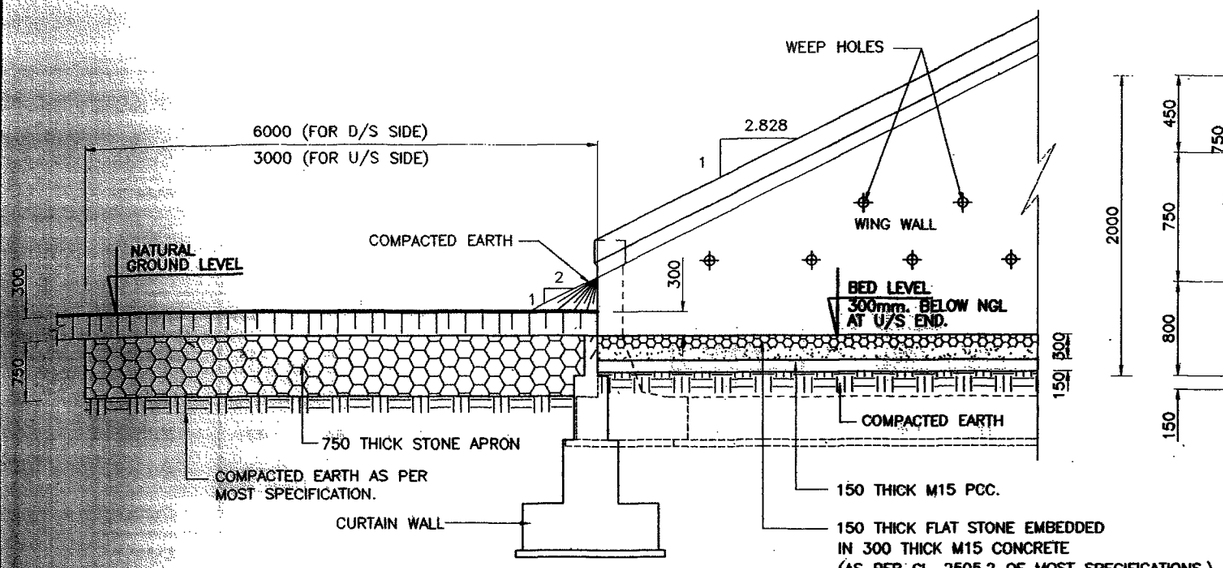
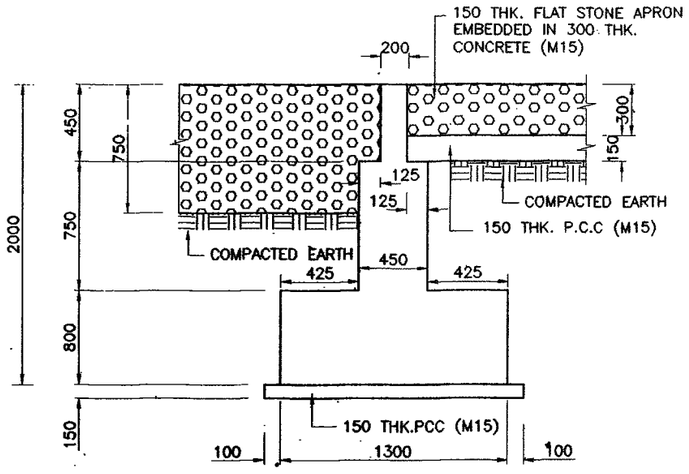
DRG.NO. SD/111 (SHEET 1 OF 4)



SECTION 1-1

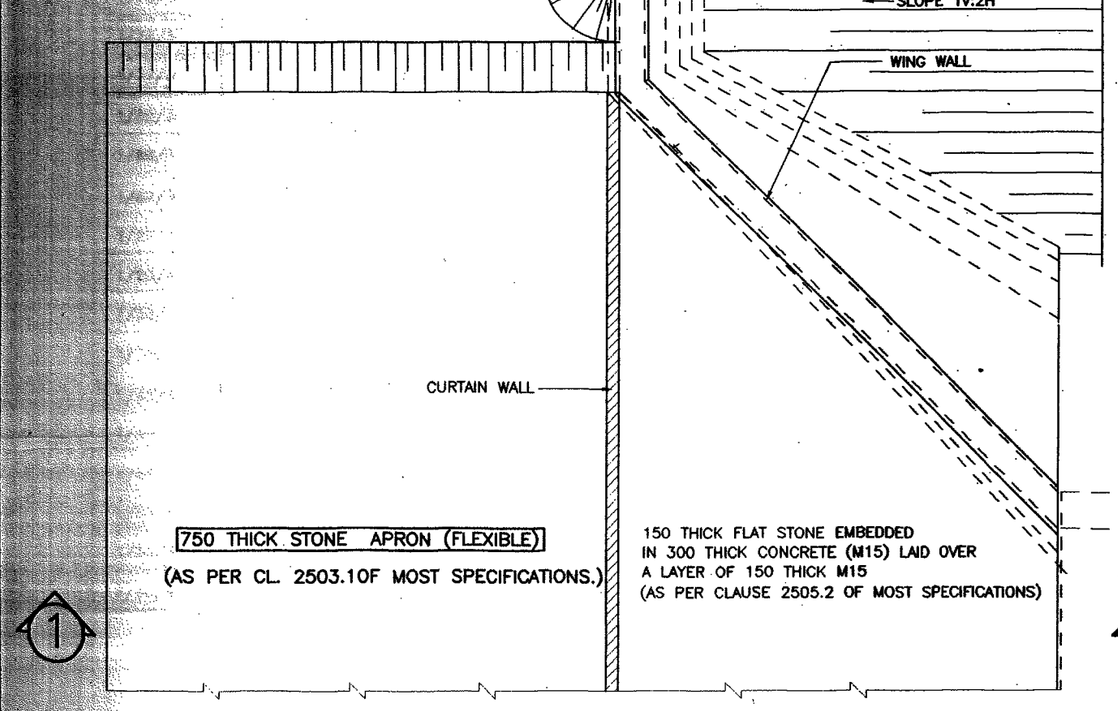


TYPICAL CROSS SECTION OF CURTAIN WALL TYPE-II

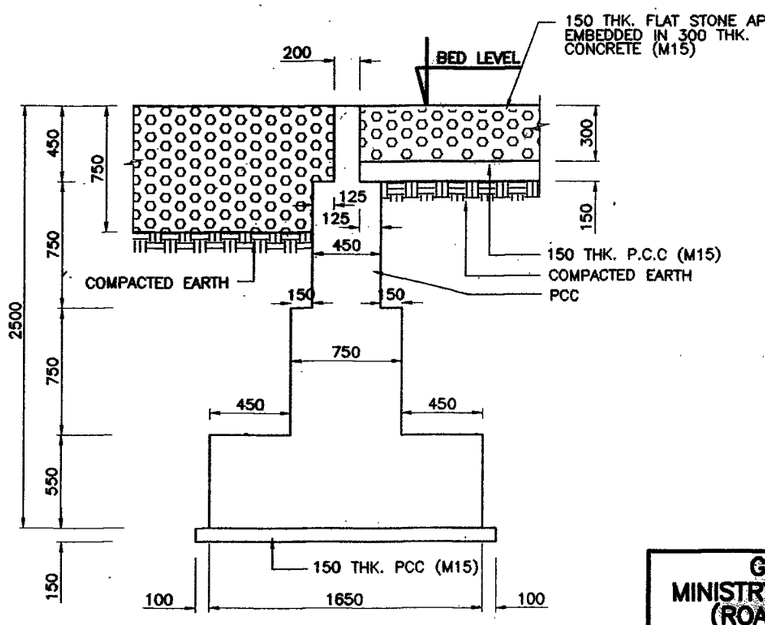
(UP STREAM SIDE)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
2. FOR GENERAL NOTES AND REFERENCE DRAWINGS REFER DRG.NO.SD/101.
3. FOR DETAILS OF WING WALL, REFER DWG.NO.SD/113 (SHEET 1 TO 6 OF 6)
4. COMPACTED EARTH SHOULD CONFIRM TO CLAUSE. 305.2.1.5 OF MOST SPECIFICATIONS



PLAN



TYPICAL CROSS SECTION OF CURTAIN WALL TYPE-I

(DOWN STREAM SIDE)

GOVERNMENT OF INDIA
MINISTRY OF SURFACE TRANSPORT
(ROADS WING), NEW DELHI.

STANDARD DRAWINGS FOR BOX CELL STRUCTURES

TYPICAL DETAILS OF FLOOR PROTECTION WORKS

GENERAL ARRANGEMENT

DESIGNED BY	CHECKED BY	APPROVED FOR ISSUE BY	1999
(A.R.GHOSH) CES (I) LTD	(M.C.TANDON) TCPL	(C.C.BHATTACHARYA) C.E (R) S&R MOST	DRG. NO. SD/111 SHEET 1 OF 4

Source: MoST Standard Drawings for Box Cell Culverts (2000) - older reference, verify with current IRC / MoRTH. Scan cleaned by helptheengineer.com

APRON:

BOX CELL DESIGNATION NN/ab/Ec	FLOOR APRON			FLEXIBLE APRON
	150 THK. PCC M15 (CUM)	300 THK. CONCRETE (CUM)	150 THK. FLAT STONE (CUM)	750 THK. STONE (CUM)
1/22/3	3.4	6.8	3.4	47.2
1/23/3	9.0	18.0	9.0	75.1
1/33/3	11.0	22.0	11.0	84.2
1/34/3	19.7	39.4	19.7	111.2
1/43/3	13.3	26.5	13.3	93.7
1/44/3	22.8	45.6	22.8	120.7
1/45/3	34.5	68.9	34.5	147.1
1/53/3	15.5	30.9	15.5	102.6
1/54/3	25.8	51.6	25.8	129.6
1/55/3	38.5	77.0	38.5	156.6
1/63/3	18.0	35.9	18.0	112.0
1/64/3	29.8	59.5	29.8	140.4
1/65/3	42.7	85.4	42.7	166.0
1/66/3	58.7	117.4	58.7	193.0
1/75/3	47.1	94.1	47.1	175.5
1/76/3	63.9	127.7	63.9	202.5
1/77/3	83.1	166.2	83.1	229.5
1/85/3	51.9	103.7	51.9	185.5
1/86/3	69.2	138.4	69.2	211.9
1/87/3	89.3	178.5	89.3	238.9
1/22/4	3.5	7.0	3.5	48.1
1/23/4	9.3	18.5	9.3	76.1
1/33/4	11.1	22.2	11.1	84.5
1/34/4	20.0	40.0	20.0	112.0
1/43/4	13.5	27.0	13.5	94.5
1/44/4	23.1	46.2	23.1	121.5
1/45/4	35.1	70.3	35.1	148.5
1/53/4	16.1	32.2	16.1	104.5
1/54/4	26.4	52.7	26.4	130.9
1/55/4	39.2	78.4	39.2	157.9

BOX CELL DESIGNATION NN/ab/Ec	FLOOR APRON			FLEXIBLE APRON
	150 THK. PCC M15	300 THK. CONCRETE	150 THK. FLAT STONE	750 THK. STONE
1/63/4	19.0	38.0	19.0	114.7
1/64/4	30.4	60.8	30.4	141.7
1/65/4	43.5	86.9	43.5	167.4
1/66/4	59.6	119.1	59.6	194.4
1/75/4	48.6	97.3	48.6	178.2
1/76/4	65.1	130.3	65.1	204.4
1/77/4	84.5	169.0	84.5	231.4
1/85/4	53.2	106.4	53.2	187.6
1/86/4	71.1	142.2	71.1	214.6
1/87/4	91.4	182.8	91.4	241.6
1/22/5	3.6	7.2	3.6	48.6
1/23/5	9.3	18.5	9.3	76.1
1/33/5	11.4	22.8	11.4	85.6
1/34/5	20.5	41.0	20.5	113.4
1/43/5	14.1	28.2	14.1	96.4
1/44/5	23.1	46.2	23.1	121.5
1/45/5	35.8	71.6	35.8	149.8
1/53/3	16.6	33.1	16.6	105.8
1/54/5	1.3	2.5	1.3	43.6
1/55/5	39.9	79.8	39.9	159.3
1/63/5	19.7	39.4	19.7	116.6
1/64/5	31.0	62.0	31.0	143.1
1/65/5	44.5	89.0	44.5	169.3
1/66/5	60.4	120.8	60.4	195.7
1/75/5	49.7	99.5	49.7	180.1
1/76/5	66.0	132.1	66.0	205.7
1/77/5	86.2	172.3	86.2	233.5
1/85/5	55.7	111.5	55.7	191.7
1/86/5	73.0	146.0	73.0	217.3
1/87/5	93.5	187.1	93.5	244.3

BOX CELL DESIGNATION NN/ab/Ec	FLOOR APRON			FLEXIBLE APRON
	150 THK. PCC M15	300 THK. CONCRETE	150 THK. FLAT STONE	750 THK. STONE
2/22/3	5.2	10.4	5.2	63.0
2/22/4	5.3	10.7	5.3	63.8
2/22/5	5.5	10.5	5.5	64.3
2/23/3	12.2	24.4	12.2	90.8
2/23/4	12.4	24.8	12.4	91.3
2/23/5	12.6	25.3	12.6	92.1
2/32/3	7.6	15.2	7.6	80.0
2/32/4	8.0	15.9	8.0	81.3
2/32/5	8.0	15.9	8.0	81.3
2/33/3	15.9	31.8	15.9	107.0
2/33/4	16.2	32.4	16.2	107.8
2/33/5	16.2	32.4	16.2	107.8
3/22/3	17.1	34.1	17.1	110.8
3/22/4	6.9	13.8	6.9	78.2
3/22/5	7.1	14.2	7.1	79.0
3/33/3	20.0	40.1	20.0	127.6
3/33/4	20.6	41.2	20.6	128.9
3/33/5	21.2	42.4	21.2	130.3

NOTES:

1. FOR ALL NOTES REFER. DRG. NO. SD/111 (SHEET 1 OF 4)
2. THIS DRAWING SHALL BE READ IN CONJUNCTION TO FOLLOWING DRAWINGS–
   –SD/113 (SHEET 1 TO 3 OF 6)
   –SD/103 (SHEET 1 & 2 OF 2) , SD/105 & SD/107
3. THE VARIOUS VARIABLES FOR DIFFERENT CASES OF BOX – CULVERTS ARE INTERPOLATED FROM TABLES GIVEN IN DRG. NO. SD/113 (SHEET 3 OF 6)
   THE GIVEN CONCRETE QUANTITY IS FOR ALL THE FOUR ARMS OF WING WALL
4. FOR INTERMEDIATE HEIGHT/SECTIONS OF BOX CULVERTS, WING WALL DIMENSIONS SHALL BE INTERPOLATED FOR ACTUAL MAXIMUM HEIGHT OF WALL & CORRESPONDING SAFE BEARING CAPACITY USING DIMENSION SCHEDULE GIVEN IN DRG. NO. SD/113 (SHEET 3 OF 6)

GOVERNMENT OF INDIA
MINISTRY OF SURFACE TRANSPORT
(ROADS WING) , NEW DELHI.

STANDARD DRAWINGS FOR BOX CELL STRUCTURES

ESTIMATION OF PROTECTION WORKS
(WITH EARTH CUSHION CASES)

DESIGNED BY	CHECKED BY	APPROVED FOR ISSUE BY	1999
(A.R.GHOSH) CES (I) LTD	(M.C.TANDON) TCPL	(C.C.BHATTACHARYA) C.E (R) S&R MOST	DRG. NO. SD/111 (SHEET 2 OF 4)

Source: MoST Standard Drawings for Box Cell Culverts (2000) - older reference, verify with current IRC / MoRTH. Scan cleaned by helptheengineer.com

CURTAIN WALL:

BOX CELL DESIGNATION NN/ab/Ec	CONCRETE FOR D/S CURTAIN WALL (CUM)	CONCRETE FOR U/S CURTAIN WALL (CUM)	TOTAL CONCRETE FOR CURTAIN WALLS (CUM)	PCC M15 UNDER THE CURTAIN WALLS (CUM)
1/22/3	13.3	10.3	23.6	3.5
1/23/3	21.1	16.3	37.4	5.6
1/33/3	23.7	18.3	42.0	6.3
1/34/3	31.3	24.2	55.4	8.3
1/43/3	26.3	20.4	46.7	7.0
1/44/3	33.9	26.2	60.2	9.0
1/45/3	41.4	32.0	73.4	11.0
1/53/3	28.8	22.3	51.1	7.6
1/54/3	36.4	28.2	64.6	9.6
1/55/3	44.0	34.0	78.1	11.7
1/63/3	31.5	24.4	55.9	8.3
1/64/3	39.5	30.5	70.0	10.5
1/65/3	46.7	36.1	82.8	12.4
1/66/3	54.3	42.0	96.2	14.4
1/75/3	49.3	38.2	87.5	13.1
1/76/3	56.9	44.0	100.9	15.1
1/77/3	64.5	49.9	114.4	17.1
1/85/3	52.1	40.3	92.5	13.8
1/86/3	59.8	46.1	105.7	15.8
1/87/3	67.2	51.9	119.1	17.8

BOX CELL DESIGNATION NN/ab/Ec	CONCRETE FOR D/S CURTAIN WALL (CUM)	CONCRETE FOR U/S CURTAIN WALL (CUM)	TOTAL CONCRETE FOR CURTAIN WALLS (CUM)	PCC M15 UNDER THE CURTAIN WALLS (CUM)
1/22/4	13.5	10.4	24.0	3.6
1/23/4	21.4	16.6	38.0	5.7
1/33/4	23.8	18.4	42.1	6.3
1/34/4	31.5	24.4	55.9	8.3
1/43/4	26.6	20.5	47.1	7.0
1/44/4	34.2	26.4	60.6	9.0
1/45/4	41.7	32.3	74.0	11.1
1/53/4	29.4	22.7	52.1	7.8
1/54/4	36.8	28.5	65.3	9.7
1/55/4	44.4	34.3	78.7	11.8
1/63/4	32.3	24.9	57.2	8.5
1/64/4	39.8	30.8	70.7	10.6
1/65/4	47.1	36.4	83.4	12.5
1/66/4	54.6	42.3	96.9	14.5
1/75/4	50.1	38.7	88.8	13.3
1/76/4	57.4	44.4	101.9	15.2
1/77/4	65.0	50.3	115.3	17.2
1/85/4	52.7	40.8	93.5	14.0
1/86/4	60.3	46.7	107.0	16.0
1/87/4	67.9	52.5	120.5	18.0

BOX CELL DESIGNATION NN/ab/Ec	CONCRETE FOR D/S CURTAIN WALL (CUM)	CONCRETE FOR U/S CURTAIN WALL (CUM)	TOTAL CONCRETE FOR CURTAIN WALLS (CUM)	PCC M15 UNDER THE CURTAIN WALLS (CUM)
1/22/5	13.7	10.6	24.2	3.6
1/23/5	21.4	16.6	38.0	5.7
1/33/3	24.1	18.6	42.7	6.4
1/34/5	31.9	24.7	56.5	8.4
1/43/5	27.1	21.0	48.0	7.2
1/44/5	34.2	26.4	60.6	9.0
1/45/5	42.1	32.6	74.7	11.2
1/53/5	29.8	23.0	52.8	7.9
1/54/5	12.3	9.5	21.7	3.2
1/55/5	44.8	34.6	79.4	11.9
1/63/5	32.8	25.4	58.1	8.7
1/64/5	40.2	31.1	71.3	10.7
1/65/5	47.6	36.8	84.4	12.6
1/66/5	55.0	42.6	97.6	14.6
1/75/5	50.6	39.1	89.8	13.4
1/76/5	57.8	44.7	102.6	15.3
1/77/5	65.6	50.8	116.4	17.4
1/85/5	53.9	41.7	95.6	14.3
1/86/5	61.1	47.2	108.3	16.2
1/87/5	68.7	53.1	121.8	18.2

BOX CELL DESIGNATION NN/ab/Ec	CONCRETE FOR D/S CURTAIN WALL (CUM)	CONCRETE FOR U/S CURTAIN WALL (CUM)	TOTAL CONCRETE FOR CURTAIN WALLS (CUM)	PCC M15 UNDER THE CURTAIN WALLS (CUM)
2/22/3	17.7	13.7	31.4	4.7
2/22/4	17.9	13.9	31.8	4.7
2/22/5	18.1	14.0	32.1	4.8
2/23/3	25.5	19.7	45.3	6.8
2/23/4	25.7	19.9	45.5	6.8
2/23/5	25.9	20.0	45.9	6.9
2/32/3	22.5	17.4	39.9	6.0
2/32/4	22.9	17.7	40.5	6.1
2/32/5	22.9	17.7	40.5	6.1
2/33/3	30.1	23.3	53.3	8.0
2/33/4	30.3	23.4	53.7	8.0
2/33/5	30.7	23.7	54.4	8.1
3/22/3	22.0	17.0	39.0	5.8
3/22/4	22.2	17.2	39.4	5.9
3/22/5	22.2	17.2	39.4	5.9
3/33/3	35.9	27.7	63.6	9.5
3/33/4	36.2	28.0	64.3	9.6
3/33/5	36.6	28.3	64.9	9.7

NOTES:

1. FOR ALL NOTES REFER DWG. NO. SD/111 (SHEET 2 OF 4)

GOVERNMENT OF INDIA
MINISTRY OF SURFACE TRANSPORT
(ROADS WING), NEW DELHI.

STANDARD DRAWINGS FOR BOX CELL STRUCTURES

ESTIMATION OF PROTECTION WORKS
(WITH EARTH CUSHION CASES)

DESIGNED BY	CHECKED BY	APPROVED FOR ISSUE BY	1999
(A.R.GHOSH) CES (I) LTD	(M.C.TANDON) TCPL	(C.C.BHATTACHARYA) C.E (R) S&R MOST	DRG. NO. SD/111 (SHEET 3 OF 4)

Source: MoST Standard Drawings for Box Cell Culverts (2000) - older reference, verify with current IRC / MoRTH. Scan cleaned by helptheengineer.com

APRON:

BOX CELL DESIGNATION NN/ab/Ec	FLOOR APRON			FLEXIBLE APRON
	150 THK. PCC M15 (CUM)	300 THK. CONCRETE (CUM)	150 THK. FLAT STONE (CUM)	750 THK. STONE (CUM)
1/22/0	3.8	7.6	3.8	49.9
1/23/0	9.6	19.2	9.6	77.5
1/33/0	11.4	22.8	11.4	85.6
1/34/0	20.5	41.0	20.5	113.4
1/43/0	13.1	26.2	13.1	93.1
1/44/0	22.9	45.8	22.9	120.9
1/45/0	35.4	70.8	35.4	149.0
1/53/0	15.0	30.0	15.0	101.2
1/54/0	25.4	50.9	25.4	128.8
1/55/0	38.9	77.9	38.9	157.4
1/63/0	18.3	36.6	18.3	112.8
1/64/3	29.5	59.0	29.5	139.8
1/65/0	43.2	86.3	43.2	166.8
1/66/0	59.6	119.1	59.6	194.4
1/75/0	47.1	94.1	47.1	175.5
1/76/0	64.4	128.8	64.4	203.3
1/77/0	87.2	174.4	87.2	234.9
1/85/0	50.7	101.4	50.7	183.6
1/86/0	68.6	137.3	68.6	211.1
1/87/0	89.3	178.5	89.3	238.9
2/22/0	6.0	11.9	6.0	66.8
2/23/0	13.1	26.2	13.1	93.8
2/32/0	8.0	16.0	8.0	81.7
2/33/0	16.7	33.5	16.7	109.5
3/22/0	7.7	15.4	7.7	81.5
3/33/0	21.6	43.2	21.6	132.3

CURTAIN WALL:

BOX CELL DESIGNATION NN/ab/Ec	CONCRETE FOR D/S CURTAIN WALL (CUM)	CONCRETE FOR U/S CURTAIN WALL (CUM)	TOTAL CONCRETE FOR CURTAIN WALLS (CUM)	PCC M15 UNDER THE CURTAIN WALLS (CUM)
1/22/0	14.0	10.9	24.9	3.7
1/23/0	21.8	16.8	38.6	5.8
1/33/0	24.1	18.6	42.7	6.4
1/34/0	31.9	24.7	56.5	8.4
1/43/0	26.2	20.3	46.4	6.9
1/44/0	34.0	26.3	60.3	9.0
1/45/0	41.9	32.4	74.3	11.1
1/53/0	28.5	22.0	50.5	7.5
1/54/0	36.2	28.0	64.2	9.6
1/55/0	44.2	34.2	78.5	11.7
1/63/0	31.7	24.5	56.3	8.4
1/64/3	39.3	30.4	69.7	10.4
1/65/0	46.9	36.3	83.2	12.4
1/66/0	54.6	42.3	96.9	14.5
1/75/0	49.3	38.2	87.5	13.1
1/76/0	57.1	44.2	101.3	15.1
1/77/0	66.0	51.1	117.1	17.5
1/85/0	51.6	39.9	91.5	13.7
1/86/0	59.3	45.9	105.2	15.7
1/87/0	67.2	51.9	119.1	17.8
2/22/0	18.8	14.5	33.3	5.0
2/23/0	26.4	20.4	46.8	7.0
2/32/0	23.0	17.8	40.7	6.1
2/33/0	30.8	23.8	54.6	8.2
3/22/0	22.9	17.7	40.6	6.1
3/33/0	37.2	28.8	66.0	9.8

NOTES:

1. FOR ALL NOTES REFER DWG. NO. SD/111 (SHEET 2 OF 4)

GOVERNMENT OF INDIA
MINISTRY OF SURFACE TRANSPORT
(ROADS WING) , NEW DELHI.

STANDARD DRAWINGS FOR BOX CELL STRUCTURES

ESTIMATION OF PROTECTION WORKS
(WITHOUT EARTH CUSHION CASES)

DESIGNED BY	CHECKED BY	APPROVED FOR ISSUE BY	1999
(A.R.GHOSH) CES (I) LTD	(M.C.TANDON) TCPL	(C.C.BHATTACHARYA) C.E (R) S&R MOST	DRG. NO. SD/111 (SHEET 4 OF 4)

Source: MoST Standard Drawings for Box Cell Culverts (2000) - older reference, verify with current IRC / MoRTH. Scan cleaned by helptheengineer.com