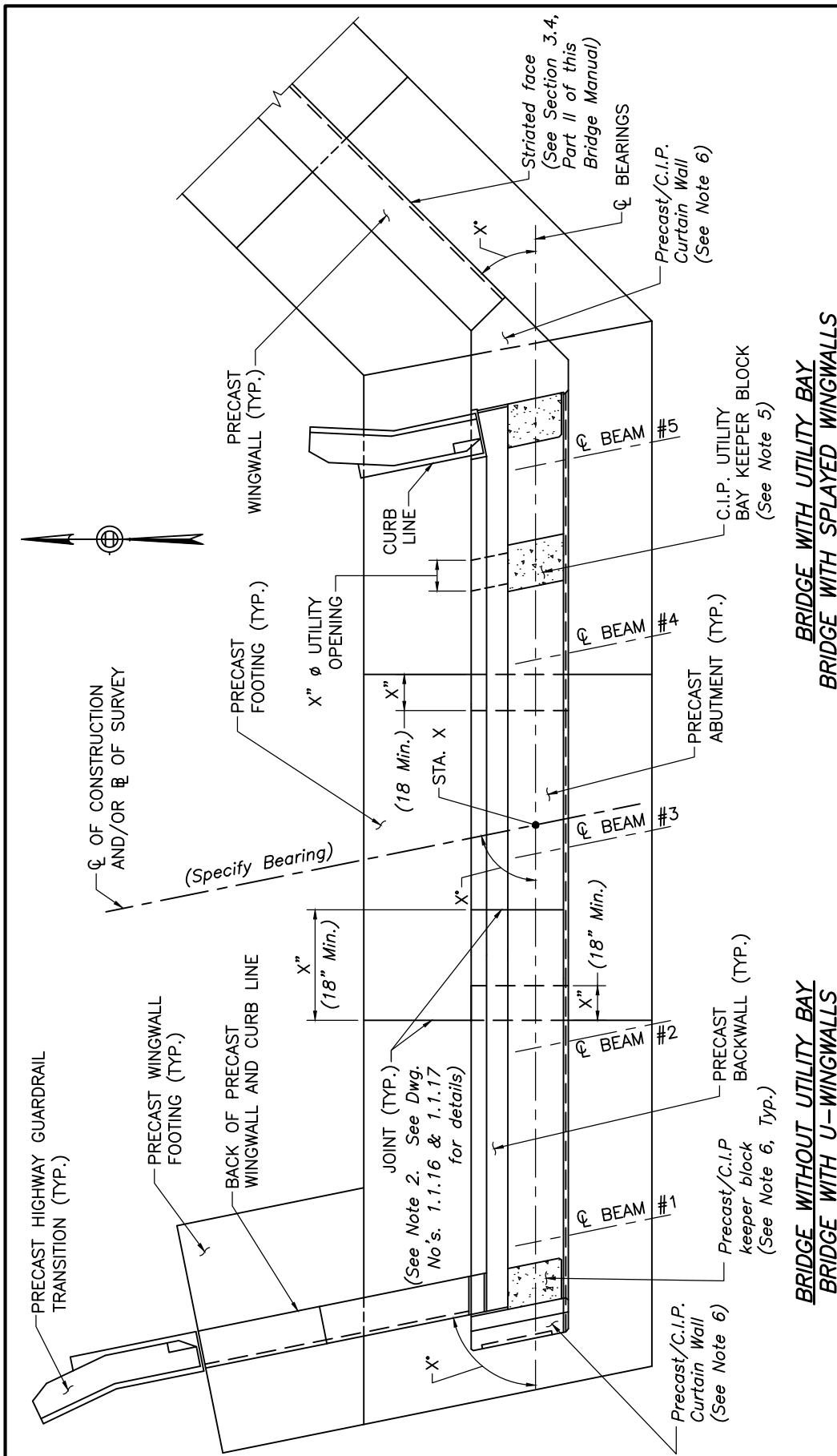


ABUTMENT PLAN

PRECAST ABUTMENTS

DATE OF ISSUE
 JUNE 2013

DRAWING NUMBER
1.1.1



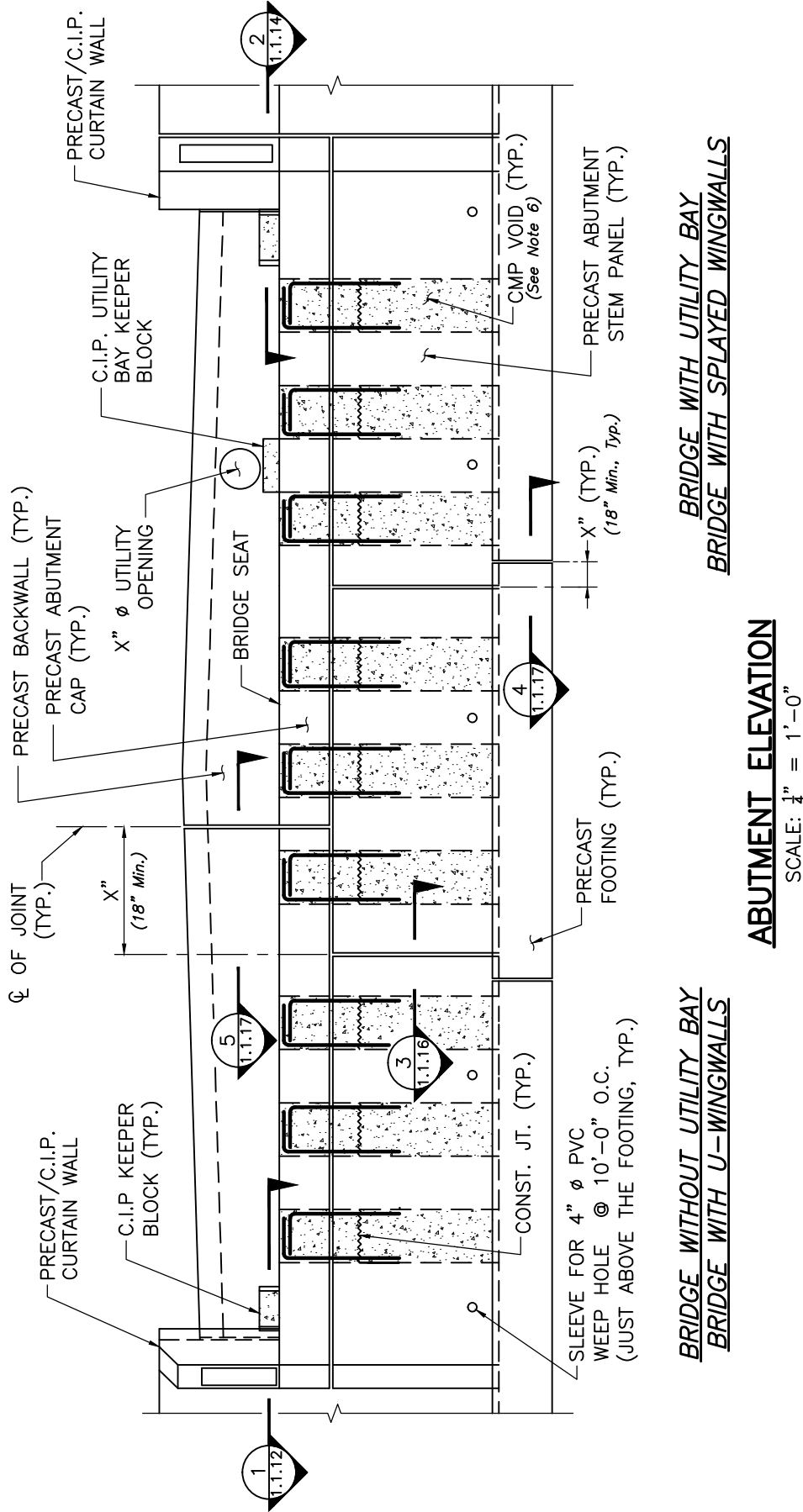
BRIDGE WITH UTILITY BAY
BRIDGE WITH SPLAYED WINGWALLS

ABUTMENT PLAN

SCALE: 1/4" = 1'-0"

BRIDGE WITHOUT UTILITY BAY
BRIDGE WITH U-WINGWALLS

- NOTES:**
1. The Plan of each abutment shall be provided as shown, without breaks and to scale, on the Construction Drawings and it shall be aligned with its Elevation view. The location of all joints shall be shown on both abutment views, as well.
 2. Joints shall be set perpendicular to the centerline of bearings. For situations where due to the skew and the distance between construction stages a square joint will not fit, the joint may be angled up to a maximum 20° (see Dwg. No. 1.1.16 for details).
 3. All dimensions and other relevant information as specified on Dwg. No. 3.1.1, Part II of this Bridge Manual, shall be shown on the Construction Drawings.
 4. Abutment Plan with Pavement Sawcut and Asphaltic Bridge Joint at safety curb is shown. Modify the drawing as required for bridge with sidewalk and/or Strip Seal Joint.
 5. C.I.P. utility bay keeper block is for adjacent beam systems with utility bays under sidewalk only.
 6. The Designer shall specify the preferred method of construction.



ABUTMENT ELEVATION

SCALE: $\frac{1}{4}'' = 1'-0''$

BRIDGE WITH UTILITY BAY
BRIDGE WITH SPLAYED WINGWALLS

BRIDGE WITHOUT UTILITY BAY
BRIDGE WITH U-WINGWALLS

NOTES:

- See Dwg. No. 1.1.5 for Construction and Designer Notes.
- Utility bay may be used with either U-Wingwalls or Splayed Wingwalls.
- See Dwg. No. 3.1.2, Part II of this Bridge Manual, for additional required information, not shown here.
- Bridges with Pavement Sawcut and Asphaltic Bridge Joint at safety curb shown. Modify the drawings as required for bridges with sidewalk and/or Strip Seal Joint.
- Abutment elevation shall be drawn without breaks and to scale on the Construction Drawings. All relevant elevations shall be provided. For erection tolerances see Drawing No. 6.1.6, Part III.
- CMP voids are to be provided to reduce the weight of the precast abutment blocks and to provide a connection between the cap and the stem. The maximum number of these voids shall account for the required, based on the design, amount of reinforcing steel.



LRFD BRIDGE

MANUAL, PART III

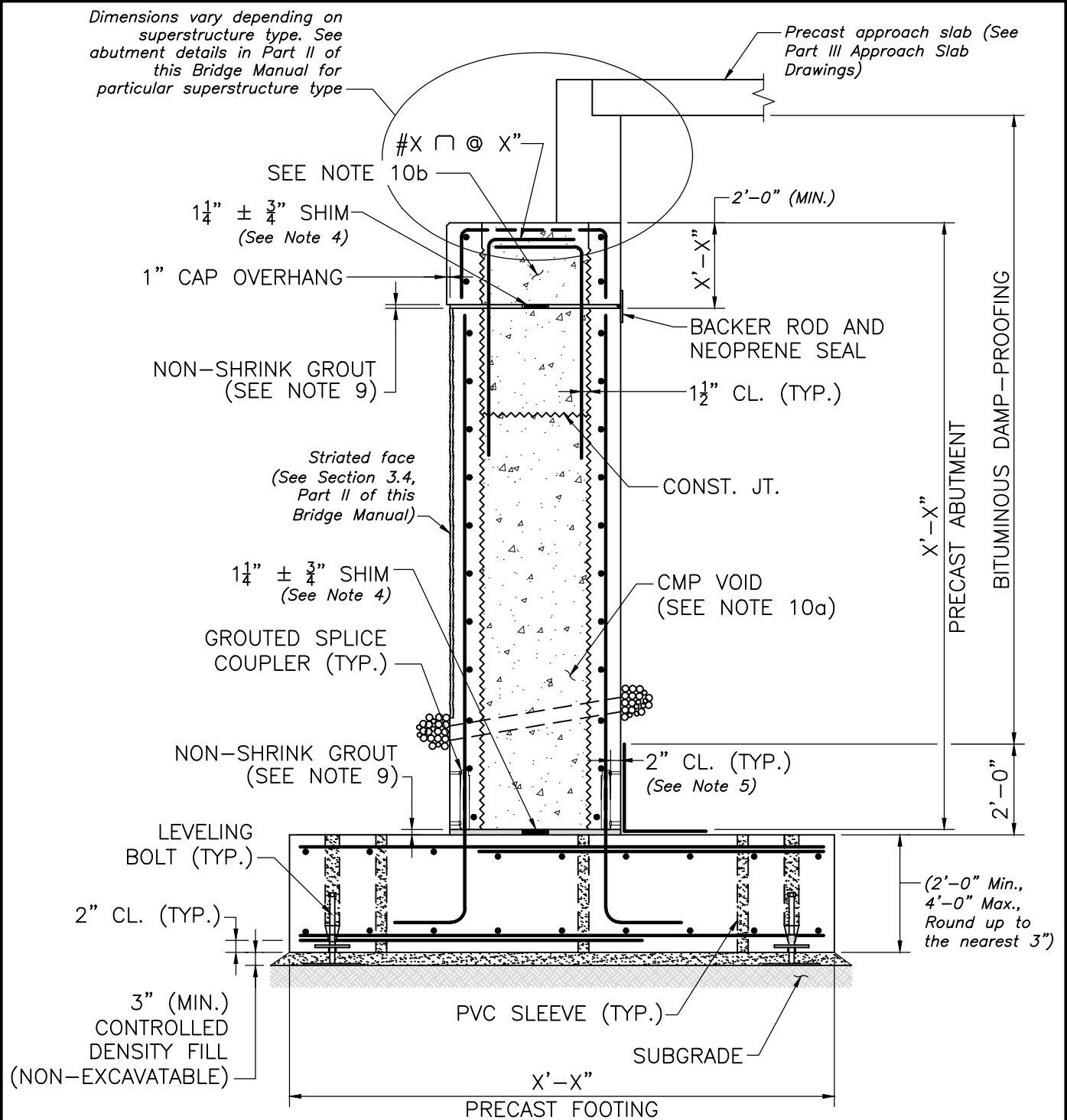
ABUTMENT ELEVATION

PRECAST ABUTMENTS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER

1.1.2



ABUTMENT SECTION

SCALE: 3/8" = 1'-0"

NOTES:

1. See Dwg. No. 1.1.5 for Construction and Designer Notes.
2. For additional Designer Notes and Annotation, see Dwg. No. 3.1.5, Part II of this Bridge Manual.
3. For additional Construction Notes, see Dwg. No. 3.1.6, Part II of this Bridge Manual.
4. Shims shown are outside the CMP voids.
5. See standard splice coupler Designer Notes on Dwg. 4.1.6, Part III.



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CANTILEVER ABUTMENT VERTICAL SECTION

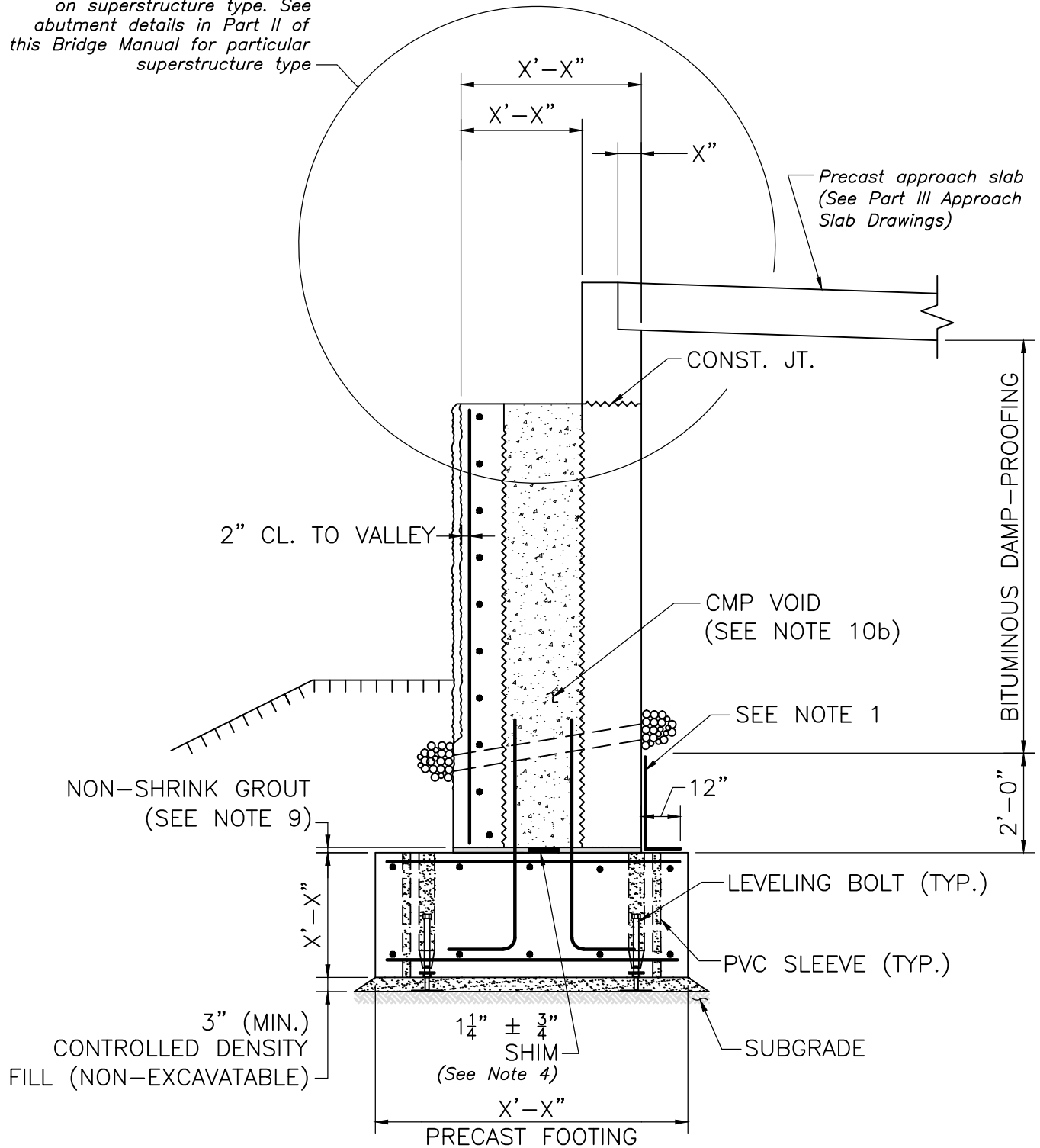
PRECAST ABUTMENTS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER

1.1.3

Dimensions vary depending on superstructure type. See abutment details in Part II of this Bridge Manual for particular superstructure type



STUB ABUTMENT SECTION

SCALE: $\frac{3}{8}'' = 1'-0''$

NOTES:

1. See Dwg. No. 1.1.5 for Construction and Designer Notes.
2. For additional Designer Notes and Annotation, see Dwg. No. 3.1.3, Part II of this Bridge Manual.
3. For additional Construction Notes, see Dwg. No. 3.1.6, Part II of this Bridge Manual.
4. Shims shown are outside the CMP voids.



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STUB ABUTMENT VERTICAL SECTION PRECAST ABUTMENTS

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1.1.4

NOTES:

(See Dwg. No. 3.1.6, Part II of this Bridge Manual, for Notes 1 thru 8 to be included on Construction Drawings).

9. PRE-BED PRECAST COMPONENT WITH NON-SHRINK GROUT WITH THICKNESS MORE THAN SHIM STACK.
- 10a. PRIOR TO PLACEMENT OF CAP FILL CMP VOIDS WITH 4000 PSI, $\frac{3}{4}$ IN., 610 CEMENT CONCRETE
(Omit Note 10a for Stub Abutments)
- 10b. FILL CMP VOIDS WITH 4000 PSI, $\frac{3}{4}$ IN., 610 CEMENT CONCRETE.
11. AFTER SETTING PRECAST CAP FILL REMAINDER OF CMP VOID WITH CONCRETE *(Only use this note with Dwg. No. 1.1.3, Part II of this Bridge Manual)*

NOTES:

1. *Where piles are used, see pier footing details.*
2. *Increase concrete cover by 1" where concrete is exposed to salt water.*



LRFD BRIDGE
MANUAL, PART III

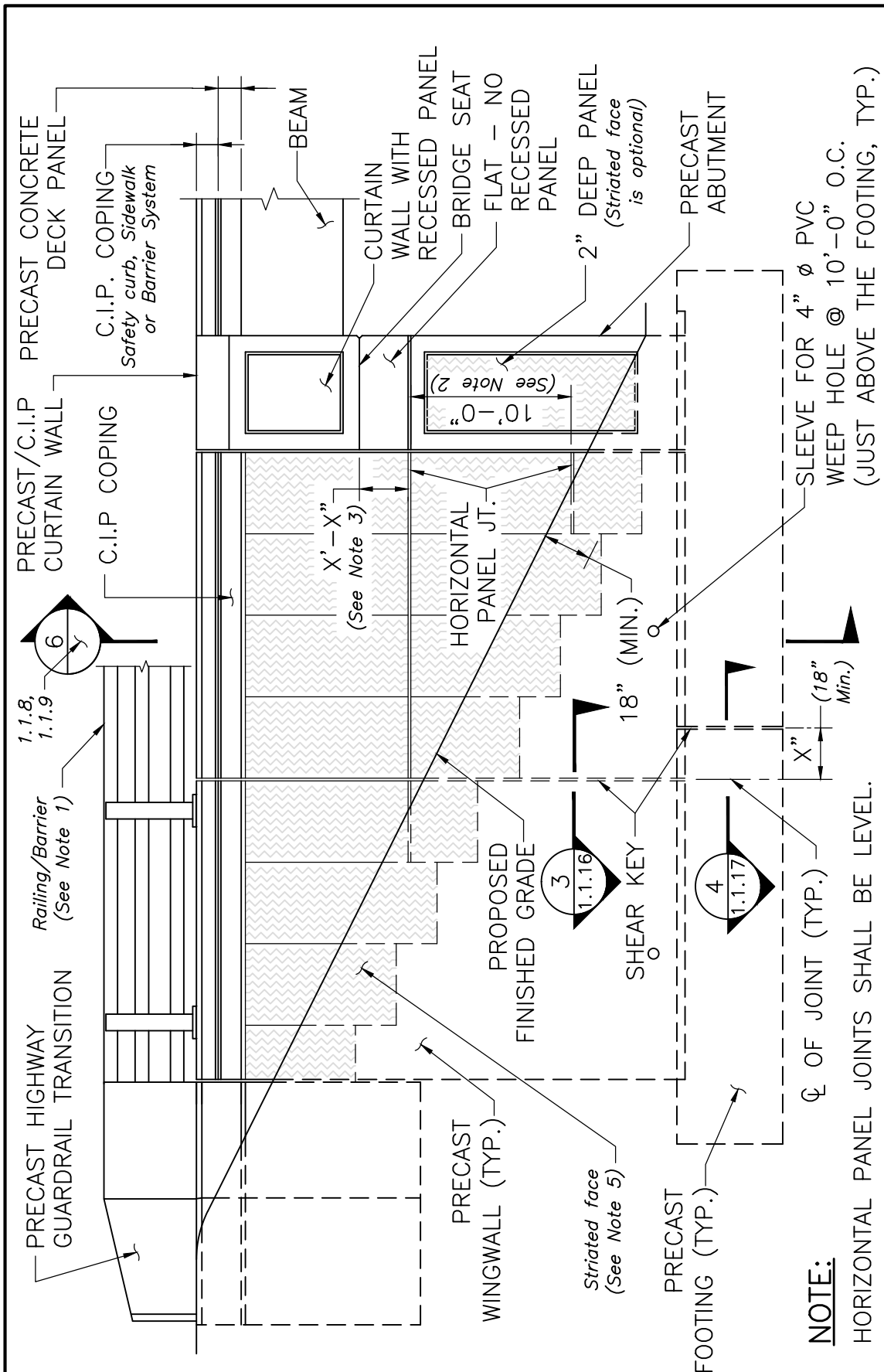
CONSTRUCTION NOTES

PRECAST ABUTMENTS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER

1.1.5



NOTE:
HORIZONTAL PANEL JOINTS SHALL BE LEVEL.

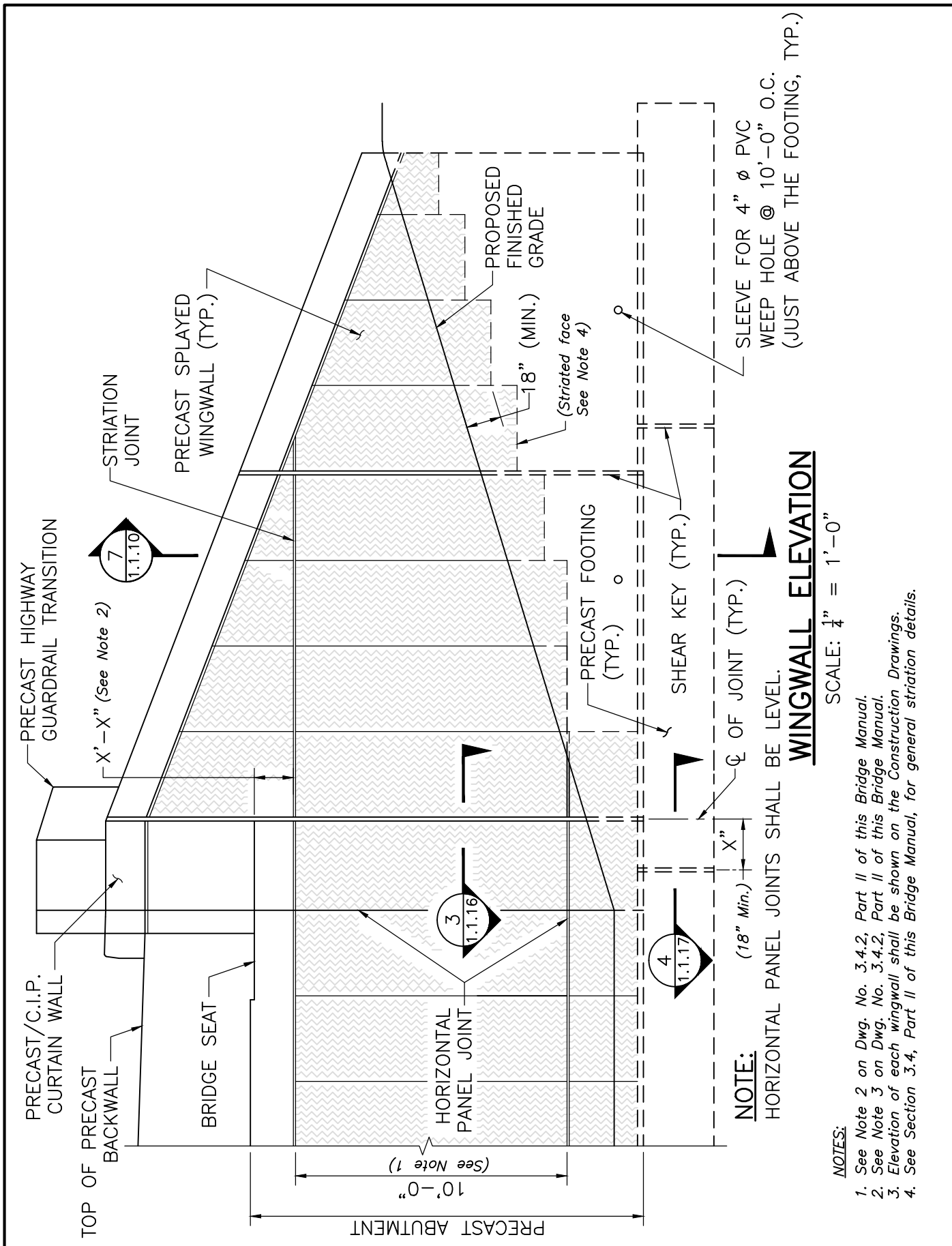
WINGWALL ELEVATION

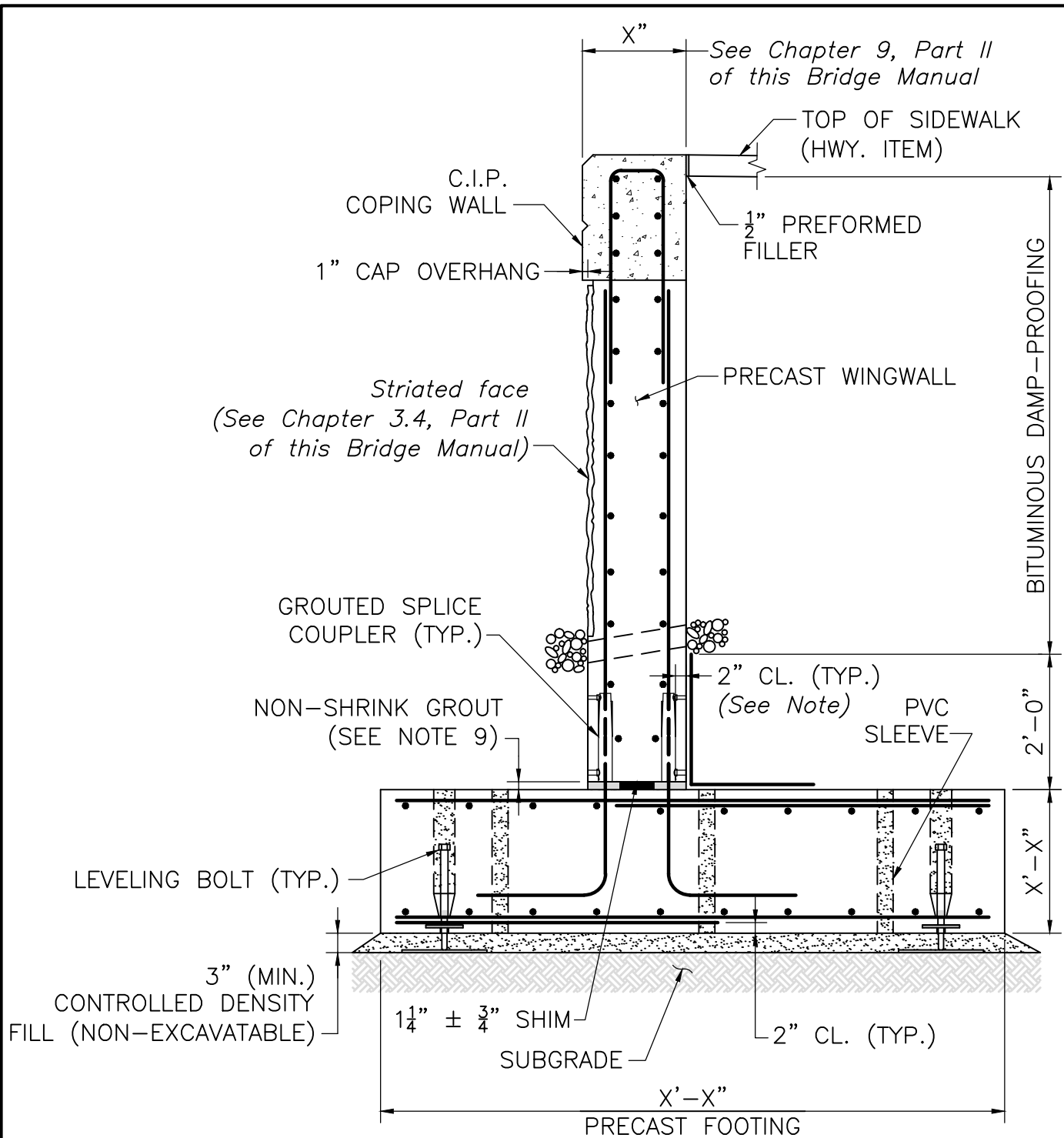
SCALE: 1/4" = 1'-0"

NOTES:

1. Type S3-TL4 railing shown. Modify the drawing above as required for other types of railing/barrier.
2. See Note 2 on Dwg. No. 3.4.1, Part II of this Bridge Manual.
3. See Note 3 on Dwg. No. 3.4.1, Part II of this Bridge Manual.
4. Elevation of each wingwall shall be shown on the Construction Drawings.
5. See Section 3.4, Part II of this Bridge Manual, for general striation details.

**SPLAYED WINGWALL
 ELEVATION
 PRECAST ABUTMENTS**





SECTION 6

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

WINGWALL WITH SIDEWALK

NOTES:

1. See Dwg. No. 1.1.11 for Construction and Designer Notes.
2. For additional Notes see Dwg. No. 3.1.6, Part II of this Bridge Manual.



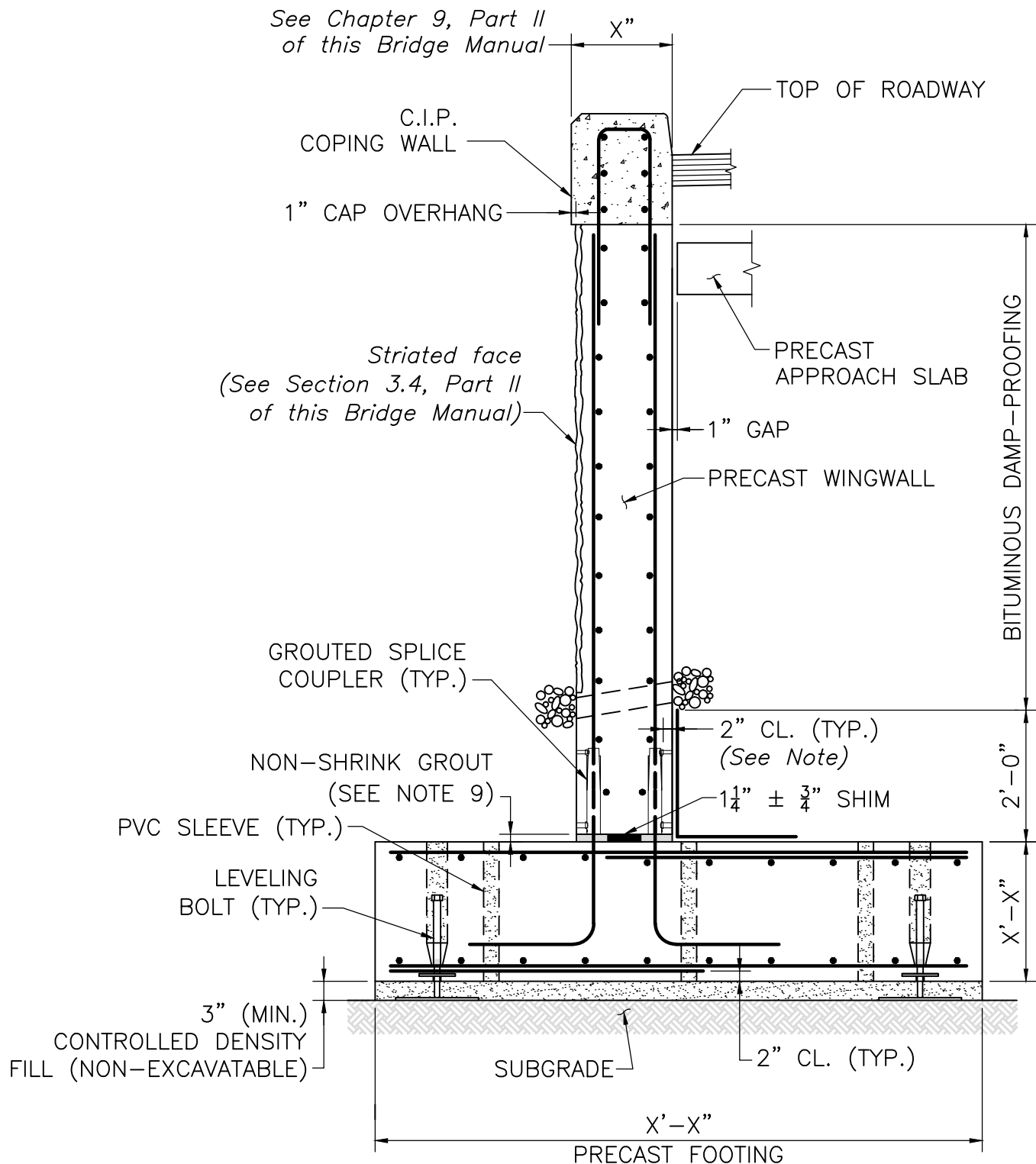
LRFD BRIDGE
MANUAL, PART III

VERTICAL SECTION THROUGH
U-WINGWALL W/ SIDEWALK
PRECAST ABUTMENTS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER

1.1.8



SECTION 6

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

WINGWALL WITH SAFETY CURB

NOTES:

1. See Dwg. No. 1.1.11 for Construction and Designer Notes.
2. For additional Notes see Dwg. No. 3.1.6, Part II of this Bridge Manual.



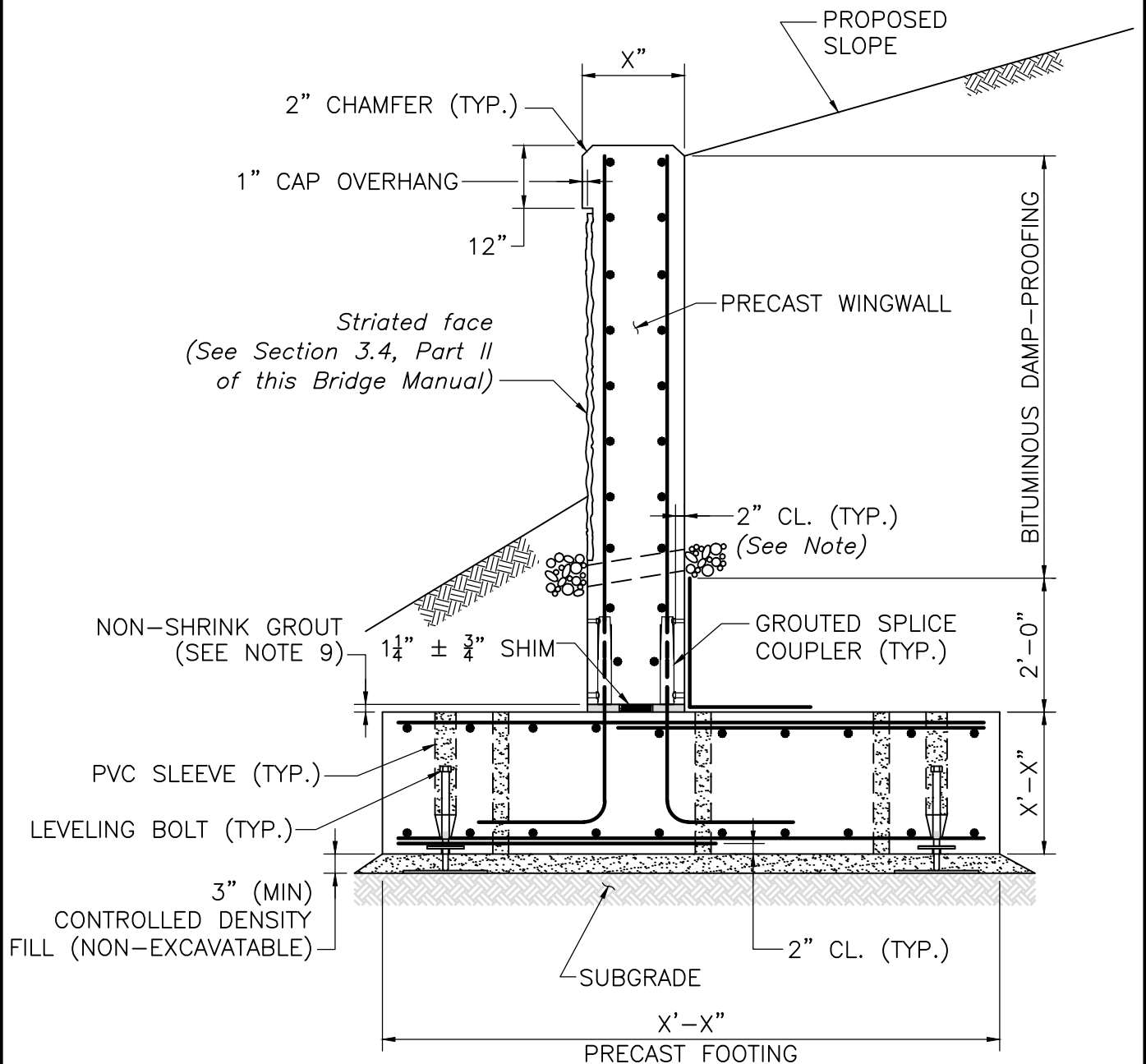
LRFD BRIDGE
MANUAL, PART III

VERTICAL SECTION
THROUGH U-WINGWALL
W/ SAFETY CURB
PRECAST ABUTMENTS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER

1.1.9



SECTION 7

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

NOTES:

1. See Dwg. No. 1.1.11 for Construction and Designer Notes.
2. For additional Notes see Dwg. No. 3.1.6, Part II of this Bridge Manual.



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VERTICAL SECTION THROUGH CANTILEVER RETAINING WALL

PRECAST ABUTMENTS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER

1.1.10

NOTES:

(See Dwg. No. 3.1.6, Part II of this Bridge Manual, for Notes 1 thru 8 to be included on Construction Drawings).

9. PRE-BED PRECAST ELEMENT WITH NON-SHRINK GROUT WITH THICKNESS MORE THAN SHIM STACK.

NOTE:

See Grouted Splice Coupler Designer Notes on Dwg. No. 4.1.6, Part III.



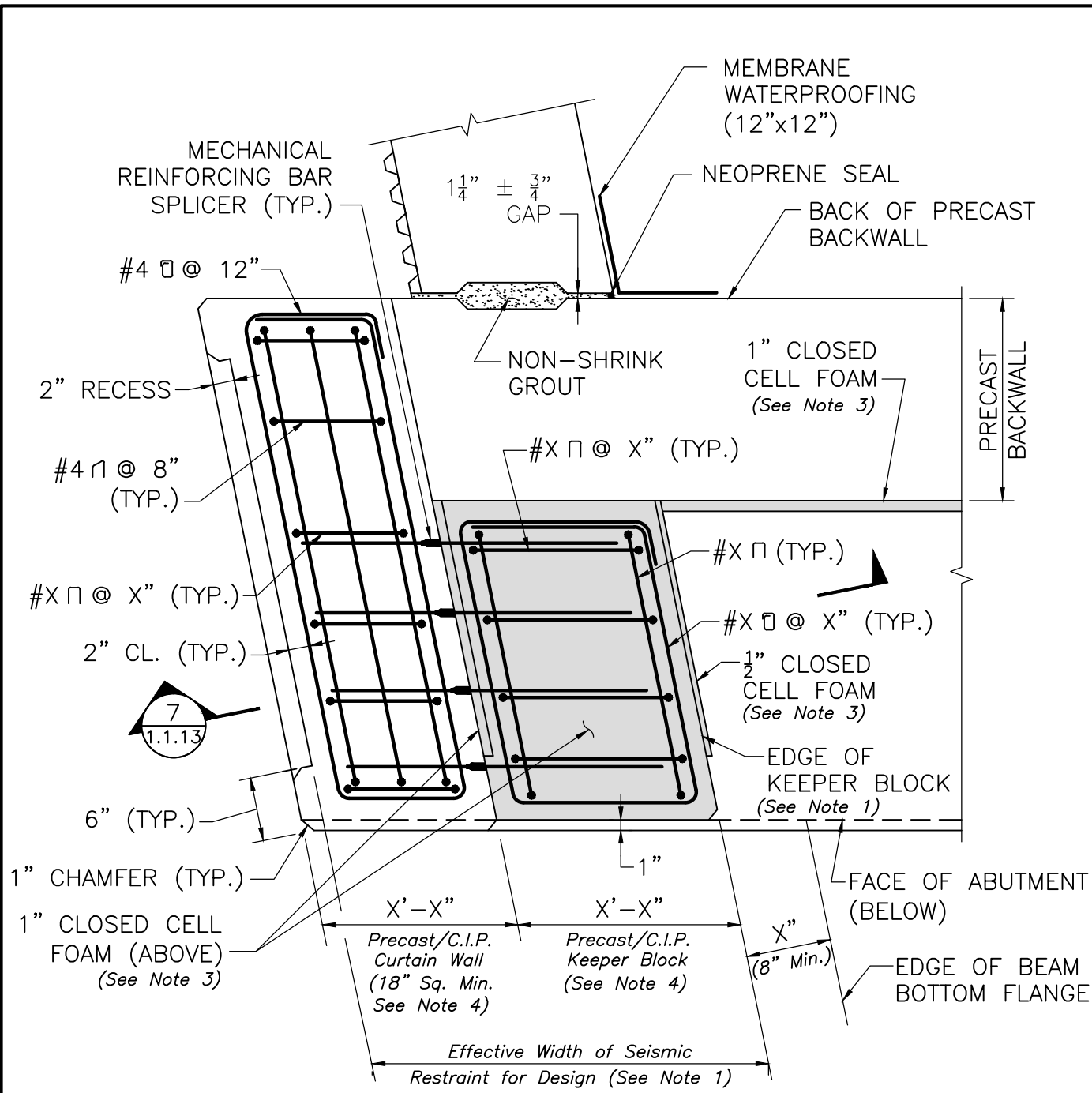
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MANUAL, PART III

CONSTRUCTION NOTES FOR
CANTILEVER RETAINING WALL
PRECAST ABUTMENTS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER

1.1.11

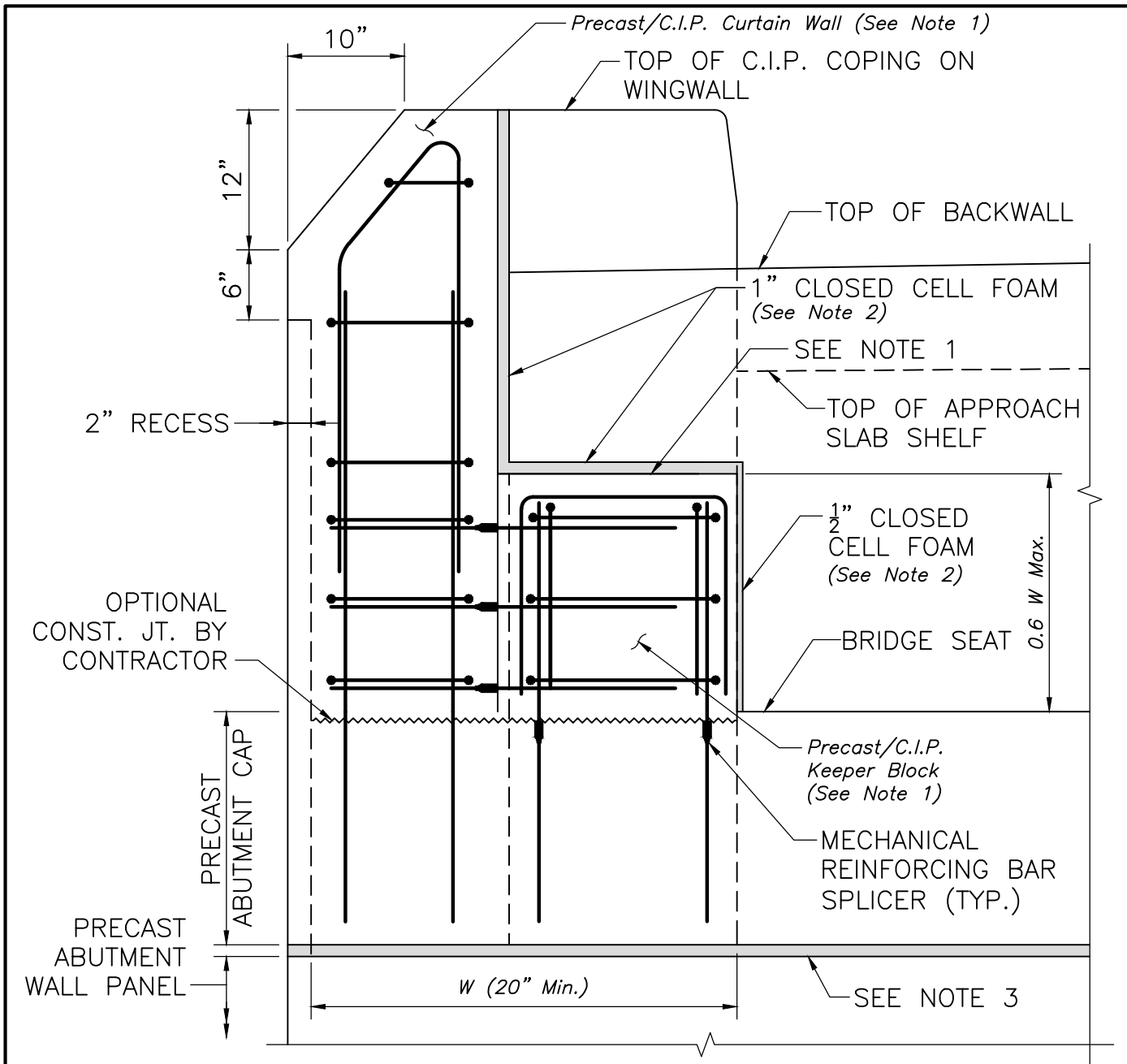


SECTION 1

SCALE: 1" = 1'-0"

NOTES:

1. Edge of keeper block shall not extend beyond the line of the back of wingwall. The curtain wall and keeper block can be combined for the design of the seismic restraint. If the width is still not sufficient, use intermediate abutment keeper blocks.
2. Use this detail for abutments with precast cap with integral backwall.
3. Closed cell foam shown to be used if C.I.P. concrete is used. Closed cell foam may be omitted if precast end diaphragm is used. Gap to remain if precast is set against other precast.
4. The Designer shall specify the preferred method of construction.



NOTES:

1. TOP OF KEEPER BLOCK SHALL BE TROWELED SMOOTH PARALLEL TO PROFILE GRADE.
2. ABUTMENT REINFORCEMENT NOT SHOWN FOR CLARITY.
3. PRE-BED SEAT WITH NON-SHRINK GROUT WITH THICKNESS SLIGHTLY MORE THAN SHIM STACK.

SECTION 7

SCALE: 1" = 1'-0"

NOTES:

1. The Designer shall specify the preferred method of construction.
2. Closed cell foam shown to be used if C.I.P. concrete is used. Closed cell foam may be omitted if precast end diaphragm is used. Gap to remain if precast is set against other precast.



LRFD BRIDGE

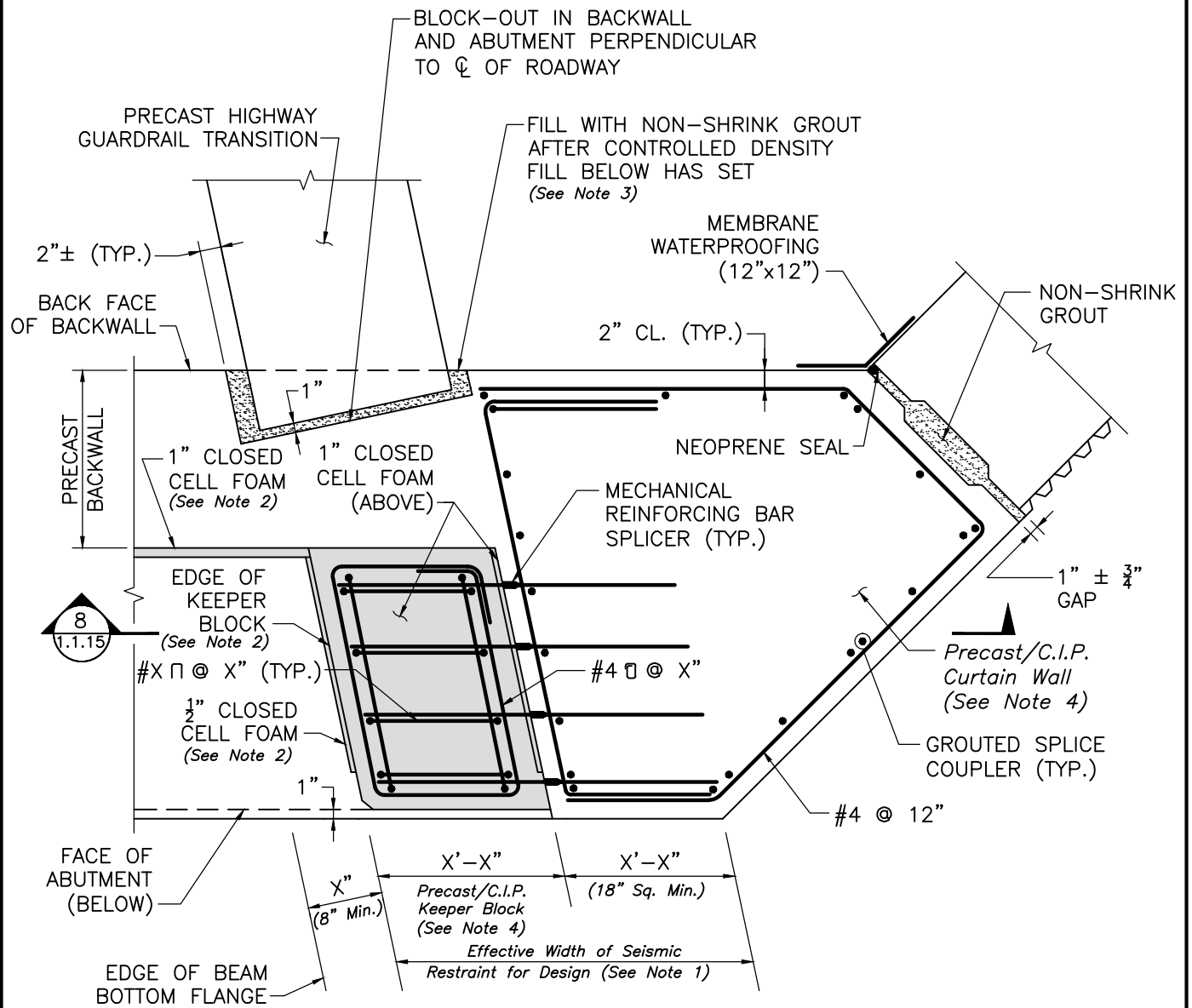
MANUAL, PART III

**VERTICAL SECTION AT
ABUTMENT U-WINGWALL
PRECAST ABUTMENTS**

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER

1.1.13



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

NOTES:

1. Edge of keeper block shall not extend beyond the line of the back of wingwall. The curtain wall and keeper block can be combined for the design of the seismic restraint. If the width is still not sufficient, use intermediate abutment keeper blocks.
2. Closed cell foam shown to be used if C.I.P. concrete is used. Closed cell foam may be omitted if precast end diaphragm is used. Gap to remain if precast is set against other precast.
3. See Chapter 3, Part II of this Bridge Manual, Precast Highway Guardrail Transitions, for additional information and relevant details.
4. The Designer shall specify the preferred method of construction.



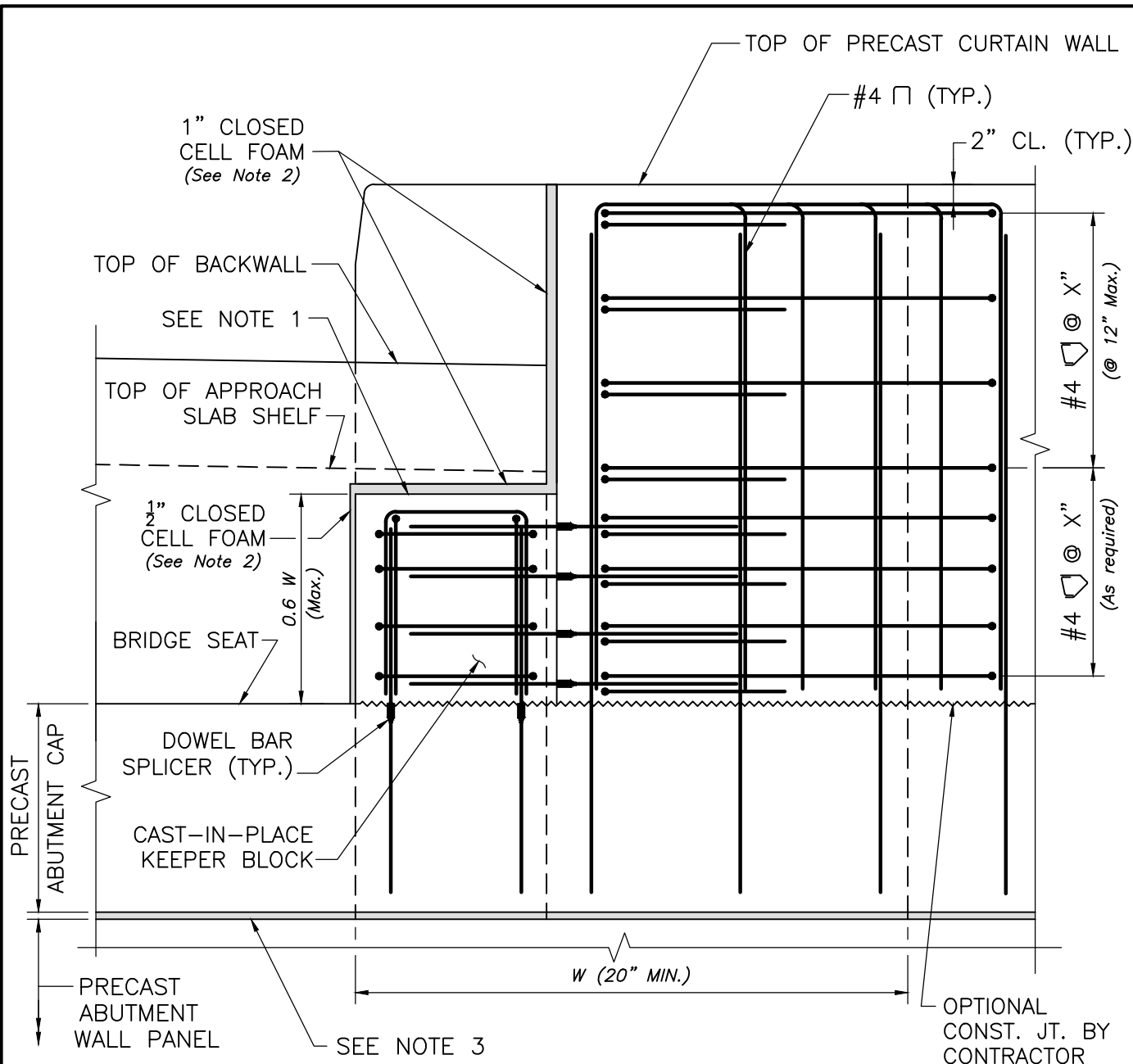
LRFD BRIDGE
MANUAL, PART III

HORIZONTAL SECTION AT
ABUTMENT SPLAYED WINGWALL
PRECAST ABUTMENTS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER

1.1.14



NOTES:

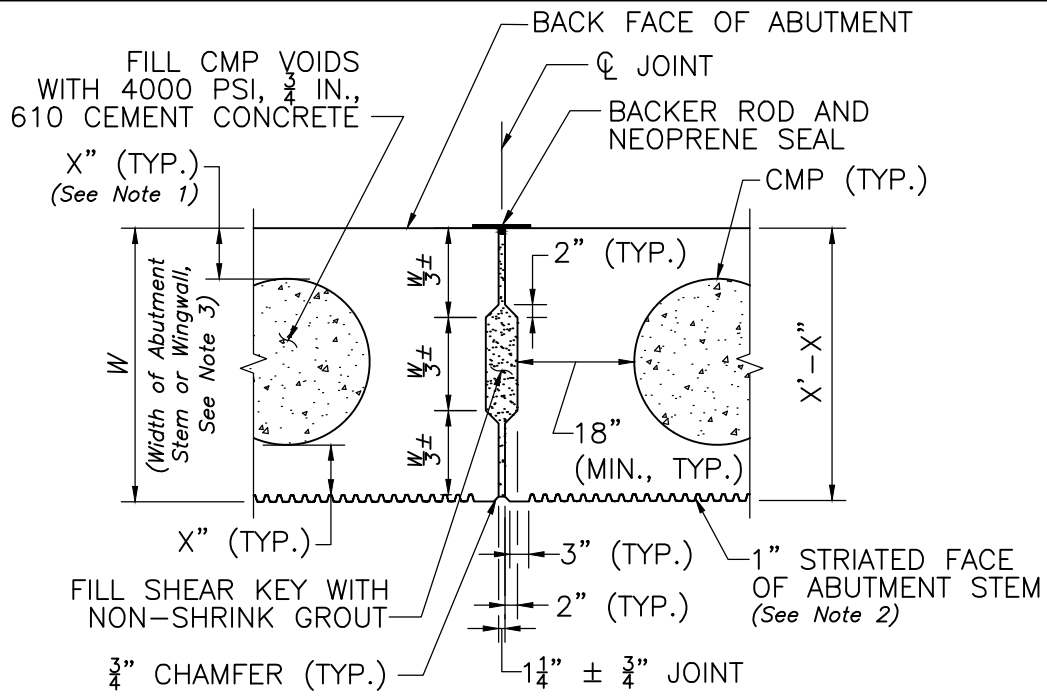
1. TOP OF KEEPER BLOCK SHALL BE TROWELED SMOOTH PARALLEL TO PROFILE GRADE.
2. ABUTMENT REINFORCEMENT NOT SHOWN FOR CLARITY.
3. PRE-BED SEAT WITH NON-SHRINK GROUT WITH THICKNESS SLIGHTLY MORE THAN SHIM STACK.

SECTION 8

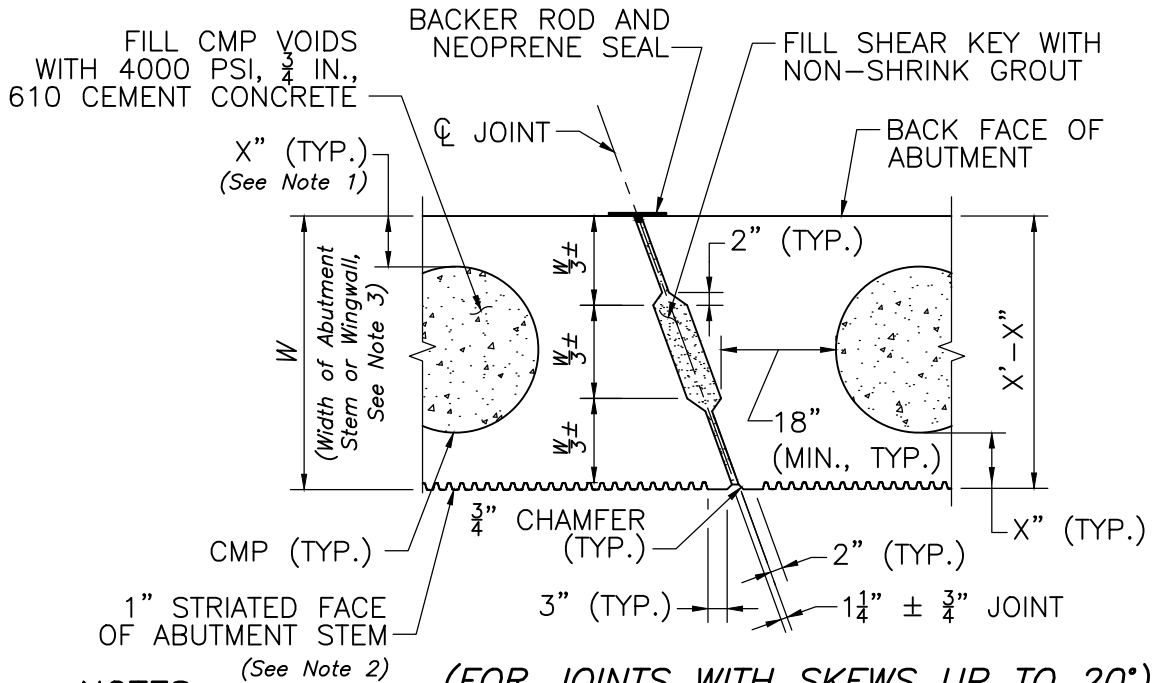
SCALE: 1" = 1'-0"

NOTES:

1. Design as shear friction reinforcement to resist transverse seismic loads. Reinforcement configuration shown is conceptual. The Designer shall modify the arrangement or add additional hoops as required by the actual design.
2. Closed cell foam shown to be used if C.I.P. concrete is used. Closed cell foam may be omitted if precast end diaphragm is used. Gap to remain if precast is set against other precast.



(FOR SQUARE JOINTS)



NOTES: (FOR JOINTS WITH SKEWS UP TO 20°)

1. FACE OF SHEAR KEYS SHALL BE BLAST CLEANED, ROUGHENED AND WETTED WITH CLEAN WATER PRIOR TO INSTALLATION.
2. REINFORCEMENT IS NOT SHOWN FOR CLARITY.

SECTION 3

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

NOTES:

1. X" = 8" (Min.) for cantilever abutment.
2. Striated face shall be omitted for Integral Abutments. See Section 3.4, Part II of this Bridge Manual, for Striation Details.
3. These shear key details shall be used for abutment stems and wingwalls thicker than 2'-0". For abutment stems and wingwalls with thickness up to 2'-0" see detail on Dwg. No. 1.1.17.



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**ABUTMENT STEM/WINGWALL
SHEAR KEY FOR
WIDTHS > 2'-0"
PRECAST ABUTMENTS**

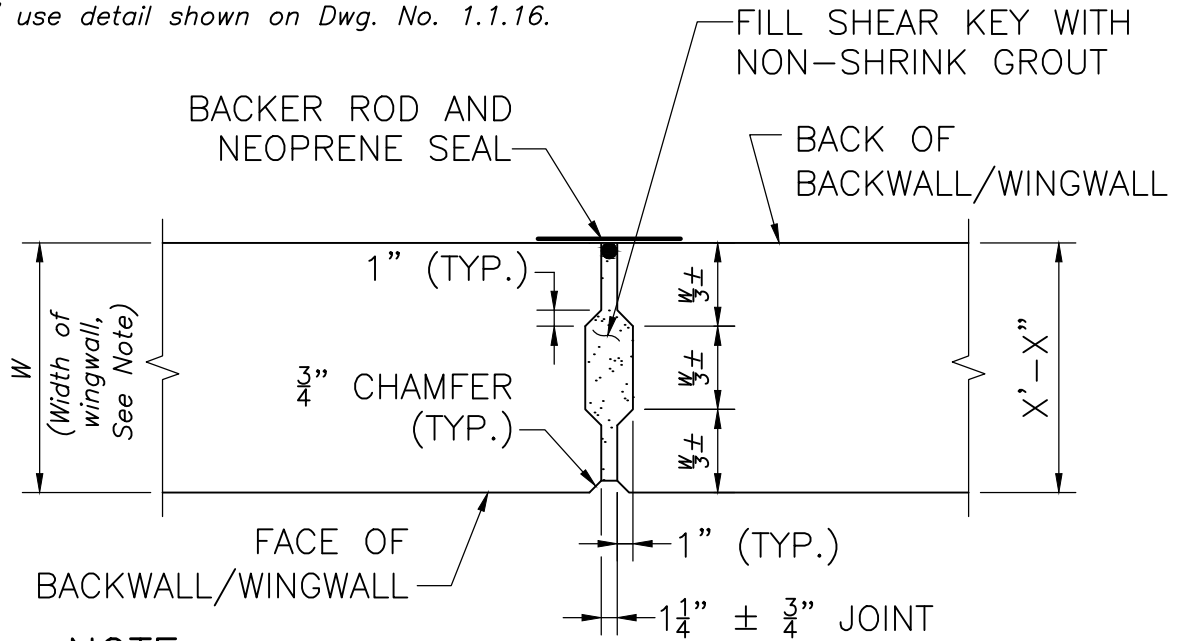
DATE OF ISSUE
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DRAWING NUMBER

1.1.16

NOTE:

This shear key detail shall be used with backwalls/wingwalls with thickness up to 2'-0". For backwalls/wingwalls thicker than 2'-0" use detail shown on Dwg. No. 1.1.16.

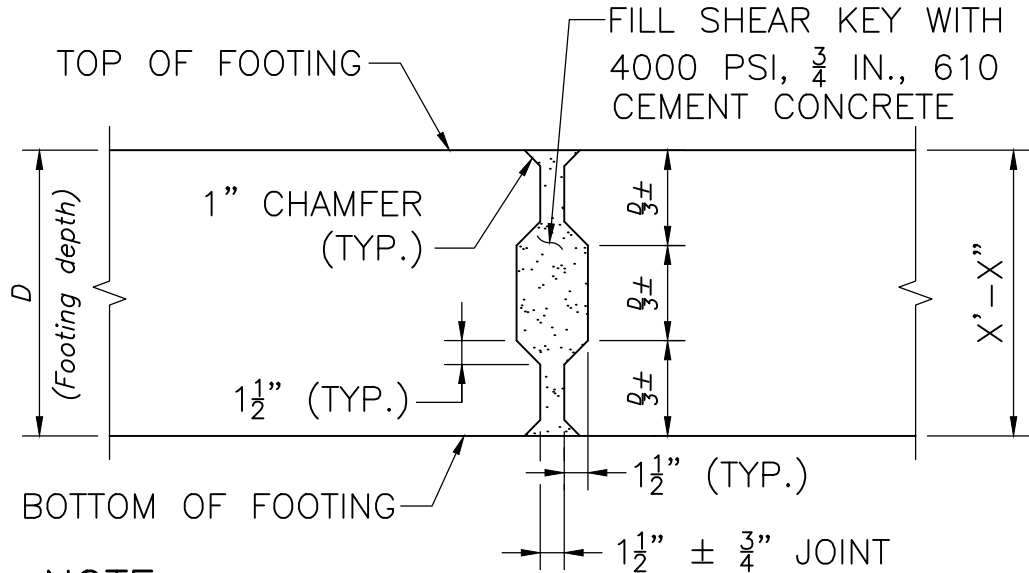


NOTE:

REINFORCEMENT IS NOT SHOWN FOR CLARITY.

SECTION 5

SCALE: 1" = 1'-0"



NOTE:

FOOTING REINFORCEMENT IS NOT SHOWN FOR CLARITY.

SECTION 4

SCALE: 1" = 1'-0"



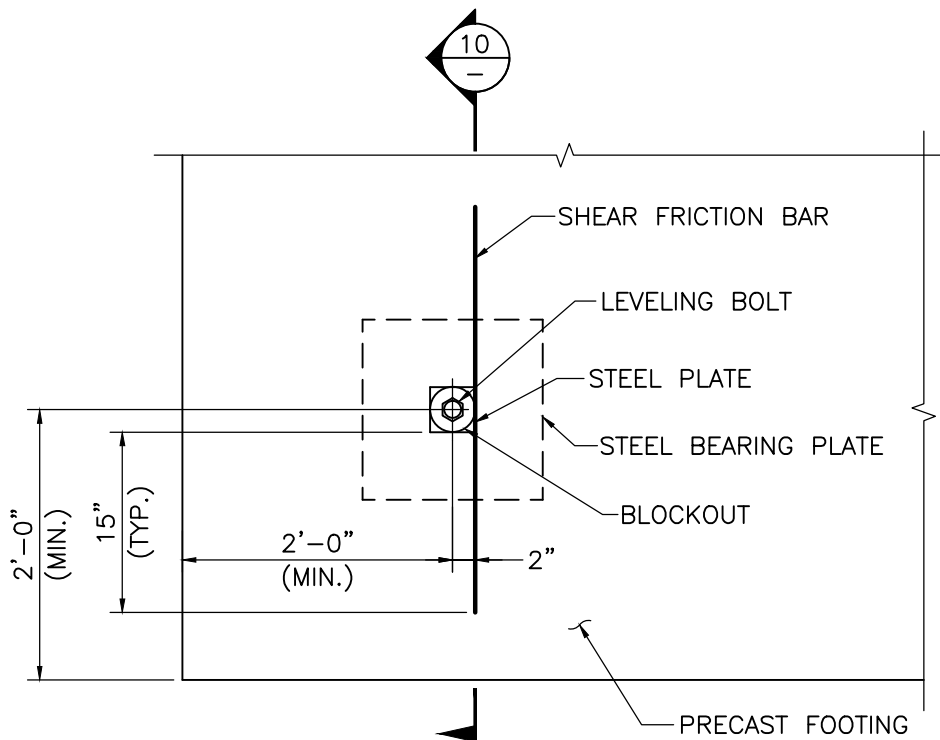
LRFD BRIDGE
MANUAL, PART III

BACKWALLS/WINGWALLS WITH
WIDTHS ≤ 2'-0" AND
FOOTINGS SHEAR KEYS
PRECAST ABUTMENTS

DATE OF ISSUE
JUNE 2013

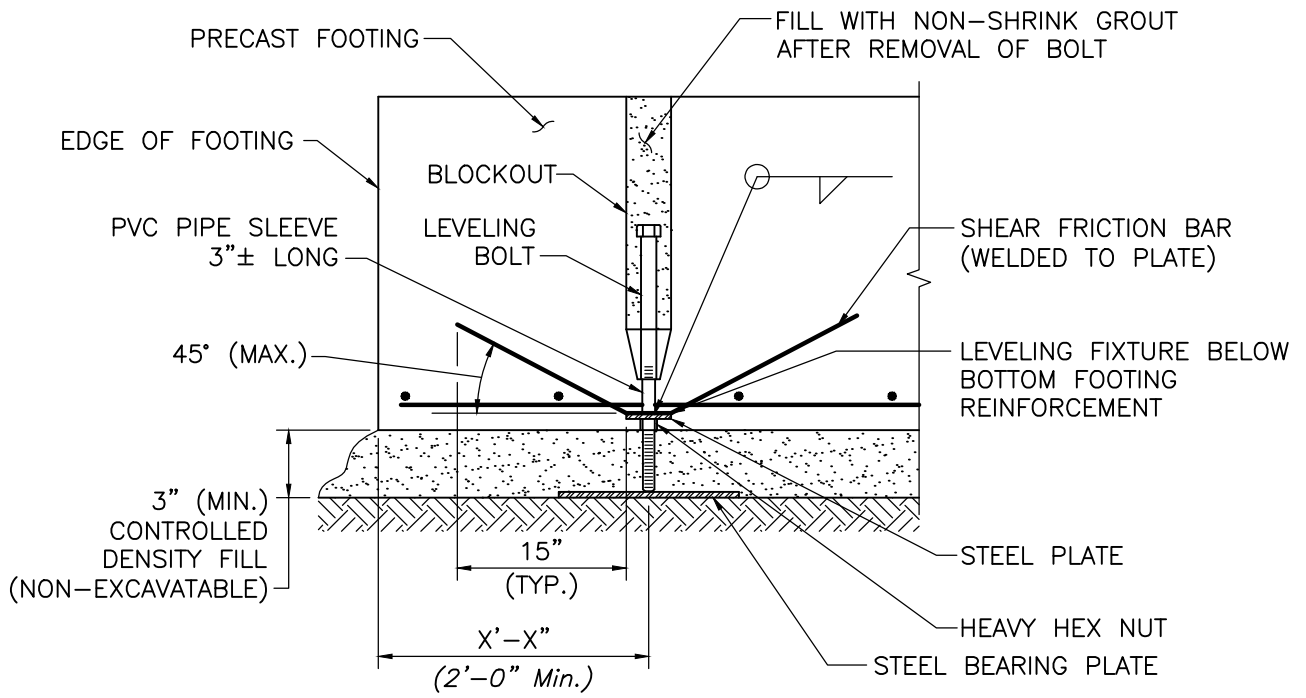
DRAWING NUMBER

1.1.17



PLAN

SCALE: 1" = 1'-0"



SECTION 10

SCALE: 1" = 1'-0"

LEVELING BOLT ASSEMBLY

NOTE:

For Construction Notes, see Dwg. No. 1.1.19.



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LEVELING BOLT ASSEMBLY

PRECAST ABUTMENTS

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DRAWING NUMBER

1.1.18

LEVELING BOLT ASSEMBLY NOTES:

1. THE LEVELING BOLT ASSEMBLY SHOWN IS SCHEMATIC. DESIGN OF THE LEVELING BOLT ASSEMBLY SHALL BE PERFORMED BY THE CONTRACTOR AND SUBMITTED WITH THE ASSEMBLY PLAN TO ENGINEER FOR APPROVAL.
2. BOLT SHALL BE REMOVED AFTER THE CONTROLLED DENSITY FILL (NON-EXCAVATABLE) HAS SET.
3. STEEL PLATES SHALL BE AASHTO M 270 GRADE 36 UNCOATED STEEL.
4. BOLTS SHALL BE H.S. AASHTO M 164 AND UNCOATED.
5. REINFORCEMENT SHALL BE WELDABLE LOW-ALLOY ASTM A 706 BARS.
6. GREASE OR OIL NUT AND BOLT THREADS TO FACILITATE LEVELING AND REMOVAL.



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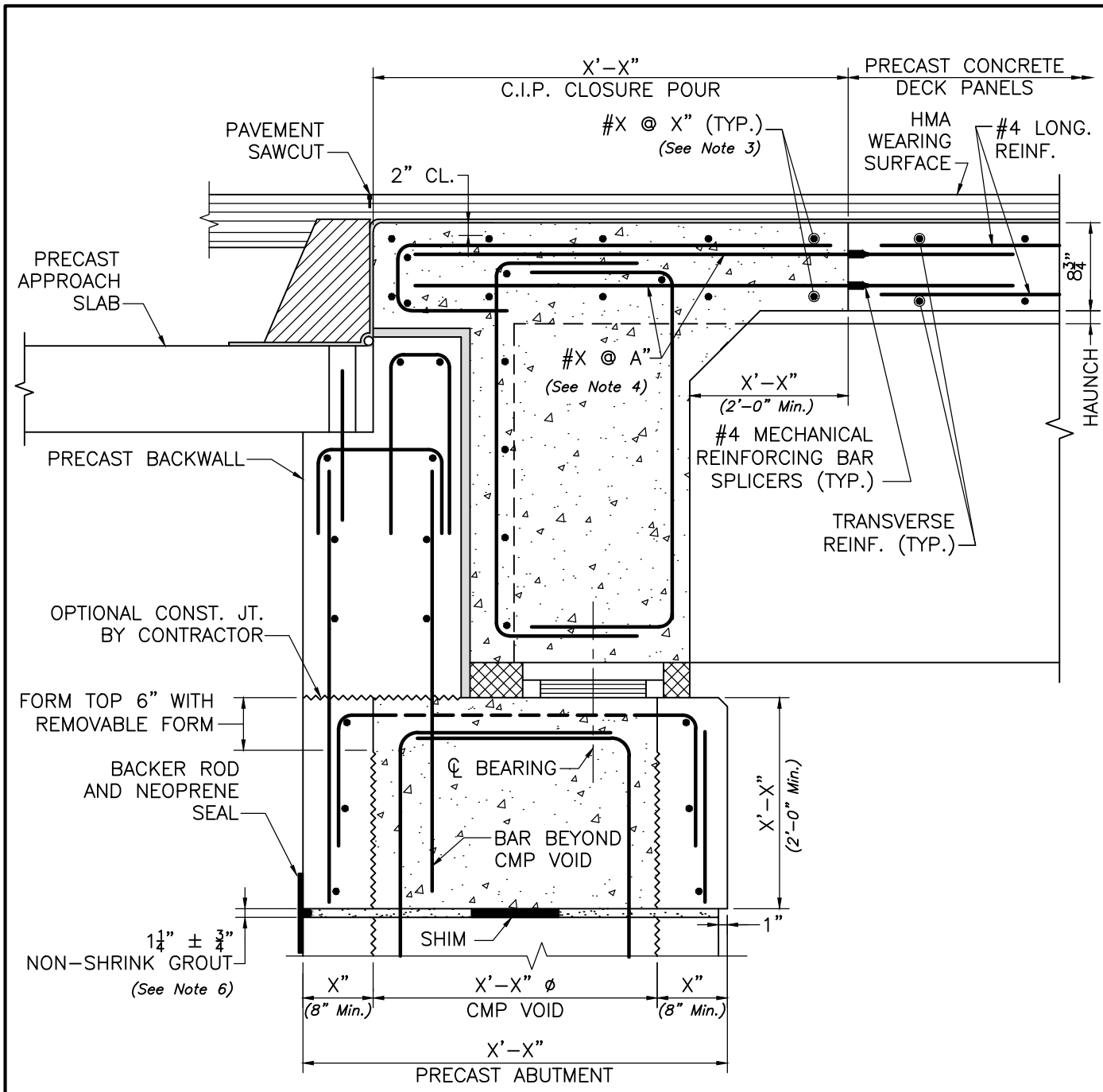
LEVELING BOLT ASSEMBLY NOTES

PRECAST ABUTMENTS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER

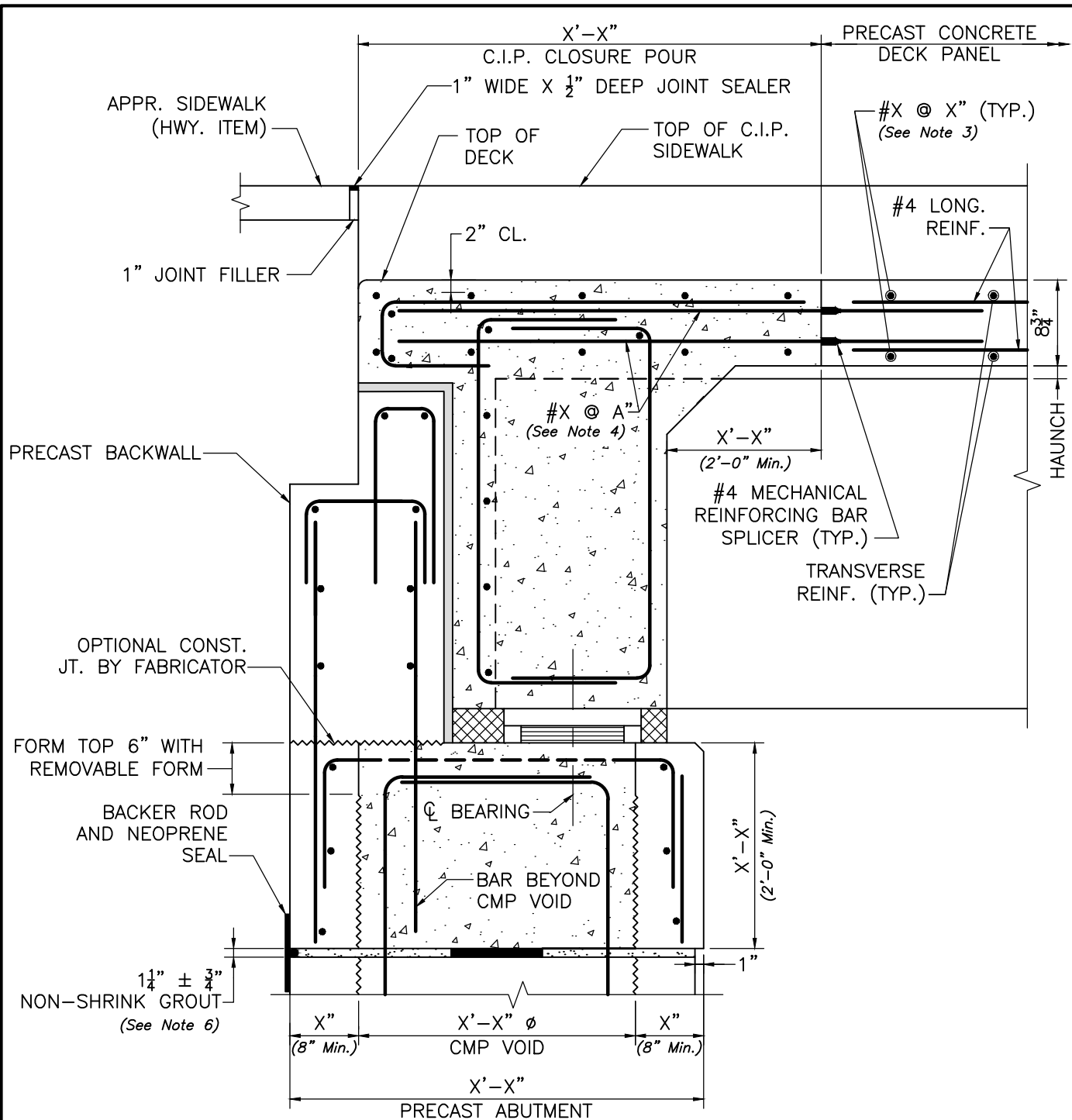
1.1.19



ROADWAY SECTION WITH PAVEMENT SAWCUT
SCALE: 1" = 1'-0"

NOTES:

1. See Dwg. No. 3.7.9, Part II of this Bridge Manual, for details and show all required dimensions
2. See Dwg. No. 1.1.22 for notes to be included on the Construction Drawings.
3. Closure pour transverse reinforcement bar size and spacing shall be the same as for precast concrete deck panels transverse (primary) reinforcement.
4. A = spacing of longitudinal reinforcement as per design table in Section 7, Part II of this Bridge Manual.



SIDEWALK SECTION WITH PAVEMENT SAWCUT

SCALE: 1" = 1'-0"

NOTES:

1. See Dwg. No. 3.7.10, Part II of this Bridge Manual, for details and show all required dimensions
2. See Dwg. No. 1.1.22 for notes to be included on the Construction Drawings.
3. Closure pour transverse reinforcement bar size and spacing shall be the same as for precast concrete deck panels transverse (primary) reinforcement.
4. A = spacing of longitudinal reinforcement as per design table in Section 7, Part II of this Bridge Manual.



LRFD BRIDGE

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SIDEWALK SECTION WITH PAVEMENT SAWCUT

PRECAST ABUTMENTS

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JUNE 2013

DRAWING NUMBER

1.1.21

ROADWAY/SIDEWALK SECTION NOTES:

(Include these Notes with details shown on Dwg. No's. 1.1.20 and 1.1.21)

1. ALL REINFORCEMENT SHOWN IN THIS DETAIL SHALL BE COATED EXCEPT FOR THE APPROACH SLAB REINFORCEMENT.
2. ALL BACKWALL CONCRETE SHALL BE 4000 PSI, $\frac{3}{4}$ IN., 610 CEMENT CONCRETE. THE TOP OF BACKWALL SHALL BE TROWELED SMOOTH PARALLEL TO THE PROFILE GRADE.
3. THE KEEPER BLOCK CONCRETE MUST BE PLACED AND SUFFICIENTLY CURED PRIOR TO PLACING THE CLOSURE POUR CONCRETE.
4. THE CLOSURE POUR CONCRETE SHALL BE 4000 PSI, $\frac{3}{4}$ IN., 585 HP CEMENT CONCRETE.
5. PRIOR TO PLACING THE CLOSURE POUR CONCRETE, CLOSED CELL FOAM OF THE SPECIFIED THICKNESS SHALL BE ATTACHED WITH ADHESIVE TO ALL SURFACES OF THE BACKWALL, KEEPER BLOCKS, AND CURTAIN WALLS AS SHOWN ON THE PLANS. EXPANDED POLYSTYRENE FILLER SHALL BE PLACED UNDER THE BEAM BOTTOM FLANGE AND THE BOTTOM OF THE CLOSURE POUR SHALL BE FORMED AS SPECIFIED. THE CONTRACTOR SHALL INSURE THAT ALL ABUTMENT CONCRETE IS PROPERLY LINED. CLOSURE POUR CONCRETE MUST NOT COME IN DIRECT CONTACT WITH ABUTMENT CONCRETE. *(Omit this note if end diaphragm is precast.)*
6. PRE-BED SEAT WITH NON-SHRINK GROUT WITH THICKNESS MORE THAN SHIM STACK.
7. DRAPE MEMBRANE WATERPROOFING OVER CLOSED CELL FOAM BACKER ROD.
8. PROTECTIVE COURSE TO BE HOT MIX ASPHALT DENSE BINDER COURSE FOR BRIDGES, PLACED IN 2" LAYERS AND COMPACTED WITH A MECHANICAL HAND-GUIDED TAMPER WITHIN 12 HOURS AFTER PLACING MEMBRANE WATERPROOFING.



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CONSTRUCTION NOTES FOR
ABUTMENTS W/ PAVEMENT SAWCUT
PRECAST ABUTMENTS

DATE OF ISSUE
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1.1.22