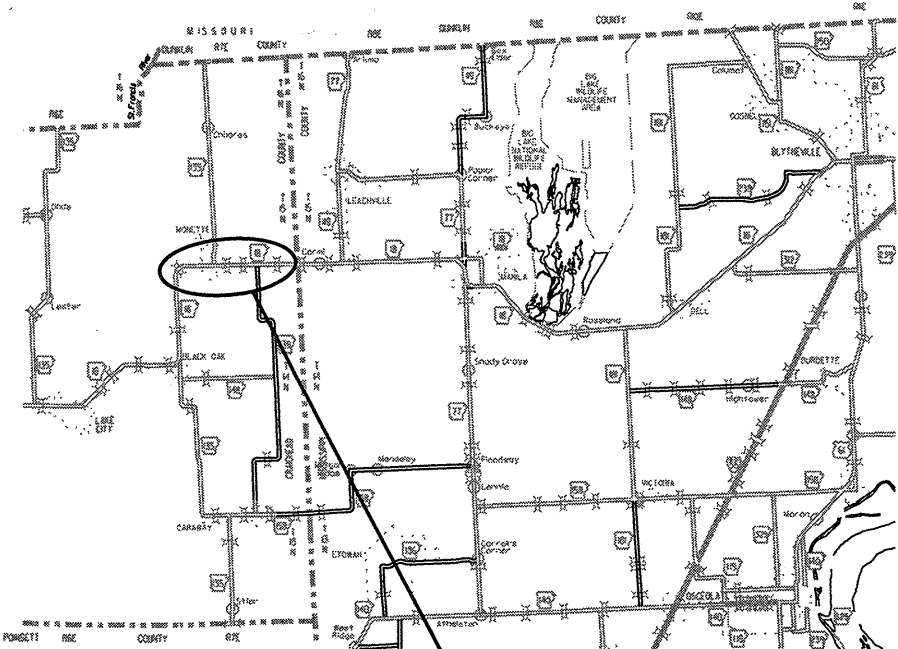


ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. CA1001	1	283

2 MONETTE BYPASS (S)



VICINITY MAP

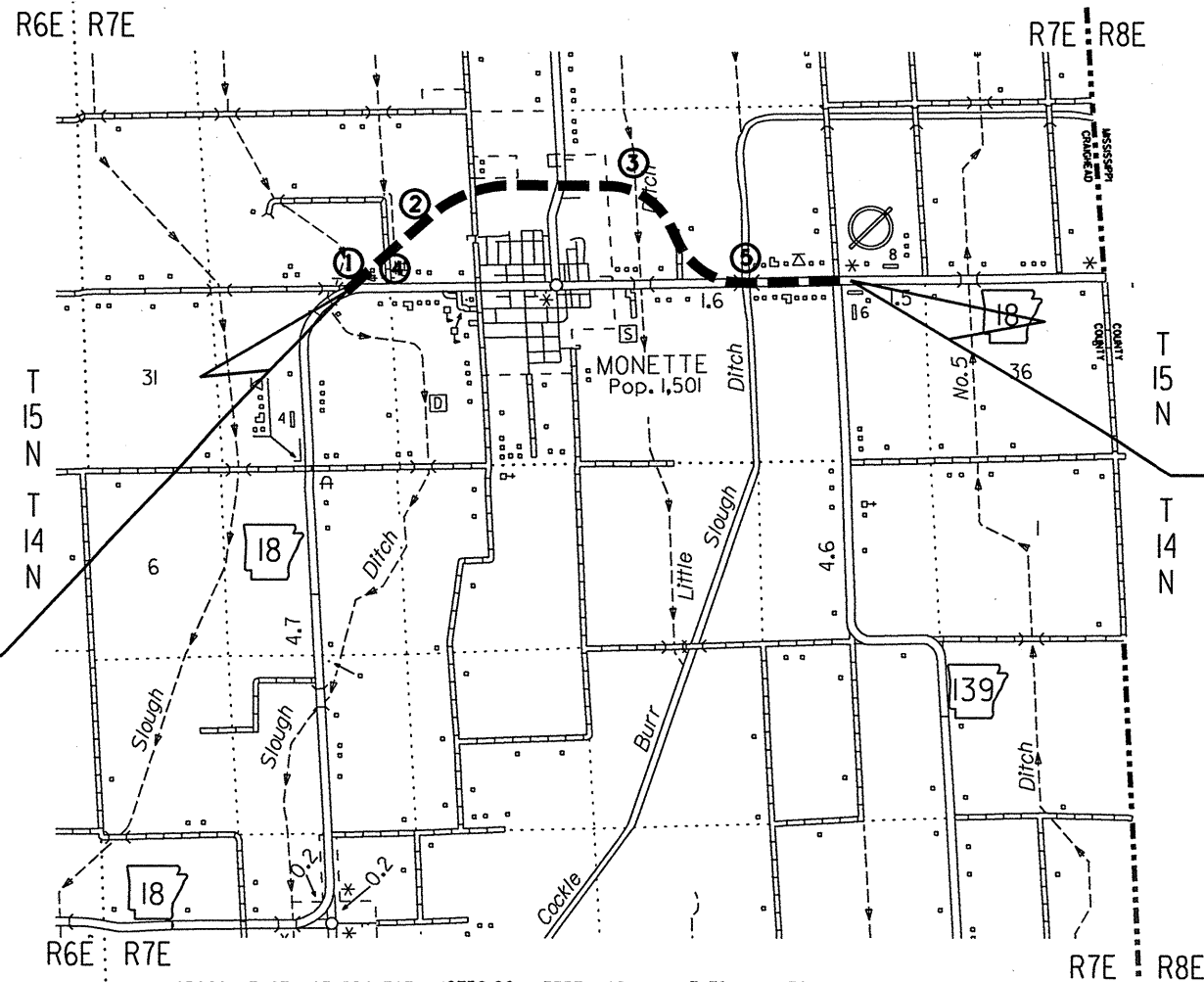
PROJECT LOCATION

STRUCTURES OVER 20' - 0" SPAN

- 1 STA. 473+03 CONSTRUCT DBL. 11' X 6' X 188' R.C. BOX CULVERT 50° RT. FORWARD SKEW W/3:1 WINGS LT. & RT. D.A. = 1.96 SQ. MI., Q50 = 460 C.F.S. SPAN = 23' - 9"
- 2 STA. 490+88 CONSTRUCT DBL. 11' X 6' X 148' R.C. BOX CULVERT W/3:1 WINGS LT. & RT. 35° LT. FORWARD SKEW D.A. = 1.95 SQ. MI., Q50 = 450 C.F.S. SPAN = 23' - 8"
- 3 STA. 570+82 CONSTRUCT QUAD. 12' X 8' X 151' R.C. BOX CULVERT W/3:1 WINGS LT. & RT. 30° RT. FORWARD SKEW D.A. = 8.8 SQ. MI., Q50 = 950 C.F.S. SPAN = 51' - 6"
- 4 STA. 46+00 CONSTRUCT - HWY. 18 WEST TIE DBL. 11' X 6' X 110' R.C. BOX CULVERT 50° LT. FORWARD SKEW W/3:1 WINGS LT. & RT. CHANNEL CHANGE = 55 CU. YDS. D.A. = 1.95 SQ. MI., Q50 = 450 C.F.S. SPAN = 23' - 9"

BRIDGE DATA

- 5 BR. END STA. 613+11.92 BRIDGE NO. 07363 327' CONTINUOUS COMPOSITE W-BEAM UNIT (60', 69', 69', 69', 60') 75' - 0" CLEAR ROADWAY 329' - 2" BRIDGE LENGTH BR. END STA. 616+41.08

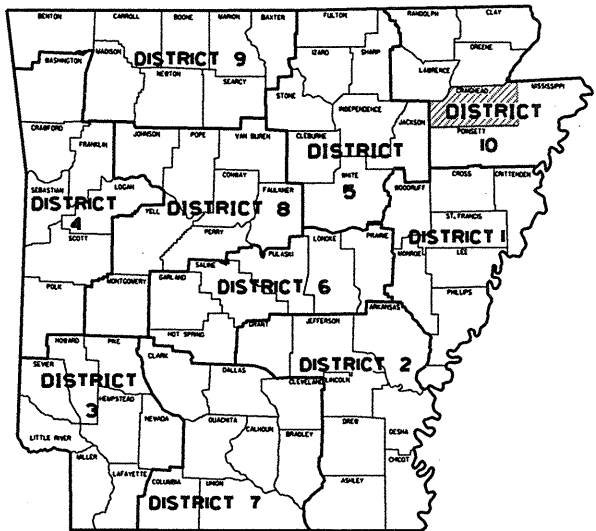


STA. 472+50.00
BEGIN JOB CA1001

STA. 640+00.00
END JOB CA1001
LOG MILE 26.89

GROSS LENGTH OF PROJECT	16750.00	FEET	OR	3.172	MILES
NET " " ROADWAY	16321.92	"	"	3.091	"
NET " " BRIDGES	428.08	"	"	0.081	"
NET " " PROJECT	16750.00	"	"	3.172	"

P.E. 100618



ARK. HWY. DIST. NO. 10

DESIGN TRAFFIC DATA

DESIGN YEAR	2035
2015 ADT	6000
2035 ADT	8000
2035 DHV	880
TRUCKS	11%
DESIGN SPEED	60 MPH



APPROVED



11-2-15
DEPUTY DIRECTOR
AND CHIEF ENGINEER

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		105	283
				JOB NO. CA1001				

2 PLAN AND PROFILE SHEETS

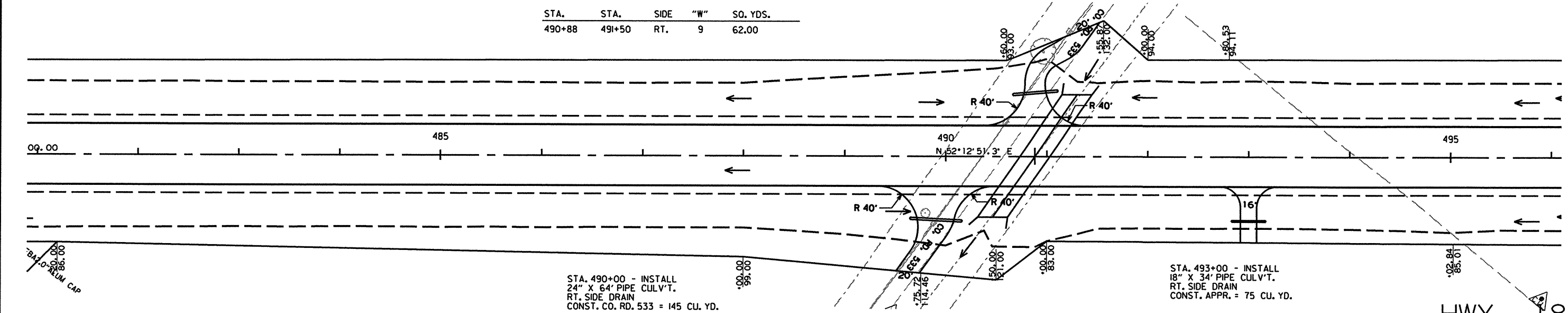


STA. 490+88 CONSTRUCT
DBL. 11' X 6' X 148' R.C. BOX CULVERT
W/34 WINGS LT. & RT.
35' LT. FORWARD SKEW
D.A. = 1.95 SO. MI., 050 = 450 C.F.S.

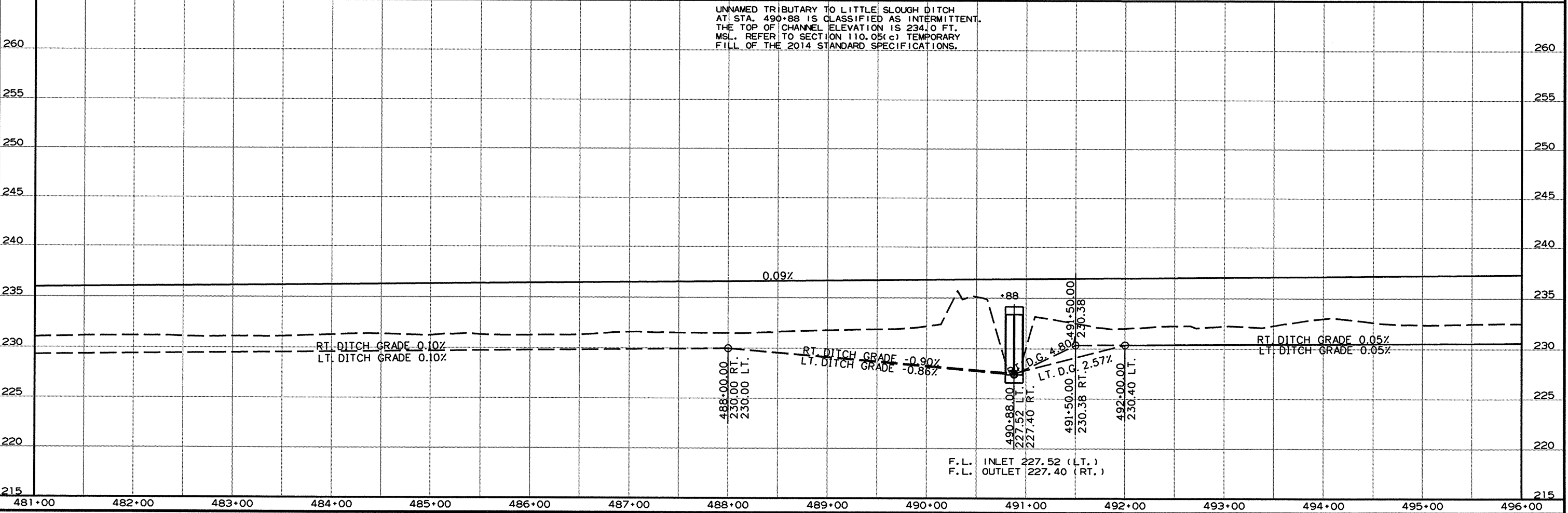
STA. 490+88 - INSTALL
24" X 74' PIPE CULV'T.
LT. SIDE DRAIN
CONST. CO. RD. 533 = 375 CU. YD.

EROSION CONTROL MATTING				
STA.	STA.	SIDE	LENGTH LIN. FT.	CLASS 3 SQ. YDS.
490+88.00	492+00.00	LT.	112	99.60

CONCRETE DITCH PAVING				
STA.	STA.	SIDE	"W"	SQ. YDS.
490+88	491+50	RT.	9	62.00



REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.



9/22/2015
CA1001.DGN

CU. YDS. PER LIN. FT.	CLASS "S" CONCRETE	REINFORCING STEEL (GR. 60)	ADTL. REIN. PER LONG LAP LOCATION(S)
2.27		303	185

[illegible]

Design Fill Depth	Range of Actual Fill Depth
2	0.0 ft - 2.0 ft
5	>2.0 ft - 5.0 ft
10	>5.0 ft - 10.0 ft
15	>10.0 ft - 15.0 ft
20	>15.0 ft - 20.0 ft
25	>20.0 ft - 25.0 ft
30	>25.0 ft - 30.0 ft
35	>30.0 ft - 35.0 ft
40	>35.0 ft - 40.0 ft

SHEET 1 OF 2

23.92	CU. YDS.	CLASS "S" CONCRETE (Includes HDWL)
4021	LBS.	① REINFORCING STEEL (GR 60) (Includes HDWL)

③ MID-SECTION
BAR LAP TABLE

# of Long. Laps Req'd.	SL = Section Length
0	< 40.0 ft
1	>40.0 ft - 78.0 ft
2	>78.0 ft - 116.0 ft
3	>116.0 ft - 154.0 ft
4	>154.0 ft - 192.0 ft
5	>192.0 ft - 230.0 ft
6	>230.0 ft - 268.0 ft
7	>268.0 ft - 306.0 ft
8	>306.0 ft -344.0 ft

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

This drawing to be used in conjunction with
SHEET 1 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE',
SHEET 3 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF MULTI-BARREL R.C. BOX CULVERT',
SHEET 4 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF WINGWALLS', and
STANDARD DRAWING RCB-2.

For additional information and outlet sections, see Sheet 2 of 2.

① Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Gr. 60)."

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA1001	20	283
				1 SPECIAL DETAILS				

A circular professional engineer seal for the State of Arkansas. The outer ring contains the text "STATE OF ARKANSAS" at the top and "CHARLES R. ELLIS" at the bottom. Inside the ring, the name "Charles R. Ellis" is written in a cursive script. Below the name, the text "REGISTERED PROFESSIONAL ENGINEER" is printed in a bold, sans-serif font. Underneath that, there are three stars, followed by the number "No. 9235". At the bottom of the seal, the date "8-28-15" is stamped.

TABULAR DATA BY: CJR DATE: 8/26/2015
CHECKED BY: [Signature] DATE: 8/27/15

[illegible]

SHEET 2 OF 2
DETAILS OF R.C. BOX CULVERT
DOUBLE BARREL BOX CULVERT
Sta. 490+88
SPECIAL DETAILS

Unless otherwise noted, all dimensions are in inches.

23.92	CU. YDS.	CLASS "S" CONCRETE (Includes HDWL.)
4021	LBS.	① REINFORCING STEEL (GR 60) (Includes HDWL.)

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

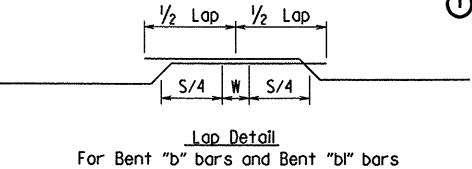
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA1001	21	283
				1 SPECIAL DETAILS				



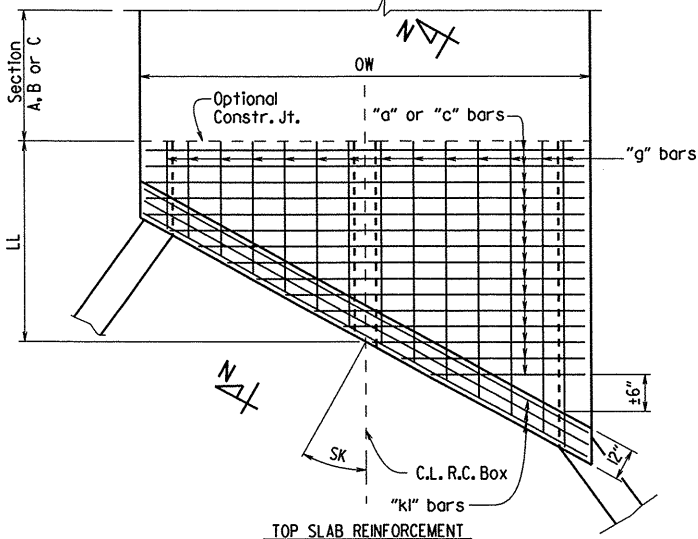
TABULAR DATA BY: CJR DATE: 8/26/2015
CHECKED BY: Sub DATE: 8/27/15

DATE REVISED	DATE FILMED	REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		28	283
				JOB NO.	CA1001		28	283

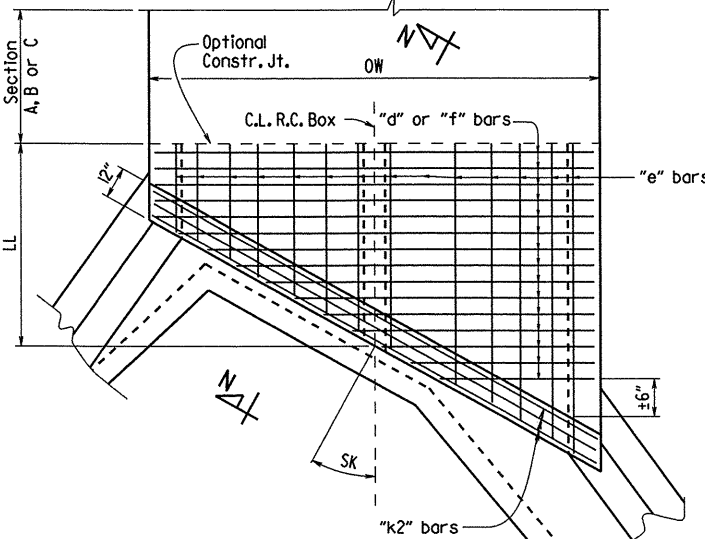
SPECIAL DETAILS



At the Contractor's option in lieu of providing Bent "b" or Bent "bl" bars, one bar top and bottom of equivalent size may be substituted for each bent bar. Payment for the reinforcing will be based on the weight of the "b" or "bl" bar.



TOP SLAB REINFORCEMENT
Straight "c" bars in top.
Straight "a" bars in bottom.



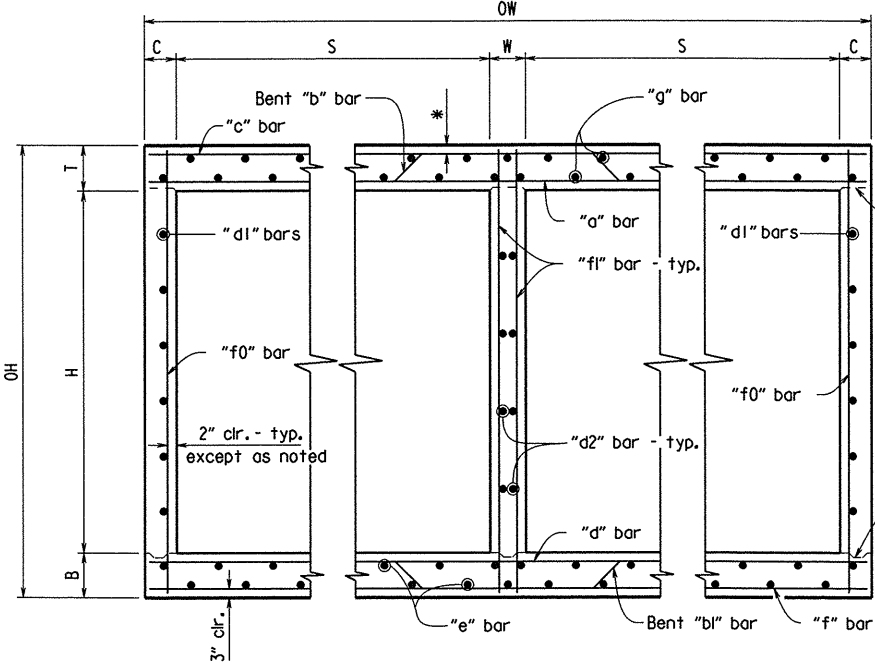
BOTTOM SLAB REINFORCEMENT
Straight "d" bars in top.
Straight "f" bars in bottom.

SKewed END SECTION DETAILS

SHEET 3 OF 4
GENERAL DETAILS OF R.C. BOX CULVERT
DETAILS OF MULTI-BARREL
R.C. BOX CULVERT
SPECIAL DETAILS

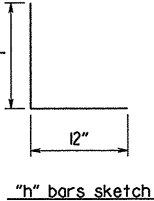
*2" clr. for fill depth (D) greater than 2 ft.
2 1/2" clr. for fill depth (D) equal to or less than 2 ft.

Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.

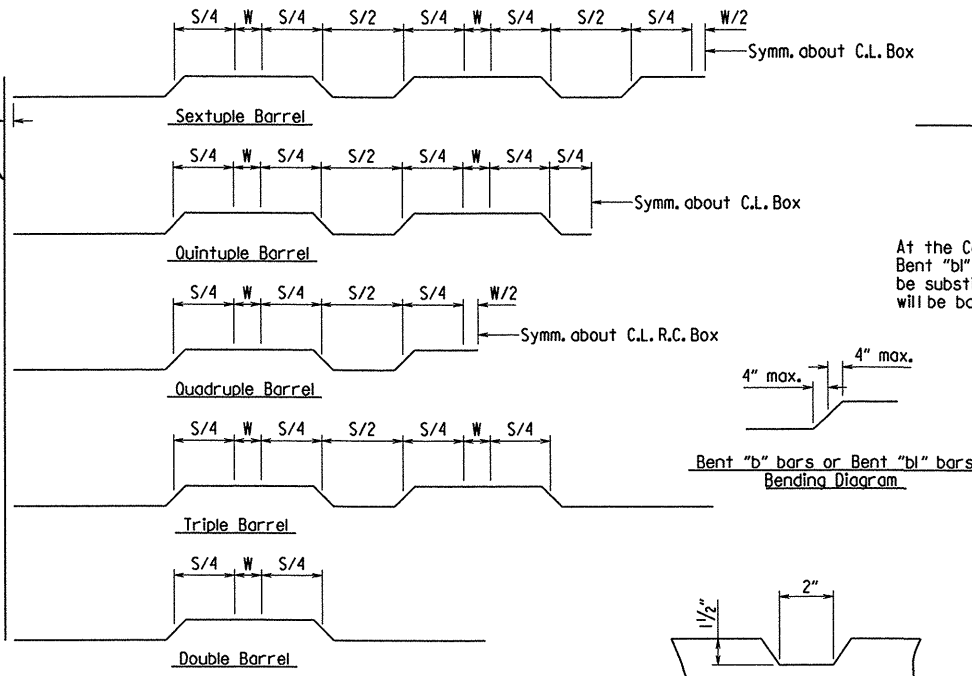


TYPICAL SECTION M-M

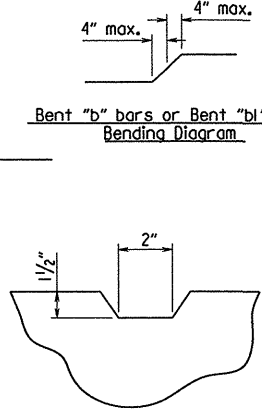
Top Slab
Straight "c" bars shall alternate with Bent "b" bars in top.
Straight "a" bars shall alternate with Bent "b" bars in bottom.
Bottom Slab
Straight "d" bars shall alternate with Bent "bl" bars in top.
Straight "f" bars shall alternate with Bent "bl" bars in bottom.



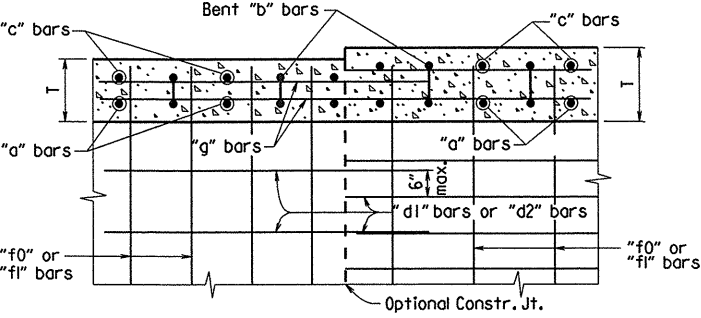
"h" bars sketch



Bent "b" bars or Bent "bl" bars sketch

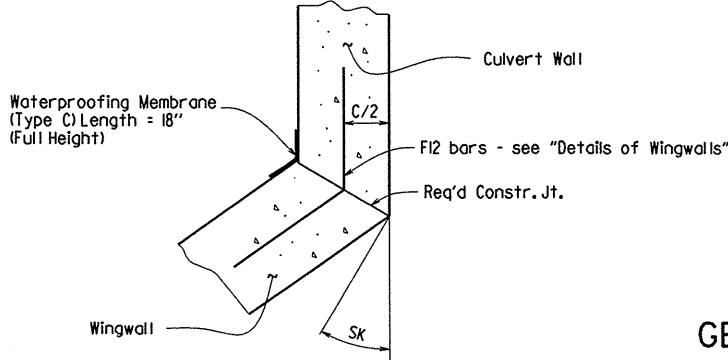


TYPICAL KEYWAY DETAIL
(All Construction Joints)



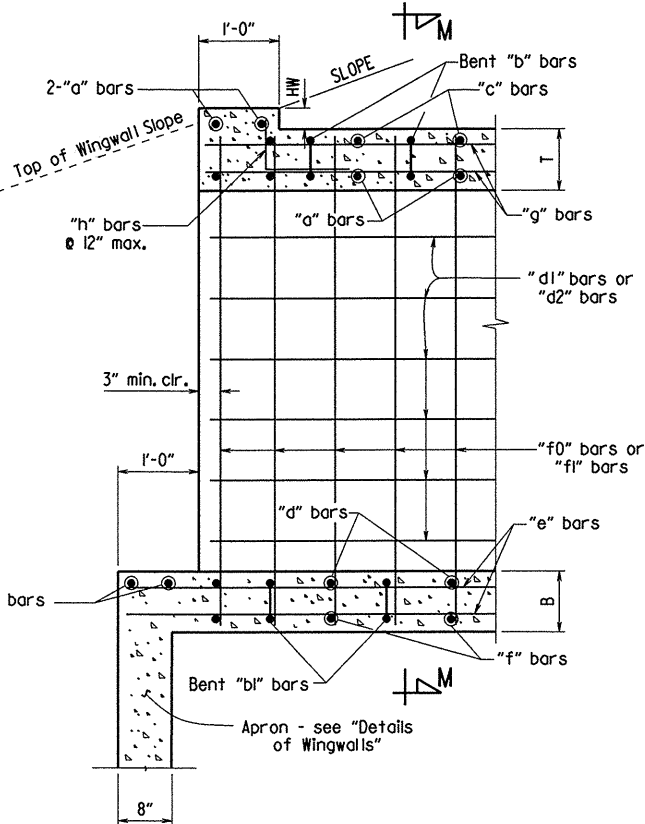
Longitudinal Bar Spacing at individual sections shall be maintained, which may result in noncontact bar laps.

LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS
TOP SLAB SHOWN, BOTTOM SLAB SIMILAR

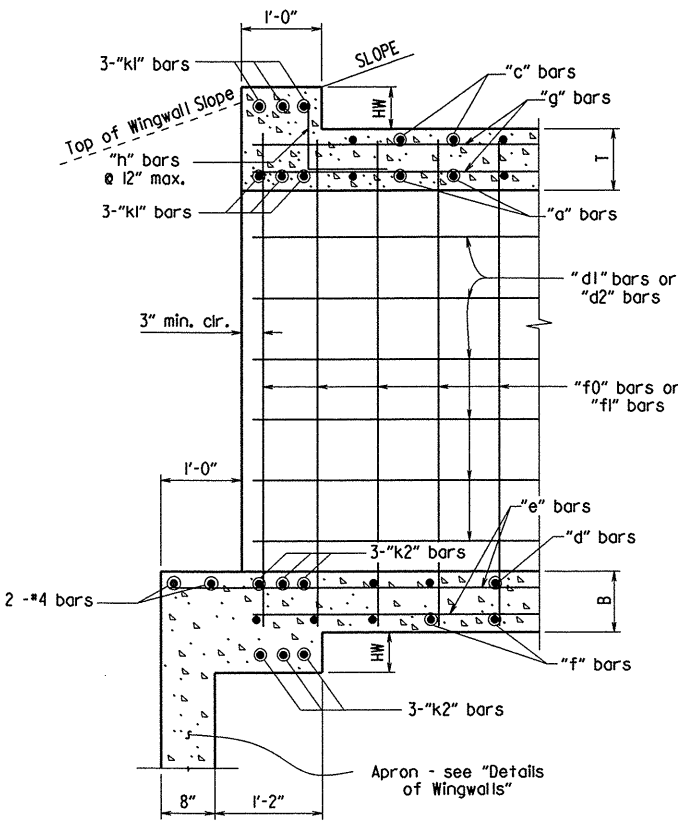


WINGWALL ATTACHMENT

See "Details of Wingwalls" for additional information and wingwall details.



PART LONGITUDINAL SECTION
(Non-Skewed Ends)



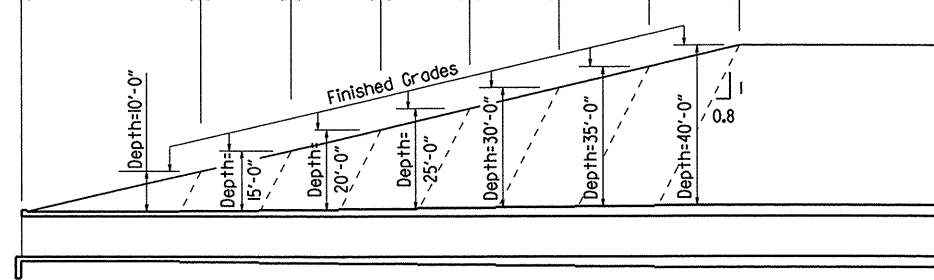
PART LONGITUDINAL SECTION N-N
(Skewed Ends)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		CA1001	26	283
SPECIAL DETAILS								

2:1 Slope	20'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
3:1 Slope	30'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"
4:1 Slope	40'-0"	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"

Note: For fill depths 10' and under, use Mid-Section full length of box culvert.

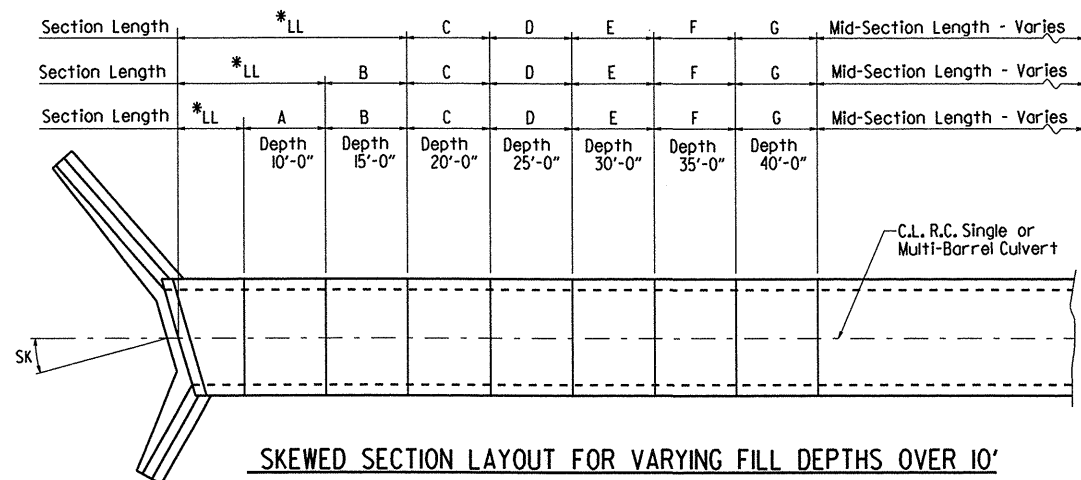
* LL = Skewed End Section Length - See "Skewed End Section Details" Length LL varies with skew angle, overall box width and fill depth and may eliminate the need for some slope section lengths as shown.



Slope Section Length @ 2:1 Slope	A=12'-0"	B=6'-0"	C=6'-0"	D=6'-0"	E=6'-0"	F=6'-0"	G=6'-0"	Mid-Section Length - Varies
Slope Section Length @ 3:1 Slope	A=22'-0"	B=11'-0"	C=11'-0"	D=11'-0"	E=11'-0"	F=11'-0"	G=11'-0"	Mid-Section Length - Varies
Slope Section Length @ 4:1 Slope	A=32'-0"	B=16'-0"	C=16'-0"	D=16'-0"	E=16'-0"	F=16'-0"	G=16'-0"	Mid-Section Length - Varies

LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'

Lengths for Non-Skewed Boxes



SKewed SECTION LAYOUT FOR VARYING FILL DEPTHS OVER 10'



GENERAL NOTES:

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 edition) with applicable Supplemental Specifications and Special Provisions. Section and Subsection refer to the Standard Construction Specifications unless otherwise noted in the Plans.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fifth Edition (2010) with 2010 interim revisions.

LIVE LOADING: HL-93

All concrete shall be Class S with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have 1/4" chamfers.

Reinforcing Steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

Reinforcing Steel Tolerances: The tolerances for reinforcing steel shall meet those listed in 'Manual of Standard Practice' published by Concrete Reinforcing Steel Institute (CRSI) except that the tolerance for truss bars such as Figure 3 on page 7-4 of the CRSI Manual shall be minus zero to plus 1/2 inch.

Excavation and backfilling shall be in accordance with the requirements of Section 801.

Membrane Waterproofing shall conform to the requirements of Section 815. Membrane Waterproofing shall be Type C and as directed by the Engineer applied to all construction joints in the top slab and the sidewalls of R.C. Box culverts and to the construction joint between wingwalls and R.C. Box culvert walls.

Weep Holes in box culvert walls shall have a maximum horizontal spacing of 10'-0" and shall be spaced to clear all reinforcing steel. The drain opening shall be 4" diameter and shall be placed 12" above the top of the bottom slab.

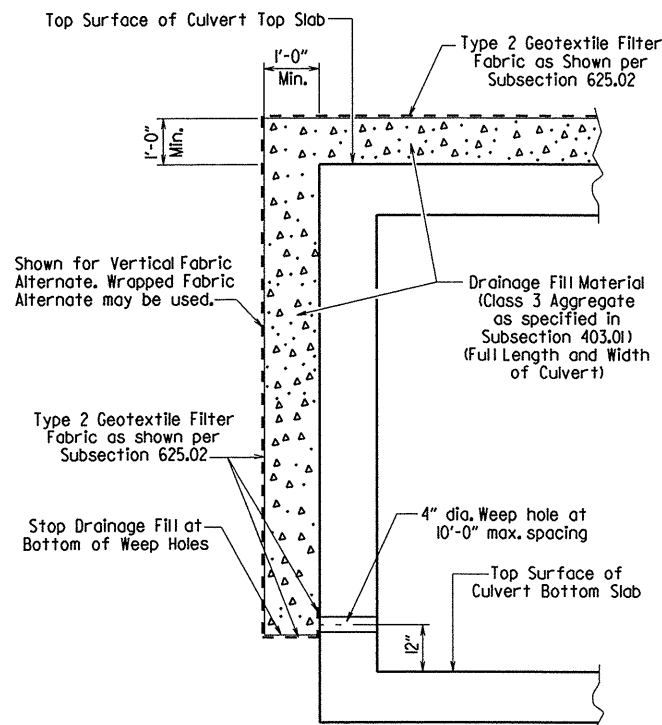
Weep Holes in wingwalls shall have a maximum horizontal spacing of 10'-0" and shall be spaced to clear all reinforcing steel. There shall be a minimum of two (2) weep holes in each wingwall. The drain opening shall be 4" diameter and shall be placed 12" above the top of the wingwall footing.

The barrel components of the culvert may be constructed using continuous pours. For longer culvert construction, the Contractor may use multiple pours with transverse construction joints spaced a minimum of 50 feet apart unless superseded by stage construction or site constraints as approved by the Engineer. Construction joints between footings and walls shall be made only where shown in the Plans. Joints shall be normal to the centerline of barrel and shall be keyed. Longitudinal reinforcing shall be continuous through joints unless shown otherwise. All longitudinal construction joints shall be submitted to the Engineer for approval.

Membrane Waterproofing, Weep Holes, Geotextile Filter Fabric, and Drainage Fill Material will not be paid for directly but shall be considered subsidiary to Class S Concrete.

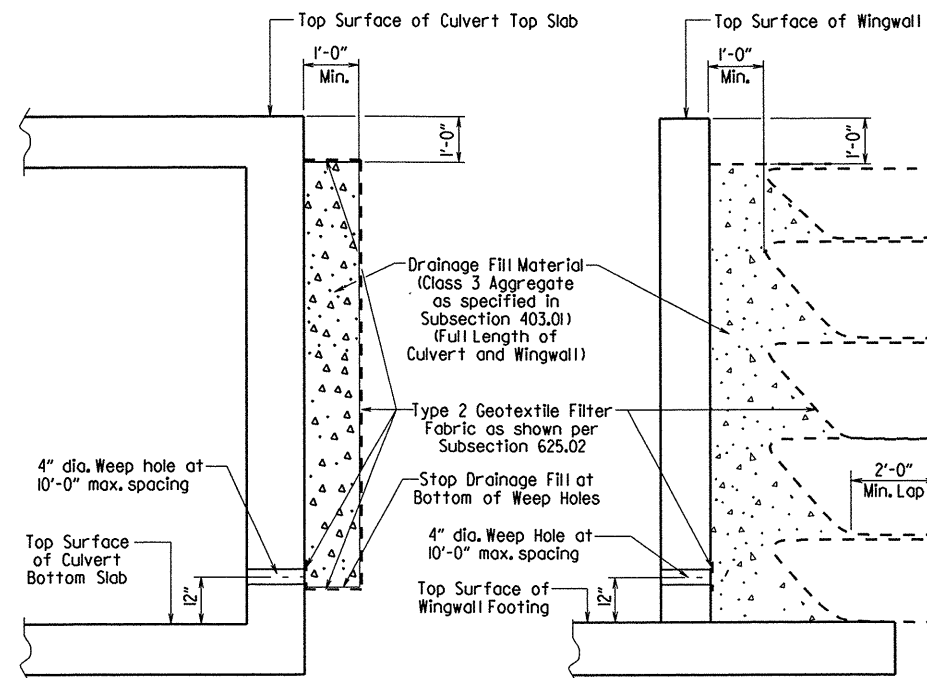
When the top slab of the box culvert serves as finished roadway surface, curing and finishing shall be in accordance with subsections 802.17 and 802.20 for bridge roadway surface and a fine finish shall be applied in accordance with subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Curing and finishing shall not be paid for directly, but shall be considered incidental to the item "Class 5 Concrete-Roadway". Class 1 Protective Surface Treatment shall be applied to the roadway surface and this work shall be paid for under the unit price bid for "Class 1 Protective Surface Treatment".

When precast reinforced concrete box culverts are substituted for cast in place box culverts, they shall be manufactured according to ASTM C 1577 and meet the requirements of Section 607. When the top slab of the box culvert serves as the finished roadway surface, a precast reinforced concrete box culvert substitution is not allowed.



CULVERT DRAINAGE DETAIL FOR ROCK FILL

This detail shall be used when rock fill is specified for embankment construction.



VERTICAL FABRIC ALTERNATE

(Shown for Culvert, Similar for Wingwall)

WRAPPED FABRIC ALTERNATE

(Shown for Wingwall, Similar for Culvert)

For Details of Excavation and Pay Limits, see Standard Drawing RCB-2.

WINGWALL & CULVERT DRAINAGE DETAIL

SHEET 1 OF 4
GENERAL DETAILS OF R.C. BOX CULVERT
GENERAL NOTES &
LONGITUDINAL SECTION LENGTH SCHEDULE
SPECIAL DETAILS



