CULVERT DIMENSIONS

CULVERT HEIGHT	"J"	"LW"	"N1"	"N2"	"R"	"Z"	"Y" CLEAR SPANS 4'	5'	6'	8'	10'	12'	14'	16'	18'	20'
4'	3'-11"	16'-2 5/16"			1 3/16"	15'-9 3/16"	16'-11 3/16"	18'-11 3/16"	20'-11 3/16"	24'-11 11/16"	29'-0 1/16"	33'-0 9/16"				
5'	4'-7"	18'-11 3/16"			1 3/16"	18'-5 9/16"		20'-4 13/16"	22'-4 13/16"	26'-4 13/16"	30'-5 5/16"	34'-5 5/16"	38'-6 5/16"			
6'	5'-10"	24'-1 3/16"			1 3/16"	23'-5 9/16"			25'-1 3/16"	29'-2"	33'-2"	37'-2"	41'-3"	45'-3 1/16"		
8'	7'-5"	30'-8 9/16"			1 3/8"	29'-10 9/16"				32'-7 3/8"	36'-7 3/8"	40'-8 3/8"	44'-8 3/8"	48'-8 3/8"		
10'	8'-5"	34'-10 1/16"	2'-11"	6'-6"	1 3/16"	33'-10 9/16"					38'-10 1/16"	42'-10 1/16"	46'-11 3/16"	50'-11 3/16"	55'-0 1/16"	
12'	9'-8"	40'-08 3/8"	3'-3"	7'-0"	1 3/16"	38'-10 3/8"						45'-8 1/16"	49'-8 1/16"	53'-8 3/8"	57'-9 3/8"	61'-9 3/8"

ESTIMATED QUANTITIES — CULVERT (L = 150 FT.)

CULVERT HEIGHT	CLEAR SPANS 4' Concrete Cu. Yds.	4' Reinf. Steel Lbs.	5' Concrete Cu. Yds.	5' Reinf. Steel Lbs.	6' Concrete Cu. Yds.	6' Reinf. Steel Lbs.	8' Concrete Cu. Yds.	8' Reinf. Steel Lbs.	10' Concrete Cu. Yds.	10' Reinf. Steel Lbs.	12' Concrete Cu. Yds.	12' Reinf. Steel Lbs.	14' Concrete Cu. Yds.	14' Reinf. Steel Lbs.	16' Concrete Cu. Yds.	16' Reinf. Steel Lbs.	18' Concrete Cu. Yds.	18' Reinf. Steel Lbs.	20' Concrete Cu. Yds.	20' Reinf. Steel Lbs.	CULVERT HEIGHT
4'	110.54	14,299	130.78	16,985	152.86	20,725	206.46	26,866	267.69	33,332	344.42	39,872									4'
5'			142.97	18,121	169.70	20,968	219.97	26,567	282.33	34,845	364.38	42,827	457.86	53,666							5'
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					6'
8'							325.72	37,064	398.91	45,510	492.20	51,712	575.41	59,488	673.53	73,858					8'
10'									464.62	50,233	539.40	59,337	630.41	64,351	745.37	76,854	880.93	90,739			10'
12'											638.81	66,141	724.16	73,198	843.71	83,234	974.84	101,061	1086.49	116,434	12'

HEIGHT = 4 FT.

BAR LIST FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 4'	5'	6'	8'	10'	12'	DIM. X	DIM. X1	LENGTH
T1	#4	4	4	4	4	4	4			2S+1'-5"
T2	#4	4	4	4	4	4	4			2S+2'-6"
T3	#4	4	4	4	4	4	4			2S+3'-7"
T4	#4	4	4	4	4	4	4			2S+4'-8"
T5	#4	4	4	4	4	4	4			2S+5'-9"
T6	#4	4	4	4	4	4	4			2S+6'-10"
T7	#4	4	4	4	4	4	4			2S+7'-11"
T8	#4	8	8	8	8	8	8			2S+9'-0"
U	#4	8	8	8	8	8	8			15'-10"
V1	#4	22	26	30	38	46	54	15'-5"	1'-8"	17'-1"
V2	#4	4	4	4	4	4	4	11'-6"	1'-8"	13'-2"
V3	#4	4	4	4	4	4	4	7'-6"	1'-8"	9'-2"
V4	#4	4	4	4	4	4	4	3'-6"	1'-8"	5'-2"
W1	#4	16	16	16	16	16	16	2'-6"	W+3'-8"	W+6'-2"
W2	#4	16	16	16	16	16	16	2'-3"	W+2'-9"	W+5'-0"
W3	#4	16	16	16	16	16	16	2'-0"	W+1'-10"	W+3'-10"
W4	#4	12	12	12	12	12	12	1'-9"	W+1'-1"	W+2'-10"
W5	#4	12	12	12	12	12	12	1'-7"	W+4"	W+1'-11"
Y1	#4	4	4	4	4	4	4			5'-3"
Y2	#4	4	4	4	4	4	4			9'-5"
Y3	#4	4	4	4	4	4	4			13'-7"
Y4	#4	4	4	4	4	4	4			15'-10"

HEIGHT = 5 FT.

BAR LIST FOR WINGS & APRONS

BAR	SIZE	NO. REQUIRED SPAN 5'	6'	8'	10'	12'	14'	DIM. X	DIM. X1	LENGTH
T1	#4	4	4	4	4	4	4			2S+1'-5"
T2	#4	4	4	4	4	4	4			2S+2'-6"
T3	#4	4	4	4	4	4	4			2S+3'-7"
T4	#4	4	4	4	4	4	4			2S+4'-8"
T5	#4	4	4	4	4	4	4			2S+5'-9"
T6	#4	4	4	4	4	4	4			2S+6'-10"
T7	#4	4	4	4	4	4	4			2S+7'-11"
T8	#4	4	4	4	4	4	4			2S+9'-0"
T9	#4	4	4	4	4	4	4			2S+10'-1"
T10	#4	6	6	6	6	6	6			2S+11'-2"
U	#4	8	8	8	8	8	8			18'-7"
V1	#4	26	30	38	46	54	62	18'-1"	1'-8"	19'-9"
V2	#4	4	4	4	4	4	4	14'-0"	1'-8"	15'-8"
V3	#4	4	4	4	4	4	4	10'-6"	1'-8"	12'-2"
V4	#4	4	4	4	4	4	4	6'-6"	1'-8"	8'-2"
V5	#4	4	4	4	4	4	4	2'-6"	1'-8"	4'-2"
W1	#4	24	24	24	24	24	24	3'-0"	W+4'-2"	W+7'-2"
W2	#4	20	20	20	20	20	20	2'-9"	W+3'-6"	W+6'-3"
W3	#4	16	16	16	16	16	16	2'-6"	W+2'-6"	W+5'-0"
W4	#4	12	12	12	12	12	12	2'-3"	W+1'-9"	W+4'-0"
W5	#4	12	12	12	12	12	12	2'-0"	W+1'-1"	W+3'-1"
W6	#4	12	12	12	12	12	12	1'-9"	W+4"	W+2'-1"
Y1	#4	4	4	4	4	4	4			6'-0"
Y2	#4	4	4	4	4	4	4			10'-1"
Y3	#4	4	4	4	4	4	4			14'-3"
Y4	#4	8	8	8	8	8	8			18'-7"

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			2S+1'-8"
T2	#4	4	4	4	4	4	4			2S+2'-9"
T3	#4	4	4	4	4	4	4			2S+3'-10"
T4	#4	4	4	4	4	4	4			2S+4'-11"
T5	#4	4	4	4	4	4	4			2S+6'-0"
T6	#4	4	4	4	4	4	4			2S+7'-1"
T7	#4	4	4	4	4	4	4			2S+8'-2"
T8	#4	4	4	4	4	4	4			2S+9'-3"
T9	#4	4	4	4	4	4	4			2S+10'-4"
T10	#4	4	4	4	4	4	4			2S+11'-5"
T11	#4	4	4	4	4	4	4			2S+12'-6"
T12	#4	8	8	8	8	8	8			2S+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"

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			2S+2'-0"
T2	#4	4	4	4	4	4			2S+3'-1"
T3	#4	4	4	4	4	4			2S+4'-2"
T4	#4	4	4	4	4	4			2S+5'-3"
T5	#4	4	4	4	4	4			2S+6'-4"
T6	#4	4	4	4	4	4			2S+7'-5"
T7	#4	4	4	4	4	4			2S+8'-6"
T8	#4	4	4	4	4	4			2S+9'-7"
T9	#4	4	4	4	4	4			2S+10'-8"
T10	#4	4	4	4	4	4			2S+11'-9"
T11	#4	4	4	4	4	4			2S+12'-10"
T12	#4	4	4	4	4	4			2S+13'-11"
T13	#4	4	4	4	4	4			2S+15'-0"
T14	#4	4	4	4	4	4			2S+16'-1"
T15	#4	8	8	8	8	8			2S+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'-1"	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 = 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"
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+6"	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"

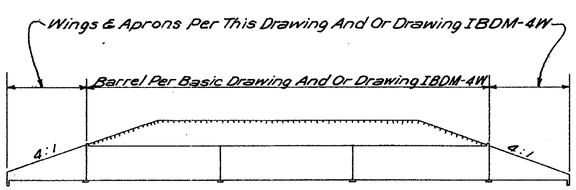
HEIGHT = 12 FT.

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			2S+2'-7"
T2	#4	4	4	4	4	4			2S+3'-8"
T3	#4	4	4	4	4	4			2S+4'-9"
T4	#4	4	4	4	4	4			2S+5'-10"
T5	#4	4	4	4	4	4			2S+6'-11"
T6	#4	4	4	4	4	4			2S+8'-0"
T7	#4	4	4	4	4	4			2S+9'-1"
T8	#4	4	4	4	4	4			2S+10'-2"
T9	#4	4	4	4	4	4			2S+11'-3"
T10	#4	4	4	4	4	4			2S+12'-4"
T11	#4	4	4	4	4	4			2S+13'-5"
T12	#4	4	4	4	4	4			2S+14'-6"
T13	#4	4	4	4	4	4			2S+15'-7"
T14	#4	4	4	4	4	4			2S+16'-8"
T15	#4	4	4	4	4	4			2S+17'-9"
T16	#4	4	4	4	4	4			2S+18'-10"
T17	#4	4	4	4	4	4			2S+19'-11"
T18	#4	4	4	4	4	4			2S+21'-0"
T19	#4	4	4	4	4	4			2S+22'-1"
T20	#4	6	6	6	6	6			2S+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"
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"	W+16'-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	4'-10"	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'-1"	W+3'-7"	W+7'-7"
W9	#4	16	16	16	16	16	3'-9"	W+5'-1"	W+8'-10"
W10	#4	12	12	12	12	12	3'-5"	W+4'-1"	W+7'-6"
W11	#4	8	8	8	8	8	3'-1"	W+3'-2"	W+6'-3"
W12	#4	8	8	8	8	8	2'-9"	W+2'-2"	W+4'-11"
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"

ADDITIONAL BAR LIST FOR WINGS & APRONS

BAR	SIZE	H=4 Ft. NO.	LENGTH	H=5 Ft. NO.	LENGTH	H=6 Ft. NO.	LENGTH	H=8 Ft. NO.	LENGTH	H=10 Ft. NO.	LENGTH	H=12 Ft. NO.	LENGTH
F	#4	8	16'-2"	8	19'-0"	8	24'-4"	8	31'-1"	8	35'-4"	8	40'-8"
Q	#5	20	3'-0"	24	3'-0"	28	3'-0"	72	3'-0"	72	3'-0"	88	3'-0"
Q5	#4	4	3'-7"	4	4'-7"	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+1'-4½"	16	W+1'-4½"
R8	#4											16	W-1"



SIDE ELEVATION OF CULVERT
See Drawing 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 Double Cell Culvert For Wings With 4:1 Slope.
All Governing Dimensions, Reinforcement 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.

REVISION	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

WINGS WITH 4:1 SLOPE FOR BASIC CULVERT DRAWING DOUBLE CELL

HEIGHTS 4–12 FT.
TOTAL SPANS 8–40 FT.

WORKING NUMBER SD-IWD-4A
SHEET NUMBER

FILENAME:
DESIGN TEAM CHECKED DATE

COUNTY:
DESIGN TEAM:
PROJECT NO.:
FILENAME: