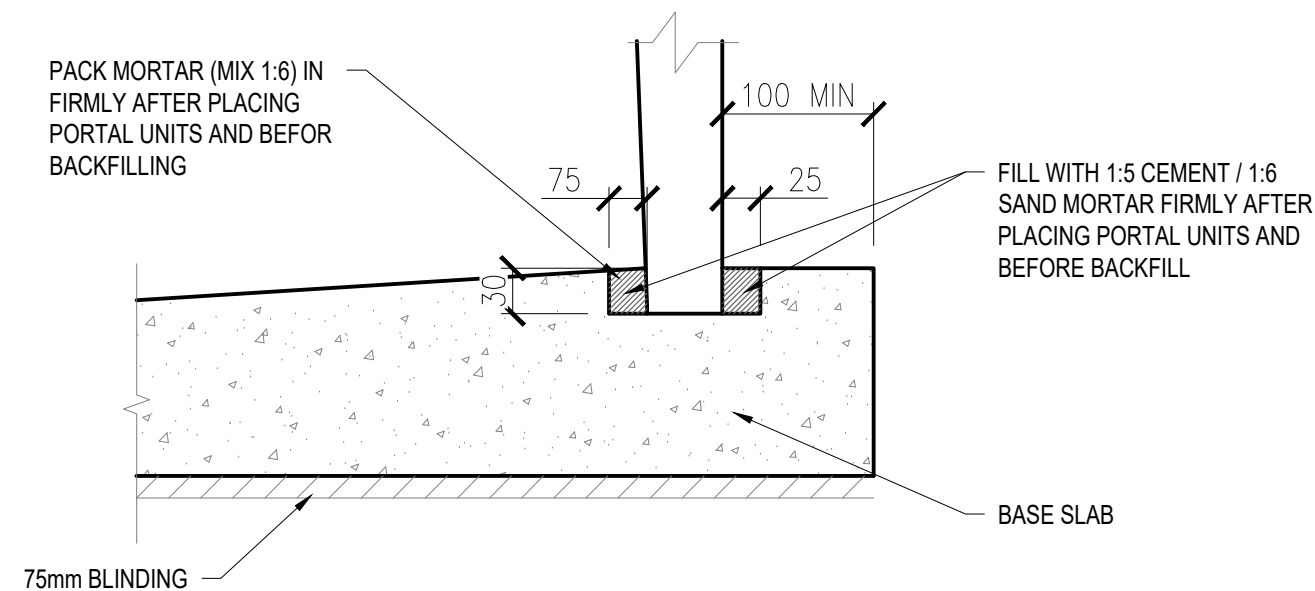
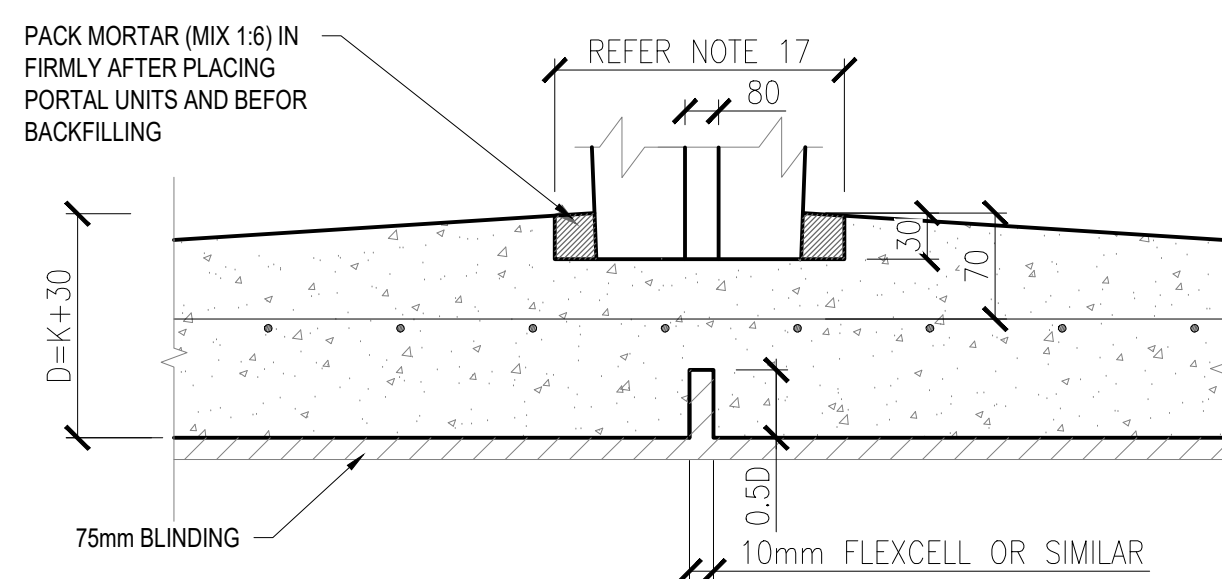


TYPICAL CROSS-SECTION OF SINGLE PORTAL CULVERT UNIT
SCALE 1:15

TYPICAL CROSS-SECTION OF MULTIPLE PORTAL CULVERT UNIT
SCALE 1:15



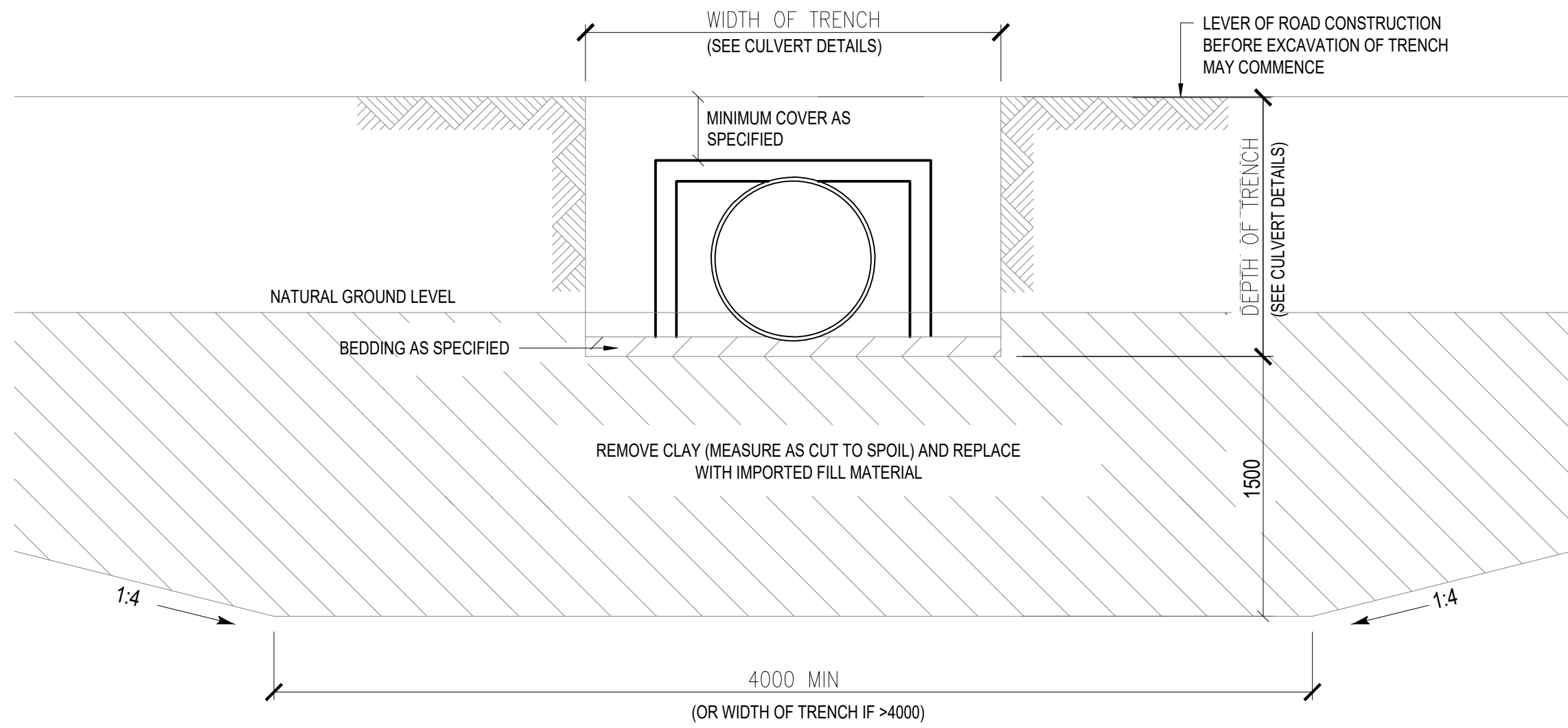
DETAIL 1



DETAIL 2

TYPICAL DETAILS OF CAST IN SITU FLOOR SLABS FOR PREFABRICATED PORTAL CULVERT

SCALE 1:5



DETAIL OF CULVERT BEDDING IN CLAY

SCALE 1:20

GENERAL NOTES

- STRUCTURAL CONCRETE IS CLASS 30/19
- REINFORCEMENT SHALL COMPLY WITH THE REQUIREMENTS OF SANS 900 TYPE C, CLASS 2, GRADE 1.
- CONCRETE COVER TO STEEL IS 50mm
- DESIGN DENSITY OF THE FILL MATERIAL IS 2000kg/m³
- LOAD FACTOR FOR PROOF LOAD OF SANS 988 = 1.25
- HIGH YIELD STRESS REINFORCEMENT Y1 YIELD STRESS = 450MPa
- PREFABRICATED PORTAL CULVERTS SHALL COMPLY WITH THE REQUIREMENTS OF SANS 988 AS WELL AS THE ADDITIONAL TEST LOADING AND CRITICAL TEST LOAD COMBINATION FOR THE TEST OF SHEAR RESISTANCE
- DIMENSIONS AND REINFORCEMENT FOR CAST IN SITU FLOOR SLABS ARE VALID ONLY IF:
a) THE HEIGHT OF THE FILL IS LESS THAN SPECIFIED BELOW AND THE CORRESPONDING CLASS CULVERT IS USED.

DIMENSION B(mm)	MAXIMUM HEIGHT (m)	CLASS OF CULVERT
600	5.6	200S
750	4.9	175S
900	4.8	175S
1200	4.1	150S
1500	2.9	100S
1800	2.4	75S
2100	2.4	75S
2400	2.4	75S
3000	2.4	75S

b) WHERE THE TYPE OF MATERIAL UNDER THE BASE SLAB IS NOT ROCK

- THE DIMENSIONS IN THE TABLE MAY NOT CONFORM TO ALL MARKETED UNITS AND IT MAY BECOME NECESSARY TO REVISE THE TABULATED DIMENSIONS.
- THE MAXIMUM SPACING OF TRANSVERSE JOINTS IN THE FLOOR SLAB IS 10m.
- THE EXCAVATION WIDTH MAY BE REDUCED FROM (S+1000) TO (S+200) MINIMUM WHERE SOILCRETE BACKFILL IS USED.
- FOR HANDLING AND INSTALLATION OF CULVERT REFER TO "CONCRETE PIPE AND PORTAL CULVERT INSTALLATION MANUAL" FROM THE CONCRETE SOCIETY OF SOUTHERN AFRICA
- WHEN THE HEIGHT OF THE PORTAL CULVERT IS 1.5m OR MORE, TEMPORARY PROPS MUST BE PLACED BETWEEN THE LEGS DURING BACKFILLING OPERATION.
- PREFABRICATED CULVERT SHALL BE INSTALLED BY THE "TRENCH METHOD" EXCEPT WHERE OTHERWISE REQUIRED BY THE ENGINEER.
- IF CONSTRUCTION VEHICLES IMPOSE IN EXCESS OF DESIGN LOADINGS, CULVERTS MUST BE PROTECTED BY PROVIDING ADDITIONAL TEMPORARY COVER OR BY APPROVED MEANS.
- TWO LAYERS OF FILTER FABRIC STRIPS IMPREGNATED WITH BITUMEN EMULSION MUST BE PLACED ON ALL JOINTS BETWEEN PRECAST UNITS (HORIZONTAL AND VERTICAL).
- FOR H < 1.5m, THE WIDTH = 120mm + 2 x WIDTH OF PORTAL LEG
FOR H > 1.5m, THE WIDTH = 150mm + 2 x WIDTH OF PORTAL LEG

LOAD STATEMENT

- PREFABRICATED PORTAL CULVERTS WITH NOMINAL SIZE "n x B x H" ARE LOADED IN ACCORDANCE WITH ALL THE REQUIREMENTS OF TMH7.
- ALL PREFABRICATED PORTAL CULVERTS TO BE ACCORDING TO SANS 988.
- THE MAXIMUM HEIGHT OF FILL ABOVE PORTAL CULVERTS MAY NOT EXCEED THE VALUES GIVEN IN NOTE 8g).

DIMENSIONS					REINFORCEMENT					
B	H	S	O	K	BAR A	L	CUT LENGTH	BENDING	BAR B	BENDING
1/600	450 OR 600	760	960	160	Y12-200	860	1300	L SHAPE CODE = 33	Y120-250	LENGTH OF SLAB COVER SHAPE CODE = 35
2/600		1600	1800	160	Y12-200	1700	2100		Y10-250	
3/600		2440	2640	160	Y12-200	2540	2950		Y10-250	
1/750	450 OR 600	960	1120	170	Y12-150	1020	1450		Y10-250	
2/750		1920	2120	170	Y12-150	2020	2450		Y10-250	
3/750		2920	3120	170	Y12-150	3020	3450		Y10-250	
1/900	450, 600 OR 900	1100	1300	180	Y12-100	1200	1600		Y10-250	
2/900		2280	2480	180	Y12-100	2380	2800		Y10-250	
3/900		3460	3660	180	Y12-100	3560	4000		Y10-250	
1/1000		1300	1500	180	Y12-100	1400	1800		Y10-250	
2/1000	1000	2680	2880	180	Y12-100	2780	3200	L SHAPE CODE = 35	Y10-250	LENGTH OF SLAB COVER SHAPE CODE = 35
3/1000		4060	4260	180	Y12-100	4160	4600		Y10-250	
1/1200	450, 600 900 OR 1200	1440	1640	190	Y16-160	1540	2000		Y10-200	
2/1200		2960	3160	190	Y16-160	3060	3550		Y10-200	
3/1200		4480	4680	190	Y16-160	4580	5050		Y10-200	
1/1500	600	1750	1950	200	Y16-140	1850	2350		Y10-200	
2/1500	900, 1200 OR 1500	3580	3780	200	Y16-140	3680	4150		Y10-200	
3/1500		5410	5610	200	Y16-140	5510	6000		Y10-200	
1/1800	600, 900, 1200, 1500 OR 1800	2100	2300	210	Y16-120	2184	2650		Y10-150	
2/1800		4280	4480	210	Y16-120	4364	4850		Y10-150	
1/2000	1000 OR 1500	2400	2600	220	Y16-110	2484	2950	L SHAPE CODE = 35	Y10-150	LENGTH OF SLAB COVER SHAPE CODE = 35
2/2000		4880	5080	220	Y16-110	4964	5450		Y10-150	
3/2000		7360	7560	220	Y16-110	7444	7900		Y10-150	
1/2400	900, 1200, 1500, 1800 OR 2400	2720	2920	230	Y16-100	2804	3300		Y10-150	
2/2400		5520	5720	230	Y16-100	5604	6100		Y10-150	
1/3000	900, 1200, 1500, 1800, 2400 OR 3000	3480	3680	260	Y16-100	3564	4050		Y10-150	

IF ACCEPTED BY ENGINEER, MILD STEEL CAN BE SUBSTITUTED FOR HIGH YIELD STRESS STEEL, AS FOLLOWS
Y10 REPLACED BY R12 AT UNCHANGED SPACING
Y12 REPLACED BY R16 AT UNCHANGED SPACING
Y16 REPLACED BY R20 AT 0.95X EXISTING SPACING

CLIENT:



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TEL: (015) 491 9600
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PROJECT:

CONTRACT No. :

UPGRADING OF GRAVEL ROADS AND STORMWATER IN
MOORDKOPPIE CLUSTER MOLEKANE VILLAGE

DESIGN COORDINATOR APPROVAL:

SIGNATURE _____ DATE _____

PROJECT MANAGER APPROVAL:

SIGNATURE _____ DATE _____

CLIENT APPROVAL:

SIGNATURE _____ DATE _____

A	JUL. 2020	ISSUED FOR TENDER PURPOSE ONLY	SD
REV	DATE	DESCRIPTION	DRAWN
REVISIONS			

DRAWN: S. SITHOLE	CHECKED: S. SITHOLE	DESIGNED: P. SEOPA
SCALES: AS SHOWN		DATE: SEPTEMBER 2020
DRAWING TITLE: TYPICAL DETAIL OF CULVERTS DETAIL SHEET 1		
SIZE: A0	PROJECT No.	
REV No. A	DRAWING No.	ROMH-042-07-10-10

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FOR TENDER