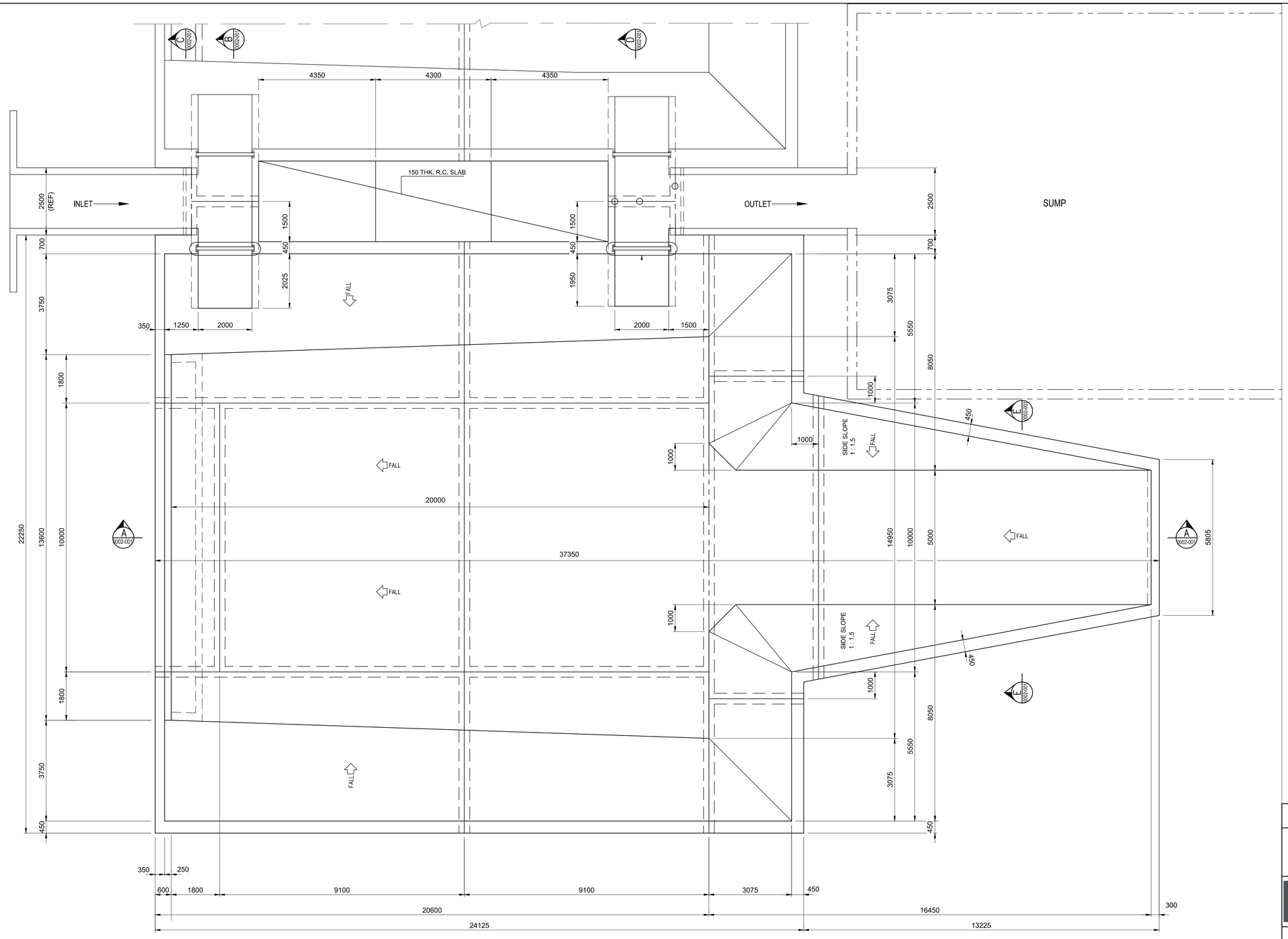
G.9 Silt trap



PLAN ON SILT TRAP

1 : 75

CONCRETE VOLUME - SILT TRAP = 400m^3

GENERAL NOTES :

1. ALL CIVIL WORK TO BE CARRIED OUT IN ACCORDANCE WITH ENGINEER'S SPECIFICATION.
2. CONCRETE TOLERANCE TO DEGREE OF ACCURACY II .
3. MIN. STRENGTH OF CONCRETE TO BE 35 MPa AT 28 DAYS UNLESS OTHERWISE NOTED.
4. 50mm BLINDING TO BE GRADE 10 MPa CONCRETE UNDER ALL FOUNDATIONS.
5. 250 MICRON PVC SHEETING TO BE PROVIDED UNDER ALL GROUND SLABS IN ACCORDANCE WITH SANS 952.
6. ALL FOUNDATION EXCAVATIONS TO BE INSPECTED BY ENGINEER - PRIOR TO CASTING OF BLINDING AND TO BE KEPT DRY AT ALL TIMES.
7. ANY OVER BREAK UNDER FOUNDATIONS TO BE MADE GOOD WITH MASS CONCRETE 10 MPa TO THE ENGINEERS INSTRUCTIONS.
8. ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE BEFORE ANY WORK COMMENCES. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
9. ALL LEVELS SHOWN ARE TO "TOP OF CONCRETE" AND ARE A.M.S.L. (ABOVE MEAN SEA LEVEL).
10. ALL EXPOSED CONCRETE CORNERS TO HAVE 25x25 CHAMFERS.
11. CONCRETE FINISHES TO BE SMOOTH WHEN EXPOSED AND ROUGH WHEN CONCEALED.
12. ALL DIMENSIONS INDICATED IN mm.

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS SIGNED BY PROFESSIONAL ENGINEER / TECHNOLOGIST

DESIGNED, DRAWN AND ISSUED BY:

Professional Engineer/ Technologist :-.....

Reg. No. :-..... Rev. :-.....

SOUTH32
VDDC PROJECT
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Intl Tel : +27 11 218 3000 | Intl Fax: +27 11 218 3100

DRAWING No.	REFERENCE DRAWINGS	REV No.	DATE	REVISIONS	BY / CHK	S Ldr / CNG
C00820 05AA GE DAL 0001 001	SITE INFRASTRUCTURE - OVERALL BLOCKPLAN	0	05/09/19	ISSUED FOR USE	NM	
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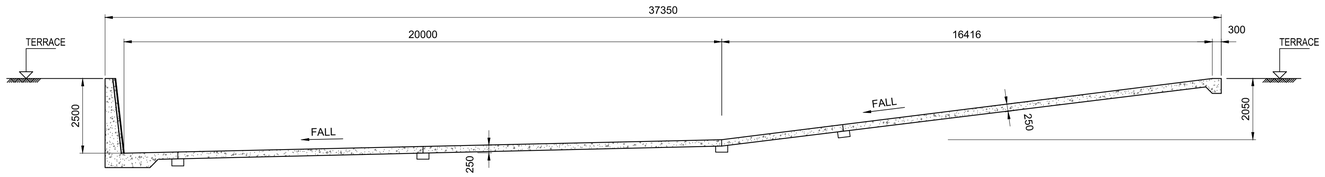
CLIENT	NAME	DATE	WORLEY	NAME	DATE	WORLEY	NAME	DATE
Lead Engineer			Piping Engineer			Drawn By	N.M.	08/07/19
Project Manager			Process Engineer			Checked By		
			Struct/Civil Engineer			Project S/Leader		
			Engineering Manager			Electrical Engineer		
			Project Manager			Instrument Engineer		
						Mechanical Engineer		
						Mining Engineer		

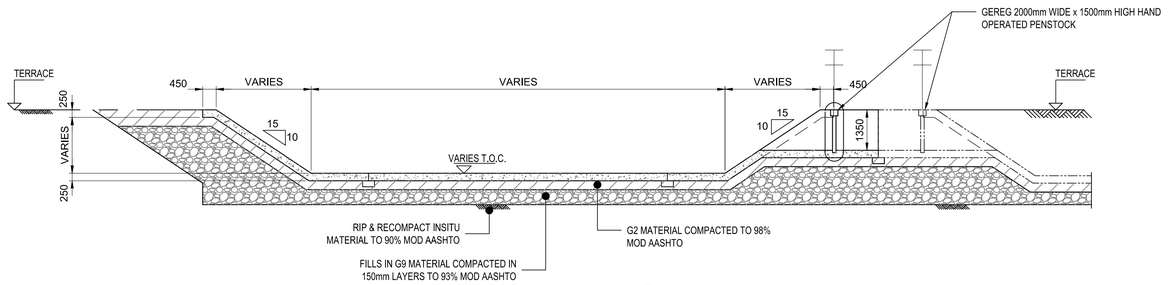
VDDC PROJECT - FEASIBILITY
SURFACE INFRASTRUCTURE
SILT TRAP
LAYOUT

CLIENT DRAWING NUMBER	SHEET SIZE	SCALE
0001	A1	.

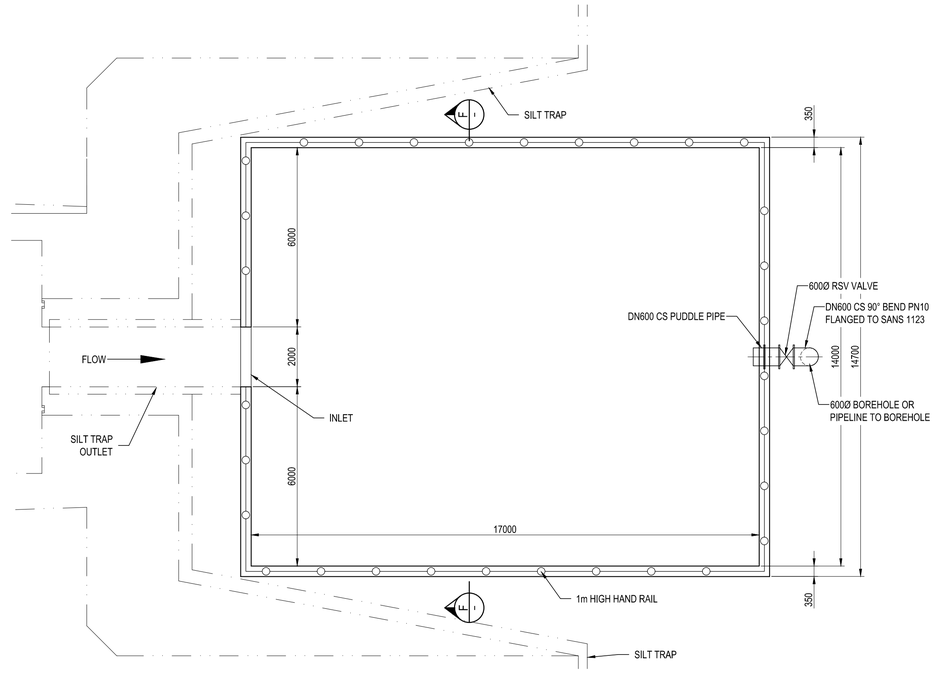
PROJECT No	WBS	DISC	DWG ID	DOC ID.	SHEET	REV
C00820	05DI	CI	DGA	0001	001	0



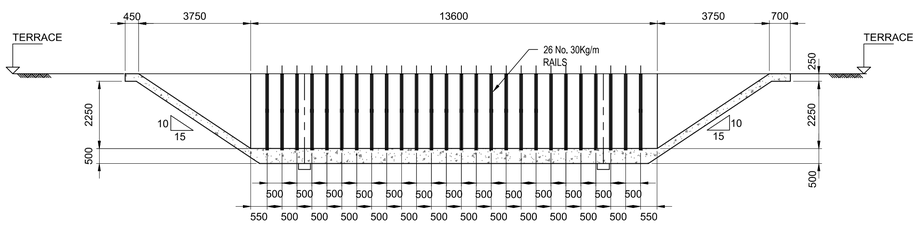
SECTION A
SCALE 1:100 — 0001-001



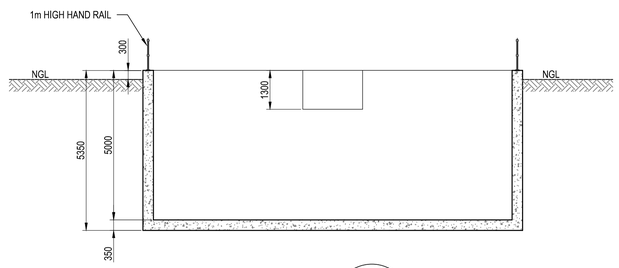
SECTION B
SCALE 1:100 — 0001-001



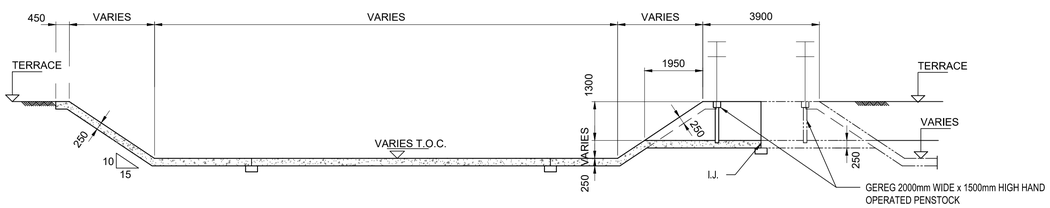
SUMP LAYOUT
SCALE 1:100



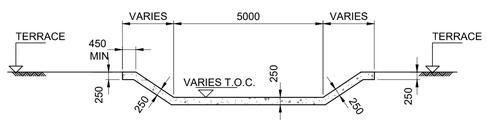
SECTION C
SCALE 1:100 — 0001-001



SECTION F
SCALE 1:100 — --



SECTION D
SCALE 1:100 — 0001-001



SECTION E
SCALE 1:100 — 0001-001

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DESIGNED, DRAWN AND ISSUED BY:

Professional Engineer/ Technologist :-.....

Reg. No. :-..... Rev. :-.....

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Worley
energy | chemicals | resources

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VDDC PROJECT - FEASIBILITY
SURFACE INFRASTRUCTURE
SILT TRAP
SECTIONS

CLIENT DRAWING NUMBER	SHEET SIZE	SCALE
0001	A1	.

PROJECT No	WBS	DISC	DWG ID	DOC ID.	SHEET	REV
C00820	05DI	CI	DGA	0001	002	0

DRAWING No.	REFERENCE DRAWINGS	REV No.	DATE	REVISIONS	BY	CHK	S.Lar	ENG
C00820 05AA GE DAL 0001 001	SITE INFRASTRUCTURE - OVERALL BLOCKPLAN	0	05/09/19	ISSUED FOR USE	NM			
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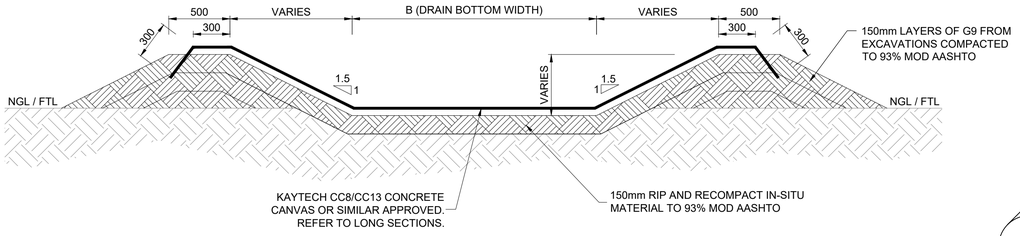
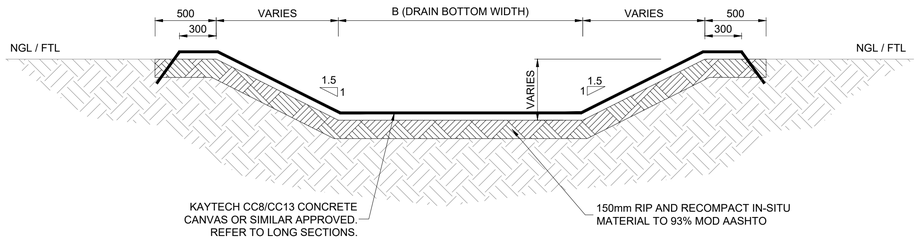
CLIENT	NAME	DATE	WORLEY	NAME	DATE	WORLEY	NAME	DATE
Lead Engineer			Piping Engineer			Drawn By	N.M.	08/07/19
Project Manager			Process Engineer			Checked By		
			Struct/Civil Engineer			Project S/Leader		
			Engineering Manager			Electrical Engineer		
			Project Manager			Instrument Engineer		
						Mechanical Engineer		
						Mining Engineer		

G.10 Polluted stormwater drains



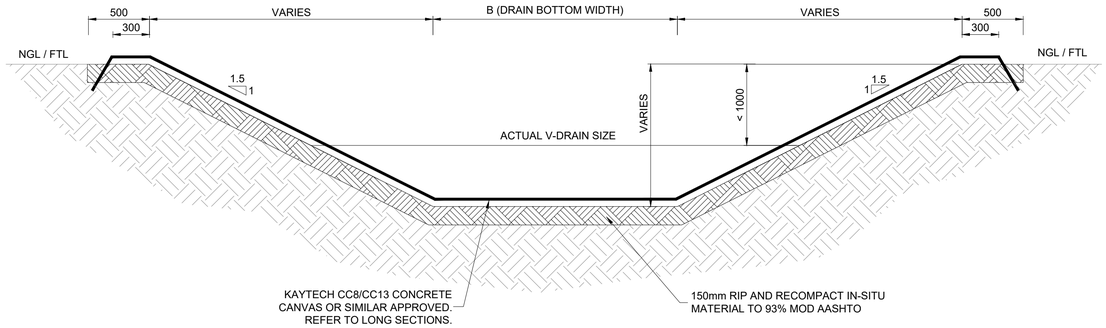
TYPICAL DETAIL OF TRAPEZOIDAL EARTH DRAIN (FILL)

SCALE 1:25



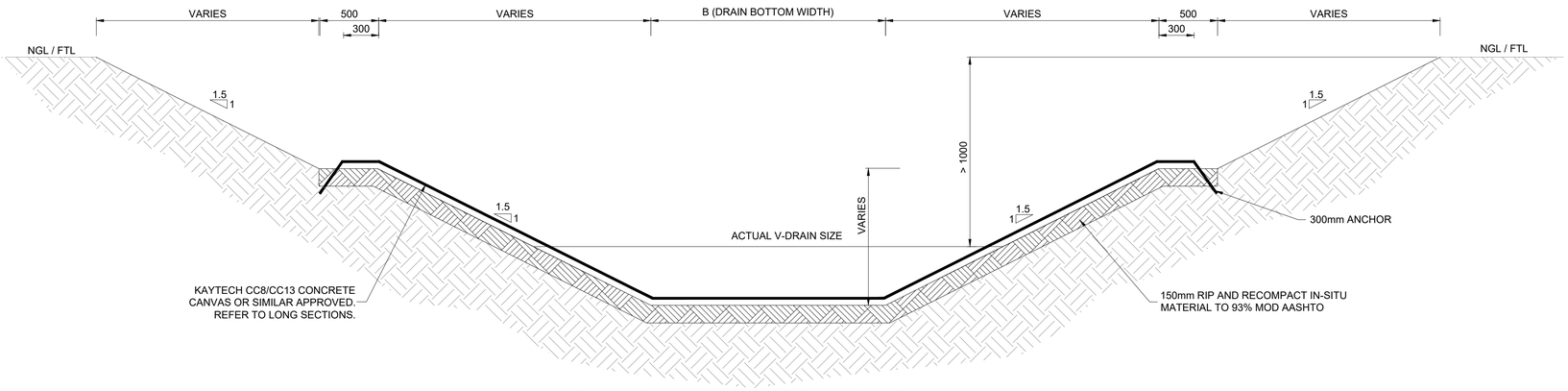
TYPICAL DETAIL OF TRAPEZOIDAL EARTH DRAIN (NORMAL / ON GRADE)

SCALE 1:25



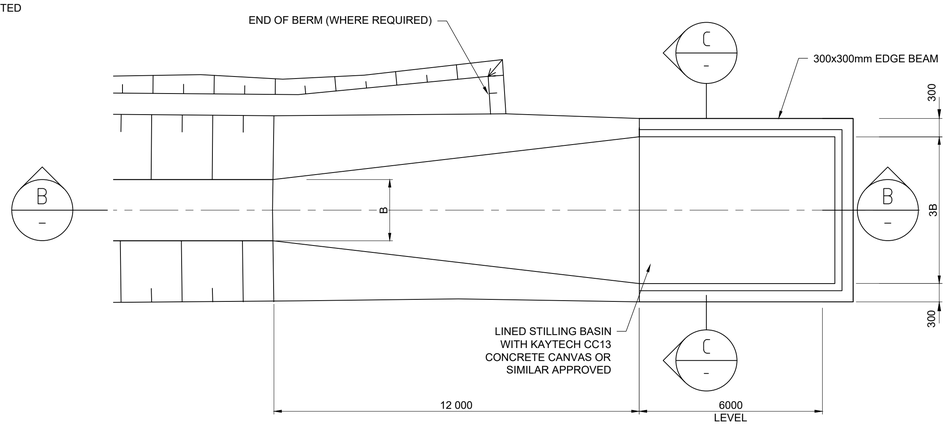
TYPICAL DETAIL OF TRAPEZOIDAL EARTH DRAIN (SHALLOW CUT)

SCALE 1:25



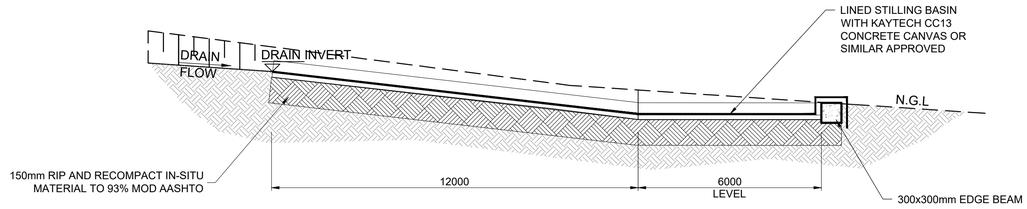
TYPICAL DETAIL OF TRAPEZOIDAL EARTH DRAIN (DEEP CUT)

SCALE 1:25

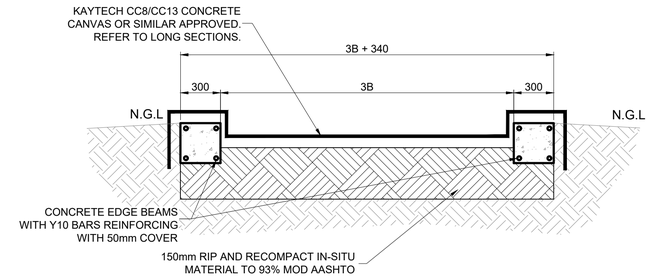


PLAN ON OUTLET DETAIL 1

SCALE 1: 100



SECTION B – SCALE 1:100



SECTION C – SCALE 1:50

GENERAL NOTES :

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2. CONCRETE TOLERANCE TO DEGREE OF ACCURACY II
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7. ANY OVER BREAK UNDER FOUNDATIONS TO BE MADE GOOD WITH MASS CONCRETE 10 MPa TO THE ENGINEERS INSTRUCTIONS.
8. ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE BEFORE ANY WORK COMMENCES. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
9. ALL LEVELS SHOWN ARE TO "TOP OF CONCRETE" AND ARE A.M.S.L. (ABOVE MEAN SEA LEVEL).
10. ALL EXPOSED CONCRETE CORNERS TO HAVE 25x25 CHAMFERS.
11. CONCRETE FINISHES TO BE SMOOTH WHEN EXPOSED AND ROUGH WHEN CONCEALED.
12. ALL DIMENSIONS INDICATED IN mm.
13. ALL STEEL COMPONENTS TO BE HOT DIP GALVANIZED TO THE CORROSION PROTECTION REQUIREMENTS.

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS SIGNED BY PROFESSIONAL ENGINEER / TECHNOLOGIST

DESIGNED, DRAWN AND ISSUED BY:

Professional Engineer/ Technologist :-.....

Reg. No. :-..... Rev. :-.....

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VDDC PROJECT
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DRAWING No.	REFERENCE DRAWINGS	REV No.	DATE	REVISIONS	BY / CHK	S Ldr / ENG
C00820 05AA GE DAL 0001 001	SITE INFRASTRUCTURE - OVERALL BLOCKPLAN	0	27/08/19	ISSUED FOR USE	NM	
		.	.	.	.	

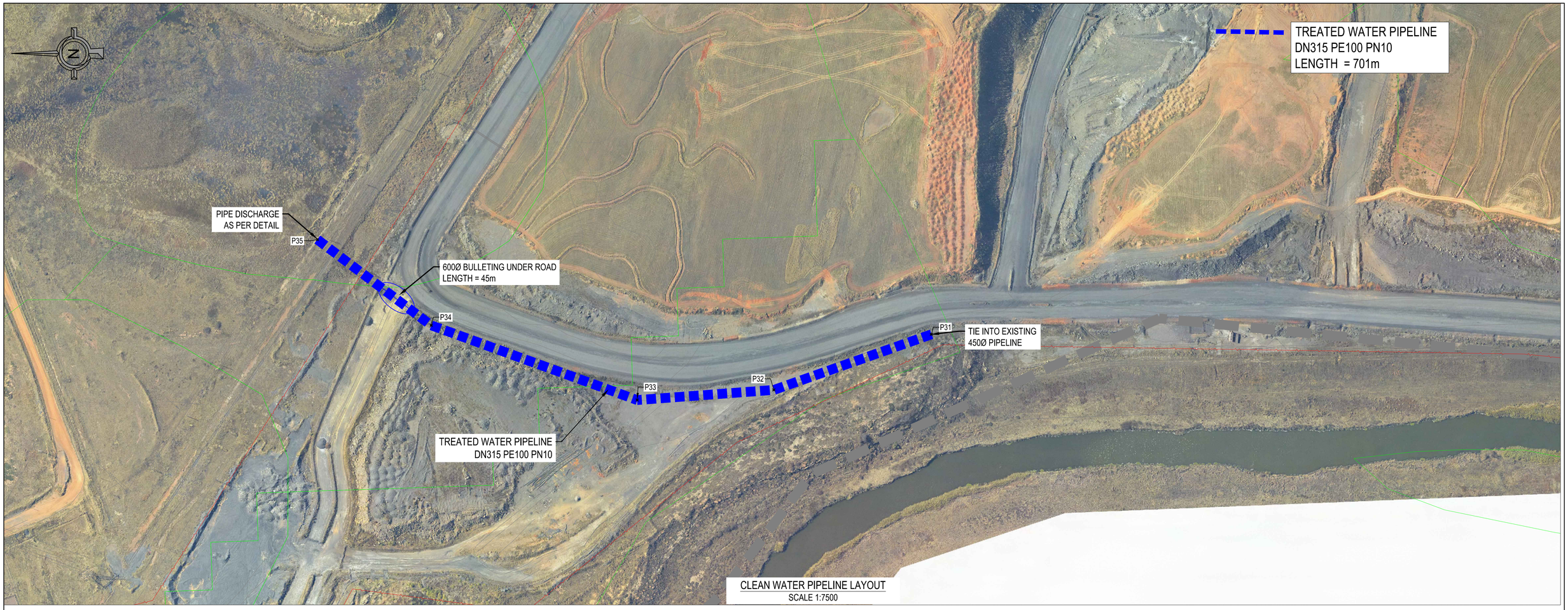
CLIENT	NAME	DATE	WORLEY	NAME	DATE	WORLEY	NAME	DATE
Lead Engineer			Piping Engineer			Drawn By	N.M.	08/07/19
Project Manager			Process Engineer			Checked By		
			Struct/Civil Engineer			Project S/Leader		
			Engineering Manager			Electrical Engineer		
			Project Manager			Instrument Engineer		
						Mechanical Engineer		
						Mining Engineer		

VDDC PROJECT - FEASIBILITY
SURFACE INFRASTRUCTURE
STORMWATER DRAINS
TYPICAL SECTIONS & DETAILS

CLIENT DRAWING NUMBER	SHEET SIZE	SCALE
0001	A1	.

PROJECT No	WBS	DISC	DWG ID	DOC ID.	SHEET	REV
C00820	05DH	CI	DRD	0002	001	0

G.11 Treated water pipeline



CLEAN WATER PIPELINE LAYOUT
SCALE 1:7500

PIPELINE SETTING OUT		
POINT	Y	X
P31	-26 831.164	2 879 968.784
P32	-26 772.712	2 879 802.973
P33	-26 762.063	2 879 659.234
P34	-26 840.629	2 879 442.545
P35	-26 930.859	2 879 322.767

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Professional Engineer/ Technologist :-.....

Reg. No. :-..... Rev. :-.....

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DRAWING No.	REFERENCE DRAWINGS	REV No.	DATE	REVISIONS	BY CHK.	S.Lir ENG
C00820 05AA GE DAL 0001 001	SITE INFRASTRUCTURE - OVERALL BLOCKPLAN	0	27/08/19	ISSUED FOR USE	NM	
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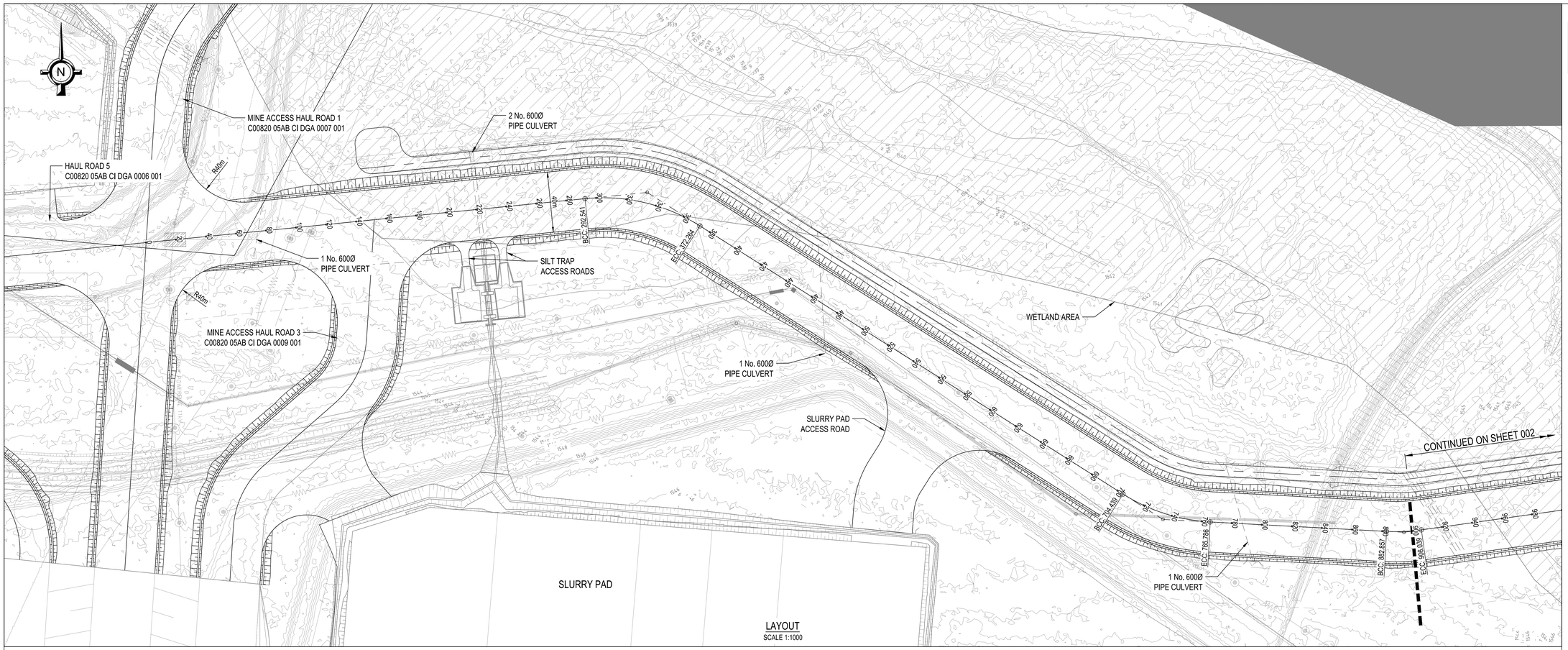
CLIENT	NAME	DATE	WORLEY	NAME	DATE	WORLEY	NAME	DATE
Lead Engineer			Piping Engineer			Drawn By	N.M.	03/07/19
Project Manager			Process Engineer			Checked By		
			Struct/Civil Engineer			Project S/Leader		
			Engineering Manager			Electrical Engineer		
			Project Manager			Instrument Engineer		
						Mechanical Engineer		
						Mining Engineer		

VDDC PROJECT - FEASIBILITY
SURFACE INFRASTRUCTURE
TREATED WATER PIPELINE
LAYOUT & SETTING OUT

CLIENT DRAWING NUMBER	SHEET SIZE	SCALE
0001	A1	.

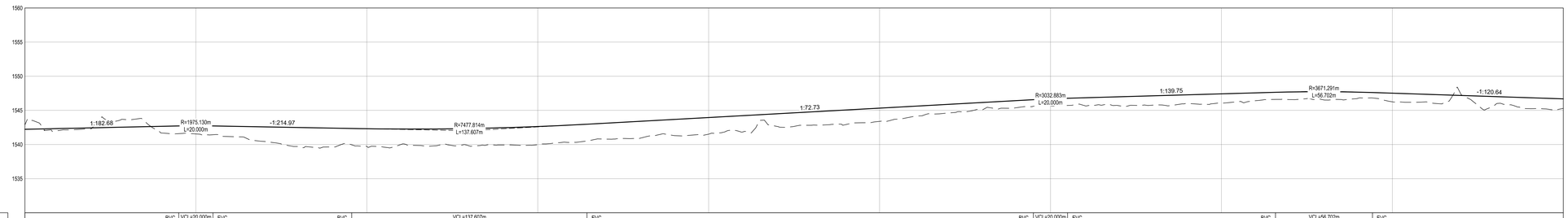
PROJECT No	WBS	DISC	DWG ID	DOC ID.	SHEET	REV
C00820	05FF	CI	DAL	0001	002	0

G.12 Eastern haul road



LAYOUT
SCALE 1:1000

Cut/Fill Summary		
2d Area	Cut	Fill
227916.906sq.m	3490.818 Cu. M.	263656.897 Cu. M.



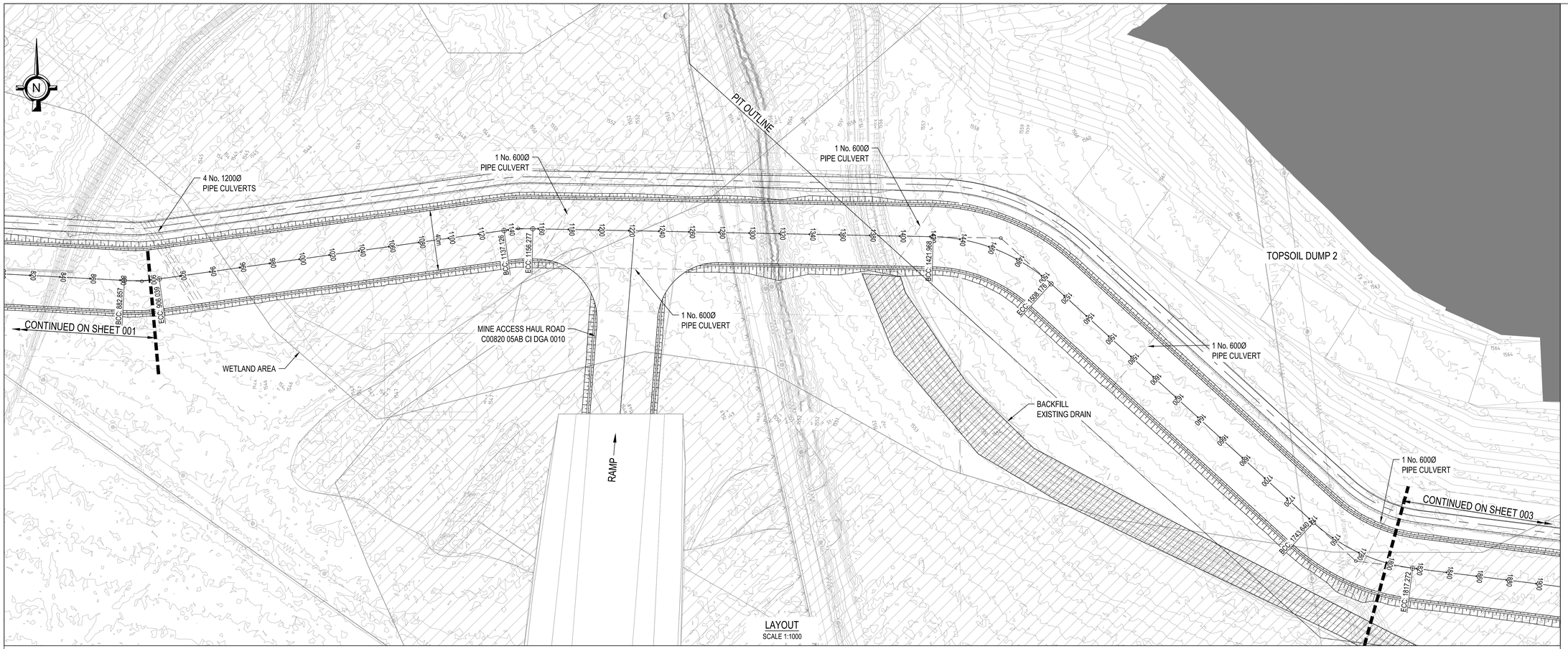
SCALES:
Horizontal 1:1000
Vertical 1:250

DATUM 1530.000

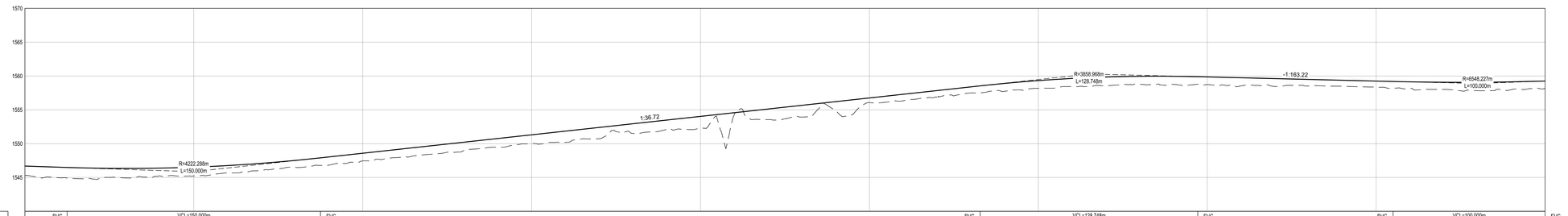
VERTICAL PROFILE GRADES

BVC 90.000 | VCL=20.000m K=20 | EVC 110.000 — 0.547%
100.000 | 1542.771 — -0.465%
BVC 191.197 | VCL=137.607m K=75 | EVC 328.803
260.000 | 1542.027 — 1.375%
BVC 590.000 | VCL=20.000m K=30 | EVC 610.000
600.000 | 1546.702 — 0.716%
BVC 731.649 | VCL=56.702m K=37 | EVC 788.351
760.000 | 1547.847 — -0.829%

| | | |



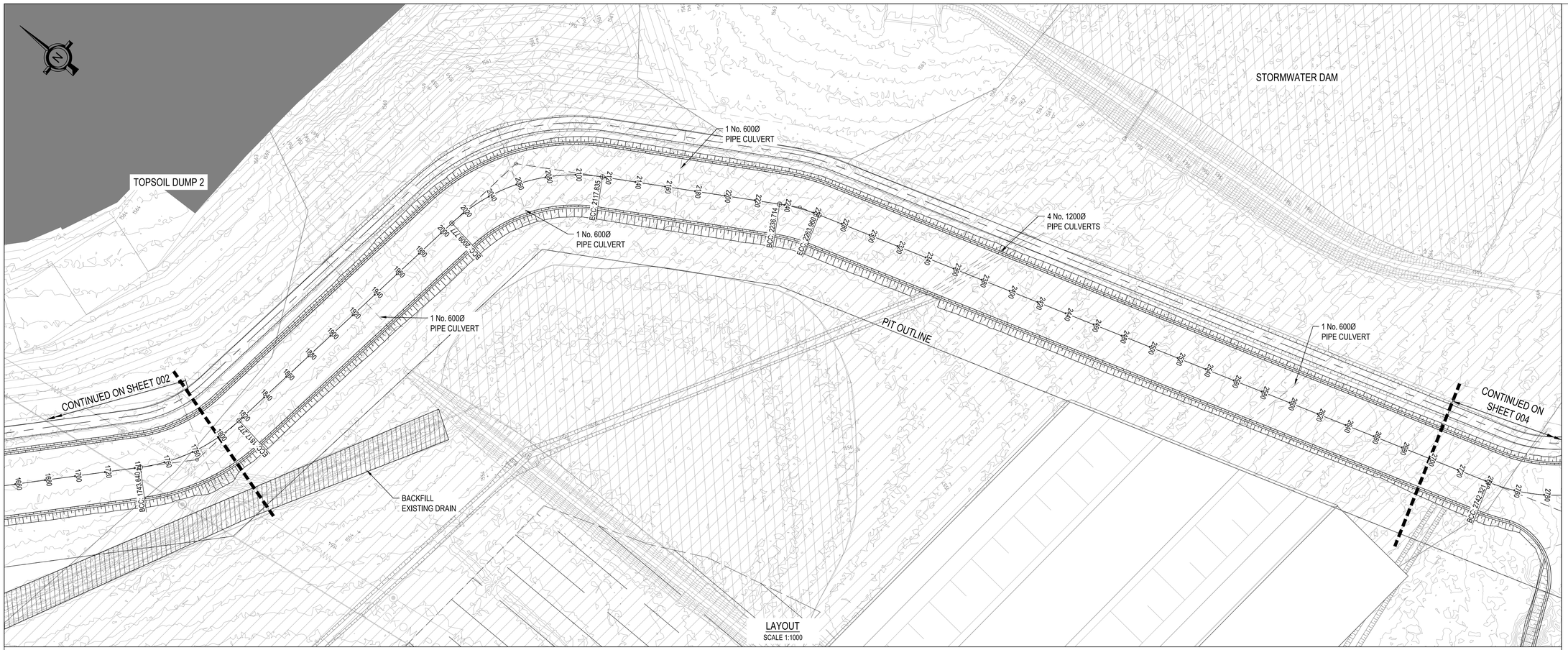
LAYOUT
SCALE 1:1000

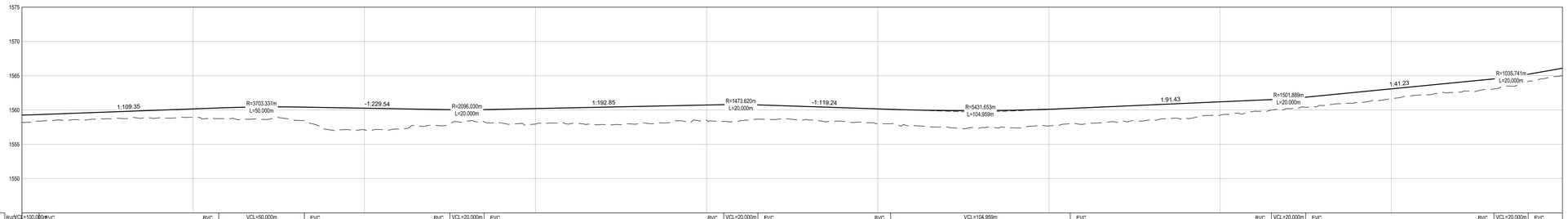


SCALES:
Horizontal 1:1000
Vertical 1:250

DATUM 1540.000

| | | |





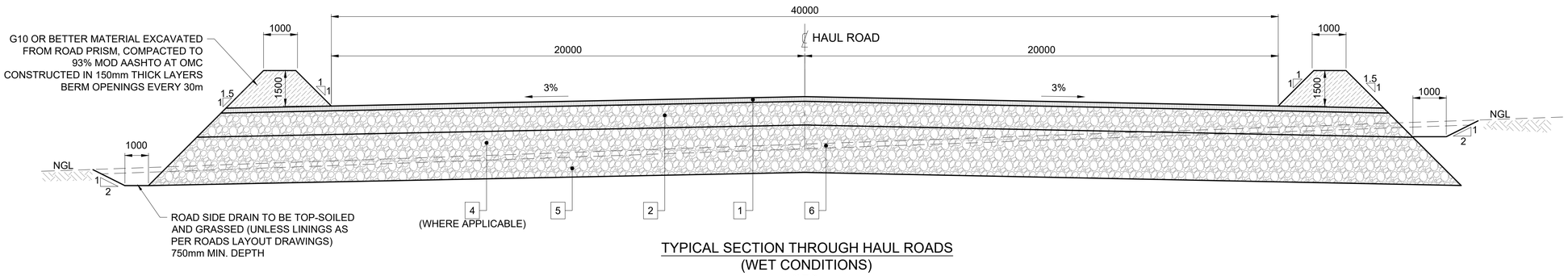
SCALES:
Horizontal 1:1000
Vertical 1:250

DATUM 1545.000

VERTICAL PROFILE GRADES

BVCVCL=100.000m K=65 EVC 1810.000 — 1760.000 — 1558.884 — 0.914% — BVC 1915.000 VCL=50.000m K=37 EVC 1965.000 — 1940.000 — 1560.530 — -0.436% — BVC 2050.000 VCL=20.000m K=21 EVC 2070.000 — 2060.000 — 1560.007 — 0.519% — BVC 2210.000 VCL=20.000m K=15 EVC 2230.000 — 2220.000 — 1560.837 — -0.839% — BVC 2307.520 VCL=104.959m K=54 EVC 2412.480 — 2360.000 — 1559.663 — 1.094% — BVC 2530.000 VCL=20.000m K=15 EVC 2550.000 — 2540.000 — 1561.632 — 2.425% — BVC 2660.000 VCL=20.000m K=10 EVC 2680.000 — 2670.000 — 1564.784 — 4.356%

| | | |



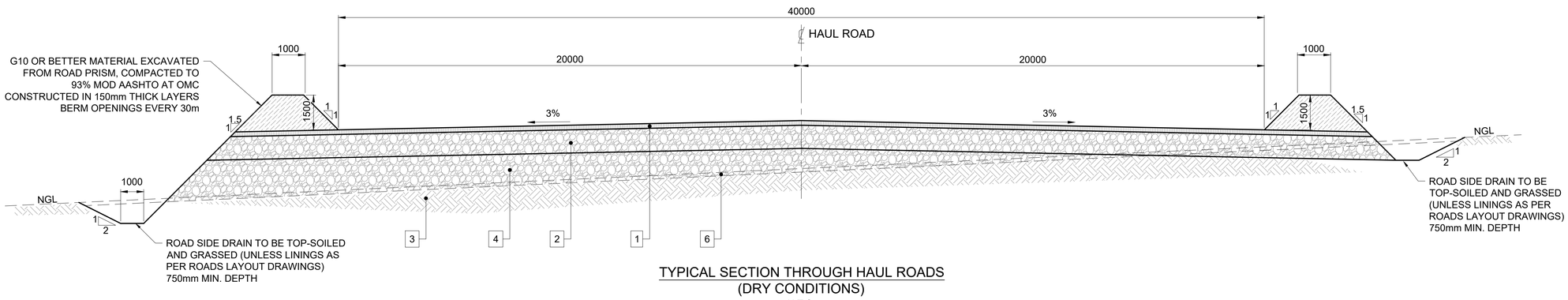
TYPICAL SECTION THROUGH HAUL ROADS
(WET CONDITIONS)
N.T.S.

HAUL ROADS - LAYERWORKS

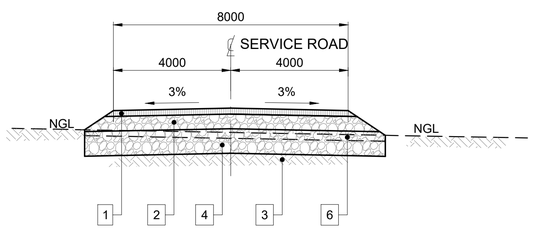
1. 200mm THICK WEARING COURSE CONSISTING OF SELECTED G7 MATERIAL FROM ROAD PRISM, STOCKPILES OR OTHER EXCAVATIONS. TREATED WITH AN APPLICATION RATE OF 4.5l/m² BITUMEN BINDER (TBC) COMPACTED TO 98% MOD AASHTO AT OMC
2. 1000mm THICK MINIMUM BASE, LAYER CONSTRUCTED IN 500mm LAYERS MAXIMUM FROM SELECTED NON-CARBANACIOUS DUMP ROCK MATERIAL FROM DESIGNATED STOCKPILES ON SITE, COMPACTED TO ROCK COMPACTION SPECIFICATION (TOP SIZE = 300mm)
3. 200mm THICK RIP, SCARIFY AND RE-COMPACT INSITU MATERIAL TO 93% MOD AASHTO AT OMC
4. FILL LAYERS SIMILAR TO LAYER 2, WHERE REQUIRED.
5. 2000mm THICK DUMP ROCK PIONEER LAYER (MAX), IN 500mm LAYERS MAXIMUM, COMPACTED TO ROCK COMPACTION SPECIFICATION. PIONEER LAYER TO BE CONSTRUCTED IN LAYERS ONLY UNTIL SETTLEMENT CRITERIA ARE MET AND CONTINUES AS PER LAYER 4 ABOVE.
6. 200mm TOPSOIL STRIP TO DESIGNATED STOCKPILE

DUMP ROCK COMPACTION SPECIFICATION

1. THE ROCK FILL SHALL BE SELECTED DUMP ROCK SOURCE APPROVED BY THE ENGINEER.
2. THE DUMP ROCK FILL SHALL CONTAIN SUFFICIENT FINES TO FILL THE VOIDS WITH A MINIMUM OF 25% OF PARTICLES SMALLER THAN 50mm DIAMETER.
3. THE MAXIMUM SIZE OF THE ROCK SHALL NOT EXCEED 300mm. THE LAYER THICKNESS SHALL NOT EXCEED 500mm.
4. THE ROCK FILL SHALL BE OFF-LOADED BY THE END-TIPPING METHOD. THE MATERIAL SHALL BE SPREAD AND LEVELED SO AS TO PROPERLY MIX THE FINE MATERIAL WITH THE ROCK. DURING THIS PROCESS WATER SHALL BE ADDED (SPRAYED OVER) AND MIXED INTO THE MATERIAL. THE AMOUNT OF WATER TO BE ADDED SHALL BE DETERMINED ON SITE TO PROVIDE THE BEST COMPACTION BY MEANS OF COMPACTION TRIALS.
5. COMPACTION SHALL BE DONE WITH A 20t VIBRATING ROLLER.
6. THE MINIMUM NUMBER OF PASSES OF THE VIBRATING ROLLER SHALL BE DETERMINED BY THE CONTRACTOR BY MEANS OF COMPACTION TRIALS MEASURING SETTLEMENT VERSUS THE NUMBER OF PASSES. THE NUMBER OF PASSES TO REDUCE SETTLEMENT BETWEEN PASSES TO THE LESSER OF 2,5mm OR 0,5% OF THE LAYER THICKNESS WILL BE THE MINIMUM NUMBER OF PASSES REQUIRED PER LAYER.
7. ONE PASS SHALL MEAN THE TRAVEL BACK AND FORTH OF THE ROLLER.
8. A DETAILED BACKFILLING METHOD STATEMENT IS TO BE PROVIDED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.



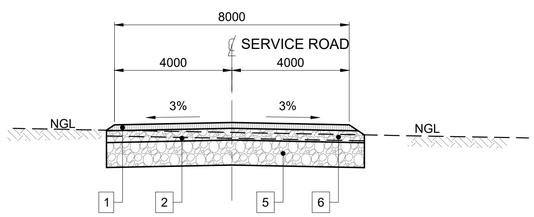
TYPICAL SECTION THROUGH HAUL ROADS
(DRY CONDITIONS)
N.T.S.



TYPICAL SECTION THROUGH SERVICE ROADS
(DRY CONDITIONS)
N.T.S.

SERVICE ROADS - LAYERWORKS

1. 200mm THICK WEARING COURSE CONSISTING OF SELECTED G7 MATERIAL FROM ROAD PRISM, STOCKPILES OR OTHER EXCAVATIONS. TREATED WITH AN APPLICATION RATE OF 4.5l/m² BITUMEN BINDER (TBC) COMPACTED TO 98% MOD AASHTO AT OMC
2. 500mm THICK MINIMUM, BASE LAYER FROM SELECTED NON-CARBANACIOUS DUMP ROCK MATERIAL FROM DESIGNATED STOCKPILES ON SITE, COMPACTED TO ROCK COMPACTION SPECIFICATION (TOP SIZE = 300mm)
3. 200mm THICK RIP, SCARIFY AND RE-COMPACT INSITU MATERIAL TO 93% MOD AASHTO AT OMC
4. FILL LAYERS SIMILAR TO LAYER 2, WHERE REQUIRED.
5. 2000mm THICK DUMP ROCK PIONEER LAYER (MAX), IN 500mm LAYERS MAXIMUM, COMPACTED TO ROCK COMPACTION SPECIFICATION. PIONEER LAYER TO BE CONSTRUCTED IN LAYERS ONLY UNTIL SETTLEMENT CRITERIA ARE MET AND CONTINUES AS PER LAYER 4 ABOVE.
6. 200mm TOPSOIL STRIP TO DESIGNATED STOCKPILE



TYPICAL SECTION THROUGH SERVICE ROADS
(WET CONDITIONS)
N.T.S.

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS SIGNED BY PROFESSIONAL ENGINEER / TECHNOLOGIST

DESIGNED, DRAWN AND ISSUED BY:

Professional Engineer/ Technologist :-.....

Reg. No. :-..... Rev. :-.....

SOUTH32
VDDC PROJECT
FEASIBILITY STUDY

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DRAWING No.	REFERENCE DRAWINGS	REV No.	DATE	REVISIONS	BY	CHK	S.Ldr	ENG
C00820 05AB CI DGA 0001 001	OVERALL ROADS LAYOUT	0	27/08/19	ISSUED FOR USE	NM			
C00820 05AB CI DGA 0002 001	EAST HAUL ROAD - LAYOUT & LONG SECTION							
C00820 05AB CI DGA 0003 001	WEST HAUL ROAD - LAYOUT & LONG SECTION							
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CLIENT	NAME	DATE	WORLEY	NAME	DATE	WORLEY	NAME	DATE
Lead Engineer			Piping Engineer			Drawn By	NM	25.5.2019
Project Manager			Process Engineer			Checked By	L.P.	29.5.2019
			Struct/Civil Engineer			Project S/Leader		
			Engineering Manager			Electrical Engineer		
			Project Manager			Instrument Engineer		
						Mechanical Engineer		
						Mining Engineer		

VDDC PROJECT - FEASIBILITY
SITE INFRASTRUCTURE
ROADS
TYPICAL CROSS SECTIONS

CLIENT DRAWING NUMBER	SHEET SIZE	SCALE
.	A1	AS SHOWN

PROJECT No	WBS	DISC	DWG ID	DOC ID.	SHEET	REV
C00820	05AB	CI	DSE	0001	001	0

DATE 2019/08/28
USER NAME noel.peneto.mphothulo
LOCATION C:\WORKING FOLDER\C00820 ISOUTH32 VDDC PROJECT FS\V05 - INFRASTRUCTURE\V05AB - ROADS\V01 - CIVIL\C00820 05AB CI DSE 0001 001 REV0_ROADS SECTS.DWG