THE CITY OF

RIDGELAND

CITY OF RIDGELAND
MADISON COUNTY, MISSISSIPPI
STEED ROAD IMPROVEMENTS

N.S. ACCOUNT NO. 2-1918-03

MAYOR
GENE F. McGEE

MAYOR PRO TEM
HARVEY CARR, JR.

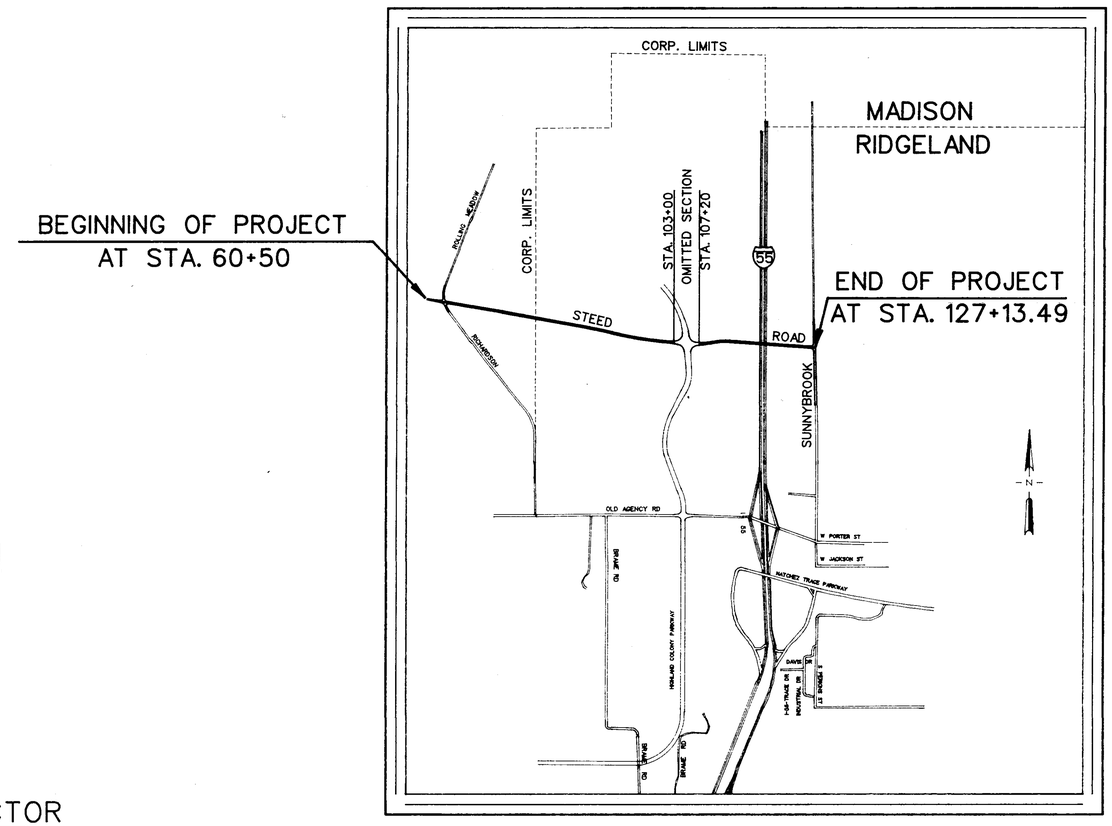
CITY ATTORNEY
JERRY MILLS

BOARD OF ALDERMEN
BRIAN BARCELLONA
AL BIBLE
HARVEY CARR, JR.
LINDA DAVIS
DARYL SMITH

PUBLIC WORKS DIRECTOR
SAM VINSON, P.E.

ASSISTANT PUBLIC WORKS DIRECTOR
SID HAWTHORNE

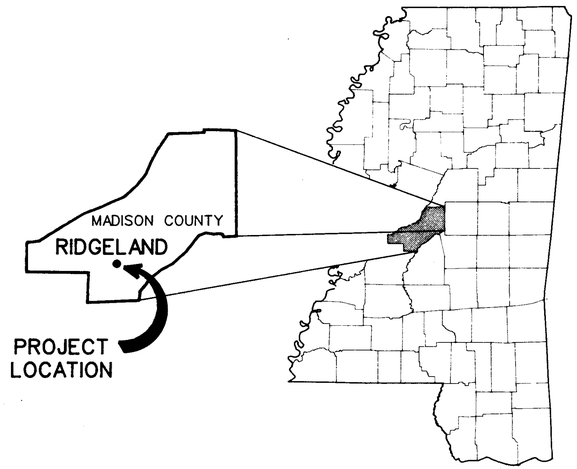
CITY CLERK
MICHAEL McPHEARSON



VICINITY MAP
OCTOBER 1992
EQUATIONS

LENGTH DATA

LENGTH OF ROADWAY	6632.49	FT.	1.256 MI.
LENGTH OF BRIDGES	31.00	FT.	0.006 MI.
LENGTH OF PROJECT (NET)	6663.49	FT.	1.262 MI.
LENGTH OF EXCEPTIONS	500.00	FT.	0.095 MI.
LENGTH OF PROJECT (GROSS)	6163.49	FT.	1.167 MI.



LOCATION MAP

RECEIVED
MAY 30 1997
PUBLIC WORKS DEPT.

DESIGN CONTROL
40 MPH - V (SPEED DESIGN)
ADT (1993)-500: ADT (2013)-5000
DHV - 500 : D - 55 % T - 5 %

PREPARED BY :

NEEL-SCHAFFER, INC.
Engineers • Planners
Jackson, Mississippi

MARK G. BAILEY REGISTERED PROFESSIONAL ENGINEER 8245 STATE OF MISSISSIPPI

DATE :

PREFINAL
10-30-92

MARK G. BAILEY, P.E.
MISSISSIPPI LICENSE NO. 8245

PWP-01914

cad/2-1918/cover.dgn

PIPE CULVERT DRAINAGE STRUCTURES

WORK SH.NO.	STATION TO STATION		CURB INLET	JUNCTION BOX				CONCRETE PIPE REQ'D. CLASS III							PIPE REQ'D. CONC. OR POLYETHYLENE				FLARED END SECTIONS									SIZE OF INLET OR JUNTION BOX			NO. & SIZE OF PIPE OPENINGS IN J. BOX OR INLET	STANDARD DRAWING	CLASS"B" STRUCT. CONC. (MINOR)	REINF. STEEL		CASTING	STRUCTURE EXCAVATION (ABSORBED ITEM)		REMARKS
								18"	24"	30"	36"	42"	58" x 36"	73" x 45"	18"	24"			18"	24"	30"	36"	58" x 36"	73" x 45"				L	W	H							EST. DEPTH	CU. YDS.	
9	92+50		*51																									5.0	3.58	3.72	1 @ 18"	TYPE"A"MOD.	1.262	78		508			LT. OF SUNNYBROOK
9	92+50	94+85													236																							LT. OF SUNNYBROOK
9	94+85		*53																									5.0	3.58	3.72	2 @ 18"	TYPE"A"MOD.	1.209	81		508			LT. OF SUNNYBROOK
9	92+50		*52																									5.0	4.17	4.22	2 @ 24"	TYPE"A"MOD	1.445	94		508			RT. OF SUNNYBROOK
9	92+50															36																1 CONC COLLAR	0.41						RT. TO EXISTING PIPE
9	92+50	94+85														236																							RT.
9	94+85		*54																									5.0	4.17	4.22	2 @ 24"	TYPE"A"MOD.	1.445	94		508			RT.
9	94+85	95+95		*5												110												4.25	3.80	3.75	2 @ 24", 1 @ 18"	JB-1						RT.
9	94+95							4											1																				STUB RT. AT JB *5
10	94+85	97+00													215																							LT.
10	97+00		*55																									5.0	3.58	3.72	2 @ 18"	TYPE"A"MOD.	1.209	81		508			LT.
10	97+00	99+35													235																							LT.
10	99+35		*57																									5.0	5.33	5.67	1 @ 24", 1 @ 30", 1 @ 36"	TYPE"A"MOD.	2.040	126		508			LT.
10	99+35	JB *1									84																											LT.
10	99+35									8											1																		STUB LT. AT INLET *57
10	100+60			*3																								10.78	7.5	5.67	1 @ 36" 1 @ 58" X 36" 2 @ 42"	SPECIAL DESIGN	5.718	342					SPECIAL DESIGN JB *3
10	100+60											28											1																STUB TO JB *3 LT.
10	100+60			*4																											1 @ 42" 1 @ 24" 1 @ 36" 1 @ 73" X 45"	SPECIAL DESIGN	3.989	209					SPECIAL DESIGN JB *4
10	100+60										44																												CROSS DRAIN-PARALLEL TO 36"
10	95+95	97+00														110																							RT.
10	97+00		*56																									5.0	4.17	4.32	2 @ 24"	TYPE"A"MOD	1.475	94		508			RT.
10	97+00	99+35														235																							RT.
10	99+35		*58																									5.0	4.17	5.67	2 @ 24"	TYPE"A"MOD	1.883	115		508			RT.
10	99+35	100+60														120																							RT.
10	100+60												4											1															STUB RT. AT JB *4(SK 10° R.F.)
								L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.			EA.	EA.	EA.		EA.	EA.											CU. YDS.	LBS.		LBS.		
SUBTOTALS								4		8	84	44	28	4	686	847			1		1		1	1											22.148	1314		4064		
TOTALS								520	73	57	84	64	28	4	3764	3303			5	1	2		1	1											91.143	5672		30,480		

BOX CULVERT QUANTITIES

WORKING SHEET NO.	STATION	SIZE	STANDARD DRAWINGS	LENGTH	CLASS "B" CONCRETE	REINF.	STRUCTURE EXCAVATION	REMARKS
6	92+32	8' x 8'	IBS-8-2W IBJL-1 ISK-15-2W	68'	89.14	12,664	83.7	SKEW 11° RT. FWD.
7	107+85	8' x 6'	IBS-6-2W IBJL-1 ISK-15-2W	100'	91.62	13,142	110.6	SKEW 12° 30' RT. FWD.
					CU. YDS.	LBS.	CU. YDS.	
	TOTALS				180.76	25,806	194.30	

REVISIONS

DATE

CITY OF RIDGELAND
STEED ROAD

SUMMARY OF DRAINAGE STRUCTURES

DESIGNED _____ DETAILED _____ TRACED _____

CHECKED _____ ISSUED _____ DATE _____

WORKING NUMBER
SDS-5

SHEET NUMBER
15

/usr2/1918/details/drsum.dgn

Δ = 11° 46' 43.1" L
D = 6° 00'
T = 98.50'
R = 954.93'
L = 196.31'

TYPICAL SECTION
4' F.B. PAVED DITCH

SOLID SOD REQ'D. (TYP)

105+28.15 STEED RD.
= 253+24.09 PKY.

EXIST. TEMP. CONSTR. EASE. (TYP.)
EXIST. R.O.W.
54.47' OPP. 285+18.40
153.68' OPP. 254+47.24
8" F.M.
15" RCP BY OTHERS
21" RCP BY OTHERS
UTILITY SIGN
105+00
R.O.W. REQ'D. 75' LT. ℄
PC 106+74.12
32.21' BK. OF ℄ OPP. 106+85.82
INLET REQ'D. TYPE "A" MOD.
PT 108+70.43
4' F.B. PAVED DITCH REQ'D.
140'-18" PIPE
INV. 350.5
FL 351.2
128'-18" PIPE
FL 350.5
82° 56' 29"
4" STEEL
12" STEEL ENCASEMENT
8" WATERLINE REQ'D.
INV. 348.5
20'-18" CMP IN PLACE
48'-8'x 4' BOX CULV. IN PLACE TO BE REMOVED
12" WATERLINE REQ'D.
R.O.W. 75' OPP. STA. 108+35
PI 107+72.62
R.O.W. REQ'D. 75' RT. ℄
12" WATERLINE REQ'D.
21" RCP BY OTHERS
SD MH BY OTHERS
38.33' OPP. 107+80.63
34.64' BK. OF ℄ OPP. 105+70.63
18" RCP BY OTHERS
54.01' OPP. 251+84.69
TIE TO EXIST. 60' OPP. ℄
EXIST. R.O.W.
TIE TO EXIST. R.O.W. OPP. +00
PC 110+46.37
30"-36" RCP IN PLACE (REMOVE)
44'x 27" ARCH PIPE REQ'D. BY OTHERS
DRIVEWAY REQ'D. BY OTHERS
8" FORCE MAIN
EXIST. R.O.W.
4' F.B. PAVED DITCH REQ'D.
PI 111+51.59
INLET REQ'D. TYPE "A" MOD.
NO ACCESS
24" PIPE IN PL.
INV. 370.7
CONC. PAVED DITCH PL. TO BE REMOVED
6" U.D. IN PL.
175'-18" PIPE
200'-18" PIPE
BR. ABUT. 173+30.65
BR. ABUT. 173+19.59
150'-24" PIPE
115+00
PT 112+55.96
BR. ABUT. 171+64.34
BR. ABUT. 171+75.40
STA. 115+51.54 STEED RD.
= 172+47.50 I-55
= 20+00 PROJ.
I-091-2(16)

B.M.ELEV. 357.50
SPIKE IN 36" OAK
58.5' RT. STA. 107+50

B.M.ELEV. 369.75
SPIKE IN PP
86' RT. STA. 113+45

Δ = 12° 34' 31.4" R
D = 6° 00'
T = 105.22'
R = 954.93'
L = 209.59'

STA. 107+85
D.A.= 142 Ac.
100'-8' x 6' BOX CULVERT REQ'D.
SK. 12° 30' RT. FWD.
2 : 1 HDWLS. REQ'D.

EXISTING 48' - 8' x 4' BOX CULVERT TO BE REMOVED

STA. 109+25 INLET #33
T.C.=359.00
INV.=355.2

STA. 109+25 INLET #34
T.C.=359.00
INV.=355.2

STA. 111+75 INLET #35
T.C.=357.52
INV.=353.8

STA. 111+75 INLET #36
T.C.=357.52
INV.=353.8

STA. 113+75 INLET #37
T.C.=356.33
INV.=352.6

STA. 113+75 INLET #38
T.C.=356.33
INV.=352.6

STA. 115+50 INLET #39
T.C.=355.32
INV.=351.0

STA. 115+50 INLET #40
T.C.=355.32
INV.=351.0

PROFILE
NOTE BOOK
No.

370
365
360
355
350

PVI 108+00 (0' V.C.) 360.02
PVI 115+00 (0' V.C.) 355.50

-0.4283 %
-0.6457 %
-0.4000 %

BY OTHERS
+20 END CONSTRUCTION
4' F.B. PAVED DITCH LT.
140'-18" PIPE LT.
128'-18" PIPE RT.
@ 1.250% RT. & LT.
INV. 355.2
INV. 353.5
4" EXISTING GAS LINE
12" WATERLINE RELOCATION
F.L. LT. 350.5
F.L. RT. 348.5
1794 Exc.
2262 Emb.
200'-18" PIPE @ 0.600% RT. & LT.
INV. 353.8
175'-18" PIPE @ 0.914% RT. & LT.
INV. 352.6
INV. 351.0

361.73 361.30 360.88 360.45 360.02 359.37 358.73 358.08 357.44 356.79 356.15 355.50 355.10
365.70 361.73 359.30 359.02 359.44 359.42 359.11 358.76 357.72 357.83 356.93 356.04 355.21

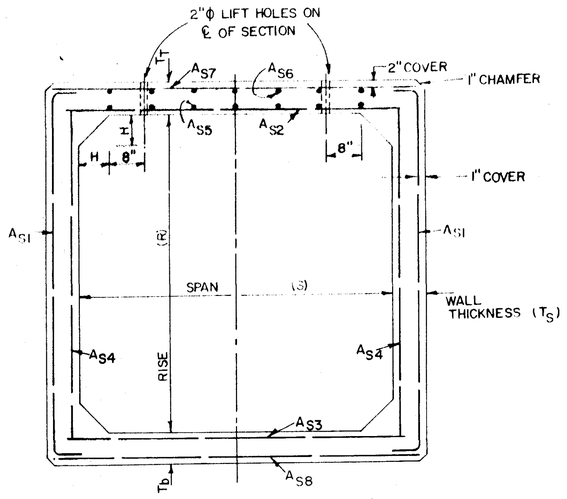
104+00 105+00 106+00 107+00 108+00 109+00 110+00 111+00 112+00 113+00 114+00 115+00 116+00

Vr. Sh. 7
Sh. No. 21

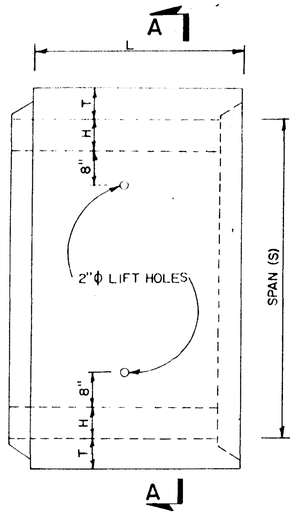
/usr2/1918/stp40-5.dgn

Keuffel & Esser Company PLATE 1, PLAN-PROFILE 487008 Made in U.S.A.

STATE	PROJECT NO.
MISS.	



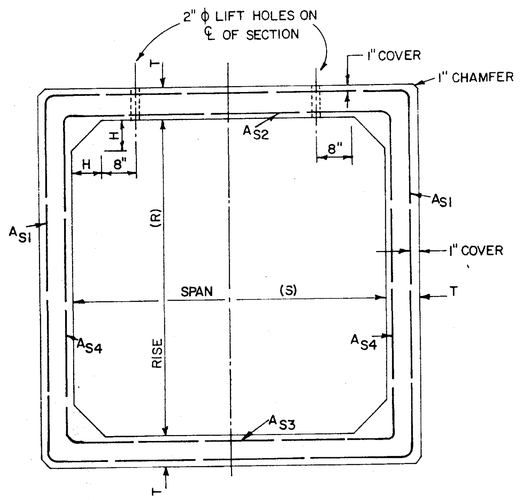
SECTION A-A
(ASTM C850 DESIGN)
AASHTO M 273
(LESS THAN 2' COVER)



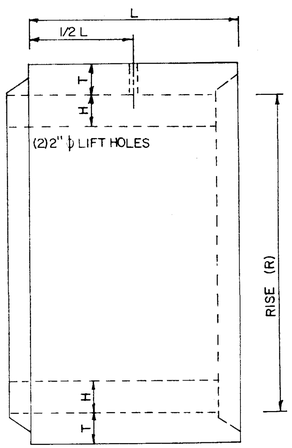
PLAN

SPAN (FT.)	RISE (FT.)	COVER EQUAL TO OR LESS THAN 2' ASTM C850 DESIGN (AASHTO M273) TABLE I			COVER OF 2' TO MAXIMUM AS SHOWN ASTM C789 DESIGN (AASHTO M259) TABLE I	
		MINIMUM THICKNESSES (IN.)			TOP, BOTTOM, WALL THICKNESSES (T) (INCHES)	MAXIMUM FILL HEIGHT TO TOP OF BOX. (FEET)
		TOP SLAB(T_T)	BOTTOM SLAB(T_b)	WALL (T_S)		
4	2	7 1/2	6	5	5	18
						*
4	4	7 1/2	6	5	5	18
6	4	8	7	7	7	18
8	4	8	8	8	8	14
* 10	4	10	10	10	10	5
6	5	8	7	7	7	18
8	5	8	8	8	8	12
10	5	10	10	10	10	14
6	6	8	7	7	7	18
8	6	8	8	8	8	12
10	6	10	10	10	10	14
8	8	8	8	8	8	12
10	8	10	10	10	10	12

* SPECIAL DESIGNED (SEE NOTE 3)



SECTION A-A
(ASTM C789 DESIGN)
AASHTO M 259
(2' OR MORE COVER)



ELEVATION

GENERAL NOTES

1. THE PRECAST REINFORCED CONCRETE BOX SECTION, EXCLUDING SPECIAL DESIGNED, SHALL BE DESIGNED, AND MANUFACTURED IN ACCORDANCE WITH THE SPECIFICATION OF ASTM C850 (AASTO M273) (TABLE I) FOR LESS THAN 2 FEET OF COVER SUBJECTED TO HIGHWAY LOADING OR ASTM C789 (AASHTO M259)(TABLE I) FOR 2 FEET OR MORE EARTH COVER.
2. THE HAUNCH DIMENSION ("H") IS EQUAL TO THE WALL THICKNESS.
3. CONCRETE BOXES INDICATED AS SPECIAL DESIGNS HAVE BEEN APPROVED AND ARE ON FILE AT THE ROADWAY DESIGN AND TESTING DIVISION OF THE MISSISSIPPI STATE HIGHWAY DEPARTMENT, AND SHALL BE MANUFACTURED IN ACCORDANCE WITH THE SPECIFICATIONS OF ASTM C850 (AASHTO M273)(TABLE I) FOR LESS THAN 2 FEET OF COVER SUBJECTED TO HIGHWAY LOADING OR ASTM C789 (AASHTO M259)(TABLE I) FOR 2 FEET OR MORE EARTH COVER.

REVISIONS	BY	DATE
REDRAWN	A.K.	11-15-85
ADDED 4 X 2	A.J.P.	6-22-83

MISSISSIPPI STATE HIGHWAY DEPARTMENT

PRECAST CONCRETE BOX CULVERT

DESIGNED A.W.K. DETAILED M.S. JR. TRACED
CHECKED ISSUED E.L.S. DATE 11-15-85

WORKING NUMBER PBC-1
SHEET NUMBER 67

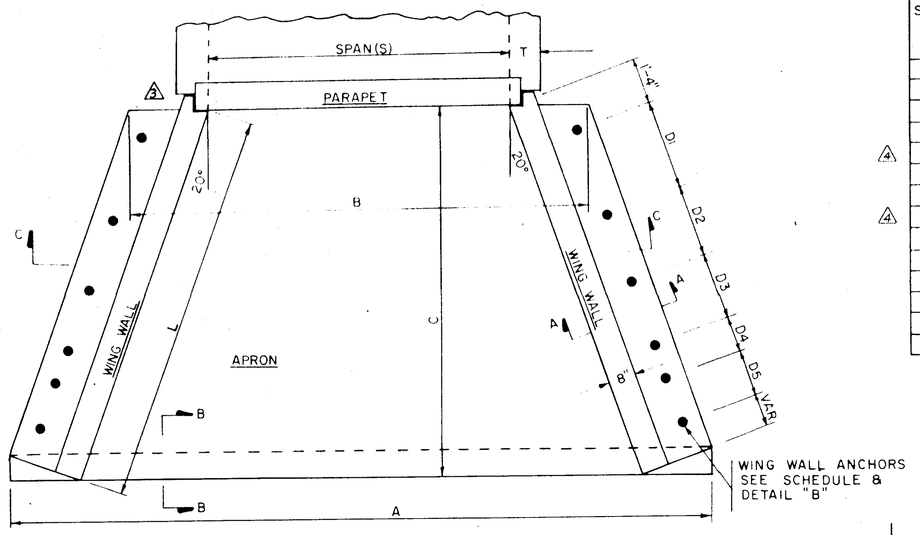
BRUNING 44-141 39869

STATE	PROJECT NO.
MISS.	

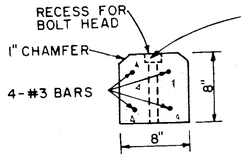
TABLE OF DIMENSIONS

SPAN S	RISE R	WALL THICKNESS T	APRON WIDTH A	APRON WIDTH B	APRON LENGTH C	WEIGHTS INSIDE APRON TONS	WEIGHTS MIDDLE APRON TONS	WEIGHTS TOE WALL APRON TONS	WING HEIGHT H	WING LENGTH L	WING HEIGHT W	WEIGHT TONS	WING WALL ANCHORS D1	D2	D3	D4	D5	REINFORCING STEEL * S1	S2	S3	S4	S5	S6
4'	2'					NOT AVAILABLE																	
4'	4'					NOT AVAILABLE																	
6'	4'	8"	15'-3 1/4"	9'-11"	8'-0"	—	—	5.7	4'-8"	8'-4"	1'-10"	1.9	6'-2"	—	—	—	—	.10	.10	.10	.10	.10	.10
8'	4'	8"	17'-3 1/4"	11'-11"	8'-0"	—	—	6.5	4'-8"	8'-4"	1'-10"	1.9	6'-2"	—	—	—	—	.10	.10	.10	.10	.10	.10
10'	4'	10"	19' 3 1/4"	13'-11"	8'-0"	—	—	7.3	4'-8"	8'-4"	1'-10"	1.9	6'-2"	—	—	—	—	.10	.10	.10	.10	.10	.10
6'	5'	8"	15'-3 1/4"	9'-11"	8'-0"	—	—	5.7	5'-8"	8'-4"	2'-10"	2.3	6'-2"	—	—	—	—	.12	.10	.10	.10	.10	.10
8'	5'	8"	17'-3 1/4"	11'-11"	8'-0"	—	—	6.5	5'-8"	8'-4"	2'-10"	2.3	6'-2"	—	—	—	—	.12	.10	.10	.10	.10	.10
10'	5	10"	19'-3 1/4"	13'-11"	8'-0"	—	—	7.3	5'-8"	8'-4"	2'-10"	2.3	6'-2"	—	—	—	—	.12	.10	.10	.10	.10	.10
6'	6'	8"	18'-2"	9'-11"	12'-0"	5.1	—	4.0	6'-8"	12'-7"	2'-5"	3.6	6'-2"	2'-4"	1'-11"	—	—	.20	.10	.10	.10	.10	.10
8'	6'	8"	20'-2"	11'-11"	12'-0"	5.9	—	4.5	6'-8"	12'-7"	2'-5"	3.6	6'-2"	2'-4"	1'-11"	—	—	.20	.10	.10	.10	.10	.10
10'	6'	10"	22'-2"	13'-11"	12'-0"	6.7	—	5.0	6'-8"	12'-7"	2'-5"	3.6	6'-2"	2'-4"	1'-11"	—	—	.20	.10	.10	.10	.10	.10
8'	8'	8"	23'-1"	11'-11"	16'-0"	5.9	3.8	5.2	8'-8"	16'-11"	3'-0"	5.9	6'-2"	2'-4"	1'-11"	2'-4"	1'-11"	.45	.10	.10	.10	.10	.10
10'	8'	10"	25'-1"	13'-11"	16'-0"	6.7	4.2	5.6	8'-8"	16'-11"	3'-0"	5.9	6'-2"	2'-4"	1'-11"	2'-4"	1'-11"	.45	.10	.10	.10	.10	.10

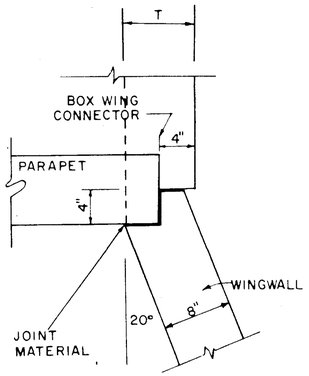
* REINFORCING STEEL SCHEDULE-SQUARE INCHES OF STEEL PER LINEAR FOOT OF WING.



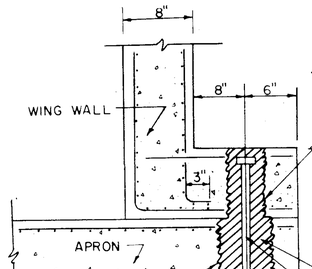
PLAN



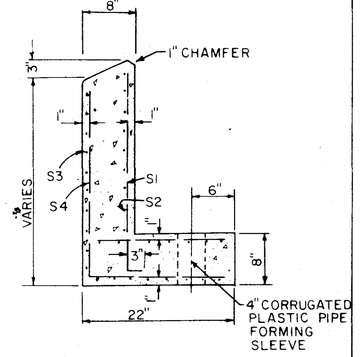
PARAPET DETAIL



DETAIL "A" 3



DETAIL "B" 3 4

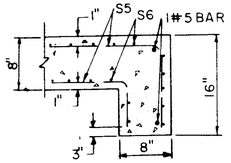


WING WALL

(SECTION A-A)

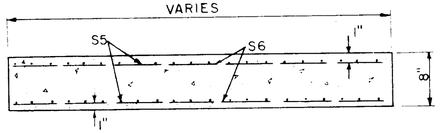
SIDE ELEVATION

APRONS: FOR 4' & 5' RISE, TOE WALL APRON ONLY (APRON LENGTH: 8'-0") INSIDE APRON UNIT NOT REQ'D.
FOR 6' RISE (TWO APRON UNITS REQ'D): INSIDE APRON LENGTH: 8'-0"
TOE WALL APRON LENGTH: 4'-0".
FOR 8' RISE (THREE APRON UNITS REQ'D): INSIDE APRON (LENGTH: 8'-0"), MIDDLE APRON (LENGTH: 4'-0"), TOE WALL APRON (LENGTH: 4'-0").



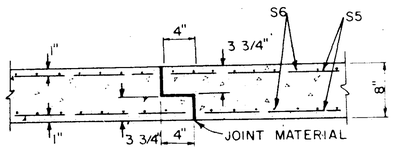
TOE WALL

SECTION "B-B"



APRON

SECTION "C-C"



APRON JOINT

DETAIL "C"-TYPICAL

4 GENERAL NOTES

1. THE BOX WING CONNECTOR SECTION SHALL MEET THE DESIGN REQUIREMENT OF THE PRECAST CONCRETE BOX CULVERT TO WHICH IT IS ATTACHED. SEE SHEET NO. 265 FOR BOX CULVERT DETAILS.
2. CONCRETE DESIGN STRENGTH : 5000 PSI
3. REINF. STEEL : 75,000 LBS. YIELD STRENGTH
4. GALVANIZATION FOR REQUIRED HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M-111.

DATE	REVISIONS
11-15-85	AWK
12-22-83	AWK
8-11-82	AWK
4-1-81	AWK
	8"

MISSISSIPPI STATE HIGHWAY DEPARTMENT

PRECAST CONCRETE BOX CULVERT END SECTIONS

WORKING NUMBER PBC-2

SHEET NUMBER 68

DESIGNED _____ DETAILED _____ TRACED _____

CHECKED _____ ISSUED D B J DATE 9-9-80

GROUP II DIAGRAMS
6 FT. TRAFFIC LANES
OR 4-12 FT. (PAVED) & 2-12 FT. (UNPAVED) SHOULDERS
WITH 88 FT. THRU 60 FT. MEDIANS

L Equal To Or Less Than 140 Ft. & M = 4 Ft. To 10 Ft.
C = 96 Ft. To 105 Ft.

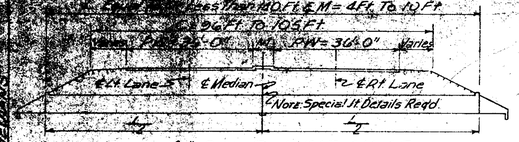


DIAGRAM "A" ~ DRAWN FOR L = 124 FT. & M = 6 FT.

L Equal To Or Less Than 140 Ft. & M = 10 Ft. Thru 36 Ft.
C = 102 Ft. Thru 131 Ft.

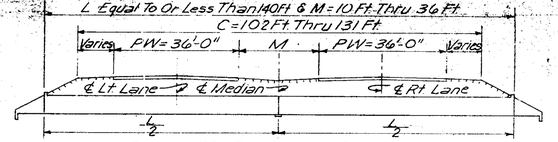


DIAGRAM "B" ~ DRAWN FOR L = 134 FT. & M = 23 FT.

L Greater Than 140 Ft. & Equal To Or Less Than 190 Ft. & M = 4 Ft. To 10 Ft.
C = 96 Ft. To 105 Ft.

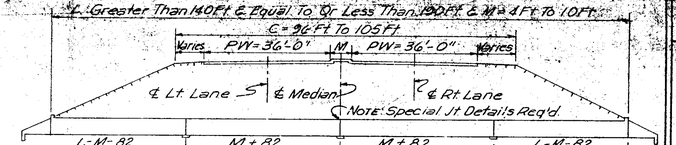


DIAGRAM "C" DRAWN FOR L = 165 FT. & M = 6 FT.

L Greater Than 140 Ft. & Equal To Or Less Than 190 Ft. & M = 10 Ft. Thru 36 Ft.
C = 102 Ft. Thru 131 Ft.

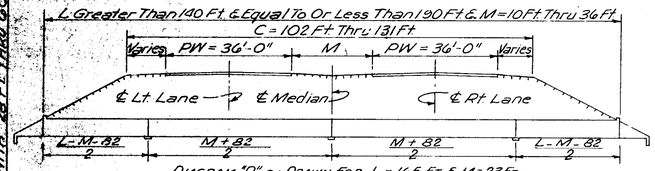


DIAGRAM "D" ~ DRAWN FOR L = 165 FT. & M = 23 FT.

L Greater Than 190 Ft. & M = 4 Ft. Thru 36 Ft.
C = 96 Ft. Thru 131 Ft.

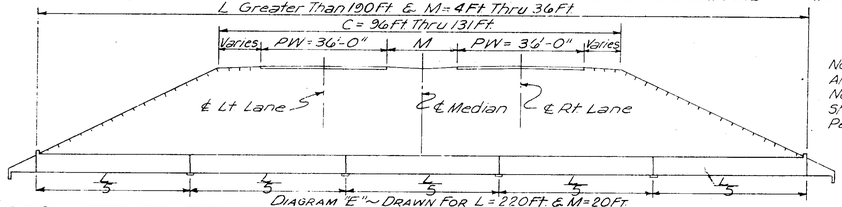


DIAGRAM "E" ~ DRAWN FOR L = 220 FT. & M = 20 FT.

SIDE ELEVATION OF CULVERTS CONSTRUCTED NORMAL TO ℄ ROADWAY
SHOWING BARREL JOINTS AND AUXILIARY SLABS "J"

Note: These Joint Locations Are For Culverts Constructed Normal To ℄ Of Roadway And Shall Be Adjusted For Skew Per Details In Group IV.

GROUP II DIAGRAMS
TYPICAL DIAGRAMS FOR SKEWED CULVERTS

APPLICATION OF DIAGRAMS:
The Following Diagrams Show The General Application Of LOCATION DIAGRAMS In Groups I, II & III To Skewed Culverts.
LOCATION OF BARREL JOINTS FOR SKEWED CULVERTS NOT EXCEEDING 45° SKEW:
1. With LSK (Length Of Skewed Culvert Along ℄ Barrel) Known Or Length Of Barrel Section Required, MULTIPLY LSK By The Cosine Of SKEW ANGLE (θ) To Obtain L (Length Of Culvert Normal To ℄ Roadway).
2. Enter Group I, II Or III Determined By Roadway Cross Section And The Number Of Joints And Length Of Each Barrel Section For Culvert Normal To ℄ Roadway.
3. DIVIDE Each Length Of Section By The COSINE Of The Skew Angle To Determine The Length Of Each Barrel Section Along ℄ Barrel.
4. Place The Barrel Joints (Type Per Basic Dwg.) At These Locations. If Length Of Any Section Exceeds 10 Ft. And A Construction Joint Is Not Required To Reduce Yardage Of Pour) Place A Construction Joint In Center Of Section.

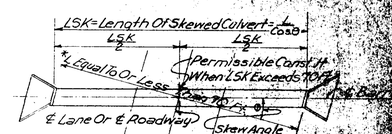


DIAGRAM "A"
PLAN OF SKEWED CULVERT
TYPICAL FOR DIAGRAM "A" GROUP I AND SKEWED 15° RIGHT FORWARD
(No Barrel Joints Required)
NOTE: LSK = 1.03528L FOR 15° SKEW.

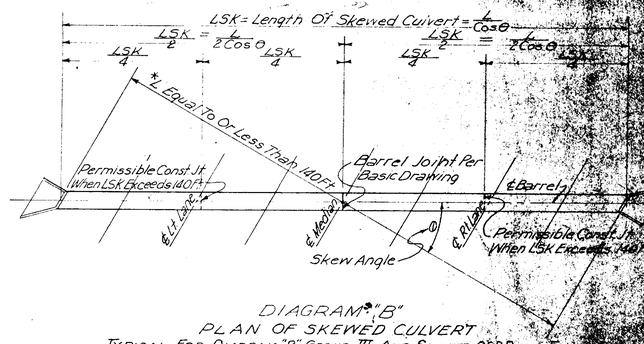


DIAGRAM "B"
PLAN OF SKEWED CULVERT
TYPICAL FOR DIAGRAM "B", GROUP III AND SKEWED 30° RIGHT FORWARD
(ONE BARREL JOINT REQUIRED)
NOTE: LSK = 1.1547 0L FOR 30° SKEW

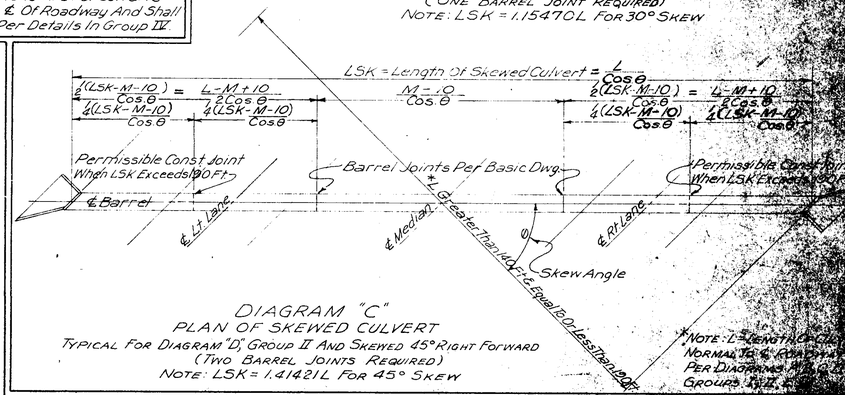


DIAGRAM "C"
PLAN OF SKEWED CULVERT
TYPICAL FOR DIAGRAM "D", GROUP II AND SKEWED 45° RIGHT FORWARD
(TWO BARREL JOINTS REQUIRED)
NOTE: LSK = 1.4142L FOR 45° SKEW

*NOTE: L = LENGTH OF CULVERT NORMAL TO ℄ ROADWAY AS PER DIAGRAMS IN GROUPS I, II & III

GROUP I DIAGRAMS
2 - 12 FT. TRAFFIC LANES
OR
2 - 12 FT. (PAVED) & 2 - 12 FT. (UNPAVED) TRAFFIC LANES

L Equal To Or Less Than 140 Ft. & M = 4 Ft. To 10 Ft.
C = 72 Ft. To 81 Ft.

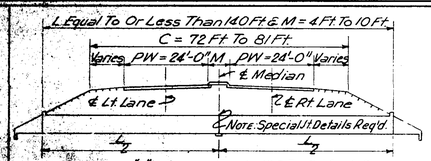


DIAGRAM "A" ~ DRAWN FOR L = 100 FT. & M = 6 FT.

L Equal To Or Less Than 140 Ft. & M = 10 Ft. Thru 60 Ft.
C = 78 Ft. Thru 131 Ft.

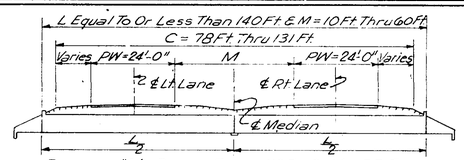


DIAGRAM "B" ~ DRAWN FOR L = 110 FT. & M = 35 FT.

L Greater Than 140 Ft. & Equal To Or Less Than 190 Ft. & M = 4 Ft. To 40 Ft.
C = 72 Ft. To 111 Ft.

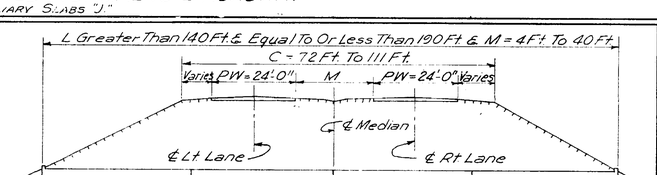


DIAGRAM "C" ~ DRAWN FOR L = 165 FT. & M = 22 FT.

L Greater Than 190 Ft. & M = 4 Ft. Thru 60 Ft.
C = 72 Ft. Thru 131 Ft.

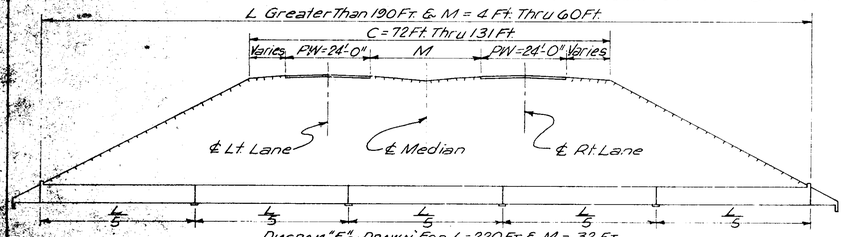


DIAGRAM "E" ~ DRAWN FOR L = 220 FT. & M = 32 FT.

L Greater Than 140 Ft. & Equal To Or Less Than 190 Ft. & M = 40 Ft. Thru 60 Ft.
C = 108 Ft. Thru 131 Ft.

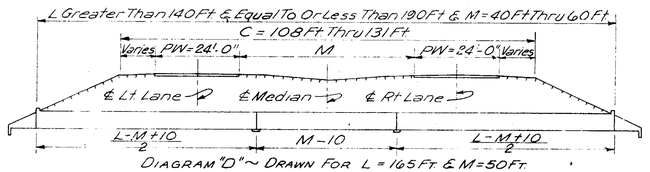


DIAGRAM "D" ~ DRAWN FOR L = 165 FT. & M = 50 FT.

NOTE: These Joint Locations Are For Culverts Constructed Normal To ℄ Of Roadway And Shall Be Adjusted For Skew Per Details In Group IV.

SIDE ELEVATION OF CULVERTS CONSTRUCTED NORMAL TO ℄ ROADWAY
SHOWING BARREL JOINTS AND AUXILIARY SLABS "J"

GROUP I DIAGRAMS
2 - 12 FT. TRAFFIC LANES
OR
2 - 12 FT. (PAVED) & 1 - 12 FT. (UNPAVED) TRAFFIC LANES

L Equal To Or Less Than 70 Ft.
C = 30 Ft. Thru 55.5 Ft.

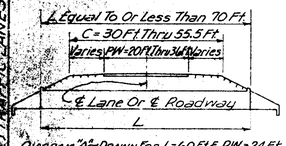


DIAGRAM "A" ~ DRAWN FOR L = 60 FT. & PW = 24 FT.

L Greater Than 70 Ft. & Equal To Or Less Than 120 Ft.
C = 30 Ft. Thru 55.5 Ft.

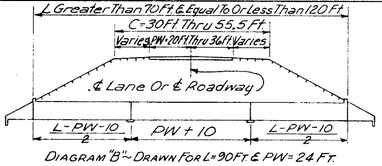


DIAGRAM "B" ~ DRAWN FOR L = 90 FT. & PW = 24 FT.

L Greater Than 70 Ft. & Equal To Or Less Than 120 Ft.
C = 30 Ft. Thru 55.5 Ft.

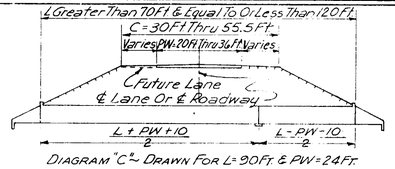


DIAGRAM "C" ~ DRAWN FOR L = 90 FT. & PW = 24 FT.

NOTE: These Joint Locations Are For Culverts Constructed Normal To ℄ Of Roadway And Shall Be Adjusted For Skew Per Details In Group IV.

L Greater Than 120 Ft. & Equal To Or Less Than 190 Ft.
C = 30 Ft. Thru 55.5 Ft.

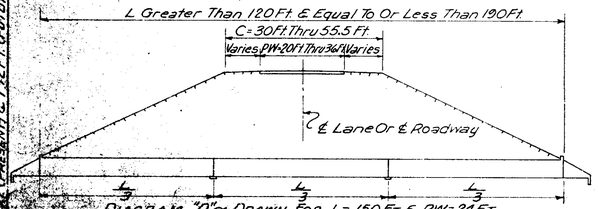


DIAGRAM "D" ~ DRAWN FOR L = 150 FT. & PW = 24 FT.

L Greater Than 190 Ft.
C = 30 Ft. Thru 55.5 Ft.

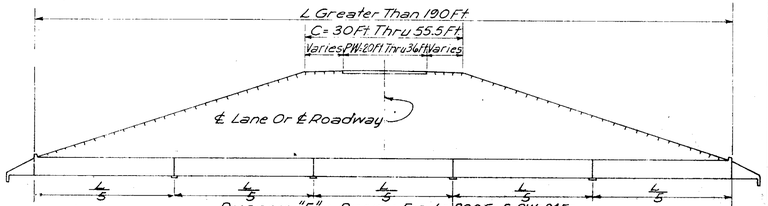
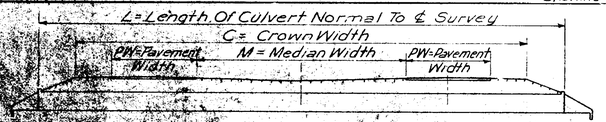


DIAGRAM "E" ~ DRAWN FOR L = 200 FT. & PW = 24 FT.

SIDE ELEVATION OF CULVERTS CONSTRUCTED NORMAL TO ℄ ROADWAY
SHOWING BARREL JOINTS AND AUXILIARY SLABS "J"



SIDE ELEVATION OF CULVERT CONST. NORMAL TO ℄ SURVEY
SHOWING VARIABLES FOR DIAGRAMS IN GROUPS I, II & III SHOWN ABOVE

GENERAL NOTES:
This Drawing Shows The Barrel Joint Locations For Box Culverts Constructed Normal To ℄ Of Roadway And General Details Necessary To Locate Joints For Culverts On 15, 30 And 45° Skews.
The Diagrams On This Sheet Show Joint Locations For Culverts Under Variable Amounts Of Cover, Crown Width And Side Slopes.
Barrel Joints Shall Be Of Type Per Basic Drawing And Shall Be Placed Only At Locations Shown Unless Otherwise Stated.
Joints Shall Not Be Located Closer Than 5 Ft. Outside Pavement For Cover Of 8 Ft. Or Less Except In Cases Where Median Is Less Than 10 Ft. Where Cover Is 8 Ft. Or Less And A Joint Occurs Within The Limits Of 5 Ft. Beyond Each Edge Of Pavement, Use Complete Collar At Joints Per Drawing ICJ-1 Or ICJS-1. Where Cover Exceeds 8 Ft. Joints May Be Located Without Regard To Pavement Edge.
Construction Joints Per Group III, If Required, Shall Have Reinforcement Continuous Thru Joint And Shall Be Placed Only At Locations Indicated.
General Requirements Of Basic Culvert Drawings Shall Apply Except As Specifically Modified Hereon.

REVISIONS
Added ℄ Barrel Values

MISSISSIPPI STATE HIGHWAY DEPT.
BOX CULVERT DRAWINGS
BARREL JOINT LOCATIONS
NORMAL AND SKEWED CULVERTS

CULVERT DIMENSIONS

CLEAR SPAN	MAX. COVER	T	V	W	Y
4'	21'	7"	7"	1'-2"	16'-10½"
6'	14'	7½"	7"	1'-2½"	18'-10½"
8'	10'	8½"	7½"	1'-3½"	20'-10½"
10'	8'	9½"	8"	1'-4½"	22'-10½"
12'	7'	10½"	8½"	1'-5½"	24'-10½"
14'	7'	1'-0"	9½"	1'-7"	26'-10½"
16'	6'	1'-1"	10"	1'-8"	28'-10½"
18'	6'	1'-2"	11½"	1'-9"	30'-10½"
20'	6'	1'-3"	1'-1"	1'-10"	32'-10½"

ESTIMATED QUANTITIES

CULVERT (L=150') CONC. CU. YD.	CULVERT (L=150') REINF. STEEL LB.	PER LIN. FT. BARREL CONC. CU. YD.	PER LIN. FT. BARREL REINF. STEEL LB.	/ AUX. SLAB "J" CONC. CU. YD.	/ AUX. SLAB "J" REINF. STEEL LB.
84.17	10,202	0.4825	60.7	0.26	15
101.85	14,258	0.5910	86.8	0.35	21
129.16	18,948	0.7631	117.3	0.46	26
160.31	25,194	0.9609	158.1	0.56	32
195.30	31,113	1.1844	196.9	0.66	38
245.12	39,315	1.5062	250.3	0.77	44
288.88	45,780	1.7881	292.9	0.87	49
344.23	57,285	2.1471	368.7	0.98	55
403.75	67,670	2.5339	436.2	1.09	61

BAR LIST FOR BARREL (L=150') PARAPETS & 2 AUXILIARY SLABS

BARS "A" NO.	SIZE	SPAC	LGTH	BARS "B" NO.	SIZE	SPAC	LGTH	DOWELS "Q"-#4 NO.	LGTH	SPACERS "QS"-#4 NO.	LGTH	SETS OF BARS "AST" ●#4 NO.	LGTH	SETS OF BARS "ASB" ●#4 NO.	LGTH	SETS OF BARS "BS" ●#4 NO.	LGTH	BARS "K" #4 NO.	LGTH	BARS "L" #4 NO.	LGTH	BARS "M" #4 NO.	LGTH	BARS "N" #4 NO.	LGTH
480	#5	7½"	4'-11"	1788	#3	4"	5'-8"	24	2'-6"	4	5'-7"	4	152'-9"	4	155'-7"	20	152'-9"	8	4'-0"	4	4'-10"	4	4'-10"		
600	#5	6"	6'-11"	1200	#4	6"	6'-4"	24	2'-6"	4	5'-7"	6	152'-9"	6	155'-7"	24	152'-9"	12	4'-1"	4	6'-10"	4	6'-10"		
480	#6	7½"	9'-0"	960	#5	7½"	7'-1"	24	2'-6"	4	5'-7"	8	152'-9"	8	155'-7"	24	152'-9"	16	4'-3"	4	8'-10"	4	8'-11"		
576	#6	6¼"	11'-1"	1152	#5	6¼"	7'-9"	24	2'-6"	4	5'-7"	10	152'-9"	10	155'-7"	28	152'-9"	20	4'-5"	4	10'-10"	4	10'-11"		
654	#6	5½"	13'-2"	1308	#5	5½"	8'-4"	24	2'-6"	4	5'-7"	12	152'-9"	12	155'-7"	28	152'-9"	24	4'-7"	4	12'-10"	4	12'-11"		
534	#7	6¾"	15'-4"	1068	#6	6¾"	9'-3"	24	2'-6"	4	5'-7"	14	152'-9"	14	155'-7"	32	152'-9"	28	4'-10"	4	14'-10"	4	14'-11"		
576	#7	6¼"	17'-5"	1152	#6	6¼"	9'-10"	24	2'-6"	4	5'-7"	16	152'-9"	16	155'-7"	32	152'-9"	32	5'-0"	4	16'-10"	4	16'-11"		
480	#8	7½"	19'-8"	1440	#6	5"	10'-7"	24	2'-6"	4	5'-7"	18	152'-9"	18	155'-7"	36	152'-9"	36	5'-8"	4	18'-10"	4	18'-11"		
402	#9	9"	21'-11"	1200	#7	6"	11'-5"	24	2'-6"	4	5'-7"	20	152'-9"	20	155'-7"	36	152'-9"	40	5'-4"	4	20'-10"	4	21'-10"	44	6'-11"

BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 4'	6'	8'	10'	12'	14'	16'	18'	20'	DIM. X	DIM. Y &	LENGTH
T1	#4	2	2	2	2	2	2	2	2	2			
T2	#4	2	2	2	2	2	2	2	2	2			
T3	#4	2	2	2	2	2	2	2	2	2			
T4	#4	2	2	2	2	2	2	2	2	2			
T5	#4	2	2	2	2	2	2	2	2	2			
T6	#4	2	2	2	2	2	2	2	2	2			
T7	#4	2	2	2	2	2	2	2	2	2			
T8	#4	2	2	2	2	2	2	2	2	2			
T9	#4	2	2	2	2	2	2	2	2	2			
T10	#4	2	2	2	2	2	2	2	2	2			
T11	#4	2	2	2	2	2	2	2	2	2			
T12	#4	6	6	6	6	6	6	6	6	6			
U	#4	12	12	12	12	12	12	12	12	12			
V1	#4	12	16	20	24	28	32	36	40	44	11'-0"	1'-8"	
V2	#4	4	4	4	4	4	4	4	4	4	9'-7"	1'-8"	
V3	#4	4	4	4	4	4	4	4	4	4	7'-4"	1'-8"	
V4	#4	4	4	4	4	4	4	4	4	4	5'-1"	1'-8"	
V5	#4	4	4	4	4	4	4	4	4	4	3'-10"	1'-8"	
V6	#4	4	4	4	4	4	4	4	4	4	2'-7"	1'-8"	
W1	#4	12	12	12	12	12	12	12	12	12	4'-10"	W+3'-2"	
W2	#4	8	8	8	8	8	8	8	8	8	3'-8"	W+2'-1"	
W3	#4	8	8	8	8	8	8	8	8	8	2'-6"	W+1'-0"	
W4	#4	8	8	8	8	8	8	8	8	8	3'-0"	W+3'-0"	
W5	#4	8	8	8	8	8	8	8	8	8	2'-8"	W+2'-8"	
W6	#4	8	8	8	8	8	8	8	8	8	2'-4"	W+1'-8"	
W7	#4	8	8	8	8	8	8	8	8	8	2'-0"	W+0"	
Y1	#4	4	4	4	4	4	4	4	4	4			
Y2	#4	4	4	4	4	4	4	4	4	4			
Y3	#4	4	4	4	4	4	4	4	4	4			
Y4	#4	4	4	4	4	4	4	4	4	4			
Y5	#4	4	4	4	4	4	4	4	4	4			
Y6	#4	4	4	4	4	4	4	4	4	4			

PERMISSIBLE CONSTRUCTION JOINT AT WING

SECTION "A"-"A"

LONGITUDINAL SECTION

NOTE: Culvert Shall Be Sloped To Conform To Gradient Of Stream.

HALF END ELEVATION

* Note: The Number And Length Of Bars Are Listed For Sets Of Bars Composed Of Sections As Shown In Bar Bending Details. See Elevation Of Culvert For Number Of Sections.

DESIGN DATA

Specifications: A.A.S.H.O. 1969
Live Load: H S 20 -44 Mod. For 324000# Axles.
Unit Stresses: fs = 20,000#/□", fc = 1,200#/□", n = 10.

Note: The Diagrams For Bars ASB, AST And BS Are For A Culvert Length Greater Than 140 Ft. And Equal To Or Less Than 190 Ft. With A Median Of 40 Ft. Thru 60 Ft. For Conditions Other Than These, Use Sections As Shown On Elevation Of Culvert.

ONE SET OF BARS AST & BS - #4

BARS N-#4

BARS B

BARS K-#4

BARS V-#4

BARS W-#4

DOWELS Q-#4

ONE SET OF BARS ASB - #4

TOP SLAB
SIDE WALLS SIMILAR

BOTTOM SLAB

PLAN OF WING & PARAPET

PLAN OF APRON & BOTTOM SLAB

Note: Joints Shall Not Be Located Closer Than 5 Ft. Outside Of Pavement For Cover Of 8 Ft. Or Less Except In Cases Where Median Is Less Than 10 Ft. Where Cover Exceeds 8 Ft. Joints May Be Located Without Regards To Pavement Edge.

Note: Where Cover Is 8 Ft. Or Less And A Joint Occurs Within The Limits Of 5 Ft. Beyond Each Edge Of Pavement, Use Complete Collar At Joints. For Drawing ICJ-1 Or ICJS-1.

CROSS SECTION

SIDE ELEVATION OF CULVERT
Showing ½" Joints And Auxiliary Slabs "J"
Drawn For L = 150 Ft. & M = 20 Ft.

BAR BENDING DETAILS
Dimensions Are Out To Out

GENERAL NOTES:-

Specifications: Mississippi State Highway Department.
All Concrete Shall Be Class "B" For Box Culverts And Class "BB" For Box Bridges.
Conc. Surfaces Shall Be Finished In Accordance With Sub-Section 804.24.
All Exposed Corners Shall Be Chamfered ¾ Inch.
Reinforcing Steel Shall Be Placed 1" Clear Minimum From The Surface Of The Concrete And Shall Be Adequately Supported From The Forms.
All Bars Shall Be Accurately Spaced And Securely Wired At Each Intersection Before Placing Concrete.
Horizontal Construction Joints Shall Be Placed Only At The Locations Shown, And The Concrete Shall Be Allowed To Set A Minimum Period Of 2 Hours Before Continuing The Pour.
The Quantities Shown Will Be Used As A Basis For Final Payment Unless This Drawing Is Modified.

NOTE: See Drawing 1B101 For Additional Joint Specifications.

MISSISSIPPI STATE HIGHWAY DEPARTMENT
BASIC CULVERT DRAWING
SINGLE CELL
HEIGHT
SPANS 4' to 20'