

TYPICAL WINGWALL SET OUT & QUANTITY TABLES FOR SLAB LINK BOX CULVERTS (UP TO 1800mm CULVERT DEPTH)

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TABLE 10: CULVERT SKEW ANGLE 35° TO 40°
(WINGWALL ANGLES $\alpha = 8^\circ$ & $\beta = 57^\circ$) (BATTER SLOPE OF 1V:2H)

SETOUT DIMENSIONS					
D	H	A	B	E	C
450	1030	1660	240	2560	W+2800
600	1180	1960	280	3020	W+3300
750	1330	2260	320	3490	W+3810
900	1480	2560	360	3950	W+4310
1050	1680	2960	420	4560	W+4980
1200	1830	3260	460	5020	W+5480
1350	1980	3560	510	5490	W+6000
1500	2130	3860	550	5950	W+6500
1650	2280	4160	590	6410	W+7000
1800	2430	4460	630	6870	W+7500

TABLE 13: CULVERT SKEW ANGLE 40° TO 45°
(WINGWALL ANGLES $\alpha = 0^\circ$ & $\beta = 60^\circ$) (BATTER SLOPE OF 1V:2H)

SETOUT DIMENSIONS					
D	H	A	B	E	C
450	1030	1660	0	2880	W+2880
600	1180	1960	0	3400	W+3400
750	1330	2260	0	3920	W+3920
900	1480	2560	0	4440	W+4440
1050	1680	2960	0	5130	W+5130
1200	1830	3260	0	5650	W+5650
1350	1980	3560	0	6170	W+6170
1500	2130	3860	0	6690	W+6690
1650	2280	4160	0	7210	W+7210
1800	2430	4460	0	7730	W+7730

TABLE 11: CULVERT SKEW ANGLE 35° TO 40°
(WINGWALL ANGLES $\alpha = 8^\circ$ & $\beta = 57^\circ$) (BATTER SLOPE OF 1V:4H)

SETOUT DIMENSIONS					
D	H	A	B	E	C
450	1030	3320	470	5120	W+5590
600	1180	3920	560	6040	W+6600
750	1330	4520	640	6970	W+7610
900	1480	5120	720	7890	W+8610
1050	1680	5920	840	9120	W+9960
1200	1830	6520	920	10040	W+10960
1350	1980	7120	1010	10970	W+11980
1500	2130	7720	1090	11890	W+12980
1650	2280	8320	1170	12820	W+13990
1800	2430	8920	1260	13740	W+15000

TABLE 14: CULVERT SKEW ANGLE 41° TO 45°
(WINGWALL ANGLES $\alpha = 0^\circ$ & $\beta = 60^\circ$) (BATTER SLOPE OF 1V:4H)

SETOUT DIMENSIONS					
D	H	A	B	E	C
450	1030	3320	0	5760	W+5760
600	1180	3920	0	6790	W+6790
750	1330	4520	0	7830	W+7830
900	1480	5120	0	8870	W+8870
1050	1680	5920	0	10260	W+10260
1200	1830	6520	0	11300	W+11300
1350	1980	7120	0	12340	W+12340
1500	2130	7720	0	13380	W+13380
1650	2280	8320	0	14420	W+14420
1800	2430	8920	0	15450	W+15450

TABLE 12: CULVERT SKEW ANGLE 35° TO 40°
(WINGWALL ANGLES $\alpha = 8^\circ$ & $\beta = 57^\circ$) (BATTER SLOPE OF 1V:6H)

SETOUT DIMENSIONS					
D	H	A	B	E	C
450	1030	4980	700	7670	W+8370
600	1180	5880	830	9060	W+9890
750	1330	6780	960	10450	W+11410
900	1480	7680	1080	11830	W+12910
1050	1680	8880	1250	13680	W+14930
1200	1830	9780	1380	15060	W+16440
1350	1980	10680	1510	16450	W+17960
1500	2130	11580	1630	17840	W+19470
1650	2280	12480	1760	19220	W+20980
1800	2430	13380	1890	20610	W+22500

TABLE 15: CULVERT SKEW ANGLE 41° TO 45°
(WINGWALL ANGLES $\alpha = 0^\circ$ & $\beta = 60^\circ$) (BATTER SLOPE OF 1V:6H)

SETOUT DIMENSIONS					
D	H	A	B	E	C
450	1030	4980	0	8630	W+8630
600	1180	5880	0	10190	W+10190
750	1330	6780	0	11750	W+11750
900	1480	7680	0	13310	W+13310
1050	1680	8880	0	15390	W+15390
1200	1830	9780	0	16940	W+16940
1350	1980	10680	0	18500	W+18500
1500	2130	11580	0	20060	W+20060
1650	2280	12480	0	21620	W+21620
1800	2430	13380	0	23180	W+23180

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SPECIFIED ELSEWHERE
- STANDARD DRAWING REFERENCES:
 - CS3107 - RCBC SETOUT DETAILS
 - CS3108 - RCBC CROWN UNIT & LINK SLAB INSTALLATION DETAIL
 - CS3109 - RCBC WINGWALL AND HEADWALL DETAIL FOR D < 900mm
 - CS3110 - RCBC WINGWALL AND HEADWALL DETAIL FOR D > 900mm
 - CS3111 - RCBC CONSTRUCTION OF BASES WITH NIBS & APRONS
 - CS3112 - RCBC CONSTRUCTION OF BASES WITH RECESSES & APRONS
- TO ASSIST PROJECT DEVELOPMENT, TENDERING AND CONSTRUCTION, FORMULAS ARE PROVIDED TO DEVELOP QUANTITIES FOR SLBC BOX CULVERTS. IT IS THE RESPONSIBILITY OF THE DESIGNER / CONSULTANT / CONTRACTOR TO VERIFY THE BELOW FORMULAS, AND WHERE A DISCREPANCY EXISTS, INFORM THE DEPARTMENT AS SOON AS PRACTICAL.
- THE TABLES & FORMULAS PROVIDED REFERENCE THE BELOW STANDARD DRAWINGS:
 - CS3107 - REFERENCE FOR [H], [A], [B], [E], [T], [a], [b]
 - CS3111 & CS3112 - VALUES FOR [B]
 - CS3132 - VALUES FOR [a] & [b]

QUANTITY CALCULATIONS FOR SLBC CULVERTS	
CULVERT COMPONENT	FORMULA
HEADWALL	$Q_{HEADWALL} = [T] \times \text{HEADWALL DEPTH} \times [W]$
WINGWALL 1 LENGTH - A_{W1}	$A_{W1} = [A] / \cos(\alpha)$
WINGWALL LENGTH 2 - A_{W2}	$A_{W2} = [A] / \cos(\beta)$
WINGWALL - Q DUE TO A_{W1}	$Q_{AW1} = ([A_{W1}] \times 200\text{mm} \times [T]) + ([A_{W1}] \times (H - 200\text{mm}) \times 0.5 \times [T])$
WINGWALL - Q DUE TO A_{W2}	$Q_{AW2} = ([A_{W2}] \times 200\text{mm} \times [T]) + ([A_{W2}] \times (H - 200\text{mm}) \times 0.5 \times [T])$
APRON	$Q_{APRON} = ([A] \times [W]) + (0.5 \times [B] \times [A]) + (0.5 \times [E] \times [A])$
CUT OFF WALL - INLET	$Q_{CUT-IN} = ([W] + [B] + [E]) \times 200\text{mm} \times 150\text{mm}$
CUT OFF WALL - OUTLET	$Q_{CUT-OUT} = ([W] + [B] + [E]) \times 450\text{mm} \times 150\text{mm}$
FOOTING DUE TO A_{W1}	$Q_{F1} = ([A_{W1}] \times 300\text{mm} \times 100\text{mm}) + ((0.75[H] - 300\text{mm}) \times [A_{W1}] \times 0.5) \times 0.1$
FOOTING DUE TO A_{W2}	$Q_{F2} = ([A_{W2}] \times 300\text{mm} \times 100\text{mm}) + ((0.75[H] - 300\text{mm}) \times [A_{W2}] \times 0.5) \times 0.1$
IN-SITU BASE SLAB	$Q_{BASE} = [B] \times [W] \times \text{LENGTH OF CULVERT FROM INVERT TO INVERT}$
TOTAL PER CULVERT	$Q_T = 2 \times (Q_{HEADWALL} + Q_{AW1} + Q_{AW2} + Q_{APRON} + Q_{F1} + Q_{F2}) + Q_{CUT-IN} + Q_{CUT-OUT} + Q_{BASE}$

NOTES:
1. QUANTITY CALCULATIONS ARE PROVIDED AND INCLUDE THE FOLLOWING: HEADWALL, WINGWALLS, APRON, CUT OFF WALL & FOOTINGS

0	ISSUED AS A STANDARD DRAWING	APR 2023	J. COOK	TCS / DIPL
No.	AMENDMENT DESCRIPTION	DATE	INIT.	DEPT/COMPANY

Drawn	J. COOK Date: MAR 2023	Checked	S. HATZI Date: APR 2023
Designed	J. COOK Date: MAR 2023	Checked	S. HATZI Date: APR 2023
	Design Project Leader DIPL Date: APR 2023		NTG Project Manager DIPL Date: APR 2023



STANDARD DRAWINGS DRAINAGE			
SLBC - 450mm - 1800mm HEIGHT & 1V:2H TO 1V:6H BATTER SETOUT DIMENSIONS & QUANTITIES - 36° TO 45° SKEW			
NTG Project No.	NTG Asset No.	Sheet Reference	NTG Drawing No. Amendment
-	-	6 OF 6	CS3132 0 A1