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.		100567	1	112
				(2) NORTH OF BLACK OAK-MONETTE BYPASS (S)				

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

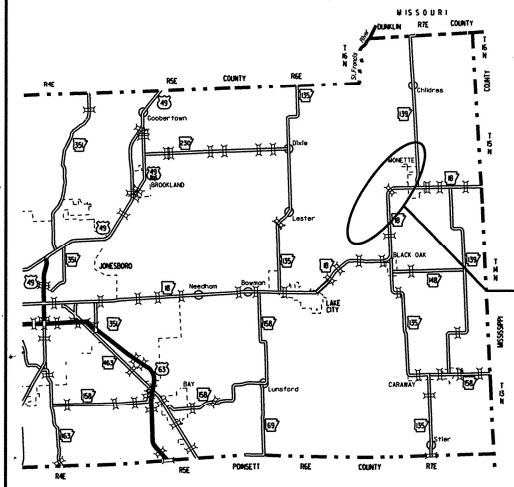
NORTH OF BLACK OAK-MONETTE BYPASS (S)

CRAIGHEAD COUNTY

ROUTE 18 SECTION 4

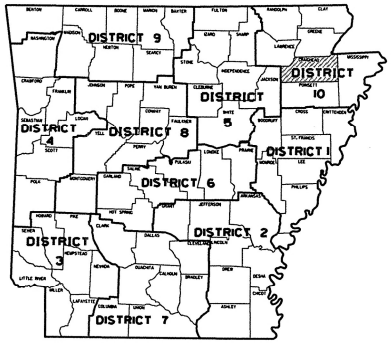
JOB 100567

FED. AID PROJ. STP-0016 (59)



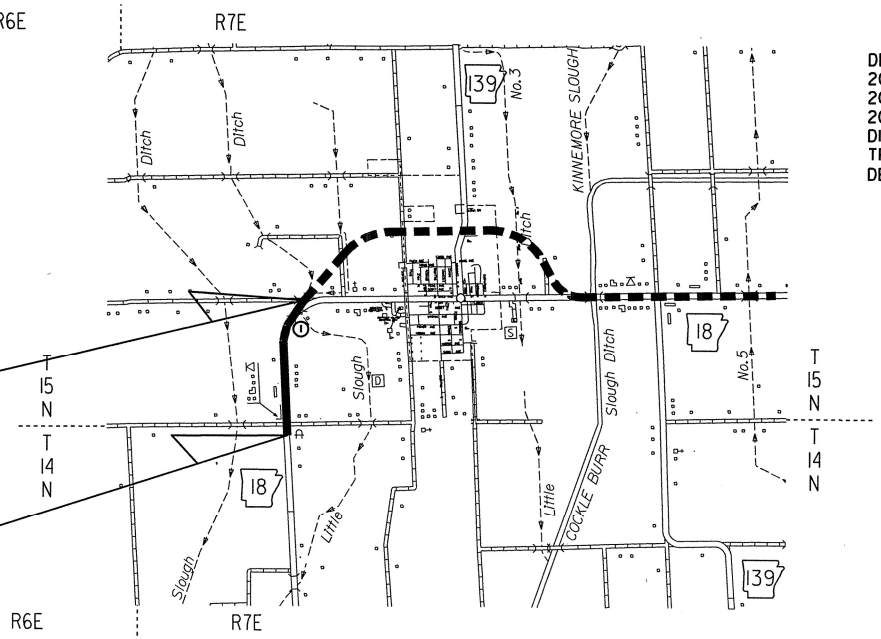
PROJECT LOCATION

VICINITY MAP



ARK. HWY. DIST. NO. 10

0 2 4
SCALE: 1" = 1 MILE



STRUCTURES OVER 20'-0" SPAN

(1) STA. 465+62 CONSTRUCT
QUAD. 12' X 7' X 195' R.C. BOX CULVERT
45° LT. FWD. SKEW
W/ 3:1 WINGS LT. & RT.
D.A. = 14.1 SQ. MI., Q50 = 920 C.F.S.
SPAN = 63' - 11"

• DESIGN TRAFFIC DATA •

DESIGN YEAR	2033
2013 ADT	6200
2033 ADT	8000
2033 DHV	880
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	12%
DESIGN SPEED	60 MPH

N

	LATITUDE	LONGITUDE
BEGIN JOB	N 35°52'34"	W 90°22'06"
MID POINT	N 35°52'18"	W 90°22'06"
END JOB	N 35°53'27"	W 90°21'51"

GROSS LENGTH OF PROJECT	5882.12	FEET	OR	1.114	MILES
NET " " ROADWAY	5818.20	"	"	1.102	"
NET " " BRIDGES	63.92	"	"	0.012	"
NET " " PROJECT	5882.12	"	"	1.114	"

P.E. 100567
NON-PART.

APPROVED

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 3917 FRANK VOZEL

11/21/12

DEPUTY DIRECTOR
AND CHIEF ENGINEER

04/13/12 r100567 t1t.dgn

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.		100567	54	112

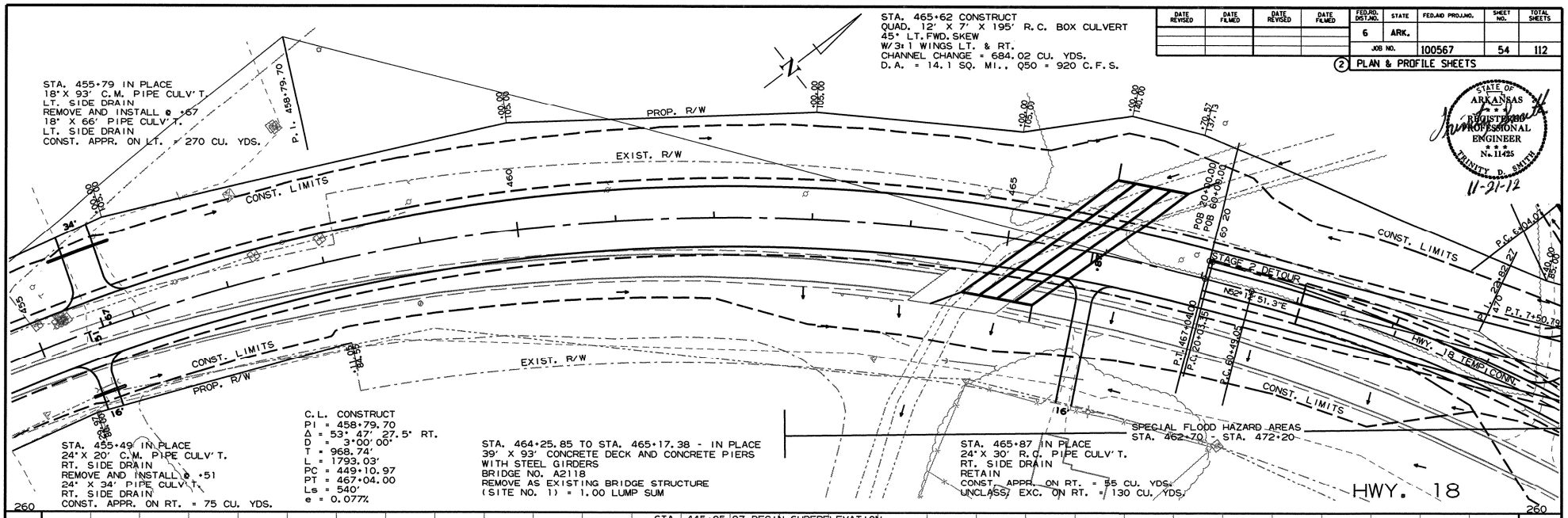
(2) PLAN & PROFILE SHEETS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH

11-21-12

STA. 455+79 IN PLACE
18" X 93' C.M. PIPE CULV'T.
LT. SIDE DRAIN
REMOVE AND INSTALL @ +67
18" X 66' PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. ON LT. = 270 CU. YDS.

STA. 465+62 CONSTRUCT
QUAD. 12' X 7' X 195' R.C. BOX CULVERT
45° LT. FWD. SKEW
W/ 3:1 WINGS LT. & RT.
CHANNEL CHANGE = 684.02 CU. YDS.
D.A. = 14.1 SQ. MI., Q50 = 920 C.F.S.



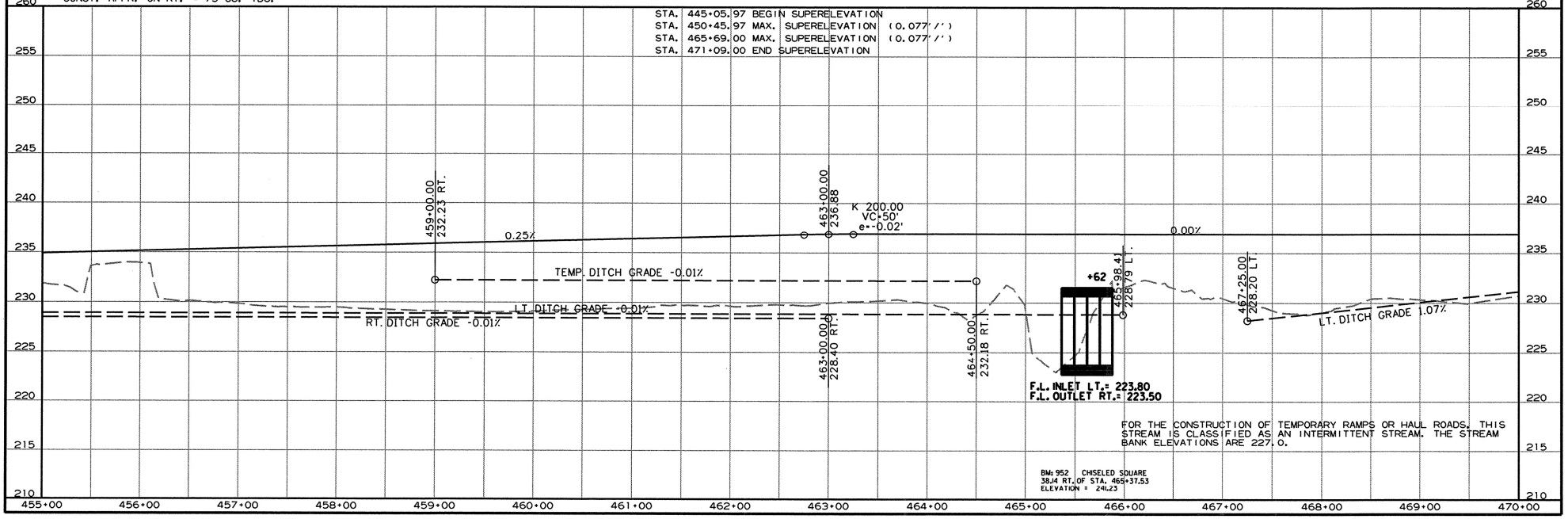
STA. 455+49 IN PLACE
24" X 20' C.M. PIPE CULV'T.
RT. SIDE DRAIN
REMOVE AND INSTALL @ +51
24" X 34' PIPE CULV'T.
RT. SIDE DRAIN
CONST. APPR. ON RT. = 75 CU. YDS.

C.L. CONSTRUCT
PI = 458+79.70
Δ = 53° 47' 27.5" RT.
D = 3°00' 00"
T = 968.74'
L = 1793.03'
PC = 449+10.97
PT = 467+04.00
Ls = 540'
e = 0.077%

STA. 464+25.85 TO STA. 465+17.38 - IN PLACE
39' X 93' CONCRETE DECK AND CONCRETE PIERS
WITH STEEL GIRDERS
BRIDGE NO. A2118
REMOVE AS EXISTING BRIDGE STRUCTURE
(SITE NO. 1) = 1.00 LUMP SUM

STA. 465+87 IN PLACE
24" X 30' R.C. PIPE CULV'T.
RT. SIDE DRAIN
RETAIN
CONST. APPR. ON RT. = 55 CU. YDS.
UNCLASS. EXC. ON RT. = 130 CU. YDS.

STA. 445+05.97 BEGIN SUPERELEVATION
STA. 450+45.97 MAX. SUPERELEVATION (0.077'/')
STA. 465+69.00 MAX. SUPERELEVATION (0.077'/')
STA. 471+09.00 END SUPERELEVATION



FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 227.0.

BM: 952 CHISELED SQUARE
38.14 RT. OF STA. 465+37.53
ELEVATION = 241.23

r100567.dgn 7/19/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-8-13				6	ARK.			
				JOB NO.		100567	11	112

① SPECIAL DETAILS

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	INSIDE FOOTING DIMENSIONS WING A	INSIDE FOOTING DIMENSIONS WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W4	W5
51'-3"	7'-0"	0'-9"	0'-8"	45	3:1	72'-6"	2'-0"	7'-10"	2'-4"	0	60	3'-2"	3'-6"	4'-2"	1'-5 3/4"	2'-8 1/2"	16'-6"	33'-0"	15'-6"	34'-10 3/8"

CLASS "S" CONCRETE (Includes apron) INLET	REINFORCING STEEL (Includes apron and laps if required) INLET
CU.YD	LBS.
17.02	1511

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1 LENGTHS	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6 LENGTHS	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	17	L Min 3'-4"	L 3'-5"	4	12	3	L 3'-5"	-	-	-	L -	4	18	6	Min 3'-4"	4	18	4	16'-2"	4	18	11	L Min 5'-3"	4	8	19'-4"	4	18	11	Min 2'-8"	-	-	-	Min -	4	2	16'-11"	4	2	17'-0"	6	12	7	L 3'-4"	508
				L Max 9'-0"																					L Max 10'-3"																					
				X Min 0'-9"					X 1'-0"				X -				Max 3'-4"								X Min 2'-4"							Max -				Max -									X 1'-8"	
				X Max 1'-1"																					X Max 2'-4"																					
				Y Min 2'-8"					Y 2'-6"				Y -				Max 12'-4"								Y Min 3'-0"							Max 2'-0"				Max -										
				Y Max 8'-0"																					Y Max 8'-0"																					
WING B	4	12	33	L Min 3'-4"	L 4'-0"	4	12	6	L 4'-0"	-	-	-	L -	4	18	6	Min 6'-10"	4	18	4	32'-8"	4	18	22	L Min 5'-1"	4	8	41'-4"	4	18	24	Min 2'-8"	4	18	2	Min 51'-10"	4	2	32'-0"	4	2	37'-1"	6	12	7	L 3'-4"	1003
				L Max 9'-8"																					L Max 10'-3"																					
				X Min 0'-9"					X 1'-7"				X -				Max 2'-8"								X Min 2'-4"							Max 51'-10"													X 1'-8"	
				X Max 1'-9"																					X Max 2'-4"																					
				Y Min 2'-8"					Y 2'-6"				Y -				Max 24'-10"								Y Min 2'-10"							Max 3'-9"				Max 51'-10"										
				Y Max 8'-0"																					Y Max 8'-0"																					

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

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

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

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 7510 CARL J. PUSEL JR. 11/16/12

TABULAR DATA BY: TMG DATE: 11/16/12
CHECKED BY: JGT DATE: 11/16/12

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.

INLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT
SK	SL	D	S	H	LL	T	HW	B	C	W	OW	OH
45	3:1	15	12	7	27'-7"	15	3	16	7.5	8	51'-3"	9'-7"

TOP SLAB REINFORCING STEEL a SIZE	a SPACING	a LENGTHS VARY	a NO. REQ'D	c SIZE	c SPACING	c LENGTHS VARY	c NO. REQ'D
5	5	Max 50'-11"	117	6	4	Max 50'-11"	147
		Min 2'-2"				Min 2'-2"	
		50'-11"	5			50'-11"	6

BOTTOM SLAB REINFORCING STEEL d SIZE	d SPACING	d LENGTHS VARY	d NO. REQ'D	f SIZE	f SPACING	f LENGTHS VARY	f NO. REQ'D
7	5.5	Max 50'-11"	107	6	8	Max 50'-11"	74
		Min 2'-2"				Min 2'-2"	
		50'-11"	5			50'-11"	3

SIDE WALL REINFORCING STEEL f0 SIZE	f0 SPACING	f0 NO. REQ'D	f0 LENGTH	INTERIOR WALL REINFORCING STEEL f1 SIZE	f1 SPACING	f1 NO. REQ'D	f1 LENGTH	TOP SLAB DISTRIBUTION REINFORCING STEEL g SIZE	g SPACING	g NO. REQ'D	g LENGTHS VARY
7	9	74	9'-3"	4	12	172	9'-3"	5	11	119	Max 53'-1"
											Min 1'-10"

BOTTOM SLAB DISTRIBUTION REINFORCING STEEL e SIZE	e SPACING	e NO. REQ'D	e LENGTHS VARY	SIDE WALL DISTRIBUTION REINFORCING STEEL d1 SIZE	d1 SPACING	d1 NO. REQ'D	d1 LENGTH	INTERIOR WALL DISTRIBUTION REINFORCING STEEL d2 SIZE	d2 SPACING	d2 NO. REQ'D	d2 LENGTH
4	6.5	~~119~~ 191	Max 53'-1"	4	12	7	LONG 53'-1"	4	12	14	LONG 40'-3"
			Min 1'-10"			7	SHORT 1'-10"			14	MID 27'-6"
										14	SHORT 14'-8"

CLASS "S" CONCRETE (Includes HDWL) CU. YDS.	① REINFORCING STEEL (GR 60) (Includes HDWL) LBS.
160.19	~~30972~~ 32,898

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

k1 SIZE	k1 LENGTH	k1 NO. REQ'D	k2 SIZE	k2 LENGTH	k2 NO. REQ'D	h SIZE	h LENGTH	h Y	h NO. REQ'D
8	38'-4"	12	8	38'-4"	12	4	2'-2"	1'-2"	74

⚠1 REVISED NO. REQ'D & QUANTITIES JGT, 4/8/13

INLET SLOPE SECTION(S)

R.C. BOX SECTION D	DESIGN FILL DEPTH (FT.) S	CLEAR SPAN (FT.) H	CLEAR HEIGHT (FT.) T	TOP SLAB THK. B	BOTTOM SLAB THK C	SIDE WALL THK. W	INTERIOR WALL THK. OW	OVER ALL WIDTH OH	OVER ALL HEIGHT SL	SECTION LENGTH (FT.)	TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS a SIZE	a L	Bent b SIZE	Bent b L	c SIZE	c L	c SPACING	c NO. REQ'D

BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS d SIZE	d L	Bent b1 SIZE	Bent b1 L	f SIZE	f L	f SPACING	f NO. REQ'D

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	f0 SPACING	f0 NO. REQ'D	f0 LENGTH	INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	f1 SPACING	f1 NO. REQ'D	f1 LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	g SPACING	g NO. REQ'D

BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	e SPACING	e NO. REQ'D	SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	d1 SPACING	d1 NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	d2 SPACING	d2 NO. REQ'D

HDWL THK. HW	ADDITIONAL REINF. FOR HDWL LBS.	"h" BARS SIZE	Y	LENGTH	NO. REQ'D

CLASS "S" CONCRETE CU. YDS. PER LIN. FT.	REINFORCING STEEL (GR. 60) LBS. PER LIN. FT.	② ADTL. REINF. PER LONG. LAP LOCATION (S) LBS.	ADTL. REINF. FOR TRANS. LAP LBS. PER LIN. FT.	ADDITIONAL CONCRETE FOR HDWL CU. YDS.	TOTAL ADTL. REINF. FOR HDWL LBS.

② Bar Lap - Add one long. lap for each Slope Section, and one additional long. lap for Slope Sections greater than 40'-0" in length.

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

Data shown for Mid-Section, Slope Section(s), and Skewed End Section is based on the design fill depth shown in the table, see PLAN AND PROFILE SHEETS for actual fill depth.

MID-SECTION

R.C. BOX SECTION D	DESIGN FILL DEPTH (FT.) S	CLEAR SPAN (FT.) H	CLEAR HEIGHT (FT.) T	TOP SLAB THK. B	BOTTOM SLAB THK. C	SIDE WALL THK. W	INTERIOR WALL THK. OW	OVER ALL WIDTH OH	OVER ALL HEIGHT SL	SECTION LENGTH (FT.)	TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS a SIZE	a L	Bent b SIZE	Bent b L	c SIZE	c L	c SPACING	c NO. REQ'D
B	15	12	7	15	16	7.5	8	51'-3"	9'-7"	139.8	4	50'-11"	8	52'-5"	8	50'-11"	14	119

BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS d SIZE	d L	Bent b1 SIZE	Bent b1 L	f SIZE	f L	f SPACING	f NO. REQ'D
4	50'-11"	7	52'-6"	7	50'-11"	11	152

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	f0 SPACING	f0 NO. REQ'D	f0 LENGTH	INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	f1 SPACING	f1 NO. REQ'D	f1 LENGTH	TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	g SPACING	g NO. REQ'D
7	9	372	9'-3"	4	12	834	9'-3"	5	11	119

BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	e SPACING	e NO. REQ'D	SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	d1 SPACING	d1 NO. REQ'D	INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	d2 SPACING	d2 NO. REQ'D
4	6.5	191	4	12	14	4	12	42

CLASS "S" CONCRETE CU. YDS. PER LIN. FT.	REINFORCING STEEL (GR. 60) LBS. PER LIN. FT.	③ ADTL. REINF. PER LONG. LAP LOCATION (S) LBS.	ADTL. REINF. FOR TRANS. LAP LBS. PER LIN. FT.
5.75	910	558	39

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
QUADRUPLE BARREL BOX CULVERT
Sta. 465+62
SPECIAL DETAILS

bi00561_cl.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
4-8-13				6	ARK.			
				JOB NO.		100567	12	112

1 SPECIAL DETAILS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 7510 CARL J. FUSELIER 11/16/12

TABULAR DATA BY: TMG DATE: 11/16/12
CHECKED BY: JGT DATE: 11/16/12

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	EOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	INSIDE FOOTING DIMENSIONS WING A	INSIDE FOOTING DIMENSIONS WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W4	W5
51'-3"	7'-0"	0'-9"	0'-8"	45	3:1	72'-6"	2'-0"	7'-10"	2'-4"	0	60	3'-2"	3'-6"	4'-2"	1'-5 3/4"	2'-8 1/2"	16'-6"	33'-0"	15'-6"	34'-10 3/8"

CLASS "S" CONCRETE (Includes apron) OUTLET	REINFORCING STEEL (Includes apron and laps if required) OUTLET
CU.YD	LBS.
19.32	1511

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1 LENGTHS	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6 LENGTHS	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	17	L Min 3'-4" Max 9'-0"	L 3'-5"	4	12	3	L 3'-5"	-	-	-	L -	4	18	6	Min 3'-4" Max 12'-4"	4	18	4	16'-2"	4	18	11	L Min 5'-3" Max 10'-3"	4	8	19'-4"	4	18	11	Min 2'-8" Max 2'-0"	-	-	-	Min - Max -	4	2	16'-11"	4	2	17'-0"	6	12	7	L 3'-4"	508
				X Min 0'-9" Max 1'-1"	X 1'-0"				X 1'-0"				X -												X Min 2'-4" Max 2'-4"																					X 1'-8"	
				Y Min 2'-8" Max 8'-0"	Y 2'-6"				Y 2'-6"				Y -												Y Min 3'-0" Max 8'-0"																						
WING B	4	12	33	L Min 3'-4" Max 9'-8"	L 4'-0"	4	12	6	L 4'-0"	-	-	-	L -	4	18	6	Min 6'-10" Max 24'-10"	4	18	4	32'-8"	4	18	22	L Min 5'-1" Max 10'-3"	4	8	41'-4"	4	18	24	Min 2'-8" Max 3'-9"	4	18	2	Min 51'-10" Max 51'-10"	4	2	32'-0"	4	2	37'-1"	6	12	7	L 3'-4"	1003
				X Min 0'-9" Max 1'-9"	X 1'-7"				X 1'-7"				X -												X Min 2'-4" Max 2'-4"																					X 1'-8"	
				Y Min 2'-8" Max 8'-0"	Y 2'-6"				Y 2'-6"				Y -												Y Min 2'-10" Max 8'-0"																						

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

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

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

OUTLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT
SK	SL	D	S	H	LL	T	HW	B	C	W	OW	OH
45	3:1	15	12	7	27'-7"	15	3	16	7.5	8	51'-3"	9'-7"

TOP SLAB REINFORCING STEEL a SIZE	a SPACING	a LENGTHS VARY	a NO. REQ'D	c SIZE	c SPACING	c LENGTHS VARY	c NO. REQ'D
5	5	Max 50'-11" Min 2'-2"	117	6	4	Max 50'-11" Min 2'-2"	147
		50'-11"	5			50'-11"	6

BOTTOM SLAB REINFORCING STEEL d SIZE	d SPACING	d LENGTHS VARY	d NO. REQ'D	f SIZE	f SPACING	f LENGTHS VARY	f NO. REQ'D
7	5.5	Max 50'-11" Min 2'-2"	107	6	8	Max 50'-11" Min 2'-2"	74
		50'-11"	5			50'-11"	3

SIDE WALL REINFORCING STEEL f0 SIZE	f0 SPACING	f0 NO. REQ'D	f0 LENGTH
7	9	74	9'-3"

INTERIOR WALL REINFORCING STEEL f1 SIZE	f1 SPACING	f1 NO. REQ'D	f1 LENGTH
4	12	172	9'-3"

TOP SLAB DISTRIBUTION REINFORCING STEEL g SIZE	g SPACING	g NO. REQ'D	g LENGTHS VARY
5	11	119	Max 53'-1" Min 1'-10"

BOTTOM SLAB DISTRIBUTION REINFORCING STEEL e SIZE	e SPACING	e NO. REQ'D	e LENGTHS VARY
4	6.5	~~419~~ 191	Max 53'-1" Min 1'-10"

SIDE WALL DISTRIBUTION REINFORCING STEEL d1 SIZE	d1 SPACING	d1 NO. REQ'D	d1 LENGTH
4	12	7	LONG 53'-1"
		7	SHORT 1'-10"

INTERIOR WALL DISTRIBUTION REINFORCING STEEL d2 SIZE	d2 SPACING	d2 NO. REQ'D	d2 LENGTH
4	12	14	LONG 40'-3"
		14	MID 27'-6"
		14	SHORT 14'-8"

k1 SIZE	k1 LENGTH	k1 NO. REQ'D	k2 SIZE	k2 LENGTH	k2 NO. REQ'D	h SIZE	h LENGTH	h Y	h NO. REQ'D
8	38'-4"	12	8	38'-4"	12	4	2'-2"	1'-2"	74

CLASS "S" CONCRETE (Includes HDWL) CU. YDS.	1 REINFORCING STEEL (GR 60) (Includes HDWL) LBS.
160.19	~~30972~~ 32,295

1 REVISED NO. BARS & QUANTITIES JGT, 4/9/13

OUTLET SLOPE SECTION(S)

R.C. BOX SECTION D	DESIGN FILL DEPTH (FT.) S	CLEAR SPAN (FT.) H	CLEAR HEIGHT (FT.) T	TOP SLAB THK. B	BOTTOM SLAB THK C	SIDE WALL THK. W	INTERIOR WALL THK. OW	OVER ALL WIDTH OH	OVER ALL HEIGHT SL	SECTION LENGTH (FT.)	TOP SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS a SIZE	a L	Bent b SIZE	Bent b L	c SIZE	c L	SPACING	NO. REQ'D

BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS d SIZE	d L	Bent b1 SIZE	Bent b1 L	f SIZE	f L	SPACING	NO. REQ'D

SIDE WALL REINFORCING STEEL "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH

INTERIOR WALL REINFORCING STEEL "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH

TOP SLAB DISTRIBUTION REINF. STEEL "g" LENGTH = SL SIZE	SPACING	NO. REQ'D

BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE	SPACING	NO. REQ'D

SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D

INTERIOR WALL DISTRIBUTION REINF. STEEL "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D

HDWL THK. HW	ADDITIONAL REINF. FOR HDWL LBS.	"h" BARS SIZE	Y	LENGTH	NO. REQ'D

CLASS "S" CONCRETE CU. YDS. PER LIN. FT.	REINFORCING STEEL (GR. 60) LBS. PER LIN. FT.	2 ADTL. REINF. PER LONG. LAP LOCATION (S) LBS.	ADTL. REINF. FOR TRANS. LAP LBS. PER LIN. FT.	ADDITIONAL CONCRETE FOR HDWL CU. YDS.	TOTAL ADTL. REINF. FOR HDWL LBS.

2 Bar Lap - Add one long. lap for each Slope Section, and one additional long. lap for Slope Sections greater than 40'-0" in length.

The required number of bars shown is for estimating purpose only. The actual number required shall be determined in field.

Unless otherwise noted, all dimensions are in inches.

SHEET 2 OF 2

DETAILS OF R.C. BOX CULVERT

QUADRUPLE BARREL BOX CULVERT
Sta. 465+62

SPECIAL DETAILS

bl00567_cl.dgn