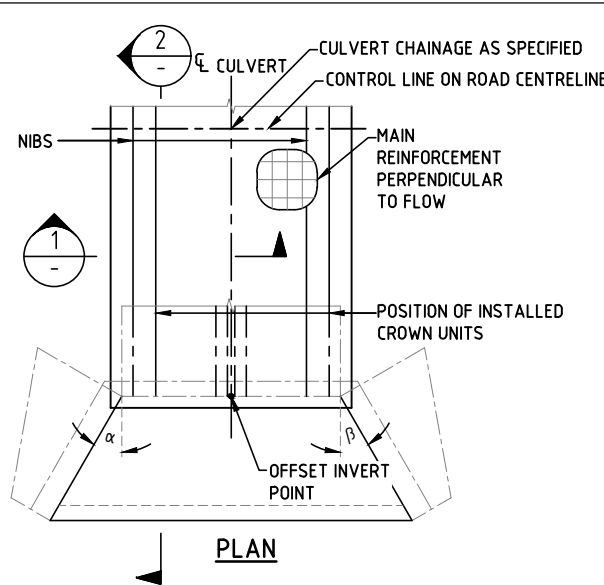


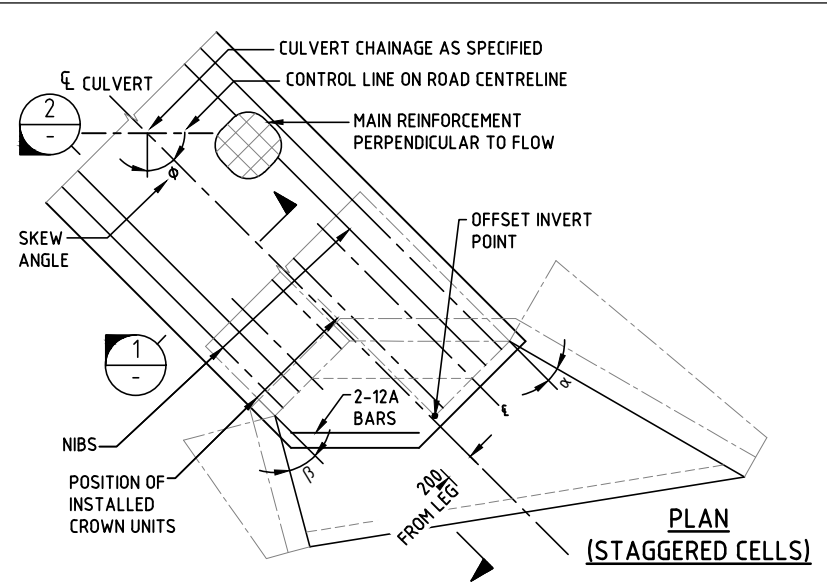
**SLAB & APRON DETAILS FOR CULVERTS WITHOUT WINGWALLS**

FOR HEADWALL AND WINGWALL DETAILS REFER STANDARD DRAWINGS CS3107 AND CS3108



**SLAB & APRON DETAILS FOR CULVERTS WITH WINGWALLS**

FOR HEADWALL & WINGWALL DETAILS REFER STANDARD DRAWINGS CS3107 AND CS3108

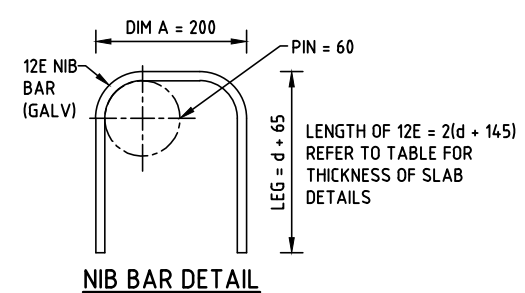


**NOTES:**

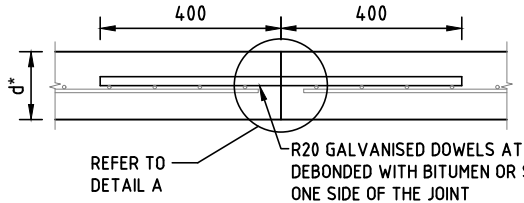
- CONTRACTION JOINTS ARE TO BE PROVIDED WHERE (a) THE LENGTH OF THE BASE SLAB AND/OR (b) THE WIDTH OF THE BASE SLAB EXCEED 20 METRES. WHEN CONTRACTION JOINTS ARE REQUIRED ACROSS THE WIDTH OF THE BASE SLAB, THEY ARE TO BE LOCATED AT 1/4 SPAN POINTS OF CROWN UNITS. CONTRACTION JOINTS ACROSS THE WIDTH OF THE BASE SLAB ARE TO BE CONTINUED ACROSS THE APRONS. FOR APRON CONTRACTION JOINTS REFER TO THE DETAIL FOR SINGLE REINFORCEMENT LAYER. 24 HOURS MINIMUM IS TO BE ALLOWED BETWEEN POURS.
- FOR CULVERTS WITH A BASE > 10 METRES ALONG ROAD CENTRELINE, THIS DESIGN SHOULD NOT BE USED IN:
  - HIGHLY REACTIVE OR EXPANSIVE CLAY SOILS (LINEAR SHRINKAGE >8%)
  - WHERE LARGE DIFFERENTIAL SETTLEMENTS ARE EXPECTED TO OCCUR. SPECIAL DESIGN ADVICE SHOULD BE OBTAINED IN THESE CIRCUMSTANCES.
- REFER TO STANDARD DRAWING CS3100 FOR GENERAL NOTES, W1 & W2 CALCULATIONS AND WINGWALLS ANGLES  $\alpha$  AND  $\beta$ .
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- REFER TO CS3109 AND CS3110 FOR SHEET 1 AND 2, CS3112 AND CS3113 FOR SHEET 3 AND SHEET 4.
- NIB DETAILS ARE AS FOLLOWS:
 

ARRANGEMENTS:	FOR H = 600	- NO NIBS	
	FOR RCBC H > 600	- NIBS SUPPORTING EXTERNAL LEGS OF EXTERNAL CELLS	
	FOR SLBC H > 600 to 900	- NIBS SUPPORTING EXTERNAL LEGS OF EXTERNAL CELLS	
	FOR SLBC H > 900	- NIBS SUPPORTING BOTH LEGS OF EXTERNAL CELLS	

INSTALLATION:  
 FOR H < 1500 - NIBS CAST BEFORE PLACEMENT OF UNITS  
 FOR H ≥ 1500 - NIBS CAST AFTER PLACEMENT OF UNITS

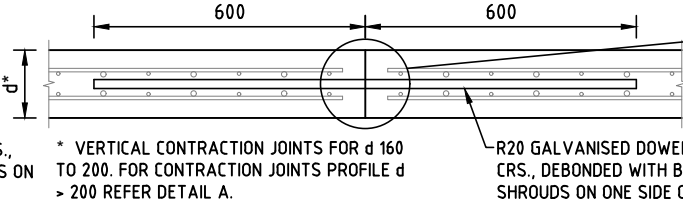


**NIB BAR DETAIL**



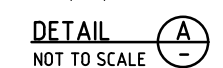
**CONTRACTION JOINT**

(SINGLE REINFORCEMENT LAYER) REFER NOTE 1 THIS PAGE FOR SPANS OF 600 TO 1800 FOR ALL APRONS

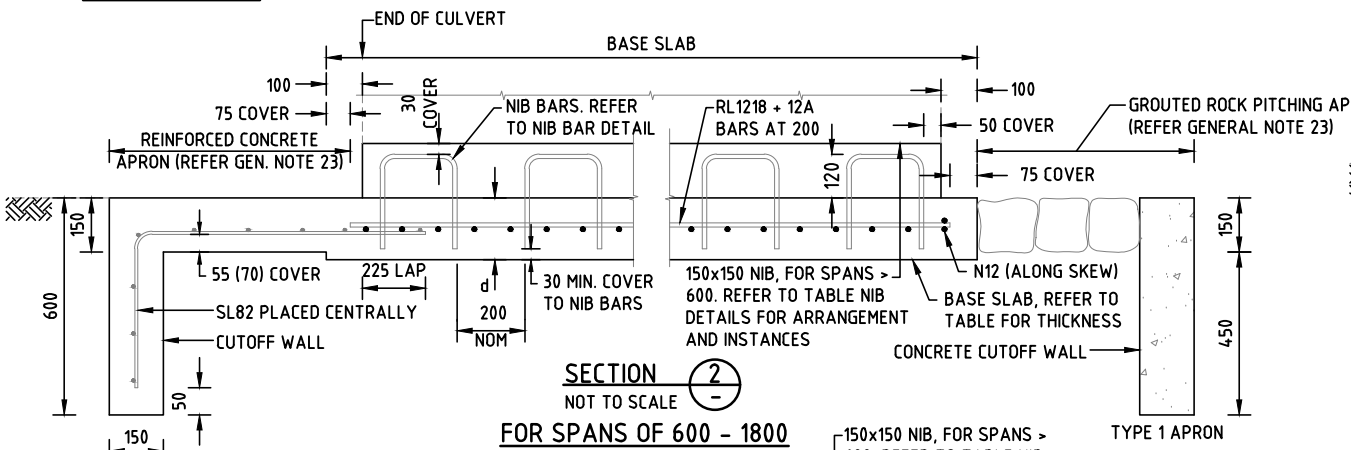


**DOWELLED CONTRACTION JOINT**

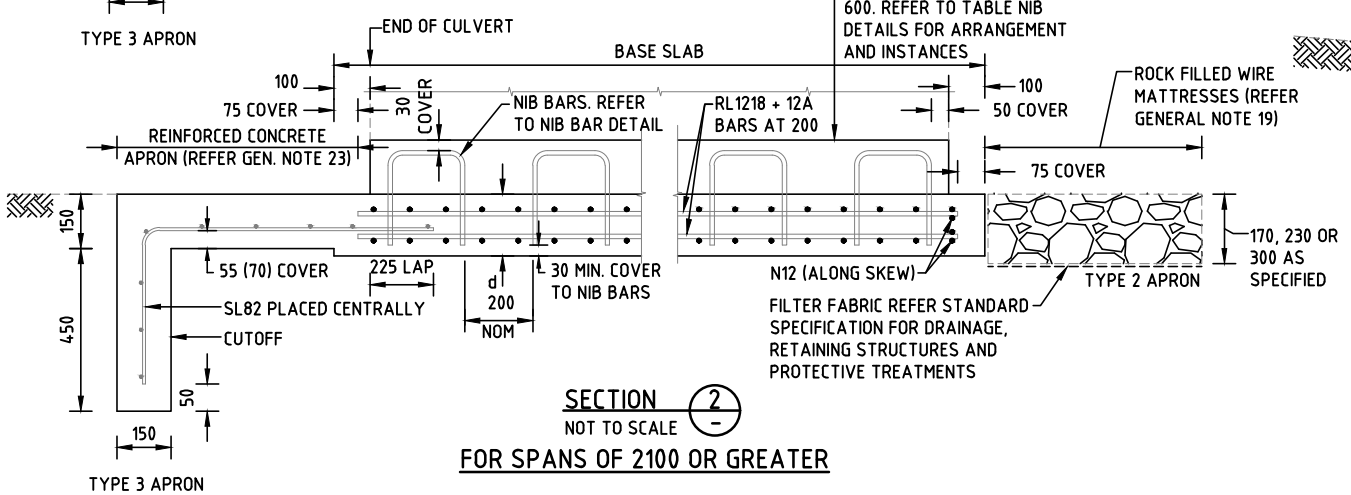
(DOUBLE REINFORCEMENT LAYER) REFER NOTE 1 THIS PAGE FOR SPANS OF 2100 OR GREATER



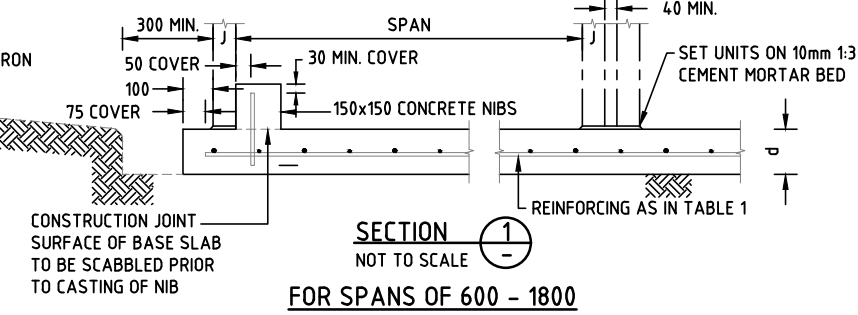
**DETAIL A**  
NOT TO SCALE



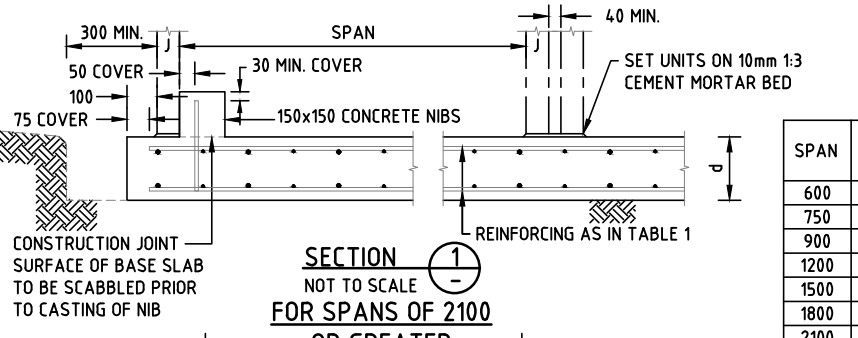
**SECTION 2**  
NOT TO SCALE  
FOR SPANS OF 600 - 1800



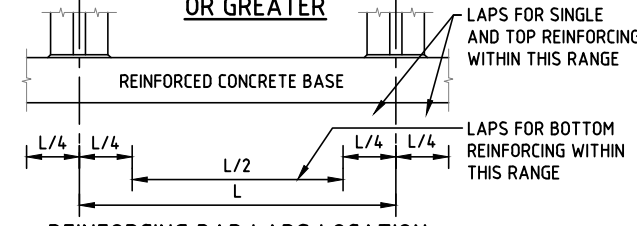
**SECTION 2**  
NOT TO SCALE  
FOR SPANS OF 2100 OR GREATER



**SECTION 1**  
NOT TO SCALE  
FOR SPANS OF 600 - 1800



**SECTION 1**  
NOT TO SCALE  
FOR SPANS OF 2100 OR GREATER



**REINFORCING BAR LAPS LOCATION**

SPAN	THICKNESS OF SLAB, d	MAIN REINFORCEMENT	SECONDARY REINFORCEMENT	POSITION	LENGTH OF NIB BARS
600	180 (210)	RL1218	12 AT 200	SINGLE MAT ON CENTRE LINE	N/A
750	180 (210)	RL1218	12 AT 200		630
900	180 (210)	RL1218	12 AT 200		630
1200	180 (210)	RL1218	12 AT 200		630
1500	190 (210)	RL1218	12 AT 200		650
1800	190 (210)	RL1218	12 AT 200		650
2100	210 (240)	RL1218	12 AT 200		690
2400	220 (240)	RL1218	12 AT 200	TOP MAT 55 (70) & BOTTOM MAT 75 (90) COVER	710
2700	240 (280)	RL1218	12 AT 200		750
3000	240 (280)	RL1218	12 AT 200		750
3300	250 (290)	RL1218	12 AT 200		770
3600	260 (300)	RL1218	12 AT 200		790

**TABLE 1 - SLAB DETAILS**  
REFER TO STANDARD DRAWING CS3100 FOR GENERAL NOTES 1, 2, 3 & 4

THIS DRAWING IS DERIVED FROM QUEENSLAND MAIN ROADS STANDARD DRAWING 1317 AND ADOPTED FOR THE NT CONDITIONS.

No.	DESCRIPTION	DATE	NAME	DEPT/COMPANY
0	ISSUED AS A STANDARD DRAWING	SEPT 2017	J.LEESON	EES/DIPL
AMENDMENTS				

**WARNING**  
 BEWARE OF UNDERGROUND SERVICES. THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

DRAWN	A.R	CHECKED	L.Mc
DATE	DEC 2012	DATE	DEC 2012
DESIGNED	QLD	CHECKED	QLD
DATE		DATE	
DESIGN LEADER	S.HATZI	DESIGN DIRECTOR	S.JACKSON
DATE	1/09/2017	DATE	1/09/2017



STANDARD DRAWINGS DRAINAGE				
RCBC AND LINK SLABS CONSTRUCTION OF BASES WITH NIBS AND APRONS				
FILE No.	ASSET No.	SHEET No.	DRAWING No.	AMEND.
-	-	3 OF 5	CS3111	0
				SHEET SIZE A1