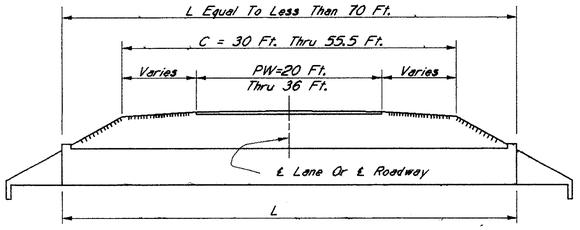


DIAGRAM "A" ~ DRAWN FOR L = 60 Ft. & PW = 24 Ft.

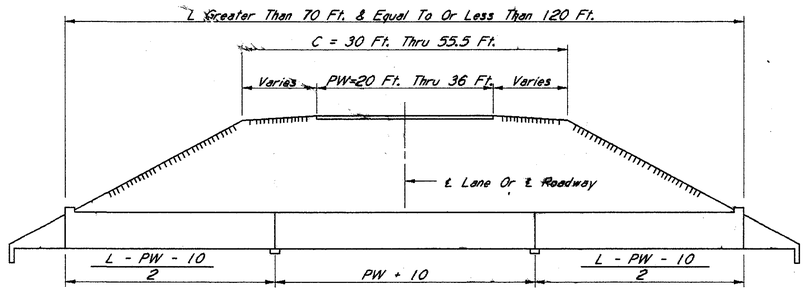


DIAGRAM "B" ~ DRAWN FOR L = 90 Ft. & PW = 24 Ft.

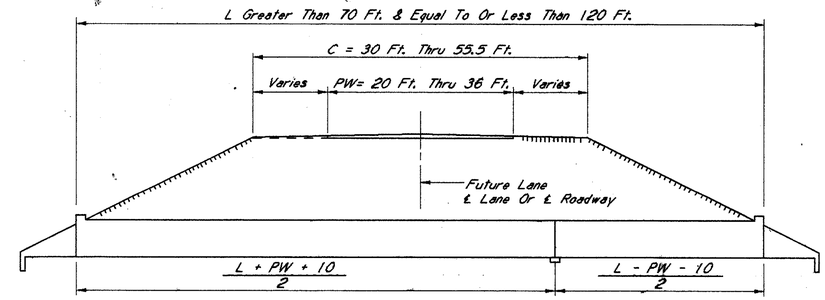


DIAGRAM "C" ~ DRAWN FOR L = 90 Ft. & PW = 24 Ft.

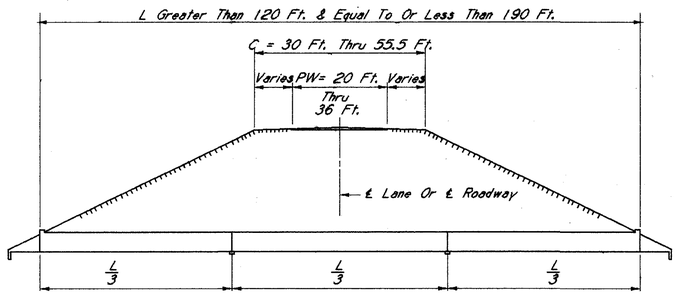


DIAGRAM "D" ~ DRAWN FOR L = 150 Ft. & PW = 24 Ft.

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

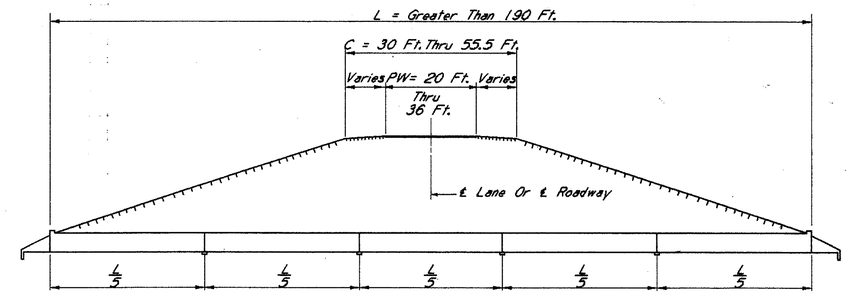


DIAGRAM "E" ~ DRAWN FOR L = 200 Ft. & PW = 24 Ft.

SIDE ELEVATION OF CULVERTS CONSTRUCTED NORMAL TO ℄ ROADWAY

Showing Barrel Joint And Auxiliary Slabs "J".

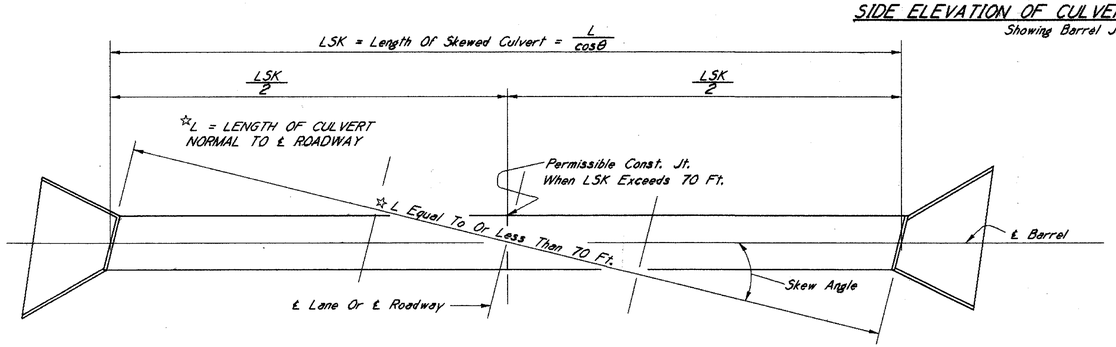


DIAGRAM "A"

PLAN OF SKEWED CULVERT

TYPICAL FOR DIAGRAM "A" GROUP I AND SKEWED 15° RIGHT FORWARD
(NO BARREL JOINTS REQUIRED)
NOTE : LSK = 1.03528(L) FOR 15° SKEW.

GENERAL NOTES:

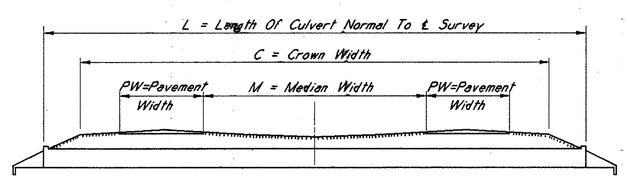
This Drawing Shows The Barrel Joint Locations For Box Culverts Constructed Normal To ℄ Of Roadway And General Details Necessary To Locate Joints For Culverts On 15, 30 And 45° Skews.
The Diagrams On This Sheet Show Joint Locations For Culverts Under Variable Amounts Of Cover, Crown Width And Side Slopes.
Barrel Joints Shall Not 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 IV, 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.

✳NOTE: GROUP I ~ 2 Or 3 - 10 Ft. Thru 12 Ft. Traffic Lanes
Or 2 - 12 Ft. (PRESENT) & 1 - 12 Ft. (FUTURE) Traffic Lanes

GROUP IV DIAGRAMS
TYPICAL DIAGRAMS FOR SKEWED CULVERTS

APPLICATION OF DIAGRAMS:
The Following Diagrams Show The General Application Of JOINT LOCATION DIAGRAMS IN Groups I, II & III To Skewed Culverts
Location Of Barrel Joints For Skewed Culverts Is Determined As Follows:

1. With LSK(Length Of Skewed Culvert Along ℄ Barrel) Given And Number Of Joints And Length Of Barrel Sections Required, MULTIPLY LSK By The COSINE Of The SKEW ANGLE θ To Obtain L (Length Of Culvert Normal To ℄ Roadway).
2. Enter Group I, II Or III (Determined By Roadway Cross Section) With L To Determine The Number Of Joints And Length Of Each Barrel Section For A Culvert Constructed Normal To ℄ Roadway.
3. DIVIDE Each Length Of Section By The COSINE Of The SKEW ANGLE θ To Determine The Length Of Each Barrel Section Along ℄ Barrel.
4. Place The Barrel Joints (Type Per Basic Dwg.) At These Locations. If The Length Of Any Section Exceeds 70 Ft. And A Construction Joint Is Desired (To Reduce Yardage Of Pour) Place A Construction Joint In Center Of Section.



SIDE ELEVATION OF CULVERTS CONSTRUCTED NORMAL TO ℄ SURVEY

Showing Variable For Diagrams In Group I.

REVISIONS	BY	MISSISSIPPI DEPARTMENT OF TRANSPORTATION BASIC CULVERT DRAWING BARREL JOINT LOCATIONS NORMAL AND SKEWED CULVERTS GROUP I DIAGRAMS ✳		WORKING NUMBER IBJL-1
DATE	DESIGNED NA DETAILED ALT	CHECKED BJJ DATE 07-11-97	ISSUED TMT DATE 08-01-97	SHEET NUMBER 7001

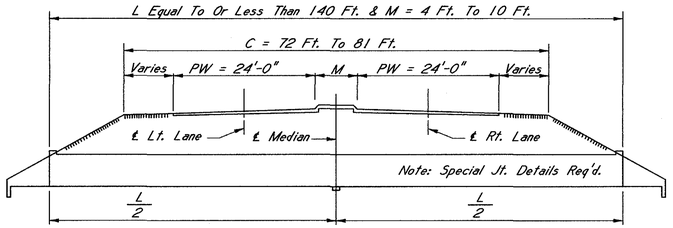


DIAGRAM "A" ~ DRAWN FOR L = 100 Ft. & M = 6 Ft.

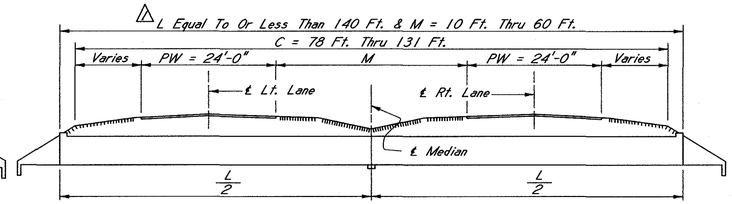


DIAGRAM "B" ~ DRAWN FOR L = 110 Ft. & M = 35 Ft.

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

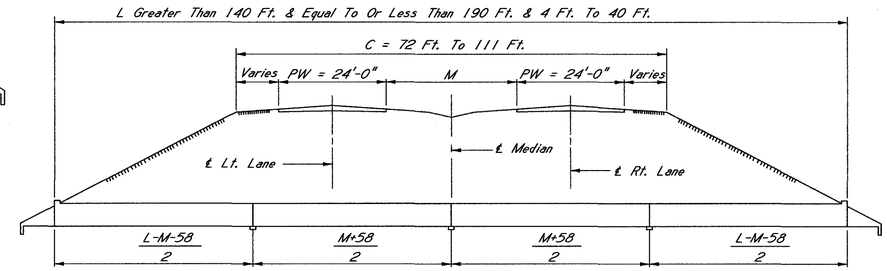


DIAGRAM "C" ~ DRAWN FOR L = 165 Ft. & M = 22 Ft.

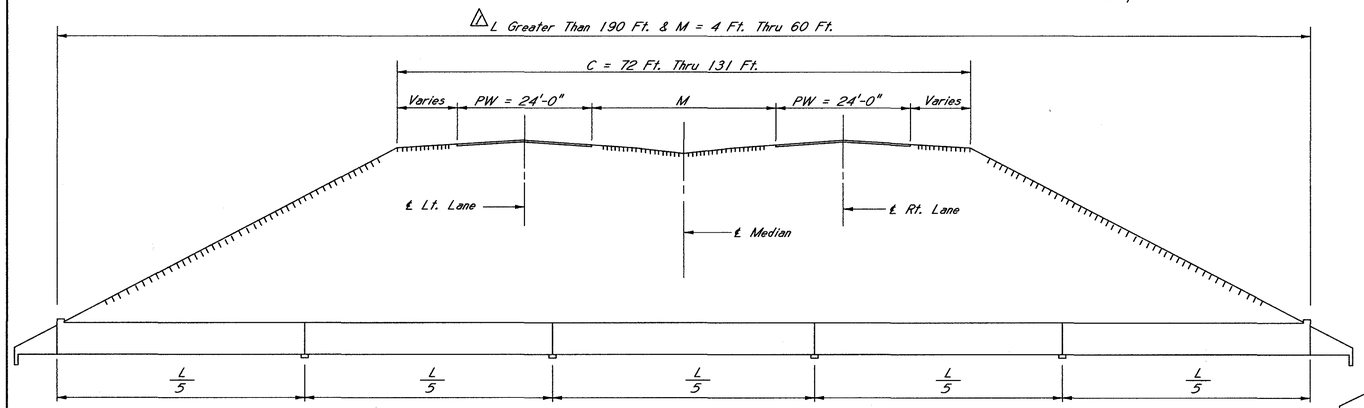


DIAGRAM "E" ~ DRAWN FOR L = 220 Ft. & M = 32 Ft.

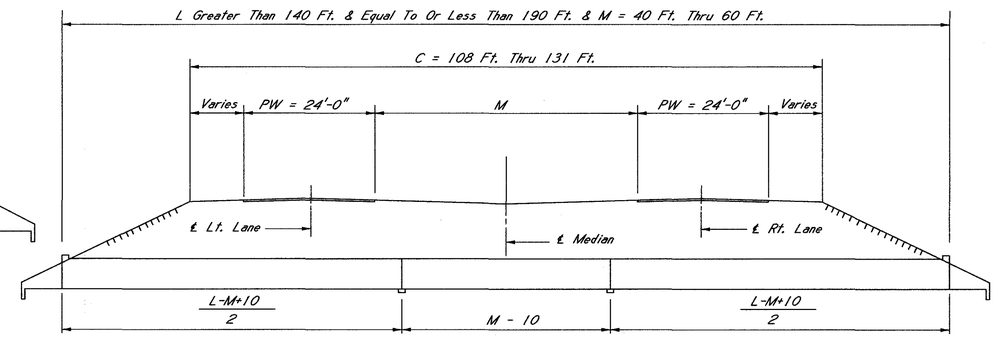


DIAGRAM "D" ~ DRAWN FOR L = 165 Ft. & M = 50 Ft.

SIDE ELEVATION OF CULVERTS CONSTRUCTED NORMAL TO ℄ ROADWAY

Showing Barrel Joint And Auxiliary Slabs "J".

NOTE: For GROUP IV DIAGRAM Application Notes, See Sheet No. 366.1.

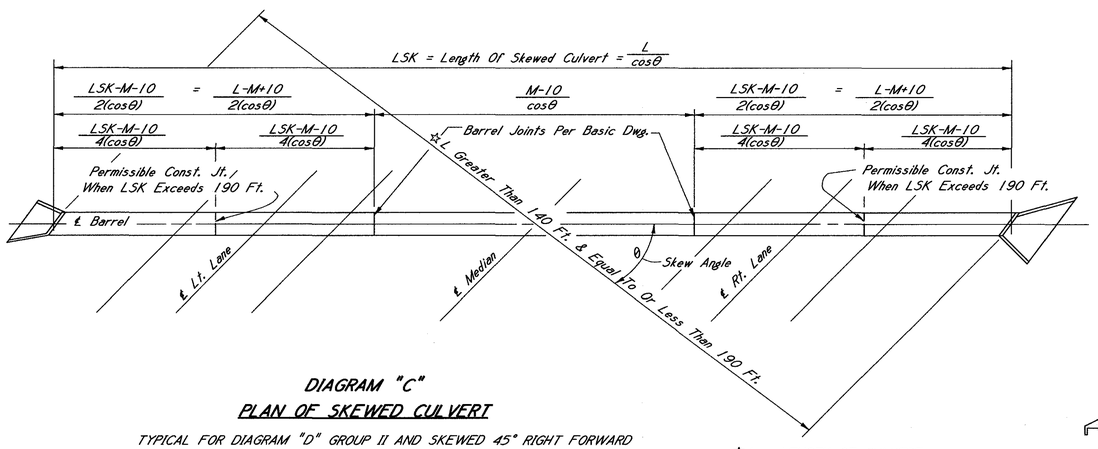


DIAGRAM "C"

PLAN OF SKEWED CULVERT

TYPICAL FOR DIAGRAM "D" GROUP II AND SKEWED 45° RIGHT FORWARD (TWO BARREL JOINTS REQUIRED)

NOTE : LSK = 1.41421(L) FOR 45° SKEW.

☆L = LENGTH OF CULVERT NORMAL TO ℄ ROADWAY

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 Not Be Of Type Per Basic Drawing And Shall Be Placed Only At Locations Shown Unless Otherwise Stated.

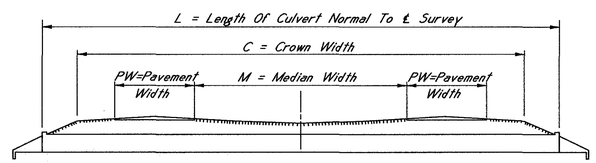
Joints Shall Not Be Located Closer Than 5 Ft. Outside Pavement For Cover Of 8 Ft. Or Less Except In Cases Where Median Is Less Than 10 Ft. Where Cover Is 8 Ft. Or Less And A Joint Occurs Within The Limits Of 5 Ft. Beyond Each Edge Of Pavement, Use Complete Collar At Joints Per Drawing ICJ-1 Or ICJS-1.

Where Cover Exceeds 8 Ft., Joints May Be Located Without Regard To Pavement Edge.

Construction Joints Per Group IV, 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.

*** NOTE:** GROUP II ~ 4 - 12 Ft. Traffic Lanes 4 Ft. Thru 60 Ft. Medians.



SIDE ELEVATION OF CULVERTS CONSTRUCTED NORMAL TO ℄ SURVEY

Showing Variable For Diagrams In Group II.

△ 07/17/98 DATE	Revised Diagrams "B" & "E" REVISIONS	BY BJJ	

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BASIC CULVERT DRAWING

BARREL JOINT LOCATIONS

NORMAL AND SKEWED CULVERTS

GROUP II DIAGRAMS *

DESIGNED NA	CHECKED BJJ	ISSUED TMT	WORKING NUMBER IBJL-1
DETAILED ALT	DATE 07-11-97	DATE 08-01-97	SHEET NUMBER 7002

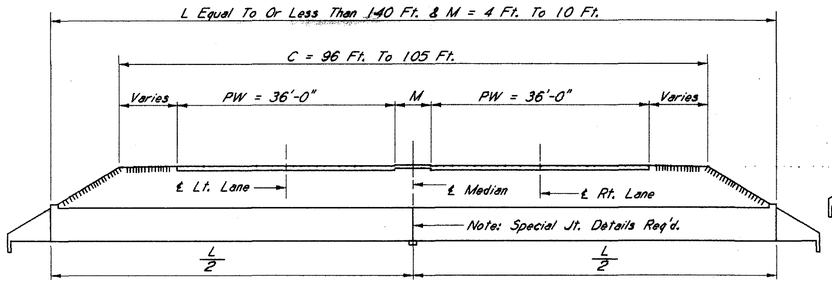


DIAGRAM "A" ~ DRAWN FOR L = 124 Ft. & M = 6 Ft.

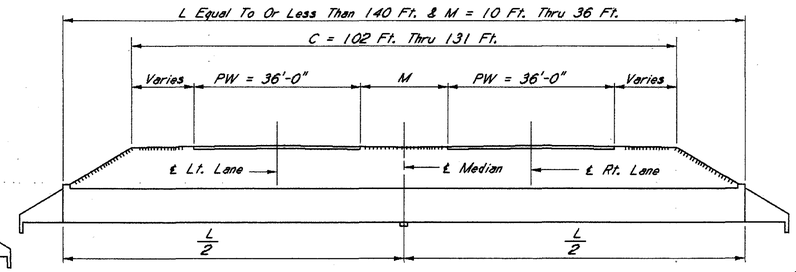


DIAGRAM "B" ~ DRAWN FOR L = 134 Ft. & M = 23 Ft.

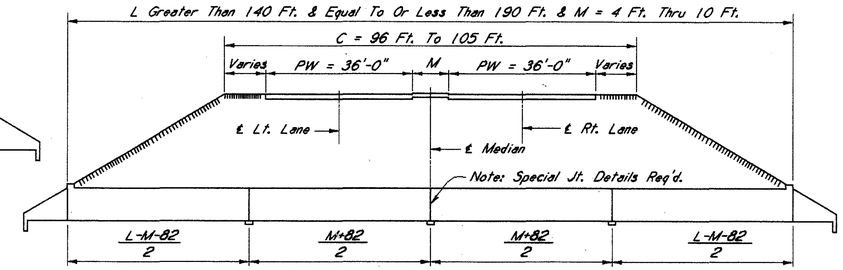


DIAGRAM "C" ~ DRAWN FOR L = 165 Ft. & M = 6 Ft.

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

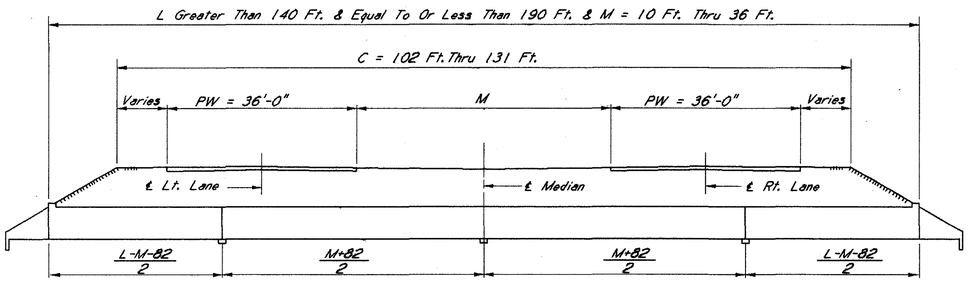


DIAGRAM "D" ~ DRAWN FOR L = 165 Ft. & M = 23 Ft.

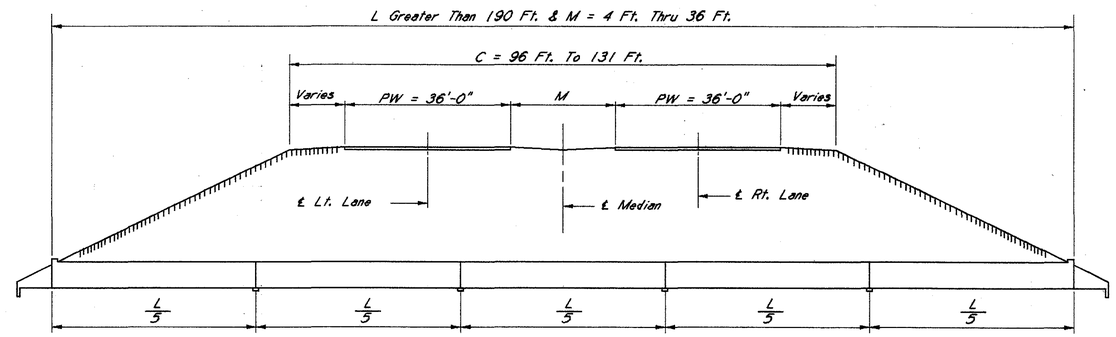


DIAGRAM "E" ~ DRAWN FOR L = 220 Ft. & M = 20 Ft.

SIDE ELEVATION OF CULVERTS CONSTRUCTED NORMAL TO ℄ ROADWAY

Showing Barrel Joint And Auxiliary Slabs "J".

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 Not 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 IV, 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.

NOTE: For GROUP IV DIAGRAM Application Notes, See Sheet No. 366.1.

*NOTE: GROUP III ~ 6 - 12 Ft. Traffic Lanes ~ 4 Ft. Thru 36 Ft. Medians Or 4 - 12 Ft. (PRESENT) & 2 - 12 Ft. (FUTURE) Traffic Lanes With 28 Ft. Thru 60 Ft. Medians.

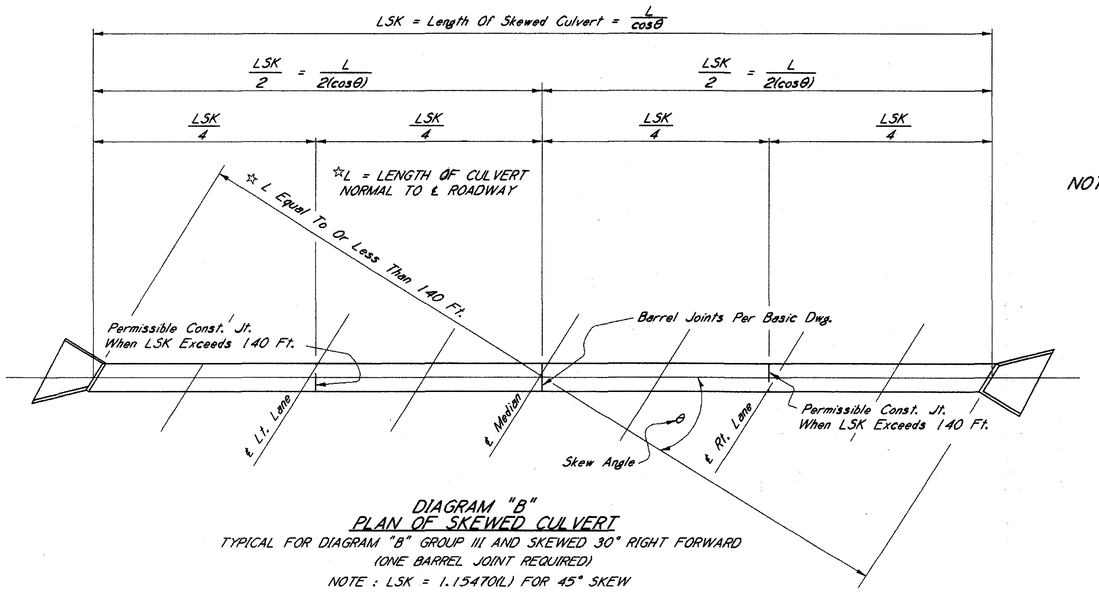
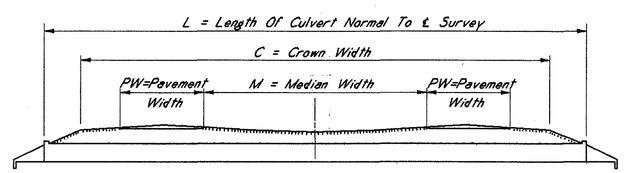


DIAGRAM "B"
PLAN OF SKEWED CULVERT

TYPICAL FOR DIAGRAM "B" GROUP III AND SKEWED 30° RIGHT FORWARD (ONE BARREL JOINT REQUIRED)
NOTE : LSK = 1.1547O(L) FOR 45° SKEW



SIDE ELEVATION OF CULVERTS CONSTRUCTED NORMAL TO ℄ SURVEY

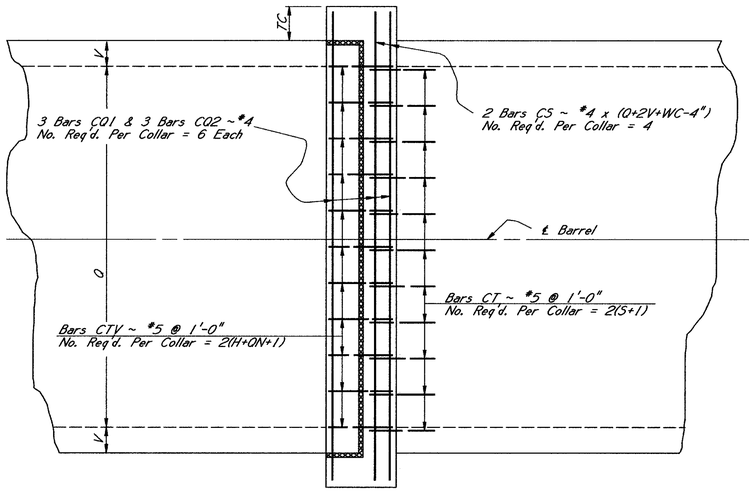
Showing Variable For Diagrams In Group III.

REVISIONS	BY

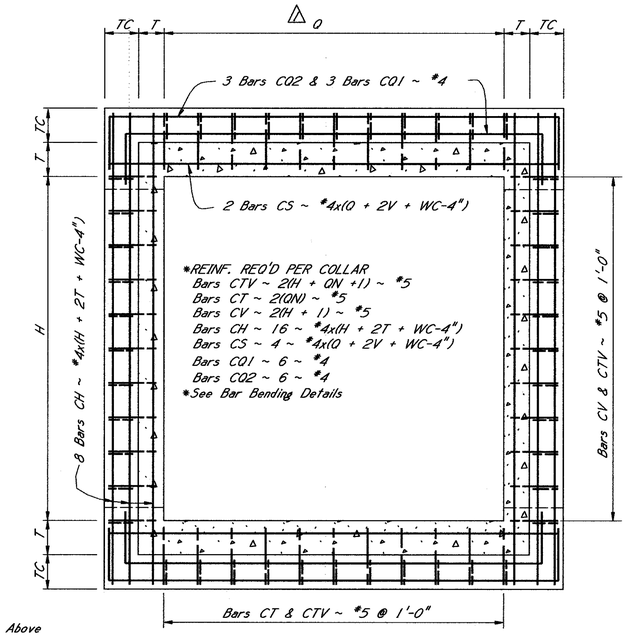
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BASIC CULVERT DRAWING
BARREL JOINT LOCATIONS
NORMAL AND SKEWED CULVERTS
GROUP III DIAGRAMS *

DATE	DESIGNED NA	CHECKED BJJ	ISSUED TMT
	DETAILED ALT	DATE 07-11-97	DATE 08-01-97

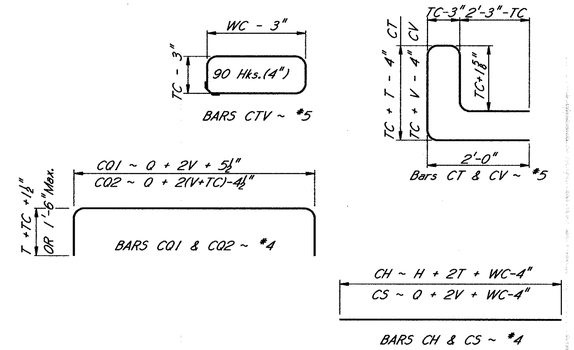
WORKING NUMBER IBJL-1
SHEET NUMBER 7003



PLAN OF COLLAR



SECTION A-A



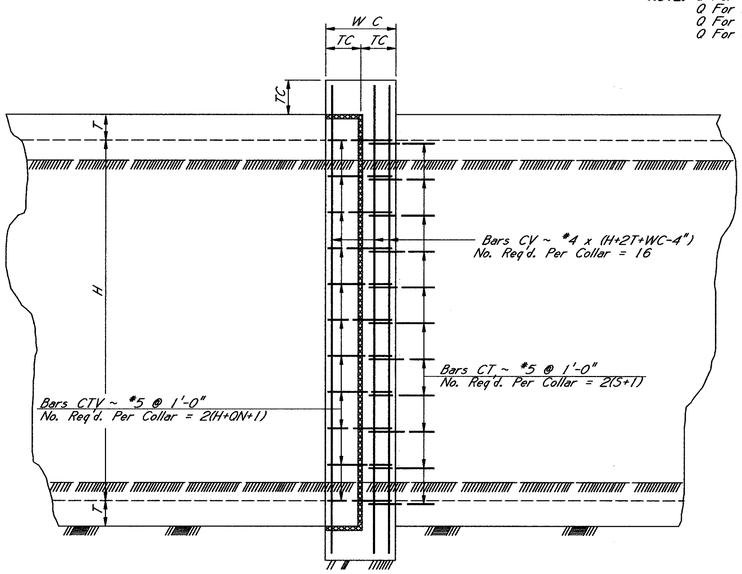
BAR BENDING DETAILS

NOTE: See * Below

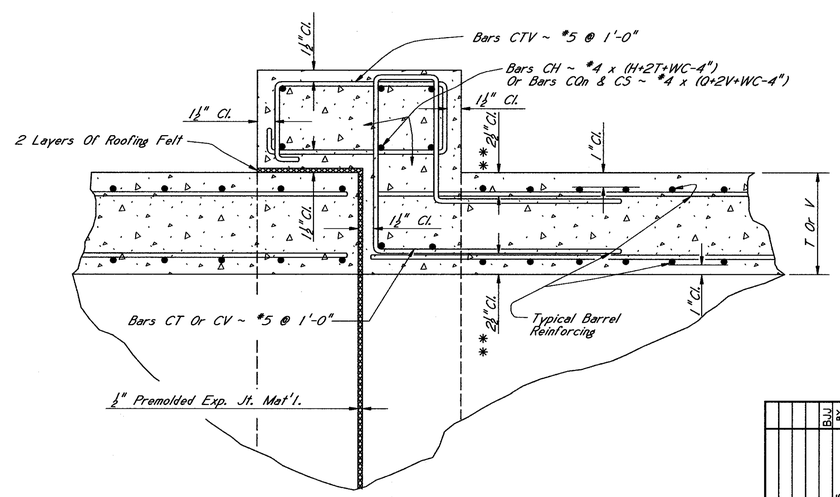
NOTE: For H = 6 Ft.
TC = 9"
WC = 1'-6"

For H = 8 Ft. & Above
TC = 1'-0"
WC = 2'-0"

NOTE: O For Single Cell Box = S (Clear Span) , ON = S+1
O For Double Cell Box = 2S + V, ON = 2(S+1)
O For Triple Cell Box = 3S + 2V, ON=3(S+1)
O For Quadruple Cell Box = 4S + 3V, ON = 4(S+1)



ELEVATION OF COLLAR



** **NOTE:** 2¼" Cl. Based On 1" Cl. For Typ. Barrel Reinf.
This Cl. Shall Be Adjusted For Cl. Other Than 1".

TYPICAL SECTION OF COLLAR

GENERAL NOTES:

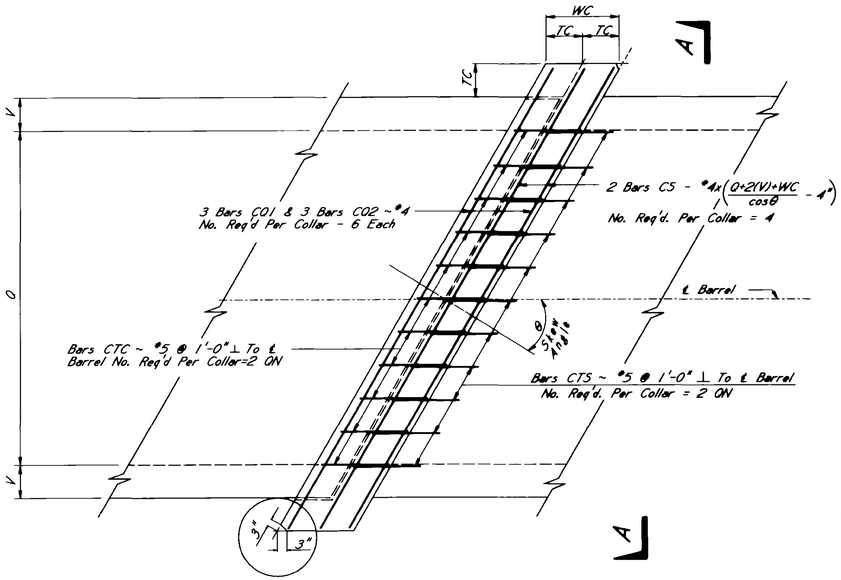
This Drawing Shows The Details Necessary To Construct A Complete Collar Around Barrel At Expansion Joints For Single, Double, Triple And Quadruple Cell Box Structures.
All Details And Requirements Not Shown Hereon Shall Be As Per Specific Drawings Or Sheets As Listed In The Plan Assembly.
This Drawing Is Detailed For A Single Cell Box Structure, And Multi-Cell Box Structures Shall Be Treated Similarly As Shown.

DATE	REVISIONS	BY
07/17/98	Changed H To O	BJJ

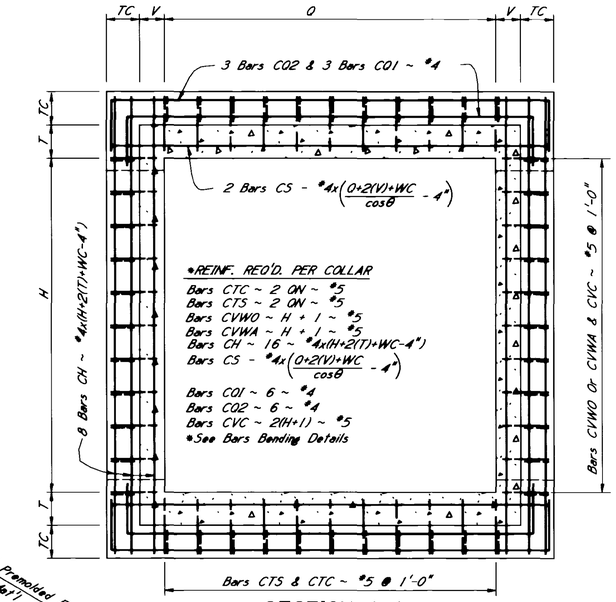
MISSISSIPPI DEPARTMENT OF TRANSPORTATION

COLLAR DETAILS
FOR BOX STRUCTURES
(SINGLE,DOUBLE,TRIPLE & QUADRUPLE)

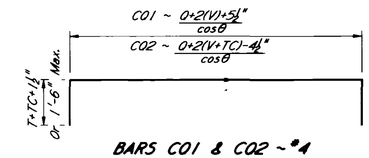
DESIGNED NA	CHECKED BJJ	ISSUED TMT	WORKING NUMBER ICJ-1
DETAILED ALT	DATE 07-11-97	DATE 08-01-97	SHEET NUMBER 7004



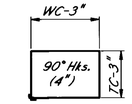
PLAN OF COLLAR



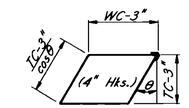
SECTION A-A



BARS CO1 & CO2 ~ #4



BARS CTC ~ #5

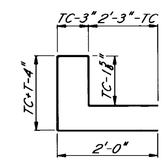


BARS CVC ~ #5

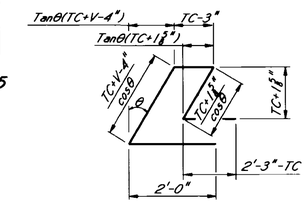
CH ~ H+2(T)+WC-4"

CS ~ O+2(V)+WC / cosθ -4"

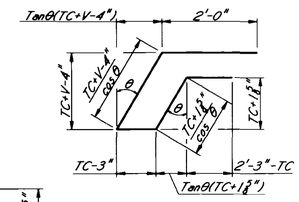
BARS CS & CH ~ #4



BARS CTS ~ #5



BARS CVWA ~ #5

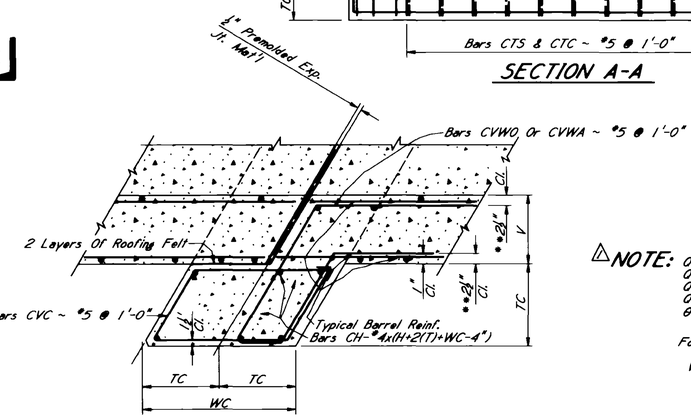


BARS CVWO ~ #5

NOTE: See * Below

BAR BENDING DETAILS

Dimensions Are Out To Out

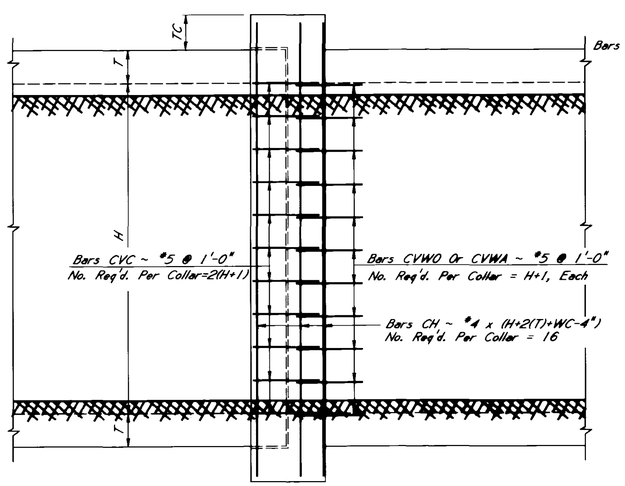


TYPICAL SECTION OF COLLAR AT WALL

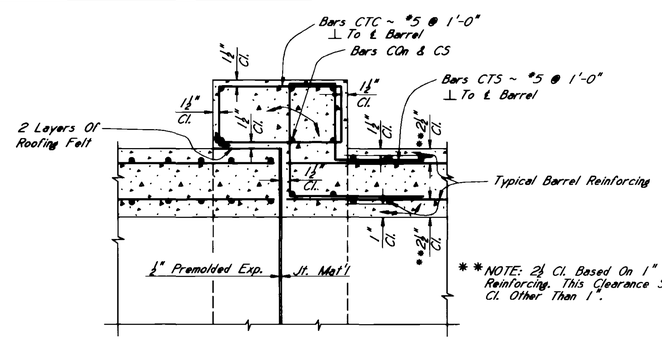
△NOTE: O For Single Cell Box = S (Clear Span), ON = S+1
O For Double Cell Box = 2(S) + V, ON = 2(S+1)
O For Triple Cell Box = 3(S) + 2(V), ON=3(S+1)
O For Quadruple Cell Box = 4(S) + 3(V), ON = 4(S+1)
θ = Skew Angle

For H = 6 Ft.
TC = 9"
WC = 1'-6"

For H = 8 Ft. & Above
TC = 1'-0"
WC = 2'-0"



ELEVATION OF COLLAR



** NOTE: 2½ Cl. Based On 1" Cl. For Typical Barrel Reinforcing. This Clearance Shall Be Adjusted For Cl. Other Than 1".

TYPICAL SECTION OF COLLAR - TOP & BOTTOM

GENERAL NOTES:

This Drawing Shows The Details Necessary To Construct A Complete Collar Around Barrel At Expansion Joints For Single, Double, Triple And Quadruple Cell Box Structures.
All Details And Requirements Not Shown Hereon Shall Be As Per Specific Drawings Or Sheets As Listed In The Plan Assembly.
This Drawing Is Detailed For A Single Cell Box Structure, And Multi-Cell Box Structures Shall Be Treated Similarly As Shown.

DATE	REVISIONS	BY
12/14/00	Revised Note	BJJ

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

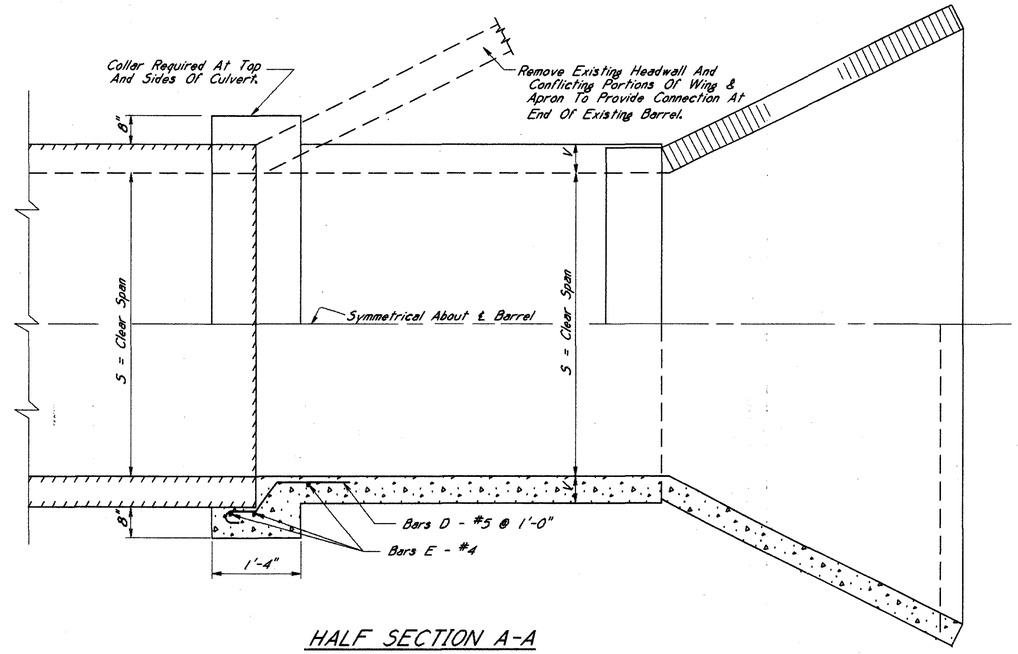
SKEWED COLLAR DETAILS

FOR BOX STRUCTURES

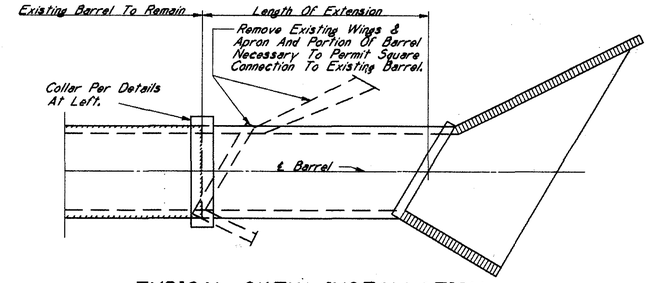
(SINGLE, DOUBLE, TRIPLE & QUADRUPLE)

DESIGNED NA	CHECKED BJJ	ISSUED TMT	WORKING NUMBER ICJS-1
DETAILED ALT	DATE 07-11-97	DATE 08-01-97	SHEET NUMBER 7005

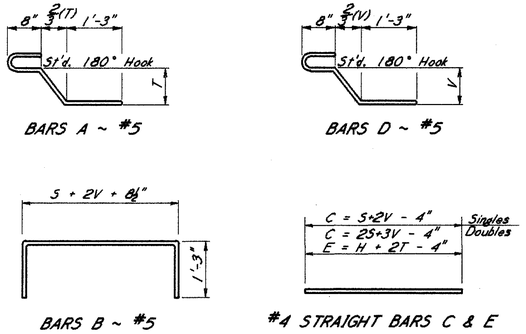
HALF TOP PLAN



HALF SECTION A-A

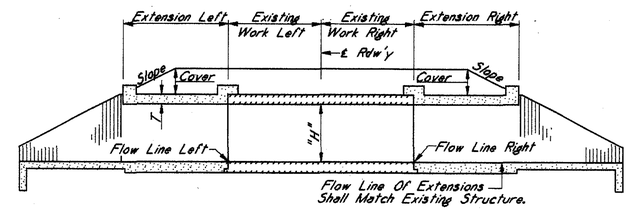


TYPICAL SKEW INSTALLATION

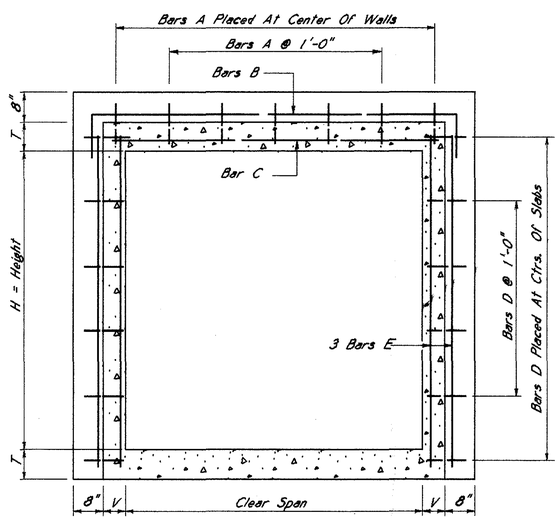


BAR BENDING DETAILS

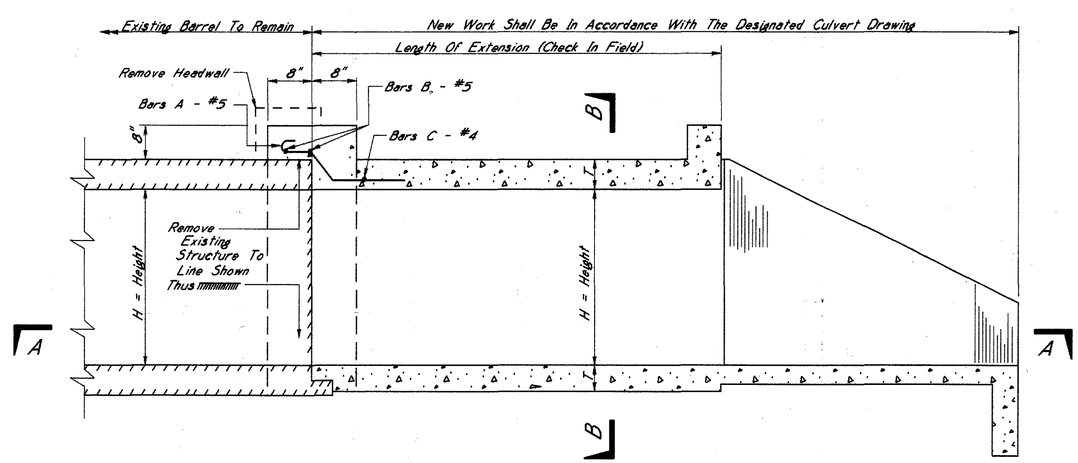
Dimensions Are Out To Out.



TYPICAL LONGITUDINAL SECTION



SECTION B-B



LONGITUDINAL SECTION

GENERAL NOTES:

This Drawing Is Supplementary To Basic Culvert Drawings Of The 185 And 180 Series And All Typical Details And General Notes Shown Thereon Shall Apply.

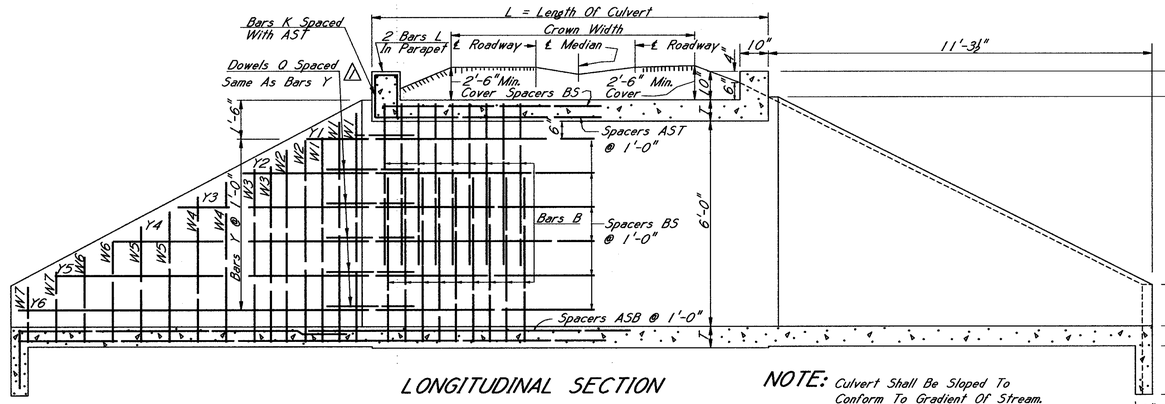
The Length Of Extensions For Each End Of The Culvert Shall Be Checked In The Field By The Project Engineer Before The Reinforcing Steel Is Ordered.

Bar List Of Reinforcing Steel Shall Be Submitted To The Project Engineer Prior To Fabrication. Placing Plan Shall Be Furnished When Extensions Are Skewed.

When The Length Of The Extension Is Less Than 10 Ft, The Vertical Construction Joints At The Junction Of The Barrel And Wings Shown On The Basic Culvert Drawings For Culvert Heights Of 8 Ft And Greater Shall Be Omitted.

This Drawing Is Detailed For A Single Cell Culvert And Double Cell Structure Shall Be Treated Similarly.

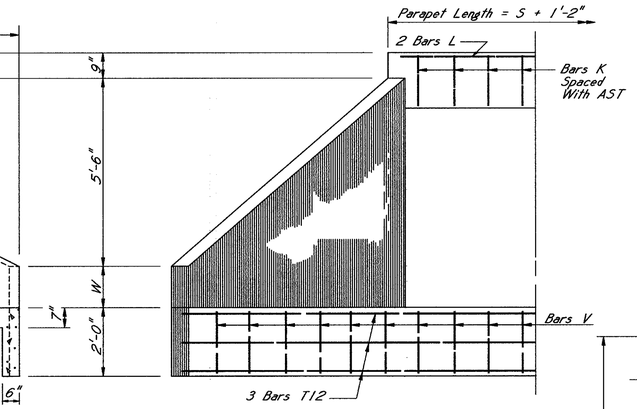
REVISIONS	BY	MISSISSIPPI DEPARTMENT OF TRANSPORTATION CULVERT DRAWING EXTENSION DETAILS FOR LENGTHENING EXISTING BOX CULVERTS
DATE	DESIGNED NA / DETAILED ALT	CHECKED BJJ / DATE 07-11-97
	ISSUED TMT / DATE 08-01-97	WORKING NUMBER ICX-1 / SHEET NUMBER 7006



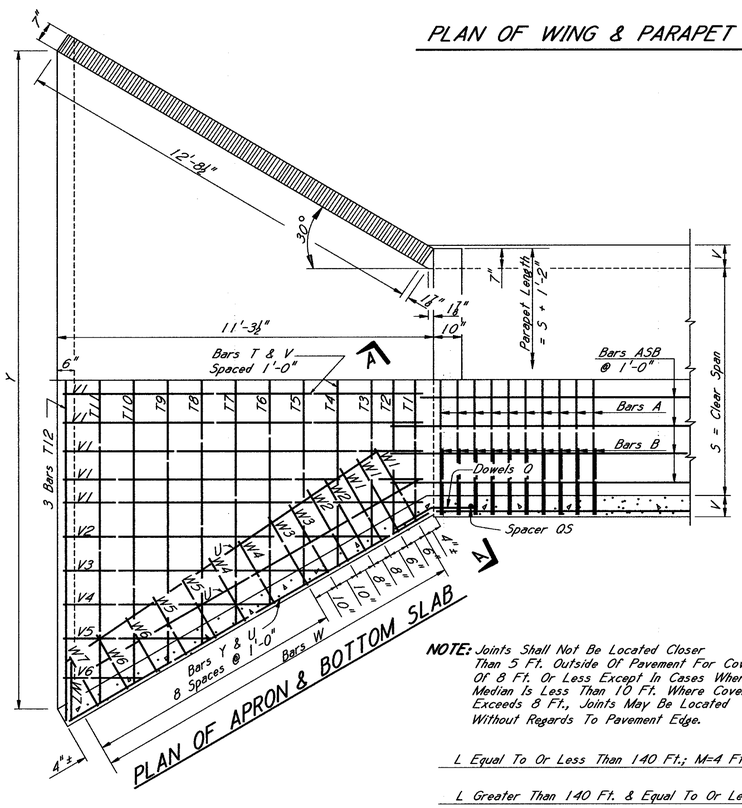
LONGITUDINAL SECTION

PLAN OF WING & PARAPET

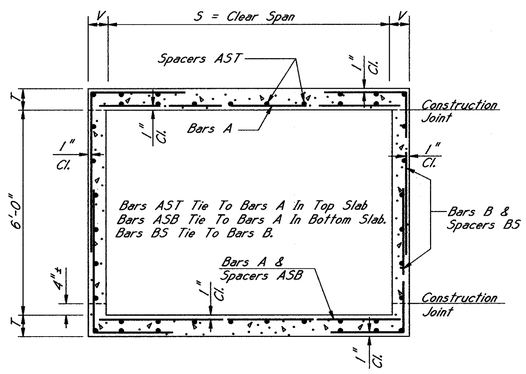
NOTE: Culvert Shall Be Sloped To Conform To Gradient Of Stream.



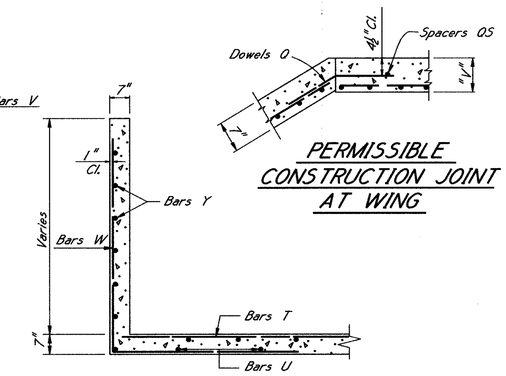
HALF END ELEVATION



PLAN OF APRON & BOTTOM SLAB



CROSS SECTION



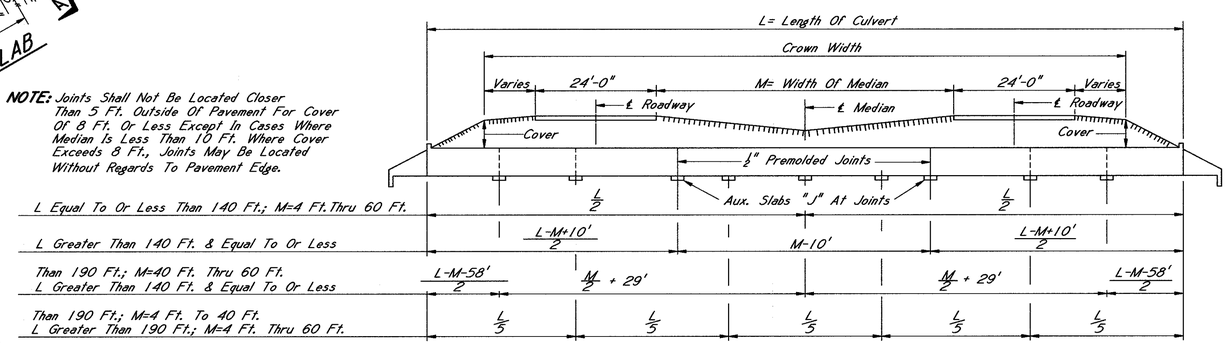
PERMISSIBLE CONSTRUCTION JOINT AT WING

SECTION A-A

CULVERT DIMENSIONS						ESTIMATED QUANTITIES					
						CULVERT (L= 150 FT.)		PER LIN. FT. BARREL		1 AUX. SLAB "J"	
CLEAR SPAN	MAX. COVER	T	V	W	Y	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.
6'	14'	7½"	7"	1'-2½"	18'-10¼"	101.85	14,258	0.5910	86.8	0.35	21
8'	10'	8½"	7½"	1'-3½"	20'-10¼"	129.16	18,948	0.7631	117.3	0.46	26
10'	8'	9½"	8"	1'-4½"	22'-10¼"	160.31	25,194	0.9609	158.1	0.56	32
12'	7'	10½"	8½"	1'-5½"	24'-10¼"	195.30	31,113	1.1844	196.9	0.66	38
14'	7'	1'-0"	9½"	1'-7"	26'-10¼"	245.12	39,315	1.5062	250.3	0.77	44
16'	6'	1'-1"	10"	1'-8"	28'-10¼"	288.88	45,780	1.7881	292.9	0.87	49
18'	6'	1'-2"	11½"	1'-9"	30'-10¼"	344.23	57,285	2.1471	368.7	0.98	55
20'	6'	1'-3"	1'-1"	1'-10"	32'-10¼"	403.75	67,670	2.5339	436.2	1.09	61

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 Per Drawing ICJ-1 Or ICJS-1.



SIDE ELEVATION OF CULVERT

Showing ½" Joints And Auxiliary Slabs "J"
Drawn for L = 150 Ft. & M = 60 Ft.

NOTE: See Drawing IBJL-1 For Additional Joint Locations.

DESIGN DATA:

Specifications. . . . A.A.S.H.O. 1969
Live Load. . . . . HS 20-44 Mod. For 2-24,000 lbs Axles
Unit Stresses. . . . fs=20,000 psi , fc= 1,200 psi , n=10.

DATE	REVISIONS	BY
07/17/98	Added Bar L	BJJ

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BASIC CULVERT DRAWING

SINGLE CELL

HEIGHT 6 FT.
SPANS 6-20 FT.

WORKING NUMBER IBS-6-2W

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED ALT | DATE 07-11-97 | DATE 08-01-97

SHEET NUMBER 7007

\bjjbas\culvert\english\370.dgn

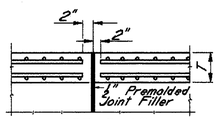
BAR LIST FOR BARREL (L= 150 FT.) PARAPETS & 2 AUXILIARY SLABS "J"

CLEAR SPAN	BARS "A"				BARS "B"				DOWELS "Q" ~ #4		SPACERS "QS" ~ #4		SETS OF BARS "AST" #4@		SETS OF BARS "ASB" #4@		SETS OF BARS "BS" #4@		BARS "K" #4		BARS "L" #4		BARS "M" #4		BARS "N" #4	
	NO.	SIZE	SPAC.	LGTH.	NO.	SIZE	SPAC.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.
6'	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"	16	2'-2"
8'	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"	20	2'-2"
10'	576	#6	6½"	11'-1"	1152	#5	6½"	7'-9"	24	2'-6"	4	5'-7"	10	152'-9"	10	155'-7"	28	152'-9"	20	4'-5"	4	10'-10"	4	11'-0"	24	2'-2"
12'	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	13'-1"	28	2'-2"
14'	534	#7	6½"	15'-4"	1068	#6	6½"	9'-3"	24	2'-6"	4	5'-7"	14	152'-9"	14	155'-7"	32	152'-9"	28	4'-10"	4	14'-10"	4	15'-3"	32	2'-2"
16'	576	#7	6½"	17'-5"	1152	#6	6½"	9'-10"	24	2'-6"	4	5'-7"	16	152'-9"	16	155'-7"	32	152'-9"	32	5'-0"	4	16'-10"	4	17'-4"	36	2'-2"
18'	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'-2"	4	18'-10"	4	19'-7"	40	2'-2"
20'	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	2'-2"

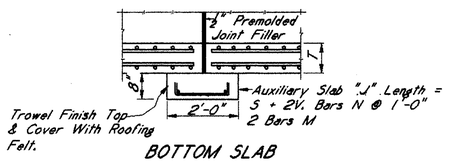
@ NOTE: The Number And Length Of Bars Are Listed For Sets Of Bars Composed Of Sections As Shown In Bar Bending Details See Elevation Of Culvert For Number Of Sections.

BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 6'	8'	10'	12'	14'	16'	18'	20'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2	2	2	2			S+1'-0"
T2	#4	2	2	2	2	2	2	2	2			S+1'-7"
T3	#4	2	2	2	2	2	2	2	2			S+2'-9"
T4	#4	2	2	2	2	2	2	2	2			S+3'-11"
T5	#4	2	2	2	2	2	2	2	2			S+5'-1"
T6	#4	2	2	2	2	2	2	2	2			S+6'-3"
T7	#4	2	2	2	2	2	2	2	2			S+7'-5"
T8	#4	2	2	2	2	2	2	2	2			S+8'-7"
T9	#4	2	2	2	2	2	2	2	2			S+9'-9"
T10	#4	2	2	2	2	2	2	2	2			S+10'-11"
T11	#4	2	2	2	2	2	2	2	2			S+12'-1"
T12	#4	6	6	6	6	6	6	6	6			S+13'-3"
U	#4	12	12	12	12	12	12	12	12			12'-5"
V1	#4	16	20	24	28	32	36	40	44	11'-0"	1'-8"	12'-8"
V2	#4	4	4	4	4	4	4	4	4	9'-1"	1'-8"	10'-9"
V3	#4	4	4	4	4	4	4	4	4	7'-4"	1'-8"	9'-0"
V4	#4	4	4	4	4	4	4	4	4	5'-7"	1'-8"	7'-3"
V5	#4	4	4	4	4	4	4	4	4	3'-10"	1'-8"	5'-6"
V6	#4	4	4	4	4	4	4	4	4	2'-1"	1'-8"	3'-9"
W1	#4	12	12	12	12	12	12	12	12	4'-0"	W+5'-2"	W+9'-2"
W2	#4	8	8	8	8	8	8	8	8	3'-8"	W+4'-7"	W+8'-3"
W3	#4	8	8	8	8	8	8	8	8	3'-4"	W+3'-11"	W+7'-3"
W4	#4	8	8	8	8	8	8	8	8	3'-0"	W+3'-0"	W+6'-0"
W5	#4	8	8	8	8	8	8	8	8	2'-8"	W+2'-2"	W+4'-10"
W6	#4	8	8	8	8	8	8	8	8	2'-4"	W+1'-4"	W+3'-8"
W7	#4	8	8	8	8	8	8	8	8	2'-0"	W+6"	W+2'-6"
Y1	#4	4	4	4	4	4	4	4	4			2'-11"
Y2	#4	4	4	4	4	4	4	4	4			5'-3"
Y3	#4	4	4	4	4	4	4	4	4			7'-7"
Y4	#4	4	4	4	4	4	4	4	4			9'-10"
Y5	#4	4	4	4	4	4	4	4	4			12'-2"
Y6	#4	4	4	4	4	4	4	4	4			12'-5"

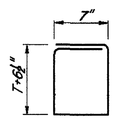


TOP SLAB
SIDE WALLS SIMILAR

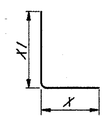


BOTTOM SLAB

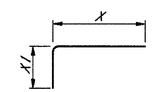
DETAILS OF BARREL JOINT & AUXILIARY SLAB "J"



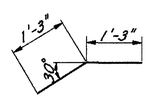
BARS K - #4



BARS W - #4

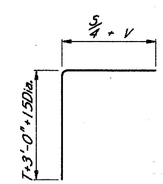


BARS V - #4

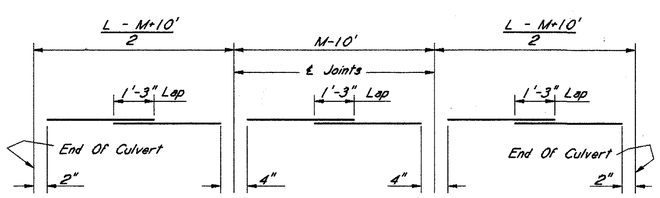


DOWELS Q ~ #4

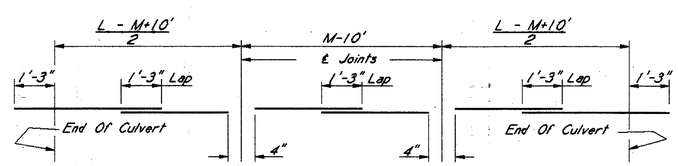
BARS N - #4



BARS B



ONE SET OF BARS AST & BS ~ #4



ONE SET OF BARS ASB ~ #4

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.

BAR BENDING DETAILS

Dimensions Are Out To Out.

GENERAL NOTES:

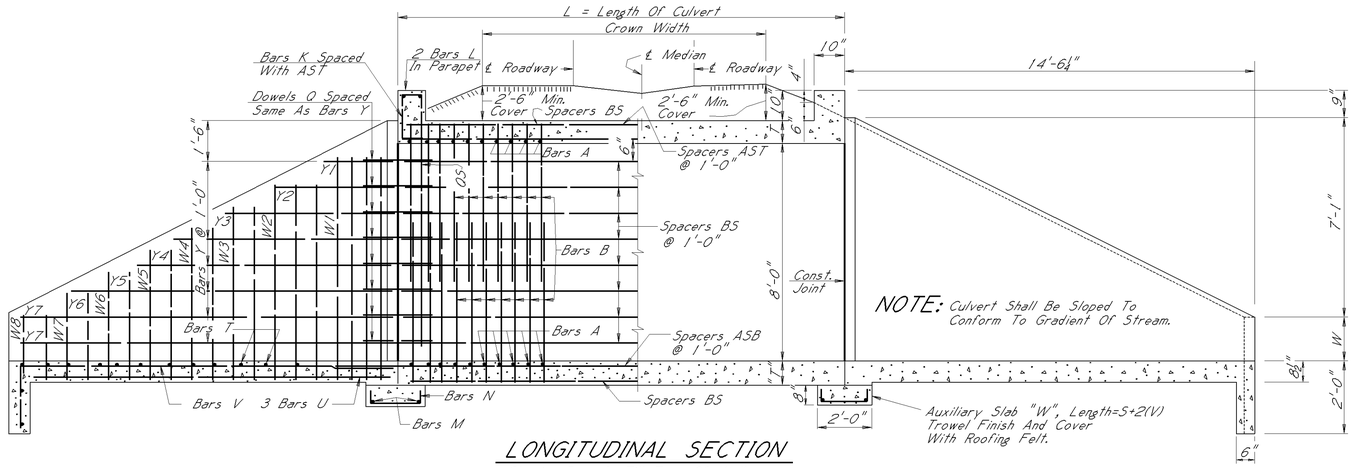
Specifications: Mississippi Standard Specifications For Road And Bridge Construction, 1990.
All Concrete Shall Be Class "B".
Concrete Surfaces Shall Be Finished In Accordance With Sub-Section 804.03.19.
Expansion Joint Material Shall Be Bituminous Fiber Type Unless Otherwise Noted.
All Exposed Corners Shall Be Chamfered ¾".
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 Two Hours Before Continuing The Pour.
The Quantities Shown Will Be Used As A Basis For Final Payment Unless This Drawing Is Modified.

REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BASIC CULVERT DRAWING
SINGLE CELL
HEIGHT 6 FT.
SPANS 6-20 FT.

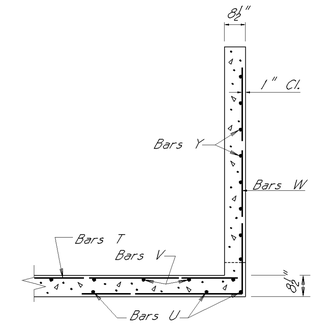
DESIGNED NA CHECKED BJJ ISSUED TMT
DETAILED ALT DATE 07-11-97 DATE 08-01-97

WORKING NUMBER IBS-6-2W
SHEET NUMBER 7008

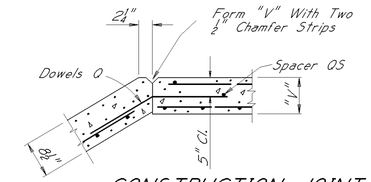


LONGITUDINAL SECTION

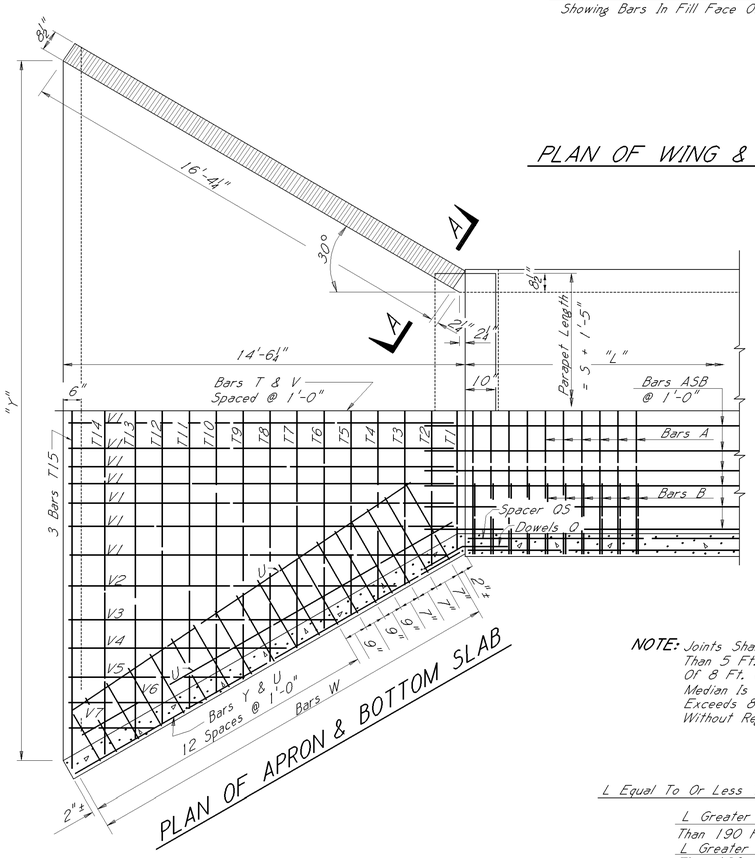
Showing Bars In Fill Face Of Wall



SECTION A-A

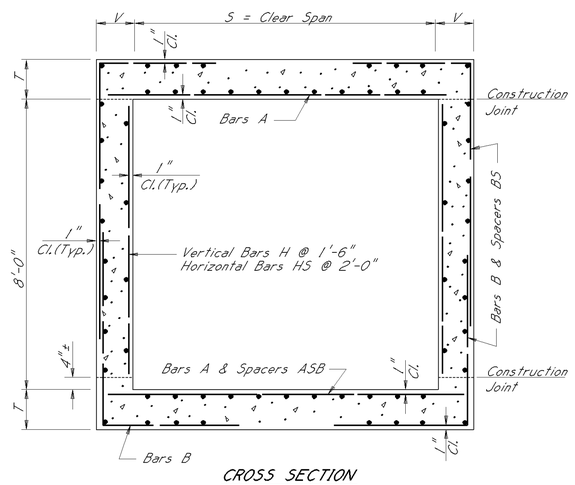


CONSTRUCTION JOINT AT WING



PLAN OF WING & PARAPET

PLAN OF APRON & BOTTOM SLAB

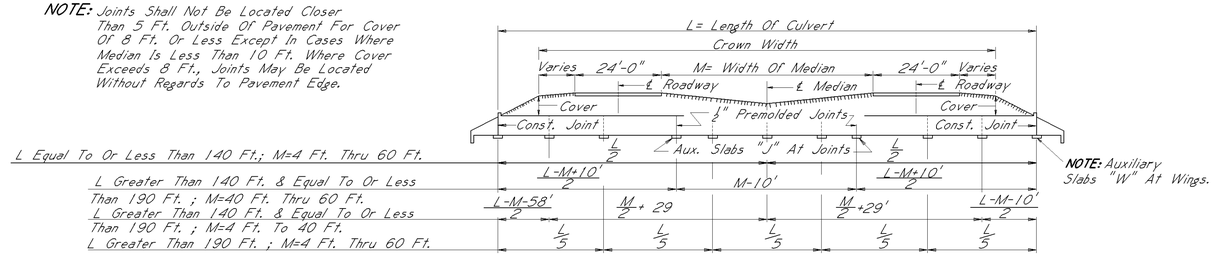


CROSS SECTION

Bars AST Tie To Bars A In Top Slab.
Bars ASB Tie To Bars A In Bottom Slab.
Bars BS Tie To Bars B.

CULVERT DIMENSIONS						ESTIMATED QUANTITIES CULVERT(L=150 FT.)		PER LIN. FT. BARREL		1 AUX. SLAB "J"	
CLEAR SPAN	MAX. COVER	T	V	W	Y	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.
8'	11'	9"	8"	1'-9"	24'-6¼"	163.41	25,289	0.9136	154.8	0.46	27
10'	7'	9½"	8½"	1'-9½"	26'-6¼"	191.99	28,639	1.0892	176.2	0.56	32
12'	6'	10½"	9"	1'-10½"	28'-6¼"	228.90	33,580	1.3194	207.7	0.67	38
14'	6'	1'-0"	10"	2'-0"	30'-6¼"	281.66	41,042	1.6543	256.9	0.77	44
16'	6'	1'-1"	11"	2'-1"	32'-6¼"	332.12	50,954	1.9743	321.5	0.88	49
18'	6'	1'-2"	1'-0"	2'-2"	34'-6¼"	386.61	60,691	2.3210	385.3	0.99	55
20'	6'	1'-3"	1'-1"	2'-3"	36'-6½"	445.11	71,230	2.6944	454.1	1.09	61

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: Auxiliary Slabs "W" At Wings.

SIDE ELEVATION OF CULVERT

Showing ¾" Joints And Auxiliary Slabs "J" Drawn For L = 150 Ft. & M = 60 Ft.

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 Per Drawing 1CJ-1 Or 1CJS-1.

NOTE: See Drawing 1BJL-1 For Additional Joint Locations.

DESIGN DATA:

Specifications. . . . A.A.S.H.O. 1969
Live Load. . . . . .HS 20-44 Mod. For 2-24,000 lbs Axles
Unit Stresses. . . . fs=20,000 psi; fc= 1,200 psi; n=10.

DATE	REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BASIC CULVERT DRAWING

SINGLE CELL

HEIGHT 8 FT.

SPANS 8-20 FT.

WORKING NUMBER IBS-8-2W

DESIGNED NA CHECKED BJJ ISSUED TMT

DETAILED ALT DATE 07-11-97 DATE 08-01-97

SHEET NUMBER 7009

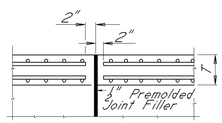
BAR LIST FOR BARREL (L= 150 FT.) PARAPETS & 4 AUXILIARY SLABS (2 "J's" & 2 "W's")

CLEAR SPAN	BARS "A"				BARS "B"				DOWELS "O" ~ #4		SPACERS "OS" ~ #4		SETS OF BARS "AST" #4 @		SETS OF BARS "ASB" #4 @		SETS OF BARS "BS" #4 @		BARS "H" #4		SETS OF BARS "HS" #4 @		BARS "K" #4		BARS "L" #4		BARS "M" #4		BARS "N" #4	
	NO.	SIZE	SPAC.	LGTH.	NO.	SIZE	SPAC.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.
8'	552	#6	6½"	9'-1"	1104	#5	6½"	8'-2"	32	2'-6"	4	7'-7"	8	152'-9"	8	155'-7"	28	152'-9"	204	7'-7"	8	152'-9"	16	4'-4"	4	9'-1"	8	9'-0"	40	2'-2"
10'	552	#6	6½"	11'-2"	1104	#5	6½"	8'-9"	32	2'-6"	4	7'-7"	10	152'-9"	10	155'-7"	32	152'-9"	204	7'-7"	8	152'-9"	20	4'-5"	4	11'-1"	8	11'-1"	48	2'-2"
12'	600	#6	6"	13'-3"	1200	#5	6"	9'-5"	32	2'-6"	4	7'-7"	12	152'-9"	12	155'-7"	32	152'-9"	204	7'-7"	8	152'-9"	24	4'-7"	4	13'-1"	8	13'-2"	56	2'-2"
14'	684	#6	5¼"	15'-5"	1368	#5	5¼"	10'-1"	32	2'-6"	4	7'-7"	14	152'-9"	14	155'-7"	36	152'-9"	204	7'-7"	8	152'-9"	28	4'-10"	4	15'-1"	8	15'-4"	64	2'-2"
16'	576	#7	6¼"	17'-7"	1152	#6	6¼"	10'-11"	32	2'-6"	4	7'-7"	16	152'-9"	16	155'-7"	36	152'-9"	204	7'-7"	8	152'-9"	32	5'-0"	4	17'-1"	8	17'-6"	72	2'-2"
18'	480	#7	7½"	19'-9"	960	#7	7½"	11'-9"	32	2'-6"	4	7'-7"	18	152'-9"	18	155'-7"	40	152'-9"	204	7'-7"	8	152'-9"	36	5'-2"	4	19'-1"	8	19'-8"	80	2'-2"
20'	534	#8	6¾"	21'-11"	1068	#7	6¾"	12'-5"	32	2'-6"	4	7'-7"	20	152'-9"	20	155'-7"	40	152'-9"	204	7'-7"	8	152'-9"	40	5'-4"	4	21'-1"	8	21'-10"	88	2'-2"

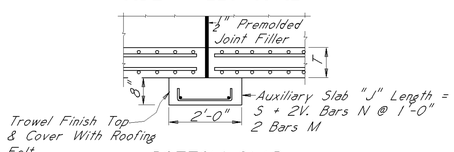
@ NOTE: The Number And Length Of Bars Are Listed For Sets Of Bars Composed Of Sections As Shown In Bar Bending Details See Elevation Of Culvert For Number Of Sections.

BAR LISTS FOR WINGS & APRONS

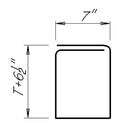
BAR	SIZE	NO. REQUIRED SPAN 8'	10'	12'	14'	16'	18'	20'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2	2	2			S+1'-0"
T2	#4	2	2	2	2	2	2	2			S+2'-2"
T3	#4	2	2	2	2	2	2	2			S+3'-4"
T4	#4	2	2	2	2	2	2	2			S+4'-6"
T5	#4	2	2	2	2	2	2	2			S+5'-8"
T6	#4	2	2	2	2	2	2	2			S+6'-10"
T7	#4	2	2	2	2	2	2	2			S+8'-0"
T8	#4	2	2	2	2	2	2	2			S+9'-2"
T9	#4	2	2	2	2	2	2	2			S+10'-4"
T10	#4	2	2	2	2	2	2	2			S+11'-6"
T11	#4	2	2	2	2	2	2	2			S+12'-8"
T12	#4	2	2	2	2	2	2	2			S+13'-10"
T13	#4	2	2	2	2	2	2	2			S+15'-0"
T14	#4	2	2	2	2	2	2	2			S+16'-2"
T15	#4	6	6	6	6	6	6	6			S+17'-0"
U	#4	12	12	12	12	12	12	12			16'-1"
V1	#4	20	24	28	32	36	40	44	14'-2"	1'-8"	15'-10"
V2	#4	4	4	4	4	4	4	4	12'-3"	1'-8"	13'-11"
V3	#4	4	4	4	4	4	4	4	10'-6"	1'-8"	12'-2"
V4	#4	4	4	4	4	4	4	4	8'-10"	1'-8"	10'-6"
V5	#4	4	4	4	4	4	4	4	7'-1"	1'-8"	8'-9"
V6	#4	4	4	4	4	4	4	4	5'-5"	1'-8"	7'-1"
V7	#4	4	4	4	4	4	4	4	3'-8"	1'-8"	5'-4"
W1	#5	16	16	16	16	16	16	16	4'-6"	W+6'-7"	W+11'-1"
W2	#5	12	12	12	12	12	12	12	4'-1"	W+5'-8"	W+9'-9"
W3	#5	8	8	8	8	8	8	8	3'-8"	W+4'-9"	W+8'-5"
W4	#4	8	8	8	8	8	8	8	3'-4"	W+3'-11"	W+7'-3"
W5	#4	8	8	8	8	8	8	8	3'-0"	W+3'-0"	W+6'-0"
W6	#4	8	8	8	8	8	8	8	2'-8"	W+2'-2"	W+4'-10"
W7	#4	8	8	8	8	8	8	8	2'-4"	W+1'-4"	W+3'-8"
W8	#4	8	8	8	8	8	8	8	2'-0"	W+6"	W+2'-6"
Y1	#4	4	4	4	4	4	4	4			2'-11"
Y2	#4	4	4	4	4	4	4	4			5'-3"
Y3	#4	4	4	4	4	4	4	4			7'-7"
Y4	#4	4	4	4	4	4	4	4			9'-10"
Y5	#4	4	4	4	4	4	4	4			12'-2"
Y6	#4	4	4	4	4	4	4	4			14'-5"
Y7	#4	8	8	8	8	8	8	8			16'-1"



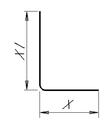
TOP SLAB
SIDE WALLS SIMILAR



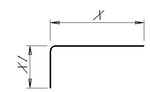
BOTTOM SLAB
DETAILS OF BARREL JOINT
& AUXILIARY SLAB "J"



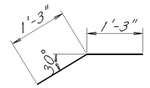
BARS K - #4



BARS W - #4

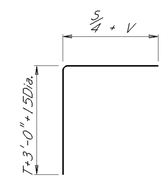


BARS V - #4



DOWELS O ~ #4

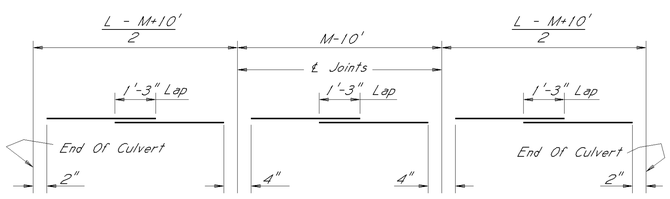
BARS N - #4



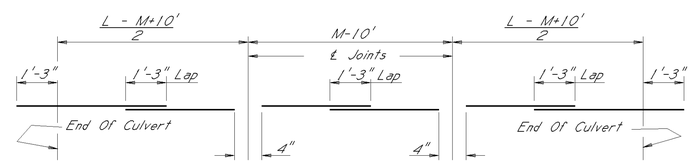
BARS B

GENERAL NOTES:

Specifications: Mississippi Standard Specifications For Road And Bridge Construction, 1990.
All Concrete Shall Be Class "B".
Concrete Surfaces Shall Be Finished In Accordance With Sub-Section 804.03.19.
Expansion Joint Material Shall Be Bituminous Fiber Type Unless Otherwise Noted.
All Exposed Corners Shall Be Chamfered ¾".
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 Two Hours Before Continuing The Pour.
Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Shall Be Placed In All Culverts Regardless Of Length.
The Quantities Shown Will Be Used As A Basis For Final Payment Unless This Drawing Is Modified.



ONE SET OF BARS AST & BS ~ #4



ONE SET OF BARS ASB ~ #4

BAR BENDING DETAILS

Dimensions Are Out To Out.

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.

REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

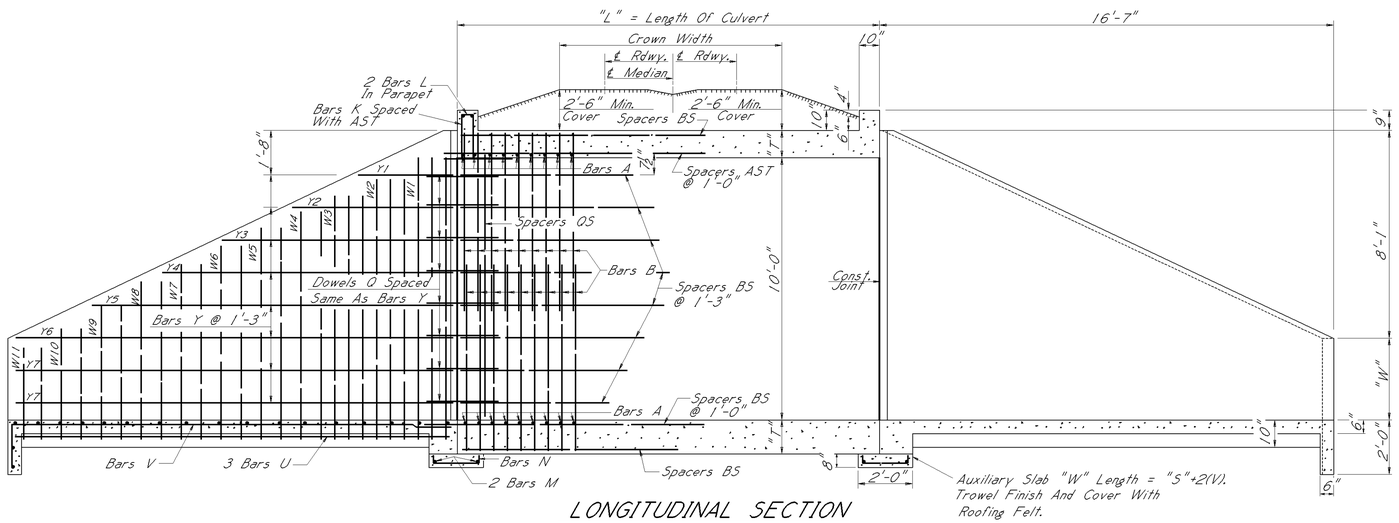
BASIC CULVERT DRAWING
SINGLE CELL

HEIGHT 8 FT.
SPANS 8-20 FT.

WORKING NUMBER IBS-8-2W

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED ALT | DATE 07-11-97 | DATE 08-01-97

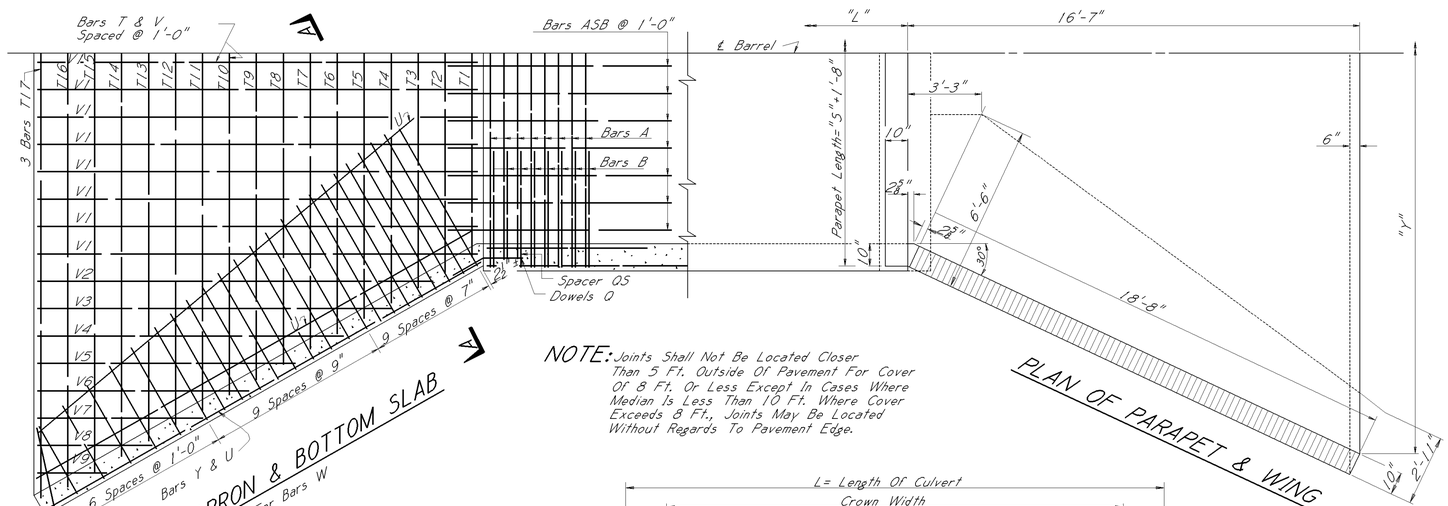
SHEET NUMBER 7010



LONGITUDINAL SECTION

Showing Bars In Fill Face Of Wall.

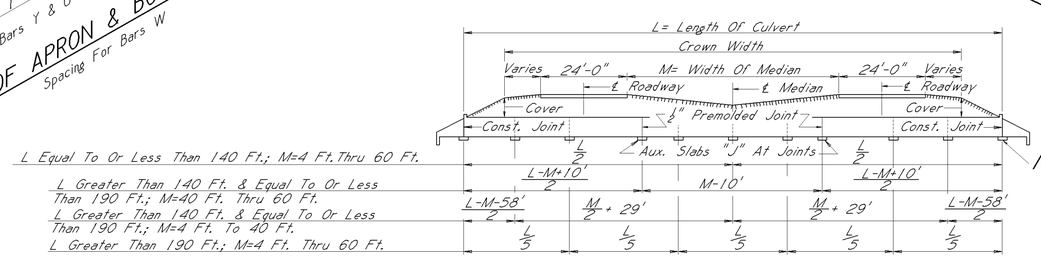
NOTE: Culvert Shall Be Sloped To Conform To Gradient Of Stream.



PLAN OF APRON & BOTTOM SLAB

PLAN OF PARAPET & WING

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.

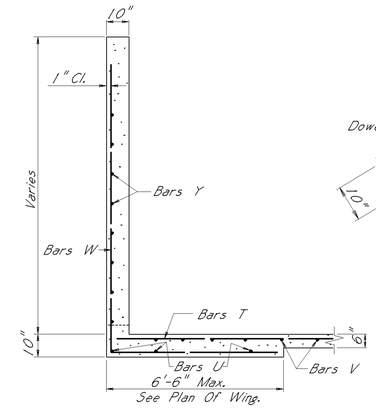


SIDE ELEVATION OF CULVERT

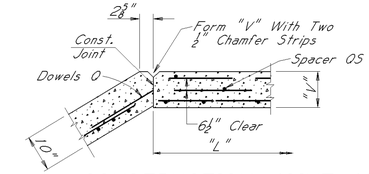
Showing ½" Joints And Auxiliary Slabs "J"
Drawn For L = 150 Ft. & M = 60 Ft.

NOTE: Auxiliary Slabs "W" At Wings.

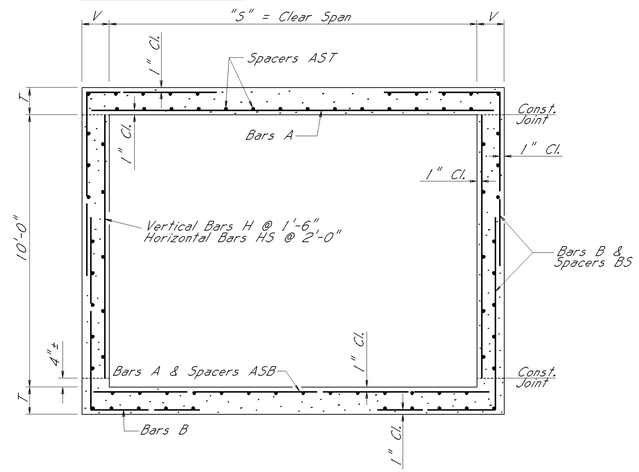
NOTE: Where Cover Is 8 Ft. Or Less And A Joint Occurs Within The Limits Of 5 Ft. Beyond Each Edge Of Pavement, Use Complete Collar At Joints Per Drawing ICJ-1 Or ICJS-1.



SECTION A-A



CONSTRUCTION JOINT AT WING



CROSS SECTION

Bars AST Tie To Bars A In Top Slab.
Bars ASB Tie To Bars A In Bottom Slab.
Bars BS Tie To Bars B.

CULVERT DIMENSIONS						ESTIMATED QUANTITIES					
						CULVERT (L= 150 FT.)		PER LIN. FT. BARREL		1 AUX. SLAB "J"	
CLEAR SPAN	MAX. COVER	T	V	W	Y	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.
10'	7'	10"	10"	2'-10"	28'-10⅝"	238.96	31,575	1.3371	189.6	0.58	33
12'	6'	11"	10"	2'-11"	30'-10⅝"	272.31	36,483	1.5452	220.9	0.67	38
14'	6'	1'-0"	10"	3'-0"	32'-10⅝"	309.38	45,540	1.7777	280.1	0.77	44
16'	6'	1'-1"	11"	3'-1"	34'-10⅝"	361.49	55,825	2.1100	347.6	0.88	49
18'	6'	1'-2"	1'-0"	3'-2"	36'-10⅝"	417.63	67,223	2.4691	423.4	0.99	55
20'	6'	1'-3"	1'-1½"	3'-3"	38'-10⅝"	483.59	79,944	2.8935	506.2	1.10	61
22'	6'	1'-4½"	1'-2"	3'-4½"	40'-10⅝"	553.44	95,233	3.3425	607.4	1.20	67

DESIGN DATA:

Specifications. . . . A.A.S.H.O. 1969
Live Load. . . . . .HS 20-44 Mod. For 2-24,000 lbs Axles
Unit Stresses. . . . fs=20,000 psi; fc= 12,000 psi; n=10.

NOTE: See Drawing IBJL-1 For Additional Joint Locations.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BASIC CULVERT DRAWING

SINGLE CELL

HEIGHT 10 FT.
SPANS 10-22 FT.

BY	REVISIONS	DATE

DESIGNED NA CHECKED BJJ ISSUED TMT
DETAILED ALT DATE 07-11-97 DATE 08-01-97

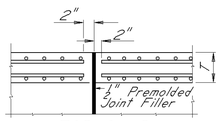
WORKING NUMBER IBS-10-2W

SHEET NUMBER 7011

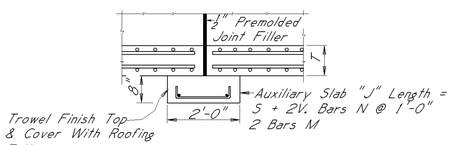
BAR LIST FOR BARREL (L=150 FT.) PARAPETS & 4 AUXILLARY SLABS (2 "J's" & 2 "W's")

CLEAR SPAN	BARS "A"				BARS "B"				DOWELS "O" ~ #4		SPACERS "OS" ~ #4		SETS OF BARS "AST" #4 @		SETS OF BARS "ASB" #4 @		SETS OF BARS "BS" #4 @		BARS H ~ #4		SETS OF BARS "HS" #4 @		BARS K ~ #4		BARS L ~ #4		BARS M ~ #4		BARS N ~ #4	
	NO.	SIZE	SPAC.	LGTH.	NO.	SIZE	SPAC.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.
10'	552	#6	6½"	11'-5"	1104	#5	6½"	9'-11"	32	2'-6"	4	9'-7"	10	152'-9"	10	155'-7"	32	152'-9"	204	9'-7"	10	152'-9"	20	4'-6"	4	11'-4"	8	11'-4"	48	2'-2"
12'	600	#6	6"	13'-5"	1200	#5	6"	10'-6"	32	2'-6"	4	9'-7"	12	152'-9"	12	155'-7"	32	152'-9"	204	9'-7"	10	152'-9"	24	4'-8"	4	13'-4"	8	13'-4"	56	2'-2"
14'	720	#6	5"	15'-5"	1440	#5	5"	11'-1"	32	2'-6"	4	9'-7"	14	152'-9"	14	155'-7"	36	152'-9"	204	9'-7"	10	152'-9"	28	4'-10"	4	15'-4"	8	15'-4"	64	2'-2"
16'	600	#7	6"	17'-7"	1200	#6	6"	11'-11"	32	2'-6"	4	9'-7"	16	152'-9"	16	155'-7"	36	152'-9"	204	9'-7"	10	152'-9"	32	5'-0"	4	17'-4"	8	17'-6"	72	2'-2"
18'	684	#7	5¼"	19'-9"	1368	#6	5¼"	12'-7"	32	2'-6"	4	9'-7"	18	152'-9"	18	155'-7"	40	152'-9"	204	9'-7"	10	152'-9"	36	5'-2"	4	19'-4"	8	19'-8"	80	2'-2"
20'	576	#8	6¼"	22'-0"	1152	#7	6¼"	13'-6"	32	2'-6"	4	9'-7"	20	152'-9"	20	155'-7"	40	152'-9"	204	9'-7"	10	152'-9"	40	5'-4"	4	21'-4"	8	21'-11"	88	2'-2"
22'	654	#8	5½"	24'-1"	1308	#7	5½"	14'-2"	32	2'-6"	4	9'-7"	22	152'-9"	22	155'-7"	44	152'-9"	204	9'-7"	10	152'-9"	44	5'-7"	4	24'-4"	8	24'-0"	96	2'-2"

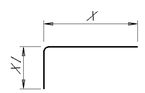
@NOTE: The Number And Length Of Bars Are Listed For Sets Of Bars Composed Of Sections As Shown In Bar Bending Details. See Elevation Of Culvert For Number Of Sections.



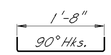
TOP SLAB
SIDE WALLS SIMILAR



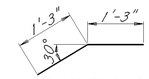
BOTTOM SLAB
DETAILS OF BARREL JOINT
& AUXILIARY SLAB "J"



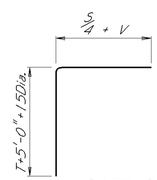
BARS V - #4



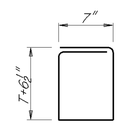
BARS N - #4



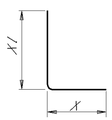
DOWELS O ~ #4



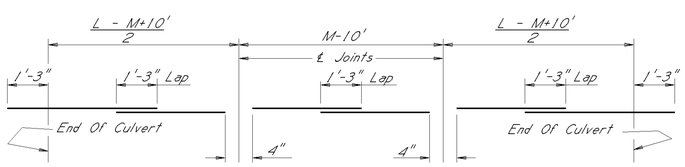
BARS B



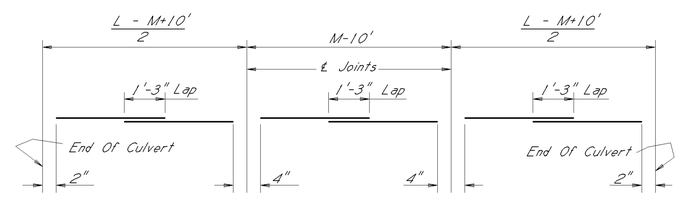
BARS K - #4



BARS W - #4



ONE SET OF BARS ASB ~ #4



ONE SET OF BARS AST, BS & HS ~ #4

NOTE: The Diagrams For Bars ASB, AST, BS, DS & ES Are For A Culvert Lenght 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.

BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 10'	12'	14'	16'	18'	20'	22'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2	2	2			S+1'-2"
T2	#4	2	2	2	2	2	2	2			S+2'-4"
T3	#4	2	2	2	2	2	2	2			S+3'-6"
T4	#4	2	2	2	2	2	2	2			S+4'-8"
T5	#4	2	2	2	2	2	2	2			S+5'-10"
T6	#4	2	2	2	2	2	2	2			S+7'-0"
T7	#4	2	2	2	2	2	2	2			S+8'-2"
T8	#4	2	2	2	2	2	2	2			S+9'-4"
T9	#4	2	2	2	2	2	2	2			S+10'-6"
T10	#4	2	2	2	2	2	2	2			S+11'-8"
T11	#4	2	2	2	2	2	2	2			S+12'-10"
T12	#4	2	2	2	2	2	2	2			S+14'-0"
T13	#4	2	2	2	2	2	2	2			S+15'-2"
T14	#4	2	2	2	2	2	2	2			S+16'-4"
T15	#4	2	2	2	2	2	2	2			S+17'-6"
T16	#4	2	2	2	2	2	2	2			S+18'-8"
T17	#4	6	6	6	6	6	6	6			S+19'-0"
U	#4	12	12	12	12	12	12	12			18'-4"
V1	#4	24	28	32	36	40	44	48	16'-3"	1'-8"	17'-11"
V2	#4	4	4	4	4	4	4	4	14'-6"	1'-8"	16'-2"
V3	#4	4	4	4	4	4	4	4	12'-9"	1'-8"	14'-5"
V4	#4	4	4	4	4	4	4	4	11'-1"	1'-8"	12'-9"
V5	#4	4	4	4	4	4	4	4	9'-4"	1'-8"	11'-0"
V6	#4	4	4	4	4	4	4	4	7'-8"	1'-8"	9'-4"
V7	#4	4	4	4	4	4	4	4	5'-11"	1'-8"	7'-7"
V8	#4	4	4	4	4	4	4	4	4'-3"	1'-8"	5'-11"
V9	#4	4	4	4	4	4	4	4	2'-5"	1'-8"	4'-1"
W1	#6	12	12	12	12	12	12	12	6'-0"	W+7'-11"	W+13'-11"
W2	#6	12	12	12	12	12	12	12	5'-8"	W+7'-2"	W+12'-10"
W3	#5	12	12	12	12	12	12	12	5'-4"	W+6'-5"	W+11'-9"
W4	#5	8	8	8	8	8	8	8	5'-0"	W+5'-10"	W+10'-10"
W5	#5	8	8	8	8	8	8	8	4'-8"	W+5'-2"	W+9'-10"
W6	#4	8	8	8	8	8	8	8	4'-5"	W+4'-7"	W+9'-0"
W7	#4	8	8	8	8	8	8	8	4'-1"	W+3'-11"	W+8'-0"
W8	#4	8	8	8	8	8	8	8	3'-10"	W+3'-3"	W+7'-1"
W9	#4	8	8	8	8	8	8	8	3'-5"	W+2'-4"	W+5'-9"
W10	#4	8	8	8	8	8	8	8	3'-0"	W+1'-6"	W+4'-6"
W11	#4	8	8	8	8	8	8	8	2'-7"	W+8"	W+3'-3"
Y1	#4	4	4	4	4	4	4	4			3'-4"
Y2	#4	4	4	4	4	4	4	4			6'-3"
Y3	#4	4	4	4	4	4	4	4			9'-1"
Y4	#4	4	4	4	4	4	4	4			12'-0"
Y5	#4	4	4	4	4	4	4	4			14'-10"
Y6	#4	4	4	4	4	4	4	4			17'-9"
Y7	#4	8	8	8	8	8	8	8			18'-4"

GENERAL NOTES:

Specifications: Mississippi Standard Specifications For Road And Bridge Construction, 1990.
All Concrete Shall Be Class "B".
Concrete Surfaces Shall Be Finished In Accordance With Sub-Section 804.03.19.
Expansion Joint Material Shall Be Bituminous Fiber Type Unless Otherwise Noted.
All Exposed Corners Shall Be Chamfered ¾".
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 Two Hours Before Continuing The Pour.
Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Shall Be Placed In All Culverts Regardless Of Length.
The Quantities Shown Will Be Used As A Basis For Final Payment Unless This Drawing Is Modified.

					BY
					REVISIONS
					DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BASIC CULVERT DRAWING

SINGLE CELL

HEIGHT 10 FT.

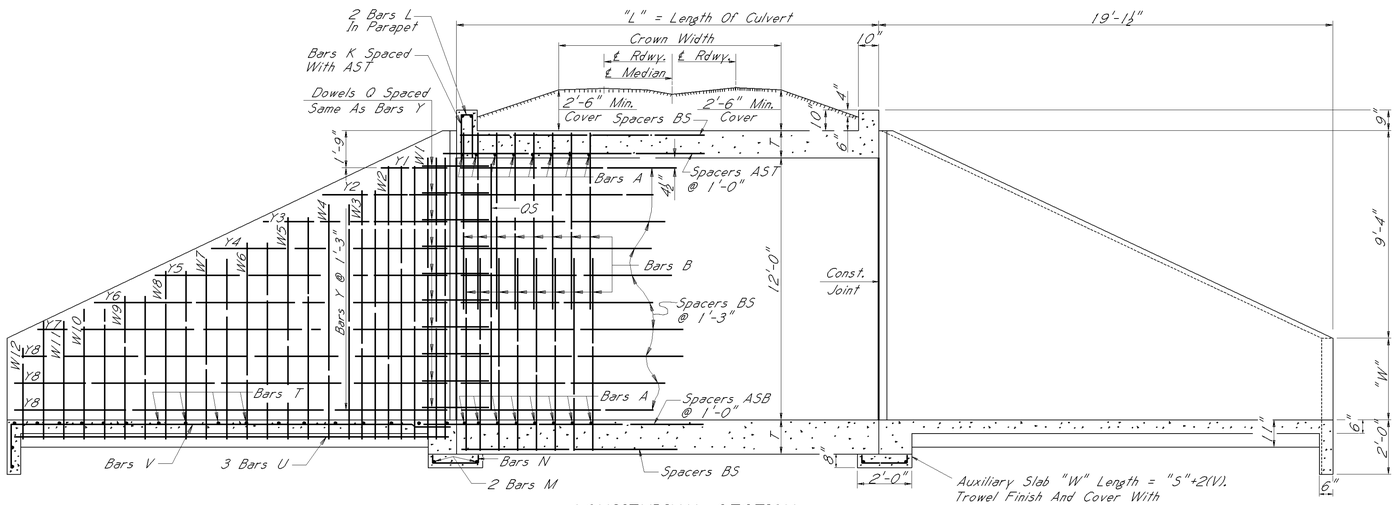
SPANS 10-22 FT.

DESIGNED NA CHECKED BJJ ISSUED TMT

DETAILED ALT DATE 07-11-97 DATE 08-01-97

WORKING NUMBER IBS-10-2W

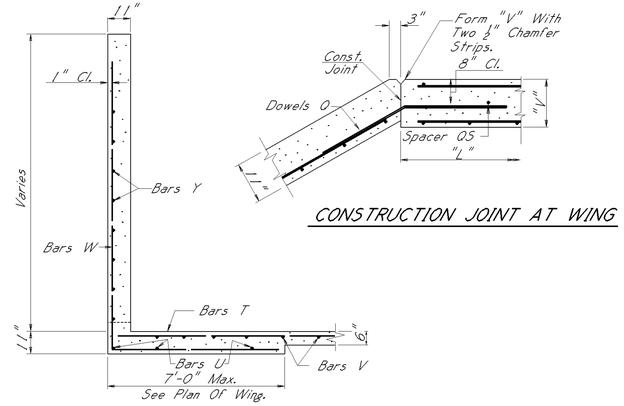
SHEET NUMBER 7012



LONGITUDINAL SECTION

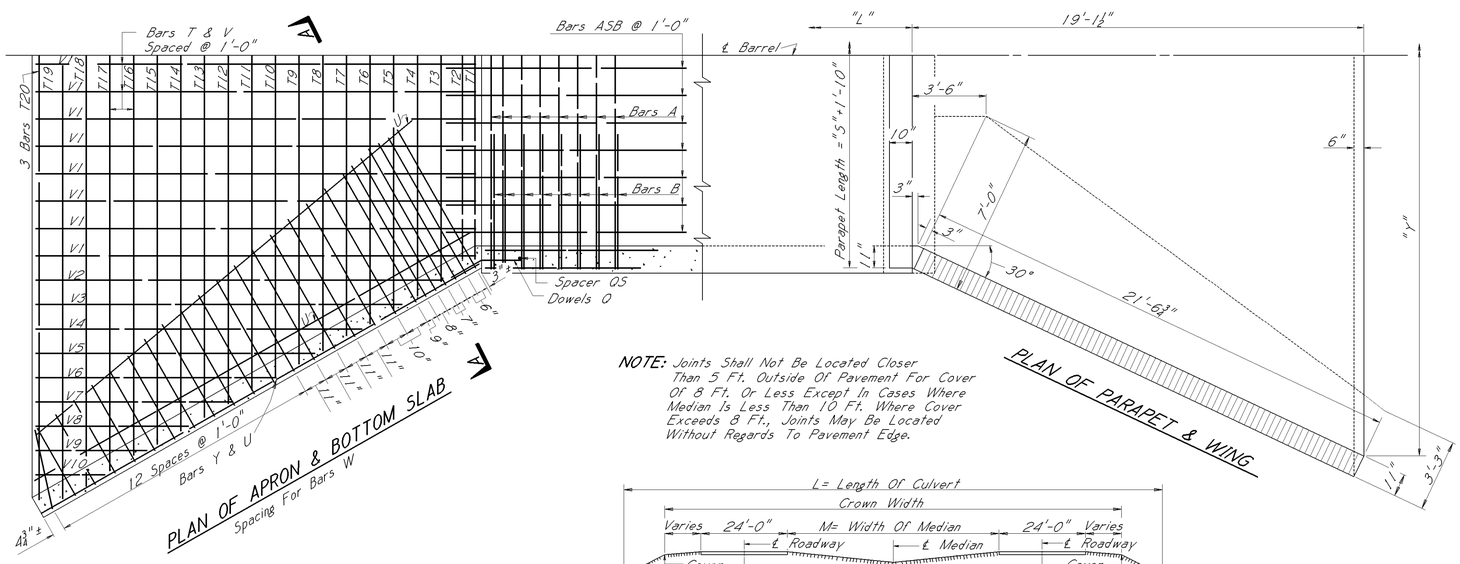
Showing Bars In Fill Face Of Wall.

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



CONSTRUCTION JOINT AT WING

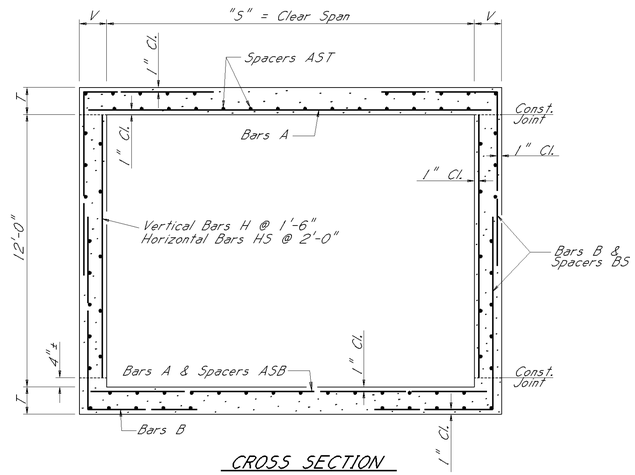
SECTION A-A



PLAN OF APRON & BOTTOM SLAB

PLAN OF PARAPET & WING

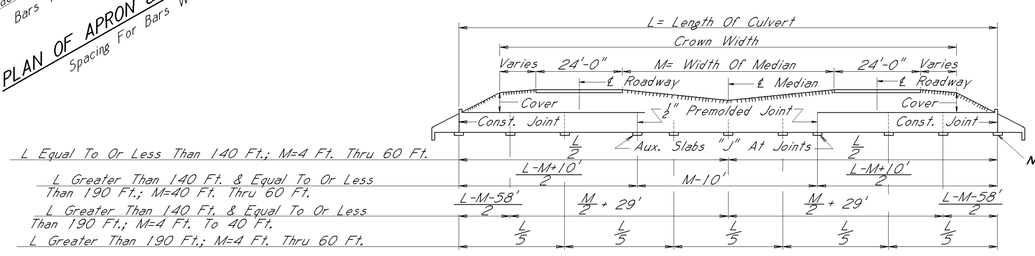
NOTE: Joints Shall Not Be Located Closer Than 5 Ft. Outside Of Pavement For Cover Of 8 Ft. Or Less Except In Cases Where Median Is Less Than 10 Ft. Where Cover Exceeds 8 Ft., Joints May Be Located Without Regards To Pavement Edge.



CROSS SECTION

Bars AST Tie To Bars A In Top Slab.
Bars ASB Tie To Bars A In Bottom Slab.
Bars BS Tie To Bars B.

CULVERT DIMENSIONS						ESTIMATED QUANTITIES					
						CULVERT (L= 150 FT.)		PER LIN. FT. BARREL		1 AUX. SLAB "J"	
CLEAR SPAN	MAX. COVER	T	V	W	Y	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.
12'	7'	11½"	11"	3'-8¼"	33'-9¾"	324.81	44,081	1.7968	262.9	0.68	38
14'	6'	1'-0"	11"	3'-9"	35'-9¾"	355.70	52,493	1.9876	318.1	0.78	44
16'	4'	1'-1"	11"	3'-10"	37'-9¾"	396.89	58,093	2.2458	353.5	0.88	49
18'	4'	1'-2"	1'-0"	3'-11"	39'-9¾"	455.12	69,121	2.6172	426.0	0.99	55
20'	4'	1'-3"	1'-1"	4'-0"	41'-9¾"	517.39	79,339	3.0154	492.1	1.09	61
22'	4'	1'-4½"	1'-2"	4'-1½"	43'-9¾"	595.17	93,403	3.5154	585.0	1.20	67
24'	4'	1'-6"	1'-3"	4'-3"	45'-9¾"	679.01	106,385	4.0555	670.8	1.31	73



SIDE ELEVATION OF CULVERT

Showing ½" Joints And Auxiliary Slabs Drawn For L = 150 Ft. & M = 60 Ft.

NOTE: Auxiliary Slabs "W" At Wings.

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 Per Drawing ICJ-1 Or ICJS-1.

DESIGN DATA:

Specifications. . . . A.A.S.H.O. 1969
Live Load. . . . . .HS 20-44 Mod. For 2-24,000 lbs Axles.
Unit Stresses. . . . fs=20,000 psi, fc= 1,200 psi, n=10.

NOTE: See Drawing IBJL-1 For Additional Joint Locations.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BASIC CULVERT DRAWING

SINGLE CELL

HEIGHT 12 FT.

SPANS 12-24 FT.

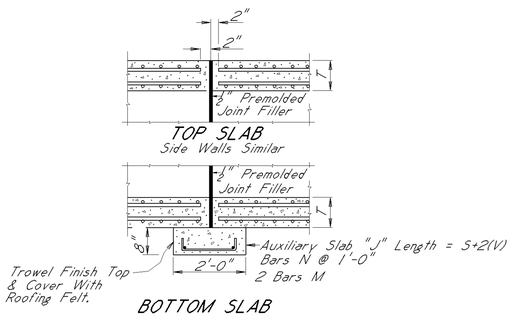
REVISIONS	BY	DATE

DESIGNED NA	CHECKED BJJ	ISSUED TMT	WORKING NUMBER IBS-12-2W
DETAILED ALT	DATE 07-11-97	DATE 08-01-97	SHEET NUMBER 7013

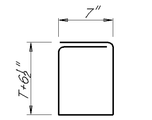
BAR LIST FOR BARREL (L=150 FT.) PARAPETS & 4 AUXILIARY SLABS (2 "J's" & 2 "W's")

CLEAR SPAN	BARS "A"				BARS "B"				DOWELS "O" ~ #4		SPACERS "OS" ~ #4		SETS OF BARS "AST" #4 @		SETS OF BARS "ASB" #4 @		SETS OF BARS "BS" #4 @		BARS H ~ #4		SETS OF BARS "HS" #4 @		BARS K ~ #4		BARS L ~ #4		BARS M ~ #4		BARS N ~ #4	
	NO.	SIZE	SPAC.	LGTH.	NO.	SIZE	SPAC.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.
12'	684	#6	5 1/4"	13'-7"	1368	#5	5 1/4"	11'-8"	40	2'-6"	4	11'-7"	12	152'-9"	12	155'-7"	36	152'-9"	204	11'-7"	12	152'-9"	24	4'-9"	4	13'-6"	8	13'-6"	56	2'-2"
14'	552	#7	6 1/2"	15'-7"	1104	#6	6 1/4"	12'-4"	40	2'-6"	4	11'-7"	14	152'-9"	14	155'-7"	40	152'-9"	204	11'-7"	12	152'-9"	28	4'-10"	4	15'-6"	8	15'-6"	64	2'-2"
16'	576	#7	6 1/4"	17'-7"	1152	#6	6 1/4"	12'-11"	40	2'-6"	4	11'-7"	16	152'-9"	16	155'-7"	40	152'-9"	204	11'-7"	12	152'-9"	32	5'-0"	4	17'-6"	8	17'-6"	72	2'-2"
18'	654	#7	5 3/4"	19'-9"	1308	#6	5 3/4"	13'-7"	40	2'-6"	4	11'-7"	18	152'-9"	18	155'-7"	44	152'-9"	204	11'-7"	12	152'-9"	36	5'-2"	4	19'-6"	8	19'-8"	80	2'-2"
20'	534	#8	6 3/4"	21'-11"	1068	#7	6 3/4"	14'-5"	40	2'-6"	4	11'-7"	20	152'-9"	20	155'-7"	44	152'-9"	204	11'-7"	12	152'-9"	40	5'-4"	4	21'-6"	8	21'-10"	88	2'-2"
22'	600	#8	6"	24'-1"	1200	#7	6"	15'-2"	40	2'-6"	4	11'-7"	22	152'-9"	22	155'-7"	48	152'-9"	204	11'-7"	12	152'-9"	44	5'-7"	4	23'-6"	8	24'-0"	96	2'-2"
24'	654	#8	5 1/2"	26'-3"	1308	#7	5 1/2"	15'-10"	40	2'-6"	4	11'-7"	24	152'-9"	24	155'-7"	48	152'-9"	204	11'-7"	12	152'-9"	48	5'-10"	4	25'-6"	8	26'-2"	104	2'-2"

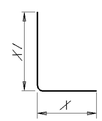
@ NOTE: The Number And Length Of Bars Are Listed For Sets Of Bars Composed Of Sections As Shown In Bar Bending Details See Elevation Of Culvert For Number Of Sections.



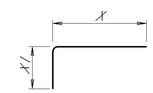
DETAILS OF BARREL JOINT & AUXILIARY SLAB "J"



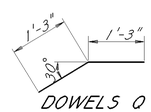
BARS K ~ #4



BARS W

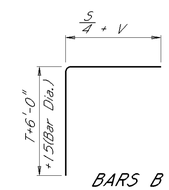


BARS V ~ #4

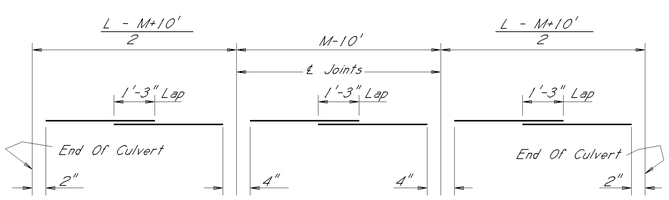


DOWELS O ~ #4

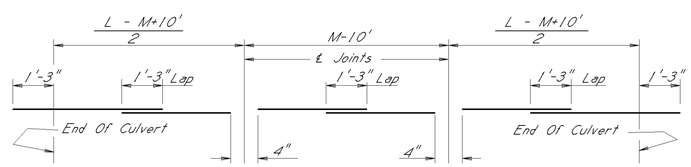
BARS N ~ #4



BARS B



ONE SET OF BARS AST, BS & HS ~ #4



ONE SET OF BARS ASB ~ #4

BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 12'	14'	16'	18'	20'	22'	24'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2	2	2			S+1'-4"
T2	#4	2	2	2	2	2	2	2			S+1'-11"
T3	#4	2	2	2	2	2	2	2			S+3'-1"
T4	#4	2	2	2	2	2	2	2			S+4'-3"
T5	#4	2	2	2	2	2	2	2			S+5'-5"
T6	#4	2	2	2	2	2	2	2			S+6'-7"
T7	#4	2	2	2	2	2	2	2			S+7'-9"
T8	#4	2	2	2	2	2	2	2			S+8'-11"
T9	#4	2	2	2	2	2	2	2			S+9'-11"
T10	#4	2	2	2	2	2	2	2			S+11'-1"
T11	#4	2	2	2	2	2	2	2			S+12'-3"
T12	#4	2	2	2	2	2	2	2			S+13'-5"
T13	#4	2	2	2	2	2	2	2			S+14'-7"
T14	#4	2	2	2	2	2	2	2			S+15'-9"
T15	#4	2	2	2	2	2	2	2			S+16'-11"
T16	#4	2	2	2	2	2	2	2			S+18'-1"
T17	#4	2	2	2	2	2	2	2			S+19'-3"
T18	#4	2	2	2	2	2	2	2			S+20'-5"
T19	#4	2	2	2	2	2	2	2			S+21'-7"
T20	#4	6	6	6	6	6	6	6			S+21'-9"
U	#4	12	12	12	12	12	12	12			21'-3"
V1	#4	28	32	36	40	44	48	52	18'-10"	1'-8"	20'-6"
V2	#4	4	4	4	4	4	4	4	17'-4"	1'-8"	19'-0"
V3	#4	4	4	4	4	4	4	4	15'-7"	1'-8"	17'-3"
V4	#4	4	4	4	4	4	4	4	13'-10"	1'-8"	15'-6"
V5	#4	4	4	4	4	4	4	4	12'-2"	1'-8"	13'-10"
V6	#4	4	4	4	4	4	4	4	10'-5"	1'-8"	12'-1"
V7	#4	4	4	4	4	4	4	4	8'-8"	1'-8"	10'-4"
V8	#4	4	4	4	4	4	4	4	7'-0"	1'-8"	8'-8"
V9	#4	4	4	4	4	4	4	4	5'-3"	1'-8"	6'-11"
V10	#4	4	4	4	4	4	4	4	3'-6"	1'-8"	5'-2"
W1	#7	12	12	12	12	12	12	12	6'-6"	W+9'-4"	W+15'-10"
W2	#7	12	12	12	12	12	12	12	6'-2"	W+8'-6"	W+14'-8"
W3	#7	8	8	8	8	8	8	8	5'-10"	W+7'-10"	W+13'-8"
W4	#7	8	8	8	8	8	8	8	5'-6"	W+7'-1"	W+12'-7"
W5	#6	8	8	8	8	8	8	8	5'-2"	W+6'-4"	W+11'-6"
W6	#6	8	8	8	8	8	8	8	4'-10"	W+5'-6"	W+10'-4"
W7	#5	8	8	8	8	8	8	8	4'-6"	W+4'-8"	W+9'-2"
W8	#5	8	8	8	8	8	8	8	4'-2"	W+3'-9"	W+7'-11"
W9	#4	8	8	8	8	8	8	8	3'-10"	W+2'-11"	W+6'-9"
W10	#4	8	8	8	8	8	8	8	3'-6"	W+2'-0"	W+5'-6"
W11	#4	8	8	8	8	8	8	8	3'-2"	W+1'-2"	W+4'-4"
W12	#4	4	4	4	4	4	4	4	2'-8"	W+8"	W+3'-4"
Y1	#4	4	4	4	4	4	4	4			3'-6"
Y2	#4	4	4	4	4	4	4	4			6'-5"
Y3	#4	4	4	4	4	4	4	4			9'-4"
Y4	#4	4	4	4	4	4	4	4			12'-2"
Y5	#4	4	4	4	4	4	4	4			15'-1"
Y6	#4	4	4	4	4	4	4	4			17'-11"
Y7	#4	4	4	4	4	4	4	4			20'-10"
Y8	#4	12	12	12	12	12	12	12			21'-3"

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.

BAR BENDING DETAILS

Dimensions Are Out To Out

GENERAL NOTES:

Specifications: Mississippi Standard Specifications For Road And Bridge Construction, 1990.
All Concrete Shall Be Class "B".
Concrete Surfaces Shall Be Finished In Accordance With Sub-Section 804.03.19.
Expansion Joint Material Shall Be Bituminous Fiber Type Unless Otherwise Noted.
All Exposed Corners Shall Be Chamfered 3/4".
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 Two Hours Before Continuing The Pour.
Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Shall Be Placed In All Culverts Regardless Of Length.
The Quantities Shown Will Be Used As A Basis For Final Payment Unless This Drawing Is Modified.

DATE	REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BASIC CULVERT DRAWING

SINGLE CELL

HEIGHT 12 FT.

SPANS 12-24 FT.

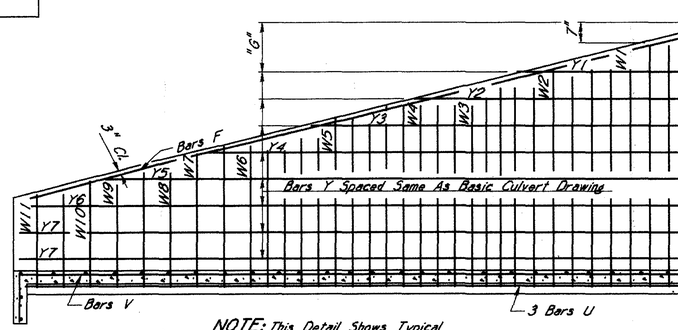
WORKING NUMBER IBS-12-2W

SHEET NUMBER 7014

DESIGNED NA CHECKED BJJ ISSUED TMT

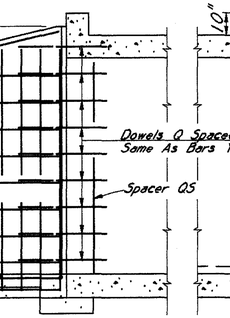
DETAILED ALT DATE 07-11-97 DATE 08-01-97

CULVERT HEIGHT "H"	"G"
6'	1'-9"
8'	1'-9"
10'	1'-11"
12'	2'-0"



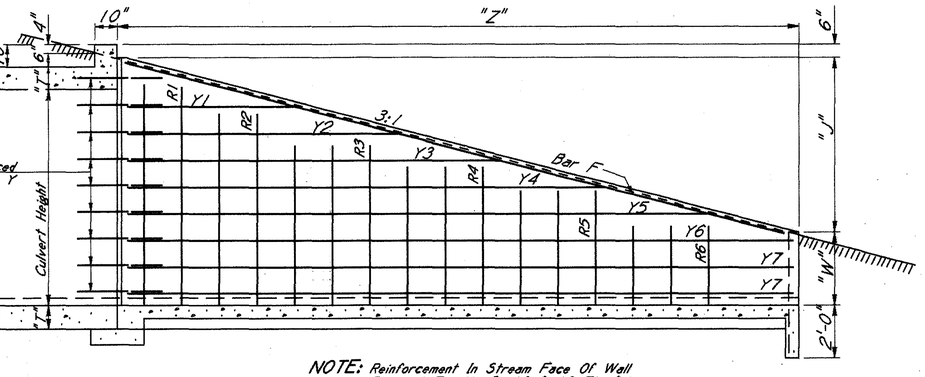
NOTE: This Detail Shows Typical Scheme For Bars W And Y.

FILL SIDE



LONGITUDAL SECTION

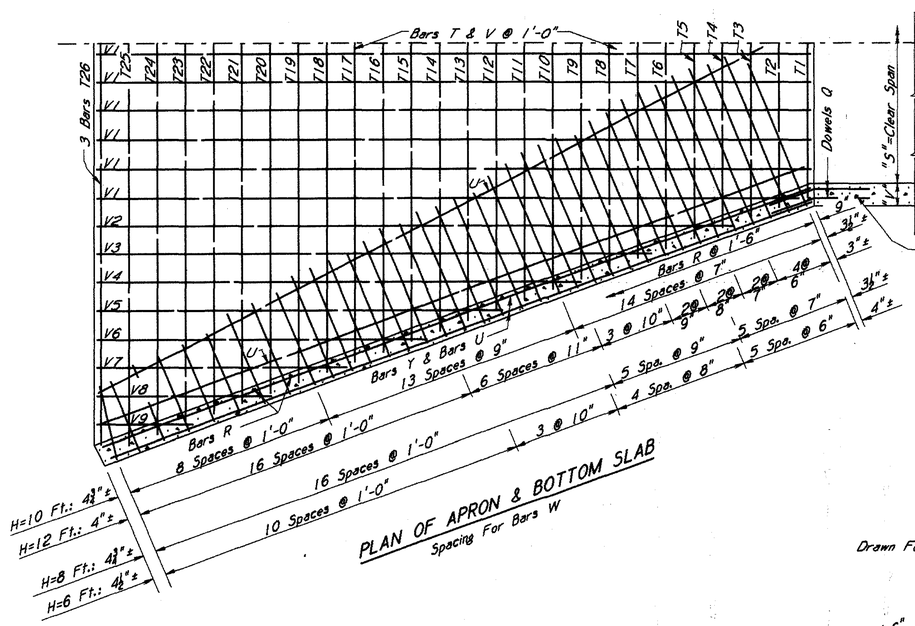
Showing Bars In Both Faces Of Wall Drawn For Single Cell 10' x 10' Culvert



NOTE: Reinforcement In Stream Face Of Wall Required For H= 8, 10 & 12 Ft. Only.

STREAM SIDE

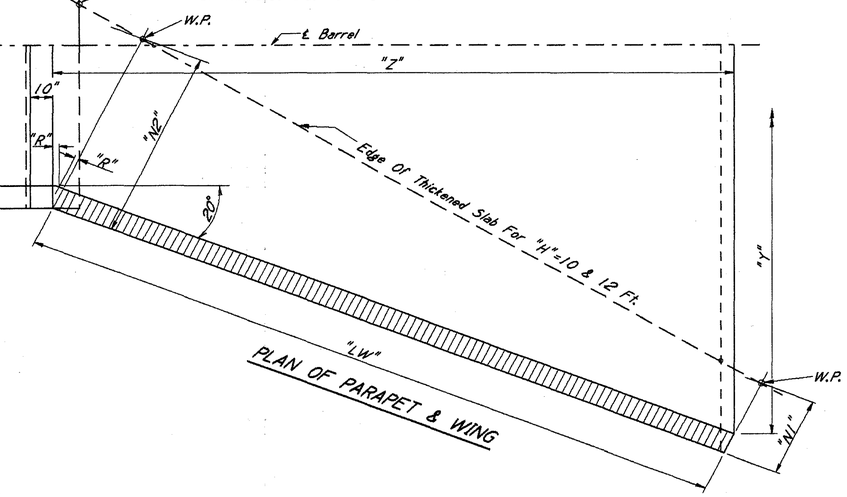
NOTE: This Detail Shows Typical Scheme For Bars T And V.



PLAN OF APRON & BOTTOM SLAB

Spacing For Bars W

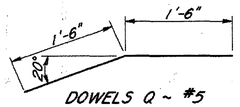
NOTE: As Clear Span Increases Extend Edge Of Thickened Slab To This Point.



PLAN OF PARAPET & WING

GENERAL PLAN

Drawn For Single Cell 10' x 10' Culvert



DOWELS Q ~ #5

BAR BENDING DETAILS

Dimensions Are Out To Out

REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
WINGS WITH 3:1 SLOPE
FOR
BASIC CULVERT DRAWING
SINGLE CELL
HEIGHTS 6-12 FT.
SPANS 6-24 FT.

WORKING NUMBER IWS-3

SHEET NUMBER 7015

DATE			
DESIGNED NA	CHECKED BJJ	ISSUED TMT	
DETAILED ALT	DATE 07-11-97	DATE 08-01-97	

CULVERT DIMENSIONS

CULVERT HEIGHT "H"	"J"	"LW"	"N1"	"N2"	"R"	"Z"	"Y" CLEAR SPAN 6'	7'	8'	9'	10'	12'	14'	16'	18'	20'	22'	24'
10'	8'-4"	26'-7 1/4"	2'-11"	6'-6"	1 1/2"	25'-3 7/16"					28'-3 9/16"	30'-3 9/16"	32'-3 9/16"	34'-3 9/16"	36'-3 9/16"	38'-3 9/16"	40'-3 9/16"	
12'	9'-7"	30'-7 1/4"	3'-3"	7'-0"	1 9/16"	29'-0 7/8"						33'-0 7/16"	35'-0 7/16"	37'-0 7/16"	39'-0 7/16"	41'-0 7/16"	43'-0 7/16"	45'-0 7/16"

ESTIMATED QUANTITIES~CULVERT (L=150 FT.)

CULVERT HEIGHT "H"	CLEAR SPAN 6' CONC. cu. yd.	6' REINF. STEEL lb.	7' CONC. cu. yd.	7' REINF. STEEL lb.	8' CONC. cu. yd.	8' REINF. STEEL lb.	9' CONC. cu. yd.	9' REINF. STEEL lb.	10' CONC. cu. yd.	10' REINF. STEEL lb.	12' CONC. cu. yd.	12' REINF. STEEL lb.	14' CONC. cu. yd.	14' REINF. STEEL lb.	16' CONC. cu. yd.	16' REINF. STEEL lb.	18' CONC. cu. yd.	18' REINF. STEEL lb.	20' CONC. cu. yd.	20' REINF. STEEL lb.	22' CONC. cu. yd.	22' REINF. STEEL lb.	24' CONC. cu. yd.	24' REINF. STEEL lb.
10'									254.22	33,861	288.33	38,823	326.12	47,936	378.95	58,275	435.83	69,729	502.54	82,504	573.13	97,852		
12'											346.82	47,412	378.50	55,883	420.53	61,540	479.61	72,629	542.69	82,907	621.36	97,045	706.08	110,084

ADDITIONAL BAR LIST FOR WINGS & APRONS

BAR	SIZE	H = 10 FT. NO.	H = 10 FT. LENGTH	H = 12 FT. NO.	H = 12 FT. LENGTH
F	#4	8	27'-6"	8	31'-8"
Q	#5	72	3'-0"	88	3'-0"
Q5	#4	4	9'-7"	4	11'-7"
R1	#4	8	W+7'-1"	8	W+8'-4"
R2	#4	8	W+6'-2"	8	W+7'-5"
R3	#4	12	W+4'-9"	12	W+6'-0"
R4	#4	12	W+3'-4"	12	W+4'-7"
R5	#4	12	W+1'-11"	12	W+3'-2"
R6	#4	12	W+6"	12	W+1'-9"
R7	#4			12	W+4"

HEIGHT = 12 FT.

BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 12'	14'	16'	18'	20'	22'	24'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2	2	2			S+1'-6"
T2	#4	2	2	2	2	2	2	2			S+2'-3"
T3	#4	2	2	2	2	2	2	2			S+3'-0"
T4	#4	2	2	2	2	2	2	2			S+3'-9"
T5	#4	2	2	2	2	2	2	2			S+4'-6"
T6	#4	2	2	2	2	2	2	2			S+5'-3"
T7	#4	2	2	2	2	2	2	2			S+6'-0"
T8	#4	2	2	2	2	2	2	2			S+6'-9"
T9	#4	2	2	2	2	2	2	2			S+7'-6"
T10	#4	2	2	2	2	2	2	2			S+8'-3"
T11	#4	2	2	2	2	2	2	2			S+9'-0"
T12	#4	2	2	2	2	2	2	2			S+9'-9"
T13	#4	2	2	2	2	2	2	2			S+10'-6"
T14	#4	2	2	2	2	2	2	2			S+11'-3"
T15	#4	2	2	2	2	2	2	2			S+12'-0"
T16	#4	2	2	2	2	2	2	2			S+12'-9"
T17	#4	2	2	2	2	2	2	2			S+13'-6"
T18	#4	2	2	2	2	2	2	2			S+14'-3"
T19	#4	2	2	2	2	2	2	2			S+15'-0"
T20	#4	2	2	2	2	2	2	2			S+15'-9"
T21	#4	2	2	2	2	2	2	2			S+16'-6"
T22	#4	2	2	2	2	2	2	2			S+17'-2"
T23	#4	2	2	2	2	2	2	2			S+17'-11"
T24	#4	2	2	2	2	2	2	2			S+18'-8"
T25	#4	2	2	2	2	2	2	2			S+19'-5"
T26	#4	2	2	2	2	2	2	2			S+20'-2"
T27	#4	2	2	2	2	2	2	2			S+20'-11"
T28	#4	2	2	2	2	2	2	2			S+21'-8"
T29	#4	6	6	6	6	6	6	6			S+21'-8"
U	#4	12	12	12	12	12	12	12			30'-3"
V1	#4	28	32	36	40	44	48	52	28'-8"	1'-8"	30'-4"
V2	#4	4	4	4	4	4	4	4	26'-7"	1'-8"	28'-3"
V3	#4	4	4	4	4	4	4	4	23'-10"	1'-8"	25'-6"
V4	#4	4	4	4	4	4	4	4	21'-1"	1'-8"	22'-9"
V5	#4	4	4	4	4	4	4	4	18'-4"	1'-8"	20'-0"
V6	#4	4	4	4	4	4	4	4	15'-7"	1'-8"	17'-3"
V7	#4	4	4	4	4	4	4	4	12'-10"	1'-8"	14'-6"
V8	#4	4	4	4	4	4	4	4	10'-1"	1'-8"	11'-9"
V9	#4	4	4	4	4	4	4	4	7'-4"	1'-8"	9'-0"
V10	#4	4	4	4	4	4	4	4	4'-7"	1'-8"	6'-3"
W1	#7	20	20	20	20	20	20	20	6'-5"	W+9'-6"	W+15'-11"
W2	#7	20	20	20	20	20	20	20	6'-0"	W+8'-6"	W+14'-6"
W3	#7	12	12	12	12	12	12	12	5'-8"	W+7'-8"	W+13'-4"
W4	#7	12	12	12	12	12	12	12	5'-4"	W+6'-10"	W+12'-2"
W5	#6	12	12	12	12	12	12	12	5'-0"	W+6'-0"	W+11'-0"
W6	#6	12	12	12	12	12	12	12	4'-8"	W+5'-2"	W+9'-10"
W7	#5	12	12	12	12	12	12	12	4'-3"	W+4'-2"	W+8'-5"
W8	#5	12	12	12	12	12	12	12	3'-11"	W+3'-3"	W+7'-2"
W9	#4	12	12	12	12	12	12	12	3'-7"	W+2'-3"	W+5'-10"
W10	#4	8	8	8	8	8	8	8	3'-4"	W+1'-7"	W+4'-11"
W11	#4	8	8	8	8	8	8	8	3'-1"	W+1'-0"	W+4'-1"
W12	#4	4	4	4	4	4	4	4	3'-0"	W+8"	W+3'-8"
Y1	#4	8	8	8	8	8	8	8			5'-8"
Y2	#4	8	8	8	8	8	8	8			9'-8"
Y3	#4	8	8	8	8	8	8	8			13'-8"
Y4	#4	8	8	8	8	8	8	8			17'-8"
Y5	#4	8	8	8	8	8	8	8			21'-8"
Y6	#4	8	8	8	8	8	8	8			25'-8"
Y7	#4	8	8	8	8	8	8	8			29'-8"
Y8	#4	24	24	24	24	24	24	24			30'-3"

HEIGHT = 10 FT.

BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 10'	12'	14'	16'	18'	20'	22'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2	2	2			S+1'-2"
T2	#4	2	2	2	2	2	2	2			S+1'-8"
T3	#4	2	2	2	2	2	2	2			S+2'-5"
T4	#4	2	2	2	2	2	2	2			S+3'-2"
T5	#4	2	2	2	2	2	2	2			S+3'-11"
T6	#4	2	2	2	2	2	2	2			S+4'-8"
T7	#4	2	2	2	2	2	2	2			S+5'-5"
T8	#4	2	2	2	2	2	2	2			S+6'-2"
T9	#4	2	2	2	2	2	2	2			S+6'-11"
T10	#4	2	2	2	2	2	2	2			S+7'-8"
T11	#4	2	2	2	2	2	2	2			S+8'-5"
T12	#4	2	2	2	2	2	2	2			S+9'-2"
T13	#4	2	2	2	2	2	2	2			S+9'-9"
T14	#4	2	2	2	2	2	2	2			S+10'-6"
T15	#4	2	2	2	2	2	2	2			S+11'-3"
T16	#4	2	2	2	2	2	2	2			S+12'-0"
T17	#4	2	2	2	2	2	2	2			S+12'-9"
T18	#4	2	2	2	2	2	2	2			S+13'-6"
T19	#4	2	2	2	2	2	2	2			S+14'-3"
T20	#4	2	2	2	2	2	2	2			S+15'-0"
T21	#4	2	2	2	2	2	2	2			S+15'-9"
T22	#4	2	2	2	2	2	2	2			S+16'-6"
T23	#4	2	2	2	2	2	2	2			S+17'-3"
T24	#4	2	2	2	2	2	2	2			S+17'-11"
T25	#4	2	2	2	2	2	2	2			S+18'-7"
T26	#4	2	2	2	2	2	2	2			S+18'-10"
U	#4	12	12	12	12	12	12	12			26'-3"
V1	#4	24	28	32	36	40	44	48	24'-11"	1'-8"	26'-7"
V2	#4	4	4	4	4	4	4	4	22'-7"	1'-8"	24'-3"
V3	#4	4	4	4	4	4	4	4	19'-10"	1'-8"	21'-6"
V4	#4	4	4	4	4	4	4	4	17'-1"	1'-8"	18'-9"
V5	#4	4	4	4	4	4	4	4	14'-4"	1'-8"	16'-0"
V6	#4	4	4	4	4	4	4	4	11'-7"	1'-8"	13'-3"
V7	#4	4	4	4	4	4	4	4	8'-10"	1'-8"	10'-6"
V8	#4	4	4	4	4	4	4	4	6'-1"	1'-8"	7'-9'
V9	#4	4	4	4	4	4	4	4	3'-4"	1'-8"	5'-0"
W1	#6	20	20	20	20	20	20	20	5'-10"	W+8'-1"	W+13'-11"
W2	#6	20	20	20	20	20	20	20	5'-5"	W+7'-2"	W+12'-7"
W3	#5	20	20	20	20	20	20	20	5'-0"	W+6'-3"	W+11'-3"
W4	#5	12	12	12	12	12	12	12	4'-8"	W+5'-7"	W+10'-3"
W5	#5	12	12	12	12	12	12	12	4'-5"	W+4'-11"	W+9'-4"
W6	#4	12	12	12	12	12	12	12	4'-2"	W+4'-1"	W+8'-3"
W7	#4	12	12	12	12	12	12	12	3'-10"	W+3'-5"	W+7'-3"
W8	#4	12	12	12	12	12	12	12	3'-5"	W+2'-7"	W+6'-0"
W9	#4	12	12	12	12	12	12	12	3'-2"	W+2'-0"	W+5'-2"
W10	#4	8	8	8	8	8	8	8	2'-11"	W+1'-4"	W+4'-3"
W11	#4	8	8	8	8	8	8	8	2'-8"	W+8"	W+3'-4"
Y1	#4	8	8	8	8	8	8	8			5'-4"
Y2	#4	8	8	8	8	8	8	8			9'-4"
Y3	#4	8	8	8	8	8	8	8			13'-4"
Y4	#4	8	8	8	8	8	8	8			17'-4"
Y5	#4	8	8	8	8	8	8	8			21'-4"
Y6	#4	8	8	8	8	8	8	8			25'-4"
Y7	#4	16	16	16	16	16	16	16			26'-3"

REVISIONS | BY | DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
WINGS WITH 3:1 SLOPE
FOR
BASIC CULVERT DRAWING
SINGLE CELL
HEIGHTS 6-12 FT.
SPANS 6-24 FT.

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED MJC | DATE 07-11-97 | DATE 08-01-97

WORKING NUMBER IWS-3

SHEET NUMBER 7016

ESTIMATED QUANTITIES-CULVERT (L=150 FT.)

CULVERT HEIGHT "H"	CLEAR SPAN 6' CONC. cu. yd.	6' REINF. STEEL lb.	7' CONC. cu. yd.	7' REINF. STEEL lb.	8' CONC. cu. yd.	8' REINF. STEEL lb.	9' CONC. cu. yd.	9' REINF. STEEL lb.	10' CONC. cu. yd.	10' REINF. STEEL lb.	12' CONC. cu. yd.	12' REINF. STEEL lb.	14' CONC. cu. yd.	14' REINF. STEEL lb.	16' CONC. cu. yd.	16' REINF. STEEL lb.	18' CONC. cu. yd.	18' REINF. STEEL lb.	20' CONC. cu. yd.	20' REINF. STEEL lb.	22' CONC. cu. yd.	22' REINF. STEEL lb.	24' CONC. cu. yd.	24' REINF. STEEL lb.
6'	107.46	14,893			135.35	19,617			167.07	25,896	202.64	31,851	253.05	40,088	297.38	46,586	353.30	58,125	413.39	68,544				
8'					174.41	26,894			203.83	30,286	241.63	35,276	295.28	42,787	346.61	52,747	401.98	62,531	461.34	73,117				

CULVERT DIMENSIONS

CULVERT HEIGHT "H"	"J"	"LW"	"N1"	"N2"	"R"	"Z"	"Y" CLEAR SPAN 6'	7'	8'	9'	10'	12'	14'	16'	18'	20'	22'	24'
6'	5'-9"	18'-4 5/16"			1¼"	17'-5⅜"	18'-7½"		20'-7½"		22'-7½"	24'-7½"	26'-7½"	28'-7½"	30'-7½"	32'-7½"		
8'	7'-4"	23'-4 5/16"			1½"	22'-2 5/16"			24'-1 3/16"		26'-1 3/16"	28'-1 3/16"	30'-1 3/16"	32'-1 3/16"	34'-1 3/16"	36'-1 3/16"		

ADDITIONAL BAR LIST FOR WINGS & APRONS

BAR	SIZE	H = 6 FT. NO.	H = 6 FT. LENGTH	H = 8 FT. NO.	H = 8 FT. LENGTH
F	#4	8	18'-10"	8	24'-2"
O	#5	28	3'-0"	72	3'-0"
Q5	#4	4	5'-7"	4	7'-7"
R1	#4			8	W+6'-1"
R2	#4			12	W+4'-8"
R3	#4			12	W+3'-3"
R4	#4			12	W+1'-10"
R5	#4			12	W+5"

△ HEIGHT = 8 FT.

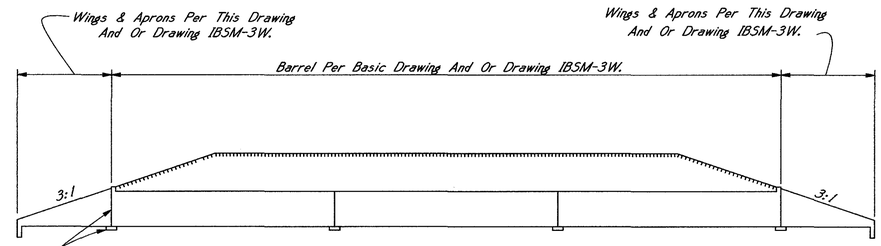
BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 8'	10'	12'	14'	16'	18'	20'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2	2	2			S+10"
T2	#4	2	2	2	2	2	2	2			S+1'-5"
T3	#4	2	2	2	2	2	2	2			S+2'-2"
T4	#4	2	2	2	2	2	2	2			S+2'-11"
T5	#4	2	2	2	2	2	2	2			S+3'-8"
T6	#4	2	2	2	2	2	2	2			S+4'-5"
T7	#4	2	2	2	2	2	2	2			S+5'-2"
T8	#4	2	2	2	2	2	2	2			S+5'-11"
T9	#4	2	2	2	2	2	2	2			S+6'-7"
T10	#4	2	2	2	2	2	2	2			S+7'-4"
T11	#4	2	2	2	2	2	2	2			S+8'-1"
T12	#4	2	2	2	2	2	2	2			S+8'-10"
T13	#4	2	2	2	2	2	2	2			S+9'-7"
T14	#4	2	2	2	2	2	2	2			S+10'-4"
T15	#4	2	2	2	2	2	2	2			S+11'-1"
T16	#4	2	2	2	2	2	2	2			S+11'-10"
T17	#4	2	2	2	2	2	2	2			S+12'-7"
T18	#4	2	2	2	2	2	2	2			S+13'-4"
T19	#4	2	2	2	2	2	2	2			S+14'-1"
T20	#4	2	2	2	2	2	2	2			S+14'-10"
T21	#4	2	2	2	2	2	2	2			S+15'-7"
T22	#4	2	2	2	2	2	2	2			S+16'-3"
T23	#4	6	6	6	6	6	6	6			S+16'-6"
U	#4	12	12	12	12	12	12	12			23'-0"
V1	#4	20	24	28	32	36	40	44	21'-11"	1'-8"	23'-7"
V2	#4	4	4	4	4	4	4	4	19'-2"	1'-8"	20'-10"
V3	#4	4	4	4	4	4	4	4	16'-5"	1'-8"	18'-1"
V4	#4	4	4	4	4	4	4	4	13'-8"	1'-8"	15'-4"
V5	#4	4	4	4	4	4	4	4	10'-11"	1'-8"	12'-7"
V6	#4	4	4	4	4	4	4	4	8'-2"	1'-8"	9'-10"
V7	#4	4	4	4	4	4	4	4	5'-5"	1'-8"	7'-1"
W1	#5	24	24	24	24	24	24	24	4'-6"	W+6'-9"	W+11'-3"
W2	#5	20	20	20	20	20	20	20	4'-1"	W+5'-7"	W+9'-8"
W3	#5	12	12	12	12	12	12	12	3'-7"	W+4'-7"	W+8'-2"
W4	#4	12	12	12	12	12	12	12	3'-3"	W+3'-7"	W+6'-10"
W5	#4	12	12	12	12	12	12	12	2'-11"	W+2'-7"	W+5'-6"
W6	#4	12	12	12	12	12	12	12	2'-7"	W+1'-7"	W+4'-2"
W7	#4	8	8	8	8	8	8	8	2'-3"	W+1'-0"	W+3'-3"
W8	#4	8	8	8	8	8	8	8	2'-0"	W+5"	W+2'-5"
Y1	#4	8	8	8	8	8	8	8			4'-10"
Y2	#4	8	8	8	8	8	8	8			8'-0"
Y3	#4	8	8	8	8	8	8	8			11'-2"
Y4	#4	8	8	8	8	8	8	8			14'-4"
Y5	#4	8	8	8	8	8	8	8			17'-6"
Y6	#4	8	8	8	8	8	8	8			20'-8"
Y7	#4	16	16	16	16	16	16	16			23'-0"

△ HEIGHT = 6 FT.

BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 6'	8'	10'	12'	14'	16'	18'	20'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2	2	2	2			S+8"
T2	#4	2	2	2	2	2	2	2	2			S+1'-5"
T3	#4	2	2	2	2	2	2	2	2			S+2'-2"
T4	#4	2	2	2	2	2	2	2	2			S+2'-11"
T5	#4	2	2	2	2	2	2	2	2			S+3'-8"
T6	#4	2	2	2	2	2	2	2	2			S+4'-5"
T7	#4	2	2	2	2	2	2	2	2			S+5'-2"
T8	#4	2	2	2	2	2	2	2	2			S+5'-11"
T9	#4	2	2	2	2	2	2	2	2			S+6'-8"
T10	#4	2	2	2	2	2	2	2	2			S+7'-5"
T11	#4	2	2	2	2	2	2	2	2			S+8'-2"
T12	#4	2	2	2	2	2	2	2	2			S+8'-11"
T13	#4	2	2	2	2	2	2	2	2			S+9'-7"
T14	#4	2	2	2	2	2	2	2	2			S+10'-4"
T15	#4	2	2	2	2	2	2	2	2			S+11'-1"
T16	#4	2	2	2	2	2	2	2	2			S+11'-10"
T17	#4	2	2	2	2	2	2	2	2			S+12'-7"
T18	#4	6	6	6	6	6	6	6	6			S+13'-0"
U	#4	12	12	12	12	12	12	12	12			18'-0"
V1	#4	16	20	24	28	32	36	40	44	17'-1"	1'-8"	18'-9"
V2	#4	4	4	4	4	4	4	4	4	14'-1"	1'-8"	15'-9"
V3	#4	4	4	4	4	4	4	4	4	11'-4"	1'-8"	13'-0"
V4	#4	4	4	4	4	4	4	4	4	8'-7"	1'-8"	10'-3"
V5	#4	4	4	4	4	4	4	4	4	5'-10"	1'-8"	7'-6"
V6	#4	4	4	4	4	4	4	4	4	3'-1"	1'-8"	4'-9"
W1	#4	20	20	20	20	20	20	20	20	4'-0"	W+5'-4"	W+9'-4"
W2	#4	12	12	12	12	12	12	12	12	3'-8"	W+4'-9"	W+8'-5"
W3	#4	12	12	12	12	12	12	12	12	3'-5"	W+4'-0"	W+7'-5"
W4	#4	12	12	12	12	12	12	12	12	3'-0"	W+3'-2"	W+6'-2"
W5	#4	12	12	12	12	12	12	12	12	2'-8"	W+2'-3"	W+4'-11"
W6	#4	12	12	12	12	12	12	12	12	2'-4"	W+1'-4"	W+3'-8"
W7	#4	12	12	12	12	12	12	12	12	2'-0"	W+5"	W+2'-5"
Y1	#4	4	4	4	4	4	4	4	4			4'-10"
Y2	#4	4	4	4	4	4	4	4	4			8'-1"
Y3	#4	4	4	4	4	4	4	4	4			11'-3"
Y4	#4	4	4	4	4	4	4	4	4			14'-5"
Y5	#4	4	4	4	4	4	4	4	4			17'-7"
Y6	#4	4	4	4	4	4	4	4	4			18'-0"



SIDE ELEVATION OF CULVERT

See Drawing No. IBJL-1 For Joint Locations

NOTE:
Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Are Required Only Where Called For By The Basic Drawing And Auxiliary Slabs "W" Are Not To Be Used For Culvert Heights Of Less Than 8 Feet.

GENERAL NOTES:

This Drawing Shows The General Details Necessary To Modify A Single Cell Culvert For Wings With 3:1 Slope.

All Governing Dimensions, Reinforcing Details And General Requirements Of Basic Culvert Drawing Shall Apply Except As Specifically Modified By This Drawing And Or Drawing IBSM-3W.

Barrel Details On Basic Culvert Drawing Shall Be Used With Cover From 2'-6" To The Maximum Shown On Basic Culvert Drawing. With Cover Less Than 2'-6" And More Than Maximum Shown On Basic Culvert Drawing, Use Drawing IBSM-3W For Barrel Details.

Quantities Shown On This Sheet Are For Culverts With Basic Culvert Barrels And Wings With 3:1 Slope Per This Drawing. Quantities Shown On Drawing IBSM-3W Are For Culverts With Barrels Per Drawing IBSM-3W And Wings With 3:1 Slope Per This Drawing And Drawing IBSM-3W. Quantities Not Shown On This Sheet And Or Drawing IBSM-3W Are Same As Shown On Basic Culvert Drawing.

Quantities Shown On This Sheet Are For Complete Culvert Of The Length Noted And Include Barrel, Parapets, Wings, Aprons, Cut-Off Walls, Auxiliary Slabs "W" Where Required And Two Auxiliary Slabs "J".

Quantities Shown On This Sheet Will Be Used As A Basis For Final Payment For Culverts Constructed In Accordance With This Drawing And Basic Culvert Drawing.

DATE	REVISIONS	BY
2-17-99	Revised HEIGHT Dimensions.	BJJ

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
WINGS WITH 3:1 SLOPE
FOR
BASIC CULVERT DRAWING
SINGLE CELL
HEIGHTS 6-12 FT.
SPANS 6-24 FT.

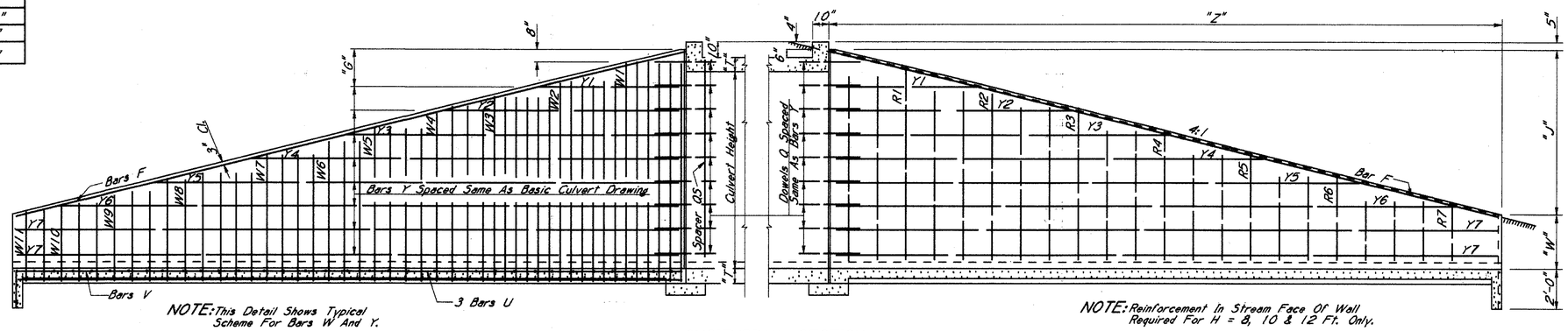
WORKING NUMBER IWS-3

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED MJC | DATE 07-11-97 | DATE 08-01-97

SHEET NUMBER 7017

\bjj\pw\culvert\english\375.dgn

"H"	"G"
6'	1'-10"
8'	1'-10"
10'	2'-0"
12'	2'-1"



NOTE: This Detail Shows Typical Scheme For Bars W And Y.

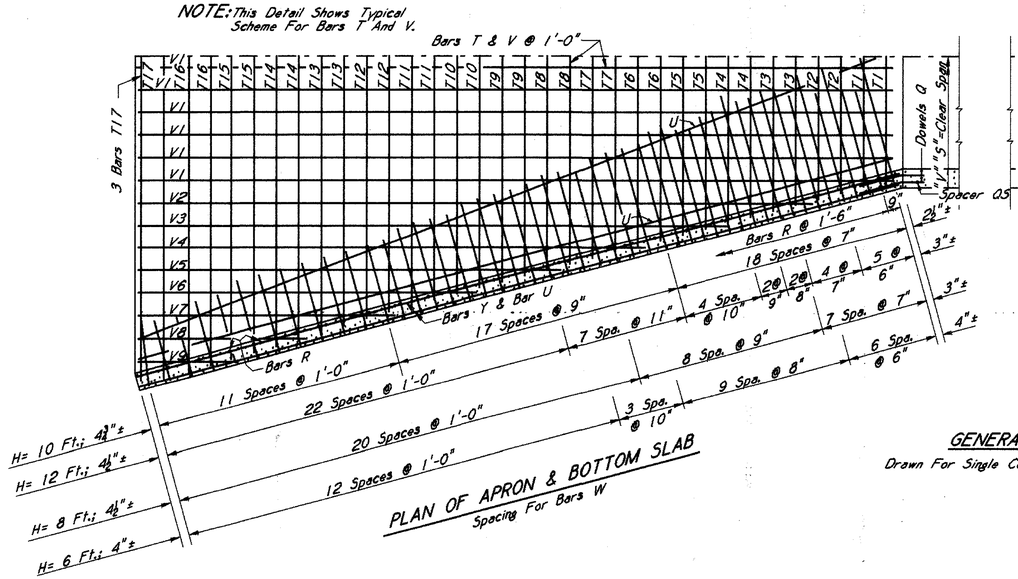
FILL SIDE

LONGITUDINAL SECTION

Showing Bars In Both Faces Of Wall.
Drawn For Single Cell 10' x 10' Culvert.

NOTE: Reinforcement In Stream Face Of Wall Required For H = 8, 10 & 12 Ft. Only.

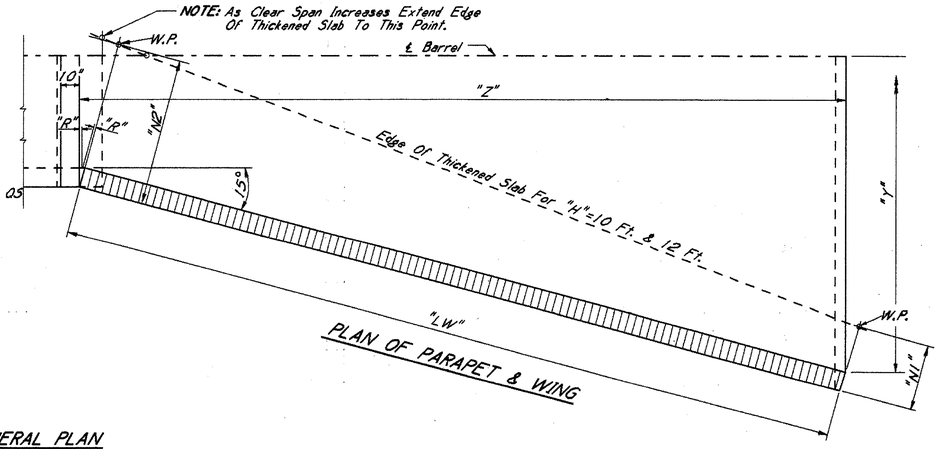
STREAM SIDE



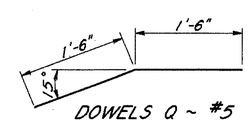
PLAN OF APRON & BOTTOM SLAB
Spacing For Bars W

GENERAL PLAN

Drawn For Single Cell 10' x 10' Culvert.



PLAN OF PARAPET & WING



DOWELS Q ~ #5

BAR BENDING DETAILS

Dimensions Are Out To Out

REVISIONS	BY	MISSISSIPPI DEPARTMENT OF TRANSPORTATION WINGS WITH 4:1 SLOPE FOR BASIC CULVERT DRAWING SINGLE CELL HEIGHTS 6-12 FT. SPANS 6-24 FT.
		WORKING NUMBER IWS-4
DATE	DESIGNED NA / CHECKED BJJ / ISSUED TMT	SHEET NUMBER 7018
	DETAILED MJC / DATE 07-11-97 / DATE 08-01-97	

CULVERT DIMENSIONS

CULVERT HEIGHT "H"	"J"	"LW"	"N1"	"N2"	"R"	"Z"	"Y" CLEAR SPAN 6'	7'	8'	9'	10'	12'	14'	16'	18'	20'	22'	24'
10'	8'-5"	34'-10 1/8"	2'-11"	6'-6"	1 3/8"	33'-10 3/8"					28'-1 3/8"	30'-1 3/8"	32'-1 3/8"	34'-1 3/8"	36'-1 3/8"	38'-1 3/8"	40'-1 3/8"	
12'	9'-8"	40'-0 3/8"	3'-3"	7'-0"	1 3/8"	38'-10 3/8"						32'-9 7/8"	34'-9 7/8"	36'-9 7/8"	38'-9 7/8"	40'-9 7/8"	42'-9 7/8"	44'-9 7/8"

ESTIMATED QUANTITIES~CULVERT (150 FT.)

CLEAR SPAN

CULVERT HEIGHT "H"	6' CONC. cu. yd.	6' REINF. STEEL lb.	7' CONC. cu. yd.	7' REINF. STEEL lb.	8' CONC. cu. yd.	8' REINF. STEEL lb.	9' CONC. cu. yd.	9' REINF. STEEL lb.	10' CONC. cu. yd.	10' REINF. STEEL lb.	12' CONC. cu. yd.	12' REINF. STEEL lb.	14' CONC. cu. yd.	14' REINF. STEEL lb.	16' CONC. cu. yd.	16' REINF. STEEL lb.	18' CONC. cu. yd.	18' REINF. STEEL lb.	20' CONC. cu. yd.	20' REINF. STEEL lb.	22' CONC. cu. yd.	22' REINF. STEEL lb.	24' CONC. cu. yd.	24' REINF. STEEL lb.
10'									269.80	35,301	304.62	40,312	343.14	49,473	396.69	59,862	454.29	71,364	521.72	84,189	593.07	99,589		
12'											369.40	49,543	401.86	58,070	444.73	63,786	504.64	74,934	568.56	85,271	648.12	99,472	733.73	119.574

ADDITIONAL BAR LIST FOR WINGS & APRONS

BAR	SIZE	H = 10 FT. NO.	H = 10 FT. LENGTH	H = 12 FT. NO.	H = 12 FT. LENGTH
F	#4	8	35'-4"	8	40'-8"
Q	#5	72	3'-0"	88	3'-0"
QS	#4	4	9'-7"	4	11'-7"
R1	#4	12	W+7'-0"	12	W+8'-3"
R2	#4	12	W+5'-11"	12	W+7'-2"
R3	#4	12	W+4'-10"	12	W+6'-1"
R4	#4	12	W+3'-9"	12	W+5'-0"
R5	#4	12	W+2'-8"	12	W+3'-11"
R6	#4	12	W+1'-7"	12	W+2'-10"
R7	#4	16	W+1 3/8"	16	W+1'-4 1/2"
R8	#4			16	W+1"

HEIGHT = 12 FT.

BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 12'	14'	16'	18'	20'	22'	24'	DIM. X	DIM. X1	LENGTH
T1	#4	4	4	4	4	4	4	4			S+1'-8"
T2	#4	4	4	4	4	4	4	4			S+2'-9"
T3	#4	4	4	4	4	4	4	4			S+3'-10"
T4	#4	4	4	4	4	4	4	4			S+4'-11"
T5	#4	4	4	4	4	4	4	4			S+6'-0"
T6	#4	4	4	4	4	4	4	4			S+7'-1"
T7	#4	4	4	4	4	4	4	4			S+8'-2"
T8	#4	4	4	4	4	4	4	4			S+9'-3"
T9	#4	4	4	4	4	4	4	4			S+10'-4"
T10	#4	4	4	4	4	4	4	4			S+ 11'-5"
T11	#4	4	4	4	4	4	4	4			S+12'-6"
T12	#4	4	4	4	4	4	4	4			S+13'-7"
T13	#4	4	4	4	4	4	4	4			S+14'-8"
T14	#4	4	4	4	4	4	4	4			S+15'-9"
T15	#4	4	4	4	4	4	4	4			S+16'-10"
T16	#4	4	4	4	4	4	4	4			S+17'-11"
T17	#4	4	4	4	4	4	4	4			S+19'-0"
T18	#4	4	4	4	4	4	4	4			S+20'-1"
T19	#4	4	4	4	4	4	4	4			S+21'-2"
T20	#4	6	6	6	6	6	6	6			S+22'-3"
U	#4	12	12	12	12	12	12	12			39'-8"
V1	#4	28	32	36	40	44	48	52	38'-6"	1'-8"	40'-2"
V2	#4	4	4	4	4	4	4	4	35'-0"	1'-8"	36'-8"
V3	#4	4	4	4	4	4	4	4	31'-0"	1'-8"	32'-8"
V4	#4	4	4	4	4	4	4	4	27'-6"	1'-8"	29'-2"
V5	#4	4	4	4	4	4	4	4	24'-0"	1'-8"	25'-8"
V6	#4	4	4	4	4	4	4	4	20'-0"	1'-8"	21'-8"
V7	#4	4	4	4	4	4	4	4	16'-6"	1'-8"	18'-2"
V8	#4	4	4	4	4	4	4	4	12'-6"	1'-8"	14'-2"
V9	#4	4	4	4	4	4	4	4	9'-0"	1'-8"	10'-8"
V10	#4	4	4	4	4	4	4	4	5'-6"	1'-8"	7'-2"
W1	#7	24	24	24	24	24	24	24	6'-6"	W+9'-7"	W+16'-1"
W2	#7	20	20	20	20	20	20	20	6'-2"	W+8'-11"	W+15'-1"
W3	#7	16	16	16	16	16	16	16	5'-10"	W+8'-2"	W+14'-0"
W4	#7	16	16	16	16	16	16	16	5'-6"	W+7'-3"	W+12'-9"
W5	#6	16	16	16	16	16	16	16	5'-2"	W+6'-6"	W+11'-8"
W6	#6	16	16	16	16	16	16	16	4'-10"	W+5'-7"	W+10'-5"
W7	#5	16	16	16	16	16	16	16	4'-5"	W+4'-7"	W+9'-0"
W8	#5	16	16	16	16	16	16	16	4'-0"	W+3'-7"	W+7'-7"
W9	#4	16	16	16	16	16	16	16	3'-8"	W+2'-8"	W+6'-4"
W10	#4	12	12	12	12	12	12	12	3'-3"	W+1'-11"	W+5'-2"
W11	#4	12	12	12	12	12	12	12	2'-11"	W+1'-2"	W+4'-1"
W12	#4	8	8	8	8	8	8	8	2'-8"	W+9"	W+3'-5"
Y1	#4	8	8	8	8	8	8	8			7'-8"
Y2	#4	8	8	8	8	8	8	8			12'-10"
Y3	#4	8	8	8	8	8	8	8			18'-0"
Y4	#4	8	8	8	8	8	8	8			23'-2"
Y5	#4	8	8	8	8	8	8	8			28'-5"
Y6	#4	8	8	8	8	8	8	8			33'-7"
Y7	#4	8	8	8	8	8	8	8			38'-9"
Y8	#4	24	24	24	24	24	24	24			39'-8"

HEIGHT = 10 FT.

BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 10'	12'	14'	16'	18'	20'	22'	DIM. X	DIM. X1	LENGTH
T1	#4	4	4	4	4	4	4	4			S+1'-6"
T2	#4	4	4	4	4	4	4	4			S+2'-7"
T3	#4	4	4	4	4	4	4	4			S+3'-8"
T4	#4	4	4	4	4	4	4	4			S+4'-9"
T5	#4	4	4	4	4	4	4	4			S+5'-10"
T6	#4	4	4	4	4	4	4	4			S+6'-11"
T7	#4	4	4	4	4	4	4	4			S+8'-0"
T8	#4	4	4	4	4	4	4	4			S+9'-1"
T9	#4	4	4	4	4	4	4	4			S+10'-2"
T10	#4	4	4	4	4	4	4	4			S+11'-3"
T11	#4	4	4	4	4	4	4	4			S+12'-4"
T12	#4	4	4	4	4	4	4	4			S+13'-5"
T13	#4	4	4	4	4	4	4	4			S+14'-6"
T14	#4	4	4	4	4	4	4	4			S+15'-7"
T15	#4	4	4	4	4	4	4	4			S+16'-8"
T16	#4	4	4	4	4	4	4	4			S+17'-9"
T17	#4	8	8	8	8	8	8	8			S+18'-10"
U	#4	12	12	12	12	12	12	12			34'-6"
V1	#4	24	28	32	36	40	44	48	33'-6"	1'-8"	35'-2"
V2	#4	4	4	4	4	4	4	4	30'-0"	1'-8"	31'-8"
V3	#4	4	4	4	4	4	4	4	26'-6"	1'-8"	28'-2"
V4	#4	4	4	4	4	4	4	4	22'-6"	1'-8"	24'-2"
V5	#4	4	4	4	4	4	4	4	18'-6"	1'-8"	20'-2"
V6	#4	4	4	4	4	4	4	4	15'-0"	1'-8"	16'-8"
V7	#4	4	4	4	4	4	4	4	11'-6"	1'-8"	13'-2"
V8	#4	4	4	4	4	4	4	4	7'-6"	1'-8"	9'-2"
V9	#4	4	4	4	4	4	4	4	4'-0"	1'-8"	5'-8"
W1	#6	24	24	24	24	24	24	24	6'-0"	W+8'-3"	W+14'-3"
W2	#6	24	24	24	24	24	24	24	5'-7"	W+7'-5"	W+13'-0"
W3	#5	24	24	24	24	24	24	24	5'-2"	W+6'-6"	W+11'-8"
W4	#5	16	16	16	16	16	16	16	4'-9"	W+5'-10"	W+10'-7"
W5	#5	16	16	16	16	16	16	16	4'-5"	W+5'-1"	W+9'-6"
W6	#4	16	16	16	16	16	16	16	4'-2"	W+4'-5"	W+8'-7"
W7	#4	16	16	16	16	16	16	16	3'-10"	W+3'-8"	W+7'-6"
W8	#4	16	16	16	16	16	16	16	3'-6"	W+2'-10"	W+6'-4"
W9	#4	16	16	16	16	16	16	16	3'-2"	W+1'-10"	W+5'-0"
W10	#4	12	12	12	12	12	12	12	2'-10"	W+1'-1"	W+3'-11"
W11	#4	8	8	8	8	8	8	8	2'-7"	W+8"	W+3'-3"
Y1	#4	8	8	8	8	8	8	8			7'-4"
Y2	#4	8	8	8	8	8	8	8			12'-6"
Y3	#4	8	8	8	8	8	8	8			17'-7"
Y4	#4	8	8	8	8	8	8	8			22'-10"
Y5	#4	8	8	8	8	8	8	8			28'-0"
Y6	#4	8	8	8	8	8	8	8			33'-2"
Y7	#4	16	16	16	16	16	16	16			34'-6"

REVISIONS | BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
WINGS WITH 4:1 SLOPE
FOR
BASIC CULVERT DRAWING
SINGLE CELL
HEIGHTS 6-12 FT.
SPANS 6-24 FT.

WORKING NUMBER IWS-4

DATE | DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED MJC | DATE 07-11-97 | DATE 08-01-97

SHEET NUMBER 7019

CULVERT DIMENSIONS

CULVERT HEIGHT "H"	"J"	"LW"	"N1"	"N2"	"R"	"Z"	"Y" CLEAR SPAN 6'	7'	8'	9'	10'	12'	14'	16'	18'	20'	22'	24'
6'	5'-10"	24'-1 1/8"			5/8"	23'-5 7/8"	18'-6 1/2"		20'-6 1/2"		22'-6 1/2"	24'-6 1/2"	26'-6 1/2"	28'-6 1/2"	30'-6 1/2"	32'-6 1/2"		
8'	7'-5"	30'-8 5/8"			1 1/8"	29'-10 5/8"			23'-11 3/8"		25'-11 3/8"	27'-11 3/8"	29'-11 3/8"	31'-11 3/8"	33'-11 3/8"	35'-11 3/8"		

ESTIMATED QUANTITIES-CULVERT (150 FT.)

CLEAR SPAN

CULVERT HEIGHT "H"	6' CONC. cu. yd.	6' REINF. STEEL lb.	7' CONC. cu. yd.	7' REINF. STEEL lb.	8' CONC. cu. yd.	8' REINF. STEEL lb.	9' CONC. cu. yd.	9' REINF. STEEL lb.	10' CONC. cu. yd.	10' REINF. STEEL lb.	12' CONC. cu. yd.	12' REINF. STEEL lb.	14' CONC. cu. yd.	14' REINF. STEEL lb.	16' CONC. cu. yd.	16' REINF. STEEL lb.	18' CONC. cu. yd.	18' REINF. STEEL lb.	20' CONC. cu. yd.	20' REINF. STEEL lb.	22' CONC. cu. yd.	22' REINF. STEEL lb.	24' CONC. cu. yd.	24' REINF. STEEL lb.
6'	113.05	15,418			141.50	20,177			173.78	26,490	209.91	32,478	260.90	40,750	305.80	47,282	362.28	58,854	422.93	69,308				
8'					185.54	27,883			215.79	31,316	304.62	36,347	308.99	43,903	361.19	53,904	417.42	63,731	477.64	74,360				

ADDITIONAL BAR LIST FOR WINGS & APRONS

BAR	SIZE	H = 6 FT. NO.	H = 6 FT. LENGTH	H = 8 FT. NO.	H = 8 FT. LENGTH
F	#4	8	24'-4"	8	31'-1"
Q	#5	28	3'-0"	72	3'-0"
QS	#4	4	5'-7"	4	7'-7"
R1	#4			12	W+6'-0"
R2	#4			12	W+4'-11"
R3	#4			12	W+3'-10"
R4	#4			12	W+2'-9"
R5	#4			12	W+1'-8"
R6	#4			12	W+7"

HEIGHT = 8 FT.

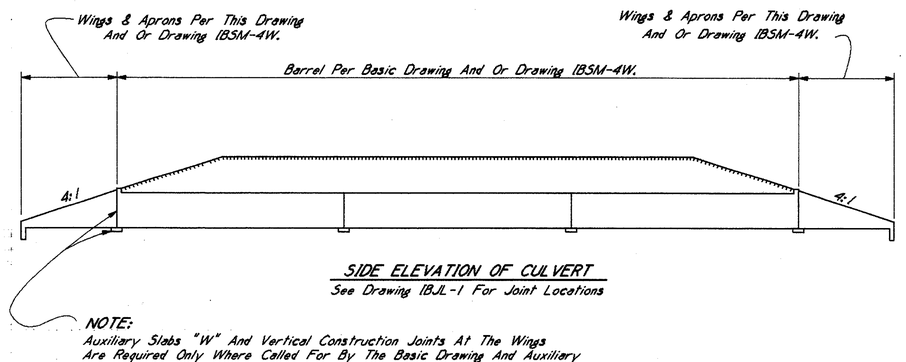
BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 8'	10'	12'	14'	16'	18'	20'	DIM. X	DIM. X1	LENGTH
T1	#4	4	4	4	4	4	4	4			S+1'-3"
T2	#4	4	4	4	4	4	4	4			S+2'-4"
T3	#4	4	4	4	4	4	4	4			S+3'-5"
T4	#4	4	4	4	4	4	4	4			S+4'-6"
T5	#4	4	4	4	4	4	4	4			S+5'-7"
T6	#4	4	4	4	4	4	4	4			S+6'-8"
T7	#4	4	4	4	4	4	4	4			S+7'-9"
T8	#4	4	4	4	4	4	4	4			S+8'-10"
T9	#4	4	4	4	4	4	4	4			S+9'-11"
T10	#4	4	4	4	4	4	4	4			S+11'-0"
T11	#4	4	4	4	4	4	4	4			S+12'-1"
T12	#4	4	4	4	4	4	4	4			S+13'-2"
T13	#4	4	4	4	4	4	4	4			S+14'-3"
T14	#4	4	4	4	4	4	4	4			S+15'-4"
T15	#4	8	8	8	8	8	8	8			S+16'-5"
U	#4	12	12	12	12	12	12	12			30'-4"
V1	#4	20	24	28	32	36	40	44	29'-6"	1'-8"	31'-2"
V2	#4	4	4	4	4	4	4	4	25'-6"	1'-8"	27'-2"
V3	#4	4	4	4	4	4	4	4	22'-0"	1'-8"	23'-8"
V4	#4	4	4	4	4	4	4	4	18'-6"	1'-8"	20'-2"
V5	#4	4	4	4	4	4	4	4	14'-6"	1'-8"	16'-2"
V6	#4	4	4	4	4	4	4	4	11'-0"	1'-8"	12'-8"
V7	#4	4	4	4	4	4	4	4	7'-0"	1'-8"	8'-8"
W1	#5	28	28	28	28	28	28	28	4'-6"	W+6'-11"	W+11'-5"
W2	#5	24	24	24	24	24	24	24	4'-2"	W+5'-10"	W+10'-0"
W3	#5	16	16	16	16	16	16	16	3'-9"	W+5'-1"	W+8'-10"
W4	#4	16	16	16	16	16	16	16	3'-5"	W+4'-1"	W+7'-6"
W5	#4	16	16	16	16	16	16	16	3'-1"	W+3'-2"	W+6'-3"
W6	#4	16	16	16	16	16	16	16	2'-9"	W+2'-2"	W+4'-11"
W7	#4	16	16	16	16	16	16	16	2'-5"	W+1'-2"	W+3'-7"
W8	#4	12	12	12	12	12	12	12	2'-0"	W+6"	W+2'-6"
Y1	#4	8	8	8	8	8	8	8			6'-8"
Y2	#4	8	8	8	8	8	8	8			10'-10"
Y3	#4	8	8	8	8	8	8	8			11'-2"
Y4	#4	8	8	8	8	8	8	8			19'-1"
Y5	#4	8	8	8	8	8	8	8			23'-2"
Y6	#4	8	8	8	8	8	8	8			27'-4"
Y7	#4	16	16	16	16	16	16	16			30'-4"

HEIGHT = 6 FT.

BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 6'	8'	10'	12'	14'	16'	18'	20'	DIM. X	DIM. X1	LENGTH
T1	#4	4	4	4	4	4	4	4	4			S+1'-0"
T2	#4	4	4	4	4	4	4	4	4			S+2'-1"
T3	#4	4	4	4	4	4	4	4	4			S+3'-2"
T4	#4	4	4	4	4	4	4	4	4			S+4'-3"
T5	#4	4	4	4	4	4	4	4	4			S+5'-4"
T6	#4	4	4	4	4	4	4	4	4			S+6'-5"
T7	#4	4	4	4	4	4	4	4	4			S+7'-6"
T8	#4	4	4	4	4	4	4	4	4			S+8'-7"
T9	#4	4	4	4	4	4	4	4	4			S+9'-8"
T10	#4	4	4	4	4	4	4	4	4			S+10'-9"
T11	#4	4	4	4	4	4	4	4	4			S+11'-10"
T12	#4	8	8	8	8	8	8	8	8			S+12'-11"
U	#4	12	12	12	12	12	12	12	12			23'-9"
V1	#4	16	20	24	28	32	36	40	44	23'-1"	1'-8"	24'-9"
V2	#4	4	4	4	4	4	4	4	4	19'-6"	1'-8"	21'-2"
V3	#4	4	4	4	4	4	4	4	4	15'-6"	1'-8"	17'-2"
V4	#4	4	4	4	4	4	4	4	4	12'-0"	1'-8"	13'-8"
V5	#4	4	4	4	4	4	4	4	4	8'-6"	1'-8"	10'-2"
V6	#4	4	4	4	4	4	4	4	4	4'-6"	1'-8"	6'-2"
W1	#4	28	28	28	28	28	28	28	28	4'-0"	W+5'-4"	W+9'-4"
W2	#4	16	16	16	16	16	16	16	16	3'-8"	W+4'-8"	W+8'-4"
W3	#4	16	16	16	16	16	16	16	16	3'-5"	W+4'-0"	W+7'-5"
W4	#4	16	16	16	16	16	16	16	16	3'-2"	W+3'-3"	W+6'-5"
W5	#4	16	16	16	16	16	16	16	16	2'-10"	W+2'-4"	W+5'-2"
W6	#4	16	16	16	16	16	16	16	16	2'-6"	W+1'-4"	W+3'-10"
W7	#4	16	16	16	16	16	16	16	16	2'-0"	W+5"	W+2'-5"
Y1	#4	4	4	4	4	4	4	4	4			6'-8"
Y2	#4	4	4	4	4	4	4	4	4			10'-9"
Y3	#4	4	4	4	4	4	4	4	4			14'-11"
Y4	#4	4	4	4	4	4	4	4	4			19'-1"
Y5	#4	4	4	4	4	4	4	4	4			23'-3"
Y6	#4	4	4	4	4	4	4	4	4			24'-9"



SIDE ELEVATION OF CULVERT

See Drawing 1BJL-1 For Joint Locations

NOTE:

Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Are Required Only Where Called For By The Basic Drawing And Auxiliary Slabs "W" Are Not To Be Used For Culvert Heights Of Less Than 8 Feet.

GENERAL NOTES:

This Drawing Shows The General Details Necessary To Modify A Single Cell Culvert For Wings With 4:1 Slope.

All Governing Dimensions, Reinforcing Details And General Requirements Of Basic Culvert Drawing Shall Apply Except As Specifically Modified By This Drawing And Or Drawing 1B5M-4W.

Barrel Details On Basic Culvert Drawing Shall Be Used With Cover From 2'-6" To The Maximum Shown On Basic Culvert Drawing. With Cover Less Than 2'-6" And More Than Maximum Shown On Basic Culvert Drawing, Use Drawing 1B5M-4W For Barrel Details.

Quantities Shown On This Sheet Are For Culverts With Basic Culvert Barrels And Wings With 4:1 Slope Per This Drawing. Quantities Shown On Drawing 1B5M-4W Are For Culverts With Barrels Per Drawing 1B5M-4W And Wings With 4:1 Slope Per This Drawing And Drawing 1B5M-4W. Quantities Not Shown On This Sheet And Or Drawing 1B5M-4W Are Same As Shown On Basic Culvert Drawing.

Quantities Shown On This Sheet Are For Complete Culvert Of The Length Noted And Include Barrel, Parapets, Wings, Aprons, Cut-Off Walls, Auxiliary Slabs "W" Where Required And Two Auxiliary Slabs "J".

Quantities Shown On This Sheet Will Be Used As A Basis For Final Payment For Culverts Constructed In Accordance With This Drawing And Basic Culvert Drawing.

REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
WINGS WITH 4:1 SLOPE
FOR
BASIC CULVERT DRAWING
SINGLE CELL
HEIGHTS 6-12 FT.
SPANS 6-24 FT.

WORKING NUMBER IWS-4

DESIGNED NA CHECKED BJJ ISSUED TMT
DETAILED MJC DATE 07-11-97 DATE 08-01-97

SHEET NUMBER 7020

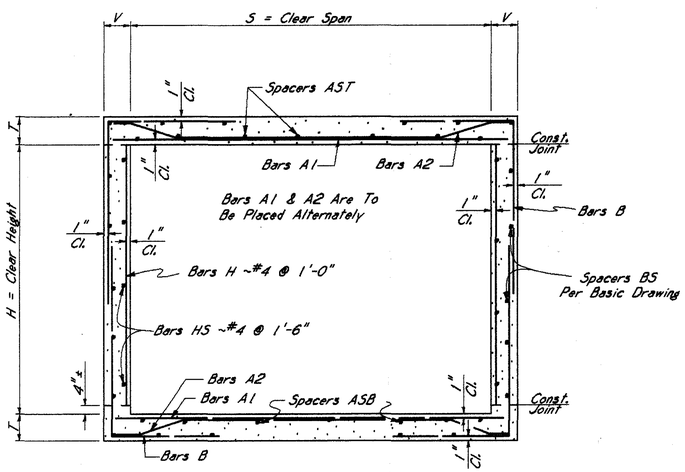
GENERAL DATA & ESTIMATED QUANTITIES FOR BOX CULVERTS UNDER HIGH COVER

LESS THAN 2'-6" COVER ~ L=150 FT.

AREA OF OPENING sq. ft.	SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A1" SIZE	BARS "A1" SPACING	BARS "A2" SIZE	BARS "A2" SPACING	BARS "B" SIZE	BARS "B" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
36	6x6	7½"	7"	1'-2½"	#7	1'-4"	#7	1'-4"	#6	7"	101.85	23,703	0.5910	148.70	0.35	21
48	8x6	8½"	7½"	1'-3½"	#7	1'-4"	#7	1'-4"	#6	7"	129.16	27,102	0.7631	170.57	0.46	26
60	10x6	10"	8½"	1'-5"	#8	1'-4"	#8	1'-4"	#7	8"	169.15	36,896	1.0195	235.30	0.56	32
72	12x6	10"	8½"	1'-5"	#8	1'-4"	#8	1'-4"	#7	8"	189.04	40,734	1.1430	260.12	0.66	38
84	14x6	11½"	10"	1'-6½"	#8	1'-2"	#8	1'-2"	#7	7"	241.52	51,026	1.4825	326.91	0.77	44
96	16x6	1'-1"	11½"	1'-8"	#9	1'-4"	#9	1'-4"	#8	8"	300.24	62,378	1.8637	402.74	0.88	50
108	18x6	1'-2½"	1'-1"	1'-9½"	#9	1'-2"	#9	1'-2"	#8	6"	365.23	81,990	2.2865	531.78	1.00	55
120	20x6	1'-3½"	1'-2"	1'-10½"	#10	1'-4"	#10	1'-4"	#10	8"	422.03	101,627	2.6553	662.72	1.10	61
64	8x8	9"	8"	1'-9"	#6	11"	#6	11"	#6	6½"	163.41	32,762	0.9136	200.79	0.46	27
80	10x8	9½"	8"	1'-9½"	#6	11"	#6	11"	#6	6½"	187.56	36,546	1.0597	225.06	0.56	32
96	12x8	11"	9"	1'-11"	#7	1'-0"	#7	1'-0"	#6	6"	235.28	45,061	1.3611	280.42	0.67	38
112	14x8	1'-0½"	10½"	2'-0½"	#8	1'-2"	#8	1'-2"	#7	6½"	293.74	57,635	1.7338	363.17	0.78	44
128	16x8	1'-2"	11½"	2'-2"	#8	1'-0"	#8	1'-0"	#8	7½"	353.67	70,715	2.1162	449.28	0.88	50
144	18x8	1'-3"	1'-1"	2'-3"	#8	11"	#8	11"	#8	6½"	415.15	84,642	2.5092	542.12	1.00	55
160	20x8	1'-4½"	1'-2½"	2'-4½"	#8	10"	#8	10"	#8	5½"	491.34	102,364	2.9992	658.46	1.11	61
100	10x10	9½"	9"	2'-9½"	#7	1'-2"	#7	1'-2"	#6	6"	222.77	42,402	1.2300	256.53	0.57	32
120	12x10	11"	10"	2'-11"	#7	1'-0"	#7	1'-0"	#7	7"	272.34	52,494	1.5453	322.43	0.67	38
140	14x10	1'-0½"	11"	3'-0½"	#7	10"	#7	10"	#7	6"	328.01	65,513	1.9007	408.57	0.78	44
160	16x10	1'-2"	1'-0"	3'-2"	#8	1'-0"	#8	1'-0"	#8	7"	389.78	77,586	2.2963	487.12	0.89	50
180	18x10	1'-4"	1'-1½"	3'-4"	#9	1'-1"	#9	1'-1"	#8	6½"	472.96	92,540	2.8334	588.09	1.00	56
200	20x10	1'-5"	1'-3"	3'-5"	#9	1'-0"	#9	1'-0"	#8	5½"	543.33	110,675	3.2870	706.45	1.11	61
220	22x10	1'-6"	1'-4"	3'-6"	#9	11"	#9	11"	#9	6"	611.93	132,276	3.7284	849.34	1.22	67
144	12x12	1'-1½"	10½"	3'-8½"	#7	11"	#7	11"	#7	6½"	318.36	60,770	1.7539	368.01	0.68	38
168	14x12	1'-2"	11½"	3'-11"	#8	1'-0"	#8	1'-0"	#7	6"	392.38	73,296	2.2273	449.40	0.79	44
192	16x12	1'-3"	1'-0"	4'-0"	#8	11"	#8	11"	#8	7"	444.12	85,838	2.5556	531.12	0.89	50
216	18x12	1'-4"	1'-1½"	4'-1"	#8	10"	#8	10"	#8	6"	513.33	102,740	3.0000	643.11	1.00	56
240	20x12	1'-6"	1'-3"	4'-3"	#9	11"	#9	11"	#8	5½"	607.98	121,401	3.6111	766.88	1.11	61
264	22x12	1'-7"	1'-4"	4'-4"	#11	1'-5"	#11	1'-5"	#10	8"	680.68	136,998	4.0782	871.98	1.22	67
288	24x12	1'-8½"	1'-5½"	4'-5½"	#10	1'-0"	#10	1'-0"	#9	6"	777.17	157,882	4.7024	1006.78	1.33	73

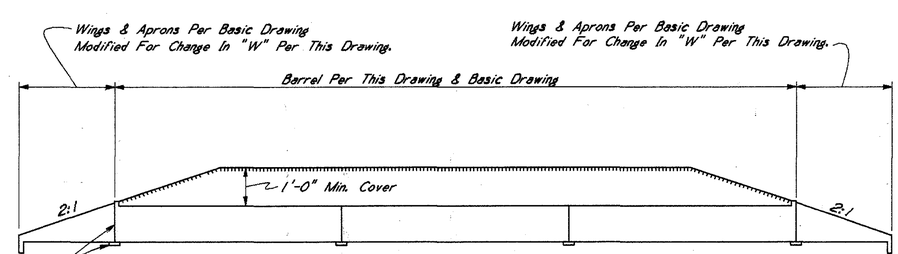
MAX. 15 FT. COVER ~ L=150 FT.

SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A1" SIZE	BARS "A1" SPACING	BARS "A2" SIZE	BARS "A2" SPACING	BARS "B" SIZE	BARS "B" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
6x6															
8x6	8½"	7½"	1'-3½"	#7	1'-4"	#7	1'-4"	#6	7"	129.16	27,102	0.7631	170.57	0.46	26
10x6	10"	8½"	1'-5"	#8	1'-4"	#8	1'-4"	#7	8"	169.15	36,896	1.0195	235.30	0.56	32
12x6	11½"	9½"	1'-6½"	#8	1'-2"	#8	1'-2"	#7	7"	215.16	46,088	1.3161	294.86	0.67	38
14x6	1'-1"	11"	1'-8"	#9	1'-4"	#9	1'-4"	#8	7"	271.00	60,808	1.6780	392.44	0.78	44
16x6	1'-2½"	1'-0½"	1'-9½"	#9	1'-2"	#9	1'-2"	#8	6"	333.07	75,675	2.0815	490.61	0.89	50
18x6	1'-4"	1'-2"	1'-11"	#10	1'-4"	#10	1'-4"	#9	7"	401.40	90,744	2.5267	590.02	1.00	56
20x6	1'-5½"	1'-3½"	2'-0½"	#10	1'-2"	#10	1'-2"	#10	8"	476.01	109,761	3.0137	715.73	1.12	62
8x8	9"	8"	1'-9"	#6	11"	#6	11"	#6	6½"	163.41	32,762	0.9136	200.79	0.46	27
10x8	10½"	9"	1'-10½"	#7	1'-1"	#7	1'-1"	#6	5½"	207.33	41,514	1.1898	258.13	0.57	32
12x8	1'-0½"	10"	2'-0½"	#7	10"	#7	10"	#6	5"	263.72	52,665	1.5484	331.03	0.67	38
14x8	1'-2"	11½"	2'-2"	#8	1'-0"	#8	1'-0"	#7	5½"	325.59	66,438	1.9434	421.88	0.79	44
16x8	1'-3½"	1'-0½"	2'-3½"	#9	1'-1"	#9	1'-1"	#8	6½"	388.79	80,950	2.3475	518.98	0.89	50
18x8	1'-4½"	1'-2½"	2'-4½"	#9	1'-0"	#9	1'-0"	#8	5½"	458.56	98,636	2.7955	634.54	1.01	56
20x8	1'-6½"	1'-4½"	2'-6½"	#9	11"	#9	11"	#8	5"	554.02	115,780	3.4129	747.86	1.12	62
10x10	11"	10"	2'-11"	#7	1'-1"	#7	1'-1"	#7	7"	250.10	47,299	1.4095	289.13	0.58	33
12x10	1'-1½"	11"	3'-1½"	#7	11"	#7	11"	#7	6"	316.03	58,731	1.8318	364.51	0.68	38
14x10	1'-2"	1'-0½"	3'-2"	#8	1'-0"	#8	1'-0"	#7	5½"	367.62	71,271	2.1616	447.05	0.79	44
16x10	1'-4"	1'-1½"	3'-4"	#8	11"	#8	11"	#8	6"	441.37	87,211	2.6358	552.16	0.90	50
18x10	1'-6"	1'-2½"	3'-6"	#9	11"	#9	11"	#8	5½"	523.18	108,123	3.1638	690.65	1.01	56
20x10	1'-7"	1'-4½"	3'-7"	#9	10"	#9	10"	#8	5"	604.00	126,637	3.6868	812.43	1.12	62
22x10	1'-8½"	1'-6"	3'-8½"	#9	10"	#9	10"	#9	5½"	694.79	145,869	4.2746	939.78	1.23	68
12x12	1'-1"	11½"	3'-10"	#7	10"	#7	10"	#7	5½"	351.11	68,470	1.9686	418.68	0.69	38
14x12	1'-3"	1'-0½"	4'-0"	#8	10"	#8	10"	#7	5"	420.90	85,455	2.4151	530.35	0.79	44
16x12	1'-5"	1'-1½"	4'-2"	#8	10"	#8	10"	#8	6½"	498.82	93,060	2.9152	580.63	0.90	50
18x12	1'-6"	1'-3"	4'-3"	#9	11"	#9	11"	#8	5½"	572.46	114,639	3.3889	722.86	1.01	56
20x12	1'-8"	1'-4½"	4'-5"	#9	10"	#9	10"	#8	5"	671.78	133,530	4.0309	846.88	1.12	62
22x12	1'-9"	1'-5½"	4'-6"	#11	1'-3"	#11	1'-3"	#10	7"	748.73	156,049	4.5262	994.05	1.23	68
24x12															



CROSS SECTION

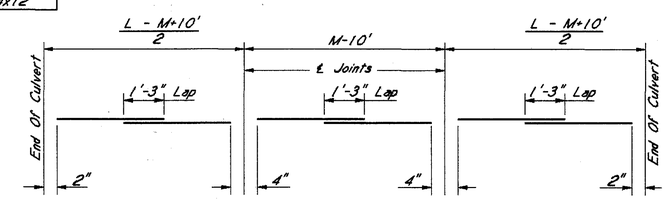
Bars AST Tie To Bars A1 In Top Slab.
Bars ASB Tie To Bars A1 In Bottom Slab.
Bars BS Tie To Bars B.



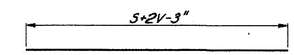
SIDE ELEVATION OF CULVERT

See Drawing No. IBJL-1 For Joint Locations

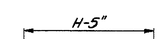
NOTE:
Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Are Required Only Where Called For By The Basic Drawing And Auxiliary Slabs "W" Are Not To Be Used For Culvert Heights Of Less Than 8 Feet.



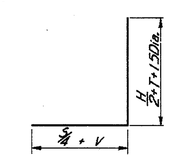
ONE SET OF BARS HS ~ #4



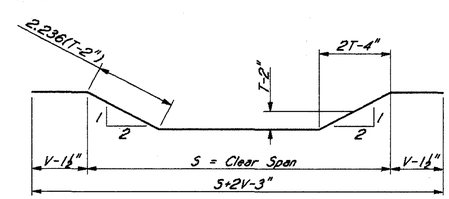
BARS A1



BARS H ~#4



BARS B



BARS A2

BAR BENDING DETAILS

Dimensions Are Out To Out

REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
IBS CULVERTS MODIFIED
FOR HIGH COVER
WINGS WITH 2:1 SLOPE

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED MJC | DATE 07-11-97 | DATE 08-01-97

WORKING NUMBER IBSM-2W
SHEET NUMBER 7021

GENERAL DATA & ESTIMATED QUANTITIES FOR BOX CULVERTS UNDER HIGH COVER

MAX. 20 FT. COVER ~ L=150 FT.

AREA OF OPENING sq. ft.	SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A1" SIZE	BARS "A1" SPACING	BARS "A2" SIZE	BARS "A2" SPACING	BARS "B" SIZE	BARS "B" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
36	6x6	7½"	7"	1'-2½"	#7	1'-4"	#7	1'-4"	#6	7"	101.85	23,703	0.5910	148.70	0.35	21
48	8x6	9½"	8"	1'-4½"	#7	1'-2"	#7	1'-2"	#6	6"	141.33	30,537	0.8436	193.46	0.46	27
60	10x6	11½"	9½"	1'-6½"	#8	1'-2"	#8	1'-2"	#7	7"	192.51	41,762	1.1742	266.92	0.57	32
72	12x6	1'-1"	10½"	1'-8"	#8	1'-0"	#8	1'-0"	#7	6"	241.75	52,999	1.4923	341.78	0.68	38
84	14x6	1'-2½"	1'-0½"	1'-9½"	#9	1'-2"	#9	1'-2"	#8	7"	304.85	65,562	1.9026	423.43	0.79	44
96	16x6	1'-4"	1'-2"	1'-11"	#9	1'-0"	#9	1'-0"	#8	6"	370.40	82,241	2.3292	535.08	0.91	50
108	18x6	1'-6"	1'-3½"	2'-1"	#10	1'-2"	#10	1'-2"	#10	8"	451.78	103,121	2.8611	672.31	1.02	56
120	20x6	1'-7½"	1'-5"	2'-2½"	#10	1'-0"	#10	1'-0"	#10	7"	530.88	127,000	3.3781	830.49	1.13	62
64	8x8	10"	9"	1'-10"	#7	1'-2"	#7	1'-2"	#6	6"	181.24	35,165	1.0309	216.15	0.47	27
80	10x8	11½"	10"	1'-11½"	#7	11"	#7	11"	#7	7"	227.42	46,056	1.3220	287.60	0.58	33
96	12x8	1'-1½"	11"	2'-1½"	#9	1'-3"	#9	1'-3"	#7	6½"	286.14	56,708	1.6960	358.43	0.68	38
112	14x8	1'-3½"	1'-0½"	2'-3½"	#8	11"	#8	11"	#7	5"	357.87	72,533	2.1561	462.52	0.79	44
128	16x8	1'-5"	1'-2"	2'-5"	#9	11"	#9	11"	#8	6"	429.42	91,644	2.6152	588.95	0.91	50
144	18x8	1'-6½"	1'-4"	2'-6½"	#9	11"	#9	11"	#8	5"	512.36	108,516	3.1502	700.39	1.02	56
160	20x8	1'-8½"	1'-6"	2'-8½"	#9	10"	#9	10"	#9	5½"	612.66	131,607	3.7994	853.28	1.14	62
100	10x10	11½"	11"	2'-11½"	#7	11"	#7	11"	#7	6½"	266.67	51,743	1.5191	319.54	0.58	33
120	12x10	1'-1½"	1'-0"	3'-1½"	#8	1'-0"	#8	1'-0"	#7	5½"	327.42	65,341	1.9074	408.58	0.69	39
140	14x10	1'-3½"	1'-1½"	3'-3½"	#8	11"	#8	11"	#8	6½"	402.09	78,230	2.3881	494.14	0.80	44
160	16x10	1'-5"	1'-3"	3'-5"	#9	11"	#9	11"	#9	7½"	476.45	98,495	2.8673	627.36	0.91	50
180	18x10	1'-7½"	1'-4"	3'-7½"	#9	10"	#9	10"	#8	5"	570.47	119,062	3.4753	762.94	1.02	56
200	20x10	1'-9"	1'-6"	3'-9"	#10	1'-0"	#10	1'-0"	#9	5½"	665.65	141,065	4.0926	908.83	1.14	62
220	22x10															
144	12x12	1'-2"	1'-0½"	3'-11"	#8	1'-0"	#8	1'-0"	#7	5"	377.64	74,393	2.1430	457.87	0.70	39
168	14x12	1'-4½"	1'-2"	4'-1½"	#8	10"	#8	10"	#8	6½"	464.33	87,326	2.7006	543.52	0.81	45
192	16x12	1'-6"	1'-2½"	4'-3"	#9	11"	#9	11"	#8	5½"	529.99	107,134	3.1203	674.34	0.91	50
216	18x12	1'-7½"	1'-4½"	4'-4½"	#9	10"	#9	10"	#8	5"	622.72	125,971	3.7199	797.68	1.02	56
240	20x12	1'-10"	1'-5½"	4'-7"	#10	11"	#10	11"	#9	5½"	729.23	153,677	4.4084	981.79	1.13	62

GENERAL DATA & ESTIMATED QUANTITIES FOR BOX CULVERTS UNDER HIGH COVER

MAX. 25 FT. COVER ~ L=150 FT.

AREA OF OPENING sq. ft.	SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A1" SIZE	BARS "A1" SPACING	BARS "A2" SIZE	BARS "A2" SPACING	BARS "B" SIZE	BARS "B" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
36	6x6	8"	7½"	1'-3"	#7	1'-4"	#7	1'-4"	#6	7"	108.64	23,911	0.6358	150.06	0.36	21
48	8x6	10"	8½"	1'-5"	#7	1'-2"	#7	1'-2"	#6	6"	149.27	30,777	0.8961	195.00	0.47	27
60	10x6	1'-0"	10"	1'-7"	#8	1'-2"	#8	1'-2"	#7	7"	201.64	42,114	1.2346	269.21	0.58	33
72	12x6	1'-2"	11½"	1'-9"	#8	1'-0"	#8	1'-0"	#7	6"	262.31	53,744	1.6286	346.73	0.69	38
84	14x6	1'-4"	1'-1½"	1'-11"	#9	1'-2"	#9	1'-2"	#8	6"	335.37	71,085	2.1050	460.81	0.80	44
96	16x6	1'-5½"	1'-3"	2'-0½"	#9	1'-0"	#9	1'-0"	#8	5"	404.26	90,275	2.5540	588.62	0.91	50
108	18x6	1'-7½"	1'-5"	2'-2½"	#10	1'-2"	#10	1'-2"	#10	7"	493.39	111,536	3.1374	727.13	1.03	56
120	20x6	1'-9"	1'-6½"	2'-4"	#10	1'-0"	#10	1'-0"	#10	6"	575.95	138,175	3.6775	906.27	1.14	62
64	8x8	10½"	9½"	1'-10½"	#7	1'-1"	#7	1'-1"	#6	5½"	190.26	37,505	1.0903	232.30	0.47	27
80	10x8	1'-0½"	10½"	2'-0½"	#8	1'-2"	#8	1'-2"	#7	6½"	243.10	48,374	1.4251	303.47	0.58	33
96	12x8	1'-3"	11½"	2'-3"	#9	1'-2"	#9	1'-2"	#8	7½"	310.59	62,586	1.8565	396.44	0.69	38
112	14x8	1'-4½"	1'-1½"	2'-4½"	#8	10"	#8	10"	#8	6"	383.01	79,693	2.3218	509.99	0.80	44
128	16x8	1'-6½"	1'-3"	2'-6½"	#9	10"	#9	10"	#8	5½"	465.55	100,435	2.8534	647.44	0.91	50
144	18x8	1'-8"	1'-5"	2'-8"	#9	10"	#9	10"	#9	6"	552.01	118,099	3.4115	763.88	1.03	56
100	10x10	1'-0½"	11½"	3'-0½"	#7	10"	#7	10"	#7	6"	283.51	55,883	1.6293	346.46	0.59	33
120	12x10	1'-2½"	1'-1"	3'-2½"	#8	11"	#8	11"	#7	5"	352.21	71,239	2.0705	447.80	0.70	39
140	14x10	1'-4½"	1'-2"	3'-4½"	#9	1'-0"	#9	1'-0"	#8	6"	423.38	86,798	2.5278	550.15	0.81	45
160	16x10	1'-6½"	1'-4"	3'-6½"	#9	11"	#9	11"	#9	6½"	514.76	106,165	3.1194	679.51	0.92	51
180	18x10	1'-9"	1'-5"	3'-9"	#10	1'-0"	#10	1'-0"	#9	6"	612.21	127,147	3.7500	816.77	1.03	56
144	12x12	1'-3"	1'-1½"	4'-0"	#8	11"	#8	11"	#8	6"	404.44	80,999	2.3194	501.97	0.70	39
168	14x12	1'-5½"	1'-2½"	4'-2½"	#9	11"	#9	11"	#8	5½"	486.72	100,129	2.8475	628.39	0.81	45
192	16x12	1'-7½"	1'-3½"	4'-4½"	#9	10"	#9	10"	#9	6½"	570.30	116,777	3.3851	738.79	0.92	50
216	18x12	1'-9"	1'-5½"	4'-6"	#10	11"	#10	11"	#9	6"	666.51	139,197	4.0077	886.11	1.03	56

GENERAL NOTES:

This Drawing Shows The Additional Reinforcing Bars And The Increased Dimensions And Reinforcing Bar Sizes Necessary To Modify A Single Cell Culvert For Cover Less Than Or In Excess Of That Provided By Basic Culvert Drawings.

All Other Dimensions, Reinforcement Details And General Requirements Of Basic Culvert Drawings Shall Apply Except As Specifically Modified By This Drawing.

Barrel Details Shown On This Drawing Shall Be Used With Cover Less Than 2'-6" And More Than Maximum Shown On Basic Culvert Drawing.

Quantities Shown On This Drawing Are For Culverts With Barrels Per This Drawing And Wings With 2:1 Slope Per This Drawing And Basic Culvert Drawings.

Quantities Shown On This Drawing Are For Culverts Constructed Normal To The Centerline Of The Roadway.

Quantities Shown On This Drawing For "Total Culvert" Are For Complete Culvert Of The Length Noted And Include Barrel, Parapets, Wings, Aprons, Cut-Off Walls, Auxiliary Slabs "W", Where Required, And Two Auxiliary Slabs "J".

Quantities Shown On This Drawing Will Be Used As A Basis For Final Payment On Culverts Constructed In Accordance With This Drawing And Basic Culvert Drawings.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION BOX CULVERT DRAWING IBS CULVERTS MODIFIED FOR HIGH COVER WINGS WITH 2:1 SLOPE	WORKING NUMBER IBSM-2W	REVISIONS BY
DESIGNED NA CHECKED BJJ ISSUED TMT DETAILED ALT DATE 07-11-97 DATE 08-01-97	SHEET NUMBER 7022	DATE

GENERAL DATA & ESTIMATED QUANTITIES FOR BOX CULVERTS UNDER HIGH COVER

MAX. 30 FT. COVER ~ L=150 FT.

AREA OF OPENING sq. ft.	SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A1" SIZE	BARS "A1" SPACING	BARS "A2" SIZE	BARS "A2" SPACING	BARS "B" SIZE	BARS "B" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu yd.	1 AUX. SLAB "J" REINF. STEEL lb.
36	6x6	8½"	8"	1'-3½"	#7	1'-4"	#7	1'-4"	#6	6"	115.46	25,842	0.6810	163.15	0.36	21
48	8x6	10½"	9"	1'-5½"	#7	1'-0"	#7	1'-0"	#6	5"	157.27	35,367	0.9491	225.88	0.47	27
60	10x6	1'-1"	10½"	1'-8"	#8	1'-0"	#8	1'-0"	#7	6"	216.31	48,055	1.3318	309.58	0.58	33
72	12x6	1'-3"	1'-0"	1'-10"	#8	10"	#8	10"	#7	5"	279.22	63,254	1.7407	410.10	0.69	39
84	14x6	1'-5"	1'-2"	2'-0"	#9	11"	#9	11"	#8	6"	354.63	79,315	2.2326	516.55	0.81	45
96	16x6	1'-6½"	1'-4"	2'-1½"	#9	10"	#9	10"	#8	5"	429.92	98,997	2.7243	646.72	0.92	51
108	18x6	1'-9"	1'-6"	2'-4"	#10	11"	#10	11"	#10	7"	531.27	125,466	3.3889	821.41	1.04	57
120	20x6															
64	8x8	11"	10"	1'-11"	#7	1'-0"	#7	1'-0"	#6	5"	199.41	40,433	1.1502	251.46	0.48	27
80	10x8	1'-1½"	11"	2'-1½"	#8	1'-1"	#8	1'-1"	#7	6"	258.95	51,800	1.5293	326.53	0.58	33
96	12x8	1'-4"	1'-0½"	2'-4"	#9	1'-1"	#9	1'-1"	#8	7"	333.63	67,161	2.0082	427.41	0.70	39
112	14x8	1'-5½"	1'-2½"	2'-5½"	#9	11"	#9	11"	#9	7½"	408.45	86,739	2.4894	557.13	0.81	45
128	16x8	1'-8"	1'-4"	2'-8"	#9	10"	#9	10"	#9	6½"	502.19	105,411	3.0947	681.32	0.92	51
100	10x10	1'-1½"	1'-0½"	3'-1½"	#7	10"	#7	10"	#7	5½"	306.22	58,938	1.7786	366.80	0.60	33
120	12x10	1'-3½"	1'-1½"	3'-3½"	#8	10"	#8	10"	#8	6"	371.44	77,810	2.1968	491.39	0.70	39
140	14x10	1'-5½"	1'-3"	3'-5½"	#9	11"	#9	11"	#8	5½"	450.76	94,306	2.7083	600.63	0.81	45
160	16x10	1'-8"	1'-5"	3'-8"	#9	10"	#9	10"	#9	6"	553.57	115,992	3.3746	743.46	0.93	51
144	12x12	1'-4"	1'-2½"	4'-1"	#9	1'-1"	#9	1'-1"	#8	6"	431.60	83,803	2.4979	520.96	0.71	39
168	14x12	1'-7"	1'-3½"	4'-4"	#9	11"	#9	11"	#8	5½"	524.13	101,341	3.0931	636.36	0.82	45
192	16x12	1'-9"	1'-4½"	4'-6"	#10	1'-0"	#10	1'-0"	#9	6"	611.05	125,367	3.6528	794.66	0.93	51

MAX. 35 FT. COVER ~ L=150 FT.

SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A1" SIZE	BARS "A1" SPACING	BARS "A2" SIZE	BARS "A2" SPACING	BARS "B" SIZE	BARS "B" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu yd.	1 AUX. SLAB "J" REINF. STEEL lb.
6x6	9"	8½"	1'-4"	#7	1'-2"	#7	1'-2"	#6	6"	122.40	27,055	0.7268	171.04	0.37	21
8x6	11"	9½"	1'-6"	#7	10"	#7	10"	#6	5"	165.34	37,982	1.0026	243.29	0.47	27
10x6	1'-1½"	11½"	1'-8½"	#8	11"	#8	11"	#7	6"	229.45	50,339	1.4190	324.91	0.59	33
12x6	1'-3½"	1'-1"	1'-10½"	#8	10"	#8	10"	#7	5"	293.73	63,944	1.8370	414.70	0.70	39
14x6	1'-6"	1'-3"	2'-1"	#9	11"	#9	11"	#8	6"	378.16	80,315	2.3889	523.19	0.81	45
16x6	1'-8"	1'-5"	2'-3"	#9	10"	#9	10"	#8	5"	464.65	100,211	2.9548	654.78	0.93	51
18x6															
20x6															
8x8	11½"	10½"	1'-11½"	#7	10"	#7	10"	#7	6½"	208.55	44,196	1.2106	276.98	0.48	27
10x8	1'-2"	1'-0"	2'-2"	#8	1'-0"	#8	1'-0"	#8	7½"	274.15	55,459	1.6296	350.51	0.59	33
12x8	1'-5"	1'-1"	2'-5"	#9	1'-0"	#9	1'-0"	#8	6½"	351.93	72,055	2.1286	460.75	0.70	39
14x8	1'-6½"	1'-3"	2'-6½"	#9	10"	#9	10"	#9	6½"	429.04	96,892	2.2650	625.50	0.81	45
16x8	1'-9"	1'-4½"	2'-9"	#10	1'-0"	#10	1'-0"	#9	6"	525.10	112,813	3.2454	729.57	0.93	51
10x10	1'-2"	1'-1"	3'-2"	#8	1'-0"	#8	1'-0"	#7	5"	317.65	63,842	1.8539	399.39	0.60	33
12x10	1'-4½"	1'-2½"	3'-4½"	#8	10"	#8	10"	#8	6"	396.75	78,755	2.3634	497.64	0.71	39
14x10	1'-6½"	1'-4"	3'-6½"	#9	11"	#9	11"	#8	5"	478.51	99,811	2.8910	637.02	0.82	45
16x10	1'-9"	1'-6"	3'-9"	#10	1'-0"	#10	1'-0"	#9	5½"	583.86	124,770	3.5741	802.28	0.94	51
12x12	1'-4½"	1'-3"	4'-1½"	#9	1'-0"	#9	1'-0"	#8	5½"	445.32	90,319	2.5880	564.03	0.72	39
14x12	1'-8"	1'-4½"	4'-5"	#9	10"	#9	10"	#8	5"	544.09	110,954	3.2902	699.82	0.83	45
16x12															

REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
IBS CULVERTS MODIFIED
FOR HIGH COVER
WINGS WITH 2:1 SLOPE

WORKING NUMBER IBSM-2W

DESIGNED NA CHECKED BJJ ISSUED TMT
DETAILED ALT DATE 07-11-97 DATE 08-01-97

SHEET NUMBER 7023

GENERAL DATA & ESTIMATED QUANTITIES FOR BOX CULVERTS UNDER HIGH COVER

LESS THAN 2'-6" COVER ~ L=150 FT.

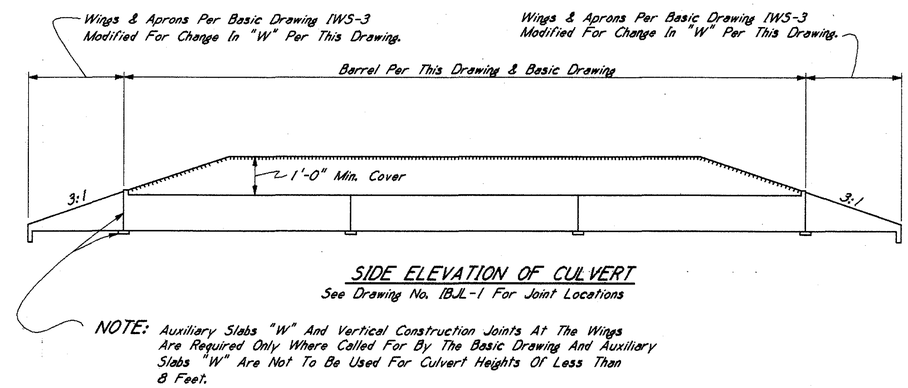
AREA OF OPENING sq. ft.	SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A1" SIZE	BARS "A1" SPACING	BARS "A2" SIZE	BARS "A2" SPACING	BARS "B" SIZE	BARS "B" SPACING	ESTIMATED QUANTITIES TOTAL CONC. cu yd.	TOTAL REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu yd.	1 AUX. SLAB "J" REINF. STEEL lb.
36	6x6	7½"	7"	1'-2½"	#7	1'-4"	#7	1'-4"	#6	7"	107.46	24,232	0.5910	148.70	0.35	21
48	8x6	8½"	7½"	1'-3½"	#7	1'-4"	#7	1'-4"	#6	7"	135.35	27,665	0.7631	170.57	0.46	26
60	10x6	10"	8½"	1'-5"	#8	1'-4"	#8	1'-4"	#7	8"	175.92	37,495	1.0195	235.30	0.56	32
72	12x6	10"	8½"	1'-5"	#8	1'-4"	#8	1'-4"	#7	8"	196.36	41,365	1.1430	260.12	0.66	38
84	14x6	11½"	10"	1'-6½"	#8	1'-2"	#8	1'-2"	#7	7"	249.42	51,691	1.4825	326.91	0.77	44
96	16x6	1'-1"	11½"	1'-8"	#9	1'-4"	#9	1'-4"	#8	8"	308.74	63,079	1.8637	402.74	0.88	50
108	18x6	1'-2½"	1'-1"	1'-9½"	#9	1'-2"	#9	1'-2"	#8	6"	374.31	82,725	2.2865	531.78	1.00	55
120	20x6	1'-3½"	1'-2"	1'-10½"	#10	1'-4"	#10	1'-4"	#10	8"	431.68	102,396	2.6553	662.72	1.10	61
64	8x8	9"	8"	1'-9"	#6	11"	#6	11"	#6	6½"	174.41	33,785	0.9136	200.79	0.46	27
80	10x8	9½"	8"	1'-9½"	#6	11"	#6	11"	#6	6½"	199.40	37,613	1.0597	225.06	0.56	32
96	12x8	11"	9"	1'-11"	#7	1'-0"	#7	1'-0"	#6	6"	248.03	46,176	1.3611	280.42	0.67	38
112	14x8	1'-0½"	10½"	2'-0½"	#8	1'-2"	#8	1'-2"	#7	6½"	307.40	58,797	1.7338	363.17	0.78	44
128	16x8	1'-2"	11½"	2'-2"	#8	1'-0"	#8	1'-0"	#8	7½"	368.22	71,924	2.1162	449.28	0.88	50
144	18x8	1'-3"	1'-1"	2'-3"	#8	11"	#8	11"	#8	6½"	430.59	85,897	2.5092	542.12	1.00	55
160	20x8	1'-4½"	1'-2½"	2'-4½"	#8	10"	#8	10"	#8	5½"	507.66	103,667	2.9992	658.46	1.11	61
100	10x10	9½"	9"	2'-9½"	#7	1'-2"	#7	1'-2"	#6	6"	238.01	43,978	1.2300	256.53	0.57	32
120	12x10	11"	10"	2'-11"	#7	1'-0"	#7	1'-0"	#7	7"	288.34	54,124	1.5453	322.43	0.67	38
140	14x10	1'-0½"	11"	3'-0½"	#7	10"	#7	10"	#7	6"	344.80	67,197	1.9007	408.57	0.78	44
160	16x10	1'-2"	1'-0"	3'-2"	#8	1'-0"	#8	1'-0"	#8	7"	407.33	79,324	2.2963	487.12	0.89	50
180	18x10	1'-4"	1'-1½"	3'-4"	#9	1'-1"	#9	1'-1"	#8	6½"	491.33	94,336	2.8334	588.09	1.00	56
200	20x10	1'-5"	1'-3"	3'-5"	#9	1'-0"	#9	1'-0"	#8	5½"	562.44	112,523	3.2870	706.45	1.11	61
220	22x10	1'-6"	1'-4"	3'-6"	#9	11"	#9	11"	#9	6"	631.75	134,176	3.7284	849.34	1.22	67
144	12x12	11½"	10½"	3'-8½"	#7	11"	#7	11"	#7	6½"	340.38	63,119	1.7539	368.01	0.68	38
168	14x12	1'-2"	11½"	3'-11"	#8	1'-0"	#8	1'-0"	#7	6"	415.39	75,713	2.2273	449.40	0.79	44
192	16x12	1'-3"	1'-0"	4'-0"	#8	11"	#8	11"	#8	7"	467.96	88,313	2.5556	531.12	0.89	50
216	18x12	1'-4"	1'-1½"	4'-1"	#8	10"	#8	10"	#8	6"	538.02	105,272	3.0000	643.11	1.00	56
240	20x12	1'-6"	1'-3"	4'-3"	#9	11"	#9	11"	#8	5½"	633.59	123,999	3.6111	766.88	1.11	61
264	22x12	1'-7"	1'-4"	4'-4"	#11	1'-5"	#11	1'-5"	#10	8"	707.12	139,652	4.0782	871.98	1.22	67
288	24x12	1'-8½"	1'-5½"	4'-5½"	#10	1'-0"	#10	1'-0"	#9	6"	804.50	160,598	4.7024	1,006.78	1.33	73

MAX. 10 FT. COVER ~ L=150 FT.

SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A1" SIZE	BARS "A1" SPACING	BARS "A2" SIZE	BARS "A2" SPACING	BARS "B" SIZE	BARS "B" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu yd.	1 AUX. SLAB "J" REINF. STEEL lb.
6x6															
8x6															
10x6															
12x6	10"	8½"	1'-5"	#8	1'-4"	#8	1'-4"	#7	8"	196.36	41,365	1.1430	260.12	0.66	38
14x6	11½"	10"	1'-6½"	#8	1'-2"	#8	1'-2"	#7	7"	249.42	51,691	1.4825	326.91	0.77	44
16x6	1'-1"	11½"	1'-8"	#9	1'-4"	#9	1'-4"	#8	8"	308.74	63,079	1.8637	402.74	0.88	50
18x6	1'-2½"	1'-1"	1'-9½"	#9	1'-2"	#9	1'-2"	#8	6"	374.31	82,725	2.2865	531.78	1.00	55
20x6	1'-3½"	1'-2"	1'-10½"	#10	1'-4"	#10	1'-4"	#10	8"	431.68	102,396	2.6553	662.72	1.10	61
8x8															
10x8	9½"	8"	1'-9½"	#6	11"	#6	11"	#6	6½"	199.40	37,613	1.0597	225.06	0.56	32
12x8	11"	9"	1'-11"	#7	1'-0"	#7	1'-0"	#6	6"	248.03	46,176	1.3611	280.42	0.67	38
14x8	1'-0½"	10½"	2'-0½"	#8	1'-2"	#8	1'-2"	#7	6½"	307.40	58,797	1.7338	363.17	0.78	44
16x8	1'-2"	11½"	2'-2"	#8	1'-0"	#8	1'-0"	#8	7½"	368.22	71,924	2.1162	449.28	0.88	50
18x8	1'-3"	1'-1"	2'-3"	#8	11"	#8	11"	#8	6½"	430.59	85,897	2.5092	542.12	1.00	55
20x8	1'-4½"	1'-2½"	2'-4½"	#8	10"	#8	10"	#8	5½"	507.66	103,667	2.9992	658.46	1.11	61
10x10	9½"	9"	2'-9½"	#7	1'-2"	#7	1'-2"	#6	6"	238.01	43,978	1.2300	256.53	0.57	32
12x10	11"	10"	2'-11"	#7	1'-0"	#7	1'-0"	#7	7"	288.34	54,124	1.5453	322.43	0.67	38
14x10	1'-0½"	11"	3'-0½"	#7	10"	#7	10"	#7	6"	344.80	67,197	1.9007	408.57	0.78	44
16x10	1'-2"	1'-0"	3'-2"	#8	1'-0"	#8	1'-0"	#8	7"	407.33	79,324	2.2963	487.12	0.89	50
18x10	1'-4"	1'-1½"	3'-4"	#9	1'-1"	#9	1'-1"	#8	6½"	491.33	94,336	2.8334	588.09	1.00	56
20x10	1'-5"	1'-3"	3'-5"	#9	1'-0"	#9	1'-0"	#8	5½"	562.44	112,523	3.2870	706.45	1.11	61
22x10	1'-6"	1'-4"	3'-6"	#9	11"	#9	11"	#9	6"	631.75	134,176	3.7284	849.34	1.22	67
12x12	11½"	10½"	3'-8½"	#7	11"	#7	11"	#7	6½"	340.38	63,119	1.7539	368.01	0.68	38
14x12	1'-2"	11½"	3'-11"	#8	1'-0"	#8	1'-0"	#7	6"	415.39	75,713	2.2273	449.40	0.79	44
16x12	1'-3"	1'-0"	4'-0"	#8	11"	#8	11"	#8	7"	467.96	88,313	2.5556	531.12	0.89	50
18x12	1'-4"	1'-1½"	4'-1"	#8	10"	#8	10"	#8	6"	538.02	105,272	3.0000	643.11	1.00	56
20x12	1'-6"	1'-3"	4'-3"	#9	11"	#9	11"	#8	5½"	633.02	123,999	3.6111	766.88	1.11	61
22x12	1'-7"	1'-4"	4'-4"	#11	1'-5"	#11	1'-5"	#10	8"	707.12	139,652	4.0782	871.98	1.22	67
24x12	1'-8½"	1'-5½"	4'-5½"	#10	1'-0"	#10	1'-0"	#9	6"	804.50	160,598	4.7024	1,006.78	1.33	73

MAX. 15 FT. COVER ~ L=150 FT.

AREA OF OPENING sq. ft.	SIZE OF CULVERT "S"x"H"	"T"	"V"	"W"	BARS "A1" SIZE	BARS "A1" SPACING	BARS "A2" SIZE	BARS "A2" SPACING	BARS "B" SIZE	BARS "B" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu yd.	1 AUX. SLAB "J" REINF. STEEL lb.
36	6x6															
48	8x6	8½"	7½"	1'-3½"	#7	1'-4"	#7	1'-4"	#6	7"	135.35	27,665	0.7631	170.57	0.46	26
60	10x6	10"	8½"	1'-5"	#8	1'-4"	#8	1'-4"	#7	8"	175.92	37,495	1.0195	235.30	0.56	32
72	12x6	11½"	9½"	1'-6½"	#8	1'-2"	#8	1'-2"	#7	7"	222.55	46,721	1.3161	294.86	0.67	38
84	14x6	1'-1"	11"	1'-8"	#9	1'-4"	#9	1'-4"	#8	7"	278.97	61,477	1.6780	392.44	0.78	44
96	16x6	1'-2½"	1'-0½"	1'-9½"	#9	1'-2"	#9	1'-2"	#8	6"	341.63	76,378	2.0815	490.61	0.89	50
108	18x6	1'-4"	1'-2"	1'-11"	#10	1'-4"	#10	1'-4"	#9	7"	410.54	91,481	2.5267	590.02	1.00	56
120	20x6	1'-5½"	1'-3½"	2'-0½"	#10	1'-2"	#10	1'-2"	#10	8"	485.75	110,534	3.0137	715.73	1.12	62
64	8x8	9"	8"	1'-9"	#6	11"	#6	11"	#6	6½"	174.41	33,785	0.9136	200.79	0.46	27
80	10x8	10½"	9"	1'-10½"	#7	1'-1"	#7	1'-1"	#6	5½"	219.24	42,584	1.1898	258.13	0.57	32
96	12x8	1'-0½"	10"	2'-0½"	#7	10"	#7	10"	#6	5"	276.56	53,785	1.5484	331.03	0.67	38
112	14x8	1'-2"	11½"	2'-2"	#8	1'-0"	#8	1'-0"	#7	5½"	339.34	67,605	1.9434	421.88	0.79	44
128	16x8	1'-3½"	1'-0½"	2'-3½"	#9	1'-1"	#9	1'-1"	#8	6½"	403.43	82,164	2.3475	518.98	0.89	50
144	18x8	1'-4½"	1'-2½"	2'-4½"	#9	1'-0"	#9	1'-0"	#8	5½"	474.08	99,896	2.7955	634.54	1.01	56
160	20x8	1'-6½"	1'-4½"	2'-6½"	#9	11"	#9	11"	#8	5"	570.47	117,089	3.4129	747.86	1.12	62
100	10x10	11"	10"	2'-11"	#7	1'-1"	#7	1'-1"	#7	7"	265.42	48,882	1.4095	289.13	0.58	33
120	12x10	1'-1½"	11"	3'-1½"	#7	11"	#7	11"	#7	6"	332.26	60,374	1.8318	364.51	0.68	38
140	14x10	1'-2"	1'-0½"	3'-2"	#8	1'-0"	#8	1'-0"	#7	5½"	384.54	72,962	2.1616	447.50	0.79	44
160	16x10	1'-4"	1'-1½"	3'-4"	#8	11"	#8	11"	#8	6"	459.08	88,960	2.6358	552.16	0.90	50
180	18x10	1'-6"	1'-2½"	3'-6"	#9	11"	#9	11"	#8	5½"	541.71	109,929	3.1636	690.65	1.01	56
200	20x10	1'-7"	1'-4½"	3'-7"	#9	10"	#9	10"	#8	5"	623.28	128,496	3.6868	812.43	1.12	62
220	22x10	1'-8½"	1'-6"	3'-8½"	#9	10"	#9	10"	#9	5½"	714.81	147,782	4.2746	939.78	1.23	68
144	12x12	1'-1"	11½"	3'-10"	#7	10"	#7	10"	#7	5½"	373.28	70,831	1.9686	418.68	0.69	38
168	14x12	1'-3"	1'-0½"	4'-0"	#8	10"	#8	10"	#7	5"	444.01	87,880	2.4151	530.35	0.79	44
192	16x12	1'-5"	1'-1½"	4'-2"	#8	10"	#8	10"	#8	6½"	522.86	95,549	2.9152	580.63	0.90	50
216	18x12	1'-6"	1'-3"	4'-3"	#9	11"	#9	11"	#8	5½"	597.35	117,186	3.3889	722.86	1.01	56
240	20x12	1'-8"	1'-4½"	4'-5"	#9	10"	#9	10"	#8	5"	697.59	136,141	4.0309	846.88	1.12	62
264	22x12	1'-9"	1'-5½"	4'-6"	#11	1'-3"	#11	1'-3"	#10	7"	775.38	158,717	4.5262	994.05	1.23	68
288	24x12															



REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
IBS CULVERTS MODIFIED
FOR HIGH COVER
WINGS WITH 3:1 SLOPE

DESIGNED NA CHECKED BJJ ISSUED TMT
DETAILED MJC DATE 07-11-97 DATE 08-01-97

WORKING NUMBER IBSM-3W
SHEET NUMBER 7024

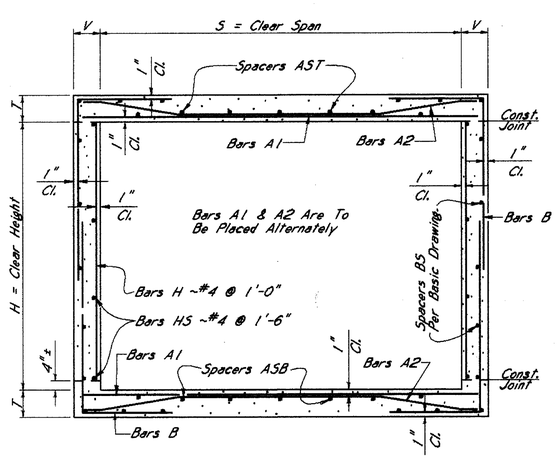
GENERAL DATA & ESTIMATED QUANTITIES FOR BOX CULVERTS UNDER HIGH COVER

MAX. 20 FT. COVER ~ L=150 FT.

AREA OF OPENING sq. ft.	SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A1" SIZE	BARS "A1" SPACING	BARS "A2" SIZE	BARS "A2" SPACING	BARS "B" SIZE	BARS "B" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
36	6x6	7½"	7"	1'-2½"	#7	1'-4"	#7	1'-4"	#6	7"	107.46	24,232	0.5910	148.70	0.35	21
48	8x6	9½"	8"	1'-4½"	#7	1'-2"	#7	1'-2"	#6	6"	147.56	31,102	0.8436	193.46	0.46	27
60	10x6	11½"	9½"	1'-6½"	#8	1'-2"	#8	1'-2"	#7	7"	199.35	42,363	1.1742	266.92	0.57	32
72	12x6	1'-1"	10½"	1'-8"	#8	1'-0"	#8	1'-0"	#7	6"	249.20	53,634	1.4923	341.78	0.68	38
84	14x6	1'-2½"	1'-0½"	1'-9½"	#9	1'-2"	#9	1'-2"	#8	7"	312.88	66,233	1.9026	423.43	0.79	44
96	16x6	1'-4"	1'-2"	1'-11"	#9	1'-0"	#9	1'-0"	#8	6"	379.02	82,947	2.3292	535.08	0.91	50
108	18x6	1'-6"	1'-3½"	2'-1"	#10	1'-2"	#10	1'-2"	#10	8"	461.01	103,863	2.8611	672.31	1.02	56
120	20x6	1'-7½"	1'-5"	2'-2½"	#10	1'-0"	#10	1'-0"	#10	7"	540.70	127,776	3.3781	830.49	1.13	62
64	8x8	10"	9"	1'-10"	#6	1'-2"	#6	1'-2"	#6	6"	192.31	36,192	1.0309	216.15	0.47	27
80	10x8	11½"	10"	1'-11½"	#7	11"	#7	11"	#7	7"	239.38	47,131	1.3220	287.60	0.58	33
96	12x8	1'-1½"	11"	2'-1½"	#9	1'-3"	#9	1'-3"	#7	6½"	299.04	57,832	1.6960	358.43	0.68	38
112	14x8	1'-3½"	1'-0½"	2'-3½"	#8	11"	#8	11"	#7	5"	371.71	73,706	2.1561	462.52	0.79	44
128	16x8	1'-5"	1'-2"	2'-5"	#9	11"	#9	11"	#8	6"	444.16	92,864	2.6152	588.95	0.91	50
144	18x8	1'-6½"	1'-4"	2'-6½"	#9	11"	#9	11"	#8	5"	528.00	109,784	3.1502	700.39	1.02	56
160	20x8	1'-8½"	1'-6"	2'-8½"	#9	10"	#9	10"	#9	5½"	629.23	132,925	3.7994	853.28	1.14	62
100	10x10	11½"	11"	2'-11½"	#7	11"	#7	11"	#7	6½"	282.15	53,328	1.5191	319.54	0.58	33
120	12x10	1'-1½"	1'-0"	3'-1½"	#8	1'-0"	#8	1'-0"	#7	5½"	343.64	66,984	1.9074	408.58	0.69	39
140	14x10	1'-3½"	1'-1½"	3'-3½"	#8	11"	#8	11"	#8	6½"	419.12	79,930	2.3881	494.14	0.80	44
160	16x10	1'-5"	1'-3"	3'-5"	#9	11"	#9	11"	#9	7½"	494.24	100,249	2.8673	627.36	0.91	50
180	18x10	1'-7½"	1'-4"	3'-7½"	#9	10"	#9	10"	#8	5"	589.12	120,876	3.4753	762.94	1.02	56
200	20x10	1'-9"	1'-6"	3'-9"	#10	1'-0"	#10	1'-0"	#9	5½"	685.09	142,933	4.0926	908.83	1.14	62
144	12x12	1'-2"	1'-0½"	3'-11"	#8	1'-0"	#8	1'-0"	#7	5"	399.91	76,761	2.1430	457.87	0.70	39
168	14x12	1'-4½"	1'-2"	4'-1½"	#8	10"	#8	10"	#8	6½"	487.59	89,762	2.7006	543.52	0.81	45
192	16x12	1'-6"	1'-2½"	4'-3"	#9	11"	#9	11"	#8	5½"	554.14	109,631	3.1203	674.34	0.91	51
216	18x12	1'-7½"	1'-4½"	4'-4½"	#9	10"	#9	10"	#8	5"	647.76	128,528	3.7199	797.68	1.02	56
240	20x12	1'-10"	1'-5½"	4'-7"	#10	11"	#10	11"	#9	5½"	755.25	156,303	4.4084	981.79	1.13	62

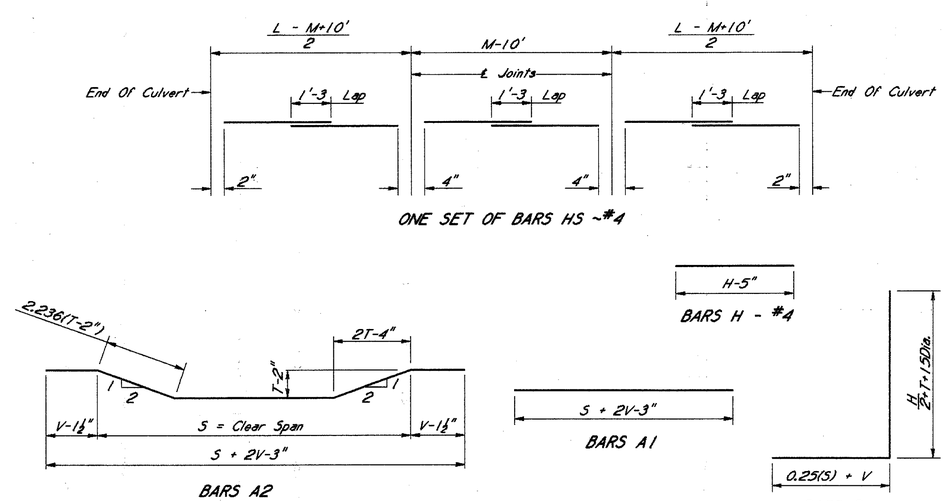
MAX. 25 FT. COVER ~ L=150 FT.

SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A1" SIZE	BARS "A1" SPACING	BARS "A2" SIZE	BARS "A2" SPACING	BARS "B" SIZE	BARS "B" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
6x6	8"	7½"	1'-3"	#7	1'-4"	#7	1'-4"	#6	7"	114.27	24,440	0.6358	150.06	0.36	21
8x6	10"	8½"	1'-5"	#7	1'-2"	#7	1'-2"	#6	6"	155.52	31,343	0.8961	195.00	0.47	27
10x6	1'-0"	10"	1'-7"	#8	1'-2"	#8	1'-2"	#7	7"	208.49	42,716	1.2346	269.21	0.58	33
12x6	1'-2"	11½"	1'-9"	#8	1'-0"	#8	1'-0"	#7	6"	269.80	54,382	1.6286	346.73	0.69	38
14x6	1'-4"	1'-1½"	1'-11"	#9	1'-2"	#9	1'-2"	#8	6"	343.46	71,759	2.1050	460.81	0.80	44
16x6	1'-5½"	1'-3"	2'-0½"	#9	1'-0"	#9	1'-0"	#8	5"	412.94	90,984	2.5540	588.62	0.91	50
18x6	1'-7½"	1'-5"	2'-2½"	#10	1'-2"	#10	1'-2"	#10	7"	502.67	112,281	3.1374	727.13	1.03	56
20x6	1'-9"	1'-6½"	2'-4"	#10	1'-0"	#10	1'-0"	#10	6"	585.82	138,954	3.6775	906.27	1.14	62
8x8	10½"	9½"	1'-10½"	#7	1'-1"	#7	1'-1"	#6	5½"	201.35	38,533	1.0903	232.30	0.47	27
10x8	1'-0½"	10½"	2'-0½"	#8	1'-2"	#8	1'-2"	#7	6½"	255.13	49,452	1.4251	303.47	0.58	33
12x8	1'-3"	11½"	2'-3"	#9	1'-2"	#9	1'-2"	#8	7½"	323.59	63,714	1.8565	396.44	0.69	38
14x8	1'-4½"	1'-1½"	2'-4½"	#8	10"	#8	10"	#8	6"	396.91	80,869	2.3218	509.99	0.80	44
16x8	1'-6½"	1'-3"	2'-6½"	#9	10"	#9	10"	#8	5½"	480.38	101,660	2.8534	647.44	0.91	50
18x8	1'-8"	1'-5"	2'-8"	#9	10"	#9	10"	#9	6"	567.75	119,371	3.4115	763.88	1.03	56
20x8															
10x10	1'-0½"	11½"	3'-0½"	#7	10"	#7	10"	#7	6"	298.96	57,474	1.6293	346.46	0.59	33
12x10	1'-2½"	1'-1"	3'-2½"	#8	11"	#8	11"	#7	5"	368.51	72,887	2.0705	447.80	0.70	39
14x10	1'-4½"	1'-2"	3'-4½"	#9	1'-0"	#9	1'-0"	#8	6"	440.50	88,502	2.5278	550.15	0.81	45
16x10	1'-6½"	1'-4"	3'-6½"	#9	11"	#9	11"	#9	6½"	532.67	107,927	3.1193	679.51	0.92	51
18x10	1'-9"	1'-5"	3'-9"	#10	1'-0"	#10	1'-0"	#9	6"	630.98	128,968	3.7500	816.77	1.03	56
20x10															
12x12	1'-3"	1'-1½"	4'-0"	#8	11"	#8	11"	#8	6"	426.81	83,372	2.3194	501.97	0.70	39
14x12	1'-5½"	1'-2½"	4'-2½"	#9	11"	#9	11"	#8	5½"	510.08	102,572	2.8475	628.39	0.81	45
16x12	1'-7½"	1'-3½"	4'-4½"	#9	10"	#9	10"	#9	6½"	594.60	119,284	3.3851	738.79	0.92	50
18x12	1'-9"	1'-5½"	4'-6"	#10	11"	#10	11"	#9	6"	691.70	141,765	4.0077	886.11	1.03	56
20x12															



CROSS SECTION

Bars AST Tie To Bars A1 In Top Slab
Bars ASB Tie To Bars A1 In Bottom Slab
Bars BS Tie To Bars B



BAR BENDING DETAILS

Dimensions Are Out To Out

GENERAL NOTES:

This Drawing Shows The Additional Reinforcing Bars And The Increased Dimensions And Reinforcing Bar Sizes Necessary To Modify A Single Cell Culvert For Cover Less Than Or In Excess Of That Provided By Basic Culvert Drawings.

All Other Dimensions, Reinforcement Details And General Requirements Of Basic Culvert Drawings Shall Apply Except As Specifically Modified By This Drawing And Drawing IWS-3.

Barrel Details Shown On This Drawing Shall Be Used With Cover Less Than 2'-6" And More Than Maximum Shown On Basic Culvert Drawings.

Quantities Shown On This Drawing Are For Culverts With Barrels Per This Drawing And Wings With 3:1 Slope Per This Drawing And Drawing IWS-3.

Quantities Shown On This Drawing For "Total Culvert" Are For Complete Culvert Of The Length Noted And Include Barrel, Parapets, Wings And Aprons, Cut-Off Walls, Auxiliary Slabs "W" Where Required And Two Auxiliary Slabs "J".

Quantities Shown On This Drawing Will Be Used As A Basis For Final Payment For Culverts Constructed In Accordance With This Drawing, Drawing IWS-3 And Basic Culvert Drawings.

DATE	REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BOX CULVERT DRAWING

IBS CULVERTS MODIFIED

FOR HIGH COVER

WINGS WITH 3:1 SLOPE

DESIGNED NA | CHECKED BJJ | ISSUED TMT

DETAILED ALT | DATE 07-11-97 | DATE 08-01-97

WORKING NUMBER IBSM-3W

SHEET NUMBER 7025

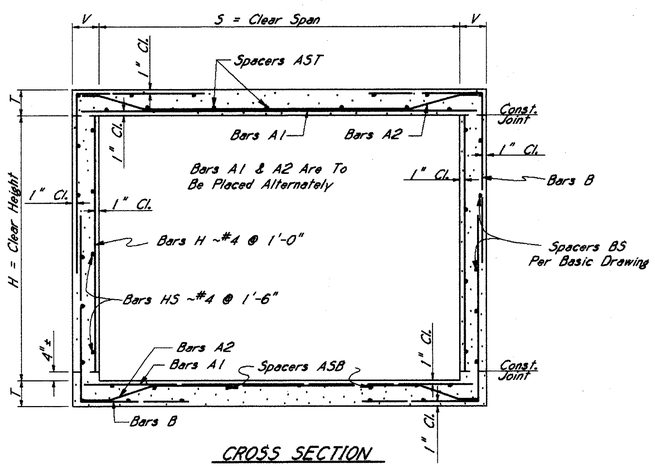
GENERAL DATA & ESTIMATED QUANTITIES FOR BOX CULVERTS UNDER HIGH COVER

LESS THAN 2'-6" COVER ~ L=150 FT.

AREA OF OPENING sq. ft.	SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A1" SIZE	BARS "A1" SPACING	BARS "A2" SIZE	BARS "A2" SPACING	BARS "B" SIZE	BARS "B" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
36	6x6	7½"	7"	1'-2½"	#7	1'-4"	#7	1'-4"	#6	7"	113.05	24,757	0.5910	148.70	0.35	21
48	8x6	8½"	7½"	1'-3½"	#7	1'-4"	#7	1'-4"	#6	7"	141.50	28,225	0.7631	170.57	0.46	26
60	10x6	10"	8½"	1'-5"	#8	1'-4"	#8	1'-4"	#7	8"	182.65	38,089	1.0195	235.30	0.56	32
72	12x6	10"	8½"	1'-5"	#8	1'-4"	#8	1'-4"	#7	8"	203.62	41,991	1.1430	260.18	0.66	38
84	14x6	11½"	10"	1'-6½"	#8	1'-2"	#8	1'-2"	#7	7"	257.26	52,353	1.4825	326.91	0.77	44
96	16x6	1'-1"	11½"	1'-8"	#9	1'-4"	#9	1'-4"	#8	8"	317.16	63,774	1.8637	402.74	0.88	50
108	18x6	1'-2½"	1'-1"	1'-9½"	#9	1'-2"	#9	1'-2"	#8	6"	383.32	83,456	2.2865	531.78	1.00	55
120	20x6	1'-3½"	1'-2"	1'-10½"	#10	1'-4"	#10	1'-4"	#10	8"	441.25	103,160	2.6553	662.72	1.10	61
64	8x8	9"	8"	1'-9"	#6	11"	#6	11"	#6	6½"	185.54	34,774	0.9136	200.79	0.46	27
80	10x8	9½"	8"	1'-9½"	#6	11"	#6	11"	#6	6½"	211.36	38,642	1.0597	225.06	0.56	32
96	12x8	11"	9"	1'-11"	#7	1'-0"	#7	1'-0"	#6	6"	260.88	47,249	1.3611	280.42	0.67	38
112	14x8	1'-0½"	10½"	2'-0½"	#8	1'-2"	#8	1'-2"	#7	6½"	321.14	59,914	1.7338	363.17	0.78	44
128	16x8	1'-2"	11½"	2'-2"	#8	1'-0"	#8	1'-0"	#8	7½"	382.86	73,085	2.1162	449.28	0.88	50
144	18x8	1'-3"	1'-1"	2'-3"	#8	11"	#8	11"	#8	6½"	446.09	87,100	2.5092	542.12	1.00	55
160	20x8	1'-4½"	1'-2½"	2'-4½"	#8	10"	#8	10"	#8	5½"	524.06	104,914	2.9992	658.46	1.11	61
100	10x10	9½"	9"	2'-9½"	#7	1'-2"	#7	1'-2"	#6	6"	253.55	45,415	1.2300	256.53	0.57	32
120	12x10	11"	10"	2'-11"	#7	1'-0"	#7	1'-0"	#7	7"	304.68	55,612	1.5453	322.43	0.68	38
140	14x10	1'-0½"	11"	3'-0½"	#7	10"	#7	10"	#7	6"	361.86	68,737	1.9007	408.57	0.78	44
160	16x10	1'-2"	1'-0"	3'-2"	#8	1'-0"	#8	1'-0"	#8	7"	425.15	80,916	2.2963	487.12	0.89	50
180	18x10	1'-4"	1'-1½"	3'-4"	#9	1'-1"	#9	1'-1"	#8	6½"	509.25	95,981	2.8334	588.07	1.00	56
200	20x10	1'-5"	1'-3"	3'-5"	#9	1'-0"	#9	1'-0"	#8	5½"	581.79	114,217	3.2870	706.45	1.11	61
220	22x10	1'-6"	1'-4"	3'-6"	#9	11"	#9	11"	#9	6"	651.82	135,919	3.7284	849.34	1.22	67
144	12x12	11½"	10½"	3'-8½"	#7	11"	#7	11"	#7	6½"	362.96	65,251	1.7539	368.01	0.68	38
168	14x12	1'-2"	11½"	3'-11"	#8	1'-0"	#8	1'-0"	#7	6"	438.96	77,913	2.2273	449.40	0.79	44
192	16x12	1'-3"	1'-0"	4'-0"	#8	11"	#8	11"	#8	7"	492.37	90,572	2.5556	531.12	0.89	50
216	18x12	1'-4"	1'-1½"	4'-1"	#8	10"	#8	10"	#8	6"	563.26	107,590	3.0000	643.11	1.00	56
240	20x12	1'-6"	1'-3"	4'-3"	#9	11"	#9	11"	#8	5½"	659.78	126,382	3.6111	766.88	1.11	61
264	22x12	1'-7"	1'-4"	4'-4"	#11	1'-5"	#11	1'-5"	#10	8"	734.14	142,095	4.0782	871.98	1.22	67
288	24x12	1'-8½"	1'-5½"	4'-5½"	#10	1'-0"	#10	1'-0"	#9	6"	832.41	163,103	4.7024	1006.78	1.33	73

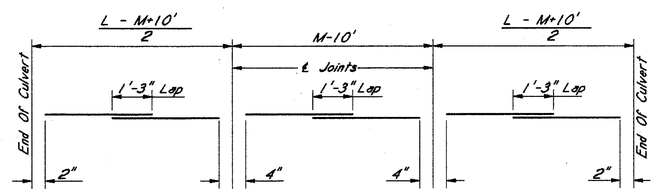
MAX. 10 FT. COVER ~ L=150 FT.

SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A1" SIZE	BARS "A1" SPACING	BARS "A2" SIZE	BARS "A2" SPACING	BARS "B" SIZE	BARS "B" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
12x6	10"	8½"	1'-5"	#8	1'-4"	#8	1'-4"	#7	8"	203.62	41,991	1.1430	260.18	0.66	38
14x6	11½"	10"	1'-6½"	#8	1'-2"	#8	1'-2"	#7	7"	257.26	52,353	1.4825	326.91	0.77	44
16x6	1'-1"	11½"	1'-8"	#9	1'-4"	#9	1'-4"	#8	8"	317.16	63,774	1.8637	402.74	0.88	50
18x6	1'-2½"	1'-1"	1'-9½"	#9	1'-2"	#9	1'-2"	#8	6"	383.32	83,456	2.2865	531.78	1.00	55
20x6	1'-3½"	1'-2"	1'-10½"	#10	1'-4"	#10	1'-4"	#10	8"	441.25	103,160	2.6553	662.72	1.10	61
8x8															
10x8	9½"	8"	1'-9½"	#6	11"	#6	11"	#6	6½"	211.36	38,642	1.0597	225.06	0.56	32
12x8	11"	9"	1'-11"	#7	1'-0"	#7	1'-0"	#6	6"	260.88	47,249	1.3611	280.42	0.67	38
14x8	1'-0½"	10½"	2'-0½"	#8	1'-2"	#8	1'-2"	#7	6½"	321.14	59,914	1.7338	363.17	0.78	44
16x8	1'-2"	11½"	2'-2"	#8	1'-0"	#8	1'-0"	#8	7½"	382.86	73,085	2.1162	449.28	0.88	50
18x8	1'-3"	1'-1"	2'-3"	#8	11"	#8	11"	#8	6½"	446.09	87,100	2.5092	542.12	1.00	55
20x8	1'-4½"	1'-2½"	2'-4½"	#8	10"	#8	10"	#8	5½"	524.06	104,914	2.9992	658.46	1.11	61
10x10	9½"	9"	2'-9½"	#7	1'-2"	#7	1'-2"	#6	6"	253.55	45,415	1.2300	256.53	0.57	32
12x10	11"	10"	2'-11"	#7	1'-0"	#7	1'-0"	#7	7"	304.68	55,612	1.5453	322.43	0.68	38
14x10	1'-0½"	11"	3'-0½"	#7	10"	#7	10"	#7	6"	361.86	68,737	1.9007	408.57	0.78	44
16x10	1'-2"	1'-0"	3'-2"	#8	1'-0"	#8	1'-0"	#8	7"	425.15	80,916	2.2963	487.12	0.89	50
18x10	1'-4"	1'-1½"	3'-4"	#9	1'-1"	#9	1'-1"	#8	6½"	509.95	95,981	2.8334	588.07	1.00	56
20x10	1'-5"	1'-3"	3'-5"	#9	1'-0"	#9	1'-0"	#8	5½"	581.79	114,217	3.2870	706.45	1.11	61
22x10	1'-6"	1'-4"	3'-6"	#9	11"	#9	11"	#9	6"	651.82	135,919	3.7284	849.34	1.22	67
12x12	11½"	10½"	3'-8½"	#7	11"	#7	11"	#7	6½"	362.96	65,251	1.7539	368.01	0.68	38
14x12	1'-2"	11½"	3'-11"	#8	1'-0"	#8	1'-0"	#7	6"	438.96	77,913	2.2273	449.40	0.79	44
16x12	1'-3"	1'-0"	4'-0"	#8	11"	#8	11"	#8	7"	492.37	90,572	2.5556	531.12	0.89	50
18x12	1'-4"	1'-1½"	4'-1"	#8	10"	#8	10"	#8	6"	563.26	107,590	3.0000	643.11	1.00	56
20x12	1'-6"	1'-3"	4'-3"	#9	11"	#9	11"	#8	5½"	659.78	126,382	3.6111	766.88	1.11	61
22x12	1'-7"	1'-4"	4'-4"	#11	1'-5"	#11	1'-5"	#10	8"	734.14	142,095	4.0782	871.98	1.22	67
24x12	1'-8½"	1'-5½"	4'-5½"	#10	1'-0"	#10	1'-0"	#9	6"	832.41	163,103	4.7024	1006.78	1.33	73

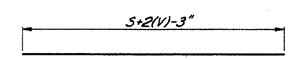


CROSS SECTION

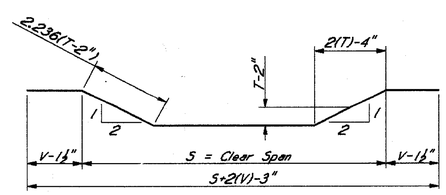
Bars AST Tie To Bars A1 In Top Slab.
Bars ASB Tie To Bars A1 In Bottom Slab.
Bars BS Tie To Bars B.



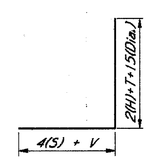
ONE SET OF BARS HS ~ #4



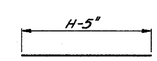
BARS A1



BARS A2



BARS B



BARS H ~#4

BAR BENDING DETAILS

Dimensions Are Out To Out

REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
IBS CULVERTS MODIFIED
FOR HIGH COVER
WINGS WITH 4:1 SLOPE

WORKING NUMBER IBSM-4W

SHEET NUMBER 7026

DATE			
DESIGNED NA	CHECKED BJJ	ISSUED TMT	
DETAILED MJC	DATE 07-11-97	DATE 08-01-97	

GENERAL DATA & ESTIMATED QUANTITIES FOR BOX CULVERTS UNDER HIGH COVER

MAX. 15 FT. COVER ~ L=150 FT.

AREA OF OPENING sq. ft.	SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A1" SIZE	BARS "A1" SPACING	BARS "A2" SIZE	BARS "A2" SPACING	BARS "B" SIZE	BARS "B" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
36	6x6															
48	8x6	8½"	7½"	1'-3½"	#7	1'-4"	#7	1'-4"	#6	7"	141.50	28,225	0.7631	170.57	0.46	26
60	10x6	10"	8½"	1'-5"	#8	1'-4"	#8	1'-4"	#7	8"	182.65	38,089	1.0195	235.30	0.56	32
72	12x6	11½"	9½"	1'-6½"	#8	1'-2"	#8	1'-2"	#7	7"	229.86	47,350	1.3136	294.86	0.67	38
84	14x6	1'-1"	11"	1'-8"	#9	1'-4"	#9	1'-4"	#8	7"	286.87	62,140	1.6780	392.44	0.78	44
96	16x6	1'-2½"	1'-0½"	1'-9½"	#9	1'-2"	#9	1'-2"	#8	6"	350.13	77,077	2.0816	490.61	0.89	50
108	18x6	1'-4"	1'-2"	1'-11"	#10	1'-4"	#10	1'-4"	#9	7"	419.63	92,215	2.5268	590.02	1.00	56
120	20x6	1'-5½"	1'-3½"	2'-0½"	#10	1'-2"	#10	1'-2"	#10	8"	495.40	111,302	3.0137	715.73	1.12	62
64	8x8	9"	8"	1'-9"	#6	11"	#6	11"	#6	6½"	185.74	34,774	0.9136	200.79	0.46	27
80	10x8	10½"	9"	1'-10½"	#7	1'-1"	#7	1'-1"	#6	5½"	231.26	43,617	1.1898	258.13	0.57	32
96	12x8	1'-0½"	10"	2'-0½"	#7	10"	#7	10"	#6	5"	289.55	54,863	1.5484	331.03	0.68	38
112	14x8	1'-2"	11½"	2'-2"	#8	1'-0"	#8	1'-0"	#7	5½"	353.18	68,727	1.9434	421.88	0.79	44
128	16x8	1'-3½"	1'-0½"	2'-3½"	#9	1'-1"	#9	1'-1"	#8	6½"	418.17	83,330	2.3475	518.98	0.89	50
144	18x8	1'-4½"	1'-2½"	2'-4½"	#9	1'-0"	#9	1'-0"	#8	5½"	489.68	101,104	2.7955	634.54	1.01	56
160	20x8	1'-6½"	1'-4½"	2'-6½"	#9	11"	#9	11"	#8	5"	586.99	118,343	3.4129	747.85	1.12	62
100	10x10	11"	10"	2'-11"	#7	1'-1"	#7	1'-1"	#7	7"	281.09	50,326	1.4095	289.13	0.58	33
120	12x10	1'-1½"	11"	3'-1½"	#7	11"	#7	11"	#7	6"	348.77	61,874	1.8318	364.51	0.68	38
140	14x10	1'-2"	1'-0½"	3'-2"	#8	1'-0"	#8	1'-0"	#7	5½"	401.73	74,509	2.1616	447.05	0.79	44
160	16x10	1'-4"	1'-1½"	3'-4"	#8	11"	#8	11"	#8	6"	477.07	90,560	2.6358	552.16	0.90	50
180	18x10	1'-6"	1'-2½"	3'-6"	#9	11"	#9	11"	#8	5½"	560.50	111,583	3.1636	690.65	1.01	56
200	20x10	1'-7"	1'-4½"	3'-7"	#9	10"	#9	10"	#8	5"	642.80	130,199	3.6868	812.43	1.12	62
220	22x10	1'-8½"	1'-6"	3'-8½"	#9	10"	#9	10"	#9	5½"	735.14	149,547	4.2747	939.78	1.24	68
144	12x12	1'-1"	11½"	3'-10"	#7	10"	#7	10"	#7	5½"	396.02	72,971	1.9686	418.68	0.69	38
168	14x12	1'-3"	1'-0½"	4'-0"	#8	10"	#8	10"	#7	5"	467.70	90,086	2.4152	530.35	0.79	44
192	16x12	1'-5"	1'-1½"	4'-2"	#8	10"	#8	10"	#8	6½"	547.49	97,820	2.9151	580.63	0.90	50
216	18x12	1'-6"	1'-3"	4'-3"	#9	11"	#9	11"	#8	5½"	622.81	119,516	3.3889	722.86	1.01	56
240	20x12	1'-8"	1'-4½"	4'-5"	#9	10"	#9	10"	#8	5"	723.98	138,537	4.0308	846.88	1.12	62
264	22x12	1'-9"	1'-5½"	4'-6"	#11	1'-3"	#11	1'-3"	#10	7"	802.61	161,172	4.5262	994.03	1.23	68

GENERAL NOTES:

This Drawing Shows The Additional Reinforcing Bars And The Increased Dimensions And Reinforcing Bar Sizes Necessary To Modify A Single Cell Culvert For Cover Less Than Or In Excess Of That Provided By Basic Culvert Drawings.

All Other Dimensions, Reinforcement Details And General Requirements Of Basic Culvert Drawings Shall Apply Except As Specifically Modified By This Drawing And Drawing IWS-4.

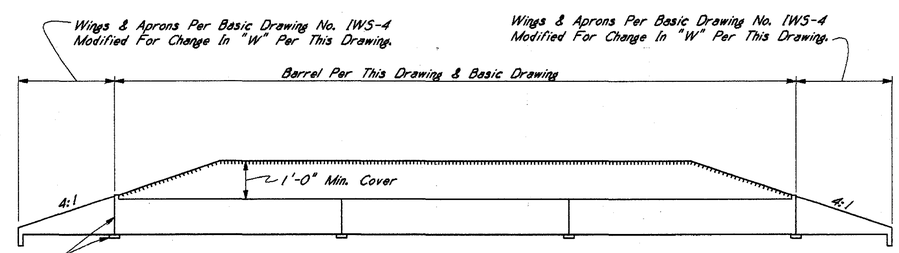
Barrel Details Shown On This Drawing Shall Be Used With Cover Less Than 2'-6" And More Than Maximum Shown On Basic Culvert Drawing.

Quantities Shown On This Drawing Are For Culverts With Barrels Per This Drawing And Wings With 4:1 Slope Per This Drawing And Drawing IWS-4.

Quantities Shown On This Drawing Are For Culverts Constructed Normal To The Centerline Of The Roadway.

Quantities Shown On This Drawing For "Total Culvert" Are For Complete Culvert Of The Length Noted And Include Barrel, Parapets, Wings, Aprons, Cut-Off Walls, Auxiliary Slabs "W", Where Required, And Two Auxiliary Slabs "J".

Quantities Shown On This Drawing Will Be Used As A Basis For Final Payment On Culverts Constructed In Accordance With This Drawing, Drawing IWS-4 And Basic Culvert Drawings.



SIDE ELEVATION OF CULVERT

See Drawing No. IBJL-1 For Joint Locations

NOTE:
Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Are Required Only Where Called For By The Basic Drawing And Auxiliary Slabs "W" Are Not To Be Used For Culvert Heights Of Less Than 8 Ft.

REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BOX CULVERT DRAWING

IBS CULVERTS MODIFIED

FOR HIGH COVER

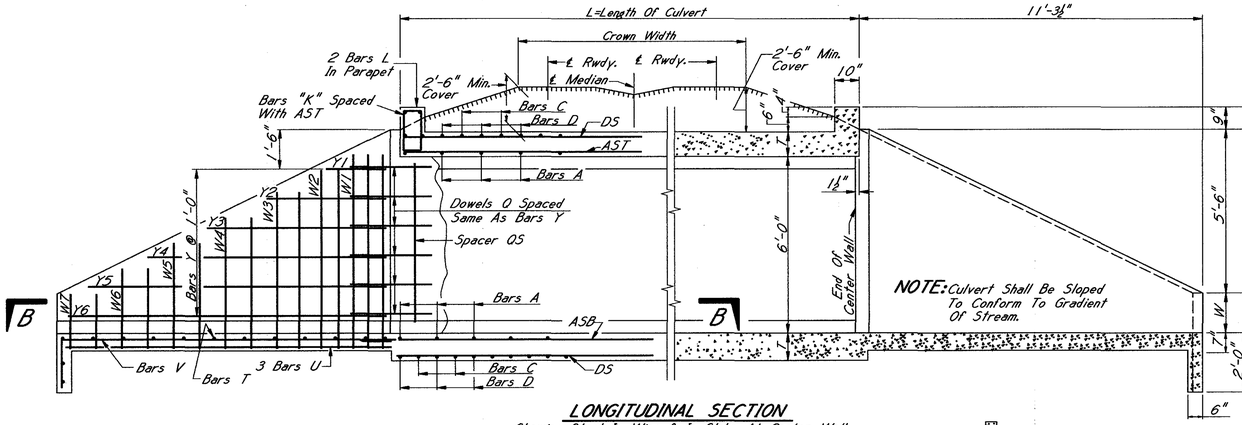
WINGS WITH 4:1 SLOPE

WORKING NUMBER IBSM-4W

DESIGNED NA CHECKED BJJ ISSUED TMT

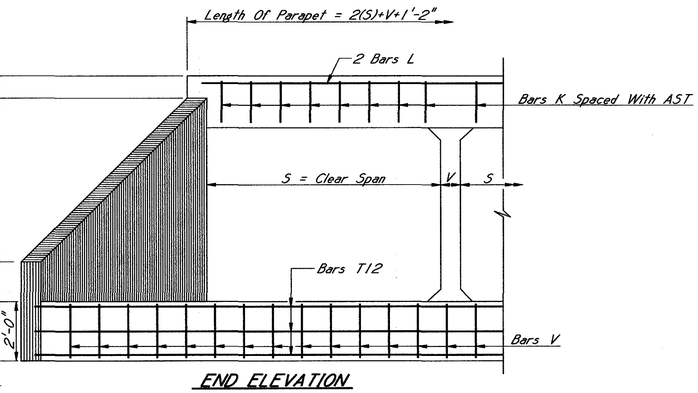
DETAILED ALT DATE 07-11-97 DATE 08-01-97

SHEET NUMBER 7027

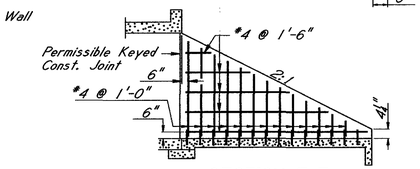


LONGITUDINAL SECTION

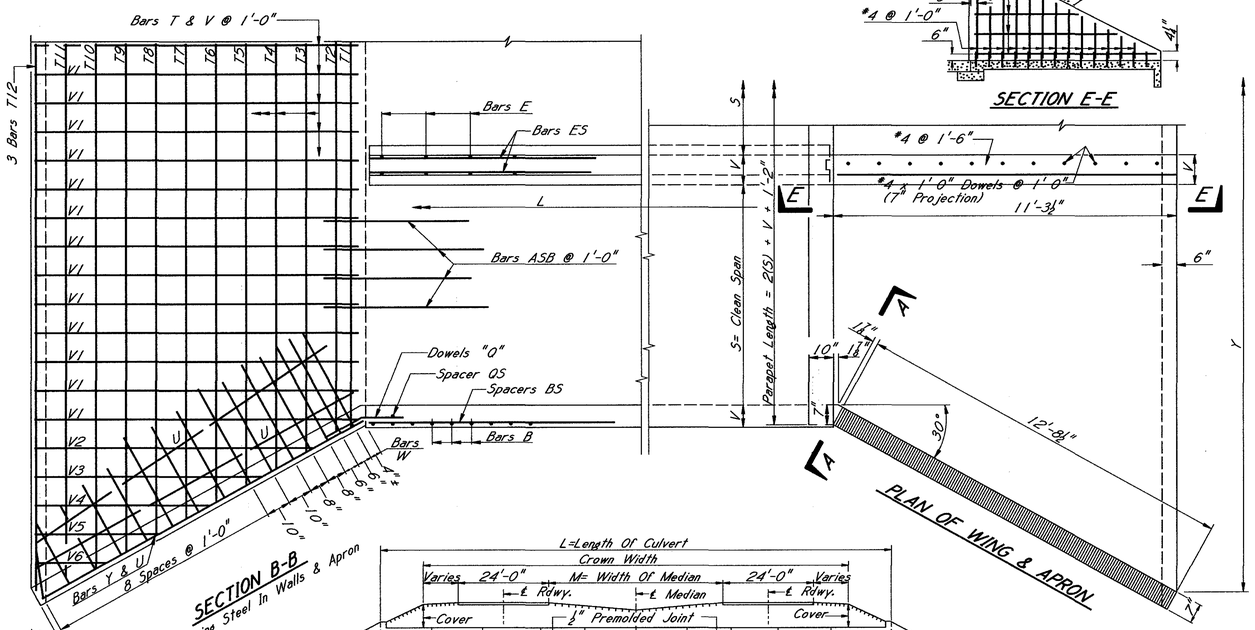
Showing Steel In Wing & In Slabs At Center Wall



END ELEVATION



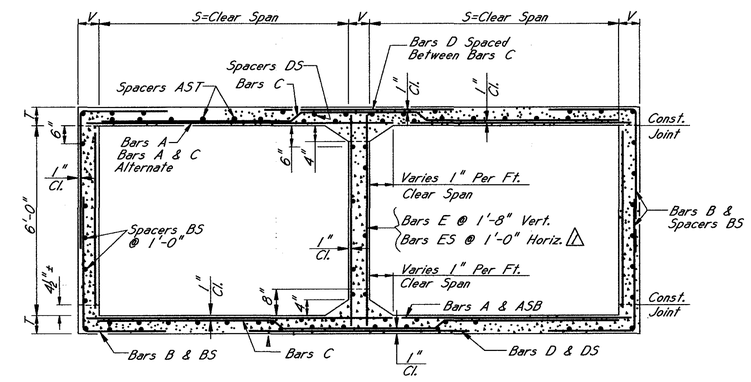
SECTION E-E



SECTION B-B

Showing Steel In Walls & Apron

CULVERT DIMENSIONS						ESTIMATED QUANTITIES					
						CULVERT (L= 150 FT.)		PER LIN. FT. BARREL		1 AUX. SLAB "J"	
CLEAR SPAN	MAX. COVER	T	V	W	Y	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.
6'	14'	8½"	7"	1'-3½"	25'-5⅜"	187.01	22,506	1.1227	138.01	0.68	40
8'	10'	9½"	7½"	1'-4½"	29'-5⅜"	243.75	27,560	1.4814	170.17	0.88	51
10'	7'	10"	7½"	1'-5"	33'-5⅜"	292.49	35,002	1.7876	218.15	1.08	62
12'	6'	11½"	7½"	1'-6½"	37'-5⅜"	368.99	43,539	2.2782	274.17	1.28	73
14'	6'	1'-1"	8½"	1'-8"	41'-6⅞"	468.12	53,492	2.9185	338.77	1.49	85
16'	6'	1'-2½"	9"	1'-9½"	45'-7⅞"	573.10	62,488	3.5985	396.49	1.69	96

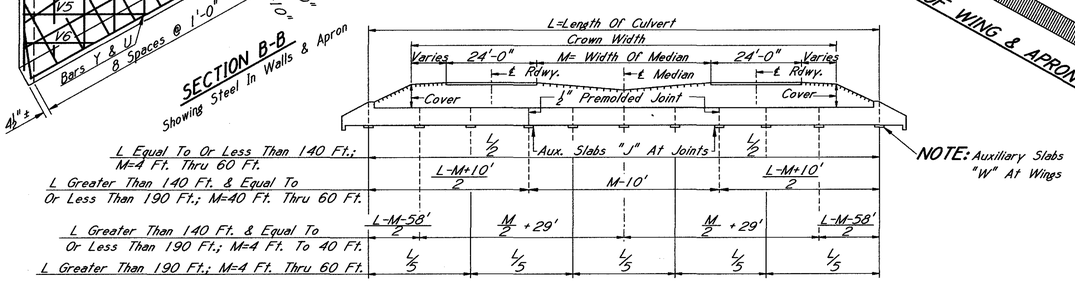


CROSS SECTION

Bars AST Tie To Bars A In The Top Slab
Bars ASB Tie To Bars A In Bottom Slab
Bars BS Tie To Bars B & B2, Bars DS Tie To Bars D
Bars E5 Tie To Bars E.

DESIGN DATA:

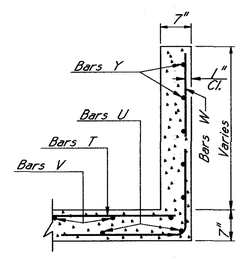
Specifications: . . . . A.A.S.H.O. 1969
Live Load: . . . . . H5 20-44 Mod. For 2-24,000 lbs Axles
Unit Stresses: . . . . fs=20,000 psi, fc=1,200 psi, n=10



NOTE: Auxiliary Slabs "W" At Wings

SIDE ELEVATION OF CULVERT

Showing ½" Joints And Auxiliary Slabs "J"
Drawn For L=150 Ft. And M=60 Ft.



SECTION A-A

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 Per Drawing ICJ-1 Or ICJS-1.

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

NOTE: See Drawing IBJL-1 For Additional Joint Locations.

DATE	REVISIONS	BY
07/17/98	Removed Extra Bars Es	BJJ

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BASIC CULVERT DRAWING
DOUBLE CELL

HEIGHT 6 FT.
SPANS 12-32 FT.

WORKING NUMBER IBD-6-2W

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED MJC | DATE 07-11-97 | DATE 08-01-97

SHEET NUMBER 7028

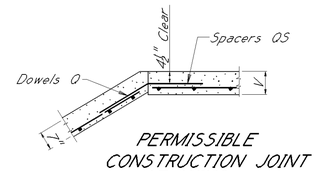
BAR LIST FOR BARREL (L=150 FT.) PARAPETS & 2 AUXILIARY SLABS "J"

CLEAR SPAN	BARS "A"				BARS "B"				BARS "C"				BARS "D"				DOWELS "O" ~ #4		SPACERS "OS" ~ #4		SETS OF BARS "AST" #4 @		SETS OF BARS "ASB" #4 @		SETS OF BARS "BS" #4 @		SETS OF BARS "DS" #4 @		BARS E ~ #4		SETS OF BARS "ES" #4 @		BARS K ~ #4		BARS L ~ #4		BARS M ~ #4		BARS N ~ #4	
	NO.	SIZE	SPAC.	LGTH.	NO.	SIZE	SPAC.	LGTH.	NO.	SIZE	SPAC.	LGTH.	NO.	SIZE	SPAC.	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.
6'	300	#4	1'-0"	13'-6"	900	#4	8"	6'-5"	300	#5	1'-0"	13'-0"	300	#6	1'-0"	5'-4"	24	2'-6"	4	5'-7"	12	152'-9"	12	155'-7"	24	152'-9"	12	152'-9"	204	7'-1"	8	152'-6"	24	4'-3"	4	13'-5"	4	13'-5"	30	2'-2"
8'	300	#4	1'-0"	17'-7"	900	#4	8"	7'-1"	300	#5	1'-0"	17'-2"	300	#7	1'-0"	6'-4"	24	2'-6"	4	5'-7"	16	152'-9"	16	155'-7"	24	152'-9"	12	152'-9"	204	7'-3"	8	152'-6"	32	4'-5"	4	17'-5"	4	17'-6"	38	2'-2"
10'	240	#5	1'-3"	21'-7"	960	#4	7½"	7'-7"	240	#6	1'-3"	21'-3"	240	#8	1'-3"	7'-4"	24	2'-6"	4	5'-7"	20	152'-9"	20	155'-7"	28	152'-9"	16	152'-9"	204	7'-4"	8	152'-6"	40	4'-6"	4	21'-5"	4	21'-6"	46	2'-2"
12'	276	#5	1'-1"	25'-7"	1104	#4	6½"	8'-3"	276	#6	1'-1"	25'-4"	276	#8	1'-1"	8'-4"	24	2'-6"	4	5'-7"	24	152'-9"	24	155'-7"	28	152'-9"	16	152'-9"	204	7'-7"	8	152'-6"	48	4'-9'	4	25'-5"	4	25'-6"	54	2'-2"
14'	276	#5	1'-1"	29'-10"	1440	#4	5"	8'-11"	276	#6	1'-1"	29'-6"	276	#9	1'-1"	9'-4"	24	2'-6"	4	5'-7"	28	152'-9"	28	155'-7"	32	152'-9"	20	152'-9"	204	7'-10"	8	152'-6"	56	5'-0'	4	29'-6"	4	29'-9"	62	2'-2"
16'	300	#5	1'-0"	34'-0"	960	#5	7½"	9'-9"	300	#6	1'-0"	33'-7"	300	#9	1'-0"	10'-4"	24	2'-6"	4	5'-7"	32	152'-9"	32	155'-7"	32	152'-9"	20	152'-9"	204	8'-1"	8	152'-6"	64	5'-3"	4	33'-7"	4	33'-11"	70	2'-2"

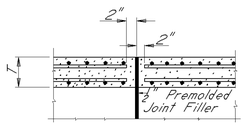
BAR LIST FOR UPSTREAM CENTER WALL EXTENSION

Horizontal Bars: #4 One Each 10'-5", 7'-5" & 4'-5"
Vertical Bars: #4 One Each 5'-6", 5'-0", 4'-6", 4'-0", 3'-6", 3'-0", 2'-6", 2'-0", 1'-6"
Dowels: 11~#4x1'-0"

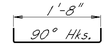
@NOTE: The Number And Length Of Bars Are Listed For Sets Of Bars Composed Of Sections As Shown In Bar Bending Details. See Elevation Of Culvert For Number Of Sections.



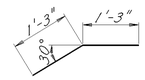
PERMISSIBLE CONSTRUCTION JOINT AT WING



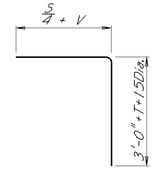
TOP SLAB
Walls Similar



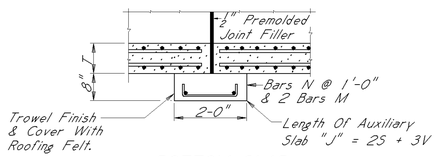
BARS N - #4



DOWELS O ~ #4

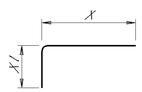


BARS B

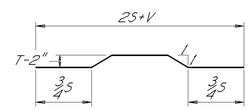


BOTTOM SLAB

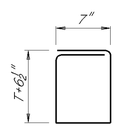
DETAILS OF BARREL JOINT & AUXILIARY SLAB "J"



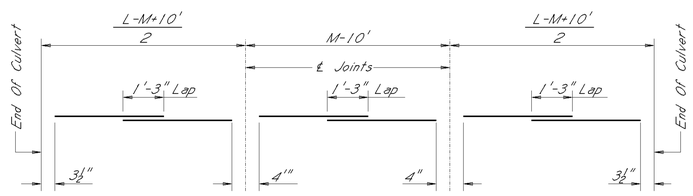
BARS V - #4



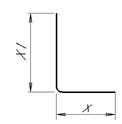
BARS C



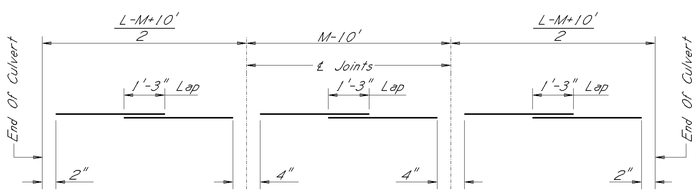
BARS K - #4



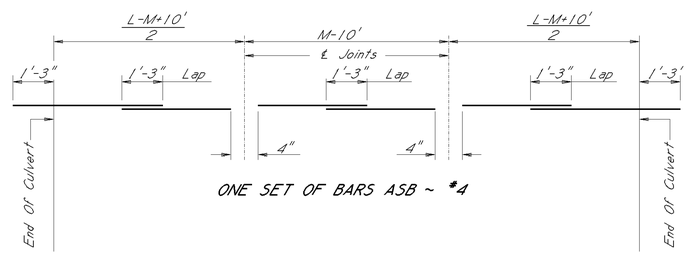
ONE SET OF BARS ES ~ #4



BARS W - #4



ONE SET OF BARS AST, BS & DS ~ #4



ONE SET OF BARS ASB ~ #4

BAR BENDING DETAILS
Dimensions Are Out To Out.

NOTE: The Diagrams For Bars ASB, AST, BS, DS & ES 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.

BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 6'	8'	10'	12'	14'	16'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2	2			25+1'-7"
T2	#4	2	2	2	2	2	2			25+2'-2"
T3	#4	2	2	2	2	2	2			25+3'-4"
T4	#4	2	2	2	2	2	2			25+4'-6"
T5	#4	2	2	2	2	2	2			25+5'-8"
T6	#4	2	2	2	2	2	2			25+6'-10"
T7	#4	2	2	2	2	2	2			25+8'-0"
T8	#4	2	2	2	2	2	2			25+9'-2"
T9	#4	2	2	2	2	2	2			25+10'-4"
T10	#4	2	2	2	2	2	2			25+11'-6"
T11	#4	2	2	2	2	2	2			25+12'-8"
T12	#4	6	6	6	6	6	6			25+13'-10"
U	#4	12	12	12	12	12	12			12'-5"
V1	#4	30	38	46	54	62	70	11'-0"	1'-8"	12'-8"
V2	#4	4	4	4	4	4	4	9'-1"	1'-8"	10'-9"
V3	#4	4	4	4	4	4	4	7'-4"	1'-8"	9'-0"
V4	#4	4	4	4	4	4	4	5'-7"	1'-8"	7'-3"
V5	#4	4	4	4	4	4	4	3'-10"	1'-8"	5'-6"
V6	#4	4	4	4	4	4	4	2'-1"	1'-8"	3'-9"
W1	#4	12	12	12	12	12	12	4'-0"	W+5'-2"	W+9'-2"
W2	#4	8	8	8	8	8	8	3'-8"	W+4'-7"	W+8'-3"
W3	#4	8	8	8	8	8	8	3'-4"	W+3'-11"	W+7'-3"
W4	#4	8	8	8	8	8	8	3'-0"	W+3'-0"	W+6'-0"
W5	#4	8	8	8	8	8	8	2'-8"	W+2'-2"	W+4'-10"
W6	#4	8	8	8	8	8	8	2'-4"	W+1'-4"	W+3'-8"
W7	#4	8	8	8	8	8	8	2'-0"	W+6"	W+2'-6"
Y1	#4	4	4	4	4	4	4			2'-11"
Y2	#4	4	4	4	4	4	4			5'-3"
Y3	#4	4	4	4	4	4	4			7'-7"
Y4	#4	4	4	4	4	4	4			9'-10"
Y5	#4	4	4	4	4	4	4			12'-2"
Y6	#4	4	4	4	4	4	4			12'-5"

GENERAL NOTES:

Specifications: Mississippi Standard Specifications For Road And Bridge Construction, 1990.
All Concrete Shall Be Class "B".
Concrete Surfaces Shall Be Finished In Accordance With Sub-Section 804.03.19.
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 Two Hours Before Continuing The Pour.
The Quantities Shown Will Be Used As The Basic For Final Payment Unless This Drawing Is Modified.

DATE	REVISIONS	BY

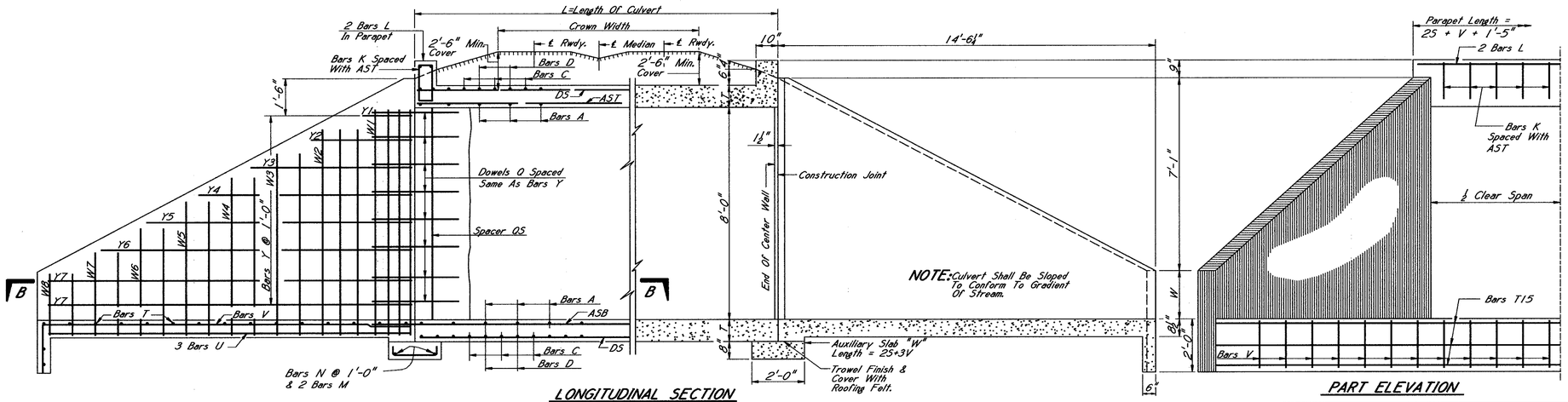
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BASIC CULVERT DRAWING
DOUBLE CELL

HEIGHT 6 FT.
SPANS 12-32 FT.

WORKING NUMBER IBD-6-2W

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED MJC | DATE 07-11-97 | DATE 08-01-97

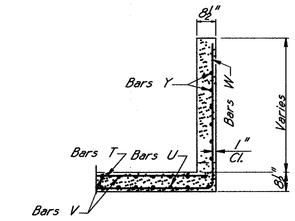
SHEET NUMBER 7029



LONGITUDINAL SECTION

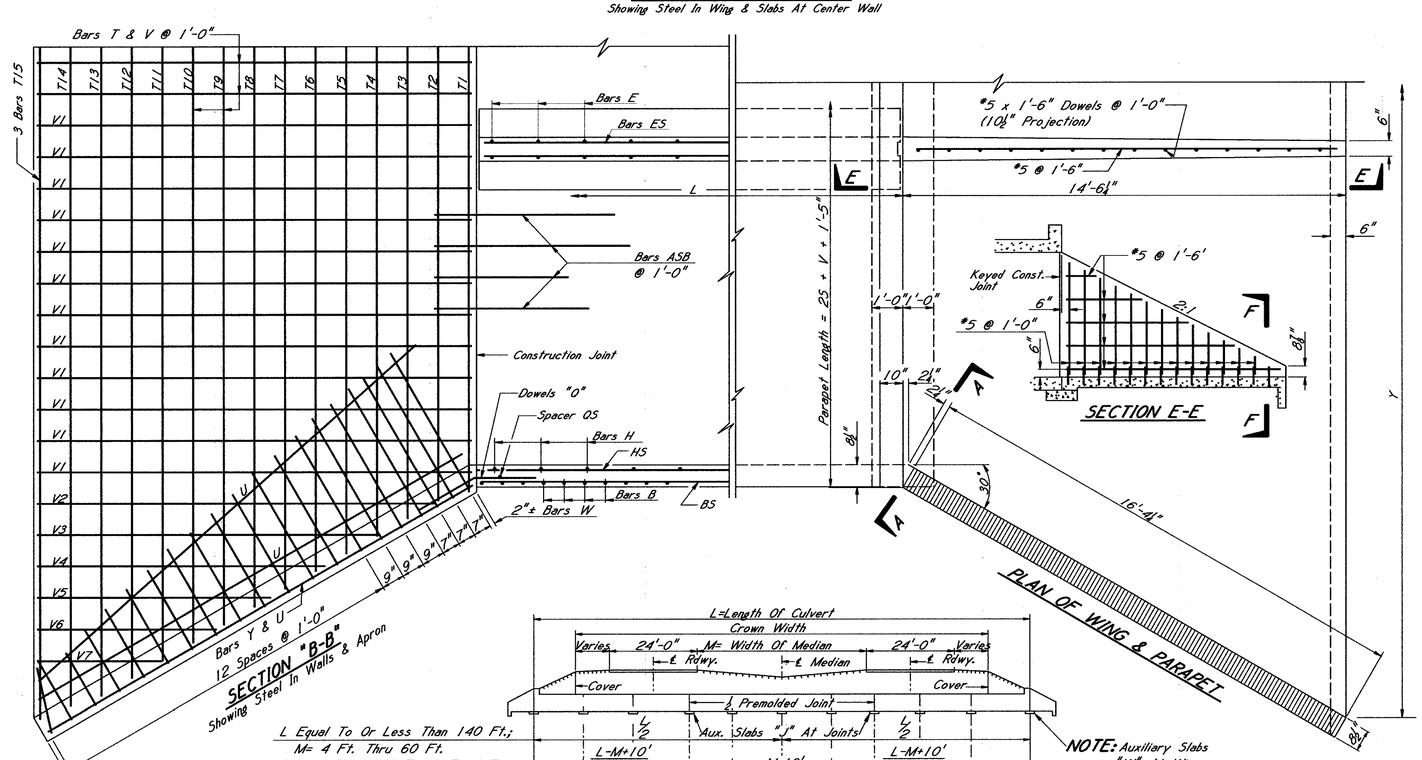
Showing Steel In Wing & Slabs At Center Wall

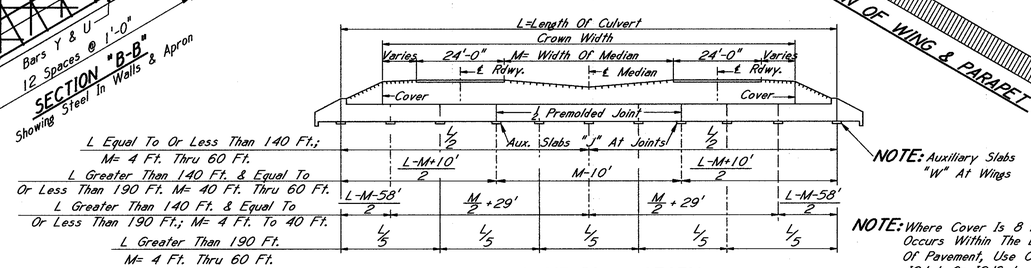
PART ELEVATION



SECTION A-A

CULVERT DIMENSIONS						ESTIMATED QUANTITIES					
						CULVERT (L= 150 FT.)		PER LIN. FT. BARREL		1 AUX. SLAB "J"	
CLEAR SPAN	MAX. COVER	T	V	W	Y	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.
8'	10'	10"	8"	1'-10"	33'-2½"	296.44	34,101	1.7284	207.79	0.89	51
10'	9'	11"	8½"	1'-11"	37'-3"	366.31	42,375	2.1628	260.95	1.09	62
12'	7'	1'-0½"	9"	2'-0½"	41'-3½"	456.14	48,403	2.7291	299.63	1.30	74
14'	6'	1'-1½"	9"	2'-1½"	45'-3½"	536.03	56,008	3.2307	348.39	1.49	85
16'	6'	1'-2½"	9½"	2'-2½"	49'-4"	630.75	70,208	3.8299	440.50	1.70	96

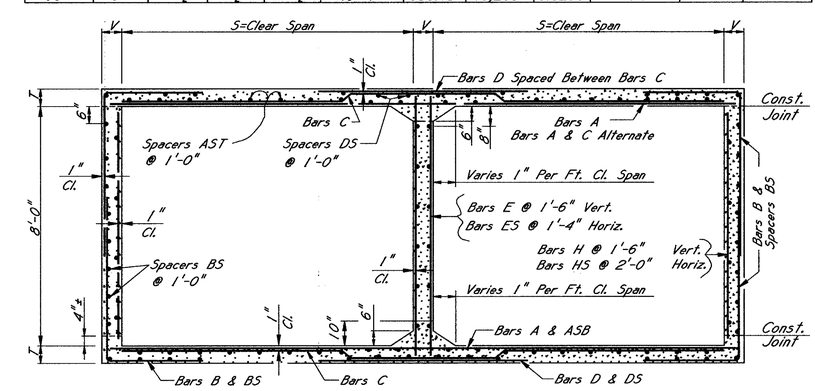




LONGITUDINAL SECTION

Showing ½" Joints And Auxiliary Slabs Drawn For L=150 Ft. And M=60 Ft.

NOTE: Auxiliary Slabs "W" At Wings



CROSS SECTION

Bars AST Tie To Bars A In The Top Slab
Bars ASB Tie To Bars A In Bottom Slab
Bars BS Tie To Bars B, DS To D, ES To E, HS To H

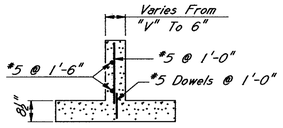
NOTE: Joints Shall Not Be Located Closer Than 5 Ft. Outside Of Pavement For Cover Of 8 Ft. Or Less Except In The Cases Where Median Is Less Than 10 Ft. Where Cover Exceeds 8 Ft., Joints May Be Located Without Regards To Pavement Edge.

NOTE: See Drawing 1BJL-1 For Additional Joint Locations.

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 Per Dwg 1CJ-1 Or 1CJS-1.

DESIGN DATA:

Specifications . . . . A.A.S.H.O. 1969
Live Load . . . . . HS20-44 Mod. For 2-24,000 lbs Axles.
Unit Stresses . . . . fs=20,000 psi, fc=1,200 psi, n=10.



SECTION F-F

DATE	REVISIONS	BY
07/17/98	Added Section A-A	BJJ

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BASIC CULVERT DRAWING

DOUBLE CELL

HEIGHT 8 FT.
SPANS 16-32 FT.

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED MJC | DATE 07-11-97 | DATE 08-01-97

WORKING NUMBER IBD-8-2W

SHEET NUMBER 7030

BAR LIST FOR BARREL (L=150 FT.) PARAPETS & 4 AUXILIARY SLABS (2 "J's" & 2 "W's")

CLEAR SPAN	BARS "A"				BARS "B"				BARS "C"				BARS "D"				DOWELS "Q"~#4		SPACERS "QS"~#4		SETS OF BARS "AST" #4 @		SETS OF BARS "ASB" #4 @		SETS OF BARS "BS" #4 @		SETS OF BARS "DS" #4 @		BARS E ~ #4		SETS OF BARS "ES" #4 @		BARS "H"~#4		SETS OF BARS "HS" #4 @		BARS "K"~#4		BARS "L"~#4		BARS "M"~#4		BARS "N"~#4	
	NO.	SIZE	SPAC.	LGTH.	NO.	SIZE	SPAC.	LGTH.	NO.	SIZE	SPAC.	LGTH.	NO.	SIZE	SPAC.	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.
8'	300	#4	1'-0"	17'-9"	1200	#4	6"	8'-2"	300	#5	1'-0"	17'-3"	300	#7	1'-0"	6'-10"	32	2'-6"	4	7'-7"	16	152'-9"	16	155'-7"	28	152'-9"	12	152'-9"	204	9'-4"	12	152'-6"	204	7'-7"	8	152'-9"	32	4'-6"	4	17'-9"	8	17'-8"	76	2'-2"
10'	360	#4	10"	21'-10"	1200	#4	6"	8'-9"	360	#5	10"	21'-4"	360	#7	10"	7'-10"	32	2'-6"	4	7'-7"	20	152'-9"	20	155'-7"	32	152'-9"	16	152'-9"	204	9'-6"	12	152'-6"	204	7'-7"	8	152'-9"	40	4'-8"	4	21'-9"	8	21'-9"	92	2'-2"
12'	276	#4	1'-1"	26'-0"	1440	#4	5"	9'-5"	276	#6	1'-1"	25'-6"	276	#8	1'-1"	8'-10"	32	2'-6"	4	7'-7"	24	152'-9"	24	155'-7"	32	152'-9"	16	152'-9"	204	9'-9"	12	152'-6"	204	7'-7"	8	152'-9"	48	4'-11"	4	25'-10"	8	25'-11"	108	2'-2"
14'	276	#4	1'-1"	30'-0"	1400	#4	5"	10'-0"	276	#6	1'-1"	29'-6"	276	#9	1'-1"	9'-10"	32	2'-6"	4	7'-7"	28	152'-9"	28	155'-7"	36	152'-9"	20	152'-9"	204	9'-11"	12	152'-6"	204	7'-7"	8	152'-9"	56	5'-1"	4	29'-10"	8	29'-11"	124	2'-2"
16'	240	#5	1'-3"	34'-1"	1200	#5	6"	10'-9"	240	#7	1'-3"	33'-8"	240	#10	1'-3"	10'-10"	32	2'-6"	4	7'-7"	32	152'-9"	32	155'-7"	36	152'-9"	20	152'-9"	204	10'-1"	12	152'-6"	204	7'-7"	8	152'-9"	64	5'-3"	4	33'-10"	8	34'-0"	140	2'-2"

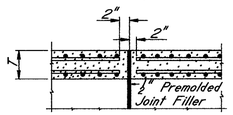
BAR LIST FOR UPSTREAM CENTER WALL EXTENSION

Horiz. Bars: #5 One For Each 14'-3", 11'-5", 8'-5" 5'-5", 2'-5"
Vert. Bars: #5 One Each 7'-6", 7'-0", 6'-6", 6'-0", 5'-6", 5'-0", 4'-6", 4'-0", 3'-6", 3'-0", 2'-6", 2'-0', 1'-6"
Dowels: 14 ~ #5 x 1'-6"

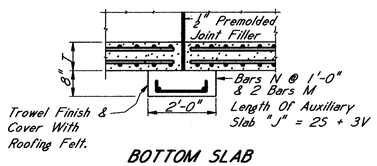
@NOTE: The Number And Length Of Bars Are Listed For Sets Of Bars Composed Of Sections As Shown In Bar Bending Details. See Elevation Of Culvert For Number Of Sections.

BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 8'	10'	12'	14'	16'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2			25+1'-8"
T2	#4	2	2	2	2	2			25+2'-10"
T3	#4	2	2	2	2	2			25+4'-0"
T4	#4	2	2	2	2	2			25+5'-2"
T5	#4	2	2	2	2	2			25+6'-3"
T6	#4	2	2	2	2	2			25+7'-5"
T7	#4	2	2	2	2	2			25+8'-7"
T8	#4	2	2	2	2	2			25+9'-9"
T9	#4	2	2	2	2	2			25+10'-11"
T10	#4	2	2	2	2	2			25+12'-1"
T11	#4	2	2	2	2	2			25+13'-3"
T12	#4	2	2	2	2	2			25+14'-4"
T13	#4	2	2	2	2	2			25+15'-6"
T14	#4	2	2	2	2	2			25+16'-8"
T15	#4	6	6	6	6	6			25+17'-8"
U	#4	12	12	12	12	12			16'-1"
V1	#4	38	46	54	62	70	14'-2"	1'-8"	15'-10"
V2	#4	4	4	4	4	4	12'-3"	1'-8"	13'-11"
V3	#4	4	4	4	4	4	10'-6"	1'-8"	12'-2"
V4	#4	4	4	4	4	4	8'-10"	1'-8"	10'-6"
V5	#4	4	4	4	4	4	7'-1"	1'-8"	8'-9"
V6	#4	4	4	4	4	4	5'-5"	1'-8"	7'-1"
V7	#4	4	4	4	4	4	3'-8"	1'-8"	5'-4"
W1	#5	16	16	16	16	16	4'-6"	W+6'-7"	W+11'-1"
W2	#5	12	12	12	12	12	4'-1"	W+5'-8"	W+9'-9"
W3	#5	8	8	8	8	8	3'-8"	W+4'-9"	W+8'-5"
W4	#4	8	8	8	8	8	3'-4"	W+3'-11"	W+7'-3"
W5	#4	8	8	8	8	8	3'-0"	W+3'-0"	W+6'-0"
W6	#4	8	8	8	8	8	2'-8"	W+2'-2"	W+4'-10"
W7	#4	8	8	8	8	8	2'-4"	W+1'-4"	W+3'-8"
W8	#4	8	8	8	8	8	2'-0"	W+6"	W+2'-6"
Y1	#4	4	4	4	4	4			2'-11"
Y2	#4	4	4	4	4	4			5'-3"
Y3	#4	4	4	4	4	4			7'-7"
Y4	#4	4	4	4	4	4			9'-10"
Y5	#4	4	4	4	4	4			12'-2"
Y6	#4	4	4	4	4	4			14'-5"
Y7	#4	8	8	8	8	8			16'-1"

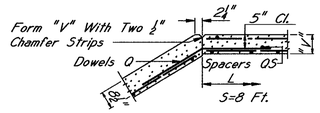


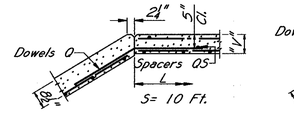
TOP SLAB
Walls Similar

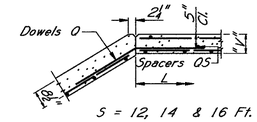


BOTTOM SLAB

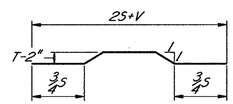
DETAILS OF BARREL JOINT & AUXILIARY SLAB "J"



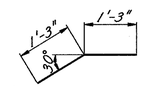




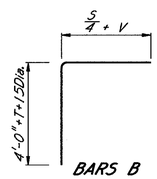
CONSTRUCTION JOINT AT WINGS



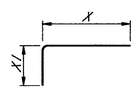
BARS C



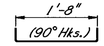
△DOWELS Q ~ #4



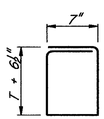
BARS B



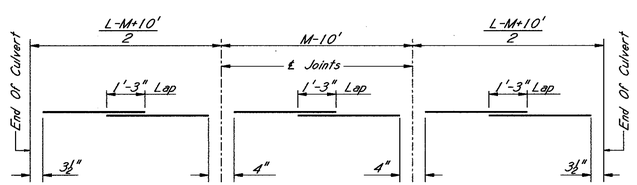
BARS V - #4



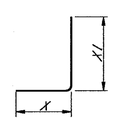
BARS N - #4



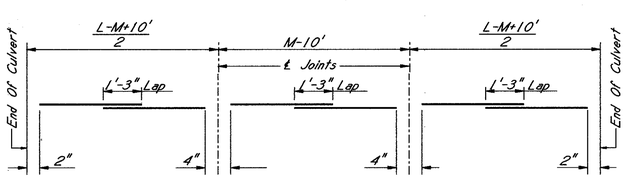
BARS K - #4



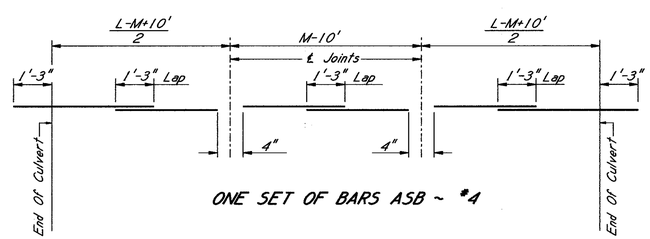
ONE SET OF BARS ES ~ #4



BARS W



ONE SET OF BARS AST, BS, DS & HS ~#4



ONE SET OF BARS ASB ~ #4

NOTE: The Diagrams For Bars ASB, AST, BS, DS, ES & HS 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.

BAR BENDING DETAILS
Dimensions Are Out To Out

GENERAL NOTES:

Specifications: Mississippi Standard Specifications For Road And Bridge Construction, 1990.
All Concrete Shall Be Class "B".
Concrete Surfaces Shall Be Finished In Accordance With Sub-Section 804.03.19.
Expansion Joint Material Shall Be Bituminous Fiber Type Unless Otherwise Noted.
All Exposed Corners Shall Be Chamfered ¾".
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 Two Hours Before Continuing The Pour.
Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Shall Be Placed In All Culverts Regardless Of Length.
The Quantities Shown Will Be Used As A Basis For Final Payment Unless This Drawing Is Modified.

DATE	REVISIONS	BY
△07/17/98	Changed Dowels Q To Dowels Q	BJJ

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BASIC CULVERT DRAWING

DOUBLE CELL

HEIGHT 8 FT.
SPANS 16-32 FT.

WORKING NUMBER IBD-8-2W

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED MJC | DATE 07-11-97 | DATE 08-01-97

SHEET NUMBER 7031

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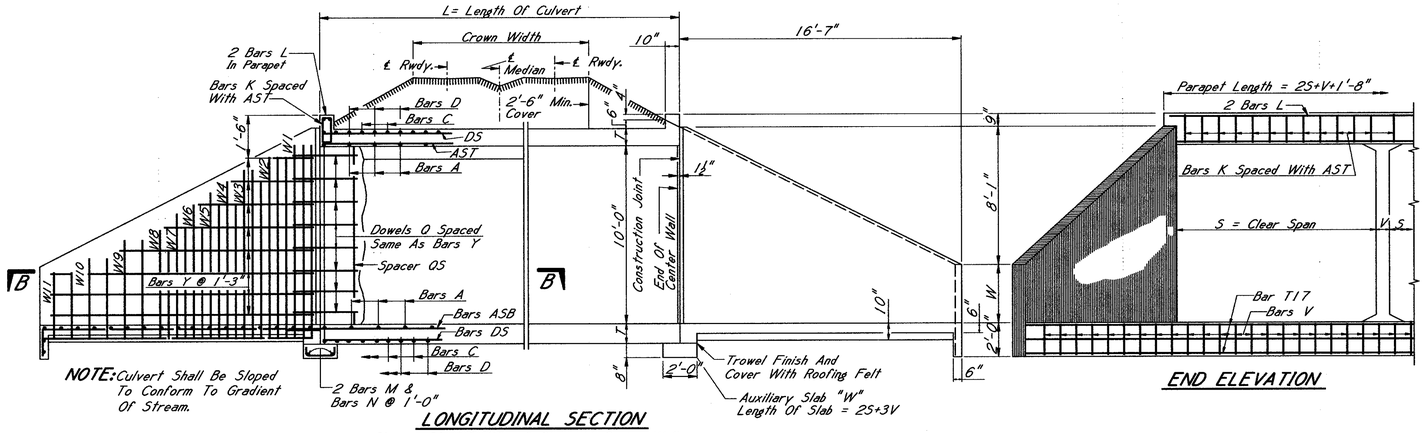
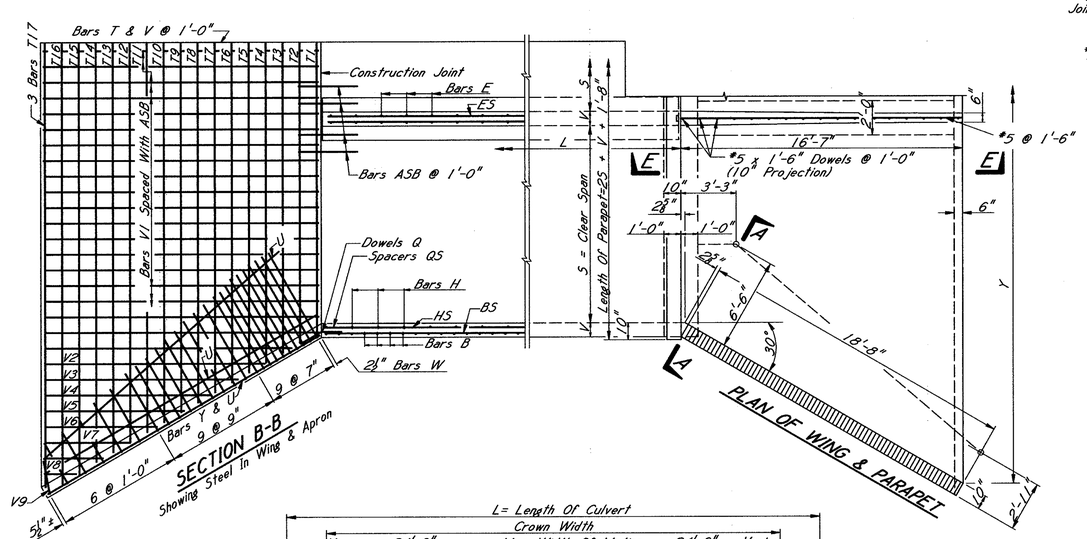


LONGITUDINAL SECTION

Showing Steel In Wing & Slabs At Center Wall.

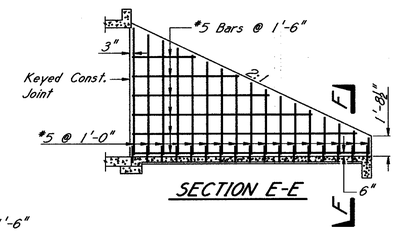
END ELEVATION

CULVERT DIMENSIONS						ESTIMATED QUANTITIES					
						CULVERT (L= 150 FT.)		PER LIN. FT. BARREL		1 AUX. SLAB "J"	
CLEAR SPAN	MAX. COVER	T	V	W	Y	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.
10'	9'	11½"	9¼"	2'-11½"	39'-8¼"	426.56	45,989	2.4989	278.10	1.11	57
12'	7'	1'-0¼"	9¼"	3'-0⅛"	43'-8⅛"	498.63	54,898	2.9517	335.37	1.30	68
14'	6'	1'-1½"	10"	3'-1½"	47'-8⅜"	586.88	59,716	3.5108△	365.95	1.51	79
16'	6'	1'-3"	10½"	3'-3"	51'-9⅛"	699.01	72,017	4.2276	445.06	1.71	91
18'	6'	1'-4½"	11½"	3'-4½"	55'-10⅛"	831.71	85,707	5.0779	533.14	1.92	102

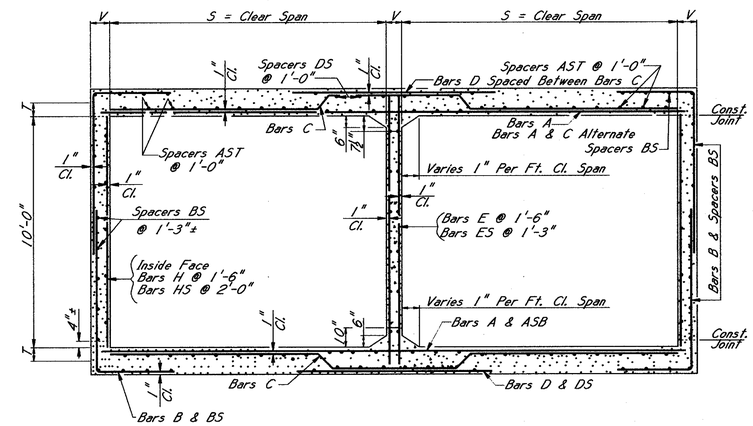


SECTION B-B

Showing Steel In Wing & Apron

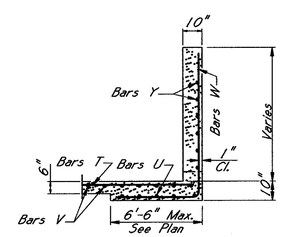


SECTION E-E

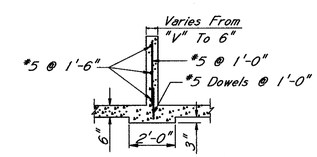


CROSS SECTION

Bars AST Tie To Bars A In Top Slab.
Bars ASB Tie To Bars A In Bottom Slab.
Bars BS Tie To B, Bars DS To D, Bars ES To E, Bars HS To H.



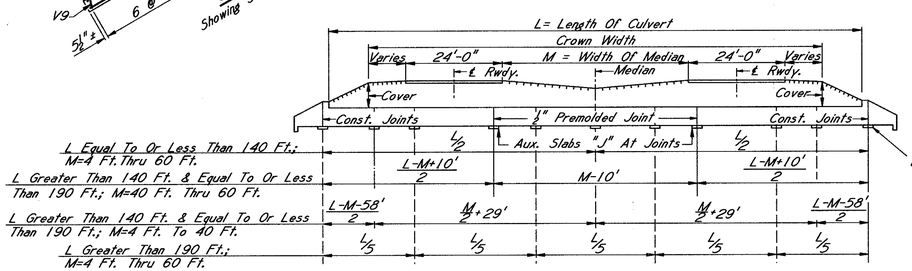
△SECTION A-A



SECTION F-F △

DESIGN DATA:

Specifications . . . . A.A.S.H.O. 1969
Live Load . . . . . HS 20-44 Mod. For 2-24,000 lbs Axles
Unit Stresses . . . . fs=20,000 psi, fc=1,200 psi, n=10.



NOTE: Auxiliary Slabs "W" At Wings

SIDE ELEVATION OF CULVERT

Showing ½" Joints And Auxiliary Slabs
Drawn For L= 150 Ft. And M=60 Ft.

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

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

GENERAL NOTES:

Specifications: Mississippi Standard Specifications For Road And Bridge Construction, 1990.
All Concrete Shall Be Class "B".
Concrete Surfaces Shall Be Finished In Accordance With Sub-Section 804.03.19.
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 Two Hours, Before Continuing The Pour.
Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Shall Be Placed In All Culverts Regardless Of Length.
The Quantities Shown Will Be Used As A Basic For Final Payment Unless This Drawing Is Modified.

NOTE: See Drawing IBJL-1 For Additional Joint Locations.

DATE	REVISIONS	BY
07/17/98	Changed Titles & Quantity	BJJ

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BASIC CULVERT DRAWING

DOUBLE CELL

HEIGHT 10 FT.
SPANS 20-36 FT.

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED MJC | DATE 07-11-97 | DATE 08-01-97

WORKING NUMBER IBD-10-2W
SHEET NUMBER 7032

\bjj\ma\culvert\english\385.dgn

BAR LIST FOR BARREL L=150 FT. PARAPETS & 4 AUXILIARY SLABS (2 "J's" & 2 "W's")

CLEAR SPAN	BARS "A"				BARS "B"				BARS "C"				BARS "D"				DOWELS "Q" ~ #4		SPACERS "QS" ~ #4		SETS OF BARS "AST" #4 @		SETS OF BARS "ASB" #4 @		SETS OF BARS "BS" #4 @		SETS OF BARS "DS" #4 @		BARS E ~ #4		SETS OF BARS "ES" #4 @		BARS H ~ #4		SETS OF BARS "HS" #4 @		BARS K ~ #4		BARS L ~ #4		BARS M ~ #4		BARS N ~ #4	
	NO.	SIZE	SPAC.	LGTH.	NO.	SIZE	SPAC.	LGTH.	NO.	SIZE	SPAC.	LGTH.	NO.	SIZE	SPAC.	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.
10'	360	#4	10"	22'-1"	1200	#4	6"	9'-11"	360	#5	10"	21'-6"	360	#7	10"	8'-4"	32	2'-6"	4	9'-7"	20	152'-9"	20	155'-7"	32	152'-9"	16	152'-9"	204	11'-7"	16	152'-6"	204	9'-7"	10	152'-6"	40	4'-9"	4	22'-1"	8	22'-0"	76	2'-2"
12'	300	#4	1'-0"	26'-1"	960	#5	7½"	10'-7"	300	#6	1'-0"	25'-7"	300	#8	1'-0"	9'-4"	32	2'-6"	4	9'-7"	24	152'-9"	24	155'-7"	32	152'-9"	20	152'-9"	204	11'-9"	16	152'-6"	204	9'-7"	10	152'-6"	48	4'-11"	4	26'-1"	8	26'-0"	92	2'-2"
14'	276	#4	1'-1"	30'-3"	900	#5	8"	11'-3"	276	#6	1'-1"	29'-7"	276	#9	1'-1"	10'-4"	32	2'-6"	4	9'-7"	28	152'-9"	28	155'-7"	36	152'-9"	20	152'-9"	204	11'-11"	16	152'-6"	204	9'-7"	10	152'-6"	56	5'-1"	4	30'-2"	8	30'-2"	108	2'-2"
16'	240	#5	1'-3"	34'-4"	960	#5	7½"	11'-11"	240	#7	1'-3"	33'-10"	240	#10	1'-3"	11'-4"	32	2'-6"	4	9'-7"	32	152'-9"	32	155'-7"	36	152'-9"	24	152'-9"	204	12'-2"	16	152'-6"	204	9'-7"	10	152'-6"	64	5'-4"	4	34'-2"	8	34'-2"	124	2'-2"
18'	258	#5	1'-2"	38'-7"	900	#6	8"	12'-9"	258	#7	1'-2"	38'-0"	258	#10	1'-2"	12'-4"	32	2'-6"	4	9'-7"	36	152'-9"	36	155'-7"	36	152'-9"	24	152'-9"	204	12'-5"	16	152'-6"	204	9'-7"	10	152'-6"	72	5'-7"	4	38'-3"	8	38'-6"	140	2'-2"

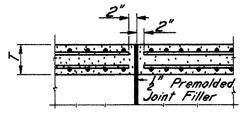
BAR LIST FOR UPSTREAM CENTER WALL EXTENSION

Horiz. Bars: #5 One Each 16'-4", 15'-5", 12'-5", 9'-5", 6'-5", 3'-5"

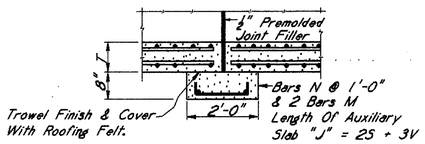
Vert. Bars: #5 One Each 9'-7", 9'-1", 8'-7", 8'-1", 7'-7", 7'-1", 6'-7", 6'-1", 5'-7", 5'-1", 4'-7" 4'-1", 3'-7", 3'-1", 2'-7", 2'-1", 1'-7"

Dowels: 17 ~ #5 x 1'-6"

®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.

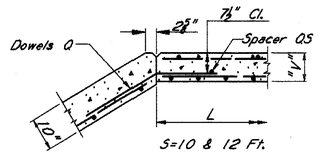


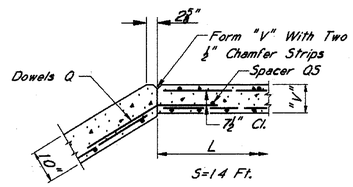
TOP SLAB
WALL SILIMAR



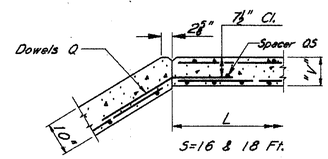
BOTTOM SLAB

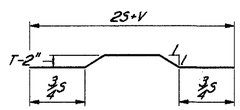
DETAILS OF BARREL JOINT & AUXILIARY SLAB "J"



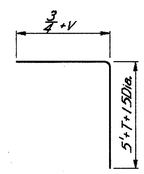


CONSTRUCTION JOINT AT WING

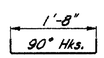




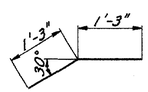
BARS C



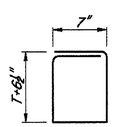
BARS B



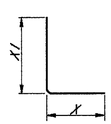
BARS N - #4



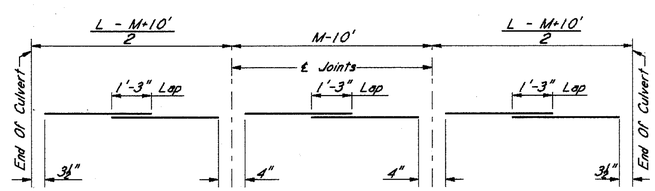
DOWELS Q ~ #4



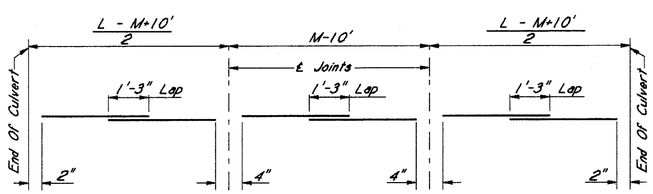
BARS K - #4



BARS W



ONE SET OF BARS ES ~ #4

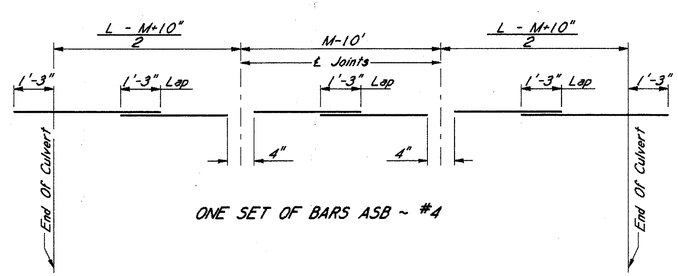


ONE SET OF BARS AST, BS, DS & HS ~ #4

NOTE: The Diagrams For Bars AST, ASB, BS, DS, ES & HS 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.

BAR BENDING DETAILS

Dimensions Are Out To Out.



ONE SET OF BARS ASB ~ #4

BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 10'	12'	14'	16'	18'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2			25+2'-0"
T2	#4	2	2	2	2	2			25+3'-2"
T3	#4	2	2	2	2	2			25+4'-4"
T4	#4	2	2	2	2	2			25+5'-6"
T5	#4	2	2	2	2	2			25+6'-8"
T6	#4	2	2	2	2	2			25+7'-9"
T7	#4	2	2	2	2	2			25+8'-11"
T8	#4	2	2	2	2	2			25+10'-1"
T9	#4	2	2	2	2	2			25+11'-3"
T10	#4	2	2	2	2	2			25+12'-5"
T11	#4	2	2	2	2	2			25+13'-7"
T12	#4	2	2	2	2	2			25+14'-9"
T13	#4	2	2	2	2	2			25+15'-10"
T14	#4	2	2	2	2	2			25+17'-0"
T15	#4	2	2	2	2	2			25+18'-2"
T16	#4	2	2	2	2	2			25+19'-4"
T17	#4	6	6	6	6	6			25+20'-0"
U	#4	12	12	12	12	12			18'-4"
V1	#4	46	54	62	70	78	16'-3"	1'-8"	17'-11"
V2	#4	4	4	4	4	4	14'-6"	1'-8"	16'-2"
V3	#4	4	4	4	4	4	12'-9'	1'-8"	14'-5"
V4	#4	4	4	4	4	4	11'-1"	1'-8"	12'-9"
V5	#4	4	4	4	4	4	9'-4"	1'-8"	11'-0"
V6	#4	4	4	4	4	4	7'-8"	1'-8"	9'-4"
V7	#4	4	4	4	4	4	5'-11"	1'-8"	7'-7"
V8	#4	4	4	4	4	4	4'-3"	1'-8"	5'-11"
V9	#4	4	4	4	4	4	2'-5"	1'-8"	4'-1"
W1	#6	12	12	12	12	12	6'-0"	W+7'-11"	W+13'-11"
W2	#6	12	12	12	12	12	5'-8"	W+7'-2"	W+12'-10"
W3	#5	12	12	12	12	12	5'-4"	W+6'-5"	W+11'-9"
W4	#5	8	8	8	8	8	5'-0'	W+5'-10"	W+10'-10"
W5	#5	8	8	8	8	8	4'-8"	W+5'-2"	W+9'-10"
W6	#4	8	8	8	8	8	4'-5"	W+4'-7"	W+9'-0"
W7	#4	8	8	8	8	8	4'-1"	W+3'-11"	W+8'-0"
W8	#4	8	8	8	8	8	3'-10"	W+3'-3"	W+7'-1"
W9	#4	8	8	8	8	8	3'-5"	W+2'-4"	W+5'-9"
W10	#4	8	8	8	8	8	3'-0"	W+1'-6"	W+4'-6"
W11	#4	8	8	8	8	8	2'-7"	W+8"	W+3'-3"
Y1	#4	4	4	4	4	4			3'-4"
Y2	#4	4	4	4	4	4			6'-3"
Y3	#4	4	4	4	4	4			9'-1"
Y4	#4	4	4	4	4	4			12'-0"
Y5	#4	4	4	4	4	4			14'-10"
Y6	#4	4	4	4	4	4			17'-9"
Y7	#4	8	8	8	8	8			18'-4"

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BASIC CULVERT DRAWING

DOUBLE CELL

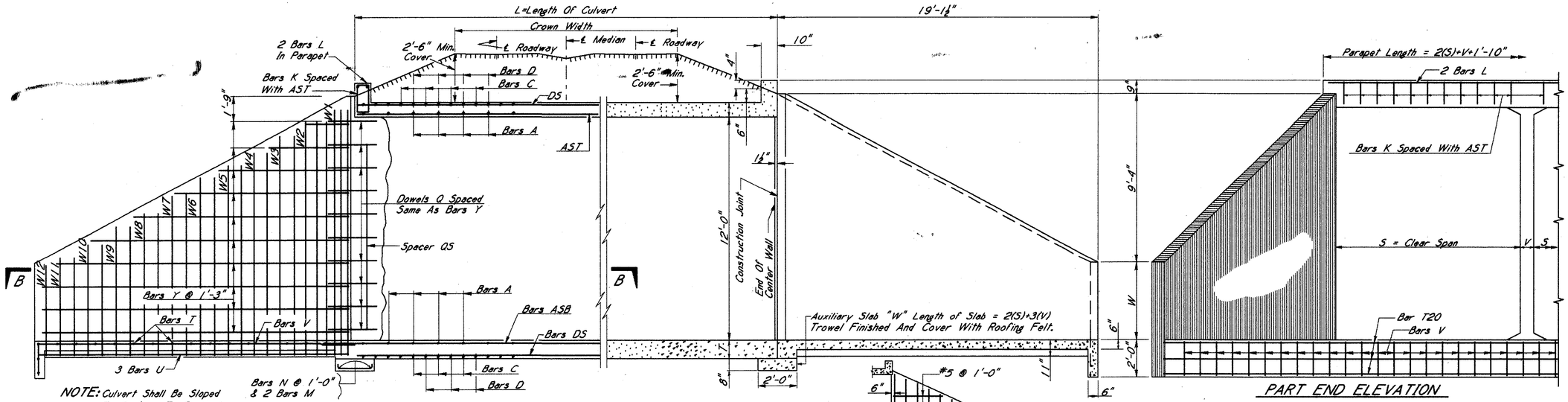
HEIGHT 10 FT.
SPANS 20-36 FT.

REVISIONS | BY | DATE

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED MJC | DATE 07-11-97 | DATE 08-01-97

WORKING NUMBER IBD-10-2W

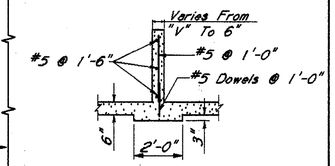
SHEET NUMBER 7033



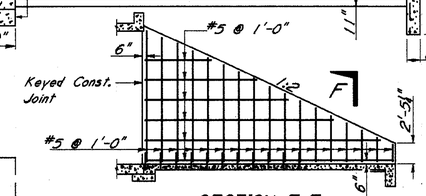
NOTE: Culvert Shall Be Sloped To Conform To Gradient Of Stream.

LONGITUDINAL SECTION
Showing Steel In Wing & Slabs At Center Wall

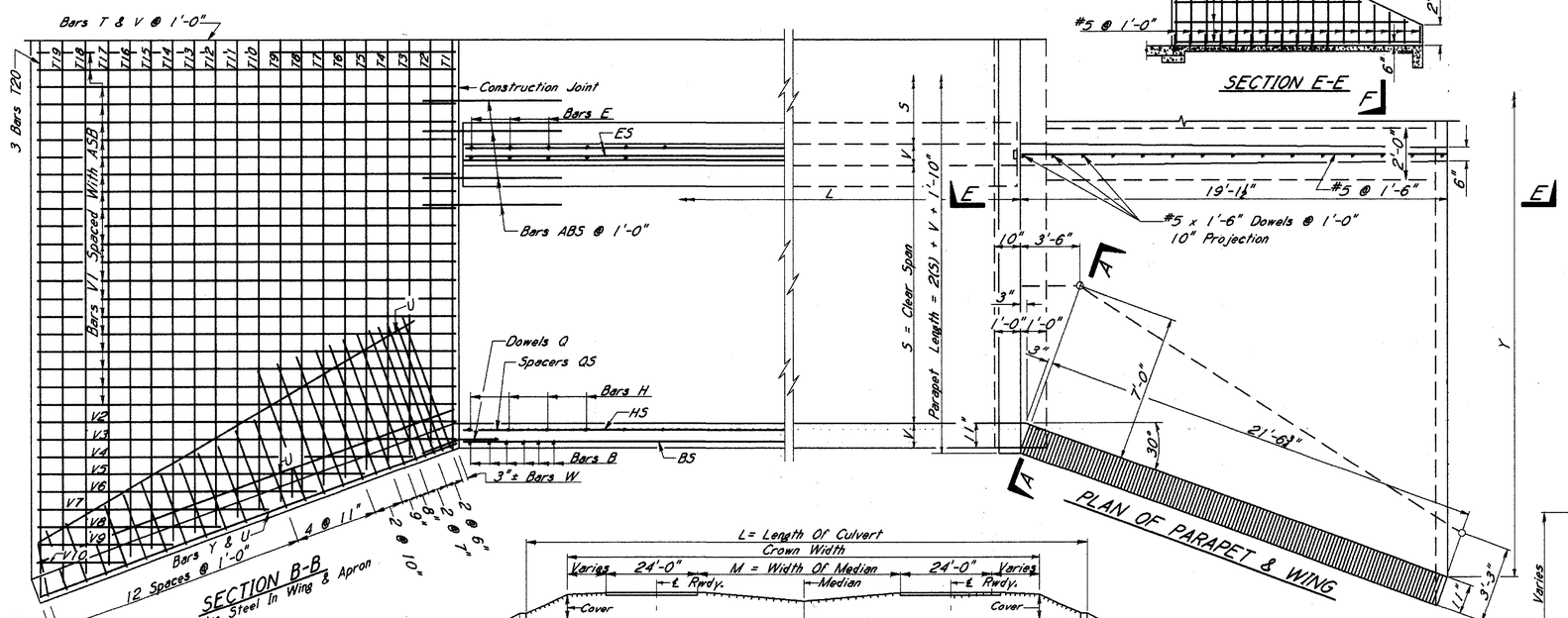
PART END ELEVATION



SECTION F-F



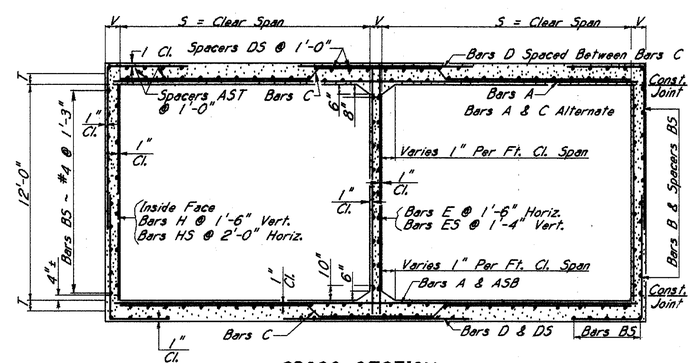
SECTION E-E



SECTION B-B
Showing Steel In Wing & Apron

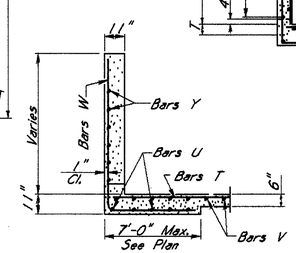
PLAN OF PARAPET & WING

CULVERT DIMENSIONS						ESTIMATED QUANTITIES					
						CULVERT (L= 150 FT.)		PER LIN. FT. BARREL		1 AUX. SLAB "J"	
CLEAR SPAN	MAX. COVER	T	V	W	Y	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.	CONC. cu. yd.	REINF. STEEL lb.
12'	7'	1'-1"	11"	3'-10"	46'-8¾"	584.42	59,986	3.4058	358.22	1.32	74
14'	7'	1'-2"	11"	3'-11"	50'-8¾"	666.64	66,821	3.9228	402.90	1.52	86
16'	6'	1'-3½"	11½"	4'-0½"	54'-9¼"	782.95	76,628	4.6639	464.87	1.72	97
18'	6'	1'-5"	1'-0"	4'-2"	58'-9¾"	910.77	94,220	5.4814	580.78	1.93	108
20'	6'	1'-6"	1'-0"	4'-3"	62'-9¾"	1019.31	109,370	6.1728	679.63	2.12	119

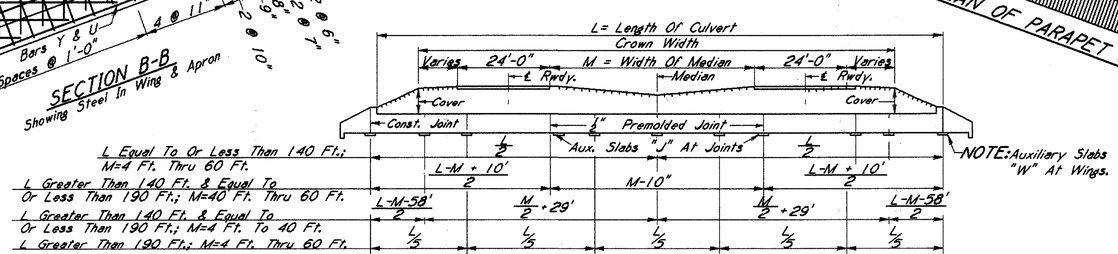


CROSS SECTION

Bars AST Tie To Bars A In Top Slab.
Bars ASB Tie To Bars A In Bottom Slab.
Bars BS Tie To Bars B, DS To D, ES To E, HS To H.



SECTION A-A



NOTE: Auxiliary Slabs "W" At Wings.

SIDE ELEVATION OF CULVERT
Showing ½" Joints And Auxiliary Slabs
Drawn For L = 150 Ft. And M= 60 Ft.

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

NOTE: See Drawing IBJL-1 For Additional Joint Locations.

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 Per Drawing ICJ-1 Or ICJS-1.

DESIGN DATA:
Specifications . . . . A.A.S.H.O. 1969.
Live Load . . . . . HS20-44 Mod. For 2-24,000 lbs Axles.
Unit Stresses . . . fs=20,000 psi fc=1,200 psi, n=10.

DATE	REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BASIC CULVERT DRAWING
DOUBLE CELL
HEIGHT 12 FT.
SPANS 24-40 FT.

DESIGNED NA CHECKED BJJ ISSUED TMT
DETAILED MJC DATE 07-11-97 DATE 08-01-97

WORKING NUMBER IBD-12-2W
SHEET NUMBER 7034

BAR LIST FOR BARREL (L=150 FT.) PARAPETS & 4 AUXILIARY SLABS (2 "J's" & 2 "W's")

CLEAR SPAN	BARS "A" NO.	SIZE	SPAC.	LGTH.	BARS "B" NO.	SIZE	SPAC.	LGTH.	BARS "C" NO.	SIZE	SPAC.	LGTH.	BARS "D" NO.	SIZE	SPAC.	LGTH.
12'	270	#4	1'-1½"	26'-6"	1068	#5	6¾"	11'-9"	264	#6	1'-1½"	25'-8"	270	#9	1'-1½"	9'-9"
14'	276	#4	1'-1"	30'-6"	1104	#5	6¼"	12'-4"	276	#6	1'-1"	29'-9"	276	#9	1'-1"	10'-9"
16'	240	#5	1'-3"	34'-7"	960	#5	7½"	13'-0"	240	#7	1'-3"	33'-11"	240	#10	1'-3"	11'-9"
18'	276	#5	1'-1"	38'-9"	900	#6	8"	13'-10"	276	#7	1'-1"	38'-0"	276	#10	1'-1"	12'-9"
20'	312	#5	1½"	42'-9"	960	#6	7½"	14'-5"	312	#7	1½"	42'-1"	312	#10	1½"	13'-9"

CLEAR SPAN	DOWELS Q ~ #4 NO.	LGTH.	SPACERS QS ~ #4 NO.	LGTH.	4 SETS OF BARS AST #4 @ NO.	LGTH.	4 SETS OF BARS ASB #4 @ NO.	LGTH.	4 SETS OF BARS BS #4 @ NO.	LGTH.	4 SETS OF BARS DS #4 @ NO.	LGTH.	BARS E ~ #4 NO.	LGTH.	4 SETS OF BARS ES #4 @ NO.	LGTH.
12'	40	2'-6"	4	11'-7"	24	152'-9"	24	155'-7"	36	152'-9"	20	152'-9"	204	13'-10"	18	152'-6"
14'	40	2'-6"	4	11'-7"	28	152'-9"	28	155'-7"	40	152'-9"	20	152'-9"	204	14'-0"	18	152'-6"
16'	40	2'-6"	4	11'-7"	32	152'-9"	32	155'-7"	40	152'-9"	24	152'-9"	204	14'-3"	18	152'-6"
18'	40	2'-6"	4	11'-7"	36	152'-9"	36	155'-7"	44	152'-9"	24	152'-9"	204	14'-6"	18	152'-6"
20'	40	2'-6"	4	11'-7"	40	152'-9"	40	155'-7"	44	152'-9"	28	152'-9"	204	14'-8"	18	152'-6"

CLEAR SPAN	BARS H ~ #4 NO.	LGTH.	4 SETS OF BARS HS #4 @ NO.	LGTH.	BARS "K" ~ #4 NO.	LGTH.	BARS "L" ~ #4 NO.	LGTH.	BARS "M" ~ #4 NO.	LGTH.	BARS "N" ~ #4 NO.	LGTH.
12'	204	11'-7"	12	152'-9"	48	5'-0"	4	26'-5"	8	26'-5"	108	2'-2"
14'	204	11'-7"	12	152'-9"	56	5'-2"	4	30'-5"	8	30'-5"	124	2'-2"
16'	204	11'-7"	12	152'-9"	64	5'-5"	4	34'-5"	8	34'-6"	140	2'-2"
18'	204	11'-7"	12	152'-9"	72	5'-8"	4	38'-6"	8	38'-8"	152	2'-2"
20'	204	11'-7"	12	152'-9"	80	5'-10"	4	42'-6"	8	42'-8"	172	2'-2"

BAR LISTS FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 12'	14'	16'	18'	20'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2			2(S)+3'-3"
T2	#4	2	2	2	2	2			2(S)+2'-10"
T3	#4	2	2	2	2	2			2(S)+4'-0"
T4	#4	2	2	2	2	2			2(S)+5'-2"
T5	#4	2	2	2	2	2			2(S)+6'-4"
T6	#4	2	2	2	2	2			2(S)+7'-5"
T7	#4	2	2	2	2	2			2(S)+8'-5"
T8	#4	2	2	2	2	2			2(S)+9'-9"
T9	#4	2	2	2	2	2			2(S)+10'-11"
T10	#4	2	2	2	2	2			2(S)+12'-1"
T11	#4	2	2	2	2	2			2(S)+13'-2"
T12	#4	2	2	2	2	2			2(S)+14'-5"
T13	#4	2	2	2	2	2			2(S)+15'-7"
T14	#4	2	2	2	2	2			2(S)+16'-8"
T15	#4	2	2	2	2	2			2(S)+17'-10"
T16	#4	2	2	2	2	2			2(S)+19'-0"
T17	#4	2	2	2	2	2			2(S)+20'-2"
T18	#4	2	2	2	2	2			2(S)+21'-4"
T19	#4	2	2	2	2	2			2(S)+22'-6"
T20	#4	6	6	6	6	6			2(S)+23'-0"
U	#4	12	12	12	12	12			21'-3"
V1	#4	54	62	70	78	86	18'-10"	1'-8"	20'-6"
V2	#4	4	4	4	4	4	17'-4"	1'-8"	19'-0"
V3	#4	4	4	4	4	4	15'-7"	1'-8"	17'-3"
V4	#4	4	4	4	4	4	13'-10"	1'-8"	15'-6"
V5	#4	4	4	4	4	4	12'-2"	1'-8"	13'-10"
V6	#4	4	4	4	4	4	10'-5"	1'-8"	12'-1"
V7	#4	4	4	4	4	4	8'-8"	1'-8"	10'-4"
V8	#4	4	4	4	4	4	7'-0"	1'-8"	8'-8"
V9	#4	4	4	4	4	4	5'-3"	1'-8"	6'-11"
V10	#4	4	4	4	4	4	3'-6'	1'-8"	5'-2"
W1	#7	12	12	12	12	12	6'-6"	W + 9'-4"	W + 15'-10"
W2	#7	12	12	12	12	12	6'-2"	W + 8'-6"	W + 14'-8"
W3	#7	8	8	8	8	8	5'-10"	W + 7'-10"	W + 13'-8"
W4	#7	8	8	8	8	8	5'-6"	W + 7'-1"	W + 12'-7"
W5	#6	8	8	8	8	8	5'-2"	W + 6'-4"	W + 11'-6"
W6	#6	8	8	8	8	8	4'-10"	W + 5'-6"	W + 10'-4"
W7	#5	8	8	8	8	8	4'-6"	W + 4'-8"	W + 9'-2"
W8	#5	8	8	8	8	8	4'-2"	W + 3'-9"	W + 7'-11"
W9	#4	8	8	8	8	8	3'-10"	W + 2'-11"	W + 6'-9"
W10	#4	8	8	8	8	8	3'-6"	W + 2'-0"	W + 5'-6"
W11	#4	8	8	8	8	8	3'-2"	W + 1'-2"	W + 4'-4"
W12	#4	4	4	4	4	4	2'-8"	W + .8"	W + 3'-4"
Y1	#4	4	4	4	4	4			3'-6"
Y2	#4	4	4	4	4	4			6'-5"
Y3	#4	4	4	4	4	4			9'-4"
Y4	#4	4	4	4	4	4			12'-2"
Y5	#4	4	4	4	4	4			15'-1"
Y6	#4	4	4	4	4	4			17'-11"
Y7	#4	4	4	4	4	4			20'-10"
Y8	#4	12	12	12	12	12			21'-3"

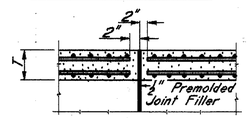
BAR LIST FOR UPSTREAM CENTER WALL EXTENSION

Horiz. Bars: 2 ~ #5 x 18'-10", #5 One Each 16'-5", 13'-5", 10'-5", 7'-5", 4'-5"

Vert. Bars: #5 Bars One Each 11'-6", 11'-0", 10'-6", 10'-0", 9'-6", 9'-0", 8'-6", 8'-0", 7'-6", 7'-0", 6'-6", 6'-0" 5'-6", 5'-0", 4'-6", 4'-0", 3'-6", 3'-0", 2'-6"

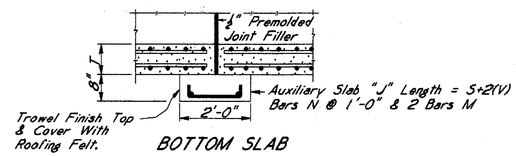
Dowels: 19 ~ #5 x 1'-6"

@ 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.



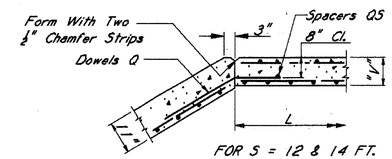
TOP SLAB

Side Walls Similar

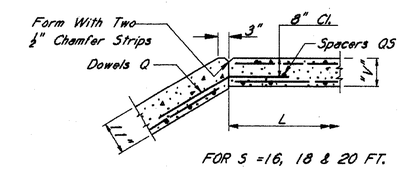


BOTTOM SLAB

DETAILS OF BARREL JOINTS & AUXILIARY SLAB "J"

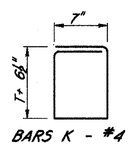


FOR S = 12 & 14 FT.

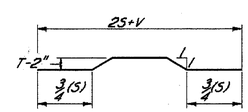


FOR S =16, 18 & 20 FT.

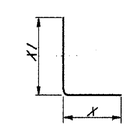
CONSTRUCTION JOINT AT WINGS



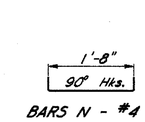
BARS K - #4



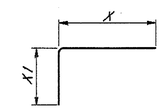
BARS C



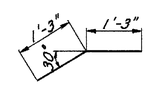
BARS W



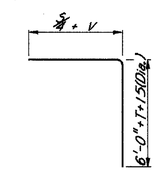
BARS N - #4



BARS V - #4



DOWELS Q ~ #4

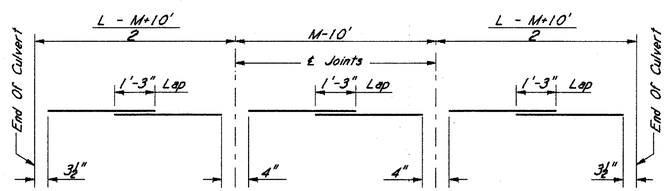


BARS B

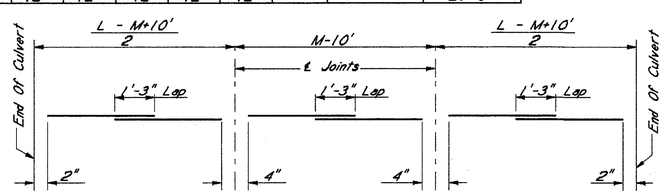
NOTE: The Diagrams For Bars ASB, AST, BS, DS, ES And HS Are For A Culvert Length Greater Than 140 Feet And Equal To Or Less Than 190 Ft. With A Median Of 40 Ft. Thru 60 Ft. For Conditions Other Than These, Use Sections As Shown On Elevation Of Culvert.

GENERAL NOTES:

Specifications: Mississippi Standard Specifications For Road And Bridge Construction, 1990.
All Concrete Shall Be Class "S".
Concrete Surfaces Shall Be Finished In Accordance With Sub-Section 804.03.19.
Expansion Joint Material Shall Be Bituminous Fiber Type Unless Otherwise Noted.
All Exposed Corners Shall Be Chamfered ¾".
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 Two Hours Before Continuing The Pour.
Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Shall Be Placed In All Culverts Regardless Of Length.
The Quantities Shown Will Be Used As A Basis For Final Payment Unless This Drawing Is Modified.



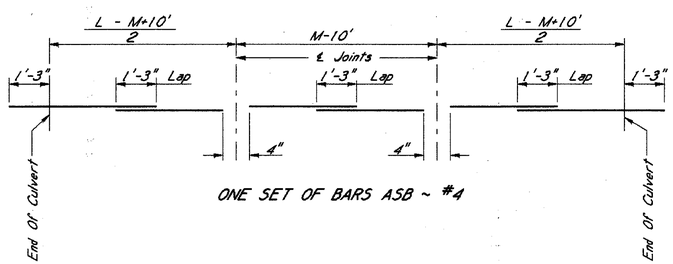
ONE SET OF BARS ES ~ #4



ONE SET OF BARS AST, BS, DS & HS ~ #4

BAR BENDING DETAILS

Dimensions Are Out To Out



ONE SET OF BARS ASB ~ #4

DATE	REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BASIC CULVERT DRAWING

DOUBLE CELL

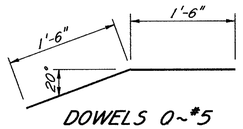
HEIGHT 12 FT

SPANS 24-40 FT.

WORKING NUMBER IBD-12-2W

DESIGNED NA	CHECKED BJJ	ISSUED TMT
DETAILED MJC	DATE 07-11-97	DATE 08-01-97

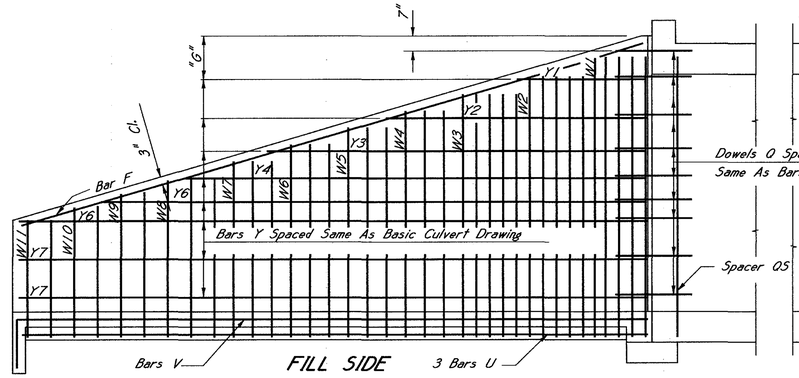
SHEET NUMBER 7035



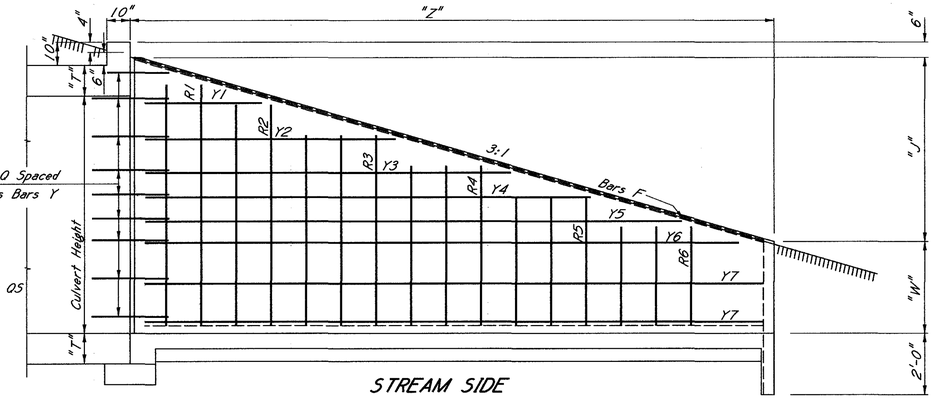
DOWELS 0~#5

BAR BENDING DETAILS

Dimensions Are Out To Out



FILL SIDE



STREAM SIDE

"H"	"G"
6'	1'-9"
8'	1'-9"
10'	1'-11"
12'	2'-0"

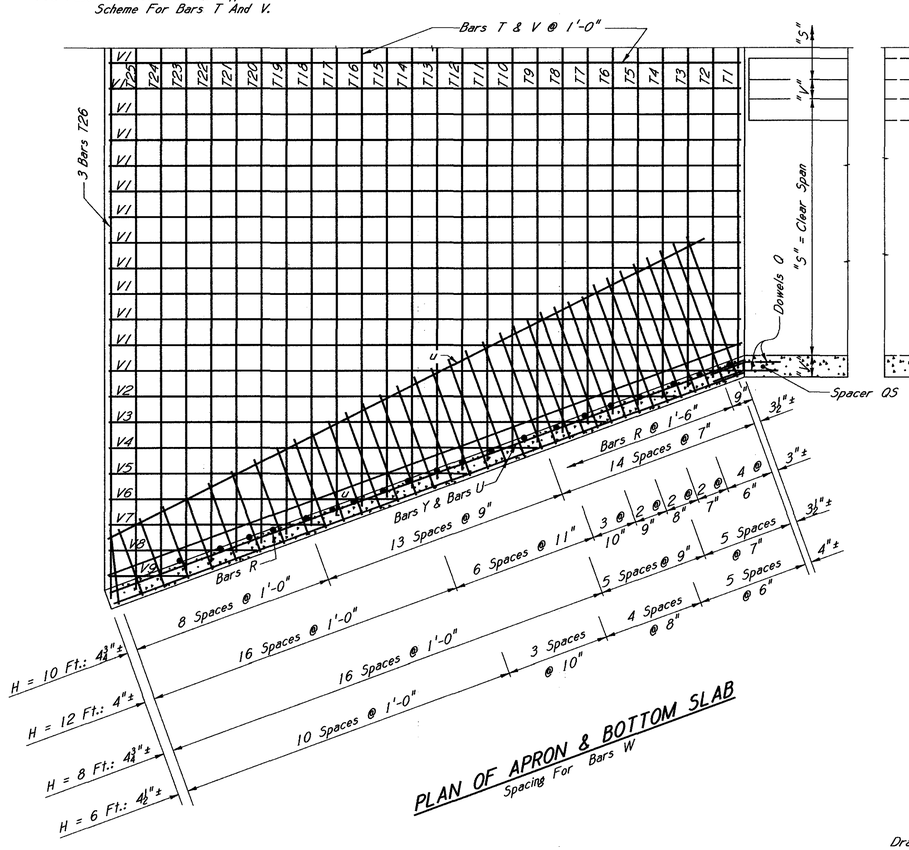
NOTE: This Detail Shows Typical Scheme For Bars W And Y.

LONGITUDINAL SECTION

Showing Bars In Both Faces Of Wall
Drawn For Double Cell 10'x10' Culvert

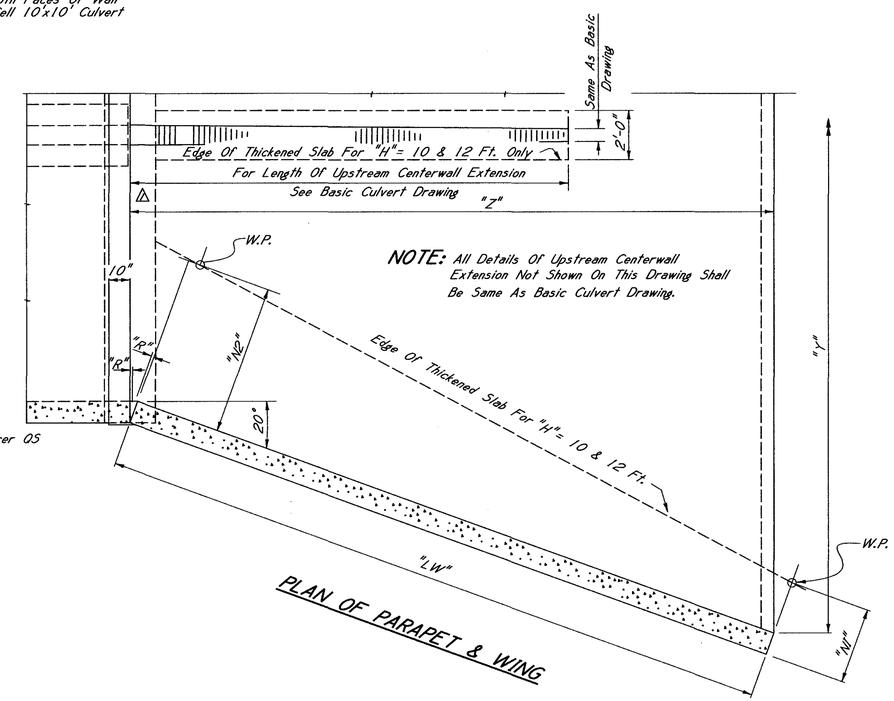
NOTE: Reinforcement In Stream Face Of Wall Required For "H" = 8, 10, 12 Ft. Only.

NOTE: This Detail Shows Typical Scheme For Bars T And V.



PLAN OF APRON & BOTTOM SLAB

Spacing For Bars W



NOTE: All Details Of Upstream Centerwall Extension Not Shown On This Drawing Shall Be Same As Basic Culvert Drawing.

PLAN OF PARAPET & WING

GENERAL PLAN

Drawn For Double Cell 10'x10' Culvert

DATE	REVISIONS	BY
07/17/98	Moved Dimension Lines	BJJ

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
WINGS WITH 3:1 SLOPE
FOR
BASIC CULVERT DRAWING
DOUBLE CELL
HEIGHTS 6-12 FT.
SPANS 12-40 FT.

WORKING NUMBER IWD-3

SHEET NUMBER 7036

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED ALT | DATE 07-11-97 | DATE 08-01-97

...\bjj\bridge\culvert\english\387.dgn

CULVERT DIMENSIONS

CULVERT HEIGHT "H"	"J"	"LW"	"N1"	"N2"	"R"	"Z"	"Y" CLEAR SPAN 6'	8'	10'	12'	14'	16'	18'	20'
6'	5'-9"	18'-4 5/16"			1 1/4"	17'-5 3/8"	25'-2 1/2"	29'-3"	33'-3"	37'-3"	41'-4"	45'-4 1/4"		
8'	7'-4"	23'-4 5/16"			1 1/2"	22'-2 15/16"		32'-9 3/8"	36'-9 3/8"	40'-10 3/8"	44'-10 3/8"	48'-10 3/8"		
10'	8'-4"	26'-7 1/4"	2'-11"	6'-6"	1 3/4"	25'-3 3/16"			39'-1 1/16"	43'-1 1/16"	47'-1 3/8"	51'-2 1/16"	55'-3 1/16"	
12'	9'-7"	30'-7 1/4"	3'-3"	7'-0"	1 15/16"	29'-0 3/8"				45'-11 1/16"	49'-11 7/16"	53'-11 13/16"	58'-0 1/16"	62'-0 7/16"

ESTIMATED QUANTITIES ~ CULVERT (L=150 FT.)

CLEAR SPAN

CULVERT HEIGHT "H"	6' CONCRETE cu. yd.	6' REINF. STEEL lb.	8' CONCRETE cu. yd.	8' REINF. STEEL lb.	10' CONCRETE cu. yd.	10' REINF. STEEL lb.	12' CONCRETE cu. yd.	12' REINF. STEEL lb.	14' CONCRETE cu. yd.	14' REINF. STEEL lb.	16' CONCRETE cu. yd.	16' REINF. STEEL lb.	18' CONCRETE cu. yd.	18' REINF. STEEL lb.	20' CONCRETE cu. yd.	20' REINF. STEEL lb.
6'	194.42	23,255	252.27	28,376	302.10	35,883	379.72	44,487	480.00	54,507	586.12	63,571				
8'			311.06	35,899	382.58	44,263	474.16	50,382	555.71	58,078	652.15	72,367				
10"					445.96	48,545	519.39	57,556	609.03	62,476	723.18	74,883	856.71	88,673		
12'							612.14	63,646	695.94	70,591	813.86	80,523	943.35	98,234	1053.44	113.492

HEIGHT=12 FT.

BAR LIST FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 12'	14'	16'	18'	20'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2			25+2'-5"
T2	#4	2	2	2	2	2			25+3'-2"
T3	#4	2	2	2	2	2			25+3'-11"
T4	#4	2	2	2	2	2			25+4'-8"
T5	#4	2	2	2	2	2			25+5'-5"
T6	#4	2	2	2	2	2			25+6'-2"
T7	#4	2	2	2	2	2			25+6'-11"
T8	#4	2	2	2	2	2			25+7'-8"
T9	#4	2	2	2	2	2			25+8'-5"
T10	#4	2	2	2	2	2			25+9'-2"
T11	#4	2	2	2	2	2			25+9'-11"
T12	#4	2	2	2	2	2			25+10'-8"
T13	#4	2	2	2	2	2			25+11'-5"
T14	#4	2	2	2	2	2			25+12'-2"
T15	#4	2	2	2	2	2			25+12'-11"
T16	#4	2	2	2	2	2			25+13'-8"
T17	#4	2	2	2	2	2			25+14'-5"
T18	#4	2	2	2	2	2			25+15'-2"
T19	#4	2	2	2	2	2			25+15'-11"
T20	#4	2	2	2	2	2			25+16'-8"
T21	#4	2	2	2	2	2			25+17'-5"
T22	#4	2	2	2	2	2			25+18'-1"
T23	#4	2	2	2	2	2			25+18'-10"
T24	#4	2	2	2	2	2			25+19'-7"
T25	#4	2	2	2	2	2			25+20'-4"
T26	#4	2	2	2	2	2			25+21'-1"
T27	#4	2	2	2	2	2			25+21'-10"
T28	#4	2	2	2	2	2			25+22'-7"
T29	#4	6	6	6	6	6			25+22'-7"
U	#4	12	12	12	12	12			30'-3"
V1	#4	54	62	70	78	86	28'-8"	1'-8"	30'-4"
V2	#4	4	4	4	4	4	26'-7"	1'-8"	28'-3"
V3	#4	4	4	4	4	4	23'-10"	1'-8"	25'-6"
V4	#4	4	4	4	4	4	21'-1"	1'-8"	22'-9"
V5	#4	4	4	4	4	4	18'-4"	1'-8"	20'-0"
V6	#4	4	4	4	4	4	15'-7"	1'-8"	17'-3"
V7	#4	4	4	4	4	4	12'-10"	1'-8"	14'-6"

HEIGHT=12 FT.

BAR LIST FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 12'	14'	16'	18'	20'	DIM. X	DIM. X1	LENGTH
V8	#4	4	4	4	4	4	10'-1"	1'-8"	11'-9"
V9	#4	4	4	4	4	4	7'-4"	1'-8"	9'-0"
V10	#4	4	4	4	4	4	4'-7"	1'-8"	6'-3"
W1	#7	20	20	20	20	20	6'-5"	W+9'-6"	W+15'-11"
W2	#7	20	20	20	20	20	6'-0"	W+8'-6"	W+14'-6"
W3	#7	12	12	12	12	12	5'-8"	W+7'-8"	W+13'-4"
W4	#7	12	12	12	12	12	5'-4"	W+6'-10"	W+12'-2"
W5	#6	12	12	12	12	12	5'-0"	W+6'-0"	W+11'-0"
W6	#6	12	12	12	12	12	4'-8"	W+5'-2"	W+9'-10"
W7	#5	12	12	12	12	12	4'-3"	W+4'-2"	W+8'-5"
W8	#5	12	12	12	12	12	3'-11"	W+3'-3"	W+7'-2"
W9	#4	12	12	12	12	12	3'-7"	W+2'-3"	W+5'-10"
W10	#4	8	8	8	8	8	3'-4"	W+1'-7"	W+4'-11"
W11	#4	8	8	8	8	8	3'-1"	W+1'-0"	W+4'-1"
W12	#4	4	4	4	4	4	3'-0"	W+8"	W+3'-8"
Y1	#4	8	8	8	8	8			5'-8"
Y2	#4	8	8	8	8	8			9'-8"
Y3	#4	8	8	8	8	8			13'-8"
Y4	#4	8	8	8	8	8			17'-8"
Y5	#4	8	8	8	8	8			21'-8"
Y6	#4	8	8	8	8	8			25'-8"
Y7	#4	8	8	8	8	8			29'-8"
Y8	#4	24	24	24	24	24			30'-3"

HEIGHT=10 FT.

BAR LIST FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 10'	12'	14'	16'	18'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2			25+2'-0"
T2	#4	2	2	2	2	2			25+2'-6"
T3	#4	2	2	2	2	2			25+3'-3"
T4	#4	2	2	2	2	2			25+4'-0"
T5	#4	2	2	2	2	2			25+4'-9"
T6	#4	2	2	2	2	2			25+5'-6"
T7	#4	2	2	2	2	2			25+6'-3"
T8	#4	2	2	2	2	2			25+7'-0"
T9	#4	2	2	2	2	2			25+7'-9"
T10	#4	2	2	2	2	2			25+8'-6"
T11	#4	2	2	2	2	2			25+9'-3"
T12	#4	2	2	2	2	2			25+10'-0"
T13	#4	2	2	2	2	2			25+10'-7"
T14	#4	2	2	2	2	2			25+11'-4"
T15	#4	2	2	2	2	2			25+12'-1"
T16	#4	2	2	2	2	2			25+12'-10"
T17	#4	2	2	2	2	2			25+13'-7"
T18	#4	2	2	2	2	2			25+14'-4"
T19	#4	2	2	2	2	2			25+15'-1"
T20	#4	2	2	2	2	2			25+15'-10"
T21	#4	2	2	2	2	2			25+16'-7"
T22	#4	2	2	2	2	2			25+17'-4"
T23	#4	2	2	2	2	2			25+18'-1"
T24	#4	2	2	2	2	2			25+18'-9"
T25	#4	2	2	2	2	2			25+19'-5"
T26	#4	6	6	6	6	6			25+19'-8"
U	#4	12	12	12	12	12			26'-3"
V1	#4	46	54	62	70	78	24'-11"	1'-8"	26'-7"
V2	#4	4	4	4	4	4	22'-7"	1'-8"	24'-3"
V3	#4	4	4	4	4	4	19'-10"	1'-8"	21'-6"
V4	#4	4	4	4	4	4	17'-1"	1'-8"	18'-9"
V5	#4	4	4	4	4	4	14'-4"	1'-8"	16'-0"
V6	#4	4	4	4	4	4	11'-7"	1'-8"	13'-3"
V7	#4	4	4	4	4	4	8'-10"	1'-8"	10'-6"

HEIGHT=10 FT.

BAR LIST FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 10'	12'	14'	16'	18'	DIM. X	DIM. X1	LENGTH
V8	#4	4	4	4	4	4	6'-1"	1'-8"	7'-9"
V9	#4	4	4	4	4	4	3'-4"	1'-8"	5'-0"
W1	#6	20	20	20	20	20	5'-10"	W+8'-1"	W+13'-11"
W2	#6	20	20	20	20	20	5'-5"	W+7'-2"	W+12'-7"
W3	#5	20	20	20	2 0	20	5'-0"	W+6'-3"	W+11'-3"
W4	#5	12	12	12	12	12	4'-8"	W+5'-7'	W+10'-3"
W5	#5	12	12	12	12	12	4'-5"	W+4'-11"	W+9'-4"
W6	#4	12	12	12	12	12	4'-2"	W+4'-1"	W+8'-3"
W7	#4	12	12	12	12	12	3'-10"	W+3'-5"	W+7'-3"
W8	#4	12	12	12	12	12	3'-5"	W+2'-7"	W+6'-0"
W9	#4	8	8	8	8	8	3'-2"	W+2'-0"	W+5'-2"
W10	#4	8	8	8	8	8	2'-11"	W+1'-4"	W+4'-3"
W11	#4	8	8	8	8	8	2'-8"	W+8"	W+3'-4"
Y1	#4	8	8	8	8	8			5'-4"
Y2	#4	8	8	8	8	8			9'-4"
Y3	#4	8	8	8	8	8			13'-4"
Y4	#4	8	8	8	8	8			17'-4"
Y5	#4	8	8	8	8	8			21'-4"
Y6	#4	8	8	8	8	8			25'-4"
Y7	#4	16	16	16	16	16			26'-3"

REVISIONS | BY | DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
WINGS WITH 3:1 SLOPE
FOR
BASIC CULVERT DRAWING
DOUBLE CELL

HEIGHTS 6-12 FT.
SPANS 12-40 FT.

WORKING NUMBER IWD-3

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED MJC | DATE 07-11-97 | DATE 08-01-97

SHEET NUMBER 7037

HEIGHT= 8 FT.

BAR LIST FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 8'	10'	12'	14'	16'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2			25+1'-7"
T2	#4	2	2	2	2	2			25+2'-2"
T3	#4	2	2	2	2	2			25+2'-11"
T4	#4	2	2	2	2	2			25+3'-8"
T5	#4	2	2	2	2	2			25+4'-5"
T6	#4	2	2	2	2	2			25+5'-2"
T7	#4	2	2	2	2	2			25+5'-11"
T8	#4	2	2	2	2	2			25+6'-8"
T9	#4	2	2	2	2	2			25+7'-4"
T10	#4	2	2	2	2	2			25+8'-1"
T11	#4	2	2	2	2	2			25+8'-10"
T12	#4	2	2	2	2	2			25+9'-7"
T13	#4	2	2	2	2	2			25+10'-4"
T14	#4	2	2	2	2	2			25+11'-1"
T15	#4	2	2	2	2	2			25+11'-10"
T16	#4	2	2	2	2	2			25+12'-7"
T17	#4	2	2	2	2	2			25+13'-4"
T18	#4	2	2	2	2	2			25+14'-1"
T19	#4	2	2	2	2	2			25+14'-10"
T20	#4	2	2	2	2	2			25+15'-7"
T21	#4	2	2	2	2	2			25+16'-4"
T22	#4	2	2	2	2	2			25+17'-0"
T23	#4	6	6	6	6	6			25+17'-3"
U	#4	12	12	12	12	12			23'-0"
V1	#4	38	46	54	62	70	21'-11"	1'-8"	23'-7"
V2	#4	4	4	4	4	4	19'-2"	1'-8"	20'-10"
V3	#4	4	4	4	4	4	16'-5"	1'-8"	18'-1"
V4	#4	4	4	4	4	4	13'-8"	1'-8"	15'-4"
V5	#4	4	4	4	4	4	10'-11"	1'-8"	12'-7"
V6	#4	4	4	4	4	4	8'-2"	1'-8"	9'-10"
V7	#4	4	4	4	4	4	5'-5"	1'-8"	7'-1"
W1	#5	24	24	24	24	24	4'-6"	W+6'-9"	W+11'-3"
W2	#5	20	20	20	20	20	4'-1"	W+5'-7"	W+9'-8"
W3	#5	12	12	12	12	12	3'-7"	W+4'-7"	W+8'-2"
W4	#4	12	12	12	12	12	3'-3"	W+3'-7"	W+6'-10"
W5	#4	12	12	12	12	12	2'-11"	W+2'-7"	W+5'-6"
W6	#4	12	12	12	12	12	2'-7"	W+1'-7"	W+4'-2"
W7	#4	8	8	8	8	8	2'-3"	W+1'-0"	W+3'-3"
W8	#4	8	8	8	8	8	2'-0"	W+5"	W+2'-5"
Y1	#4	8	8	8	8	8			4'-10"
Y2	#4	8	8	8	8	8			8'-0"
Y3	#4	8	8	8	8	8			11'-2"
Y4	#4	8	8	8	8	8			14'-4"
Y5	#4	8	8	8	8	8			17'-6"
Y6	#4	8	8	8	8	8			20'-8"
Y7	#4	16	16	16	16	16			23'-0"

HEIGHT= 6 FT.

BAR LIST FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 6'	8'	10'	12'	14'	16'	DIM. X	DIM. X1	LENGTH
T1	#4	2	2	2	2	2	2			25+1'-4"
T2	#4	2	2	2	2	2	2			25+2'-1"
T3	#4	2	2	2	2	2	2			25+2'-10"
T4	#4	2	2	2	2	2	2			25+3'-7"
T5	#4	2	2	2	2	2	2			25+4'-4"
T6	#4	2	2	2	2	2	2			25+5'-1"
T7	#4	2	2	2	2	2	2			25+5'-10"
T8	#4	2	2	2	2	2	2			25+6'-7"
T9	#4	2	2	2	2	2	2			25+7'-4"
T10	#4	2	2	2	2	2	2			25+8'-1"
T11	#4	2	2	2	2	2	2			25+8'-10"
T12	#4	2	2	2	2	2	2			25+9'-7"
T13	#4	2	2	2	2	2	2			25+10'-3"
T14	#4	2	2	2	2	2	2			25+11'-0"
T15	#4	2	2	2	2	2	2			25+11'-9"
T16	#4	2	2	2	2	2	2			25+12'-6"
T17	#4	2	2	2	2	2	2			25+13'-3"
T18	#4	6	6	6	6	6	6			25+13'-8"
U	#4	12	12	12	12	12	12			18'-0"
V1	#4	30	38	46	45	62	70	17'-1"	1'-8"	18'-9"
V2	#4	4	4	4	4	4	4	14'-1"	1'-8"	15'-9"
V3	#4	4	4	4	4	4	4	11'-4"	1'-8"	13'-0"
V4	#4	4	4	4	4	4	4	8'-7"	1'-8"	10'-3"
V5	#4	4	4	4	4	4	5	5'-10"	1'-8"	7'-6"
V6	#4	4	4	4	4	4	4	3'-1"	1'-8"	4'-9"
W1	#4	20	20	20	20	20	20	4'-0"	W+5'-4"	W+9'-4"
W2	#4	12	12	12	12	12	12	3'-8"	W+4'-9"	W+8'-5"
W3	#4	12	12	12	12	12	12	3'-5"	W+4'-0"	W+7'-5"
W4	#4	12	12	12	12	12	12	3'-0"	W+3'-2"	W+6'-2"
W5	#4	12	12	12	12	12	12	2'-8"	W+2'-3"	W+4'-11"
W6	#4	12	12	12	12	12	12	2'-4"	W+1'-4"	W+3'-8"
W7	#4	12	12	12	12	12	12	2'-0"	W+5"	W+2'-5"
Y1	#4	4	4	4	4	4	4			4'-10"
Y2	#4	4	4	4	4	4	4			8'-1"
Y3	#4	4	4	4	4	4	4			11'-3"
Y4	#4	4	4	4	4	4	4			14'-5"
Y5	#4	4	4	4	4	4	4			17'-7"
Y6	#4	4	4	4	4	4	4			18'-0"

ADDITIONAL BAR LIST FOR WINGS & APRONS

BAR	SIZE	H= 6 FT. No.	H= 6 FT. Length	H= 8 FT. No.	H= 8 FT. Length	H= 10 FT. No.	H= 10 FT. Length	H= 12 FT. No.	H= 12 FT. Length
F	#4	8	18'-10"	8	24'-2"	8	27'-6"	8	31'-8"
Q	#5	28	3'-0"	72	3'-0"	72	3'-0"	88	3'-0"
QS	#4	4	5'-7"	4	7'-7"	4	9'-7"	4	11'-7"
R1	#4			8	W+6'-1"	8	W+7'-1"	8	W+8'-4"
R2	#4			12	W+4'-8"	8	W+6'-2"	8	W+7'-5"
R3	#4			12	W+3'-3"	12	W+4'-9"	12	W+6'-0"
R4	#4			12	W+1'-10"	12	W+3'-4"	12	W+4'-7"
R5	#4			12	W+5"	12	W+1'-11"	12	W+3'-2"
R6	#4					12	W+6"	12	W+1'-9"
R7	#4							12	W+4"

GENERAL NOTES:

This Drawing Shows The General Details Necessary To Modify A Double Cell Culvert For Wings With 3:1 Slope.

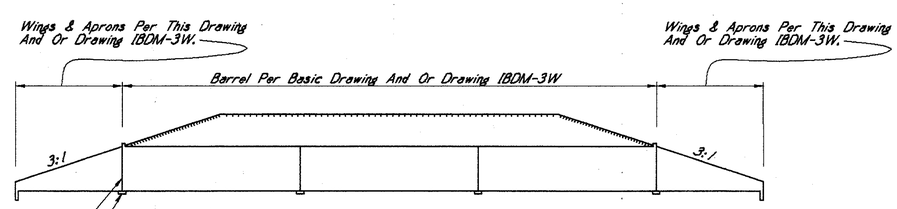
All Governing Dimensions, Reinforcing Details And General Requirements Of Basic Culvert Drawing Shall Apply Except As Specifically Modified By This Drawing And Or Drawing IBDM-3W.

Barrel Details On Basic Culvert Drawing Shall Be Used With Cover From 2'-6" To The Maximum Shown On Basic Culvert Drawing With Cover Less Than 2'-6" And More Than Maximum Shown On Basic Culvert Drawing, Use Drawing IBDM-3W For Barrel Details.

Quantities Shown On This Sheet Are For Culverts With Basic Culvert Barrels And Wings With 3:1 Per This Drawing Quantities Shown On Drawing IBDM-3W Are For Culverts With Barrels Per Drawing IBDM-3W And Wings With 3:1 Slope Per This Drawing And Drawing IBDM-3W. Quantities Not Shown On This Sheet And Or Drawing IBDM-3W Are Same As Shown On Basic Culvert Drawing.

Quantities Shown On This Sheet Are For Complete Culvert Of The Length Noted And Include Barrel, Parapets, Wings, Aprons, Cut-Off Walls, Auxiliary Slabs "W" Where Required And Two Auxiliary Slabs "J".

Quantities Shown On This Sheet Will Be Used As A Basis For Final Payment For Culverts Constructed In Accordance With This Drawing And Basic Culvert Drawing.



SIDE ELEVATION OF CULVERT

See Dwg. No. IBJL-1 For Joint Locations.

NOTE: Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Are Required Only Where Called For By The Basic Drawing And Auxiliary Slabs "W" Are Not To Be Used For Culvert Heights Of Less Than 8 Feet.

REVISIONS	BY

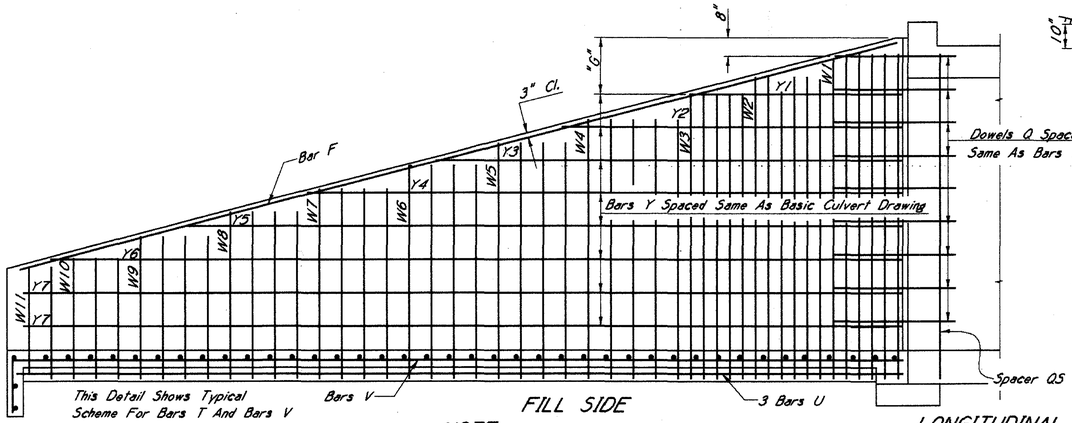
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
WINGS WITH 3:1 SLOPE
FOR
BASIC CULVERT DRAWING
DOUBLE CELL

HEIGHTS 6-12 FT.
SPANS 12-40 FT.

WORKING NUMBER IWD-3

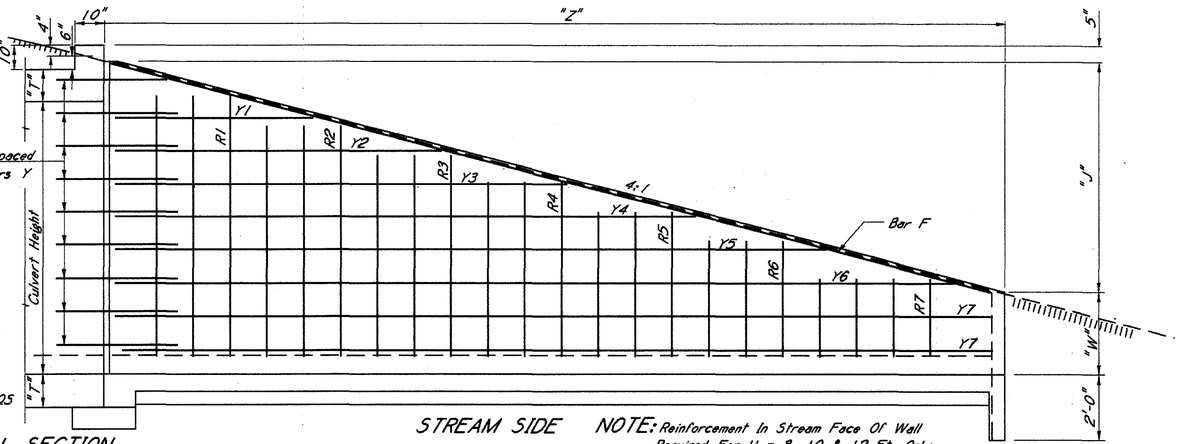
SHEET NUMBER 7038

DATE			
DESIGNED NA	CHECKED BJJ	ISSUED TMT	
DETAILED MJC	DATE 07-11-97	DATE 08-01-97	



FILL SIDE

NOTE: This Detail Shows Typical Scheme For Bars W And Bars Y.

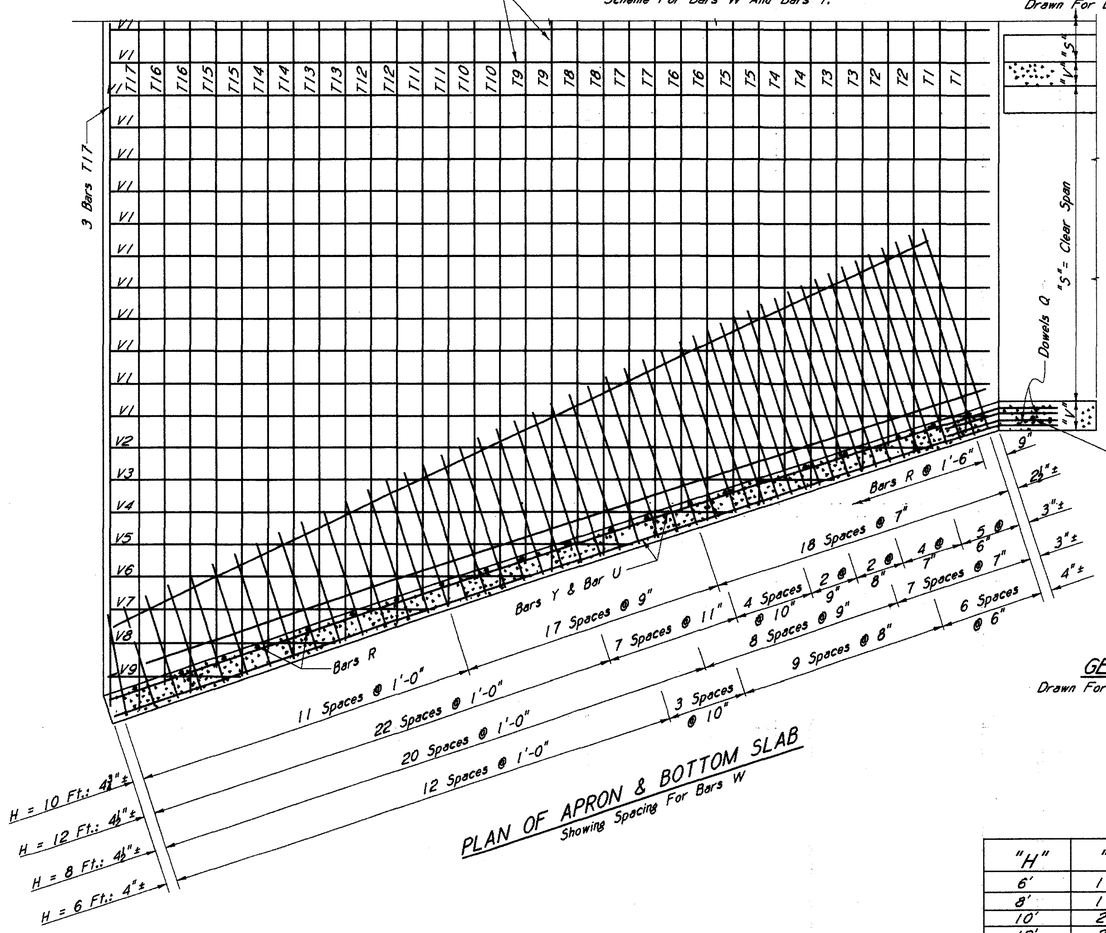


LONGITUDINAL SECTION

Showing Bars In Both Faces Of Wall
Drawn For Double Cell 10x10'

STREAM SIDE

NOTE: Reinforcement In Stream Face Of Wall Required For H = 8, 10 & 12 Ft. Only.

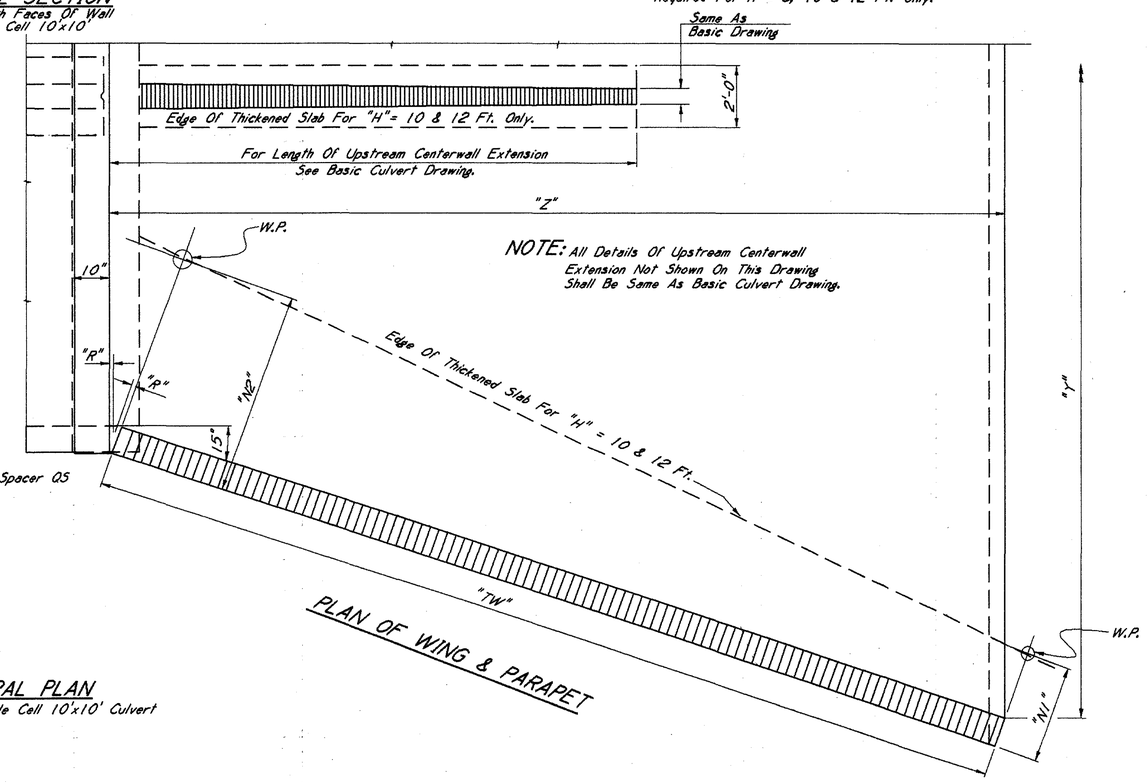


PLAN OF APRON & BOTTOM SLAB

Showing Spacing For Bars W

GENERAL PLAN

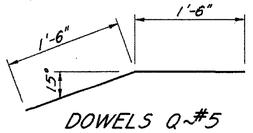
Drawn For Double Cell 10'x10' Culvert



PLAN OF WING & PARAPET

NOTE: All Details Of Upstream Centerwall Extension Not Shown On This Drawing Shall Be Same As Basic Culvert Drawing.

"H"	"G"
6'	1'-10"
8'	1'-10"
10'	2'-0"
12'	2'-1"



DOWELS Q-#5

BAR BENDING DETAILS

All Dimensions Are Out To Out

MISSISSIPPI DEPARTMENT OF TRANSPORTATION WINGS WITH 4:1 SLOPE FOR BASIC CULVERT DRAWING DOUBLE CELL HEIGHTS 6-12 FT. SPANS 12-40 FT.	WORKING NUMBER IWD-4
DESIGNED NA · CHECKED BJJ · ISSUED TMT DETAILED NJC · DATE 07-11-97 · DATE 08-01-97	SHEET NUMBER 7039

BY · REVISIONS · DATE

CULVERT DIMENSIONS

CULVERT HEIGHT	"J"	"LW"	"N1"	"N2"	"R"	"Z"	"Y" CLEAR SPAN 6'	8'	10'	12'	14'	16'	18'	20'
6'	5'-10"	24'-1 7/8"			15/16"	23'-5 13/16"	25'-1 1/2"	29'-2"	33'-2"	37'-2"	41'-3"	45'-3 1/2"		
8'	7'-5"	30'-8 3/16"			1 1/8"	29'-10 3/16"		32'-7 3/8"	36'-7 7/8"	40'-8 3/8"	44'-8 3/8"	48'-8 7/8"		
10'	8'-5"	34'-10 1/4"	2'-11"	6'-6"	1 5/16"	33'-10 13/16"			38'-10 15/16"	42'-10 15/16"	46'-11 3/8"	50'-11 15/16"	55'-0 11/16"	
12'	9'-8"	40'-0 3/8"	3'-3"	7'-0"	1 7/16"	38'-10 1/4"				45'-8 7/16"	49'-8 7/16"	53'-8 7/8"	57'-9 3/8"	61'-9 3/8"

ESTIMATED QUANTITIES ~ CULVERT (L=150 FT.)

CLEAR SPAN

CULVERT HEIGHT	6' CONCRETE cu. yd.	6' REINF. STEEL lb.	8' CONCRETE cu. yd.	8' REINF. STEEL lb.	10' CONCRETE cu. yd.	10' REINF. STEEL lb.	12' CONCRETE cu. yd.	12' REINF. STEEL lb.	14' CONCRETE cu. yd.	14' REINF. STEEL lb.	16' CONCRETE cu. yd.	16' REINF. STEEL lb.	18' CONCRETE cu. yd.	18' REINF. STEEL lb.	20' CONCRETE cu. yd.	20' REINF. STEEL lb.
6'	201.76	23,889	260.76	29,076	311.65	36,648	390.37	45,319	491.86	55,406	599.14	64,537				
8'			325.72	37,064	398.91	45,510	492.20	51,712	575.41	59,488	673.53	73,858				
10'					464.62	50,233	539.40	59,337	630.41	64,351	745.37	76,854	880.93	90,739		
12'							638.81	66,141	724.16	73,198	843.71	83,234	974.84	101,061	1086.49	116,434

HEIGHT = 12 FT.

BAR LIST FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 12'	14'	16'	18'	20'	DIM. X	DIM. X1	LENGTH
T1	#4	4	4	4	4	4			2(S)+2'-7"
T2	#4	4	4	4	4	4			2(S)+3'-8"
T3	#4	4	4	4	4	4			2(S)+4'-9"
T4	#4	4	4	4	4	4			2(S)+5'-10"
T5	#4	4	4	4	4	4			2(S)+6'-11"
T6	#4	4	4	4	4	4			2(S)+8'-0"
T7	#4	4	4	4	4	4			2(S)+9'-1"
T8	#4	4	4	4	4	4			2(S)+10'-2"
T9	#4	4	4	4	4	4			2(S)+11'-3"
T10	#4	4	4	4	4	4			2(S)+12'-4"
T11	#4	4	4	4	4	4			2(S)+13'-5"
T12	#4	4	4	4	4	4			2(S)+14'-6"
T13	#4	4	4	4	4	4			2(S)+15'-7"
T14	#4	4	4	4	4	4			2(S)+16'-8"
T15	#4	4	4	4	4	4			2(S)+17'-9"
T16	#4	4	4	4	4	4			2(S)+18'-10"
T17	#4	4	4	4	4	4			2(S)+19'-11"
T18	#4	4	4	4	4	4			2(S)+21'-0"
T19	#4	4	4	4	4	4			2(S)+22'-1"
T20	#4	6	6	6	6	6			2(S)+23'-2"
U	#4	12	12	12	12	12			39'-8"
V1	#4	54	62	70	78	86	38'-6"	1'-8"	40'-2"
V2	#4	4	4	4	4	4	35'-0"	1'-8"	36'-8"
V3	#4	4	4	4	4	4	31'-0"	1'-8"	32'-8"
V4	#4	4	4	4	4	4	27'-6"	1'-8"	29'-2"
V5	#4	4	4	4	4	4	24'-0"	1'-8"	25'-8"
V6	#4	4	4	4	4	4	20'-0"	1'-8"	21'-8"
V7	#4	4	4	4	4	4	16'-6"	1'-8"	18'-2"

HEIGHT = 12 FT.

BAR LIST FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 12'	14'	16'	18'	20'	DIM. X	DIM. X1	LENGTH
V8	#4	4	4	4	4	4	12'-6"	1'-8"	14'-2"
V9	#4	4	4	4	4	4	9'-0"	1'-8"	10'-8"
V10	#4	4	4	4	4	4	5'-6"	1'-8"	7'-2"
W1	#7	24	24	24	24	24	6'-6"	W+9'-7"	W16'-1"
W2	#7	20	20	20	20	20	6'-2"	W+8'-11"	W+15'-1"
W3	#7	16	16	16	16	16	5'-10"	W+8'-2"	W+14'-0"
W4	#7	16	16	16	16	16	5'-6"	W+7'-3"	W+12'-9"
W5	#6	16	16	16	16	16	5'-2"	W+6'-6"	W+11'-8"
W6	#6	16	16	16	16	16	5'-6"	W+5'-7"	W+10'-5"
W7	#5	16	16	16	16	16	4'-5'	W+4'-7"	W+9'-0"
W8	#5	16	16	16	16	16	4'-0"	W+3'-7"	W+7'-7"
W9	#4	16	16	16	16	16	3'-8"	W+2'-8"	W+6'-4"
W10	#4	12	12	12	12	12	3'-3"	W+1'-11"	W+5'-2"
W11	#4	12	12	12	12	12	2'-11"	W+1'-2"	W+4'-1"
W12	#4	8	8	8	8	8	2'-8"	W+9"	W+3'-5"
Y1	#4	8	8	8	8	8			7'-8"
Y2	#4	8	8	8	8	8			12'-10"
Y3	#4	8	8	8	8	8			18'-0"
Y4	#4	8	8	8	8	8			23'-2'
Y5	#4	8	8	8	8	8			28'-5"
Y6	#4	8	8	8	8	8			33'-7"
Y7	#4	8	8	8	8	8			38'-9"
Y8	#4	24	24	24	24	24			39'-8"

HEIGHT = 10 FT.

BAR LIST FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 10'	12'	14'	16'	18'	DIM. X	DIM. X1	LENGTH
T1	#4	4	4	4	4	4			2S+2'-4"
T2	#4	4	4	4	4	4			2S+3'-5"
T3	#4	4	4	4	4	4			2S+4'-6"
T4	#4	4	4	4	4	4			2S+5'-7"
T5	#4	4	4	4	4	4			2S+6'-8"
T6	#4	4	4	4	4	4			2S+7'-9"
T7	#4	4	4	4	4	4			2S+8'-10"
T8	#4	4	4	4	4	4			2S+9'-11"
T9	#4	4	4	4	4	4			2S+11'-0"
T10	#4	4	4	4	4	4			2S+12'-1"
T11	#4	4	4	4	4	4			2S+13'-2"
T12	#4	4	4	4	4	4			2S+14'-3"
T13	#4	4	4	4	4	4			2S+15'-4"
T14	#4	4	4	4	4	4			2S+16'-5"
T15	#4	4	4	4	4	4			2S+17'-6"
T16	#4	4	4	4	4	4			2S+18'-7"
T17	#4	8	8	8	8	8			2S+19'-8"
U	#4	12	12	12	12	12			34'-6"
V1	#4	46	54	62	70	78	33'-6"	1'-8"	35'-2"
V2	#4	4	4	4	4	4	30'-0"	1'-8"	31'-8"
V3	#4	4	4	4	4	4	26'-6"	1'-8"	28'-2"
V4	#4	4	4	4	4	4	22'-6"	1'-8"	24'-2"
V5	#4	4	4	4	4	4	18'-6"	1'-8"	20'-2"
V6	#4	4	4	4	4	4	15'-0"	1'-8"	16'-8"
V7	#4	4	4	4	4	4	11'-6"	1'-8"	13'-2"

HEIGHT = 10 FT.

BAR LIST FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 10'	12'	14'	16'	18'	DIM. X	DIM. X1	LENGTH
V8	#4	4	4	4	4	4	7'-6"	1'-8"	9'-2"
V9	#4	4	4	4	4	4	4'-0"	1'-8"	5'-8"
W1	#6	24	24	24	24	24	6'-0"	W+8'-3"	W+14'-3"
W2	#6	24	24	24	24	24	5'-7"	W+7'-5"	W+13'-0"
W3	#5	24	24	24	24	24	5'-2"	W+6'-6"	W+11'-8"
W4	#5	16	16	16	16	16	4'-9"	W+5'-10"	W+10'-7"
W5	#5	16	16	16	16	16	4'-5"	W+5'-1"	W+9'-6"
W6	#4	16	16	16	16	16	4'-2"	W+4'-5"	W+8'-7"
W7	#4	16	16	16	16	16	3'-10"	W+3'-8"	W+7'-6"
W8	#4	16	16	16	16	16	3'-6"	W+2'-10"	W+6'-4"
W9	#4	16	16	16	16	16	3'-2"	W+1'-10"	W+5'-0"
W10	#4	12	12	12	12	12	2'-10"	W+1'-1"	W+3'-11"
W11	#4	8	8	8	8	8	2'-7"	W+8"	W+3'-3"
Y1	#4	8	8	8	8	8			7'-4"
Y2	#4	8	8	8	8	8			12'-6"
Y3	#4	8	8	8	8	8			17'-7"
Y4	#4	8	8	8	8	8			22'-10"
Y5	#4	8	8	8	8	8			28'-0"
Y6	#4	8	8	8	8	8			33'-2"
Y7	#4	16	16	16	16	16			34'-6"

REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
WINGS WITH 4:1 SLOPE
FOR
BASIC CULVERT DRAWING
DOUBLE CELL
HEIGHTS 6-12 FT.
SPANS 12-40 FT.

WORKING NUMBER IWD-4

DATE | DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED ALT | DATE 07-11-97 | DATE 08-01-97

SHEET NUMBER 7040

HEIGHT = 8 FT.

BAR LIST FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 8'	10'	12'	14'	16'	DIM. X	DIM. X1	LENGTH
T1	#4	4	4	4	4	4			25+2'-0"
T2	#4	4	4	4	4	4			25+3'-1"
T3	#4	4	4	4	4	4			25+4'-2"
T4	#4	4	4	4	4	4			25+5'-3"
T5	#4	4	4	4	4	4			25+6'-4"
T6	#4	4	4	4	4	4			25+7'-5"
T7	#4	4	4	4	4	4			25+8'-6"
T8	#4	4	4	4	4	4			25+9'-7"
T9	#4	4	4	4	4	4			25+10'-8"
T10	#4	4	4	4	4	4			25+11'-9"
T11	#4	4	4	4	4	4			25+12'-10"
T12	#4	4	4	4	4	4			25+13'-11"
T13	#4	4	4	4	4	4			25+15'-0"
T14	#4	4	4	4	4	4			25+16'-1"
T15	#4	8	8	8	8	8			25+17'-2"
U	#4	12	12	12	12	12			30'-4"
V1	#4	38	46	54	62	70	29'-6"	1'-8"	31'-2"
V2	#4	4	4	4	4	4	25'-6"	1'-8"	27'-2"
V3	#4	4	4	4	4	4	22'-0"	1'-8"	23'-8"
V4	#4	4	4	4	4	4	18'-6"	1'-8"	20'-2"
V5	#4	4	4	4	4	4	14'-6"	1'-8"	16'-2"
V6	#4	4	4	4	4	4	11'-0"	1'-8"	12'-8"
V7	#4	4	4	4	4	4	7'-0"	1'-8"	8'-8"
W1	#5	28	28	28	28	28	4'-6"	W+6'-11"	W+11'-5"
W2	#5	24	24	24	24	24	4'-2"	W+5'-10"	W+10'-0"
W3	#5	16	16	16	16	16	3'-9"	W+5'-1"	W+8'-10"
W4	#4	16	16	16	16	16	3'-5"	W+4'-1"	W+7'-6"
W5	#4	16	16	16	16	16	3'-1"	W+3'-2"	W+6'-3"
W6	#4	16	16	16	16	16	2'-9"	W+2'-2"	W+4'-11"
W7	#4	16	16	16	16	16	2'-5"	W+1'-2"	W+3'-7"
W8	#4	12	12	12	12	12	2'-0"	W+6"	W+2'-6"
Y1	#4	8	8	8	8	8			6'-8"
Y2	#4	8	8	8	8	8			10'-10"
Y3	#4	8	8	8	8	8			14'-11"
Y4	#4	8	8	8	8	8			19'-1"
Y5	#4	8	8	8	8	8			23'-2"
Y6	#4	8	8	8	8	8			27'-4"
Y7	#4	16	16	16	16	16			30'-4"

HEIGHT = 6 FT.

BAR LIST FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 6'	8'	10'	12'	14'	16'	DIM. X	DIM. X1	LENGTH
T1	#4	4	4	4	4	4	4			25+1'-8"
T2	#4	4	4	4	4	4	4			25+2'-9"
T3	#4	4	4	4	4	4	4			25+3'-10"
T4	#4	4	4	4	4	4	4			25+4'-11"
T5	#4	4	4	4	4	4	4			25+6'-0"
T6	#4	4	4	4	4	4	4			25+7'-1"
T7	#4	4	4	4	4	4	4			25+8'-2"
T8	#4	4	4	4	4	4	4			25+9'-3"
T9	#4	4	4	4	4	4	4			25+10'-4"
T10	#4	4	4	4	4	4	4			25+11'-5"
T11	#4	4	4	4	4	4	4			25+12'-6"
T12	#4	8	8	8	8	8	8			25+13'-7"
U	#4	12	12	12	12	12	12			23'-9"
V1	#4	30	38	46	54	62	70	23'-1"	1'-8"	24'-9"
V2	#4	4	4	4	4	4	4	19'-6"	1'-8"	21'-2"
V3	#4	4	4	4	4	4	4	15'-6"	1'-8"	17'-2"
V4	#4	4	4	4	4	4	4	12'-0"	1'-8"	13'-8"
V5	#4	4	4	4	4	4	4	8'-6"	1'-8"	10'-2"
V6	#4	4	4	4	4	4	4	4'-6"	1'-8"	6'-2"
W1	#4	28	28	28	28	28	28	4'-0"	W+5'-4"	W+9'-4"
W2	#4	16	16	16	16	16	16	3'-8"	W+4'-8"	W+8'-4"
W3	#4	16	16	16	16	16	16	3'-5"	W+4'-0"	W+7'-5"
W4	#4	16	16	16	16	16	16	3'-2"	W+3'-3"	W+6'-5"
W5	#4	16	16	16	16	16	16	2'-10"	W+2'-4"	W+5'-2"
W6	#4	16	16	16	16	16	16	2'-6"	W+1'-4"	W+3'-10"
W7	#4	16	16	16	16	16	16	2'-0"	W+5"	W+2'-5"
Y1	#4	4	4	4	4	4	4			6'-8"
Y2	#4	4	4	4	4	4	4			10'-9"
Y3	#4	4	4	4	4	4	4			14'-11"
Y4	#4	4	4	4	4	4	4			19'-1"
Y5	#4	4	4	4	4	4	4			23'-3"
Y6	#4	4	4	4	4	4	4			23'-9"

ADDITIONAL BAR LIST FOR WINGS & APRONS

BAR	SIZE	H = 6 FT. No.	H = 6 FT. Length	H = 8 FT. No.	H = 8 FT. Length	H = 10 FT. No.	H = 10 FT. Length	H = 12 FT. No.	H = 12 FT. Length
F	#4	8	24'-4"	8	31'-1"	8	35'-4"	8	40'-8"
Q	#5	28	3'-0"	72	3'-0"	72	3'-0"	88	3'-0"
Q5	#4	4	5'-7"	4	7'-7"	4	9'-7"	4	11'-7"
R1	#4			12	W+6'-0"	12	W+7'-0"	12	W+8'-3"
R2	#4			12	W+4'-11"	12	W+5'-11"	12	W+7'-2"
R3	#4			12	W+3'-10"	12	W+4'-10"	12	W+6'-1"
R4	#4			12	W+2'-9"	12	W+3'-9"	12	W+5'-0"
R5	#4			12	W+1'-8"	12	W+2'-8"	12	W+3'-11"
R6	#4			12	W+7"	12	W+1'-7"	12	W+2'-10"
R7	#4					16	W+1½"	16	W+1'-4½"
R8	#4							16	W-1"

GENERAL NOTES:

This Drawing Shows The General Details Necessary To Modify A Double Cell Culvert For Wings With 4:1 Slope.

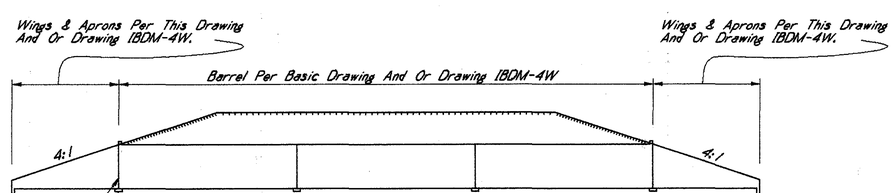
All Governing Dimensions, Reinforcment Details And General Requirements Of Basic Culvert Drawing Shall Apply Except As Specifically Modified By This Drawing And Or Drawing IBDM-4W.

Barrel Details On Basic Culvert Drawing Shall Be Used With Cover From 2'-6" To The Maximum Shown On Basic Culvert Drawing. With Cover Less Than 2'-6" And More Than Maximum Shown On Basic Culvert Drawing, Use Drawing IBDM-4W For Barrel Details.

Quantities Shown On This Sheet Are For Culverts With Basic Culvert Barrels And Wings With 4:1 Slope Per This Drawing, Quantities Shown On Drawing IBDM-4W Are For Culverts With Barrels Per Drawing IBDM-4W And Wings With 4:1 Slope Per This Drawing And Drawing IBDM-4W. Quantities Not Shown On This Sheet And Or Drawing IBDM-4W Are Same As Shown On Basic Culvert Drawing.

Quantities Shown On This Sheet Are For Complete Culvert Of The Length Noted And Include Barrel, Parapets Wings, Aprons, Cut-Off Walls, Auxiliary Slabs "W" Where Required And Two Auxiliary Slabs "J".

Quantities Shown On This Sheet Will Be Used As A Basis For Final Payment For Culverts Constructed In Accordance With This Drawing And Basic Culvert Drawing.



SIDE ELEVATION OF CULVERT

See Drawing No. IBJL-1 For Joint Locations.

NOTE: Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Are Required Only Where Called For By The Basic Drawing And Auxiliary Slabs "W" Are Not To Be Used For Culvert Heights Of Less Than 8 Ft.

REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
WINGS WITH 4:1 SLOPE
FOR
BASIC CULVERT DRAWING
DOUBLE CELL

HEIGHTS 6-12 FT.
SPANS 12-40 FT.

WORKING NUMBER IWD-4

SHEET NUMBER 7041

DATE			
	DESIGNED NA	CHECKED BJJ	ISSUED TMT
	DETAILED ALT	DATE 07-11-97	DATE 08-01-97

GENERAL DATA AND ESTIMATED QUANTITIES FOR BOX CULVERTS UNDER HIGH COVER

LESS THAN 2'-6" COVER ~ L = 150 FT.

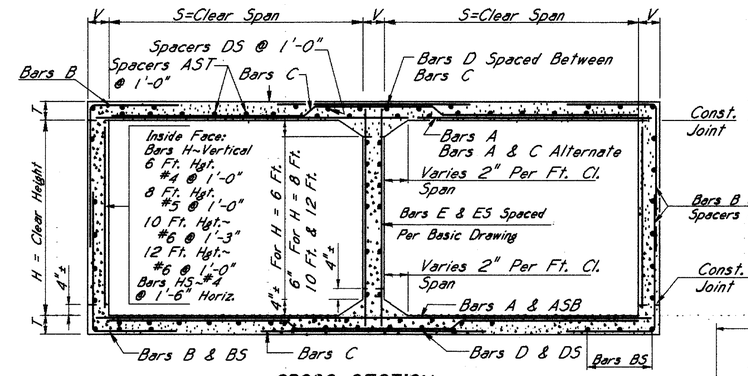
AREA OF OPENING sq. ft.	SIZE OF CULVERT ft.xft. "S"x"H"	"T"	"V"	"W"	BARS "A" SIZE	BARS "A" SPAC.	BARS "B" SIZE	BARS "B" SPAC.	BARS "C" SIZE	BARS "C" SPAC.	BARS "D" SIZE	BARS "D" SPAC.	TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
72	6x6	6½"	7"	1'-1½"	#4	1'-0"	#5	6½"	#6	1'-0"	#6	1'-0"	163.25	29,773	0.9653	186.53	0.68	40
96	8x6	7½"	7"	1'-2½"	#4	10"	#5	6½"	#6	10"	#6	10"	207.84	37,343	1.2435	235.49	0.88	51
120	10x6	8½"	6½"	1'-3½"	#5	1'-2"	#6	9½"	#7	1'-2"	#7	1'-2"	254.61	43,819	1.5369	276.55	1.07	62
144	12x6	10"	6½"	1'-5"	#5	1'-1"	#6	9½"	#7	1'-1"	#9	1'-1"	325.82	54,180	1.9923	345.20	1.27	73
168	14x6	1'-0"	7"	1'-7"	#5	10"	#6	9½"	#7	10"	#8	10"	427.54	69,137	2.6502	442.57	1.47	84
192	16x6	1'-2"	7"	1'-9"	#6	1'-0"	#6	9"	#8	1'-0"	#9	1'-0"	538.67	82,338	3.3714	529.57	1.67	95
128	8x8	8"	7½"	1'-8"	#5	10"	#6	7"	#5	10"	#7	10"	259.90	47,440	1.4877	292.77	0.88	51
160	10x8	9½"	8½"	1'-9½"	#6	10"	#7	8"	#6	10"	#8	10"	339.84	66,152	1.9888	415.76	1.09	62
192	12x8	9½"	8"	1'-9½"	#6	10"	#7	9"	#6	10"	#8	10"	374.35	71,164	2.1913	448.38	1.28	73
224	14x8	11½"	8½"	1'-11½"	#6	10"	#7	9"	#7	10"	#9	10"	478.91	88,062	2.8546	558.99	1.49	85
256	16x8	1'-1"	8½"	2'-1"	#7	10"	#7	9"	#7	10"	#9	10"	575.61	103,212	3.4669	658.03	1.69	96
200	10x10	9"	9"	2'-9"	#6	10"	#7	7"	#6	10"	#8	10"	370.78	74,388	2.1312	462.37	1.10	63
240	12x10	10½"	9½"	2'-10½"	#6	10"	#7	8"	#6	10"	#8	10"	438.11	79,544	2.5544	495.11	1.29	73
280	14x10	11½"	9½"	2'-11½"	#6	10"	#7	8"	#7	10"	#8	10"	510.93	93,233	3.0120	584.19	1.49	85
320	16x10	1'-1½"	9"	3'-1½"	#6	10"	#8	9"	#7	10"	#9	10"	631.83	109,004	3.7863	688.77	1.69	96
360	18x10	1'-3½"	9½"	3'-3½"	#6	10"	#8	9"	#8	10"	#9	10"	768.15	126,712	4.6624	804.62	1.90	107
288	12x12	10"	9½"	3'-7"	#6	10"	#8	9"	#6	10"	#8	10"	485.82	90,203	2.7577	555.96	1.30	74
336	14x12	1'-0"	10"	3'-9"	#6	10"	#8	9"	#7	10"	#9	10"	595.60	107,353	3.4568	667.84	1.51	85
384	16x12	1'-1½"	10"	3'-10½"	#7	10"	#8	9"	#7	10"	#9	10"	694.67	123,386	4.0849	772.36	1.70	96
432	18x12	1'-3½"	10½"	4'-0½"	#7	10"	#8	8"	#8	10"	#10	10"	833.36	150,520	4.9733	948.75	1.91	108
480	20x12	1'-5½"	10½"	4'-2½"	#7	10"	#8	8"	#8	10"	#10	10"	976.85	162,255	5.8947	1024.39	2.10	119

MAXIMUM 15 FT. COVER ~ L = 150 FT.

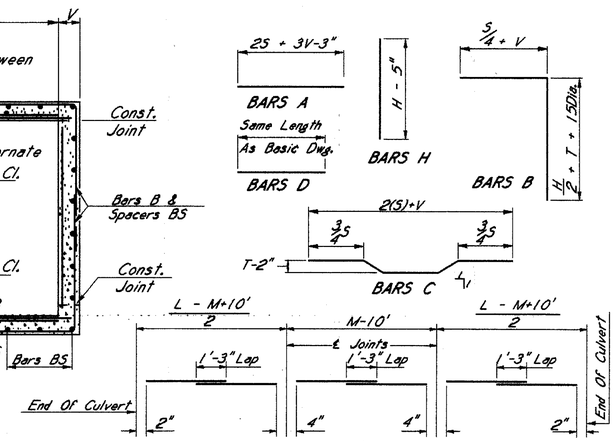
AREA OF OPENING sq. ft.	SIZE OF CULVERT ft.xft. "S"x"H"	"T"	"V"	"W"	BARS "A" SIZE	BARS "A" SPAC.	BARS "B" SIZE	BARS "B" SPAC.	BARS "C" SIZE	BARS "C" SPAC.	BARS "D" SIZE	BARS "D" SPAC.	TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
72	6x6																	
96	8x6	7½"	7"	1'-2½"	#4	10"	#5	6½"	#6	10"	#6	10"	207.84	37,343	1.2435	235.49	0.88	51
120	10x6	9½"	7"	1'-4½"	#5	1'-0"	#6	8"	#7	1'-0"	#8	1'-0"	280.07	50,465	1.7055	321.14	1.07	62
144	12x6	1'-0"	7"	1'-7"	#5	1'-0"	#6	8"	#7	1'-0"	#9	1'-0"	379.10	58,957	2.3457	376.11	1.27	73
168	14x6	1'-2"	7½"	1'-9"	#6	1'-0"	#6	8"	#8	1'-0"	#9	1'-0"	488.71	76,323	3.0561	490.18	1.48	84
192	16x6	1'-4"	7½"	1'-11"	#6	11"	#6	7½"	#8	11"	#10	11"	607.45	93,170	3.8281	601.05	1.67	95
128	8x8	8"	7½"	1'-8"	#5	10"	#6	7"	#5	10"	#7	10"	259.90	47,440	1.4877	292.77	0.88	51
160	10x8	9½"	8½"	1'-9½"	#6	10"	#7	8"	#6	10"	#8	10"	339.84	66,152	1.9888	415.76	1.09	62
192	12x8	10½"	9"	1'-10½"	#6	10"	#7	8"	#7	10"	#8	10"	412.55	78,785	2.4421	498.00	1.30	74
224	14x8	1'-1"	9"	2'-1"	#7	10"	#7	8"	#7	10"	#9	10"	528.40	96,699	3.1805	615.28	1.49	85
256	16x8	1'-3"	9"	2'-3"	#6	10"	#7	8"	#8	10"	#9	10"	646.89	107,269	3.9367	683.67	1.69	96
200	10x10	9"	9"	2'-9"	#6	10"	#7	7"	#6	10"	#8	10"	370.78	74,388	2.1312	462.37	1.10	63
240	12x10	11½"	9½"	2'-11½"	#6	10"	#7	7"	#7	10"	#9	10"	479.50	90,462	2.8260	567.19	1.30	74
280	14x10	1'-1½"	9½"	3'-1½"	#6	10"	#7	7"	#7	10"	#9	10"	584.78	99,880	3.4973	627.65	1.50	85
320	16x10	1'-4"	10"	3'-4"	#7	10"	#8	8"	#7	10"	#10	10"	730.00	124,020	4.4320	786.81	1.70	96
360	18x10	1'-6"	10"	3'-6"	#6	10"	#8	8"	#8	10"	#10	10"	867.25	135,395	5.3148	860.32	1.90	107
288	12x12	11½"	10½"	3'-8½"	#6	10"	#8	8"	#7	10"	#8	10"	542.44	99,424	3.1307	615.48	1.31	74
336	14x12	1'-1½"	11"	3'-10½"	#6	10"	#8	8"	#7	10"	#9	10"	658.79	117,791	3.8712	735.36	1.52	86
384	16x12	1'-3½"	11"	4'-0½"	#7	10"	#8	8"	#8	10"	#10	10"	780.18	139,670	4.6460	878.66	1.72	97
432	18x12	1'-6"	11½"	4'-3"	#7	10"	#8	8"	#8	10"	#11	10"	945.21	165,100	5.7083	1045.54	1.92	108
480	20x12	1'-8"	11½"	4'-5"	#7	10"	#8	8"	#9	10"	#11	10"	1098.52	179,589	6.6945	1139.52	2.12	119

MAXIMUM 20 FT. COVER ~ L = 150 FT.

AREA OF OPENING sq. ft.	SIZE OF CULVERT ft.xft. "S"x"H"	"T"	"V"	"W"	BARS "A" SIZE	BARS "A" SPAC.	BARS "B" SIZE	BARS "B" SPAC.	BARS "C" SIZE	BARS "C" SPAC.	BARS "D" SIZE	BARS "D" SPAC.	TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
72	6x6	6½"	7"	1'-1½"	#4	1'-0"	#5	6½"	#6	1'-0"	#6	1'-0"	163.25	29,773	0.9653	186.53	0.68	40
96	8x6	8½"	7½"	1'-3½"	#5	11"	#6	8"	#6	11"	#7	11"	229.61	40,987	1.3875	259.55	0.88	51
120	10x6	11"	8"	1'-6"	#5	11"	#6	7½"	#7	11"	#8	11"	321.50	54,032	1.9794	344.99	1.09	62
144	12x6	1'-1"	8"	1'-8"	#5	10"	#6	7½"	#7	10"	#9	10"	414.56	66,604	2.5803	427.04	1.28	73
168	14x6	1'-4½"	8"	1'-11½"	#6	1'-0"	#6	7"	#8	1'-0"	#10	1'-0"	564.25	81,371	3.5576	523.31	1.48	85
192	16x6																	
128	8x8	8½"	8"	1'-8½"	#5	10"	#6	6"	#6	10"	#7	10"	274.86	52,586	1.5864	327.35	0.89	51
160	10x8	10½"	9"	1'-10½"	#6	10"	#7	7"	#7	10"	#8	10"	367.52	73,203	2.1705	462.23	1.10	63
192	12x8	1'-0"	9½"	2'-0"	#7	10"	#7	7"	#7	10"	#9	10"	456.53	89,418	2.7315	568.30	1.30	74
224	14x8	1'-2½"	10"	2'-2½"	#7	10"	#7	7"	#8	10"	#10	10"	585.67	110,233	3.5571	704.87	1.51	85
256	16x8	1'-5"	10"	2'-5"	#7	10"	#7	7"	#8	10"	#10	10"	726.32	121,401	4.4598	777.15	1.70	96
200	10x10	10"	10"	2'-10"	#6	10"	#7	7"	#6	10"	#8	10"	407.94	74,991	2.3766	466.24	1.11	63
240	12x10	1'-0½"	10½"	3'-0½"	#6	10"	#7	7"	#7	10"	#9	10"	521.36	91,111	3.1007	571.43	1.31	74
280	14x10	1'-3"	10½"	3'-3"	#6	10"	#7	7"	#8	10"	#9	10"	645.20	107,381	3.8943	677.51	1.51	85
320	16x10	1'-7"	11"	3'-7"	#7	10"	#8	8"	#8	10"	#10	10"	845.70	132,996	5.1929	846.27	1.72	97
360	18x10	1'-10"	11"	3'-10"	#7	10"	#8	8"	#8	10"	#10	10"	1030.83	144,574	6.3920	921.00	1.91	108
288	12x12	1'-0½"	11½"	3'-9½"	#7	10"	#8	7"	#7	10"	#9	10"	587.49	112,170	3.4255	699.56	1.33	74
336	14x12	1'-4"	1'-0"	4'-1"	#7	10"	#8	7"	#8	10"	#9	10"	751.80	130,333	4.4815	817.81	1.53	86
384	16x12	1'-7"	1'-0"	4'-4"	#7	10"	#8	7"	#8	10"	#10	10"	915.84	146,108	5.5371	920.20	1.73	97
432	18x12	1'-11"	1'-0½"	4'-8"	#7	10"	#8	7"	#9	10"	#10	10"	1150.00	169,115	7.0547	1070.62	1.93	108
480	20x12	2'-1"	1'-0½"	4'-10"	#7	10"	#8	7"	#9	10"	#11	10"	1322.43	187,136	8.1675	1188.07	2.13	119



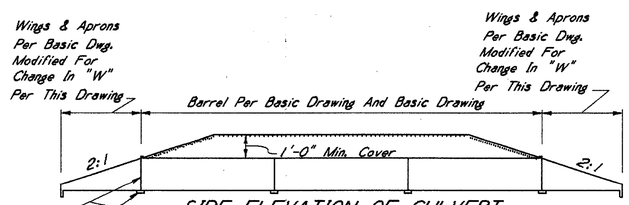
CROSS SECTION



ONE SET OF BARS HS ~ #4

BAR BENDING DETAILS

Dimensions Are Out To Out



SIDE ELEVATION OF CULVERT

See Drawing No. IBJL-1 For Joint Locations.

NOTE: Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Are Required Only Where Called For By The Basic Drawing And Auxiliary Slabs "W" Are Not To Be Used For Culvert Heights Of Less Than 8 Ft.

DATE	REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BOX CULVERT DRAWING

IBD CULVERTS MODIFIED FOR HIGH COVER WINGS WITH 2:1 SLOPE

WORKING NUMBER IBDM-2W

SHEET NUMBER 7042

DESIGNED NA CHECKED BJJ ISSUED TMT

DETAILED ALT DATE 07-11-97 DATE 08-01-97

GENERAL DATA AND ESTIMATED QUANTITIES FOR BOX CULVERTS UNDER HIGH COVER

MAXIMUM 25 FT. COVER ~ L = 150 FT.

AREA OF OPENING sq. ft.	SIZE OF CULVERT ft.xft. "S"x"H"	"T"	"V"	"W"	BARS "A" SIZE	BARS "A" SPAC.	BARS "B" SIZE	BARS "B" SPAC.	BARS "C" SIZE	BARS "C" SPAC.	BARS "D" SIZE	BARS "D" SPAC.	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
72	6x6	7"	7½"	1'-2"	#4	11"	#5	6"	#6	11"	#6	11"	174.74	31,558	1.0409	198.35	0.69	40
96	8x6	9½"	8"	1'-4½"	#5	10"	#6	7½"	#6	10"	#7	10"	251.62	43,806	1.5329	278.31	0.89	51
120	10x6	1'-1"	8½"	1'-8"	#5	11"	#6	7"	#7	11"	#8	11"	368.19	55,435	2.2889	353.97	1.09	62
144	12x6	1'-4½"	8½"	1'-11½"	#5	10"	#6	7"	#7	10"	#9	10"	505.32	68,429	3.1825	438.65	1.29	73
128	8x8	9"	8½"	1'-9"	#6	10"	#6	5"	#6	10"	#7	10"	290.07	58,818	1.6860	368.86	0.90	51
160	10x8	1'-0"	9½"	2'-0"	#6	10"	#7	6"	#7	10"	#8	10"	405.89	77,016	2.4228	487.98	1.10	63
192	12x8	1'-2½"	10"	2'-2½"	#6	10"	#7	6"	#7	10"	#9	10"	525.74	88,635	3.1868	563.35	1.31	74
224	14x8	1'-6½"	10½"	2'-6½"	#7	10"	#7	6"	#7	10"	#10	10"	707.77	108,558	4.3615	693.84	1.51	85
256	16x8	1'-10"	10½"	2'-10"	#7	10"	#7	6"	#7	10"	#10	10"	896.10	119,337	5.5787	763.45	1.71	96
200	10x10	1'-8"	10½"	2'-11½"	#6	10"	#7	6"	#7	10"	#8	10"	448.13	83,327	2.6401	522.22	1.12	63
240	12x10	1'-3½"	11"	3'-3½"	#6	10"	#7	6"	#8	10"	#8	10"	605.30	99,310	3.6520	626.28	1.32	74
280	14x10	1'-7"	11"	3'-7"	#6	10"	#7	6"	#8	10"	#9	10"	769.49	112,823	4.7115	713.94	1.52	86
320	16x10	1'-10"	11½"	3'-10"	#7	10"	#7	5"	#8	10"	#9	10"	953.08	137,023	5.8997	872.76	1.72	97
288	12x12	1'-4"	1'-0½"	4'-1"	#6	10"	#8	7"	#7	10"	#9	10"	696.79	108,543	4.1420	674.86	1.34	75
336	14x12	1'-7½"	1'-1"	4'-4½"	#7	10"	#8	6"	#7	10"	#10	10"	875.37	134,729	5.2924	847.46	1.54	86
384	16x12	1'-11"	1'-1"	4'-8"	#7	10"	#8	6"	#8	10"	#10	10"	1069.70	154,372	6.5478	975.58	1.74	97

MAXIMUM 30 FT. COVER ~ L = 150 FT.

SIZE OF CULVERT ft.xft. "S"x"H"	"T"	"V"	"W"	BARS "A" SIZE	BARS "A" SPAC.	BARS "B" SIZE	BARS "B" SPAC.	BARS "C" SIZE	BARS "C" SPAC.	BARS "D" SIZE	BARS "D" SPAC.	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
6x6	8"	7½"	1'-3"	#4	11"	#6	7"	#6	11"	#6	11"	187.67	33,891	1.1265	213.60	0.69	40
8x6	1'-0"	8½"	1'-7"	#5	11"	#6	7"	#6	11"	#8	11"	299.17	44,646	1.8477	283.44	0.90	51
10x6	1'-4"	9"	1'-11"	#5	1'-0"	#6	6½"	#7	1'-0"	#8	1'-0"	436.04	54,793	2.7387	349.91	1.10	63
12x6																	
8x8	10½"	9½"	1'-10½"	#6	10"	#6	5"	#6	10"	#7	10"	329.41	59,548	1.9441	373.57	0.91	52
10x8	1'-2½"	10½"	2'-2½"	#6	10"	#7	6"	#7	10"	#8	10"	473.16	78,107	2.8646	495.00	1.12	63
12x8	1'-5½"	11"	2'-5½"	#6	10"	#7	6"	#7	10"	#9	10"	615.68	89,908	3.7786	571.57	1.32	74
14x8	1'-9"	11½"	2'-9"	#6	10"	#7	6"	#8	10"	#9	10"	795.73	107,421	4.9406	685.98	1.52	86
16x8																	
10x10	1'-2½"	11½"	3'-2½"	#5	10"	#7	6"	#7	10"	#8	10"	529.51	80,840	3.1740	505.31	1.13	63
12x10	1'-6½"	11½"	3'-6½"	#6	10"	#7	5"	#7	10"	#9	10"	689.93	102,706	4.2079	650.92	1.33	74
14x10	1'-10"	11½"	3'-10"	#6	10"	#7	5"	#7	10"	#10	10"	865.68	116,600	5.3442	739.36	1.52	86
16x10																	
12x12	1'-7½"	1'-1"	4'-4½"	#6	10"	#8	6"	#7	10"	#9	10"	796.94	115,707	4.7986	722.91	1.35	75
14x12	2'-0"	1'-1½"	4'-9"	#7	10"	#8	6"	#7	10"	#10	10"	1018.90	136,599	6.2346	859.23	1.55	86
16x12																	

MAXIMUM 35 FT. COVER ~ L = 150 FT.

AREA OF OPENING sq. ft.	SIZE OF CULVERT ft.xft. "S"x"H"	"T"	"V"	"W"	BARS "A" SIZE	BARS "A" SPAC.	BARS "B" SIZE	BARS "B" SPAC.	BARS "C" SIZE	BARS "C" SPAC.	BARS "D" SIZE	BARS "D" SPAC.	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
72	6x6	10"	8"	1'-5"	#4	1'-0"	#6	6½"	#6	1'-0"	#6	1'-0"	218.97	34,205	1.3334	216.03	0.69	40
96	8x6	1'-2½"	9"	1'-9½"	#5	11"	#6	6½"	#6	11"	#7	11"	347.29	44,885	2.1664	285.54	0.90	51
120	10x6																	
128	8x8	1'-1"	10"	2'-1"	#5	10"	#6	5"	#6	10"	#7	10"	379.75	57,428	2.2747	359.27	0.91	52
160	10x8	1'-5"	11"	2'-5"	#5	10"	#7	5"	#7	10"	#7	10"	533.87	78,440	3.2639	497.04	1.12	63
192	12x8	1'-9"	11½"	2'-9"	#5	10"	#7	5"	#7	10"	#8	10"	711.58	89,705	4.4097	569.88	1.33	74
224	14x8																	
200	10x10	1'-5"	1'-0"	3'-5"	#5	10"	#7	5"	#7	10"	#8	10"	592.40	87,148	3.5865	547.08	1.14	64
240	12x10	1'-10"	1'-0"	3'-10"	#6	10"	#7	5"	#7	10"	#9	10"	787.91	104,080	4.8518	657.30	1.33	75
280	14x10																	
288	12x12	1'-11"	1'-2"	4'-8"	#6	10"	#8	6"	#7	10"	#9	10"	909.12	117,943	5.5341	737.31	1.36	75
336	14x12																	

GENERAL NOTES:

This Drawing Shows The Additional Reinforcing Bars And The Increased Dimensions And Reinforcing Bar Sizes Necessary To Modify A Double Cell Culvert For Cover Less Than Or In Exess Of That Provided By Basic Culvert Drawings.

All Other Dimensions, Reinforcement Details And General Requirements Of Basic Culvert Drawings Shall Apply Except As Specifically Modified By This Drawing.

Barrel Details Shown On This Drawing Shall Be Used With Cover Less Than 2'-6" And More Than Maximum Shown On Basic Culvert Drawings.

Quantities Shown On This Drawing Are For Culvert With Barrels Per This Drawing And Wings With 2:1 Slope Per This Drawing And Basic Culvert Drawing.

Quantities Shown On This Drawing Are For Culverts Constructed Normal To The Centerline Of The Roadway.

Quantities Shown On This Drawing For "TOTAL CULVERT" Are For A Complete Culvert Of The Length Noted And Include Barrel, Parapets, Wings, Aprons, Cut-Off Walls, Auxiliary Slabs "W" Where Required And Two Auxiliary Slabs "J".

Quantities Shown On This Drawing Will Be Used As A Basis For Final Payment For Culverts Constructed In Accordance With This Drawing And Basic Culvert Drawings.

REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
IBD CULVERTS MODIFIED
FOR HIGH COVER
WINGS WITH 2:1 SLOPE

WORKING NUMBER IBDM-2W

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED MJC | DATE 07-11-97 | DATE 08-01-97

SHEET NUMBER 7043

GENERAL DATA AND ESTIMATED QUANTITIES FOR BOX CULVERTS UNDER HIGH COVER

LESS THAN 2'-6" COVER ~ L = 150 FT.

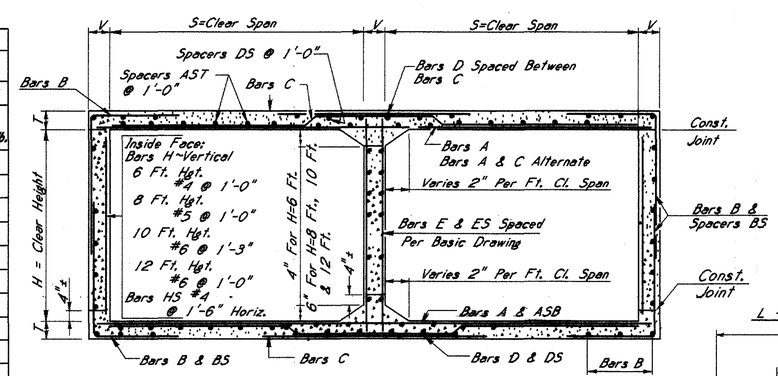
AREA OF OPENING sq. ft.	SIZE OF CULVERT ft.xft. "S"x"H"	"T"	"V"	"W"	BARS "A" SIZE	BARS "A" SPAC.	BARS "B" SIZE	BARS "B" SPAC.	BARS "C" SIZE	BARS "C" SPAC.	BARS "D" SIZE	BARS "D" SPAC.	ESTIMATED QUANTITIES: TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
72	6x6	6½"	7"	1'-1½"	#4	1'-0"	#5	6½"	#6	1'-0"	#6	1'-0"	170.58	30,412	0.9653	186.53	0.68	40
96	8x6	7½"	7"	1'-2½"	#4	10"	#5	6½"	#6	10"	#6	10"	216.27	38,050	1.2435	235.49	0.88	51
120	10x6	8½"	6½"	1'-3½"	#5	1'-2"	#6	9½"	#7	1'-2"	#7	1'-2"	264.13	44,591	1.5369	276.55	1.07	62
144	12x6	10"	6½"	1'-5"	#5	1'-1"	#6	9½"	#7	1'-1"	#9	1'-1"	336.47	55,019	1.9923	345.20	1.27	73
168	14x6	1'-0"	7"	1'-7"	#5	10"	#6	9½"	#7	10"	#8	10"	439.35	70,044	2.6502	442.57	1.47	84
192	16x6	1'-2"	7"	1'-9"	#6	1'-0"	#6	9"	#8	1'-0"	#9	1'-0"	551.62	83,314	3.3714	529.57	1.67	95
128	8x8	8"	7½"	1'-8"	#5	10"	#6	7"	#5	10"	#7	10"	274.23	48,649	1.4877	292.77	0.88	51
160	10x8	9½"	8½"	1'-9½"	#6	10"	#7	8"	#6	10"	#8	10"	356.03	67,450	1.9888	415.76	1.09	62
192	12x8	9½"	8"	1'-9½"	#6	10"	#7	9"	#6	10"	#8	10"	392.13	72,546	2.1913	448.38	1.28	73
224	14x8	11½"	8½"	1'-11½"	#6	10"	#7	9"	#7	10"	#9	10"	498.46	89,537	2.8546	558.99	1.49	85
256	16x8	1'-1"	8½"	2'-1"	#7	10"	#7	9"	#7	10"	#9	10"	596.87	104,775	3.4669	658.03	1.69	96
200	10x10	9"	9"	2'-9"	#6	10"	#7	7"	#6	10"	#8	10"	389.95	76,220	2.1312	462.37	1.10	63
240	12x10	10½"	8½"	2'-10½"	#6	10"	#7	8"	#6	10"	#8	10"	458.68	81,477	2.5544	495.11	1.29	73
280	14x10	11½"	8½"	2'-11½"	#6	10"	#7	8"	#7	10"	#8	10"	532.87	95,266	3.0120	584.19	1.49	85
320	16x10	1'-1½"	9"	3'-1½"	#6	10"	#8	9"	#7	10"	#9	10"	655.24	111,141	3.7863	688.77	1.69	96
360	18x10	1'-3½"	9½"	3'-3½"	#6	10"	#8	9"	#8	10"	#9	10"	793.02	128,948	4.6624	804.62	1.90	107
288	12x12	10"	9½"	3'-7"	#6	10"	#8	9"	#6	10"	#8	10"	513.20	92,856	2.7577	555.96	1.30	74
336	14x12	1'-0"	10"	3'-9"	#6	10"	#8	9"	#7	10"	#9	10"	624.67	110,120	3.4568	667.84	1.51	85
384	16x12	1'-1½"	10"	3'-10½"	#7	10"	#8	9"	#7	10"	#9	10"	725.37	126,276	4.0849	772.36	1.70	96
432	18x12	1'-3½"	10½"	4'-0½"	#7	10"	#8	8"	#8	10"	#10	10"	865.74	153,525	4.9733	948.75	1.91	108
480	20x12	1'-5½"	10½"	4'-2½"	#7	10"	#8	8"	#8	10"	#10	10"	1010.94	165,372	5.8947	1024.40	2.11	119

MAXIMUM 10 FT. COVER ~ L = 150 FT.

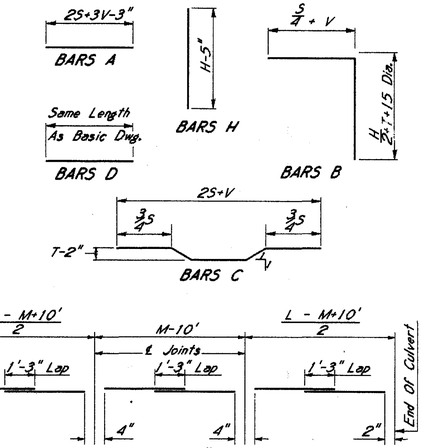
SIZE OF CULVERT ft.xft. "S"x"H"	"T"	"V"	"W"	BARS "A" SIZE	BARS "A" SPAC.	BARS "B" SIZE	BARS "B" SPAC.	BARS "C" SIZE	BARS "C" SPAC.	BARS "D" SIZE	BARS "D" SPAC.	ESTIMATED QUANTITIES: TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
6x6																	
8x6																	
10x6	8½"	6½"	1'-3½"	#5	1'-2"	#6	9½"	#7	1'-2"	#7	1'-2"	264.13	44,591	1.5369	276.55	1.07	62
12x6	10"	6½"	1'-5"	#5	1'-1"	#6	9½"	#7	1'-1"	#9	1'-1"	336.47	55,019	1.9923	345.20	1.27	73
14x6	1'-0"	7"	1'-7"	#5	10"	#6	9½"	#7	10"	#8	10"	439.35	70,044	2.6502	442.57	1.47	84
16x6	1'-2"	7"	1'-9"	#6	1'-0"	#6	9"	#8	1'-0"	#9	1'-0"	551.62	83,314	3.3714	529.57	1.67	95
8x8																	
10x8																	
12x8	9½"	8"	1'-9½"	#6	10"	#7	9"	#6	10"	#8	10"	392.13	72,546	2.1913	448.38	1.28	73
14x8	11½"	8½"	1'-11½"	#6	10"	#7	9"	#7	10"	#9	10"	498.46	89,537	2.8546	558.99	1.49	85
16x8	1'-1"	8½"	2'-1"	#7	10"	#7	9"	#7	10"	#9	10"	596.87	104,775	3.4669	658.03	1.69	96
10x10																	
12x10	10½"	8½"	2'-10½"	#6	10"	#7	8"	#6	10"	#8	10"	458.68	81,477	2.5544	495.11	1.29	73
14x10	11½"	8½"	2'-11½"	#6	10"	#7	8"	#7	10"	#8	10"	532.87	95,266	3.0120	584.19	1.49	85
16x10	1'-1½"	9"	3'-1½"	#6	10"	#8	9"	#7	10"	#9	10"	655.24	111,141	3.7863	688.77	1.69	96
18x10	1'-3½"	9½"	3'-3½"	#6	10"	#8	9"	#8	10"	#9	10"	793.02	128,948	4.6624	804.62	1.90	107
12x12	10"	9½"	3'-7"	#6	10"	#8	9"	#6	10"	#8	10"	513.20	92,856	2.7577	555.96	1.30	74
14x12	1'-0"	10"	3'-9"	#6	10"	#8	9"	#7	10"	#9	10"	624.67	110,120	3.4568	667.84	1.51	85
16x12	1'-1½"	10"	3'-10½"	#7	10"	#8	9"	#7	10"	#9	10"	725.37	126,276	4.0849	772.36	1.70	96
18x12	1'-3½"	10½"	4'-0½"	#7	10"	#8	8"	#8	10"	#10	10"	865.74	153,525	4.9733	948.75	1.91	108
20x12	1'-5½"	10½"	4'-2½"	#7	10"	#8	8"	#8	10"	#10	10"	1010.94	165,372	5.8947	1024.40	2.11	119

MAXIMUM 15 FT. COVER ~ L = 150 FT.

AREA OF OPENING sq. ft.	SIZE OF CULVERT ft.xft. "S"x"H"	"T"	"V"	"W"	BARS "A" SIZE	BARS "A" SPAC.	BARS "B" SIZE	BARS "B" SPAC.	BARS "C" SIZE	BARS "C" SPAC.	BARS "D" SIZE	BARS "D" SPAC.	ESTIMATED QUANTITIES: TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
72	6x6																	
96	8x6	7½"	7"	1'-2½"	#4	10"	#5	6½"	#6	10"	#6	10"	216.27	38,050	1.2435	235.49	0.88	51
120	10x6	9½"	7"	1'-4½"	#5	1'-0"	#6	8"	#7	1'-0"	#8	1'-0"	289.65	51,240	1.7055	321.14	1.07	62
144	12x6	1'-0"	7"	1'-7"	#5	1'-0"	#6	8"	#7	1'-0"	#9	1'-0"	389.84	59,800	2.3457	376.11	1.27	73
168	14x6	1'-2"	7½"	1'-9"	#6	1'-0"	#6	8"	#8	1'-0"	#9	1'-0"	500.61	77,234	3.0561	490.18	1.48	84
192	16x6	1'-4"	7½"	1'-11"	#6	11"	#6	7½"	#8	11"	#10	11"	620.49	94,150	3.8281	601.05	1.67	95
128	8x8	8"	7½"	1'-8"	#5	10"	#6	7"	#5	10"	#7	10"	274.23	48,649	1.4877	292.77	0.88	51
160	10x8	9½"	8½"	1'-9½"	#6	10"	#7	8"	#6	10"	#8	10"	356.03	67,450	1.9888	415.76	1.09	62
192	12x8	10½"	9"	1'-10½"	#6	10"	#7	8"	#7	10"	#8	10"	430.44	80,170	2.4421	498.00	1.30	74
224	14x8	1'-1"	9"	2'-1"	#7	10"	#7	8"	#7	10"	#9	10"	548.05	98,179	3.1805	615.28	1.49	85
256	16x8	1'-3"	9"	2'-3"	#6	10"	#7	8"	#8	10"	#9	10"	668.29	108,838	3.9369	683.67	1.69	96
200	10x10	9"	9"	2'-9"	#6	10"	#7	7"	#6	10"	#8	10"	389.95	76,220	2.1312	462.37	1.10	63
240	12x10	11½"	9½"	2'-11½"	#6	10"	#7	7"	#7	10"	#9	10"	500.18	92,400	2.8260	567.19	1.30	74
280	14x10	1'-1½"	9½"	3'-1½"	#6	10"	#7	7"	#7	10"	#9	10"	606.91	101,922	3.4973	627.65	1.50	84
320	16x10	1'-4"	10"	3'-4"	#7	10"	#8	8"	#7	10"	#10	10"	753.64	126,170	4.4320	786.81	1.70	96
360	18x10	1'-6"	10"	3'-6"	#6	10"	#8	8"	#8	10"	#10	10"	892.31	137,642	5.3148	860.32	1.90	107
288	12x12	11½"	10½"	3'-8½"	#6	10"	#8	8"	#7	10"	#8	10"	570.00	102,087	3.1307	615.48	1.31	74
336	14x12	1'-1½"	11"	3'-10½"	#6	10"	#8	8"	#7	10"	#9	10"	688.04	120,568	3.8712	735.36	1.52	86
384	16x12	1'-3½"	11"	4'-0½"	#7	10"	#8	8"	#8	10"	#10	10"	811.11	142,575	4.6460	878.66	1.72	97
432	18x12	1'-6"	11½"	4'-3"	#7	10"	#8	8"	#8	10"	#11	10"	977.87	168,123	5.7083	1045.54	1.92	108
480	20x12	1'-8"	11½"	4'-5"	#7	10"	#8	8"	#9	10"	#11	10"	1132.86	182,724	6.6945	1139.52	2.12	119



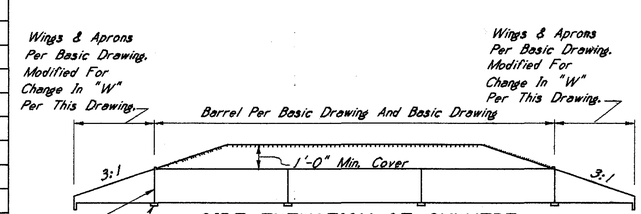
TYPICAL CROSS SECTION



ONE SET OF BARS HS ~ #4

BAR BENDING DETAILS

Dimensions Are Out To Out



SIDE ELEVATION OF CULVERT

See Drawing No. IBJL-1 For Joint Locations.

NOTE: Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Are Required Only Where Called For By The Basic Drawing And Auxiliary Slabs "W" Are Not To Be Used For Culvert Heights Of Less Than 8 Ft.

DATE	REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BOX CULVERT DRAWING

IBD CULVERTS MODIFIED

FOR HIGH COVER

WINGS WITH 3:1 SLOPE

DESIGNED NA CHECKED BJJ ISSUED TMT

DETAILED MJC DATE 07-11-97 DATE 08-01-97

WORKING NUMBER IBDM-3W

SHEET NUMBER 7044

GENERAL DATA & ESTIMATED QUANTITIES FOR BOX CULVERTS UNDER HIGH COVER

MAX. 20 FT. COVER ~ L = 150 FT.

AREA OF OPENING sq. ft.	SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A" SIZE	BARS "A" SPAC.	BARS "B" SIZE	BARS "B" SPAC.	BARS "C" SIZE	BARS "C" SPAC.	BARS "D" SIZE	BARS "D" SPAC.	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
72	6x6	6½"	7"	1'-1½"	#4	1'-0"	#5	6½"	#6	1'-0"	#6	1'-0"	170.58	30,412	0.9653	186.53	0.68	40
96	8x6	8½"	7½"	1'-3½"	#5	11"	#6	8"	#6	11"	#7	11"	238.10	41,695	1.3875	259.55	0.88	51
120	10x6	11"	8"	1'-6"	#5	11"	#6	7½"	#7	11"	#8	11"	331.16	54,809	1.9794	344.99	1.09	62
144	12x6	1'-1"	8"	1'-8"	#5	10"	#6	7½"	#7	10"	#9	10"	425.37	67,449	2.5803	427.04	1.28	73
168	14x6	1'-4½"	8"	1'-11½"	#6	1'-0"	#6	7"	#8	1'-0"	#10	1'-0"	576.26	82,286	3.5576	523.31	1.48	85
128	8x8	8½"	8"	1'-8½"	#5	10"	#6	6"	#6	10"	#7	10"	289.34	53,798	1.5864	327.35	0.89	51
160	10x8	10½"	9"	1'-10½"	#6	10"	#7	7"	#7	10"	#8	10"	383.78	74,504	2.1705	462.23	1.09	62
192	12x8	1'-0"	9½"	2'-0"	#7	10"	#7	7"	#7	10"	#9	10"	474.52	90,808	2.7315	568.30	1.30	74
224	14x8	1'-2½"	10"	2'-2½"	#7	10"	#7	7"	#8	10"	#10	10"	605.45	111,718	3.5571	704.87	1.51	85
256	16x8	1'-5"	10"	2'-5"	#7	10"	#7	7"	#8	10"	#10	10"	747.87	122,978	4.4598	777.15	1.70	96
200	10x10	10"	10"	2'-10"	#6	10"	#7	7"	#6	10"	#8	10"	427.22	76,817	2.3766	466.24	1.11	63
240	12x10	1'-0½"	10½"	3'-0½"	#6	10"	#7	7"	#7	10"	#9	10"	542.14	93,054	3.1007	571.43	1.31	74
280	14x10	1'-3"	10½"	3'-3"	#6	10"	#7	7"	#8	10"	#9	10"	667.48	109,431	3.8943	677.51	1.51	85
320	16x10	1'-7"	11"	3'-7"	#7	10"	#8	8"	#8	10"	#10	10"	869.61	135,161	5.1929	846.27	1.72	97
360	18x10	1'-10"	11"	3'-10"	#7	10"	#8	8"	#8	10"	#10	10"	1056.27	146,842	6.3920	921.00	1.91	108
288	12x12	1'-0½"	11½"	3'-0½"	#7	10"	#8	7"	#7	10"	#9	10"	615.18	114,840	3.4255	699.56	1.33	74
336	14x12	1'-4"	1'-0"	4'-1"	#7	10"	#8	7"	#8	10"	#9	10"	781.34	133,128	4.4815	817.81	1.53	86
384	16x12	1'-7"	1'-0"	4'-4"	#7	10"	#8	7"	#8	10"	#10	10"	947.15	149,038	5.5371	920.20	1.73	97
432	18x12	1'-11"	1'-0½"	4'-8"	#7	10"	#8	7"	#9	10"	#10	10"	1183.20	172,174	7.0547	1070.62	1.93	108
480	20x12	2'-1"	1'-0½"	4'-10"	#7	10"	#8	7"	#9	10"	#11	10"	1357.30	190,306	8.1675	1188.07	2.13	119

MAX. 25 FT. COVER ~ L = 150 FT.

SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A" SIZE	BARS "A" SPAC.	BARS "B" SIZE	BARS "B" SPAC.	BARS "C" SIZE	BARS "C" SPAC.	BARS "D" SIZE	BARS "D" SPAC.	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
6x6	7"	7½"	1'-2"	#4	11"	#5	6"	#6	11"	#6	11"	182.09	32,199	1.0409	198.35	0.69	40
8x6	9½"	8"	1'-4½"	#5	10"	#6	7½"	#6	10"	#7	10"	260.15	44,516	1.5329	278.31	0.89	51
10x6	1'-1"	8½"	1'-8"	#5	11"	#6	7"	#7	11"	#8	11"	377.94	56,215	2.2889	353.97	1.09	62
12x6	1'-4½"	8½"	1'-11½"	#5	10"	#6	7"	#7	10"	#9	10"	516.28	69,280	3.1825	438.65	1.29	73
14x6																	
8x8	9"	8½"	1'-9"	#6	10"	#6	5"	#6	10"	#7	10"	304.60	60,031	1.6860	368.86	0.90	51
10x8	1'-0"	9½"	2'-0"	#6	10"	#7	6"	#7	10"	#8	10"	422.30	78,323	2.4228	487.98	1.11	63
12x8	1'-2½"	10"	2'-2½"	#6	10"	#7	6"	#7	10"	#9	10"	543.89	90,034	3.1868	563.35	1.31	74
14x8	1'-6½"	10½"	2'-6½"	#7	10"	#7	6"	#7	10"	#10	10"	727.81	110,057	4.3615	693.84	1.51	85
16x8	1'-10"	10½"	2'-10"	#7	10"	#7	6"	#7	10"	#10	10"	917.97	120,931	5.5787	763.45	1.71	96
10x10	11½"	10½"	2'-11½"	#6	10"	#7	6"	#7	10"	#8	10"	467.54	85,171	2.6401	522.22	1.12	63
12x10	1'-3½"	11"	3'-3½"	#6	10"	#7	6"	#8	10"	#8	10"	626.34	101,268	3.6520	626.28	1.32	74
14x10	1'-7"	11"	3'-7"	#6	10"	#7	6"	#8	10"	#9	10"	792.10	114,902	4.7115	713.94	1.52	86
16x10	1'-10"	11½"	3'-10"	#7	10"	#7	5"	#8	10"	#9	10"	977.24	139,203	5.8997	872.76	1.72	97
18x10																	
12x12	1'-4"	1'-0½"	4'-1"	#6	10"	#8	7"	#7	10"	#9	10"	724.86	111,238	4.1420	674.86	1.34	75
14x12	1'-7½"	1'-1"	4'-4½"	#7	10"	#8	6"	#7	10"	#10	10"	904.28	137,549	5.2924	847.46	1.54	86
16x12	1'-11"	1'-1"	4'-8"	#7	10"	#8	6"	#8	10"	#10	10"	1101.44	157,330	6.5478	975.58	1.74	97
18x12																	
20x12																	

GENERAL NOTES:

This Drawing Shows The Additional Reinforcing Bars And The Increased Dimensions And Reinforcing Bar Sizes Necessary To Modify A Double Cell Culvert For Cover Less Than Or In Excess Of That Provided By Basic Culvert Drawings.

All Other Dimensions, Reinforcement Details And General Requirements Of Basic Culvert Drawings Shall Apply Except As Specifically Modified By This Drawing And Drawing IWD-3.

Barrel Details Shown On This Drawing Shall Be Used With Cover Less Than 2'-6" And More Than Maximum Shown On Basic Culvert Drawings.

Quantities Shown On This Drawing Are For Culverts With Barrels Per This Drawing And Wings With 3:1 Slope Per This Drawing And Drawing IWD-3.

Quantities Shown On This Drawing Are For Culverts Constructed Normal To The Centerline Of The Roadway.

Quantities Shown On This Drawing For "Total Culvert" Are For Complete Culvert Of The Length Noted And Include Barrel, Parapets, Wings And Aprons, Cut-Off Walls, Auxiliary Slabs "W" Where Required And Two Auxiliary Slabs "J".

Quantities Shown On This Drawing Will Be Used As A Basis For Final Payment For Culverts Constructed In Accordance With This Drawing, Drawing IWD-3 And Basic Culvert Drawings.

REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BOX CULVERT DRAWING

IBD CULVERTS MODIFIED FOR HIGH COVER

WINGS WITH 3:1 SLOPE

WORKING NUMBER IBDM-3W

DESIGNED NA CHECKED BJJ ISSUED TMT

DETAILED ALT DATE 07-11-97 DATE 08-01-97

SHEET NUMBER 7045

GENERAL DATA & ESTIMATED QUANTITIES FOR BOX CULVERTS UNDER HIGH COVER

LESS THAN 2'-6" COVER ~ L=150 FT.

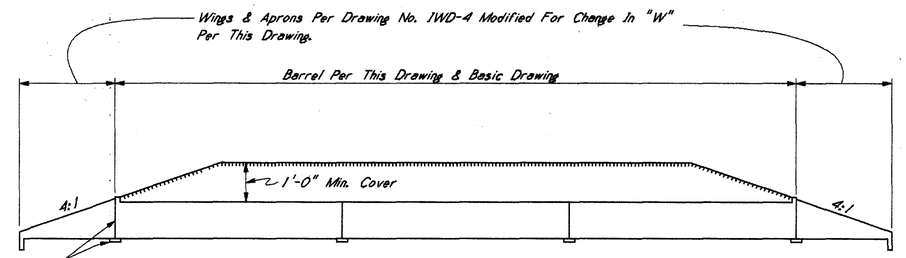
AREA OF OPENING sq. ft.	SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A" SIZE	BARS "A" SPACING	BARS "B" SIZE	BARS "B" SPACING	BARS "C" SIZE	BARS "C" SPACING	BARS "D" SIZE	BARS "D" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
72	6x6	6¼"	7"	1'-1½"	#4	1'-0"	#5	6¼"	#6	1'-0"	#6	1'-0"	177.83	31,043	0.9653	186.53	0.68	40
96	8x6	7½"	7"	1'-2½"	#4	10"	#5	6¼"	#6	10"	#6	10"	224.67	38,747	1.2436	235.49	0.88	51
120	10x6	8½"	6¼"	1'-3½"	#5	1'-2"	#6	9½"	#7	1'-2"	#7	1'-2"	273.59	45,354	1.5369	276.55	1.07	62
144	12x6	10"	6¼"	1'-5"	#5	1'-1"	#6	9½"	#7	1'-1"	#9	1'-1"	347.04	55,848	1.9923	345.20	1.27	73
168	14x6	1'-0"	7"	1'-7"	#5	10"	#6	9½"	#7	10"	#8	10"	451.13	70,941	2.6502	442.57	1.47	84
192	16x6	1'-2"	7"	1'-9"	#6	1'-0"	#6	9"	#8	1'-0"	#9	1'-0"	564.58	84,278	3.3714	529.57	1.67	95
128	8x8	8"	7½"	1'-8"	#5	10"	#6	7"	#5	10"	#7	10"	288.83	49,808	1.4876	292.77	0.88	51
160	10x8	9½"	8½"	1'-9½"	#6	10"	#7	8"	#6	10"	#8	10"	372.26	68,691	1.9888	415.76	1.09	62
192	12x8	9½"	8"	1'-9½"	#6	10"	#7	9"	#6	10"	#8	10"	409.95	73,865	2.1913	448.38	1.28	73
224	14x8	11½"	8½"	1'-11½"	#6	10"	#7	9"	#7	10"	#9	10"	518.01	90,941	2.8546	558.99	1.49	85
256	16x8	1'-1"	8½"	2'-1"	#7	10"	#7	9"	#7	10"	#9	10"	618.11	106,261	3.4669	658.03	1.69	96
200	10x10	9"	9"	2'-9"	#6	10"	#7	7"	#6	10"	#8	10"	408.38	77,896	2.1312	462.37	1.10	63
240	12x10	10½"	8½"	2'-10½"	#6	10"	#7	8"	#6	10"	#8	10"	478.50	83,254	2.5544	495.11	1.29	74
280	14x10	11½"	8½"	2'-11½"	#6	10"	#7	8"	#7	10"	#8	10"	554.05	97,131	3.0120	584.19	1.49	85
320	16x10	1'-1½"	9"	3'-1½"	#6	10"	#8	9"	#7	10"	#9	10"	677.87	113,105	3.7863	688.77	1.69	96
360	18x10	1'-3½"	9½"	3'-3½"	#6	10"	#8	9"	#8	10"	#9	10"	817.11	131,010	4.6624	804.62	1.90	107
288	12x12	10"	9½"	3'-7"	#6	10"	#8	9"	#6	10"	#8	10"	539.50	95,332	2.7577	555.96	1.30	74
336	14x12	1'-0"	10"	3'-9"	#6	10"	#8	9"	#7	10"	#9	10"	652.65	112,715	3.4568	667.84	1.51	85
384	16x12	1'-1½"	10"	3'-10½"	#7	10"	#8	9"	#7	10"	#9	10"	754.96	128,975	4.0849	772.36	1.70	96
432	18x12	1'-3½"	10½"	4'-0½"	#7	10"	#8	8"	#8	10"	#10	10"	897.03	156,340	4.9733	948.75	1.91	108
480	20x12	1'-5½"	10½"	4'-2½"	#7	10"	#8	8"	#8	10"	#10	10"	1043.90	168,311	5.8947	1024.40	2.11	119

MAX. 10 FT. COVER ~ L= 150 FT.

SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A" SIZE	BARS "A" SPACING	BARS "B" SIZE	BARS "B" SPACING	BARS "C" SIZE	BARS "C" SPACING	BARS "D" SIZE	BARS "D" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
6x6																	
8x6																	
10x6	8½"	6¼"	1'-3½"	#5	1'-2"	#6	9½"	#7	1'-2"	#7	1'-2"	273.59	45,354	1.5369	276.55	1.07	62
12x6	10"	6¼"	1'-5"	#5	1'-1"	#6	9½"	#7	1'-1"	#9	1'-1"	347.04	55,848	1.9923	345.20	1.27	73
14x6	1'-0"	7"	1'-7"	#5	10"	#6	9½"	#7	10"	#8	10"	451.13	70,941	2.6502	442.57	1.47	84
16x6	1'-2"	7"	1'-9"	#6	1'-0"	#6	9"	#8	1'-0"	#9	1'-0"	564.58	84,278	3.3714	529.57	1.67	95
8x8																	
10x8																	
12x8	9½"	8"	1'-9½"	#6	10"	#7	9"	#6	10"	#8	10"	409.95	73,865	2.1913	448.38	1.27	73
14x8	11½"	8½"	1'-11½"	#6	10"	#7	9"	#7	10"	#9	10"	518.01	90,941	2.8546	558.99	1.49	85
16x8	1'-1"	8½"	2'-1"	#7	10"	#7	9"	#7	10"	#9	10"	618.11	106,261	3.4669	658.03	1.69	96
10x10																	
12x10	10½"	8½"	2'-10½"	#6	10"	#7	8"	#6	10"	#8	10"	478.50	83,254	2.5544	495.11	1.29	74
14x10	11½"	8½"	2'-11½"	#6	10"	#7	8"	#7	10"	#8	10"	554.05	97,131	3.0120	584.19	1.49	85
16x10	1'-1½"	9"	3'-1½"	#6	10"	#8	9"	#7	10"	#9	10"	677.87	113,105	3.7863	688.77	1.69	96
18x10	1'-3½"	9½"	3'-3½"	#6	10"	#8	9"	#8	10"	#9	10"	817.11	131,010	4.6624	804.62	1.90	107
12x12	10"	9½"	3'-7"	#6	10"	#8	9"	#6	10"	#8	10"	539.50	95,332	2.7577	555.96	1.30	74
14x12	1'-0"	10"	3'-9"	#6	10"	#8	9"	#7	10"	#9	10"	652.65	112,715	3.4568	667.84	1.51	85
16x12	1'-1½"	10"	3'-10½"	#7	10"	#8	9"	#7	10"	#9	10"	754.96	128,975	4.0849	772.36	1.70	96
18x12	1'-3½"	10½"	4'-0½"	#7	10"	#8	8"	#8	10"	#10	10"	897.03	156,340	4.9733	948.75	1.91	108
20x12	1'-5½"	10½"	4'-2½"	#7	10"	#8	8"	#8	10"	#10	10"	1043.90	168,311	5.8947	1024.40	2.11	119

MAX. 15 FT. COVER ~ L= 150 FT.

AREA OF OPENING sq. ft.	SIZE OF CULVERT ft. x ft. "S"x"H"	"T"	"V"	"W"	BARS "A" SIZE	BARS "A" SPACING	BARS "B" SIZE	BARS "B" SPACING	BARS "C" SIZE	BARS "C" SPACING	BARS "D" SIZE	BARS "D" SPACING	ESTIMATED QUANTITIES TOTAL CULVERT CONC. cu. yd.	TOTAL CULVERT REINF. STEEL lb.	PER LIN. FT. BARREL CONC. cu. yd.	PER LIN. FT. BARREL REINF. STEEL lb.	1 AUX. SLAB "J" CONC. cu. yd.	1 AUX. SLAB "J" REINF. STEEL lb.
72	6x6																	
96	8x6	7½"	7"	1'-2½"	#4	10"	#5	6¼"	#6	10"	#6	10"	224.67	38,747	1.2436	235.49	0.88	51
120	10x6	9½"	7"	1'-4½"	#5	1'-0"	#6	8"	#7	1'-0"	#8	1'-0"	299.16	52,004	1.7055	321.14	1.07	62
144	12x6	1'-0"	7"	1'-7"	#5	1'-0"	#6	8"	#7	1'-0"	#9	1'-0"	400.50	60,633	2.3457	376.11	1.27	73
168	14x6	1'-2"	7½"	1'-9"	#6	1'-0"	#6	8"	#8	1'-0"	#9	1'-0"	512.49	78,135	3.0560	490.18	1.48	84
192	16x6	1'-4"	7½"	1'-11"	#6	11"	#6	7½"	#8	11"	#10	11"	633.54	95,118	3.8281	601.05	1.67	95
128	8x8	8"	7½"	1'-8"	#5	10"	#6	7"	#5	10"	#7	10"	288.83	49,808	1.4876	292.77	0.88	51
160	10x8	9½"	8½"	1'-9½"	#6	10"	#7	8"	#6	10"	#8	10"	372.26	68,691	1.9888	415.76	1.09	62
192	12x8	10½"	9"	1'-10½"	#6	10"	#7	8"	#7	10"	#8	10"	448.35	81,492	2.4421	498.00	1.30	74
224	14x8	1'-1"	9"	2'-1"	#7	10"	#7	8"	#7	10"	#9	10"	567.72	99,588	3.1805	615.28	1.49	85
256	16x8	1'-3"	9"	2'-3"	#6	10"	#7	8"	#8	10"	#9	10"	689.68	110,332	3.9367	683.67	1.69	96
200	10x10	9"	9"	2'-9"	#6	10"	#7	7"	#6	10"	#8	10"	408.38	77,896	2.1312	462.37	1.10	63
240	12x10	11½"	9½"	2'-11½"	#6	10"	#7	7"	#7	10"	#9	10"	520.11	94,177	2.8260	567.19	1.30	74
280	14x10	1'-1½"	9½"	3'-1½"	#6	10"	#7	7"	#7	10"	#9	10"	628.28	103,797	3.4973	627.65	1.50	85
320	16x10	1'-4"	10"	3'-4"	#7	10"	#8	8"	#7	10"	#10	10"	776.52	128,145	4.4320	786.81	1.70	96
360	18x10	1'-6"	10"	3'-6"	#6	10"	#8	8"	#8	10"	#10	10"	916.62	139,716	5.3148	860.32	1.90	107
288	12x12	11½"	10½"	3'-8½"	#6	10"	#8	8"	#7	10"	#8	10"	596.50	104,573	3.1307	615.48	1.31	74
336	14x12	1'-1½"	11"	3'-10½"	#6	10"	#8	8"	#7	10"	#9	10"	716.21	123,173	3.8711	735.36	1.52	86
384	16x12	1'-3½"	11"	4'-0½"	#7	10"	#8	8"	#8	10"	#10	10"	840.94	145,288	4.6460	878.66	1.72	97
432	18x12	1'-6"	11½"	4'-3"	#7	10"	#8	8"	#8	10"	#11	10"	1009.45	170,957	5.7083	1045.54	1.92	108
480	20x12	1'-8"	11½"	4'-5"	#7	10"	#8	8"	#9	10"	#11	10"	1166.11	185,678	6.6945	1139.52	2.12	119



SIDE ELEVATION OF CULVERT

See Drawing No. IBJL-1 For Joint Locations

NOTE:
Auxiliary Slabs "W" And Vertical Construction Joints At The Wings Are Required Only Where Called For By The Basic Drawing And Auxiliary Slabs "W" Are Not To Be Used For Culvert Heights Of Less Than 8 Ft.

DATE	REVISIONS	BY

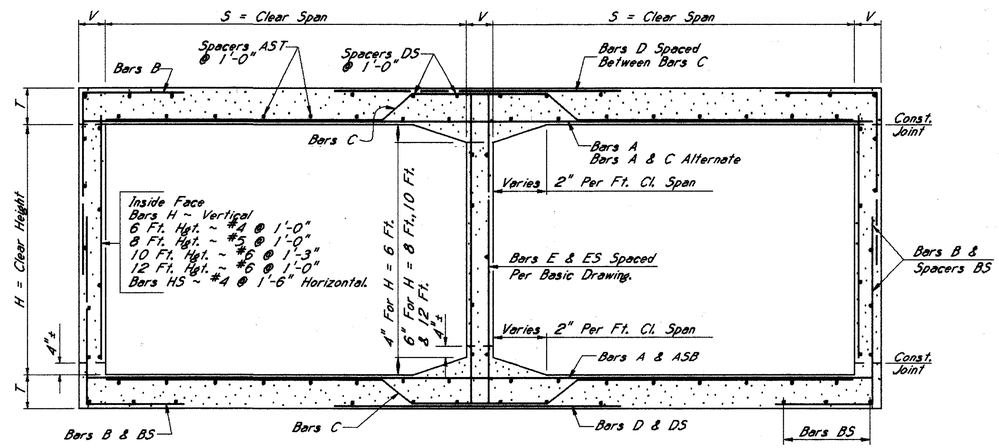
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
IBD CULVERTS MODIFIED
FOR HIGH COVER

WINGS WITH 4:1 SLOPE

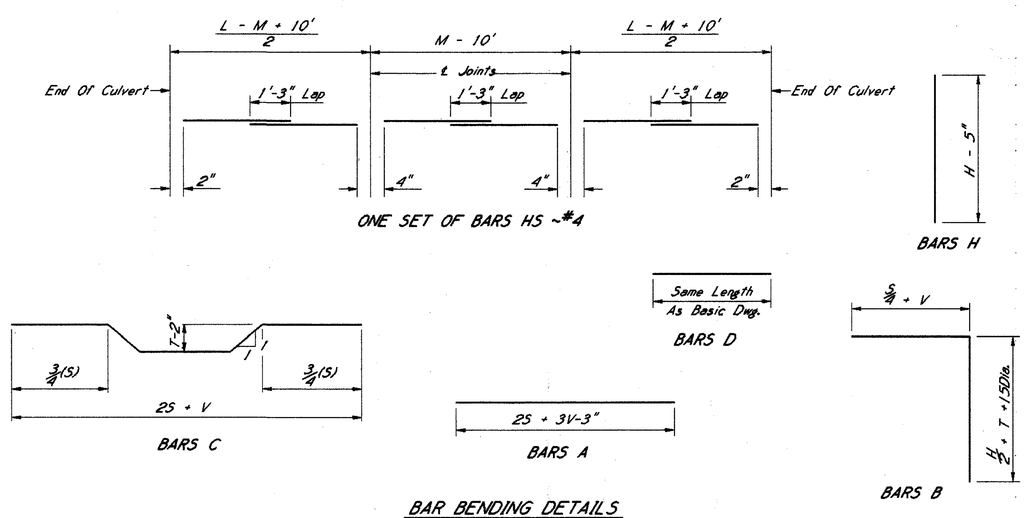
WORKING NUMBER IBDM-4W

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED MJC | DATE 07-11-97 | DATE 08-01-97

SHEET NUMBER 7046



CROSS SECTION



BAR BENDING DETAILS

Dimensions Are Out To Out

GENERAL NOTES:

This Drawing Shows The Additional Reinforcing Bars And The Increased Dimensions And Reinforcing Bar Sizes Necessary To Modify A Double Cell Culvert For Cover Less Than Or In Excess Of That Provided By Basic Culvert Drawings.

All Other Dimensions, Reinforcement Details And General Requirements Of Basic Culvert Drawings Shall Apply Except As Specifically Modified By This Drawing And Drawing IWD-4.

Barrel Details Shown On This Drawing Shall Be Used With Cover Less Than 2'-6" And More Than Maximum Shown On Basic Culvert Drawings.

Quantities Shown On This Drawing Are For Culverts With Barrels Per This Drawing And Wings With 4:1 Slope Per This Drawing And Drawing IWD-4.

Quanitities Shown On This Drawing Are For Culverts Constructed Normal To The Centerline Of The Roadway.

Quantities Shown On This Drawing For "Total Culvert" Are For Complete Culvert Of The Length Noted And Include Barrel, Parapets, Wings And Aprons, Cut-Off Walls, Auxiliary Slabs "W" Where Required And Two Auxiliary Slabs "J".

Quantities Shown On This Drawing Will Be Used As A Basis For Final Payment For Culverts Constructed In Accordance With This Drawing, Drawing IWD-4 And Basic Culvert Drawings.

REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BOX CULVERT DRAWING

IBD CULVERTS MODIFIED

FOR HIGH COVER

WINGS WITH 4:1 SLOPE

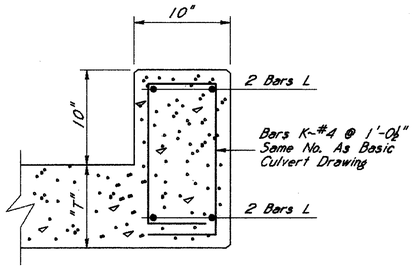
WORKING NUMBER IBDM-4W

SHEET NUMBER 7047

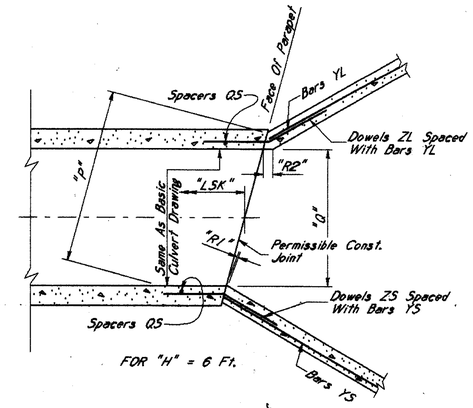
DATE			
DESIGNED NA	CHECKED BJJ	ISSUED TMT	
DETAILED MJC	DATE 07-11-97	DATE 08-01-97	

CULVERT HEIGHT "H"	TABLE OF DIMENSIONS									
	"LW1"	"LW2"	"N1"	"N2"	"P"	"R1"	"R2"	"U"	"W"	"Z"
									Per Supplementary Drawing	
6'	11'-4 5/8"	15'-6 3/8"			1.035(Q)+1.11'	1 7/8"	5 1/8"	7"		11'-0"
8'	14'-8"	20'-0 1/2"			1.035(Q)+1.34'	2 1/4"	6 1/4"	8 1/2"		14'-2"
10'	16'-8 7/8"	22'-10 1/4"	2'-11"	6'-1"	1.035(Q)+1.58'	2 5/8"	7 3/8"	10"		16'-2"
12'	19'-4"	26'-4 3/4"	3'-3"	7'-0"	1.035(Q)+1.74'	3"	8"	11"		18'-8"

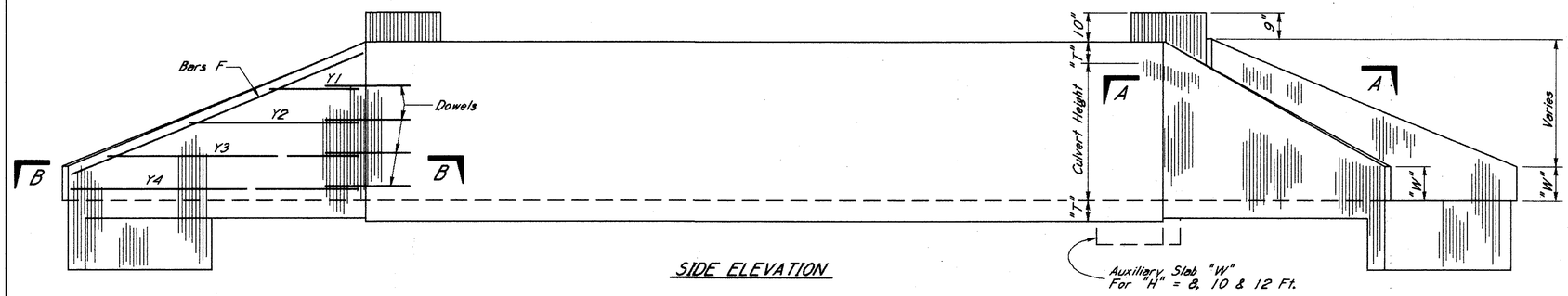
NOTE: Q For Single Cell Culvert = S (Clear Span)
Q For Double Cell Culvert = 2(S) + V



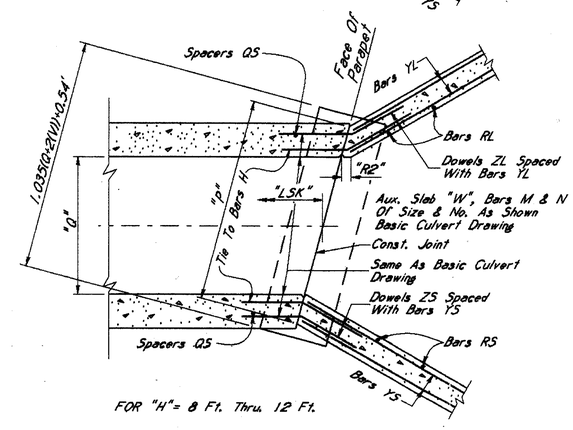
PARAPET DETAIL
Slab Steel Not Shown



FOR "H" = 6 Ft.



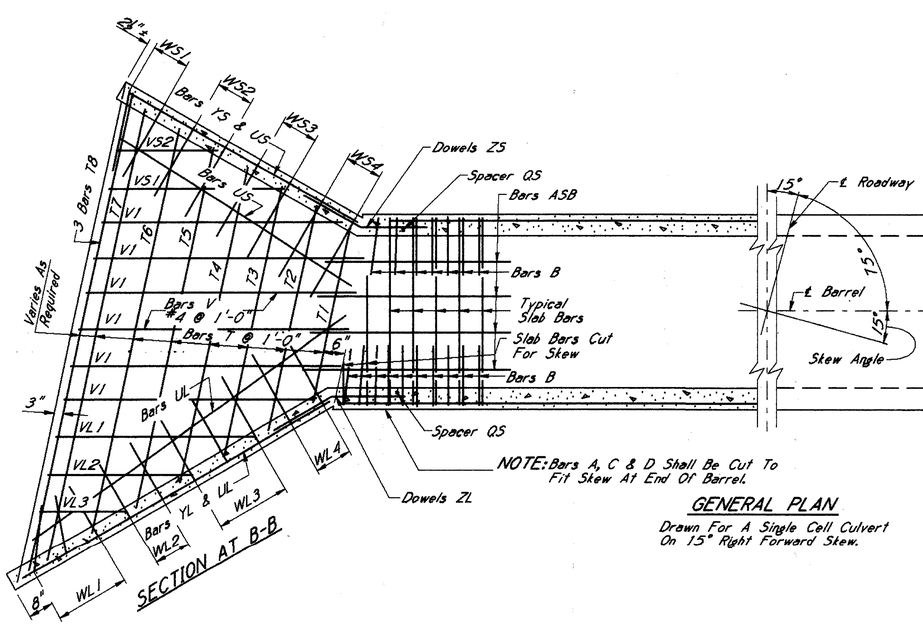
SIDE ELEVATION



FOR "H" = 8 Ft. Thru. 12 Ft.

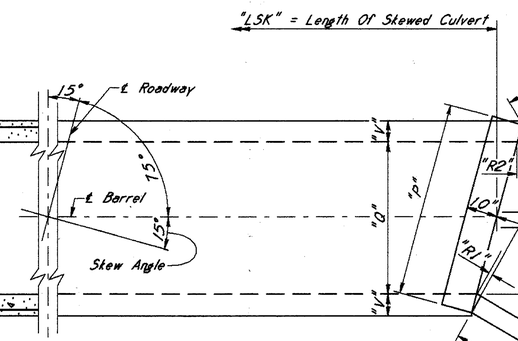
NOTE: Reinforcement In Stream Face Of Wing Wall Required For "H" = 8, 10 & 12 Ft. Only.

SECTION A-A

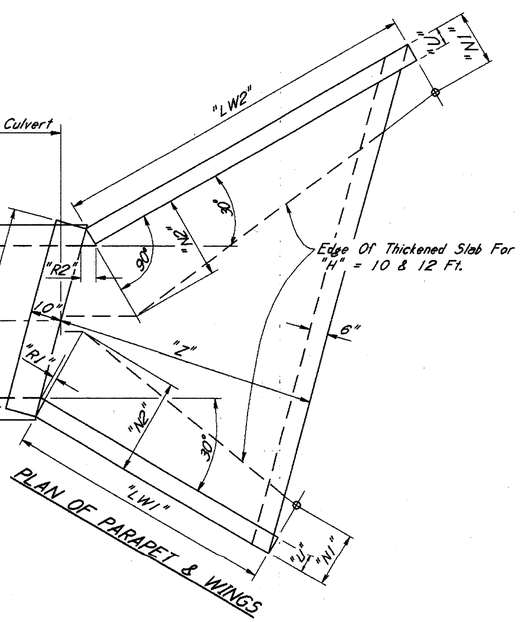


SECTION AT B-B

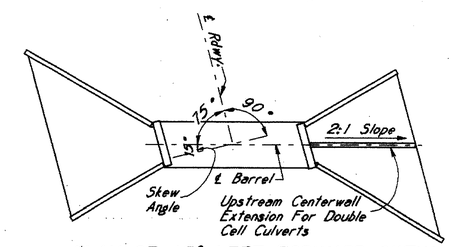
NOTE: Bars A, C & D Shall Be Cut To Fit Skew At End Of Barrel.



GENERAL PLAN
Drawn For A Single Cell Culvert On 15° Right Forward Skew.



PLAN OF PARAPET & WINGS



PLAN OF 15° LEFT FORWARD SKEW

REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
15° SKEW DETAILS
WINGS WITH 2:1 SLOPE
SINGLE & DOUBLE CELL CULVERTS

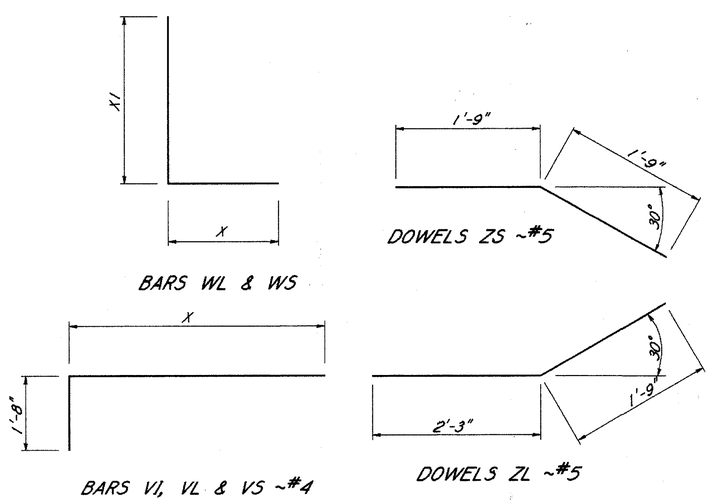
DESIGNED NA CHECKED BJJ ISSUED TMT
DETAILED ALT DATE 07-11-97 DATE 08-01-97

WORKING NUMBER 15K-15-2W
SHEET NUMBER 7048

CULVERT HEIGHT "H"	TABLE OF BARS V					
	BARS VI		BARS VLI - VLn		BARS VSI - VSn	
	NO.	DIM. X	NO.	DIM. X	NO.	DIM. X
	Same As Basic Culvert Drawing					
6'		11'-1"	6	9'-2" To 1'-10"	4	8'-10" To 2'-10"
8'		14'-4"	8	12'-6" To 2'-3"	6	12'-3" To 2'-3"
10'		16'-5"	9	14'-9" To 3'-1"	7	14'-9' To 2'-9"
12'		19'-0"	11	17'-5" To 2'-10"	8	17'-5" To 3'-5"

CULVERT HEIGHT "H"	TABLE OF BARS R ~ #4		
	BAR	NO.	LENGTH
8'	RS1 To RS9	1 Ea.	W+6'-2" To W+5"
	RL1 To RL12	1 Ea.	W+6'-3" To W+5"
10'	RS1 To RS10	1 Ea.	W+7'-2" To W+8"
	RL1 To RL14	1 Ea.	W+7'-3" To W+5"
12'	RS1 To RS12	1 Ea.	W+8'-5" To W+6"
	RL1 To RL16	1 Ea.	W+8'-6" To W+7"

CULVERT HEIGHT "H"	TABLE OF BARS U	
	UL, NO. & LENGTH	US, NO. & LENGTH
	LONG WING	SHORT WING
6'	3 @ 15'-1"	3 @ 11'-2"
8'	3 @ 19'-6"	3 @ 14'-5"
10'	2 @ 22'-4"	3 @ 16'-5"
	1 @ 20'-6"	
12'	2 @ 25'-10"	2 @ 19'-0"
	1 @ 24'-0"	1 @ 19'-6"



BAR BENDING DETAILS
Dimensions Are Out To Out

NOTE: Vertical Spacers QS And Dowels ZL And ZS Located Per Section A - A.

CULVERT HEIGHT "H"	TABLE OF BARS FL, FS, QS, ZL & ZS									
	BARS FL ~#4		BARS FS ~#4		SPACERS QS ~#4		DOWELS ZL ~#5		DOWELS ZS ~#5	
	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.
6'	2	16'-0"	2	12'-2"	2	5'-7"	6	4'-0"	6	3'-6"
8'	2	20'-9"	2	15'-9"	2	7'-7"	16	4'-0"	16	3'-6"
10'	2	23'-9"	2	18'-1"	2	9'-7"	16	4'-0"	16	3'-6"
12'	2	27'-6"	2	21'-0"	2	11'-7"	20	4'-0"	20	3'-6"

NOTE: The Number Of Bars Shown In The Tables Is The Number Required For One Complete Headwall Assembly At One End Of Culvert.

TABLE OF BARS WL						
LONG WING						
CULVERT HEIGHT "H"	BAR	NO.	SIZE	SPACING	DIM. X	DIM. X1
12', 10', 8', 6'	WL1	3	#4	1'-0"	M-3"	K
	WL2	2	#4	1'-0"	M+3"	K+1'-0"
	WL3	3	#5	1'-0"	M+6"	K+1'-9"
	WL4	2	#5	1'-0"	M+11"	K+2'-10"
	WL5	2	#5	1'-0"	M+1'-2"	K+3'-6"
	WL6	2	#6	9"	M+1'-5"	K+4'-3"
	WL7	2	#6	9"	M+1'-8"	K+4'-9'
12', 10', 8'	WL8	3	#6	9"	M+1'-11"	K+5'-4"
	WL9	3	#6	9"	M+2'-2"	K+6'-1"
12', 10'	WL10	2	#7	9"	M+2'-6"	K+6'-10"
	WL11	2	#7	9"	M+2'-9"	K+7'-5"
12'	WL12	2	#7	6"	M+2'-10"	K+7'-10"
	WL13	2	#7	6"	M+3'-0"	K+8'-3"
	WL14	3	#7	6"	M+3'-1"	K+8'-7"

TABLE OF BARS WS						
CULVERT HEIGHT "H"	SHORT WING					
	BAR	NO.	SIZE	SPACING	DIM. X	DIM. X1
12', 10', 8', 6'	WS1	2	#4	1'-0"	M-3"	K
	WS2	2	#4	1'-0"	M+1"	K+11"
	WS3	2	#5	1'-0"	M+6"	K+1'-11"
	WS4	2	#5	1'-0"	M+11"	K+2'-11"
	WS5	1	#5	1'-0"	M+1'-4"	K+3'-10"
	WS6	2	#5	9"	M+1'-5"	K+4'-3"
	WS7	2	#5	9"	M+1'-9"	K+4'-11"
12', 10', 8'	WS8	2	#6	9"	M+2'-0"	K+5'-8"
	WS9	2	#6	9"	M+2'-4"	K+6'-5"
12', 10'	WS10	1	#7	9"	M+2'-7"	K+7'-1"
	WS11	2	#7	9"	M+2'-9"	K+7'-5"
12'	WS12	3	#7	6"	M+3'-1"	K+8'-2"
	WS13	2	#7	6"	M+3'-4"	K+8'-11"

CULVERT HEIGHT - "H"	6'	8'	10'	12'
M	2'-2"	2'-7"	2'-11"	3'-3"

K = W+5" For "H" = 6'
K = W+6" For "H" = 8'
K = W+8" For "H" = 10'
K = W+9" For "H" = 12'

CULVERT HEIGHT "H"	TABLE OF BARS T		
	BAR	NO.	LENGTH
6'	T1 To T10	1 Ea.	P-2" To P+11'-5"
	T11	3	P+13'-0"
8'	T1 To T14	1 Ea.	P-2" To P+16'-4"
	T15	3	P+16'-11"
10'	T1 To T16	1 Ea.	P-2" To P+19'-0"
	T17	3	P+19'-6"
12'	T1 To T18	1 Ea.	P-2" To P+21'-7"
	T19	3	P+22'-10"

CULVERT HEIGHT "H"	TABLE OF BARS L & M					
	BARS L			BARS M		
	NO.	SIZE	LENGTH	NO.	SIZE	LENGTH
6'	4	#6	P - 4"			NONE
8' - 12'	4	#7	P - 4"	2	#4	1.035(Q+2(V1))+2"

Bars K & N Per Basic Culvert Drawing Except Spacing Shall Be 1'-0½".

CULVERT HEIGHT "H"	TABLE OF BARS Y ~ #4			
	BAR	NO.	YL - LENGTH	YS- LENGTH
			LONG WING	SHORT WING
6'	Y1 To Y5	1 Ea.	3'-9" To 15'-1"	2'-8" To 10'-11"
	Y6	1	15'-5"	11'-2"
8'	Y1 To Y6	2 Ea.	3'-9" To 17'-11"	2'-8" To 13'-0"
	Y7	4	19'-11"	14'-5"
10'	Y1 To Y6	2 Ea.	4'-3" To 21'-10"	3'-1" To 16'-0"
	Y7	4	22'-8"	16'-6"
12'	Y1 To Y7	2 Ea.	4'-6" To 25'-9"	3'-2" To 18'-8"
	Y8	6	26'-3"	19'-1"

GENERAL NOTES:
This Drawing Shows The General Details Necessary To Modify A Single Or Double Cell Culvert With Wings With 2:1 Slope For A 15° Skew.
All Governing Dimensions, Reinforcement Details And General Requirements Of Basic Culvert Drawings, And Or Drawings 185M-2W And 180M-2W Shall Apply Except As Specifically Modified Hereon.
A Complete Placing Plan Showing All Governing Dimensions, Bar List And Bending Details Shall Be Submitted To The Project Engineer For Approval Prior To Fabrication Of The Reinforcing Steel.

DATE	REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
15° SKEW DETAILS
WINGS WITH 2:1 SLOPE
SINGLE & DOUBLE CELL CULVERTS

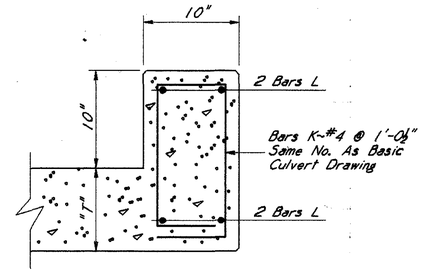
WORKING NUMBER 15K-15-2W

DESIGNED NA CHECKED BJJ ISSUED TMT
DETAILED ALT DATE 07-11-97 DATE 08-01-97

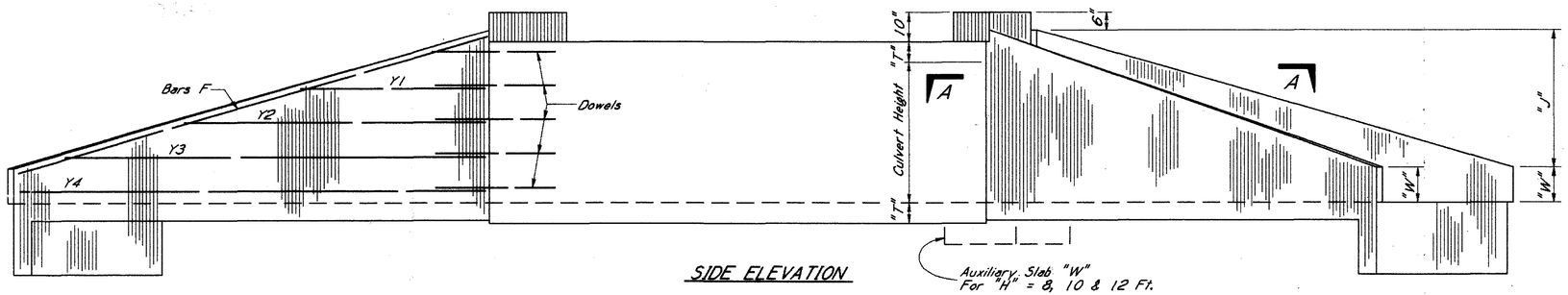
SHEET NUMBER 7049

CULVERT HEIGHT "H"	TABLE OF DIMENSIONS "J"	"LW1"	"LW2"	"N1"	"N2"	"P"	"R1"	"R2"	"U"	"W"	"Z"
6'	5'-9"	17'-3 3/16"	21'-0 11/16"			1.035(Q)+1.15'	0 5/8"	4 1/8"	7"	Per Supplementary Drawing	17'-3"
8'	7'-4"	22'-1"	26'-10 5/16"			1.035(Q)+1.39'	0 3/4"	5 1/4"	8 1/2"		22'-0"
10'	8'-4"	25'-1 1/8"	30'-6 1/4"	2'-11"	6'-6"	1.035(Q)+1.64'	0 7/8"	5 15/16"	10"		25'-0"
12'	9'-7"	28'-10 5/16"	35'-1 3/16"	3'-3"	7'-0"	1.035(Q)+1.81'	0 15/16"	6 5/8"	11"		28'-9"

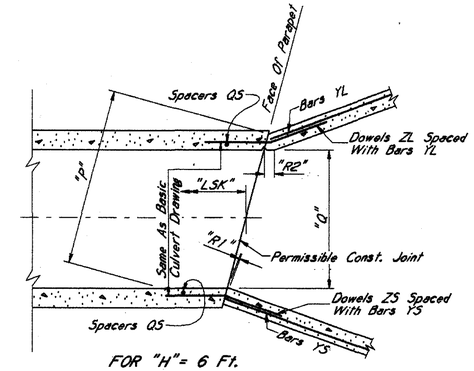
NOTE: Q For Single Cell Culvert = S (Clear Span)
Q For Double Cell Culvert = 2(S) + V



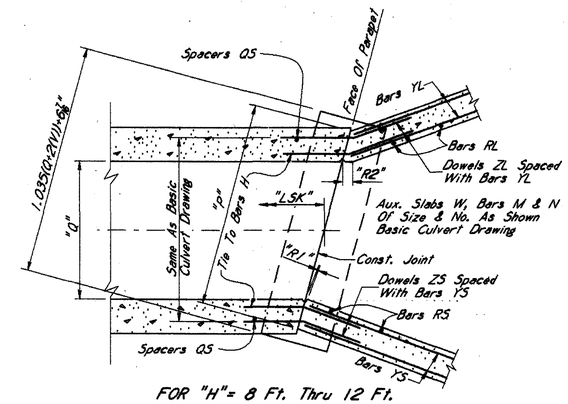
PARAPET DETAIL
Slab Steel Not Shown



SIDE ELEVATION



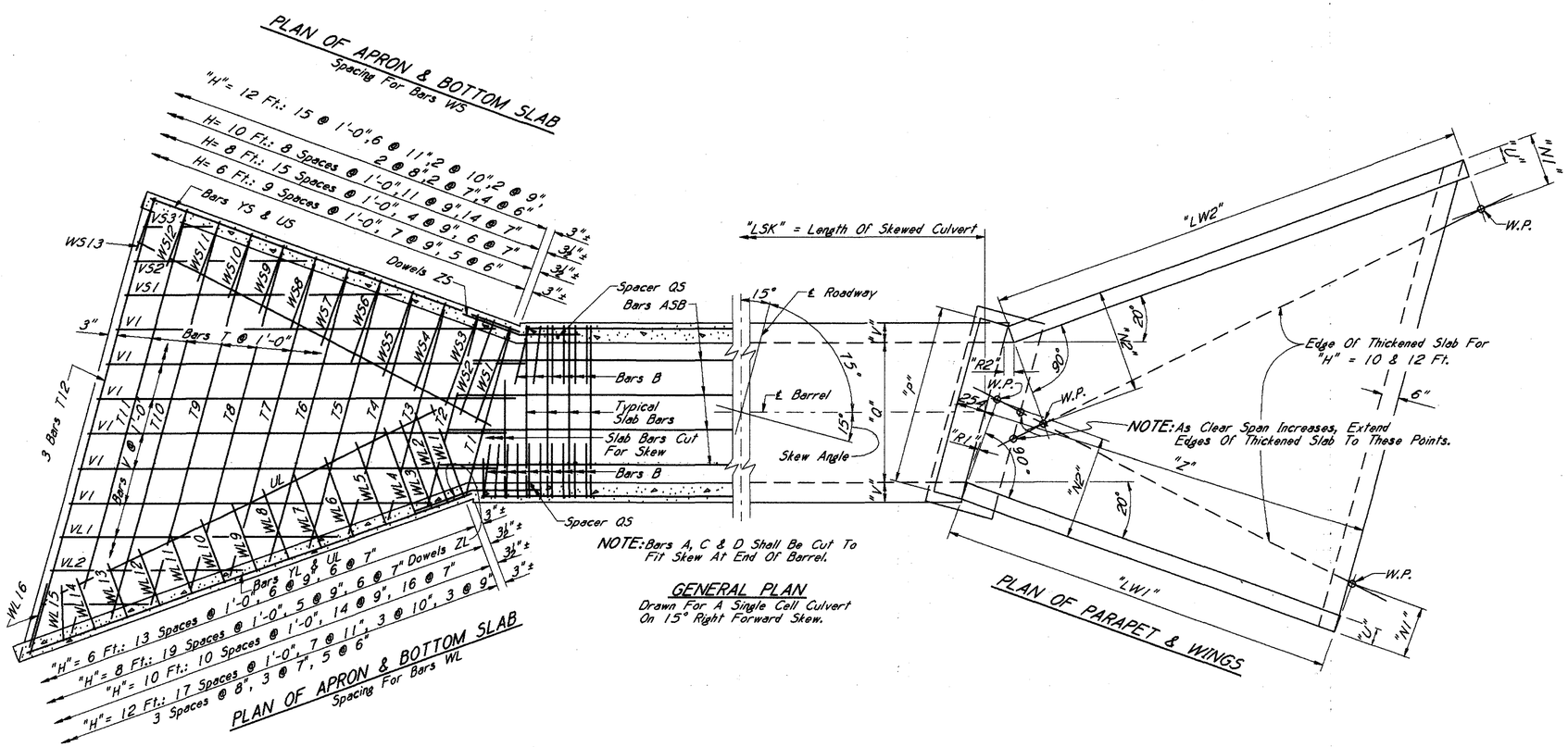
FOR "H" = 6 Ft.

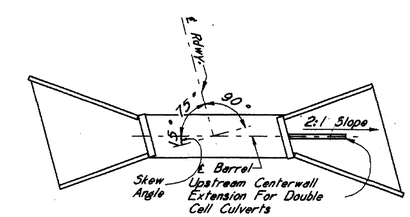


FOR "H" = 8 Ft. Thru 12 Ft.

NOTE: Reinforcement In Stream Face Of Wing Wall Required For "H" = 8, 10 & 12 Ft. Only.

SECTION A-A





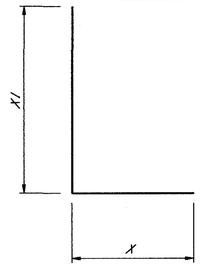
PLAN OF 15° LEFT FORWARD SKEW

REVISIONS	BY	MISSISSIPPI DEPARTMENT OF TRANSPORTATION BOX CULVERT DRAWING 15° SKEW DETAILS WINGS WITH 3:1 SLOPE SINGLE & DOUBLE CELL CULVERTS			WORKING NUMBER ISK-15-3W
DATE		DESIGNED NA DETAILED ALT	CHECKED BJJ DATE 07-11-97	ISSUED TMT DATE 08-01-97	SHEET NUMBER 7050

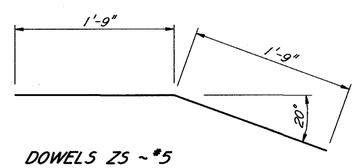
CULVERT HEIGHT "H"	TABLE OF BARS V ~ #4					
	BARS V1		BARS VL1 - VLn		BARS VS1 - VSn	
	NO.	DIM. X	NO.	DIM. X	NO.	DIM. X
	Same As Basic Culvert Drawing					
6'		17'-6"	6	14'-6" To 2'-2"	5	14'-1" To 2'-0"
8'		22'-5"	8	19'-9" To 2'-5"	6	19'-5" To 4'-3"
10'		25'-6"	9	23'-2" To 3'-4"	7	22'-9" To 4'-7"
12'		29'-5"	11	27'-3" To 2'-6"	9	27'-0" To 2'-9"

CULVERT HEIGHT "H"	TABLE OF BARS R ~ #4		
	BAR	NO.	LENGTH
8'	RS1 To RS13	1 Ea.	W+6'-7" To W+6"
	RL1 To RL16	1 Ea.	W+6'-7" To W+5"
10'	RS1 To RS15	1 Ea.	W+7'-6" To W+7"
	RL1 To RL18	1 Ea.	W+7'-6" To W+7"
12'	RS1 To RS18	1 Ea.	W+8'-10" To W+4"
	RL1 To RL22	1 Ea.	W+8'-10" To W+4"

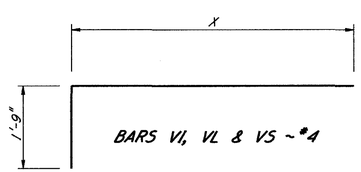
CULVERT HEIGHT "H"	TABLE OF BARS U ~ #4	
	UL, NO. & LENGTH	US, NO. & LENGTH
	LONG WING	SHORT WING
6'	3 @ 20'-8"	3 @ 16'-11"
8'	3 @ 26'-6"	3 @ 21'-9"
10'	3 @ 30'-2"	3 @ 24'-9"
12'	3 @ 34'-9"	3 @ 28'-6"



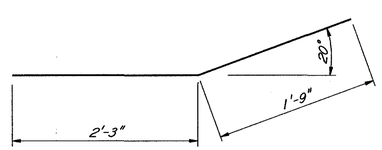
BARS WL & WS



DOWELS ZS ~ #5



BARS VI, VL & VS ~ #4



DOWELS ZL ~ #5

BAR BENDING DETAILS
Dimensions Are Out To Out

NOTE: Vertical Spacers OS And Dowels ZL And ZS Located Per Section A - A.

CULVERT HEIGHT "H"	TABLE OF BARS FL, FS, OS, ZL & ZS									
	BARS FL ~ #4		BARS FS ~ #4		SPACERS OS ~ #4		DOWELS ZL ~ #5		DOWELS ZS ~ #5	
	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.
6'	2	21'-5"	2	17'-10"	2	5'-7"	7	4'-0"	7	3'-6"
8'	2	27'-6"	2	22'-11"	2	7'-7"	18	4'-0"	18	3'-6"
10'	2	31'-3"	2	26'-1"	2	9'-7"	18	4'-0"	18	3'-6"
12'	2	36'-0"	2	30'-0"	2	11'-7"	22	4'-0"	22	3'-6"

NOTE: The Number Of Bars Shown In The Tables Is The Number Required For One Complete Headwall Assembly At One End Of Culvert.

CULVERT HEIGHT "H"	TABLE OF BARS Y ~ #4			
	BAR	NO.	YL - LENGTH	YS - LENGTH
			LONG WING	SHORT WING
6'	Y1 To Y5	1 Ea.	5'-7" To 20'-3"	4'-6" To 16'-7"
	Y6	1	20'-8"	16'-11"
8'	Y1 To Y6	2 Ea.	5'-7" To 23'-11"	4'-6" To 19'-7"
	Y7	4	26'-6"	21'-9"
10'	Y1 To Y6	2 Ea.	6'-2" To 29'-1"	5'-0" To 23'-10"
	Y7	4	30'-2"	24'-9"
12'	Y1 To Y7	2 Ea.	6'-6" To 34'-0"	5'-3" To 27'-10"
	Y8	6	34'-9"	28'-6"

Bars K & N Per Basic Culvert Drawing Except Spacing Shall Be 1'-0½".

CULVERT HEIGHT "H"	TABLE OF BARS T ~ #4		
	BAR	NO.	LENGTH
6'	T1 To T17	1 Ea.	P-4" To P+12'-1"
	T18	3	P+12'-9"
8'	T1 To T21	1 Ea.	P-2" To P+15'-7"
	T22	3	P+16'-4"
10'	T1 To T24	1 Ea.	P-2" To P+18'-3"
	T25	3	P+19'-0"
12'	T1 To T28	1 Ea.	P To P+21'-3"
	T29	3	P+22'-0"

CULVERT HEIGHT "H"	TABLE OF BARS WL				
	BAR	NO.	SIZE	LONG WING	
				DIM. X	DIM. X1
6'	WL1 To WL26	1 Ea.	#4	4'-0" To 2'-0"	K+5'-6" To K
8'	WL1 To WL16	1 Ea.	#5	4'-6" To 3'-3"	K+7'-2" To K+4'-4"
	WL17 To WL31	1 Ea.	#4	3'-2" To 2'-0"	K+4'-1" To K
10'	WL1 To WL11	1 Ea.	#6	5'-10" To 5'-3"	K+8'-1" To K+6'-6"
	WL12 To WL24	1 Ea.	#5	5'-2" To 4'-4"	K+6'-4" To K+4'-1"
	WL25 To WL41	1 Ea.	#4	4'-3" To 2'-8"	K+3'-11" To K
12'	WL1 To WL19	1 Ea.	#7	6'-5" To 5'-3"	K+9'-4" To K+6'-1"
	WL20 To WL26	1 Ea.	#6	5'-2" To 4'-7"	K+5'-10" To K+4'-4"
	WL27 To WL33	1 Ea.	#5	4'-6" To 3'-10"	K+4'-1" To K+2'-5"
	WL34 To WL42	1 Ea.	#4	3'-9" To 3'-0"	K+2'-2" To K

CULVERT HEIGHT "H"	TABLE OF BARS WS				
	BAR	NO.	SIZE	SHORT WING	
				DIM. X	DIM. X1
6'	WS1 To WS22	1 Ea.	#4	4'-0" To 2'-0"	K+5'-6" To K
8'	WS1 To WS14	1 Ea.	#5	4'-6" To 3'-4"	K+7'-2" To K+4'-0"
	WS15 To WS26	1 Ea.	#4	3'-3" To 2'-0"	K+3'-8" To K
10'	WS1 To WS10	1 Ea.	#6	5'-10" To 5'-1"	K+8'-1" To K+6'-1"
	WS11 To WS20	1 Ea.	#5	5'-0" To 4'-3"	K+5'-11" To K+4'-0" △
	WS21 To WS34	1 Ea.	#4	4'-2" To 2'-8"	K+3'-9" To K
12'	WS1 To WS15	1 Ea.	#7	6'-5" To 5'-3"	K+9'-4" To K+6'-2"
	WS16 To WS21	1 Ea.	#6	5'-2" To 4'-7"	K+5'-10" To K+4'-3"
	WS22 To WS27	1 Ea.	#5	4'-5" To 3'-10"	K+3'-11" To K+2'-3"
	WS28 To WS34	1 Ea.	#4	3'-9" To 3'-0"	K+1'-11" To K

CULVERT HEIGHT "H"	TABLE OF BARS L & M					
	BARS L			BARS M		
	NO.	SIZE	LENGTH	NO.	SIZE	LENGTH
6'	4	#6	P-4"			NONE
8'-12'	4	#7	P-4"	2	#4	1.035(O+2(V))+2"

K = W+5" For "H" = 6'
K = W+6" For "H" = 8'
K = W+8 For "H" = 10'
K = W+9" For "H" = 12'

GENERAL NOTES:

This Drawing Shows The General Details Necessary To Modify A Single Or Double Cell Culvert With Wings With 3:1 Slope For A 15° Skew.
All Governing Dimensions Reinforcement Details And General Requirements Of Basic Culvert Drawings, Drawings IWS-3 And IWD-3 And Or Drawings IBSM-3W And IBDM-3W Shall Apply Except As Specifically Modified Hereon
A Complete Placing Plan Showing All Governing Dimensions, Bars List And Bending Details Shall Be Submitted To The Project Engineer For Approval Prior To Fabrication Of The Reinforcing Steel.

DATE	REVISIONS	BY
△ 07/17/98	Changed Bar Length	BJJ

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
15° SKEW DETAILS
WINGS WITH 3:1 SLOPE
SINGLE & DOUBLE CELL CULVERTS

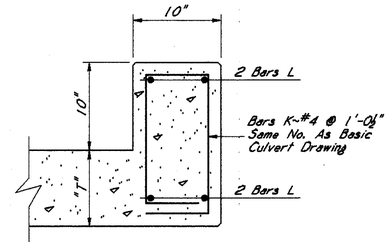
WORKING NUMBER ISK-15-3W

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED ALT | DATE 07-11-97 | DATE 08-01-97

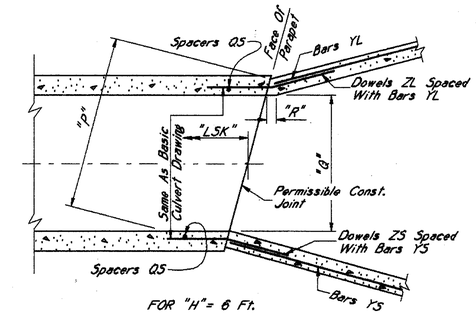
SHEET NUMBER 7051

CULVERT HEIGHT "H"	TABLE OF DIMENSIONS									
	"J"	"LW1"	"LW2"	"N1"	"N2"	"P"	"R"	"U"	"W"	"Z"
6'	5'-10"	23'-4"	26'-11 13/16"			1.035(Q)+1.17'	3 3/8"	7"	Per Supplementary Drawing	23'-4"
8'	7'-5"	29'-8"	34'-3 11/16"			1.035(Q)+1.42'	4 1/8"	8 1/2"		29'-8"
10'	8'-5"	33'-8"	38'-10 1/2"	2'-11"	6'-6"	1.035(Q)+1.67'	5 1/4"	10"		33'-8"
12'	9'-8"	38'-8"	44'-7 3/8"	3'-3"	7'-0"	1.035(Q)+1.83'	5 5/8"	11"		38'-8"

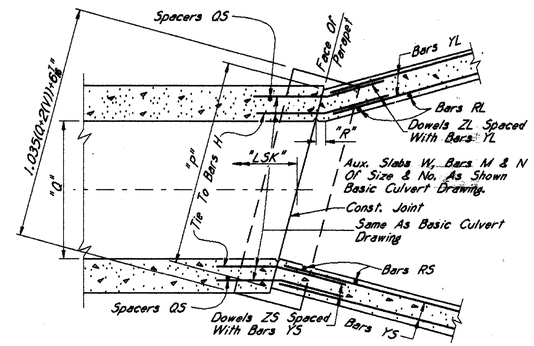
NOTE: Q For Single Cell Culvert = S (Clear Span)
Q For Double Cell Culvert = 2(S) + V



PARAPET DETAIL
Slab Steel Not Shown



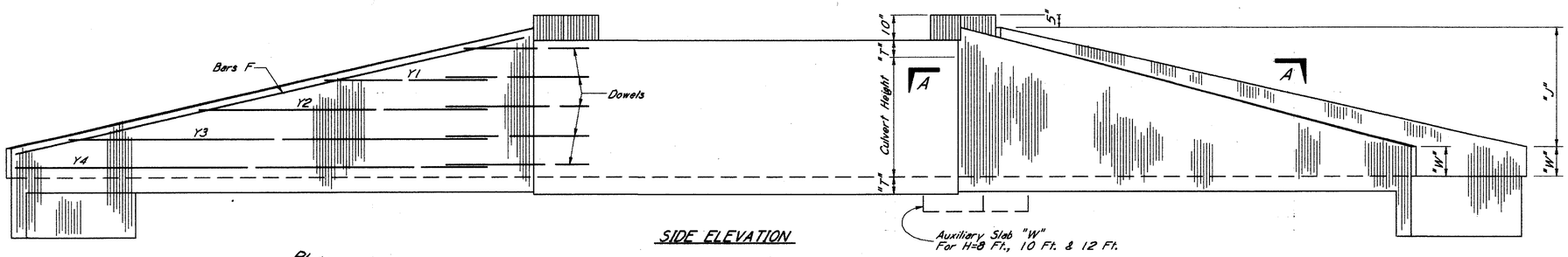
FOR "H" = 6 Ft.



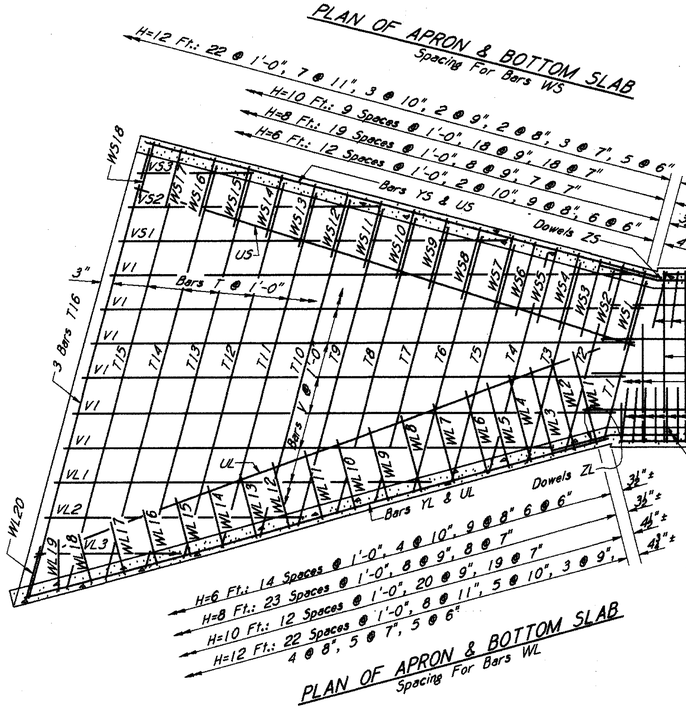
FOR "H"=8 Ft. THRU 12 Ft.

NOTE: Reinforcement In Stream Face Of Wing Wall Required For H=8, 10 & 12 Ft. Only.

SECTION A-A

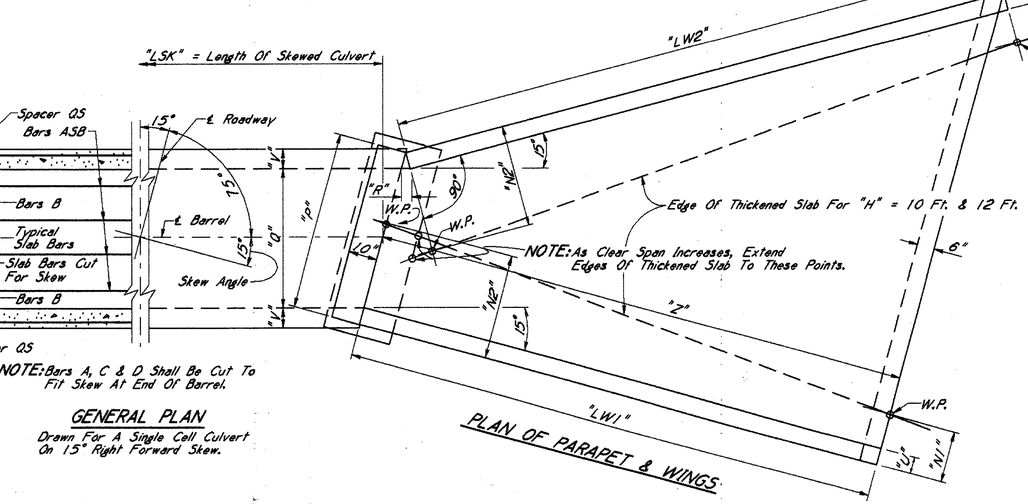


SIDE ELEVATION



PLAN OF APRON & BOTTOM SLAB
Spacing For Bars W5

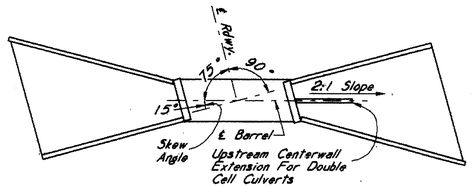
PLAN OF APRON & BOTTOM SLAB
Spacing For Bars WL



NOTE: Bars A, C & D Shall Be Cut To Fit Skew At End Of Barrel.

GENERAL PLAN
Drawn For A Single Cell Culvert On 15° Right Forward Skew.

PLAN OF PARAPET & WINGS



PLAN OF 15° LEFT FORWARD SKEW

DATE	BY	REVISIONS	MISSISSIPPI DEPARTMENT OF TRANSPORTATION BOX CULVERT DRAWING 15° SKEW DETAILS WINGS WITH 4:1 SLOPE SINGLE & DOUBLE CELL CULVERTS		
			DESIGNED NA DETAILED ALT	CHECKED BJJ DATE 07-11-97	ISSUED TMT DATE 08-01-97
			WORKING NUMBER ISK-15-4W	SHEET NUMBER 7052	

CULVERT HEIGHT "H"	TABLE OF BARS V ~#4					
	BARS VI		BARS VL1 - VLn		BARS VS1 - VSn	
	NO.	DIM. X	NO.	DIM. X	NO.	DIM. X
	Same As Basic Culvert Drawing					
6'		23'-9"	6	20'-0" To 2'-7"	5	19'-4" To 3'-4"
8'		30'-4"	8	26'-11" To 2'-9"	7	26'-6" To 2'-5"
10'		34'-6"	9	31'-6" To 3'-10"	8	31'-1" To 3'-2"
12'		39'-8"	10	36'-11" To 5'-11"	9	36'-8 "To 4'-7"

CULVERT HEIGHT "H"	TABLE OF BARS FL, FS, QS, ZL & ZS									
	BARS FL ~#4		BARS FS ~#4		SPACERS QS ~#4		DOWELS ZL ~#5		DOWELS ZS ~#5	
	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.
6'	2	27'-2"	2	23'-8"	2	5'-7"	7	4'-0"	7	3'-6"
8'	2	34'-8"	2	30'-3"	2	7'-7"	18	4'-0"	18	3'-6"
10'	2	39'-5"	2	34'-4"	2	9'-7"	18	4'-0"	18	3'-6"
12'	2	45'-4"	2	39'-6"	2	11'-7"	22	4'-0"	22	3'-6"

NOTE: The Number Of Bars Shown In The Tables Is The Number Required For One Complete Headwall Assembly At One End Of Culvert.

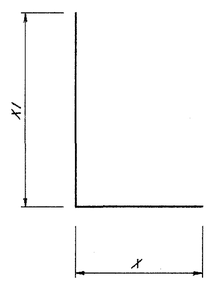
CULVERT HEIGHT "H"	TABLE OF BARS T ~#4		
	BAR	NO.	LENGTH
6'	T1 To T23	1 Ea.	P-5" To P+12'-4"
	T24	3	P+12'-10"
8'	T1 To T29	1 Ea.	P-2" To P+15'-11"
	T30	3	P+16'-6"
10'	T1 To T33	1 Ea.	P-2" To P+18'-3"
	T34	3	P+18'-10"
12'	T1 To T38	1 Ea.	P-2" To P+21'-2"
	T39	3	P+21'-9"

CULVERT HEIGHT "H"	TABLE OF BARS R ~ #4		
	BAR	NO.	LENGTH
8'	RS1 To RS18	1 Ea.	W+6'-8" To W+4"
	RL1 To RL21	1 Ea.	W+6'-9" To W+3"
10'	RS1 To RS21	1 Ea.	W+7'-8" To W+2"
	RS1 To RL24	1 Ea.	W+7'-9" To W+3"
12'	RS1 To RS24	1 Ea.	W+8'-11" To W+4"
	RL1 To RL28	1 Ea.	W+9'-0" To W+2"

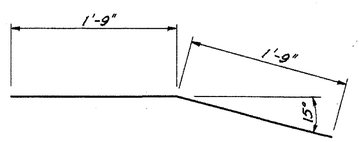
CULVERT HEIGHT "H"	TABLE OF BARS U ~#4	
	UL, NO. & LENGTH	US, NO. & LENGTH
	LONG WING	SHORT WING
6'	3 @ 26'-7"	3 @ 23'-0"
8'	3 @ 33'-11"	3 @ 29'-4"
10'	3 @ 38'-6"	3 @ 33'-4"
12'	3 @ 44'-3"	3 @ 38'-4"

CULVERT HEIGHT "H"	TABLE OF BARS L & M					
	BARS L			BARS M		
	NO.	SIZE	LENGTH	NO.	SIZE	LENGTH
6'	4	#6	P-4"			NONE
8' - 12'	4	#7	P-4"	2	#4	1.035(O+2Y)+2"

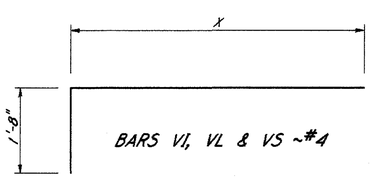
Bars K & N Per Basic Culvert Drawing Except Spacing Shall Be 1'-0½".



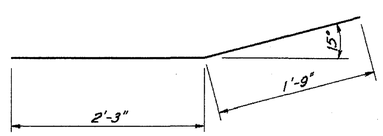
BARS WL & WS



DOWELS ZS ~#5



BARS VI, VL & VS ~#4



DOWELS ZL ~#5

BAR BENDING DETAILS
Dimensions Are Out To Out

NOTE: Vertical Spacers QS And Dowels ZL And ZS Located Per Section A - A.

CULVERT HEIGHT "H"	TABLE OF BARS WL				
	BAR	NO.	SIZE	LONG WING	
				DIM. X	DIM. X1
6'	WL1 To WL34	1 Ea.	#4	4'-0" To 2'-0"	K+5'-8" To K
8'	WL1 To WL19	1 Ea.	#5	4'-6" To 3'-7"	K+7'-3"To K+4'-6"
	WL20 To WL40	1 Ea.	#4	3'-6" To 2'-0"	K+4'-4" To K
10'	WL1 To WL14	1 Ea.	#6	6'-0" To 5'-4"	K+8'-3" To K+6'-7"
	WL15 To WL30	1 Ea.	#5	5'-3" To 4'-4"	K+6'-5" To K+4'-2"
	WL31 To WL52	1 Ea.	#4	4'-3" To 2'-7"	K+4'-0" To K
12'	WL1 To WL23	1 Ea.	#7	6'-6" To 5'-2"	K+9'-5" To K+6'-4"
	WL24 To WL32	1 Ea.	#6	5'-1" To 4'-6"	K+6'-2" To K+4'-6"
	WL33 To WL41	1 Ea.	#5	4'-5" To 3'-8"	K+4'-4" To K+2'-7"
	WL42 To WL53	1 Ea.	#4	3'-7" To 2'-8"	K+2'-4" To K

CULVERT HEIGHT "H"	TABLE OF BARS Y ~ #4			
	BAR	NO.	YL - LENGTH	YS - LENGTH
			LONG WING	SHORT WING
6'	Y1 To Y5	1 Ea.	7'-5" To 25'-11"	6'-5" To 22'-5"
	Y6	1	26'-7"	23'-0"
8'	Y1 To Y6	2 Ea.	7'-6" To 30'-7"	6'-5" To 26'-5"
	Y7	4	33'-11"	29'-4"
10'	Y1 To Y6	2 Ea.	8'-3" To 37'-1"	7'-1" To 32'-1"
	Y7	4	38'-6"	33'-4"
12'	Y1 To Y7	2 Ea.	8'-8" To 43'-3"	7'-5" To 37'-5"
	Y8	6	44'-3"	38'-4"

CULVERT HEIGHT "H"	TABLE OF BARS WS				
	BAR	NO.	SIZE	SHORT WING	
				DIM. X	DIM. X1
6'	WS1 To WS30	1 Ea.	#4	4'-0" To 2'-0"	K+5'-8" To K
8'	WS1 To WS17	1 Ea.	#5	4'-6" To 3'-9"	K+7'-3" To K+4'-6"
	WS18 To WS35	1 Ea.	#4	3'-8" To 2'-0"	K+4'-3" To K
10'	WS1 To WS12	1 Ea.	#6	6'-0" To 5'-4"	K+8'-3" To K+6'-7"
	WS13 To WS26	1 Ea.	#5	5'-3" To 4'-4"	K+6'-6" To K+4'-3"
	WS27 To WS46	1 Ea.	#4	4'-3" To 2'-7"	K+4'-1" To K
12'	WS1 To WS19	1 Ea.	#7	6'-6" To 5'-3"	K+9'-6" To K+6'-5"
	WS20 To WS27	1 Ea.	#6	5'-2" To 4'-6"	K+6'-2" To K+4'-6"
	WS28 To WS35	1 Ea.	#5	4'-5" To 3'-8"	K+4'-3" To K+2'-6"
	WS36 To WS45	1 Ea.	#4	3'-7" To 2'-8"	K+2'-3" To K

K = W+5" For "H" = 6'
K = W+6" For "H" = 8'
K = W+8" For "H" = 10'
K = W+9" For "H" = 12'

GENERAL NOTES:

This Drawing Shows The General Details Necessary To Modify A Single Or Double Cell Culvert With Wings With 4:1 Slope For A 15° Skew.
All Governing Dimensions, Reinforcement Details And General Requirements Of Basic Culvert Drawings, Drawings 1WS-4 And 1WD-4 And Or Drawings 1BSM-4W And 1BDM-4W Shall Apply Except As Specifically Modified Hereon.
A Complete Placing Plan Showing All Governing Dimensions, Bar List And Bending Details Shall Be Submitted To The Project Engineer For Approval Prior To Fabrication Of The Reinforcing Steel.

REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

BOX CULVERT DRAWING

15° SKEW DETAILS

WINGS WITH 4:1 SLOPE

SINGLE & DOUBLE CELL CULVERTS

WORKING NUMBER ISK-15-4W

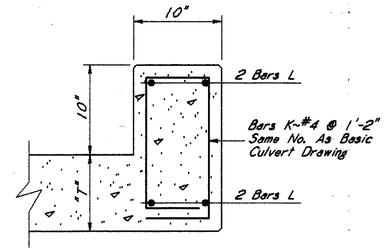
SHEET NUMBER 7053

DESIGNED NA CHECKED BJJ ISSUED TMT

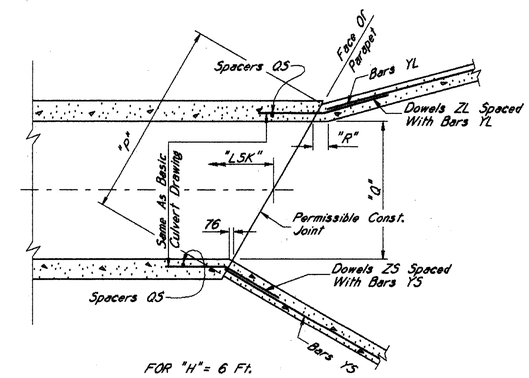
DETAILED ALT DATE 07-11-97 DATE 08-01-97

CULVERT HEIGHT "H"	TABLE OF DIMENSIONS								
	"LW1"	"LW2"	"N1"	"N2"	"P"	"R"	"U"	"W"	"Z"
6'	11'-0"	15'-6¾"			1.155(Q)+1.36'	5¾"	7"	Per Supplementary Drawing	11'-0"
8'	14'-2"	20'-0¼"			1.155(Q)+1.62'	7"	8¼"		14'-2"
10'	16'-2"	22'-10¼"	2'-11"	6'-1"	1.155(Q)+1.89'	8"	10"		16'-2"
12'	18'-8"	26'-4¾"	3'-3"	7'-0"	1.155(Q)+2.06'	9"	11"		18'-8"

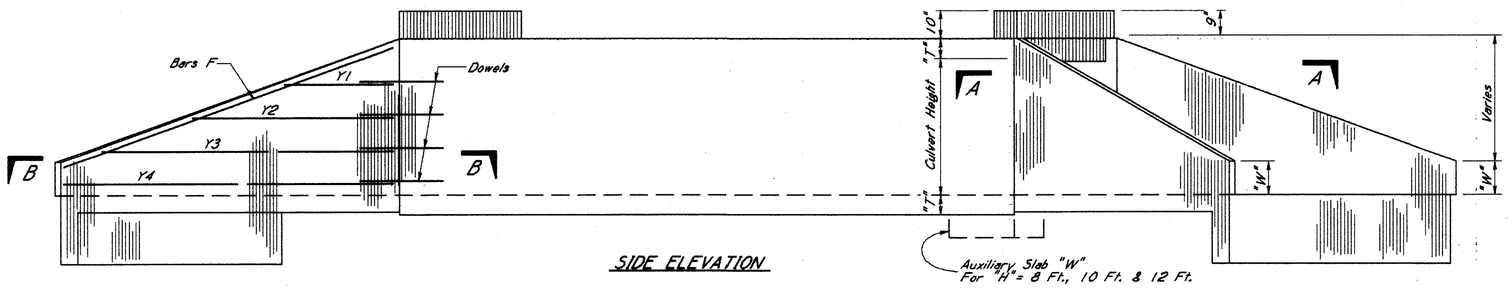
NOTE: Q For Single Cell Culvert = S (Clear Span)
Q For Double Cell Culvert = 2(S) + V



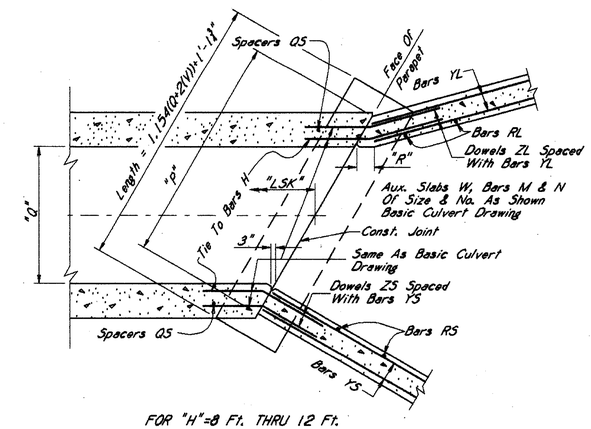
PARAPET DETAIL
Slab Steel Not Shown



FOR "H" = 6 Ft.



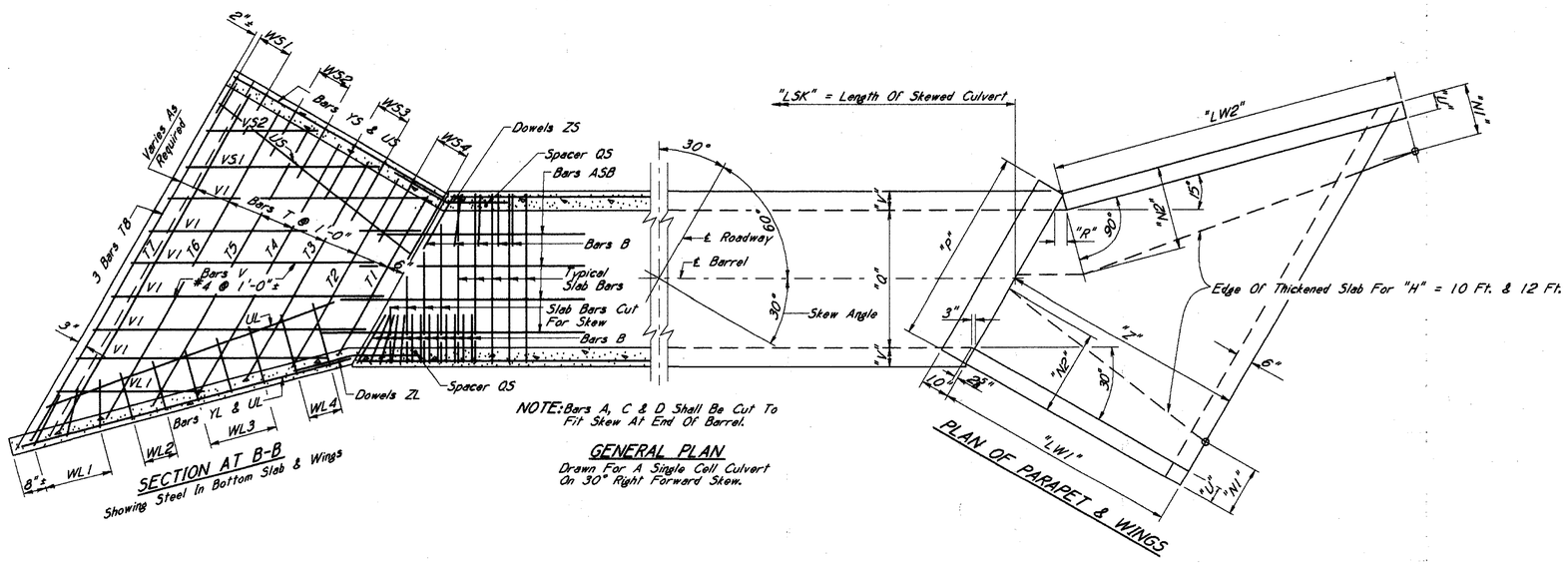
SIDE ELEVATION



FOR "H"=8 Ft. THRU 12 Ft.

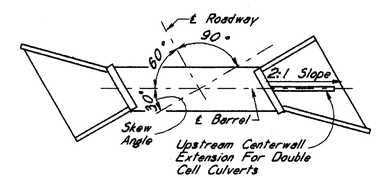
NOTE: Reinforcement In Stream Face Of Wing Wall Required For H = 8 Ft., 10 Ft. & 12 Ft. Only.

SECTION A-A
Barrel Steel Not Shown



NOTE: Bars A, C & D Shall Be Cut To Fit Skew At End Of Barrel.

GENERAL PLAN
Drawn For A Single Cell Culvert On 30° Right Forward Skew.



PLAN OF 30° LEFT FORWARD SKEW

REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
30° SKEW DETAILS
WINGS WITH 2:1 SLOPE
SINGLE & DOUBLE CELL CULVERTS

WORKING NUMBER ISK-30-2W

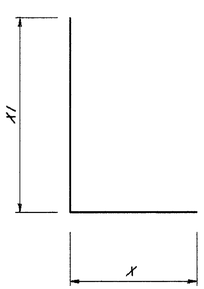
DESIGNED NA CHECKED BJJ ISSUED TMT
DETAILED MJC DATE 07-11-97 DATE 08-01-97

SHEET NUMBER 7054

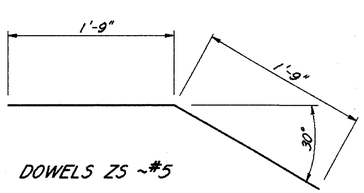
CULVERT HEIGHT "H"	TABLE OF BARS V					
	BARS V1		BARS VL1 - VLn		BARS VS1 - VSn	
	NO.	DIM. X	NO.	DIM. X	NO.	DIM. X
	Same As Basic Culvert Drawing					
6'		12'-4"	2	8'-6" To 5'-4"	4	10'-0" To 3'-1"
8'		16'-0"	3	12'-4" To 6'-0"	5	13'-8" To 4'-5"
10'		18'-4"	4	15'-0" To 5'-6"	6	16'-3" To 4'-8"
12'		21'-3"	5	18'-0" To 5'-5"	8	19'-4" To 3'-4"

CULVERT HEIGHT "H"	TABLE OF BARS R ~ #4		
	BAR	NO.	LENGTH
8'	RS1 To RS9	1 Ea.	W+6'-2" To W+2"
	RL1 To RL12	1 Ea.	W+6'-3" To W+5"
10'	RS1 To RS10	1 Ea.	W+7'-2" To W+5"
	RS1 To RL14	1 Ea.	W+7'-3" To W+5"
12'	RS1 To RS12	1 Ea.	W+8'-5" To W+2"
	RL1 To RL12	1 Ea.	W+8'-6" To W+1"

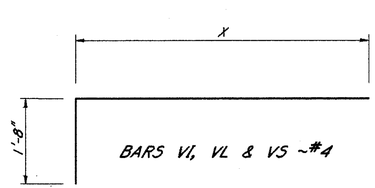
CULVERT HEIGHT "H"	TABLE OF BARS U	
	UL, NO. & LENGTH	US, NO. & LENGTH
	LONG WING	SHORT WING
6'	3 @ 15'-0"	3 @ 10'-10"
8'	3 @ 19'-6"	3 @ 14'-0"
10'	2 @ 22'-4"	3 @ 16'-0"
	1 @ 21'-6"	
12'	2 @ 26'-0"	2 @ 18'-5"
	1 @ 25'-0"	1 @ 18'-9"



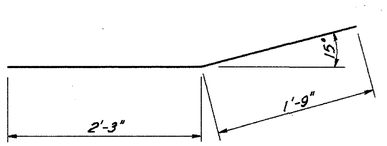
BARS WL & WS



DOWELS ZS ~#5



BARS V1, VL & VS ~#4



DOWELS ZL ~#5

BAR BENDING DETAILS
Dimensions Are Out To Out

NOTE: Vertical Spacers QS And Dowels ZL And ZS Located Per Section A - A.

CULVERT HEIGHT "H"	TABLE OF BARS FL, FS, QS, ZL & ZS									
	BARS FL ~#4		BARS FS ~#4		SPACERS QS ~#4		DOWELS ZL ~#5		DOWELS ZS ~#5	
	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.
6'	2	16'-0"	2	11'-10"	2	5'-7"	6	4'-0"	6	3'-6"
8'	2	20'-9"	2	15'-4"	2	7'-7"	16	4'-0"	16	3'-6"
10'	2	23'-9"	2	17'-7"	2	9'-7"	16	4'-0"	16	3'-6"
12'	2	27'-6"	2	20'-4"	2	11'-7"	20	4'-0"	20	3'-6"

NOTE: The Number Of Bars Shown In The Tables Is The Number Required For One Complete Headwall Assembly At One End Of Culvert.

CULVERT HEIGHT "H"	TABLE OF BARS WL					
	LONG WING					
	BAR	NO.	SIZE	SPACING	DIM. X	DIM. X1
6'	WL1	3	#4	1'-0"	M-3"	K
	WL2	2	#4	1'-0"	M+3"	K+1'-0"
	WL3	3	#5	1'-0"	M+6"	K+1'-9"
	WL4	2	#5	1'-0"	M+11"	K+2'-10"
	WL5	2	#5	1'-0"	M+1'-2"	K+3'-6"
	WL6	2	#6	9"	M+1'-5"	K+4'-3"
	WL7	2	#6	9"	M+1'-8"	K+4'-9"
8'	WL8	3	#6	9"	M+1'-11"	K+5'-4"
	WL9	3	#6	9"	M+2'-2"	K+6'-1"
10'	WL10	2	#7	9"	M+2'-6"	K+6'-10"
	WL11	2	#7	9"	M+2'-9"	K+7'-5"
12'	WL12	2	#7	6"	M+2'-10"	K+7'-10"
	WL13	2	#7	6"	M+3'-0"	K+8'-3"
	WL14	3	#7	6"	M+3'-1"	K+8'-7"

CULVERT HEIGHT "H"	TABLE OF BARS WS					
	SHORT WING					
	BAR	NO.	SIZE	SPACING	DIM. X	DIM. X1
6'	WS1	2	#4	1'-0"	M-4"	K
	WS2	2	#4	1'-0"	M+1"	K+1'-0"
	WS3	2	#5	1'-0"	M+6"	K+2'-0"
	WS4	2	#5	1'-0"	M+10"	K+3'-0"
8'	WS5	1	#6	1'-0"	M+1'-3"	K+4'-0"
	WS6	1	#6	1'-0"	M+1'-6"	K+4'-6"
	WS7	2	#6	9"	M+1'-8"	K+5'-0"
10'	WS8	2	#6	9"	M+2'-0"	K+5'-9"
	WS9	2	#6	9"	M+2'-3"	K+6'-6"
12'	WS10	2	#7	9"	M+2'-7"	K+7'-3"
	WS11	1	#7	9"	M+2'-10"	K+7'-10"
	WS12	1	#7	6"	M+2'-11"	K+8'-1"
	WS13	2	#7	6"	M+3'-1"	K+8'-4"
	WS14	2	#7	6"	M+3'-3"	K+8'-10"

CULVERT HEIGHT -"H"	6'	8'	10'	12'
M	2'-2"	2'-7"	2'-11"	3'-3"

K = W+5" For "H" = 6'
K = W+6" For "H" = 8'
K = W+8" For "H" = 10'
K = W+9" For "H" = 12'

CULVERT HEIGHT "H"	TABLE OF BARS T		
	BAR	NO.	LENGTH
6'	T1 To T10	1 Ea.	P-4" To P+8'-8"
	T11	3	P+10'-0"
8'	T1 To T14	1 Ea.	P-4" To P+12'-8"
	T15	3	P+13'-1"
10'	T1 To T16	1 Ea.	P-4" To P+14'-8"
	T17	3	P+15'-2"
12'	T1 To T18	1 Ea.	P-4" To P+16'-8"
	T19	3	P+17'-8"

CULVERT HEIGHT "H"	TABLE OF BARS L & M					
	BARS L			BARS M		
	NO.	SIZE	LENGTH	NO.	SIZE	LENGTH
6'	4	#7	P-4"			NONE
8-12'	4	#8	P-4"	2	#4	1.154(Q+2(V1))+10"

Bars K & N Per Basic Culvert Drawing Except Spacing Shall Be 1'-2".

CULVERT HEIGHT "H"	TABLE OF BARS Y ~ #4			
	BAR	NO.	YL- LENGTH	YS- LENGTH
			LONG WING	SHORT WING
6'	Y1 To Y5	1 Ea.	3'-9" To 15'-1"	2'-7" To 10'-7"
	Y6	1	15'-5"	10'-9"
8'	Y1 To Y6	2 Ea.	3'-9" To 17'-11"	2'-7" To 12'-7"
	Y7	4	19'-11"	13'-11"
10'	Y1 To Y6	2 Ea.	4'-3" To 21'-10"	2'-11" To 15'-5"
	Y7	4	22'-8"	15'-11"
12'	Y1 To Y7	2 Ea.	4'-5" To 25'-8"	3'-0" To 18'-0"
	Y8	6	26'-3"	18'-5"

GENERAL NOTES:
This Drawing Shows The General Details Necessary To Modify A Single Or Double Cell Culvert With Wings With 2:1 Slope For A 30° Skew.
All Governing Dimensions, Reinforcement Details And General Requirements Of Basic Culvert Drawings, And Or Drawings 1B5M-2W And 1B0M-2W Shall Apply Except As Specifically Modified Hereon.
A Complete Placing Plan Showing All Governing Dimensions, Bar List And Bending Details Shall Be Submitted To The Project Engineer For Approval Prior To Fabrication Of The Reinforcing Steel.

DATE	REVISIONS	BY

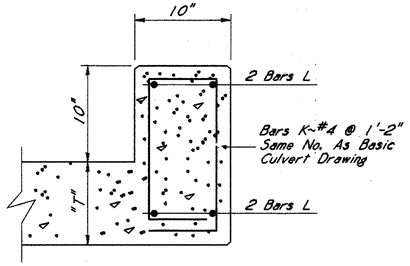
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
30° SKEW DETAILS
WINGS WITH 2:1 SLOPE
SINGLE & DOUBLE CELL CULVERTS

DESIGNED NA CHECKED BJJ ISSUED TMT
DETAILED MJC DATE 07-11-97 DATE 08-01-97

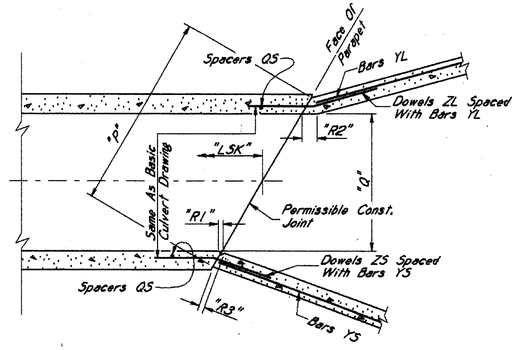
WORKING NUMBER ISK-30-2W
SHEET NUMBER 7055

CULVERT HEIGHT "H"	TABLE OF DIMENSIONS											
	"J"	"LW1"	"LW2"	"N1"	"N2"	"P"	"R1"	"R2"	"R3"	"U"	"W"	"Z"
6'	5'-9"	17'-4 13/16"	24'-4 3/4"			1.155(Q)+1.32'	2 13/16"	5 11/16"	1 1/4"	7"	Per Supplementary Drawing	17'-3"
8'	7'-4"	22'-2 9/16"	31'-1 3/8"			1.155(Q)+1.61'	3 7/16"	6 15/16"	1 1/2"	8 1/2"		22'-0"
10'	8'-4"	25'-2 3/4"	35'-4 1/4"	2'-11"	6'-6"	1.155(Q)+1.89'	4"	8 3/8"	1 3/4"	10"		25'-0"
12'	9'-7"	29'-0 3/8"	40'-7 7/8"	3'-3"	7'-0"	1.155(Q)+2.08'	4 7/16"	9"	1 15/16"	11"		28'-9"

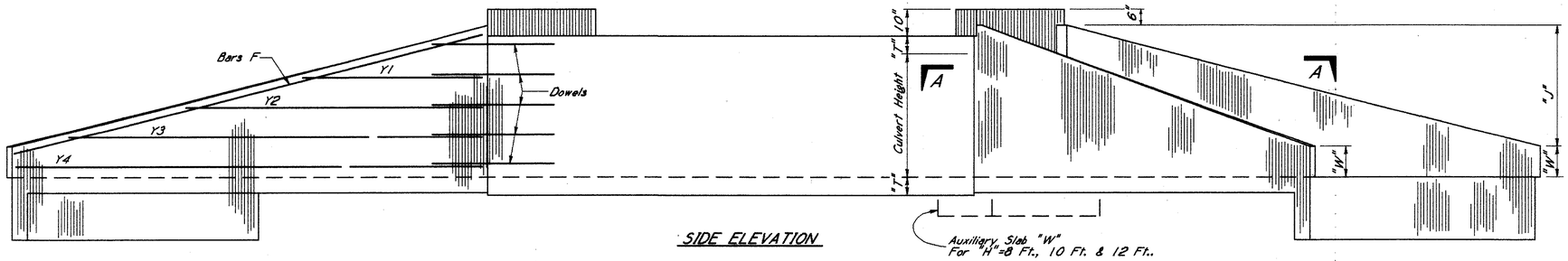
NOTE: Q For Single Cell Culvert = S (Clear Span)
Q For Double Cell Culvert = 2(S) + V



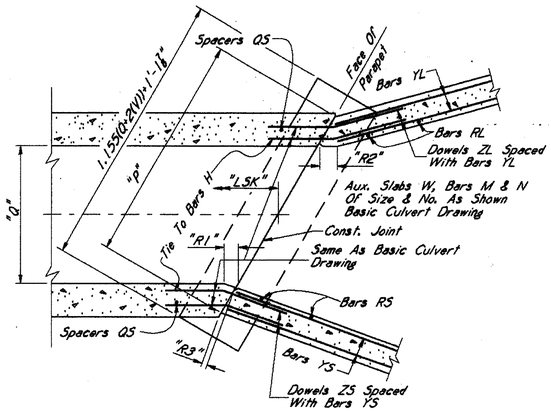
PARAPET DETAIL
Slab Steel Not Shown



FOR "H"= 6 Ft.



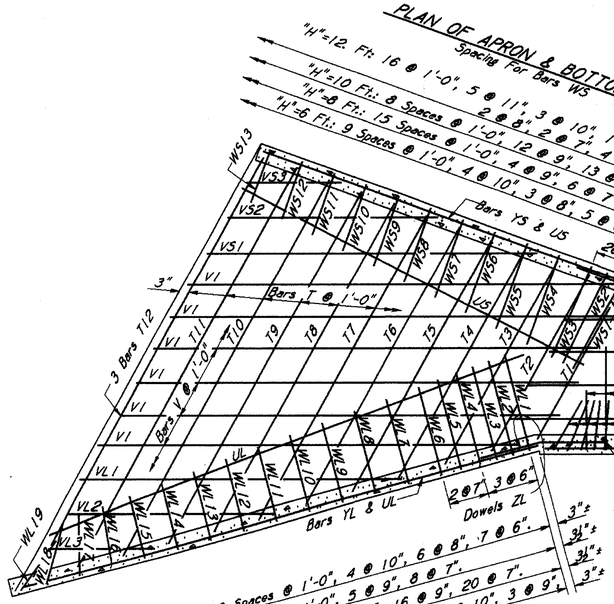
SIDE ELEVATION



FOR "H"=8 Ft. THRU 12 Ft.

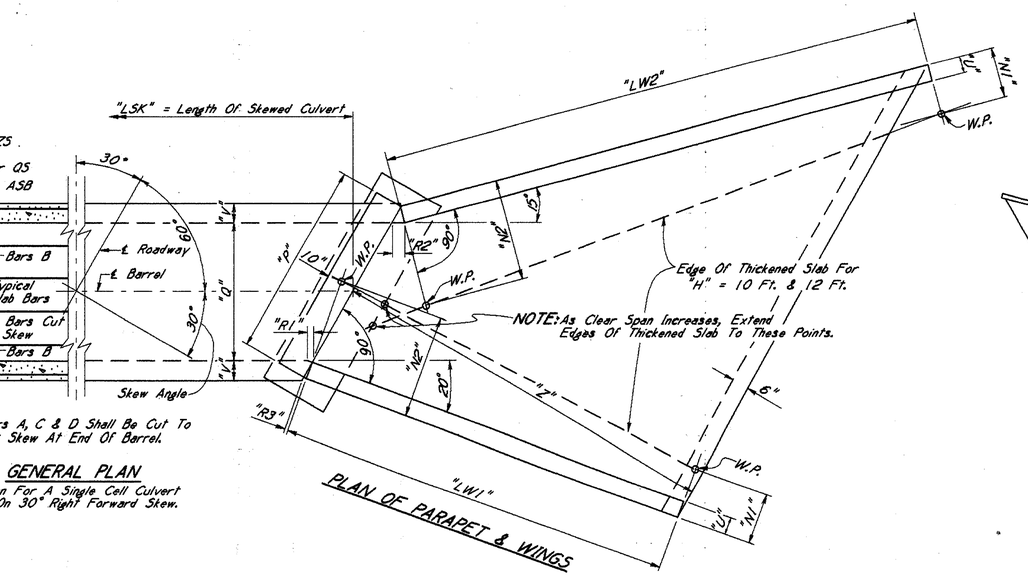
NOTE: Reinforcement In Stream Face Of Wing Wall Required For H=8 Ft., 10 Ft. & 12 Ft. Only.

SECTION A-A



PLAN OF APRON & BOTTOM SLAB
Spacing For Bars WS

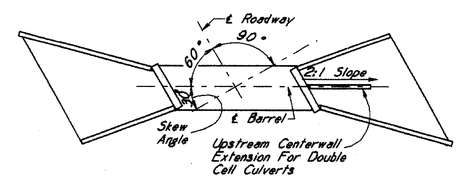
PLAN OF APRON & BOTTOM SLAB
Spacing For Bars WL



NOTE: Bars A, C & D Shall Be Cut To Fit Skew At End Of Barrel.

GENERAL PLAN
Drawn For A Single Cell Culvert On 30° Right Forward Skew.

PLAN OF PARAPET & WINGS



PLAN OF 30° LEFT FORWARD SKEW

DATE	REVISIONS	BY

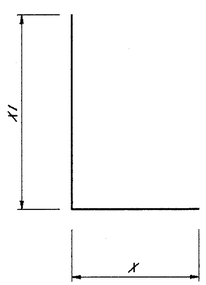
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
30° SKEW DETAILS
WINGS WITH 3:1 SLOPE
SINGLE & DOUBLE CELL CULVERTS

DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED ALT | DATE 07-11-97 | DATE 08-01-97

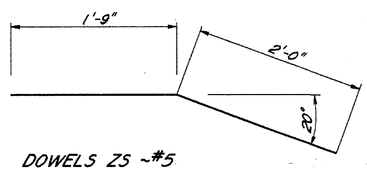
WORKING NUMBER ISK-30-3W
SHEET NUMBER 7056

CULVERT HEIGHT "H"	TABLE OF BARS V ~ #4					
	BARS VI		BARS VLI - VLn		BARS VSI - VSn	
	NO.	DIM. X	NO.	DIM. X	NO.	DIM. X
	Same As Basic Culvert Drawing					
6'		19'-6"	5	15'-10" To 3'-3"	5	15'-11" To 2'-7"
8'		25'-0"	7	21'-9" To 2'-10"	7	21'-10" To 1'-11"
10'		28'-5"	8	25'-7" To 3'-6"	8	25'-8" To 2'-5"
12'		32'-9"	9	30'-2" To 4'-11"	9	30'-4" To 3'-8"

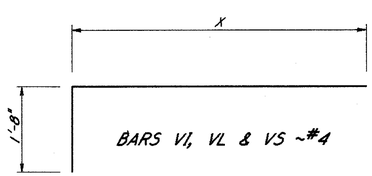
CULVERT HEIGHT "H"	TABLE OF BARS R ~ #4		
	BAR	NO.	LENGTH
8'	RS1 To RS13	1 Ea.	W+6'-7" To W+7"
	RL1 To RL19	1 Ea.	W+6'-7" To W+3"
10'	RS1 To RS15	1 Ea.	W+7'-6" To W+7"
	RL1 To RL22	1 Ea.	W+7'-6" To W+1"
12'	RS1 To RS18	1 Ea.	W+8'-10" To W+5"
	RL1 To RL25	1 Ea.	W+8'-10" To W+4"



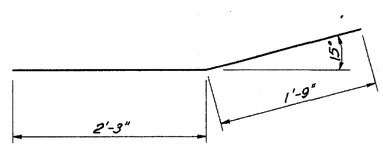
BARS WL & WS



DOWELS ZS ~#5



BARS VI, VL & VS ~#4



DOWELS ZL ~#5

NOTE: Vertical Spacers QS And Dowels ZL And ZS Located Per Section A - A.

BAR BENDING DETAILS

Dimensions Are Out To Out

CULVERT HEIGHT "H"	TABLE OF BARS FL, FS, QS, ZL & ZS									
	BARS FL ~#4		BARS FS ~#4		SPACERS QS ~#4		DOWELS ZL ~#5		DOWELS ZS ~#5	
	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.
6'	2	24'-8"	2	17'-11"	2	5'-7"	7	4'-0"	7	3'-9"
8'	2	31'-7"	2	23'-0"	2	7'-7"	18	4'-0"	18	3'-9"
10'	2	35'-11"	2	26'-2"	2	9'-7"	18	4'-0"	18	3'-9"
12'	2	41'-4"	2	30'-2"	2	11'-7"	22	4'-0"	22	3'-9"

NOTE: The Number Of Bars Shown In The Tables Is The Number Required For One Complete Headwall Assembly At One End Of Culvert.

CULVERT HEIGHT "H"	TABLE OF BARS U ~#4	
	UL, NO. & LENGTH	US, NO. & LENGTH
	LONG WING	SHORT WING
6'	3 @ 24'-0"	3 @ 17'-0"
8'	3 @ 30'-9"	3 @ 21'-10"
10'	3 @ 35'-0"	3 @ 24'-10"
12'	3 @ 40'-3"	3 @ 28'-8"

CULVERT HEIGHT "H"	TABLE OF BARS WL				
				LONG WING	
	BAR	NO.	SIZE	DIM. X	DIM. X1
6'	WL1 To WL31	1 Ea.	#4	4'-0" To 2'-0"	K+5'-7" To K
8'	WL1 To WL19	1 Ea.	#5	4'-6" To 3'-4"	K+7'-1" To K+4'-0"
	WL20 To WL36	1 Ea.	#4	3'-3" To 2'-0"	K+3'-9" To K
10'	WL1 To WL13	1 Ea.	#6	5'-10" To 5'-3"	K+8'-2" To K+6'-6"
	WL14 To WL28	1 Ea.	#5	5'-2" To 4'-4"	K+6'-4" To K+4'-2"
	WL29 To WL48	1 Ea.	#4	4'-3" To 2'-8"	K+4'-0" To K
12'	WL1 To WL21	1 Ea.	#7	6'-5" To 5'-3"	K+9'-4" To K+6'-2"
	WL22 To WL29	1 Ea.	#6	5'-2" To 4'-7"	K+6'-0" To K+4'-5"
	WL30 To WL37	1 Ea.	#5	4'-6" To 3'-11"	K+4'-2" To K+2'-7"
	WL38 To WL48	1 Ea.	#4	3'-10" To 3'-0"	K+2'-4" To K

CULVERT HEIGHT "H"	TABLE OF BARS WS				
				SHORT WING	
	BAR	NO.	SIZE	DIM. X	DIM. X1
6'	WS1 To WS22	1 Ea.	#4	4'-0" To 2'-0"	K+5'-6" To K
8'	WS1 To WS14	1 Ea.	#5	4'-6" To 3'-4"	K+7'-1" To K+3'-11"
	WS15 To WS26	1 Ea.	#4	3'-3" To 2'-0"	K+3'-7" To K
10'	WS1 To WS10	1 Ea.	#6	5'-10" To 5'-1"	K+8'-2" To K+6'-4"
	WS11 To WS20	1 Ea.	#5	5'-0" To 4'-3"	K+6'-2" To K+4'-2"
	WS21 To WS34	1 Ea.	#4	4'-2" To 2'-8"	K+3'-11" To K
12'	WS1 To WS15	1 Ea.	#7	6'-5" To 5'-2"	K+9'-4" To K+6'-2"
	WS16 To WS21	1 Ea.	#6	5'-1" To 4'-6"	K+5'-11" To K+4'-4"
	WS22 To WS27	1 Ea.	#5	4'-5" To 3'-10"	K+4'-0" To K+2'-4"
	WS28 To WS34	1 Ea.	#4	3'-8" To 3'-0"	K+2'-0" To K

K = W+5" For "H" = 6'
K = W+6" For "H" = 8'
K = W+8" For "H" = 10'
K = W+9" For "H" = 12'

CULVERT HEIGHT "H"	TABLE OF BARS T ~ #4		
	BAR	NO.	LENGTH
6'	T1 To T17	1 Ea.	P-4" To P+12'-10"
	T18	3	P+13'-7"
8'	T1 To T21	1 Ea.	P+1" To P+16'-6"
	T22	3	P+17'-3"
10'	T1 To T24	1 Ea.	P+1" To 19'-0"
	T25	3	P+19'-9"
12'	T1 To T28	1 Ea.	P To P+22'-2"
	T29	3	P+22'-11"

CULVERT HEIGHT "H"	TABLE OF BARS L & M					
	BARS L			BARS M		
	NO.	SIZE	LENGTH	NO.	SIZE	LENGTH
6'	4	#7	P-4"			NONE
8' - 12'	4	#8	P-4"	2	#4	1.155(Q+2(V1))+10"

Bars K & N Per Basic Culvert Drawing Except Spacing Shall Be 1'-2".

CULVERT HEIGHT "H"	TABLE OF BARS Y ~ #4			
			YL - LENGTH	YS - LENGTH
	BAR	NO.	LONG WING	SHORT WING
6'	Y1 To Y5	1 Ea.	6'-6" To 23'-6"	4'-7" To 16'-8"
	Y6	1	24'-0"	17'-0"
8'	Y1 To Y6	2 Ea.	6'-6" To 27'-9"	4'-7" To 19'-9"
	Y7	4	30'-9"	21'-10"
10'	Y1 To Y6	2 Ea.	7'-2" To 33'-9"	5'-1" To 24'-0"
	Y7	4	35'-0"	24'-10"
12'	Y1 To Y7	2 Ea.	7'-7" To 39'-4"	5'-4" To 28'-1"
	Y8	6	40'-3"	28'-8"

GENERAL NOTES:

This Drawing Shows The General Details Necessary To Modify A Single Or Double Cell Culvert With Wings With 3:1 Slope For A 30° Skew.
All Governing Dimensions Reinforcement Details And General Requirements Of Basic Culvert Drawings, Drawings IWS-3 And IWD-3 And Or Drawings IBSM-3W And IBDM-3W Shall Apply Except As Specifically Modified Hereon
A Complete Placing Plan Showing All Governing Dimensions, Bar List And Bending Details Shall Be Submitted To The Project Engineer For Approval Prior To Fabrication Of The Reinforcing Steel.

REVISIONS	BY	DATE

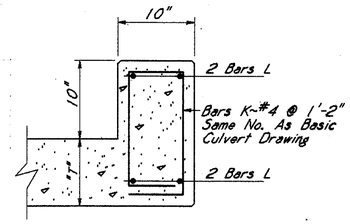
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
30° SKEW DETAILS
WINGS WITH 3:1 SLOPE
SINGLE & DOUBLE CELL CULVERTS

WORKING NUMBER ISK-30-3W

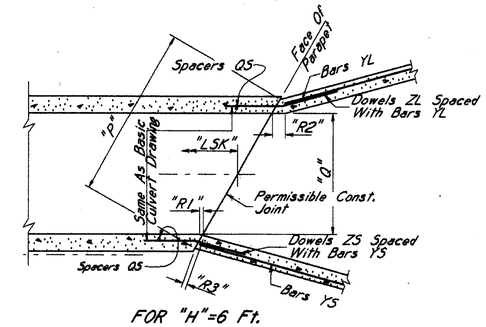
DESIGNED	CHECKED	ISSUED	SHEET NUMBER
NA	BJJ	TMT	7057
DETAILED ALT	DATE 07-11-97	DATE 08-01-97	

CULVERT HEIGHT "H"	TABLE OF DIMENSIONS											
	"J"	"LW1"	"LW2"	"N1"	"N2"	"P"	"R1"	"R2"	"R3"	"U"	"W"	"Z"
											Per Supplementary Drawing	
6'	5'-10"	24'-0"	33'-0"			1.1550+1.32'	3 1/4"	5 11/16"	1 1/8"	7"		23'-4"
8'	7'-5"	30'-6 1/4"	41'-11 7/16"			1.1550+1.61'	3 13/16"	6 15/16"	2 1/4"	8 1/2"		29'-8"
10'	8'-5"	34'-7 9/16"	47'-7 13/16"	2'-11"	6'-6"	1.1550+1.89'	4 7/16"	8 3/8"	2 11/16"	10"		33'-8"
12'	9'-8"	39'-9 7/16"	54'-8 3/8"	3'-3"	7'-0"	1.1550+2.08'	4 3/4"	9"	2 15/16"	11"		38'-8"

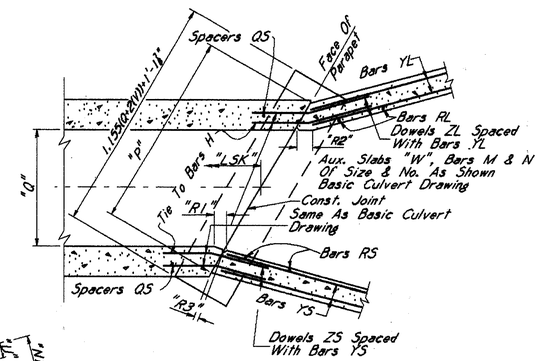
NOTE: Q For Single Cell Culvert = S (Clear Span)
Q For Double Cell Culvert = 2(S) + V



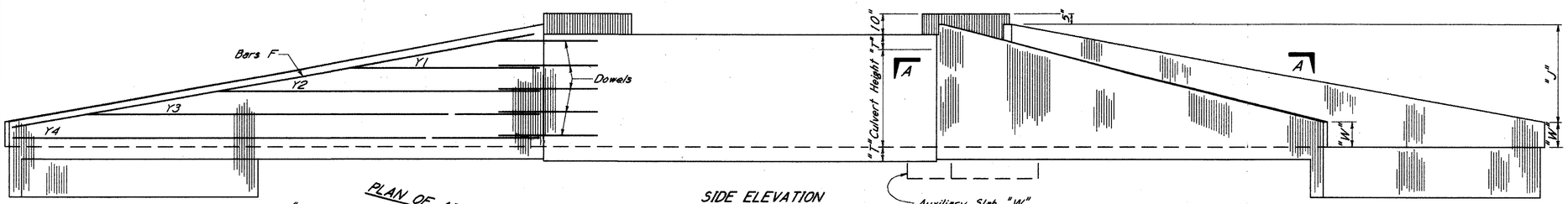
PARAPET DETAIL
Slab Steel Not Shown



FOR "H"=6 Ft.



FOR "H"=8 Ft. THRU 12 Ft.

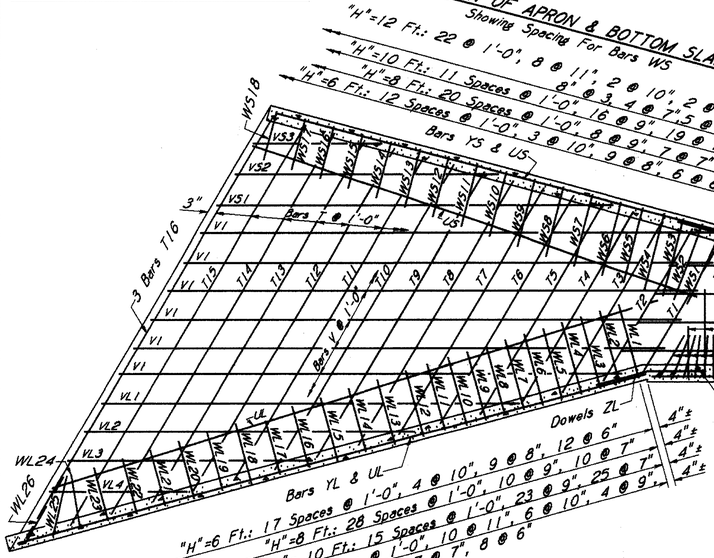


SIDE ELEVATION

Auxiliary Slab "W"
For "H"=8 Ft., 10 Ft. & 12 Ft.

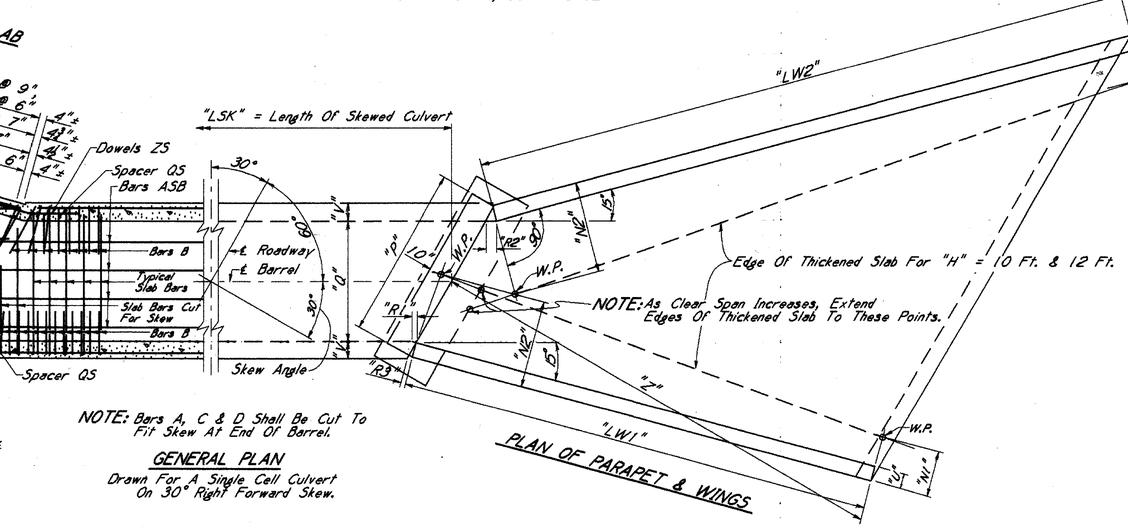
PLAN OF APRON & BOTTOM SLAB
Showing Spacing For Bars WS

"H"=12 Ft.: 22 @ 1'-0", 8 @ 11", 2 @ 10", 2 @ 9"
"H"=10 Ft.: 11 Spaces @ 1'-0", 16 @ 9", 19 @ 7", 5 @ 6"
"H"=8 Ft.: 20 Spaces @ 1'-0", 8 @ 9", 7 @ 7", 6 @ 6"
"H"=6 Ft.: 12 Spaces @ 1'-0", 3 @ 10", 9 @ 8", 6 @ 6"



"H"=6 Ft.: 17 Spaces @ 1'-0", 4 @ 10", 9 @ 8", 12 @ 6"
"H"=8 Ft.: 28 Spaces @ 1'-0", 10 @ 9", 10 @ 7"
"H"= 10 Ft.: 15 Spaces @ 1'-0", 10 @ 11", 6 @ 10", 4 @ 9"
"H"=12 Ft.: 26 Spaces @ 1'-0", 23 @ 9", 25 @ 7", 4 @ 8", 7 @ 7", 8 @ 6"

PLAN OF APRON & BOTTOM SLAB
Showing Spacing For Bars WL

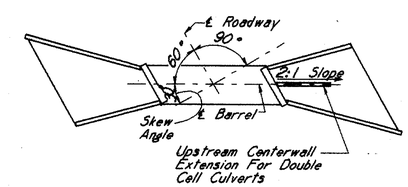


NOTE: Bars A, C & D Shall Be Cut To
Fit Skew At End Of Barrel.

GENERAL PLAN
Drawn For A Single Cell Culvert
On 30° Right Forward Skew.

PLAN OF PARAPET & WINGS

SECTION A-A
NOTE: Reinforcement In Stream Face Of Wing Wall Required
For "H"=8 Ft., 10 Ft. & 12 Ft. Only.



PLAN OF 30° LEFT FORWARD SKEW

REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
30° SKEW DETAILS
WINGS WITH 4:1 SLOPE
SINGLE & DOUBLE CELL CULVERTS

DESIGNED NA CHECKED BJJ ISSUED TMT
DETAILED ALT DATE 07-11-97 DATE 08-01-97

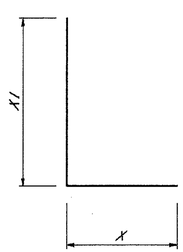
WORKING NUMBER
ISK-30-4W

SHEET NUMBER
7058

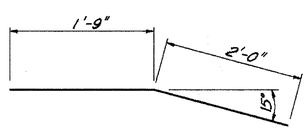
CULVERT HEIGHT "H"	TABLE OF BARS V ~ #4					
	BARS V1		BARS VL1 - VLn		BARS VS1 - VSn	
	NO.	DIM. X	NO.	DIM. X	NO.	DIM. X
	Same As Basic Culvert Drawing					
6'		26'-7"	7	22'-10" To 4'-0"	5	21'-9" To 4'-6"
8'		33'-11"	9	30'-7" To 5'-4"	7	30'-0" To 4'-3"
10'		38'-6"	11	35'-4" To 3'-11"	8	35'-1" To 4'-11"
12'		44'-3"	13	41'-8" To 3'-8"	9	42'-2" To 6'-9"

CULVERT HEIGHT "H"	TABLE OF BARS R ~ #4		
	BAR	NO.	LENGTH
8'	R51 To R519	1 Ea.	W+6'-8" To W+2"
	RL1 To RL26	1 Ea.	W+6'-9" To W+1"
10'	R51 To R522	1 Ea.	W+7'-8" To W
	RL1 To RL30	1 Ea.	W+7'-9" To W+1"
12'	R51 To R525	1 Ea.	W+8'-11" To W+2"
	RL1 To RL35	1 Ea.	W+9'-0" To W

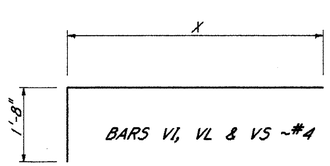
CULVERT HEIGHT "H"	TABLE OF BARS U ~#4	
	UL, NO. & LENGTH	US, NO. & LENGTH
	LONG WING	SHORT WING
6'	3 @ 32'-8"	3 @ 23'-9"
8'	3 @ 41'-7"	3 @ 30'-3"
10'	3 @ 47'-3"	3 @ 34'-4"
12'	3 @ 54'-4"	3 @ 39'-6"



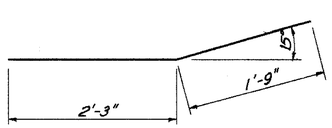
BARS WL & WS



DOWELS ZS ~#5



BARS V1, VL & VS ~#4



DOWELS ZL ~#5

NOTE: Vertical Spacers QS And Dowels ZL And ZS Located Per Section A - A.

BAR BENDING DETAILS
Dimensions Are Out To Out

CULVERT HEIGHT "H"	TABLE OF BARS FL, FS, QS, ZL & ZS									
	BARS FL ~#4		BARS FS ~#4		SPACERS QS ~#4		DOWELS ZL ~#5		DOWELS ZS ~#5	
	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.
6'	2	33'-2"	2	24'-4"	2	5'-7"	7	4'-0"	7	3'-9"
8'	2	42'-3"	2	30'-11"	2	7'-7"	18	4'-0"	18	3'-9"
10'	2	48'-0"	2	35'-3"	2	9'-7"	18	4'-0"	18	3'-9"
12'	2	55'-3"	2	40'-6"	2	11'-7"	22	4'-0"	22	3'-9"

NOTE: The Number Of Bars Shown In The Tables Is The Number Required For One Complete Headwall Assembly At One End Of Culvert.

CULVERT HEIGHT "H"	TABLE OF BARS WL				
	BAR	NO.	SIZE	LONG WING	
				DIM. X	DIM. X1
6'	WL1 To WL43	1 Ea.	#4	4'-0" To 2'-0"	K+5'-8" To K
8'	WL1 To WL24	1 Ea.	#5	4'-6" To 3'-6"	K+7'-3" To K+4'-5"
	WL25 To WL49	1 Ea.	#4	3'-5" To 2'-0"	K+4'-3" To K
10'	WL1 To WL18	1 Ea.	#6	6'-0" To 5'-3"	K+8'-3" To K+6'-6"
	WL19 To WL35	1 Ea.	#5	5'-2" To 4'-5"	K+6'-5" To K+4'-6"
	WL36 To WL64	1 Ea.	#4	4'-4" To 2'-7"	K+4'-4" To K
12'	WL1 To WL27	1 Ea.	#7	6'-6" To 5'-4"	K+9'-6" To K+6'-7"
	WL28 To WL39	1 Ea.	#6	5'-3" To 4'-7"	K+6'-6" To K+4'-9"
	WL40 To WL50	1 Ea.	#5	4'-6" To 3'-9"	K+4'-7" To K+2'-10"
	WL51 To WL66	1 Ea.	#4	3'-8" To 2'-8"	K+2'-7" To K

CULVERT HEIGHT "H"	TABLE OF BARS WS				
	BAR	NO.	SIZE	SHORT WING	
				DIM. X	DIM. X1
6'	WS1 To WS31	1 Ea.	#4	4'-0" To 2'-0"	K+5'-8" To K
8'	WS1 To WS17	1 Ea.	#5	4'-6" To 3'-7"	K+7'-3" To K+4'-7"
	WS18 To WS36	1 Ea.	#4	3'-6" To 2'-0"	K+4'-4" To K
10'	WS1 To WS12	1 Ea.	#6	6'-0" To 5'-4"	K+8'-3" To K+6'-8"
	WS13 To WS26	1 Ea.	#5	5'-3" To 4'-5"	K+6'-7" To K+4'-5"
	WS27 To WS47	1 Ea.	#4	4'-4" To 2'-7"	K+4'-4" To K
12'	WS1 To WS19	1 Ea.	#7	6'-6" To 5'-4"	K+9'-6" To K+6'-7"
	WS20 To WS27	1 Ea.	#6	5'-3" To 4'-7"	K+6'-5" To K+4'-10"
	WS28 To WS35	1 Ea.	#5	4'-6" To 3'-10"	K+4'-7" To K+2'-10"
	WS36 To WS47	1 Ea.	#4	3'-9" To 2'-8"	K+2'-7" To K

K = W+5" For "H" = 6'
K = W+6" For "H" = 8'
K = W+8" For "H" = 10'
K = W+9" For "H" = 12'

CULVERT HEIGHT "H"	TABLE OF BARS T ~ #4		
	BAR	NO.	LENGTH
6'	T1 To T23	1 Ea.	P-5" To P+15'-9'
	T24	3	P+16'-6"
8'	T1 To T29	1 Ea.	P-2" To P+20'-5"
	T30	3	P+21'-2"
10'	T1 To T33	1 Ea.	P-2" To P+23'-4"
	T34	3	P+24'-1"
12'	T1 To T38	1 Ea.	P-2" To P+27'-0"
	T39	3	P+27'-9"

CULVERT HEIGHT "H"	TABLE OF BARS L & M					
	BARS L			BARS M		
	NO.	SIZE	LENGTH	NO.	SIZE	LENGTH
6'	4	#7	P-4"			NONE
8' - 12'	4	#8	P-4"	2	#4	1.155(Q+2(V1))+10"

Bars K & N Per Basic Culvert Drawing Except Spacing Shall Be 1'-2".

CULVERT HEIGHT "H"	TABLE OF BARS Y ~ #4			
	BAR	NO.	YL - LENGTH	YS - LENGTH
			LONG WING	SHORT WING
6'	Y1 To Y5	1 Ea.	9'-3" To 31'-10"	6'-8" To 23'-2"
	Y6	1	32'-8"	23'-9"
8'	Y1 To Y6	2 Ea.	9'-3" To 37'-6"	6'-8" To 27'-3"
	Y7	4	41'-7"	30'-3"
10'	Y1 To Y6	2 Ea.	10'-1" To 45'-6"	7'-4" To 33'-1"
	Y7	4	47'-3"	34'-4"
12'	Y1 To Y7	2 Ea.	10'-8" To 53'-1"	7'-9" To 38'-7"
	Y8	6	54'-4"	39'-6"

GENERAL NOTES:

This Drawing Shows The General Details Necessary To Modify A Single Or Double Cell Culvert With Wings With 4:1 Slope For A 30° Skew.
All Governing Dimensions Reinforcement Details And General Requirements Of Basic Culvert Drawings, Drawings IWS-4 And IWD-4 And Or Drawings IBSM-4W And IBDM-4W Shall Apply Except As Specifically Modified Hereon
A Complete Placing Plan Showing All Governing Dimensions, Bar List And Bending Details Shall Be Submitted To The Project Engineer For Approval Prior To Fabrication Of The Reinforcing Steel.

REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
30° SKEW DETAILS
WINGS WITH 4:1 SLOPE

SINGLE & DOUBLE CELL CULVERTS

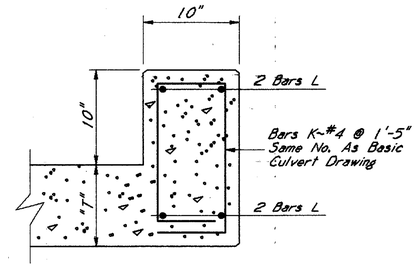
WORKING NUMBER ISK-30-4W

DATE | DESIGNED NA | CHECKED BJJ | ISSUED TMT
DETAILED ALT | DATE 07-11-97 | DATE 08-01-97

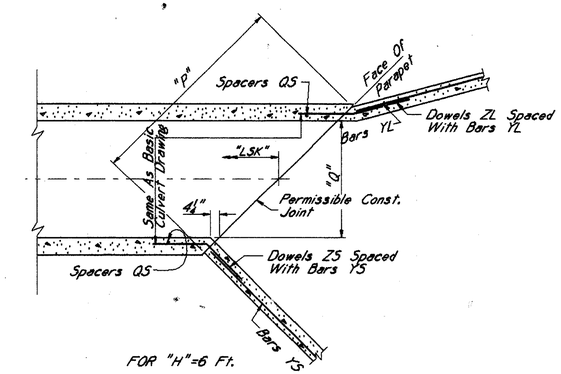
SHEET NUMBER 7059

CULVERT HEIGHT "H"	TABLE OF DIMENSIONS								
	"LW1"	"LW2"	"N1"	"N2"	"P"	"R"	"U"	"W"	"Z"
								Per Supplementary Drawing	
6'	11'-0"	22'-0"			1.414(Q)+1.63'	8 3/16"	7"		11'-0"
8'	14'-2"	28'-4"			1.414(Q)+1.93'	10 7/16"	8 1/2"		14'-2"
10'	16'-2"	32'-4"	2'-11"	6'-1"	1.414(Q)+2.22'	1'-0 1/4"	10"		16'-2"
12'	18'-8"	37'-4"	3'-3"	7'-0"	1.414(Q)+2.42'	1'-1 1/2"	11"		18'-8"

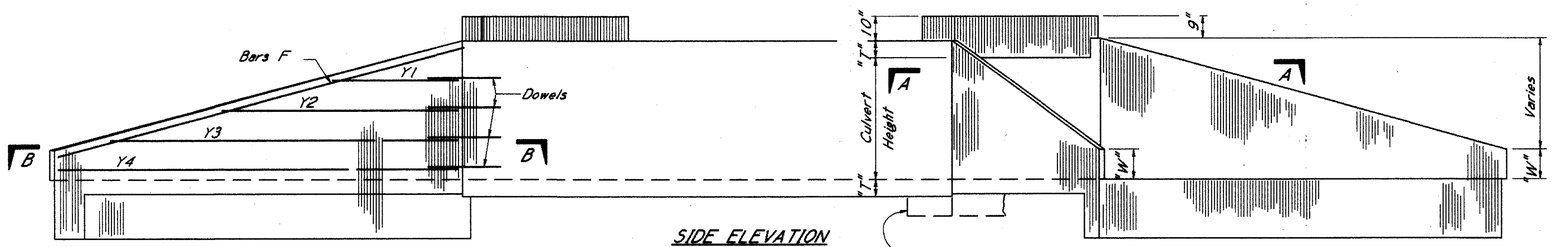
NOTE: Q For Single Cell Culvert = S (Clear Span)
Q For Double Cell Culvert = 2(S) + V



PARAPET DETAIL
Slab Steel Not Shown

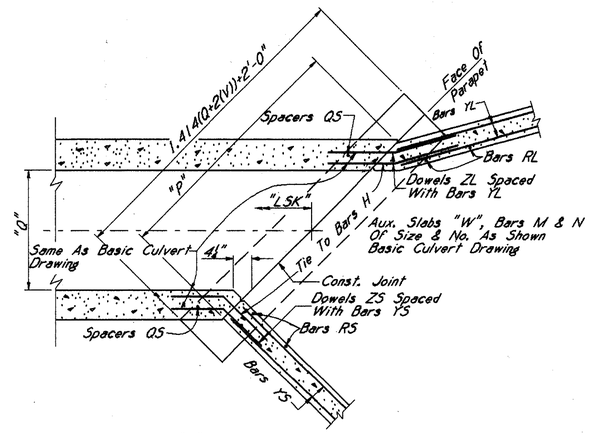


FOR "H"=6 Ft.



SIDE ELEVATION

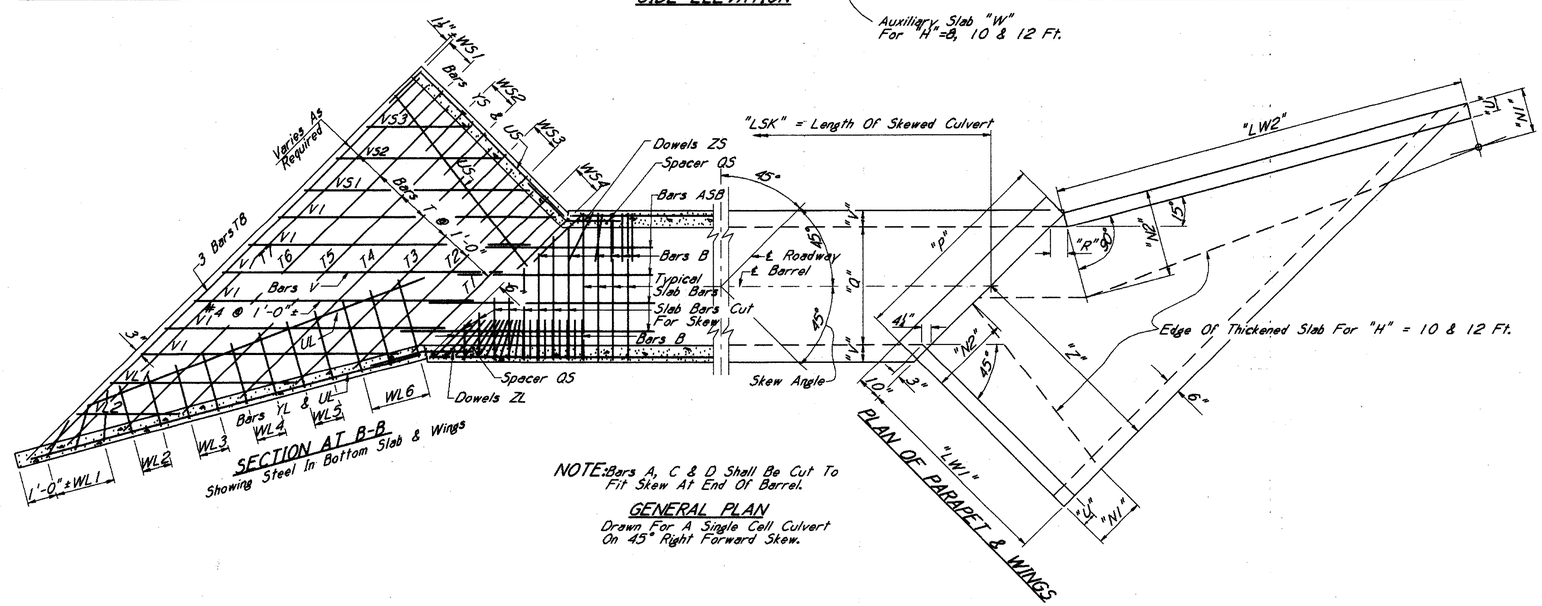
Auxiliary Slab "W"
For "H"=8, 10 & 12 Ft.



FOR "H"=8 THRU 12 Ft.

NOTE: Reinforcement In Stream Face Of Wing Wall Required For "H"=8, 10 & 12 Ft. Only.

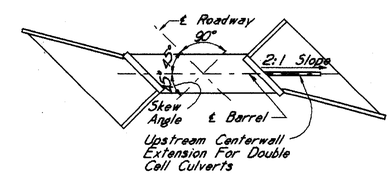
SECTION A-A
Barrel Steel Not Shown



SECTION AT B-B
Showing Steel In Bottom Slab & Wings

NOTE: Bars A, C & D Shall Be Cut To Fit Skew At End Of Barrel.

GENERAL PLAN
Drawn For A Single Cell Culvert On 45° Right Forward Skew.



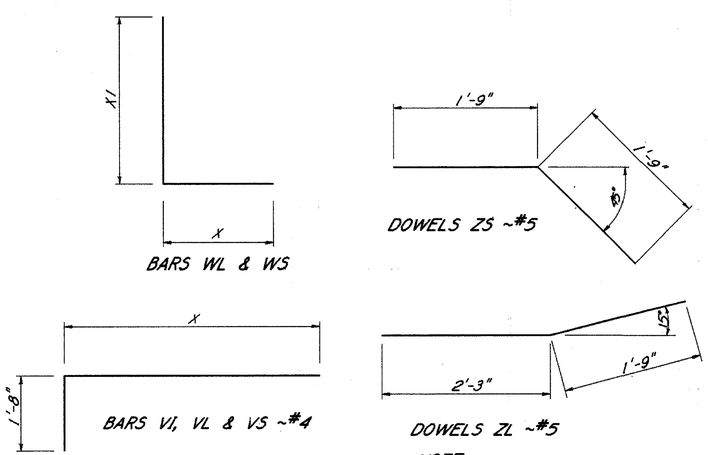
PLAN OF 45° LEFT FORWARD SKEW

REVISIONS	BY	MISSISSIPPI DEPARTMENT OF TRANSPORTATION BOX CULVERT DRAWING 45° SKEW DETAILS WINGS WITH 2:1 SLOPE SINGLE & DOUBLE CELL CULVERTS			WORKING NUMBER ISK-45-2W
DATE		DESIGNED NA DETAILED MJC	CHECKED BJJ DATE 07-11-97	ISSUED TMT DATE 08-01-97	SHEET NUMBER 7060

CULVERT HEIGHT "H"	TABLE OF BARS V					
	BARS V1		BARS VL1 - VLn		BARS VS1 - VSn	
	NO.	DIM. X	NO.	DIM. X	NO.	DIM. X
	Same As Basic Culvert Drawing					
6'		15'-3"	4	11'-8" To 3'-6"	6	13'-2" To 3'-2"
8'		19'-8"	5	16'-2" To 5'-3"	9	17'-8" To 1'-8"
10'		22'-6"	6	19'-4" To 5'-8"	10	20'-8" To 2'-8"
12'		26'-1"	7	23'-1" To 6'-8"	11	24'-5" To 4'-5"

CULVERT HEIGHT "H"	TABLE OF BARS R ~ #4		
	BAR	NO.	LENGTH
8'	RS1 To RS9	1 Ea.	W+6'-2" To W+2"
	RL1 To RL18	1 Ea.	W+6'-4" To W
10'	RS1 To RS10	1 Ea.	W+7'-2" To W+5"
	RL1 To RL20	1 Ea.	W+7'-4" To W+3"
12'	RS1 To RS12	1 Ea.	W+8'-5" To W+2"
	RL1 To RL24	1 Ea.	W+8'-7" To W

CULVERT HEIGHT "H"	TABLE OF BARS U	
	UL, NO. & LENGTH	US, NO. & LENGTH
	LONG WING	SHORT WING
6'	2 @ 21'-2"	3 @ 10'-9"
	1 @ 19'-0"	
8'	2 @ 27'-6"	3 @ 13'-11"
	1 @ 25'-0"	
10'	1 @ 31'-6" 1 @ 30'-6"	2 @ 15'-11"
	1 @ 28'-6"	1 @ 16'-2"
12'	1 @ 36'-6", 1 @ 35'-0"	2 @ 18'-5"
	1 @ 32'-0"	1 @ 18'-9"



NOTE: Vertical Spacers QS And Dowels ZL And ZS Located Per Section A - A.

BAR BENDING DETAILS
Dimensions Are Out To Out

CULVERT HEIGHT "H"	TABLE OF BARS FL, FS, QS, ZL & ZS									
	BARS FL ~#4		BARS FS ~#4		SPACERS QS ~#4		DOWELS ZL ~#5		DOWELS ZS ~#5	
	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.
6'	2	22'-2"	2	11'-10"	2	5'-7"	6	4'-0"	6	3'-6"
8'	2	28'-9"	2	15'-4"	2	7'-7"	16	4'-0"	16	3'-6"
10'	2	32'-10"	2	17'-7"	2	9'-7"	16	4'-0"	16	3'-6"
12'	2	38'-0"	2	20'-4"	2	11'-7"	20	4'-0"	20	3'-6"

NOTE: The Number Of Bars Shown In The Tables Is The Number Required For One Complete Headwall Assembly At One End Of Culvert.

CULVERT HEIGHT "H"	TABLE OF BARS WL					
	LONG WING					
	BAR	NO.	SIZE	SPACING	DIM. X	DIM. X1
6'	WL1	3	#4	1'-0"	M-3"	K
	WL2	2	#4	1'-0"	M+1"	K+9"
	WL3	2	#5	1'-0"	M+3"	K+1'-3"
	WL4	2	#5	1'-0"	M+6"	K+1'-9"
	WL5	2	#5	1'-0"	M+8"	K+2'-3"
	WL6	3	#5	1'-0"	M+11"	K+2'-9"
8'	WL7	3	#5	1'-0"	M+1'-2"	K+3'-6"
	WL8	2	#6	1'-0"	M+1'-5"	K+4'-3"
	WL9	3	#6	1'-0"	M+1'-8"	K+4'-9"
10'	WL10	2	#6	9"	M+1'-11"	K+5'-6"
	WL11	3	#6	9"	M+2'-1"	K+5'-9"
	WL12	3	#6	9"	M+2'-4"	K+6'-4"
12'	WL13	3	#7	9"	M+2'-6"	K+6'-11"
	WL14	2	#7	9"	M+2'-9"	K+7'-6"
	WL15	4	#7	6"	M+2'-11"	K+7'-10"
	WL16	3	#7	6"	M+3'-1"	K+8'-4"
	WL17	3	#7	6"	M+3'-3"	K+8'-9"

CULVERT HEIGHT "H"	TABLE OF BARS WS					
	SHORT WING					
	BAR	NO.	SIZE	SPACING	DIM. X	DIM. X1
6'	WS1	2	#4	1'-0"	M-4"	K
	WS2	2	#4	1'-0"	M+1"	K+1'-0"
	WS3	2	#5	1'-0"	M+6"	K+2'-0"
	WS4	2	#5	1'-0"	M+10"	K+3'-0"
	WS5	1	#6	1'-0"	M+1'-3"	K+4'-0"
8'	WS6	1	#6	1'-0"	M+1'-6"	K+4'-6"
	WS7	2	#6	9"	M+1'-8"	K+5'-0"
	WS8	2	#6	9"	M+2'-0"	K+5'-9"
	WS9	2	#6	9"	M+2'-3"	K+6'-6"
10'	WS10	2	#6	9"	M+2'-7"	K+7'-3"
	WS11	1	#7	6"	M+2'-10"	K+7'-10"
12'	WS12	1	#7	6"	M+2'-11"	K+8'-1"
	WS13	2	#7	6"	M+3'-1"	K+8'-4"
	WS14	2	#7	6"	M+3'-3"	K+8'-10"

CULVERT HEIGHT -"H"	6'	8'	10'	12'
M	2'-2"	2'-7"	2'-11"	3'-3"

K = W+5" For "H" = 6'
K = W+6" For "H" = 8'
K = W+8" For "H" = 10'
K = W+9" For "H" = 12'

CULVERT HEIGHT "H"	TABLE OF BARS T		
	BAR	NO.	LENGTH
6'	T1 To T10	1 Ea.	P-2" To P+15'-5"
	T11	3	P+17'-5"
8'	T1 To T14	1 Ea.	P-2" To P+22'-4"
	T15	3	P+23'-2"
10'	T1 To T16	1 Ea.	P-2" To P+25'-9"
	T17	3	P+26'-7"
12'	T1 To T18	1 Ea.	P-2" To P+29'-3"
	T19	3	P+31'-0"

CULVERT HEIGHT "H"	TABLE OF BARS L & M					
	BARS L			BARS M		
	NO.	SIZE	LENGTH	NO.	SIZE	LENGTH
6'	4	#8	P-4"			NONE
8' - 12'	4	#9	P-4"	2	#4	1.414(Q+2V)+1'-8"

CULVERT HEIGHT "H"	TABLE OF BARS Y ~ #4			
	BAR	NO.	YL - LENGTH	YS- LENGTH
			LONG WING	SHORT WING
6'	Y1 To Y5	1 Ea.	5'-5" To 21'-5"	2'-7" To 10'-7"
	Y6	1	21'-10"	10'-9"
8'	Y1 To Y6	2 Ea.	5'-2" To 25'-2"	2'-7" To 12'-7"
	Y7	4	28'-2"	13'-11"
10'	Y1 To Y6	2 Ea.	5'-11" To 30'-11"	2'-11" To 15'-5"
	Y7	4	32'-2"	15'-11"
12'	Y1 To Y7	2 Ea.	6'-4" To 36'-4"	3'-0" To 18'-0"
	Y8	6	37'-2"	18'-5"

Bars K & N Per Basic Culvert Drawing Except Spacing Shall Be 1'-5".

GENERAL NOTES:

This Drawing Shows The General Details Necessary To Modify A Single Or Double Cell Culvert With Wings With 2:1 Slope For A 45° Skew.

All Governing Dimensions, Reinforcement Details And General Requirements Of Basic Culvert Drawings, And Or Drawings 185M-2W And 180M-2W Shall Apply Except As Specifically Modified Hereon.

A Complete Placing Plan Showing All Governing Dimensions, Bar List And Bending Details Shall Be Submitted To The Project Engineer For Approval Prior To Fabrication Of The Reinforcing Steel.

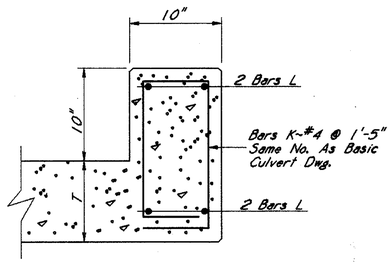
REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
45° SKEW DETAILS
WINGS WITH 2:1 SLOPE
SINGLE & DOUBLE CELL CULVERTS

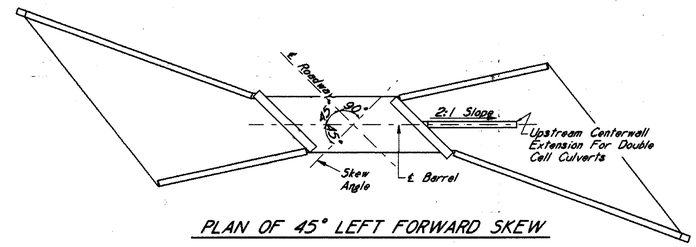
DATE			
DESIGNED NA	CHECKED BJJ	ISSUED TMT	WORKING NUMBER ISK-45-2W
DETAILED MJC	DATE 07-11-97	DATE 08-01-97	SHEET NUMBER 7061

TABLE OF DIMENSIONS												
CULVERT HEIGHT "H"	"J"	"LW1"	"LW2"	"N1"	"N2"	"P"	"R1"	"R2"	"R3"	"U"	"W"	"Z"
6'	5'-9"	18'-9 1/4"	31'-8 1/16"			1.414Q+1.63'	5 3/8"	8 5/16"	3 1/4"	7"	Per Supplementary Drawing	17'-3"
8'	7'-4"	23'-11 5/16"	40'-4 3/4"			1.414Q+1.98'	7"	10 1/16"	3 15/16"	8 1/2"		22'-0"
10'	8'-4"	27'-2 3/4"	45'-10 13/16"	2'-11"	6'-6"	1.414Q+2.33'	8 1/4"	11 7/16"	4 11/16"	10"		25'-0"
12'	9'-7"	31'-3 3/16"	52'-9 7/16"	3'-3"	7'-0"	1.414Q+2.56'	9 1/16"	1'-1 1/16"	5 1/8"	11"		28'-9"

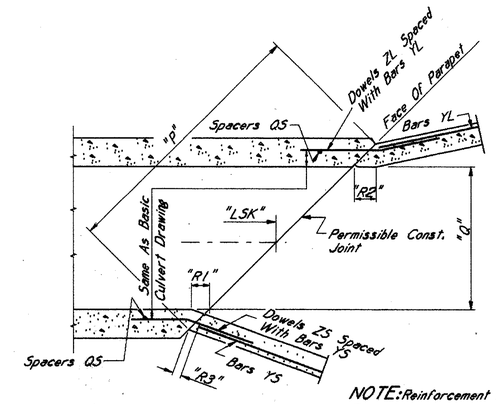
NOTE: Q For Single Cell Culvert = S (Clear Span)
Q For Double Cell Culvert = 2S+V



PARAPET DETAIL
Slab Steel Not Shown

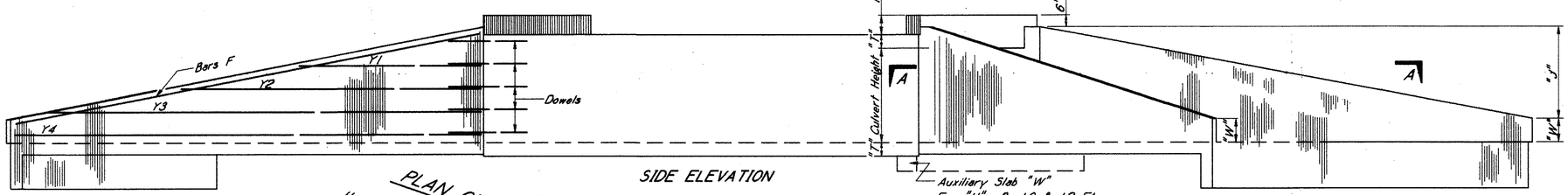


PLAN OF 45° LEFT FORWARD SKEW

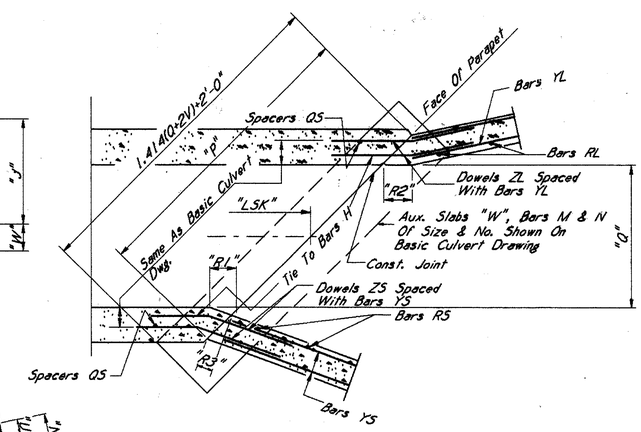


FOR "H"= 6 Ft.

NOTE: Reinforcement In Stream Face Of Wing Wall Required For H= 8, 10 & 12 Ft. Only.



SIDE ELEVATION



FOR "H"= 8 THRU 12 Ft.

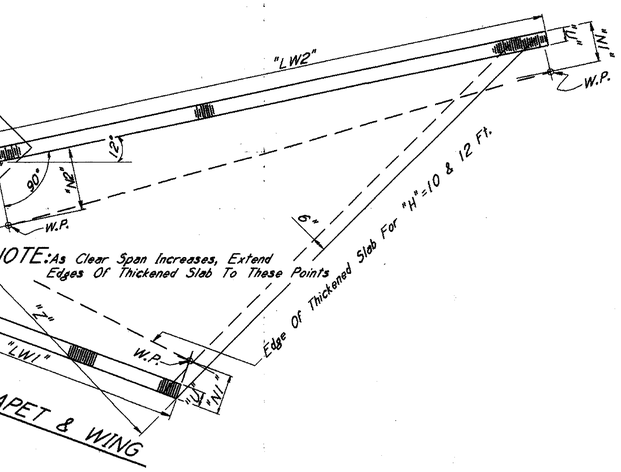
SECTION A-A

PLAN OF APRON & BOTTOM SLAB
Showing Spacing For Bars WS

H=12 Ft.: 16 Spaces @ 1'-0", 3@9", 2@9", 6@11", 3@10"
H=10 Ft.: 8 Spaces @ 1'-0", 2@7", 1@9", 1@6"
H=8 Ft.: 16 Spaces @ 1'-0", 6@9", 1@7"
H= 6 Ft.: 10 Spaces @ 1'-0", 3@10", 4@8", 6@6"

H=6 Ft.: 17 Spaces @ 1'-0", 4@10", 9@9", 8@6"
H=8 Ft.: 27 Spaces @ 1'-0", 9@10", 9@7"
H=10 Ft.: 14 Spaces @ 1'-0", 2@9", 2@7"
H=12 Ft.: 28 Spaces @ 1'-0", 10 @11", 6@10", 3@9", 3@8", 3@7", 8@6"

PLAN OF APRON & BOTTOM SLAB
Showing Spacing For Bars WL



NOTE: Bars A, C & D Shall Be Cut To Fit Skew At End Of Barrel.

GENERAL PLAN
Drawn For A Single Cell Culvert On 45° Right Forward Skew.

PLAN OF PARAPET & WING

REVISIONS	BY	MISSISSIPPI DEPARTMENT OF TRANSPORTATION BOX CULVERT DRAWING 45° SKEW DETAILS WINGS WITH 3:1 SLOPE SINGLE & DOUBLE CELL CULVERTS	WORKING NUMBER ISK-45-3W
DATE	DESIGNED NA DETAILED MJC	CHECKED BJJ DATE 07-11-97	ISSUED TMT DATE 08-01-97	SHEET NUMBER 7062

TABLE OF BARS V ~ #4						
CULVERT HEIGHT "H"	BARS VI		BARS VLI - VLn		BARS VSI - VSn	
	NO.	DIM. X	NO.	DIM. X	NO.	DIM. X
	Same As Basic Culvert Drawing					
6'		23'-11"	5	19'-6" To 4'-8"	5	19'-11" To 5'-0"
8'		30'-7"	7	26'-8" To 4'-6"	7	27'-2" To 4'-8"
10'		34'-10"	8	31'-5" To 5'-6"	8	31'-10" To 5'-7"
12'		40'-2"	10	37'-0" To 3'-8"	10	37'-6" To 3'-9"

TABLE OF BARS Y ~ #4				
CULVERT HEIGHT "H"	BAR	NO.	YL ~ LENGTH	YS ~ LENGTH
			LONG WING	SHORT WING
6'	Y1 To Y5	1 Ea.	8'-6" To 30'-6"	4'-11" To 18'-0"
	Y6	1	31'-4'	18'-5"
8'	Y1 To Y6	2 Ea.	8'-6' To 36'-1"	4'-11" To 21'-3"
	Y7	4	40'-0"	23'-7"
10'	Y1 To Y6	2 Ea.	9'-5" To 43'-10"	5'-6" To 25'-11"
	Y7	4	45'-6"	26'-10"
12'	Y1 To Y7	2 Ea.	9'-11" To 51'-2"	5'-9" To 30'-3"
	Y8	6	52'-5"	30'-11'

TABLE OF BARS WL					
				LONG WING	
CULVERT HEIGHT "H"	BAR	NO.	SIZE	DIM. X	DIM. X1
6'	WL1 To WL39	1 Ea.	#4	4'-0" To 2'-0"	K+5'-7" To K
8'	WL1 To WL24	1 Ea.	#5	4'-6" To 3'-4"	K+7'-2" To K+3'-11"
	WL25 To WL46	1 Ea.	#4	3'-3" To 2'-0"	K+3'-9" To K
10'	WL1 To WL17	1 Ea.	#6	5'-10" To 5'-2"	K+8'-2" To K+6'-5"
	WL18 To WL36	1 Ea.	#5	5'-1" To 4'-3"	K+6'-4" To K+4'-2"
	WL37 + WL62	1 Ea.	#4	4'-2" To 2'-8"	K+4'-0" To K
12'	WL1 To WL28	1 Ea.	#7	6'-5" To 5'-2"	K+9'-4" To K+6'-0"
	WL29 To WL38	1 Ea.	#6	5'-1" To 4'-7"	K+5'-10" To K+4'-4"
	WL39 To WL48	1 Ea.	#5	4'-6" To 3'-11"	K+4'-2" To K+2'-6"
	WL49 To WL62	1 Ea.	#4	3'-10" To 3'-0"	K+2'-4" To K

TABLE OF BARS R ~ #4			
CULVERT HEIGHT "H"	BAR	NO.	LENGTH
8'	RS1 To RS14	1 Ea.	W+6'-7" To W+7"
	RL1 To RL25	1 Ea.	W+6'-8" To W+1"
10'	RS1 To RS16	1 Ea.	W+7'-7" To W+8"
	RS1 To RL29	1 Ea.	W+7'-8" To W+1"
12'	RS1 To RS19	1 Ea.	W+8'-10" To W+6"
	RL1 To RL33	1 Ea.	W+8'-11" To W+2"

K=W+5" For H= 6'
K=W+6" For H= 8'
K=W+8" For H= 10'
K=W+9" For H= 12'

TABLE OF BARS FL, FS, QS, ZL & ZS										
CULVERT HEIGHT "H"	BARS FL ~#4		BARS FS ~#4		SPACERS QS ~#4		DOWELS ZL ~#5		DOWELS ZS ~#5	
	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.
6'	2	31'-10"	2	19'-3"	2	5'-7"	7	4'-0"	7	3'-9"
8'	2	40'-8"	2	24'-8"	2	7'-7"	18	4'-0"	18	3'-9"
10'	2	46'-3"	2	28'-1"	2	9'-7"	18	4'-0"	18	3'-9'
12'	2	53'-3"	2	32'-4"	2	11'-7"	22	4'-0"	22	3'-9"

NOTE: The Number Of Bars Shown In The Tables Is The Number Required For One Complete Headwall Assembly At One End Of Culvert.

TABLE OF BARS WS					
				SHORT WING	
CULVERT HEIGHT "H"	BAR	NO.	SIZE	DIM. X	DIM. X1
6'	WS1 To WS24	1 Ea.	#4	4'-0" To 2'-0"	K+5'-6" To K
8'	WS1 To WS15	1 Ea.	#5	4'-6" To 3'-4"	K+7'-2" To K+3'-11"
	WS16 To WS28	1 Ea.	#4	3'-3" To 2'-0"	K+3'-8" To K
10'	WS1 To WS10	1 Ea.	#6	5'-10" To 5'-2"	K+8'-2" To K+6'-5"
	WS11 To WS22	1 Ea.	#5	5'-1" To 4'-2"	K+6'-3" To K+4'-0"
	WS23 To WS37	1 Ea.	#4	4'-1" To 2'-8"	K+3'-10" To K
12'	WS1 To WS17	1 Ea.	#7	6'-5" To 5'-2"	K+9'-4" To K+5'-11'
	WS18 To WS23	1 Ea.	#6	5'-1" To 4'-6"	K+5'-8" To K+4'-3"
	WS24 To WS29	1 Ea.	#5	4'-5" To 3'-10"	K+3'-11" To K+2'-5"
	WS30 To WS37	1 Ea.	#4	3'-9" To 3'-0"	K+2'-1" To K

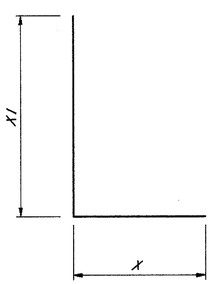
TABLE OF BARS L & M						
CULVERT HEIGHT "H"	BARS L			BARS M		
	NO.	SIZE	LENGTH	NO.	SIZE	LENGTH
6'	4	#8	P-4"			NONE
8'-12'	4	#9	P-4"	2	#4	1.414(Q+2V)+1'-8"

Bars K & N Per Basic Culvert Drawing Except Spacing Shall Be 1'-5".

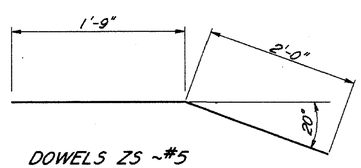
NOTE: Vertical Spacers QS And Dowels ZL And ZS Located Per Section A - A.

TABLE OF BARS U ~ #4		
CULVERT HEIGHT "H"	UL, NO. & LENGTH	US, NO. & LENGTH
	LONG WING	SHORT WING
6'	3 @ 31'-4"	3 @ 18'-5"
8'	3 @ 40'-0"	3 @ 23'-7"
10'	3 @ 45'-6"	3 @ 26'-10"
12'	3 @ 52'-5"	3 @ 30'-11"

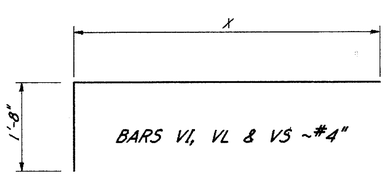
TABLE OF BARS T			
CULVERT HEIGHT "H"	BAR	NO.	LENGTH
6'	T1 To T17	1 Ea.	P-2" To P+16'-8"
	T18	3	P+17'-8"
8'	T1 To T21	1 Ea.	P+4" To P+21'-9"
	T22	3	P+22'-9"
10'	T1 To T24	1 Ea.	P+4" To P+25'-0"
	T25	3	P+26'-0"
12'	T1 To T28	1 Ea.	P To P+28'-11"
	T29	3	P+29'-11"



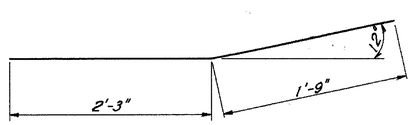
BARS WL & WS



DOWELS ZS ~#5



BARS VI, VL & VS ~#4"



DOWELS ZL ~#5"

BAR BENDING DETAILS
Dimensions Are Out To Out

GENERAL NOTES:
This Drawing Shows The General Details Necessary To Modify A Single Or Double Cell Culvert With Wings With 3:1 Slope For A 45° Skew.
All Governing Dimensions, Reinforcement Details And General Requirements Of Basic Culvert Drawings, And Or Drawings 1B5M-2W And 1BDM-2W Shall Apply Except As Specifically Modified Hereon.
A Complete Placing Plan Showing All Governing Dimensions, Bar List And Bending Details Shall Be Submitted To The Project Engineer For Approval Prior To Fabrication Of The Reinforcing Steel.

REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
45° SKEW DETAILS
WINGS WITH 3:1 SLOPE
SINGLE & DOUBLE CELL CULVERTS

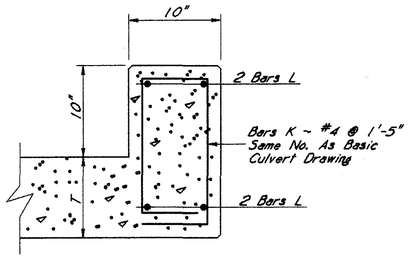
WORKING NUMBER ISK-45-3W

DESIGNED NA CHECKED BJJ ISSUED TMT
DETAILED MJC DATE 07-11-97 DATE 08-01-97

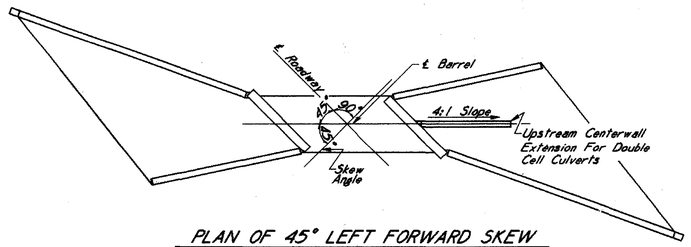
SHEET NUMBER 7063

TABLE OF DIMENSIONS												
CULVERT HEIGHT "H"	"J"	"LW1"	"LW2"	"N1"	"N2"	"P"	"R1"	"R2"	"R3"	"U"	"W"	"Z"
6'	5'-10"	26'-7 1/4"	40'-8 1/16"			1.414Q+1.64'	6 1/16"	8 1/8"	4 1/16"	7"	Per Supplementary Drawing	23'-4"
8'	7'-5"	33'-10 3/4"	51'-8 11/16"			1.414Q+1.99'	7 3/8"	9 7/8"	4 7/8"	8 1/2"		29'-8"
10'	8'-5"	38'-4 3/4"	58'-8 11/16"	2'-11"	6'-6"	1.414Q+2.34'	8 11/16"	11 5/16"	5 3/4"	10"		33'-8"
12'	9'-8"	44'-1 7/16"	67'-4 15/16"	3'-3"	7'-0"	1.414Q+2.57'	9 9/16"	1'-0 3/4"	6 3/8"	11"		38'-8"

NOTE: Q For Single Cell Culvert = S (Clear Span)
Q For Double Cell Culvert = 2S + V

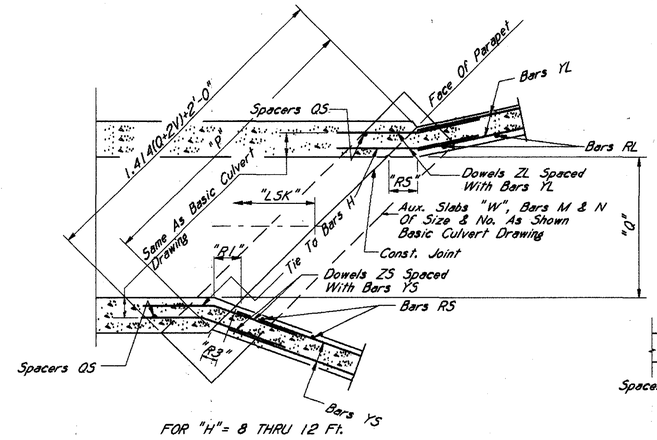


PARAPET DETAIL
Slab Steel Not Shown



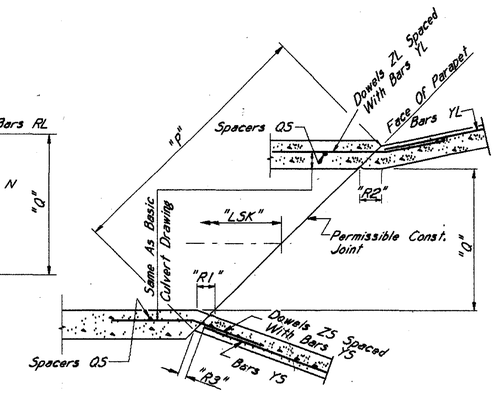
PLAN OF 45° LEFT FORWARD SKEW

NOTE: Reinforcement In Stream
Face Of Wing Wall Required
For H= 8, 10 & 12 Ft. Only.

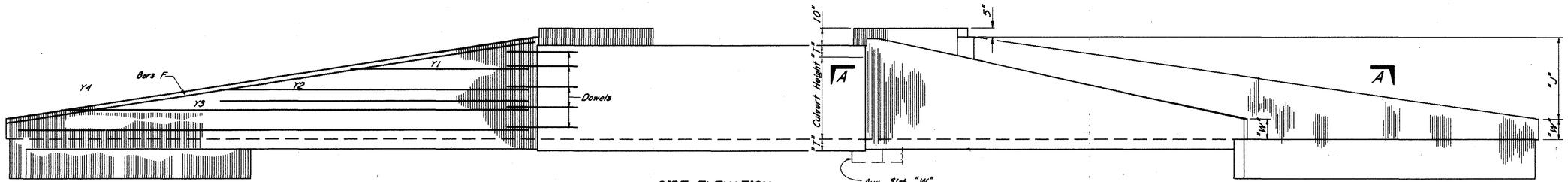


FOR "H"= 8 THRU 12 Ft.

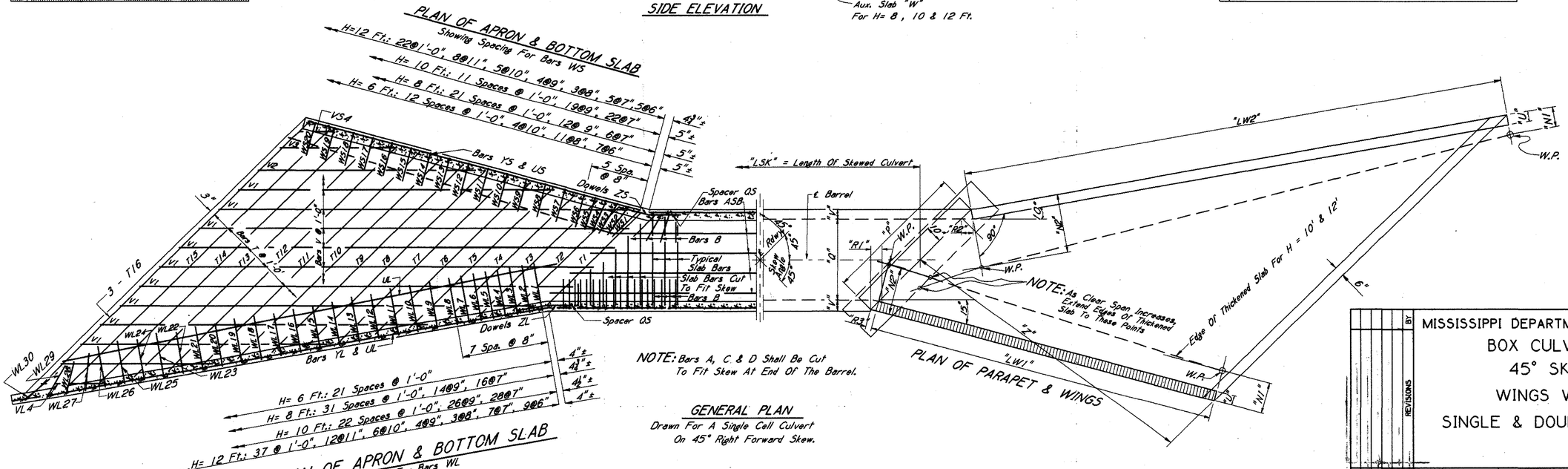
SECTION A-A



FOR "H"= THRU 6 Ft.



SIDE ELEVATION



NOTE: Bars A, C & D Shall Be Cut
To Fit Skew At End Of The Barrel.

GENERAL PLAN
Drawn For A Single Cell Culvert
On 45° Right Forward Skew.

REVISIONS	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
45° SKEW DETAILS
WINGS WITH 4:1 SLOPE
SINGLE & DOUBLE CELL CULVERTS

DESIGNED NA	CHECKED BJJ	ISSUED TMT	WORKING NUMBER ISK-45-4W
DETAILED MJC	DATE 07-11-97	DATE 08-01-97	SHEET NUMBER 7064

TABLE OF BARS V ~ #4						
CULVERT HEIGHT "H"	BARS V1		BARS VL1 - VLn		BARS VS1 - VSn	
	NO.	DIM. X	NO.	DIM. X	NO.	DIM. X
	Same As Basic Culvert Drawing					
6'		32'-6"	6	27'-4" To 4'-0"	6	27'-6" To 3'-10"
8'		41'-5"	8	36'-6" To 4'-1"	8	37'-5" To 4'-2"
10'		47'-1"	9	42'-9" To 5'-7"	9	43'-9" To 5'-9"
12'		54'-2"	11	50'-4" To 3'-9"	11	50'-8" To 3'-5"

TABLE OF BARS Y ~ #4				
CULVERT HEIGHT "H"	BAR	NO.	YL ~ LENGTH	YS ~ LENGTH
			LONG WING	SHORT WING
6'	Y1 To Y5	1 Ea.	11'-5" To 39'-4"	7'-5" To 25'-8"
	Y6	1	40'-4"	26'-4"
8'	Y1 To Y6	2 Ea.	11'-5" To 46'-3"	7'-5" To 30'-3"
	Y7	4	51'-4"	33'-7"
10'	Y1 To Y6	2 Ea.	12'-7" To 56'-2"	8'-2" To 36'-8"
	Y7	4	58'-4"	38'-1"
12'	Y1 To Y7	2 Ea.	13'-2" To 65'-5"	8'-7" To 42'-9"
	Y8	6	67'-0"	43'-10"

TABLE OF BARS WL					
				LONG WING	
CULVERT HEIGHT "H"	BAR	NO.	SIZE	DIM. X	DIM. X1
6'	WL1 To WL52	1 Ea.	#4	4'-0" To 2'-0"	K+5'-8" To K
8'	WL1 To WL31	1 Ea.	#5	4'-6" To 3'-6"	K+7'-3" To K+4'-5"
	WL32 To WL62	1 Ea.	#4	3'-5" To 2'-0"	K+4'-3" To K
10'	WL1 To WL22	1 Ea.	#6	6'-0" To 5'-3"	K+8'-3" To K+6'-6"
	WL23 To WL44	1 Ea.	#5	5'-2" To 4'-4"	K+6'-5" To K+4'-4"
	WL45 To WL77	1 Ea.	#4	4'-3" To 2'-7"	K+4'-2" To K
12'	WL1 To WL32	1 Ea.	#7	6'-6" To 5'-4"	K+9'-6" To K+6'-7"
	WL33 To WL45	1 Ea.	#6	5'-3" To 4'-7"	K+6'-5" To K+4'-10"
	WL46 To WL59	1 Ea.	#5	4'-6" To 3'-10"	K+4'-8" To K+2'-10"
	WL60 To WL79	1 Ea.	#4	3'-9" To 2'-8"	K+2'-8" To K

TABLE OF BARS R ~ #4			
CULVERT HEIGHT "H"	BAR	NO.	LENGTH
8'	RS1 To RS21	1 Ea.	W+6'-9" To W+2"
	RL1 To RL32	1 Ea.	W+6'-9" To W+1"
10'	RS1 To RS24	1 Ea.	W+7'-9" To W+2"
	RS1 To RL37	1 Ea.	W+7'-9" To W
12'	RS1 To RS28	1 Ea.	W+9'-0" To W+1"
	RL1 To RL43	1 Ea.	W+9'-0" To W

K=W+5" For H= 6'
K=W+6" For H= 8'
K=W+8" For H= 10'
K=W+9" For H= 12'

TABLE OF BARS FL, FS, QS, ZL & ZS										
CULVERT HEIGHT "H"	BARS FL ~#4		BARS FS ~#4		SPACERS QS ~#4		DOWELS ZL ~#5		DOWELS ZS ~#5	
	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.	NO.	LGTH.
6'	2	40'-8"	2	26'-11"	2	5'-7"	7	4'-0"	7	3'-9"
8'	2	51'-10"	2	34'-4"	2	7'-7"	18	4'-0"	18	3'-9"
10'	2	58'-10"	2	39'-1"	2	9'-7"	18	4'-0"	18	3'-9"
12'	2	67'-8"	2	44'-11"	2	11'-7"	22	4'-0"	22	3'-9"

NOTE: The Number Of Bars Shown In The Tables Is The Number Required For One Complete Headwall Assembly At One End Of Culvert.

TABLE OF BARS WS					
				SHORT WING	
CULVERT HEIGHT "H"	BAR	NO.	SIZE	DIM. X	DIM. X1
6'	WS1 To WS35	1 Ea.	#4	4'-0" To 2'-0"	K+5'-8" To K
8'	WS1 To WS19	1 Ea.	#5	4'-6" To 3'-6"	K+7'-4" To K+4'-5"
	WS20 To WS40	1 Ea.	#4	3'-5" To 2'-0"	K+4'-4" To K
10'	WS1 To WS15	1 Ea.	#6	6'-0" To 5'-3"	K+8'-4" To K+6'-6"
	WS16 To WS30	1 Ea.	#5	5'-2" To 4'-4"	K+6'-5" To K+4'-4"
	WS31 To WS53	1 Ea.	#4	4'-3" To 2'-7"	K+4'-2" To K
12'	WS1 To WS22	1 Ea.	#7	6'-6" To 5'-3"	K+9'-7" To K+6'-7"
	WS23 To WS30	1 Ea.	#6	5'-2" To 4'-8"	K+6'-5" To K+5'-0"
	WS31 To WS40	1 Ea.	#5	4'-7" To 3'-9"	K+4'-9" To K+2'-10"
	WS41 To WS53	1 Ea.	#4	3'-8" To 2'-8"	K+2'-7" To K

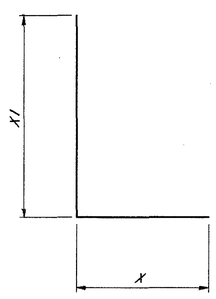
TABLE OF BARS L & M						
CULVERT HEIGHT "H"	BARS L			BARS M		
	NO.	SIZE	LENGTH	NO.	SIZE	LENGTH
6'	4	#8	P-4"			None
8' -12'	4	#9	P-4"	2	#4	1.414(Q+2V)+1'-8"

Bars K & N Per Basic Culvert Drawing Except Spacing Shall Be 1'-5".

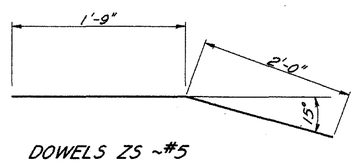
NOTE: Vertical Spacers QS And Dowels ZL And ZS Located Per Section A - A.

TABLE OF BARS U ~ #4		
CULVERT HEIGHT "H"	UL, NO. & LENGTH	US, NO. & LENGTH
	LONG WING	SHORT WING
6'	3 @ 40'-4"	3 @ 26'-4"
8'	3 @ 51'-4"	3 @ 33'-7"
10'	3 @ 58'-4"	3 @ 38'-1"
12'	3 @ 67'-0"	3 @ 43'-10"

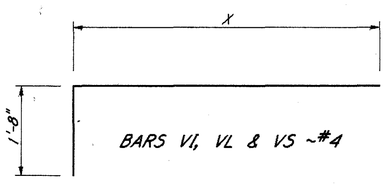
TABLE OF BARS T			
CULVERT HEIGHT "H"	BAR	NO.	LENGTH
6'	T1 To T23	1 Ea.	P-5" To P+18'-4"
	T24	3	P+19'-2"
8'	T1 To T29	1 Ea.	P-2" To P+23'-8"
	T30	3	P+24'-6"
10'	T1 To T33	1 Ea.	P-2" To P+27'-0"
	T34	3	P+27'-10"
12'	T1 To T38	1 Ea.	P-2" To P+31'-3"
	T39	3	P+32'-2"



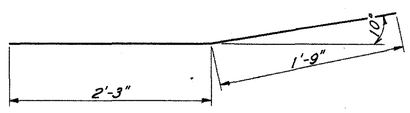
BARS WL & WS



DOWELS ZS ~#5



BARS VI, VL & VS ~#4



DOWELS ZL ~#5

BAR BENDING DETAILS
Dimensions Are Out To Out

GENERAL NOTES:

This Drawing Shows The General Details Necessary To Modify A Single Or Or Double Cell Culvert With Wings With 4:1 Slope For A 45° Skew.
All Governing Dimensions, Reinforcement Details And General Requirements Of Basic Culvert Drawings, Drawings IWS-4 And IWD-4 And Or Drawings IBSM-4M And IBDM-4W Shall Apply Except As Specifically Modified Hereon.
A Complete Placing Plan Showing All Governing Dimensions, Bar List And Bending Details Shall Be Submitted To The Project Engineer Prior To Fabrication Of The Reinforcing Steel.

REVISIONS	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
BOX CULVERT DRAWING
45° SKEW DETAILS
WINGS WITH 4:1 SLOPE
SINGLE & DOUBLE CELL CULVERTS

WORKING NUMBER ISK-45-4W

DATE			
DESIGNED NA	CHECKED BJJ	ISSUED TMT	SHEET NUMBER 7065
DETAILED MJC	DATE 07-11-97	DATE 08-01-97	