


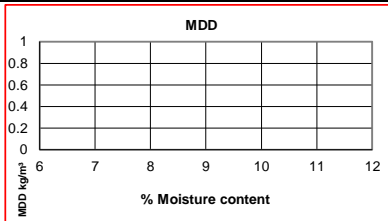
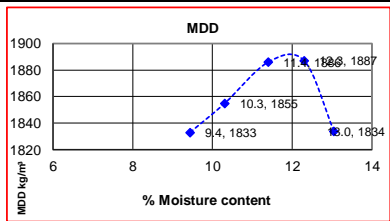
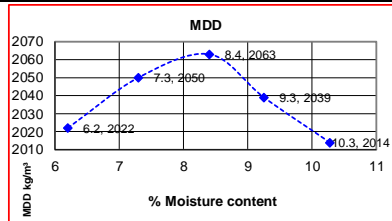

 EARTHINVLAB	EARTH INVESTIGATION LABORATORIES Plot 209 Tienie Street, Andeon AH, Zandfontein, 0183 P.O. Box 2856, Rosslyn, 0200 Tel: +27 (0)12 372 3023 Fax: +27 (0)86 241 3304 e-mail: admin@earthinv.co.za		
		TEST REPORT	
		REPORT #	EIL-398-05-01

CLIENT INFORMATION			
Client Name:	MMK	Client Number:	398
Address:	Suite 11, Hillcrest Park 2 Old Main Hillcrest	Project Name:	Work Package 4(High Wycombe Road To Roger Shishi Road)
Primary Contact Person:	Sachin Kistasamy	Telephone Number:	031 765 7752
Primary Contact email:	sachin.kistasamy@mmkengineers.co.za	Fax Number:	0


SAMPLES/JOB INFORMATION			
Date Sampled:	03-Nov-23	Date Received:	03-Nov-23
Sampler:	EIL	Date Tested:	04-Nov-23
Sample Location:		Date Reported:	28-Nov-23
Sample Method:	TMH 5 MA 2	Tests Conducted At:	Earthinv Main Lab
Sample Condition:		Report Status:	Final

TEST RESULTS SUMMARY			
Test (s) Methods References	Test Method(s) Description (s)	Qty	Test Conducted by.
SANS 3001 - GR 1:2013	Wet preparation & particle size analysis	5	Earthinv Main Lab
SANS 3001 - GR 3:2014#	Particle size analysis of material smaller than 2mm (hydrometer method)	5	Earthinv Main Lab
SANS 3001 - GR 10:2013	Determination of the one-point liquid limit, plastic limit, plasticity index & linear shrinkage	5	Earthinv Main Lab
SANS 3001 - GR 30:2013	Determination of the max. dry density & opt. MC	4	Earthinv Main Lab
SANS 3001 - GR 40:2013	Determination of the CBR	4	Earthinv Main Lab
TMH 1 A20 T#	The electronic determination of the pH value of soil suspension	2	Earthinv Main Lab
TMH 1 A21#	Tentative method for the determination of conductivity of a saturated soil paste & water	2	Earthinv Main Lab
-			-

TEST RESULTS NOTES
<p>Tests Deviations and Subcontracting - Test deviations indicated if any on the report and clearly communicated to Client.</p> <p>Documents Reproduction - If a report is published or reproduced by the client, it will be done in full, without any omission.</p> <p>Report Status - Only final status results are to be good for publication.</p> <p>Samples Received and Results Relation - Test results relate to sample received and to conditions thereof on receipt</p> <p>Samples Retainment - If not specified by the Client, samples will be disposed off as per the Laboratories discretion</p> <p>Opinions & Recommendations: Opinions & recommendations do not form part of the Labs accreditation schedule</p> <p>SANAS accreditation - Tests results marked # in this report are not included in the SANAS schedule of Accreditation for the Lab.</p>
 <div style="text-align: right;">Page 1 of 6</div>

 EARTHINVLAB		Earth Inv Lab FINAL REPORT (GRAD, ATT, MDD, CBR)																	
CLIENT		MMK				MMK				MMK									
PROJECT:		Work Package 4(High Wycombe Road To Roger Shishi Road)				Work Package 4(High Wycombe Road To Roger Shishi Road)				Work Package 4(High Wycombe Road To Roger Shishi Road)									
REPORT #		EIL-398-05-01				EIL-398-05-01				EIL-398-05-01									
SAMPLE #		14252				14244				14243									
POSITION:		TP 01(0.0km)High Wycombe road				TP 02(0.35km)High Wycombe road				TP 04(1.0km)Marlowe road									
DEPTH:		1.2-2.8 m				0.7-3.0 m				0.0-1.0 m									
DATE:		14-Nov-23				14-Nov-23				14-Nov-23									
Description of Material		Light grey silty clay				Dark orange silty sand				Dark brown gravelly sand									
SIEVE ANALYSIS																			
SIEVE SIZE (mm)																			
P A S S I N G	100.0	100				100				100									
	75.0	100				100				100									
	63.0	100				100				100									
	50.0	100				100				100									
	37.5	100				100				100									
	28.0	100				100				100									
	20.0	100				100				100									
	14.0	100				100				97									
	5.0	100				100				90									
	2.0	99				99				85									
	0.425	75				74				54									
	0.075	45				22				12									
Grading Modulus (GM)		0.81				1.04				1.49									
SOIL MOTAR																			
2.0 - 0.425		24				25				37									
0.425 - 0.250		17				30				28									
0.250 - 0.150		8				15				14									
0.150 - 0.075		5				8				6									
< 0.075		30				53				49									
ATTERBERG CONSTANTS																			
Plasticity Index (PI)		6				2				NP									
Linear Shrinkage (LS)		3.4				1.7				0.0									
Liquid Limit (LL)		49				32													
AASHTO Soil Classification		A-5				A-2-4				A-2-4									
TRH 14 Classification		-				G8				G6									
COTO Classification																			
MDD DATA																			
																			
Wet Density (kg/m³)						2101	2119	2079	2047	2006		2147	2200	2237	2228	2221			
Dry Density(kg/m³)						1886	1887	1834	1855	1833		2022	2050	2063	2039	2014			
Moisture Content (%)						11.4	12.3	13.4	10.3	9.4		6.2	7.3	8.4	9.3	10.3			
MDD (kg/m³)					OMC %			1887		OMC %	12.3			2063		OMC%	8.4		
CBR DATA																			
Specimen						Specimen A		Specimen B		Specimen C		Specimen A		Specimen B		Specimen C			
Wet Density (kg/m³)						2123		2021		1916		2242		2128		2013			
Dry Density(kg/m³)						1889		1800		1706		2070		1963		1862			
Moisture Content (%)						12.4		12.3		12.3		8.3		8.4		8.1			
% Compaction Calculated						100.1		95.4		90.4		100.4		95.1		90.3			
CBR %						30.1		21.6		7.1		82.4		47.1		22.6			
% Swell Calculated						0.35		0.49		0.69		0.01		0.06		0.10			
Compaction %		100	98	97	95	93	90	100	98	97	95	93	90	100	98	97	95	93	90
CBR Values								30	26	24	20	15	6	80	66	60	47	36	21
Remarks:																			
																			


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<div> EARTHINVLAB</div>		<div>Earth Inv Lab</div> <div>FINAL REPORT</div> <div>(HYDROMETER ANALYSIS)</div>					
CLIENT:		MMK		MMK		MMK	
PROJECT:		Work Package 4(High Wycombe Road To Roger Shishi Road)		Work Package 4(High Wycombe Road To Roger Shishi Road)		Work Package 4(High Wycombe Road To Roger Shishi Road)	
REPORT #		EIL-398-05-01		EIL-398-05-01		EIL-398-05-01	
SAMPLE #		14252		14244		14243	
POSITION:		TP 01(0.0km)High Wycombe road ■		TP 02(0.35km)High Wycombe road ▲		TP 04(1.0km)Marlowe road ●	
DEPTH:		1.2-2.8 m		0.7-3.0 m		0.0-1.0 m	
DATE:		14-Nov-2023		14-Nov-2023		14-Nov-2023	


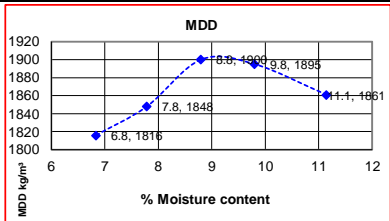
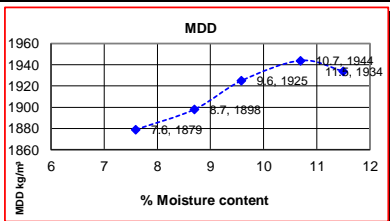
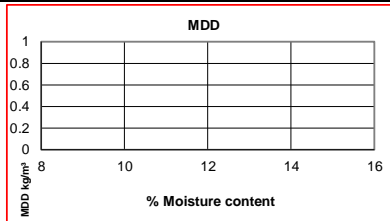

Potential Expansiveness

Plasticity Chart





<div>GRADING ANALYSIS</div>		<div>GRADING ANALYSIS</div>		<div>GRADING ANALYSIS</div>			
Description of Material		Light grey silty clay		Dark orange silty sand		Dark brown gravelly sand	
HYDROMETER ANALYSIS							
% Passing	100.0	100	100	100	100	100	100
	75.0	100	100	100	100	100	100
	63.0	100	100	100	100	100	100
	50.0	100	100	100	100	100	100
	37.5	100	100	100	100	100	100
	28.0	100	100	100	100	100	100
	20.0	100	100	100	100	100	100
	14.0	100	100	100	100	97	100
	5.0	100	100	100	100	90	100
	2.0	99	99	99	99	85	100
	0.425	75	74	74	54	85	100
	0.075	45	22	22	12	12	100
	0.06	32	18	18	12	12	100
	0.02	29	16	16	9	9	100
0.006	22	12	12	7	7	100	
0.002	12	9	9	5	5	100	
Course Sand	2.0-0.425	24.5	24.8	24.8	37.0	37.0	100
Fine Sand	0.425-0.05	75.5	58.7	58.7	51.6	51.6	100
Silt	0.05-0.005	0.0	3.8	3.8	3.1	3.1	100
Clay	0.005-0.002	0.0	3.8	3.8	2.5	2.5	100
Expansive Clay	<0.002	0.0	9.0	9.0	5.7	5.7	100
Total % silt & clay in sample		0.0	16.4	16.4	9.6	9.6	100
% Passing 0.075 mm in sample		0.0	18.6	18.6	11.8	11.8	100
ACTIVITY CLASSIFICATION							
Overall PI		4.79		1.81		NP	
Activity Classification							



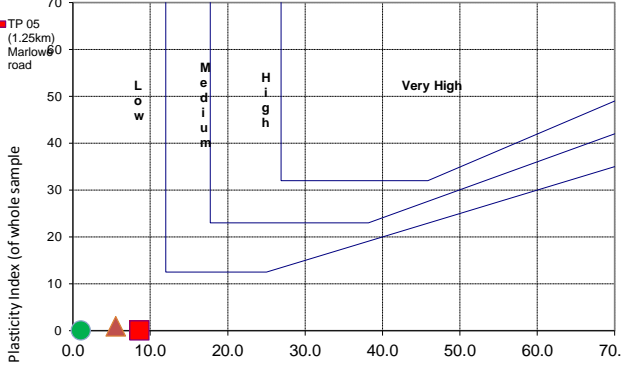
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 EARTHINVLAB		Earth Inv Lab FINAL REPORT (GRAD, ATT, MDD, CBR)																
CLIENT	MMK					MMK												
PROJECT:	Work Package 4(High Wycombe Road To Roger Shishi Road)					Work Package 4(High Wycombe Road To Roger Shishi Road)												
REPORT #	EIL-398-05-01					EIL-398-05-01												
SAMPLE #	14245					14241												
POSITION:	TP 05 (1.25km)Marlowe road					TP 06 (1.55 km)Marlowe road												
DEPTH:	0.6-1.9 m					0.35-1.65 m												
DATE:	14-Nov-23					15-Nov-23												
Description of Material		Reddish brown silty sand					Purble silty sand											
SIEVE ANALYSIS																		
SIEVE SIZE (mm)																		
P A S S I N G	100.0	100					100											
	75.0	100					100											
	63.0	100					100											
	50.0	100					100											
	37.5	100					100											
	28.0	100					100											
	20.0	100					100											
	14.0	100					100											
	5.0	98					94											
	2.0	95					84											
	0.425	68					36											
	0.075	19					11											
Grading Modulus (GM)		1.17					1.70											
SOIL MOTAR																		
2.0 - 0.425		29					57											
0.425 - 0.250		25					19											
0.250 - 0.150		17					6											
0.150 - 0.075		8					3											
< 0.075		51					30											
ATTERBERG CONSTANTS																		
Plasticity Index (PI)		NP					3											
Linear Shrinkage (LS)		-					1.9											
Liquid Limit (LL)		30					32											
AASHTO Soil Classification		A-2-4					A-2-4											
TRH 14 Classification		G9					G7											
COTO Classification																		
MDD DATA																		
																		
Wet Density (kg/m³)	2067	2081	2062	1992	1940		2022	2063	2109	2152	2156							
Dry Density(kg/m³)	1900	1895	1861	1848	1816		1879	1898	1925	1944	1934							
Moisture Content (%)	8.8	9.8	10.8	7.8	6.8		7.6	8.7	9.6	10.7	11.5							
MDD (kg/m³)	1900		OMC %		8.8		1944		OMC %		10.7			OMC%				
CBR DATA																		
Specimen	Specimen A		Specimen B		Specimen C		Specimen A		Specimen B		Specimen C							
Wet Density (kg/m³)	2076		1968		1867		2161		2047		1889							
Dry Density(kg/m³)	1906		1809		1718		1951		1849		1737							
Moisture Content (%)	8.9		8.8		8.7		10.8		10.7		8.7							
% Compaction Calculated	100.3		95.2		90.4		100.3		95.1		89.4							
CBR %	43.2		24.2		8.5		67.7		31.1		12.5							
% Swell Calculated	0.88		0.55		0.14		0.02		0.06		0.09							
Compaction %	100	98	97	95	93	90	100	98	97	95	93	90	100	98	97	95	93	90
CBR Values	42	35	31	24	17	7	66	52	44	31	24	14						
Remarks:																		
																		

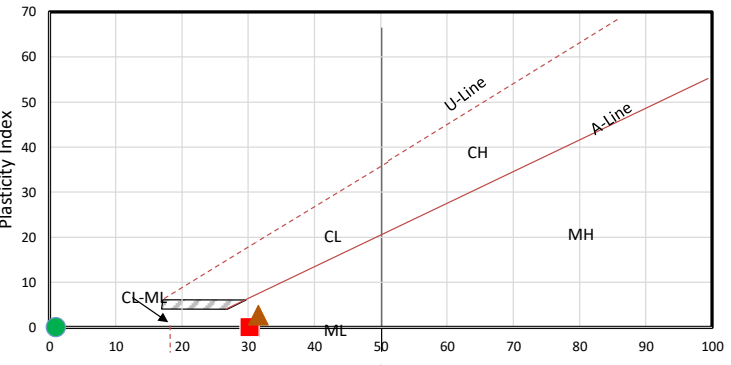
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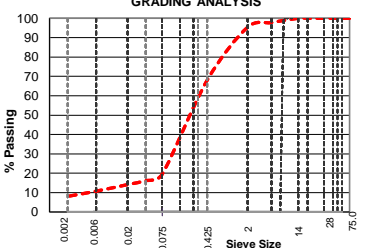
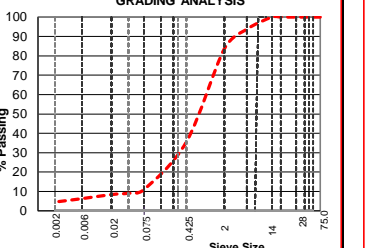
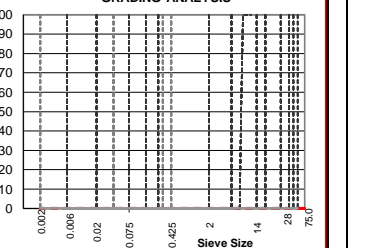
 EARTHINVLAB		Earth Inv Lab FINAL REPORT (HYDROMETER ANALYSIS)	
CLIENT:	MMK	MMK	
PROJECT:	Work Package 4(High Wycombe Road To Roger Shishi Road)	Work Package 4(High Wycombe Road To Roger Shishi Road)	
REPORT #	EIL-398-05-01	EIL-398-05-01	
SAMPLE #	14245	14241	
POSITION:	TP 05 (1.25km)Marlowe road 	TP 06 (1.55 km)Marlowe road 	
DEPTH:	0.6-1.9 m	0.35-1.65 m	
DATE:	14-Nov-2023	14-Nov-2023	


Potential Expansiveness




Plasticity Chart



<p>GRADING ANALYSIS</p> 		<p>GRADING ANALYSIS</p> 		<p>GRADING ANALYSIS</p> 	
Description of Material		Reddish brown silty sand		Purple silty sand	
HYDROMETER ANALYSIS					
% Passing	100.0	100		100	
	75.0	100		100	
	63.0	100		100	
	50.0	100		100	
	37.5	100		100	
	28.0	100		100	
	20.0	100		100	
	14.0	100		100	
	5.0	98		94	
	2.0	95		84	
	0.425	68		36	
	0.075	19		11	
	0.06	16		9	
	0.02	14		8	
0.006	11		6		
0.002	8		5		
Course Sand	2.0-0.425	28.6		57.5	
Fine Sand	0.425-0.05	56.4		32.3	
Silt	0.05-0.005	3.6		2.6	
Clay	0.005-0.002	2.9		2.1	
Expansive Clay	<0.002	8.6		5.5	
Total % silt & clay in sample		14.3		8.5	
% Passing 0.075 mm in sample		16.3		9.2	
ACTIVITY CLASSIFICATION					
Overall PI		NP		0.95	
Activity Classification					



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		<div>Earth Inv Lab</div> <div>FINAL REPORT</div> <div>(pH & Conductivity)</div>			
<div>CLIENT</div> <div>PROJECT:</div> <div>REPORT #</div> <div>DATE:</div>		MMK			
		Work Package 4(High Wycombe Road To Roger Shishi Road)			
		EIL-398-05-01			
		15-Nov-23			
Sample No.	Tp No.	Depth (m)	Description	pH	Conductivity S/m
14244	2	0.7-3.0	Dark orange silty sand	6.2	0.013
14245	5	0.6-1.9	Reddish brown silty sand	6.3	0.035
Remarks:					
<div>Page 6 of 6</div>					