

SARAWAK CONCRETE BOX CULVERTS

THIS IS HOW WELL ...



... WE STAND UP TO HEAVY LOADS

SCIB CONCRETE MANUFACTURING SDN BHD

Company No: 554888-U

(A Wholly Owned Subsidiary of Sarawak Concrete Industries Berhad
- A Member of Bursa Malaysia Securities Berhad)



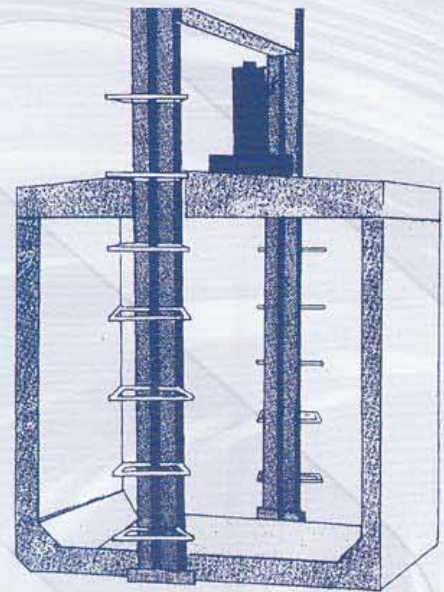
MS ISO 9001 REG. NO. AR-1476
MS ISO 9001 : 2000
Quality Systems - Model for Quality Assurance
in Production, Installation and Servicing

FEATURES

- SCM Box Culverts are available in both Standard Sizes (for nominal widths between 600mm and 1800mm) and Super Sizes (for nominal widths between 2100 mm and 3600mm) in lengths of 1 metre as shown in Tables 1,2, and 3.
- SCM Box Culverts are available both with and without dry weather flow (DWF) sections.
- Factory produced to vigorous standards
- Ease of handling and installation
- Site progress less affected by adverse weather conditions
- Reduce construction period
- Speed up installation
- Units can be delivered 7 days after casting by steam curing process to achieve high early strength

DESIGN CONSIDERATIONS & SPECIFICATIONS

- i. Design Loading requirements for SCM Box Culverts in accordance with
 - (a) BS 5400 : Part 2 : 1978 modified by (b)
 - (b) Departmental Standard BD 37/01 - Buried Concrete Box Type Structure issued by Department of Transport (UK) - Highway and Traffic
 - (c) JKR LTAL (Long Term Axle Load) and SV (Special Vehicle) requirements.
- ii. Reinforced concrete design in accordance with BS 5400 : Part 4 : 1984
- Concrete characteristic strength of 28 days $f_{cu} = 40$ MPa.
- Concrete cover to reinforcement for:-
 - Standard Size Box Culverts = 25mm
 - Super Size Box Culverts = 30mm
- Soil parameters used in the design :-
 - Coefficient of the earth pressure of rest = 0.5
 - Bulk density of the soil = 19kN/m^3
- SCM Standard Size Box Culverts (not exceeding 1800mm width and 1800mm height) are designed to cater for backfill superimposed dead load not exceeding 2 m depth (inclusive of pavement) plus 45 units of HB vehicle primary live loads.
- SCM Standard Size Box Culverts also comply with proof test load of 112.5kN over an area of 320mm x 320mm placed at any position on the Culvert Lid. Testing procedure is in accordance to AS 1597: part 1: 1974.
- SCM Super Size Box Culverts are designed to cater for backfill superimposed dead load not exceeding 4 m depth (inclusive of pavement) plus 45 units of HB vehicle primarily live loads.
- Hydrostatic pressures are eliminated by the provision of 50mm diameter weepholes placed along the centreline of the invert wall.



Proof load testing for Standard Size Box Culverts

For other design considerations or specifications not shown here, please contact our Technical Department.

HANDLING

Lifting holes (weepholes) are provided at the box culverts wall and lifting hooks are provided at both ends of the lid for handling. It is recommended that a spreader beam be used when slinging the inverts to avoid cracking at the wall-base joint.

JOINTING

SCM Box Culverts are supplied with plain butt joints. Cement mortar is normally used to fill the gap between box culverts.

LAYING

SCM Box Culverts should be laid on prepared bedding (preferable compacted sand bedding). However, in bad ground, it may be necessary to excavate deeper or provide piled foundation and place a layer of hardcore before placing the sand bedding. Backfilling around culvert units should be done after the lid of the culvert has been installed and it should be carried out in even layers on both sides simultaneously.

STACKING

All inverts should preferably be stacked uniformly on level ground. Lids should be supported with timber bearers at the both ends and not at the centre.

STANDARD SIZE BOX CULVERTS

TABLE 1

NOMINAL SIZE		DIMENSIONS						WEIGHT (tonnes)	
b	h	B	H	tb	G	J	M	LID	INVERT
600	300	740	370	70	140	128	-	0.25	0.25
	450	740	520	70	140	128	-	0.25	0.29
	600	740	670	70	140	128	-	0.25	0.34
750	450	910	530	80	140	128	-	0.31	0.38
	600	910	680	80	140	128	-	0.31	0.44
	750	910	830	80	140	128	-	0.31	0.50
900	450	1060	530	80	140	100	225	0.33	0.41
	600	1060	680	80	140	100	225	0.33	0.47
	750	1060	830	80	140	100	225	0.33	0.52
	900	1060	980	80	140	100	225	0.33	0.58
1200	600	1390	695	95	150	110	225	0.48	0.62
	750	1390	845	95	150	110	225	0.48	0.69
	900	1390	995	95	150	110	225	0.48	0.76
	1050	1390	1145	95	150	110	225	0.48	0.83
	1200	1390	1295	95	150	110	225	0.48	0.90
1500	750	1700	850	100	175	125	300	0.66	0.84
	900	1700	1000	100	175	125	300	0.66	0.91
	1050	1700	1150	100	175	125	300	0.66	0.98
	1200	1700	1300	100	175	125	300	0.66	1.05
	1350	1700	1450	100	175	125	300	0.66	1.13
	1500	1700	1600	100	175	125	300	0.66	1.21
1800	900	2030	1015	115	175	125	300	0.79	1.14
	1050	2030	1165	115	175	125	300	0.79	1.22
	1200	2030	1315	115	175	125	300	0.79	1.31
	1350	2030	1465	115	175	125	300	0.79	1.39
	1500	2030	1615	115	175	125	300	0.79	1.48
	1650	2030	1765	115	175	125	300	0.79	1.57
	1800	2030	1915	115	175	125	300	0.79	1.65

* $t_c = t_b$ for $b = 600, 900, 1500$ and 1800
 $t_c = 50$ for $b = 1200$

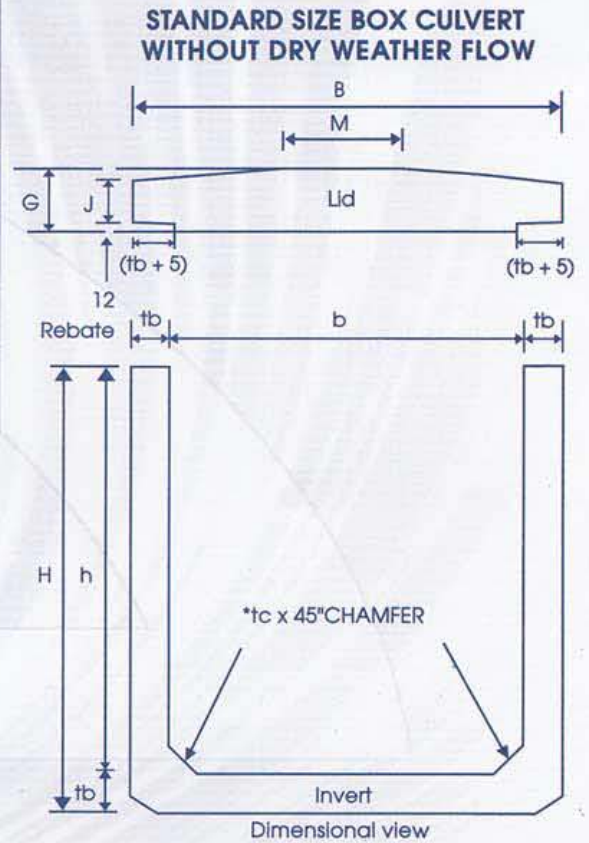
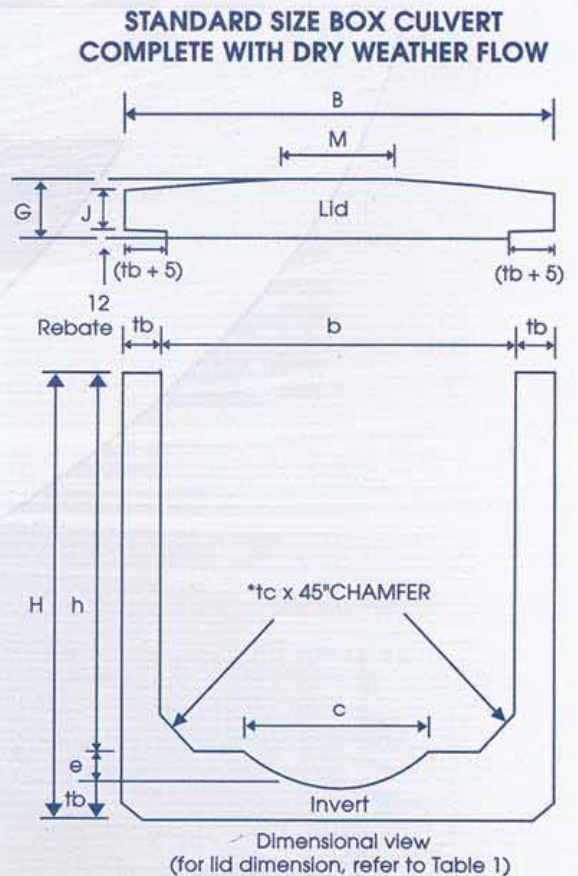


TABLE 2

NOMINAL SIZE		DIMENSIONS						WEIGHT (tonnes)	
b	h	B	H	tb	c	t _c	e	LID	INVERT
600	300	740	440	70	300	70	70	0.25	0.33
	450	740	590	70	300	70	70	0.25	0.39
	600	740	740	70	300	70	70	0.25	0.44
750	450	910	610	80	450	80	80	0.31	0.50
	600	910	760	80	450	80	80	0.31	0.56
	750	910	910	80	450	80	80	0.31	0.62
900	450	1060	610	80	450	80	80	0.33	0.55
	600	1060	760	80	450	80	80	0.33	0.61
	750	1060	910	80	450	80	80	0.33	0.66
	900	1060	1060	80	450	80	80	0.33	0.72
1200	600	1390	920	95	1075	50	225	0.48	0.97
	750	1390	1070	95	1075	50	225	0.48	1.05
	900	1390	1220	95	1075	50	225	0.48	1.11
	1050	1390	1370	95	1075	50	225	0.48	1.19
	1200	1390	1520	95	1075	50	225	0.48	1.25
1500	750	1700	1075	100	1075	100	225	0.66	1.35
	900	1700	1225	100	1075	100	225	0.66	1.42
	1050	1700	1375	100	1075	100	225	0.66	1.50
	1200	1700	1525	100	1075	100	225	0.66	1.58
	1350	1700	1675	100	1075	100	225	0.66	1.65
	1500	1700	1825	100	1075	100	225	0.66	1.72
1800	900	2030	1240	115	1075	115	225	0.79	1.83
	1050	2030	1390	115	1075	115	225	0.79	1.92
	1200	2030	1540	115	1075	115	225	0.79	2.00
	1350	2030	1690	115	1075	115	225	0.79	2.09
	1500	2030	1840	115	1075	115	225	0.79	2.17
	1650	2030	1990	115	1075	115	225	0.79	2.26
	1800	2030	2140	115	1075	115	225	0.79	2.34

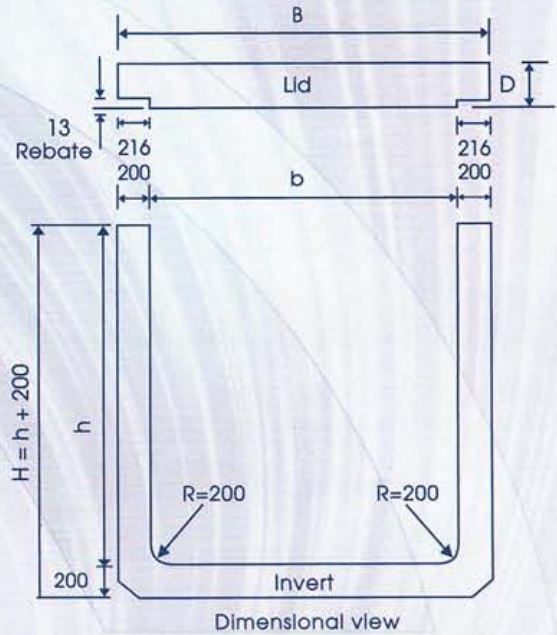


SUPER SIZE BOX CULVERTS

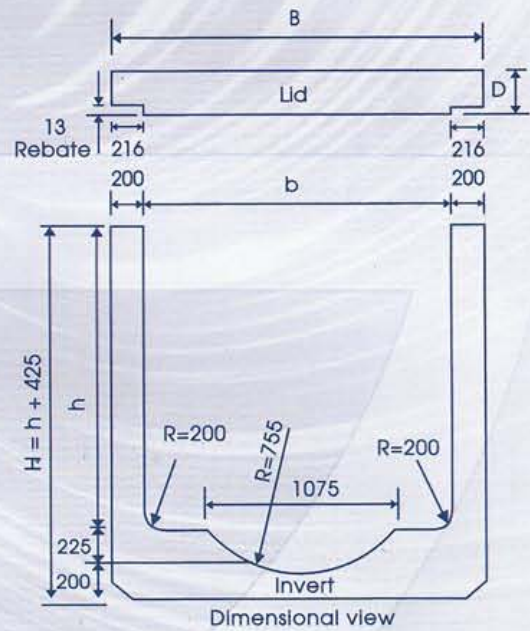
TABLE 3

NOMINAL SIZE (mm x mm)	DIMENSIONS				WEIGHT (tonnes)		
	b (mm)	h (mm)	B (mm)	D (mm)	LID	INVERT (W/O DWF)	INVERT (C/W DWF)
2100 x 1200	2100	1200	2500	255	1.62	2.55	3.44
x 1500	2100	1500	2500	255	1.62	2.86	3.74
x 1800	2100	1800	2500	255	1.62	3.17	4.04
x 2100	2100	2100	2500	255	1.62	3.48	4.34
2400 x 1200	2400	1200	2800	255	1.81	2.75	3.76
x 1500	2400	1500	2800	255	1.81	3.06	4.06
x 1800	2400	1800	2800	255	1.81	3.33	4.36
x 2100	2400	2100	2800	255	1.81	3.64	4.66
x 2400	2400	2400	2800	255	1.81	3.95	4.96
2700 x 1500	2700	1500	3100	255	2.01	3.17	4.38
x 1800	2700	1800	3100	255	2.01	3.48	4.68
x 2100	2700	2100	3100	255	2.01	3.80	4.98
x 2400	2700	2400	3100	255	2.01	4.11	5.28
x 2700	2700	2700	3100	255	2.01	4.42	5.58
3000 x 1500	3000	1500	3400	255	2.21	3.33	4.70
x 1800	3000	1800	3400	255	2.21	3.64	5.00
x 2100	3000	2100	3400	255	2.21	3.95	5.30
x 2400	3000	2400	3400	255	2.21	4.26	5.60
x 2700	3000	2700	3400	255	2.21	4.58	5.90
x 3000	3000	3000	3400	255	2.21	4.89	6.20
3300 x 1500	3300	1500	3700	275	2.59	3.48	5.01
x 1800	3300	1800	3700	275	2.59	3.80	5.31
x 2100	3300	2100	3700	275	2.59	4.11	5.61
x 2400	3300	2400	3700	275	2.59	4.42	5.91
x 2700	3300	2700	3700	275	2.59	4.73	6.21
x 3000	3300	3000	3700	275	2.59	5.04	6.51
3650 x 1800	3650	1800	4050	275	2.84	3.98	5.69
x 2100	3650	2100	4050	275	2.84	4.29	5.99
x 2400	3650	2400	4050	275	2.84	4.60	6.29
x 2700	3650	2700	4050	275	2.84	4.91	6.59
x 3000	3650	3000	4050	275	2.84	5.23	6.89

SUPER SIZE BOX CULVERT WITHOUT DRY WEATHER FLOW



SUPER SIZE BOX CULVERT COMPLETE WITH DRY WEATHER FLOW



It is our policy to continuously review and improve products and their design. Information in this leaflet is therefore subject to change without notice.



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