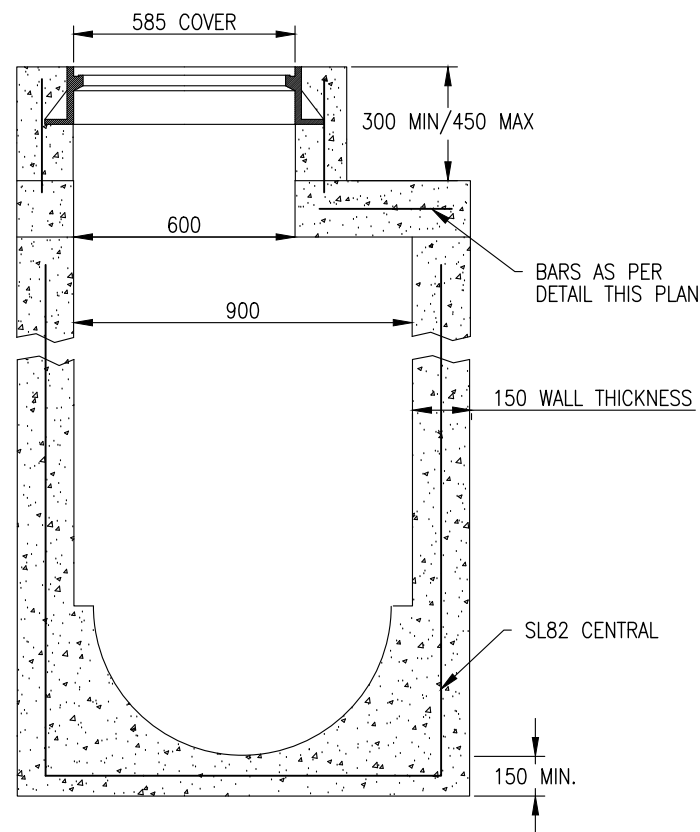
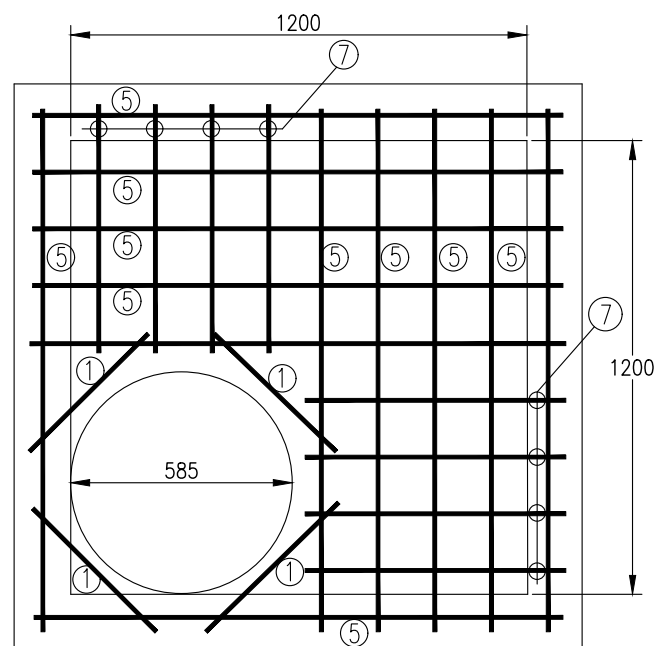


				STD. DWG. NO.		DESCRIPTIONS			
				D-002 D-003 D-004		ACCESS CHAMBERS			
						RECTANGULAR ACCESS CHAMBERS AND LIDS			
						ACCESS CHAMBER COVER AND FRAME			
				D-005 D-006 D-007		SEDIMENT CONTROL			
						SEDIMENT CONTROL DEVICES – SEDIMENT FENCE ENTRY/EXIT SEDIMENT TRAP			
						SEDIMENT CONTROL DEVICES – KERB AND FIELD INLETS			
				D-008		SEDIMENT CONTROL DEVICES – CHECK DAMS AND STRAW BALE BANK			
						FIELD INLET			
						FIELD INLET AND OVERFLOW GULLY TYPE 1 AND TYPE 2			
				D-009		GULLYS			
						STANDARD SIDE ENTRY GULLY INLET + STD. SIDE ENTRY COVER			
						SURROUND 900X600 GULLET INLET			
				D-010		INLETS AND OUTLETS			
HEADWALLS FOR STORMWATER DRAINS									
CULVERTS									
D-011 D-012 D-013 D-014		EXCAVATION, BEDDING AND BACKFLLING OF PRECAST BOX CULVERTS							
		TYPICAL REINFORCED CONCRETE BOX CULVERT DETAILS							
		REINFORCED CONCRETE BOX CULVERT PRECAST BASE SLAB – TYPICAL CONSTRUCTION METHOD							
		CAST INSITU – TYPICAL BASE SLAB AND APRON /CUTOFF WALLS – TYPICAL CONSTRUCTION DETAILS							
						Horiz. Section NTS		STANDARD DRAWING – DRAINAGE INDEX	
						Vert. Section NTS			
									
				DATE 15/07/2010					
				Job No./s		Works Order No.		Auxiliary Plan No's.	
A Original Issue								Plan No. D-001 No. 1 of 13Plans Rev. A	
Revisions		Drn by	Date						

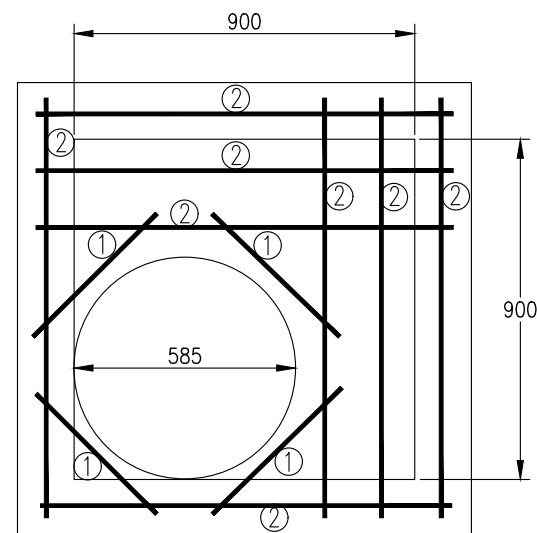
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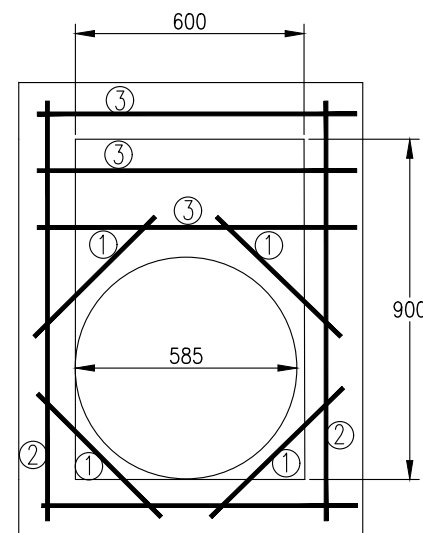
TYPICAL SECTION
900x900 & 900x600 MANHOLES



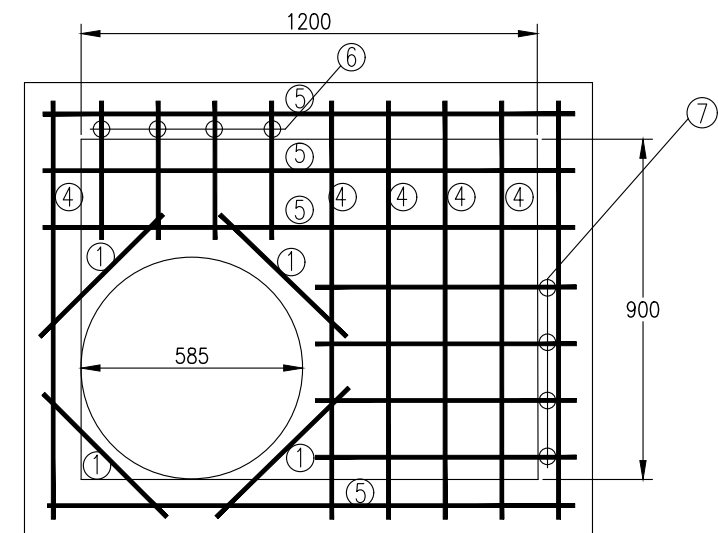
1200x1200 MANHOLE LID PLAN VIEW



900x900 MANHOLE LID PLAN VIEW



600x900 MANHOLE LID PLAN VIEW

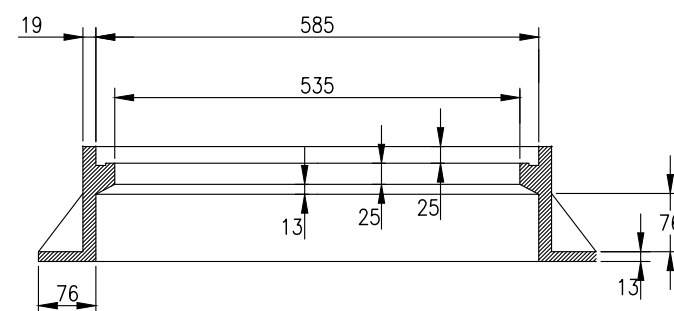


1200x900 MANHOLE LID PLAN VIEW

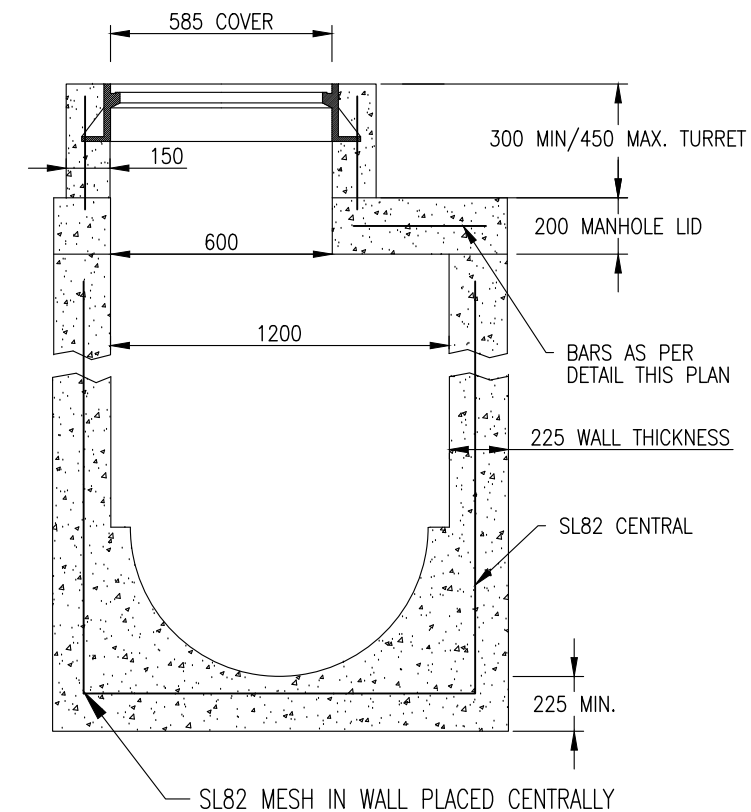
REINFORCING DETAILS	
①	N12 BARS (500mm)
②	N12 BARS (1100mm)
③	N12 BARS (800mm)
④	N12 BARS (1200mm)
⑤	N12 BARS (1500mm)
⑥	N12 BARS (400mm)
⑦	N12 BARS (700mm)

NOTES

- ALL BARS TO BE GRADE 500N TO AS1302
- CONCRETE CLASS N32
CONCRETE COVER 50mm MIN.

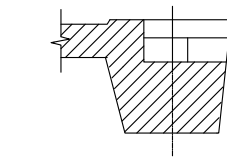


DETAIL OF FLAT TOP MANHOLE

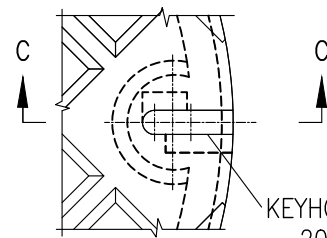


TYPICAL SECTION
1200x900 & 1200x1200 MANHOLES

				Field Book No.	DRAWN L. Porter	WESTERN DOWNS REGIONAL COUNCIL 	Horiz. Section NTS Vert. Section NTS	STANDARD DRAWING – DRAINAGE RECTANGULAR ACCESS CHAMBERS AND LIDS
				Level Book No.	DESIGNED S. Forbes			
				Datum	CHECKED S. Forbes			
					EXAMINED G. Parsons			
					RECOMMENDED S. Hegedus RPEQ. 5234			
C	Manhole cover dimension	L.T.P.	07.02.14		TECHNICAL SERVICES MANAGER	DATE 13/07/2010		Plan No. <i>D—002</i> No. 2 of 13Plans Rev. <i>C</i>
B	Bars shown/Mesh type shown	L.T.P.	09.01.13					
A	Original Issue							
Revisions		Drn by	Date					
				Job No./s	Works Order No.	Auxiliary Plan No's.		



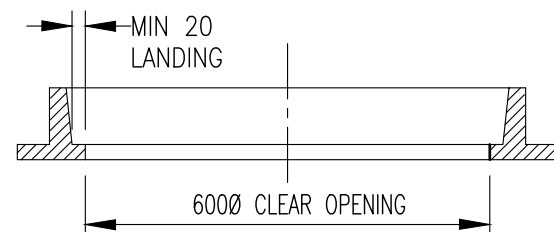
SECTION C-C



PLAN

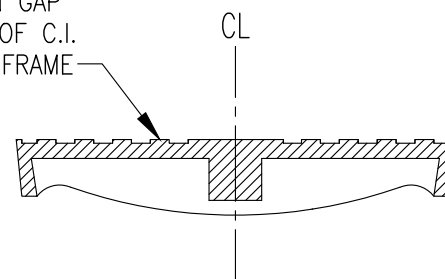
KEYHOLE TO AS 3996
- 2007 CLAUSE
3.2.2 PREFERRED
DIMENSIONS

LIFTING SLOTS - DETAIL A

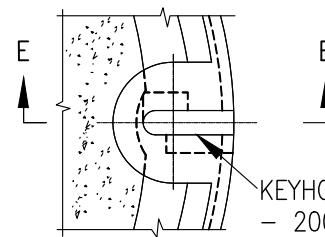


SECTION B-B

ALLOW 1mm MIN GAP
BETWEEN SIDES OF C.I.
COVER AND C.I. FRAME



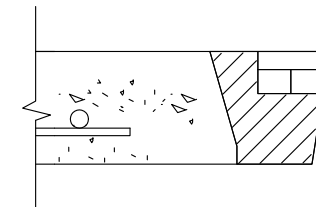
SECTION A-A



PLAN

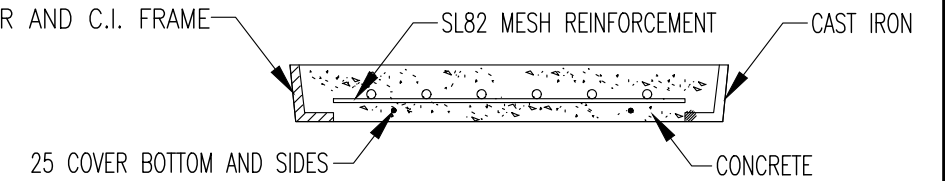
KEYHOLE TO AS 3996
- 2007 CLAUSE
3.2.2 PREFERRED
DIMENSIONS

SLOTS - DETAIL B

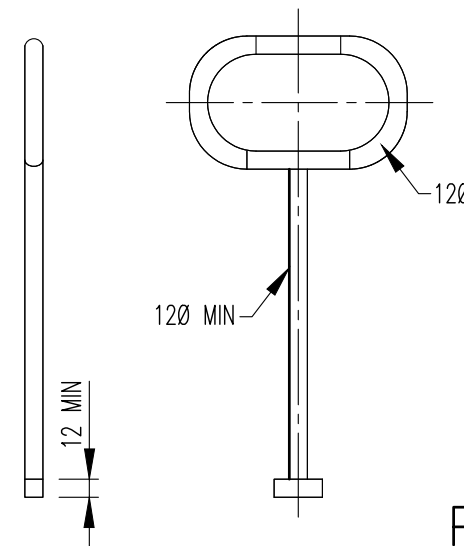


SECTION E - E

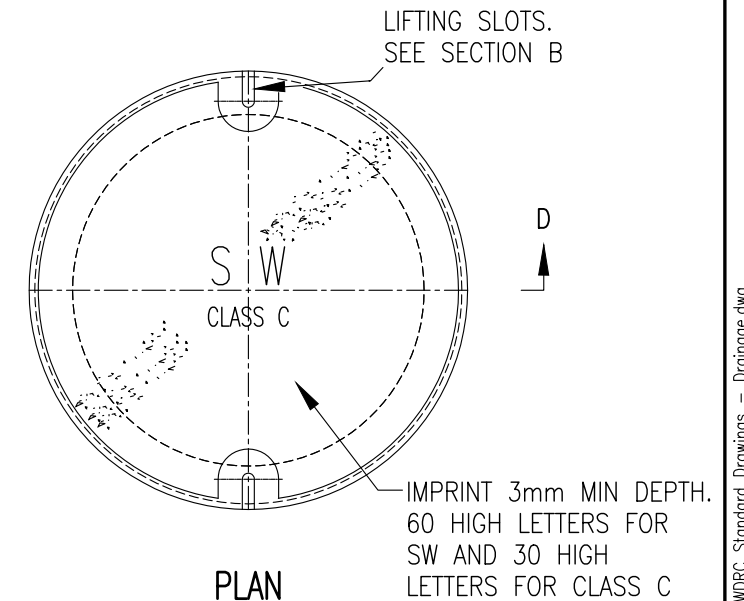
ALLOW 1mm MIN GAP BETWEEN
SIDES OF C.I. CONCRETE
FILLED COVER AND C.I. FRAME



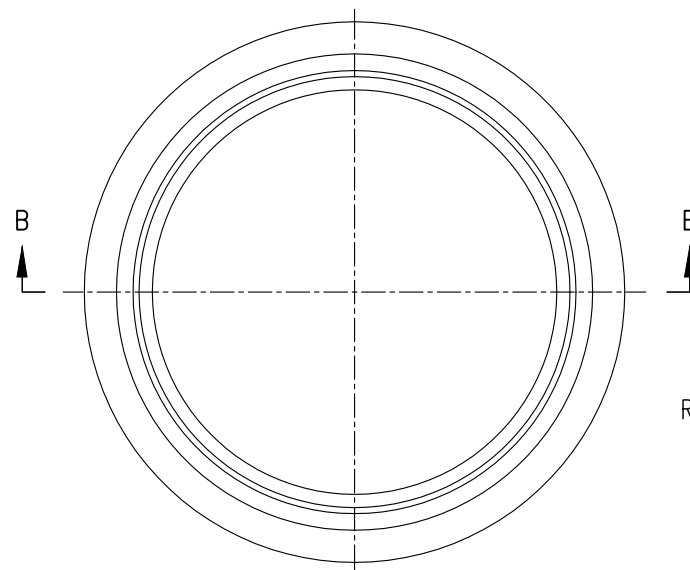
SECTION D-D



STEEL LIFTING KEY
HOT DIP GALVANIZED TO AS 1650

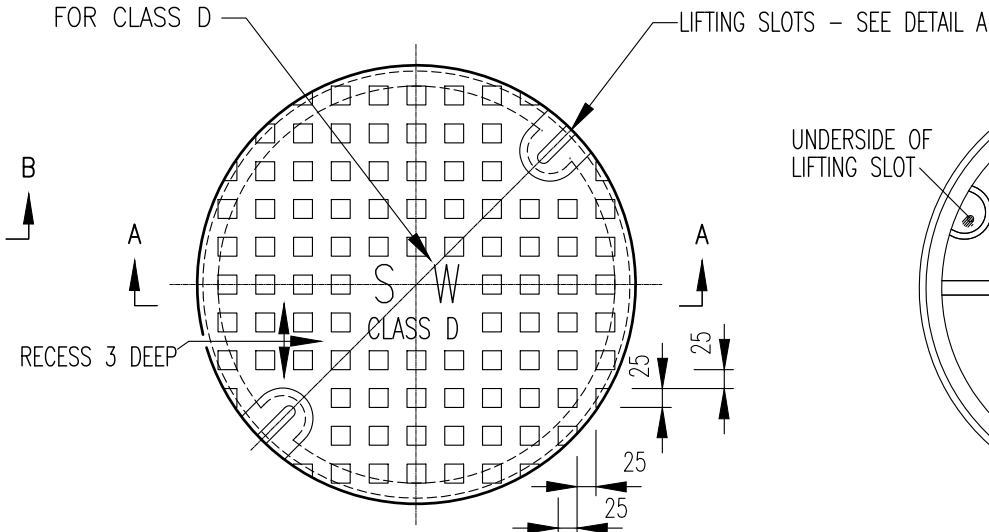


PLAN - C.I. CONCRETE FILLED COVER

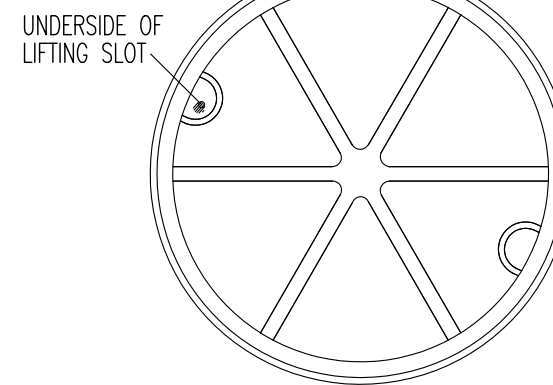


PLAN - FRAME

NAME BLOCK RAISED 3
WITH 60 HIGH LETTERS FOR
SW AND 30 HIGH LETTERS
FOR CLASS D



PLAN - C.I. COVER

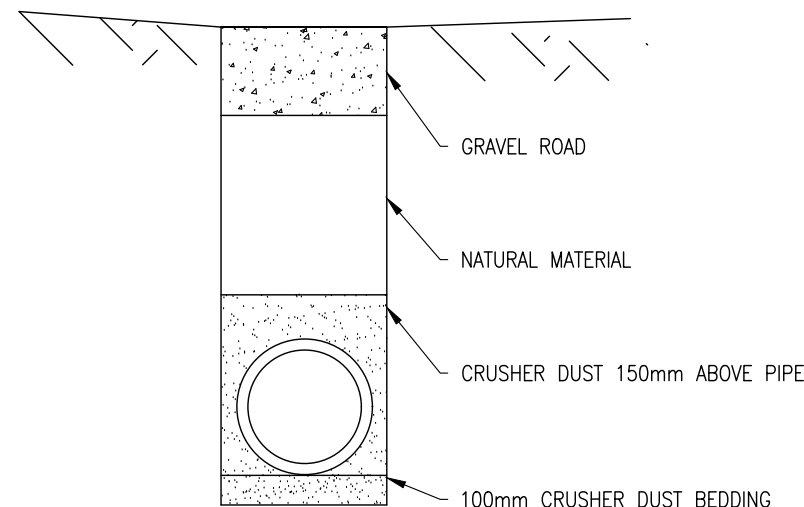


UNDERSIDE OF C.I. COVER

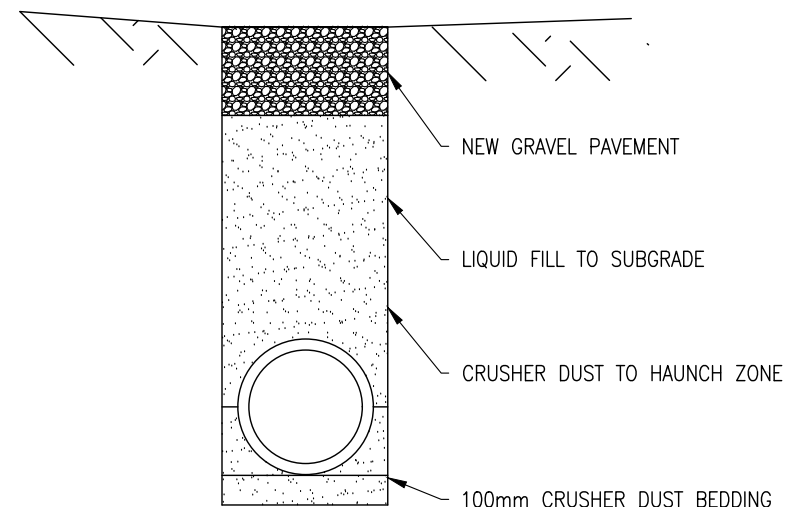
NOTES

1. THIS DRAWING IS INTENDED TO PROVIDE THE PERFORMANCE SPECIFICATION ONLY FOR THE TYPES OF ACCESS CHAMBERS SHOWN. THE STRUCTURES AS SHOWN ARE SCHEMATIC AS SIZES AND SHAPES MAY VARY.
2. ACCESS CHAMBERS WHICH ARE PROPRIETARY ITEMS ARE REQUIRED TO BE DESIGNED AND CERTIFIED TO AS 3996-2006. ACCESS COVERS SUBJECT TO ROAD TRAFFIC SHALL BE OF CLASS D DESIGN, WHERE MINIMUM ULTIMATE LIMIT STATE DESIGN LOAD = 210KN. ACCESS COVERS SUBJECT TO PEDESTRIAN TRAFFIC AND OCCASIONAL VEHICLE LOAD SHALL BE OF CLASS C DESIGN, WHERE MINIMUM ULTIMATE LIMIT STATE DESIGN LOAD = 150KN. (REF: AS 3996-2006).
3. COVER AND FRAME, GREY CAST IRON, GRADE > T220 TO AS 1830-2007.
4. ALL REINFORCEMENT TO BE GRADE 500N TO AS 1302.
5. CONCRETE INFILL N32/10 IN ACCORDANCE WITH AS 1379 AND AS 3600.
6. ALL WELDS TO AS 1554.
7. BITUMEN PAINT COVER AND FRAME TO AS/NZS 3750.4.
8. ALL DIMENSIONS IN MILLIMETRES.

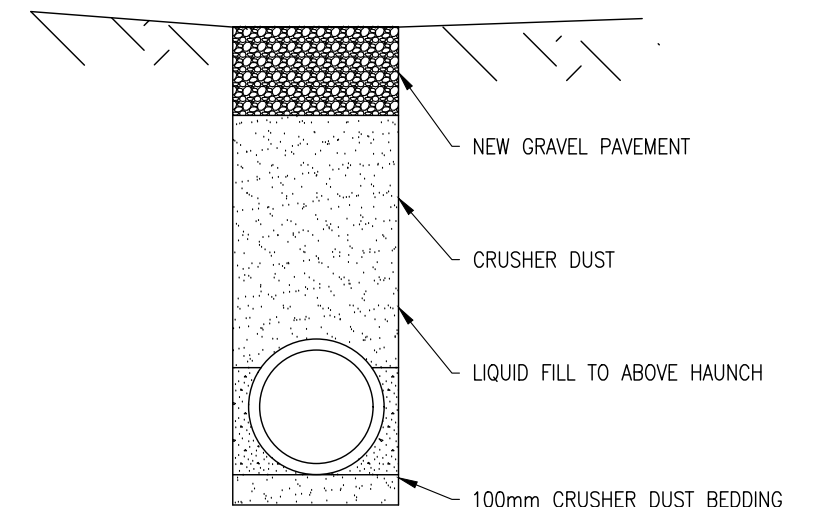
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				Level Book No.	DESIGNED S. Forbes			NTS			
				Datum	CHECKED S. Forbes			Vert. Section			
					EXAMINED G. Parsons						
					RECOMMENDED S. Hegedus RPEQ. 5234						
				TECHNICAL SERVICES MANAGER		NTS					
				DATE 13/07/2010							
A	Original Issue				Job No./s	Works Order No.	Auxiliary Plan No's.		Plan No. <i>D-003</i>	No. 3 of 13 Plans	Rev. <i>A</i>
Revisions		Drn by	Date								



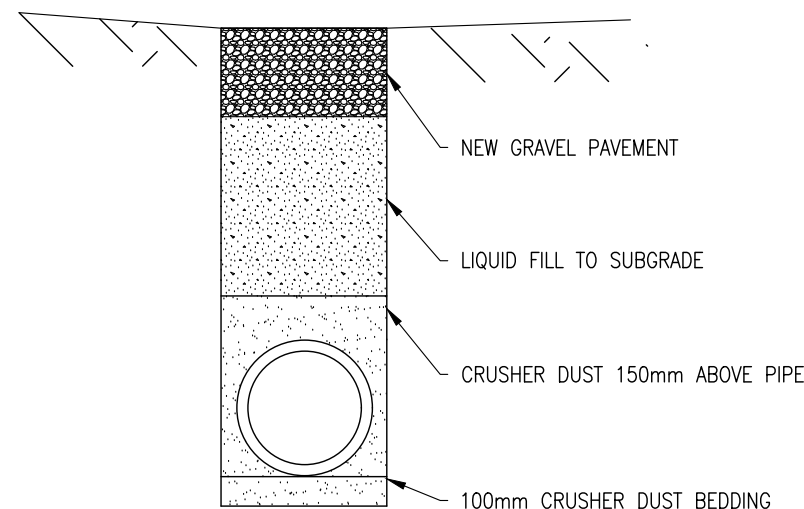
TYPE 1
ROADS/CROSSINGS



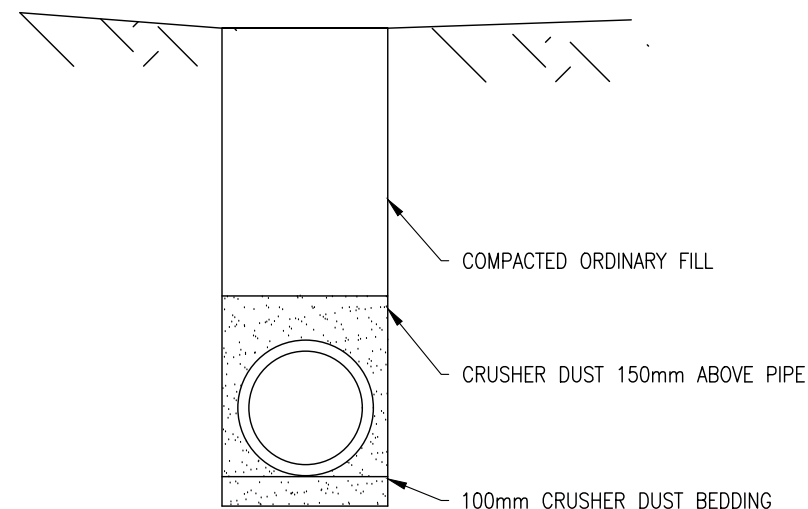
TYPE 2
ROADS/CROSSINGS



TYPE 3
ROADS/CROSSINGS



TYPE 4
ROADS/CROSSINGS



TYPE 5
FOOTPATHS/PRIVATE PROPERTY

NOTES

- CRUSHER DUST TO BE COMPACTED IN 150mm LAYERS.
- BEDDING COMPACTION (COMPACTED SELECTED FILL / SAND BEDDING)
COHESIVE MATERIAL – 95% STANDARD COMPACTION
NON-COHESIVE MATERIAL – DENSITY INDEX OF 70 MIN, REFER AS 1289.E5.1
SAND – COMPACT BY FLOODING AND USE OF VIBRATORS.
- BACKFILL COMPACTION
COMPACTED GRAVEL (300MM) LAYER UNDER ROAD PAVEMENT 95% STANDARD COMPACTION. COMPACTED ORDINARY FILL /CBR15 GRAVEL 90% STANDARD COMPACTION– BELOW 300MM ZONE.
COMPACTED BACKFILL – AT FOOTPATHS /PRIVATE PROPERTY 90% STANDARD COMPACTION. MAX. DENSITIES DETERMINED BY STANDARD COMPACTION TESTS TO AS 1289.5.1.1.

				Field Book No.	DRAWN L. Porter	WESTERN DOWNS REGIONAL COUNCIL 	Horiz. Section	STANDARD DRAWING – DRAINAGE BACKFILL OF STORMWATER DRAINAGE PIPES
				Level Book No.	DESIGNED S. Forbes		NTS	
				Datum	CHECKED S. Forbes		Vert. Section	
					EXAMINED G. Parsons		NTS	
					RECOMMENDED S. Hegedus RPEQ. 5234 TECHNICAL SERVICES MANAGER			
A	Original Issue				DATE 13/07/2010			
Revisions		Drn by	Date		Job No./s	Works Order No.	Auxiliary Plan No's.	
							Plan No. <i>D-004</i> No. 4 of 13 Plans Rev. A	



WITHOUT SL42 FABRIC, 2000 MAX C\C

- a. TEMPORARY DRAINAGE CONTROL. FLOW SHOULD BE DIVERTED AROUND THE WORK SITE WHERE POSSIBLE.
- b. ALL DRAINAGE, EROSION AND SEDIMENT CONTROLS TO BE INSTALLED AND BE OPERATIONAL BEFORE COMMENCING UP-SLOPE EARTHWORKS.
- c. ALL CONTROL MEASURES TO BE INSPECTED AT LEAST WEEKLY AND AFTER SIGNIFICANT RUNOFF PRODUCING STORMS.
- d. CONTROL MEASURES MAY BE REMOVED WHEN ON-SITE EROSION IS CONTROLLED AND 70% PERMANENT SOIL COVERAGE IS OBTAINED OVER ALL UPSTREAM DISTURBED LAND.
- e. IN AREAS WHERE RUNOFF TURBIDITY IS TO BE CONTROLLED, EXPOSED SURFACES TO BE EITHER MULCHED, COVERED WITH EROSION CONTROL BLANKETS OR TURFED IF EARTHWORKS ARE EXPECTED TO BE DELAYED FOR MORE THAN 14 DAYS.
- f. STRAW BALE SEDIMENT TRAPS ARE A SECONDARY OPTION WHICH GENERALLY SHOULD NOT BE USED IF OTHER OPTIONS ARE AVAILABLE.
2. SEDIMENT FENCE
 - a. NOT TO BE LOCATED IN AREAS OF CONCENTRATED FLOW.
 - b. NORMALLY LOCATED ALONG THE CONTOUR WITH A MAXIMUM CATCHMENT AREA 0.6 HA PER 100m LENGTH OF FENCE.
 - c. WOVEN FABRICS ARE PREFERRED, NON-WOVEN FABRICS MAY BE USED ON SMALL WORK SITES,
 - d. WHERE FENCES NEED TO BE LOCATED ACROSS THE CONTOUR THE LAYOUT SHALL CONFORM TO 'TYPICAL LAYOUT ACROSS GRADE'.
 - e. FENCES ARE REQUIRED 2m MIN FROM TOE OF CUT OR FILL BATTERS, WHERE NOT PRACTICAL ONE FENCE CAN BE AT THE TOE WITH A SECOND FENCE 1m MIN AWAY. FENCE SHOULD NOT BE LOCATED PARALLEL WITH TOE IF CONCENTRATION OF FLOW WILL OCCUR BEHIND THE FENCE.
3. TEMP CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP.
 - a. ADJACENT STORMWATER RUNOFF TO BE DIVERTED AWAY FROM ENTRY/EXIT.
 - b. WHEEL – WASH OR SPRAY UNIT MAY BE REQUIRED DURING WET WEATHER.
4. SAFETY ISSUES MUST BE CONSIDERED AT ALL TIMES, INCORPORATE TRAFFIC CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT.
5. ALL DIMENSIONS IN MILLIMETRES UNLESS INDICATED OTHERWISE.

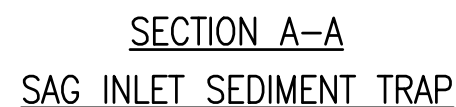
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				Level Book No.	DESIGNED S. Forbes	
				Datum	CHECKED S. Forbes	
					EXAMINED G. Parsons	
					RECOMMENDED S. Hegedus RPEQ. 5234	
					TECHNICAL SERVICES MANAGER	
					DATE 26/08/2011	
A	Original Issue				Job No./s	Works Order No.
Revisions		Drn by	Date			



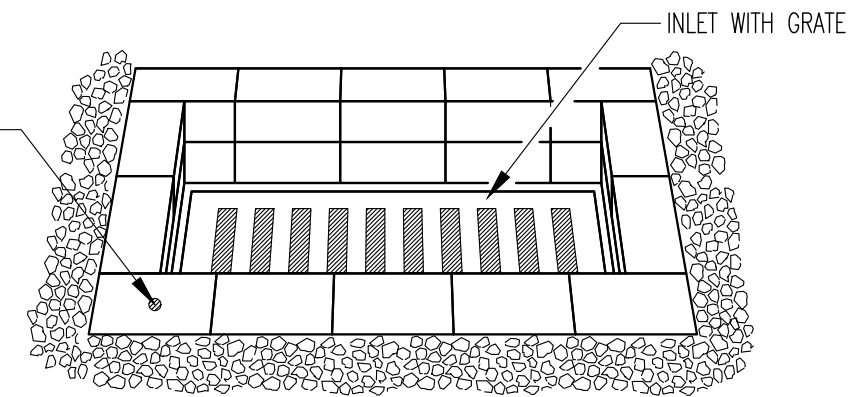
Horiz. Section	NTS
Vert. Section	NTS

STANDARD DRAWING – DRAINAGE
SEDIMENT CONTROL DEVICES
SEDIMENT FENCE ENTRY/EXIT SEDIMENT
TRAP

Plan No. <i>D-005</i>	No. 5 of 13 Plans	Rev. A
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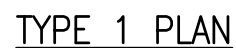
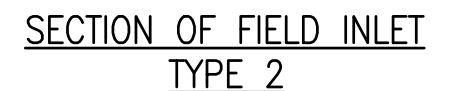
CONCRETE MASONRY BLOCKS (150 SERIES)



FIELD INLET SEDIMENT TRAP

1. FIELD INLET:
 - a. A STABILISED BYPASS OVERLAND FLOW PATH SHOULD EXIST ADJACENT TO THE FIELD INLET.
 - b. WATER LEVEL CONTROL PERIMETER BANKS MAY BE REQUIRED.
 - c. BLOCKS TO BE RESTRAINED BY A HORIZONTAL TIMBER RAIL AT BLOCK JOINT HEIGHT FIXED TO TIMBER STAKES AT CORNERS.
2. CHECK DAMS:
 - a. CATCHMENT AREA LIMITED TO 4 HA.
 - b. USE IN MINOR OPEN DRAINS ONLY, (VELOCITY CONTROL), SEDIMENT COLLECTION IS A SECONDARY PURPOSE.
3. STRAW BALE BANKS:
 - a. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR, IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
 - b. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 100MM ON THE DOWNSTREAM SIDE AND PLACED SO THE BINDINGS ARE HORIZONTAL.
 - c. BALES SHALL BE SECURELY ANCHORED IN PLACE WITH EITHER TWO STAKES OR STEEL PICKETS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER.
 - d. INSPECTIONS SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED. REPLACE AT LEAST EVERY QUARTER.
4. SAFETY ISSUES MUST BE CONSIDERED AT ALL TIMES, INCORPORATE TRAFFIC CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT.
5. ALL DIMENSIONS IN MILLIMETRES.

				Field Book No.	DRAWN L. Porter	WESTERN DOWNS REGIONAL COUNCIL 	Horiz. Section	STANDARD DRAWING – DRAINAGE SEDIMENT CONTROL DEVICES KERB AND FIELD INLETS
				Level Book No.	DESIGNED S. Forbes		NTS	
				Datum	CHECKED S. Forbes		Vert. Section	
					EXAMINED G. Parsons			
					RECOMMENDED S. Hegedus RPEQ. 5234			
				TECHNICAL SERVICES MANAGER		NTS		
A	Original Issue				DATE 26/08/2011			
Revisions		Drn by	Date	Job No./s	Works Order No.	Auxiliary Plan No's.		Plan No.D-006 No. 6 of 13Plans Rev. A

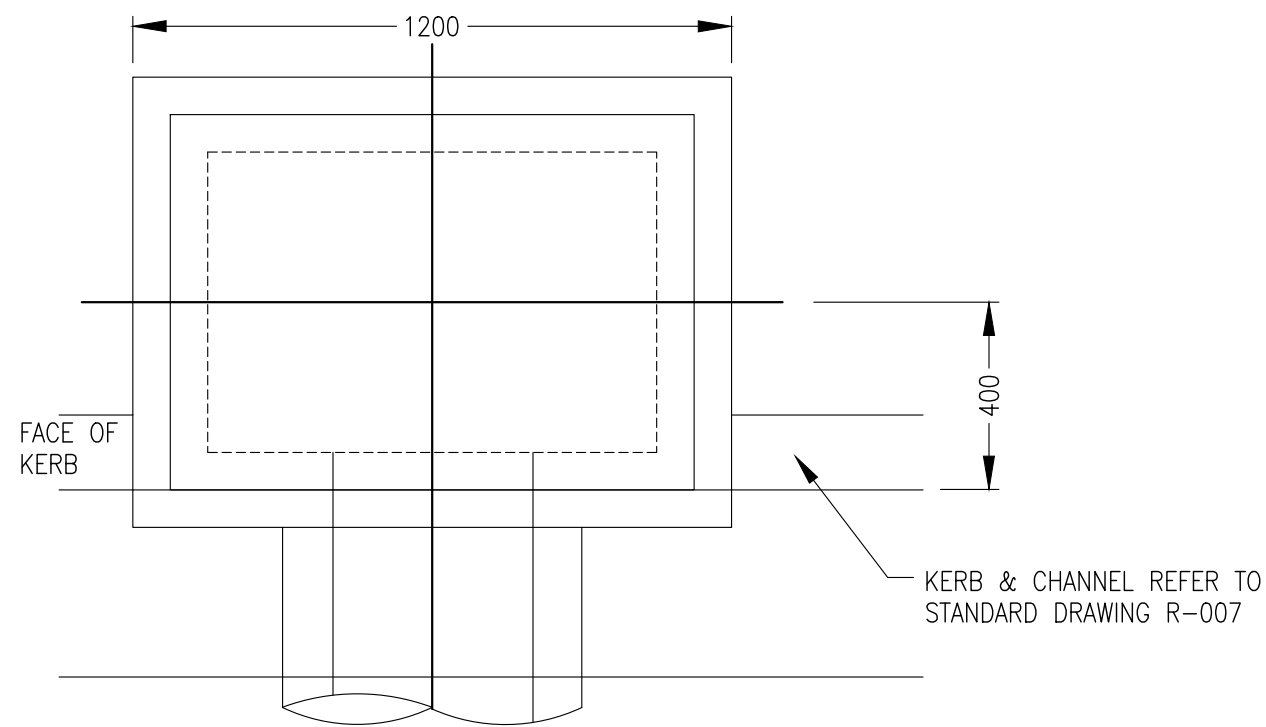


GRATE OMITTED FOR CLARITY

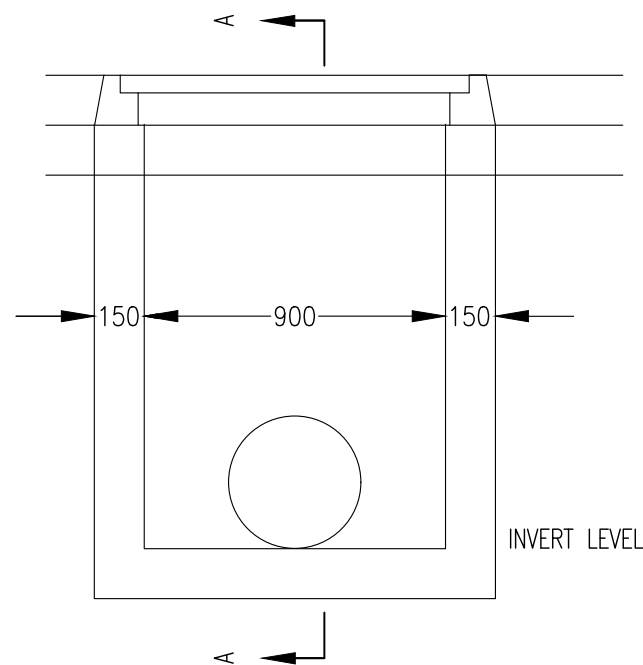


1. CONCRETE N25 IN ACCORDANCE WITH AS 1379 AND AS 3600.
2. ALL WELDS TO AS 1554. ALL WELDING SYMBOLS TO AS 1101.3.
3. GRATE AND FRAME TO BE HOT DIP GALVANIZED AFTER FABRICATION TO AS 1650.
4. REINFORCING BARS GRADE 500 TO AS 1302.
5. ALL FLATS GRADE 250 TO AS 3678.
6. ALL ANGLES GRADE 250 TO AS 3679.
7. HEXAGONAL HEAD BOLTS TO AS 1111. NUTS TO AS 1112. WASHERS TO AS 1237. GALVANIZING TO AS 1214.
8. CLASS B GRATE TO AS 3996 – GRATE IN DIRECTION NOMINATED, REFER PROJECT DRAWINGS.
9. ALL DIMENSIONS IN MILLIMETRES.

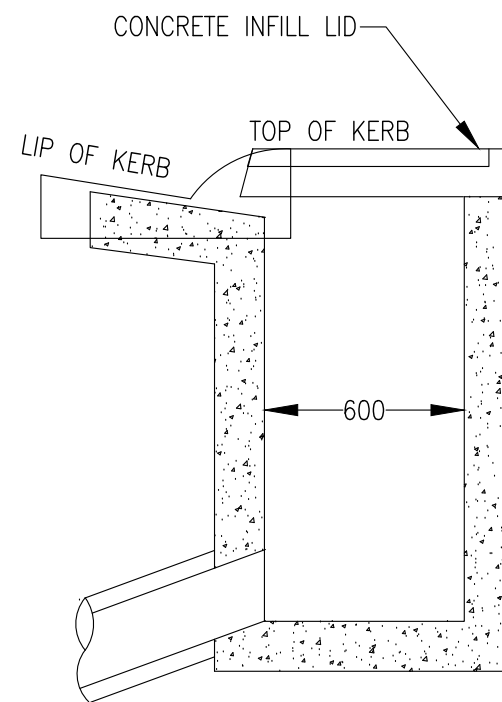
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				Level Book No.	DESIGNED S. Forbes			NTS	
				Datum	CHECKED S. Forbes			Vert. Section	
					EXAMINED G. Parsons				
					RECOMMENDED S. Hegedus RPEQ. 5234				
				TECHNICAL SERVICES MANAGER			NTS		
A	Original Issue				DATE 14/07/2010				
Revisions			Drn by	Date	Job No./s	Works Order No.	Auxiliary Plan No's.		Plan No. D-008 No. 8 of 13Plans Rev. A



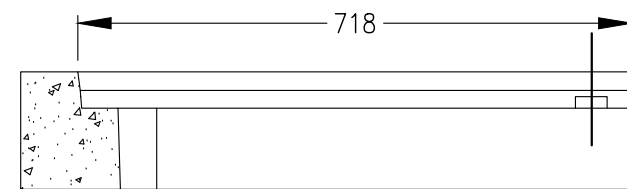
PLAN



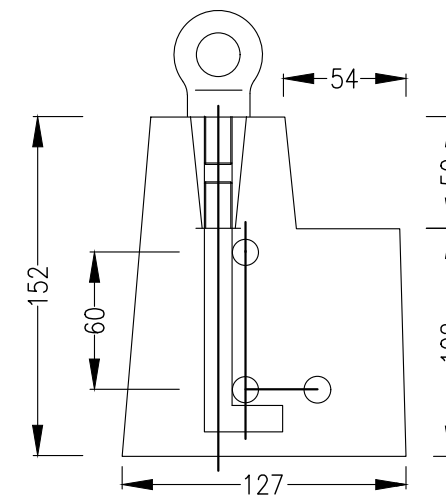
ELEVATION



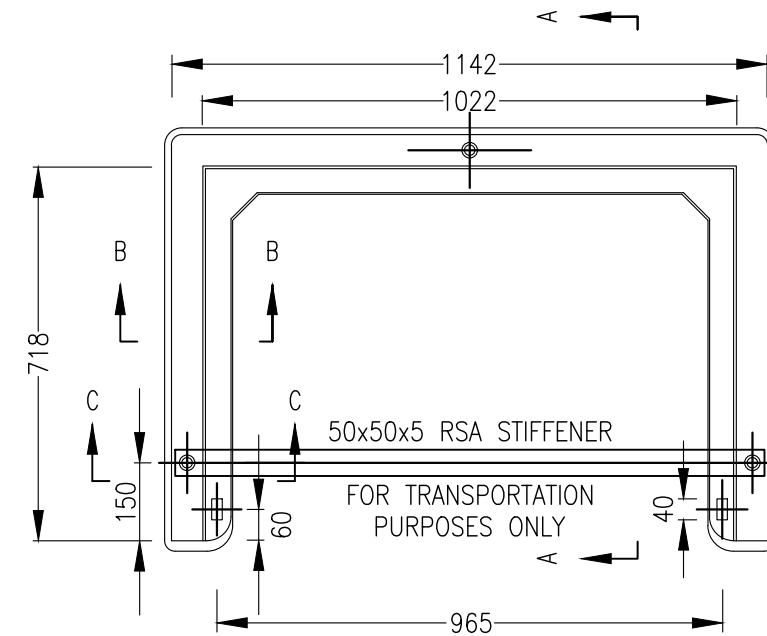
SECTION A-A



SECTION A-A



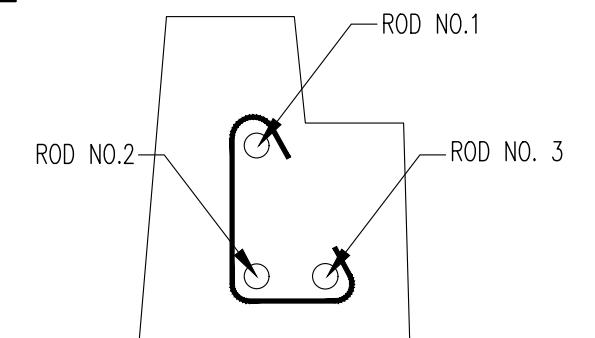
SECTION C-C



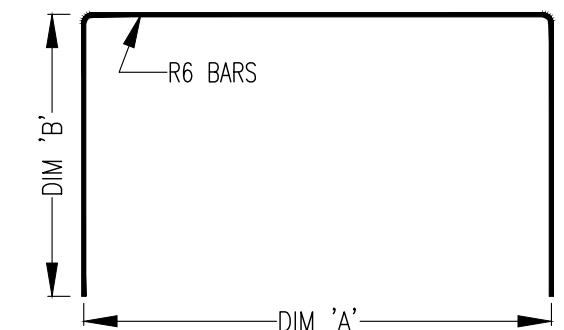
PLAN OF FRAME

NOTES

1. ALL BARS TO BE GRADE 500N TO AS1302.
2. CONCRETE CLASS N32
CONCRETE COVER 50mm MIN.
3. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED.



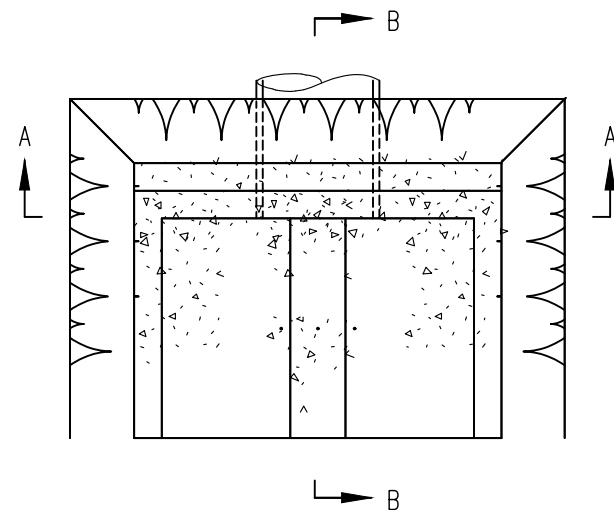
SECTION B-B



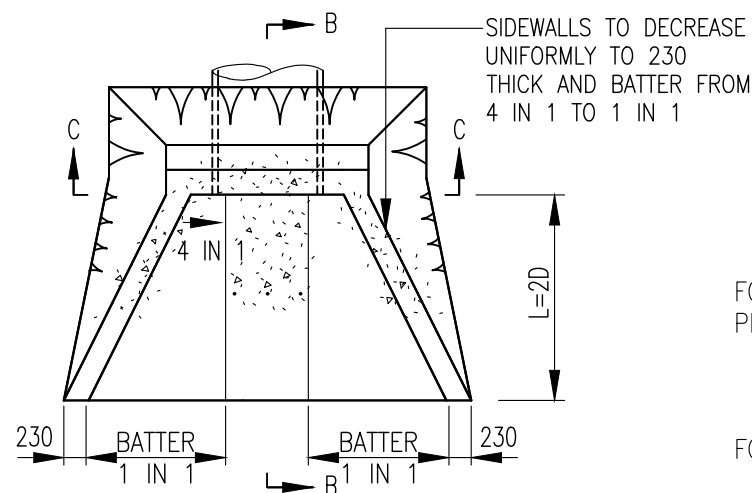
REINFORCEMENT DETAILS

ROD NO.	DIM A	DIM B
1&2	1098	660
3	997	628

				Field Book No.	DRAWN L. Porter		WESTERN DOWNS REGIONAL COUNCIL 	Horiz. Section NTS Vert. Section NTS	STANDARD DRAWING – DRAINAGE STD SIDE ENTRY GULLY INLET AND STD SIDE ENTRY COVER SURROUND FOR 900x600 GULLY INLET
				Level Book No.	DESIGNED S. Forbes				
				Datum	CHECKED S. Forbes				
					EXAMINED G. Parsons				
					RECOMMENDED S. Hegedus RPEQ. 5234				
				TECHNICAL SERVICES MANAGER					
				DATE 15/07/2010					
A	Original Issue								
Revisions		Drn by	Date		Job No./s	Works Order No.	Auxiliary Plan No's.		Plan No.D-009 No. 9 of 13Plans Rev.A



PLAN
TYPE A INLET/OUTLET



PLAN
TYPE B INLET/OUTLET

PIPE SKEW	5° - 15°	16° - 25°	26° - 35°	36° - 45°
SKEW FACTOR	1.02	1.07	1.16	1.32

FOR MULTIPLE PIPES - INCREASE W1 AND W2 FOR EACH ADDITIONAL PIPE BY THE EXTERNAL DIAMETER + : 300 WHEN NOMINAL D < 600
600 WHEN NOMINAL D 600 - 1800
900 WHEN NOMINAL D > 1800

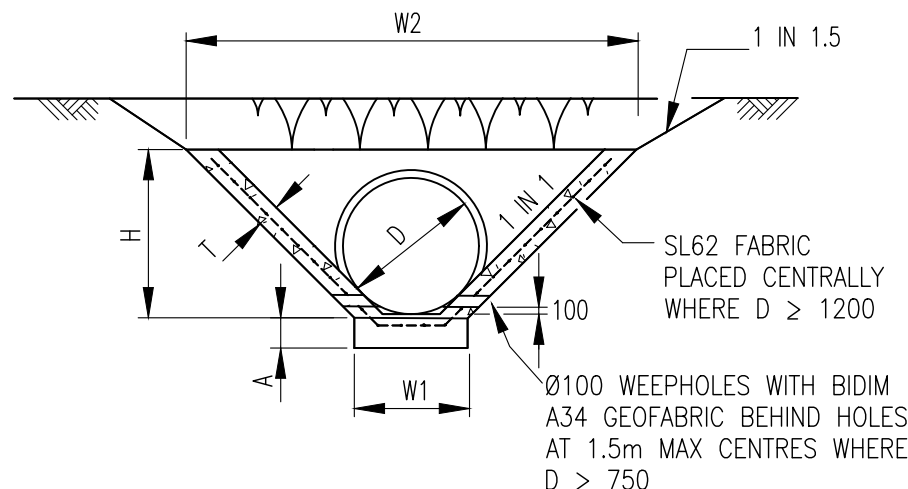
FOR SKEWED PIPES - MULTIPLY W1 AND W2 BY SKEW FACTOR

MULTIPLE/SKEW PIPES

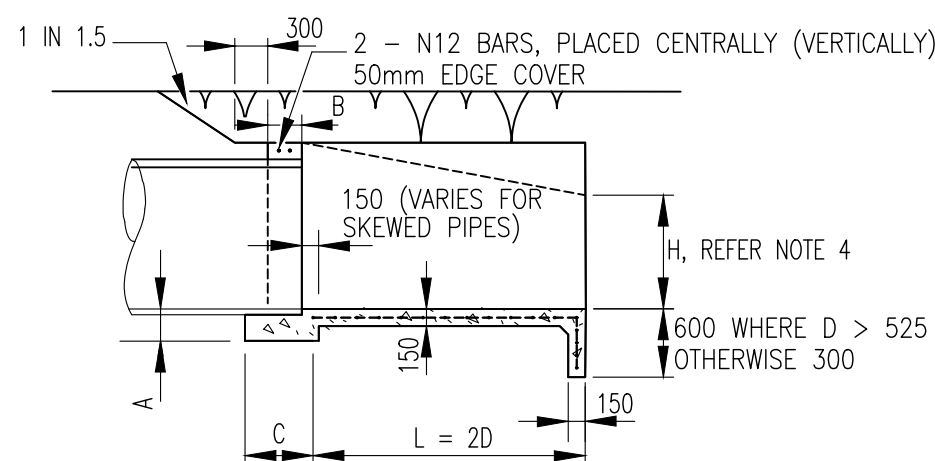
DIMENSION	PIPE DIAMETER D				
	1350	1500	1650	1800	1950
K	800	840	875	920	960
H	2000	2160	2300	2460	2640
W1	2060	2250	2440	2630	2840
W2	2060	2250	2440	2630	2840

DIMENSIONS TYPE B INLET/OUTLET

DIA. = 1350 TO 1950



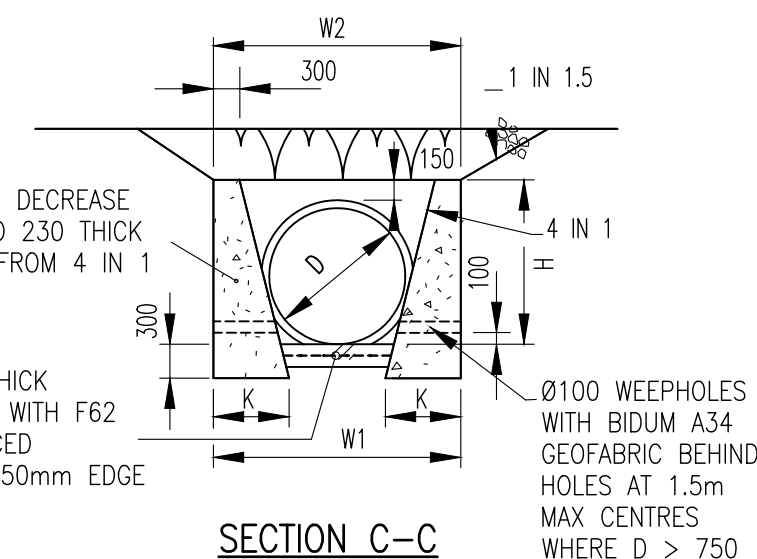
SECTION A-A



SECTION B-B

SIDEWALLS TO DECREASE UNIFORMLY TO 230 THICK AND BATTER FROM 4 IN 1 TO 1 IN 1

SLAB 150 THICK REINFORCED WITH F62 FABRIC PLACED CENTRALLY, 50mm EDGE COVER



SECTION C-C

DIMENSION	PIPE DIAMETER D															
	300	375	450	525	600	675	750	825	900	1050	1200	1350	1500	1650	1800	1950
A	150	150	150	200	200	200	250	250	250	250	250	300	300	300	300	300
B	225	225	225	300	300	300	300	300	300	300	300	300	300	300	300	300
C	450	450	450	450	450	450	600	600	600	600	600	600	600	600	600	600
H	580	670	750	830	900	980	1060	1140	1220	1370	1530	1690	1840	2000	2160	2340
T	150	150	150	200	200	200	200	200	200	200	200	200	200	200	200	200
W1	700	730	760	790	820	850	880	920	950	1010	1070	1140	1200	1260	1320	1380
W2	1860	2070	2260	2450	2620	2810	3000	3200	3390	3750	4130	4520	4880	5260	5640	6060

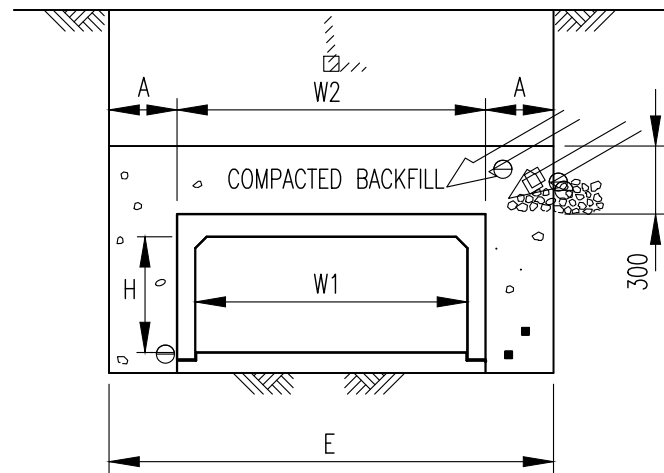
DIMENSIONS

TYPE A INLET DIA. = 300 TO 1200
TYPE A OUTLET DIA. = 300 TO 1950

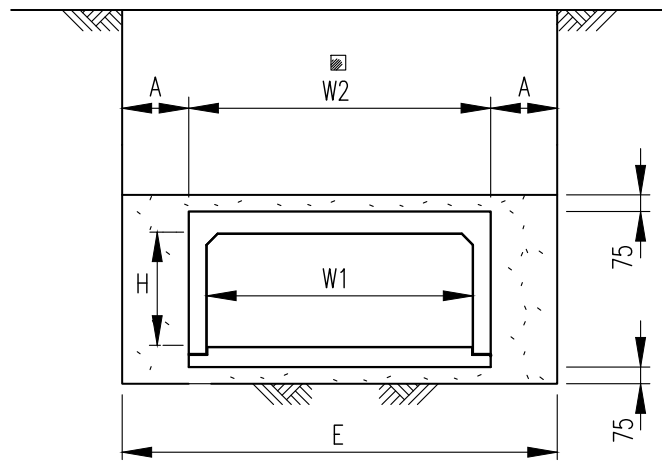
NOTES

- DESIGN BEARING PRESSURE 75 KPa. WHERE THIS BEARING PRESSURE CANNOT BE OBTAINED, THE SUPERINTENDENT MAY DIRECT THAT A WIDER FOOTING BE USED.
- CONCRETE N20 OR GRADE S32/10 SHOTCRETE MAY BE USED IN ACCORDANCE WITH AS 1379 AND AS 3600.
- IN TIDAL AREAS WHERE FABRIC REINFORCEMENT IS SPECIFIED, CONCRETE IS TO BE SULPHATE RESISTANT GRADE S40 TO AS 1379 AND AS 3600.
- IN EMBANKMENT SITUATIONS, THE HEIGHT OF THE WINGWALL AT THE TOE SHOULD BE REDUCED TO "H" SO THAT THE SLOPE OF THE TOP OF THE WINGWALL EQUALS THE ADJACENT EMBANKMENT BATTER. REFER PROJECT DRAWINGS.
- SEE PROJECT DRAWINGS FOR THE FOLLOWING : NO. AND DIAMETER OF PIPES; SKEW ANGLES OF PIPES IF APPLICABLE; INVERT LEVELS OF PIPES; HEIGHT OF WINGWALL "H" AT TOE IF APPLICABLE.
- IF DIRECTED (BY THE SUPERINTENDENT), THE APRON SLAB TO A TYPE A OUTLET MAY BE LOWERED BY THE PIPE WALL THICKNESS TO ALLOW FOR FUTURE PIPE EXTENSION.
- AT INLETS OR OUTLETS, TRANSITION UNIFORMLY FROM CONCRETE TO OPEN CHANNEL OVER 5m TO 10m.
- REFER PROJECT DRAWINGS FOR PROTECTION PROPOSED BETWEEN END OF OUTLET STRUCTURE AND OPEN DRAIN/CREEK.
- REINFORCEMENT : BARS GRADE 400 TO AS 1302. FABRIC TO AS 1304.
- ALL DIMENSIONS IN MILLIMETRES, UNLESS SHOWN OTHERWISE.

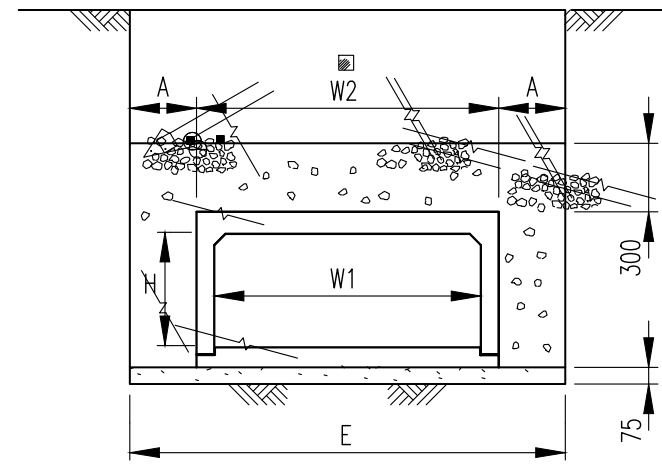
				Field Book No.	DRAWN L. Porter	WESTERN DOWNS REGIONAL COUNCIL 	Horiz. Section	STANDARD DRAWING – DRAINAGE HEADWALLS FOR STORMWATER DRAINS
				Level Book No.	DESIGNED S. Forbes		NTS	
					CHECKED S. Forbes			
				Datum	EXAMINED G. Parsons			
					RECOMMENDED S. Hegedus RPEQ. 5234			
					TECHNICAL SERVICES MANAGER			
A	Original Issue				DATE 14/07/2010			
Revisions		Drn by	Date		Job No./s	Works Order No.	Auxiliary Plan No's.	Plan No.D-010
								No. 10 of 13Plans
								Rev.A



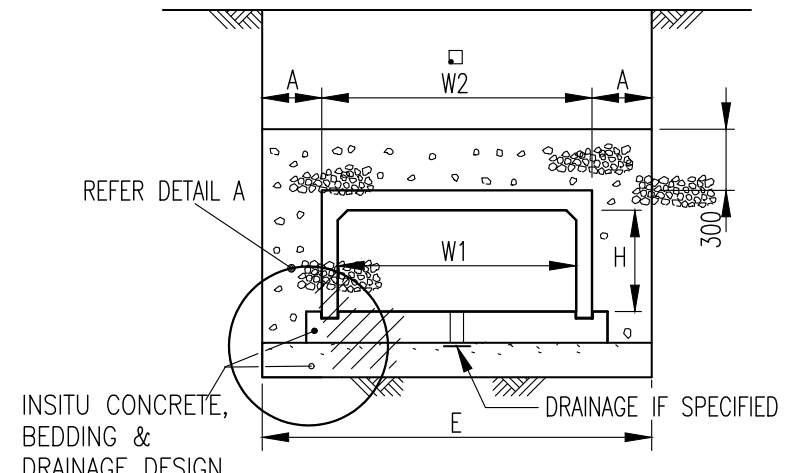
TYPE 1
NATURAL BEDDING



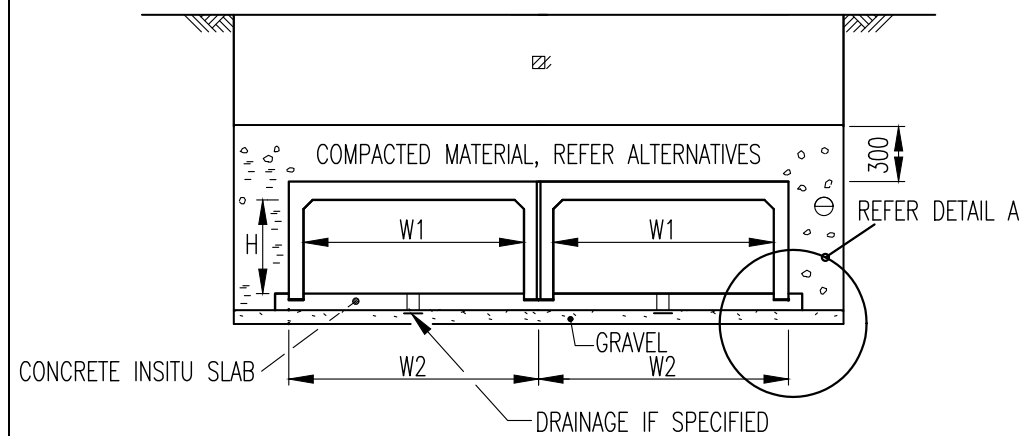
TYPE 2
SAND SURROUND



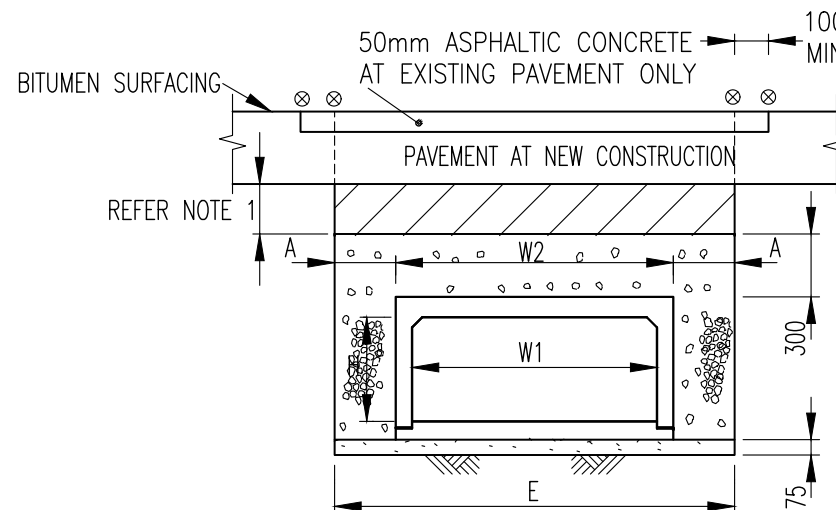
TYPE 3
SAND BEDDING



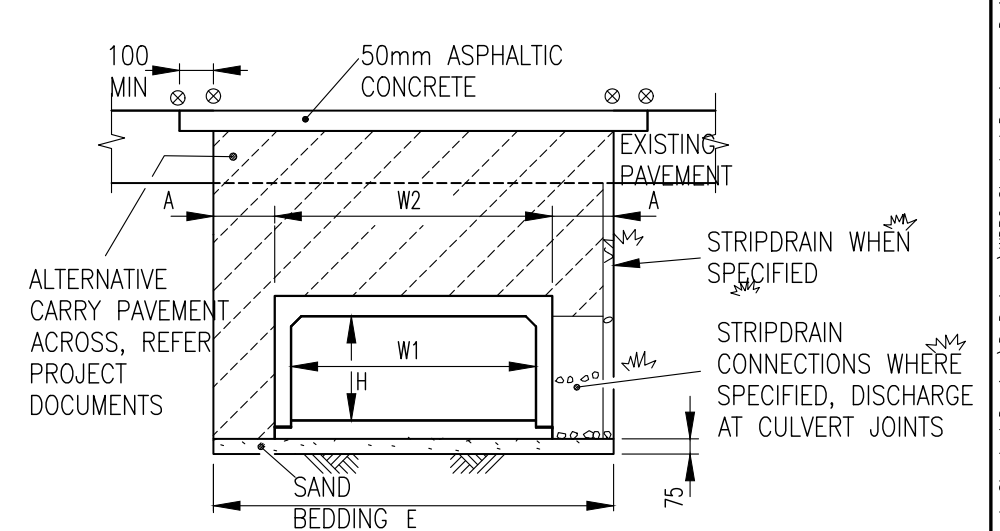
TYPE 4
INSITU BASE SLAB



MULTIPLE CULVERTS



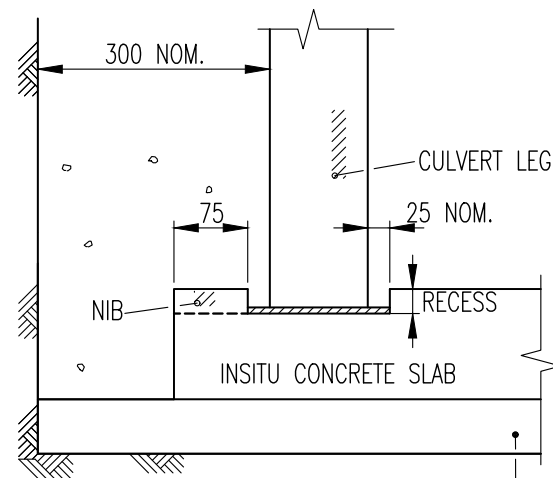
ALTERNATIVE A
AT EXISTING SURFACED PAVEMENTS OR
AT NEW PAVEMENTS ON RESIDENTIAL
STREETS & RURAL ROADS



ALTERNATIVE B
AT EXISTING SURFACED PAVEMENTS OR
INDUSTRIAL, TRUNK COLLECTOR, SUB
ARTERIAL & ARTERIAL STREETS/ROADS

W1	W2	E NOM.
300	420	1000
375	500	1100
450	570	1200
600	730	1300
750	890	1500
900	1050	1700
1200	1360	2000
1520	1700	2300
1820	2010	2600
2130	2340	3000
2440	2670	3300

EXCAVATION WIDTH



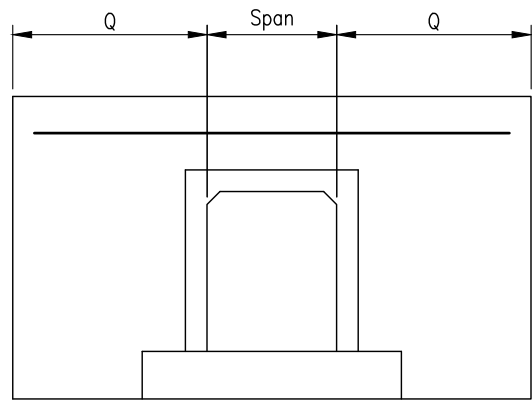
TYPICAL DETAIL A

- LEGEND**
- A 300mm NOMINAL
 - REFER ALTERNATIVE A FOR BACKFILL REQUIREMENTS AT NEW PAVEMENT
 - SAW CUT AT EXISTING PAVEMENT
 - GRAVEL (MIN CBR15) OR 75mm CRUSHER RUN BACKFILL
 - LEAN MIX CONCRETE BACKFILL (1:15 MIX)
 - 10mm CEMENT MORTAR BED, 1:3 MIX

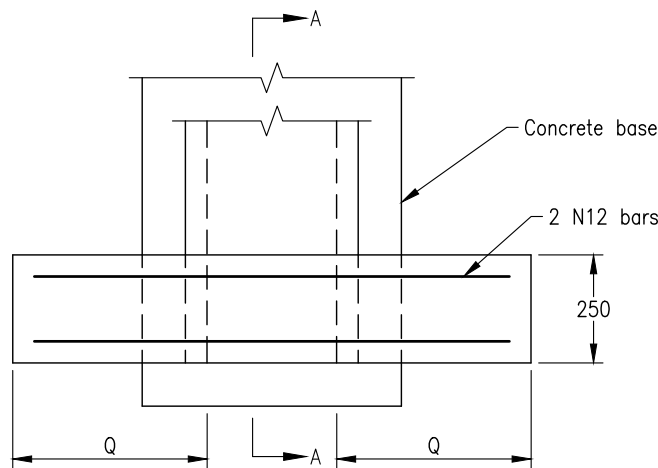
NOTES

- BACKFILL COMPACTION:
APPROVED FILL/APPROVED BEDDING/COMPACTED BACKFILL/CBR15 GRAVEL 90%
COMPACTED GRAVEL (300mm LAYER) UNDER ROAD PAVEMENT 95%
COMPACTED FILL – AT FOOTPATHS/PRIVATE PROPERTY 90%
MAX. DENSITIES DETERMINED BY STANDARD COMPACTION TESTS TO AS 1289.E5.1.
- REFER TO MAIN ROADS STD DRG 1316 FOR INSTALLATION OF PRECAST CULVERTS.
- TAPE ALL JOINTS WITH 75mm WIDE DENSO (600) TAPE OR EQUIVALENT.
- ALL DIMENSIONS IN MILLIMETRES.

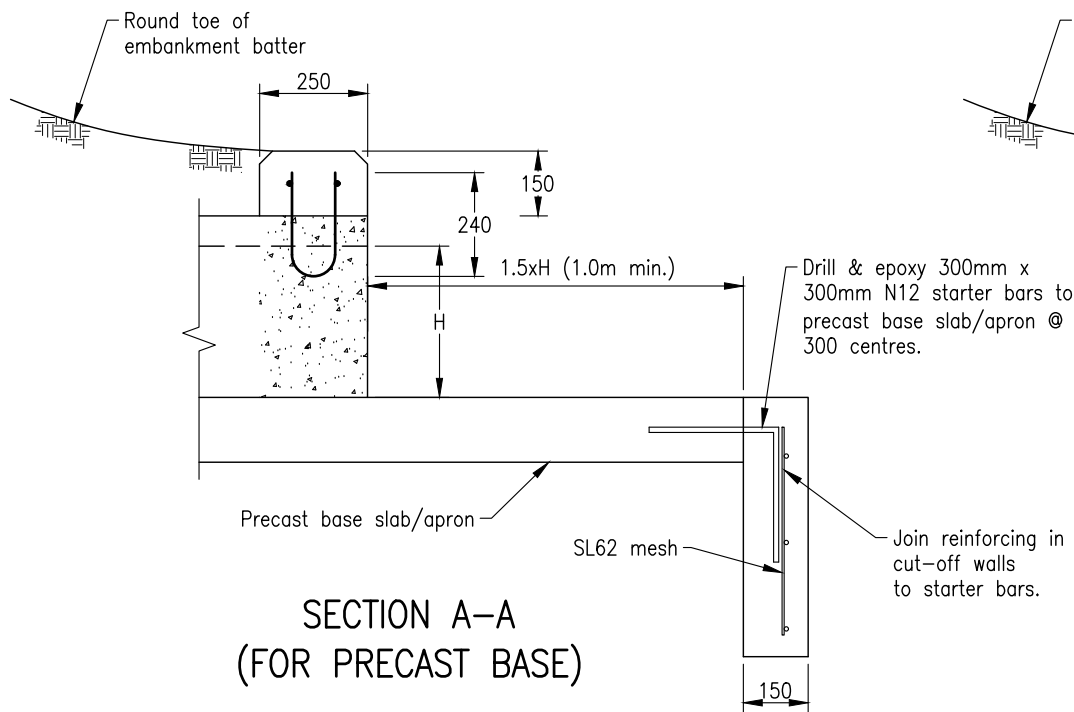
			Field Book No.	DRAWN L. Porter	WESTERN DOWNS REGIONAL COUNCIL	Horiz. Section	STANDARD DRAWING – DRAINAGE EXCAVATION, BEDDING AND BACKFILLING OF PRECAST BOX CULVERTS
			Level Book No.	DESIGNED S. Forbes		NTS	
			Datum	CHECKED S. Forbes		Vert. Section	
				EXAMINED G. Parsons		NTS	
				RECOMMENDED S. Hegedus RPEQ. 5234 TECHNICAL SERVICES MANAGER			
				DATE 15/07/2010	Auxiliary Plan No's.		
			Revisions	Drn by	Works Order No.	Plan No. D-011 No. 11 of 13 Plans Rev. A	



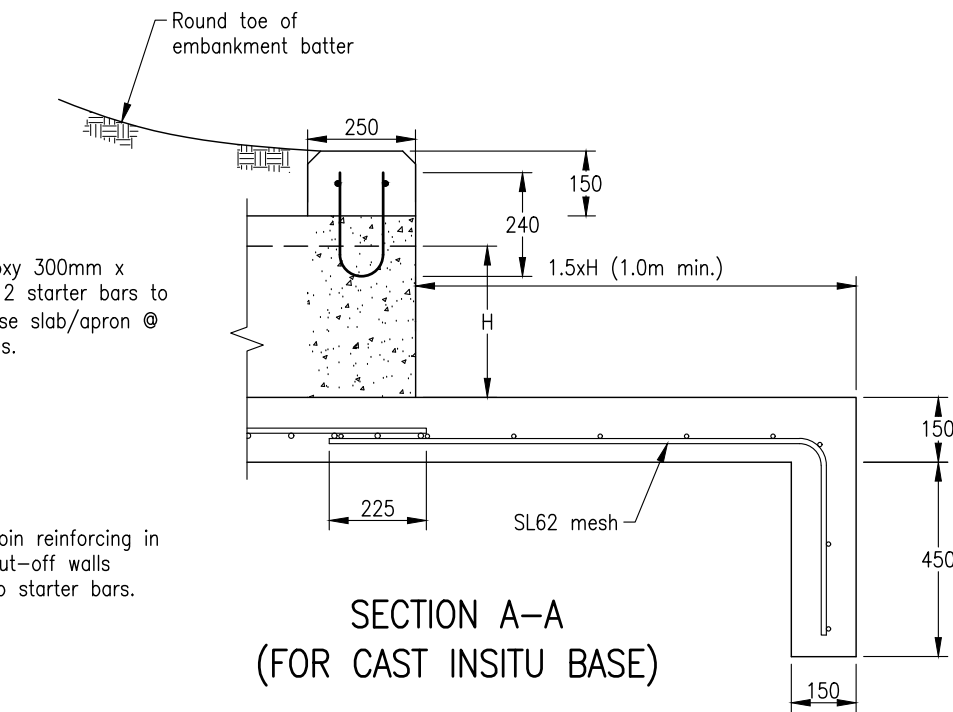
ELEVATION VIEW



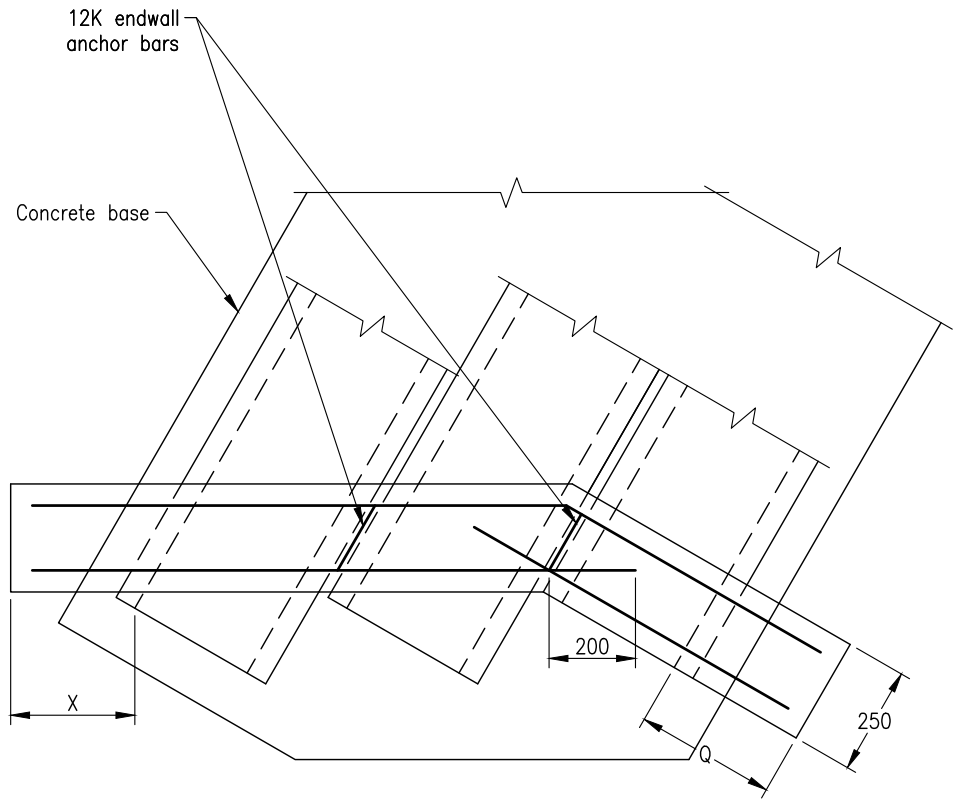
PLAN VIEW



SECTION A-A
(FOR PRECAST BASE)



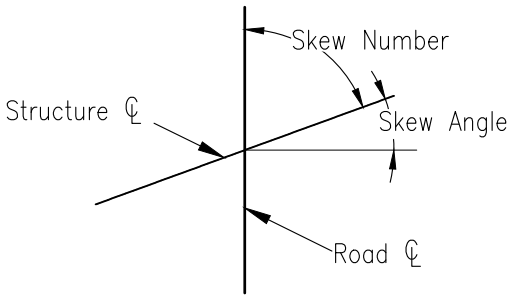
SECTION A-A
(FOR CAST INSITU BASE)



PLAN VIEW
(MULTIPLE SKEW CULVERT)

SKEW ANGLE	DIM.	HEIGHT OF CULVERT (H)					
		150	225	300	375	450	600
0-10	Q	250	300	450	600	750	900
11-20	X	250	300	500	650	800	1000
21-30	X	300	350	550	700	900	1100
31-45	X	300	400	600	800	1000	1200

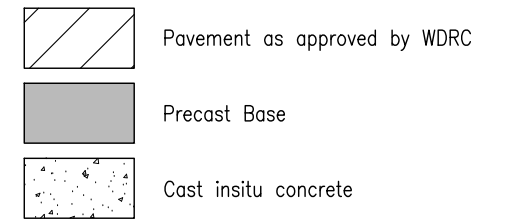
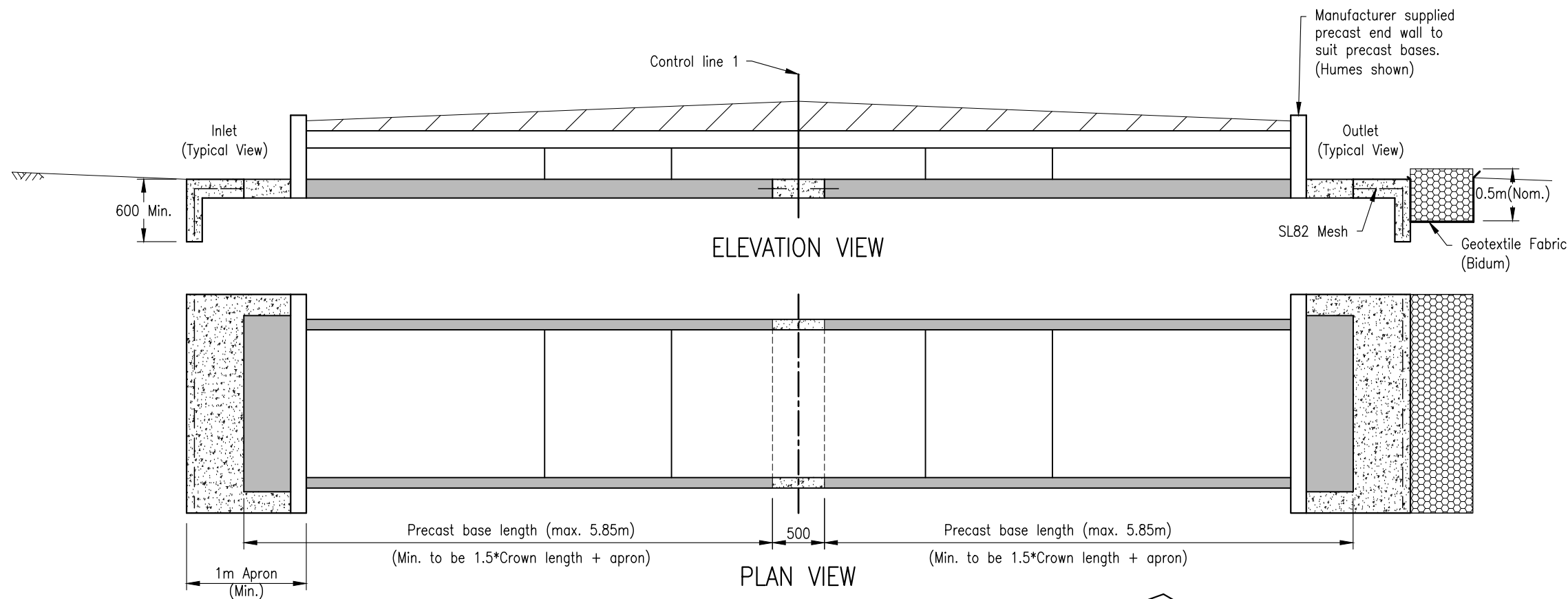
TABLE OF DIMENSIONS



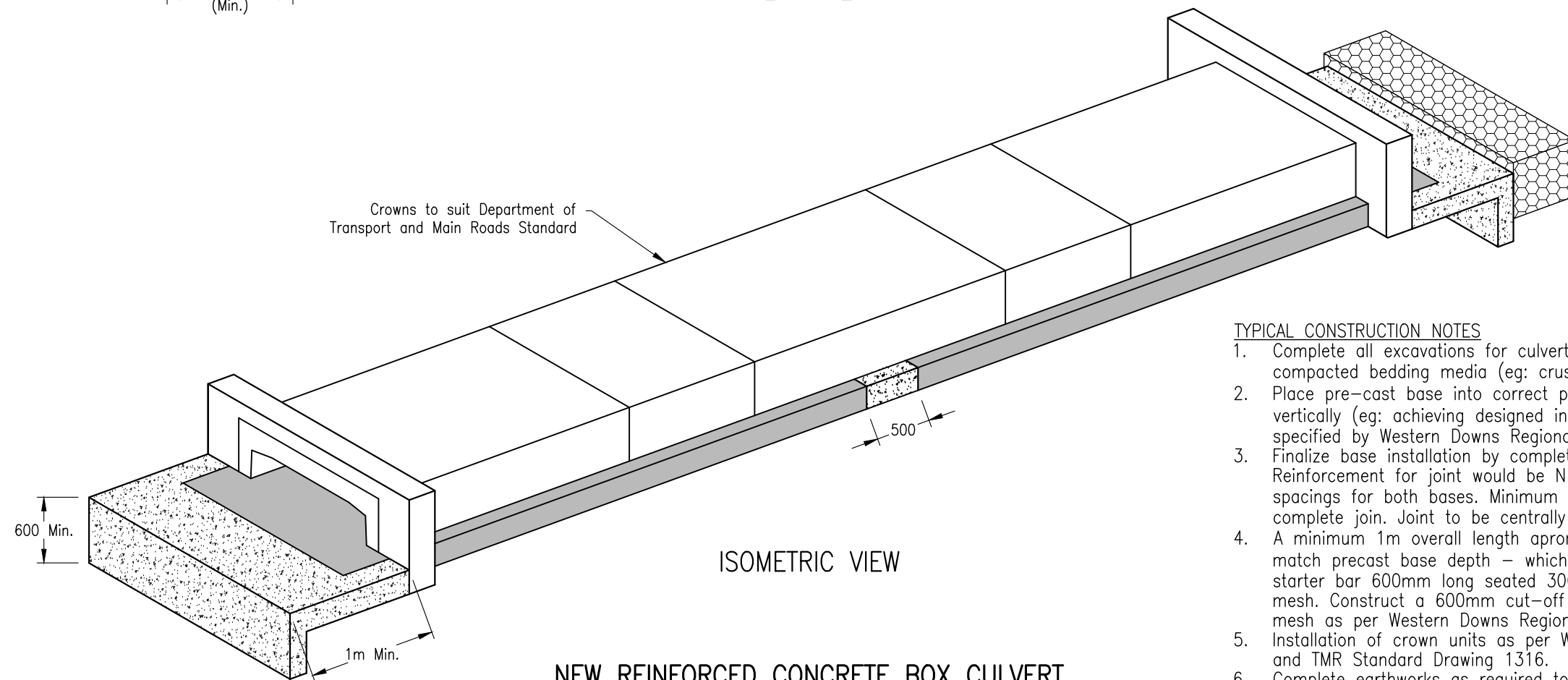
SKEW ANGLE

- NOTES
- Concrete grade N32/20 (N40/20 for exposure classification C).
 - Cover to reinforcement to be 50mm unless shown otherwise.
 - Reinforcing bars to be grade D500N to AS/NZS 4671.
 - Infill between legs of multiple culverts is achieved by placing N32/20 (N40/20) concrete plugs of 250mm minimum length at both ends of the structure and infill the remaining gap with 1:10 lean mix having maximum aggregate size of 10mm packed dry. Do not use fluid grout as hydraulic head will damage culvert legs.
 - All dimensions are in millimetres unless shown otherwise.
 - Refer to Department of Transport and Main Roads Standard Drawing 1316 for details on general arrangement and installation of precast units.
 - Refer to Australian Standards AS/NZS 4671 for details on steel reinforcing materials.

			Field Book No.	DRAWN S. Robertson			Horiz. Section		STANDARD DRAWING – DRAINAGE TYPICAL REINFORCED CONCRETE BOX CULVERT DETAILS		
E	Precast base bars changed	L.T.P.	17.08.15	Level Book No.	DESIGNED S. Robertson		NTS				
D	SL62 Mesh note added	L.T.P.	04.06.14	Datum	CHECKED S. Forbes						
C	Cut-off wall dimension	L.T.P.	11.07.13		EXAMINED G. Parsons						
B	Apron Dimension change	S.E.R.	01.05.13		RECOMMENDED S. Hegedus RPEQ. 5234						
A	Original Issue				TECHNICAL SERVICES MANAGER		Vert. Section				
					DATE 04/03/2011		NTS				
Revisions			Drn by	Date	Job No./s	Works Order No.	Auxiliary Plan No's.		Plan No.D-012	No. 12 of 13Plans	Rev. E



Gabion basket or cage sizes typically
2m wide x 1m wide x 0.5m high
4m wide x 1m wide x 0.5m high

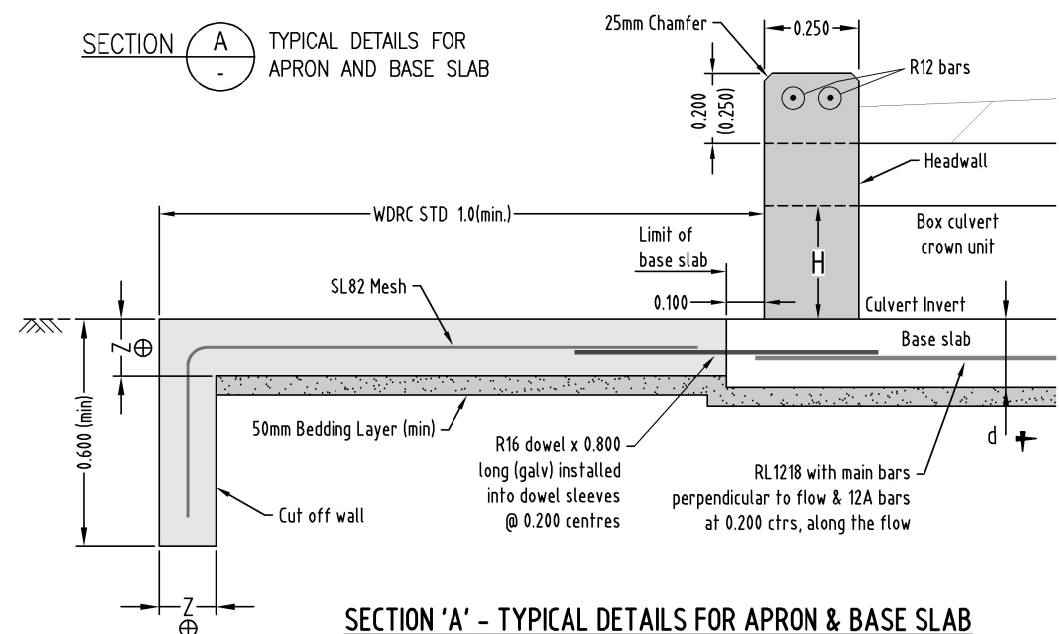


TYPICAL CONSTRUCTION NOTES

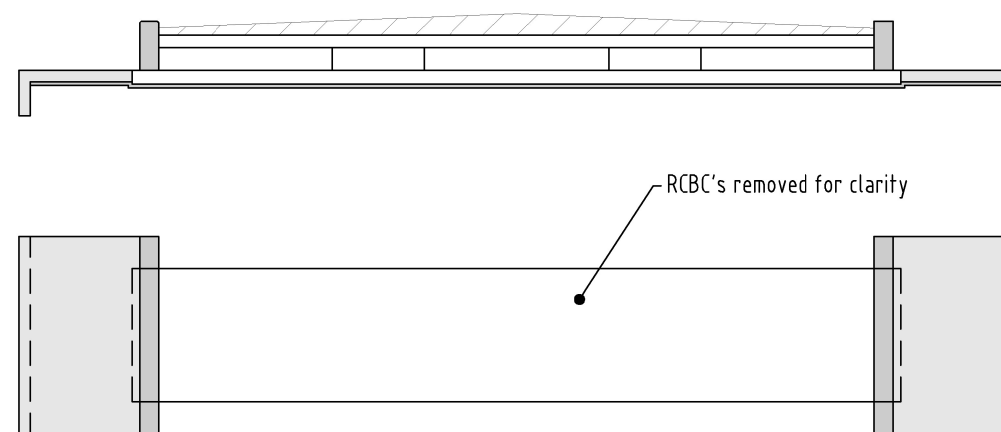
1. Complete all excavations for culvert and bring to required level with 40–50mm of compacted bedding media (eg: crusher dust)
2. Place pre-cast base into correct position both laterally (eg: within carriageway) and vertically (eg: achieving designed inlet/outlet levels). Fall generally 100mm min. or as specified by Western Downs Regional Council.
3. Finalize base installation by completing the concrete joint between the two precast bases. Reinforcement for joint would be N12 bar 600mm long seated 300mm into base at 300mm spacings for both bases. Minimum SL62 mesh secured to bars with N32/ 20 concrete to complete joint. Joint to be centrally placed.
4. A minimum 1m overall length apron to be poured as shown this plan (Min. 150mm or to match precast base depth – which ever is greater). Reinforcement for apron would be N12 starter bar 600mm long seated 300mm into base at 300mm spacings with minimum SL62 mesh. Construct a 600mm cut-off wall to be poured at 150mm thick with minimum SL62 mesh as per Western Downs Regional Council standard drawing D-012.
5. Installation of crown units as per Western Downs Regional Council Standard Drawing D-012 and TMR Standard Drawing 1316.
6. Complete earthworks as required to inlet and outlet.
7. Install gabion basket 50mm (nominal) above outlet with geofabric underneath.

NEW REINFORCED CONCRETE BOX CULVERT SHOWING CONSTRUCTION METHOD OF PRECAST BASE SLAB

				Field Book No.	DRAWN L. Porter	WESTERN DOWNS REGIONAL COUNCIL 	Horiz. Section	STANDARD DRAWING – DRAINAGE REINFORCED CONCRETE BOX CULVERT PRECAST BASE SLAB TYPICAL CONSTRUCTION METHOD
				Level Book No.	DESIGNED S. Forbes		NTS	
				Datum	CHECKED S. Forbes		Vert. Section	
					EXAMINED G. Parsons			
					RECOMMENDED S. Hegedus RPEQ. 5234			
					TECHNICAL SERVICES MANAGER			
B	Isometric/plan view added	L.T.P.	27.08.14		DATE 28/04/2014		NTS	
A	Original Issue							
Revisions		Drn by	Date		Job No./s	Works Order No.	Auxiliary Plan No's.	



SECTION 'A' - TYPICAL DETAILS FOR APRON & BASE SLAB



TYPICAL BASE SLAB DETAIL

WDRC Requirements:

1. RL1218 mesh used in Base Slab, main bars to run perpendicular to flow.
2. Additional R12 bars to be installed with flow at 0.200 ctrs on RL1218 mesh.
3. SL82 mesh to be used for Aprons/Cutoff walls
4. Minimum cover of 0.075 for ALL reinforcement.

Exposure Classification	Apron and Cut off wall Thickness 'Z'
B2	0.150
C1	0.170
C2	0.190

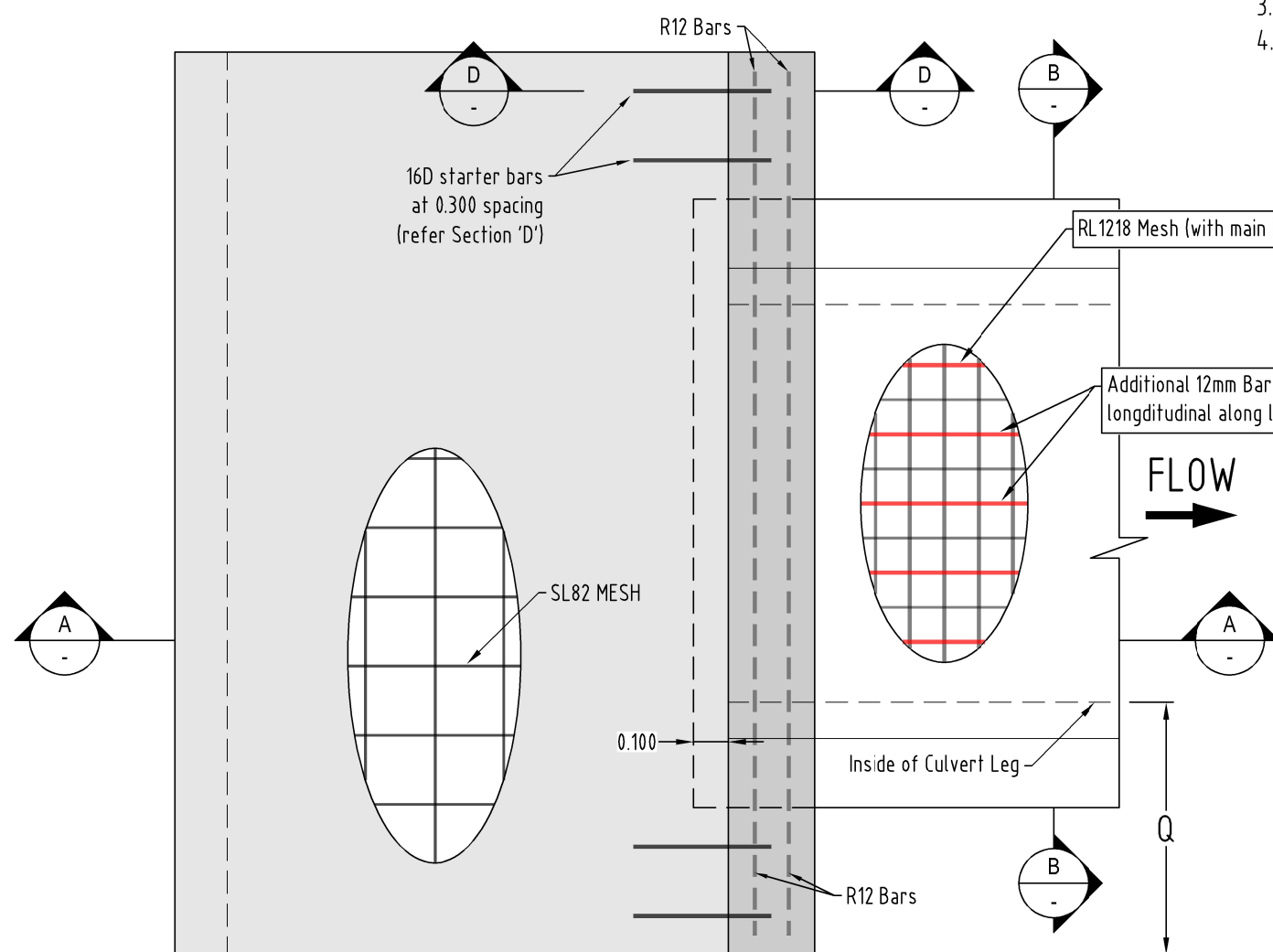
(WDRC Nominally B2 Classification)

TABLE OF DIMENSIONS				
Skew Angle (deg°)	Dim for Q for height of opening H			
	H	0.300 / 0.375	0.450	0.600
0 - 10	Q	0.600	0.750	0.900
	X	0.650	0.800	1.000
11 - 20	Q	0.600	0.750	0.900
	X	0.700	0.900	1.100
21 - 30	Q	0.600	0.750	0.900
	X	0.600	0.750	0.900
31 - 45	Q	0.600	0.750	0.900
	X	0.800	1.000	1.200

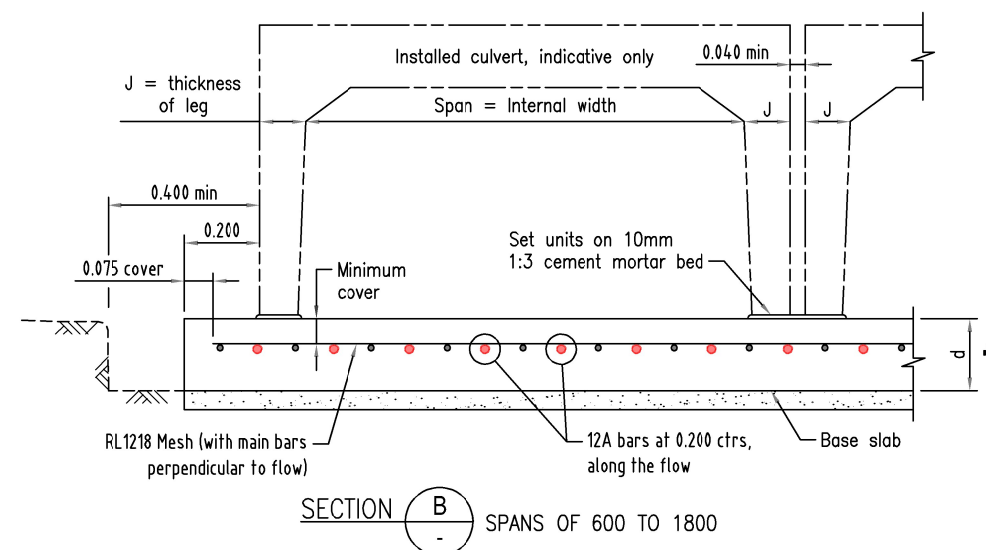
(WDRC Nominally B2 Classification)

BASE SLAB DETAILS				
Up to Span	Maximum design pressure (E _d) kPa	Base Slab Thickness 'd' for Exposure classification		
		B2	C1	C2
0.600	0.190	0.180	0.190	0.200
0.750				
0.900				
1.200				
1.500				
1.800				
2.100		0.210	0.220	0.230

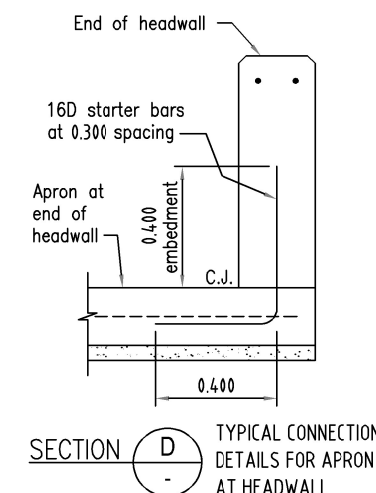
(WDRC Nominally B2 Classification)



DETAIL 'B' - TYPICAL BASE SLAB & APRON MESH DETAIL



SECTION 'B' SPANS OF 600 TO 1800



NOTE: For Slab Link or Skewed Culverts - Refer TMR STD Drawing for details

			DRAWN R.Swift	DATUM Survey Datum: 	Horiz. Section on A3 NOT TO SCALE Vert. Section on A3 NOT TO SCALE Dimensions in metres unless shown otherwise.	STANDARD DRAWING - DRAINAGE REINFORCED CONCRETE BOX CULVERT CAST INSITU - TYPICAL BASE SLAB AND APRON/CUTOFF WALLS TYPICAL CONSTRUCTION DETAILS		ISSUED FOR CONSTRUCTION 29/07/2021	
			DESIGNED R.Swift					Works Order No.	
			CHECKED P.Blissner						
			CERTIFIED CERTIFYING ENGINEER - J.CRICK RPEQ No. 7834 DATE 29/07/2021						
0	Issued for Construction	R.J.S	29/07/2021						DWG No. 014
A	Issued for Preliminary Design	R.J.S	13/07/2021						
Revisions		Drawn	Date						