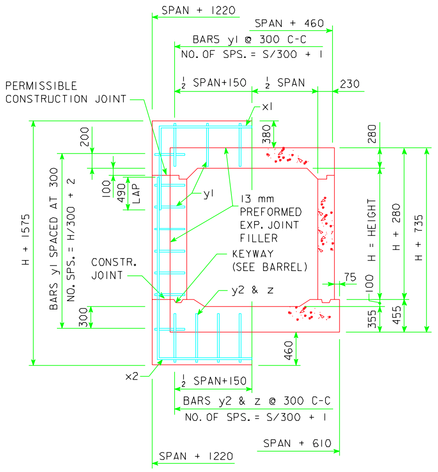
REVISED 04-02 - ADDED PERMISSIBLE CULVERT BELL JOINT.
CBJ3M.S01



JOINT DETAIL
SECTION THRU BARREL

ESTIMATE OF QUANTITIES - ONE JOINT - 3000 SPAN

BILL OF REINFORCING STEEL			3000x1200				3000x1500				3000x1800			
MARK	LOCATION	SHAPE	SIZE	NO.	LENGTH	MASS	SIZE	NO.	LENGTH	MASS	SIZE	NO.	LENGTH	MASS
x1	SLAB AND WALLS		20	4	7200	68	20	4	7200	68	20	4	7200	68
x2	FLOOR AND WALLS		20	4	7160	68	20	4	7200	68	20	4	7200	68
x3	WALLS		—	—	—	—	20	8	755	14	20	8	1055	20
y1	TOP AND SIDES		20	26	2460	151	20	28	2460	163	20	30	2460	174
y2	BOTTOM		20	12	2770	79	20	12	2770	79	20	12	2770	79
z	BOTTOM & FLOOR		20	12	1200	34	20	12	1200	34	20	12	1200	34
TOTAL MASS kg						400				426				443
TOTAL CONCRETE m^3						4.8				5.0				5.2

BILL OF REINFORCING STEEL	3000x2400				3000x3000				3000x3600			
MARK	SIZE	NO.	LENGTH	MASS	SIZE	NO.	LENGTH	MASS	SIZE	NO.	LENGTH	MASS
x1	20	4	7200	68	20	4	7200	68	20	4	7200	68
x2	20	4	7200	68	20	4	7200	68	20	4	7200	68
x3	20	8	1655	31	20	8	2255	42	20	8	2855	54
y1	20	34	2460	197	20	38	2460	220	20	42	2460	244
y2	20	12	2770	79	20	12	2770	79	20	12	2770	79
z	20	12	1200	34	20	12	1200	34	20	12	1200	34
TOTAL MASS kg				477				511				547
TOTAL CONCRETE m^3				5.7				6.1				6.6

ESTIMATE OF QUANTITIES - ONE JOINT - 3600 SPAN

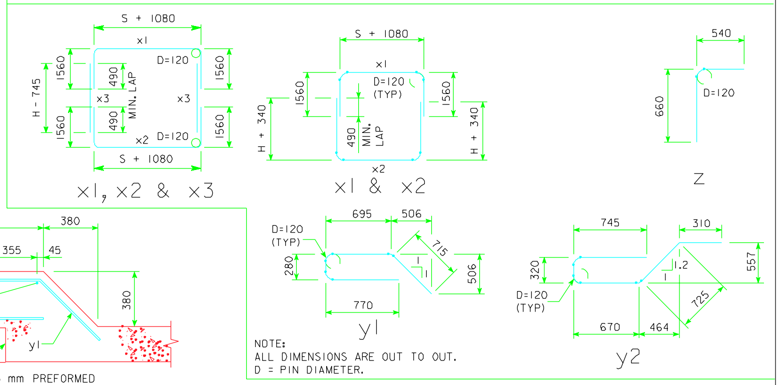
BILL OF REINFORCING STEEL			3600x1800				3600x2400			
MARK	LOCATION	SHAPE	SIZE	NO.	LENGTH	MASS	SIZE	NO.	LENGTH	MASS
x1	SLAB AND WALLS		20	4	7800	74	20	4	7800	74
x2	FLOOR AND WALLS		20	4	7800	74	20	4	7800	74
x3	WALLS		20	8	1055	20	20	8	1655	31
y1	TOP AND SIDES		20	32	2460	186	20	36	2460	209
y2	BOTTOM		20	14	2770	92	20	14	2770	92
z	BOTTOM & FLOOR		20	14	1200	40	20	14	1200	40
TOTAL MASS kg						486				520
TOTAL CONCRETE m^3						5.7				6.2

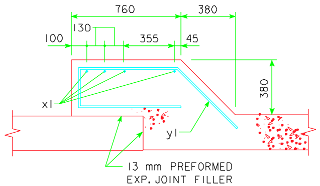
BILL OF REINFORCING STEEL	3600x3000				3600x3600			
MARK	SIZE	NO.	LENGTH	MASS	SIZE	NO.	LENGTH	MASS
x1	20	4	7800	74	20	4	7800	74
x2	20	4	7800	74	20	4	7800	74
x3	20	8	2255	42	20	8	2855	54
y1	20	40	2460	232	20	44	2460	255
y2	20	14	2770	92	20	14	2770	92
z	20	14	1200	40	20	14	1200	40
TOTAL MASS kg				554				589
TOTAL CONCRETE m^3				6.6				7.0

CONCRETE PLACEMENT m^3

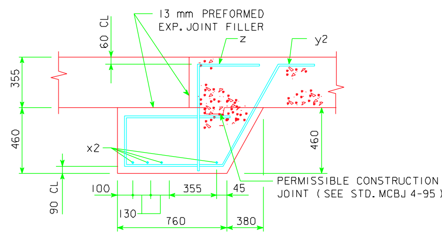
SIZE	FOOTING	WALLS	SLAB
3000x1200	2.173	0.803	1.799
3000x1500	2.173	1.021	1.799
3000x1800	2.173	1.240	1.799
3000x2400	2.173	1.678	1.799
3000x3000	2.173	2.116	1.799
3000x3600	2.173	2.554	1.799
3600x1800	2.438	1.240	2.017
3600x2400	2.438	1.678	2.017
3600x3000	2.438	2.116	2.017
3600x3600	2.438	2.554	2.017

BENT BAR DETAILS

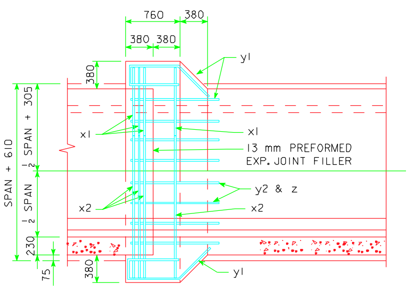




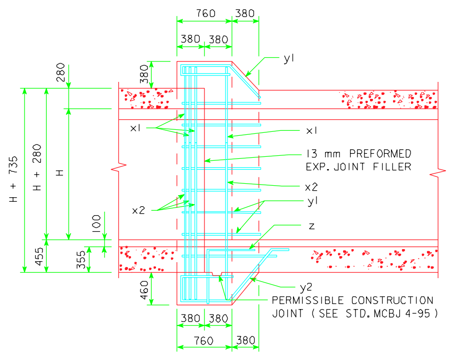
TOP & SIDES - BARS y1



BOTTOM BARS - y2 & z



PLAN VIEW



LONGITUDINAL SECTION

NOTES:

1. DIMENSIONS AND QUANTITIES SHOWN BASED ON SLAB THICKNESSS OF 280 mm WALL= 230 mm, AND FLOOR = 355 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 : [signature]

STANDARD DESIGN

CULVERT BELL JOINTS

FOR
REINFORCED CONCRETE BOX CULVERTS
3000 mm, & 3600 mm SPANS

PROJECT DEVELOPMENT DIVISION
IOWA DEPARTMENT OF TRANSPORTATION

JULY, 1995

MCBJ 3-95

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