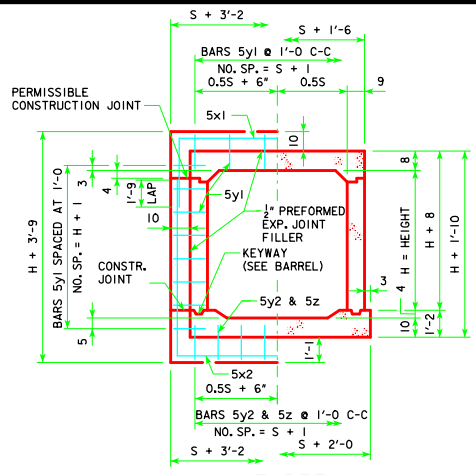
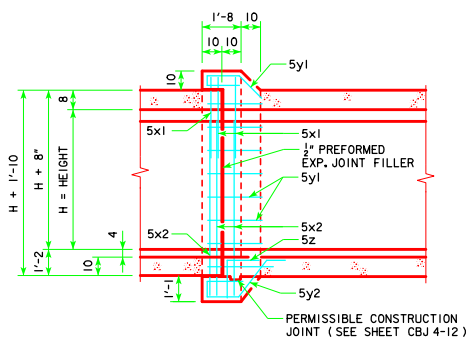


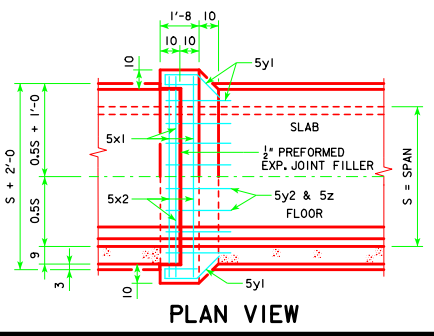
REVISED 07-13 - THE #9 BARS WERE ADDED TO NOTE NUMBER 6. ENGLISH DESIGNATIONS IN CAPITAL LETTERS ONLY. CBJ I-12 - THIS SHEET ISSUED 04-12.



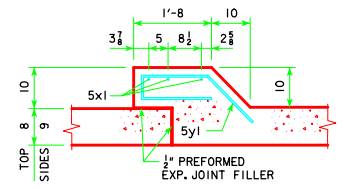
**JOINT DETAIL SECTION THRU BARREL**



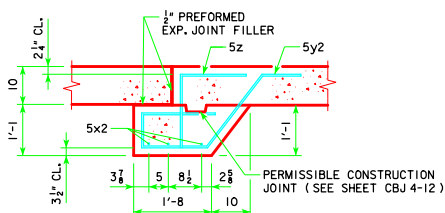
**LONGITUDINAL SECTION**



**PLAN VIEW**



**TOP & SIDES - BARS 5y1**

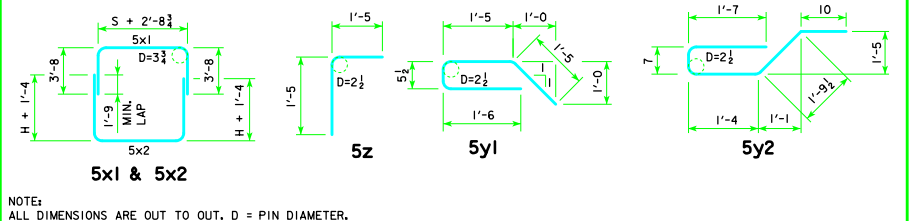


**BOTTOM - BARS 5y2 & 5z**

**ESTIMATE OF QUANTITIES - ONE JOINT - 3', 4', & 5' SPANS**

BAR	LOCATION	SHAPE	3' x 3'		4' x 4'		5' x 3'		5' x 4'		5' x 5'		5' x 6'							
			NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH						
5x1	SLAB & WALLS		3	13'-1	41	3	14'-1	44	3	15'-1	47	3	15'-1	47	3	15'-1	47			
5x2	FLOOR & WALLS		3	14'-5	45	3	17'-5	54	3	16'-5	51	3	18'-5	58	3	20'-5	64	3	22'-5	70
5y1	TOP & SIDES		15	4'-10	76	18	4'-10	91	17	4'-10	86	19	4'-10	96	21	4'-10	106	23	4'-10	116
5y2	BOTTOM		5	6'-2	32	6	6'-2	39	7	6'-2	45	7	6'-2	45	7	6'-2	45	7	6'-2	45
5z	BOTTOM & FLOOR		5	2'-10	15	6	2'-10	18	7	2'-10	21	7	2'-10	21	7	2'-10	21	7	2'-10	21
TOTAL WEIGHT (LB)			209		246		250		267		283		299							
TOTAL CONCRETE (CY)			1.5		1.8		1.8		1.9		2.0		2.2							

**BENT BAR DETAILS**



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

**CONCRETE PLACEMENT**

BARREL SIZE	BARREL DIMENSION			BELL JOINT QUANTITIES (CY)		
	A	B	C	FOOTING	WALLS	SLAB
3' x 3'	8	10	9	0.647	0.336	0.510
4' x 4'	8	10	9	0.730	0.462	0.573
5' x 3'	8	10	9	0.812	0.336	0.636
5' x 4'	8	10	9	0.812	0.462	0.636
5' x 5'	8	10	9	0.812	0.588	0.636
5' x 6'	8	10	9	0.812	0.714	0.636

**NOTES:**

- DIMENSIONS AND QUANTITIES SHOWN ARE BASED ON SLAB, FLOOR, AND WALL THICKNESSES (A, B, AND C, RESPECTIVELY). VALUES FOR THESE DIMENSIONS, UNDER VARYING FILL CONDITIONS, CAN BE FOUND ON THE RCB CULVERT BARREL DETAIL SHEETS.
- CHANGE LENGTHS OF BARS 5x1, 5x2, 5z, AND ADJUST REINFORCING STEEL AND CONCRETE QUANTITIES ACCORDINGLY FOR SLAB, WALL, AND FLOOR THICKNESSES OTHER THAN SHOWN.
- ALL BAR LENGTHS ARE ESTIMATED WITH A 2" CLEARANCE FROM CONCRETE EDGE TO OUTSIDE OF BAR, EXCEPT AS NOTED.
- MATERIAL AND CONSTRUCTION TO BE IN ACCORDANCE WITH THE CURRENT STANDARD SPECIFICATIONS OF I.D.O.T.
- SEE SHEET RCB G1-12 FOR GENERAL INFORMATION, SPECIFICATIONS, AND DESIGN STRESSES.
- BARREL FLOOR BARS m1 & m9 ARE TO BE SHORTENED 6" IN LENGTH AT BELL JOINTS.

07-13 <i>Norman E. Mc Donnell</i>	 <b>Iowa Department of Transportation</b> Highway Division
	STANDARD DESIGN <b>SINGLE REINFORCED CONCRETE BOX CULVERTS</b> APRIL, 2012
	<b>CULVERT BELL JOINTS</b> <b>CBJ I-12</b> 3', 4', & 5' SPANS