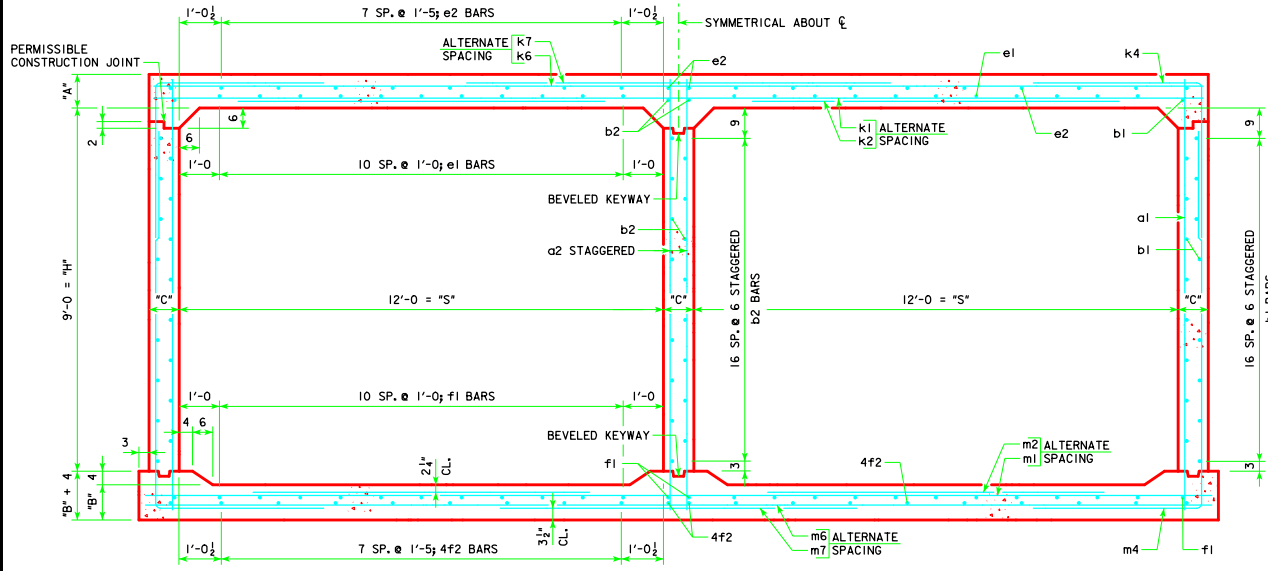
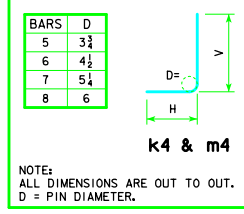


## VARIABLE DIMENSIONS AND QUANTITIES FOR TWIN 12 x 9 BARREL SECTIONS

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	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.	L					
0	12	9	14.5	12.5	9	9	9	0'-2	7'-8	3'-2	7'-3	4	12	11'-2	6	9	11'-2	4	6	36	4	6	19	4	12	22	5	17	20	4	12	26	4	17	20	5	12	25'-11	5	12	12'-9	5	9	10'-4	7'-0	3'-4	5	18	25'-11	7	18	15'-4	7	4.5	25'-11
1	12	9	13.5	12	9	9	9	0'-7	7'-8	3'-1	7'-6	4	9	11'-0	6	9	11'-0	4	6	36	4	6	19	4	12	22	4	17	20	4	12	26	4	17	20	6	18	25'-11	6	18	12'-4	6	9	11'-0	7'-4	3'-8	5	18	25'-11	7	18	15'-4	7	4.5	25'-11
2	12	9	10.5	10.5	9	9	9	1'-11	7'-5	2'-8	5'-1	4	12	10'-8	6	9	10'-8	4	6	36	4	6	19	4	12	22	4	17	20	4	12	26	4	17	20	6	12	25'-11	5	12	10'-7	7	12	8'-9	4'-10	3'-11	5	12	25'-11	6	12	14'-10	6	4.5	25'-11
3	12	9	10.5	11	9	9	9	1'-9	6'-5	2'-7	4'-11	4	12	10'-8	6	9	10'-8	4	6	36	4	6	19	4	12	22	4	17	20	4	12	26	4	17	20	7	18	25'-11	7	18	11'-0	7	12	8'-4	4'-5	3'-11	4	12	25'-11	7	12	12'-10	7	4.5	25'-11
4	12	9	10	10.5	9	9	9	2'-8	5'-3	3'-0	4'-5	4	12	10'-7	6	9	10'-7	4	6	36	4	6	19	4	12	22	4	17	20	4	12	26	4	17	20	6	12	25'-11	5	12	9'-1	7	12	8'-2	4'-1	4'-1	5	9	25'-11	5	9	10'-6	5	4.5	25'-11
5-7	12	9	10	12	9	9	9	2'-10	4'-9	3'-2	4'-5	4	12	10'-9	6	9	10'-9	4	6	36	4	6	19	4	12	22	4	17	20	4	12	26	4	17	20	5	9	25'-11	4	9	8'-6	5	6	6'-9	3'-9	3'-0	5	9	25'-11	6	9	9'-6	6	4.5	25'-11
8-10	12	9	11.5	13.5	9	9	9	3'-0	4'-3	3'-2	4'-3	4	12	11'-0	6	9	11'-0	4	6	36	4	6	19	4	12	22	4	17	20	4	12	26	4	17	20	5	9	25'-11	4	9	8'-7	5	6	6'-8	3'-4	3'-4	5	9	25'-11	6	9	8'-6	6	4.5	25'-11
11-13	12	9	13	15	9	9	9	2'-9	4'-3	2'-11	4'-3	4	9	11'-3	6	9	11'-3	4	6	36	4	6	19	4	12	22	4	17	20	4	12	26	4	17	20	5	9	25'-11	4	9	9'-6	6	9	6'-10	3'-3	3'-7	4	9	25'-11	7	9	8'-6	7	4.5	25'-11
14-16	12	9	15	17	9	9	9	2'-5	4'-4	2'-8	4'-5	4	9	11'-7	6	9	11'-7	4	6	36	4	6	19	4	12	22	4	17	20	4	12	26	4	17	20	7	18	25'-11	6	18	10'-6	6	9	7'-1	3'-4	3'-9	4	9	25'-11	7	9	8'-8	7	4.5	25'-11
17-19	12	9	16.5	18.5	10	9	9	2'-1	4'-6	2'-2	4'-7	4	9	11'-10	7	9	11'-10	4	6	36	4	6	19	4	12	22	4	17	20	4	12	26	4	17	20	6	12	26'-2	5	12	11'-0	6	9	7'-3	3'-5	3'-10	5	12	26'-2	8	12	9'-0	8	4.5	26'-2
20-22	12	9	18.5	20.5	10.5	9	9	1'-11	4'-7	2'-0	4'-9	4	12	12'-2	7	9	12'-2	4	6	36	4	6	19	4	12	22	4	17	20	4	12	26	4	17	20	6	12	26'-3	5	12	11'-2	5	6	7'-4	3'-8	3'-8	4	9	26'-3	7	9	9'-2	7	4.5	26'-3
23-25	12	9	19	21.5	11	9	9	1'-4	4'-8	1'-6	4'-10	4	9	12'-3	7	9	12'-3	4	6	36	4	6	19	4	12	22	4	17	20	5	12	26	4	17	20	7	18	26'-5	7	18	11'-10	6	9	7'-8	3'-7	4'-1	5	9	26'-5	7	9	9'-4	7	4.5	26'-5

BAR LIST																											QUANTITIES			
FILL	SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.	L	H	V	SIZE	SP.	L	SIZE	SP.	L	SIZE	SP.	L	SLAB	FLOOR	WALLS	TOTAL	STEEL (LB/FT)					
0	5	9	26'-5	4	9	8'-3	6	9	16'-11	7'-5	9'-6	5	12	26'-5	5	12	14'-6	5	4.5	26'-5	1.232	1.091	0.715	3.038	434.74					
1	5	9	26'-5	4	9	8'-3	6	9	16'-7	7'-2	9'-5	4	9	26'-5	5	9	15'-0	5	4.5	26'-5	1.151	1.050	0.715	2.916	446.16					
2	5	9	26'-5	5	9	8'-8	8	12	14'-2	4'-10	9'-4	9	26'-5	6	9	10'-2	6	4.5	26'-5	0.907	0.926	0.715	2.548	481.16						
3	5	9	26'-5	5	9	8'-10	8	12	13'-8	4'-4	9'-4	5	12	26'-5	7	12	9'-10	7	4.5	26'-5	0.907	0.967	0.715	2.589	475.66					
4	5	9	26'-5	5	9	8'-4	8	12	13'-5	4'-1	9'-4	5	9	26'-5	6	9	8'-10	6	4.5	26'-5	0.867	0.926	0.715	2.508	472.18					
5-7	6	12	26'-5	5	12	8'-3	5	6	13'-2	3'-9	9'-5	5	9	26'-5	6	9	8'-10	6	4.5	26'-5	0.867	1.050	0.715	2.632	439.92					
8-10	6	12	26'-5	5	12	8'-9	5	6	13'-0	3'-5	9'-7	5	9	26'-5	6	9	8'-6	6	4.5	26'-5	0.989	1.174	0.715	2.878	438.32					
11-13	6	12	26'-5	5	12	9'-3	6	9	13'-0	3'-4	9'-8	4	9	26'-5	7	9	8'-6	7	4.5	26'-5	1.110	1.297	0.715	3.122	435.74					
14-16	6	12	26'-5	5	12	10'-3	6	9	13'-3	3'-5	9'-10	4	9	26'-5	7	9	8'-10	7	4.5	26'-5	1.272	1.463	0.715	3.450	448.95					
17-19	6	12	26'-8	5	12	10'-11	6	9	13'-6	3'-6	10'-0	5	12	26'-8	8	12	9'-2	8	4.5	26'-8	1.410	1.604	0.795	3.809	478.66					
20-22	6	12	26'-9	5	12	11'-2	5	9	13'-10	3'-8	10'-2	5	9	26'-9	7	9	9'-6	7	4.5	26'-9	1.583	1.778	0.837	4.198	482.45					
23-25	7	18	26'-11	7	18	11'-9	6	9	13'-11	3'-8	10'-3	5	9	26'-11	7	9	9'-8	7	4.5	26'-11	1.634	1.871	0.876	4.381	526.74					

### BENT BAR DETAIL



**TWIN 12 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", "D", "E", AND "SP." LISTED IN THE BAR LIST ARE IN INCHES.

LATEST REVISION DATE  <i>Thomas E. M. Dwyer</i> APPROVED BY BRIDGE ENGINEER	<b>Iowa Department of Transportation</b> Highway Division STANDARD DESIGN <b>TWIN REINFORCED CONCRETE BOX CULVERTS</b> APRIL, 2012	<b>TWRCB 12-9-12</b>
	<b>CULVERT BARREL DETAILS</b> 12 x 9 BARREL SECTIONS	
	12 x 9 BARREL SECTIONS	

ENGLISH DESIGNED IN VERTICALS.DWG - TWRCB 12-9-12 - THIS SHEET ISSUED 04-12