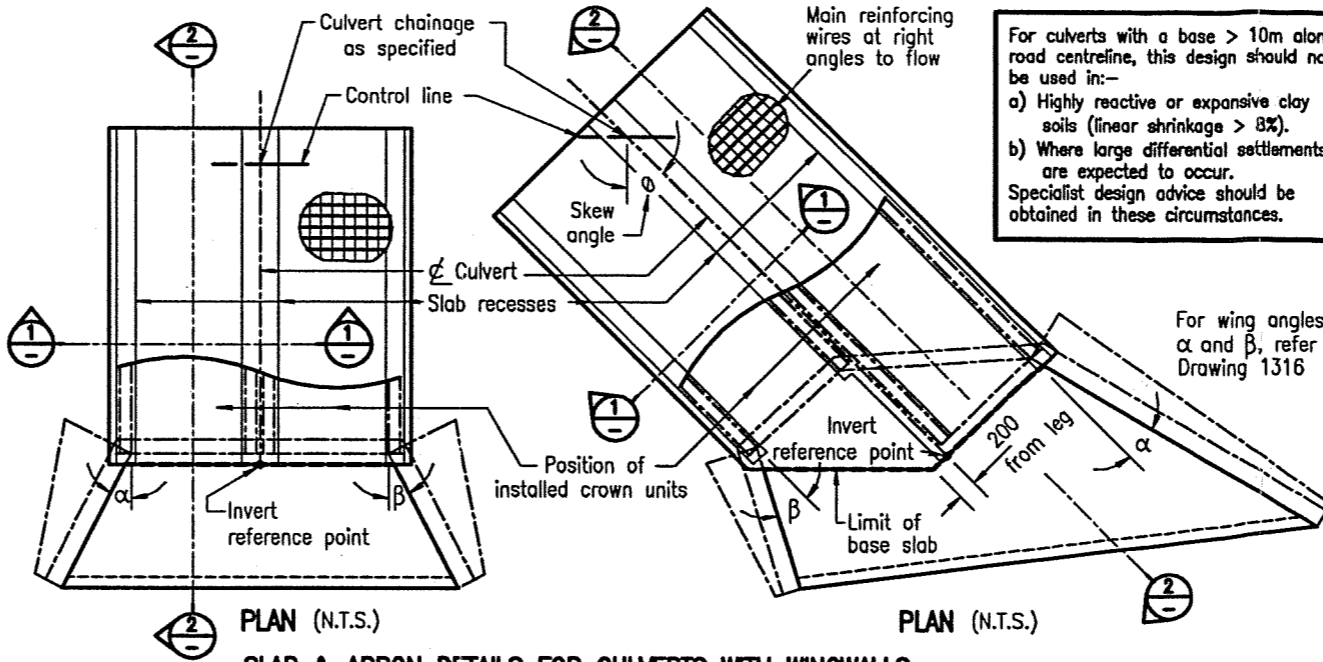


SLAB & APRON DETAILS FOR CULVERTS WITHOUT WINGWALLS

For construction detail refer Drawing 1174

H = 300-600
H = 750-2400



SLAB & APRON DETAILS FOR CULVERTS WITH WINGWALLS

For construction detail refer Drawing 1319

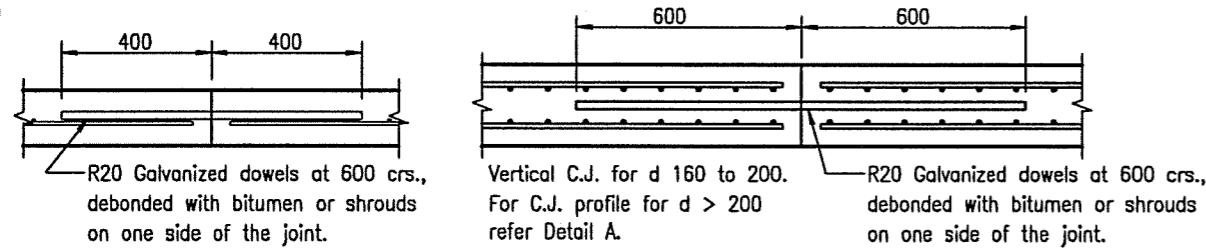
For culverts with a base > 10m along road centreline, this design should not be used in:-
a) Highly reactive or expansive clay soils (linear shrinkage > 8%).
b) Where large differential settlements are expected to occur.
Specialist design advice should be obtained in these circumstances.

Span	Thickness of slab, d	Reinforcing fabric type	Position of fabric in slab
300	120	F718	Single layer on centre line
375	120	"	
450	120	"	
600	120	"	
750	130	F818	
900	140	F1018	Single layer at top and bottom 40(50) cover
1200	150	F1118	
1520	160 (170)	F818	
1830	170 (180)	"	
2130	180 (190)	F918	
2440	190 (200)	"	
2740	200 (210)	F1018	
3050	210 (220)	"	
3350	220 (230)	F1118	
3660	230 (240)	"	

TABLE 1 - SLAB DETAILS
(Refer Notes 8, 9 and 10)

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 20m. 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 detail for single reinforcement layer. 24 hours minimum is to be allowed between pours.
- APRONS where unreinforced wingwalls are used shall be grouted rock pitching (Type 1), rock filled wire mattresses (Type 2) or concrete reinforced with F52 fabric (Type 3). Where RC wingwalls are used, refer Standard Drawing 1303 for apron details. Protection works at outlets and inlets are typical and may be varied by the engineer to suit the conditions at the site. If aprons are specified, apron lengths shall be nominally between ends of the wings as drawn. Any extended or reduced length will be shown on the drawings.
- BASE DIMENSIONS given are applicable to a maximum fill height over the culvert crown of 1.5m. An on site check of the units dimensions should be made before setting out the base slab as there are variations between manufacturers.
- UNIT DIMENSIONS : H = Height of opening
J = Thickness of leg
Span = Internal width
- LAPS shall be made so that the two outermost wires of one fabric overlap the two outermost wires of the sheet being lapped.
- OVERLAPS - Where 4 sheets overlap, cut out cross wires to limit build up in thickness of fabric.
- DETAIL TO BE SHOWN ELSEWHERE IN THE DOCUMENTS :
Apron type, depth of Type 2 apron (if required).
Apron cutoff wall, U/S and/or D/S (if required).
Aggressive environment treatment (if required).
Culvert location (chainage) and base distance and height.
- AGGRESSIVE ENVIRONMENT - Dimensions indicating slab thickness, steel cover and concrete class are shown in brackets for aggressive environment.
- DESIGN LOADING - Design loading W7, T44 and HLP320.
- RECESS DETAILS are as follows :
H < 600, no recesses
H > 600 to 750, 'e' = 20mm
H > 750 to 1200, 'e' = 30mm
H > 1200, 'e' = 40mm
- CONCRETE
Reinforced concrete class 32 MPa/20 (50 MPa/20).
Unreinforced concrete class 20 MPa/20.
- STEEL
20 dia. dowels to be grade 250R to AS 1302 and galvanized to AS/NZS 4680.
Reinforcing fabric to AS 1304.
- DIMENSIONS are in millimetres unless shown otherwise.

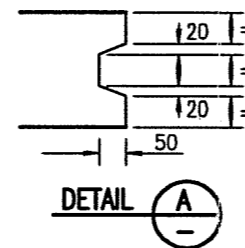


CONTRACTION JOINT

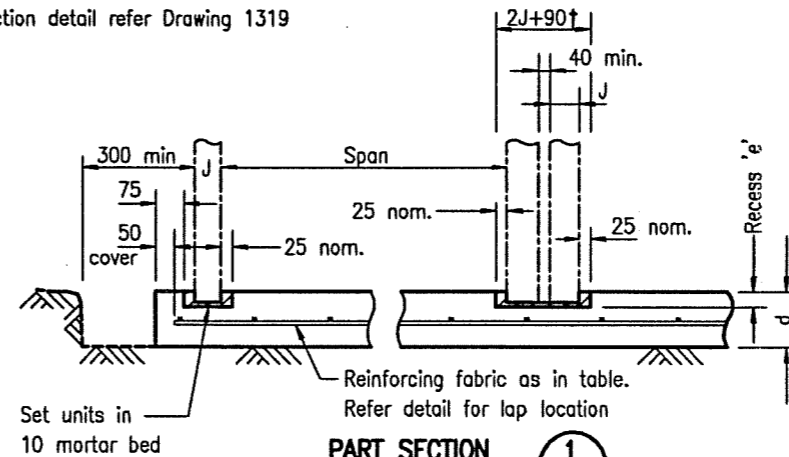
(Single Reinforcement Layer) Refer note 1

CONTRACTION JOINT

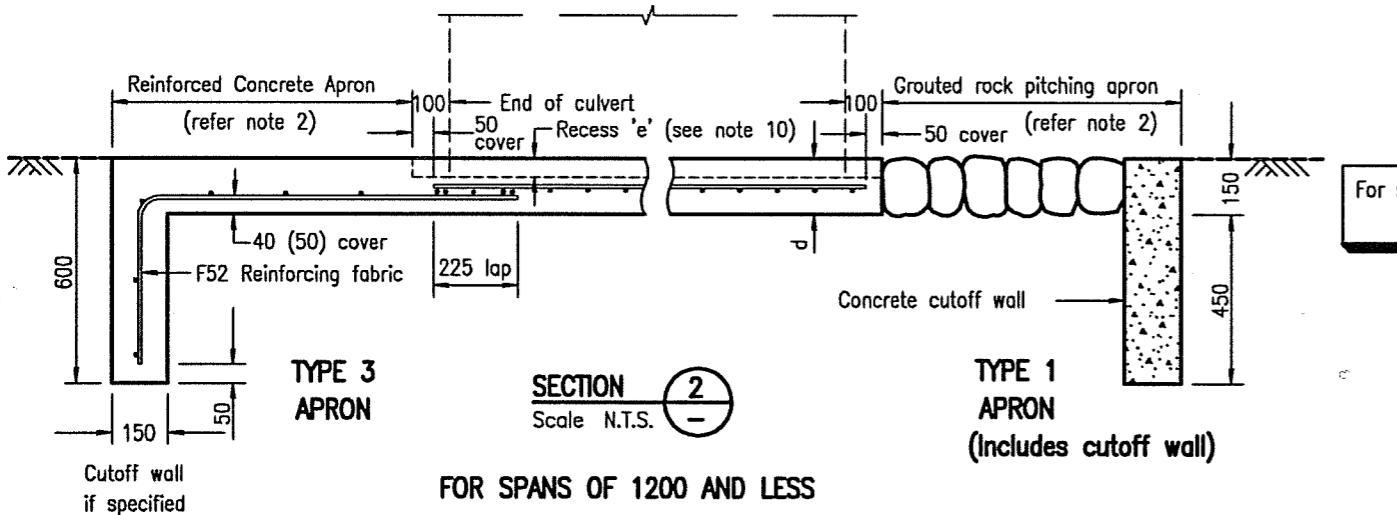
(Double Reinforcement Layer) Refer note 1



DETAIL A



PART SECTION 1
Scale N.T.S.

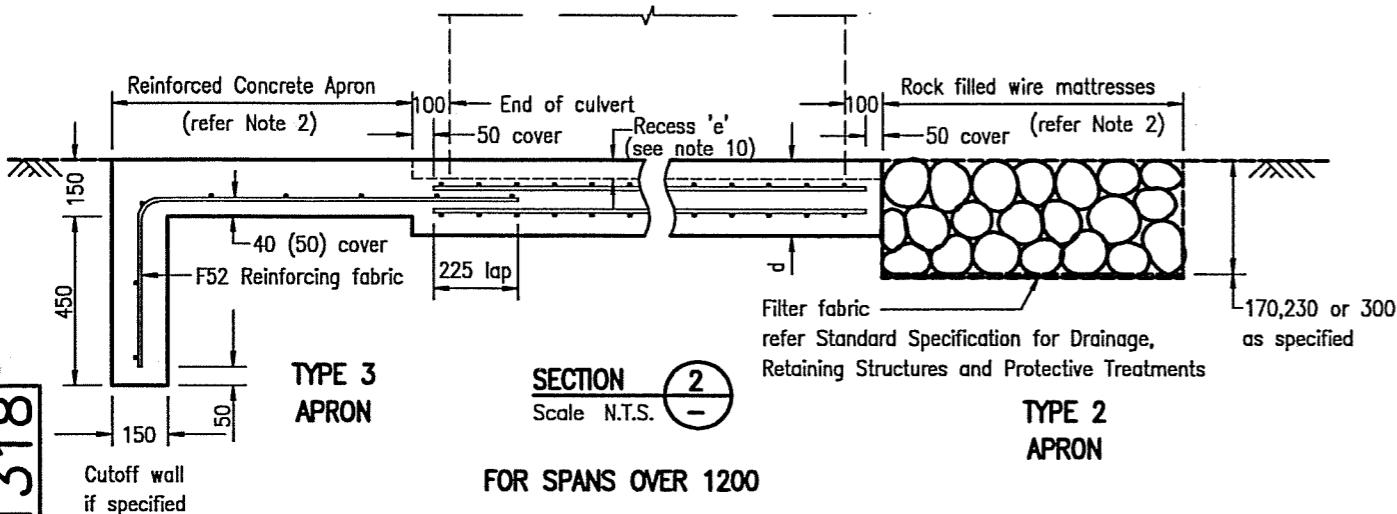


TYPE 3 APRON

SECTION 2
Scale N.T.S.

TYPE 1 APRON (Includes cutoff wall)

FOR SPANS OF 1200 AND LESS



TYPE 3 APRON

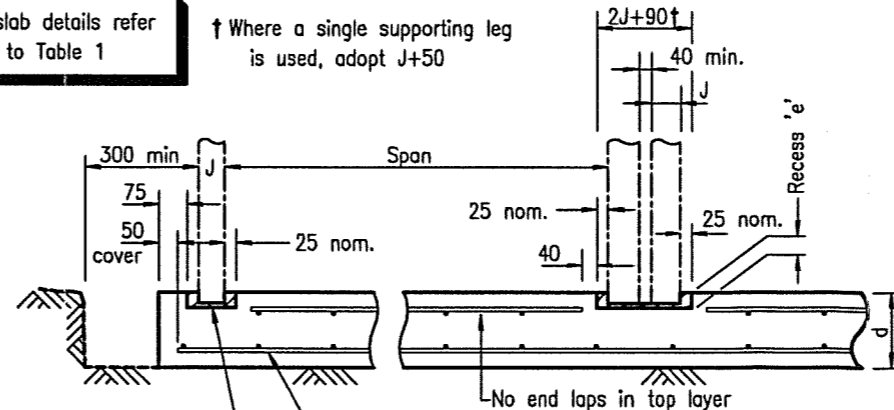
SECTION 2
Scale N.T.S.

TYPE 2 APRON

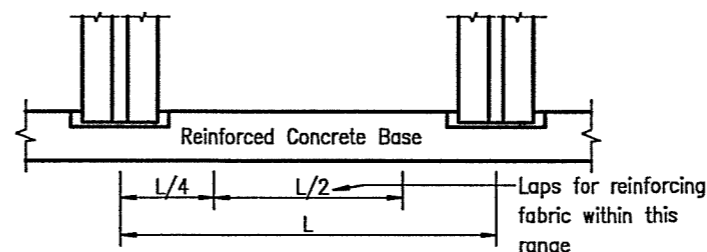
FOR SPANS OVER 1200

For slab details refer to Table 1

† Where a single supporting leg is used, adopt J+50



PART SECTION 1
Scale N.T.S.



REINFORCING FABRIC LAPS LOCATION

R C BOX CULVERTS & SLAB LINK BOX CULVERTS		Main Roads	
Size A3	Drawing No	1318	
Scales as shown	Date	9/99	
		A	B C D E

1318