

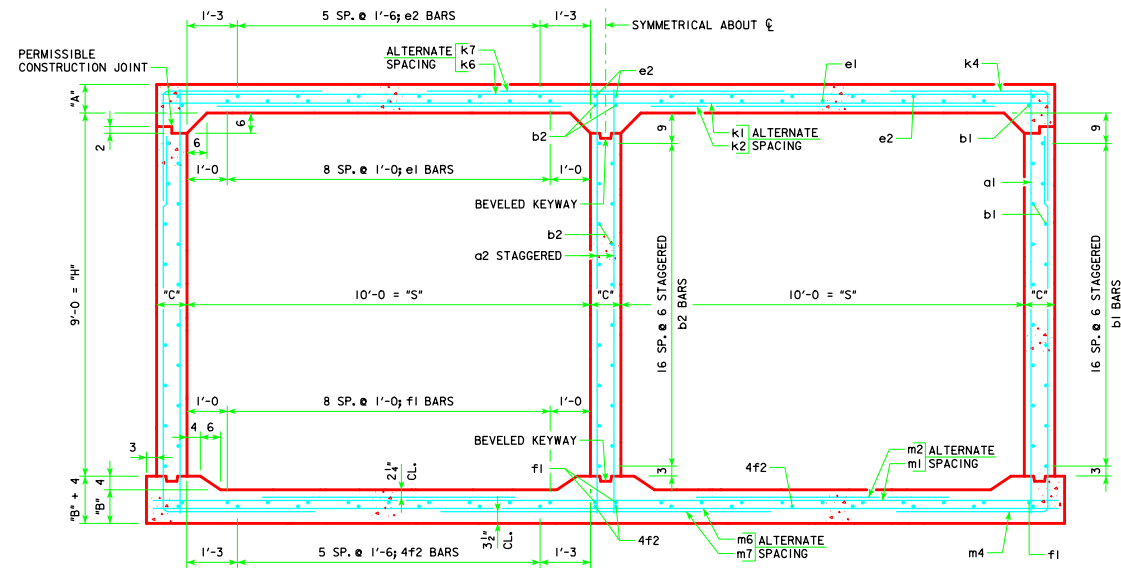
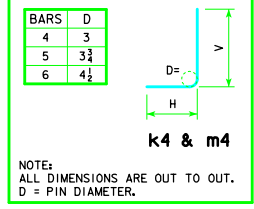
ENGLISH DESIGNED IN CIVIL WERTS.DWG - TWRCB 10-9-12 - THIS SHEET ISSUED 04-12

### VARIABLE DIMENSIONS AND QUANTITIES FOR TWIN 10 x 9 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.	L	SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.	L	H	V	SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.	L									
0	10	9	13.5	11.5	9	9	9	0'-0	6'-3	2'-0	6'-8	4	12	11'-0	6	9	11'-0	4	6	36	4	6	19	4	12	18	4	18	16	4	12	22	4	18	16	6	18	21'-11	6	18	10'-11	4	9	21'-11	4	9	12'-6	4	4.5	21'-11					
1	10	9	13	11.5	9	9	9	0'-6	6'-3	2'-0	6'-3	4	12	10'-11	6	9	10'-11	4	6	36	4	6	19	4	12	18	4	18	16	4	12	22	4	18	16	6	18	21'-11	4	9	21'-11	4	9	12'-6	4	4.5	21'-11								
2	10	9	9.5	10	9	9	9	1'-11	6'-8	2'-8	4'-10	4	12	10'-6	6	9	10'-6	4	6	36	4	6	19	5	12	18	4	18	16	4	12	22	4	18	16	5	9	21'-11	4	9	8'-3	5	6	9'-8	6'-5	3'-3	4	9	21'-11	7	18	13'-4	7	4.5	21'-11
3	10	9	9.5	10	9	9	9	1'-9	5'-10	2'-8	4'-1	4	12	10'-6	6	9	10'-6	4	6	36	4	6	19	4	12	18	4	18	16	4	12	22	4	18	16	5	9	21'-11	4	9	8'-0	5	6	7'-5	4'-5	3'-0	5	12	21'-11	5	12	11'-8	5	4.5	21'-11
4	10	9	8.5	10	9	9	9	1'-11	4'-5	3'-0	4'-1	4	12	10'-5	6	9	10'-5	4	6	36	4	6	19	4	12	18	4	18	16	4	12	22	4	18	16	5	12	21'-11	5	12	8'-6	5	6	6'-10	3'-11	2'-11	4	9	21'-11	5	9	8'-10	5	4.5	21'-11
5-7	10	9	8.5	10	9	9	9	1'-11	4'-1	3'-2	3'-9	4	12	10'-5	6	9	10'-5	4	6	36	4	6	19	4	12	18	4	18	16	4	12	22	4	18	16	5	12	21'-11	5	12	8'-0	5	6	6'-7	3'-8	2'-11	5	12	21'-11	6	12	8'-2	6	4.5	21'-11
8-10	10	9	9.5	11.5	9	9	9	2'-2	3'-10	2'-3	3'-7	4	12	10'-8	6	9	10'-8	4	6	36	4	6	19	4	12	18	4	18	16	4	12	22	4	18	16	5	12	21'-11	5	12	7'-10	5	6	6'-3	3'-4	2'-11	4	12	21'-11	7	12	7'-8	7	4.5	21'-11
11-13	10	9	11.5	13.5	9	9	9	1'-10	3'-7	2'-1	3'-8	4	12	11'-0	6	9	11'-0	4	6	36	4	6	19	4	12	18	4	18	16	4	12	22	4	18	16	6	18	21'-11	6	18	8'-9	5	6	6'-8	3'-4	3'-4	5	9	21'-11	5	9	7'-2	5	4.5	21'-11
14-16	10	9	13	15	9	9	9	1'-9	3'-8	2'-0	3'-9	4	12	11'-3	6	9	11'-3	4	6	36	4	6	19	4	12	18	4	18	16	4	12	22	4	18	16	6	18	21'-11	6	18	9'-2	6	9	6'-10	3'-3	3'-7	4	9	21'-11	6	9	7'-4	6	4.5	21'-11
17-19	10	9	14	16	10	9	9	1'-6	3'-9	1'-11	3'-10	4	9	11'-5	7	9	11'-5	4	6	36	4	6	19	4	12	18	4	18	16	4	12	22	4	18	16	5	12	22'-2	5	12	9'-7	6	9	7'-0	3'-4	3'-8	5	12	22'-2	7	12	7'-6	7	4.5	22'-2
20-22	10	9	15	17	10.5	9	9	1'-6	3'-10	1'-11	3'-11	5	12	11'-7	7	9	11'-7	4	6	36	4	6	19	4	12	18	4	18	16	4	12	22	4	18	16	5	12	22'-3	5	12	9'-7	6	9	7'-2	3'-5	3'-9	5	12	22'-3	7	12	7'-8	7	4.5	22'-3
23-25	10	9	16	18.5	10.5	9	9	1'-8	3'-10	1'-9	4'-0	5	12	11'-9	7	9	11'-9	4	6	36	4	6	19	4	12	18	4	18	16	4	12	22	4	18	16	5	9	22'-3	4	9	9'-4	5	6	7'-0	3'-6	3'-6	5	12	22'-3	7	12	7'-8	7	4.5	22'-3

FILL	BAR LIST																		QUANTITIES																		
	m1	m2	m4	m6	m7	m9	SLAB	FLOOR	WALLS	TOTAL	STEEL	SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.
0	5	12	22'-5	5	12	8'-4	5	6	15'-5	6'-0	9'-5	5	18	22'-5	7	18	13'-4	7	4.5	22'-5	0.984	0.866	0.715	2.565	368.66												
1	5	12	22'-5	5	12	8'-0	6	9	15'-10	6'-5	9'-5	4	9	22'-5	4	9	12'-6	4	4.5	22'-5	0.950	0.866	0.715	2.531	363.95												
2	6	12	22'-5	5	12	6'-7	5	6	13'-11	4'-8	9'-3	5	18	22'-5	8	18	9'-8	8	4.5	22'-5	0.709	0.761	0.715	2.185	393.29												
3	6	12	22'-5	5	12	6'-7	5	6	13'-2	3'-11	9'-3	5	12	22'-5	6	12	8'-2	6	4.5	22'-5	0.709	0.761	0.715	2.185	375.53												
4	5	9	22'-5	4	9	6'-3	5	6	13'-0	3'-9	9'-3	5	18	22'-5	8	18	8'-2	8	4.5	22'-5	0.641	0.761	0.715	2.117	356.21												
5-7	5	9	22'-5	4	9	6'-0	5	6	12'-10	3'-7	9'-3	4	9	22'-5	6	9	7'-6	6	4.5	22'-5	0.641	0.761	0.715	2.117	359.16												
8-10	5	12	22'-5	5	12	7'-10	5	6	12'-9	3'-4	9'-5	4	9	22'-5	6	9	7'-2	6	4.5	22'-5	0.709	0.866	0.715	2.290	351.71												
11-13	5	12	22'-5	5	12	8'-5	5	6	12'-11	3'-4	9'-7	5	9	22'-5	5	9	7'-4	5	4.5	22'-5	0.847	1.007	0.715	2.569	371.39												
14-16	5	12	22'-5	5	12	9'-0	6	9	13'-0	3'-4	9'-8	5	12	22'-5	7	12	7'-6	7	4.5	22'-5	0.950	1.112	0.715	2.777	369.26												
17-19	5	9	22'-8	4	9	8'-8	6	9	13'-2	3'-5	9'-9	5	12	22'-8	7	12	7'-8	7	4.5	22'-8	1.033	1.198	0.795	3.026	396.42												
20-22	5	9	22'-9	4	9	9'-1	6	9	13'-3	3'-5	9'-10	5	12	22'-9	7	12	7'-10	7	4.5	22'-9	1.110	1.275	0.837	3.222	404.03												
23-25	5	9	22'-9	4	9	9'-5	5	6	13'-5	3'-5	10'-0	5	9	22'-9	6	9	8'-0	6	4.5	22'-9	1.180	1.382	0.837	3.399	416.58												

#### BENT BAR DETAIL



**TWIN 10 x 9 BARREL SECTION**

**NOTES:**  
 1. DIMENSIONS LISTED ON THIS SHEET TO BE USED IN CONJUNCTION WITH SHEET TWRCB G2-12.  
 2. DIMENSIONS "A", "B", "C", "U", "W", "X", "Z", "E", AND "SP." LISTED IN THE BAR LIST ARE IN INCHES.

LATEST REVISION DATE	<i>Thomas E. M. Donnell</i> APPROVED BY BRIDGE ENGINEER	 STANDARD DESIGN <b>TWIN REINFORCED CONCRETE BOX CULVERTS</b> APRIL, 2012	<b>TWRCB 10-9-12</b>
		<b>CULVERT BARREL DETAILS</b> 10 x 9 BARREL SECTIONS	