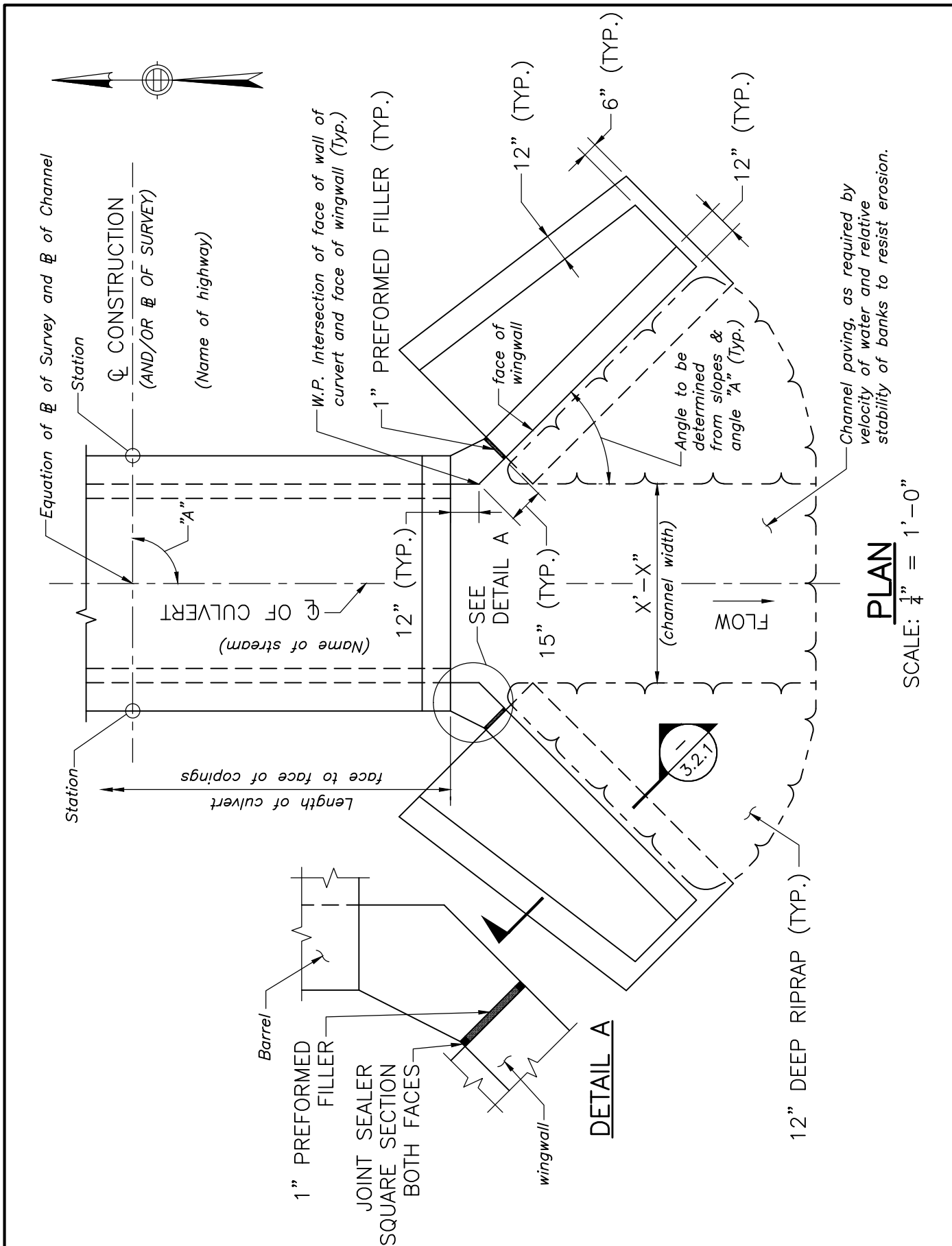
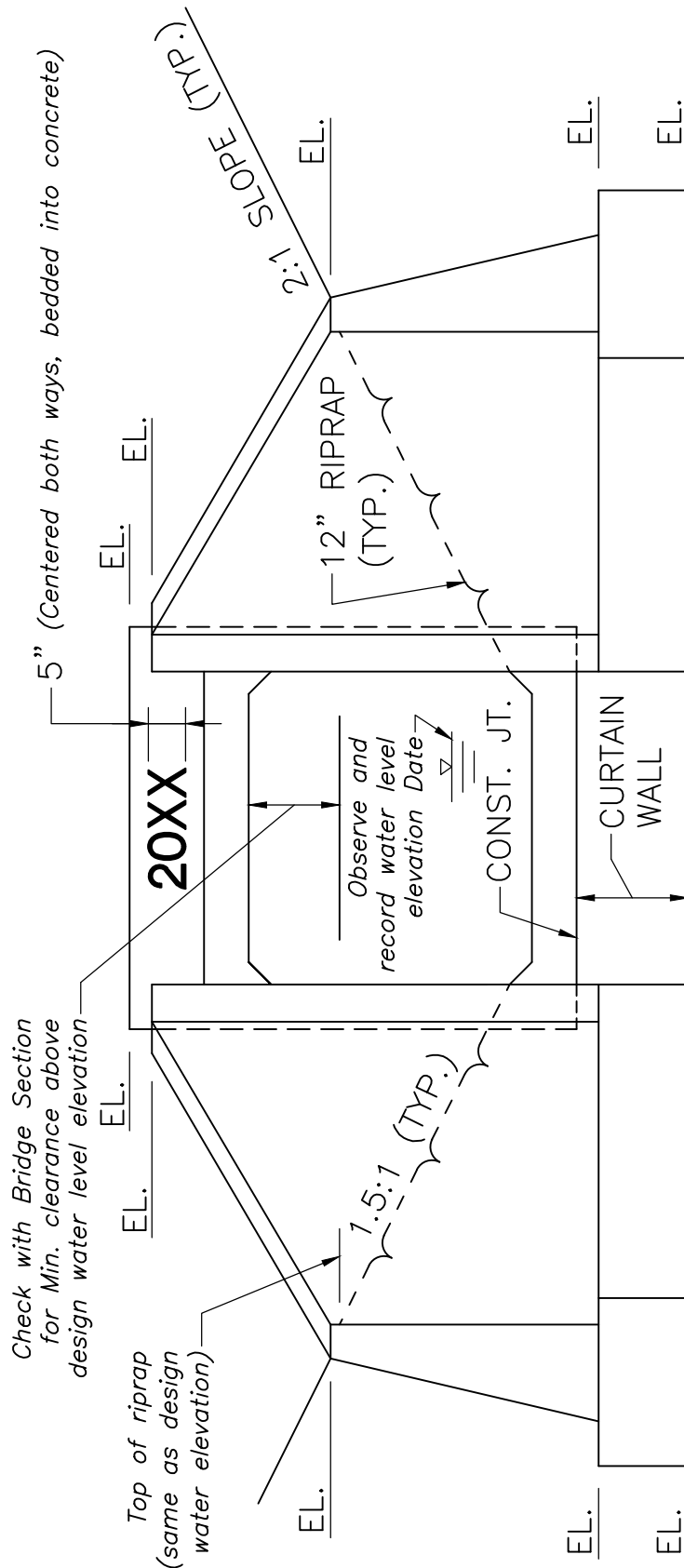




PLAN
SCALE: $\frac{1}{4}" = 1'-0"$

 LRFD BRIDGE MANUAL, PART II	TYPICAL PLAN (ROADWAY OVER FILL) CONCRETE BOX CULVERTS	DATE OF ISSUE JUNE 2013
		DRAWING NUMBER 11.1.1



ELEVATION

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

NOTES:

1. Construction Drawings will be prepared incorporating the design features shown in these standards.
2. Borings: At least two borings will be taken for each culvert.
A boring plan will be prepared in accordance with Bridge Manual standards.
3. Show typical channel cross section.
4. Note on Sketch Plans and Construction Drawings design loading used.
5. Ends of culverts to be parallel to $\angle$ of construction up to 10'-0" of cover. Where height of cover is 10'-0" or more, ends of culverts are to be square regardless of skew of stream.
6. Bottom of footing should not be less than 4'-0" below bed of stream.
7. Show approximate existing ground.



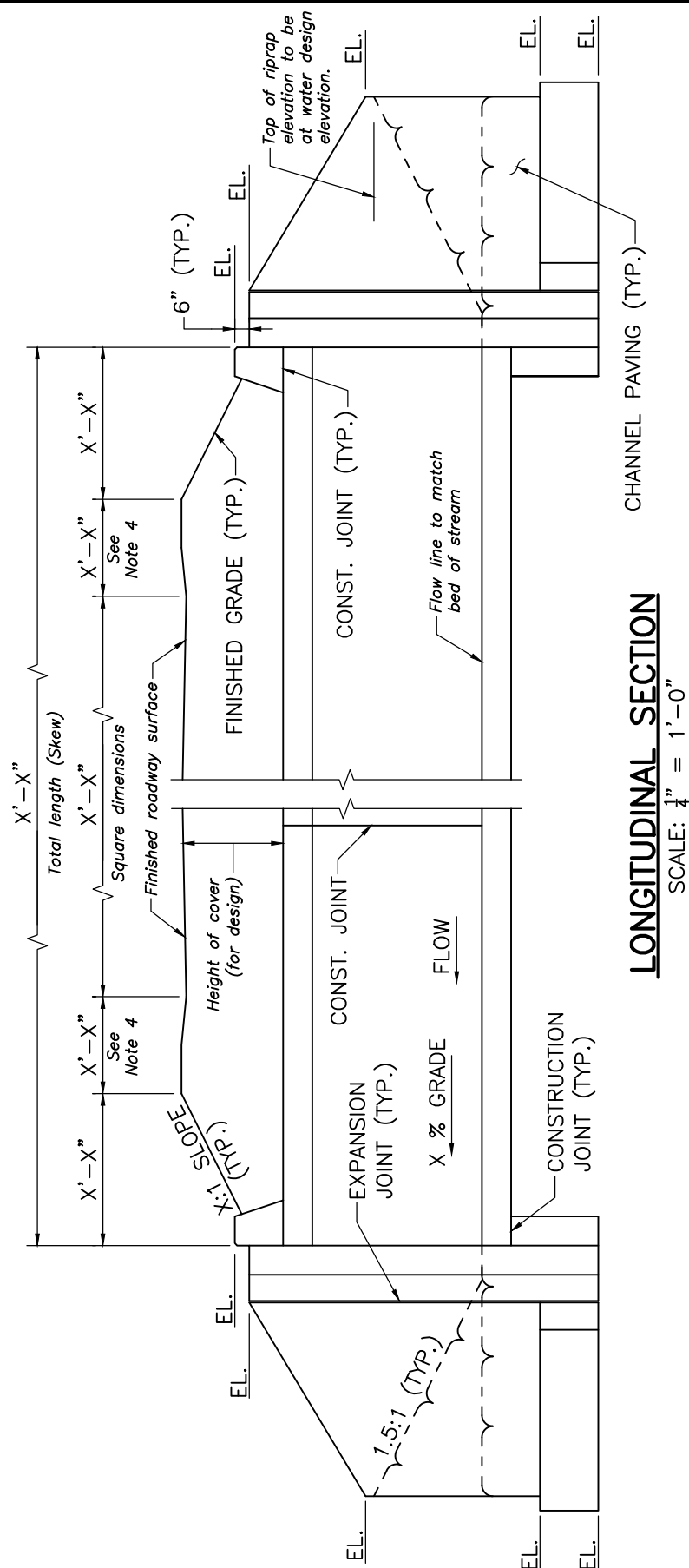
LRFD BRIDGE
MANUAL, PART II

TYPICAL ELEVATION (ROADWAY OVER FILL) CONCRETE BOX CULVERTS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER

11.1.2



LONGITUDINAL SECTION

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

NOTES:

1. Expansion joints 70'-0" O.C., Max.
2. Construction joints 25'-0" O.C., Max.
3. Show approximate existing ground.
4. Show approximate guardrail system with sufficient height of cover for post embedment. Otherwise, consider culvert with roadway on barrel roof.

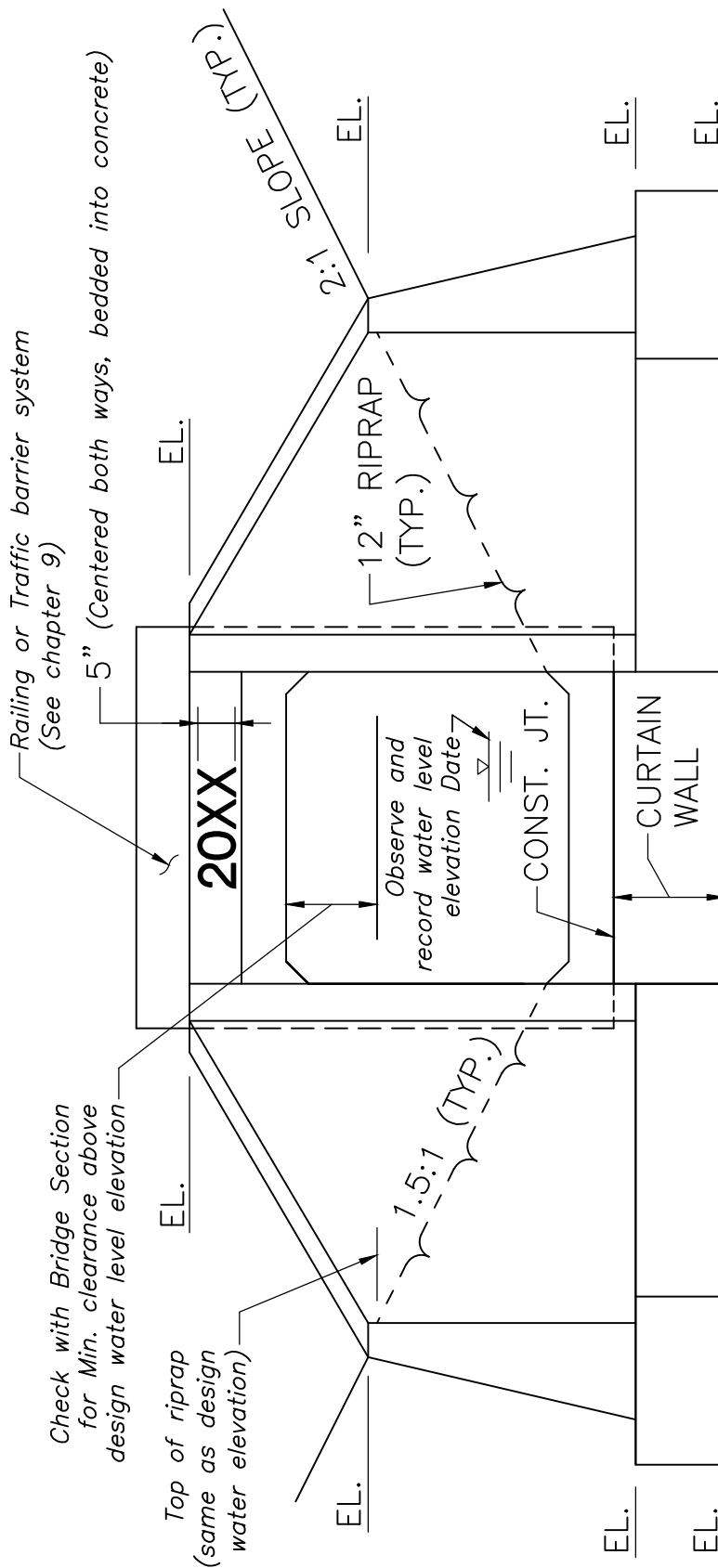


LRFD BRIDGE
MANUAL, PART II

TYPICAL LONGIT. SECTION (ROADWAY OVER FILL) CONCRETE BOX CULVERTS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER
11.1.3



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

NOTE:
See notes on Dwg. No. 11.1.2.

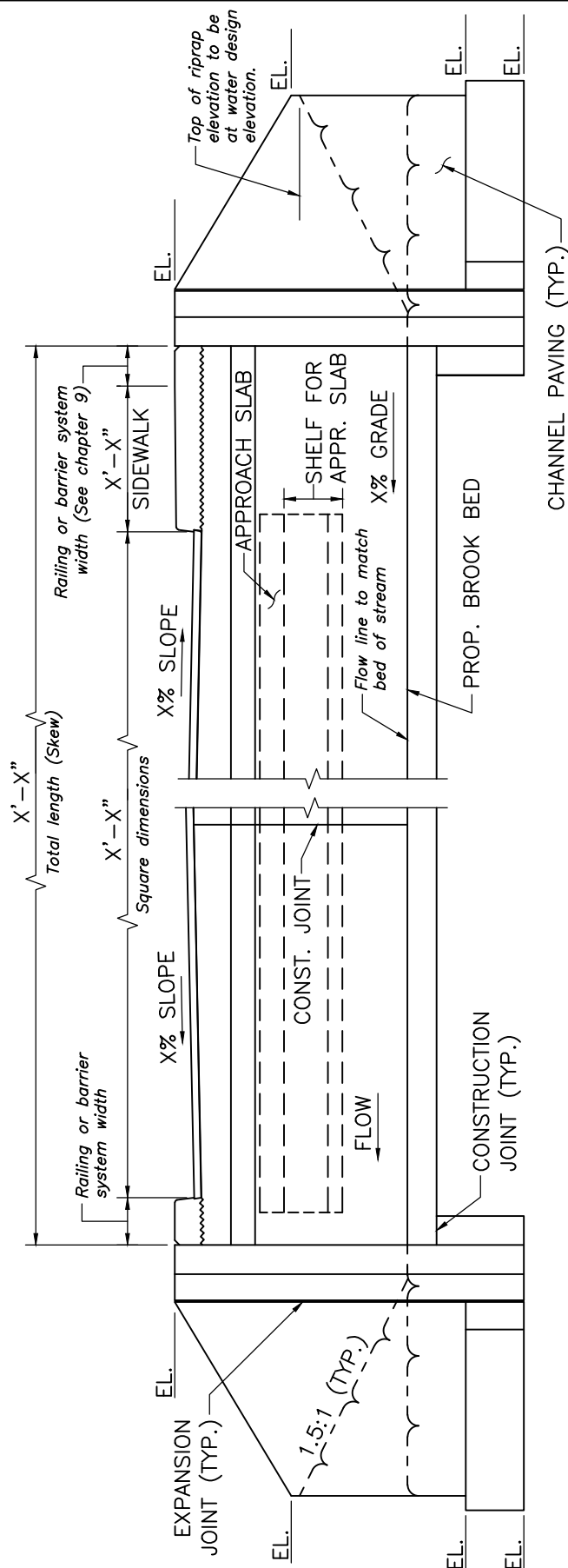


LRFD BRIDGE
MANUAL, PART II

TYPICAL ELEVATION
(ROADWAY ON BARREL ROOF)
CONCRETE BOX CULVERTS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER
11.2.2



LONGITUDINAL SECTION

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

NOTES:

1. Expansion joints 70'-0" O.C., Max.
2. Construction joints 25'-0" O.C., Max.
3. Show approximate existing ground.

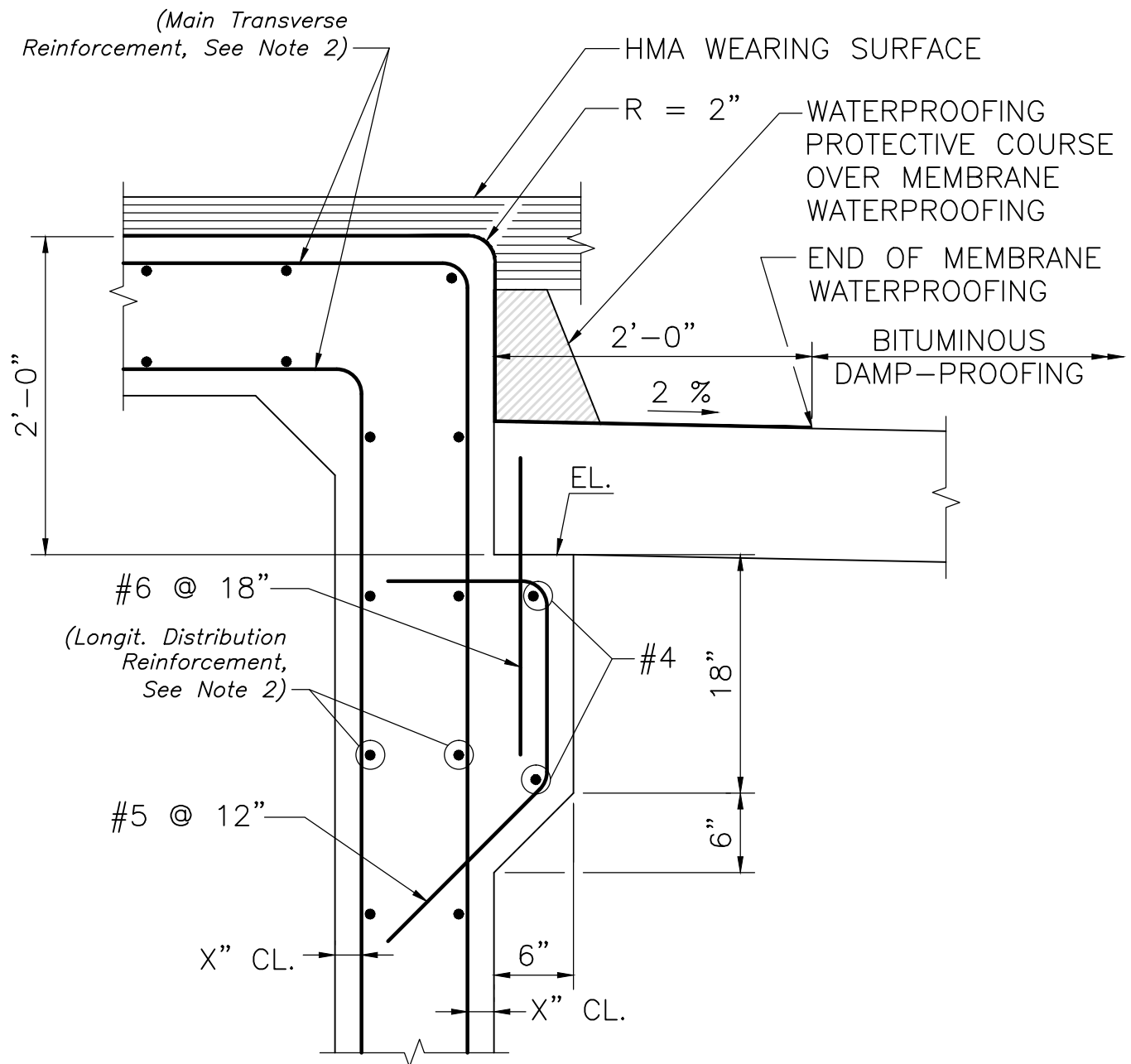


LRFD BRIDGE
MANUAL, PART II

TYPICAL LONGIT. SECTION (ROADWAY ON BARREL ROOF) CONCRETE BOX CULVERTS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER
11.2.3



PRECAST APPROACH SLAB SHELF – DETAILS

SCALE: 1" = 1'-0"

NOTE:

This detail is to be used with Approach Slab Type I.



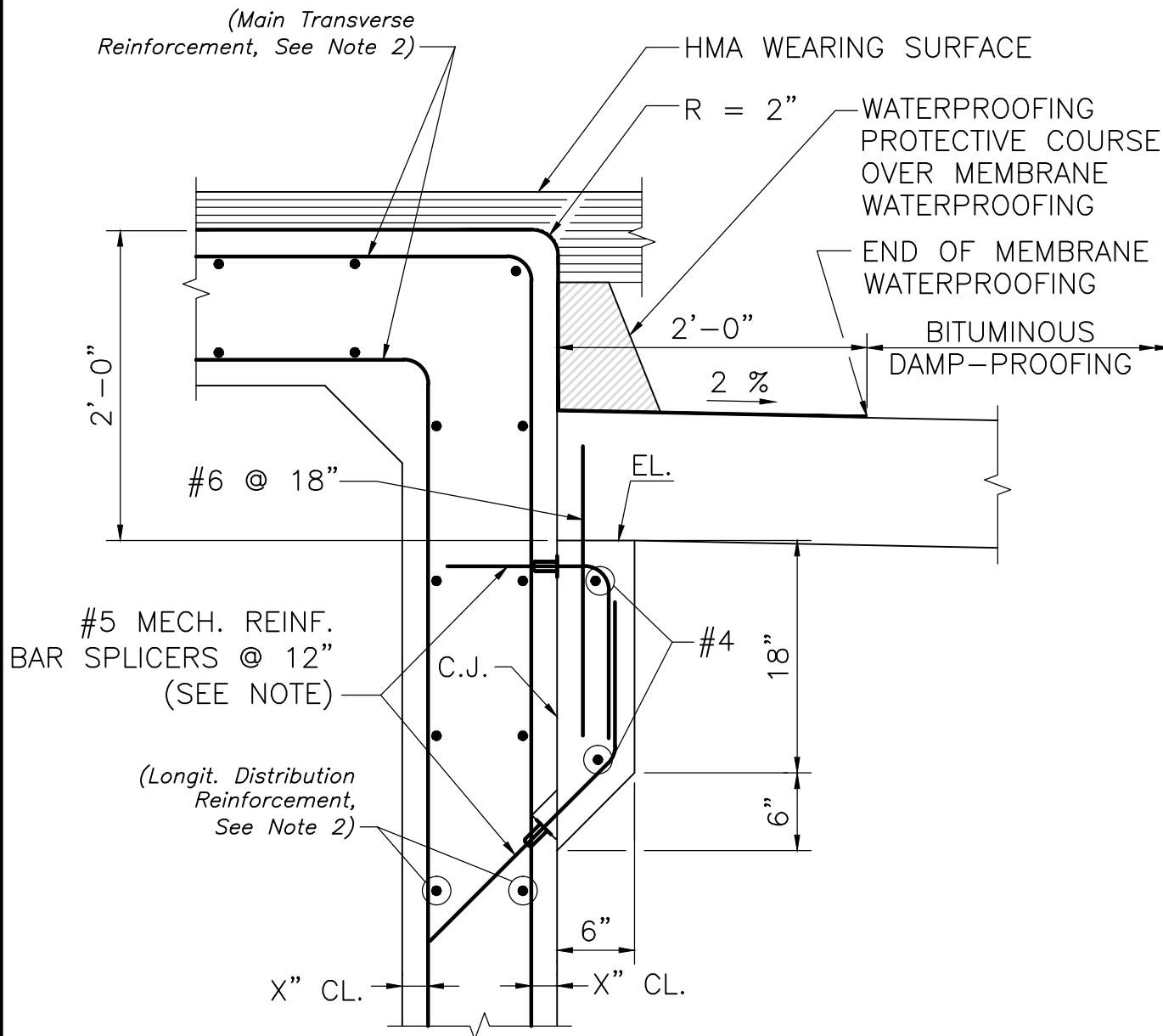
LRFD BRIDGE
MANUAL, PART II

PRECAST APPROACH SLAB
SHELF – DETAILS
(ROADWAY ON BARREL ROOF)
CONCRETE BOX CULVERTS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER

11.2.4



NOTE:

THE CONTRACTOR MAY SUBSTITUTE #5  DOWELS, FOR MECHANICAL REINFORCING BAR SPLICERS AND THREADED REBARS.

C.I.P. APPROACH SLAB SHELF – DETAILS

SCALE: 1" = 1'-0"

NOTE:

This detail is to be used with Approach Slab Type I.



LRFD BRIDGE
MANUAL, PART II

C.I.P. APPROACH SLAB
SHELF – DETAILS
(ROADWAY ON BARREL ROOF)
CONCRETE BOX CULVERTS

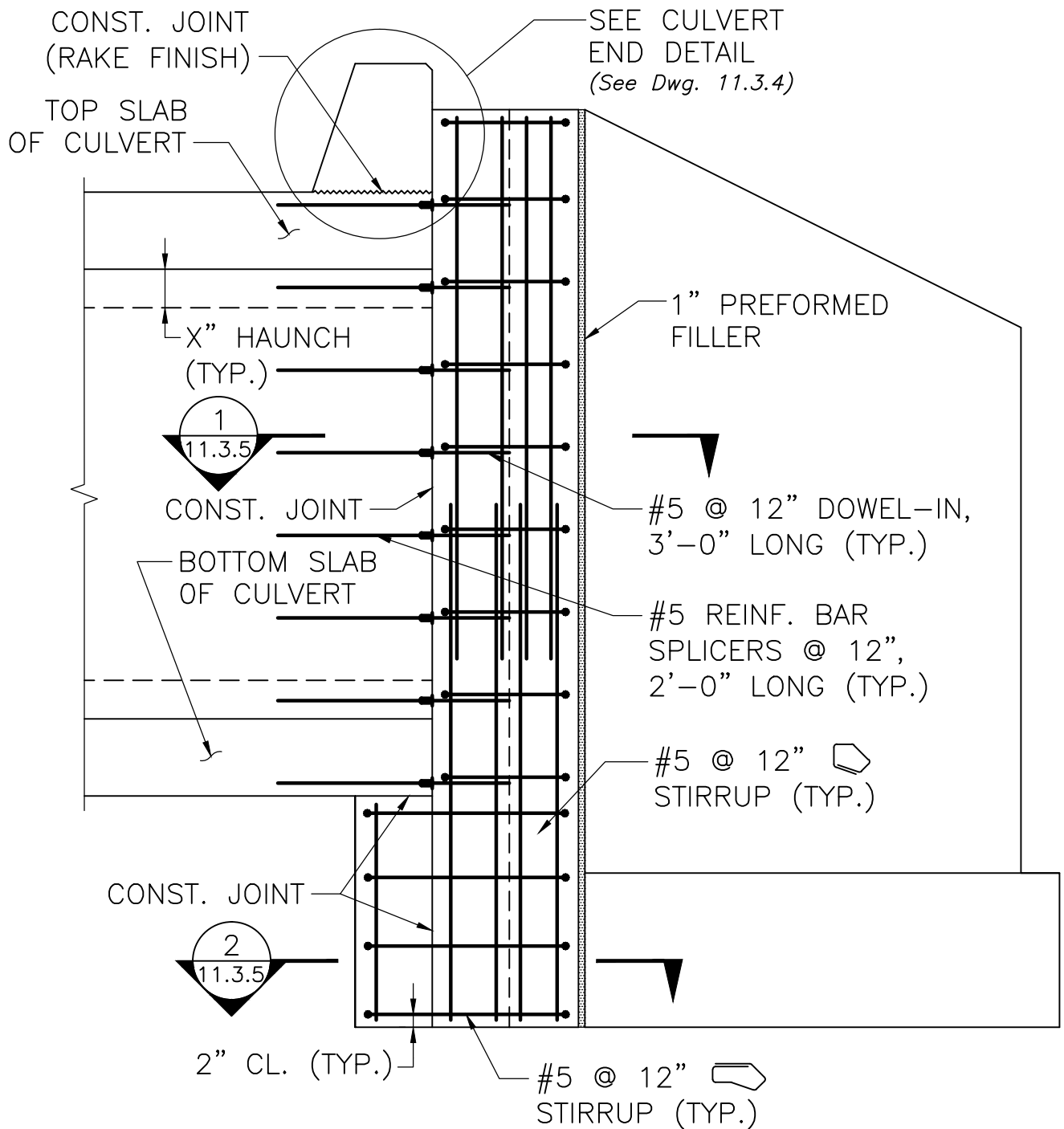
DATE OF ISSUE
JUNE 2013

DRAWING NUMBER

11.2.5

NOTES: (for use with details on Dwg. No. 11.3.1)

1. All culverts shall be:
 - designed and detailed in accordance with the provisions noted in Paragraph 3.3.4 of Part I of this LRFD Bridge Manual.
 - assigned a Bridge Number (BDEPT#) and a Bridge Identification Number (BIN) when the square span is 4 feet or greater.
 - submitted for approval in accordance with the Sketch Plan requirements of Paragraph 2.7 of Part I of this Bridge Manual when the square span is 10 feet or greater.
2. The reinforcement shown is conceptual. Standard dimensions, reinforcing, and detailing for single-cell Precast Concrete Box Culverts shall be as per design tables of the Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers Designed According to the AASHTO LRFD (ASTM C1577-08). If special design for sizes and/or loads other than those specified in the referenced design tables is necessary, it shall be based on the criteria as specified in Paragraph 3.3.4 of Part I of this LRFD Bridge Manual.
3. Membrane waterproofing with a waterproofing protective course shall be used where roadway pavement is directly on the structure and on all structures where the clear span is over 20'-0". Use bituminous damp-proofing where roadway is not directly on the structure and the clear span is less than 20'-0".
4. The horizontal and vertical haunch dimensions shall be equal to the sidewall thickness in inches. If haunches with other dimensions are used, a special reinforcement design for the actual dimensions shall be completed.
5. For cases involving a cover in excess of 40' an alternate design such as a reinforced concrete arch should be considered.

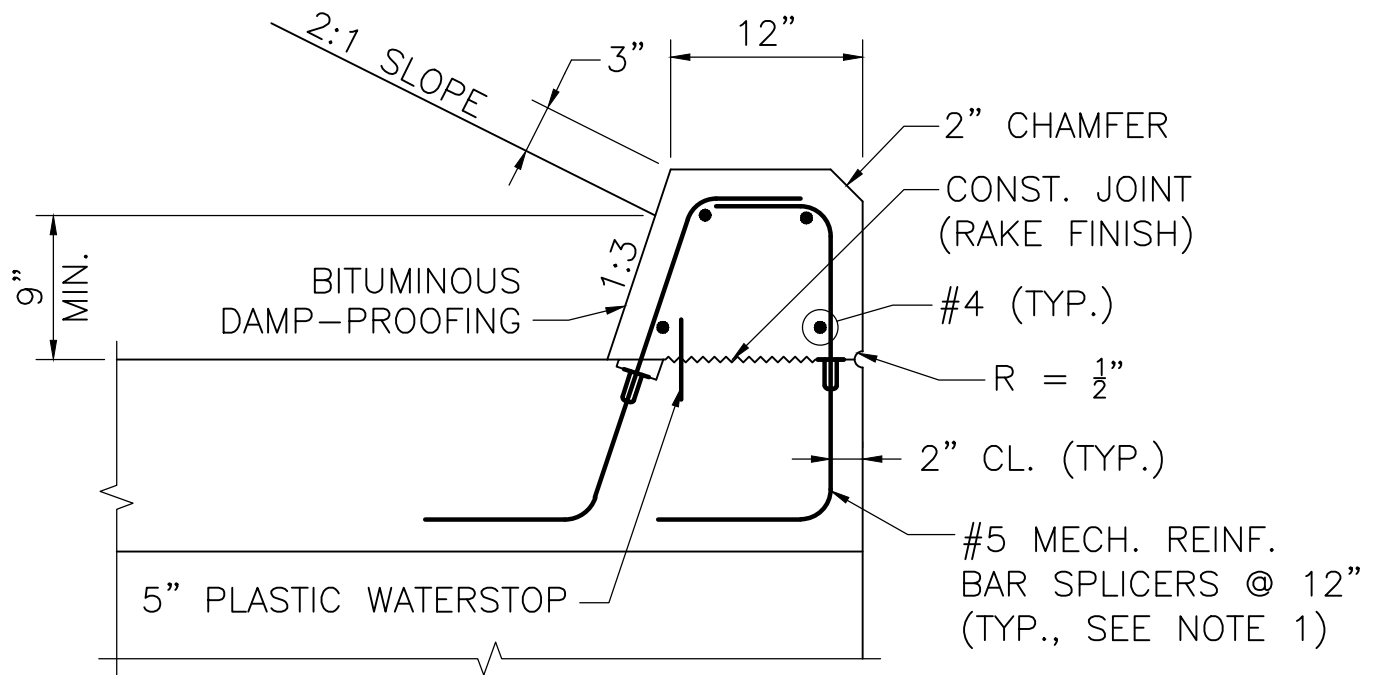


NOTES:

1. THE CONTRACTOR MAY SUBSTITUTE #5 DOWELS, 3'-0" LONG FOR MECHANICAL REINFORCING BAR SPLICERS AND THREADED REBARS.
2. CULVERT REINFORCEMENT IS NOT SHOWN FOR CLARITY.

SECTION AT WINGWALL

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



NOTES:

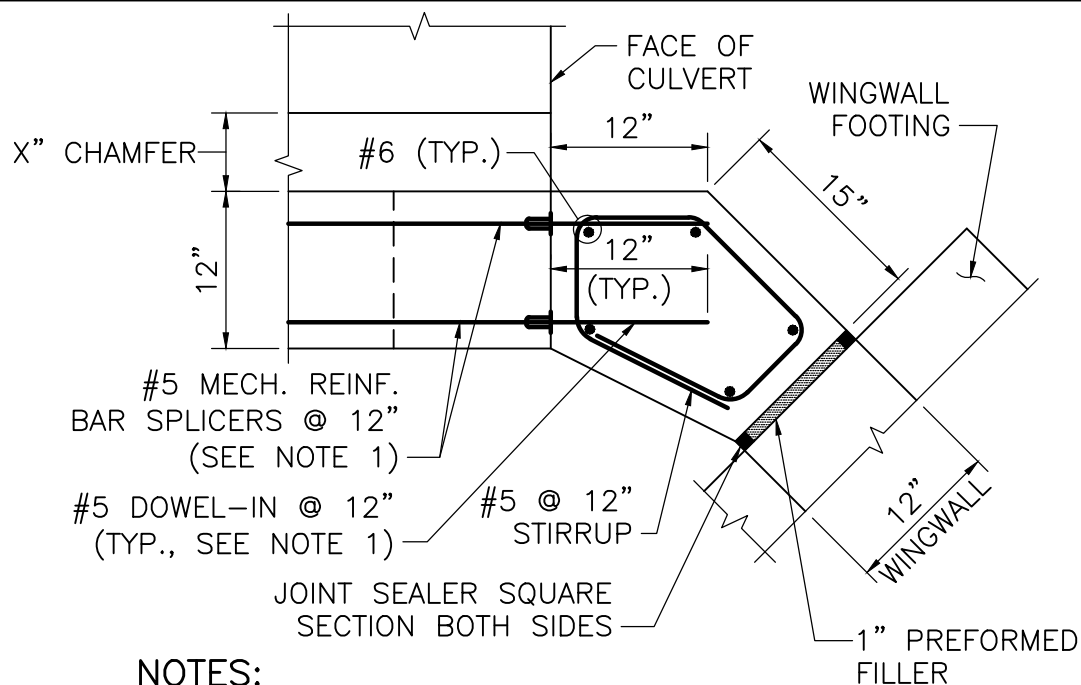
1. THE CONTRACTOR MAY SUBSTITUTE #5 $\cap$ DOWELS, FOR MECHANICAL REINFORCING BAR SPLICERS AND THREADED REBARS.
2. CULVERT REINFORCEMENT IS NOT SHOWN FOR CLARITY.

CULVERT END DETAIL

SCALE: 1" = 1'-0"

NOTE:

Coping for roadway over fill shown. For roadway on barrel roof, use appropriate sidewalk and/or safety curb details shown in Chapter 9.

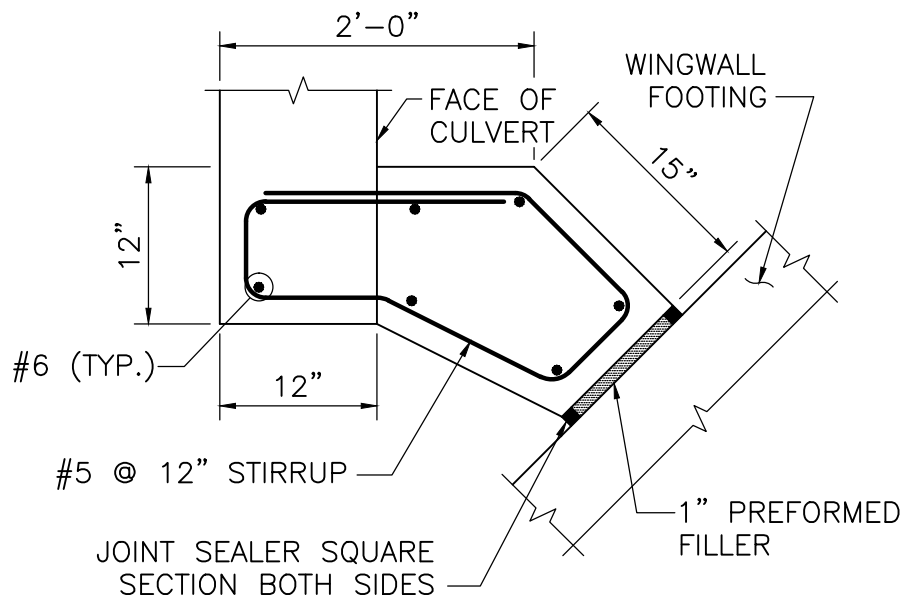


NOTES:

1. THE CONTRACTOR MAY SUBSTITUTE #5 DOWELS, 3'-0" LONG, FOR MECHANICAL REINFORCING BAR SPLICERS AND THREADED REBARS.
2. CULVERT REINFORCEMENT IS NOT SHOWN FOR CLARITY.

SECTION 1

SCALE: 1" = 1'-0"



NOTE:

CULVERT REINFORCEMENT IS NOT SHOWN FOR CLARITY.

SECTION 2

SCALE: 1" = 1'-0"



LRFD BRIDGE
MANUAL, PART II

FACE OF CULVERT DETAILS

CONCRETE BOX CULVERT DETAILS

DATE OF ISSUE
JUNE 2013

DRAWING NUMBER

11.3.5