

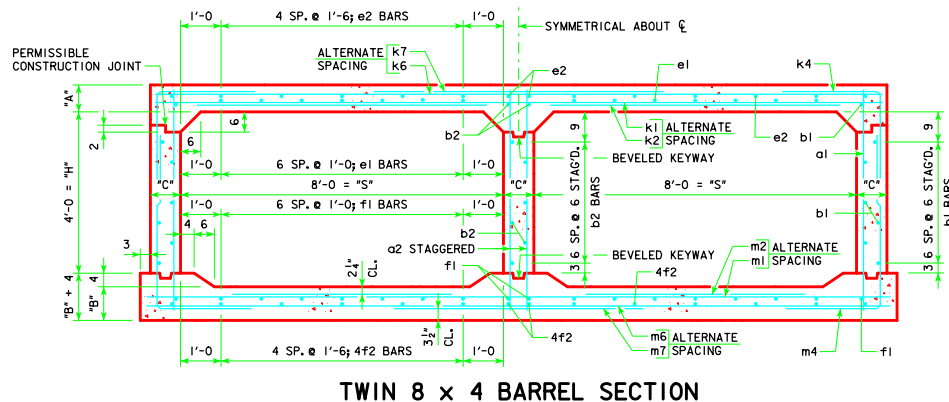
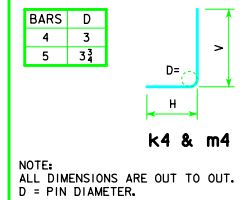
## VARIABLE DIMENSIONS AND QUANTITIES FOR TWIN 8 x 4 BARREL SECTIONS

DIMENSIONS													BAR LIST																																										
FILL	S	H	A	B	C	D	E	U	W	X	Z	a1		a2		b1		b2		e1		e2		f1		f2		k1		k2		k4		k6		k7		k9																	
SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.	NO.	SIZE	SP.	NO.	SIZE	SP.	NO.	SIZE	SP.	NO.	SIZE	SP.	NO.	SIZE	SP.	NO.	SIZE	SP.	NO.	SIZE	SP.	NO.	SIZE	SP.	NO.	SIZE	SP.	NO.	SIZE	SP.	NO.	SIZE	SP.	NO.	SIZE	SP.	NO.											
0	8	4	13	10	9	9	9	0'-0	5'-3	2'-3	5'-5	5	12	5'-10	6	9	5'-10	4	6	16	4	6	9	4	12	14	4	18	14	4	12	18	4	18	14	4	9	17'-11	4	9	8'-11	4	6	6'-2	2'-10	3'-3	4	12	17'-11	4	12	10'-6	4	4.5	17'-11
1	8	4	11	10	9	9	9	0'-9	5'-3	1'-11	4'-1	5	12	5'-8	6	9	5'-8	4	6	16	4	6	9	4	12	14	4	18	14	4	12	18	4	18	14	6	18	17'-11	5	18	8'-2	4	6	5'-8	2'-10	3'-1	4	12	17'-11	4	12	10'-6	4	4.5	17'-11
2	8	4	8	10	9	9	9	1'-3	4'-7	2'-2	3'-10	5	12	5'-5	6	9	5'-5	4	6	16	4	6	9	4	12	14	4	18	14	4	12	18	4	18	14	5	18	17'-11	4	12	6'-9	4	6	5'-8	2'-10	2'-10	5	18	17'-11	6	18	9'-2	6	4.5	17'-11
3	8	4	8	10	9	9	9	1'-5	4'-1	2'-3	3'-5	5	12	5'-5	6	9	5'-5	4	6	16	4	6	9	4	12	14	4	18	14	4	12	18	4	18	14	6	18	17'-11	5	18	6'-7	4	6	5'-3	2'-5	2'-10	5	18	17'-11	6	18	8'-2	6	4.5	17'-11
4	8	4	8	10	9	9	9	1'-1	3'-7	2'-1	3'-1	4	12	5'-5	6	9	5'-5	4	6	16	4	6	9	4	12	14	4	18	14	4	12	18	4	18	14	5	18	17'-11	5	18	7'-2	4	6	5'-3	2'-5	2'-10	5	18	17'-11	6	18	7'-2	6	4.5	17'-11
5-7	8	4	8	10	9	9	9	1'-6	3'-2	2'-2	3'-1	4	12	5'-5	6	9	5'-5	4	6	16	4	6	9	4	12	14	4	18	14	4	12	18	4	18	14	5	18	17'-11	5	18	6'-7	4	6	5'-2	2'-4	2'-10	4	12	17'-11	5	12	6'-4	5	4.5	17'-11
8-10	8	4	8	10	9	9	9	1'-11	2'-11	2'-4	3'-2	4	12	5'-5	6	9	5'-5	4	6	16	4	6	9	4	12	14	4	18	14	4	12	18	4	18	14	6	18	17'-11	5	18	5'-9	4	6	5'-1	2'-3	2'-10	5	12	17'-11	5	12	5'-10	5	4.5	17'-11
11-13	8	4	8.5	10.5	9	9	9	1'-11	2'-10	2'-1	3'-3	4	9	5'-6	6	9	5'-6	4	6	16	4	6	9	4	12	14	4	18	14	4	12	18	4	18	14	5	12	17'-11	4	12	5'-11	4	6	5'-0	2'-2	2'-10	4	9	17'-11	5	9	5'-8	5	4.5	17'-11
14-16	8	4	9.5	11.5	9	9	9	1'-10	3'-0	1'-8	3'-3	4	9	5'-8	6	9	5'-8	4	6	16	4	6	9	4	12	14	4	18	14	4	12	18	4	18	14	5	12	17'-11	4	12	6'-4	4	6	4'-11	2'-0	2'-11	5	12	17'-11	6	12	6'-0	6	4.5	17'-11
17-19	8	4	10	12	9	9	9	1'-10	2'-11	1'-8	3'-0	4	12	5'-9	6	9	5'-9	4	6	16	4	6	9	4	12	14	4	18	14	4	12	18	4	18	14	5	12	17'-11	4	12	6'-5	4	6	5'-0	2'-0	3'-0	5	12	17'-11	6	12	5'-10	6	4.5	17'-11
20-22	8	4	11.5	13.5	9	9	9	1'-4	3'-1	1'-4	3'-1	4	12	6'-0	6	9	6'-0	4	6	16	4	6	9	4	12	14	4	18	14	4	12	18	4	18	14	4	9	7'-6	4	9	7'-6	4	6	5'-1	2'-0	3'-1	4	12	17'-11	7	12	6'-2	7	4.5	17'-11
23-25	8	4	13	15	9	9	9	1'-0	3'-1	1'-1	3'-2	4	9	6'-3	6	9	6'-3	4	6	16	4	6	9	4	12	14	4	18	14	4	12	18	4	18	14	6	18	17'-11	5	12	5'-3	2'-0	3'-3	5	12	17'-11	6	12	6'-2	6	4.5	17'-11			

BAR LIST													QUANTITIES												
FILL	SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.	L	H	V	m6		m7		m9		CONCRETE (CY/FT)			STEEL (LB/FT)				
0	5	12	18'-5	4	12	5'-3	4	6	9'-6	5'-3	4'-3	4	18	18'-5	6	18	10'-10	6	4.5	18'-5	0.789	0.638	0.299	1.726	222.74
1	6	18	18'-5	5	18	5'-10	4	6	8'-6	4'-3	4'-3	4	18	18'-5	5	18	8'-2	5	4.5	18'-5	0.676	0.638	0.299	1.613	219.18
2	5	12	18'-5	4	12	5'-5	4	6	6'-9	2'-6	4'-3	4	18	18'-5	6	18	7'-8	6	4.5	18'-5	0.507	0.638	0.299	1.444	210.82
3	5	12	18'-5	4	12	5'-3	4	6	6'-8	2'-5	4'-3	4	18	18'-5	6	18	6'-10	6	4.5	18'-5	0.507	0.638	0.299	1.444	208.03
4	6	18	18'-5	5	18	5'-5	4	6	6'-7	2'-4	4'-3	5	18	18'-5	5	18	6'-2	5	4.5	18'-5	0.507	0.638	0.299	1.444	199.21
5-7	6	18	18'-5	5	18	5'-3	4	6	6'-7	2'-4	4'-3	5	18	18'-5	6	18	6'-2	6	4.5	18'-5	0.507	0.638	0.299	1.444	198.68
8-10	5	12	18'-5	4	12	4'-11	4	6	6'-6	2'-3	4'-3	5	18	18'-5	7	18	6'-4	7	4.5	18'-5	0.507	0.638	0.299	1.444	211.74
11-13	5	12	18'-5	4	12	5'-8	4	6	6'-6	2'-2	4'-4	5	18	18'-5	8	18	6'-6	8	4.5	18'-5	0.536	0.667	0.299	1.502	217.58
14-16	4	9	18'-5	4	9	6'-8	4	6	6'-6	2'-1	4'-5	5	18	18'-5	8	18	6'-6	8	4.5	18'-5	0.592	0.725	0.299	1.616	223.71
17-19	4	9	18'-5	4	9	6'-8	4	6	6'-5	2'-0	4'-5	5	12	18'-5	6	12	6'-0	6	4.5	18'-5	0.620	0.753	0.299	1.672	222.82
20-22	4	9	18'-5	4	9	7'-6	4	6	6'-7	2'-0	4'-7	5	12	18'-5	6	12	6'-2	6	4.5	18'-5	0.705	0.840	0.299	1.844	225.18
23-25	6	18	18'-5	6	18	7'-11	5	12	6'-8	2'-0	4'-8	5	12	18'-5	6	12	6'-4	6	4.5	18'-5	0.789	0.927	0.299	2.015	239.00

### BENT BAR DETAIL



### NOTES:

- DIMENSIONS LISTED ON THIS SHEET TO BE USED IN CONJUNCTION WITH SHEET TWRCB G2-12.
- DIMENSIONS "A", "B", "C", "D", "E", AND "SP." LISTED IN THE BAR LIST ARE IN INCHES.

LATEST REVISION DATE	 APPROVED BY BRIDGE ENGINEER	 <b>Iowa Department of Transportation</b> Highway Division STANDARD DESIGN <b>TWIN REINFORCED CONCRETE BOX CULVERTS</b> APRIL, 2012 <b>CULVERT BARREL DETAILS</b> 8 x 4 BARREL SECTIONS	<b>TWRCB 8-4-12</b>
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