VARIABLE DIMENSIONS AND QUANTITIES FOR TRIPLE 10 x 10 BARREL SECTIONS

REINFORCING BAR LIST

FILL	a1			a2			4b1			4b2			5e1			4e2			5e3			4e4			4f1			4f2			4f3			4f4		
	SIZE	SP	LENGTH	SIZE	SP	LENGTH	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	5	12	11'-7	6	7.5	11'-7	4	9	28	4	9	30	5	12	18	4	18	16	5	12	9	4	18	8	4	12	22	4	18	16	4	12	11	4	18	8
1	5	12	11'-9	6	7.5	11'-9	4	9	28	4	9	30	5	12	18	4	18	16	5	12	9	4	18	8	4	12	22	4	18	16	4	12	11	4	18	8
2	4	9	11'-6	6	7.5	11'-6	4	9	28	4	9	30	5	12	18	4	18	16	5	12	9	4	18	8	4	12	22	4	18	16	4	12	11	4	18	8
3-6	5	12	11'-5	5	6	11'-5	4	9	28	4	9	30	5	12	18	4	18	16	5	12	9	4	18	8	4	12	22	4	18	16	4	12	11	4	18	8
7-8	4	9	11'-5	5	6	11'-5	4	9	28	4	9	30	5	12	18	4	18	16	5	12	9	4	18	8	4	12	22	4	18	16	4	12	11	4	18	8
9-10	5	12	11'-5	5	6	11'-5	4	9	28	4	9	30	5	12	18	4	18	16	5	12	9	4	18	8	4	12	22	4	18	16	4	12	11	4	18	8
11-12	6	9	11'-7	5	6	11'-7	4	9	28	4	9	30	5	12	18	4	18	16	5	12	9	4	18	8	4	12	22	4	18	16	4	12	11	4	18	8
13-15	4	9	11'-9	5	6	11'-9	4	9	28	4	9	30	5	12	18	4	18	16	5	12	9	4	18	8	4	12	22	4	18	16	4	12	11	4	18	8
16-17	4	6	11'-11	5	6	11'-11	4	9	28	4	9	30	5	12	18	4	18	16	5	12	9	4	18	8	4	12	22	4	18	16	4	12	11	4	18	8
18-19	4	6	12'-0	5	6	12'-0	4	9	28	4	9	30	5	12	18	4	18	16	5	12	9	4	18	8	4	12	22	4	18	16	4	12	11	4	18	8
20-21	7	12	12'-2	5	6	12'-2	4	9	28	4	9	30	5	12	18	4	18	16	5	12	9	4	18	8	4	12	22	4	18	16	4	12	11	4	18	8
22-23	5	12	12'-4	5	6	12'-4	4	9	28	4	9	30	5	12	18	4	18	16	5	12	9	4	18	8	4	12	22	4	18	16	4	12	11	4	18	8
24-25	5	12	12'-6	5	6	12'-6	4	9	28	4	9	30	5	12	18	4	18	16	5	12	9	4	18	8	4	12	22	4	18	16	4	12	11	4	18	8

FILL	k1			k2			k3			k4					k5				
	SIZE	SP	LENGTH	SIZE	SP	LENGTH	SIZE	SP	LENGTH	SIZE	SP	LENGTH	h	v	SIZE	SP	LENGTH	h	v
0	5	12	33'-0	5	12	8'-7	5	12	8'-6	5	12	4'-0	1'-9	2'-3	5	12	4'-0	1'-9	2'-3
1	5	12	33'-0	5	12	8'-4	5	12	8'-2	5	12	4'-0	1'-9	2'-3	5	12	4'-0	1'-9	2'-3
2	5	12	33'-0	6	12	8'-4	6	12	7'-9	4	9	5'-1	2'-5	2'-8	5	9	4'-9	2'-1	2'-8
3-6	4	12	33'-0	5	12	7'-1	5	12	5'-9	5	12	4'-10	2'-7	2'-3	5	12	4'-1	1'-10	2'-3
7-8	4	12	33'-0	5	12	7'-0	5	12	6'-5	5	12	5'-3	2'-8	2'-7	6	12	4'-7	2'-0	2'-7
9-10	5	12	33'-0	5	12	6'-5	4	12	5'-0	4	9	5'-0	2'-4	2'-8	5	9	4'-9	2'-1	2'-8
11-12	5	12	33'-0	5	12	6'-6	4	12	5'-0	5	12	4'-7	2'-4	2'-3	5	12	4'-1	1'-10	2'-3
13-15	4	9	33'-0	5	9	7'-2	4	9	5'-3	5	9	4'-11	2'-3	2'-8	5	9	4'-8	2'-0	2'-8
16-17	4	9	33'-0	5	9	7'-3	4	9	5'-6	5	9	4'-11	2'-3	2'-8	5	9	4'-8	2'-0	2'-8
18-19	6	15	33'-0	6	15	7'-1	4	15	4'-8	5	9	5'-6	2'-10	2'-8	5	9	4'-7	1'-11	2'-8
20-21	6	15	33'-0	6	15	7'-2	4	15	4'-8	5	9	5'-6	2'-10	2'-8	5	9	4'-7	1'-11	2'-8
22-23	5	12	33'-0	6	12	7'-7	4	12	5'-3	5	9	6'-0	2'-11	3'-1	6	9	5'-3	2'-2	3'-1
24-25	5	12	33'-0	6	12	7'-10	4	12	5'-5	5	9	6'-1	3'-0	3'-1	6	9	5'-3	2'-2	3'-1

REINFORCING BAR LIST

FILL	k6			k7			k9			m1			m2			m3		
	SIZE	SP	LENGTH	SIZE	SP	LENGTH	SIZE	SP	LENGTH	SIZE	SP	LENGTH	SIZE	SP	LENGTH	SIZE	SP	LENGTH
0	4	12	33'-0	4	12	5'-1	4	4.5	33'-0	4	12	33'-6	5	12	6'-10	4	12	6'-2
1	4	12	33'-0	4	12	5'-0	4	4.5	33'-0	4	12	33'-6	5	12	7'-0	4	12	6'-3
2	5	12	27'-10	5	12	4'-11	5	4.5	33'-0	5	12	33'-6	5	12	6'-4	4	12	4'-5
3-6	5	12	25'-4	5	12	4'-5	5	4.5	33'-0	4	9	33'-6	4	9	6'-0	4	9	4'-9
7-8	4	9	25'-3	5	9	4'-9	4	4.5	33'-0	5	12	33'-6	5	12	6'-4	4	12	5'-0
9-10	5	9	25'-2	5	9	4'-2	5	4.5	33'-0	5	12	33'-6	6	12	7'-1	5	12	5'-10
11-12	5	9	25'-1	5	9	4'-2	5	4.5	33'-0	5	12	33'-6	6	12	7'-3	5	12	5'-4
13-15	6	12	25'-3	6	12	4'-5	6	4.5	33'-0	5	12	33'-6	6	12	7'-4	5	12	5'-4
16-17	6	12	25'-2	6	12	4'-6	6	4.5	33'-0	5	12	33'-6	6	12	7'-5	4	12	5'-0
18-19	7	15	25'-4	7	15	4'-8	7	7.5	33'-0	5	12	33'-6	6	12	7'-6	4	12	5'-0
20-21	7	15	25'-4	7	15	4'-9	7	7.5	33'-0	5	12	33'-6	6	12	7'-7	4	12	5'-2
22-23	7	15	25'-4	7	15	4'-8	7	7.5	33'-0	5	12	33'-6	6	12	7'-8	4	12	5'-4
24-25	7	15	25'-4	7	15	4'-8	7	7.5	33'-0	5	12	33'-6	6	12	7'-10	4	12	5'-5

FILL	m4					m5					m6			m7			m9		
	SIZE	SP	LENGTH	h	v	SIZE	SP	LENGTH	h	v	SIZE	SP	LENGTH	SIZE	SP	LENGTH	SIZE	SP	LENGTH
0	5	12	13'-0	1'-11	11'-1	5	12	12'-9	1'-8	11'-1	5	12	33'-6	5	12	3'-7	5	4.5	33'-6
1	5	12	13'-10	2'-7	11'-3	5	12	12'-11	1'-8	11'-3	4	9	25'-10	4	9	3'-10	4	4.5	33'-6
2	4	9	13'-5	2'-5	11'-0	5	9	12'-11	1'-11	11'-0	5	12	26'-0	6	12	4'-8	5	4.5	33'-6
3-6	5	12	13'-6	2'-7	10'-11	5	12	12'-7	1'-8	10'-11	4	9	25'-5	5	9	4'-5	4	4.5	33'-6
7-8	5	12	13'-4	2'-5	10'-11	6	12	12'-9	1'-10	10'-11	5	12	25'-4	5	9	3'-11	5	4.5	33'-6
9-10	4	9	13'-2	2'-3	10'-11	5	9	12'-10	1'-11	10'-11	6	12	25'-6	6	12	4'-3	6	4.5	33'-6
11-12	5	12	13'-5	2'-4	11'-1	5	12	12'-9	1'-8	11'-1	6	12	25'-6	6	12	4'-4	6	4.5	33'-6
13-15	5	9	14'-1	2'-10	11'-3	5	9	13'-2	1'-11	11'-3	7	15	25'-7	7	15	4'-7	7	7.5	33'-6
16-17	5	9	14'-3	2'-10	11'-5	5	9	13'-4	1'-11	11'-5	7	15	25'-7	7	15	4'-7	7	7.5	33'-6
18-19	5	9	13'-9	2'-3	11'-6	5	9	13'-5	1'-11	11'-6	6	12	25'-5	6	12	4'-5	6	4.5	33'-6
20-21	5	9	13'-11	2'-3	11'-8	5	9	13'-7	1'-11	11'-8	6	12	25'-5	6	12	4'-5	6	4.5	33'-6
22-23	5	9	14'-1	2'-3	11'-10	6	9	14'-0	2'-2	11'-10	6	12	25'-5	6	12	4'-7	6	4.5	33'-6
24-25	5	9	14'-7	2'-7	12'-0	6	9	14'-2	2'-2	12'-0	6	12	25'-6	6	12	4'-9	6	4.5	33'-6

DIMENSIONS

FILL	S	H	A	B	C	*D	*E	*F	*G	*J
0	10	10	10.5	10	10	9	4.5	9	12	12
1	10	10	11	11	10	9	4.5	9	12	12
2	10	10	9	10	10	9	4.5	4.5	12	12
3-6	10	10	8	10	10	9	4.5	9	12	12
7-8	10	10	8	10	10	9	4.5	9	12	12
9-10	10	10	8	10	10	9	4.5	4.5	12	12
11-12	10	10	9	11	10	9	4.5	9	12	12
13-15	10	10	10	12	10	9	4.5	4.5	12	18
16-17	10	10	11	13	10	6	4.5	4.5	12	18
18-19	10	10	11.5	14	10	6	7.5	4.5	18	12
20-21	10	10	12.5	15	10	9	7.5	4.5	18	12
22-23	10	10	13.5	16	10	9	4.5	4.5	18	12
24-25	10	10	14.5	17	10	9	4.5	4.5	18	12

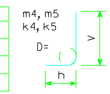
DIMENSIONS

FILL	*K	*L	R	T	U	V	W	X	Y	Z
0	4.5	3	1'-2	1'-5	2'-7	——	2'-5	2'-4	——	1'-10
1	4.5	3	1'-4	1'-8	2'-6	——	2'-5	2'-4	3'-8	1'-11
2	4.5	3	1'-7	1'-7	2'-6	5'-11	2'-9	3'-3	3'-10	2'-4
3-6	4.5	3	2'-6	2'-2	2'-3	3'-5	2'-10	3'-1	3'-3	2'-3
7-8	4.5	3	2'-2	2'-3	2'-5	3'-4	2'-7	2'-11	3'-2	2'-0
9-10	4.5	3	2'-11	2'-7	2'-1	3'-3	2'-3	2'-6	3'-4	2'-2
11-12	4.5	3	2'-11	2'-7	2'-1	3'-2	2'-3	2'-9	3'-4	2'-2
13-15	4.5	3	2'-10	2'-4	2'-3	3'-4	2'-3	2'-9	3'-5	2'-4
16-17	4.5	3	2'-8	2'-4	2'-3	3'-3	2'-3	2'-11	3'-5	2'-4
18-19	4.5	3	3'-1	2'-5	2'-4	3'-5	2'-3	2'-11	3'-3	2'-3
20-21	4.5	3	3'-1	2'-5	2'-5	3'-5	2'-3	2'-10	3'-3	2'-3
22-23	4.5	3	2'-9	2'-3	2'-3	3'-5	2'-3	2'-9	3'-3	2'-4
24-25	4.5	3	2'-8	2'-2	2'-4	3'-5	2'-2	2'-8	3'-4	2'-5

* THESE DIMENSIONS ARE CORRECT FOR 38'-0 LONG STANDARD SECTIONS ONLY. DIMENSIONS MUST BE RECALCULATED FOR ALL OTHER SECTION LENGTHS.

BENT BAR DETAILS

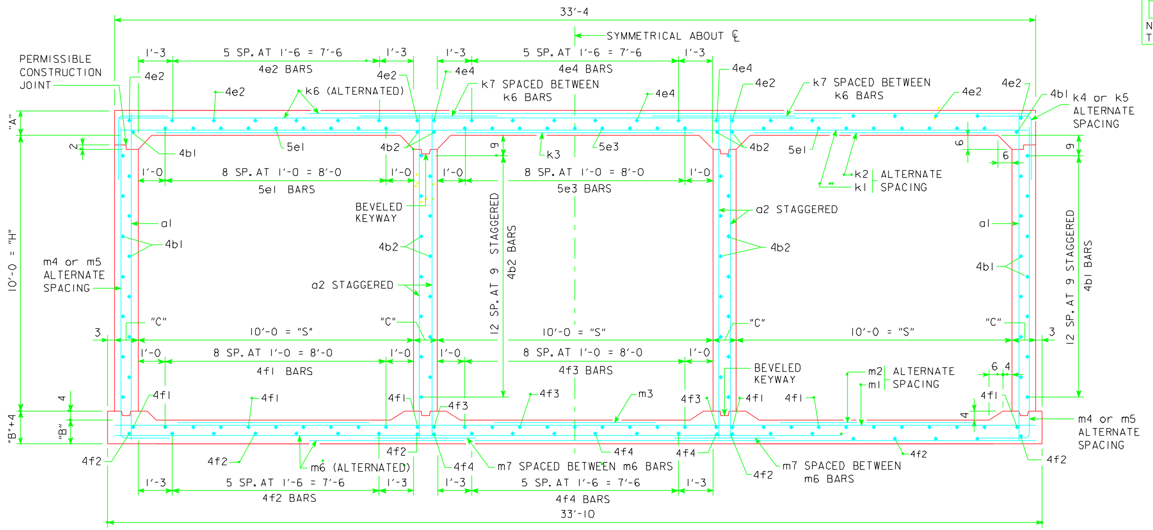
BARS	D
4	3
5	3¾
6	4½
7	5¼



NOTE: ALL DIMENSIONS ARE OUT TO OUT D = PIN DIAMETER

QUANTITIES

FILL	CONCRETE CU YD/FT				STEEL
	SLAB	FLOOR	WALL	TOTAL	LBS/FT
0	1.169	1.127	1.182	3.478	448.82
1	1.220	1.232	1.182	3.634	437.79
2	1.014	1.127	1.182	3.323	486.92
3-6	0.911	1.127	1.182	3.220	424.53
7-8	0.911	1.127	1.182	3.220	458.74
9-10	0.911	1.127	1.182	3.220	491.92
11-12	1.014	1.232	1.182	3.428	506.45
13-15	1.117	1.336	1.182	3.635	525.39
16-17	1.220	1.440	1.182	3.842	536.45
18-19	1.271	1.545	1.182	3.998	544.03
20-21	1.374	1.649	1.182	4.205	565.37
22-23	1.477	1.754	1.182	4.413	570.47
24-25	1.580	1.858	1.182	4.620	575.76



TRIPLE 10 x 10 BARREL SECTION

CORRECTION 06-02 - CHANGED NUMBER OF SPACES OF 4e2 & 4e4 BARS IN TRIPLE 10 x 10 BARREL SECTION.
TRB1010.SDI - 09-01 THIS SHEET ISSUED.

DIMENSIONS LISTED ON THIS SHEET TO BE USED IN CONJUNCTION WITH SHEET TRRCB 2-01.

LATEST REVISION DATE : | APPROVED BY :

STANDARD DESIGN

CULVERT BARREL DETAILS

FOR

TRIPLE REINFORCED CONCRETE BOX CULVERTS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

SEPT., 2001

TRRCB 10-10-01

XXXXXXXXXXSYSTEMTIME XXXXXXXUSERNAME XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXDGNSPEC