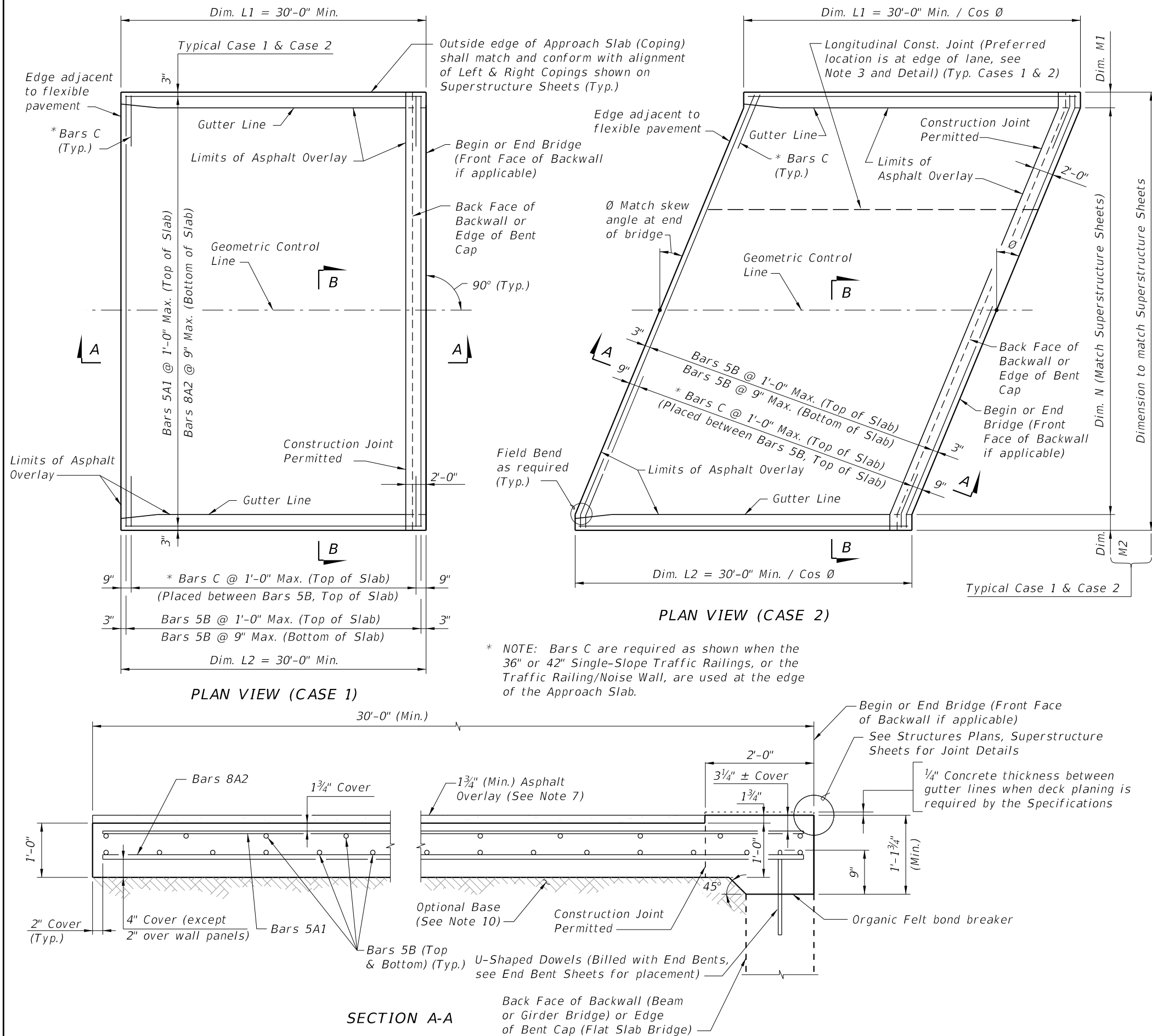


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GENERAL NOTES

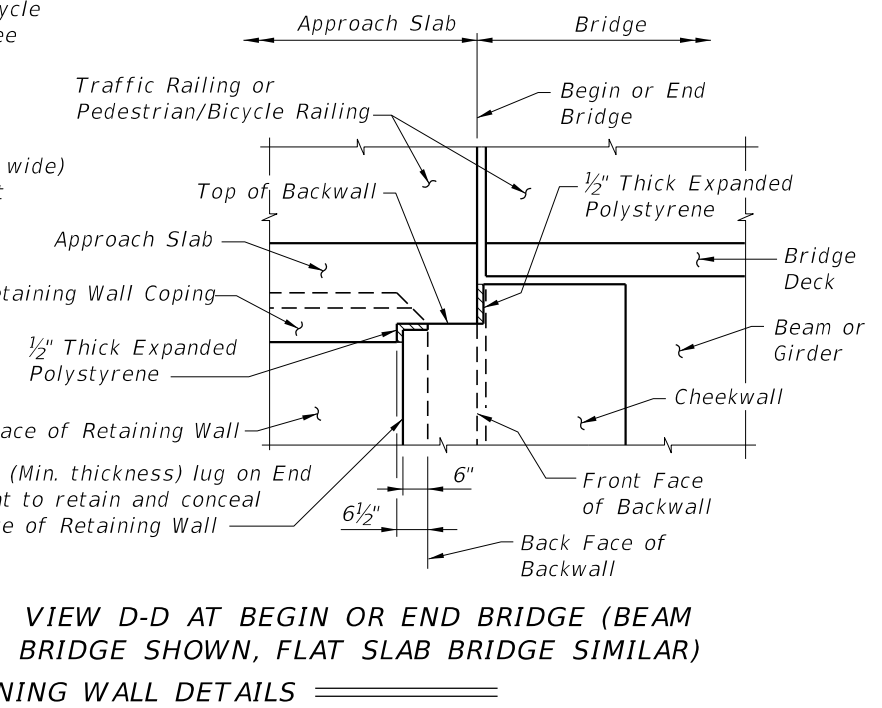
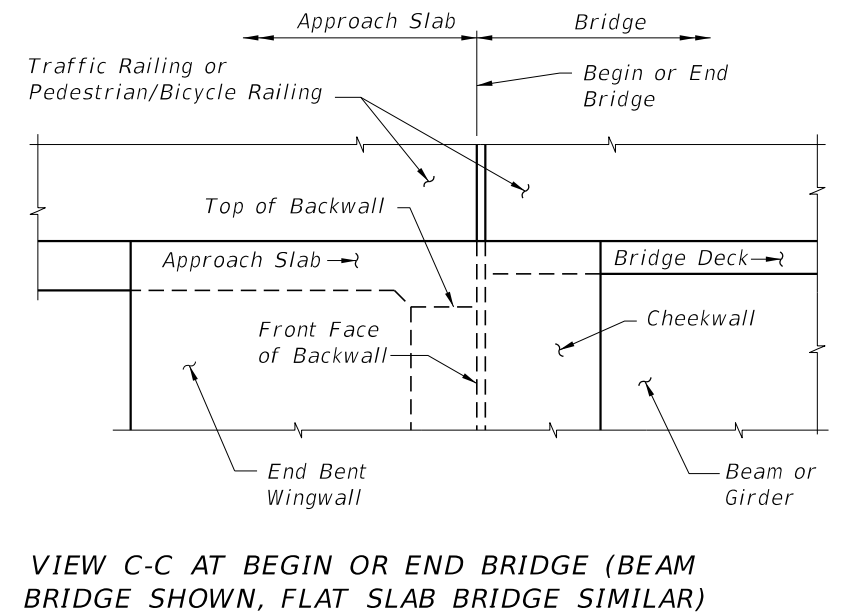
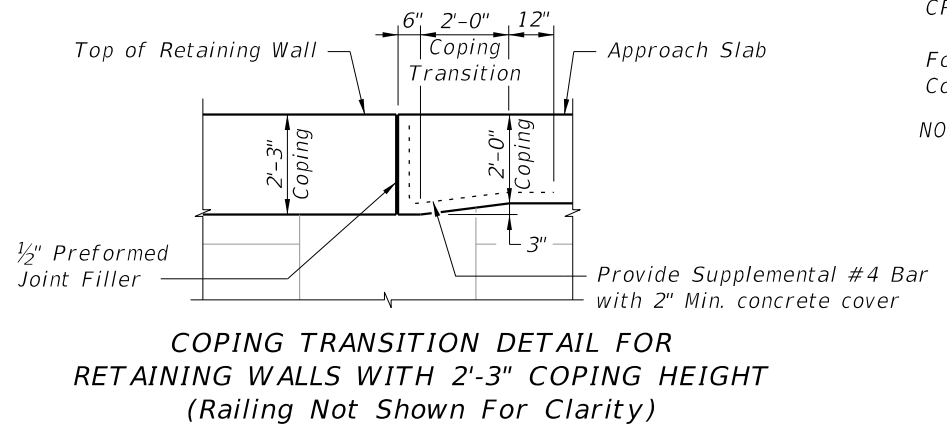
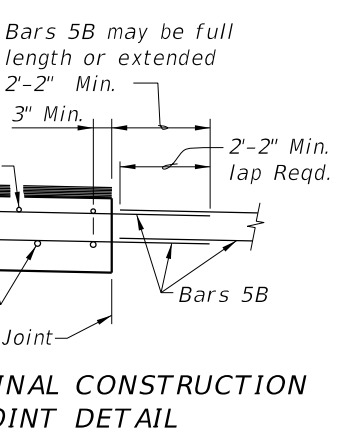
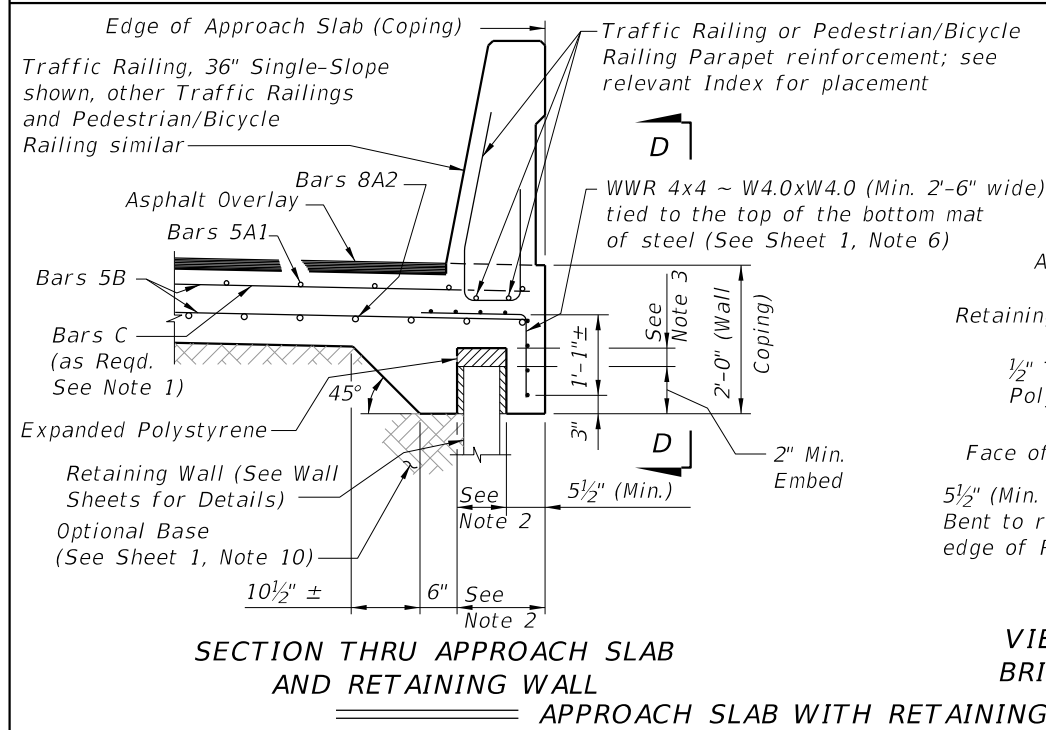
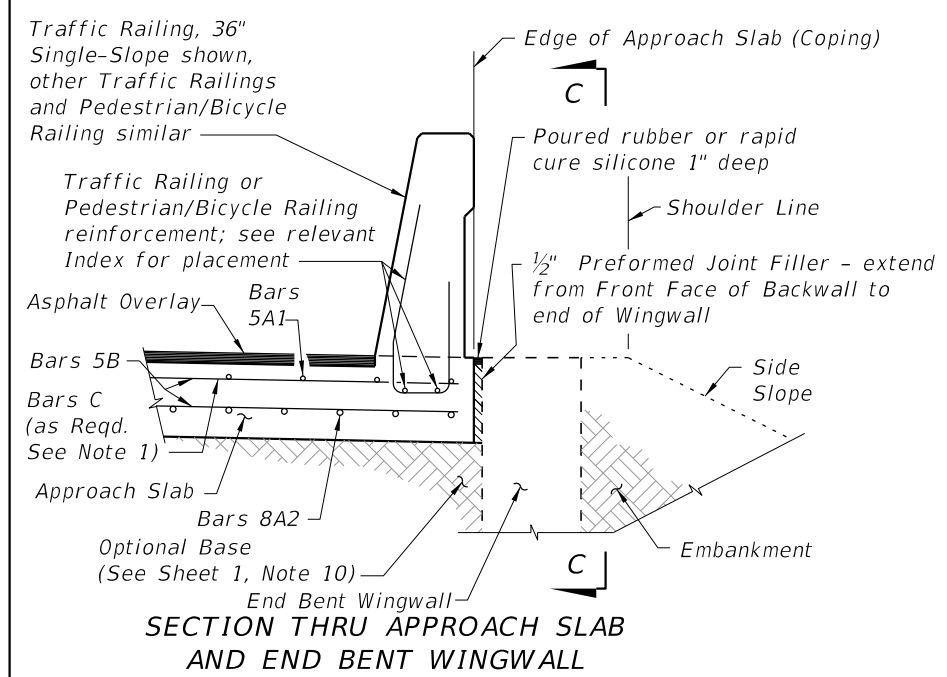
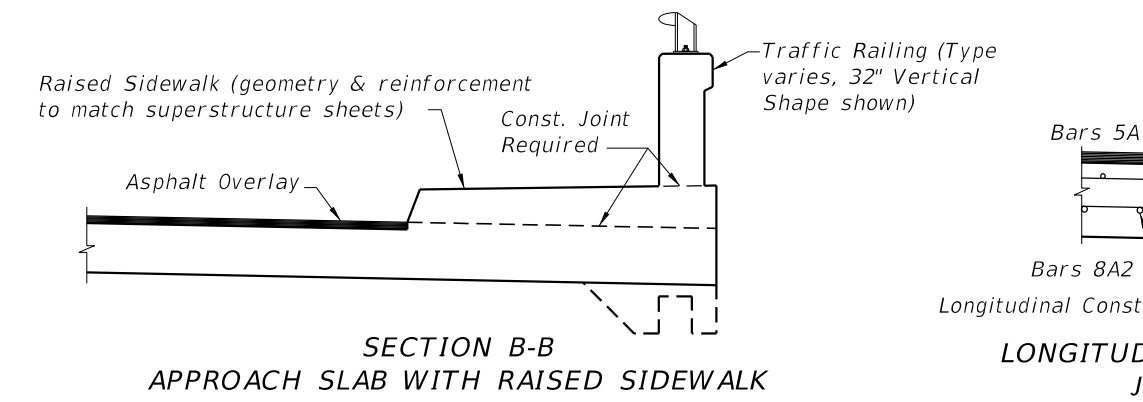
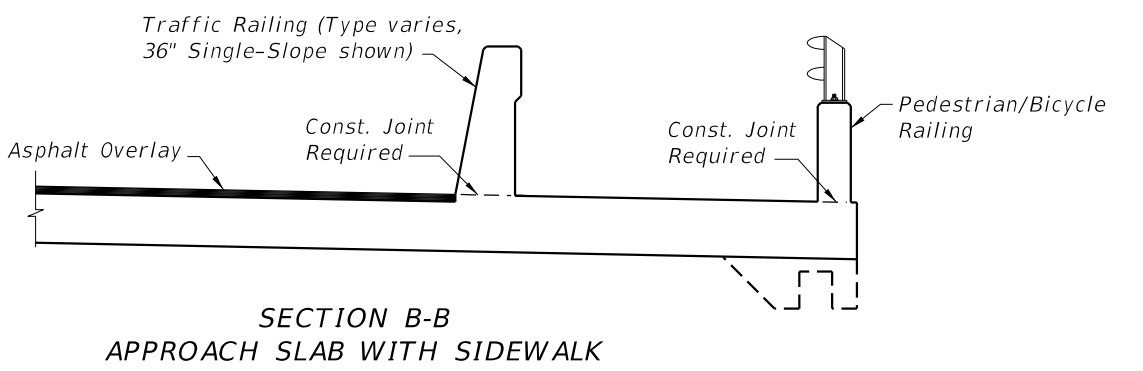
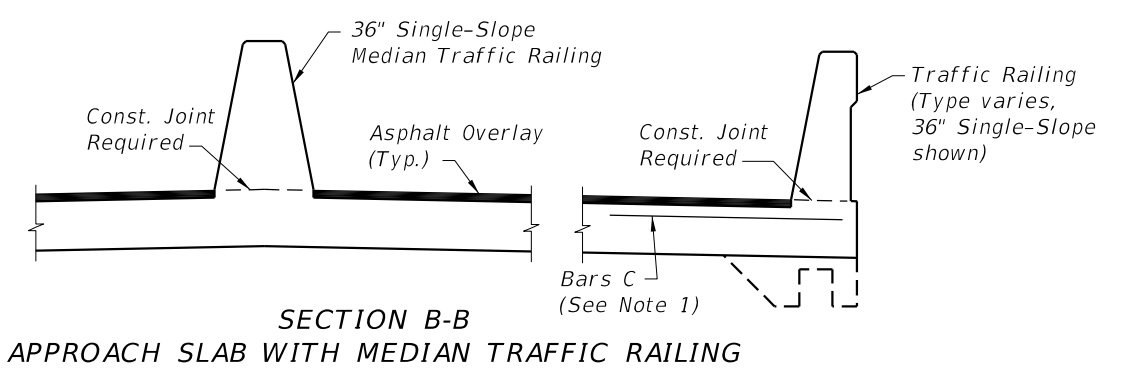
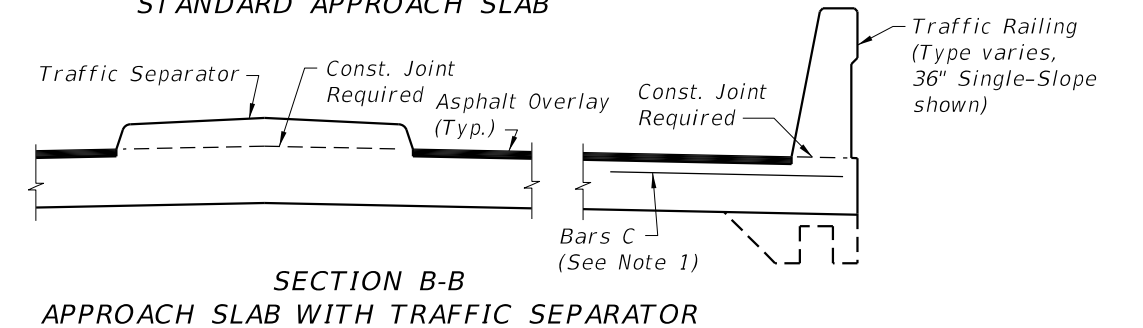
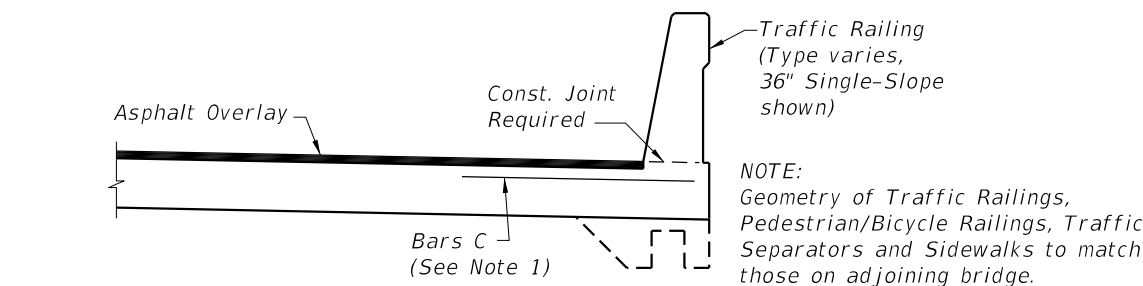
1. **SURFACE TREATMENT:** As an option to Class 4 Floor Finish (Bridge Floor Grooving) per Section 400 a hand tined or heavy broomed finish may be permitted on the concrete portion of the riding surface. Sidewalk areas shall receive a broomed finish. The top surface of the concrete beneath the asphalt overlay shall be raked.
2. **CONDUIT:** If required, see Structures Plans for Conduit Details.
3. When a longitudinal construction joint is necessary or allowed by the Engineer, the transverse steel shall be extended as shown in the Longitudinal Construction Joint Detail.
4. The plan view for CASE 1 applies when the skew angle (θ) = 0°.
5. The plan view for CASE 2 applies where the skew angle (θ) is > 0°. The slab shown represents a skew to the right for an approach slab at begin bridge; approach slab at the end of bridge or a left skew shall be treated similarly.
6. Deformed WWR must meet the requirements of Specification Section 931.
7. Continue the asphalt pavement over the approach slab and match the friction course type used on the roadway.
8. Approach slabs shown in Plan View Cases 1 and 2 represent a typical approach slab with edge barriers and no sidewalks. Provide railings, parapets and raised sidewalks as detailed in the Contract Plans.
9. **PAYMENT:** Deformed WWR for the edge of Approach Slabs on retaining walls is not included in the estimated quantity for reinforcing steel and is considered incidental to the work.
10. See Roadway Plans for Asphalt Overlay and Optional Base details and quantities.

CROSS REFERENCES:

For Section B-B, Longitudinal Construction Joint Detail and Approach Slab Details see Sheet 2.

LAST REVISION	DESCRIPTION:	FY 2027-28 STANDARD PLANS	APPROACH SLABS (30 FT.) (FLEXIBLE PAVEMENT APPROACHES)	INDEX	SHEET
11/01/22				400-090	1 of 2

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CROSS REFERENCES:

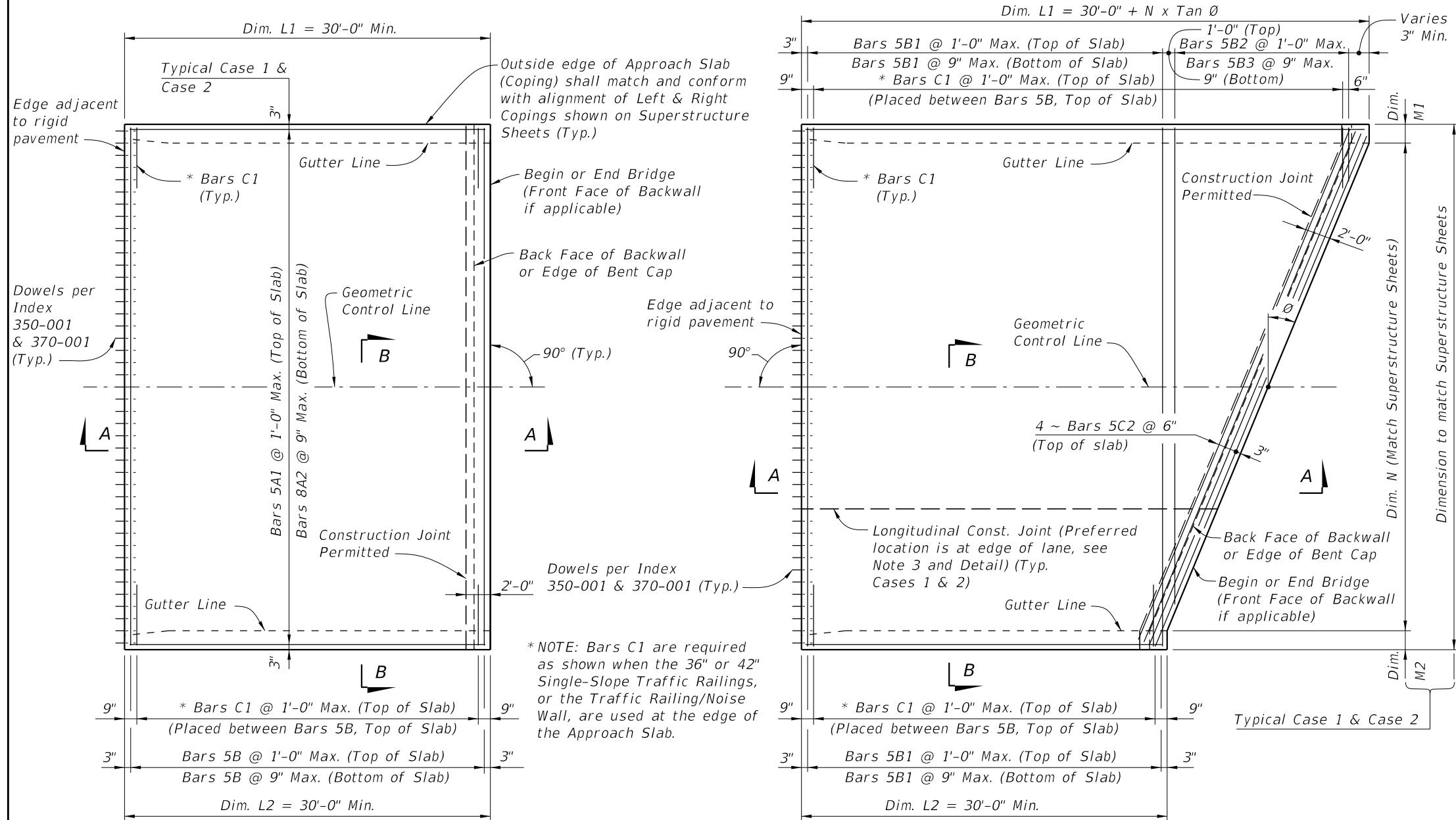
For location of Section B-B and Longitudinal Construction Joint see Sheet 1.

NOTES:

1. Bars C are required as shown when the 36" or 42" Single-Slope Traffic Railing, or the Traffic Railing/Noise Wall, are used at the edge of the Approach Slab.
2. Actual location & width vary depending on type of Retaining Wall used.
3. Expanded Polystyrene 1" min. top for MSE walls, 3" min. top for rigid retaining walls. 1/2" each side.

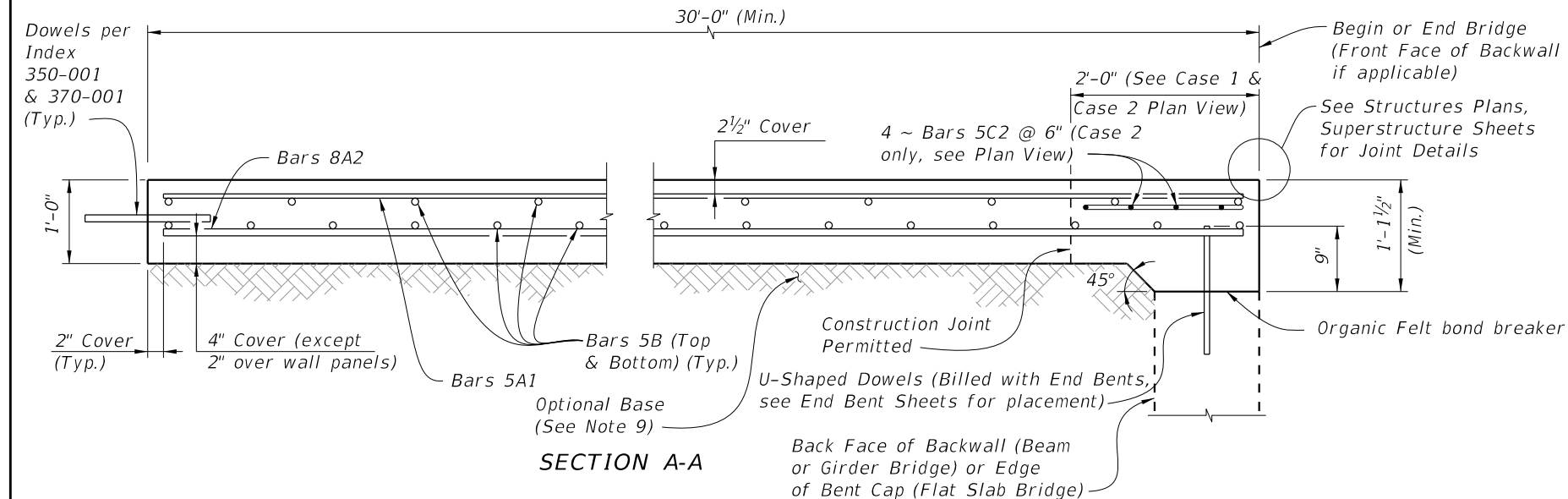
LAST REVISION		DESCRIPTION:	FDOT	FY 2027-28 STANDARD PLANS	APPROACH SLABS (30 FT.) (FLEXIBLE PAVEMENT APPROACHES)	INDEX 400-090	SHEET 2 of 2
11/01/25	REVISION						

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9/16/2026



PLAN VIEW (CASE 1)

PLAN VIEW (CASE 2)



GENERAL NOTES

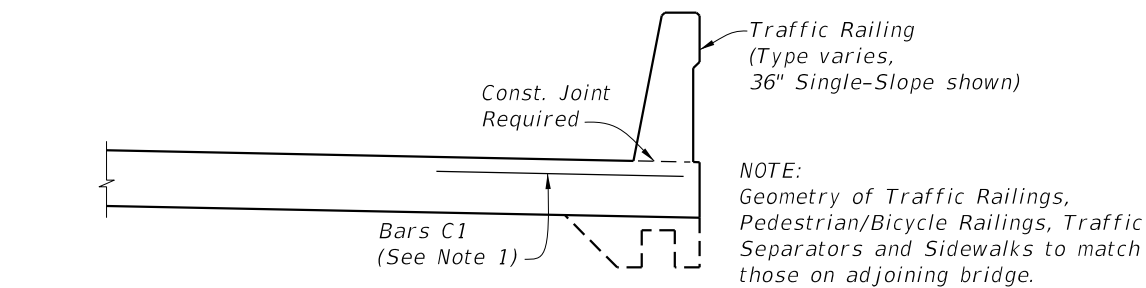
- SURFACE TREATMENT:** Apply a Class 4 Floor Finish (Grooved) to the riding surface from begin or end approach slab joint to begin or end bridge. See Bid Item Notes. Apply a broomed finish to sidewalk areas.
- CONDUIT:** If required, see Structures Plans for Conduit details.
- When a longitudinal construction joint is necessary or allowed by the Engineer, the transverse steel shall be extended as shown in the Longitudinal Construction Joint Detail.
- The plan view for CASE 1 applies when the skew angle (θ) = 0°. Relevant details also apply to CASE 2.
- The plan view for CASE 2 applies where the skew angle (θ) is > 0°. The slab shown represents a skew to the right for an approach slab at begin bridge; approach slab at the end of bridge or a left skew shall be treated similarly. The shown reinforcement shall be utilized, and Dowels provided in accordance with Index 350-001 and 370-001.
- Deformed WWR must meet the requirements of Specification Section 931.
- PROFILOGRAPH:** If profilograph requirements apply, planing may be required. The permitted construction joint shown in Section A-A will facilitate the placement of the expansion joint.
- Approach slabs shown in Plan View Cases 1 and 2 represent a typical approach slab with edge barriers and no sidewalks. Provide railings, parapets, traffic separators and sidewalks as detailed on the additional approach slab sheets.
- PAYMENT:** Deformed WWR for the edge of Approach Slabs on retaining walls is not included in the estimated quantity for reinforcing steel and is considered incidental to the work. See Roadway Plans for Optional Base details and quantities.

CROSS REFERENCES:

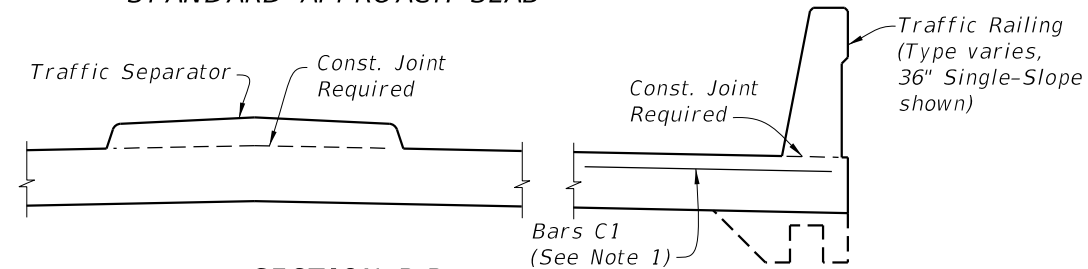
For Section B-B, Longitudinal Construction Joint Detail and Approach Slab Details see Sheet 2.

LAST REVISION	DESCRIPTION:	FY 2027-28 STANDARD PLANS	APPROACH SLABS (30 FT.) (RIGID PAVEMENT APPROACHES)	INDEX	SHEET
11/01/17				400-091	1 of 2

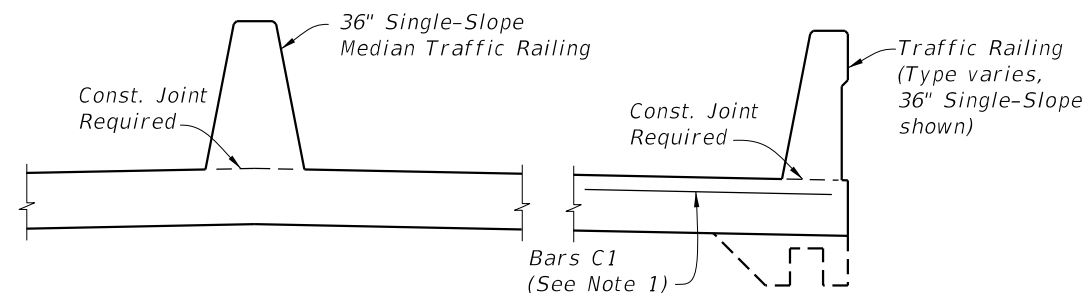
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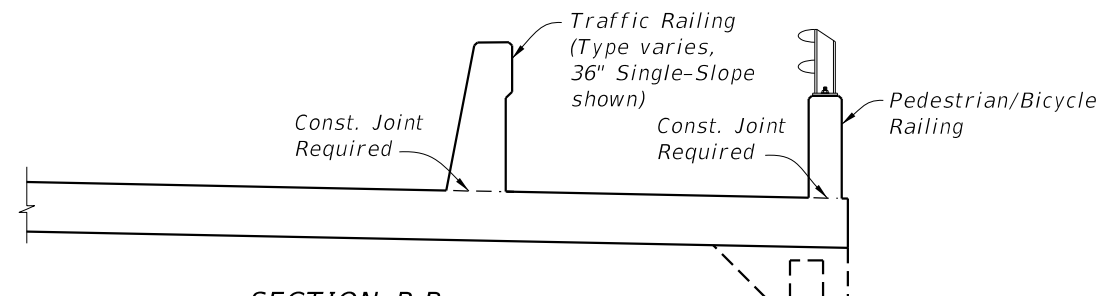
SECTION B-B
STANDARD APPROACH SLAB



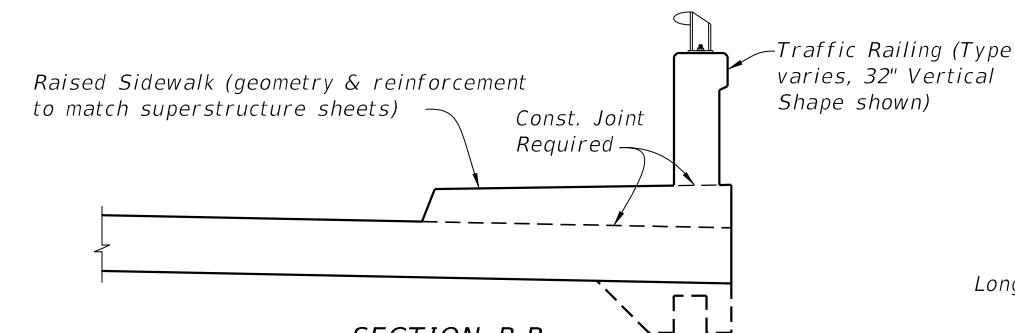
SECTION B-B
APPROACH SLAB WITH TRAFFIC SEPARATOR



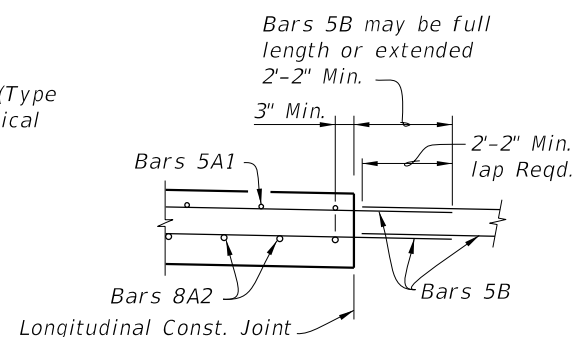
SECTION B-B
APPROACH SLAB WITH MEDIAN TRAFFIC RAILING



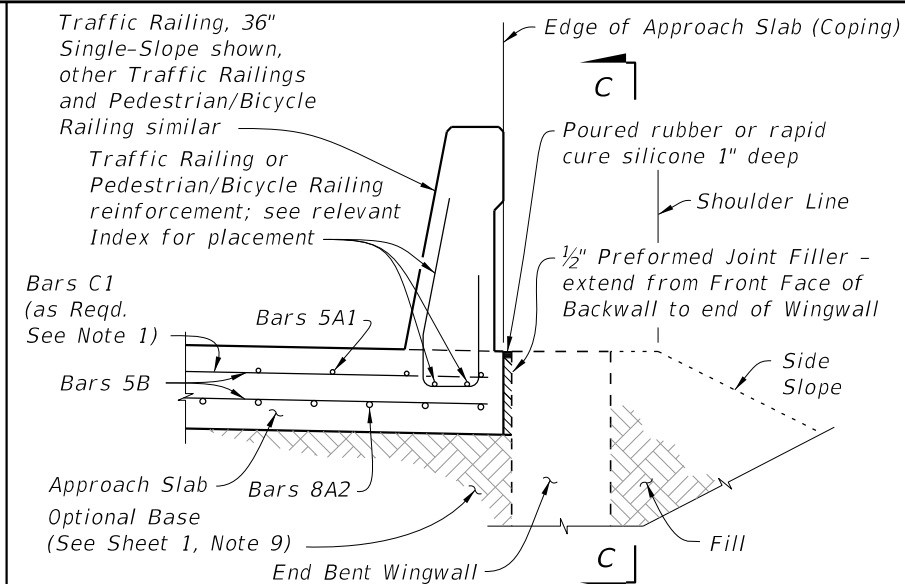
SECTION B-B
APPROACH SLAB WITH SIDEWALK



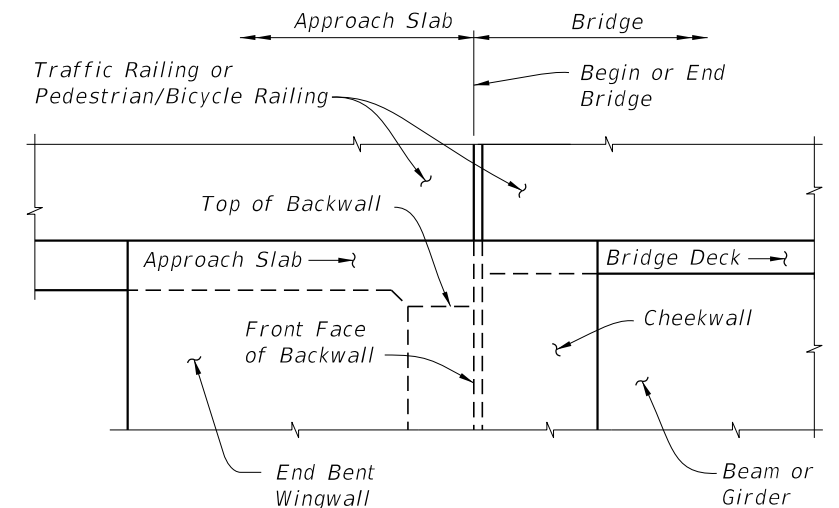
SECTION B-B
APPROACH SLAB WITH RAISED SIDEWALK



LONGITUDINAL CONSTRUCTION
JOINT DETAIL

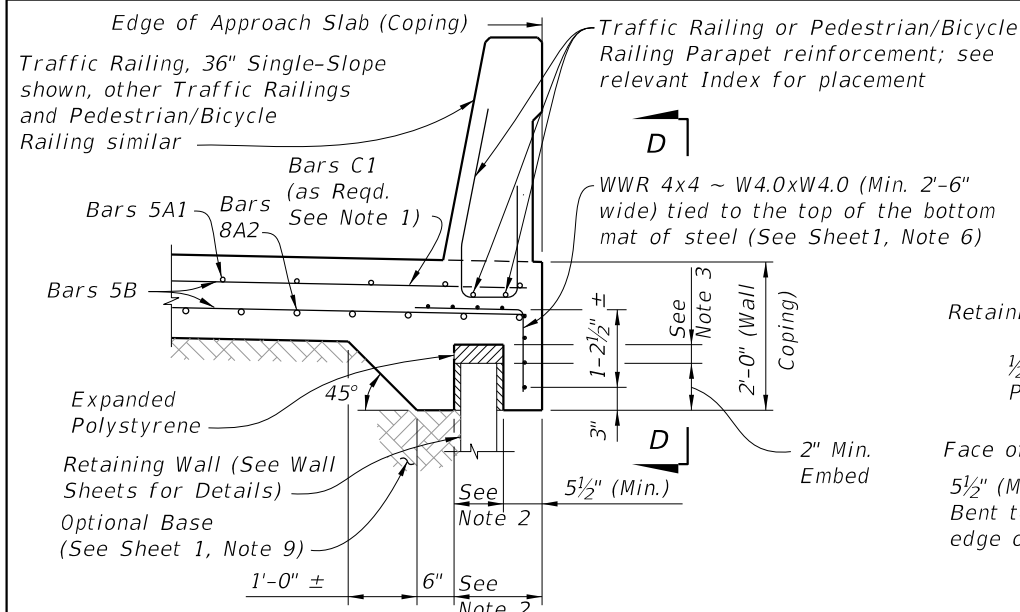


SECTION THRU APPROACH SLAB
AND END BENT WINGWALL

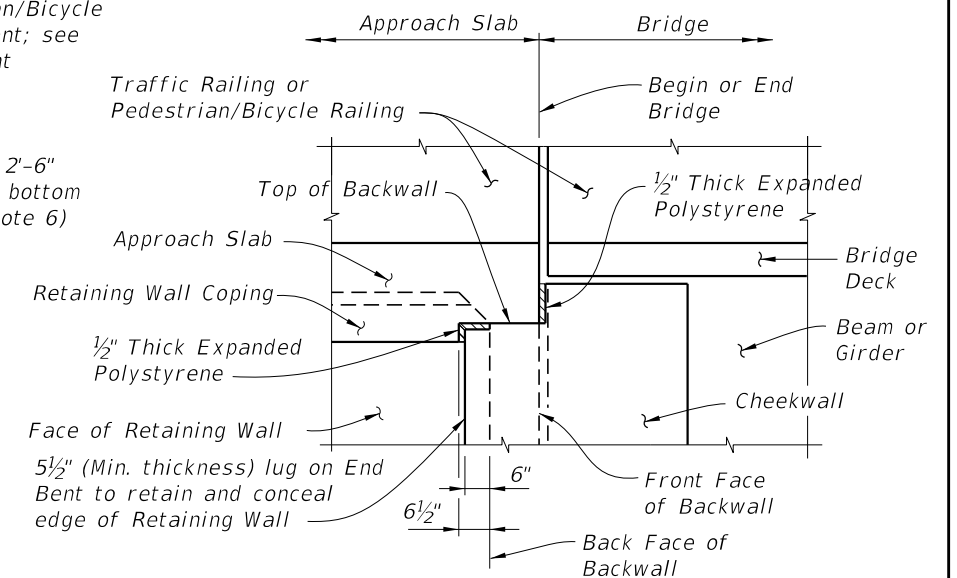


VIEW C-C AT BEGIN OR END BRIDGE (BEAM
BRIDGE SHOWN, FLAT SLAB BRIDGE SIMILAR)

APPROACH SLAB WITH WINGWALL DETAILS

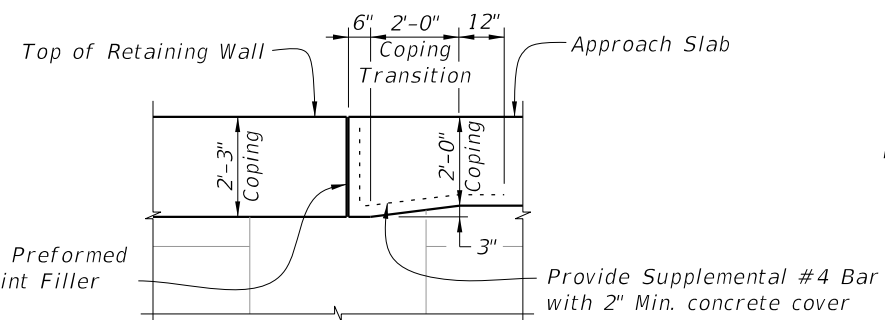


SECTION THRU APPROACH SLAB
AND RETAINING WALL



VIEW D-D AT BEGIN OR END BRIDGE (BEAM
BRIDGE SHOWN, FLAT SLAB BRIDGE SIMILAR)

APPROACH SLAB WITH RETAINING WALL DETAILS



COPING TRANSITION DETAIL FOR
RETAINING WALLS WITH 2'-3" COPING HEIGHT
(Railing Not Shown For Clarity)

CROSS REFERENCES:

For location of Section B-B and Longitudinal Construction Joint see Sheet 1.

NOTES:

1. Bars C1 are required as shown when the 36" or 42" Single-Slope Traffic Railing, or the Traffic Railing/Noise Wall, are used at the edge of the Approach Slab.
2. Actual location & width vary depending on type of Retaining Wall used.
3. Expanded Polystyrene 1" min. top for MSE walls, 3" min. top for rigid retaining walls. 1/2" each side.

LAST
REVISION
11/01/25

REVISION

DESCRIPTION:

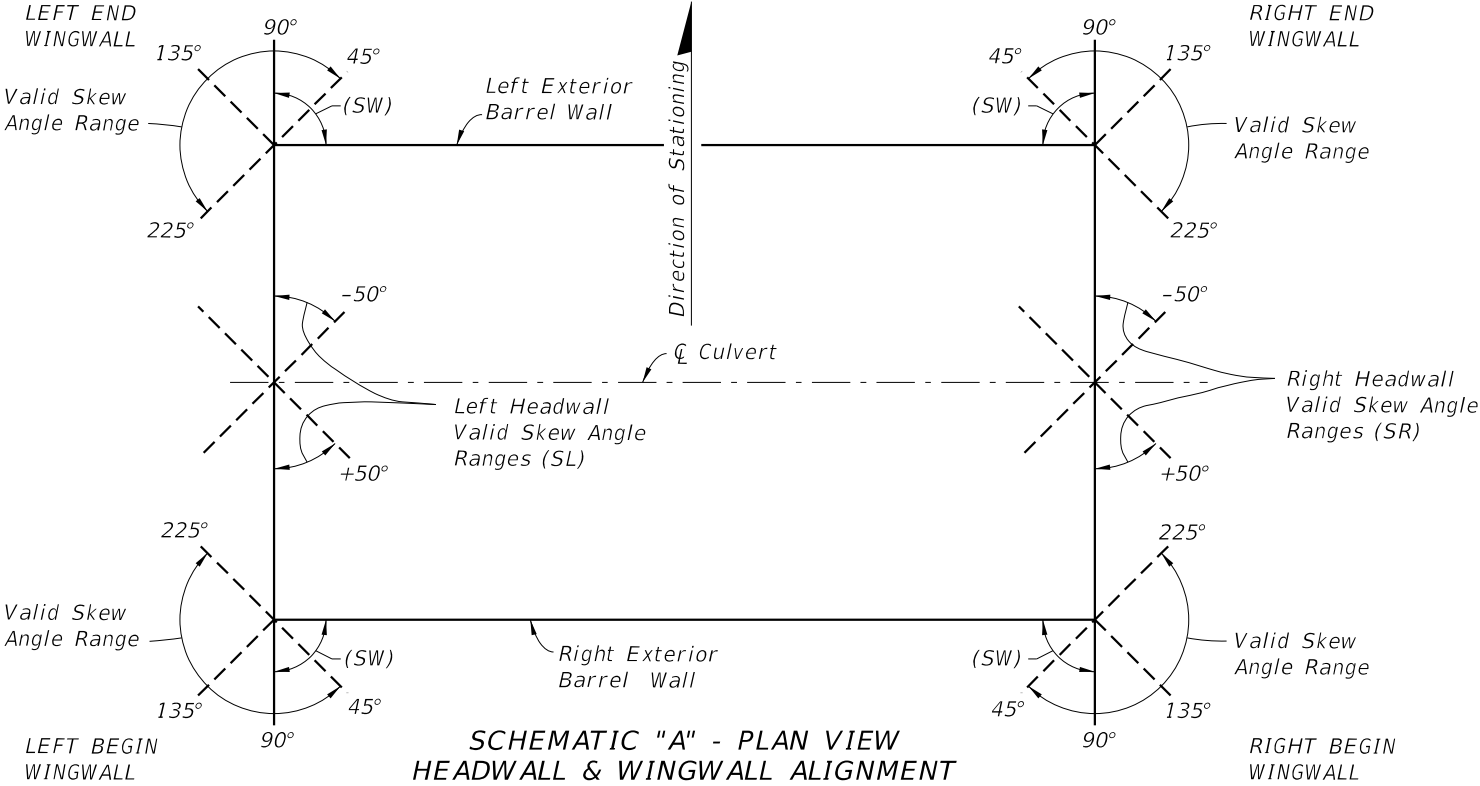


FY 2027-28
STANDARD PLANS

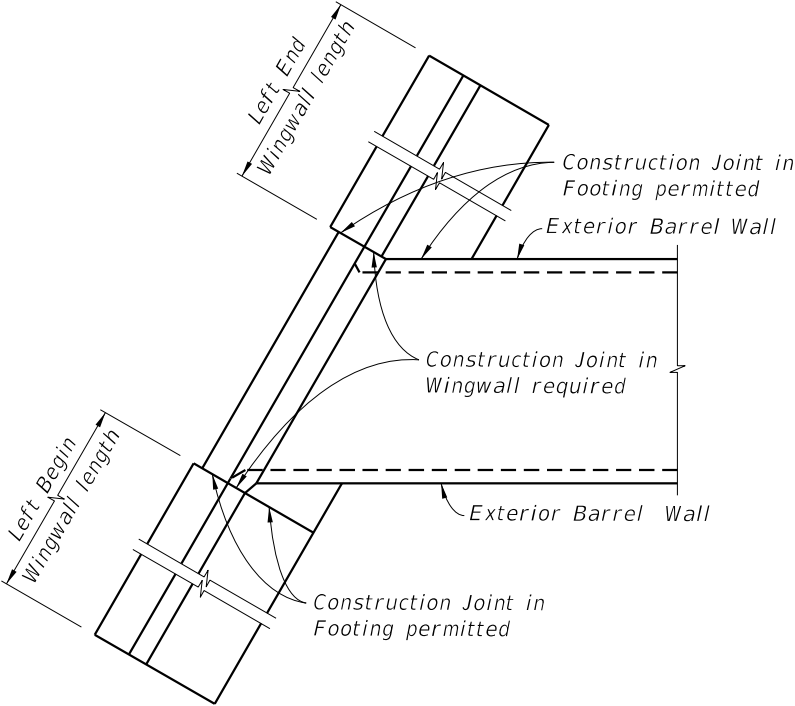
APPROACH SLABS (30 FT.)
(RIGID PAVEMENT APPROACHES)

INDEX
400-091

SHEET
2 of 2

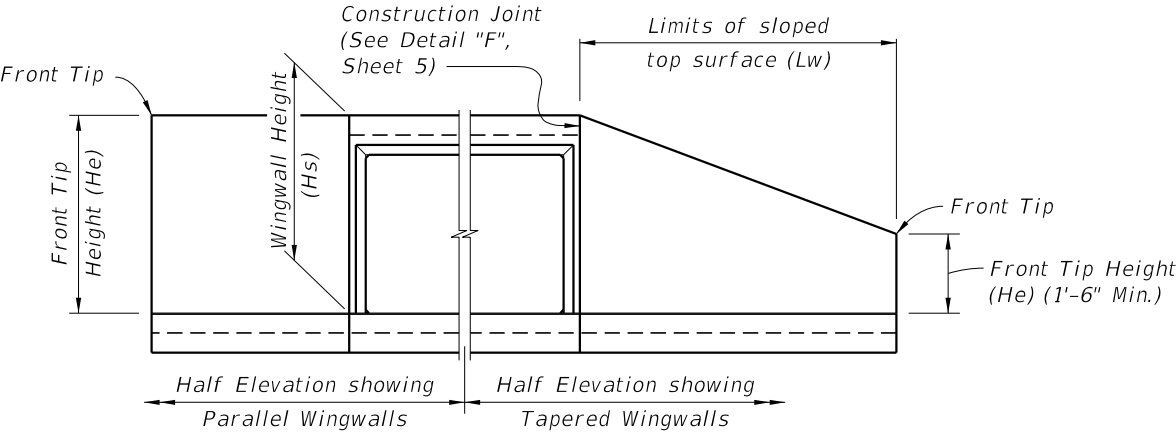


NOTE: All headwall and culvert skew angles are measured in degrees from a line perpendicular to the centerline of culvert (counter-clockwise positive), see Schematic "B".



PART PLAN SHOWING PARALLEL WINGWALLS AND LOCATION OF CONSTRUCTION JOINTS

NOTE: Construction Joints in wingwalls and footings are located as follows: For non-skewed wingwalls they are located adjacent to the exterior face of the exterior barrel wall; when the C of wingwall and C of exterior barrel wall results in an acute angle see Left End Wingwall above, and when the angle is obtuse see Left Begin Wingwall above and Detail C (Sheet 5).



END ELEVATION OF CULVERT

GENERAL NOTES:

LIVE LOAD: HL-93.

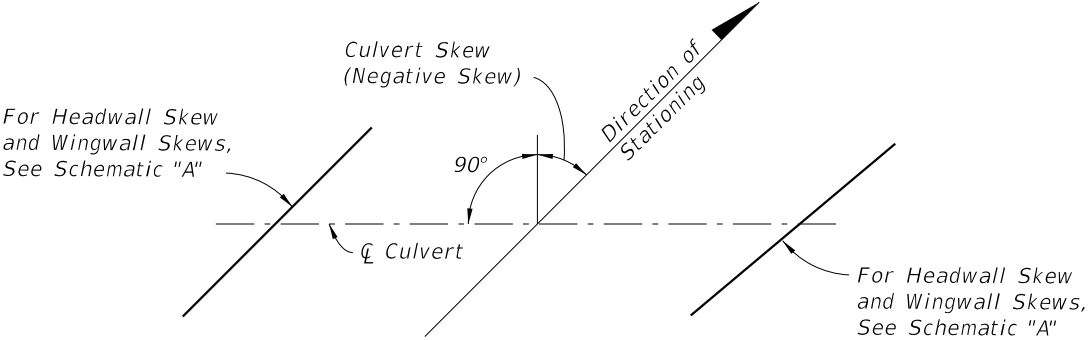
CONSTRUCTION LOADING: It is the construction Contractor's responsibility to provide for supporting construction loads that exceed AASHTO HL-93, and any construction load applied prior to 2 feet of compacted fill placed above the top slab.

SURFACE FINISH: All concrete surfaces shall receive a general surface finish.

SKEWED CONSTRUCTION JOINTS: Construction joints in barrels of culverts with skewed wingwalls may be placed parallel to the headwalls and the reinforcing steel, and the slabs may be cut provided that the cut reinforcing steel extends beyond the construction joint enough for splices to be made in accordance with Table 1 on this sheet. The cost of construction joints and additional reinforcing shall be at the expense of the Contractor.

CULVERT EXTENSIONS: For cut backs and ties into existing concrete box culverts see Sheet 6 of 8.

REINFORCING STEEL: See the "Box Culvert Data Tables" in the Contract Plans for grade and bar spacing. See the Reinforcing Bar List in the Contract Plans for bar sizes and bar bending details.

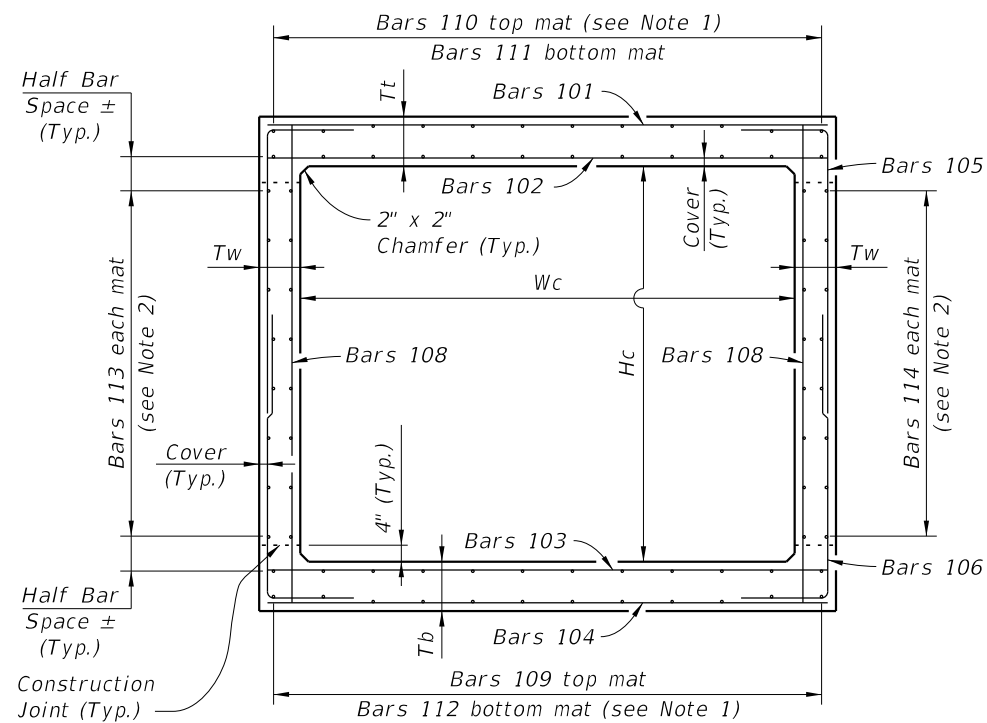


SCHEMATIC "B" - PLAN VIEW CULVERT ALIGNMENT

NOTE: For Culvert Skew see Contract Plans.

TABLE 1 - MINIMUM BAR SPLICE LENGTHS FOR LONGITUDINAL REINFORCING					
BAR SIZE	SPLICE (CLASS B)		BAR SIZE	SPLICE (CLASS B)	
	CLASS II (3400 psi)	CLASS IV (5500 psi)		CLASS II (3400 psi)	CLASS IV (5500 psi)
#3	1'-4"	1'-0"	#8	3'-5"	2'-8"
#4	1'-9"	1'-4"	#9	4'-3"	3'-4"
#5	2'-2"	1'-8"			
#6	2'-7"	2'-0"			
#7	3'-0"	2'-4"			

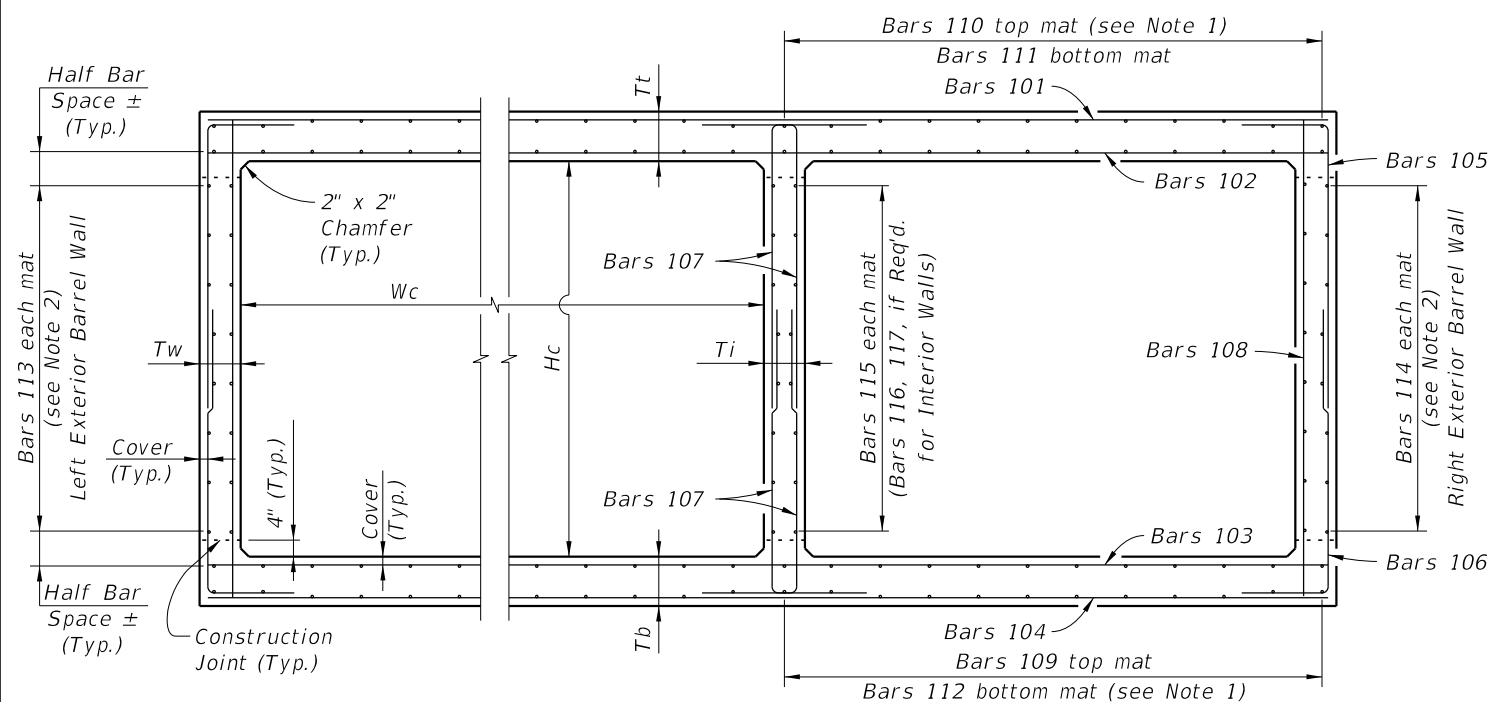
TABLE 1 NOTE: Splice lengths are based on an AASHTO Class B tension lap splice for the Specification Section 346 concrete class shown.



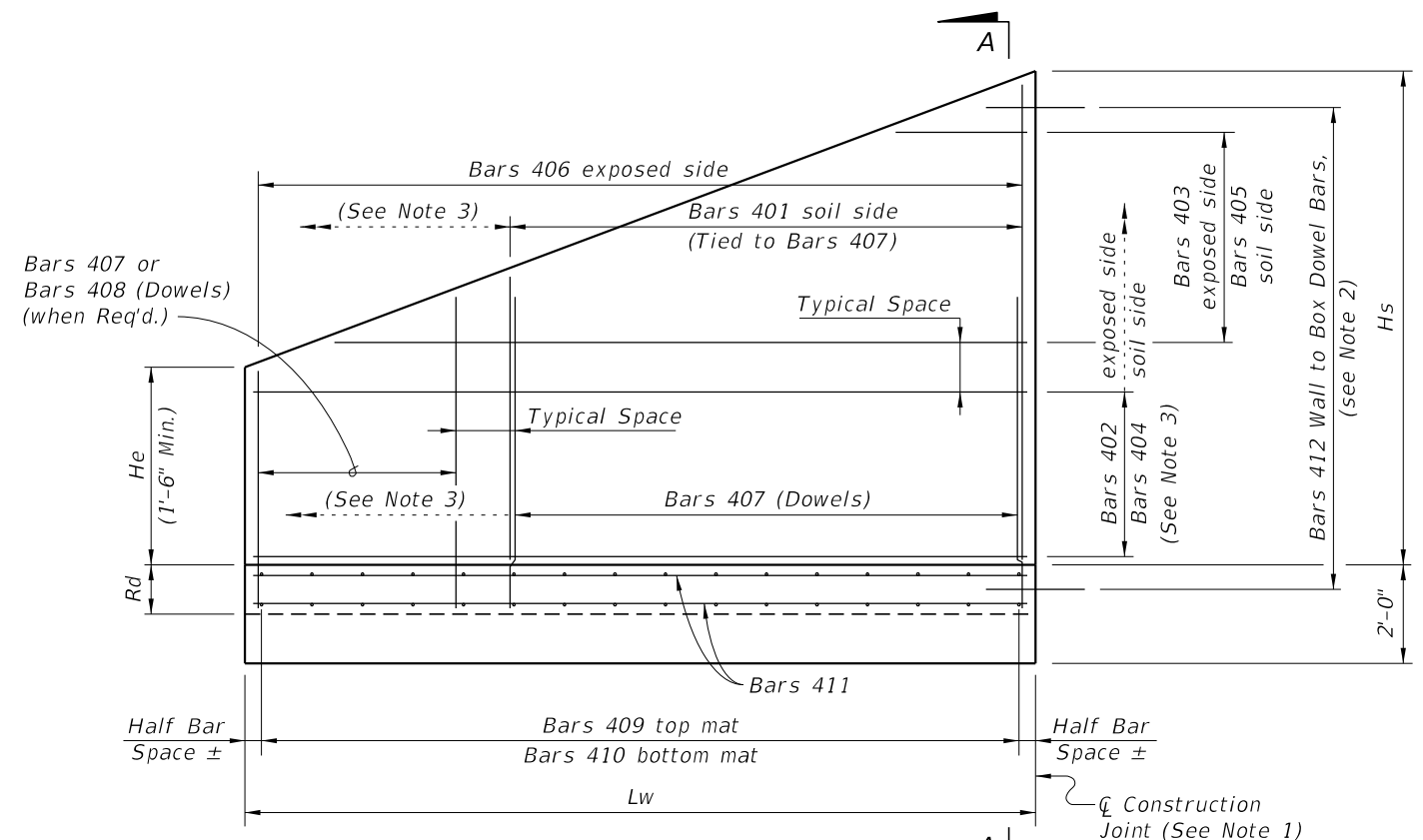
TYPICAL SECTION THRU SINGLE BARREL CULVERT

CULVERT BARREL NOTES:

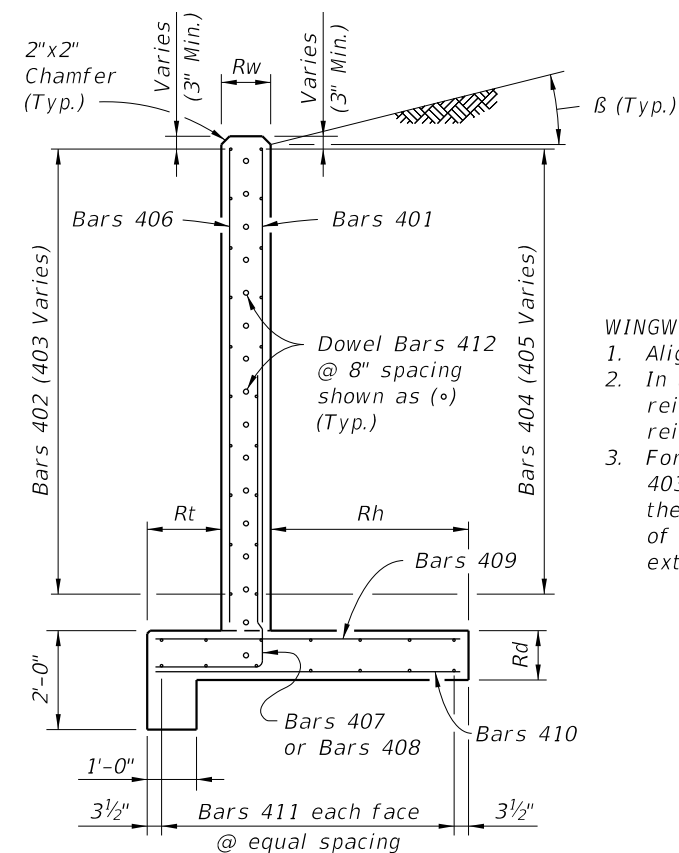
1. Space Bars 110 and 112 with a bar in each corner, and at the ϕ of interior walls (for multiple barrel culverts only), and the remaining bars placed at equal spacing shown in the Contract Plans. Adjust last bar spacing when required.
2. Place Bars 113 and 114 at spacing shown in the Contract Plans evenly between Bars 109 and 111.
3. Locate the first transverse bar from the ends of the culvert at one half the bar spacing, but provide the minimum reinforcement cover and not greater than 4" clear.



TYPICAL SECTION THRU MULTIPLE BARREL CULVERT



**WINGWALL ELEVATION - Variable Height
(Left End shown - other corners similar)**

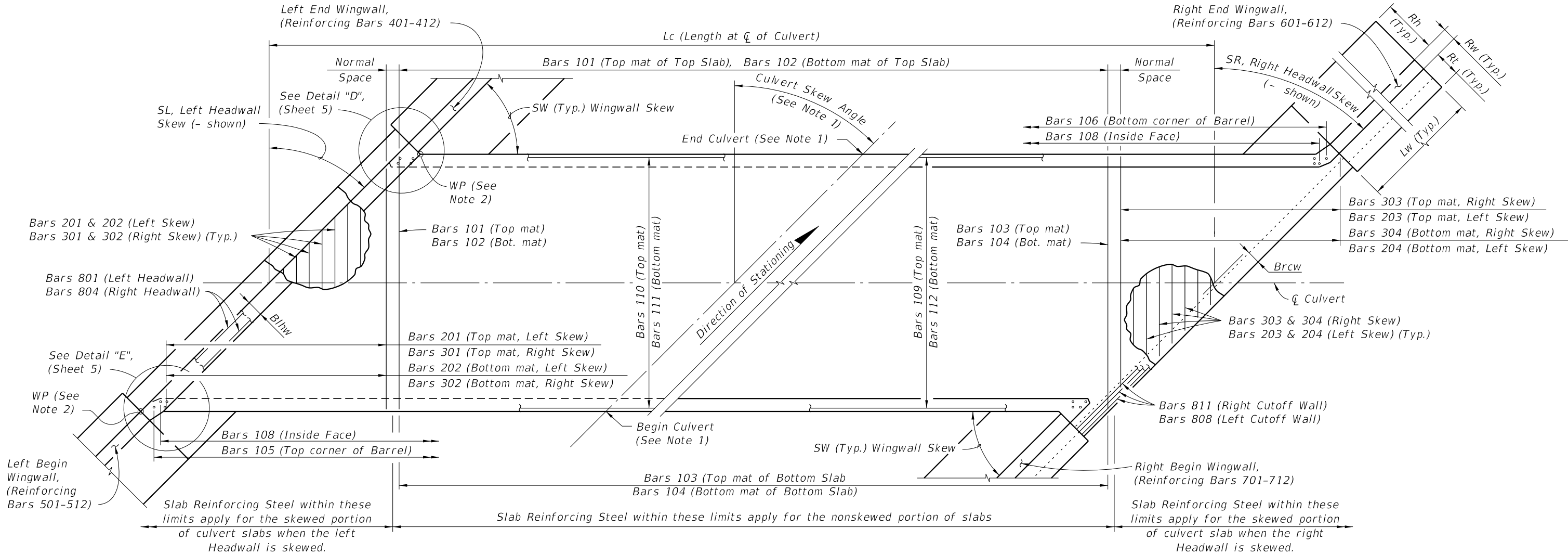


WINGWALL SECTION A-A

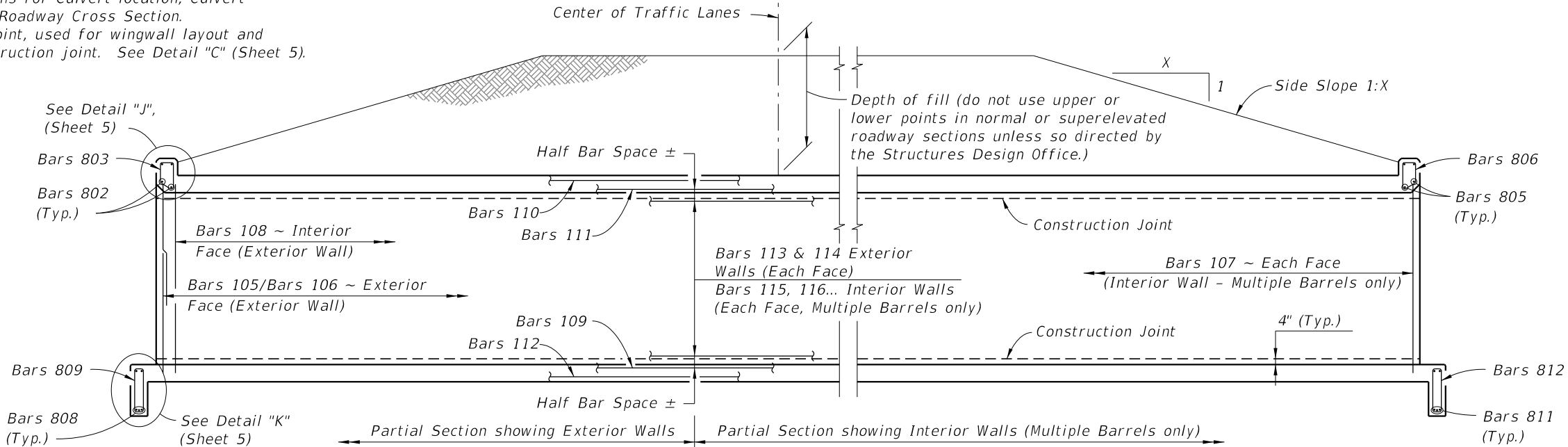
WINGWALL NOTES:

1. Align construction joint perpendicular to wingwall.
2. In the vicinity of the construction joint, field bend reinforcement as necessary to maintain minimum reinforcement cover.
3. For constant height wingwalls, variable length Bars 403, 405 & 408 are not required, and as such the limits of Bars 401 & 407 extend the full length of the wingwall, and the limits of Bars 402 & 404 extend to the full height of the wingwall.

LAST REVISION 07/01/13	REVISION DESCRIPTION:	 FY 2027-28 STANDARD PLANS	CONCRETE BOX CULVERT DETAILS		INDEX 400-289	SHEET 2 of 8
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- NOTES:**
1. See Contract Plans for Culvert location, Culvert Skew Angle and Roadway Cross Section.
 2. WP = Working Point, used for wingwall layout and location of construction joint. See Detail "C" (Sheet 5).

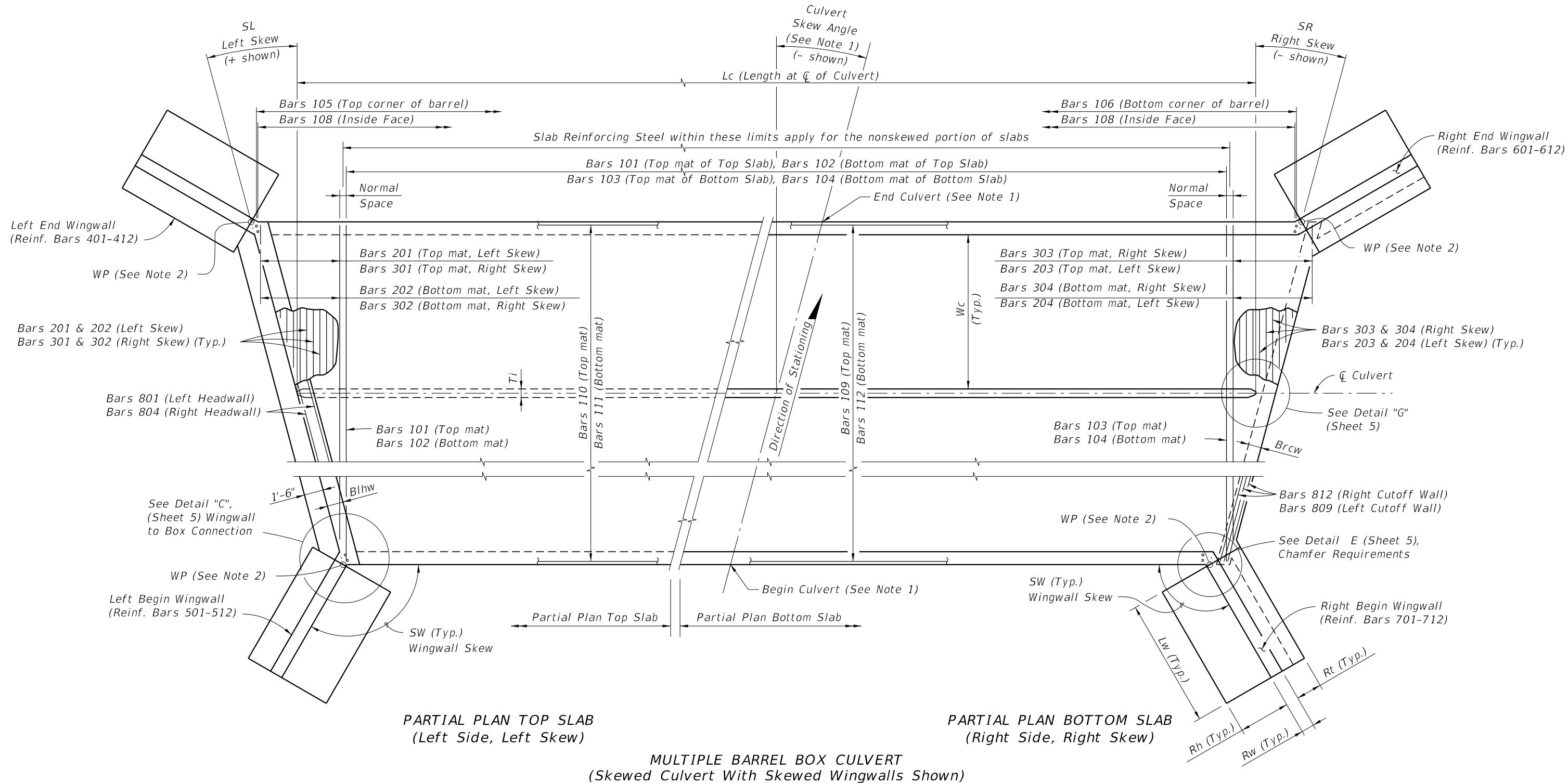


LONGITUDINAL SECTION THRU CULVERT (Transverse Top & Bottom Slab Reinforcing Not Shown For Clarity)

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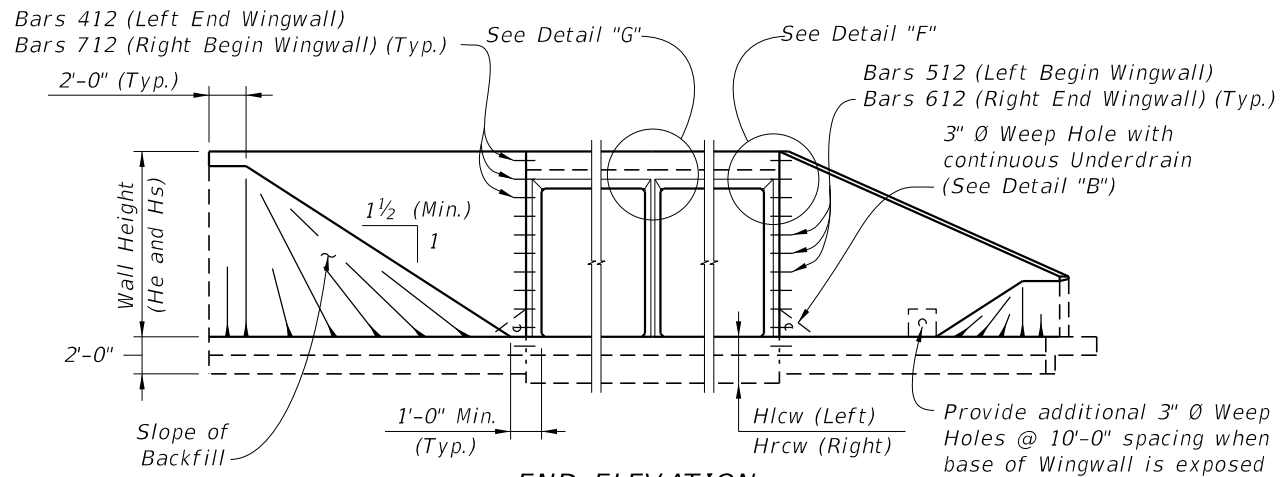
LAST REVISION	DESCRIPTION:	FDOT	FY 2027-28 STANDARD PLANS	CONCRETE BOX CULVERT DETAILS	INDEX	SHEET
01/01/07					400-289	3 of 8

9/16/2026 7:52:20 AM



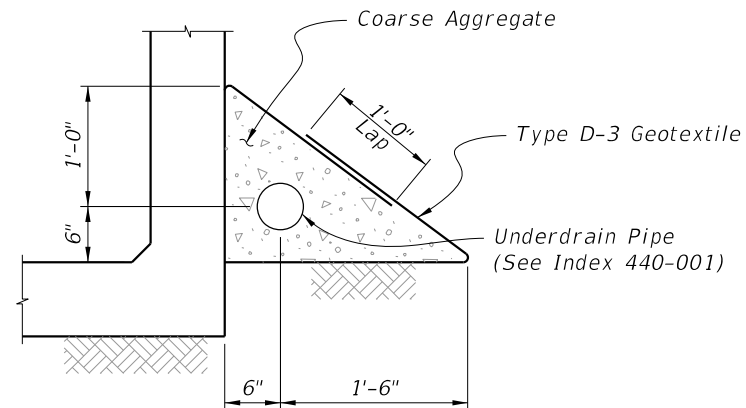
- NOTES:
1. See Contract Plans for Culvert Location, Culvert Skew Angle and Roadway Cross Section.
 2. WP = Working Point, used for wingwall layout and location of construction joint. See Detail C (Sheet 5).

LAST REVISION 01/01/07	REVISION DESCRIPTION:	 FY 2027-28 STANDARD PLANS	CONCRETE BOX CULVERT DETAILS	INDEX 400-289	SHEET 4 of 8
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END ELEVATION
(Showing Constant Height And Variable Height Wingwalls)

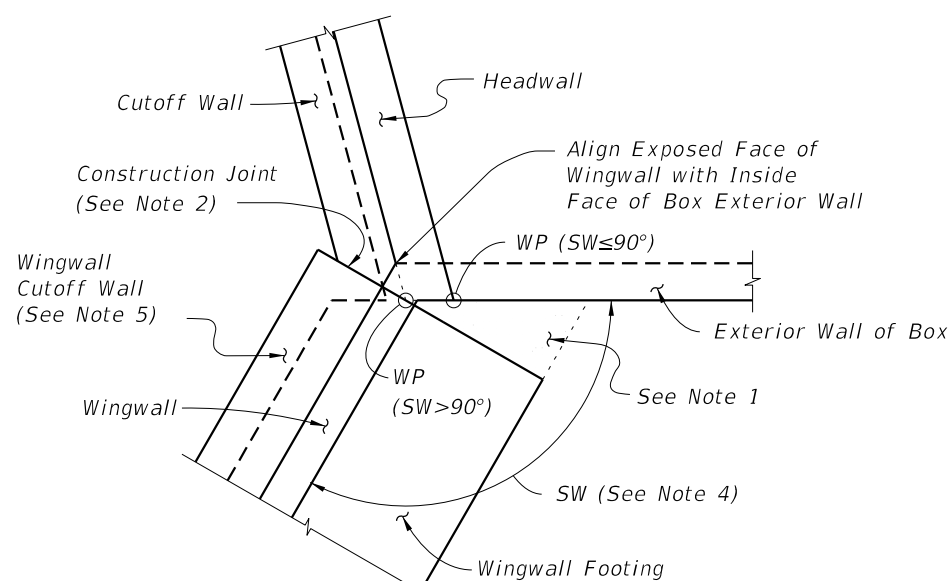
DETAIL "B"
UNDERDRAIN DETAIL
(Similar to Type II ~ Index 440-001)



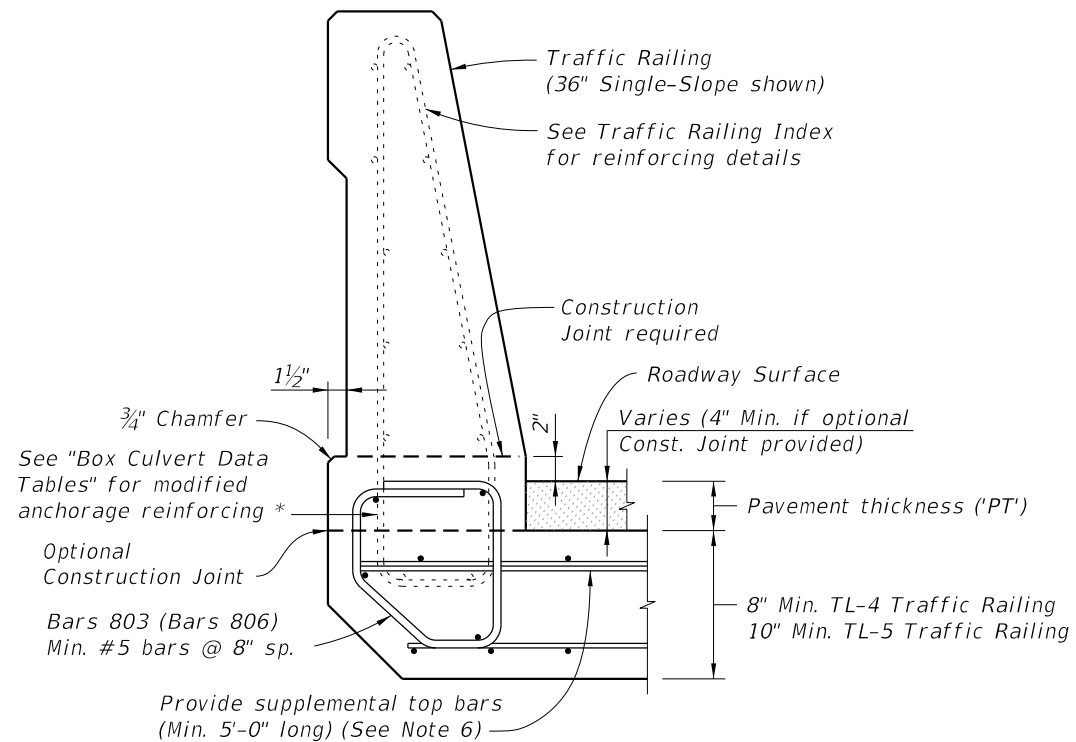
NOTES:

1. For small angles, the Contractor may elect to fill the area between the box and the wingwall footing with unreinforced concrete. For wingwall skew angles less than 90 degrees, field bend wingwall reinforcement as necessary while maintaining cover. No additional payment will be made for this work.
2. Location of Construction Joint determined by WP at theoretical intersection of:
- Soil side face of Headwall and outside face of Box Exterior Wall, for $SW \leq 90^\circ$;
- Outside face of Headwall and outside face of Box Exterior Wall, for $SW > 90^\circ$.
3. Provide 6" chamfer when angle 'A' is greater than 45° . Maintain minimum wall thickness. Field adjust reinforcing to maintain cover.
4. Wingwall Skew Angles (SW) are measured from the adjacent box exterior wall to the wingwall.
5. Turn or extend Wingwall Cutoff Wall as necessary to meet Box Cutoff Wall.
6. Provide additional reinforcement in the top of the top slab below traffic railings to ensure a minimum area of 0.80 sq. in./ft. transverse reinforcing.

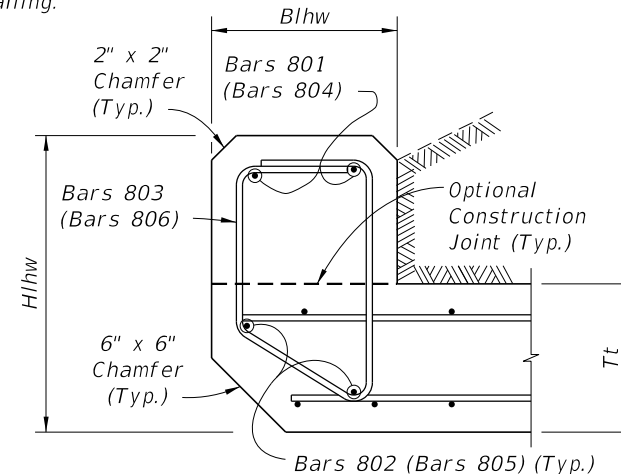
* Included in the cost of the Traffic Railing.



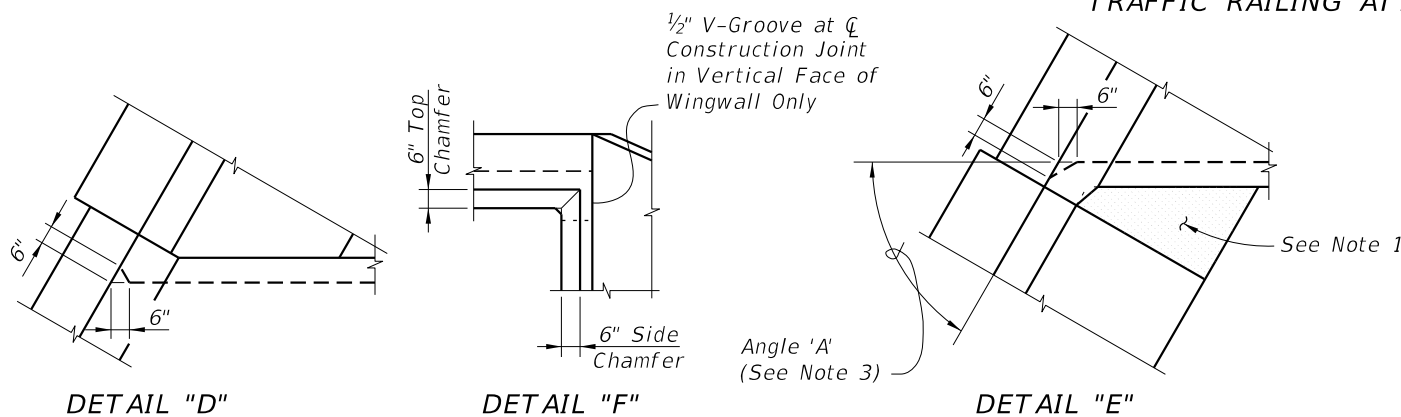
DETAIL "C" - PLAN VIEW
WINGWALL TO BOX CONNECTION
(Left Begin Corner Shown, Other Corners Similar)



DETAIL "I"
TRAFFIC RAILING ATTACHMENT TO HEADWALL



DETAIL "J"
LEFT HEADWALL SECTION
(Right Headwall similar)



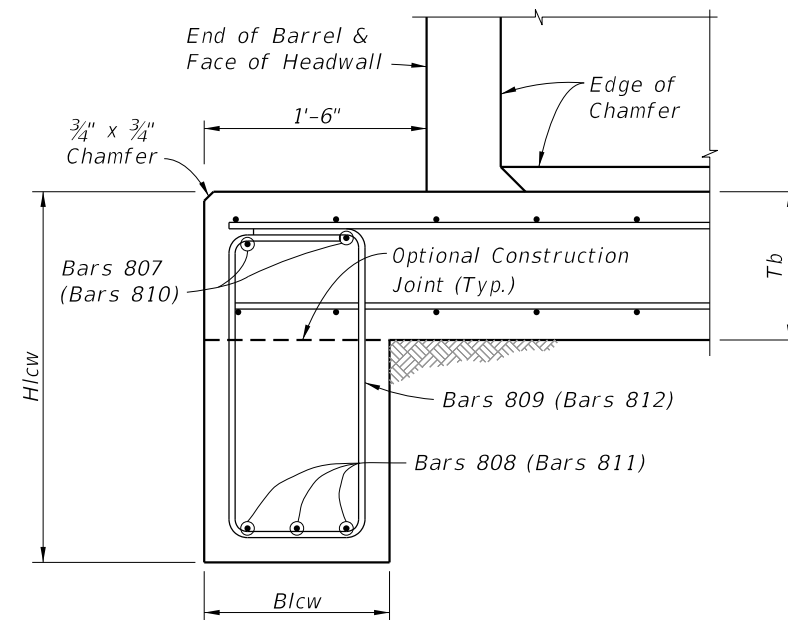
DETAIL "D"

DETAIL "F"

DETAIL "E"

DETAIL "G"

SECTION H-H

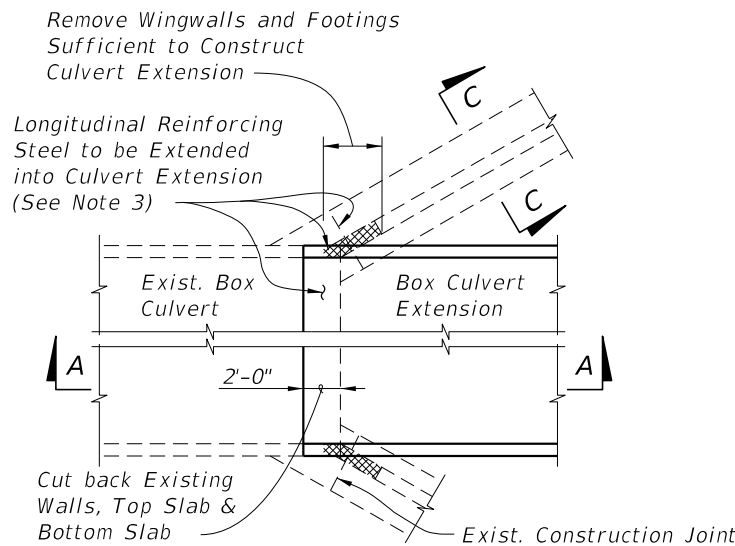


DETAIL "K"
LEFT CUTOFF WALL SECTION
(Right Cutoff Wall similar)

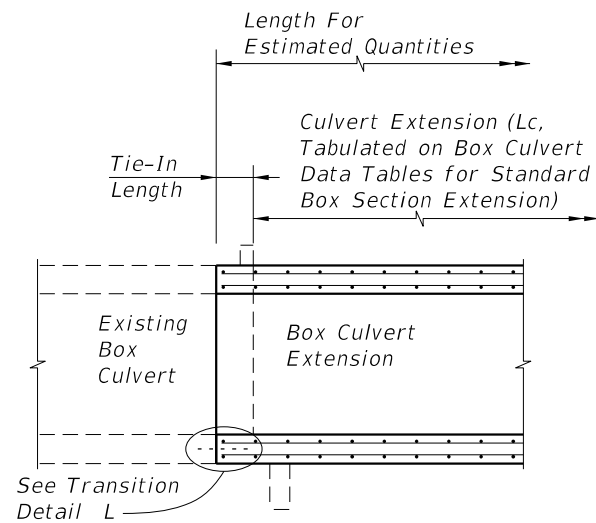
CROSS REFERENCE:
See Sheet 3 for locations of Details "D", "E", "J" & "K".
See Sheet 4 for locations of Detail "C".

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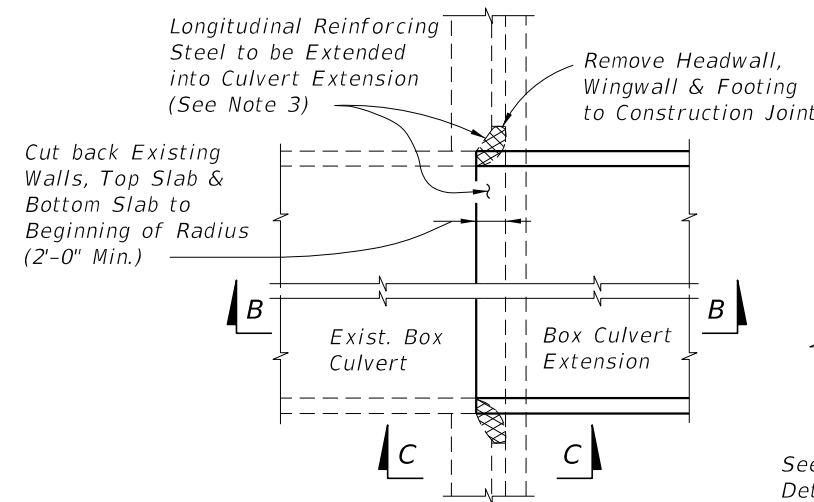
LAST REVISION	DESCRIPTION:	FY 2027-28 STANDARD PLANS	CONCRETE BOX CULVERT DETAILS	INDEX	SHEET
11/01/23		FDOT		400-289	5 of 8



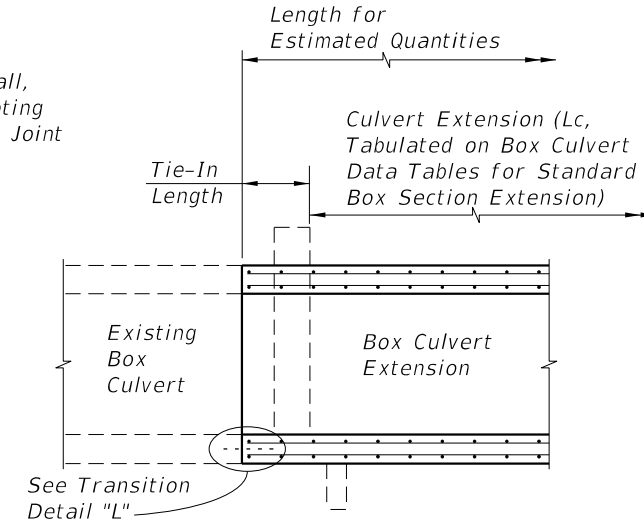
OUTSIDE WALLS OF BOXES



SECTION A-A



OUTSIDE WALLS OF BOXES

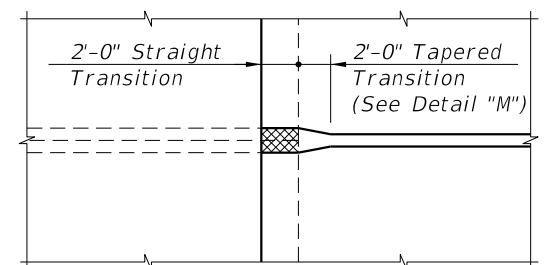


SECTION B-B

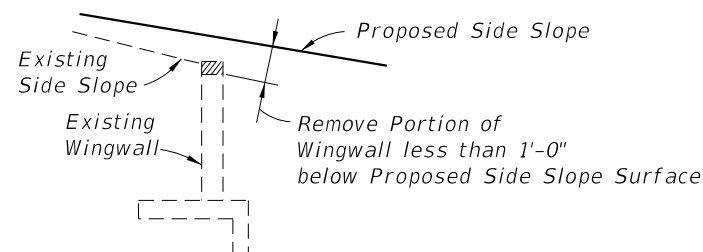
STRAIGHT WINGWALL

NOTES:

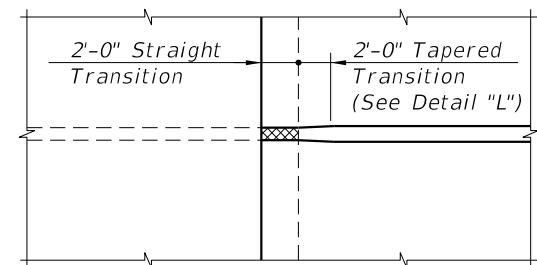
1. The Box Culvert Data Tables and Reinforcing Bar List do not include the additional quantities needed for dowel connections or transitions from double walls of existing concrete box culverts; the cost for additional reinforcement and the thickened concrete wall in the transitional area shall be included in the costs for concrete and steel in the culvert extension.
2. Cost for removal and disposal of material from existing headwalls, wingwalls and box, and cost of cleaning, straightening and extending or doweling longitudinal reinforcing steel shall be included in the cost for concrete and steel of the culvert extension.
3. Remove existing concrete while avoiding damage to existing reinforcement. Clean and straighten existing reinforcement, lap and tie onto extension reinforcement.
4. Dowel in #4 Bars @ 1'-0" max. spacing into wall/slab when there is a single mat of existing reinforcing steel, otherwise splice 1'-6" as shown for inside reinforcement. Use an Adhesive Bonding Material System in accordance with Specifications Section 416 & 937.
5. Provide additional transverse bars for top and bottom slab, parallel and full width of any skewed joint connection when shown in the Plans.
6. See Box Culvert Data Table notes in Plans for Connection Types allowed.



INTERIOR DOUBLE WALLS OF BOXES

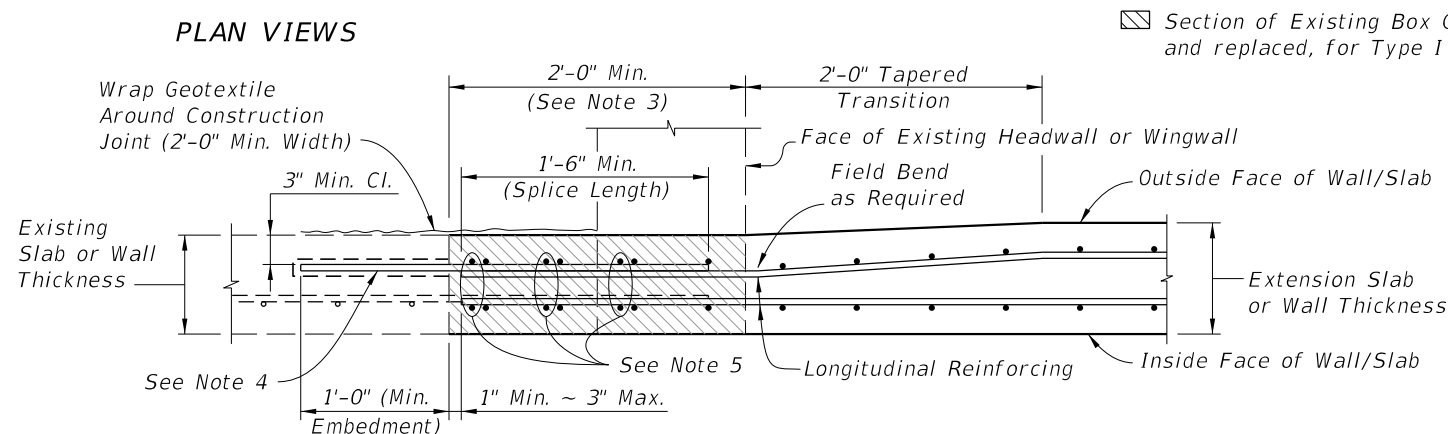


SECTION C-C

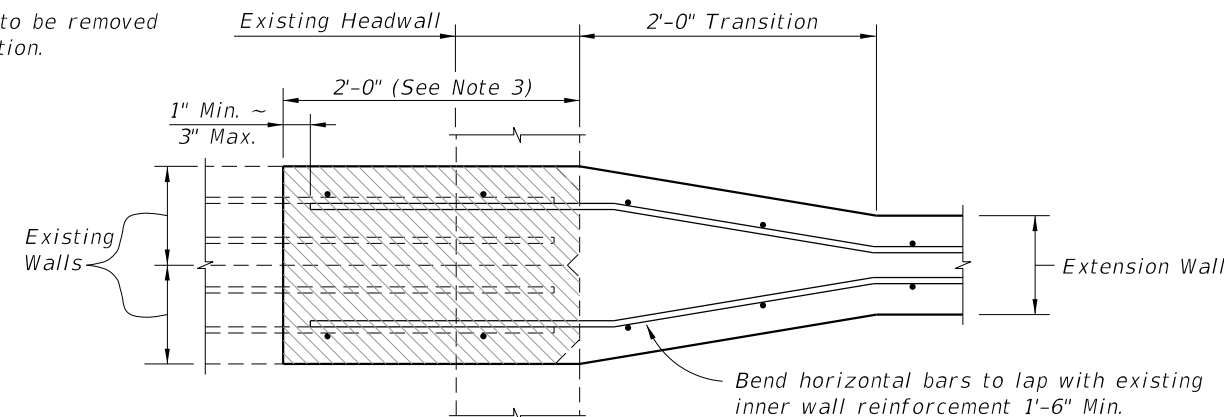


INTERIOR SINGLE WALLS OF BOXES

PLAN VIEWS



DETAIL "L" - TRANSITION FOR EXTERIOR WALL/SLAB EXTENSION
(Interior Single Walls Similar)

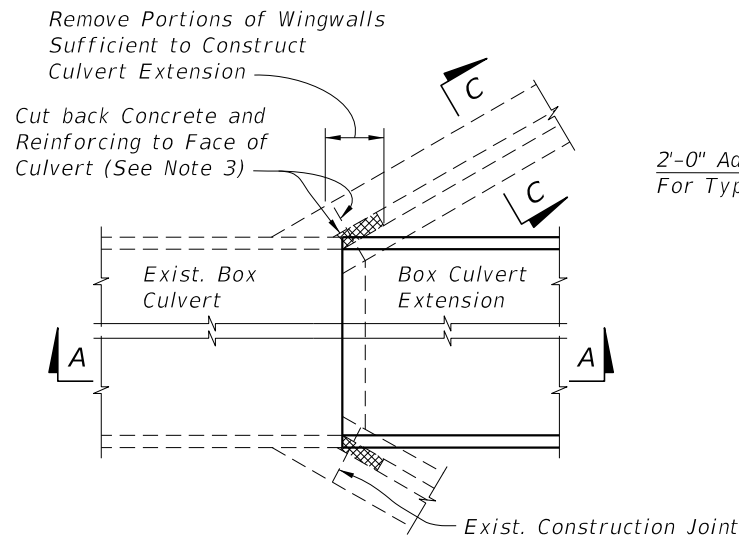


DETAIL "M" - TRANSITION FOR INTERIOR DOUBLE WALLS OF BOX CULVERTS

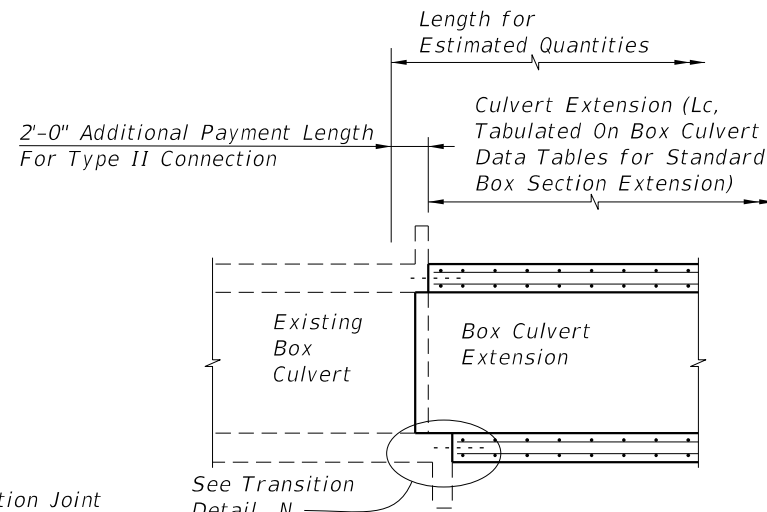
TYPE I CONNECTION DETAILS FOR CONCRETE BOX CULVERT EXTENSIONS
(CUT BACK EXISTING CONCRETE)

9/16/2026 7:52:23 AM

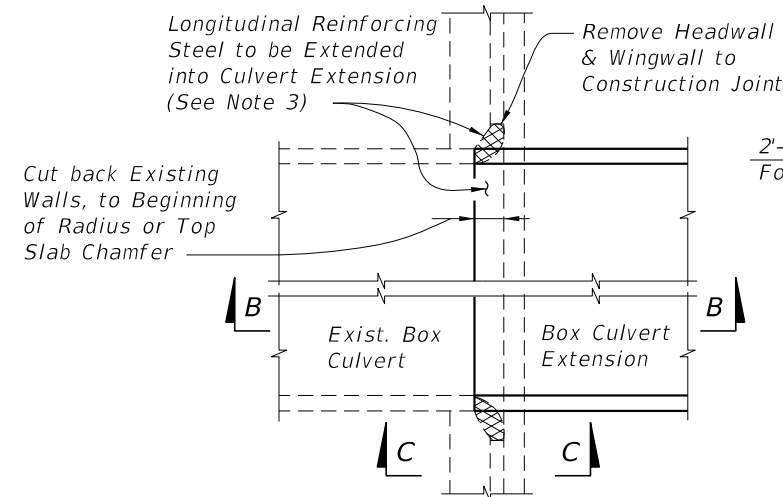
LAST REVISION 11/01/23	REVISION	DESCRIPTION:		FY 2027-28 STANDARD PLANS	CONCRETE BOX CULVERT DETAILS	INDEX 400-289	SHEET 6 of 8
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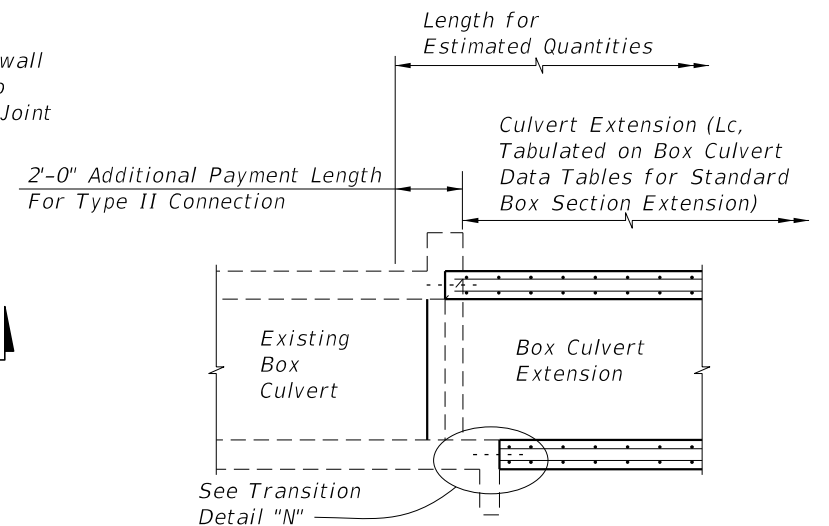
OUTSIDE WALLS OF BOXES



SECTION A-A



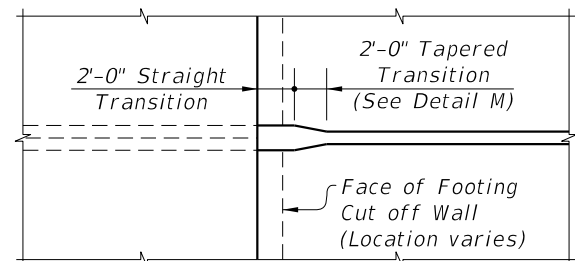
OUTSIDE WALLS OF BOXES



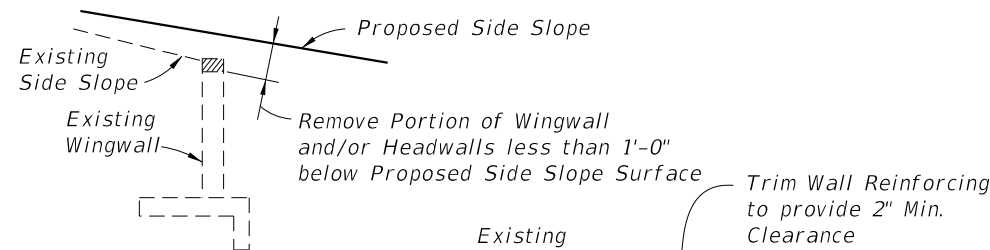
SECTION B-B

FLARED WINGWALL

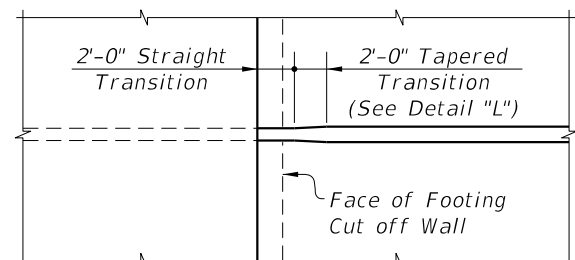
STRAIGHT WINGWALL



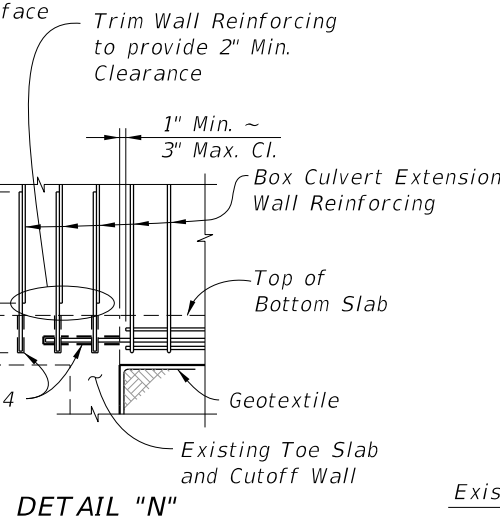
INTERIOR DOUBLE WALLS OF BOXES



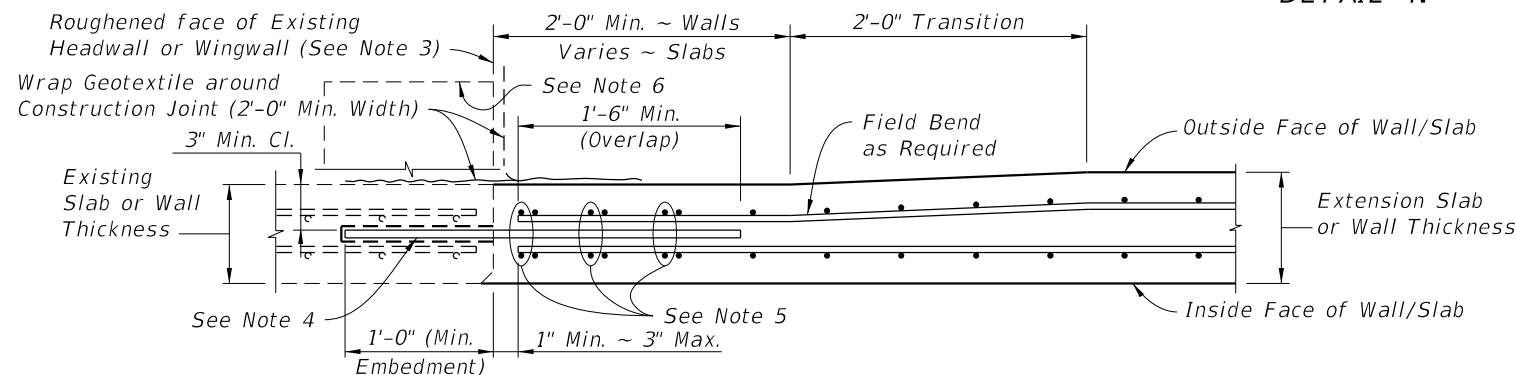
SECTION C-C



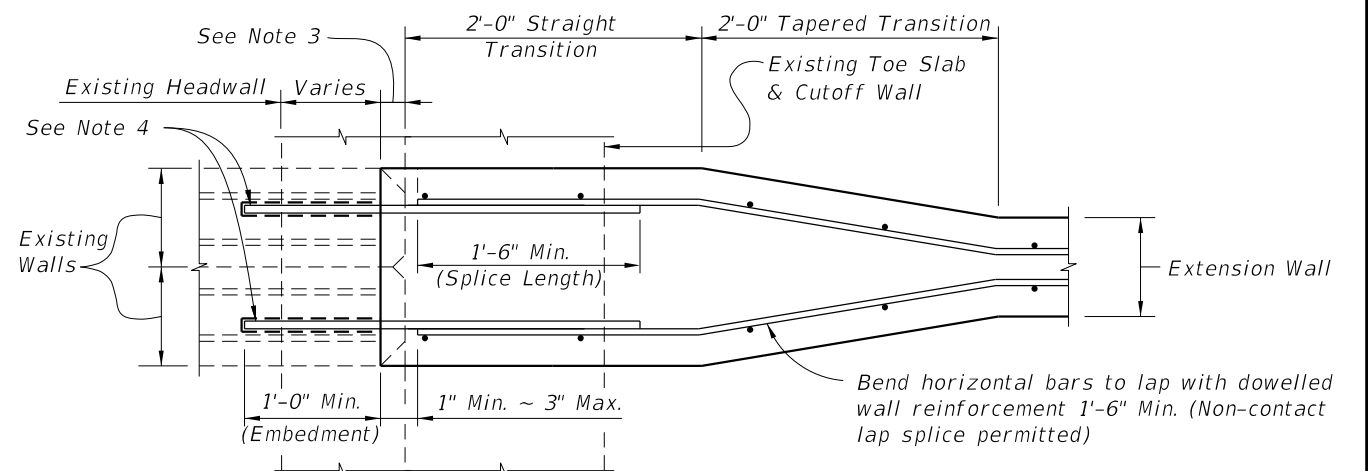
INTERIOR SINGLE WALLS OF BOXES
PLAN VIEWS



DETAIL "N"



DETAIL "L" - TRANSITION FOR EXTERIOR WALL/SLAB EXTENSION
(Interior Single Walls Similar)



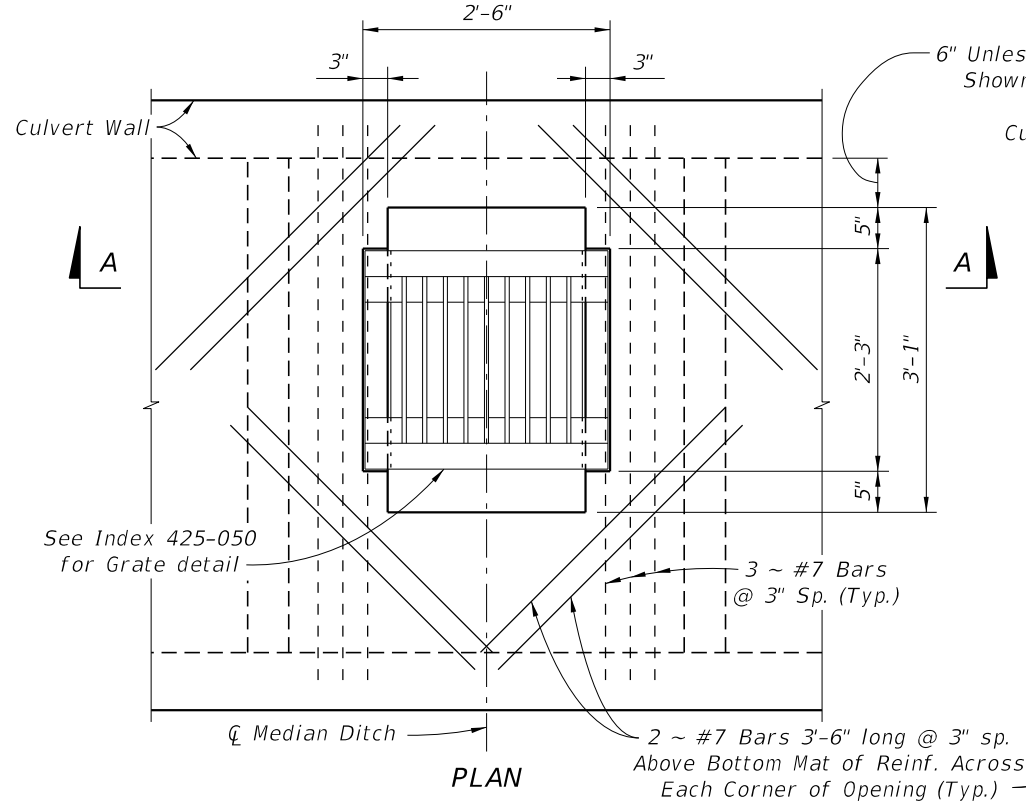
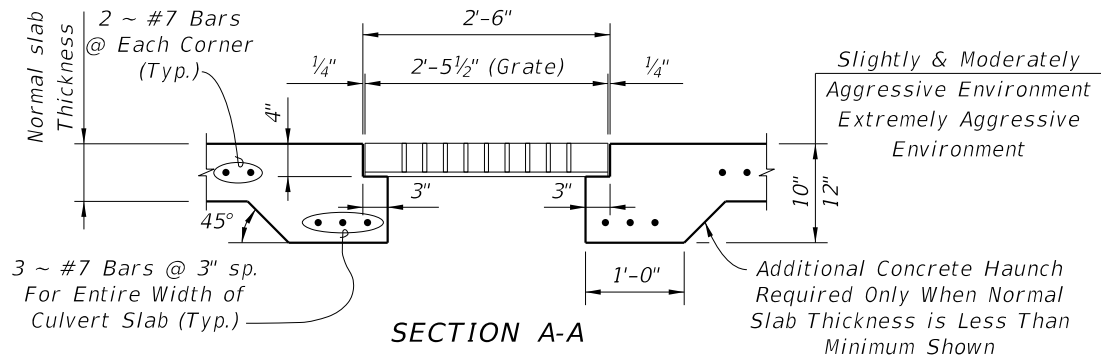
DETAIL "M" - TRANSITION FOR INTERIOR DOUBLE WALLS OF BOX CULVERTS

TYPE II CONNECTION DETAILS FOR CONCRETE BOX CULVERT EXTENSIONS
(ADHESIVE DOWEL TO EXISTING CONCRETE)

NOTES:

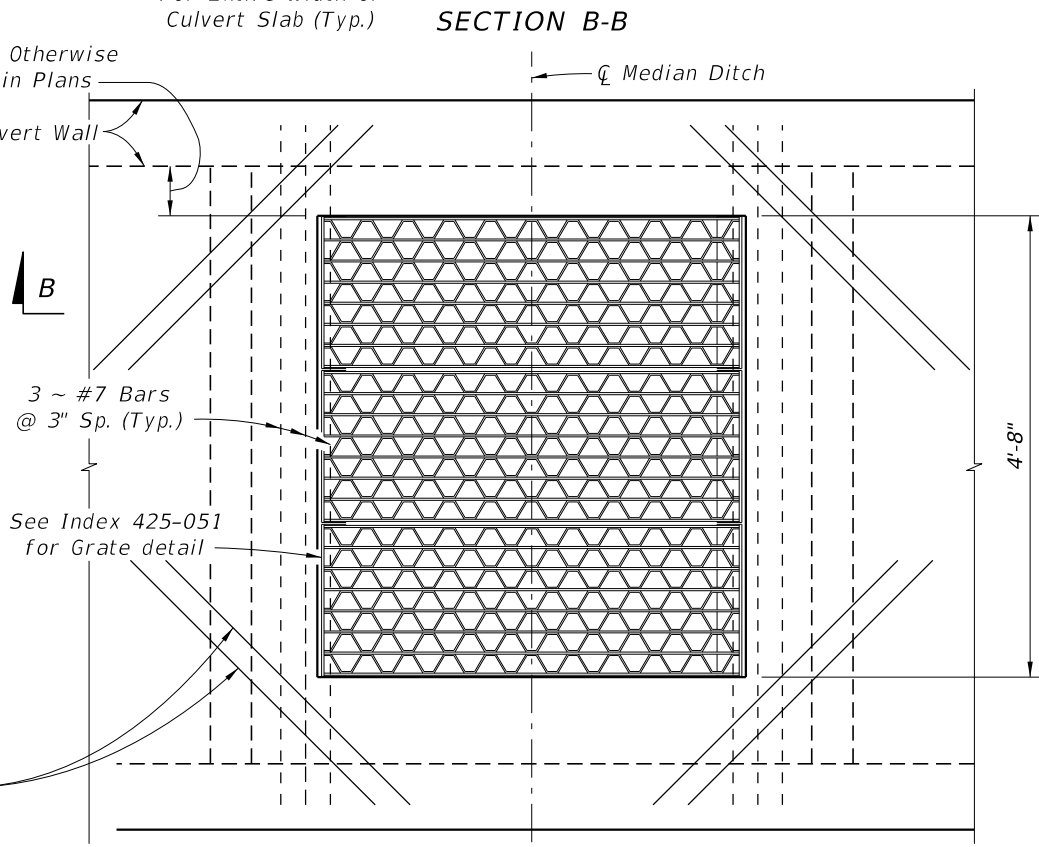
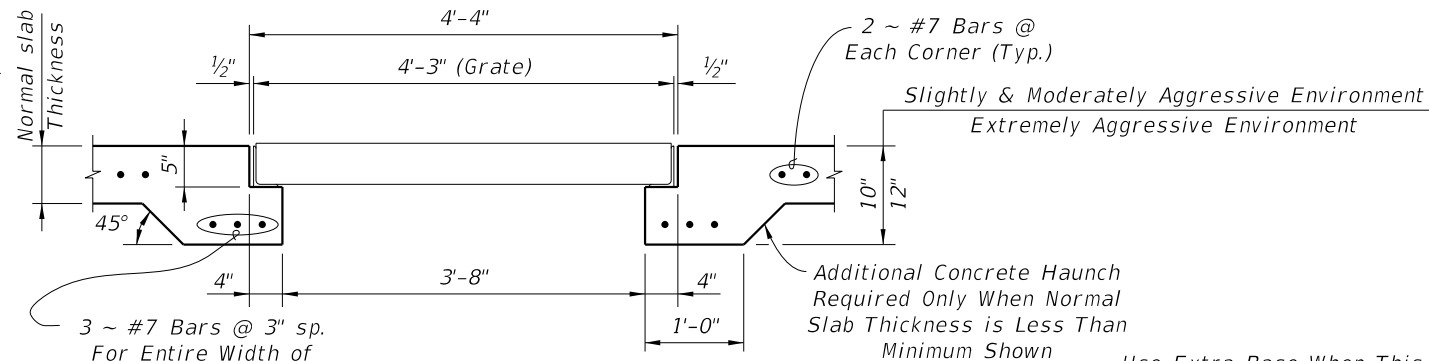
1. The Box Culvert Data Tables and Reinforcing Bar List do not include the additional quantities needed for dowel connections or transitions from double walls of existing concrete box culverts; the cost for additional reinforcement and the thickened concrete wall in the transitional area shall be included in the costs for concrete and steel in the culvert extension.
2. Cost for roughening and cleaning existing headwalls, wingwalls and box, and cost of doweling longitudinal reinforcing steel shall be included in the cost for concrete and steel of the culvert extension.
3. Remove existing concrete and reinforcing back to edge of any chamfers exceeding 1". Roughen and clean existing or exposed surface and coat with a Type A epoxy bonding compound in accordance with the manufacturer's recommendations.
4. Dowel in #5 Bars @ 1'-0" max. spacing horizontally into center of wall/slab. Provide vertical dowels in footing to match size, alignment and spacing of outside vertical wall reinforcing. Use an Adhesive Bonding Material System in accordance with Specifications Section 416 & 937.
5. Provide additional transverse bars for top and bottom slab, parallel and full width of any skewed joint connection when shown in the Plans.
6. Remove top of existing headwall when necessary to provide 1'-0" clearance below finished grade. Saw cut full width and seal with Type F-2 epoxy compound to protect exposed reinforcing.
7. See Box Culvert Data Table notes in Plans for Connection Types allowed.

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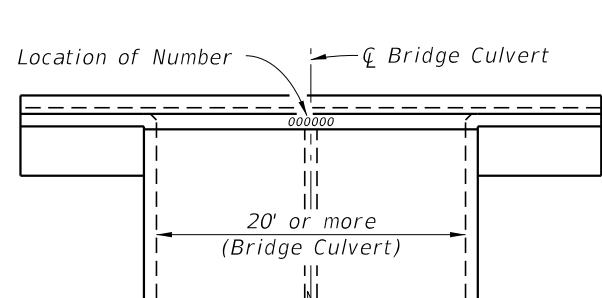
INLET TYPE A GRATE

- NOTES:
1. Cost of Steel Grating to be included in cost of Box Culvert.
 2. All reinforcing shall be 2" clear for Slightly and Moderately Aggressive Environments, and 3" clear for Extremely Aggressive Environments.



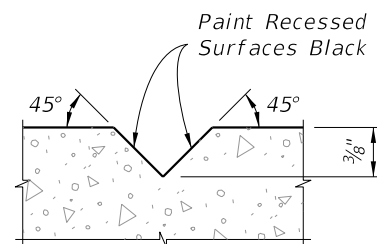
INLET TYPE B GRATE

INLET IN TOP OF BOX CULVERT



The number is to be placed in the center of the top surface of all bridge culvert headwalls. For Bridge Number see Plan-Profile sheet(s).

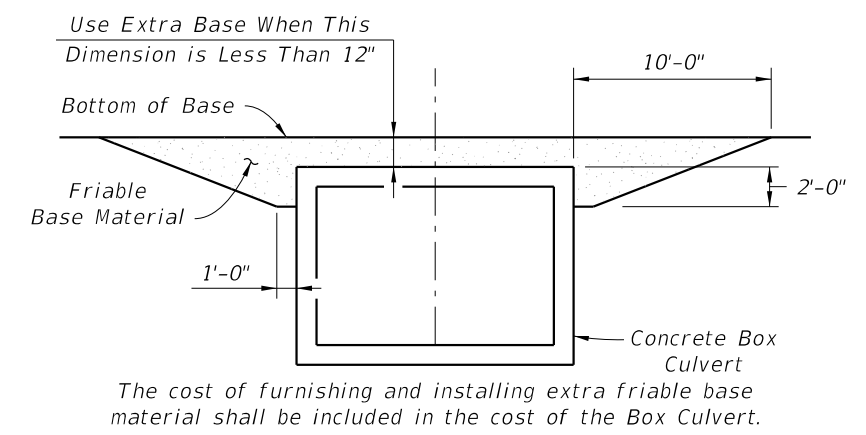
TOP VIEW OF HEADWALL



SECTION THRU RECESSED V-GROOVE TO FORM INSCRIBED FIGURES

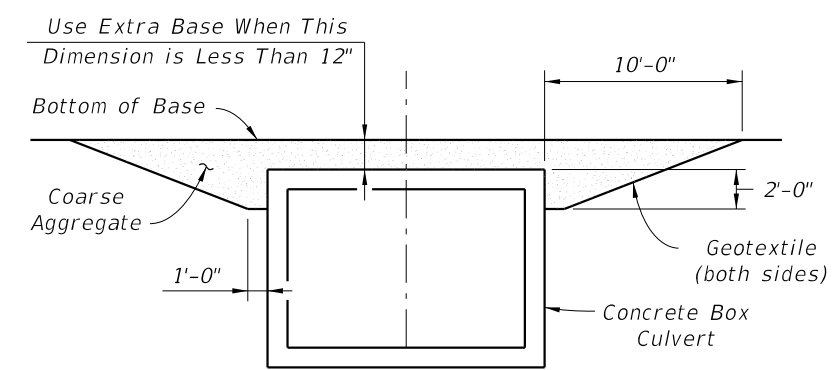
Black Plastic Figures 3" in height as approved by the Engineer may be used in lieu of numbers formed by 3/8" V-Grooves. V-Grooves shall be formed by preformed figures.

BRIDGE CULVERT NUMBER LOCATION



FRIABLE BASE

The cost of furnishing and installing extra friable base material shall be included in the cost of the Box Culvert.



ASPHALTIC CONCRETE BASE

Place coarse aggregate in 6 inch lifts and compact sufficiently as to be firm and unyielding. Provide coarse aggregate gravel or stone meeting the requirements of Specification Section 901-2 or 901-3 respectively. Meet the gradation requirements of Specification Section 901-6, Grades 4, 467, 5, 56 or 57 unless restricted in the plans. Provide Type D-3 Geotextile (see Specification Section 514). The cost of furnishing and installing the coarse aggregate and geotextile shall be included in the cost of the Box Culvert.

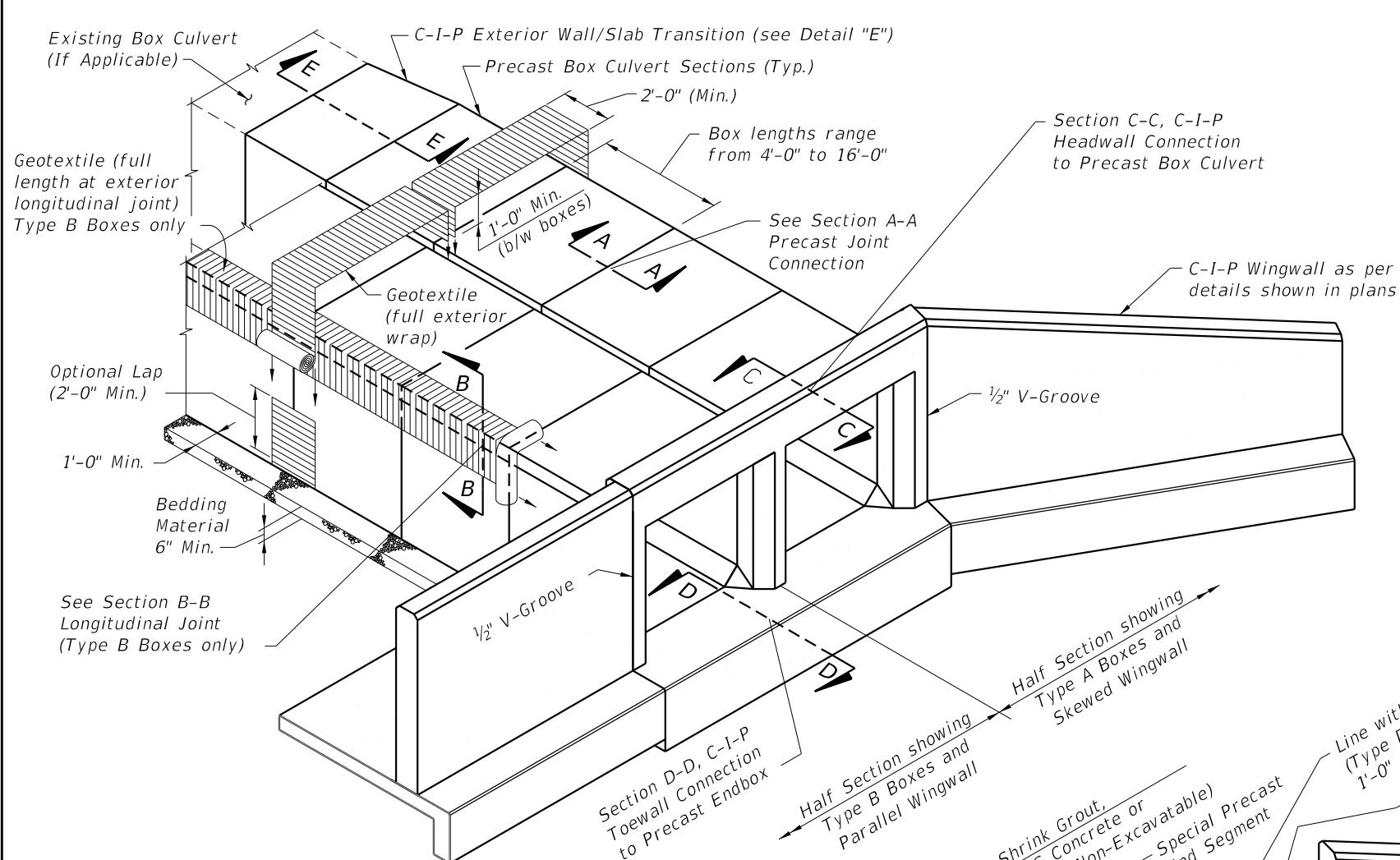
NOTE: Extra base is required when cross box culverts are located on facilities subject to high speed traffic (>45 mph) or high traffic volumes (>1600 ADT) and the cover is within the range specified in the notation above.

EXTRA BASE FOR BOX CULVERTS CROSSING UNDER FLEXIBLE PAVEMENT

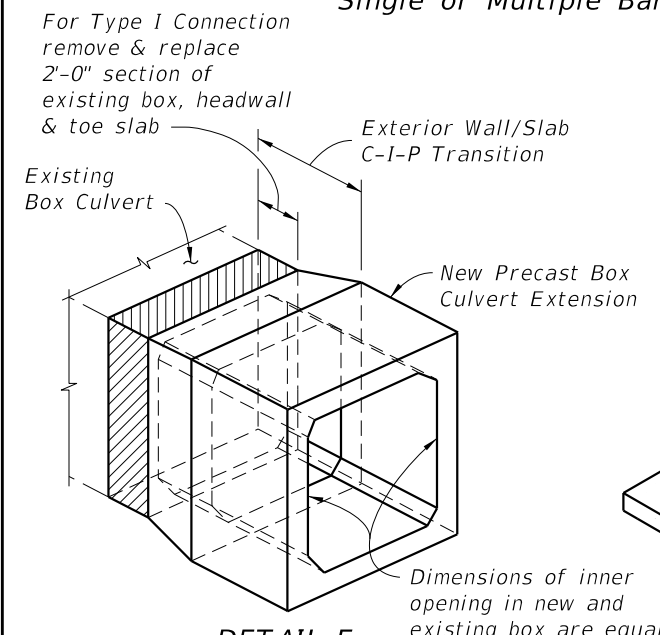
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LAST REVISION 11/01/23	DESCRIPTION:	FDOT FY 2027-28 STANDARD PLANS	CONCRETE BOX CULVERT DETAILS	INDEX 400-289	SHEET 8 of 8
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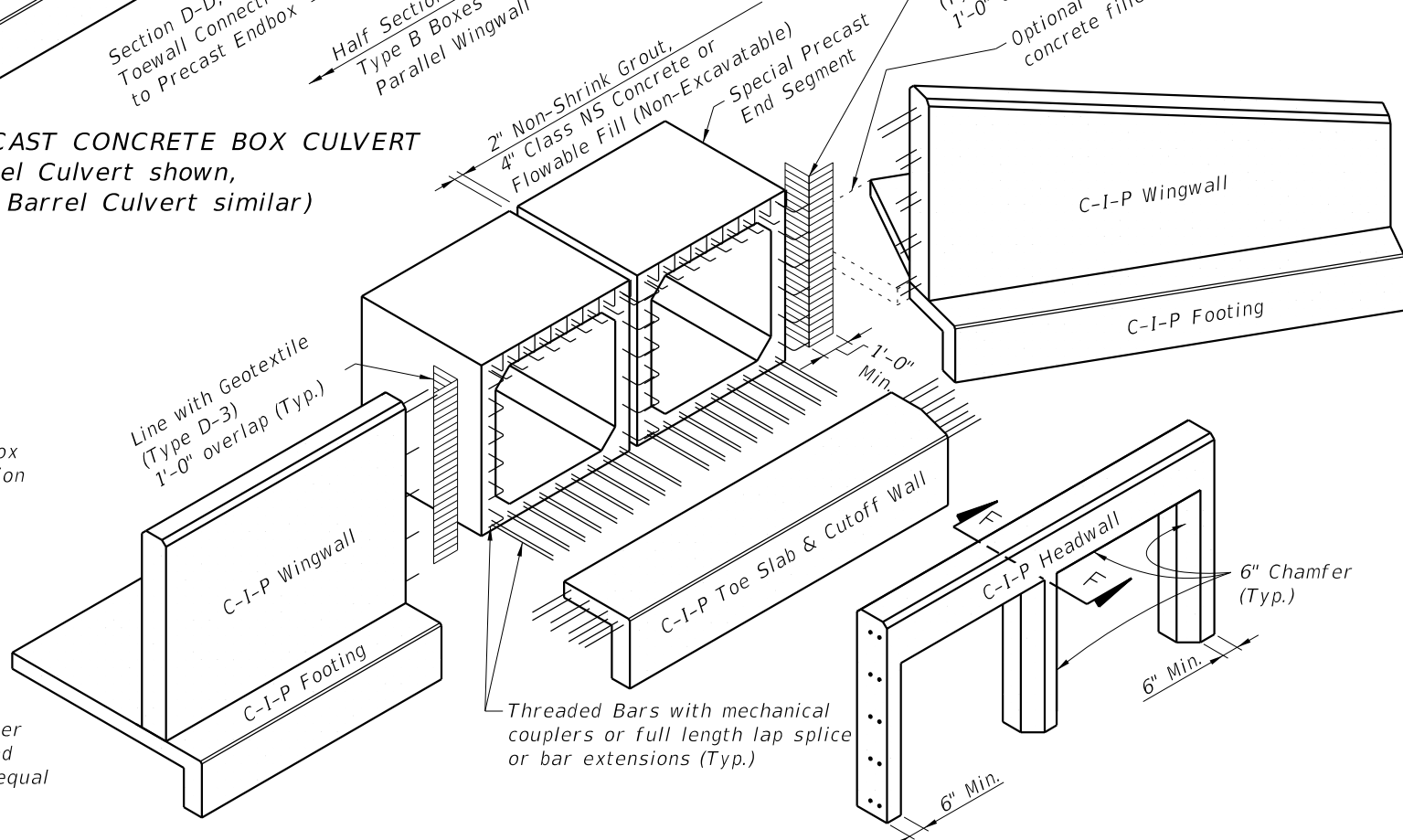
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ISOMETRIC VIEW OF PRECAST CONCRETE BOX CULVERT
(Double Barrel Culvert shown, Single or Multiple Barrel Culvert similar)



DETAIL E
PICTORIAL VIEW OF EXTERIOR WALL/SLAB TRANSITION



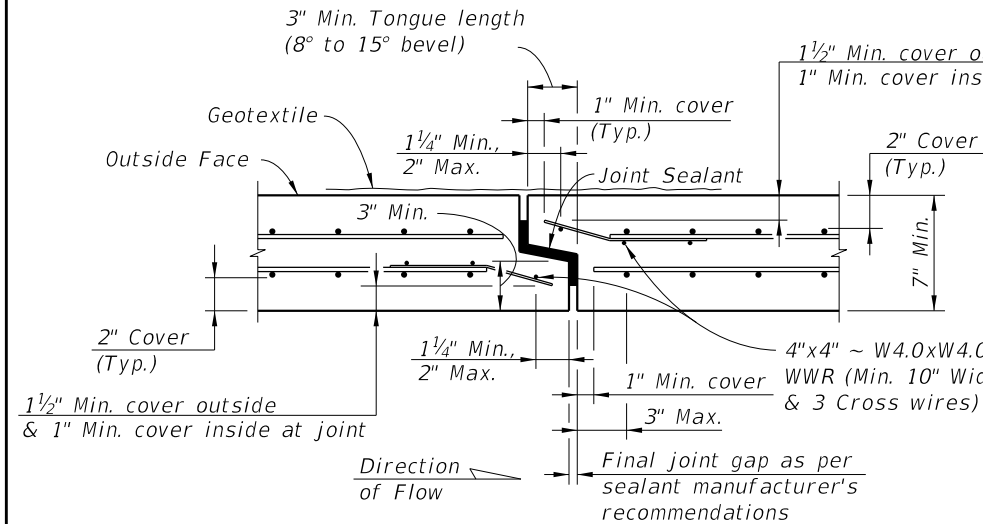
EXPLODED VIEW OF CONNECTIONS AT END OF CULVERT
(Double Barrel Culvert shown, Single or Multiple Barrel Culvert similar)

PERMITTED PRECAST ALTERNATE BOX SECTIONS				
TYPE	DESCRIPTION	SINGLE BARREL	MULTIPLE BARRELS	DESIGN NOTES
A	Single Cell Monolithic (Four Sided)			Index 400-292 or Contractor Design
B	Single Cell Two-Piece (Four Sided)			Contractor Design
C	Multicell Monolithic	Not Applicable		Contractor Design

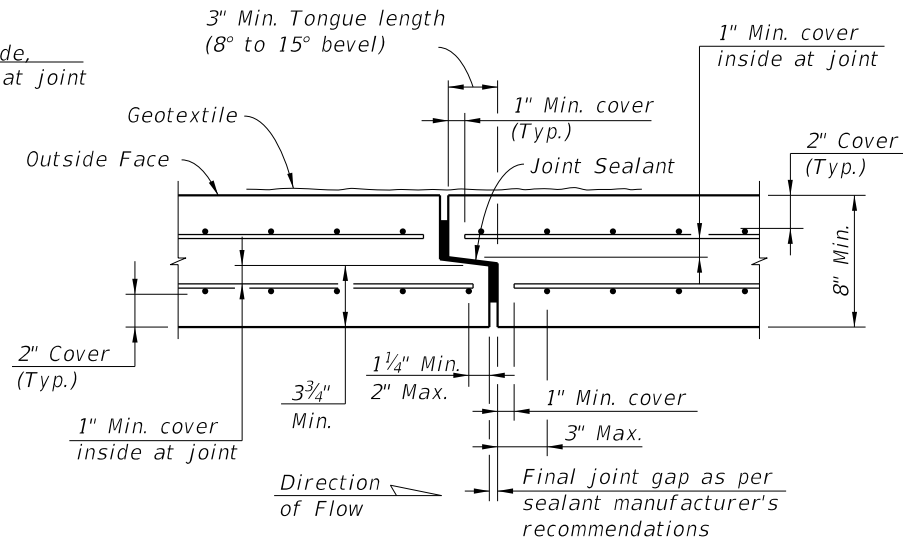
GENERAL NOTES:

- Specifications:
General:
FDOT Standard Specifications for Road and Bridge Construction, Section 410 (current edition, and supplements thereto).
Concrete (Precast):
Class III or Class II Modified (5,000 psi) for slightly aggressive environments.
Class IV (5,500 psi) for moderately to extremely aggressive environments.
Concrete (Cast-In-Place):
Class II (3,400 psi) for slightly aggressive environments.
Class IV (5,500 psi) for moderately to extremely aggressive environments.
Reinforcing Steel:
Maintain minimum clearance of 2" for slightly and moderately aggressive environments or 3" for extremely aggressive environments, unless otherwise shown. Equal area substitution of welded wire (WWR) reinforcement is permitted.
- Work this Index with the Cast-In-Place Concrete Box Culvert Details and Data Tables shown in the plans, Index 400-289 and the Precast Concrete Box Culverts shown in the shop drawings.
- All joints between precast sections must be tongue & groove with joint sealant. Joints between cast-in-place & precast sections shall have longitudinal reinforcing extending from top, bottom & both side slabs of the precast box tied to the cast-in-place reinforcement. Single barrel culverts may have precast headwalls cast integrally with the end segment when approved by the Engineer.
- Extension of existing multiple barrel box culverts with multiple single cell precast box culverts is not permitted unless approved by the District Structures Engineer. Full transition details must be shown in the shop drawings when approved.
- Culverts larger than the specified size may be substituted with no additional payment to the Contractor. Substitution must be approved by the Engineer, minimum earth cover and invert elevations shown in the Contract Documents must be maintained.

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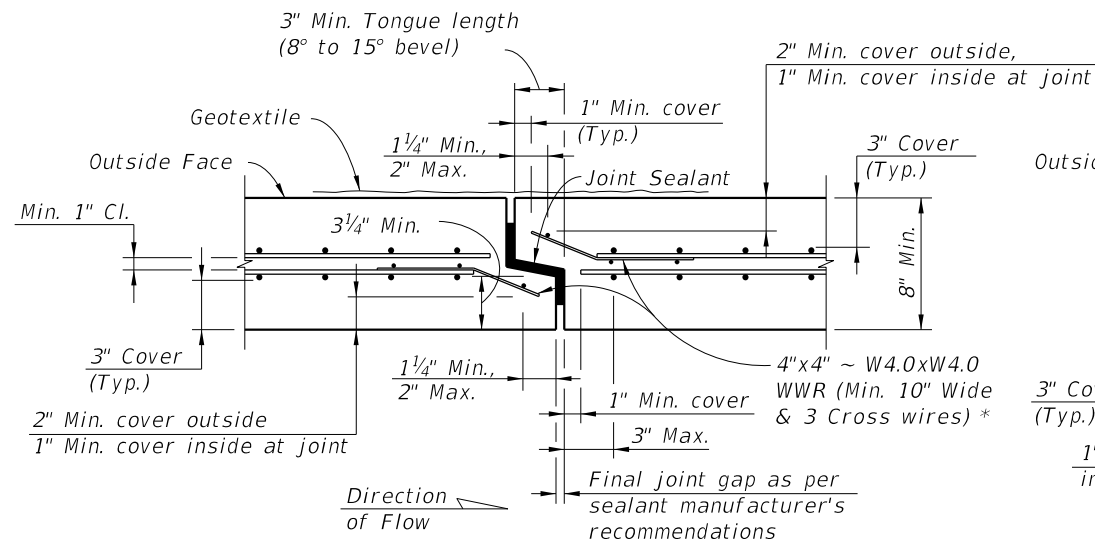


SECTION A-A
(2" Cover - Thin Wall Detail)



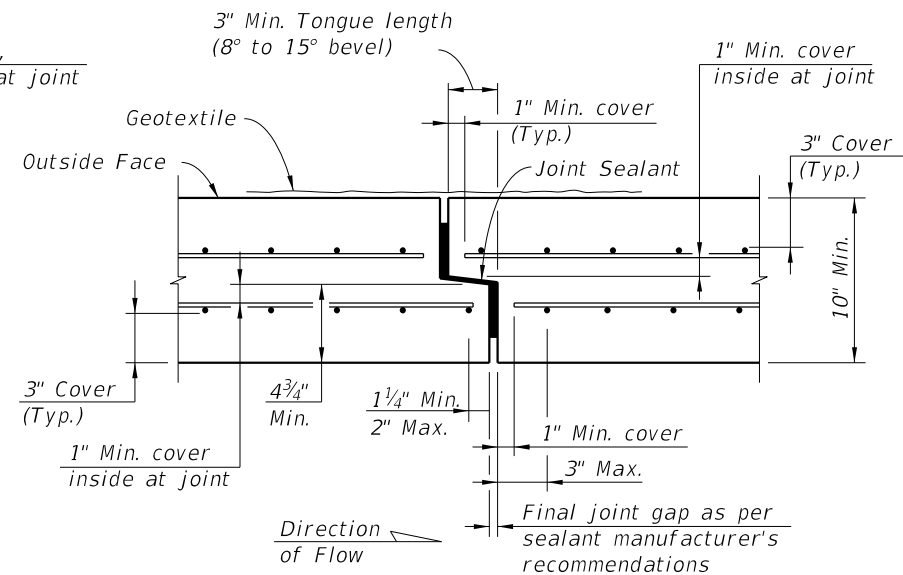
SECTION A-A
(2" Cover - Thick Wall Detail)

NOTE:
Bottom Slab Joints in Type B Boxes may be single tongue & groove joints as shown in Section A-A when the Top Slab Joints are oriented as shown in Schematic "A".

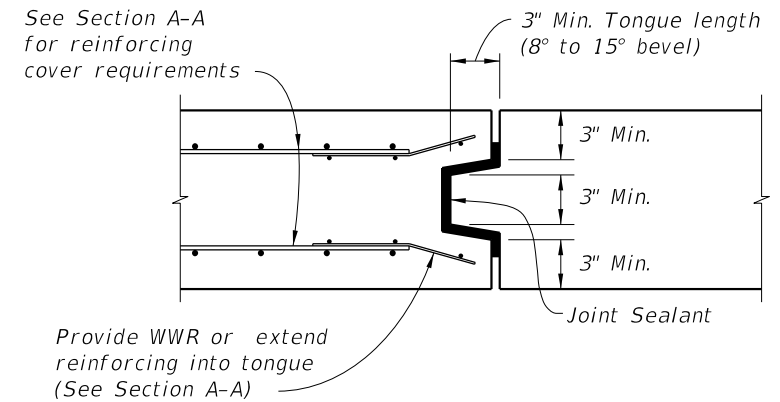


SECTION A-A
(3" Cover - Thin Wall Detail)

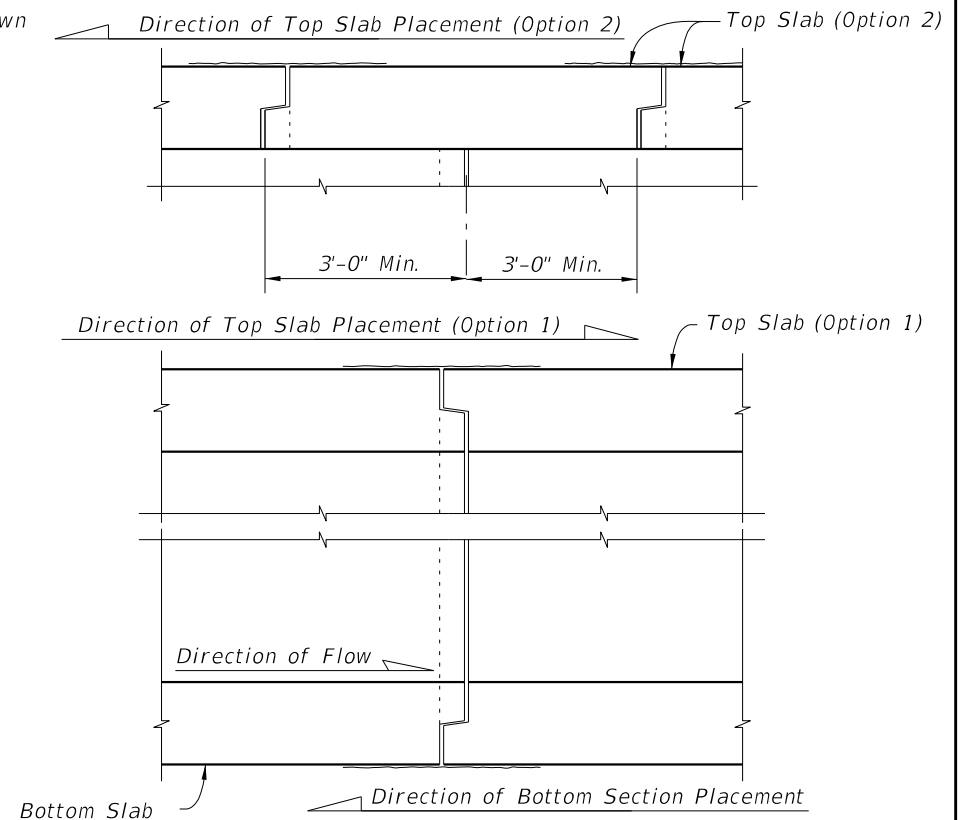
* At the Contractor's option when the box culvert reinforcing utilizes WWR, extend wall and slab reinforcing into the joint and bend to maintain cover in lieu of 4"x4" ~ W4.0xW4.0 WWR at joint. Transverse wire in tongue may be cut at corners of box to allow bending of the WWR.



SECTION A-A
(3" Cover - Thick Wall Detail)



ALTERNATE BOTTOM SLAB TRANSVERSE JOINT
TYPICAL SECTION
(DOUBLE-SIDED TONGUE & GROOVE JOINT)
(All reinforcing not shown for clarity)

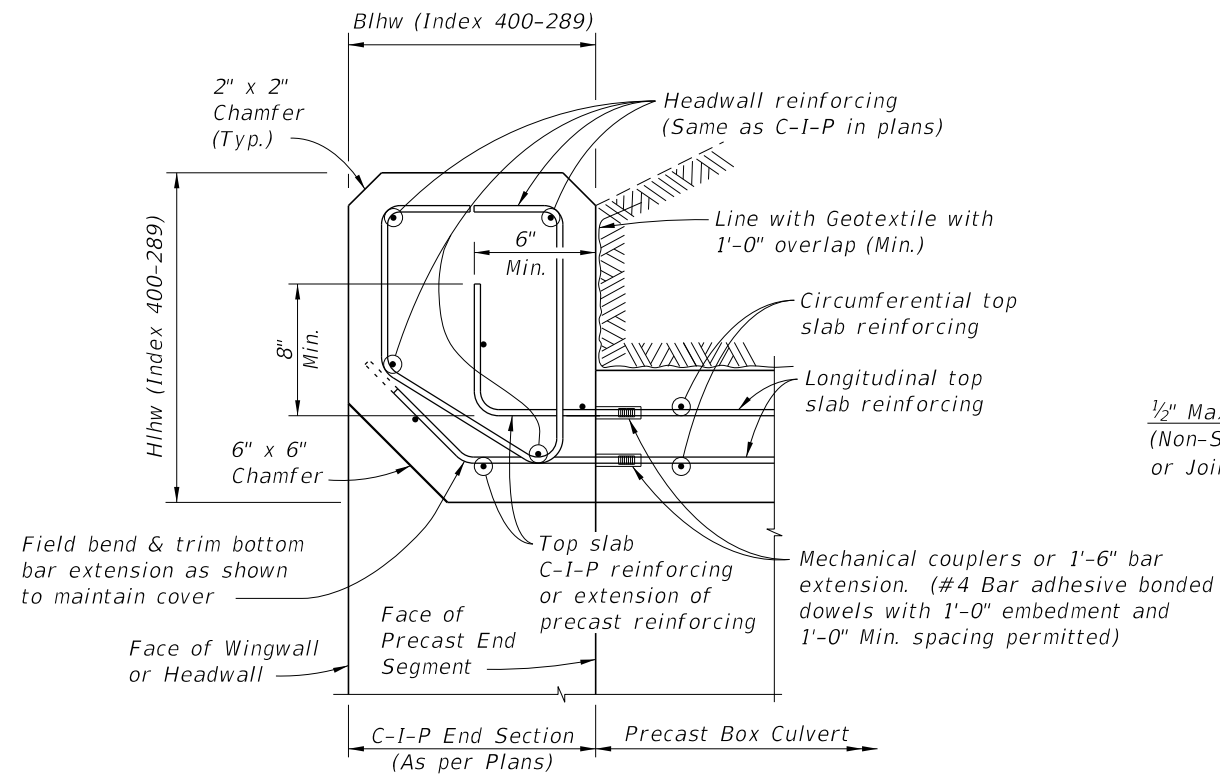


SCHEMATIC "A"
TYPE B BOX SECTION PLACEMENT
FOR SINGLE TONGUE & GROOVE JOINTS

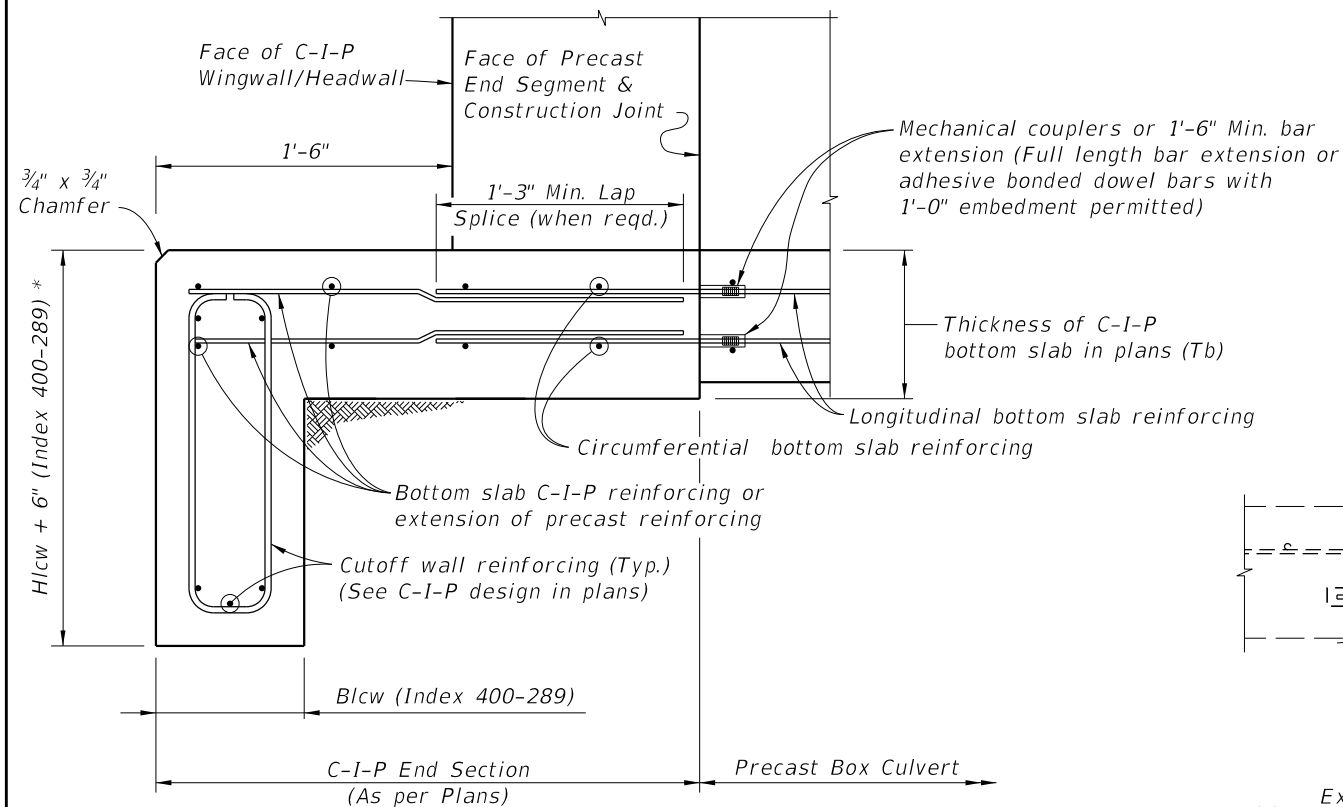
PRECAST SEGMENT TO SEGMENT TONGUE & GROOVE TRANSVERSE JOINTS

TWO-PIECE PRECAST SEGMENT
ADDITIONAL JOINT DETAILS
(TYPE B BOX)

LAST REVISION	DESCRIPTION:	FDOT	FY 2027-28 STANDARD PLANS	PRECAST CONCRETE BOX CULVERTS - SUPPLEMENTAL DETAILS	INDEX	SHEET
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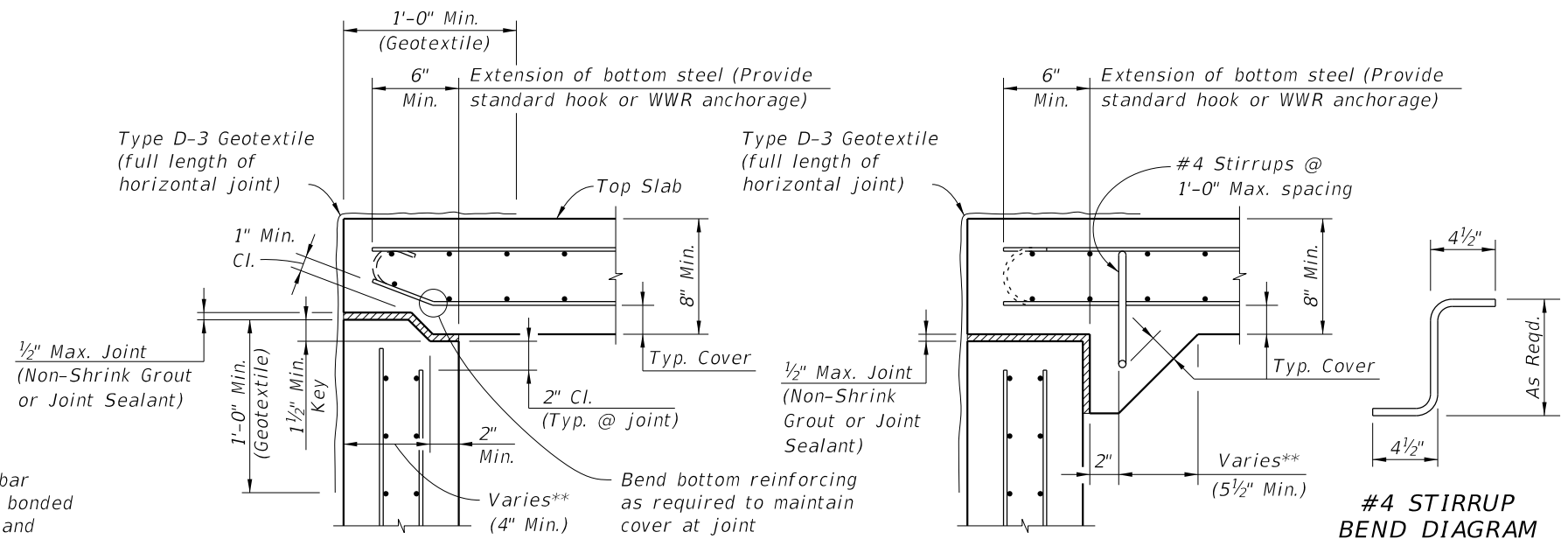


SECTION C-C
C-I-P HEADWALL DETAILS AND CONNECTION TO PRECAST BOX



SECTION D-D
C-I-P TOE SLAB & CUTOFF WALL DETAILS
AND CONNECTION TO PRECAST BOX

* Provide additional 6" depth of cutoff wall at no additional cost.

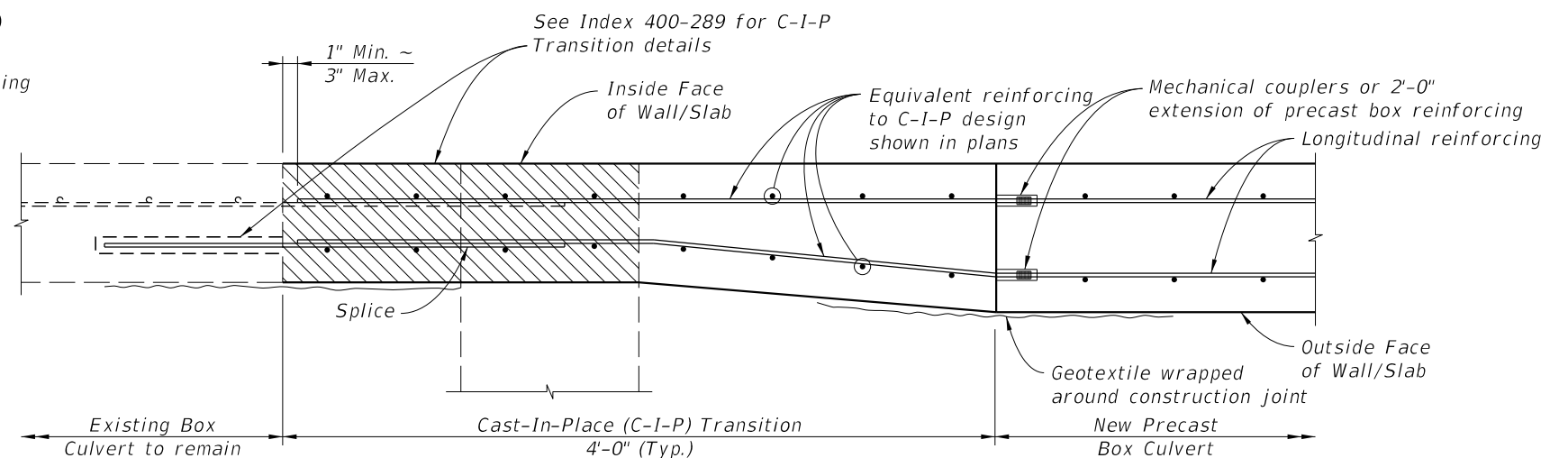


SECTION B-B
TOP SLAB TO WALL JOINT
(KEYED JOINT)

SECTION B-B
TOP SLAB TO WALL JOINT
(HAUNCHED JOINT)

** Provide adequate width to satisfy shear strength requirements at joint

TYPE B BOX LONGITUDINAL JOINTS

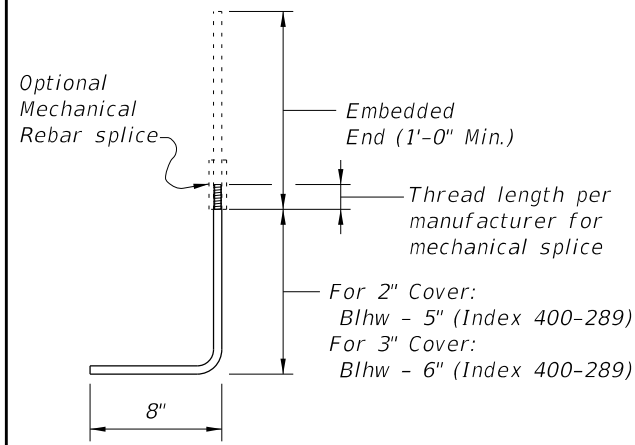


SECTION E-E
EXTERIOR WALL/SLAB TRANSITION DETAIL FOR PRECAST EXTENSION
(Type I Connection shown, Type II Connection similar)

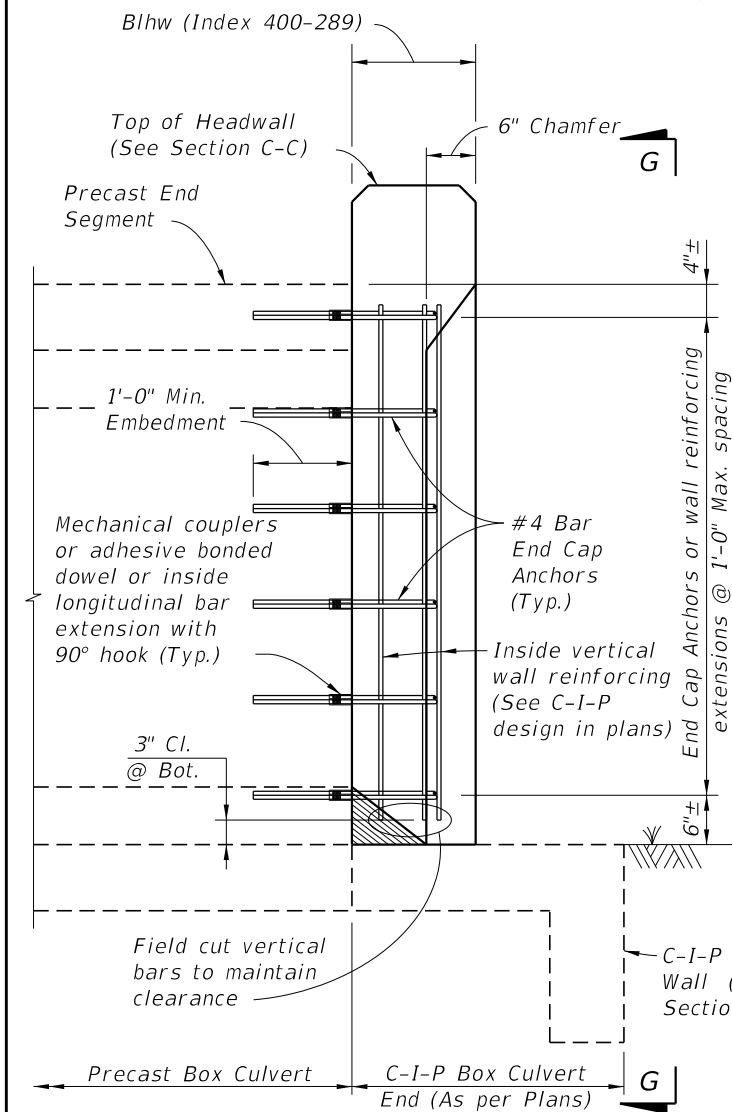
Section of Existing Box Culvert to be removed and replaced, for Type I Connection.

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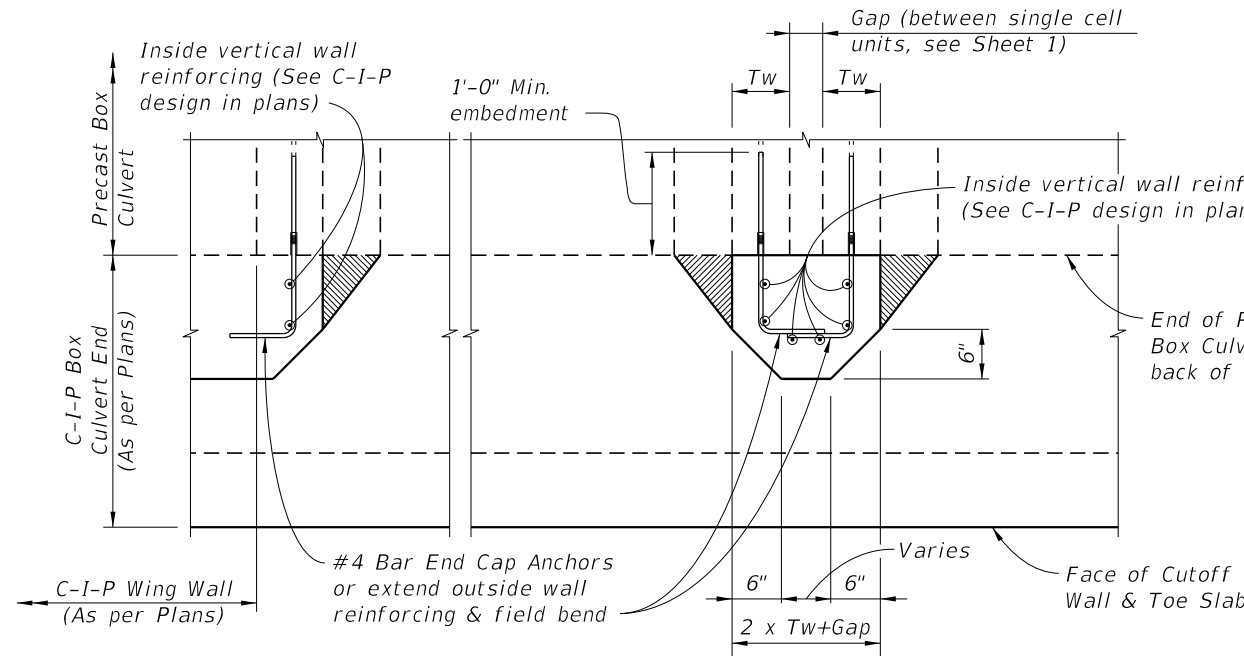
LAST REVISION	DESCRIPTION:	FY 2027-28 STANDARD PLANS	PRECAST CONCRETE BOX CULVERTS - SUPPLEMENTAL DETAILS	INDEX	SHEET
11/01/23				400-291	3 of 5



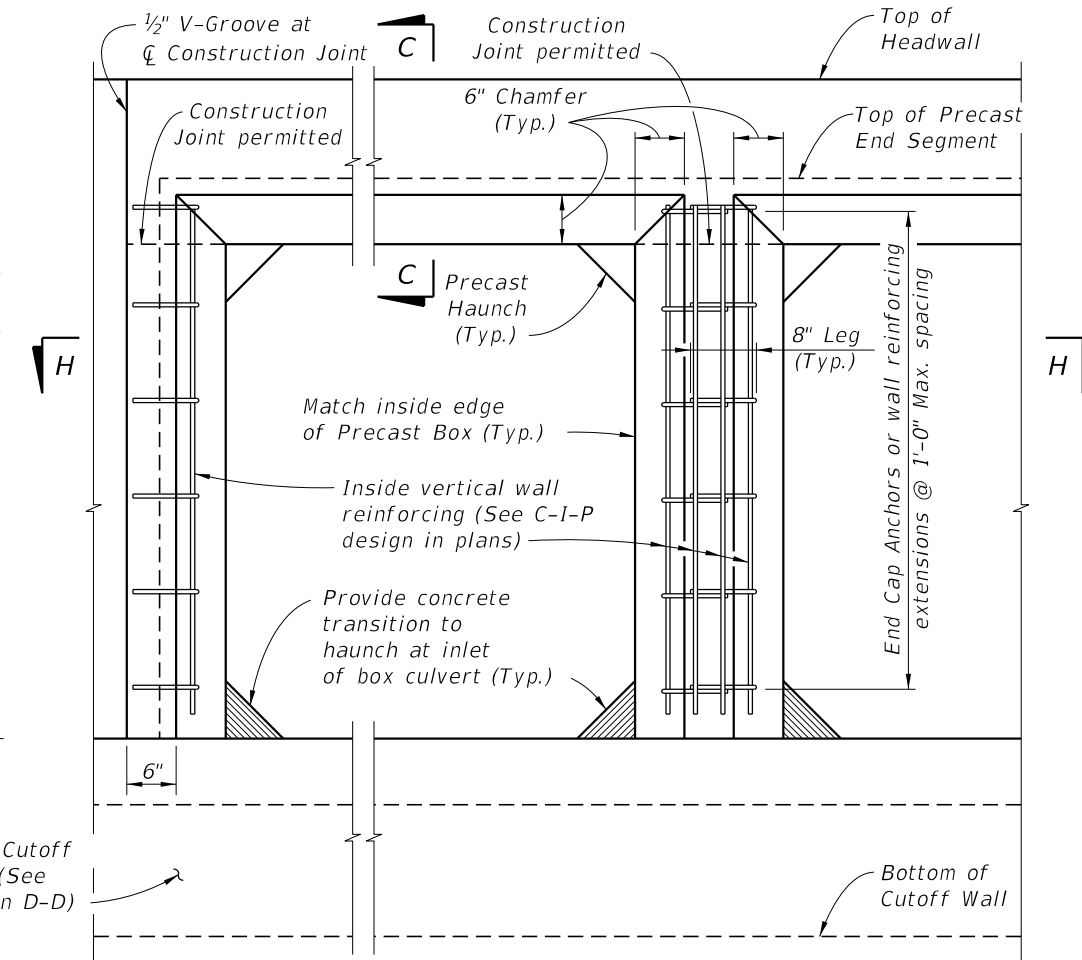
**#4 BAR END CAP ANCHOR
BAR BEND DIAGRAM**



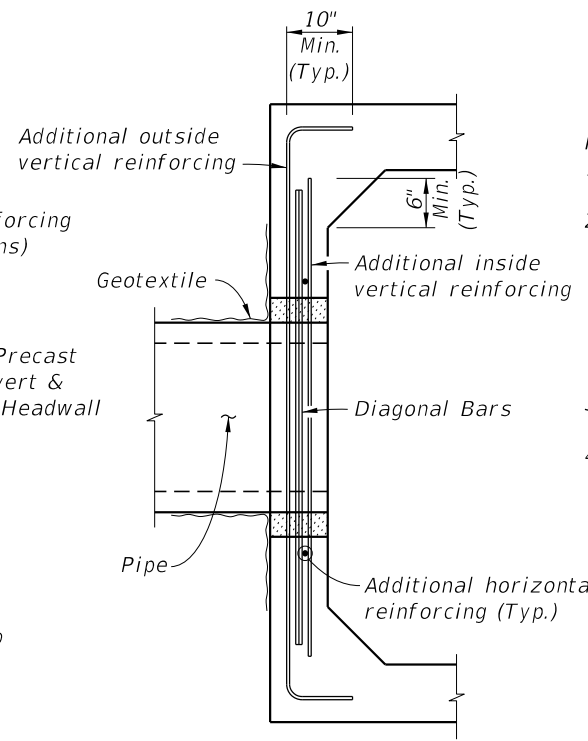
SECTION F-F



SECTION H-H

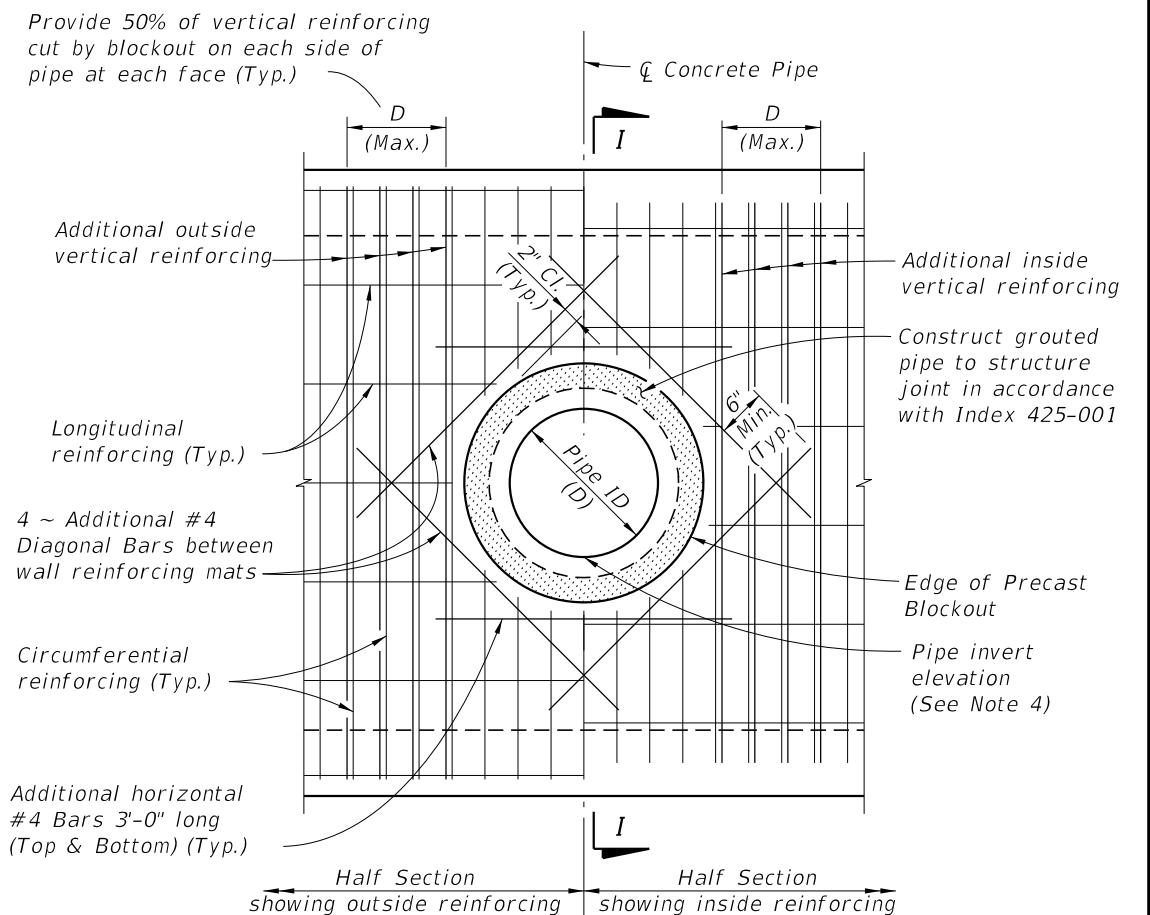


VIEW G-G
(Headwall, Toe Slab and Cutoff Wall Reinforcing not shown for clarity)



SECTION I-I

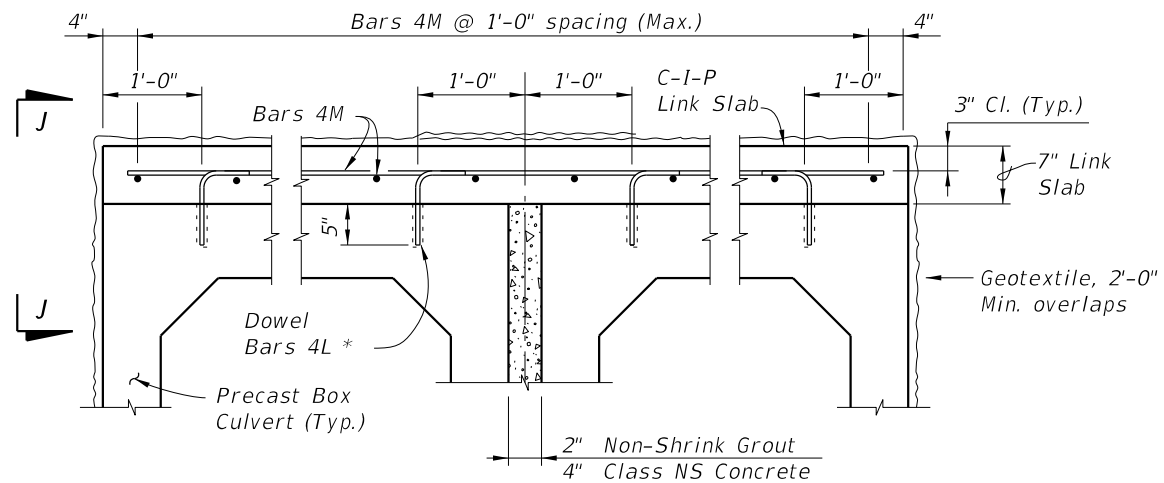
(Showing additional blockout reinforcing only)



**ELEVATION VIEW
PIPE BLOCKOUT DETAILS**

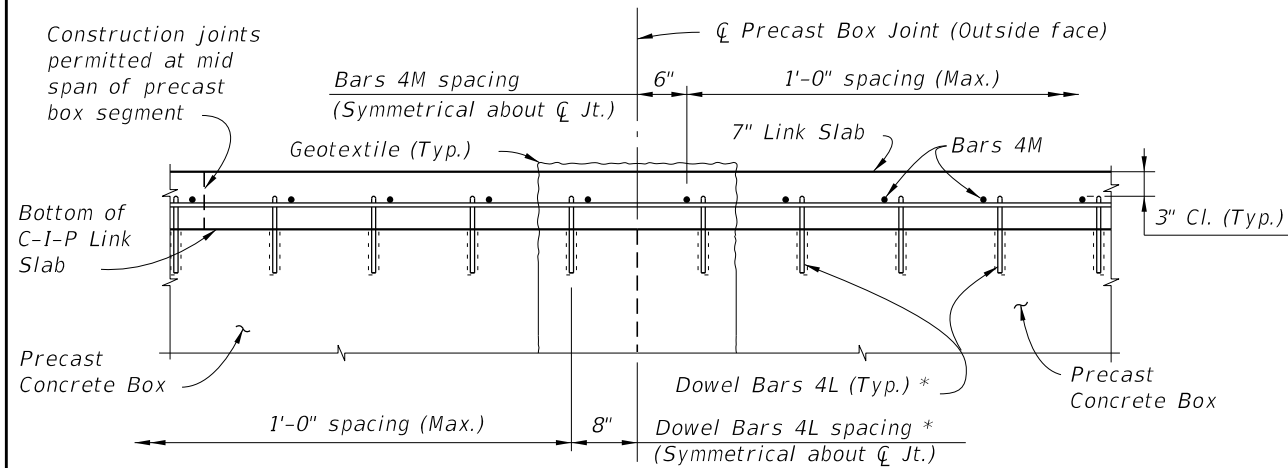
LAST REVISION 11/01/23	DESCRIPTION:	FDOT FY 2027-28 STANDARD PLANS	PRECAST CONCRETE BOX CULVERTS - SUPPLEMENTAL DETAILS	INDEX 400-291	SHEET 4 of 5
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LINK SLAB TYPICAL SECTION
(Multiple Barrel Culvert shown, Single Barrel Culvert similar)

* Install dowels with an Adhesive Bonding Material System in accordance with Specification Section 416. The Contractor may substitute mechanical couplers in lieu of adhesive bonded dowels. Shift dowels to clear box culvert reinforcing.



VIEW J-J

LINK SLAB NOTES:

1. Provide a Cast-In-Place Link Slab to ensure uniform joint opening of precast box culverts when the differential settlement shown in the plans exceeds the following limits, except that a Link Slab is not required for differential settlements less than $\frac{1}{2}$ ".

$$\Delta Y \leq \frac{(L)^2}{760 \times R \times W}$$

Where:

ΔY = Maximum Long-Term Differential Settlement (ft.)
 R = Exterior height of Box Culvert (ft.)
 W = Length of Box Culvert Segments (ft.)
 L = Effective length for single curvature deflection (ft.)

2. Extend Link Slab to back face of headwalls and to limits of existing box culverts for extensions.

ESTIMATED LINK SLAB QUANTITIES

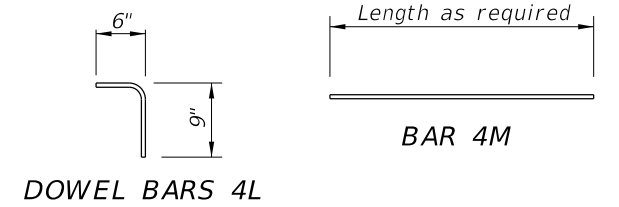
ITEM	UNIT	QUANTITY
Class II or IV Concrete (Culvert)	CY/SF	0.0216
Reinforcing Steel (Roadway)	Lb./SF	1.52

NOTE: Estimated quantities are based the plan area of precast box slabs, and are provided for information only. No additional payment will be made for Link Slabs where these are required for the precast box culverts.

BILL OF REINFORCING STEEL

MARK	SIZE	NO. REQ'D	LENGTH
L	4	2 per Barrel/Ft.	1'-3"
M	4	As Req'd.	As Req'd.

REINFORCING STEEL BENDING DIAGRAMS

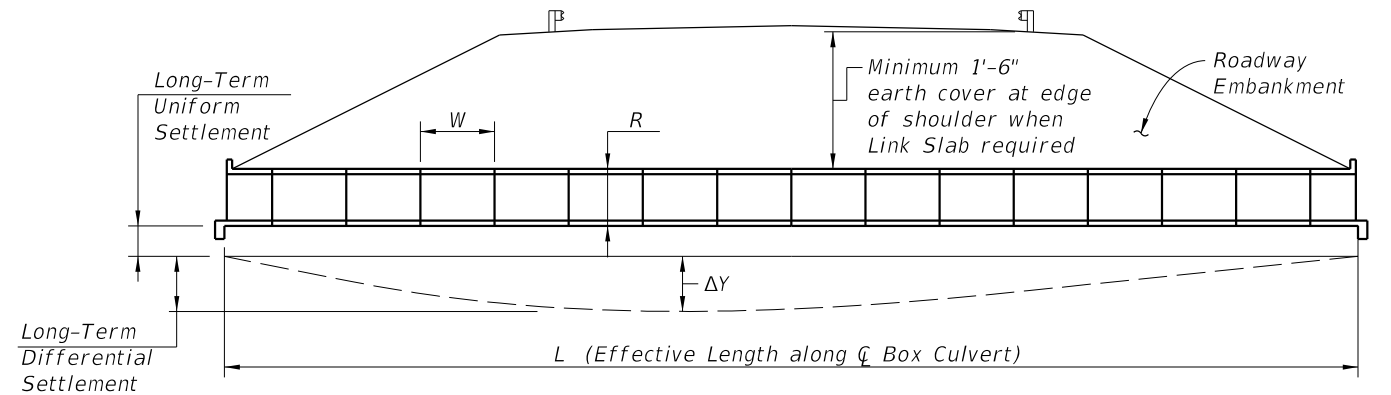


NOTES:

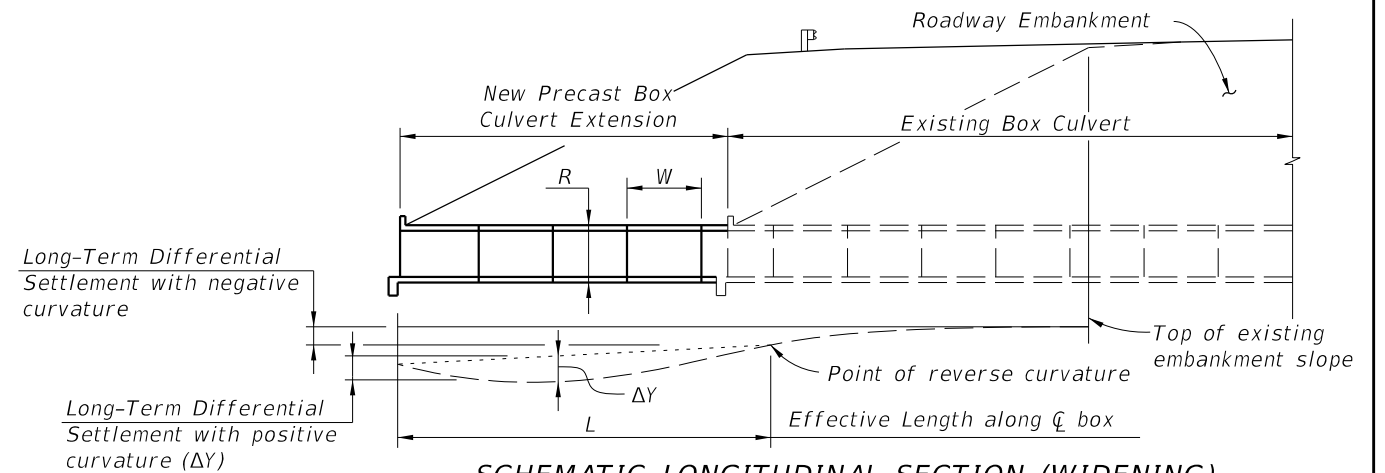
1. All bar dimensions are out to out.
2. Lap splice length for Bars 4M is 1'-4" minimum.

DESIGN NOTE:

1. Link Slab required when joint openings from differential settlement exceed $\frac{1}{8}$ " as determined in Link Slab Note 1.



SCHEMATIC LONGITUDINAL SECTION (NEW CONSTRUCTION)

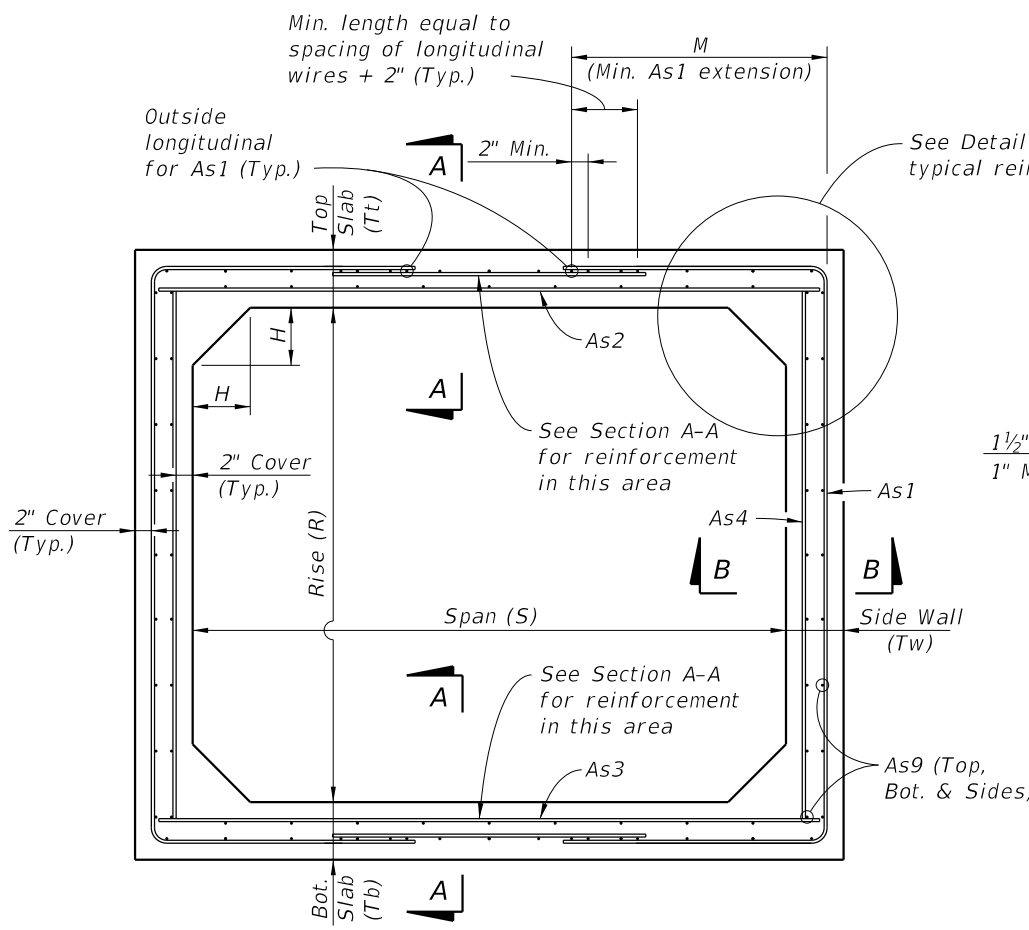


SCHEMATIC LONGITUDINAL SECTION (WIDENING)

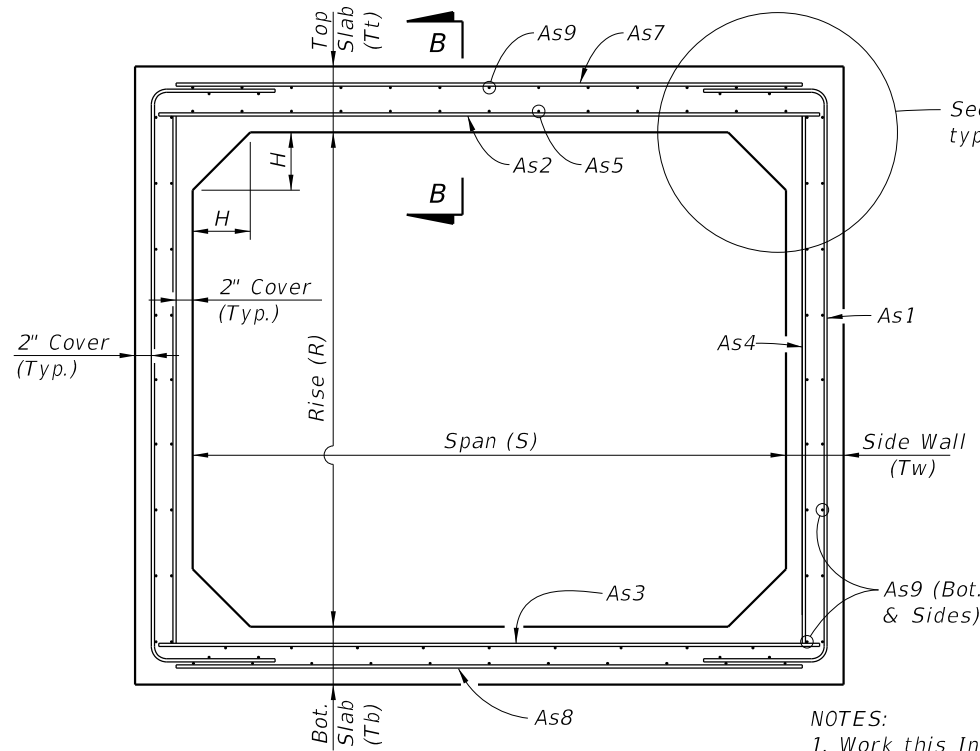
DIFFERENTIAL SETTLEMENT COUNTERMEASURES FOR PRECAST BOX CULVERTS

LAST REVISION	DESCRIPTION:	FDOT	FY 2027-28 STANDARD PLANS	PRECAST CONCRETE BOX CULVERTS - SUPPLEMENTAL DETAILS	INDEX	SHEET
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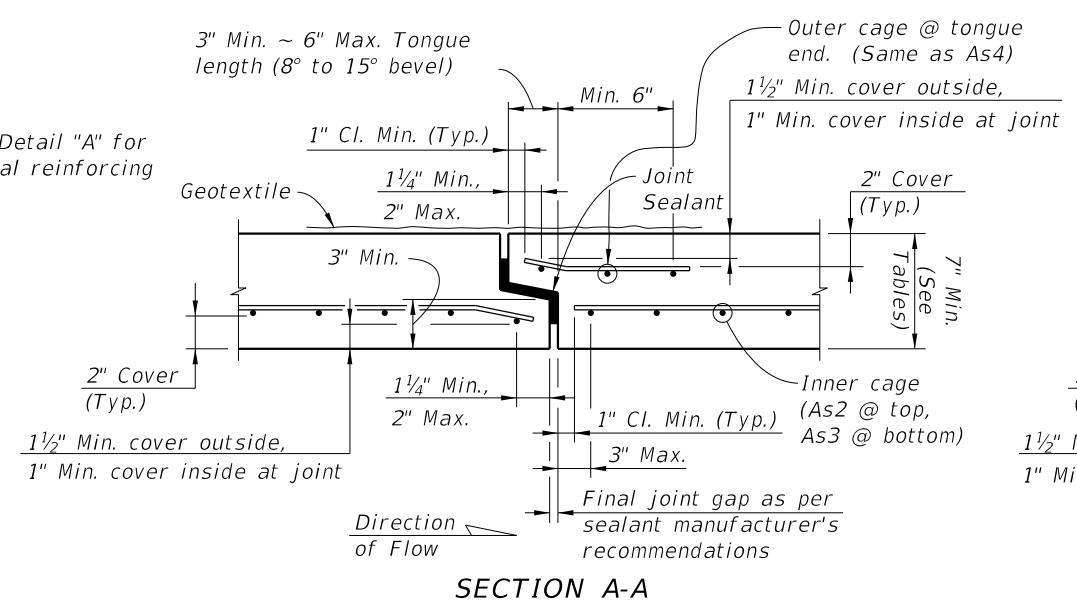
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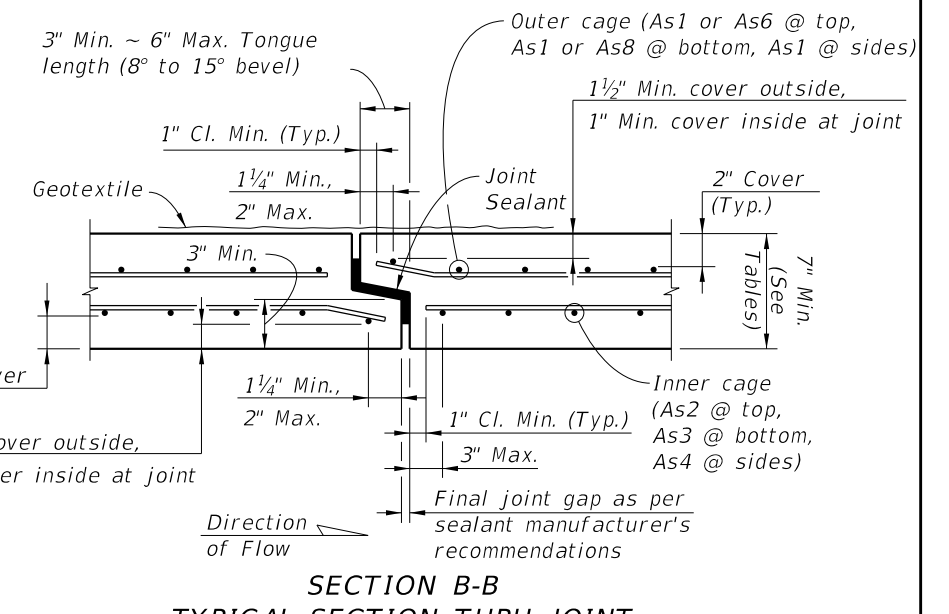
TYPICAL BOX SECTION (TYPE 2)
DESIGN EARTH COVER 2' OR GREATER
(Option 1 Reinforcing Configuration Shown)



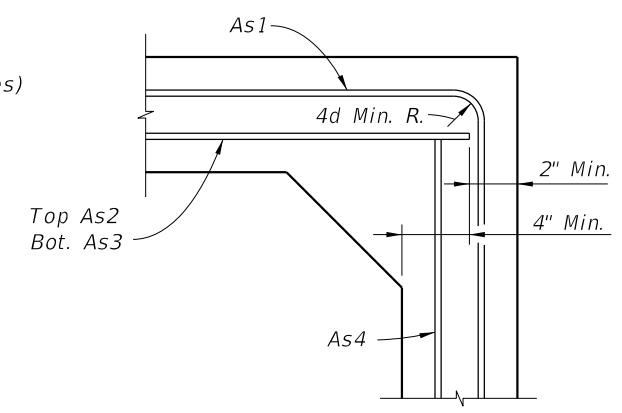
TYPICAL BOX SECTION (TYPE 1)
DESIGN EARTH COVER LESS THAN 2'
(Option 1 Reinforcing Configuration Shown)



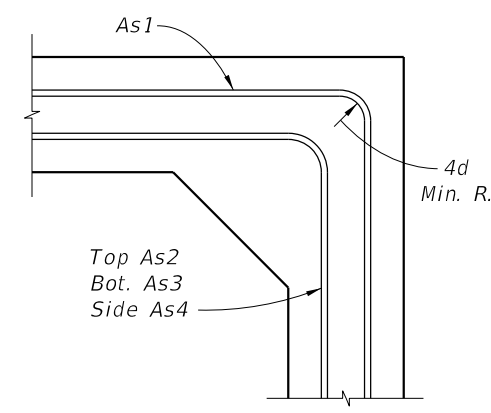
SECTION A-A



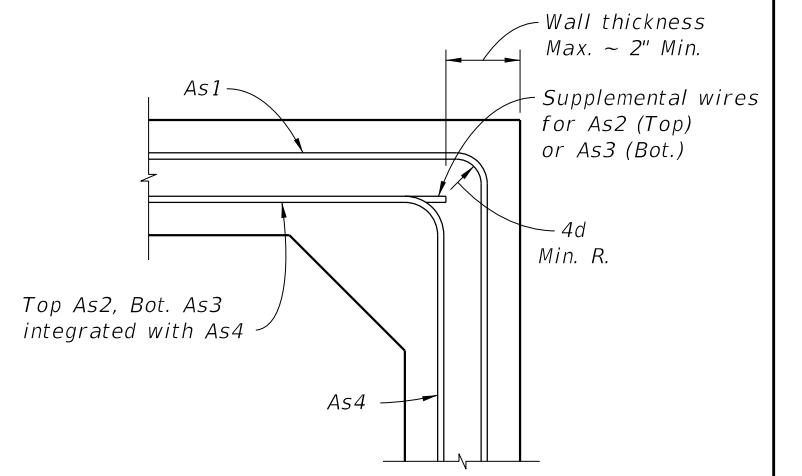
SECTION B-B
TYPICAL SECTION THRU JOINT



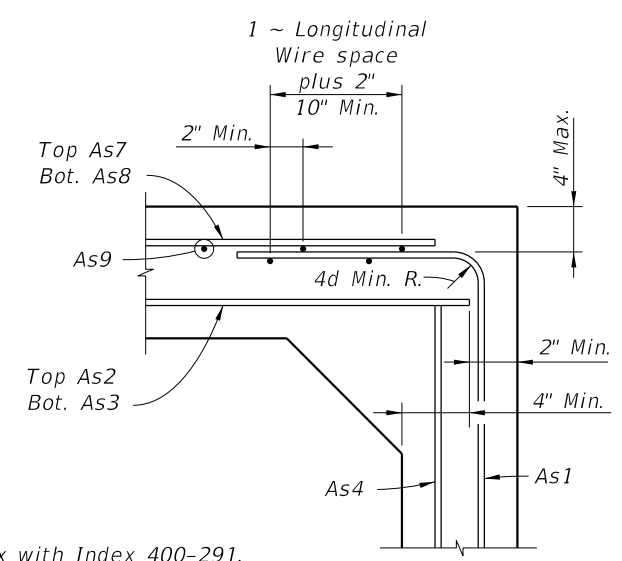
DETAIL "A"
(OPTION 1)



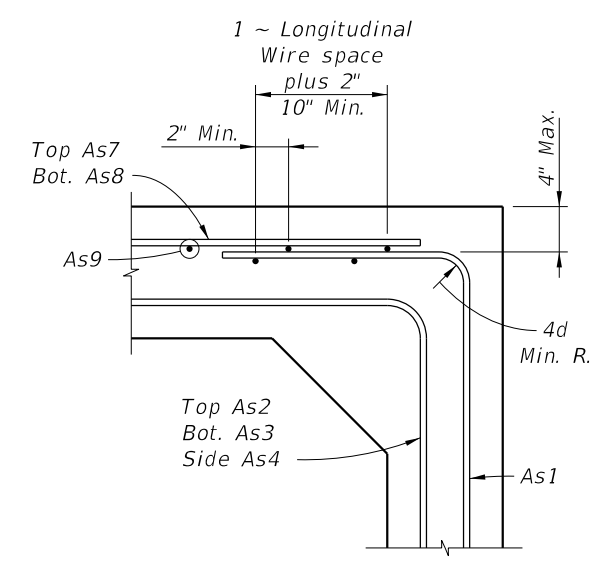
DETAIL "A"
(OPTION 2)



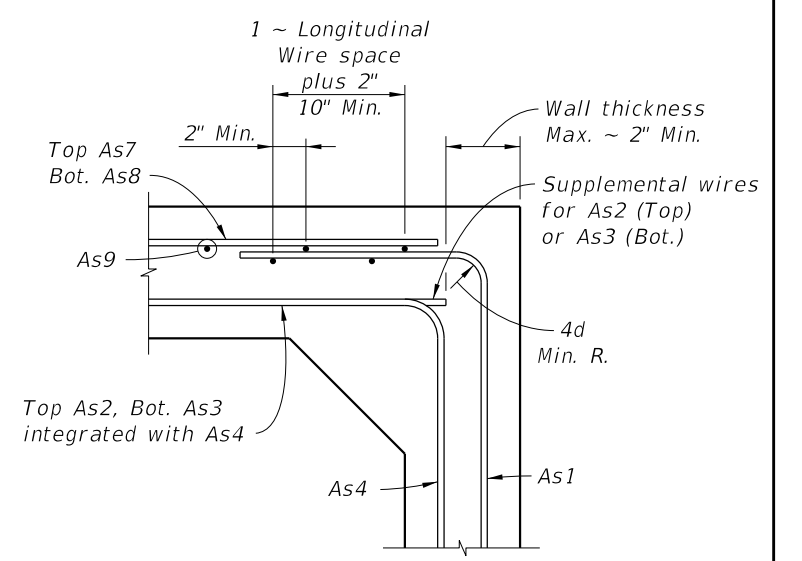
DETAIL "A"
(OPTION 3)



DETAIL "B"
(OPTION 1)



DETAIL "B"
(OPTION 2)



DETAIL "B"
(OPTION 3)

NOTES:
1. Work this Index with Index 400-291.
2. See sheets 2 thru 5 for dimensions and areas of reinforcement.

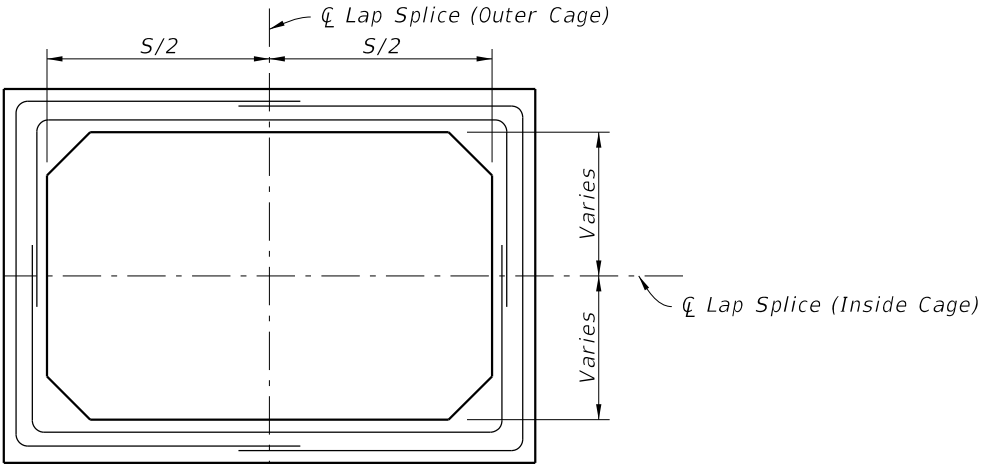
STANDARD PRECAST BOX CULVERT WITH 2" CONCRETE COVER

LAST REVISION	DESCRIPTION:	FY 2027-28 STANDARD PLANS	STANDARD PRECAST CONCRETE BOX CULVERTS	INDEX	SHEET
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GENERAL NOTES:

1. These precast designs may be substituted for cast-in-place box culverts designed to AASHTO LRFD Bridge Design Specifications, 4th Edition. Designs are based on the design criteria shown in FDOT Structures Design Guidelines.
2. Loading: HL-93 & any fill heights between the minimum & maximum shown.
3. Only one design of precast box culvert is to be used for any installation.
4. Reinforcing steel must consist of smooth or deformed welded wire reinforcement (WWR) meeting the requirements of Specification Section 931. Longitudinal reinforcement may consist of reinforcing bars meeting the requirements of Specification Section 931. Minimum cover must be 2" for slightly or moderately aggressive environments or 3" for extremely aggressive environments, unless otherwise shown. The spacing of circumferential wires must not be less than 2" nor more than 4". The spacing of longitudinal wires or bars must not be more than 8".
5. As9 longitudinal wires must have a minimum cross-sectional area of 40% of the circumferential wires, but not less than a W2.5 or D4.0 for WWR, or #3 bars for deformed bars.
6. Welding of reinforcement must be limited to the locations shown in ASTM C1577 and in accordance with ANSI/AWS D1.4 "Structural Welding Code - Reinforcing Steel".
7. For alternate reinforcing configuration Options 2 and 3 shown in Detail "A" and "B" (Sheet 1), As1 may be extended to the middle of either slab and lap spliced with As7 and As8. As4 may be lap spliced at any location or connected to As2 or As3 at corners by welding.
8. Haunch dimensions may vary between the minimum and maximum dimensions shown in the Design Tables but only one haunch dimension must be used within the full length of the box culvert installation.

9. Submittal of redesign calculations are not required for any increase to the slab and/or wall thickness when the minimum reinforcement areas shown in the Design Tables are provided.
10. For Design Earth Cover greater than 10 feet, the Contractor may interpolate the required areas of reinforcement and slab or wall thickness. Interpolated areas of reinforcement, slab or wall thickness must be approved by the Engineer.
11. Minimum length of precast box segments is 4 feet and maximum length is 16 feet.
12. See Index 400-291 for connections to wingwalls, headwalls and other general details.



SCHEMATIC OF LAP SPLICE LOCATIONS
FOR OPTION 2 & 3 REINFORCING CONFIGURATIONS

TABLE 1A - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 3' & 4' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
3' x 3'	7	7	7	4	0.33' - <2'	0.17	0.29	0.21	0.17	0.17	0.17	0.17	See General Note 5	-
					2' - <3'	0.13	0.28	0.21	0.09	-	-	-		31
					3' - <5'	0.09	0.17	0.17	0.09	-	-	-		31
					5' - 10'	0.09	0.17	0.17	0.09	-	-	-		31
				8	15'	0.09	0.17	0.17	0.09	-	-	-		31
					20'	0.12	0.17	0.17	0.09	-	-	-		31
					25'	0.14	0.18	0.18	0.09	-	-	-		31
					30'	0.17	0.21	0.22	0.09	-	-	-		31
					35'	0.19	0.25	0.25	0.09	-	-	-		31
4' x 3'	7	7	7	4	0.33' - <2'	0.19	0.38	0.26	0.17	0.19	0.17	0.19	See General Note 5	-
					2' - <3'	0.19	0.38	0.26	0.09	-	-	-		38
					3' - <5'	0.14	0.20	0.22	0.09	-	-	-		38
					5' - 10'	0.11	0.17	0.17	0.09	-	-	-		38
				8	15'	0.15	0.17	0.18	0.09	-	-	-		38
					20'	0.20	0.23	0.23	0.09	-	-	-		38
					25'	0.24	0.28	0.29	0.09	-	-	-		38
					30'	0.29	0.34	0.35	0.09	-	-	-		38
4' x 4'	7	7	7	4	0.33' - <2'	0.19	0.41	0.28	0.17	0.21	0.17	0.19	See General Note 5	-
					2' - <3'	0.19	0.41	0.28	0.09	-	-	-		38
					3' - <5'	0.14	0.21	0.24	0.09	-	-	-		38
					5' - 10'	0.12	0.17	0.17	0.09	-	-	-		38
				8	15'	0.16	0.19	0.20	0.09	-	-	-		38
					20'	0.21	0.25	0.25	0.09	-	-	-		38
					25'	0.26	0.31	0.32	0.09	-	-	-		38
					30'	0.31	0.37	0.38	0.09	-	-	-		38

TABLE 1B - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 3' & 4' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
3' x 3'	8	8	8	4	0.33' - <2'	0.20	0.26	0.32	0.20	0.20	0.20	0.20	See General Note 5	-
					2' - <3'	0.16	0.25	0.31	0.10	-	-	-		31
					3' - <5'	0.10	0.20	0.20	0.10	-	-	-		31
					5' - 10'	0.10	0.20	0.20	0.10	-	-	-		31
				8	15'	0.10	0.20	0.20	0.10	-	-	-		31
					20'	0.10	0.20	0.20	0.10	-	-	-		31
					25'	0.11	0.20	0.20	0.10	-	-	-		31
					30'	0.13	0.20	0.20	0.10	-	-	-		31
					35'	0.15	0.21	0.21	0.10	-	-	-		31
4' x 3'	8	8	8	4	0.33' - <2'	0.20	0.31	0.22	0.20	0.20	0.20	0.20	See General Note 5	-
					2' - <3'	0.12	0.31	0.22	0.10	-	-	-		38
					3' - <5'	0.12	0.20	0.20	0.10	-	-	-		38
					5' - 10'	0.10	0.20	0.20	0.10	-	-	-		38
				8	15'	0.12	0.20	0.20	0.10	-	-	-		38
					20'	0.16	0.20	0.20	0.10	-	-	-		38
					25'	0.19	0.24	0.24	0.10	-	-	-		38
					30'	0.22	0.28	0.29	0.10	-	-	-		38
4' x 4'	8	8	8	4	0.33' - <2'	0.20	0.33	0.24	0.20	0.20	0.20	0.20	See General Note 5	-
					2' - <3'	0.17	0.33	0.24	0.10	-	-	-		38
					3' - <5'	0.12	0.20	0.20	0.10	-	-	-		38
					5' - 10'	0.10	0.20	0.20	0.10	-	-	-		38
				8	15'	0.13	0.20	0.20	0.10	-	-	-		38
					20'	0.16	0.21	0.22	0.10	-	-	-		38
					25'	0.20	0.26	0.27	0.10	-	-	-		38
					30'	0.23	0.31	0.32	0.10	-	-	-		38

NOTES: 1. See Sheet 1 for Reinforcing Details and dimension locations.



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TABLE 2A - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 5' & 6' SPANS														
SPAN x RISE (S) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
5' x 3'	7	7	7	4	0.33' - <2'	0.31	0.48	0.42	0.17	0.21	0.23	0.31	See General Note 5	-
					2' - <3'	0.31	0.48	0.42	0.09	-	-	-		45
					3' - <5'	0.20	0.27	0.27	0.09	-	-	-		36
				8	5' - 10'	0.17	0.19	0.21	0.09	-	-	-		36
					15'	0.24	0.25	0.25	0.09	-	-	-		35
					20'	0.32	0.33	0.33	0.09	-	-	-		35
					25'	0.39	0.41	0.42	0.09	-	-	-		35
30'	0.47	0.50	0.50	0.09	-	-	-	35						
5' x 4'	7	7	7	4	0.33' - <2'	0.30	0.51	0.45	0.17	0.23	0.21	0.30	-	
					2' - <3'	0.30	0.51	0.45	0.09	-	-	-	45	
					3' - <5'	0.18	0.30	0.29	0.09	-	-	-	45	
				8	5' - 10'	0.17	0.21	0.23	0.09	-	-	-	36	
					15'	0.24	0.27	0.28	0.09	-	-	-	35	
					20'	0.31	0.36	0.37	0.09	-	-	-	35	
					25'	0.39	0.45	0.46	0.09	-	-	-	35	
30'	0.46	0.55	0.56	0.09	-	-	-	35						
5' x 5'	7	7	7	4	0.33' - <2'	0.30	0.53	0.48	0.17	0.24	0.21	0.30	-	
					2' - <3'	0.29	0.53	0.48	0.09	-	-	-	45	
					3' - <5'	0.19	0.31	0.31	0.09	-	-	-	45	
				8	5' - 10'	0.19	0.22	0.25	0.09	-	-	-	45	
					15'	0.26	0.29	0.31	0.09	-	-	-	36	
					20'	0.34	0.39	0.40	0.09	-	-	-	35	
					25'	0.41	0.49	0.50	0.09	-	-	-	35	
30'	0.49	0.59	0.61	0.09	-	-	-	35						
6' x 3'	7.5	7	7	4	0.33' - <2'	0.39	0.54	0.48	0.17	0.22	0.25	0.39	-	
	7	7	7		to	2' - <3'	0.39	0.58	0.49	0.09	-	-	-	43
						3' - <5'	0.28	0.36	0.36	0.09	-	-	-	39
				5' - 10'		0.25	0.26	0.28	0.09	-	-	-	39	
				12	15'	0.36	0.34	0.34	0.09	-	-	-	38	
	20'	0.47	0.46		0.46	0.09	-	-	-	38				
	25'	0.59	0.57		0.55	0.09	-	-	-	38				
30'	0.60	0.64	0.64	0.09	-	-	-	38						
6' x 4'	7.5	7	7	4	0.33' - <2'	0.37	0.58	0.52	0.17	0.24	0.23	0.37	-	
	7	7	7		to	2' - <3'	0.37	0.61	0.53	0.09	-	-	-	43
						3' - <5'	0.26	0.39	0.39	0.09	-	-	-	39
				5' - 10'		0.24	0.28	0.31	0.09	-	-	-	39	
				12	15'	0.35	0.37	0.38	0.09	-	-	-	38	
	20'	0.46	0.50		0.50	0.09	-	-	-	38				
	25'	0.56	0.63		0.60	0.09	-	-	-	38				
30'	0.58	0.69	0.69	0.09	-	-	-	38						
6' x 5'	7.5	7	7	4	0.33' - <2'	0.36	0.60	0.56	0.17	0.25	0.22	0.36	-	
	7	7	7		to	2' - <3'	0.36	0.64	0.56	0.09	-	-	-	43
						3' - <5'	0.26	0.410	0.42	0.09	-	-	-	43
				5' - 10'		0.25	0.30	0.33	0.09	-	-	-	39	
				12	15'	0.34	0.40	0.41	0.09	-	-	-	38	
	20'	0.46	0.54		0.54	0.09	-	-	-	38				
	25'	0.56	0.67		0.65	0.09	-	-	-	38				
30'	0.60	0.74	0.74	0.09	-	-	-	38						
6' x 6'	7.5	7	7	4	0.33' - <2'	0.36	0.63	0.59	0.17	0.26	0.22	.036	-	
	7	7	7		to	2' - <3'	0.35	0.67	0.59	0.09	-	-	-	52
						3' - <5'	0.27	0.43	0.44	0.09	-	-	-	52
				5' - 10'		0.27	0.32	0.35	0.09	-	-	-	43	
				12	15'	0.38	0.43	0.44	0.09	-	-	-	39	
	20'	0.50	0.57		0.59	0.09	-	-	-	39				
	25'	0.60	0.72		0.70	0.09	-	-	-	38				
30'	0.67	0.78	0.79	0.09	-	-	-	38						

See General Note 5

TABLE 2B - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 5' & 6' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
5' x 3'	8	8	8	4	0.33' - <2'	0.26	0.39	0.36	0.20	0.20	0.20	0.26	See General Note 5	-
					2' - <3'	0.26	0.39	0.36	0.10	-	-	-		45
					3' - <5'	0.16	0.23	0.24	0.10	-	-	-		36
					5' - 10'	0.13	0.20	0.20	0.10	-	-	-		36
				8	15'	0.19	0.21	0.22	0.10	-	-	-		35
					20'	0.24	0.28	0.28	0.10	-	-	-		35
					25'	0.30	0.34	0.35	0.10	-	-	-		35
					30'	0.36	0.41	0.41	0.10	-	-	-		35
5' x 4'	8	8	4	0.33' - <2'	0.25	0.42	0.38	0.20	0.20	0.20	0.25	-		
				2' - <3'	0.25	0.42	0.38	0.10	-	-	-	45		
				3' - <5'	0.16	0.25	0.25	0.10	-	-	-	45		
				5' - 10'	0.13	0.20	0.20	0.10	-	-	-	36		
			8	15'	0.19	0.23	0.24	0.10	-	-	-	35		
				20'	0.24	0.30	0.31	0.10	-	-	-	35		
				25'	0.30	0.37	0.38	0.10	-	-	-	35		
				30'	0.35	0.45	0.46	0.10	-	-	-	35		
5' x 5'	8	8	4	0.33' - <2'	0.25	0.44	0.41	0.20	0.20	0.20	0.25	-		
				2' - <3'	0.25	0.44	0.41	0.10	-	-	-	45		
				3' - <5'	0.16	0.26	0.27	0.10	-	-	-	45		
				5' - 10'	0.15	0.20	0.22	0.10	-	-	-	45		
			8	15'	0.20	0.25	0.26	0.10	-	-	-	36		
				20'	0.26	0.32	0.33	0.10	-	-	-	35		
				25'	0.32	0.40	0.41	0.10	-	-	-	35		
				30'	0.37	0.48	0.49	0.10	-	-	-	35		
6' x 3'	8	8	4	0.33' - <2'	0.32	0.47	0.41	0.20	0.20	0.25	0.32	-		
				2' - <3'	0.32	0.47	0.41	0.10	-	-	-	43		
				3' - <5'	0.23	0.30	0.31	0.10	-	-	-	39		
				5' - 10'	0.19	0.22	0.24	0.10	-	-	-	39		
			12	15'	0.28	0.29	0.29	0.10	-	-	-	38		
				20'	0.36	0.38	0.38	0.10	-	-	-	38		
				25'	0.45	0.47	0.47	0.10	-	-	-	38		
				30'	0.54	0.57	0.57	0.10	-	-	-	38		
6' x 4'	8	8	4	0.33' - <2'	0.31	0.50	0.44	0.20	0.21	0.23	0.31	-		
				2' - <3'	0.31	0.50	0.44	0.10	-	-	-	43		
				3' - <5'	0.23	0.32	0.34	0.10	-	-	-	39		
				5' - 10'	0.19	0.24	0.26	0.10	-	-	-	39		
			12	15'	0.27	0.31	0.32	0.10	-	-	-	38		
				20'	0.35	0.41	0.41	0.10	-	-	-	38		
				25'	0.43	0.51	0.51	0.10	-	-	-	38		
				30'	0.52	0.62	0.62	0.10	-	-	-	38		
6' x 5'	8	8	4	0.33' - <2'	0.30	0.52	0.47	0.20	0.22	0.22	0.30	-		
				2' - <3'	0.30	0.52	0.47	0.10	-	-	-	43		
				3' - <5'	0.22	0.34	0.36	0.10	-	-	-	43		
				5' - 10'	0.20	0.26	0.28	0.10	-	-	-	39		
			12	15'	0.27	0.33	0.34	0.10	-	-	-	38		
				20'	0.36	0.44	0.45	0.10	-	-	-	38		
				25'	0.44	0.55	0.55	0.10	-	-	-	38		
				30'	0.52	0.66	0.67	0.10	-	-	-	38		
6' x 6'	8	8	4	0.33' - <2'	0.30	0.54	0.50	0.20	0.22	0.22	0.30	-		
				2' - <3'	0.30	0.54	0.50	0.10	-	-	-	52		
				3' - <5'	0.23	0.36	0.38	0.10	-	-	-	52		
				5' - 10'	0.21	0.27	0.30	0.10	-	-	-	43		
			12	15'	0.29	0.35	0.37	0.10	-	-	-	39		
				20'	0.38	0.47	0.48	0.10	-	-	-	39		
				25'	0.47	0.59	0.60	0.10	-	-	-	38		
				30'	0.55	0.70	0.71	0.10	-	-	-	38		

TABLE 3 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 7' SPANS															
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)	
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9		
7' x 4'	8	8	8	4	0.33' - <2'	0.37	0.58	0.49	0.20	0.22	0.29	0.37	See General Note 5	-	
					to	2' - <3'	0.37	0.58	0.49	0.10	-	-		-	43
						3' - <5'	0.30	0.40	0.42	0.10	-	-		-	43
				12		5' - 10'	0.26	0.30	0.33	0.10	-	-		-	43
					15'	0.37	0.40	0.40	0.10	-	-	-		41	
					20'	0.49	0.53	0.53	0.10	-	-	-		41	
	7	8	8	8	to	25'	0.60	0.67	0.66	0.10	-	-		-	41
		8.5	8.5	8	12	30'	0.68	0.79	0.78	0.10	-	-		-	41
7' x 5'	8	8	8	4	0.33' - <2'	0.36	0.60	0.53	0.20	0.23	0.28	0.36	See General Note 5	-	
					to	2' - <3'	0.36	0.60	0.53	0.10	-	-		-	47
						3' - <5'	0.30	0.42	0.45	0.10	-	-		-	43
				12		5' - 10'	0.26	0.32	0.35	0.10	-	-		-	43
					15'	0.37	0.43	0.44	0.10	-	-	-		41	
					20'	0.48	0.57	0.57	0.10	-	-	-		41	
	7	8	8	8	to	25'	0.60	0.72	0.72	0.10	-	-		-	41
		8.5	8.5	8	12	30'	0.67	0.84	0.84	0.10	-	-		-	41
7' x 6'	8	8	8	4	0.33' - <2'	0.36	0.63	0.56	0.20	0.24	0.27	0.36	See General Note 5	-	
					to	2' - <3'	0.36	0.63	0.56	0.10	-	-		-	59
						3' - <5'	0.29	0.44	0.47	0.10	-	-		-	47
				12		5' - 10'	0.27	0.34	0.37	0.10	-	-		-	43
					15'	0.38	0.46	0.46	0.10	-	-	-		41	
					20'	0.49	0.60	0.61	0.10	-	-	-		41	
	7	8	8	8	to	25'	0.61	0.76	0.76	0.10	-	-		-	41
		8.5	8.5	8	12	30'	0.69	0.89	0.89	0.10	-	-		-	41
7' x 7'	8	8	8	4	0.33' - <2'	0.36	0.65	0.58	0.20	0.25	0.27	0.36	See General Note 5	-	
					to	2' - <3'	0.36	0.65	0.58	0.10	-	-		-	59
						3' - <5'	0.30	0.46	0.50	0.10	-	-		-	59
				12		5' - 10'	0.30	0.35	0.50	0.10	-	-		-	47
					15'	0.41	0.48	0.50	0.10	-	-	-		43	
					20'	0.53	0.64	0.65	0.10	-	-	-		43	
	7	8	8	8	to	25'	0.65	0.80	0.81	0.10	-	-		-	43
		8.5	9	8	12	30'	0.72	0.92	0.91	0.10	-	-		-	41

- NOTES:
- See Sheet 1 for Reinforcing Details and dimension locations.
 - See Sheet 2 for General Notes.
 - See Sheet 14 for Welded Wire Reinforcement Bending Diagram.

TABLE 5 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 9' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
9' x 5'	9.5	9.5	9	4	0.33' - <2'	0.41	0.62	0.53	0.22	0.23	0.34	0.38	See General Note 5	-
	9	9	9		to 12	2' - <3'	0.44	0.65	0.54	0.11	-	-		-
				3' - <5'		0.39	0.53	0.51	0.11	-	-	-		49
				5' - 10'		0.35	0.42	0.44	0.11	-	-	-		49
				15'		0.50	0.56	0.55	0.11	-	-	-		44
				20'		0.65	0.75	0.73	0.11	-	-	-		44
	9.5	9.5	9	8 to	25'	0.77	0.92	0.90	0.11	-	-	-		44
10.5	11	9	12	30'	0.81	1.05	1.02	0.11	-	-	-	44		
9' x 6'	9.5	9.5	9	4	0.33' - <2'	0.38	0.64	0.56	0.23	0.23	0.33	0.37		-
	9	9	9		to 12	2' - <3'	0.43	0.67	0.57	0.11	-	-		-
				3' - <5'		0.37	0.55	0.54	0.11	-	-	-		49
				5' - 10'		0.35	0.45	0.47	0.11	-	-	-		49
				15'		0.49	0.60	0.59	0.11	-	-	-		44
				20'		0.65	0.80	0.78	0.11	-	-	-		44
	9.5	9.5	9	8 to	25'	0.76	0.98	0.95	0.11	-	-	-	44	
10.5	11	9	12	30'	0.80	1.10	1.08	0.11	-	-	-	44		
9' x 7'	9.5	9.5	9	4	0.33' - <2'	0.37	0.67	0.59	0.22	0.23	0.32	0.37	-	
	9	9	9		to 12	2' - <3'	0.42	0.69	0.60	0.11	-	-	-	59
				3' - <5'		0.37	0.58	0.56	0.11	-	-	-	54	
				5' - 10'		0.36	0.47	0.49	0.11	-	-	-	49	
				15'		0.50	0.63	0.63	0.11	-	-	-	44	
				20'		0.66	0.84	0.80	0.11	-	-	-	44	
	9.5	9.5	9	8 to	25'	0.77	1.02	1.00	0.11	-	-	-	44	
10.5	11	9	12	30'	0.81	1.15	1.13	0.11	-	-	-	44		
9' x 8'	9.5	9.5	9	4	0.33' - <2'	0.37	0.68	0.61	0.22	0.23	0.31	0.37	-	
	9	9	9		to 12	2' - <3'	0.42	0.71	0.62	0.11	-	-	-	59
				3' - <5'		0.37	0.60	0.59	0.11	-	-	-	59	
				5' - 10'		0.38	0.49	0.51	0.11	-	-	-	54	
				15'		0.53	0.66	0.66	0.11	-	-	-	44	
				20'		0.68	0.88	0.87	0.11	-	-	-	44	
	9.5	9.5	9	8 to	25'	0.81	1.07	1.05	0.11	-	-	-	44	
10.5	11	9	12	30'	0.86	1.20	1.18	0.11	-	-	-	44		
9' x 9'	9.5	9.5	9	4	0.33' - <2'	0.38	0.70	0.63	0.22	0.23	0.32	0.38	-	
	9	9	9		to 12	2' - <3'	0.43	0.73	0.65	0.15	-	-	-	72
				3' - <5'		0.38	0.62	0.61	0.15	-	-	-	72	
				5' - 10'		0.41	0.50	0.53	0.14	-	-	-	59	
				15'		0.57	0.69	0.70	0.12	-	-	-	49	
				20'		0.73	0.92	0.91	0.11	-	-	-	49	
	9.5	10	9	8 to	25'	0.83	1.11	1.09	0.11	-	-	-	44	
10.5	11	9	12	30'	0.93	1.25	1.23	0.11	-	-	-	44		

TABLE 6 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 10' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
10' x 5'	10	10	10	4	0.33' - <2'	0.46	0.62	0.52	0.24	0.24	0.41	0.45	See General Note 5	-
					2' - <3'	0.46	0.62	0.52	0.12	-	-	-		58
					3' - <5'	0.42	0.54	0.50	0.12	-	-	-		53
				to	5' - 10'	0.38	0.46	0.49	0.12	-	-	-		52
					15'	0.52	0.59	0.58	0.12	-	-	-		47
					20'	0.69	0.78	0.76	0.12	-	-	-		47
	10.5	10.5	10	8 to	25'	0.81	0.97	0.93	0.12	-	-	-		47
					11.5	12	10	12	30'	0.87	1.11	1.11		0.12
10' x 6'	10	10	10	4	0.33' - <2'	0.44	0.64	0.54	0.24	0.24	0.39	0.44	See General Note 5	-
					2' - <3'	0.44	0.64	0.54	0.12	-	-	-		58
					3' - <5'	0.39	0.57	0.52	0.12	-	-	-		52
				to	5' - 10'	0.37	0.48	0.52	0.12	-	-	-		52
					15'	0.51	0.62	0.61	0.12	-	-	-		47
					20'	0.67	0.83	0.80	0.12	-	-	-		47
	10.5	10.5	10	8 to	25'	0.79	1.02	0.99	0.12	-	-	-		47
					11.5	12	10	12	30'	0.85	1.17	1.14		0.12
10' x 7'	10	10	10	4	0.33' - <2'	0.43	0.66	0.57	0.24	0.24	0.38	0.43	See General Note 5	-
					2' - <3'	0.43	0.66	0.57	0.12	-	-	-		58
					3' - <5'	0.38	0.59	0.55	0.12	-	-	-		58
				to	5' - 10'	0.37	0.50	0.54	0.12	-	-	-		52
					15'	0.52	0.66	0.65	0.12	-	-	-		47
					20'	0.67	0.87	0.85	0.12	-	-	-		47
	10.5	10.5	10	8 to	25'	0.79	1.07	1.04	0.12	-	-	-		47
					11.5	12	10	12	30'	0.84	1.22	1.19		0.12
10' x 8'	10	10	10	4	0.33' - <2'	0.43	0.68	0.60	0.24	0.24	0.38	0.43	See General Note 5	-
					2' - <3'	0.43	0.68	0.60	0.12	-	-	-		64
					3' - <5'	0.38	0.62	0.57	0.12	-	-	-		58
				to	5' - 10'	0.38	0.52	0.57	0.12	-	-	-		52
					15'	0.53	0.69	0.68	0.12	-	-	-		47
					20'	0.68	0.91	0.89	0.12	-	-	-		47
	10.5	10.5	10	8 to	25'	0.81	1.12	1.09	0.12	-	-	-		47
					11.5	12	10	12	30'	0.86	1.27	1.25		0.12
10' x 9'	10	10	10	4	0.33' - <2'	0.43	0.70	0.62	0.24	0.24	0.38	0.43	See General Note 5	-
					2' - <3'	0.43	0.70	0.62	0.12	-	-	-		70
					3' - <5'	0.39	0.64	0.60	0.12	-	-	-		64
				to	5' - 10'	0.40	0.54	0.59	0.12	-	-	-		58
					15'	0.56	0.72	0.72	0.12	-	-	-		52
					20'	0.71	0.95	0.94	0.12	-	-	-		47
	10.5	11	10	8 to	25'	0.82	1.15	1.13	0.12	-	-	-		47
					11.5	12	10	12	30'	0.90	1.32	1.30		0.12
10' x 10'	10	10	10	4	0.33' - <2'	0.44	0.71	0.64	0.24	0.24	0.38	0.44	See General Note 5	-
					2' - <3'	0.44	0.71	0.64	0.17	-	-	-		79
					3' - <5'	0.40	0.65	0.62	0.16	-	-	-		70
				to	5' - 10'	0.44	0.56	0.61	0.15	-	-	-		64
					15'	0.60	0.75	0.76	0.12	-	-	-		52
					20'	0.76	0.99	0.99	0.12	-	-	-		52
	10.5	11	10	8 to	25'	0.86	1.20	1.18	0.12	-	-	-		47
					11.5	12	10	12	30'	0.97	1.36	1.35		0.13

TABLE 7 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 11' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
11' x 4'	11	11	11	4	0.33' - <2'	0.51	0.57	0.47	0.27	0.27	0.45	0.48	See General Note 5	-
					2' - <3'	0.51	0.57	0.47	0.14	-	-	-		62
				to	3' - <5'	0.48	0.57	0.46	0.14	-	-	-		62
					5' - 10'	0.47	0.50	0.50	0.14	-	-	-		55
					15'	0.59	0.58	0.56	0.14	-	-	-		55
					20'	0.77	0.77	0.74	0.14	-	-	-		55
	11.5	11.5	11	8 to	25'	0.92	0.95	0.91	0.14	-	-	-		55
	13	13	11	12	30'	0.94	1.09	1.06	0.14	-	-	-		55
11' x 6'	11	11	11	4	0.33' - <2'	0.45	0.62	0.52	0.27	0.27	0.41	0.45	See General Note 5	-
					2' - <3'	0.45	0.62	0.52	0.14	-	-	-		62
				to	3' - <5'	0.42	0.58	0.51	0.14	-	-	-		55
					5' - 10'	0.43	0.56	0.56	0.14	-	-	-		55
					15'	0.54	0.65	0.64	0.14	-	-	-		50
					20'	0.70	0.86	0.83	0.14	-	-	-		50
	11.5	11.5	11	8 to	25'	0.83	1.07	1.03	0.14	-	-	-		50
	13	13	11	12	30'	0.85	1.22	1.19	0.14	-	-	-		50
11' x 8'	11	11	11	4	0.33' - <2'	0.42	0.67	0.57	0.27	0.27	0.39	0.43	See General Note 5	-
					2' - <3'	0.43	0.67	0.57	0.14	-	-	-		62
				to	3' - <5'	0.39	0.63	0.56	0.14	-	-	-		62
					5' - 10'	0.43	0.60	0.61	0.14	-	-	-		55
					15'	0.54	0.72	0.71	0.14	-	-	-		50
					20'	0.70	0.94	0.92	0.14	-	-	-		50
	11.5	11.5	11	8 to	25'	0.82	1.16	1.13	0.14	-	-	-		50
	13	13	11	12	30'	0.86	1.32	1.30	0.14	-	-	-		50
11' x 10'	11	11	11	4	0.33' - <2'	0.44	0.71	0.62	0.27	0.27	0.38	0.44	See General Note 5	-
					2' - <3'	0.44	0.71	0.62	0.14	-	-	-		75
				to	3' - <5'	0.41	0.67	0.61	0.14	-	-	-		69
					5' - 10'	0.47	0.64	0.66	0.14	-	-	-		62
					15'	0.59	0.78	0.78	0.14	-	-	-		55
					20'	0.75	1.03	1.01	0.14	-	-	-		50
	11.5	12	11	8 to	25'	0.85	1.24	1.22	0.14	-	-	-		50
	13	13.5	11	12	30'	0.91	1.40	1.39	0.14	-	-	-		50
11' x 11'	11	11	11	4	0.33' - <2'	0.45	0.72	0.64	0.27	0.27	0.39	0.45	See General Note 5	-
					2' - <3'	0.45	0.72	0.64	0.18	-	-	-		86
				to	3' - <5'	0.42	0.69	0.63	0.18	-	-	-		75
					5' - 10'	0.51	0.66	0.69	0.16	-	-	-		69
					15'	0.63	0.81	0.82	0.14	-	-	-		55
					20'	0.80	1.07	1.06	0.14	-	-	-		55
	11.5	12	11	8 to	25'	0.91	1.29	1.27	0.14	-	-	-		50
	13	13.5	11	12	30'	0.99	1.44	1.44	0.14	-	-	-		50

TABLE 8 - STANDARD PRECAST BOX CULVERT DESIGNS (2" COVER) - 12' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
12' x 4'	12	12	12	4	0.33' - <2'	0.52	0.57	0.45	0.29	0.29	0.47	0.49	See General Note 5	-
				2' - <3'	0.52	0.57	0.45	0.15	-	-	-	73		
				3' - <5'	0.50	0.54	0.45	0.15	-	-	-	66		
				5' - 10'	0.50	0.52	0.52	0.15	-	-	-	66		
				15'	0.63	0.61	0.59	0.15	-	-	-	59		
				20'	0.82	0.81	0.77	0.15	-	-	-	59		
	12.5	12.5	12	8 to	25'	0.99	0.99	0.95	0.15	-	-	-		59
	14	14	12	12	30'	1.03	1.15	1.11	0.15	-	-	-		59
12' x 6'	12	12	12	4	0.33' - <2'	0.47	0.62	0.51	0.29	0.29	0.42	0.46	See General Note 5	-
				2' - <3'	0.47	0.62	0.51	0.15	-	-	-	66		
				3' - <5'	0.45	0.60	0.51	0.15	-	-	-	59		
				5' - 10'	0.47	0.59	0.59	0.15	-	-	-	59		
				15'	0.57	0.68	0.66	0.15	-	-	-	53		
				20'	0.74	0.90	0.86	0.15	-	-	-	53		
	12.5	12.5	12	8 to	25'	0.88	1.11	1.06	0.15	-	-	-		53
	14	14.5	12	12	30'	0.92	1.27	1.24	0.15	-	-	-		53
12' x 8'	12	12	12	4	0.33' - <2'	0.44	0.67	0.56	0.29	0.29	0.40	0.44	See General Note 5	-
				2' - <3'	0.44	0.67	0.56	0.15	-	-	-	66		
				3' - <5'	0.41	0.64	0.56	0.15	-	-	-	59		
				5' - 10'	0.45	0.63	0.64	0.15	-	-	-	59		
				15'	0.56	0.75	0.73	0.15	-	-	-	53		
				20'	0.72	0.98	0.95	0.15	-	-	-	53		
	12.5	13	12	8 to	25'	0.85	1.20	1.16	0.15	-	-	-		53
	14	14.5	12	12	30'	0.89	1.38	1.35	0.15	-	-	-		53
12' x 10'	12	12	12	4	0.33' - <2'	0.44	0.71	0.60	0.29	0.29	0.39	0.44	See General Note 5	-
				2' - <3'	0.44	0.71	0.60	0.15	-	-	-	73		
				3' - <5'	0.42	0.68	0.60	0.15	-	-	-	66		
				5' - 10'	0.47	0.67	0.69	0.15	-	-	-	59		
				15'	0.59	0.81	0.81	0.15	-	-	-	53		
				20'	0.75	1.06	1.04	0.15	-	-	-	53		
	12.5	13	12	8 to	25'	0.87	1.30	1.26	0.15	-	-	-		53
	14	14.5	12	12	30'	0.92	1.47	1.45	0.15	-	-	-		53
12' x 12'	12	12	12	4	0.33' - <2'	0.46	0.74	0.64	0.29	0.29	0.40	0.46	See General Note 5	-
				2' - <3'	0.46	0.74	0.64	0.20	-	-	-	93		
				3' - <5'	0.42	0.72	0.64	0.20	-	-	-	80		
				5' - 10'	0.54	0.71	0.74	0.18	-	-	-	73		
				15'	0.66	0.87	0.89	0.15	-	-	-	59		
				20'	0.83	1.14	1.13	0.15	-	-	-	59		
	12.5	13	12	8 to	25'	0.96	1.39	1.37	0.15	-	-	-		53
	14	14.5	12.5	12	30'	1.05	1.56	1.56	0.15	-	-	-		53

- NOTES:
- See Sheet 1 for Reinforcing Details and dimension locations.
 - See Sheet 2 for General Notes.
 - See Sheet 14 for Welded Wire Reinforcement Bending Diagram.

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TABLE 9A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 3' & 4' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
3' x 3'	9	9	9	4	0.33' - <2'	0.22	0.24	0.22	0.22	0.22	0.22	0.22	See General Note 5	-
					2' - <3'	0.11	0.23	0.22	0.11	-	-	-		31
					3' - <5'	0.11	0.22	0.22	0.11	-	-	-		31
					5' - 10'	0.11	0.22	0.22	0.11	-	-	-		31
				8	15'	0.11	0.22	0.22	0.11	-	-	-		31
					20'	0.13	0.22	0.22	0.11	-	-	-		31
					25'	0.16	0.22	0.22	0.11	-	-	-		31
					30'	0.19	0.24	0.25	0.11	-	-	-		31
35'	0.22	0.28	0.29	0.11	-	-	-	31						
4' x 3'	9	9	9	4	0.33' - <2'	0.22	0.32	0.24	0.22	0.22	0.22	0.22	See General Note 5	-
					2' - <3'	0.17	0.31	0.24	0.11	-	-	-		38
					3' - <5'	0.13	0.22	0.22	0.11	-	-	-		38
					5' - 10'	0.13	0.22	0.22	0.11	-	-	-		38
				8	15'	0.17	0.22	0.22	0.11	-	-	-		38
					20'	0.23	0.26	0.27	0.11	-	-	-		38
					25'	0.28	0.32	0.34	0.11	-	-	-		38
					30'	0.33	0.39	0.40	0.11	-	-	-		38
4' x 4'	9	9	9	4	0.33' - <2'	0.22	0.34	0.26	0.22	0.22	0.22	0.22	See General Note 5	-
					2' - <3'	0.17	0.33	0.26	0.11	-	-	-		38
					3' - <5'	0.13	0.22	0.22	0.11	-	-	-		38
					5' - 10'	0.14	0.22	0.22	0.11	-	-	-		38
				8	15'	0.19	0.22	0.23	0.11	-	-	-		38
					20'	0.24	0.28	0.30	0.11	-	-	-		38
					25'	0.29	0.36	0.37	0.11	-	-	-		38
					30'	0.34	0.43	0.45	0.11	-	-	-		38

TABLE 9B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 3' & 4' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
3' x 3'	10	10	10	4	0.33' - <2'	0.24	0.24	0.24	0.24	0.24	0.24	0.24	See General Note 5	-
					2' - <3'	0.12	0.24	0.24	0.24	-	-	-		31
					3' - <5'	0.12	0.24	0.24	0.24	-	-	-		31
					5' - 10'	0.12	0.24	0.24	0.24	-	-	-		31
				8	15'	0.12	0.24	0.24	0.24	-	-	-		31
					20'	0.12	0.24	0.24	0.24	-	-	-		31
					25'	0.13	0.24	0.24	0.24	-	-	-		31
					30'	0.15	0.24	0.24	0.12	-	-	-		31
35'	0.18	0.24	0.24	0.12	-	-	-	31						
4' x 3'	10	10	10	4	0.33' - <2'	0.24	0.26	0.24	0.24	0.24	0.24	0.24	See General Note 5	-
					2' - <3'	0.14	0.26	0.24	0.12	-	-	-		38
					3' - <5'	0.12	0.24	0.24	0.12	-	-	-		38
					5' - 10'	0.12	0.24	0.24	0.12	-	-	-		38
				8	15'	0.14	0.24	0.24	0.12	-	-	-		38
					20'	0.18	0.24	0.24	0.12	-	-	-		38
					25'	0.22	0.26	0.27	0.12	-	-	-		38
					30'	0.26	0.31	0.32	0.12	-	-	-		38
4' x 4'	10	10	10	4	0.33' - <2'	0.24	0.28	0.24	0.24	0.24	0.24	0.24	See General Note 5	-
					2' - <3'	0.14	0.28	0.24	0.12	-	-	-		38
					3' - <5'	0.12	0.24	0.24	0.12	-	-	-		38
					5' - 10'	0.12	0.24	0.24	0.12	-	-	-		38
				8	15'	0.15	0.24	0.24	0.12	-	-	-		38
					20'	0.19	0.24	0.24	0.12	-	-	-		38
					25'	0.23	0.28	0.30	0.12	-	-	-		38
					30'	0.27	0.34	0.35	0.12	-	-	-		38

- NOTES:
- 1. See Sheet 2 for General Notes.
 - 2. See Sheet 7 for Reinforcing Details and dimension locations.
 - 3. See Sheet 14 for WWR Bending Diagrams.

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TABLE 10A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 5' & 6' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
5' x 3'	9	9	9	4	0.33' - <2'	0.27	0.39	0.37	0.22	0.22	0.22	0.27	See General Note 5	-
					2' - <3'	0.26	0.39	0.37	0.11	-	-	-		45
					3' - <5'	0.19	0.24	0.25	0.11	-	-	-		36
					5' - 10'	0.20	0.22	0.22	0.11	-	-	-		36
				8	15'	0.28	0.28	0.30	0.11	-	-	-		35
					20'	0.37	0.38	0.39	0.11	-	-	-		35
					25'	0.45	0.48	0.49	0.11	-	-	-		35
					30'	0.54	0.58	0.59	0.11	-	-	-		35
5' x 4'	9	9	4	0.33' - <2'	0.26	0.42	0.39	0.22	0.22	0.22	0.26	-		
				2' - <3'	0.26	0.42	0.39	0.11	-	-	-	45		
				3' - <5'	0.19	0.26	0.27	0.11	-	-	-	45		
				5' - 10'	0.20	0.22	0.23	0.11	-	-	-	36		
			8	15'	0.27	0.31	0.33	0.11	-	-	-	35		
				20'	0.36	0.42	0.43	0.11	-	-	-	35		
				25'	0.44	0.52	0.54	0.11	-	-	-	35		
				30'	0.53	0.63	0.65	0.11	-	-	-	35		
5' x 5'	9	9	4	0.33' - <2'	0.27	0.44	0.42	0.22	0.22	0.22	0.27	-		
				2' - <3'	0.27	0.44	0.42	0.11	-	-	-	45		
				3' - <5'	0.20	0.27	0.28	0.11	-	-	-	45		
				5' - 10'	0.22	0.23	0.26	0.11	-	-	-	45		
			8	15'	0.30	0.34	0.36	0.11	-	-	-	36		
				20'	0.38	0.45	0.47	0.11	-	-	-	35		
				25'	0.47	0.56	0.59	0.11	-	-	-	35		
				30'	0.55	0.68	0.71	0.11	-	-	-	35		
6' x 3'	9	9	4	0.33' - <2'	0.34	0.47	0.42	0.22	0.22	0.25	0.34	-		
				2' - <3'	0.34	0.47	0.42	0.11	-	-	-	43		
				3' - <5'	0.27	0.31	0.32	0.11	-	-	-	39		
				5' - 10'	0.29	0.26	0.28	0.11	-	-	-	39		
			12	15'	0.42	0.39	0.40	0.11	-	-	-	38		
				20'	0.55	0.52	0.53	0.11	-	-	-	38		
				25'	0.68	0.66	0.67	0.11	-	-	-	38		
				30'	0.82	0.81	0.82	0.11	-	-	-	38		
6' x 4'	9	9	4	0.33' - <2'	0.33	0.50	0.46	0.22	0.22	0.23	0.33	-		
				2' - <3'	0.33	0.50	0.46	0.11	-	-	-	43		
				3' - <5'	0.27	0.33	0.35	0.11	-	-	-	39		
				5' - 10'	0.28	0.29	0.31	0.11	-	-	-	39		
			12	15'	0.40	0.43	0.45	0.11	-	-	-	38		
				20'	0.52	0.57	0.59	0.11	-	-	-	38		
				25'	0.65	0.73	0.74	0.11	-	-	-	38		
				30'	0.78	0.88	0.90	0.11	-	-	-	38		
6' x 5'	9	9	4	0.33' - <2'	0.33	0.52	0.49	0.22	0.22	0.23	0.33	-		
				2' - <3'	0.33	0.52	0.49	0.11	-	-	-	43		
				3' - <5'	0.27	0.35	0.37	0.11	-	-	-	43		
				5' - 10'	0.29	0.31	0.34	0.11	-	-	-	39		
			12	15'	0.41	0.46	0.49	0.11	-	-	-	38		
				20'	0.53	0.62	0.64	0.11	-	-	-	38		
				25'	0.66	0.78	0.80	0.11	-	-	-	38		
				30'	0.78	0.95	0.97	0.11	-	-	-	38		
6' x 6'	9	9	4	0.33' - <2'	0.34	0.55	0.51	0.22	0.22	0.24	0.34	-		
				2' - <3'	0.34	0.54	0.51	0.11	-	-	-	52		
				3' - <5'	0.29	0.37	0.39	0.11	-	-	-	52		
				5' - 10'	0.32	0.34	0.37	0.11	-	-	-	43		
			12	15'	0.44	0.50	0.53	0.11	-	-	-	39		
				20'	0.57	0.66	0.70	0.11	-	-	-	39		
				25'	0.70	0.84	0.87	0.11	-	-	-	38		
				30'	0.83	1.02	1.05	0.11	-	-	-	38		

TABLE 10B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 5' & 6' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
5' x 3'	10	10	10	4	0.33' - <2'	0.24	0.33	0.32	0.24	0.24	0.24	0.24	See General Note 5	-
					2' - <3'	0.22	0.33	0.32	0.12	-	-	-		45
					3' - <5'	0.16	0.24	0.24	0.12	-	-	-		36
					5' - 10'	0.16	0.24	0.24	0.12	-	-	-		36
				12	15'	0.23	0.24	0.24	0.12	-	-	-		35
					20'	0.29	0.30	0.31	0.12	-	-	-		35
					25'	0.36	0.38	0.39	0.12	-	-	-		35
					30'	0.43	0.46	0.47	0.12	-	-	-		35
5' x 4'	10	10	4	0.33' - <2'	0.24	0.35	0.34	0.24	0.24	0.24	0.24	-		
				2' - <3'	0.22	0.35	0.34	0.12	-	-	-	45		
				3' - <5'	0.15	0.24	0.24	0.12	-	-	-	45		
				5' - 10'	0.16	0.24	0.24	0.12	-	-	-	36		
			12	15'	0.22	0.25	0.27	0.12	-	-	-	35		
				20'	0.29	0.33	0.34	0.12	-	-	-	35		
				25'	0.36	0.41	0.43	0.12	-	-	-	35		
				30'	0.42	0.50	0.51	0.12	-	-	-	35		
5' x 5'	10	10	4	0.33' - <2'	0.24	0.37	0.36	0.24	0.24	0.24	0.24	-		
				2' - <3'	0.21	0.37	0.36	0.12	-	-	-	45		
				3' - <5'	0.16	0.24	0.25	0.12	-	-	-	45		
				5' - 10'	0.17	0.24	0.24	0.12	-	-	-	45		
			12	15'	0.24	0.27	0.29	0.12	-	-	-	36		
				20'	0.30	0.36	0.38	0.12	-	-	-	35		
				25'	0.37	0.44	0.47	0.12	-	-	-	35		
				30'	0.44	0.53	0.56	0.12	-	-	-	35		
6' x 3'	10	10	4	0.33' - <2'	0.28	0.40	0.36	0.24	0.24	0.24	0.28	-		
				2' - <3'	0.28	0.40	0.36	0.12	-	-	-	43		
				3' - <5'	0.22	0.26	0.28	0.12	-	-	-	39		
				5' - 10'	0.24	0.24	0.24	0.12	-	-	-	39		
			12	15'	0.34	0.31	0.32	0.12	-	-	-	38		
				20'	0.44	0.41	0.42	0.12	-	-	-	38		
				25'	0.54	0.52	0.53	0.12	-	-	-	38		
				30'	0.64	0.63	0.64	0.12	-	-	-	38		
6' x 4'	10	10	4	0.33' - <2'	0.27	0.42	0.39	0.24	0.24	0.24	0.27	-		
				2' - <3'	0.27	0.42	0.39	0.12	-	-	-	43		
				3' - <5'	0.21	0.28	0.30	0.12	-	-	-	39		
				5' - 10'	0.23	0.24	0.25	0.12	-	-	-	39		
			12	15'	0.32	0.34	0.35	0.12	-	-	-	38		
				20'	0.42	0.45	0.47	0.12	-	-	-	38		
				25'	0.51	0.56	0.58	0.12	-	-	-	38		
				30'	0.61	0.68	0.70	0.12	-	-	-	38		
6' x 5'	10	10	4	0.33' - <2'	0.26	0.44	0.42	0.24	0.24	0.24	0.26	-		
				2' - <3'	0.26	0.44	0.42	0.12	-	-	-	43		
				3' - <5'	0.22	0.30	0.33	0.12	-	-	-	43		
				5' - 10'	0.24	0.25	0.27	0.12	-	-	-	39		
			12	15'	0.33	0.36	0.39	0.12	-	-	-	38		
				20'	0.42	0.48	0.51	0.12	-	-	-	38		
				25'	0.52	0.61	0.63	0.12	-	-	-	38		
				30'	0.61	0.74	0.76	0.12	-	-	-	38		
6' x 6'	10	10	4	0.33' - <2'	0.27	0.46	0.44	0.24	0.24	0.24	0.27	-		
				2' - <3'	0.27	0.46	0.44	0.12	-	-	-	52		
				3' - <5'	0.23	0.31	0.34	0.12	-	-	-	52		
				5' - 10'	0.25	0.27	0.30	0.12	-	-	-	43		
			12	15'	0.35	0.39	0.42	0.12	-	-	-	39		
				20'	0.45	0.52	0.55	0.12	-	-	-	39		
				25'	0.54	0.65	0.68	0.12	-	-	-	38		
				30'	0.64	0.78	0.81	0.12	-	-	-	38		

TABLE 11A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 7' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
7' x 4'	9	9	9	4	0.33' - <2'	0.42	0.58	0.52	0.22	0.22	0.31	0.42	See General Note 5	-
					2' - <3'	0.42	0.58	0.51	0.11	-	-	-		43
					3' - <5'	0.36	0.41	0.44	0.11	-	-	-		43
				12	5' - 10'	0.39	0.40	0.39	0.11	-	-	-		43
					15'	0.56	0.56	0.58	0.11	-	-	-		41
					20'	0.74	0.76	0.77	0.11	-	-	-		41
	9	9.5	9	7 to 12	25'	0.92	0.97	0.97	0.11	-	-	-		41
					30'	1.09	1.18	1.10	0.11	-	-	-		41
7' x 5'	9	9	9	4	0.33' - <2'	0.41	0.61	0.55	0.22	0.23	0.30	0.41		-
					2' - <3'	0.41	0.61	0.55	0.11	-	-	-		47
					3' - <5'	0.37	0.43	0.47	0.11	-	-	-		43
				12	5' - 10'	0.39	0.41	0.43	0.11	-	-	-		43
					15'	0.56	0.61	0.63	0.11	-	-	-		41
					20'	0.73	0.82	0.83	0.11	-	-	-		41
	9	9.5	9	7 to 12	25'	0.90	1.04	1.06	0.11	-	-	-		41
					30'	1.06	1.26	1.19	0.11	-	-	-		41
7' x 6'	9	9	9	4	0.33' - <2'	0.42	0.63	0.58	0.22	0.24	0.30	0.42	-	
					2' - <3'	0.42	0.63	0.58	0.11	-	-	-	59	
					3' - <5'	0.38	0.45	0.50	0.11	-	-	-	47	
				12	5' - 10'	0.41	0.44	0.47	0.11	-	-	-	43	
					15'	0.57	0.65	0.68	0.11	-	-	-	41	
					20'	0.75	0.87	0.90	0.11	-	-	-	41	
	9	9.5	9	7 to 12	25'	0.93	1.11	1.13	0.11	-	-	-	41	
					30'	1.07	1.35	1.27	0.11	-	-	-	41	
7' x 7'	9	9	9	4	0.33' - <2'	0.44	0.66	0.61	0.22	0.25	0.31	0.44	-	
					2' - <3'	0.44	0.65	0.61	0.11	-	-	-	59	
					3' - <5'	0.41	0.47	0.52	0.11	-	-	-	59	
				12	5' - 10'	0.44	0.47	0.52	0.11	-	-	-	47	
					15'	0.62	0.69	0.74	0.11	-	-	-	43	
					20'	0.80	0.93	0.97	0.11	-	-	-	43	
	9	9.5	9	7 to 12	25'	0.99	1.18	1.22	0.11	-	-	-	43	
					30'	1.12	1.43	1.36	0.11	-	-	-	41	

TABLE 11B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 7' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
7' x 4'	10	10	10	4	0.33' - <2'	0.33	0.49	0.44	0.24	0.24	0.24	0.33	See General Note 5	-
					2' - <3'	0.33	0.49	0.44	0.12	-	-	-		43
					3' - <5'	0.29	0.35	0.38	0.12	-	-	-		43
					5' - 10'	0.31	0.30	0.31	0.12	-	-	-		43
				12	15'	0.44	0.44	0.45	0.12	-	-	-		41
					20'	0.58	0.59	0.60	0.12	-	-	-		41
					25'	0.71	0.74	0.75	0.12	-	-	-		41
					30'	0.85	0.91	0.91	0.12	-	-	-		41
7' x 5'	10	10	10	4	0.33' - <2'	0.32	0.51	0.47	0.24	0.24	0.24	0.32		-
					2' - <3'	0.32	0.51	0.47	0.12	-	-	-		47
					3' - <5'	0.29	0.37	0.41	0.12	-	-	-		43
					5' - 10'	0.31	0.32	0.35	0.12	-	-	-		43
				12	15'	0.44	0.47	0.50	0.12	-	-	-		41
					20'	0.57	0.63	0.65	0.12	-	-	-		41
					25'	0.70	0.80	0.82	0.12	-	-	-		41
					30'	0.84	0.97	0.99	0.12	-	-	-		41
7' x 6'	10	10	10	4	0.33' - <2'	0.33	0.53	0.50	0.24	0.24	0.24	0.33		-
					2' - <3'	0.33	0.53	0.50	0.12	-	-	-		59
					3' - <5'	0.30	0.38	0.43	0.12	-	-	-		47
					5' - 10'	0.33	0.35	0.38	0.12	-	-	-		43
				12	15'	0.45	0.51	0.54	0.12	-	-	-		41
					20'	0.58	0.68	0.70	0.12	-	-	-		41
					25'	0.72	0.85	0.88	0.12	-	-	-		41
					30'	0.85	1.04	1.06	0.12	-	-	-		41
7' x 7'	10	10	10	4	0.33' - <2'	0.35	0.55	0.52	0.24	0.24	0.24	0.35		-
					2' - <3'	0.35	0.55	0.52	0.12	-	-	-		59
					3' - <5'	0.32	0.40	0.46	0.12	-	-	-		59
					5' - 10'	0.35	0.37	0.41	0.12	-	-	-		47
				12	15'	0.48	0.54	0.58	0.12	-	-	-		43
					20'	0.62	0.72	0.76	0.12	-	-	-		43
					25'	0.76	0.90	0.94	0.12	-	-	-		43
					30'	0.90	1.10	1.13	0.12	-	-	-		41

- NOTES:
- See Sheet 2 for General Notes.
 - See Sheet 7 for Reinforcing Details and dimension locations.
 - See Sheet 14 for WWR Bending Diagrams.

TABLE 12A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 8' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
8' x 4'	9	9	9	4	0.33' - <2'	0.52	0.66	0.57	0.22	0.24	0.42	0.52	See General Note 5	-
				to	2' - <3'	0.52	0.66	0.57	0.11	-	-	-		50
					3' - <5'	0.48	0.49	0.52	0.11	-	-	-		50
					5' - 10'	0.52	0.48	0.49	0.11	-	-	-		45
				12	15'	0.75	0.72	0.72	0.11	-	-	-		41
					20'	1.00	0.98	0.97	0.11	-	-	-		41
	9	9.5	9	8 to	25'	1.25	1.24	1.14	0.11	-	-	-		41
	10	10.5	9	12	30'	1.31	1.29	1.21	0.11	-	-	-		41
8' x 5'	9	9	9	4	0.33' - <2'	0.51	0.69	0.60	0.22	0.25	0.40	0.51		-
				to	2' - <3'	0.51	0.69	0.60	0.11	-	-	-		50
					3' - <5'	0.46	0.52	0.56	0.11	-	-	-		45
					5' - 10'	0.51	0.51	0.53	0.11	-	-	-		45
				12	15'	0.74	0.77	0.78	0.11	-	-	-		41
					20'	0.97	1.05	1.05	0.11	-	-	-		41
	9	9.5	9	8 to	25'	1.20	1.33	1.23	0.11	-	-	-		41
	10	10.5	9	12	30'	1.26	1.38	1.30	0.11	-	-	-		41
8' x 6'	9	9	9	4	0.33' - <2'	0.51	0.72	0.64	0.22	0.26	0.39	0.51		-
				to	2' - <3'	0.51	0.72	0.64	0.11	-	-	-		50
					3' - <5'	0.47	0.55	0.59	0.11	-	-	-		50
					5' - 10'	0.52	0.55	0.58	0.11	-	-	-		45
				12	15'	0.74	0.83	0.85	0.11	-	-	-		41
					20'	0.97	1.12	1.13	0.11	-	-	-		41
	9	9.5	9	8 to	25'	1.18	1.42	1.32	0.11	-	-	-		41
	10	10.5	9	12	30'	1.26	1.46	1.39	0.11	-	-	-		41
8' x 7'	9	9	9	4	0.33' - <2'	0.52	0.74	0.67	0.22	0.26	0.40	0.52		-
				to	2' - <3'	0.52	0.74	0.67	0.11	-	-	-		55
					3' - <5'	0.49	0.57	0.62	0.11	-	-	-		55
					5' - 10'	0.55	0.59	0.63	0.11	-	-	-		50
				12	15'	0.77	0.88	0.91	0.11	-	-	-		41
					20'	1.01	1.19	1.21	0.11	-	-	-		41
	9	9.5	9	8 to	25'	1.21	1.51	1.41	0.11	-	-	-		41
	10	10.5	9	12	30'	1.31	1.53	1.47	0.11	-	-	-		41
8' x 8'	9	9	9	4	0.33' - <2'	0.55	0.77	0.70	0.22	0.27	0.41	0.55		-
				to	2' - <3'	0.55	0.77	0.70	0.13	-	-	-		65
					3' - <5'	0.53	0.59	0.64	0.12	-	-	-		65
					5' - 10'	0.60	0.63	0.68	0.11	-	-	-		55
				12	15'	0.83	0.93	0.98	0.11	-	-	-		45
					20'	1.08	1.26	1.29	0.11	-	-	-		45
	9	9.5	9	8 to	25'	1.28	1.59	1.50	0.11	-	-	-		41
	10	10.5	9	12	30'	1.41	1.61	1.55	0.11	-	-	-		41

TABLE 12B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 8' SPANS															
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)	
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9		
8' x 4'	10	10	10	4	0.33' - <2'	0.42	0.56	0.49	0.24	0.24	0.32	0.41	See General Note 5	-	
					to	2' - <3'	0.42	0.56	0.49	0.12	-	-		-	50
						3' - <5'	0.38	0.42	0.46	0.12	-	-		-	50
				12	5' - 10'	0.41	0.38	0.39	0.12	-	-	-		45	
					15'	0.59	0.56	0.57	0.12	-	-	-		41	
					20'	0.78	0.75	0.76	0.12	-	-	-		41	
	10	10.5	10	8 to 12	25'	0.97	0.96	0.96	0.12	-	-	-		41	
					30'	1.15	1.16	1.10	0.12	-	-	-		41	
8' x 5'	10	10	10	4	0.33' - <2'	0.40	0.58	0.52	0.24	.034	0.31	0.40	-		
					to	2' - <3'	0.40	0.58	0.52	0.12	-	-	-	50	
						3' - <5'	0.37	0.45	0.48	0.12	-	-	-	45	
				12	5' - 10'	0.41	0.41	0.43	0.12	-	-	-	45		
					15'	0.58	0.60	0.62	0.12	-	-	-	41		
					20'	0.76	0.81	0.81	0.12	-	-	-	41		
	10	10.5	10	8 to 12	25'	0.94	1.03	1.03	0.12	-	-	-	41		
					30'	1.10	1.24	1.24	0.12	-	-	-	41		
8' x 6'	10	10	10	4	0.33' - <2'	0.40	0.60	0.55	0.24	0.24	0.30	0.40	-		
					to	2' - <3'	0.40	0.60	0.55	0.12	-	-	-	50	
						3' - <5'	0.37	0.47	0.51	0.12	-	-	-	50	
				12	5' - 10'	0.42	0.43	0.46	0.12	-	-	-	45		
					15'	0.58	0.64	0.67	0.12	-	-	-	41		
					20'	0.76	0.86	0.88	0.12	-	-	-	41		
	10	10.5	10	8 to 12	25'	0.94	1.09	1.11	0.12	-	-	-	41		
					30'	1.09	1.32	1.26	0.12	-	-	-	41		
8' x 7'	10	10	10	4	0.33' - <2'	0.41	0.63	0.58	0.24	0.24	0.30	0.41	-		
					to	2' - <3'	0.41	0.63	0.58	0.12	-	-	-	55	
						3' - <5'	0.39	0.49	0.53	0.12	-	-	-	55	
				12	5' - 10'	0.44	0.46	0.50	0.12	-	-	-	50		
					15'	0.61	0.68	0.72	0.12	-	-	-	45		
					20'	0.78	0.91	0.94	0.12	-	-	-	41		
	10	10.5	10	8 to 12	25'	0.97	1.16	1.18	0.12	-	-	-	41		
					30'	1.11	1.40	1.34	0.12	-	-	-	41		
8' x 8'	10	10	10	4	0.33' - <2'	0.44	0.64	0.60	0.24	0.24	0.31	0.44	-		
					to	2' - <3'	0.44	0.64	0.60	0.12	-	-	-	65	
						3' - <5'	0.42	0.51	0.56	0.12	-	-	-	65	
				12	5' - 10'	0.47	0.50	0.55	0.12	-	-	-	55		
					15'	0.65	0.72	0.77	0.12	-	-	-	45		
					20'	0.84	0.96	1.01	0.12	-	-	-	45		
	10	10.5	10	8 to 12	25'	1.03	1.22	1.26	0.12	-	-	-	41		
					30'	1.16	1.47	1.42	0.12	-	-	-	41		

- NOTES:
- 1. See Sheet 2 for General Notes.
 - 2. See Sheet 7 for Reinforcing Details and dimension locations.
 - 3. See Sheet 14 for WWR Bending Diagrams.



TABLE 13A - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 9' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
9' x 5'	9	9	9	4 to 12	0.33' - <2'	0.62	0.78	0.65	0.22	0.26	0.52	0.61	See General Note 5	-
					2' - <3'	0.62	0.78	0.65	0.11	-	-	-		54
					3' - <5'	0.58	0.63	0.61	0.11	-	-	-		49
					5' - 10'	0.65	0.63	0.64	0.11	-	-	-		49
					15'	0.95	0.96	0.95	0.11	-	-	-		44
	9	9	9	8 to 12	20'	1.26	1.32	1.28	0.11	-	-	-		44
	10	10.5	9		25'	1.39	1.41	1.32	0.11	-	-	-		44
	11	11.5	9		30'	1.46	1.50	1.42	0.11	-	-	-		44
9' x 6'	9	9	9	4 to 12	0.33' - <2'	0.60	0.81	0.69	0.22	0.27	0.51	0.60		-
					2' - <3'	0.60	0.81	0.69	0.11	-	-	-		54
					3' - <5'	0.56	0.66	0.65	0.11	-	-	-		49
					5' - 10'	0.65	0.68	0.69	0.11	-	-	-		49
					15'	0.94	1.03	1.02	0.11	-	-	-		44
	9	9	9	8 to 12	20'	1.25	1.40	1.38	0.11	-	-	-		44
	10	10.5	9		25'	1.37	1.49	1.40	0.11	-	-	-		44
	11	11.5	9		30'	1.44	1.58	1.50	0.11	-	-	-		44
9' x 7'	9	9	9	4 to 12	0.33' - <2'	0.61	0.84	0.72	0.22	0.28	0.51	0.61		-
					2' - <3'	0.61	0.83	0.72	0.11	-	-	-		59
					3' - <5'	0.58	0.69	0.68	0.11	-	-	-		54
					5' - 10'	0.67	0.73	0.75	0.11	-	-	-		49
					15'	0.96	1.09	1.10	0.11	-	-	-		44
	9	9	9	8 to 12	20'	1.27	1.49	1.47	0.11	-	-	-		44
	10	10.5	9		25'	1.38	1.57	1.48	0.11	-	-	-		44
	11	11.5	9		30'	1.49	1.70	1.58	0.11	-	-	-		44
9' x 8'	9	9.5	9	4 to 12	0.33' - <2'	0.60	0.85	0.73	0.22	0.29	0.52	0.53		-
	9	9	9		2' - <3'	0.64	0.86	0.76	0.12	-	-	-		59
					3' - <5'	0.62	0.72	0.72	0.11	-	-	-		59
					5' - 10'	0.71	0.77	0.81	0.11	-	-	-		54
					15'	1.01	1.16	1.17	0.11	-	-	-		44
	9	9.5	9	8 to 12	20'	1.27	1.56	1.45	0.11	-	-	-		44
	10	10.5	9		25'	1.45	1.65	1.57	0.11	-	-	-		44
	11	11.5	9		30'	1.59	1.72	1.66	0.11	-	-	-		44
9' x 9'	9	9.5	9	4 to 12	0.33' - <2'	0.68	0.88	0.76	0.22	0.29	0.55	0.57		-
	9	9	9		2' - <3'	0.68	0.88	0.78	0.18	-	-	-		72
					3' - <5'	0.68	0.75	0.78	0.18	-	-	-		72
					5' - 10'	0.79	0.82	0.88	0.17	-	-	-		59
					15'	1.11	1.22	1.26	0.13	-	-	-		49
	9	9.5	9	8 to 12	20'	1.37	1.64	1.54	0.13	-	-	-		49
	10	10.5	9		25'	1.56	1.73	1.65	0.13	-	-	-		44
	11	11.5	9.5		30'	1.56	1.73	1.68	0.12	-	-	-		44

TABLE 13B - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 9' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
9' x 5'	10	10	10	4	0.33' - <2'	0.49	0.65	0.57	0.24	0.24	0.40	0.48	See General Note 5	-
					2' - <3'	0.49	0.65	0.57	0.12	-	-	-		54
				to	3' - <5'	0.46	0.54	0.53	0.12	-	-	-		49
					5' - 10'	0.52	0.50	0.51	0.12	-	-	-		49
					15'	0.75	0.74	0.75	0.12	-	-	-		44
					20'	0.98	1.01	1.00	0.12	-	-	-		44
	8 to	25'	1.21	1.27	1.19	0.12	-	-	-	44				
		12	30'	1.30	1.36	1.30	0.12	-	-	-	44			
9' x 6'	10	10	10	4	0.33' - <2'	0.48	0.68	0.60	0.24	0.24	0.39	0.48		-
					2' - <3'	0.48	0.68	0.60	0.12	-	-	-		54
				to	3' - <5'	0.45	0.57	0.56	0.12	-	-	-		49
					5' - 10'	0.52	0.53	0.56	0.12	-	-	-		49
					15'	0.74	0.79	0.81	0.12	-	-	-		44
					20'	0.97	1.07	1.07	0.12	-	-	-		44
	8 to	25'	1.18	1.35	1.28	0.12	-	-	-	44				
		12	30'	1.27	1.44	1.38	0.12	-	-	-	44			
9' x 7'	10	10	10	4	0.33' - <2'	0.49	0.70	0.63	0.24	0.24	0.39	0.49	-	
					2' - <3'	0.49	0.70	0.63	0.12	-	-	-	59	
				to	3' - <5'	0.46	0.59	0.59	0.12	-	-	-	54	
					5' - 10'	0.54	0.57	0.60	0.12	-	-	-	49	
					15'	0.75	0.84	0.86	0.12	-	-	-	44	
					20'	0.98	1.13	1.14	0.12	-	-	-	44	
	8 to	25'	1.18	1.43	1.36	0.12	-	-	-	44				
		12	30'	1.28	1.52	1.46	0.12	-	-	-	44			
9' x 8'	10	10	10	4	0.33' - <2'	0.51	0.72	0.65	0.24	0.24	0.39	0.51	-	
					2' - <3'	0.51	0.72	0.65	0.12	-	-	-	59	
				to	3' - <5'	0.49	0.61	0.62	0.12	-	-	-	59	
					5' - 10'	0.57	0.60	0.65	0.12	-	-	-	54	
					15'	0.79	0.89	0.92	0.12	-	-	-	44	
					20'	1.02	1.20	1.22	0.12	-	-	-	44	
	8 to	25'	1.21	1.50	1.44	0.12	-	-	-	44				
		12	30'	1.33	1.59	1.54	0.12	-	-	-	44			
9' x 9'	10	10	10	4	0.33' - <2'	0.54	0.74	0.68	0.24	0.24	0.41	0.54	-	
					2' - <3'	0.54	0.74	0.68	0.15	-	-	-	72	
				to	3' - <5'	0.53	0.63	0.64	0.13	-	-	-	72	
					5' - 10'	0.62	0.64	0.70	0.12	-	-	-	59	
					15'	0.85	0.94	0.99	0.12	-	-	-	49	
					20'	1.09	1.26	1.29	0.12	-	-	-	49	
	8 to	25'	1.28	1.56	1.52	0.12	-	-	-	44				
		12	30'	1.42	1.66	1.66	0.12	-	-	-	44			

- NOTES:
- 1. See Sheet 2 for General Notes.
 - 2. See Sheet 7 for Reinforcing Details and dimension locations.
 - 3. See Sheet 14 for WWR Bending Diagrams.

TABLE 14 - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 10' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
10' x 5'	10	10	10	4 to 12	0.33' - <2'	0.60	0.73	0.61	0.24	0.24	0.50	0.57	See General Note 5	-
					2' - <3'	0.60	0.73	0.61	0.12	-	-	-		58
					3' - <5'	0.57	0.64	0.58	0.12	-	-	-		53
					5' - 10'	0.65	0.60	0.60	0.12	-	-	-		52
					15'	0.94	0.90	0.89	0.12	-	-	-		47
	10	10	10	8 to 12	20'	1.24	1.23	1.19	0.12	-	-	-		47
	11	11.5	10		25'	1.39	1.37	1.28	0.12	-	-	-		47
	12.5	12.5	10		30'	1.38	1.43	1.41	0.12	-	-	-		47
10' x 6'	10	10	10	4 to 12	0.33' - <2'	0.58	0.75	0.64	0.24	0.24	0.48	0.56		-
					2' - <3'	0.58	0.75	0.64	0.12	-	-	-		58
					3' - <5'	0.56	0.67	0.62	0.12	-	-	-		52
					5' - 10'	0.64	0.64	0.65	0.12	-	-	-		52
					15'	0.92	0.96	0.95	0.12	-	-	-		47
	10	10	10	8 to 12	20'	1.21	1.31	1.27	0.12	-	-	-		47
	11	11.5	10		25'	1.35	1.44	1.36	0.12	-	-	-		47
	12.5	12.5	10		30'	1.35	1.51	1.49	0.12	-	-	-		47
10' x 7'	10	10	10	4 to 12	0.33' - <2'	0.57	0.78	0.67	0.24	0.24	0.48	0.57		-
					2' - <3'	0.57	0.78	0.67	0.12	-	-	-		58
					3' - <5'	0.58	0.70	0.65	0.12	-	-	-		58
					5' - 10'	0.65	0.68	0.70	0.12	-	-	-		52
					15'	0.92	1.02	1.02	0.12	-	-	-		47
	10	10	10	8 to 12	20'	1.21	1.38	1.35	0.12	-	-	-		47
	11	11.5	10		25'	1.33	1.52	1.44	0.12	-	-	-		47
	12.5	12.5	10		30'	1.38	1.58	1.57	0.12	-	-	-		47
10' x 8'	10	10	10	4 to 12	0.33' - <2'	0.58	0.80	0.70	0.24	0.26	0.48	0.58		-
					2' - <3'	0.58	0.80	0.70	0.12	-	-	-		64
					3' - <5'	0.60	0.72	0.68	0.12	-	-	-		58
					5' - 10'	0.67	0.72	0.75	0.12	-	-	-		52
					15'	0.95	1.08	1.08	0.12	-	-	-		47
	10	10	10	8 to 12	20'	1.24	1.45	1.44	0.12	-	-	-		47
	11	11.5	10		25'	1.36	1.59	1.52	0.12	-	-	-		47
	12.5	12.5	10		30'	1.45	1.64	1.64	0.12	-	-	-		47
10' x 9'	10	10	10	4 to 12	0.33' - <2'	0.61	0.82	0.73	0.24	0.26	0.50	0.61	-	
					2' - <3'	0.61	0.82	0.73	0.14	-	-	-	70	
					3' - <5'	0.64	0.75	0.73	0.13	-	-	-	64	
					5' - 10'	0.72	0.77	0.80	0.12	-	-	-	58	
					15'	1.00	1.13	1.15	0.12	-	-	-	52	
	10	10	10	8 to 12	20'	1.30	1.53	1.52	0.12	-	-	-	47	
	11	11.5	10		25'	1.42	1.66	1.60	0.12	-	-	-	47	
	12.5	12.5	10		30'	1.57	1.70	1.72	0.12	-	-	-	47	
10' x 10'	10	10	10	4 to 12	0.33' - <2'	0.66	0.84	0.75	0.24	0.27	0.52	0.65	-	
					2' - <3'	0.66	0.84	0.75	0.20	-	-	-	79	
					3' - <5'	0.70	0.77	0.79	0.19	-	-	-	70	
					5' - 10'	0.79	0.81	0.87	0.18	-	-	-	64	
					15'	1.09	1.19	1.23	0.15	-	-	-	52	
	10	10	10	8 to 12	20'	1.40	1.61	1.61	0.14	-	-	-	52	
	11	11.5	10		25'	1.53	1.74	1.68	0.14	-	-	-	47	
	12.5	12.5	10.5		30'	1.60	1.71	1.74	0.14	-	-	-	47	

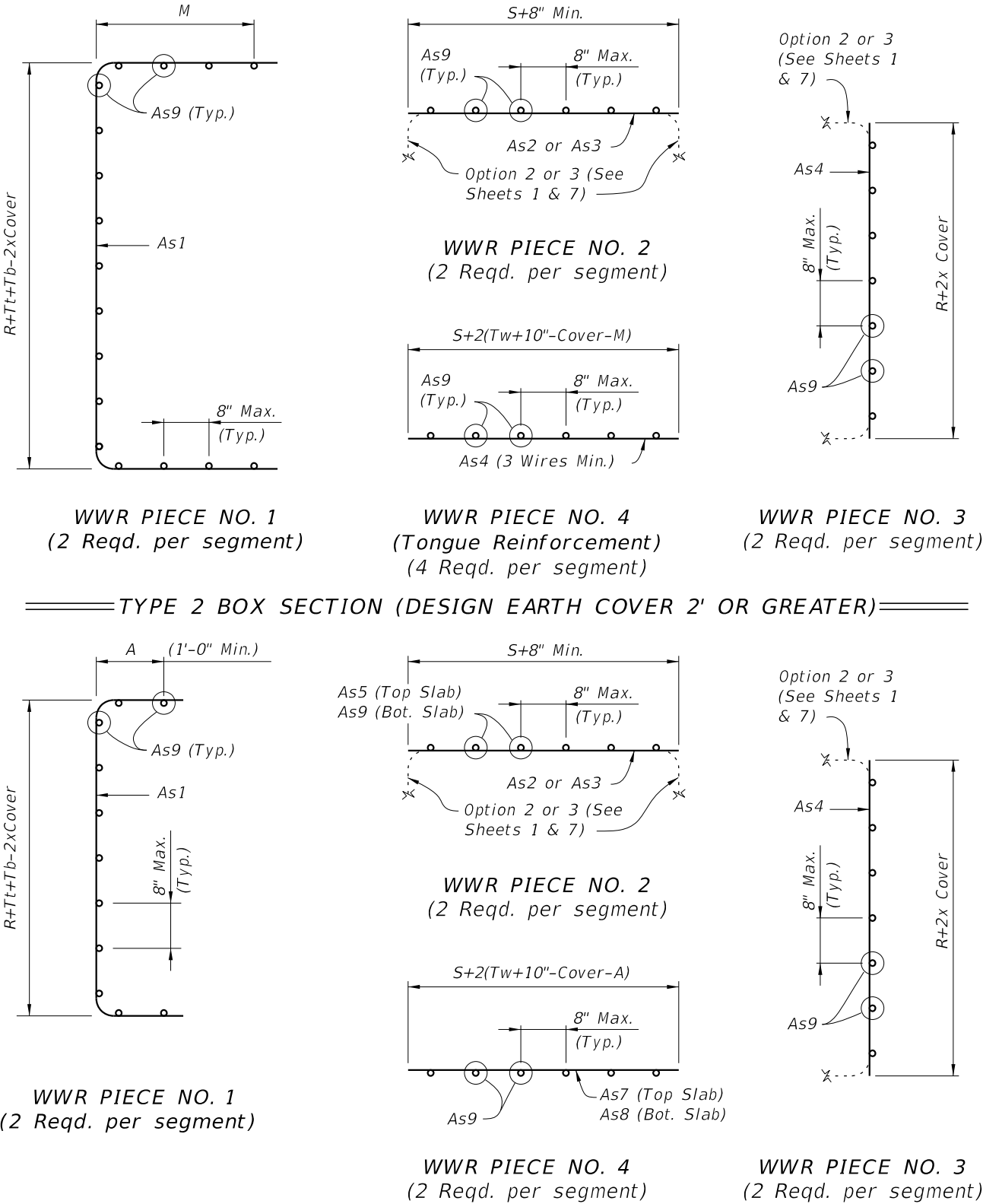
TABLE 15 - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 11' SPANS														
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9	
11' x 4'	11	11	11	4	0.33' - <2'	0.60	0.66	0.54	0.27	0.27	0.52	0.56	See General Note 5	-
				2' - <3'	0.60	0.66	0.54	0.14	-	-	-	62		
				3' - <5'	0.60	0.61	0.53	0.14	-	-	-	62		
				5' - 10'	0.79	0.63	0.62	0.14	-	-	-	55		
				15'	1.01	0.82	0.79	0.14	-	-	-	55		
				20'	1.34	1.11	1.06	0.14	-	-	-	55		
	12	12	11	8 to	25'	1.52	1.27	1.23	0.14	-	-	-		55
	13.5	13.5	11	12	30'	1.54	1.37	1.34	0.14	-	-	-		50
11' x 6'	11	11	11	4	0.33' - <2'	0.57	0.71	0.60	0.27	0.27	0.47	0.53		-
				2' - <3'	0.56	0.71	0.60	0.14	-	-	-	62		
				3' - <5'	0.56	0.67	0.59	0.14	-	-	-	55		
				5' - 10'	0.73	0.71	0.72	0.14	-	-	-	55		
				15'	0.92	0.92	0.91	0.14	-	-	-	50		
	11	11	11	8	20'	1.21	1.25	1.21	0.14	-	-	-		50
	12	12	11	to	25'	1.37	1.43	1.39	0.14	-	-	-		50
	13.5	13.5	11	12	30'	1.39	1.53	1.50	0.14	-	-	-		50
11' x 8'	11	11	11	4	0.33' - <2'	0.55	0.76	0.66	0.27	0.27	0.46	0.55	-	
				2' - <3'	0.55	0.76	0.66	0.14	-	-	-	62		
				3' - <5'	0.54	0.72	0.65	0.14	-	-	-	62		
				5' - 10'	0.73	0.79	0.82	0.14	-	-	-	55		
				15'	0.93	1.03	1.03	0.14	-	-	-	50		
	11	11	11	8	20'	1.21	1.39	1.36	0.14	-	-	-	50	
	12	12.5	11	to	25'	1.34	1.56	1.50	0.14	-	-	-	50	
	13.5	13.5	11	12	30'	1.41	1.66	1.65	0.14	-	-	-	50	
11' x 10'	11	11	11	4	0.33' - <2'	0.60	0.81	0.71	0.27	0.27	0.48	0.60	-	
				2' - <3'	0.60	0.81	0.71	0.15	-	-	-	75		
				3' - <5'	0.61	0.77	0.70	0.14	-	-	-	69		
				5' - 10'	0.80	0.88	0.93	0.14	-	-	-	62		
				15'	1.01	1.13	1.15	0.14	-	-	-	55		
	11	11	11	8	20'	1.30	1.52	1.52	0.14	-	-	-	50	
	12	12.5	11	to	25'	1.42	1.70	1.65	0.14	-	-	-	50	
	13.5	14	11	12	30'	1.53	1.77	1.74	0.14	-	-	-	50	
11' x 11'	11	11	11	4	0.33' - <2'	0.64	0.83	0.74	0.27	0.27	0.51	0.64	-	
				2' - <3'	0.64	0.83	0.74	0.21	-	-	-	86		
				3' - <5'	0.67	0.79	0.75	0.21	-	-	-	75		
				5' - 10'	0.88	0.93	0.99	0.19	-	-	-	69		
				15'	1.09	1.19	1.23	0.16	-	-	-	55		
	11	11	11	8	20'	1.40	1.59	1.60	0.15	-	-	-	55	
	12	12.5	11	to	25'	1.54	1.77	1.73	0.15	-	-	-	50	
	13.5	14	11.5	12	30'	1.57	1.77	1.76	0.14	-	-	-	50	

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TABLE 16 - STANDARD PRECAST BOX CULVERT DESIGNS (3" COVER) - 12' SPANS															
SPAN x RISE (S) (R) (Ft.)	SLAB / WALL THICKNESS				DESIGN EARTH COVER ABOVE TOP SLAB	REINFORCEMENT AREAS (sq. in./Ft.)								As1 EXT. LENGTH (M) (in.)	
	TOP (Tt) (in.)	BOT. (Tb) (in.)	SIDE (Tw) (in.)	HAUNCH (H) (in.)		As1	As2	As3	As4	As5	As7	As8	As9		
12' x 4'	12	12	12	4	0.33' - <2'	0.59	0.64	0.51	0.29	0.29	0.52	0.55	See General Note 5	-	
				to	2' - <3'	0.60	0.64	0.51	0.15	-	-	-		73	
					3' - <5'	0.60	0.61	0.51	0.15	-	-	-		66	
					5' - 10'	0.81	0.61	0.61	0.15	-	-	-		66	
					15'	1.04	0.80	0.77	0.15	-	-	-		59	
	12	20'	1.37	1.08	1.03	0.15	-	-	-	59					
		13	13	12	8 to	25'	1.58	1.26	1.21	0.15	-	-		-	59
14.5	14.5	12	12	30'	1.63	1.38	1.34	0.15	-	-	-	53			
12' x 6'	12	12	12	4	0.33' - <2'	0.56	0.70	0.57	0.29	0.29	0.47	0.52		-	
				to	2' - <3'	0.56	0.70	0.57	0.15	-	-	-		66	
					3' - <5'	0.56	0.67	0.57	0.15	-	-	-		59	
					5' - 10'	0.74	0.69	0.70	0.15	-	-	-		59	
					15'	0.94	0.90	0.88	0.15	-	-	-		53	
	12	20'	1.23	1.22	1.17	0.15	-	-	-	53					
		13	13	12	8 to	25'	1.40	1.42	1.37	0.15	-	-		-	53
14.5	15	12	12	30'	1.44	1.54	1.48	0.15	-	-	-	53			
12' x 8'	12	12	12	4	0.33' - <2'	0.55	0.75	0.63	0.29	0.29	0.45	0.53	-		
				to	2' - <3'	0.55	0.75	0.63	0.15	-	-	-	66		
					3' - <5'	0.55	0.73	0.63	0.15	-	-	-	59		
					5' - 10'	0.73	0.77	0.79	0.15	-	-	-	59		
					15'	0.93	1.00	0.99	0.15	-	-	-	53		
	12	20'	1.21	1.35	1.31	0.15	-	-	-	53					
		13	13.5	12	8 to	25'	1.35	1.55	1.48	0.15	-	-	-	53	
14.5	15	12	12	30'	1.40	1.67	1.62	0.15	-	-	-	53			
12' x 10'	12	12	12	4	0.33' - <2'	0.57	0.80	0.68	0.29	0.29	0.46	0.57	-		
				to	2' - <3'	0.57	0.80	0.68	0.15	-	-	-	73		
					3' - <5'	0.59	0.77	0.68	0.15	-	-	-	66		
					5' - 10'	0.78	0.85	0.89	0.15	-	-	-	59		
					15'	0.98	1.10	1.11	0.15	-	-	-	53		
	12	20'	1.26	1.47	1.45	0.15	-	-	-	53					
		13	13.5	12	8 to	25'	1.39	1.68	1.63	0.15	-	-	-	53	
14.5	15	12	12	30'	1.48	1.79	1.76	0.15	-	-	-	53			
12' x 12'	12	12	12	4	0.33' - <2'	0.65	0.84	0.73	0.29	0.29	0.50	0.65	-		
				to	2' - <3'	0.65	0.84	0.73	0.23	-	-	-	93		
					3' - <5'	0.68	0.81	0.75	0.22	-	-	-	80		
					5' - 10'	0.90	0.94	1.01	0.21	-	-	-	73		
					15'	1.12	1.20	1.24	0.18	-	-	-	59		
	12	20'	1.42	1.60	1.61	0.16	-	-	-	59					
		13	13.5	12	8 to	25'	1.57	1.81	1.78	0.16	-	-	-	53	
14.5	15	12.5	12	30'	1.63	1.86	1.85	0.15	-	-	-	53			

- NOTES:
- See Sheet 2 of 14 for General Notes.
 - See Sheet 7 of 14 for Reinforcing Details and dimension locations.

WELDED WIRE REINFORCEMENT BENDING DIAGRAM



- REINFORCEMENT NOTES:
- Reinforcement bending dimensions are out-to-out.
 - See General Notes 4, 5 and 6 on Sheet 2.
 - See Tables 1 thru 16 for dimensions M, R, S, Tb, Tt and Tw.
 - Dimension "A" is determined by the Manufacturer in accordance with the requirements of Detail "B" on Sheets 1 and 7.



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STANDARD PLANS

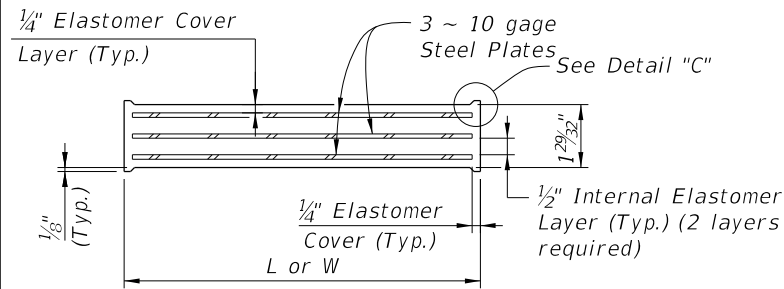
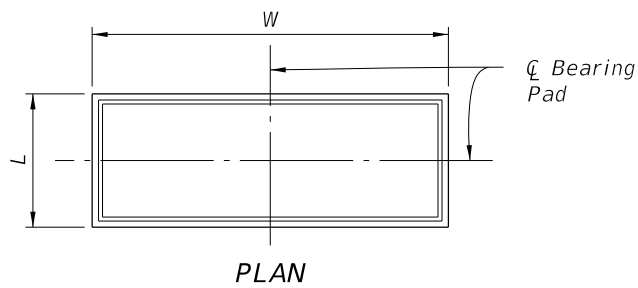
STANDARD PRECAST CONCRETE BOX CULVERTS

INDEX

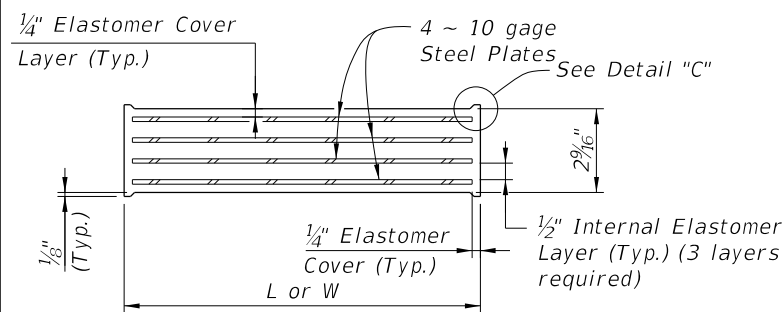
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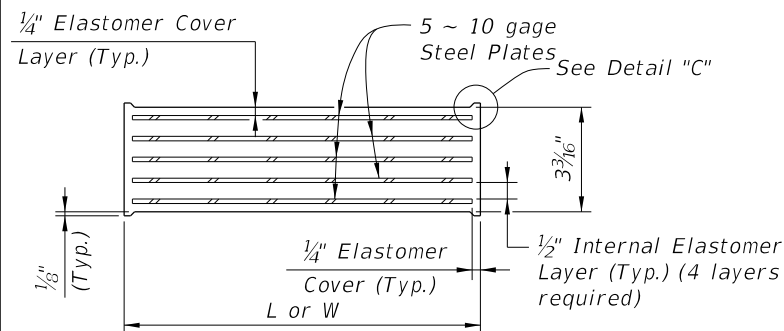
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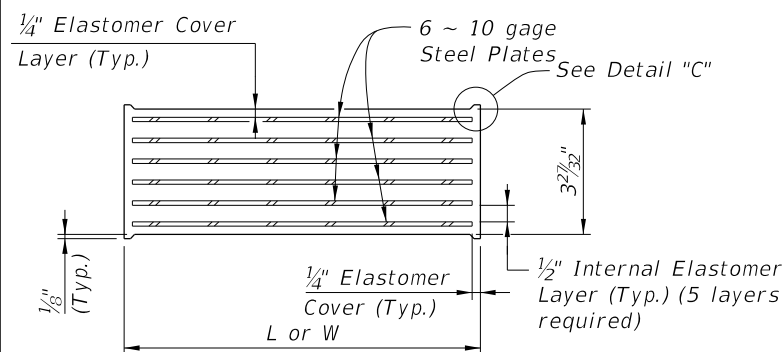
TYPICAL SECTION TYPE D, E & AA PAD



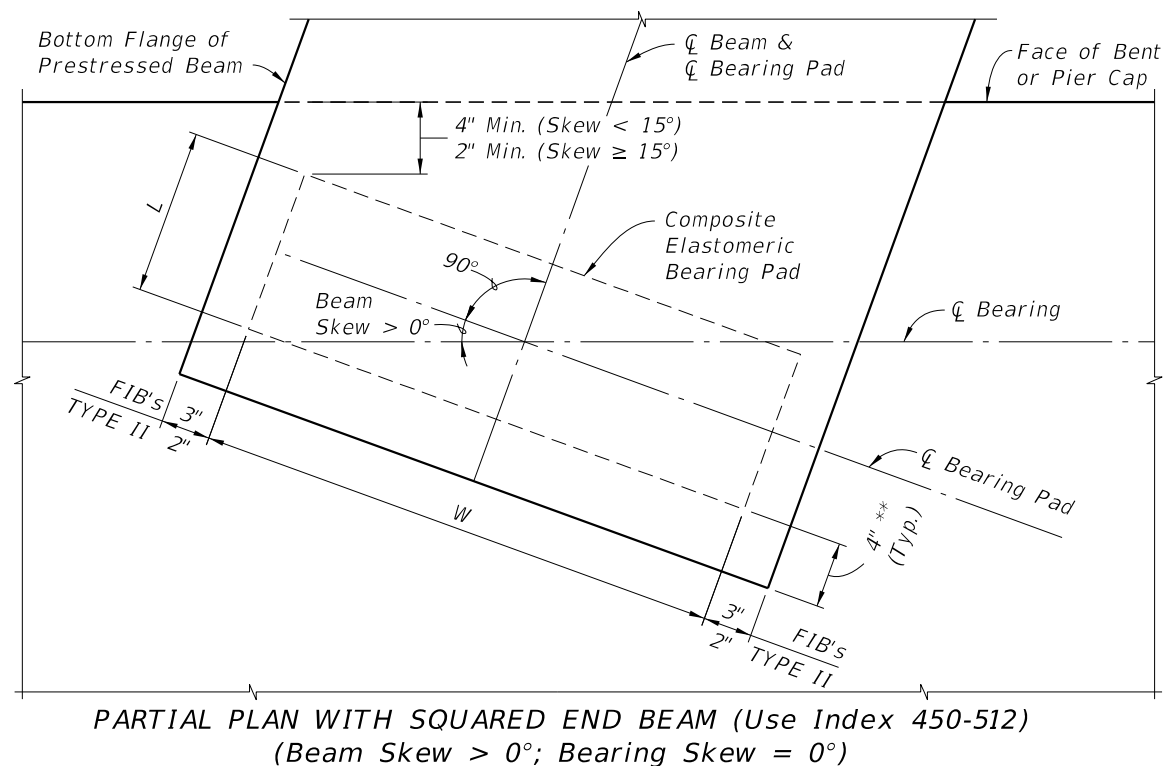
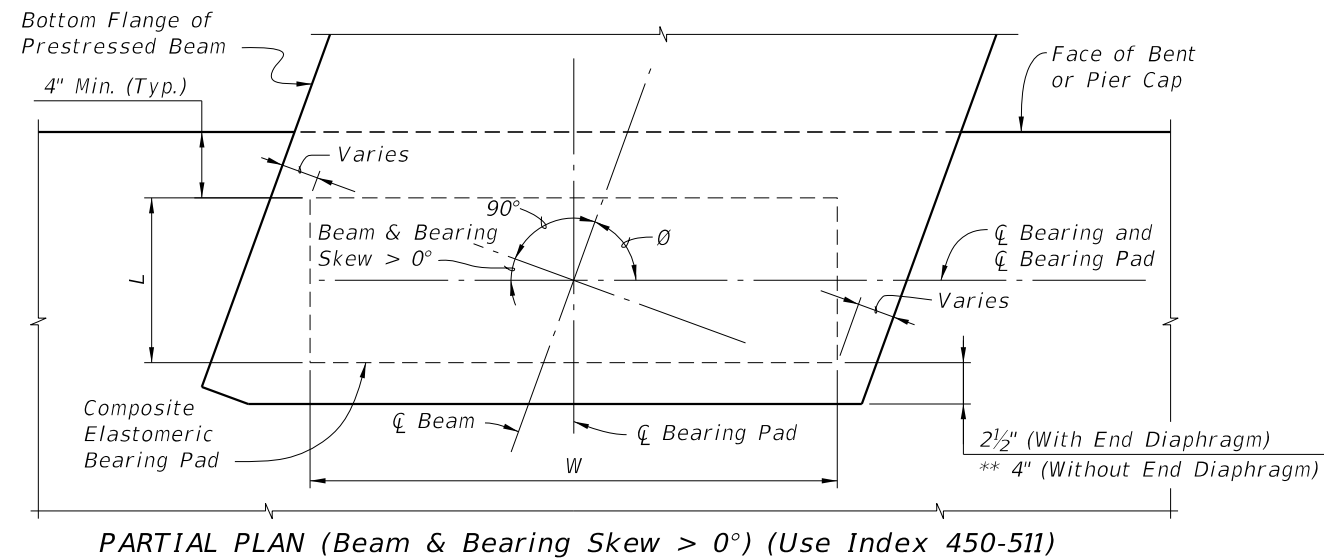
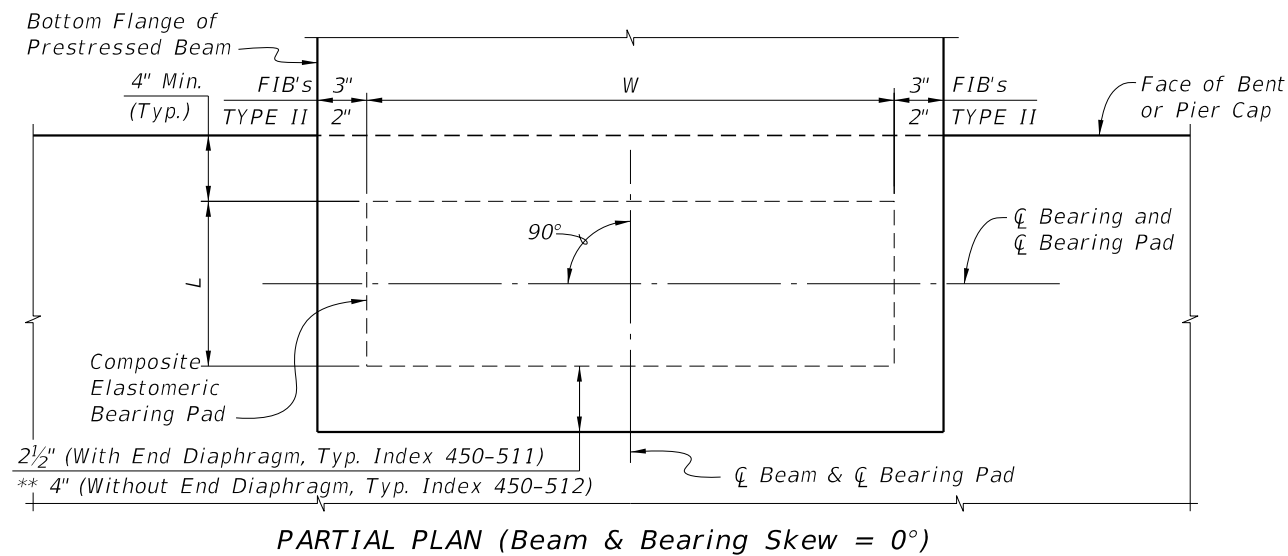
TYPICAL SECTION TYPE F, G & AB PAD



TYPICAL SECTION TYPE H PAD



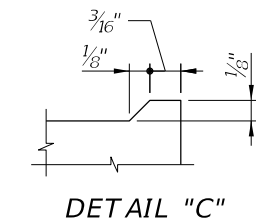
TYPICAL SECTION TYPE J & K PAD



PAD TYPE (See Note 1)	BEAM TYPE	BEARING PAD DIMENSIONS		*BEVELED BEARING PLATE DIMENSIONS	
		L	W	C	D
D (G=110psi)	FLORIDA I-BEAM	8"	2'-8"	1'-0"	3'-0"
E (G=110psi)		10"	2'-8"	1'-0"	3'-0"
F (G=110psi)		10"	2'-8"	1'-0"	3'-0"
G (G=150psi)		10"	2'-8"	1'-0"	3'-0"
H (G=150psi)		10"	2'-8"	1'-0"	3'-0"
J (G=150psi)		10"	2'-8"	1'-0"	3'-0"
K (G=150psi)		1'-0"	2'-8"	1'-1 1/2"	3'-0"
AA (G=110psi)	AASHTO TYPE II	10"	1'-2"	1'-0"	1'-4"
AB (G=150psi)		10"	1'-2"	1'-0"	1'-4"

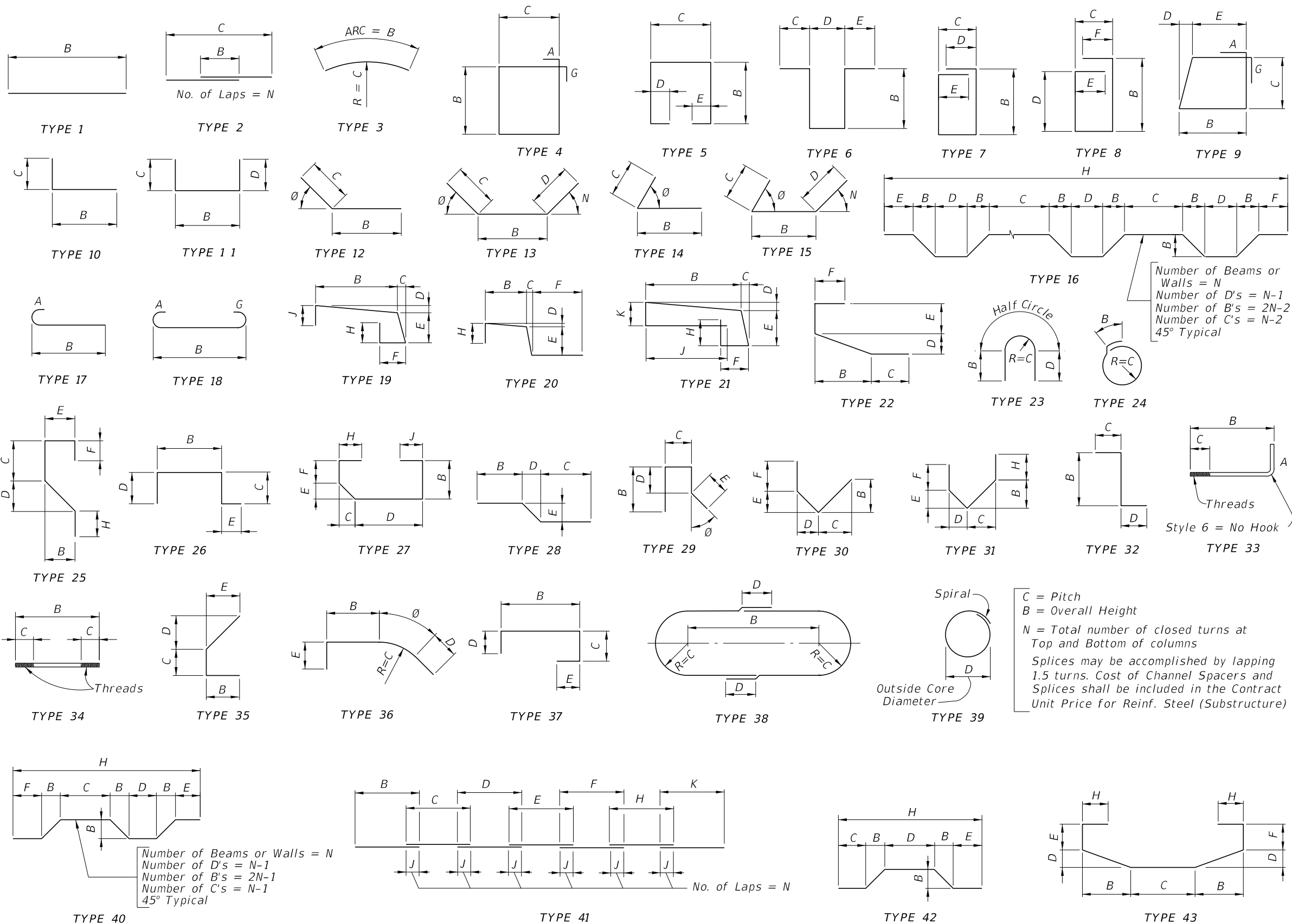
* Work this sheet with the appropriate type Bearing Plate Detail (See Bearing Plate Data Table) and BEARING PAD DATA TABLE in the Structures Plans. See TABLE OF BEAM VARIABLES and BEARING PLATE DATA TABLE in the Structures Plans for locations where beveled bearing plates are required.

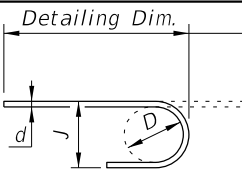
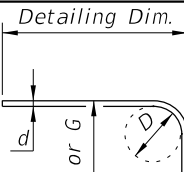
** Offset to End of Beam is reduced to 2" for Type K Pad.

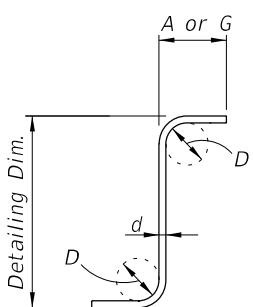
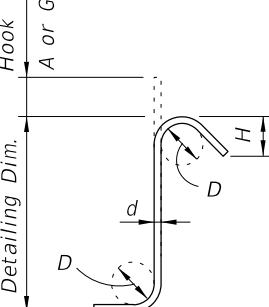


BEARING PAD NOTES:

1. Neoprene in Type D, E, F & AA bearing pads shall have a shear modulus (G) of 110 psi. Neoprene in Type G, H, J, K & AB bearing pads shall have a shear modulus (G) of 150 psi.
2. Steel Plates in bearing pads shall conform to ASTM A1011 Grade 36, Type 1.
3. See Bearing Pad Data Table in Structures Plans for quantities of Type D, E, F, G, H, J, K, AA and/or AB Bearing Pads.



HOOK DETAILS				
				
180°		90°		
BAR SIZE	D	180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#3	2¼"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3¾"	7"	5"	10"
#6	4½"	8"	6"	1'-0"
#7	5¼"	10"	7"	1'-2"
#8	6"	11"	8"	1'-4"
#9	9½"	1'-3"	11¾"	1'-7"
#10	10¾"	1'-5"	1'-1¼"	1'-10"
#11	12"	1'-7"	1'-2¾"	2'-0"
#14	18¼"	2'-3"	1'-9¾"	2'-7"
#18	24"	3'-0"	2'-4½"	3'-5"
STYLE		1		3

			
90°		135°	
STIRRUPS (TIES SIMILAR)			

STIRRUP & TIE HOOK DIMENSIONS				
BAR SIZE	D	90° HOOKS	135° HOOKS	
		A or G	A or G	H *
#3	1½"	4"	4"	2½"
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3¾"
#6	4½"	1'-0"	8"	4½"
#7	5¼"	1'-2"	9"	5¼"
#8	6"	1'-4"	10½"	6"
STYLE		4	5	
STYLE 6 = NO HOOK				

* Dimension is approximate.

Hook Styles Detailed on this sheet are for Illustration Only.

Actual Hook Style for any particular bar will be shown under A or G Heading on REINFORCING BAR LIST sheet(s) in Structures Plans.

All Dimensions are out-to-out.

NOTE: For Bar Dimensions See REINFORCING BAR LIST Sheet(s) in Structures Plans.



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STANDARD PLANS

BAR BENDING DETAILS (STEEL)

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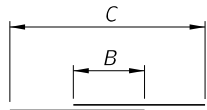
LAST
REVISION
11/01/24

DESCRIPTION:

REVISION

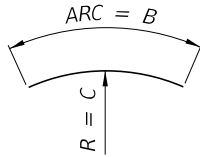


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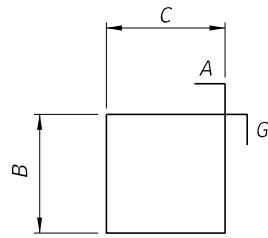


No. of Laps = N

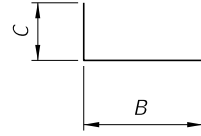
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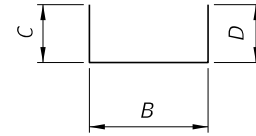
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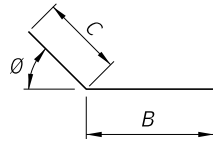
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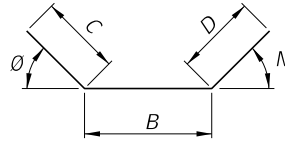
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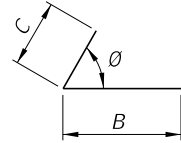
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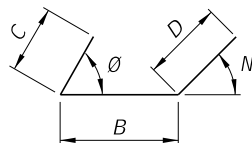
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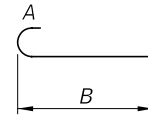
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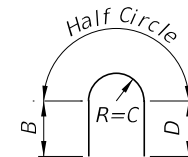
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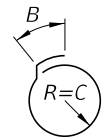
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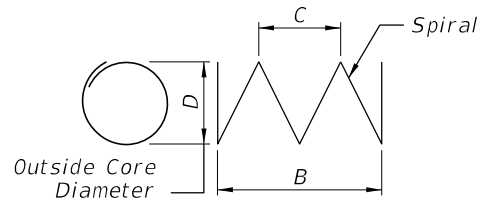
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TYPE 23



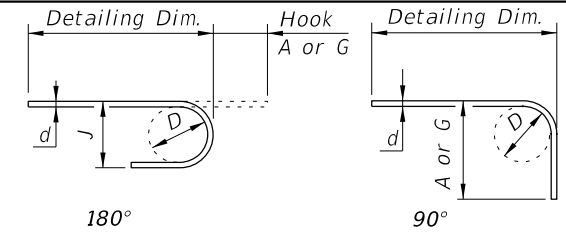
TYPE 24



TYPE 39

SINGLE BAR BENDING DETAILS

HOOK DETAILS



BAR SIZE	D	180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	1'-0"
#7	5 1/4"	10"	7"	1'-2"
#8	6"	11"	8"	1'-4"
STYLE		1		3

NOTES

GENERAL
All dimensions are out-to-out.
For Bar dimensions See REINFORCING BAR LIST Sheet(s) in Structures Plans.

SPIRALS (TYPE 39 BARS)

C = Pitch
B = Overall Height
N = Total number of closed turns at Top and Bottom of columns
Spirals = 1.5 turns
Include spiral splice in Contract Unit Price for FRP Reinforcing.

HOOKS
All Dimensions are approximate.
Hook Styles Detailed on this sheet are for Illustration Only.
Actual Hook Style for any particular bar will be shown under A or G Heading on REINFORCING BAR LIST sheet(s) in Structures Plans.



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STANDARD PLANS

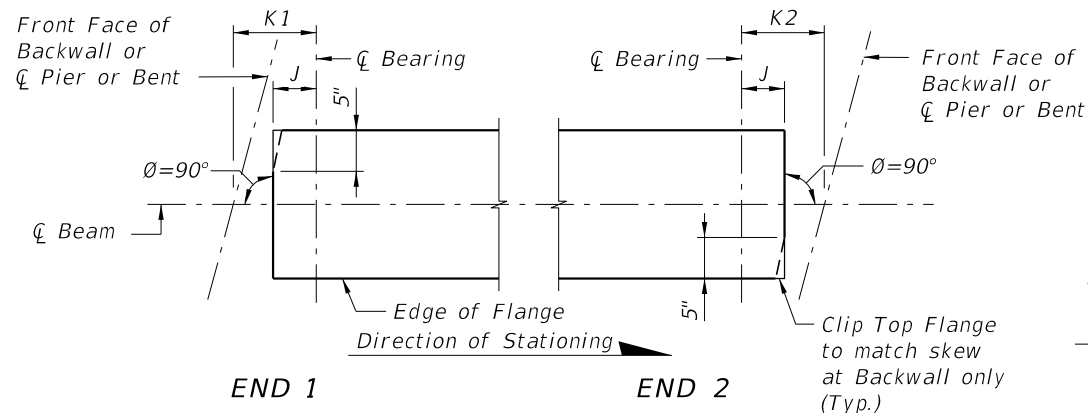
BAR BENDING DETAILS (FRP)

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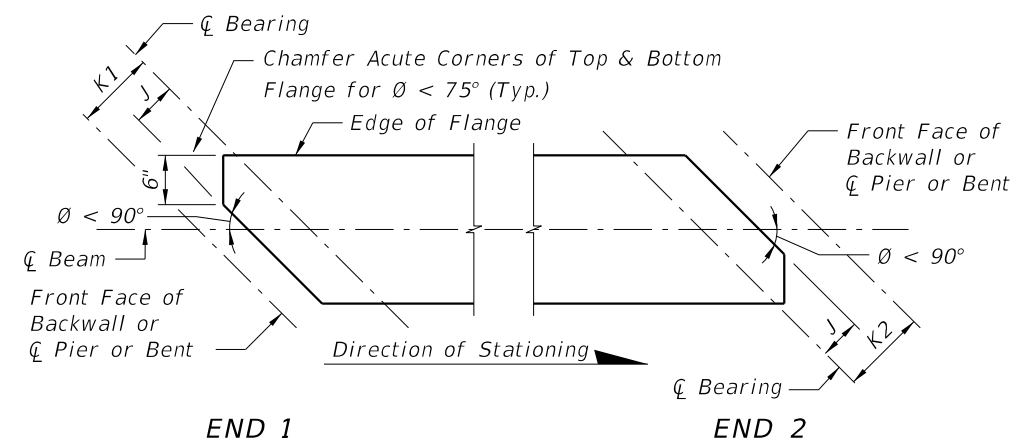
SHEET
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LAST
REVISION
11/01/24

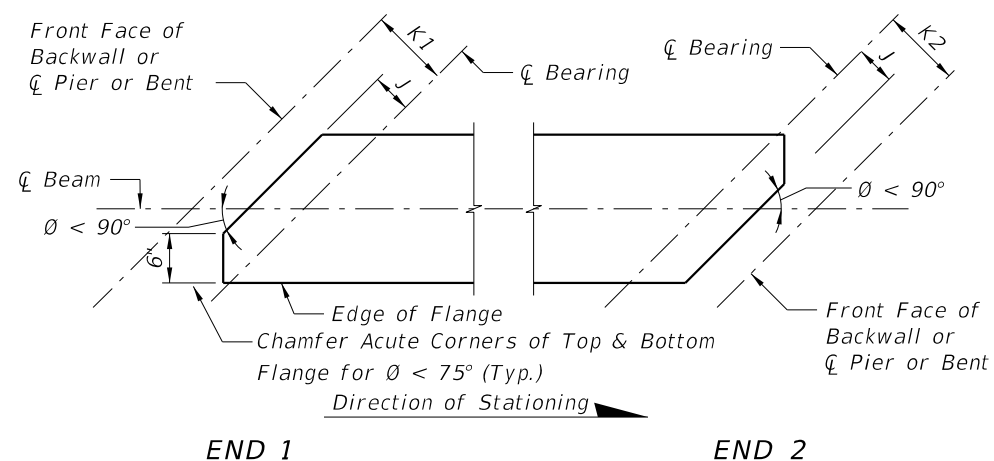
REVISION
DESCRIPTION:



CASE 1
(Standard Orientation for New Construction)

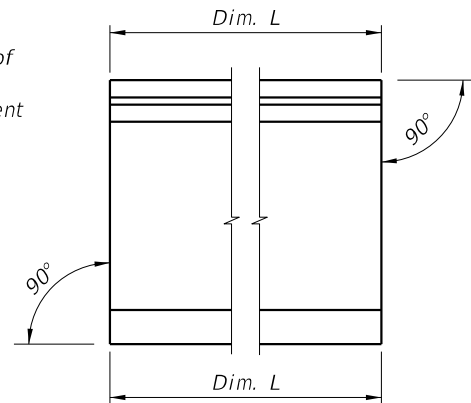


CASE 2
(Special Orientation for Widening)

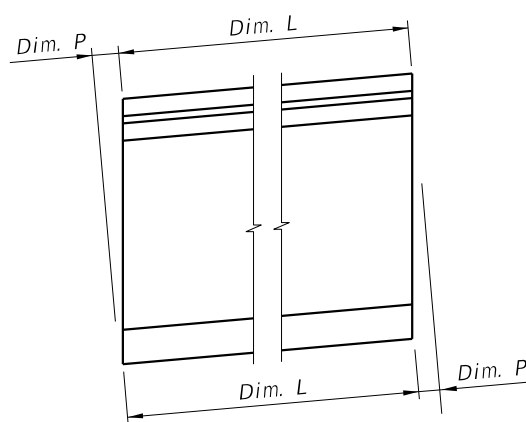


CASE 3
(Special Orientation for Widening)

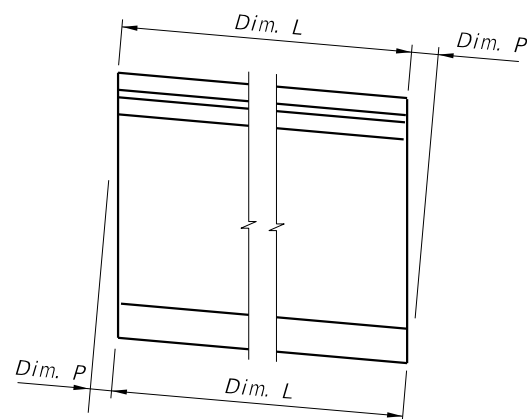
SCHEMATIC PLAN VIEWS AT BEAM ENDS



CONDITION 1
(Dim P = 0.0)



CONDITION 2



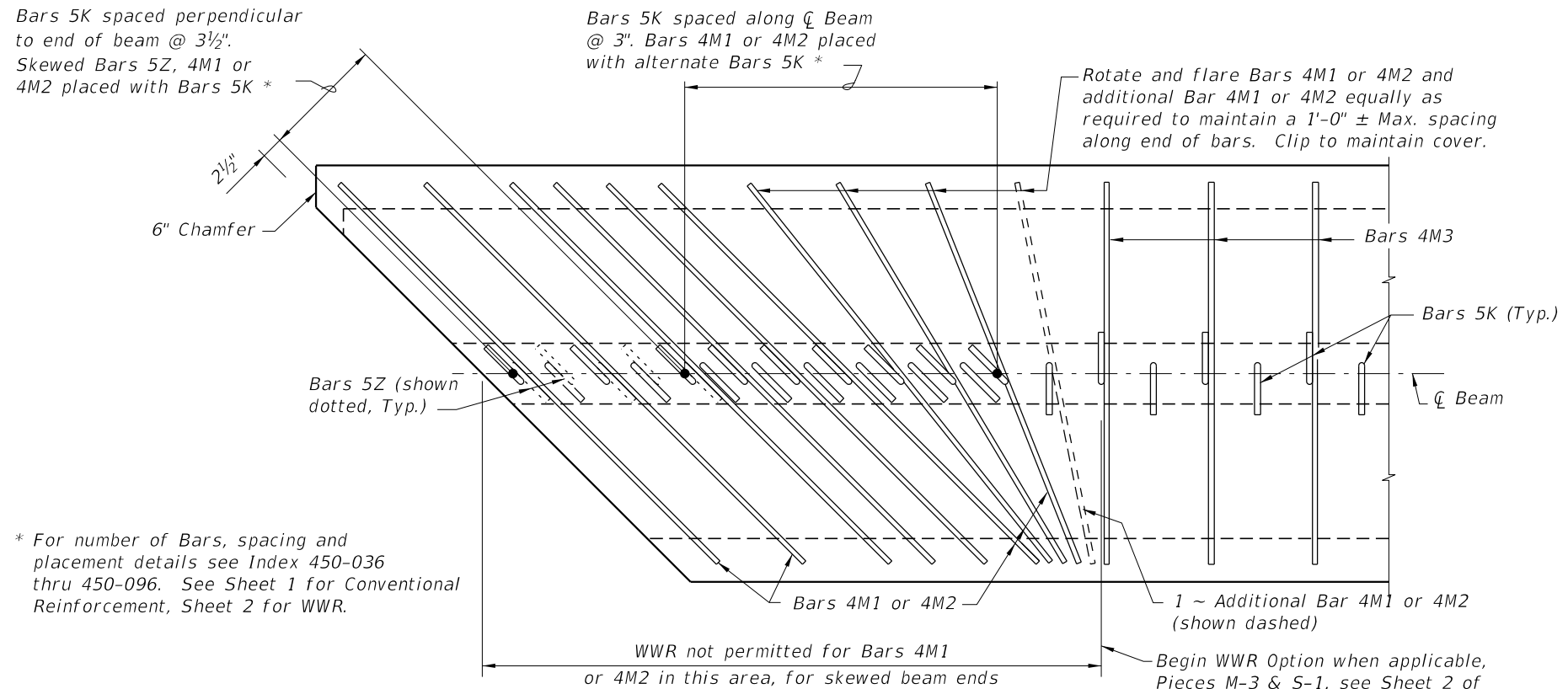
CONDITION 3

SCHEMATIC END ELEVATIONS OF BEAMS
(Showing Vertical Bevel of Beam End)

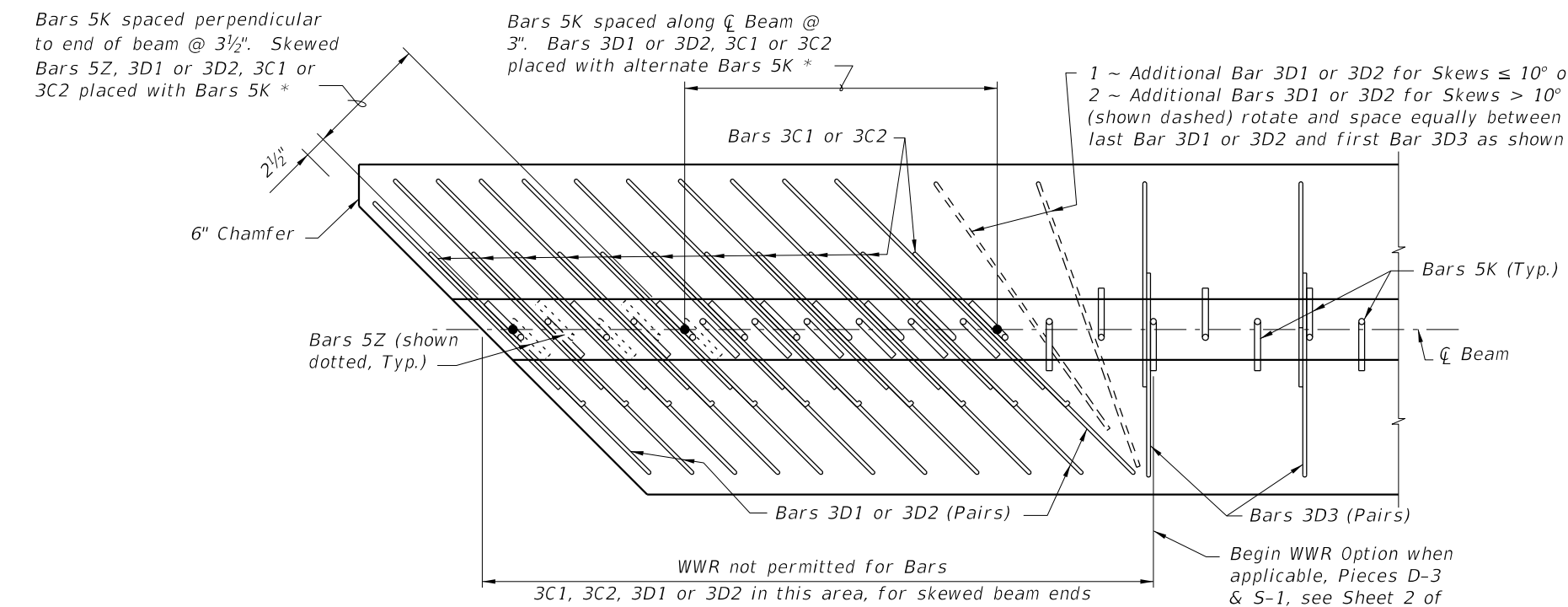
BEAM NOTES

- Work this Index with the Florida-I Beam Standard Details (Index 450-036 thru 450-096) and the Table of Beam Variables in Structures Plans.
- All bar bend dimensions are out-to-out.
- Concrete cover: 2 inches minimum.
- Stress Strands N to 10 kips each.
- Place one (1) Bar 5K or 5Z at each location. Alternate the direction of the ends for each bar (see "ELEVATION AT END OF BEAM" in Standard Details).
- Tie Bars 5K and 5Z to the fully bonded strands in the bottom or center row (see "STRAND PATTERN" on the Table of Beam Variables sheet in Structures Plans).
 - At the Contractor's option, the length of the bottom legs of Bars 5K and 5Z may be extended to facilitate tying to the exterior strands.
 - For deformed WWR, supplemental transverse #4 bars are permitted to support Pieces K & S under the cross wires on the bottom row of strands.
- Place Bars 3C1, 3D1 and 4M1 in beam END 1, and Bars 3C2, 3D2 and 4M2 in beam END 2. END 1 and END 2 are shown on the Standard Details "ELEVATION".
- For Beams with vertically beveled end conditions: Place first row of Bars 3C1, 3C2, 3D1, 3D2, 5K, 5Y and 5Z parallel to the end of the beam. Progressively rotate remaining bars within the limits of Bars 5Z until vertical by adjusting the spacing at the top of beam up to a maximum of 1". For deformed WWR, cut top cross wire and rotate bars as required or reduce end cover at top of the beam to 1" minimum.
- For beams with skewed end conditions:
 - Place end reinforcement parallel to the skewed end of the beam. End reinforcement is defined as Bars 3C1, 3C2, 3D1, 3D2, 5K, 4M1, 4M2, 5Y and 5Z placed within the limits of the spacing for Bars 3C in "ELEVATION AT END OF BEAM".
 - Beyond the limits of the spacing for Bars 3C, place Bars 3D3, 5K and 4M3 perpendicular to the longitudinal axis of the beam. Fan Bars as needed to avoid overlapping bars at the transition to Bars 3D3 and 4M3, and field cut to maintain minimum cover. Provide additional Bars 4M1, 4M2, 3D1 and 3D2 as required; additional bars are not included in the "BILL OF REINFORCING STEEL". For placement locations see Skewed Beam End Details for Widening Existing Bridges.
 - Adjust the dimensions of Bars 3C1, 3C2, 3D1, 3D2, 4M1 and 4M2 as shown on the Bending Diagram.
 - WWR is not permitted for end reinforcement Bars 3D1, 3D2, 4M1 and 4M2; use bar reinforcement.
- Contractor Options:
 - Deformed WWR may be used in lieu of Bars 3D, 5K, 4M, and 5Z as shown on the Standard Details; except at skewed ends (see Note 9).
 - Bars 3D1, 3D2 and 3D3 may be fabricated as a single bar with a 1'-0" minimum lap splice of the top legs, or the length of the bottom legs may be extended to facilitate tying to the exterior strands.
- Embedment of Safety Line Anchorage Devices are permitted in the top flange to accommodate fall protection systems. See shop drawings for details and spacing of any required anchorage devices.
- For beams with ends that will not be permanently encased in concrete diaphragms, cut wedges and recess Prestressing strands at the end of the beam without damaging the surrounding concrete. See "STRAND CUTTING AND PROTECTING DETAIL" on Sheet 2. Protect end of wedged recessed strands in accordance with Specification Section 450.
- Holes in the beam web for temporary bracing or shipping devices must be formed prior to casting. Fill holes not meeting all the following criteria in accordance with Specification Section 450.
 - The superstructure environmental classification is slightly or moderately aggressive
 - Clear cover to adjacent steel reinforcing is 1" or greater
 - Hole inside diameter is 2" maximum
 - Non-metallic, non-water absorbing forming materials such as PVC, may be left in place permanently.

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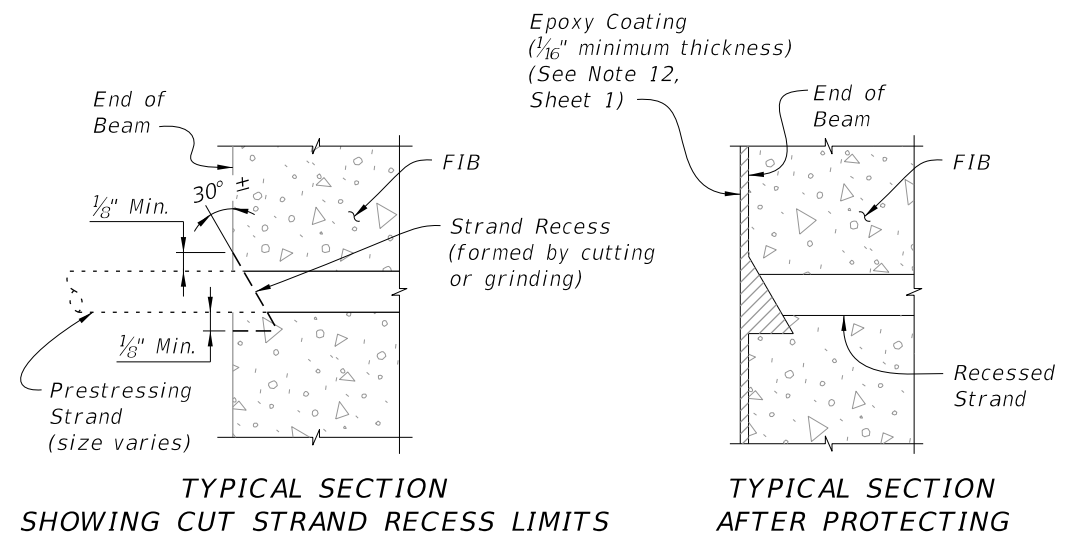


PARTIAL PLAN VIEW (SHOWING TOP FLANGE)
(End 1 Shown, End 2 Similar)
(Bars 5A, 5Y & Strands N not shown for clarity)



PARTIAL SECTION THRU WEB (SHOWING BOTTOM FLANGE)
(END 1 Shown, END 2 Similar)
(Bars 5Y, Strands, and Embedded Bearing Plate "A" not shown for clarity)

===== SKEWED BEAM END DETAILS FOR WIDENING EXISTING BRIDGES =====
(Florida-I 36 Beam shown, others similar)



TYPICAL SECTION SHOWING CUT STRAND RECESS LIMITS
TYPICAL SECTION AFTER PROTECTING

===== STRAND CUTTING AND PROTECTING DETAIL =====

9/16/2026 7:52:58 AM

LAST REVISION 11/01/19	REVISION DESCRIPTION:	 FY 2027-28 STANDARD PLANS	FLORIDA-I BEAM - TYPICAL DETAILS & NOTES	INDEX 450-010	SHEET 2 of 2
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