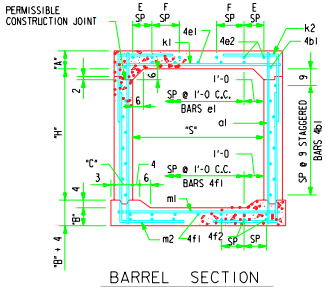
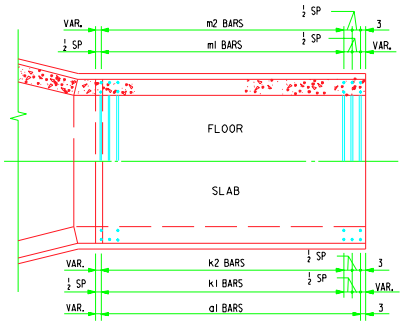
VARIABLE DIMENSIONS AND QUANTITIES FOR BARREL SECTIONS

DIMENSIONS							BAR LIST																																		QUANTITIES				
							a1			b1			e1			e2 SPACING			f1			f2			k1			m1			k2					m2					CONCRETE YD ³/FT				STEEL
FILL	S	H	A	B	C	D	SIZE	SP	L	SIZE	SP	NO.	SIZE	SP	NO.	SIZE	SP	NO.	SIZE	SP	NO.	SIZE	SP	NO.	SIZE	SP	L	SIZE	SP	L	SIZE	SP	L	h	v	SIZE	SP	L	h	v	SLAB	FLOOR	WALLS	TOTAL	LBS/FT
0	6	3	11	10	9	6	4	6	4'-8	4	9	8	4	12	5	4	15	14	6	4	12	7	4	16	4	5	9	7'-2	4	9	7'-8	4	6	7'-5	4'-3	3'-2	4	6	5'-7	2'-8	2'-11	.287	.284	.145	.716	85.08
1	6	3	11.5	10.5	9	6	4	6	4'-9	4	9	8	4	12	5	4	14	-	4	4	12	7	4	16	4	5	9	7'-2	4	9	7'-8	4	6	5'-3	2'-0	3'-3	4	6	5'-6	2'-7	2'-11	.299	.296	.145	.740	77.89
2	6	3	8	10	9	6	4	6	4'-5	4	9	8	4	12	5	4	14	-	4	4	12	7	4	15	4	5	9	7'-2	5	9	7'-8	4	6	4'-11	2'-0	2'-11	4	6	5'-0	2'-1	2'-11	.218	.284	.145	.647	78.76
3	6	3	8	10	9	9	4	12	4'-5	4	9	8	4	12	5	4	13	-	4	4	12	7	4	14	4	4	9	7'-2	4	9	7'-8	4	6	4'-10	1'-11	2'-11	4	6	4'-11	2'-0	2'-11	.218	.284	.145	.647	64.82
4 - 8	6	3	8	10	9	9	4	12	4'-5	4	9	8	4	12	5	4	11	-	4	4	12	7	4	12	4	4	9	7'-2	4	9	7'-8	4	6	4'-8	1'-9	2'-11	4	6	4'-9	1'-10	2'-11	.218	.284	.145	.647	63.92
9 - 10	6	3	8	10	9	9	4	12	4'-5	4	9	8	4	12	5	4	11	-	4	4	12	7	4	11	4	4	9	7'-2	4	9	7'-8	4	6	4'-8	1'-9	2'-11	4	6	4'-8	1'-9	2'-11	.218	.284	.145	.647	63.68
11 - 15	6	3	8	10	9	6	4	6	4'-5	4	9	8	4	12	5	4	11	-	4	4	12	7	4	11	4	5	9	7'-2	5	9	7'-8	4	6	4'-8	1'-9	2'-11	4	6	4'-8	1'-9	2'-11	.218	.284	.145	.647	77.18
16 - 20	6	3	8	10	9	9	6	12	4'-5	4	9	8	4	12	5	4	14	-	4	4	12	7	4	14	4	6	9	7'-2	6	9	7'-8	6	12	5'-1	2'-0	3'-1	6	12	5'-5	2'-0	3'-5	.218	.284	.145	.647	97.26
21 - 25	6	3	8	10	9	9	5	12	4'-5	4	9	8	4	12	5	4	14	-	4	4	12	7	4	14	4	5	6	7'-2	8	12	7'-8	6	9	5'-1	2'-0	3'-1	6	9	5'-5	2'-0	3'-5	.218	.284	.145	.647	109.21
0	6	4	11.5	11	9	6	4	6	5'-9	4	9	12	4	12	5	4	15	14	6	4	12	7	4	16	4	5	9	7'-2	4	9	7'-8	4	6	7'-6	4'-3	3'-3	4	6	6'-8	2'-8	4'-0	.299	.309	.201	.809	93.82
1	6	4	12	10	9	6	4	6	5'-9	4	9	12	4	12	5	4	11	-	4	4	12	7	4	16	4	5	9	7'-2	5	12	7'-8	4	6	5'-0	1'-9	3'-3	4	6	6'-5	2'-6	3'-11	.310	.284	.201	.795	86.53
2	6	4	8	10	9	6	4	6	5'-5	4	9	12	4	12	5	4	14	-	4	4	12	7	4	15	4	6	12	7'-2	5	9	7'-8	4	6	4'-11	2'-0	2'-11	4	6	6'-0	2'-1	3'-11	.218	.284	.201	.703	88.00
3	6	4	8	10	9	9	4	12	5'-5	4	9	12	4	12	5	4	13	-	4	4	12	7	4	13	4	4	9	7'-2	4	9	7'-8	4	6	4'-10	1'-11	2'-11	4	6	5'-10	1'-11	3'-11	.218	.284	.201	.703	71.32
4 - 8	6	4	8	10	9	9	4	12	5'-5	4	9	12	4	12	5	4	11	-	4	4	12	7	4	12	4	4	9	7'-2	5	12	7'-8	4	6	4'-8	1'-9	2'-11	4	6	5'-9	1'-10	3'-11	.218	.284	.201	.703	72.16
9 - 10	6	4	8	10	9	9	4	12	5'-5	4	9	12	4	12	5	4	11	-	4	4	12	7	4	11	4	4	9	7'-2	5	12	7'-8	4	6	4'-8	1'-9	2'-11	4	6	5'-8	1'-9	3'-11	.218	.284	.201	.703	71.92
11 - 15	6	4	8	10	9	6	4	6	5'-5	4	9	12	4	12	5	4	11	-	4	4	12	7	4	11	4	5	9	7'-2	5	9	7'-8	4	6	4'-8	1'-9	2'-11	4	6	5'-8	1'-9	3'-11	.218	.284	.201	.703	85.24
16 - 20	6	4	8	10	9	9	6	12	5'-5	4	9	12	4	12	5	4	14	-	4	4	12	7	4	14	4	6	9	7'-2	6	9	7'-8	6	12	5'-1	2'-0	3'-1	6	12	6'-5	2'-0	4'-5	.218	.284	.201	.703	106.26
21 - 25	6	4	8	10	9	9	4	12	5'-5	4	9	12	4	12	5	4	14	-	4	4	12	7	4	14	4	8	12	7'-2	8	12	7'-8	6	9	5'-1	2'-0	3'-1	6	9	6'-5	2'-0	4'-5	.218	.284	.201	.703	119.55
0	6	5	12	11.5	9	6	4	6	6'-10	4	9	14	4	12	5	4	15	14	6	4	12	7	4	16	4	5	9	7'-2	5	12	7'-8	4	6	7'-6	4'-3	3'-3	4	6	7'-8	2'-8	5'-0	.310	.321	.257	.888	102.24
1	6	5	12	11.5	9	6	4	6	6'-10	4	9	14	4	12	5	4	14	-	4	4	12	7	4	16	4	5	9	7'-2	5	12	7'-8	4	6	5'-3	2'-0	3'-3	4	6	7'-6	2'-6	5'-0	.310	.321	.257	.888	94.37
2	6	5	8	10	9	9	4	6	6'-5	4	9	14	4	12	5	4	14	-	4	4	12	7	4	15	4	6	9	7'-2	5	9	7'-8	4	6	4'-11	2'-0	2'-11	4	6	7'-0	2'-1	4'-11	.218	.284	.257	.759	98.13
3	6	5	8	10	9	9	4	12	6'-5	4	9	14	4	12	5	4	13	-	4	4	12	7	4	14	4	5	12	7'-2	5	12	7'-8	4	6	4'-10	1'-11	2'-11	4	6	6'-11	2'-0	4'-11	.218	.284	.257	.759	79.82
4 - 8	6	5	8	10	9	9	4	12	6'-5	4	9	14	4	12	5	4	11	-	4	4	12	7	4	12	4	4	9	7'-2	5	12	7'-8	4	6	4'-8	1'-9	2'-11	4	6	6'-9	1'-10	4'-11	.218	.284	.257	.759	77.53
9 - 10	6	5	8	11	9	9	4	12	6'-6	4	9	14	4	12	5	4	11	-	4	4	12	7	4	11	4	4	9	7'-2	5	12	7'-8	4	6	4'-8	1'-9	2'-11	4	6	6'-9	1'-9	5'-0	.218	.309	.257	.784	77.66
11 - 15	6	5	8	10.5	9	6	4	6	6'-5	4	9	14	4	12	5	4	11	-	4	4	12	7	4	11	4	5	9	7'-2	5	9	7'-8	4	6	4'-8	1'-9	2'-11	4	6	6'-8	1'-9	4'-11	.218	.297	.257	.772	91.95
16 - 20	6	5	8	10	9	9	6	12	6'-5	4	9	14	4	12	5	4	14	-	4	4	12	7	4	14	4	6	9	7'-2	6	9	7'-8	6	12	5'-1	2'-0	3'-1	6	12	7'-5	2'-0	5'-5	.218	.284	.257	.759	113.89
21 - 25	6	5	8	10	9	9	4	12	6'-5	4	9	14	4	12	5	4	14	-	4	4	12	7	4	14	4	8	12	7'-2	8	12	7'-8	6	9	5'-1	2'-0	3'-1	6	9	7'-5	2'-0	5'-5	.218	.284	.257	.759	126.42
0	6	6	12.5	10	9	6	4	6	7'-9	4	9	16	4	12	5	4	15	14	6	4	12	7	4	16	4	5	9	7'-2	5	12	7'-8	4	6	7'-7	4'-3	3'-4	4	6	8'-6	2'-7	5'-11	.322	.284	.312	.918	108.47
1	6	6	12.5	10.5	9	6	4	6	7'-10	4	9	16	4	12	5	4	16	-	4	4	12	7	4	16	4	5	9	7'-2	5	12	7'-8	4	6	5'-9	2'-5	3'-4	4	6	8'-5	2'-6	5'-11	.322	.296	.312	.930	102.21
2	6	6	8	10	9	6	4	6	7'-5	4	9	16	4	12	5	4	15	-	4	4	12	7	4	15	4	6	9	7'-2	5	9	7'-8	4	6	5'-0	2'-1	2'-11	4	6	8'-0	2'-1	5'-11	.218	.284	.312	.814	105.05
3	6	6	8	10	9	9	4	12	7'-5	4	9	16	4	12	5	4	14	-	4	4	12	7	4	14	4	5	12	7'-2	5	12	7'-8	4	6	4'-11	2'-0	2'-11	4	6	7'-11	2'-0	5'-11	.218	.284	.312	.814	85.45
4 - 8	6	6	8	10.5	9	9	4	12	7'-5	4	9	16	4	12	5	4	12	-	4	4	12	7	4	12	4	4	9	7'-2	5	12	7'-8	4	6	4'-9	1'-10	2'-11	4	6	7'-9	1'-10	5'-11	.218	.296	.312	.826	83.18
9 - 10	6	6	8	10.5	9	9	4	12	7'-5	4	9	16	4	12	5	4	11	-	4	4	12	7	4	12	4	4	9	7'-2	5	12	7'-8	4	6	4'-8	1'-9	2'-11	4	6	7'-9	1'-10	5'-11	.218	.296	.312	.826	82.95
11 - 15	6	6	8	10	9	6	4	6	7'-5	4	9	16	4	12	5	4	11	-	4	4	12	7	4	12	4	5	9	7'-2	6	9	7'-8	4	6	4'-8	1'-9	2'-11	4	6	7'-9	1'-10	5'-11	.218	.284	.312	.814	103.76
16 - 20	6	6	8	10	9	9	6	12	7'-5	4	9	16	4	12	5	4	14	-	4	4	12	7	4	14	4	6	9	7'-2	5	6	7'-8	6	12	5'-1	2'-0	3'-1	6	12	8'-5	2'-0	6'-5	.218	.284	.312	.814	121.74
21 - 25	6	6	8	10	9	9	5	12	7'-5	4	9	16	4	12	5	4	14	-	4	4	12	7	4	14	4	8	12	7'-2	8	12	7'-8	6	9	5'-1	2'-0	3'-1	6	9	8'-5	2'-0	6'-5	.218	.284	.312	.814	139.03
0	6	8	12.5	11.5	9	6	4	6	9'-11	4	9	22	4	12	5	4	9	18	6	4	12	7	4	12	6	5	9	7'-2	5	12	7'-8	4	6	10'-11	4'-3	6'-8	4	6	10'-11	2'-11	8'-0	.322	.321	.423	1.066	135.13
1	6	8	10.5	10	9	6	4	6	9'-7	4	9	22	4	12	5	4	9	18	6	4	12	7	4	16	4	6	9	7'-2	5	9	7'-8	4	6	7'-5	4'-3	3'-2	4	6	10'-7	2'-8	7'-11	.276	.284	.423	.983	129.68
2	6	8	8	10	9	6	4	6	9'-5	4	9	22	4	12	5	4	11	11	6	4	12	7	4	16	4	6	9	7'-2	5	9	7'-8	4	6	5'-8	2'-9	2'-11	4	6	10'-4	2'-5	7'-11	.218	.284	.423	.925	125.66
3	6	8	8	10	9	9	4	6	9'-5	4	9	22	4	12	5	4	16	-	4	4	12	7	4	16	4	5	12	7'-2	5	9	7'-8	4	6	5'-5	2'-6	2'-11	4	6	10'-3	2'-4	7'-11	.218	.284	.423	.925	114.61
4 - 8	6	8	8	10	9	9	4	6	9'-5	4	9	22	4	12	5	4	15	-	4	4	12	7	4	15	4	4	9	7'-2	5	9	7'-8	4	6	5'-0	2'-1	2'-11	4	6	10'-0	2'-1	7'-11	.218	.284	.423	.925	111.45
9 - 10	6	8	8	10	9	6	4	6	9'-5	4	9	22	4	12	5	4	14	-	4	4	12	7	4	14	4	4	9	7'-2	5	9	7'-8	4	6	4'-11	2'-0	2'-11	4	6	9'-11	2'-0	7'-11	.218	.284	.423	.925	111.00
11 - 15	6	8	8	10	9	9	4	12	9'-5	4	9	22	4	12	5	4	16	-	4	4	12	7	4	16	4	5	9	7'-2	6	9	7'-8	6	9	5'-3	2'-2	3'-1	6	9	10'-7	2'-2	8'-5	.218	.284	.423	.925	133.58
16 - 20	6	8	8	10	9	9	4	12	9'-5	4	9	22	4	12	5	4	16	-	4	4	12	7	4	16	4	6	9	7'-2	8	12	7'-8	6	9	5'-3	2'-2	3'-1	6	9	10'-7	2'-2	8'-5	.218	.284	.423	.925	144.21
21 - 25	6	8	8	10	9	9	6	9	9'-5	4	9	22	4	12	5	4	16	-	4	4	12	7	4	16	4	8	12	7'-2	8	12	7'-8	6	9	5'-3	2'-2	3'-1	6	9	10'-7	2'-2	8'-5	.218	.284	.423	.925	174.89

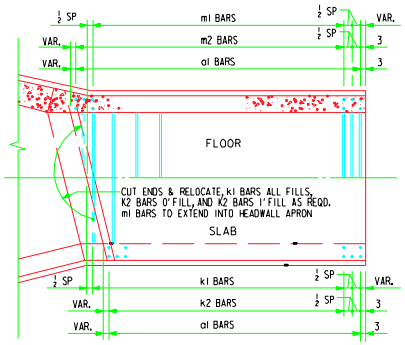


BARREL SECTION



PLAN - 0° SKEW

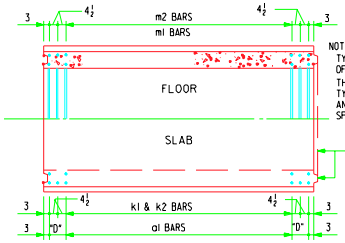
(KEYWAY NOT SHOWN)



PLAN - SKEW TYPICAL

(KEYWAY NOT SHOWN)

NOTE : ALL LONGITUDINAL BARREL STEEL SHALL EXTEND AT LEAST TO THE BACKFACE OF PARAPET.



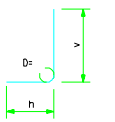
STANDARD SECTION PLAN VIEW

(KEYWAY IS TO BE OMITTED WHEN BELL JOINTS ARE USED)

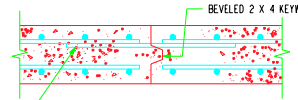
NOTE:
TYPICAL FOR LENGTHS OF 38', 35', 32', 29', AND 26'.
THESE LENGTHS ARE SHOWN AS TYPICAL BECAUSE ALL TRANSVERSE AND VERTICAL REINFORCING STEEL SPACING REPEATS IN 3' INTERVALS.

BENT BAR DETAIL

BARS	D
4	3
5	3¾
6	4½
7	5¼
8	6
9	9½



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



ONE SET OF 5r1 X 3'-6 DOWEL BARS @ 1'-0 SPACING REQUIRED IN SLAB AT ALL CULVERT BARREL JOINTS, EXCEPT JOINTS WITH BELL JOINTS.
5r1 BARS REQUIRED = 7, TOTAL WEIGHT = 26 LBS.

TOP SLAB CONSTRUCTION JOINT DETAIL

NOTES:

1. SEE DRAWING RCB-G1-87 FOR GENERAL INFORMATION, SPECIFICATIONS, AND DESIGN STRESSES.

LATEST REVISION DATE : 8-1-89

APPROVED BY : William A. Knudsen

STANDARD DESIGN

CULVERT BARREL DETAILS

FOR
REINFORCED CONCRETE BOX CULVERTS

HIGHWAY DIVISION
IOWA DEPARTMENT OF TRANSPORTATION

MAY , 1987

RCB 6-1-87

REVISED: 8/89; KEYWAY DETAIL & NOTE ADDED. LONGITUDINAL BARREL STEEL NOTE ADDED. RCB6.SOI

XXXXXXXXXXSYSTEMTIME XXXXXXXUSERNAME XXXXXXXXXX