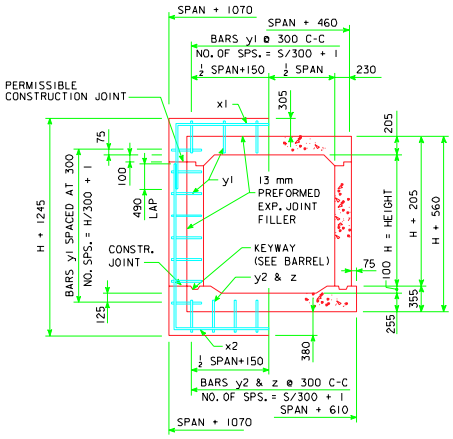
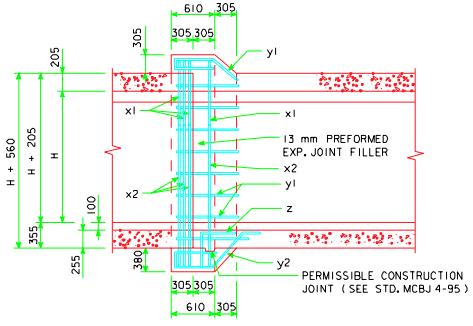
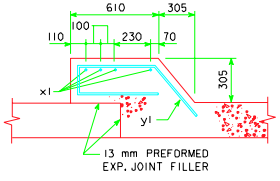


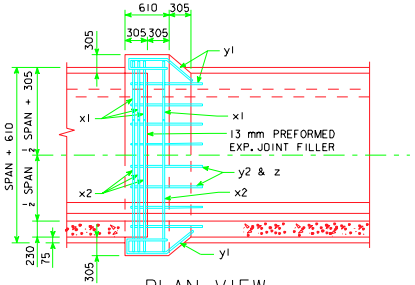
JOINT DETAIL
SECTION THRU BARREL



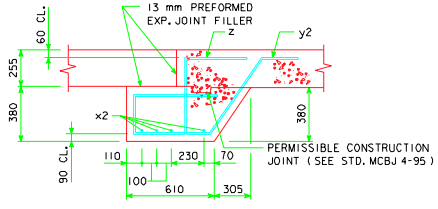
LONGITUDINAL SECTION



TOP & SIDES - BARS y1



PLAN VIEW



BOTTOM BARS - y2 & z

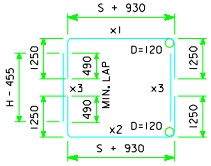
ESTIMATE OF QUANTITIES - ONE JOINT - 1800 SPAN

BILL OF REINFORCING STEEL			1800x900				1800x1200				1800x1500				1800x1800				1800x2400			
MARK	LOCATION	SHAPE	SIZE	NO.	LENGTH	MASS	SIZE	NO.	LENGTH	MASS	SIZE	NO.	LENGTH	MASS	SIZE	NO.	LENGTH	MASS	SIZE	NO.	LENGTH	MASS
x1	SLAB AND WALLS		20	4	5230	50	20	4	5230	50	20	4	5230	50	20	4	5230	50	20	4	5230	50
x2	FLOOR AND WALLS		20	4	5140	48	20	4	5740	54	20	4	5230	50	20	4	5230	50	20	4	5230	50
x3	WALLS		—	—	—	—	—	—	—	—	20	8	1045	20	20	8	1345	25	20	8	1945	37
y1	TOP AND SIDES		20	18	1880	80	20	20	1880	89	20	22	1880	98	20	24	1880	106	20	28	1880	124
y2	BOTTOM		20	8	2240	42	20	8	2240	42	20	8	2240	42	20	8	2240	42	20	8	2240	42
z	BOTTOM & FLOOR		20	8	1000	19	20	8	1000	19	20	8	1000	19	20	8	1000	19	20	8	1000	19
TOTAL MASS kg						239				254				279				292				322
TOTAL CONCRETE m^3						2.2				2.3				2.5				2.6				2.9

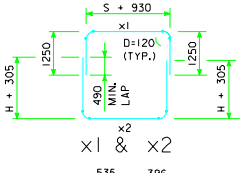
ESTIMATE OF QUANTITIES - ONE JOINT - 2400 SPAN

BILL OF REINFORCING STEEL			2400x1200				2400x1500				2400x1800				2400x2400				2400x3000			
MARK	LOCATION	SHAPE	SIZE	NO.	LENGTH	MASS	SIZE	NO.	LENGTH	MASS	SIZE	NO.	LENGTH	MASS	SIZE	NO.	LENGTH	MASS	SIZE	NO.	LENGTH	MASS
x1	SLAB AND WALLS		20	4	5830	55	20	4	5830	55	20	4	5830	55	20	4	5830	55	20	4	5830	55
x2	FLOOR AND WALLS		20	4	6340	60	20	4	5830	55	20	4	5830	55	20	4	5830	55	20	4	5830	55
x3	WALLS		—	—	—	—	20	8	1045	20	20	8	1345	25	20	8	1945	37	20	8	2545	48
y1	TOP AND SIDES		20	22	1880	98	20	24	1880	106	20	26	1880	115	20	30	1880	133	20	34	1880	151
y2	BOTTOM		20	10	2240	53	20	10	2240	53	20	10	2240	53	20	10	2240	53	20	10	2240	53
z	BOTTOM & FLOOR		20	10	1000	24	20	10	1000	24	20	10	1000	24	20	10	1000	24	20	10	1000	24
TOTAL MASS kg						290				313				327				357				386
TOTAL CONCRETE m^3						2.6				2.8				2.9				3.2				3.5

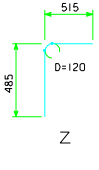
BENT BAR DETAILS



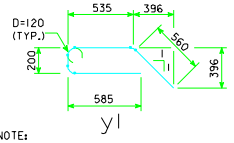
x1, x2 & x3



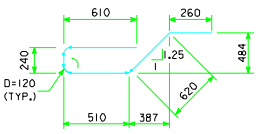
x1 & x2



z



y1



y2

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

CONCRETE PLACEMENT m^3

SIZE	FOOTING	WALLS	SLAB
1800x900	0.985	0.372	0.800
1800x1200	0.985	0.512	0.800
1800x1500	0.985	0.651	0.800
1800x1800	0.985	0.791	0.800
1800x2400	0.985	1.070	0.800
2400x1200	1.159	0.512	0.940
2400x1500	1.159	0.651	0.940
2400x1800	1.159	0.791	0.940
2400x2400	1.159	1.070	0.940
2400x3000	1.159	1.349	0.940

NOTES:

1. DIMENSIONS AND QUANTITIES SHOWN BASED ON SLAB THICKNESSS OF 205 mm WALL= 230 mm, AND FLOOR = 255 mm.
2. CHANGE LENGTHS OF BARS x1, x2, z AND ADJUST REINFORCING STEEL AND CONCRETE QUANTITIES ACCORDINGLY FOR SLAB, WALL, AND FLOOR THICKNESSES OTHER THAN SHOWN.
3. ALL BAR LENGTHS ARE ESTIMATED WITH A 50 mm CLEARANCE FROM CONCRETE EDGE TO OUTSIDE OF BAR, EXCEPT AS NOTED.
4. MATERIAL AND CONSTRUCTION TO BE IN ACCORDANCE WITH CURRENT STANDARD SPECIFICATIONS OF I.D.O.T..
5. SEE SHEET MRCB-GI-95 FOR GENERAL INFORMATION, SPECIFICATIONS, AND DESIGN STRESSES.
6. BARREL FLOOR BARS m1 ARE TO BE SHORTENED 150 mm AT BELL JOINTS.

LATEST REVISION DATE : 04-02

APPROVED BY : William A. Kleinfelt

STANDARD DESIGN

CULVERT BELL JOINTS

FOR
REINFORCED CONCRETE BOX CULVERTS
1800 mm, & 2400 mm SPANS

PROJECT DEVELOPMENT DIVISION
IOWA DEPARTMENT OF TRANSPORTATION

JULY, 1995

MCBJ 2-95

REVISED 04-02 - ADDED PERMISSIBLE CULVERT BELL JOINT.
CBJ2M.SOI

XXXXXXXXXXSYSTEMTIME XXXXXXXUSERNAME XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXDGNSPEC