STATE	PROJECT NO.
MISS.	

EQUAL PIPE SIZE	UL		US		YL1		YL2		YL3		YL4		YL5		YL6		YS1		YS2		YS3		YS4		YS5		YS6	
	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH
18	2	5-9	2	4-4	1	4-6	1	6-11									1	3-3	1	5-2								
24	2	8-2	2	6-0	1	4-4	1	9-4									1	3-3	1	6-10								
30	2	9-2	2	6-8	1	4-4	1	9-8	1	10-4							1	3-3	1	7-4	1	7-6						
36	2	10-8	2	7-9	1	4-5	1	9-10	1	11-10							1	3-3	1	7-4	1	8-8						
42	2	12-4	2	8-11	1	4-2	1	9-8	1	13-6							1	3-3	1	7-4	1	9-10						
48	2	14-2	2	10-3	1	4-3	1	9-9	1	15-3	1	15-3					1	3-3	1	7-4	1	11-1	1	11-1				
54	2	15-8	2	11-4	1	4-3	1	9-9	1	15-5	1	16-10					1	3-3	1	7-4	1	11-5	1	12-2				
60	2	17-7	2	12-8	1	4-7	1	10-3	1	15-10	1	18-8	1	18-8			1	3-3	1	7-4	1	11-6	1	13-6	1	13-6		
72	2	20-10	2	15-0	1	4-6	1	10-2	1	15-9	1	21-4	1	22-0	1	22-0	1	3-3	1	7-3	1	11-3	1	15-4	1	15-11	1	15-11

EQUAL PIPE SIZE	WL1		WL2		WL3		WL4		WL5		WL6		WL7		WL8		WL9		WL10		WL11		WS1		WS2		WS3		WS4		WS5		WS6		WS7		WS8	
	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH	NO	LGTH
18	2	2-10	2	2-6	2	1-8	1	1-6															2	2-10	2	2-0	1	1-6										
24	2	4-1	2	3-4	2	2-9	2	2-0	1	1-9													2	3-10	2	3-0	2	2-2	1	1-9								
30	2	4-8	2	3-11	2	3-4	2	2-7	2	2-0													2	4-3	2	3-6	2	2-8	1	2-0								
36	2	5-5	2	4-8	2	4-1	2	3-6	2	2-11	2	2-4											2	5-3	2	4-5	2	3-7	2	2-9	1	2-4						
42	2	6-1	2	5-6	2	4-10	2	4-3	2	3-8	2	2-11	1	2-7									2	6-0	2	5-1	2	4-3	2	3-4	2	2-7						
48	2	7-0	2	6-5	2	5-8	2	5-1	2	4-6	2	3-9	2	3-2	1	2-11							2	6-8	2	6-0	2	5-1	2	4-3	2	3-7	1	2-11				
54	2	7-9	2	7-2	2	6-5	2	5-10	2	5-3	2	4-8	2	3-11	2	3-4	1	3-2					2	7-7	2	6-8	2	5-10	2	4-11	2	4-1	2	3-2				
60	2	8-7	2	8-0	2	7-3	2	6-8	2	6-1	2	5-6	2	4-10	2	4-3	2	3-7					2	8-5	2	7-7	2	6-9	2	5-11	2	5-2	2	4-4	2	3-7		
72	2	10-2	2	9-7	2	8-11	2	8-4	2	7-9	2	7-2	2	6-5	2	5-10	2	5-3	2	4-8	2	4-1	2	10-2	2	9-2	2	8-4	2	7-5	2	6-8	2	5-10	2	4-11	2	4-1

REINFORCING COMMON TO FLARED HEADWALLS FOR SINGLE AND DOUBLE LINE PIPE CULVERTS

EQUAL PIPE SIZE	DIMENSIONS G	DIMENSIONS X	DIMENSIONS Y	A NO	A LGTH	B NO	B LGTH	C NO	C LGTH	D NO	D LGTH	J1 NO	J1 LGTH	J2 NO	J2 LGTH	J3 NO	J3 LGTH	J4 NO	J4 LGTH	J5 NO	J5 LGTH	J6 NO	J6 LGTH	J7 NO	J7 LGTH	J8 NO	J8 LGTH	J9 NO	J9 LGTH	J10 NO	J10 LGTH	J11 NO	J11 LGTH	J12 NO	J12 LGTH	J13 NO	J13 LGTH	J14 NO	J14 LGTH	J15 NO	J15 LGTH	J16 NO	J16 LGTH	PAY QUANTITIES FOR ONE HEADWALL CONCRETE (CU. YDS.)	PAY QUANTITIES FOR ONE HEADWALL STEEL (LBS.)
18	4-3½	7-10¼	3-3½	4	7-8	3	6-2	2	2-6	2	2-3	1	4-5	1	5-5	1	6-5	1	7-5	1	8-3																							1.05	106
24	5-0¼	10-3½	4-0¼	4	9-0	4	7-10	2	3-1	2	2-6	1	5-2	1	6-2	1	7-2	1	8-2	1	9-2	1	10-2	1	10-8																			1.65	156
30	5-9½	11-9¼	4-9½	4	10-1	5	8-7	2	3-5	2	2-9	1	6-0	1	7-0	1	8-0	1	9-0	1	10-0	1	11-0	1	12-0																			2.05	193
36	6-8¼	13-8½	5-8¼	4	11-5	6	9-7	2	3-11	2	3-0	1	6-11	1	7-11	1	8-11	1	9-11	1	10-11	1	11-11	1	12-11	1	14-1																	2.63	240
42	7-5½	15-7¾	6-5½	4	12-8	7	10-9	2	4-4	2	3-5	1	7-8	1	8-8	1	9-8	1	10-8	1	11-8	1	12-8	1	13-8	1	14-8	1	15-8	1	16-0													3.32	302
48	8-3¼	17-9	7-3¼	4	13-11	8	12-1	2	4-10	2	3-10	1	8-5	1	9-5	1	10-5	1	11-5	1	12-5	1	13-5	1	14-5	1	15-5	1	16-5	1	17-5	1	18-2											4.15	381
54	9-0½	19-7	8-0¼	4	15-2	8	13-2	2	5-3	2	4-3	1	9-2	1	10-2	1	11-2	1	12-2	1	13-2	1	14-2	1	15-2	1	16-2	1	17-2	1	18-2	1	19-2	1	20-0									4.95	435
60	9-10½	21-9¼	8-10½	4	16-6	9	14-6	2	5-9	2	4-8	1	10-1	1	11-1	1	12-1	1	13-1	1	14-1	1	15-1	1	16-1	1	17-1	1	18-1	1	19-1	1	20-1	1	21-1	1	22-2							5.99	532
72	11-5½	25-8¼	10-5½	4	19-0	11	16-10	2	6-8	2	5-3	1	11-8	1	12-8	1	13-8	1	14-8	1	15-8	1	16-8	1	17-8	1	18-8	1	19-8	1	20-8	1	21-8	1	22-8	1	23-8	1	24-8	1	25-8	1	26-0	8.10	733

DIMENSIONS AND REINFORCING FOR FLARED HEADWALL FOR SINGLE LINE PIPE CULVERT

TABLE OF ADDED LENGTHS FOR 30° SKEWED PIPE	
EQUAL PIPE SIZE	ADDED LENGTH (FT.) EACH END
18	.66
24	.84
30	1.03
36	1.26
42	1.45
48	1.65
54	1.84
60	2.05
72	2.43

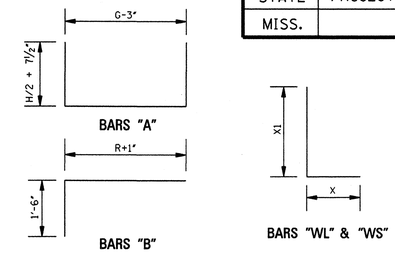
EQUAL PIPE SIZE	DIMENSIONS G	DIMENSIONS X	DIMENSIONS Y	DIMENSIONS Z	A NO	A LGTH	B NO	B LGTH	C NO	C LGTH	D NO	D LGTH	J1 NO	J1 LGTH	J2 NO	J2 LGTH	J3 NO	J3 LGTH	J4 NO	J4 LGTH	J5 NO	J5 LGTH	J6 NO	J6 LGTH	J7 NO	J7 LGTH	J8 NO	J8 LGTH	J9 NO	J9 LGTH	J10 NO	J10 LGTH	J11 NO	J11 LGTH	J12 NO	J12 LGTH	J13 NO	J13 LGTH	J14 NO	J14 LGTH	J15 NO	J15 LGTH	J16 NO	J16 LGTH	PAY QUANTITIES FOR ONE HEADWALL CONCRETE (CU. YDS.)	PAY QUANTITIES FOR ONE HEADWALL STEEL (LBS.)
18	8-0¾	11-7½	7-0¾	1-0	4	11-5	7	6-2	3	2-6	4	2-3	1	8-2	1	9-2	1	10-2	1	11-2	1	12-0																							1.54	150
24	9-6½	14-9¾	8-6½	1-0	4	13-6	9	7-10	3	3-1	4	2-6	1	9-8	1	10-8	1	11-8	1	12-8	1	13-8	1	14-8	1	15-2																			2.38	220
30	11-1	17-0½	10-0¾	1-0	4	15-4	10	8-7	3	3-5	4	2-9	1	11-4	1	12-4	1	13-4	1	14-4	1	15-4	1	16-4	1	17-5																			2.95	266
36	13-1¾	20-2	12-1¾	1-3	4	17-10	12	9-7	4	3-11	4	3-0	1	13-5	1	14-5	1	15-5	1	16-5	1	17-5	1	18-5	1	19-5	1	20-7																	3.85	341
42	14-8¼	22-10¼	13-8	1-3	4	19-10	14	10-9	4	4-4	4	3-5	1	14-11	1	15-11	1	16-11	1	17-11	1	18-11	1	19-11	1	20-11	1	21-11	1	22-11	1	23-3													4.83	430
48	16-7¼	26-1	15-7¼	1-6	4	22-3	16	12-1	4	4-10	4	3-10	1	16-9	1	17-9	1	18-9	1	19-9	1	20-9	1	21-9	1	22-9	1	23-9	1	24-9	1	25-9	1	26-6											6.09	541
54	18-5	28-11¾	17-5	1-9	4	24-6	18	13-2	4	5-3	4	4-3	1	18-7	1	19-7	1	20-7	1	21-7	1	22-7	1	23-7	1	24-7	1	25-7	1	26-7	1	27-7	1	28-7	1	29-4									7.32	637
60	20-4¾	32-3¼	19-4½	2-0	4	27-0	20	14-6	4	5-9	4	4-8	1	20-7	1	21-7	1	22-7	1	23-7	1	24-7	1	25-7	1	26-7	1	27-7	1	28-7	1	29-7	1	30-7	1	31-7	1	32-8							8.90	772
72	23-10¼	38-0¾	22-10	2-3	4	31-4	23	16-10	5	6-8	4	5-3	1	24-11	1	25-1	1	26-1	1	27-1	1	28-1	1	29-1	1	30-1	1	31-1	1	32-1	1	33-1	1	34-1	1	35-1	1	36-1	1	37-1	1	38-1	1	38-5	12.03	1059

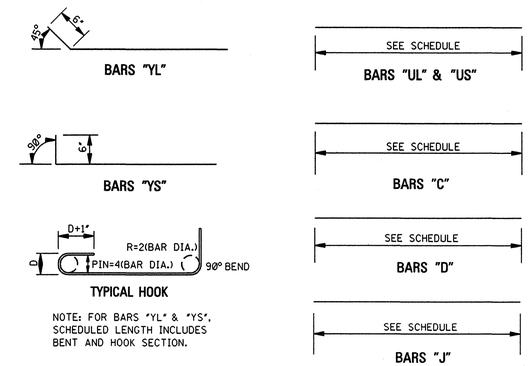
DIMENSIONS AND REINFORCING FOR FLARED HEADWALL FOR DOUBLE LINE PIPE CULVERT

EQUAL PIPE SIZE	DIMENSIONS MIN THICK "T"	INSIDE SPAN	INSIDE RISE	H	R	S1	S2	W	WL1 X	WL1 X	WL2 X	WL2 X	WL3 X	WL3 X	WL4 X	WL4 X	WL5 X	WL5 X	WL6 X	WL6 X	WL7 X	WL7 X	WL8 X	WL8 X	WL9 X	WL9 X	WL10 X	WL10 X	WL11 X	WL11 X	WS1 X	WS1 X	WS2 X	WS2 X	WS3 X	WS3 X	WS4 X	WS4 X	WS5 X	WS5 X	WS6 X	WS6 X	WS7 X	WS7 X	WS8 X	WS8 X
18	2½	22	13½	2-4¼	4-6¾	6-0½	6-5½	0-8	1-8	1-2	1-5	1-1	0-11	0-9	0-10	0-8															1-8	1-2	1-2	0-10	0-10	0-8										
24	3	28½	18	2-11⅛	6-3¼	8-5½	8-10½	0-10	2-4	1-9	1-11	1-5	1-7	1-2	1-2	0-10	1-0	0-9													2-2	1-8	1-8	1-4	1-2	1-0	1-0	0-9								
30	3½	36¼	22½	3-3½	6-11¾	9-5½	9-10½	1-0	2-8	2-0	2-3	1-8	1-11	1-5	1-6	1-1	1-2	0-10													2-6	1-9	2-0	1-6	1-6	1-2	1-2	0-10								
36	4	43¾	26⅝	3-8⅝	8-0¼	10-11	11-4	1-2	3-1	2-4	2-8	2-0	2-4	1-9	2-0	1-6	1-8	1-3	1-4	1-0											3-0	2-3	2-6	1-11	2-0	1-7	1-6	1-3	1-4	1-0						
42	4½	51⅛	31⅞	4-2⅞	9-2¼	12-7	13-0	1-4	3-6	2-7	3-2	2-4	2-9	2-1	2-5	1-10	2-1	1-7	1-8	1-3	1-6	1-1									3-5	2-7	2-11	2-2	2-5	1-10	1-11	1-5	1-6	1-1						
48	5	58½	36	4-8	10-5¾	14-4¾	14-9¾	1-6	4-0	3-0	3-8	2-9	3-3	2-5	2-11	2-2	2-7	1-11	2-2	1-7	1-10	1-4	1-8	1-3							3-10	2-10	3-5	2-7	2-11	2-2	2-5	1-10	1-11	1-8	1-8	1-3						
54	5½	65	40	5-1¼	11-6¾	15-11¼	16-4¼	1-8	4-5	3-4	4-1	3-1	3-8	2-9	3-4	2-6	3-0	2-3	2-8	2-0	2-3	1-8	1-11	1-5	1-10	1-4					4-4	3-3	3-10	2-10	3-4	2-6	2-10	2-1	2-4	1-9	1-10	1-4						
60	6	73	45	5-7¼	12-10¾	17-9¾	18-2¾	1-10	4-11	3-8	4-7	3-5	4-2	3-1	3-10	2-10	3-6	2-7	3-2	2-4	2-9	2-1	2-5	1-10	2-0	1-7					4-10	3-7	4-4	3-3	3-10	2-11	3-4	2-7	2-11	2-3	2-5	1-11	2-0	1-7				
72	7	88	54	6-6¼	15-2¾	21-1½	21-6½	2-2	5-10	4-4	5-6	4-1	5-1	3-10	4-9	3-7	4-5	3-4	4-1	3-1	3-8	2-9	3-4	2-6	3-0	2-3	2-8	2-0	2-4	1-9	5-10	4-4	5-3	3-11	4-9	3-7	4-3	3-2	3-10	2-10	3-4	2-6	2-10	2-1	2-4	1-9

DIMENSIONS AND REINFORCING COMMON TO FLARED HEADWALLS FOR SINGLE AND DOUBLE LINE PIPE CULVERTS

DETAIL DIMENSIONS FOR COMMON WING WALL REINFORCING STEEL



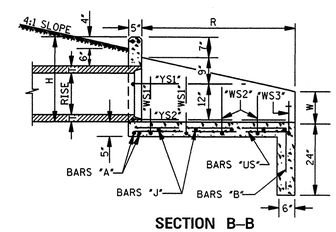


NOTE: FOR BARS "YL" & "YS", SCHEDULED LENGTH INCLUDES BENT AND HOOK SECTION.

NOTE: ONE 12" LAP ADDED TO BARS "J" EXCEEDING 30 FT. (COMPUTED LENGTH).

BAR BENDING DETAILS

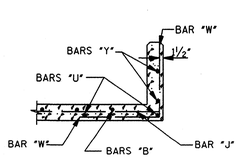
NOTE: ALL BARS ARE #4. IN BAR DESIGNATIONS (e.g. "YS" & "YL"), S DENOTES SHORT WING AND L DENOTES LONG WING.



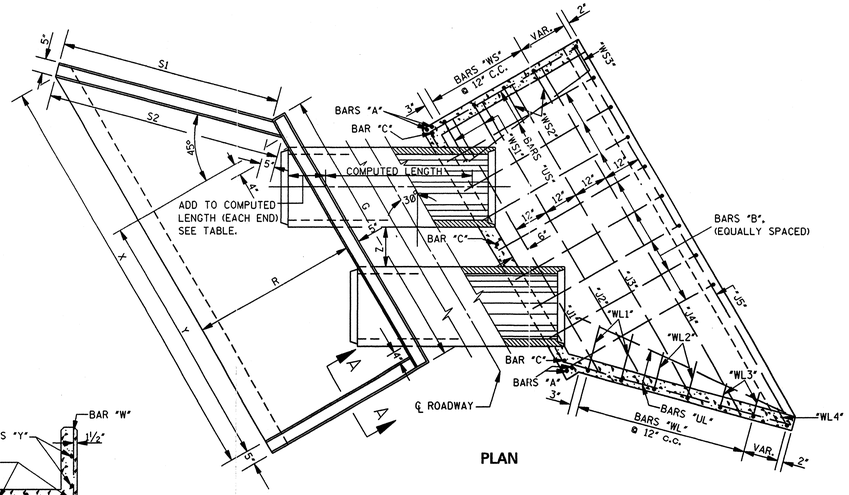
SECTION B–B

GENERAL NOTES:

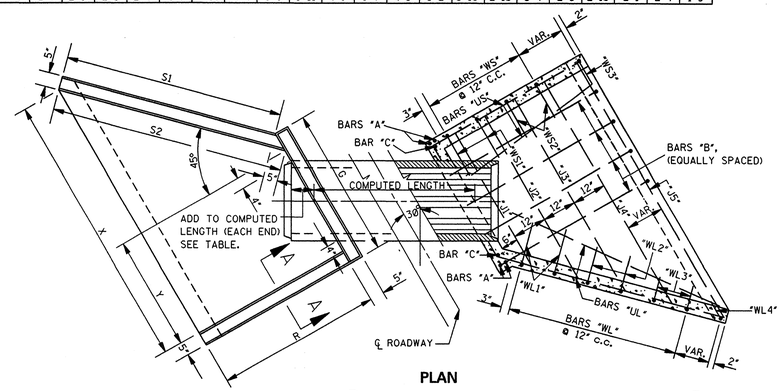
1. SPECIFICATIONS: MISSISSIPPI DEPARTMENT OF TRANSPORTATION, LATEST EDITION.
2. ALL CONCRETE SHALL BE CLASS "B".
3. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
4. EXPOSED CONCRETE SURFACES SHALL BE FINISHED IN ACCORDANCE WITH THE APPLICABLE SECTION OF THE MDOT SPECIFICATIONS.
5. ALL LENGTHS AND QUANTITIES IN THE TABLES HEREON ARE BASED ON CONCRETE TONGUE & GROOVE PIPE.
6. DIMENSIONS SHOWN FOR BAR SPACING ARE TO ℄ BARS.
7. ARCH PIPE SHALL CONFORM TO REQUIREMENTS OF AASHTO M 206 FOR CLASS OF PIPE SHOWN ON PLANS.
8. QUANTITIES SHOWN SHALL BE THE BASIS FOR FINAL PAYMENT UNLESS AUTHORIZED MODIFICATIONS ARE MADE.



SECTION A–A



PLAN



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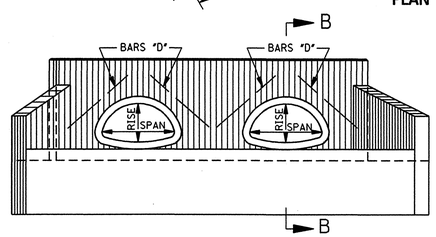
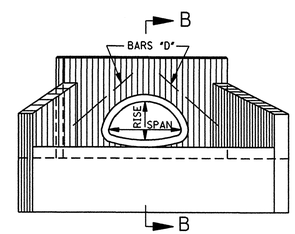


FRONT ELEVATION



FRONT ELEVATION

DATE	REVISION	BY	MISSISSIPPI DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN DIVISION STANDARD PLAN
			HEADWALLS FOR CONCRETE ARCH PIPE, 4:1 SLOPE, 30° SKEW
ISSUE DATE: OCTOBER 1, 1998			WORKING NUMBER HWA-4130 SHEET NUMBER 352

DEPARTMENT OF TRANSPORTATION ENGLISH MISSISSIPPI