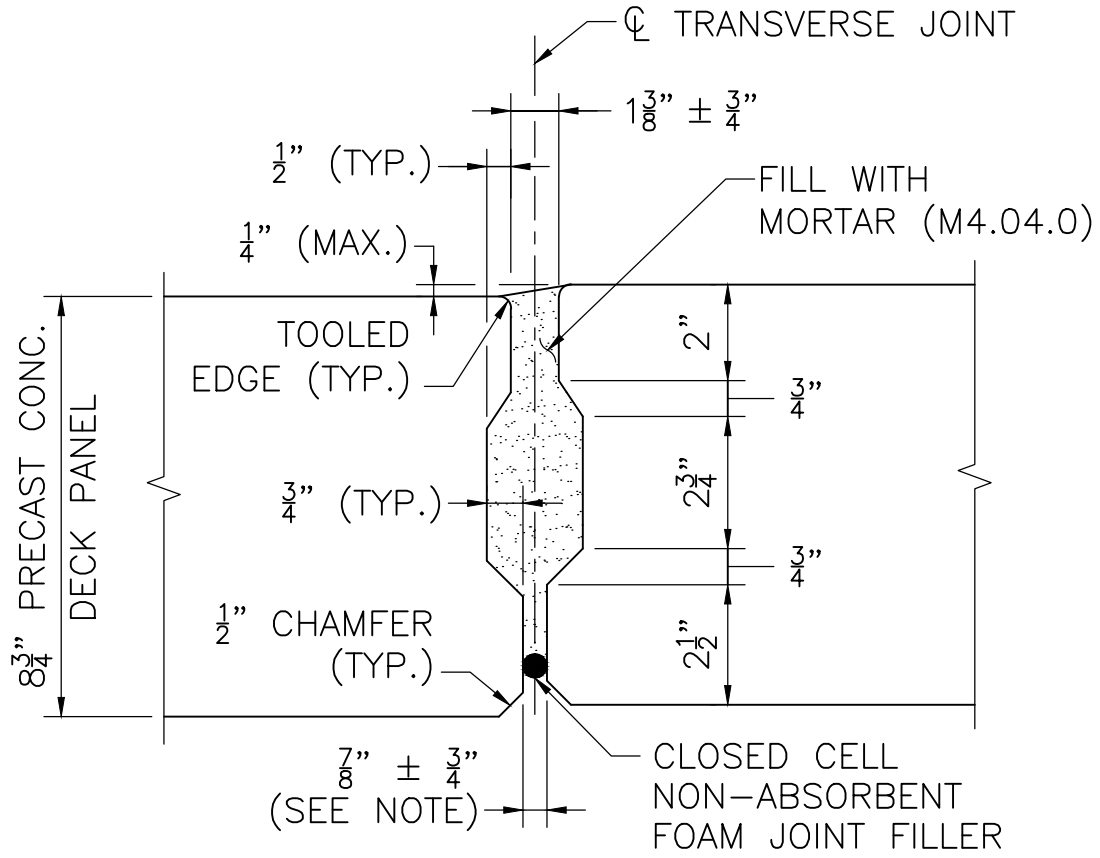


SECTION 4

SCALE: 3" = 1'–0"

NOTE WELL!

IT IS OF EXTREME IMPORTANCE TO MAKE THESE POST–TENSIONING DUCT CONNECTIONS 100% WATERTIGHT IN ORDER TO PREVENT MORTAR ENTERING THE POST–TENSIONING DUCTS WHEN IT IS PLACED IN THE TRANSVERSE JOINTS, AS WELL AS TO AVERT MORTAR FROM ESCAPING THE DUCTS DURING THEIR SUBSEQUENT GROUTING WITH MORTAR.

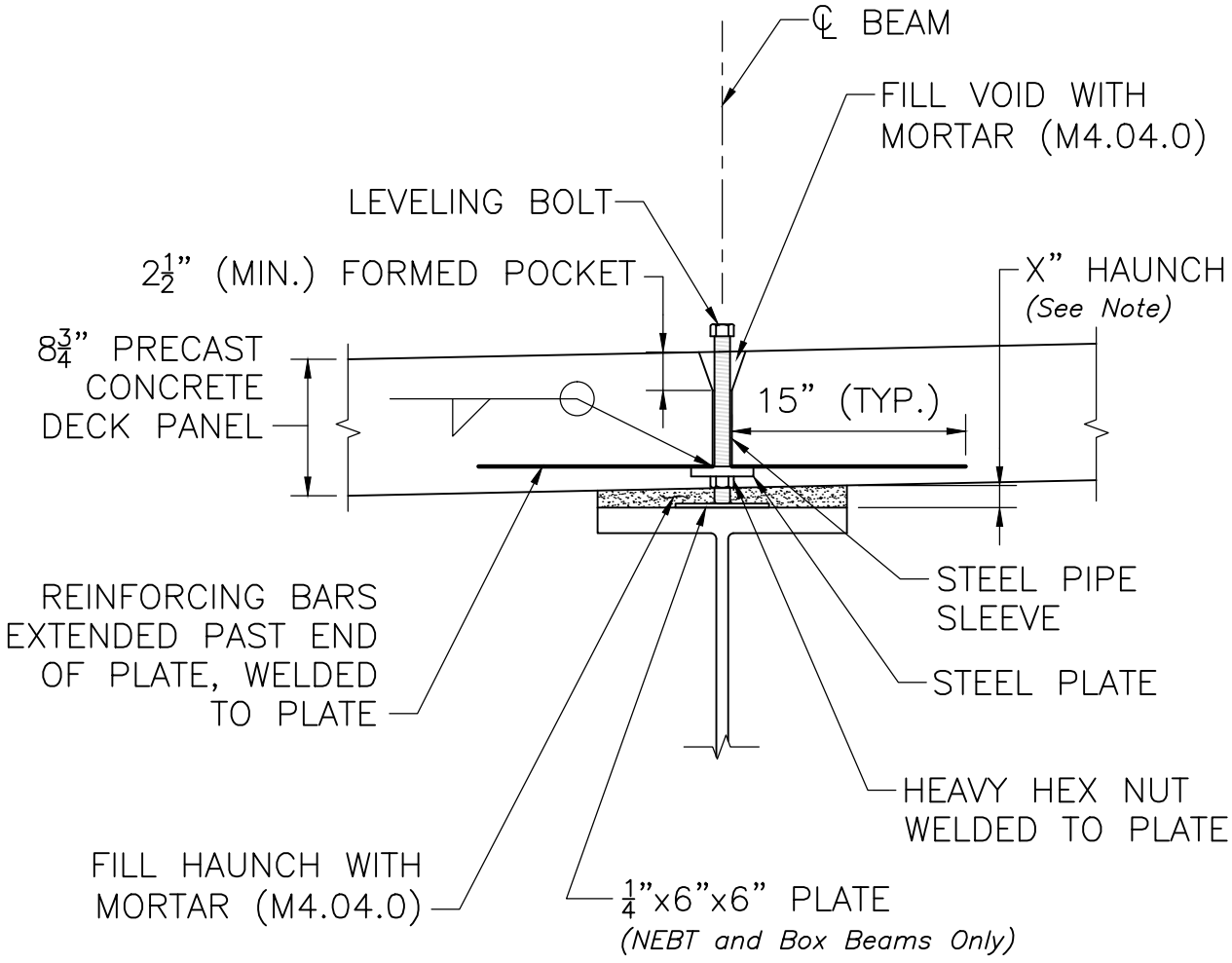


NOTE:

VARIATION IN JOINT WIDTH TO ACCOMMODATE FABRICATION TOLERANCES WHEN ERECTING PANELS.

SHEAR KEY DETAILS

SCALE: 3" = 1'-0"



NOTE:

VERTICAL ADJUSTMENT ASSEMBLY SHALL BE DESIGNED BY THE CONTRACTOR.

VERTICAL ADJUSTMENT ASSEMBLY

SCALE: 1" = 1'–0"

NOTE:

See Note 5 on Dwg. No. 7.1.17, Part II of this Bridge Manual.

MassDOT Highway Division LRFD BRIDGE MANUAL, PART III	VERTICAL ADJUSTMENT ASSEMBLY PRECAST CONCRETE DECK PANELS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **5.1.13**

POST–TENSIONING SYSTEM MATERIALS:

1. PRESTRESSING STRAND USED IN THE POST–TENSIONING SYSTEM SHALL BE 0.6" DIA. GRADE 270 LOW RELAXATION STRANDS CONFORMING TO AASHTO M203.

2. USE MAXIMUM OF 4 STRANDS PER 2" NOM. ø POST–TENSIONING DUCT.

3. FLAT ANCHORAGE ASSEMBLY SHALL BE GALVANIZED. LOCAL ZONE REINFORCEMENT SHALL BE EPOXY COATED. STRAND GRIPPING WEDGES SHALL NOT BE COATED.

4. GROUT USED FOR HAUNCHES, TRANSVERSE SHEAR KEYS, VERTICAL ADJUSTMENT ASSEMBLY VOIDS, AND HAND HOLES FOR DUCT CONNECTIONS SHALL BE MORTAR (M4.04.0)

5. GROUT FOR POST–TENSIONING DUCTS SHALL BE A CEMENTITOUS, PRE–BAGGED, NON–SHRINK GROUT SPECIFICALLY FORMULATED FOR POST TENSIONING DUCTS.

DESIGN OF POST–TENSIONING:

1. THE PLANS DETAIL A POST–TENSIONING SYSTEM THAT IS DESIGNED TO PROVIDE A UNIFORM NET FINAL COMPRESSIVE STRESS OF XXX PSI ACROSS THE TRANSVERSE DECK JOINTS. THIS MINIMUM STRESS SHALL BE PROVIDED AFTER LOSSES DUE TO ELASTIC SHORTENING, DUCT FRICTION, WOBBLE AND ANCHORAGE SET. THE DETAILS ARE BASED ON THE FOLLOWING MATERIAL PROPERTIES AND PARAMETERS:
   - FRICTION AND WOBBLE COEFFICIENT = .0002
   - ANCHORAGE SET = .25 INCHES
   - THE AREA OF CLOSURE POUR CONCRETE IS NOT INCLUDED IN THE CALCULATION OF THE NET PRESTRESS FORCE.

2. THE DESIGN DETAILED ON THE PLANS RESULTS IN AN ESTIMATED JACKING FORCE OF XXX KIPS PER DUCT (AFTER ANCHORAGE SET).

3. THE CONTRACTOR SHALL DESIGN THE FINAL POST–TENSIONING SYSTEM BASED ON THE FRICTION, WOBBLE, AND ANCHORAGE SET ACCORDING TO THE ACTUAL MATERIALS THAT ARE PROPOSED. MINOR CHANGES TO THE SYSTEM CAN BE MADE PROVIDED THAT THE FINAL NET COMPRESSIVE STRESS AFTER LOSSES IS EQUAL TO OR GREATER THAN XXX PSI.

4. THE DESIGN OF THE POST–TENSIONING SYSTEM SHALL INCLUDE THE DESIGN OF THE LOCAL ZONE REINFORCING REINFORCMENT BEHIND THE ANCHORAGE PLATE AND ANCHORAGE ASSEMBLY. THE LOCAL ZONE REINFORCEMENT SHALL BE DESIGNED IN ACCORDANCE WITH THE LATEST EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

5. THE SYSTEM DESIGN SHALL INCLUDE A SEQUENCE OF STRESSING TO ENSURE THAT THE STRESSING OPERATION DOES NOT PERMIT MORE THAN 12.5% OF THE PRESTRESSING FORCE TO BE ECCENTRIC AT ANY TIME. STRESSING SEQUENCE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF WORK.

6. DECK PANELS MUST BE ALLOWED TO SLIDE ON GIRDERS DURING POST–TENSIONING.

7. AT THE CONCLUSION OF THE STRESSING, QUALIFIED PERSONNEL SHALL PREPARE AND SUBMIT A STRESSING REPORT BASED ON ACTUAL MATERIAL PROPERTIES USED ON SITE TO THE ENGINEER FOR APPROVAL.

CONSTRUCTION SEQUENCE NOTES:

1. IF REQUIRED, FULLY BRACE GIRDERS PRIOR TO PLACING PANELS.

2. PLACE PANELS ON GIRDERS WITHIN THE SPECIFIED TOLERANCES. THE TOLERANCE BETWEEN THE TRANSVERSE JOINTS SHALL BE USED TO ACCOUNT FOR FABRICATION AND ERECTION TOLERANCES.

3. ADJUST PRECAST PANELS TO GRADE BY USING VERTICAL ADJUSTMENT ASSEMBLIES. TORQUE ALL LEVELING BOLTS TO WITHIN 15% OF EACH OTHER TO PROVIDE PROPOER DISTRIBUTION OF DEAD LOADS.

4. INSTALL POST-TENSIONING STRANDS LOOSE IN POST-TENSIONING DUCTS AND SEAL DUCT SPLICES.

5. PLACE MORTAR (M4.04.0) IN TRANSVERSE JOINTS ONLY.

6. STRESS POST-TENSIONING STRANDS ONLY AFTER MORTAR (M4.04.0) IN TRANSVERSE JOINTS ATTAINS A MINIMUM COMPRESSIVE STRENGTH TWO TIMES THAT REQUIRED BY THE APPROVED CALCULATIONS IN THE ASSEMBLY PLAN.

7. GROUT POST-TENSIONING DUCTS.

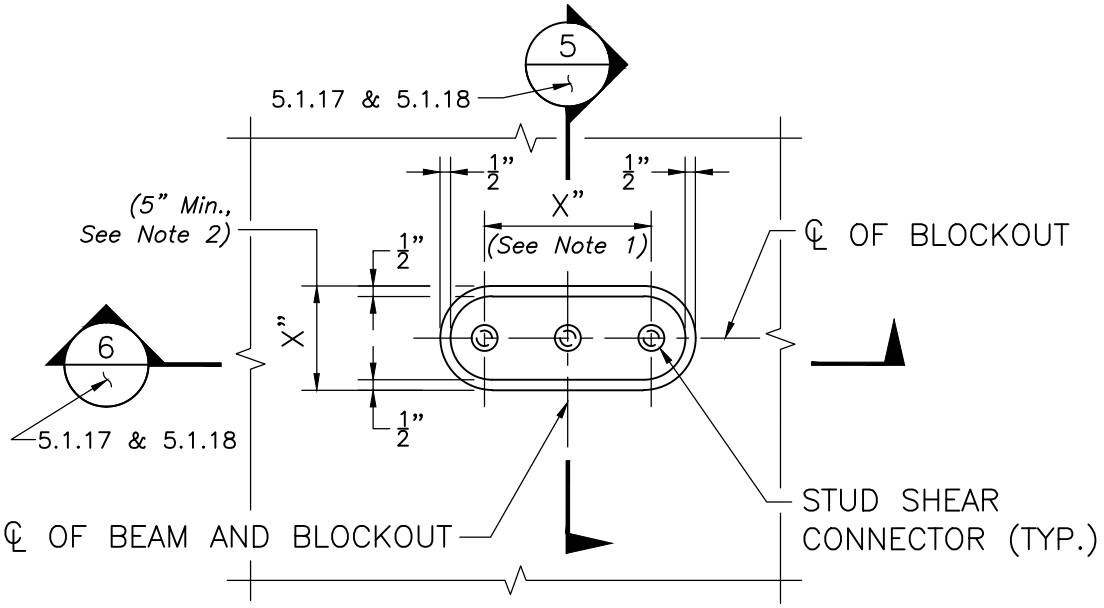
8. INSTALL SHEAR STUDS IN VOIDS/BLOCKOUTS.

9. FORM GIRDER HAUNCHES.

10. GROUT SHEAR CONNECTOR POCKETS AND HAUNCH WITH MORTAR (M4.04.0).

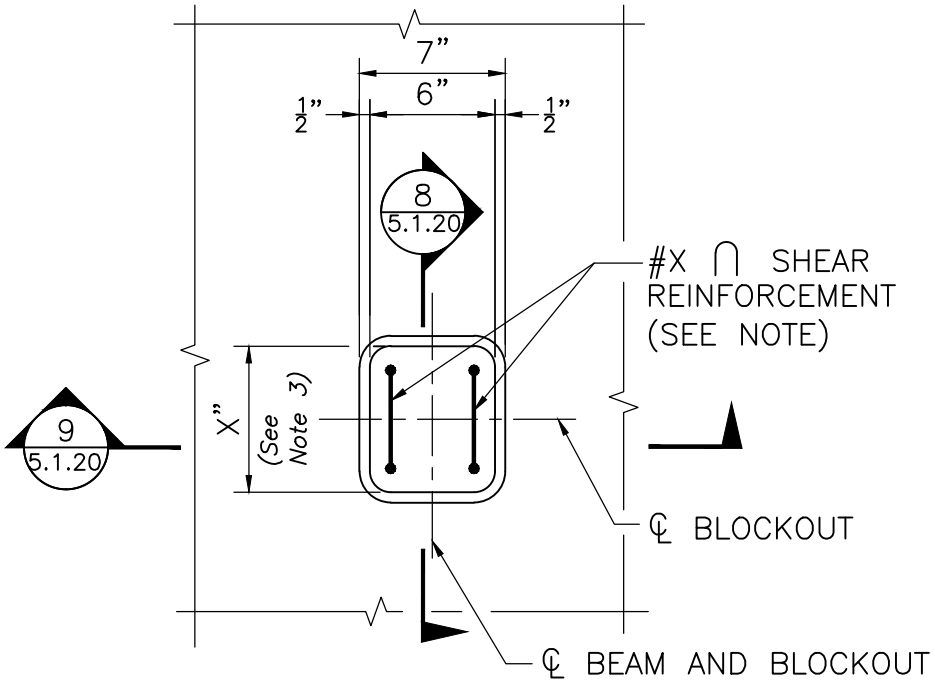
11. REMOVE VERTICAL ADJUSTMENT ASSEMBLIES, LIFTING DEVICE HARDWARE AND GROUT VOIDS AND HAND HOLES WITH MORTAR (M4.04.0).

12. CAST CLOSURE POURS.



BLOCKOUT WITH STUD SHEAR CONNECTORS – PLAN

SCALE: $1\frac{1}{2}$" = 1'–0"

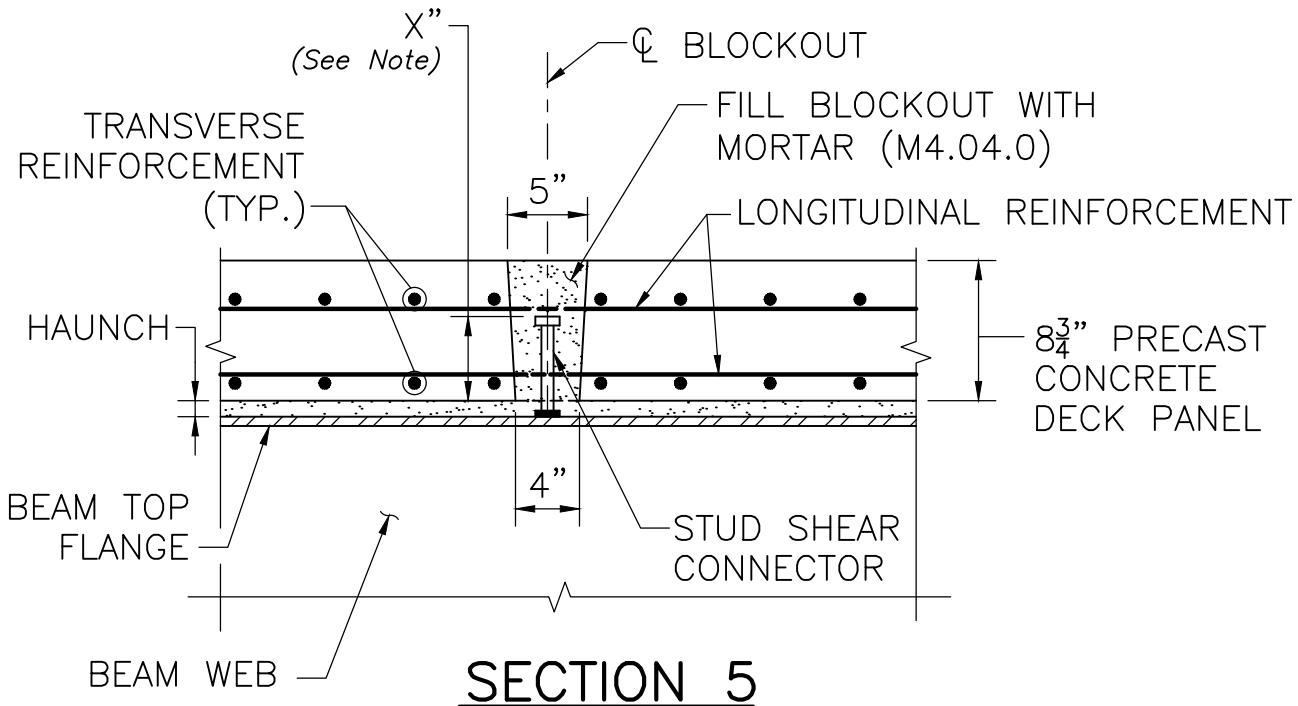


BLOCKOUT WITH HORIZONTAL SHEAR REINFORCEMENT – PLAN

SCALE: $1\frac{1}{2}$" = 1'–0"

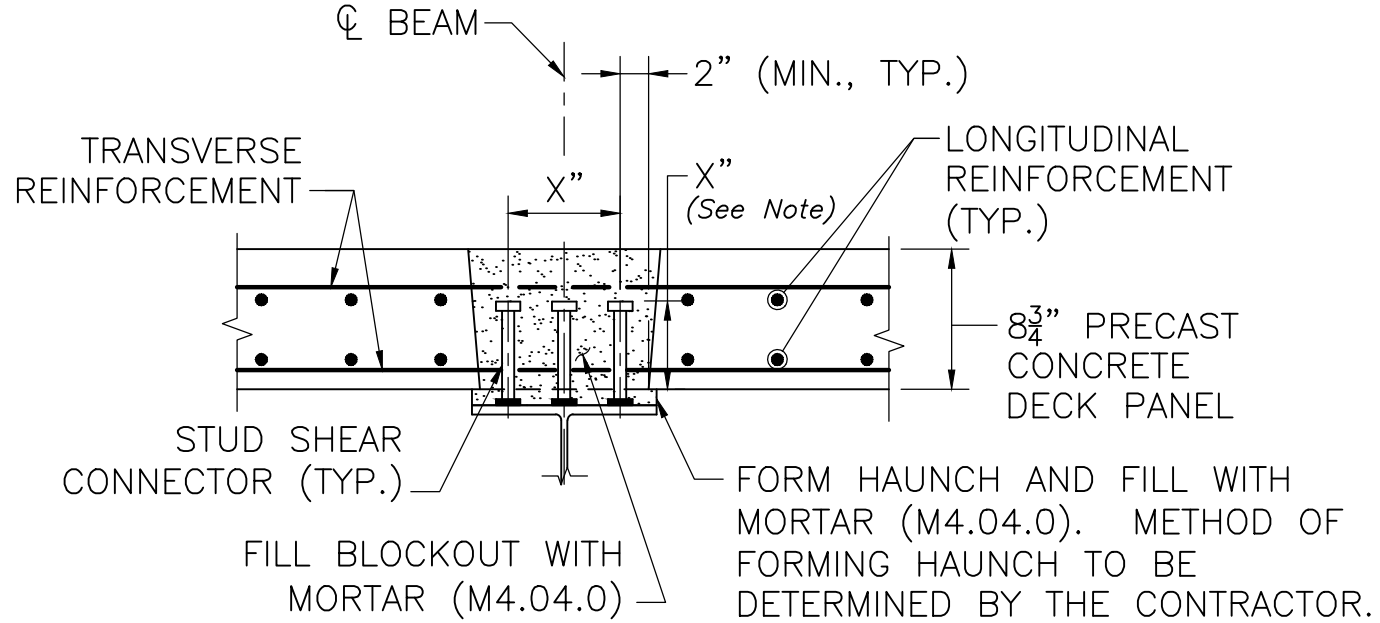
NOTES:

1. *Three shear studs shown. Actual number of shear studs shall be as per design.*
2. *The dimension of the blockouts along the ℄ of beams may be increased to allow for multiple rows of studs. See Large Blockout detail on Dwg. No. 5.1.19.*
3. *Designer to provide this dimension as small as practical to account for transverse (primary) reinforcement placement. Bars may be bundled to provide maximum size blockouts.*



SECTION 5

SCALE: 1" = 1'–0"



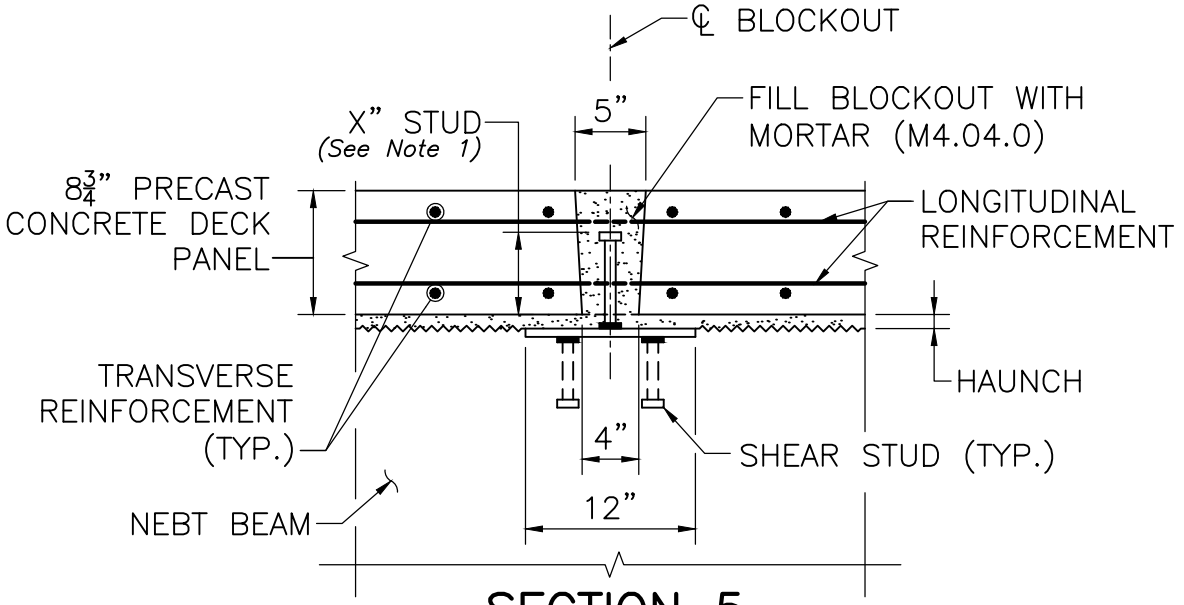
SECTION 6

SCALE: 1" = 1'–0"

NOTE:

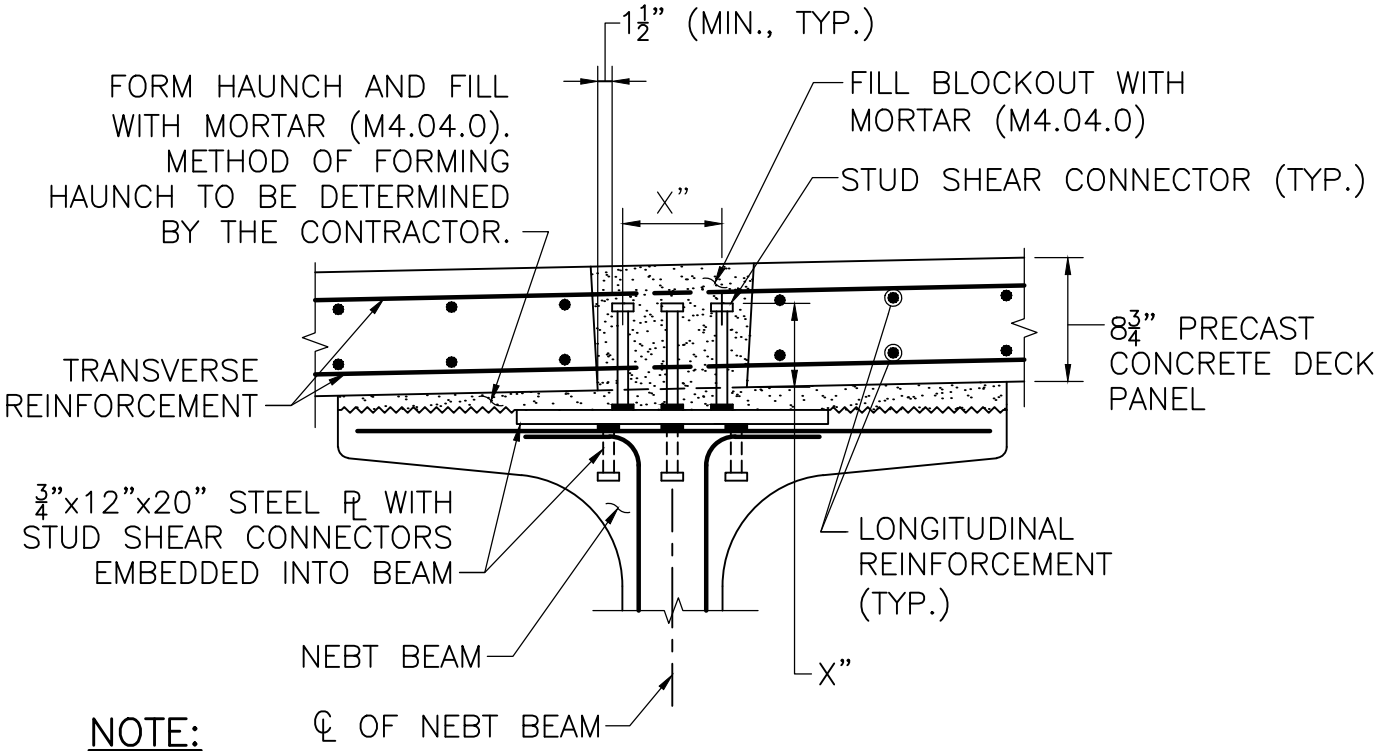
For Designer Notes see Dwg. No. 5.6.2, Part II of this Bridge Manual.

massDOT Highway Division LRFD BRIDGE MANUAL, PART III	SECTIONS THRU BLOCKOUT W/ STUD SHEAR CONNECTORS FOR STEEL BEAMS PRECAST CONCRETE DECK PANELS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **5.1.17**



SECTION 5

SCALE: 1" = 1'–0"



NOTE:

EMBEDDED STEEL PLATE SHALL BE GROUNDED FOR FIELD WELDING OF STUDS. PROVIDE SHOP APPLIED GROUNDING LUG ON TOP OF EMBEDDED PLATE.

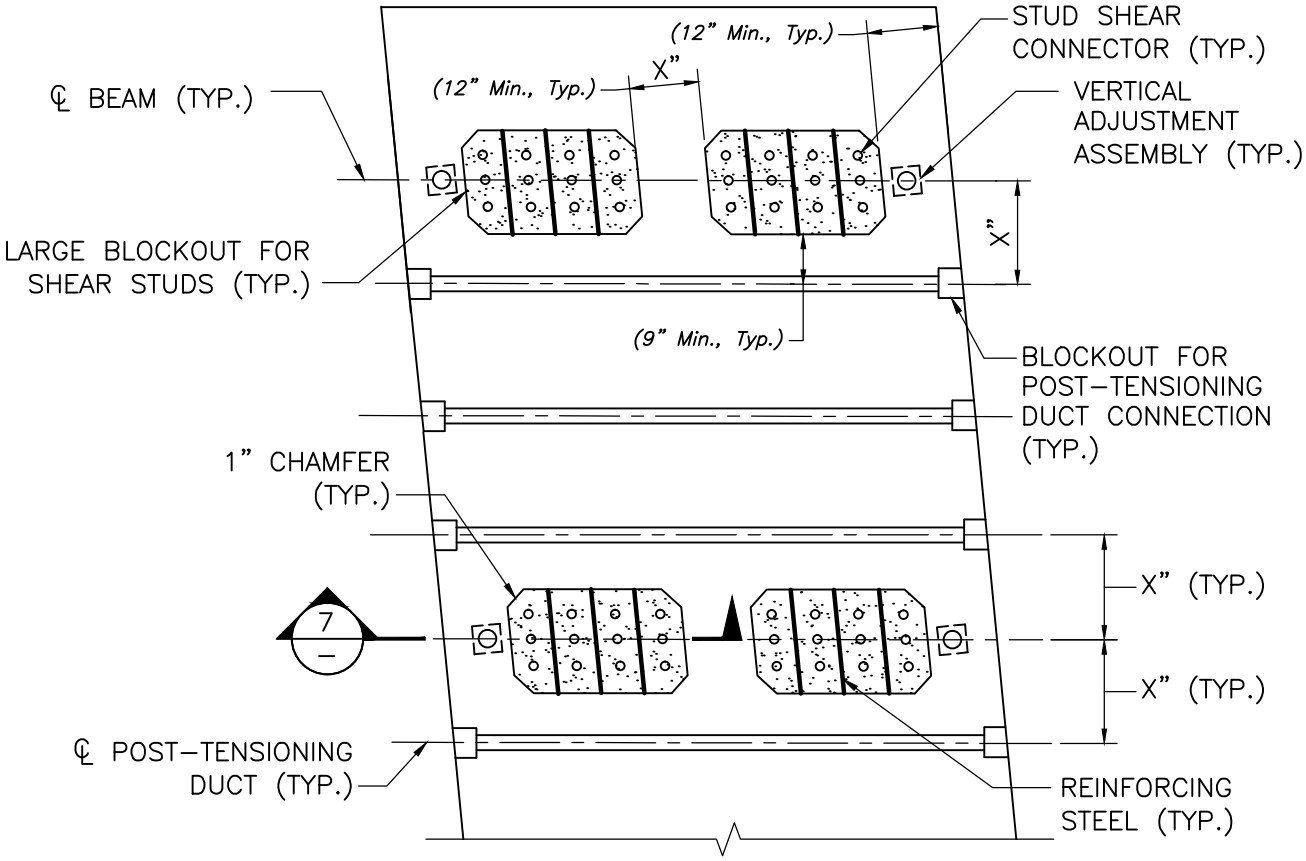
SECTION 6

SCALE: 1" = 1'–0"

NOTES:

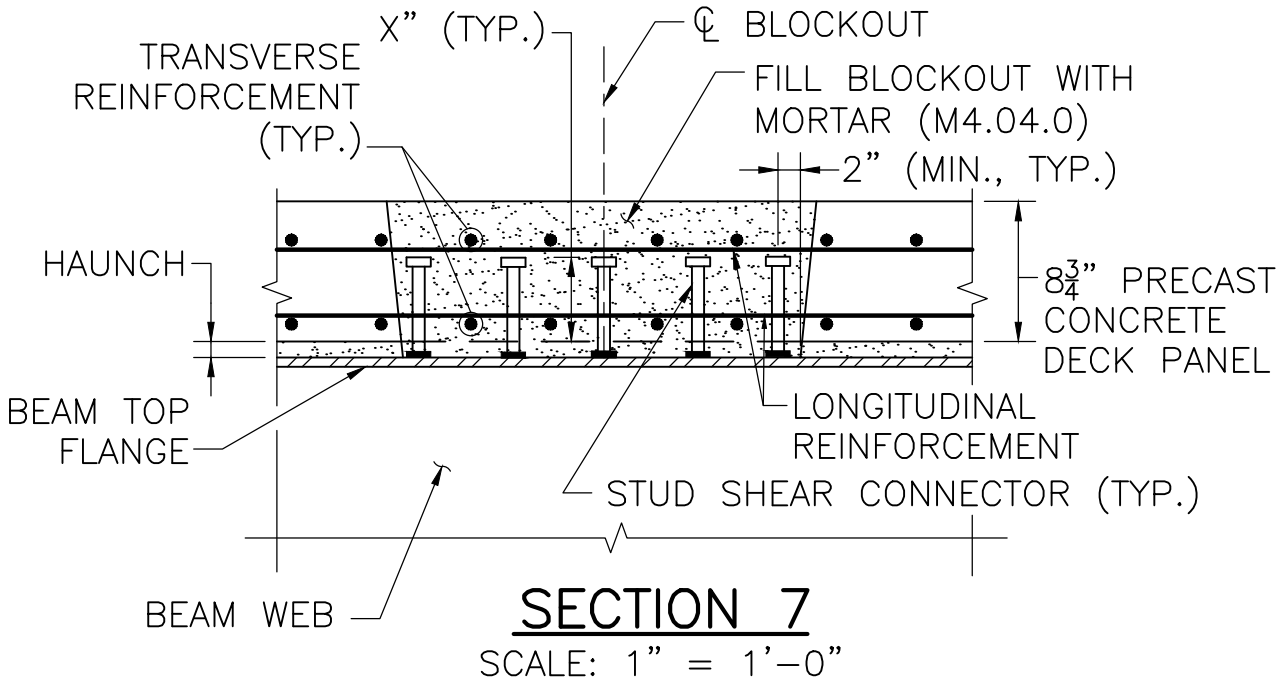
1. *For Designer Notes see Dwg. No. 5.6.2, Part II of this Bridge Manual.*
2. *NEBT beam shown. Box beams are similar.*

massDOT Highway Division LRFD BRIDGE MANUAL, PART III	SECTION THRU BLOCKOUT W/ STUD SHEAR CONNECTORS FOR NEBT & PRECAST PRESTRESSED BOX BEAMS PRECAST CONCRETE DECK PANELS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **5.1.18**



PLAN

SCALE: $1\frac{1}{2}$" = 1'-0"

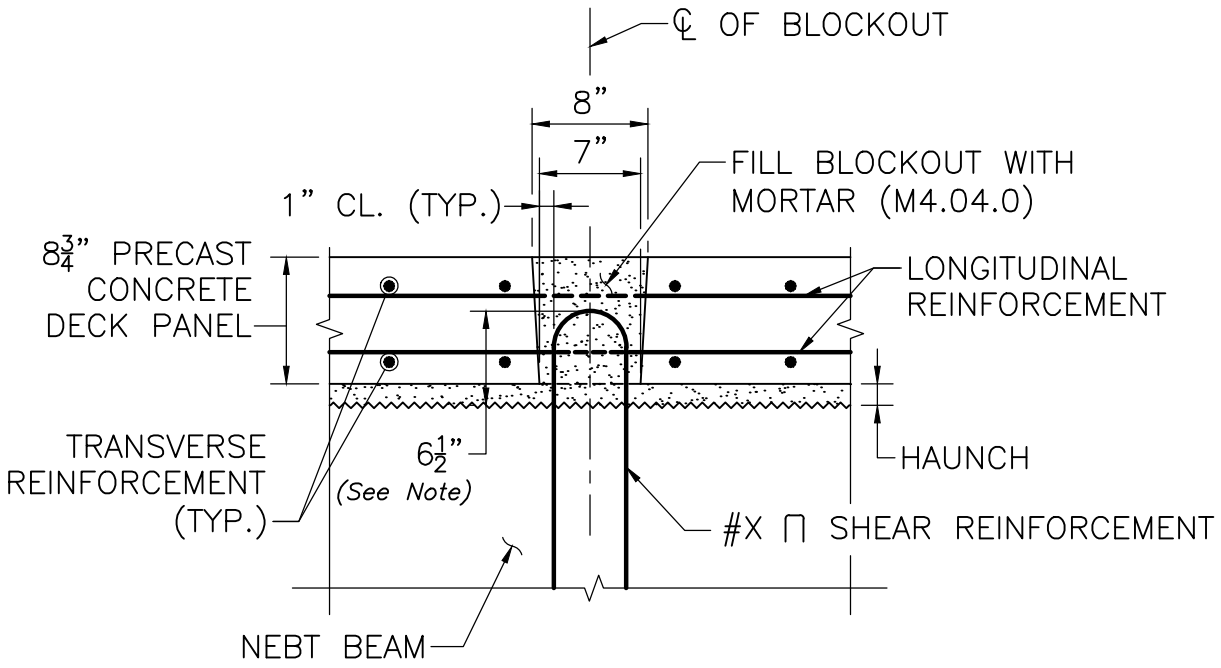


SECTION 7

SCALE: 1" = 1'-0"

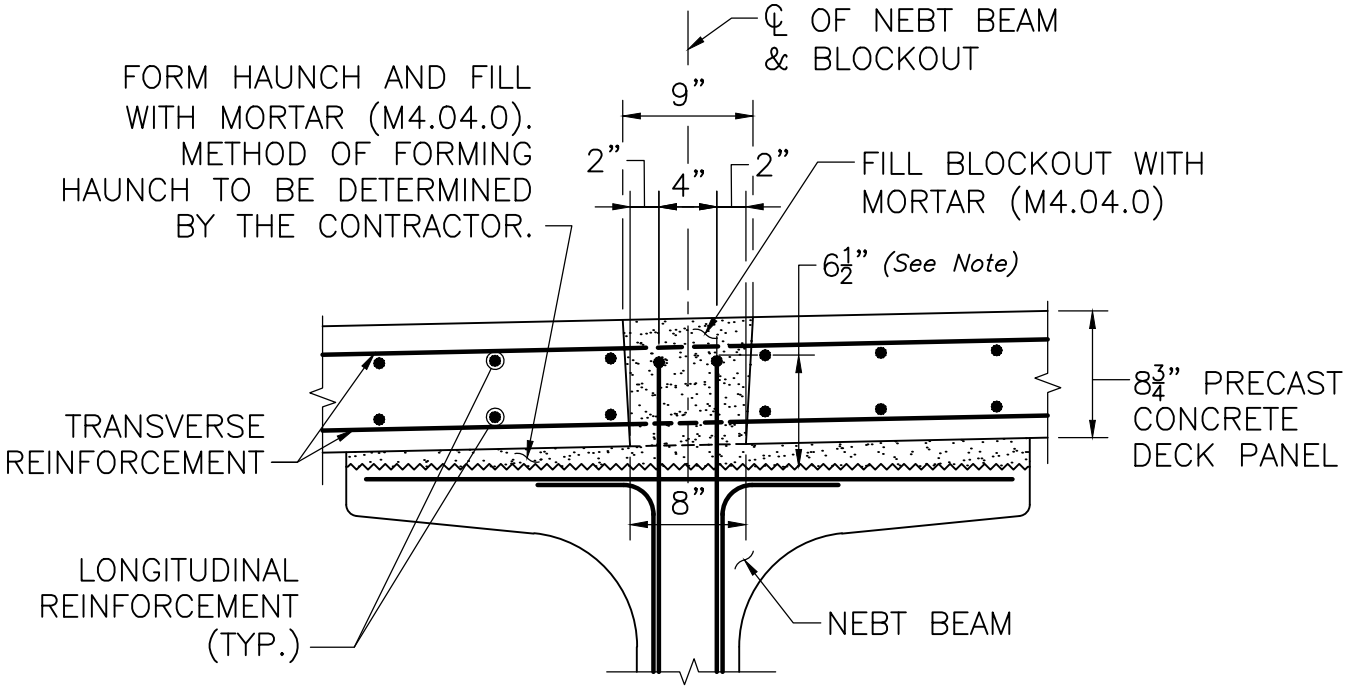
NOTE:
The Designer should check the precast panels inclusive of all blockouts for handling in accordance with the PCI Design Handbook. See Part I of this Bridge Manual.

MassDOT Highway Division LRFD BRIDGE MANUAL, PART III	LARGE BLOCKOUTS PLAN AND SECTION PRECAST CONCRETE DECK PANELS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **5.1.19**



SECTION 8

SCALE: 1" = 1'–0"



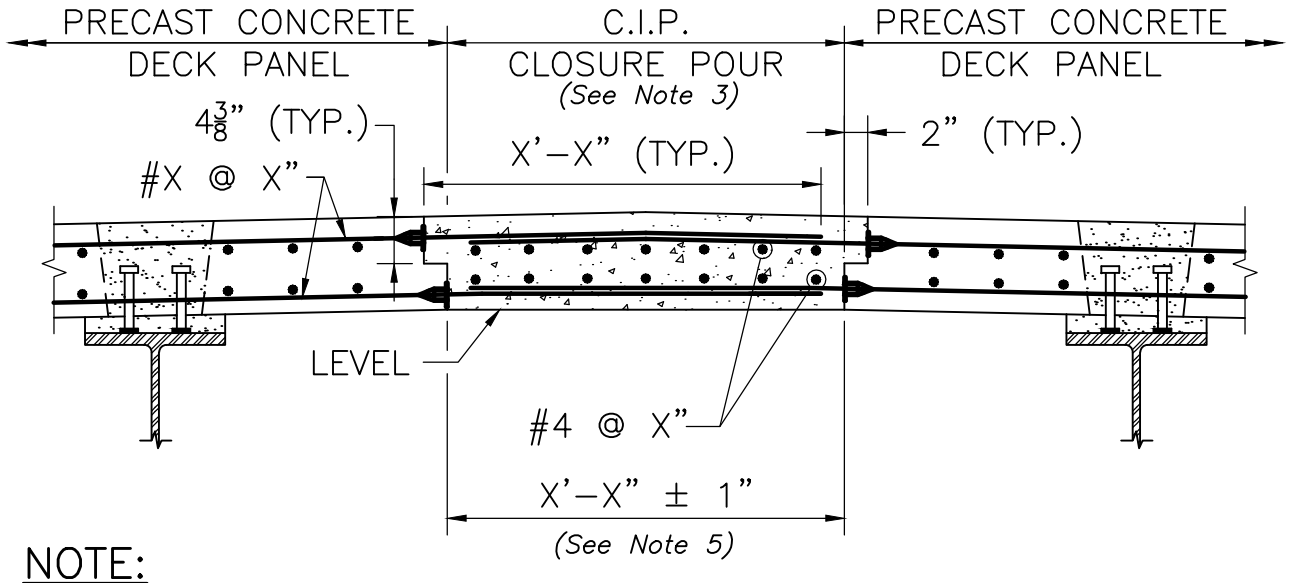
SECTION 9

SCALE: 1" = 1'–0"

NOTE:

Embedment Length of the Horizontal Shear Reinforcement into the deck may need to be increased in cases with large blocking depths. The Designer shall ensure that at least 2" clear cover is maintained to the top of the deck at all locations. The embedment length shown does not produce full development.

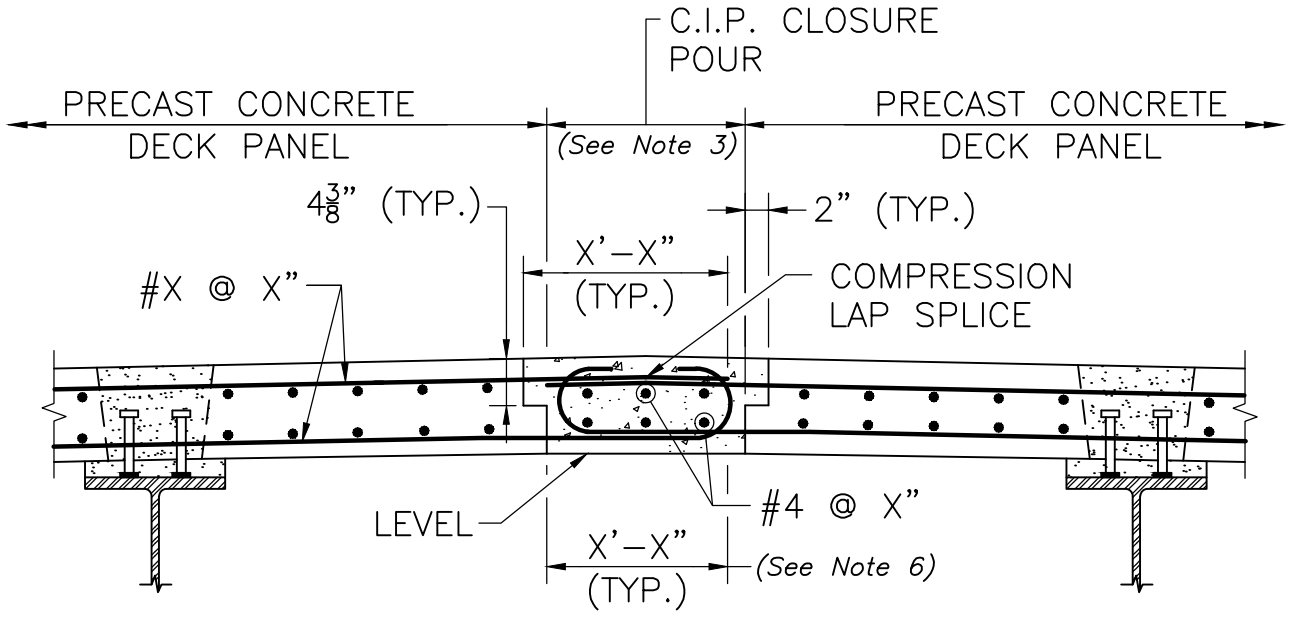
MassDOT Highway Division LRFD BRIDGE MANUAL, PART III	SECTIONS THRU BLOCKOUT W/ HORIZONTAL SHEAR REINFORCEMENT FOR NEBT BEAMS PRECAST CONCRETE DECK PANELS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **5.1.20**



NOTE:

REINFORCING BARS EXTENDING FROM THE EDGE OF DECK MAY BE USED IN LIEU OF MECHANICAL REINFORCING BAR SPLICERS

OPTION 1



OPTION 2

CAST–IN–PLACE CLOSURE POUR – DETAILS

SCALE: $\frac{3}{4}$" = 1'–0"

NOTES:

1. *Option 2 may be used to reduce the width of the closure pour.*
2. *For C.I.P. Closure Pour Construction Notes see Dwg. No. 5.1.22.*
3. *For closure pour at abutments see Dwg. No's. 1.1.20, 1.1.21 and 2.1.4.*
4. *For closure pour at the pier see Dwg. No's. 4.1.11 and 4.1.13.*
5. *Nominal width of closure pour X'–X" equals Class C Splice + 4".*
6. *Nominal width of closure pour X'–X" equals hooked bar splice length + 4".*

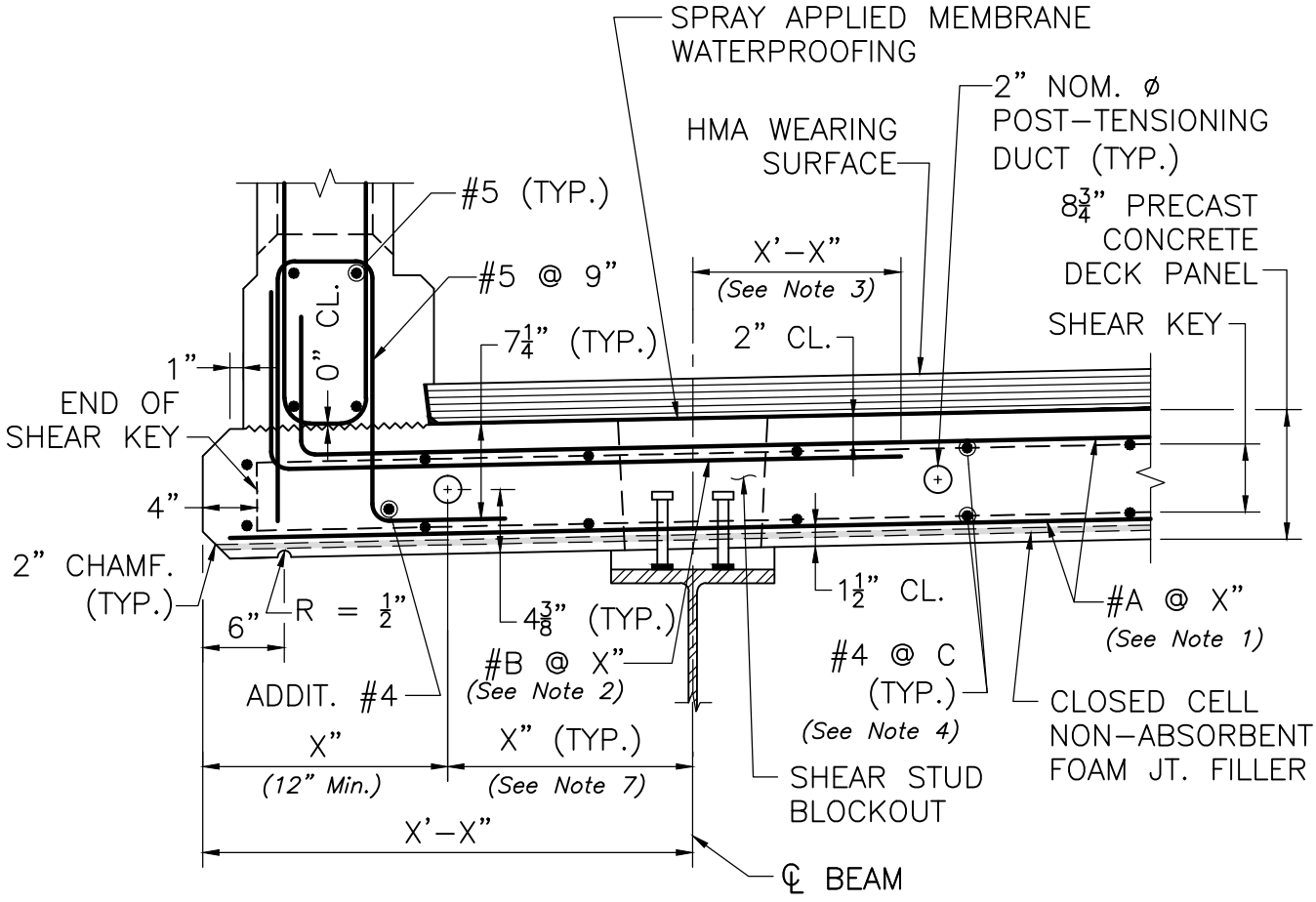
MassDOT Highway Division LRFD BRIDGE MANUAL, PART III	CAST–IN–PLACE CLOSURE POUR DETAILS PRECAST CONCRETE DECK PANELS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **5.1.21**

CAST–IN–PLACE CLOSURE POUR NOTES:

1. THE EDGE SURFACE OF THE PRECAST CONCRETE DECK PANELS SHALL BE BLAST CLEANED AND WETTED WITH CLEAN WATER, IMMEDIATELY PRIOR TO PLACING CLOSURE POUR CONCRETE.

2. CLOSURE POUR CONCRETE SHALL BE PLACED AFTER LONGITUDINAL POST–TENSIONING IS COMPLETED.

3. CLOSURE POUR CONCRETE SHALL BE 4000 PSI, $\frac{3}{4}$ IN., 585 HP CEMENT CONCRETE.
   (If required by project constraints, high early strength may be specified)



NOTE:

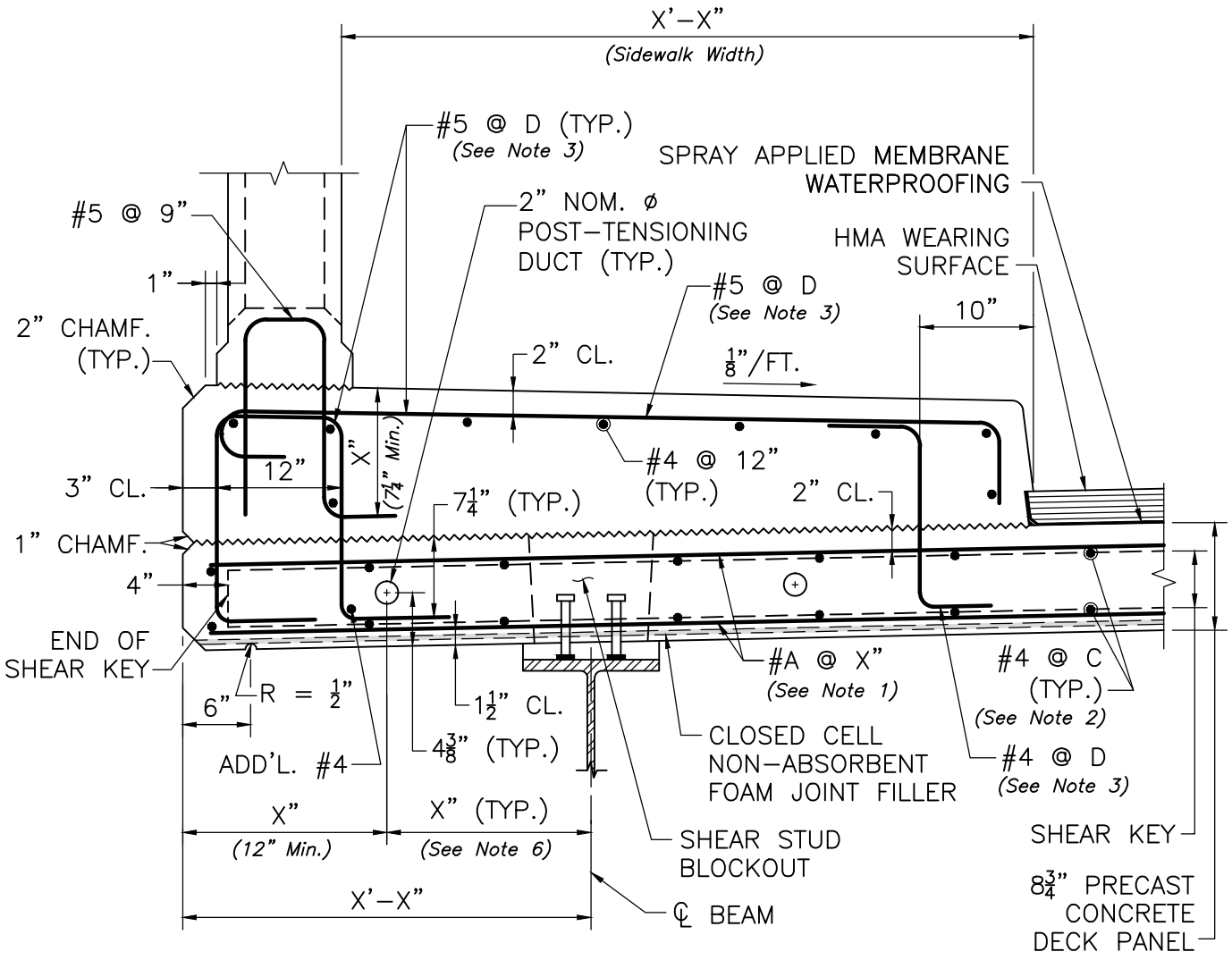
C.I.P. CT-TL2 BARRIER SHALL BE 5000 PSI, ⅜ IN., 710 HP CEMENT CONCRETE.

SECTION THRU SAFETY CURB

SCALE: 1" = 1'-0"

NOTES:

1. *#A @ X" = Size and spacing of the primary deck slab reinforcement as per Design Tables on Dwg. No. 5.1.30.*
2. *#B @ X" = Size and spacing of the Additional Overhang Reinforcement as per Design Table of Dwg. No. 5.1.31.*
3. *Additional Overhang Reinforcement extension (Lext.) as per Design Table of Dwg. No. 5.1.31.*
4. *C = Spacing of longitudinal reinforcement as per Design Tables on Dwg. No. 5.1.30.*
5. *For details and configuration of CT-TL2 barrier, see Chapter 9, Part II of this Bridge Manual.*
6. *Steel beam superstructure shown. Modify the details to accommodate other superstructure types.*
7. *The minimum dimension from the center of the PT duct to the edge of the shear connector pocket shall be 9".*



NOTES:

1. C.I.P. SIDEWALK SHALL BE 5000 PSI, $\frac{3}{4}$ IN., 685 HP CEMENT CONCRETE.
2. C.I.P. CT–TL2 BARRIER SHALL BE 5000 PSI, $\frac{3}{8}$ IN., 710 HP CEMENT CONCRETE.

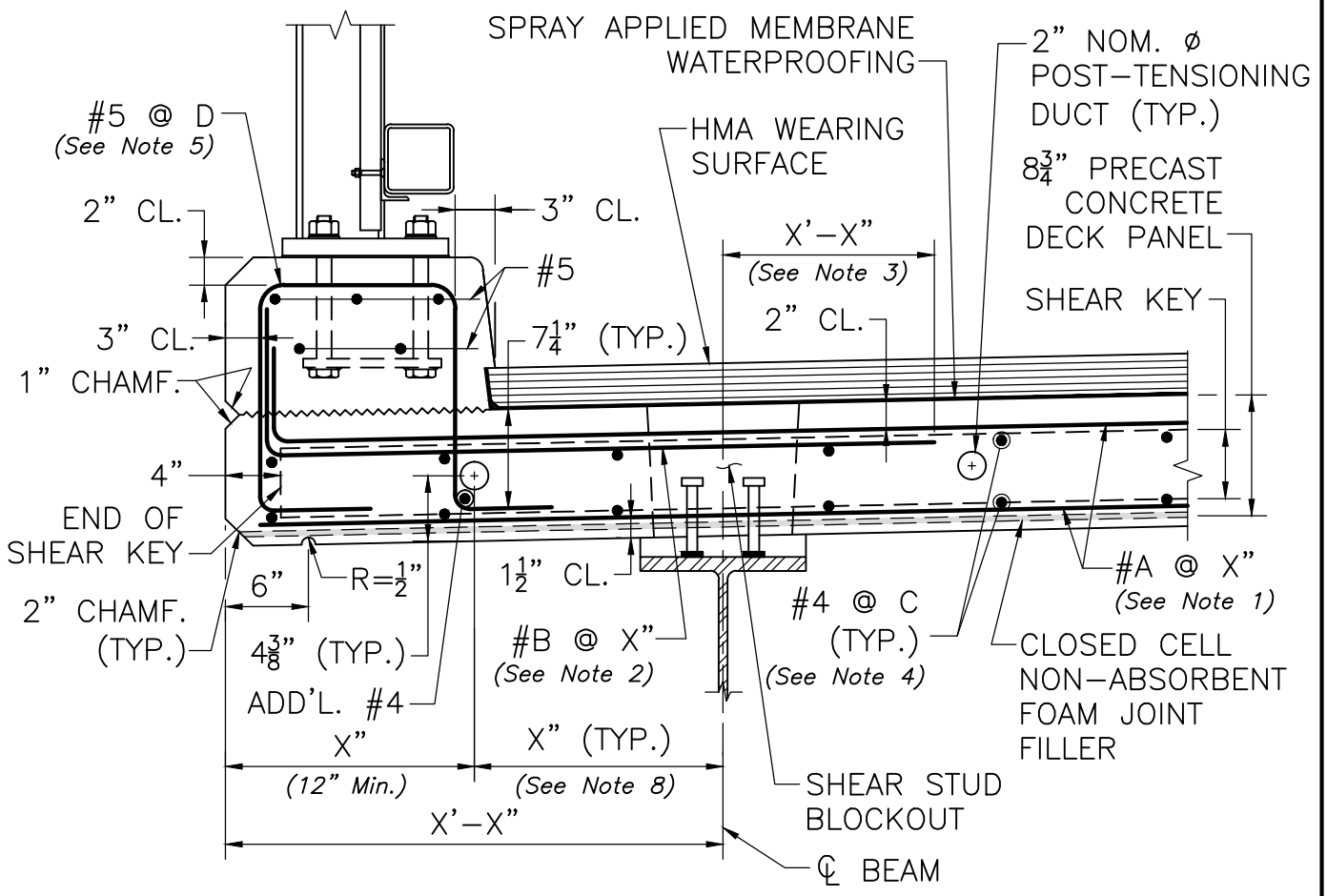
SECTION THRU SIDEWALK

SCALE: 1" = 1'–0"

NOTES:

1. *#A @ X" = Size and spacing of the primary deck slab reinforcement as per Design Tables on Dwg. No. 5.1.30.*
2. *C = Spacing of longitudinal reinforcement as per Design Tables on Dwg. No. 5.1.30.*
3. *D = Same spacing as primary deck reinforcement.*
4. *For details and configuration of CT–TL2 barrier, see Chapter 9, Part II of this Bridge Manual.*
5. *Steel beam superstructure shown. Modify the details to accommodate other superstructure types.*
6. *The minimum dimension from the center of the PT duct to the edge of the shear connector pocket shall be 9".*

MassDOT Highway Division LRFD BRIDGE MANUAL, PART III	SECTION THRU SIDEWALK FOR CT–TL2 BARRIER PRECAST CONCRETE DECK PANELS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **5.1.24**



NOTE:

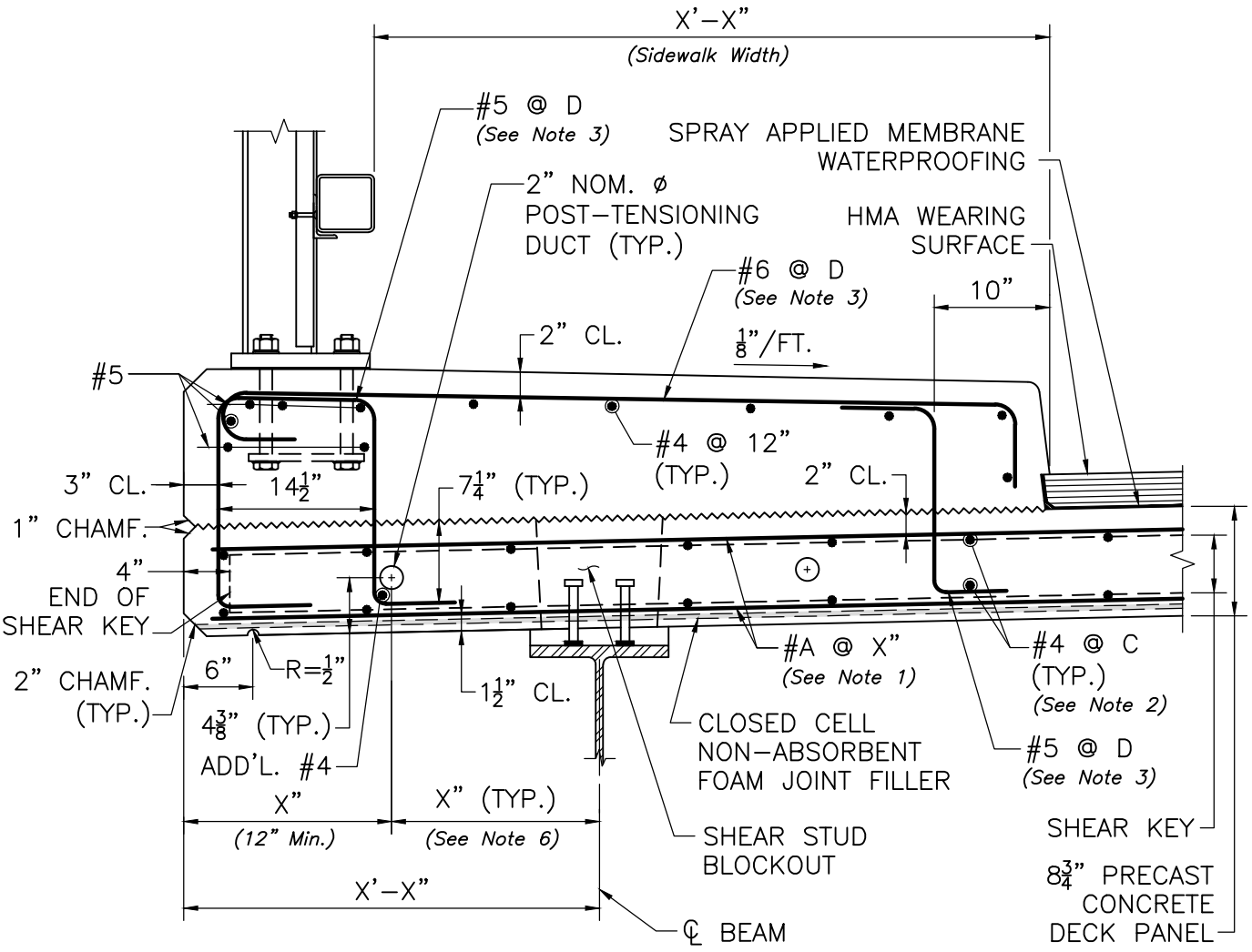
C.I.P. SAFETY CURB SHALL BE 5000 PSI, ¾ IN., 685 HP CEMENT CONCRETE.

SECTION THRU SAFETY CURB

SCALE: 1" = 1'-0"

NOTES:

1. *#A @ X" = Size and spacing of the primary deck slab reinforcement as per Design Tables on Dwg. No. 5.1.30.*
2. *#B @ X" = Size and spacing of the Additional Overhang Reinforcement as per Design Table on Dwg. No. 5.1.32.*
3. *Additional Overhang Reinforcement extension (Lext.) as per Design Tables on Dwg. No. 5.1.32.*
4. *C = Spacing of longitudinal reinforcement as per Design Table on Dwg. No. 5.1.30.*
5. *D = Same spacing as primary deck slab reinforcement.*
6. *For details and configuration of the S3-TL4 rail, see Chapter 9, Part II of this Bridge Manual.*
7. *Steel beam superstructure shown. Modify the details to accommodate other superstructure types.*
8. *The minimum dimension from the center of the PT duct to the edge of the shear connector pocket shall be 9".*



NOTE:

C.I.P. SIDEWALK SHALL BE 5000 PSI, $\frac{3}{4}$ IN., 685 HP CEMENT CONCRETE.

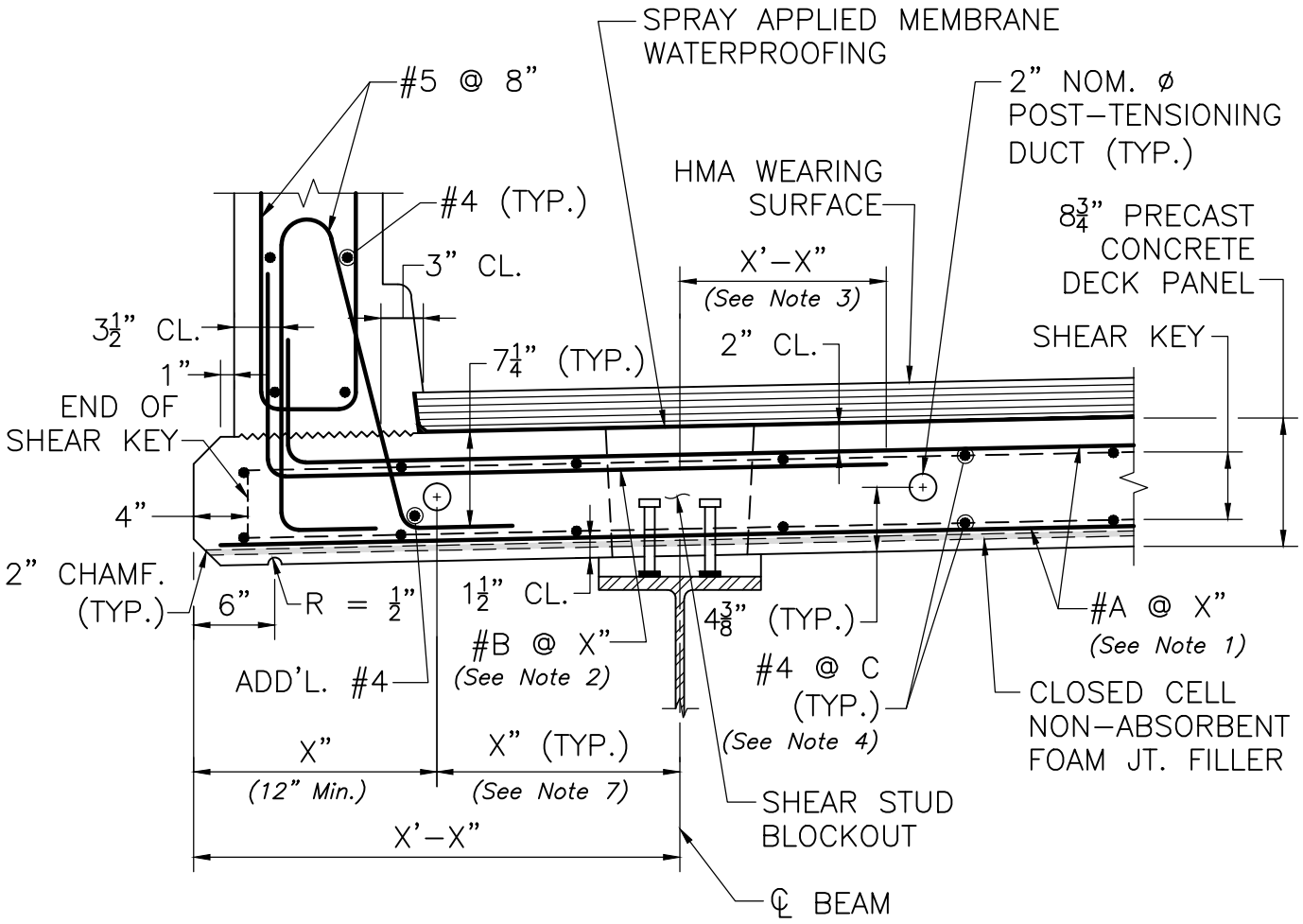
SECTION THRU SIDEWALK

SCALE: 1" = 1'–0"

NOTES:

1. *#A @ X" = Size and spacing of the primary deck slab reinforcement as per Design Tables on Dwg. No. 5.1.30.*
2. *C = Spacing of longitudinal reinforcement as per Design Tables on Dwg. No. 5.1.30.*
3. *D = Same spacing as primary deck reinforcement.*
4. *For details and configuration of the S3–TL4 rail, see Chapter 9, Part II of this Bridge Manual.*
5. *Steel beam superstructure shown. Modify the details to accommodate other superstructure types.*
6. *The minimum dimension from the center of the PT duct to the edge of the shear connector pocket shall be 9".*

massDOT Highway Division LRFD BRIDGE MANUAL, PART III	SECTION THRU SIDEWALK FOR S3–TL4 RAILING PRECAST CONCRETE DECK PANELS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **5.1.26**



NOTE:

C.I.P. CP-PL2 BARRIER SHALL BE 5000 PSI, ¾ IN., 685 HP CEMENT CONCRETE.

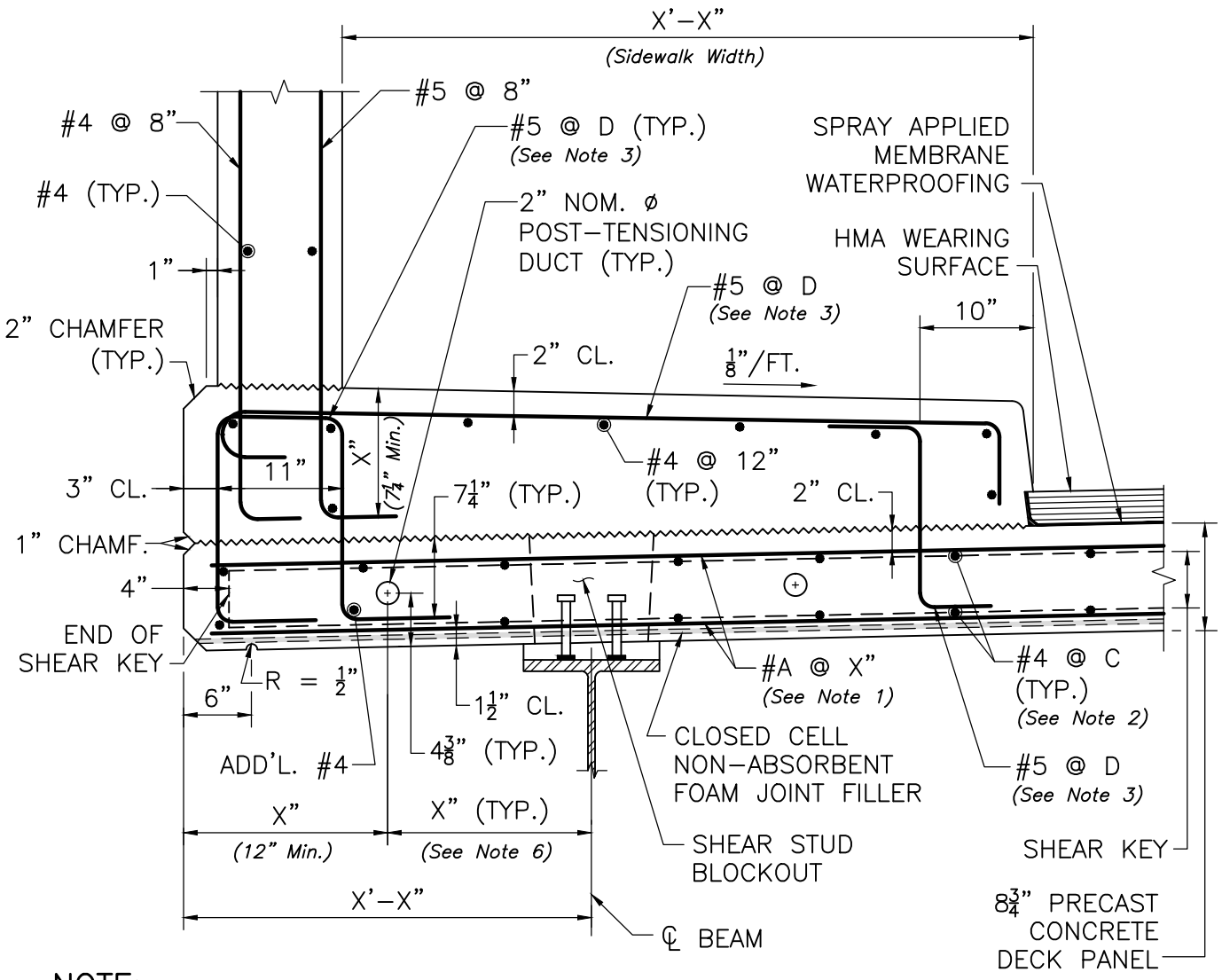
SECTION THRU SAFETY CURB

SCALE: 1" = 1'-0"

NOTES:

1. *#A @ X" = Size and spacing of the primary deck slab reinforcement as per Design Tables on Dwg. No. 5.1.30.*
2. *#B @ X" = Size and spacing of the Additional Overhang Reinforcement as per Design Table of Dwg. No. 5.1.33.*
3. *Additional Overhang Reinforcement extension (Lext.) as per Design Table of Dwg. No. 5.1.33.*
4. *C = Spacing of longitudinal reinforcement as per Design Tables on Dwg. No. 5.1.30.*
5. *For details and configuration of CP-PL2 barrier, see Chapter 9, Part II of this Bridge Manual.*
6. *Steel beam superstructure shown. Modify the details to accommodate other superstructure types.*
7. *The minimum dimension from the center of the PT duct to the edge of the shear connector pocket shall be 9".*

MassDOT Highway Division LRFD BRIDGE MANUAL, PART III	SECTION THRU SAFETY CURB FOR CP-PL2 BARRIER PRECAST CONCRETE DECK PANELS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **5.1.27**



NOTE:

C.I.P. SIDEWALK AND CP–PL2 BARRIER SHALL BE 5000 PSI, ¾ IN., 685 HP CEMENT CONCRETE.

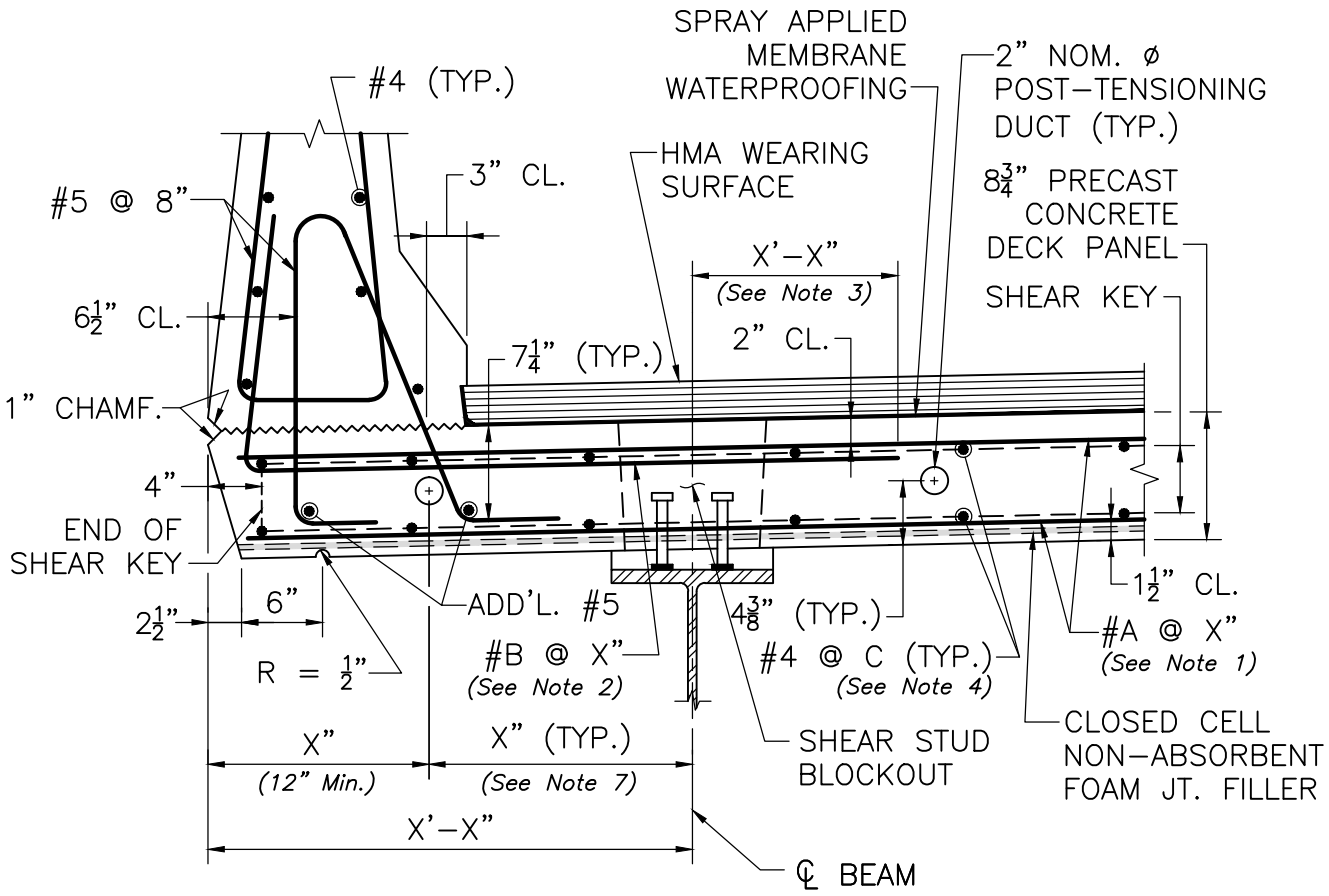
SECTION THRU SIDEWALK

SCALE: 1" = 1'–0"

NOTES:

1. *#A @ X" = Size and spacing of the primary deck slab reinforcement as per Design Tables on Dwg. No. 5.1.30.*
2. *C = Spacing of longitudinal reinforcement as per Design Tables on Dwg. No. 5.1.30.*
3. *D = Same spacing as primary deck reinforcement.*
4. *For details and configuration CP–PL2 barrier, see Chapter 9, Part II of this Bridge Manual.*
5. *Steel beam superstructure shown. Modify the details to accommodate other superstructure types.*
6. *The minimum dimension from the center of the PT duct to the edge of the shear connector pocket shall be 9".*

MassDOT Highway Division LRFD BRIDGE MANUAL, PART III	SECTION THRU SIDEWALK FOR CP–PL2 BARRIER PRECAST CONCRETE DECK PANELS	DATE OF ISSUE JUNE 2013 DRAWING NUMBER **5.1.28**



NOTE:

C.I.P. CF BARRIERS SHALL BE 5000 PSI, ¾ IN., 685 HP CEMENT CONCRETE.

SECTION THRU CF BARRIERS AT OVERHANG

SCALE: 1" = 1'-0"

NOTES:

1. *#A @ X" = Size and spacing of the primary deck slab reinforcement as per Design Tables on Dwg. No. 5.1.30.*
2. *#B @ X" = Size and spacing of the Additional Overhang Reinforcement as per Design Tables on Dwg. No's. 5.1.34 or 5.1.35.*
3. *Additional Overhang Reinforcement extension (Lext.) as per Design Tables on Dwg. No's. 5.1.34 and 5.1.35.*
4. *C = Spacing of longitudinal reinforcement as per Design Tables on Dwg. No. 5.1.30.*
5. *For details and configuration of CF-PL2 and CF-PL3 barriers, see Chapter 9, Part II of this Bridge Manual.*
6. *Steel beam superstructure shown. Modify the details to accommodate other superstructure types.*
7. *The minimum dimension from the center of the PT duct to the edge of the shear connector pocket shall be 9".*

Precast Deck Panel Reinforcement – Steel Stringers

Maximum Beam Spacing	Transverse (Primary) Reinforcement (Top & Bottom)	Longitudinal Reinforcement (Top & Bottom)
5' - 0"	#4 @ 7.0 in	#4 @ 7.0 in
5' - 6"	#4 @ 7.0 in	#4 @ 7.0 in
6' - 0"	#4 @ 7.0 in	#4 @ 7.0 in
6' - 6"	#4 @ 6.0 in	#4 @ 7.0 in
7' - 0"	#4 @ 6.0 in	#4 @ 7.0 in
7' - 6"	#4 @ 6.0 in	#4 @ 7.0 in
8' - 0"	#5 @ 7.0 in	#4 @ 6.5 in
8' - 6"	#5 @ 7.0 in	#4 @ 6.5 in
9' - 0"	#5 @ 7.0 in	#4 @ 6.5 in
9' - 6"	#5 @ 6.0 in	#4 @ 6.0 in
10' - 0"	#5 @ 6.0 in	#4 @ 6.0 in

Precast Deck Panel Reinforcement – NEBT's and 36" and 48" Precast Prestressed Concrete Box Beams

Maximum Beam Spacing	Transverse (Primary) Reinforcement (Top & Bottom)	Longitudinal Reinforcement (Top & Bottom)
5' - 0"	#4 @ 7.0 in	#4 @ 7.0 in
5' - 6"	#4 @ 7.0 in	#4 @ 7.0 in
6' - 0"	#4 @ 7.0 in	#4 @ 7.0 in
6' - 6"	#4 @ 7.0 in	#4 @ 7.0 in
7' - 0"	#4 @ 7.0 in	#4 @ 7.0 in
7' - 6"	#4 @ 6.0 in	#4 @ 7.0 in
8' - 0"	#4 @ 6.0 in	#4 @ 7.0 in
8' - 6"	#4 @ 6.0 in	#4 @ 7.0 in
9' - 0"	#5 @ 7.0 in	#4 @ 6.5 in
9' - 6"	#5 @ 7.0 in	#4 @ 6.5 in
10' - 0"	#5 @ 7.0 in	#4 @ 6.5 in

NOTES:

1. For all applicable design assumptions, see Dwg. No. 7.1.4, Part II of this Bridge Manual.
2. See Article 3.7.3, Part I of this Bridge Manual, for other relevant information.

Additional Deck Panel Overhang Reinforcement

CT-TL2 Barrier

Maximum Beam Spacing	Steel Stringers		Prestressed Concrete Beams	
	Additional Overhang Reinforcement	Bar Extension (L_{ext})	Additional Overhang Reinforcement	Bar Extension (L_{ext})
5' - 0"	#5 @ 7.0 in	2' - 0"	#5 @ 7.0 in	3' - 6"
5' - 6"	#5 @ 7.0 in	2' - 0"	#5 @ 7.0 in	3' - 6"
6' - 0"	#5 @ 7.0 in	2' - 0"	#5 @ 7.0 in	3' - 6"
6' - 6"	#5 @ 6.0 in	2' - 0"	#5 @ 7.0 in	3' - 6"
7' - 0"	#5 @ 6.0 in	2' - 0"	#5 @ 7.0 in	3' - 6"
7' - 6"	#5 @ 6.0 in	2' - 0"	#5 @ 6.0 in	3' - 6"
8' - 0"	#5 @ 7.0 in	2' - 0"	#5 @ 6.0 in	3' - 6"
8' - 6"	#5 @ 7.0 in	2' - 0"	#5 @ 6.0 in	3' - 6"
9' - 0"	#5 @ 7.0 in	2' - 0"	#5 @ 7.0 in	3' - 6"
9' - 6"	#5 @ 6.0 in	2' - 0"	#5 @ 7.0 in	3' - 6"
10' - 0"	#5 @ 6.0 in	2' - 0"	#5 @ 7.0 in	3' - 6"

NOTES:

1. For all applicable design assumptions, see Dwg. No. 7.1.10, Part II of this Bridge Manual.
2. See Article 3.5.2, Part I of this Bridge Manual, for other relevant information.

Additional Deck Panel Overhang Reinforcement

S3-TL4 Railing

Maximum Beam Spacing	Steel Stringers		Prestressed Concrete Beams	
	Additional Overhang Reinforcement	Bar Extension (L_{ext})	Additional Overhang Reinforcement	Bar Extension (L_{ext})
5' - 0"	#7 @ 7.0 in	2' - 9"	#7 @ 7.0 in	4' - 3"
5' - 6"	#7 @ 7.0 in	2' - 9"	#7 @ 7.0 in	4' - 3"
6' - 0"	#7 @ 7.0 in	2' - 9"	#7 @ 7.0 in	4' - 3"
6' - 6"	#6 @ 6.0 in	2' - 3"	#7 @ 7.0 in	4' - 3"
7' - 0"	#6 @ 6.0 in	2' - 3"	#7 @ 7.0 in	4' - 3"
7' - 6"	#6 @ 6.0 in	2' - 3"	#6 @ 6.0 in	4' - 0"
8' - 0"	#6 @ 7.0 in	2' - 3"	#6 @ 6.0 in	4' - 0"
8' - 6"	#6 @ 7.0 in	2' - 3"	#6 @ 6.0 in	4' - 0"
9' - 0"	#6 @ 7.0 in	2' - 3"	#6 @ 7.0 in	4' - 0"
9' - 6"	#5 @ 6.0 in	2' - 0"	#6 @ 7.0 in	4' - 0"
10' - 0"	#5 @ 6.0 in	2' - 0"	#6 @ 7.0 in	4' - 0"

NOTES:

1. For all applicable design assumptions, see Dwg. No. 7.1.10, Part II of this Bridge Manual.
2. See Article 3.5.2, Part I of this Bridge Manual, for other relevant information.

Additional Deck Panel Overhang Reinforcement

CP-PL2 Barrier

Maximum Beam Spacing	Steel Stringers		Prestressed Concrete Beams	
	Additional Overhang Reinforcement	Bar Extension (L_{ext})	Additional Overhang Reinforcement	Bar Extension (L_{ext})
5' - 0"	#5 @ 7.0 in	2' - 6"	#5 @ 7.0 in	3' - 6"
5' - 6"	#5 @ 7.0 in	2' - 6"	#5 @ 7.0 in	3' - 6"
6' - 0"	#5 @ 7.0 in	2' - 6"	#5 @ 7.0 in	3' - 6"
6' - 6"	#5 @ 6.0 in	2' - 3"	#5 @ 7.0 in	3' - 6"
7' - 0"	#5 @ 6.0 in	2' - 3"	#5 @ 7.0 in	3' - 6"
7' - 6"	#5 @ 6.0 in	2' - 3"	#5 @ 6.0 in	3' - 6"
8' - 0"	#5 @ 7.0 in	2' - 0"	#5 @ 6.0 in	3' - 6"
8' - 6"	#5 @ 7.0 in	2' - 0"	#5 @ 6.0 in	3' - 6"
9' - 0"	#5 @ 7.0 in	2' - 0"	#5 @ 7.0 in	3' - 6"
9' - 6"	#5 @ 6.0 in	2' - 0"	#5 @ 7.0 in	3' - 6"
10' - 0"	#5 @ 6.0 in	2' - 0"	#5 @ 7.0 in	3' - 6"

NOTES:

1. For all applicable design assumptions, see Dwg. No. 7.1.10, Part II of this Bridge Manual.
2. See Article 3.5.2, Part I of this Bridge Manual, for other relevant information.

Additional Deck Panel Overhang Reinforcement

CF-PL2 Barrier

Maximum Beam Spacing	Steel Stringers		Prestressed Concrete Beams	
	Additional Overhang Reinforcement	Bar Extension (L_{ext})	Additional Overhang Reinforcement	Bar Extension (L_{ext})
5' - 0"	#8 @ 7.0 in	3' - 9"	#8 @ 7.0 in	5' - 0"
5' - 6"	#8 @ 7.0 in	3' - 9"	#8 @ 7.0 in	5' - 0"
6' - 0"	#8 @ 7.0 in	4' - 0"	#8 @ 7.0 in	5' - 0"
6' - 6"	#7 @ 6.0 in	3' - 9"	#8 @ 7.0 in	5' - 6"
7' - 0"	#7 @ 6.0 in	3' - 9"	#8 @ 7.0 in	5' - 6"
7' - 6"	#7 @ 6.0 in	3' - 9"	#7 @ 6.0 in	4' - 3"
8' - 0"	#7 @ 7.0 in	3' - 6"	#7 @ 6.0 in	4' - 3"
8' - 6"	#7 @ 7.0 in	3' - 6"	#7 @ 6.0 in	4' - 3"
9' - 0"	#7 @ 7.0 in	3' - 6"	#7 @ 7.0 in	4' - 3"
9' - 6"	#6 @ 6.0 in	3' - 0"	#7 @ 7.0 in	4' - 3"
10' - 0"	#6 @ 6.0 in	3' - 0"	#7 @ 7.0 in	4' - 3"

NOTES:

1. For all applicable design assumptions, see Dwg. No. 7.1.10, Part II of this Bridge Manual.
2. See Article 3.5.2, Part I of this Bridge Manual, for other relevant information.

Additional Deck Panel Overhang Reinforcement

CF-PL3 Barrier

Maximum Beam Spacing	Steel Stringers		Prestressed Concrete Beams	
	Additional Overhang Reinforcement	Bar Extension (L_{ext})	Additional Overhang Reinforcement	Bar Extension (L_{ext})
5' - 0"	#8 @ 7.0 in	4' - 0"	#8 @ 7.0 in	5' - 0"
5' - 6"	#8 @ 7.0 in	4' - 6"	#8 @ 7.0 in	5' - 0"
6' - 0"	#8 @ 7.0 in	4' - 6"	#8 @ 7.0 in	5' - 0"
6' - 6"	#8 @ 6.0 in	4' - 6"	#8 @ 7.0 in	5' - 0"
7' - 0"	#8 @ 6.0 in	4' - 9"	#8 @ 7.0 in	5' - 0"
7' - 6"	#8 @ 6.0 in	4' - 9"	#8 @ 6.0 in	5' - 0"
8' - 0"	#8 @ 7.0 in	4' - 9"	#8 @ 6.0 in	5' - 6"
8' - 6"	#8 @ 7.0 in	4' - 9"	#8 @ 6.0 in	5' - 6"
9' - 0"	#8 @ 7.0 in	4' - 9"	#8 @ 7.0 in	5' - 6"
9' - 6"	#7 @ 6.0 in	4' - 9"	#8 @ 7.0 in	5' - 6"
10' - 0"	#7 @ 6.0 in	4' - 6"	#8 @ 7.0 in	5' - 6"

NOTES:

1. For all applicable design assumptions, see Dwg. No. 7.1.10, Part II of this Bridge Manual.
2. See Article 3.5.2, Part I of this Bridge Manual, for other relevant information.