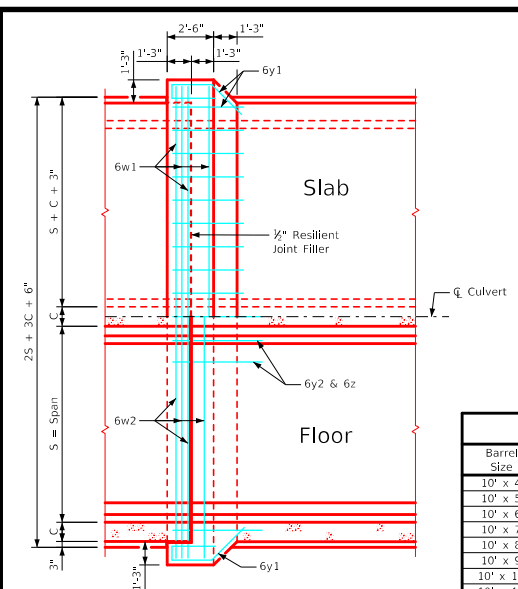


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Plan View

### Estimate of Quantities - One Joint - 10' Span

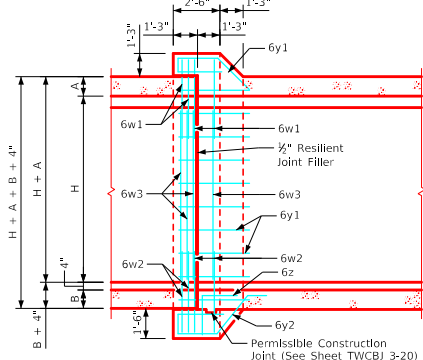
Bar	Location	Shape	10' x 4'			10' x 5'			10' x 6'			10' x 7'			10' x 8'			10' x 9'			10' x 10'			10' x 11'			10' x 12'		
			No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight
6w1	Slab & Walls		4	34'-7"	208	4	34'-7"	208	4	34'-7"	208	4	34'-7"	208	4	34'-7"	208	4	34'-7"	208	4	35'-0"	210	4	35'-3"	212	4	35'-6"	215
6w2	Floor & Walls		4	37'-1"	223	4	39'-1"	235	4	34'-11"	210	4	34'-11"	210	4	34'-11"	210	4	34'-11"	210	4	35'-4"	212	4	35'-7"	214	4	35'-10"	215
6w3	Walls		--	--	--	--	--	--	8	5'-6"	66	8	6'-6"	78	8	7'-6"	90	8	8'-6"	102	8	9'-6"	114	8	10'-6"	126	8	11'-6"	138
6y1	Top & Sides		35	8'-0"	421	37	8'-0"	445	39	8'-0"	469	41	8'-0"	493	43	8'-0"	517	45	8'-0"	541	47	8'-0"	565	49	8'-0"	589	51	8'-0"	613
6y2	Bottom		23	9'-6"	328	23	9'-6"	328	23	9'-6"	328	23	9'-6"	328	23	9'-6"	328	23	9'-6"	328	23	9'-7"	331	23	9'-7"	331	23	9'-6"	328
6z	Bottom & Floor		23	3'-11"	135	23	3'-11"	135	23	3'-11"	135	23	3'-11"	135	23	3'-11"	135	23	3'-11"	135	23	3'-11"	135	23	3'-11"	135	23	3'-11"	135
Total Weight (LB)			1315			1351			1416			1452			1488			1527			1567			1604			1642		
Total Concrete (CY)			9.6			9.9			10.2			10.5			10.8			11.1			11.5			11.8			12.2		

### Estimate of Quantities - One Joint - 12' Span

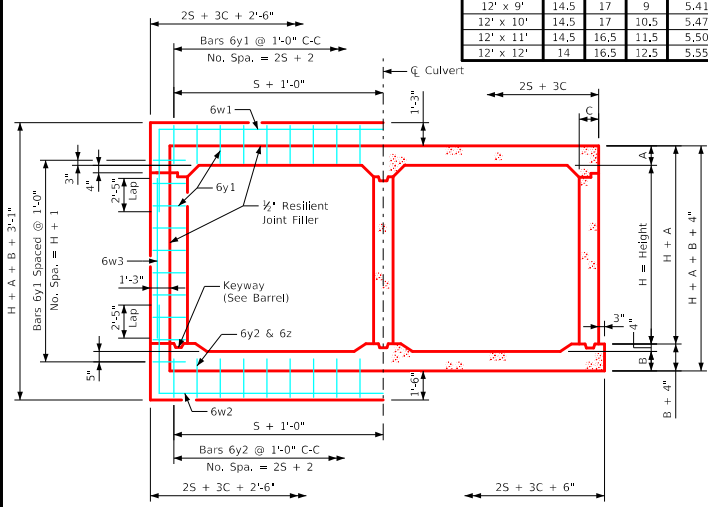
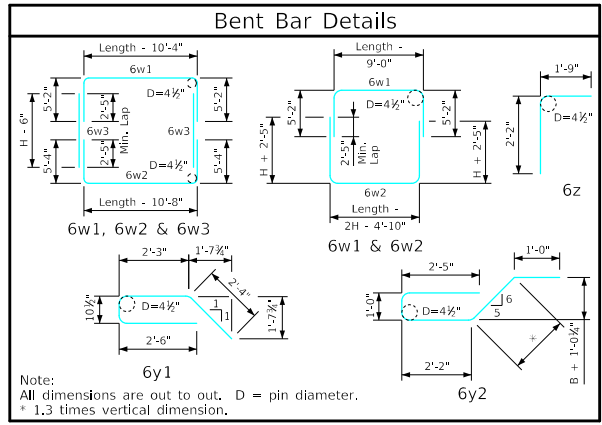
Bar	Location	Shape	12' x 4'			12' x 5'			12' x 6'			12' x 7'			12' x 8'			12' x 9'			12' x 10'			12' x 11'			12' x 12'		
			No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight
6w1	Slab & Walls		4	38'-7"	232	4	38'-7"	232	4	38'-7"	232	4	38'-7"	232	4	38'-7"	232	4	39'-0"	234	4	39'-3"	236	4	39'-6"	238	4	39'-9"	239
6w2	Floor & Walls		4	41'-1"	247	4	43'-1"	259	4	38'-11"	234	4	38'-11"	234	4	38'-11"	234	4	38'-11"	234	4	39'-4"	236	4	39'-7"	238	4	39'-10"	239
6w3	Walls		--	--	--	--	--	--	8	5'-6"	66	8	6'-6"	78	8	7'-6"	90	8	8'-6"	102	8	9'-6"	114	8	10'-6"	126	8	11'-6"	138
6y1	Top & Sides		39	8'-0"	469	41	8'-0"	493	43	8'-0"	517	45	8'-0"	541	47	8'-0"	565	49	8'-0"	589	51	8'-0"	613	53	8'-0"	637	55	8'-0"	661
6y2	Bottom		27	9'-9"	395	27	9'-9"	395	27	9'-9"	395	27	9'-9"	395	27	9'-10"	399	27	9'-10"	399	27	9'-10"	399	27	9'-9"	395	27	9'-9"	395
6z	Bottom & Floor		27	3'-11"	159	27	3'-11"	159	27	3'-11"	159	27	3'-11"	159	27	3'-11"	159	27	3'-11"	159	27	3'-11"	159	27	3'-11"	159	27	3'-11"	159
Total Weight (LB)			1502			1538			1603			1639			1679			1715			1755			1791			1829		
Total Concrete (CY)			11.0			11.3			11.5			11.8			12.1			12.4			12.8			13.2			13.5		

### Concrete Placement

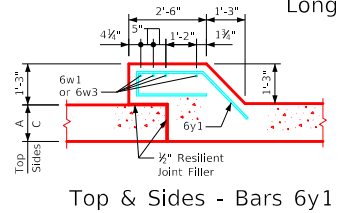
Barrel Size	Barrel Dimension			Bell Joint Quantities (CY)		
	A	B	C	Footing	Walls	Slab
10' x 4'	12.5	14.5	9	4.665	1.047	3.906
10' x 5'	12.5	14.5	9	4.665	1.332	3.906
10' x 6'	12.5	14.5	9	4.665	1.618	3.906
10' x 7'	12.5	14.5	9	4.665	1.903	3.906
10' x 8'	12.5	14.5	9	4.665	2.189	3.906
10' x 9'	12.5	15	9	4.677	2.474	3.906
10' x 10'	12.5	15	10.5	4.741	2.760	3.960
10' x 11'	12.5	14.5	11.5	4.772	3.045	3.995
10' x 12'	12	14.5	12.5	4.815	3.331	4.019
12' x 4'	14.5	16.5	9	5.399	1.047	4.525
12' x 5'	14.5	16.5	9	5.399	1.332	4.525
12' x 6'	14.5	16.5	9	5.399	1.618	4.525
12' x 7'	14.5	16.5	9	5.399	1.903	4.525
12' x 8'	14.5	17	9	5.411	2.189	4.525
12' x 9'	14.5	17	9	5.411	2.474	4.525
12' x 10'	14.5	17	10.5	5.476	2.760	4.578
12' x 11'	14.5	16.5	11.5	5.507	3.045	4.614
12' x 12'	14	16.5	12.5	5.550	3.331	4.638



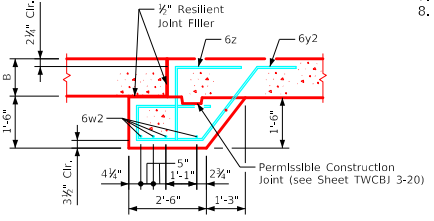
Longitudinal Section



Joint Detail Section thru Barrel



Top & Sides - Bars 6y1



Bottom - Bars 6y2 & 6z

**Notes:**

1. Dimensions and quantities shown are based on slab, floor, and wall thicknesses (A, B, and C, respectively). Values for these dimensions, under varying fill conditions, can be found on the TWRCB culvert barrel detail sheets.
2. Change lengths of bars 6w1, 6w2, 6z, and adjust reinforcing steel and concrete quantities accordingly for slab, wall, and floor thicknesses other than shown.
3. All bar lengths are estimated with a 2" clearance from concrete edge to outside of bar, except as noted.
4. Material and construction to be in accordance with the current Standard Specifications of I.D.O.T.
5. See Sheet TWRCB G2-20 for General Notes, Specifications, and Design Stresses.
6. Bars 6w1 & 6w2 may be furnished in two equal lengths adding 2'-5" to the overall length to obtain a 2'-5" min. lap. The above is to be performed at no additional cost to the contracting authority.
7. Barrel floor bars m1 & m9 are to be shortened 6" in length at bell joints.
8. Dimensions "A", "B" and "C" are in inches. "Length" dimensions in bar lists are in feet and inches.

LATEST REVISION DATE

Standard Design  
**Twin Reinforced Concrete Box Culverts**  
July, 2020

APPROVED BY BRIDGE ENGINEER

Culvert Bell Joints

TWCBJ 2-20

10' & 12' Spans