

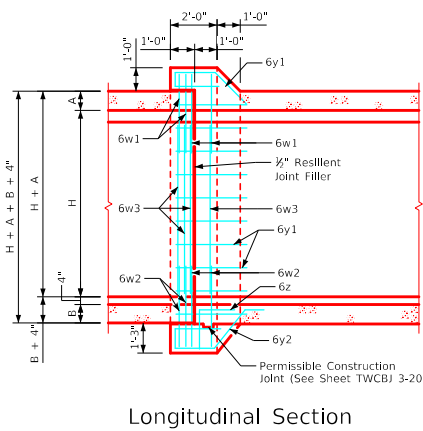
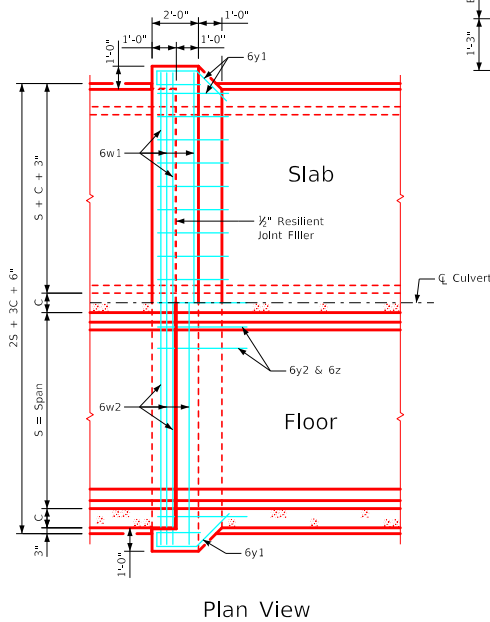
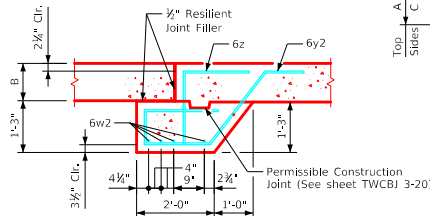
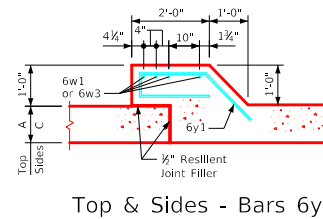
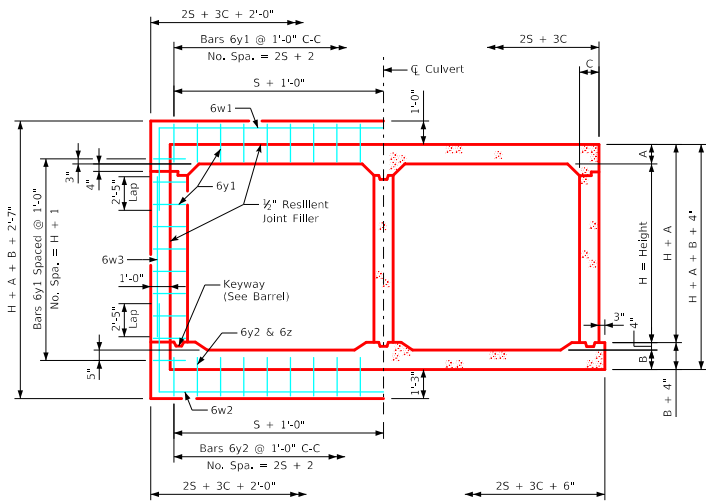
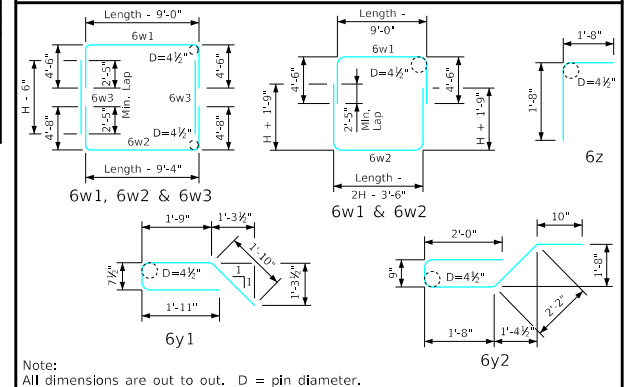
Estimate of Quantities - One Joint - 8' Span

Bill of Reinforcing Steel		8' x 4'		8' x 5'		8' x 6'		8' x 7'		8' x 8'		8' x 9'		8' x 10'			
Bar	Location	Shape	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight
6w1	Slab & Walls		4	28'-9"	173	4	28'-9"	173	4	28'-9"	173	4	28'-9"	173	4	29'-2"	175
6w2	Floor & Walls		4	31'-3"	188	4	33'-3"	200	4	29'-1"	175	4	29'-1"	175	4	29'-6"	177
6w3	Walls		--	--	--	--	--	--	8	5'-6"	66	8	6'-6"	78	8	8'-6"	102
6y1	Top & Sides		31	6'-2"	287	33	6'-2"	306	35	6'-2"	324	37	6'-2"	343	39	6'-2"	361
6y2	Bottom		19	7'-5"	212	19	7'-5"	212	19	7'-5"	212	19	7'-5"	212	19	7'-5"	212
6z	Bottom & Floor		19	3'-4"	95	19	3'-4"	95	19	3'-4"	95	19	3'-4"	95	19	3'-4"	95
Total Weight (LB)					955			986			1045			1106			1137
Total Concrete (CY)				5.2		5.4		5.6		5.8		6.0		6.2		6.4	

Concrete Placement

Barrel Size	Barrel Dimension			Bell Joint Quantities (CY)		
	A	B	C	Footings	Walls	Slab
8' x 4'	9.5	12	9	2,543	0,668	2,039
8' x 5'	9.5	12	9	2,543	0,850	2,039
8' x 6'	9.5	11.5	9	2,535	1,032	2,039
8' x 7'	9.5	12	9	2,543	1,214	2,039
8' x 8'	9.5	12	9	2,543	1,396	2,039
8' x 9'	9.5	12.5	9	2,550	1,578	2,039
8' x 10'	9.5	12	10.5	2,586	1,760	2,073

Bent Bar Details



Notes:

- 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.
- Change lengths of bars 6w1, 6w2, 6z, and adjust reinforcing steel and concrete quantities accordingly for slab, wall, and floor thicknesses other than shown.
- All bar lengths are estimated with a 2" clearance from concrete edge to outside of bar, except as noted.
- Material and construction to be in accordance with the current Standard Specifications of I.D.O.T.
- See Sheet TWRCB G2-20 for General Notes, Specifications, and Design Stresses.
- 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.
- Barrel floor bars m1 & m9 are to be shortened 6" in length at bell joints.
- Dimensions "A", "B" and "C" are in inches. "Length" dimensions in bar lists are in feet and inches.

LATEST REVISION DATE	APPROVED BY BRIDGE ENGINEER	IOWADOT Highway Division	
		Standard Design Twin Reinforced Concrete Box Culverts July, 2020	
		Culvert Bell Joints	TWCBJ 1-20 8' Span