Ref: CWWDA/AFD/PQ/W4/2022-2023/75

Date: 1st October,2024

To: Prequalified Contractors,

RE: LOT 1 – CONSTRUCTION OF THE MWACHE TRUNK MAIN (SECTION 1), SOUTH MAINLAND TRANSMISSION MAIN AND DONGO KUNDU RESERVOIR

GEOTECHNICAL INVESTIGATION REPORT - TL

Further to the Invitation for Bids issued on 19th August 2024 for the above referenced Contract, please find a Geotechnical Investigation Report for **Lot 1 – Construction of The Mwache Trunk Main (Section 1), South Mainland Transmission Main and Dongo Kundu Reservoir** attached as additional information for your action.

ENG. DAVID KANUI
FOR: Ag. CHIEF EXECUTIVE OFFICER

Encl. Documents: *Geotechnical Investigation Report for Construction of the Mwache Trunk Main (Section 1), South Mainland Transmission Main and Dongo Kundu Reservoir (TL)*

P. O. Box 90417 - 80100
Mombasa Kenya

Tel: No. 041 - 2315230
0731 231523

Email: info@cwwda.go.ke
Website: www.cwwda.go.ke
complaints@cwwda.go.ke

Republic of Kenya
Coast Water Works Development Agency

IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA; MWACHE CKE 1103

Detailed Designs, Tender Documents, Safeguard Reports and Construction Supervision of Mwache Water Transmission Pipelines and Terminal Reservoirs

Contract No : CWSB/AFD/MWCE/C/3/2017

GEOTECHNICAL SURVEY REPORT

FEBRUARY 2022

ARTELIA

MIBP CONSULTING ENGINEERS

IMPROVEMENT OF DRINKING WATER AND SANITATION SYSTEMS IN MOMBASA; MWACHE CKE 1103
Detailed Designs, Tender Documents, Safeguard Reports and Construction Supervision of Mwache Water Transmission Pipelines and Terminal Reservoirs
REPUBLIC OF KENYA - COAST WATER WORKS DEVELOPMENT AGENCY

VERSION	DESCRIPTION	PREPARED BY	APPROVED BY	DATE
01	Geotechnical Survey Report	Dr. Zacharia Kuria	Bernard Danthon	10.02.22

ARTELIA - Water, Climate and Solid Waste
6 rue de Lorraine – 38130 Echirolles – FRANCE – TEL : +33 (0)4 76 33 40 00

MANGAT, I.B. PATEL LIMITED – Consulting Engineers
P.O. Box 48674, 00100 - GPO - Nairobi, KENYA – TEL: +254 20 2710500

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1 INTRODUCTION

1.1 PREAMBLE

Regional Geophysical Survey Limited (RGS) was engaged by Mangat I.B. Patel (MIBP) Limited to carry out geotechnical investigations (GI) in support of the proposed Mwache Water Transmission Pipelines Project traversing through Mombasa, Kilifi and Kwale Counties. The investigations were carried out on the proposed Trunk Main, Transmission Pipeline to South Mainland, North Mainland Transmission Pipeline as well as the Changamwe and West Mainland Transmission Pipelines.

The main purpose of the investigations was to identify and assess the geotechnical parameters of the subsurface materials along the pipeline routes and within the proposed reservoir sites to ascertain soil chemical properties affecting pipeline material selection as well as help in the safe design of foundations for anticipated structures at the reservoir sites.

Field survey work, which mainly consisted of: 9 No. exploratory boreholes (BH) and 134 No. trial excavations (TP), was executed in the period between 4th July 2021 and 14th October 2021. The field activities were carried out under the full-time supervision of an experienced geologist who also logged the recovered soil/rock material and collected representative samples for detailed examination and subsequent laboratory testing.

This report presents the results of the geotechnical investigation to determine the prevailing subsoil and ground water conditions along the pipeline routes and proposed reservoir sites, and based on this information, provides geotechnical recommendations as it relates to foundation design and general earthwork for the planned project.

1.2 OBJECTIVES

The following were the primary objectives of the Geotechnical Survey:

a) Determine the subsurface stratigraphy to the full depths of the borings and excavations.
b) Provide lithological descriptions of the stratigraphic units encountered in the boreholes and trial pits.
c) Evaluate the engineering characteristics of the subsurface materials through in-situ and laboratory tests.
d) Provide an interpretative geotechnical report of the pipeline sites.

1.3 SCOPE OF THE GEOTECHNICAL INVESTIGATIONS

To fulfil the abovementioned objectives, the completed scope of the investigation is as follows:

a) Drilling, testing, sampling and logging of 9 No. geotechnical boreholes to the various depths indicated on Table 1.
b) Excavation, sampling and logging 134 No. trial pits to the depths listed on Table 2.
c) Laboratory testing of representative soil and rock samples to acquire geotechnical parameters for comprehensive characterization of the materials.
d) Preparation of a detailed report that documents field methodologies, findings and provides clear geotechnical recommendations based on engineering analysis of the data, our experience and acceptable engineering practice.

1.4 SITE LOCATION

The planned pipeline routes traverse Mombasa, Kilifi and Kwale counties as indicated on the satellite image below. An enlarged version of the map is provided in **Appendix D.**

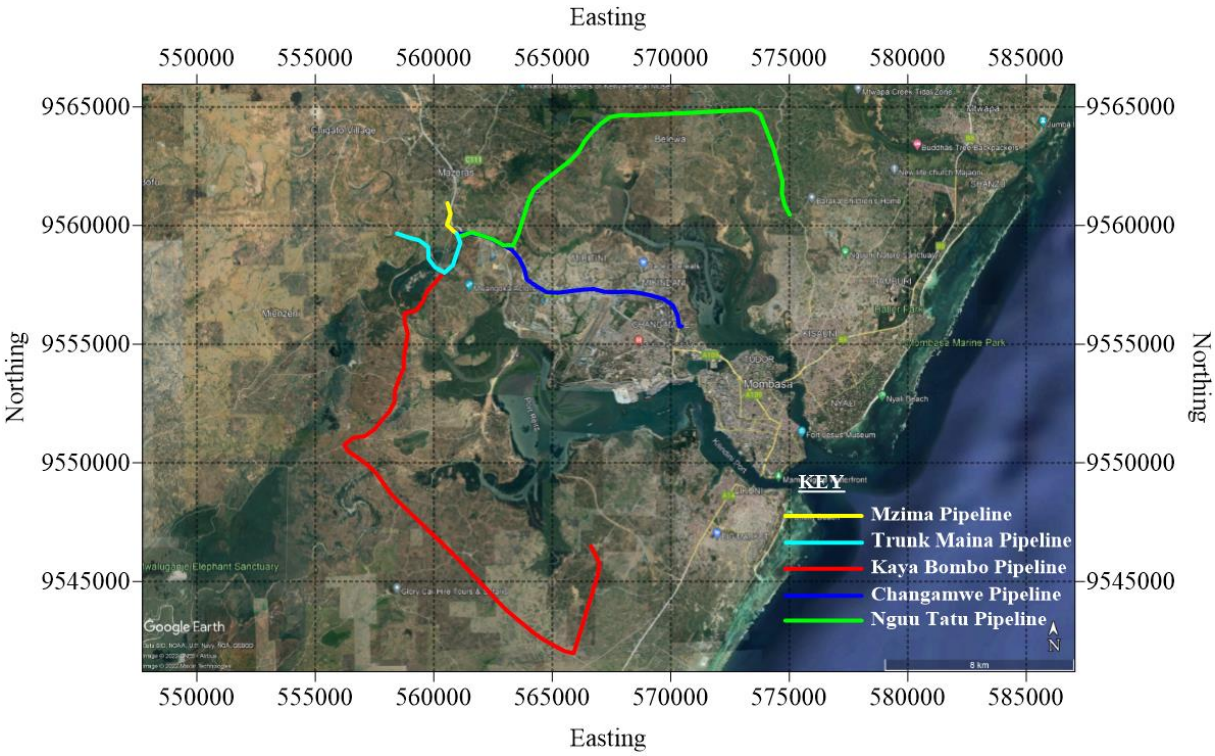


Figure 1 - Satellite Map of the Investigated Pipeline Routes

2 FIELDWORK

2.1 GENERAL

The requirements given in British Standard, BS 5930:15, were used as a guide for carrying out the field investigations.

2.2 SETTING OUT

The table below presents the placed coordinates and elevations at all surveyed points in Arc 1960 (Zone 37 S) coordinate projection system.

Table 1 - Coordinates and Depths of the Boreholes

Location	Hole ID	Depth (m)	Easting	Northing	Elevation (m)
West Main Land Tank	BH01	20	560969	9559696	109.7
West Main Land Tank	BH02	20	560996	9559688	105.5
Nguu Tatu Tank	BH01	20	575262	9560289	69.4
Nguu Tatu Tank	BH02	20	575293	9560265	65.9
Changamwe Tank	BH01	20	570463	9555652	61.1
Changamwe Tank	BH02	20	570494	9555676	60.3
Bonje Creek	BH01	30	558669	9556193	5.2
Bonje Creek	BH02	20	558617	9556133	13.6
Bonje Creek	BH03	20	558683	9556207	4.2

Table 2 - Coordinates and Depths of the Trial Pits

Pipeline	Trial Pit ID	Depth (m)	Easting	Northing	Elevation (m)
Nguu Tatu	TPKM 0+000	1.5	561128.339	9559559.194	89.489
Nguu Tatu	TPKM 0+500	1.5	561576.842	9559709.187	77.527
Nguu Tatu	TPKM 1+000	1.36	562042.978	9559571.988	71.998
Nguu Tatu	TPKM 1+500	1.2	562514.718	9559406.373	65.414
Nguu Tatu	TPKM 2+000	1.35	562949.633	9559164.007	60.571
Nguu Tatu	TPKM 2+500	1.1	563344.416	9559167.883	51.687
Nguu Tatu	TPKM 3+000	1.4	563556.784	9559619.200	26.523
Nguu Tatu	TPKM 3+500	1.6	563702.520	9560097.396	49.394
Nguu Tatu	TPKM 4+000	1.5	563854.974	9560573.582	59.032

Pipeline	Trial Pit ID	Depth (m)	Easting	Northing	Elevation (m)
Nguu Tatu	TPKM 4+500	1.5	564003.089	9561051.073	55.94
Nguu Tatu	TPKM 5+000	2.5	564214.159	9561500.368	63.773
Nguu Tatu	TPKM 5+500	1.7	564587.760	9561830.000	69.65
Nguu Tatu	TPKM 6+000	1.7	564984.847	9562133.829	59.707
Nguu Tatu	TPKM 6+500	1.2	565378.495	9562442.105	43.478
Nguu Tatu	TPKM 7+000	1.4	565769.700	9562753.478	61.19
Nguu Tatu	TPKM 7+500	1.3	566110.535	9563115.520	49.173
Nguu Tatu	TPKM 8+000	1.3	566356.213	9563550.084	29.194
Nguu Tatu	TPKM 8+500	1.7	566673.668	9563935.869	39.746
Nguu Tatu	TPKM 9+000	1.3	567032.428	9564284.135	24.472
Nguu Tatu	TPKM 9+500	1.4	567434.693	9564574.585	17.266
Nguu Tatu	TPKM 10+000	1.3	567919.518	9564655.431	21.521
Nguu Tatu	TPKM 10+500	1.3	568414.332	9564640.361	55.544
Nguu Tatu	TPKM 11+000	1.3	568913.795	9564663.532	59.219
Nguu Tatu	TPKM 11+500	1.2	569413.257	9564686.703	52.862
Nguu Tatu	TPKM 12+000	1.3	569912.720	9564709.874	52.478
Nguu Tatu	TPKM 12+500	1.25	570412.183	9564733.045	63.443
Nguu Tatu	TPKM 13+000	1.5	570911.646	9564756.216	60.326
Nguu Tatu	TPKM 13+500	2.1	571411.006	9564781.473	56.061
Nguu Tatu	TPKM 14+000	1.5	571910.324	9564807.579	23.000
Nguu Tatu	TPKM 14+500	1.7	572409.642	9564833.686	35.041
Nguu Tatu	TPKM 15+000	1.3	572908.960	9564859.793	30.11
Nguu Tatu	TPKM 15+500	1.3	573408.278	9564885.899	21.988
Nguu Tatu	TPKM 16+000	1.5	573768.771	9564697.089	23.559
Nguu Tatu	TPKM 16+500	1.8	573953.029	9564232.278	25.664
Nguu Tatu	TPKM 17+000	1.5	574137.286	9563767.468	20.967
Nguu Tatu	TPKM 17+500	1.3	574321.544	9563302.657	35.306
Nguu Tatu	TPKM 18+000	1.2	574453.700	9562820.588	51.448
Nguu Tatu	TPKM 18+500	1.5	574587.314	9562338.771	50.043

Pipeline	Trial Pit ID	Depth (m)	Easting	Northing	Elevation (m)
Nguu Tatu	TPKM 19+000	1.4	574710.660	9561862.273	44.123
Nguu Tatu	TPKM 19+500	1.1	574687.840	9561363.349	20.562
Nguu Tatu	TPKM 20+000	1.5	574796.479	9560881.795	28.627
Nguu Tatu	TPKM 20+500	1.0	575018.850	9560449.102	39.138
Kaya Bombo	TPKM 0+000	1.0	560381.075	9557980.280	76.302
Kaya Bombo	TPKM 0+500	1.1	560057.644	9557598.976	77.144
Kaya Bombo	TPKM 1+000	1.4	559718.992	9557231.558	67.657
Kaya Bombo	TPKM 1+500	1.3	559518.733	9556780.365	29.388
Kaya Bombo	TPKM 2+000	1.4	559252.784	9556424.651	45.657
Kaya Bombo	TPKM 2+500	2.0	558770.076	9556304.922	6.731
Kaya Bombo	TPKM 3+000	1.8	558772.413	9555900.643	21.153
Kaya Bombo	TPKM 3+500	1.6	558902.316	9555443.340	32.013
Kaya Bombo	TPKM 4+000	1.2	558816.063	9554951.481	27.832
Kaya Bombo	TPKM 4+500	1.4	558733.541	9554458.790	25.457
Kaya Bombo	TPKM 5+000	1.3	558719.007	9553959.655	42.014
Kaya Bombo	TPKM 5+500	1.3	558523.529	9553523.325	35.322
Kaya Bombo	TPKM 6+000	1.4	558356.799	9553051.943	35.78
Kaya Bombo	TPKM 6+500	1.7	558337.048	9552560.650	24.901
Kaya Bombo	TPKM 7+000	1.5	558113.947	9552151.468	21.386
Kaya Bombo	TPKM 7+500	1.5	557787.678	9551775.666	20.029
Kaya Bombo	TPKM 8+000	1.4	557472.642	9551393.282	36.677
Kaya Bombo	TPKM 8+500	1.2	557076.849	9551121.259	53.941
Kaya Bombo	TPKM 9+000	1.3	556583.663	9551053.702	60.228
Kaya Bombo	TPKM 9+500	1.5	556220.349	9550753.651	74.335
Kaya Bombo	TPKM 10+000	1.8	556404.063	9550469.292	55.511
Kaya Bombo	TPKM 10+500	1.7	556820.752	9550193.173	52.863
Kaya Bombo	TPKM 11+000	1.3	557222.097	9549894.997	33.692
Kaya Bombo	TPKM 11+500	2.0	557579.710	9549553.061	8.544

Pipeline	Trial Pit ID	Depth (m)	Easting	Northing	Elevation (m)
Kaya Bombo	TPKM 12+000	1.1	557867.579	9549144.244	22.697
Kaya Bombo	TPKM 12+500	0.8	558155.449	9548735.428	41.076
Kaya Bombo	TPKM 13+000	1.2	558498.485	9548374.088	52.177
Kaya Bombo	TPKM 13+500	2.5	558859.844	9548028.516	32.606
Kaya Bombo	TPKM 14+000	2.5	559221.202	9547682.943	21.429
Kaya Bombo	TPKM 14+500	2.5	559582.560	9547337.371	34.36
Kaya Bombo	TPKM 15+000	1.2	559943.919	9546991.799	33.461
Kaya Bombo	TPKM 15+500	1.2	560305.277	9546646.226	39.754
Kaya Bombo	TPKM 16+000	1.1	560666.635	9546300.654	64.824
Kaya Bombo	TPKM 16+500	1.4	561018.770	9545945.903	62.221
Kaya Bombo	TPKM 17+000	2.0	561362.588	9545582.876	44.953
Kaya Bombo	TPKM 17+500	1.5	561706.407	9545219.848	52.016
Kaya Bombo	TPKM 18+000	1.2	562050.225	9544856.821	35.205
Kaya Bombo	TPKM 18+500	1.7	562394.044	9544493.794	16.381
Kaya Bombo	TPKM 19+000	2.5	562730.305	9544124.080	20.456
Kaya Bombo	TPKM 19+500	2.0	563084.349	9543774.108	10.029
Kaya Bombo	TPKM 20+000	2.5	563468.943	9543454.596	12.526
Kaya Bombo	TPKM 20+500	2.5	563853.537	9543135.085	20.584
Kaya Bombo	TPKM 21+000	1.5	564238.131	9542815.574	33.144
Kaya Bombo	TPKM 21+500	1.6	564649.378	9542533.303	43.791
Kaya Bombo	TPKM 22+000	0.6	565085.156	9542294.764	67.529
Kaya Bombo	TPKM 22+500	1.4	565526.586	9542059.946	58.005
Kaya Bombo	TPKM 23+000	2.5	565902.679	9541983.870	43.105
Kaya Bombo	TPKM 23+500	1.5	566050.921	9542461.389	42.573
Kaya Bombo	TPKM 24+000	1.6	566199.162	9542938.908	42.782
Kaya Bombo	TPKM 24+500	2.5	566347.404	9543416.427	46.447
Kaya Bombo	TPKM 25+000	2.5	566495.645	9543893.946	47.259
Kaya Bombo	TPKM 25+500	2.5	566643.887	9544371.465	47.991
Kaya Bombo	TPKM 26+000	2.5	566784.654	9544850.974	46.459

Pipeline	Trial Pit ID	Depth (m)	Easting	Northing	Elevation (m)
Kaya Bombo	TPKM 26+500	2.5	566940.213	9545321.150	48.329
Kaya Bombo	TPKM 27+000	Not excavated	566976.026	9545792.259	52.575
Kaya Bombo	TPKM 27+500	Not excavated	566757.683	9546239.561	67.662
Kaya Bombo	TPKM 27+772.79	Not excavated	566627.239	9546479.145	74.351
Changamwe	TPKM 0+000	1.6	561022.064	9559654.454	98.206
Changamwe	TPKM 0+500	0.7	561485.873	9559673.546	77.439
Changamwe	TPKM 1+000	0.7	561948.790	9559596.426	80.546
Changamwe	TPKM 1+500	1.2	562420.260	9559430.846	63.912
Changamwe	TPKM 2+000	1.9	562863.302	9559204.599	62.486
Changamwe	TPKM 2+500	1.6	563293.800	9558975.812	41.000
Changamwe	TPKM 3+000	1.4	563614.648	9558594.567	67.951
Changamwe	TPKM 3+500	0.9	563817.834	9558165.118	69.690
Changamwe	TPKM 4+000	1.2	563921.594	9557724.701	63.538
Changamwe	TPKM 4+500	1.7	564333.712	9557441.908	67.911
Changamwe	TPKM 5+000	1.5	564761.976	9557188.436	60.756
Changamwe	TPKM 5+500	1.5	565258.036	9557168.892	62.144
Changamwe	TPKM 6+000	1.3	565753.654	9557234.946	65.174
Changamwe	TPKM 6+500	Not excavated	566249.906	9557294.573	64.334
Changamwe	TPKM 7+000	1.2	566748.990	9557324.640	65.031
Changamwe	TPKM 7+500	0.9	567224.493	9557205.019	62.001
Changamwe	TPKM 8+000	1.3	567722.502	9557193.290	60.000
Changamwe	TPKM 8+500	1.2	568222.161	9557211.743	62.037
Changamwe	TPKM 9+000	1.5	568714.885	9557152.827	60.929
Changamwe	TPKM 9+500	1.6	569203.297	9557045.802	54.997
Changamwe	TPKM 10+000	1.47	569682.997	9556907.820	47.543
Changamwe	TPKM 10+500	Not excavated	570096.316	9556632.796	61.136
Changamwe	TPKM 11+000	1.6	570289.064	9556206.973	60.858
Changamwe	TPKM 11+500	1.6	570344.581	9555755.090	64.336

Pipeline	Trial Pit ID	Depth (m)	Easting	Northing	Elevation (m)
Changamwe	TPKM 11+618.39	1.2	570462.902	9555759.178	67.540
Mzima	TPKM 0+000	1.4	560574.672	9560945.153	169.643
Mzima	TPKM 0+500	1.3	560703.016	9560502.148	129.880
Mzima	TPKM 1+000	Not excavated	560552.681	9560036.636	143.277
Mzima	TPKM 1+500	1.5	560841.455	9559755.106	126.145
Mzima	TPKM 1+740.59	1.3	560963.228	9559659.511	105.948
Trunk Main	TPKM 0+000	Not excavated	558445.352	9559667.758	115.407
Trunk Main	TPKM 0+500	Not excavated	558898.663	9559506.673	62.764
Trunk Main	TPKM 1+000	Not excavated	559378.746	9559380.926	49.502
Trunk Main	TPKM 1+500	1.0	559761.930	9559089.029	72.802
Trunk Main	TPKM 2+000	1.6	559778.695	9558597.605	84.874
Trunk Main	TPKM 2+500	1.6	560046.329	9558246.064	84.441
Trunk Main	TPKM 3+000	1.4	560446.624	9558010.895	65.331
Trunk Main	TPKM 3+500	1.4	560802.506	9558329.970	95.201
Trunk Main	TPKM 4+000	0.9	560960.508	9558804.349	96.000
Trunk Main	TPKM 4+500	1.0	561118.509	9559278.728	95.939
Trunk Main	TPKM 5+000	1.6	560967.225	9559658.242	105.310
Trunk Main	TPKM 5+005.51	1.8	560961.972	9559659.909	106.148

2.3 METHODOLOGY

2.3.1 Drilling

A GY-150 rotary drilling rig equipped with double tube barrels and SPT accessories was mobilized and used to advance the boreholes to the required depths. The drilling equipment also included a mud pump which was used to impel drilling water into the borehole to cool the diamond bit as it advanced through hard strata as well as flush out cuttings from the bottom of the borehole.

2.3.2 Standard Penetration Test (SPT)

Standard Penetration Tests (SPT) were performed in the soil layers encountered in the boreholes. The dynamic test entailed the driving of a split spoon sampler in to the soil layer at the bottom of the borehole by dropping a standard weight (63.5 kg) hammer through a standard distance (760 mm). This was followed

by recording of the number of blows (N) required to achieve 300 mm penetration (in 150 mm increments) after an initial seating drive of 150 mm or 25 blows, whichever was achieved first. In soils, the test was terminated when either of the following was achieved:

- The test drive (300 mm) was achieved,
- A limiting blow count of 50 (N=50) also referred to as penetration 'refusal'.

2.3.3 Borehole Sampling

i. Soil Sampling

Soil samples were recovered from the boreholes through auguring. The disturbed soil samples were collected into standard, moisture proof, sample bags that were labelled to indicate the project name, borehole number, depth of recovery and date of sampling.

ii. Rock Sampling

Rock cores were carefully extracted from the double tube, swivel type core barrels and placed into wooden core boxes ensuring that the depth orientation of each sample was maintained. The typical core box consisted of five grooves, each groove with adequate dimensions for containing one metre of the core section at full recovery. The core boxes were labelled to indicate the project name, borehole number, core runs and date of sampling. Photographs of the core boxes are provided in Appendix A.

2.3.4 Trial Pitting

The trial pits were all manually excavated using hand tools targeting a maximum depth of 2.5 m bgl or hard strata, whichever was reached first. Arisings from the excavations were piled at a safe distance away from the pit. The excavations were supervised by the field geologist who also logged the soils and collected representative samples for laboratory testing.

Bulk soil samples recovered from the pits were also collected in to standard sample bags and labelled as described in subsection 2.3.3.

After logging and sampling was complete the spoil was restored into the pits while ensuring that the various soil types were reinstated and compacted to maintain the original stratigraphic sequence.

2.3.5 Logging of Soils and Rocks

The recovered soils were visually and manually inspected by the geologist before being logged according to the soil logging manual provided in BS 5930:99. The geologist also carefully examined the rocks cores for any exposed minerals, cementation, weathering condition, fracture/jointing condition and the quantity and quality of recovery.

2.3.6 Soil Resistivity Test

Soil resistivity was investigated along the entire transmission line at preselected locations with station separation distance of 500m. The measuring procedure followed is as recommended by Standards as provided by DIN/VDE and IEEE Standards. The equipment used for data acquisition is ABEM LS.

The resistivity measurement were obtained using the four point Wenner method, where two current electrodes, generally referred to as C1 and C2, and two resistance electrodes to as P1 and P2, are present. The spacing between the electrodes is referred to as the "a" spacing. Current will be given to the "current electrodes" C1 and C2, and resistance (R) is read, by an instrument, between electrodes P1 and P2.

The resistivity of soil was be obtained using the following equation:

$$\rho = 2\pi aR$$

where:

ρ = resistivity (Ω·cm)

R = resistance (Ω)

a = spacing between electrodes

i. Preparation for Taking Measurements

The following equipment were availed to carry out the measurement:

- measuring instrument of four-terminal type;
- power supply with ampermeter and high-impedance voltmeter;
- ratio ohmmeter;
- double-balance transformer;
- four electrodes (length: approx. 50-70 cm);
- four flexible insulated measuring cables of 1 mm2 or 1.5 mm2 copper. Length of 2x50 and 2x25;
- non metallic tape measure of at least 50 meters length (shorter tape measures do require more time);
- miscellaneous tools for emergencies, e.g. hammer, cable stripper, combination pliers, screwdriver, etc.;
- writing material, calculator, test reports and evaluation diagrams;
- cord of 200 m length (for determining the measuring section).

ii. Measuring execution

For each performed test an appropriate log sheet (See Appendix E) was written with the following information:

- location;
- customer, project, test number;
- instrument type;
- measuring section;
- type of soil;
- soil condition during measurement;
- weather condition, temperature, time;
- supervisor, customer/consultant, dates.

The soil type and the soil conditions were described in detail. For measurement, the four electrodes are installed in the soil along one line, measuring section, with equal distance.

The electrodes connected with the instrument terminals in a logical order of succession. The measuring cables were routed with the distance between conductors and contact between cables avoided.

The measurement were terminated if the reading as per log sheet were acquired. On each point of measurement, readings were repeated with the "a" spacing indicated in the table:

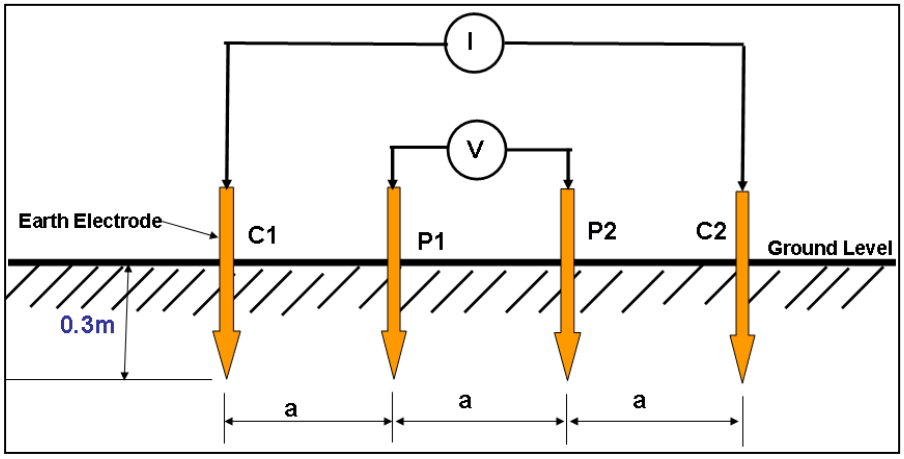


Figure 2: Wenner Method Test circuit arrangement

iii. Results of the soil resistivity test

Results along Kaya Bombo pipeline
The resistivity results along Kaya Bombo pipeline indicate high resistivity values from chainage km 0+000 to km 23+5000 ranging from 600-11,600Ωcm.

The section between chainage km 24+000 to km 27,000 is marked by very high resistity values ranging from 15,000 – 276,000Ωcm. This is indicative of pure sands.

Results along Kaya Nguu Tatu Pipeline
The resistivity values between km 0+500 and km 12,000 is indicative of relatively moderate resistivity values ranging from 1,000 – 3,000 Ωcm. High resistivity values (2,000-81,000 Ωcm) prevail in the section between km 12+500 to km 15,500. From km 16+500 to km 20+500 the resistivity values are rather moderate i.e. 1,000-2,000 Ωcm.

Results along Changamwe Pipeline
The resistivity values along the Changamwe pipeline (km 0+000 to km 11+500) are generally moderate ranging from 1,000 – 4,000 Ωcm.

Results along Trunk Pipeline
The resistivity values for the section between km 0+000 and km 2+000 varies abruptly with depth i.e. from upper a=0.67 to a=2m the resistivity values are very high 8,000 – 160,000 Ωcm. However, below this depth the resistivities are relatively moderate at 5,000-10,000 Ωcm.

The section between km 2+500 to km 3+500 has resistivity values ranging from 2,000-6,000 Ωcm.

Results along Mzima springs
The resistivity values along the entire Mzima Spring show a range between 6,000 – 33,000 Ωcm.

3 SUBSURFACE CONDITIONS

3.1 LIMITATIONS OF THE SAMPLING METHOD

Reference is to be made to the attached borehole and trial pit logs (Appendix B) while reading this section.

It should be noted that the subsurface conditions are confirmed at the borehole and trial pit locations only and that these conditions could vary between and beyond the investigated points. In addition, the boundaries between the various substrata, indicated on the borehole logs, have been determined from non-continuous sampling. In this regard, these boundaries should be interpreted as inferred transitions rather than exact planes of geologic change.

3.2 STRATIGRAPHY

The subsoil stratigraphy varies along the pipelines. The log data indicate that sands and clays are the prevalent soil types encountered along the pipeline routes. The bedrock along the pipelines is mainly of the shale formation.

4 ANALYSIS AND DISCUSSION OF TEST RESULTS

4.1 IN-SITU TESTS

4.1.1 Standard Penetration Test Results

The N-values from the SPT tests performed in the boreholes are tabulated below:

Table 3 – SPT N - Values

Location	Hole ID	Depth (m)		N-Value
		From	To	
West Main Land Tank	BH01	1.00	1.45	18
West Main Land Tank	BH01	2.00	2.45	22
West Main Land Tank	BH01	3.00	3.45	33
West Main Land Tank	BH01	4.00	4.45	37
West Main Land Tank	BH01	5.00	5.45	33
West Main Land Tank	BH01	6.00	6.45	40
West Main Land Tank	BH01	7.00	7.45	44
West Main Land Tank	BH02	1.00	1.45	21
West Main Land Tank	BH02	2.00	2.45	31
Changamwe	BH01	1.50	1.95	17
Changamwe	BH01	3.00	3.45	34
Changamwe	BH01	4.50	4.95	29
Changamwe	BH01	6.00	6.45	36
Changamwe	BH01	7.50	7.95	Refusal
Changamwe	BH01	9.00	9.45	Refusal
Changamwe	BH01	10.50	10.95	42
Changamwe	BH01	12.00	12.45	49
Changamwe	BH01	13.50	13.95	51
Changamwe	BH01	15.00	15.45	40
Changamwe	BH01	16.50	16.95	42
Changamwe	BH01	18.00	18.45	39
Changamwe	BH01	19.50	19.95	Refusal
Changamwe	BH02	1.50	1.95	34
Changamwe	BH02	3.00	3.45	30
Changamwe	BH02	4.50	4.95	44
Changamwe	BH02	6.00	6.45	Refusal
Changamwe	BH02	7.50	7.95	Refusal

Location	Hole ID	Depth (m)		N-Value
		From	To	
Changamwe	BH02	9.00	9.45	38
Changamwe	BH02	10.50	10.95	43
Changamwe	BH02	12.00	12.45	12
Changamwe	BH02	13.50	13.95	33
Changamwe	BH02	15.00	15.45	47
Changamwe	BH02	16.50	16.95	Refusal
Changamwe	BH02	18.00	18.45	38
Changamwe	BH02	19.50	19.95	Refusal
Bonje Creek	BH01	1.50	1.95	7
Bonje Creek	BH01	3.00	3.45	8
Bonje Creek	BH01	4.50	4.95	14
Bonje Creek	BH01	6.00	6.45	12
Bonje Creek	BH01	7.50	7.95	8
Bonje Creek	BH01	9.00	9.45	22
Bonje Creek	BH01	10.50	10.95	14
Bonje Creek	BH01	12.00	12.45	12
Bonje Creek	BH01	13.50	13.95	17
Bonje Creek	BH01	15.00	15.45	16
Bonje Creek	BH01	16.50	16.95	15
Bonje Creek	BH01	18.00	18.45	21
Bonje Creek	BH01	19.50	19.95	26
Bonje Creek	BH01	21.00	21.45	24
Bonje Creek	BH01	22.50	22.95	30
Bonje Creek	BH01	24.00	24.45	29
Bonje Creek	BH01	25.50	25.95	38
Bonje Creek	BH01	27.00	27.45	31
Bonje Creek	BH01	28.50	28.95	11
Bonje Creek	BH01	30.00	30.45	23
Bonje Creek	BH02	1.50	1.95	4
Bonje Creek	BH02	3.00	3.45	6
Bonje Creek	BH02	4.50	4.95	9
Bonje Creek	BH02	6.00	6.45	9
Bonje Creek	BH02	7.50	7.95	8
Bonje Creek	BH02	9.00	9.45	12
Bonje Creek	BH02	10.50	10.95	18

Location	Hole ID	Depth (m)		N-Value
		From	To	
Bonje Creek	BH02	12.00	12.45	16
Bonje Creek	BH02	13.50	13.95	21
Bonje Creek	BH02	15.00	15.45	17
Bonje Creek	BH02	16.50	16.95	26
Bonje Creek	BH02	18.00	18.45	25
Bonje Creek	BH02	19.50	19.95	23
Bonje Creek	BH03	1.50	1.95	12
Bonje Creek	BH03	3.00	3.45	7
Bonje Creek	BH03	4.50	4.95	9
Bonje Creek	BH03	6.00	6.45	13
Bonje Creek	BH03	7.50	7.95	14
Bonje Creek	BH03	9.00	9.45	18
Bonje Creek	BH03	10.50	10.95	17
Bonje Creek	BH03	12.00	12.45	22
Bonje Creek	BH03	13.50	13.95	29
Bonje Creek	BH03	15.00	15.45	Refusal

4.2 LABORATORY TESTS

For the purposes of discussion, the following subsections highlight/summarize the key soil and rock parameters determined through laboratory testing. Comprehensive backup data sheets are provided in Appendix C and should be frequently referred to when reading this section.

The laboratory tests were conducted to conform to the respective standard codes indicated on Table 4 below. Any alterations/modifications of the prescribed standard methods of testing due to specimen-based limitations are clearly outlined.

Table 4 - Laboratory Tests Performed on Soil and Rock Samples

Material	Test	Standard Code	No. of Tests
Soil	Atterberg Limits	BS 1377-2: 90	125
	Particle Size Distribution	BS 1377-2: 90	125
	Specific Gravity	BS 1377-2: 90	125
	Natural Moisture Content	BS 1377-2: 90	20
	Standard Proctor Compaction	BS 1377-4: 90	35
	Unconsolidated Undrained (UU) Triaxial Test	BS 1377-8: 90	30
	Direct Shear Test (Consolidated)	BS 1377-7: 90	30

Material	Test	Standard Code	No. of Tests
	One-Dimensional Consolidation	BS 1377-5: 90	35
	Chemical Test (pH, Sulphates and Chlorides)	BS 1377-3: 90	125
Rock	Porosity (Aggregates)	ASTM C97-83	12
	Specific Gravity and Water Absorption (Aggregates)	BS 1377-6: 90	125
	Unconfined Compressive Strength (UCS) of Rocks	ASTM D7012-04	3
	Point Load Strength Index	ASTM D5731-02	9

4.2.1 Atterberg Limits

The Atterberg tests were performed to investigate whether the soils at the site exhibit the proper consistency to support the proposed structure even as their moisture levels change. Atterberg limit tests are classification tests that determine the liquid limit (LL) and plastic limit (PI) of the soil fraction finer than the No. 40 (0.425 mm) sieve.

A cone penetrometer, which correlates liquid limit to the penetration of a freely falling calibrated cone, was used to determine the liquid limits of the soil specimens. The plastic limit was determined by measuring the water content when threads of soil (25 mm in diameter) began to crumble. The plasticity index, defined as the difference between the liquid and plastic limits, indicates the degree of plasticity or the magnitude of the water content over which the soil remains plastic.

The Atterberg parameters are summarized in Table 5.

4.2.2 Particle Size Distribution

Particle size distribution analysis evaluates the relative portions of different sizes of soil particles. From this, it is possible to determine whether the soil consists of predominantly gravel, sand, silt or clay sizes and, to a limited extent, which of these size ranges is likely to control the engineering properties of the soil.

Disturbed soil samples from the boreholes were analyzed for particle size distribution through wet sieving and sedimentation analysis using the hydrometer to enable the plotting of a continuous grading curve from the size of the coarsest particles down to clay sizes.

Table 5 lists the percentage fines confirmed in each test sample.

4.2.3 Soil Classification

The key objective of performing both Atterberg and grading tests on the same soil samples is to facilitate classification of the soils according to the Unified Soil Classification System (USCS).

Firstly, soils constituting 50% fines or greater are categorized as fine-grained soils while those with fine content less than 50% as coarse-grained. The ‘fines’ in this case refers to percentage of material passing the 0.075 mm sieve.

Afterwards, the Atterberg parameters (PI and LL) of the soil specimens are plotted on the subsequently appended, USCS plasticity chart and inspected relative to the "A" line (i.e. above or below) to determine their full identity.

The table below presents a summary of the soil classification based on USCS:

Table 5 - USCS soil classification

Location	Survey Point	Depth (m)		Fines (%)	PI (%)	LL (%)	LS (%)	USCS Classification	
		From	To					Name	Sym.
Bonje Creek	BH01	3.00	4.00	61.4	10.6	28.4	5.0	Sandy Lean Clay	CL
Bonje Creek	BH01	7.00	8.00	89.9	21.5	43.6	10.4	Lean Clay	CL
Bonje Creek	BH01	12.00	13.00	32.7	9.1	26.1	4.3	Clayey Sand	SC
Bonje Creek	BH01	19.00	20.00	22.6	NP	23.8	NP	Silty Sand	SM
Bonje Creek	BH02	1.00	2.00	69.6	21.6	45.2	10.2	Lean Clay with Sand	CL
Bonje Creek	BH02	2.00	3.00	29.7	2.9	24.7	1.4	Silty Sand	SM
Bonje Creek	BH02	8.00	9.00	39.1	7.6	24.0	3.6	Clayey Sand	SC
Bonje Creek	BH02	14.00	15.00	83.4	22.1	46.0	10.4	Lean Clay with Sand	CL
Bonje Creek	BH02	18.00	19.00	70.8	17.8	36.2	8.4	Lean Clay with Sand	CL
Bonje Creek	BH02	24.00	25.00	85.3	19.9	41.5	9.4	Lean Clay	CL
Bonje Creek	BH02	28.00	29.00	47.9	12.3	27.1	5.8	Clayey Sand	SC
Bonje Creek	BH03	2.00	3.00	81.9	21.6	43.4	10.2	Lean Clay with Sand	CL
Bonje Creek	BH03	11.00	12.00	63.2	15.2	31.6	7.2	Lean Clay with Sand	CL
Nguu Tatu Tank	BH02	1.00	2.00	92.7	22.9	47.8	10.8	Lean Clay	CL
Nguu Tatu Tank	BH02	19.00	20.00	9.6	15.7	32.9	7.4	Well Graded Sand with Clay	SW-SC
Changamwe Tank	BH01	1.00	2.00	41.7	9.5	26.2	4.5	Clayey Sand	SC
Changamwe Tank	BH01	7.00	8.00	59.1	22.9	45.2	10.8	Sandy Lean Clay	CL
Changamwe Tank	BH01	16.00	17.00	54.1	18.2	39.4	8.6	Sandy Lean Clay	CL

Location	Survey Point	Depth (m)		Fines (%)	PI (%)	LL (%)	LS (%)	USCS Classification	
		From	To					Name	Sym.
Changamwe Tank	BH02	7.00	8.00	49.5	18.2	37.2	8.6	Clayey Sand	SC
Changamwe Tank	BH02	17.00	18.00	73.7	20.6	42.7	9.7	Lean Clay with Sand	CL
Changamwe Pipeline	TPKM 0+000	0.00	3.00	49.8	15.3	35.7	7.2	Clayey Sand	SC
Changamwe Pipeline	TPKM 2+000	0.40	1.60	18.3	20.0	53.6	9.4	Silty Sand with Gravel	SM
Changamwe Pipeline	TPKM 2+500	0.60	1.60	13.2	13.8	33.0	6.5	Clayey Sand	SC
Changamwe Pipeline	TPKM 3+000	0.50	1.60	68.6	20.0	41.7	9.4	Sandy Lean Clay	CL
Changamwe Pipeline	TPKM 3+500	0.50	0.90	40.5	NP	24.1	1.1	Silty Sand	SM
Changamwe Pipeline	TPKM 4+500	0.20	1.70	57.3	15.3	33.6	7.2	Sandy Lean Clay	CL
Changamwe Pipeline	TPKM 5+000	0.00	0.80	44.3	15.3	37.9	7.2	Clayey Sand	SC
Changamwe Pipeline	TPKM 6+000	0.50	1.20	21.8	NP	23.0	1.4	Silty Sand	SM
Changamwe Pipeline	TPKM 7+000	1.00	1.20	33.9	9.2	24.8	4.3	Clayey Sand	SC
Changamwe Pipeline	TPKM 7+500	0.20	0.90	20.9	NP	24.5	1.0	Silty Sand	SM
Changamwe Pipeline	TPKM 8+000	0.00	0.10	37.9	10.0	24.2	4.7	Clayey Sand	SC
Changamwe Pipeline	TPKM 8+500	0.80	1.00	49.1	10.7	28.3	5.0	Clayey Sand	SC
Changamwe Pipeline	TPKM 9+000	0.90	1.50	38.7	12.4	29.8	5.8	Clayey Sand	SC
Changamwe Pipeline	TPKM 11+000	1.40	1.60	23.8	NP	25.7	0.9	Silty Sand	SM
Changamwe Pipeline	TPKM 11+500	0.30	1.60	61.7	14.9	37.7	7.0	Sandy Lean Clay	CL
Changamwe Pipeline	TPKM 11+618	0.30	1.20	56.6	15.3	35.3	7.2	Sandy Lean Clay	CL

Location	Survey Point	Depth (m)		Fines (%)	PI (%)	LL (%)	LS (%)	USCS Classification	
		From	To					Name	Sym.
Nguu Tatu Pipeline	TPKM 2+500	0.00	0.30	40.1	24.4	57.1	11.5	Silty Sand	SM
Nguu Tatu Pipeline	TPKM 3+000	0.80	1.40	71.9	18.3	40.8	8.6	Lean Clay with Sand	CL
Nguu Tatu Pipeline	TPKM 4+000	0.00	1.30	84.8	32.2	65.1	15.1	Elastic Silt with Sand	MH
Nguu Tatu Pipeline	TPKM 4+000	1.30	1.50	92.4	21.5	57.8	10.1	Elastic Silt	MH
Nguu Tatu Pipeline	TPKM 4+500	0.00	0.90	83.9	22.2	58.5	10.4	Elastic Silt with Sand	MH
Nguu Tatu Pipeline	TPKM 6+500	0.00	0.80	35.1	18.3	42.2	8.6	Clayey Sand	SC
Nguu Tatu Pipeline	TPKM 7+500	0.50	1.30	48.1	23.0	46.7	10.8	Clayey Sand	SC
Nguu Tatu Pipeline	TPKM 8+000	0.30	0.80	73.9	23.2	46.8	10.9	Lean Clay with Sand	CL
Nguu Tatu Pipeline	TPKM 8+500	0.70	1.70	62.2	15.3	39.3	7.2	Sandy Lean Clay	CL
Nguu Tatu Pipeline	TPKM 9+500	0.40	1.40	63.7	25.9	53.8	12.2	Sandy Fat Clay	CH
Nguu Tatu Pipeline	TPKM 10+000	0.30	1.30	71.2	29.2	59.0	13.7	Fat Clay with Sand	CH
Nguu Tatu Pipeline	TPKM 10+500	0.25	1.30	68.4	24.5	53.8	11.5	Sandy Elastic Silt	MH
Nguu Tatu Pipeline	TPKM 11+000	0.00	0.50	92.8	26.4	63.3	12.4	Elastic Silt	MH
Nguu Tatu Pipeline	TPKM 11+500	0.00	0.60	91.6	29.2	61.0	13.7	Elastic Silt	MH
Nguu Tatu Pipeline	TPKM 12+500	0.20	1.00	58.5	18.3	41.0	8.6	Sandy Lean Clay	CL
Nguu Tatu Pipeline	TPKM 13+000	0.30	1.50	60.2	21.3	44.2	10.0	Sandy Lean Clay	CL
Nguu Tatu Pipeline	TPKM 13+500	0.00	2.10	33.4	NP	21.3	1.7	Silty Sand	SM
Nguu Tatu Pipeline	TPKM 14+000	0.30	0.90	39.3	NP	23.1	2.1	Silty Sand	SM
Nguu Tatu Pipeline	TPKM 14+500	0.40	1.40	26.7	NP	23.3	NP	Silty Sand	SM

Location	Survey Point	Depth (m)		Fines (%)	PI (%)	LL (%)	LS (%)	USCS Classification	
		From	To					Name	Sym.
Nguu Tatu Pipeline	TPKM 15+000	0.50	1.00	35.9	16.4	38.4	7.7	Clayey Sand	SC
Nguu Tatu Pipeline	TPKM 15+500	0.25	0.60	88.9	28.5	62.1	13.4	Elastic Silt	MH
Nguu Tatu Pipeline	TPKM 16+000	0.00	0.75	96.6	29.2	62.4	13.7	Elastic Silt	MH
Nguu Tatu Pipeline	TPKM 16+500	0.50	1.40	80.9	28.8	62.5	13.5	Elastic Silt	MH
Nguu Tatu Pipeline	TPKM 17+000	0.00	1.50	37.3	21.3	43.8	10.0	Clayey Sand	SC
Nguu Tatu Pipeline	TPKM 17+500	0.00	1.30	60.8	20.0	54.1	9.4	Sandy Elastic Silt	MH
Nguu Tatu Pipeline	TPKM 18+000	0.40	1.20	61.6	26.7	58.8	11.9	Sandy Elastic Silt	MH
Nguu Tatu Pipeline	TPKM 18+500	0.00	0.80	92.4	19.8	55.7	9.3	Elastic Silt	MH
Nguu Tatu Pipeline	TPKM 19+000	0.00	1.10	44.4	18.3	39.0	8.6	Clayey Sand	SC
Nguu Tatu Pipeline	TPKM 19+500	0.50	1.10	93.1	16.8	51.9	7.9	Elastic Silt	MH
Nguu Tatu Pipeline	TPKM 20+000	0.50	1.50	59.4	21.3	48.0	10.1	Sandy Lean Clay	CL
Nguu Tatu Pipeline	TPKM 20+500	0.20	1.00	57.6	21.6	45.7	10.0	Sandy Lean Clay	CL
Mzima Pipeline	TPKM 0+500	0.00	0.80	28.1	7.2	27.7	3.4	Clayey Sand	SC
Mzima Pipeline	TPKM 1+000	0.00	1.40	30.1	7.7	24.9	3.6	Clayey Sand	SC
Trunk Main Pipeline	TPKM 0+500	0.00	0.40	35.6	13.8	30.3	6.5	Clayey Sand	SC
Trunk Main Pipeline	TPKM 1+500	0.00	0.50	54.1	9.2	25.3	4.3	Sandy Lean Clay	CL
Trunk Main Pipeline	TPKM 1+740	1.00	1.40	59.0	20.0	42.4	9.4	Sandy Lean Clay	CL
Trunk Main Pipeline	TPKM 2+500	0.00	0.10	72.7	23.0	51.9	10.8	Elastic Silt with Sand	MH

Location	Survey Point	Depth (m)		Fines (%)	PI (%)	LL (%)	LS (%)	USCS Classification	
		From	To					Name	Sym.
Trunk Main Pipeline	TPKM 3+000	0.00	1.40	27.7	16.8	36.9	7.9	Clayey Sand with Gravel	SC
Trunk Main Pipeline	TPKM 3+500	0.00	1.40	27.6	10.7	27.5	5.0	Clayey Sand with Gravel	SC
Trunk Main Pipeline	TPKM 4+000	0.45	0.90	79.0	24.5	51.4	11.5	Fat Clay with Sand	CH
Trunk Main Pipeline	TPKM 4+500	0.20	0.60	87.5	16.0	38.0	7.5	Lean Clay	CL
Trunk Main Pipeline	TPKM 5+000	0.30	0.80	78.7	20.0	43.4	9.4	Lean Clay with Sand	CL
Trunk Main Pipeline	TPKM 5+500	0.80	1.00	59.6	16.8	35.9	7.9	Sandy Lean Clay	CL
Kaya Bombo Pipleine	TPKM 0+000	0.40	1.00	35.2	21.5	45.2	10.1	Clayey Sand	SC
Kaya Bombo Pipleine	TPKM 0+500	0.40	1.10	31.4	20.0	46.3	9.4	Clayey Sand with Gravel	SC
Kaya Bombo Pipleine	TPKM 1+000	0.00	1.40	24.0	19.2	47.7	9.0	Silty Gravel with Sand	GM
Kaya Bombo Pipleine	TPKM 1+500	0.00	1.30	66.1	19.8	47.4	9.3	Silt with Sand	ML
Kaya Bombo Pipleine	TPKM 2+000	0.00	0.50	76.7	18.3	40.2	8.6	Lean Clay with Sand	CL
Kaya Bombo Pipleine	TPKM 2+500	0.00	0.20	44.5	NP	27.5	1.0	Silty Sand	SM
Kaya Bombo Pipleine	TPKM 3+000	0.32	0.95	75.5	22.1	45.3	10.4	Lean Clay with Sand	CL
Kaya Bombo Pipleine	TPKM 3+500	-	-	55.6	16.1	37.5	7.6	Sandy Lean Clay	CL
Kaya Bombo Pipleine	TPKM 4+500	0.00	1.40	57.8	21.4	44.8	10.1	Sandy Lean Clay	CL
Kaya Bombo Pipleine	TPKM 5+000	0.35	1.00	78.6	27.0	57.1	12.7	Elastic Silt with Sand	MH
Kaya Bombo Pipleine	TPKM 5+500	-	-	90.8	23.8	52.5	11.2	Fat Clay	CH
Kaya Bombo Pipleine	TPKM 6+000	0.80	0.90	34.1	24.4	49.5	11.5	Clayey Sand	SC

Location	Survey Point	Depth (m)		Fines (%)	PI (%)	LL (%)	LS (%)	USCS Classification	
		From	To					Name	Sym.
Kaya Bombo Pipleine	TPKM 6+500	0.00	1.00	77.2	22.1	48.9	10.4	Lean Clay with Sand	CL
Kaya Bombo Pipleine	TPKM 6+500	1.00	1.70	76.5	25.9	53.9	12.2	Fat Clay with Sand	CH
Kaya Bombo Pipleine	TPKM 7+000	0.00	0.80	72.3	24.4	49.6	11.5	Lean Clay with Sand	CL
Kaya Bombo Pipleine	TPKM 7+000	0.80	1.70	83.3	24.4	50.4	11.5	Fat Clay with Sand	CH
Kaya Bombo Pipleine	TPKM 8+000	0.30	0.60	67.2	20.6	42.0	9.7	Sandy Lean Clay	CL
Kaya Bombo Pipleine	TPKM 8+500	0.30	0.55	49.7	25.9	58.4	12.2	Silty Sand	SM
Kaya Bombo Pipleine	TPKM 10+000	-	-	14.5	18.2	38.3	8.6	Clayey Sand with Gravel	SC
Kaya Bombo Pipleine	TPKM 10+500	-	-	32.3	13.3	27.5	6.3	Clayey Sand	SC
Kaya Bombo Pipleine	TPKM 11+500	-	-	33.4	16.7	33.9	7.9	Clayey Sand	SC
Kaya Bombo Pipleine	TPKM 13+000	-	-	9.4	17.8	37.4	8.4	Poorly Graded Sand with Clay and Gravel	SP-SC
Kaya Bombo Pipleine	TPKM 13+500	-	-	67.8	29.1	59.0	13.7	Sandy Fat Clay	CH
Kaya Bombo Pipleine	TPKM 14+000	-	-	62.2	27.4	58.2	12.9	Sandy Elastic Silt	MH
Kaya Bombo Pipleine	TPKM 14+500	-	-	66.7	24.4	53.9	11.5	Sandy Elastic Silt	MH
Kaya Bombo Pipleine	TPKM 15+000	-	-	68.6	25.2	51.7	11.9	Sandy Fat Clay	CH
Kaya Bombo Pipleine	TPKM 15+500	-	-	7.5	19.9	43.2	9.4	Well Graded Sand with Clay and Gravel	SW-SC
Kaya Bombo Pipleine	TPKM 17+000	-	-	52.9	20.6	46.3	9.7	Sandy Lean Clay	CL
Kaya Bombo Pipleine	TPKM 18+500	-	-	32.5	22.9	48.1	10.8	Clayey Sand	SC
Kaya Bombo Pipleine	TPKM 19+000	1.30	2.00	38.4	23.8	49.6	11.2	Clayey Sand	SC

Location	Survey Point	Depth (m)		Fines (%)	PI (%)	LL (%)	LS (%)	USCS Classification	
		From	To					Name	Sym.
Kaya Bombo Pipleine	TPKM 19+500	-	-	55.8	19.1	40.2	9.0	Sandy Lean Clay	CL
Kaya Bombo Pipleine	TPKM 20+000	-	-	86.2	17.6	38.4	8.3	Lean Clay	CL
Kaya Bombo Pipleine	TPKM 20+500	-	-	90.4	10.6	28.1	5.0	Lean Clay	CL
Kaya Bombo Pipleine	TPKM 20+500	0.45	1.50	92.6	22.7	48.7	10.7	Lean Clay	CL
Kaya Bombo Pipleine	TPKM 20+500	1.50	2.00	94.0	25.2	53.7	11.9	Fat Clay	CH
Kaya Bombo Pipleine	TPKM 21+000	-	-	25.6	19.9	40.2	9.4	Clayey Sand	SC
Kaya Bombo Pipleine	TPKM 21+500	-	-	45.2	16.1	36.3	7.6	Clayey Sand	SC
Kaya Bombo Pipleine	TPKM 22+500	1.40	-	75.6	21.4	55.3	10.1	Elastic Silt with Sand	MH
Kaya Bombo Pipleine	TPKM 23+500	-	-	78.2	17.6	37.1	8.3	Lean Clay with Sand	CL
Kaya Bombo Pipleine	TPKM 24+000	-	-	48.6	16.1	37.6	7.6	Clayey Sand	SC
Kaya Bombo Pipleine	TPKM 24+500	-	-	17.9	16.0	37.6	7.5	Clayey Sand	SC
Kaya Bombo Pipleine	TPKM 25+000	-	-	17.2	12.3	24.7	5.8	Clayey Sand	SC
Kaya Bombo Pipleine	TPKM 25+500	-	-	13.0	NP	23.7	1.3	Silty Sand	SM
Kaya Bombo Pipleine	TPKM 26+000	-	-	15.8	7.1	29.5	3.4	Clayey Sand	SC
Kaya Bombo Pipleine	TPKM 26+500	-	-	7.1	NP	23.2	1.1	Poorly Graded Sand with Silt	SP-SM

4.2.4 Specific Gravity

The specific gravity (particle density) of the disturbed soil samples was determined via the small pycnometer method. Riffled specimens were placed in a density bottle (pycnometer) followed by the addition of distilled water. The resulting slurry was thereafter de-aired in a vacuum desiccator until no further loss of air was apparent. The recorded weighings in the various stages of the test were used to compute the specific gravity of the soil samples summarized below:

Table 6 - Summary of Specific Gravity of Soil

Location	Survey Point	Depth (m)		Specific Gravity (%)
		From	To	
Bonje Creek	BH01	3.0	4.0	2.48
Bonje Creek	BH01	7.0	8.0	2.44
Bonje Creek	BH01	12.0	13.0	2.44
Bonje Creek	BH01	19.0	20.0	2.52
Bonje Creek	BH02	1.0	2.0	2.46
Bonje Creek	BH02	2.0	3.0	2.51
Bonje Creek	BH02	8.0	9.0	2.48
Bonje Creek	BH02	14.0	15.0	2.43
Bonje Creek	BH02	18.0	19.0	2.44
Bonje Creek	BH02	24.0	25.0	2.45
Bonje Creek	BH02	28.0	29.0	2.48
Bonje Creek	BH03	2.0	3.0	2.43
Bonje Creek	BH03	11.0	12.0	2.50
Nguu Tatu Tank	BH02	1.0	2.0	2.46
Nguu Tatu Tank	BH02	19.0	20.0	2.41
Changamwe Tank	BH01	1.0	2.0	2.52
Changamwe Tank	BH01	7.0	8.0	2.47
Changamwe Tank	BH01	16.0	17.0	2.44
Changamwe Tank	BH02	7.0	8.0	2.42
Changamwe Tank	BH02	17.0	18.0	2.44
Nguu Tatu Pipeline	TPKM 2+500	0.0	0.3	2.45
Nguu Tatu Pipeline	TPKM 3+000	0.8	1.4	2.50
Nguu Tatu Pipeline	TPKM 4+000	0.0	1.3	2.49
Nguu Tatu Pipeline	TPKM 4+000	1.3	1.5	2.46
Nguu Tatu Pipeline	TPKM 4+500	0.0	0.9	2.48
Nguu Tatu Pipeline	TPKM 6+500	0.0	0.8	2.53
Nguu Tatu Pipeline	TPKM 7+500	0.5	1.3	2.42

Location	Survey Point	Depth (m)		Specific Gravity (%)
		From	To	
Nguu Tatu Pipeline	TPKM 8+000	0.3	0.8	2.54
Nguu Tatu Pipeline	TPKM 8+500	0.7	1.7	2.55
Nguu Tatu Pipeline	TPKM 9+500	0.4	1.4	2.44
Nguu Tatu Pipeline	TPKM 10+000	0.3	1.3	2.42
Nguu Tatu Pipeline	TPKM 10+500	0.25	1.3	2.54
Nguu Tatu Pipeline	TPKM 11+000	0.0	0.5	2.55
Nguu Tatu Pipeline	TPKM 11+500	0.0	0.6	2.50
Nguu Tatu Pipeline	TPKM 12+500	0.2	1.0	2.51
Nguu Tatu Pipeline	TPKM 13+000	0.3	1.5	2.50
Nguu Tatu Pipeline	TPKM 13+500	0.0	2.1	2.62
Nguu Tatu Pipeline	TPKM 14+000	0.3	0.9	2.57
Nguu Tatu Pipeline	TPKM 14+500	0.4	1.0	2.65
Nguu Tatu Pipeline	TPKM 15+000	0.5	1.3	2.55
Nguu Tatu Pipeline	TPKM 15+500	0.25	0.60	2.57
Nguu Tatu Pipeline	TPKM 16+000	0.0	0.75	2.48
Nguu Tatu Pipeline	TPKM 16+500	0.5	1.4	2.43
Nguu Tatu Pipeline	TPKM 17+000	0.0	1.5	2.52
Nguu Tatu Pipeline	TPKM 17+500	0.0	1.3	2.52
Nguu Tatu Pipeline	TPKM 18+000	0.4	1.2	2.49
Nguu Tatu Pipeline	TPKM 18+500	0.0	1.8	2.47
Nguu Tatu Pipeline	TPKM 19+000	0.0	1.1	2.51
Nguu Tatu Pipeline	TPKM 19+500	0.5	1.1	2.54
Nguu Tatu Pipeline	TPKM 20+000	0.5	1.5	2.52
Nguu Tatu Pipeline	TPKM 20+500	0.2	1.0	2.49
Kaya Bombo Pipeline	TPKM 0+000	0.4	1.0	2.45
Kaya Bombo Pipeline	TPKM 0+500	0.4	1.1	2.51
Kaya Bombo Pipeline	TPKM 1+000	0.0	1.4	2.53
Kaya Bombo Pipeline	TPKM 1+500	0.0	1.3	2.47
Kaya Bombo Pipeline	TPKM 2+000	0.0	0.5	2.46
Kaya Bombo Pipeline	TPKM 2+500	0.0	2.0	2.59

Location	Survey Point	Depth (m)		Specific Gravity (%)
		From	To	
Kaya Bombo Pipeline	TPKM 3+000	0.32	0.95	2.55
Kaya Bombo Pipeline	TPKM 3+500	-	-	2.58
Kaya Bombo Pipeline	TPKM 4+500	0.0	1.4	2.58
Kaya Bombo Pipeline	TPKM 5+000	0.32	1.0	2.50
Kaya Bombo Pipeline	TPKM 5+500	-	-	2.50
Kaya Bombo Pipeline	TPKM 6+000	0.8	0.9	2.62
Kaya Bombo Pipeline	TPKM 6+500	0.0	1.0	2.54
Kaya Bombo Pipeline	TPKM 6+500	1.0	1.7	2.56
Kaya Bombo Pipeline	TPKM 7+000	0.0	0.8	2.54
Kaya Bombo Pipeline	TPKM 7+000	0.8	1.7	2.54
Kaya Bombo Pipeline	TPKM 8+000	0.3	0.6	2.45
Kaya Bombo Pipeline	TPKM 8+500	0.3	0.55	2.42
Kaya Bombo Pipeline	TPKM 10+000	-	-	2.67
Kaya Bombo Pipeline	TPKM 10+500	-	-	2.57
Kaya Bombo Pipeline	TPKM 11+000	-	-	2.60
Kaya Bombo Pipeline	TPKM 13+000	-	-	2.64
Kaya Bombo Pipeline	TPKM 13+500	-	-	2.60
Kaya Bombo Pipeline	TPKM 14+000	-	-	2.56
Kaya Bombo Pipeline	TPKM 14+500	-	-	2.54
Kaya Bombo Pipeline	TPKM 15+000	-	-	2.44
Kaya Bombo Pipeline	TPKM 15+500	-	-	2.67
Kaya Bombo Pipeline	TPKM 17+000	-	-	2.51
Kaya Bombo Pipeline	TPKM 18+500	-	-	2.56
Kaya Bombo Pipeline	TPKM 19+000	1.3	2.0	2.57
Kaya Bombo Pipeline	TPKM 19+500	-	-	2.56
Kaya Bombo Pipeline	TPKM 20+000	-	-	2.55
Kaya Bombo Pipeline	TPKM 20+500	-	-	2.49
Kaya Bombo Pipeline	TPKM 20+500	0.45	1.5	2.48
Kaya Bombo Pipeline	TPKM 20+500	1.5	2.0	2.54
Kaya Bombo Pipeline	TPKM 21+000	-	-	2.60
Kaya Bombo Pipeline	TPKM 21+500	-	-	2.64

Location	Survey Point	Depth (m)		Specific Gravity (%)
		From	To	
Kaya Bombo Pipeline	TPKM 22+500	1.4	-	2.56
Kaya Bombo Pipeline	TPKM 23+500	1.5	-	2.53
Kaya Bombo Pipeline	TPKM 24+000	-	-	2.61
Kaya Bombo Pipeline	TPKM 24+500	-	-	2.63
Kaya Bombo Pipeline	TPKM 25+000	-	-	2.60
Kaya Bombo Pipeline	TPKM 25+500	-	-	2.63
Kaya Bombo Pipeline	TPKM 26+000	-	-	2.67
Kaya Bombo Pipeline	TPKM 26+500	-	-	2.64
Changamwe Pipeline	TPKM 0+000	0.0	0.3	2.51
Changamwe Pipeline	TPKM 2+000	0.4	1.6	2.43
Changamwe Pipeline	TPKM 2+500	0.6	1.6	2.56
Changamwe Pipeline	TPKM 3+000	0.5	1.6	2.52
Changamwe Pipeline	TPKM 3+500	0.5	0.9	2.53
Changamwe Pipeline	TPKM 4+500	0.2	1.7	2.45
Changamwe Pipeline	TPKM 5+000	0.0	0.8	2.43
Changamwe Pipeline	TPKM 6+000	0.5	1.2	2.56
Changamwe Pipeline	TPKM 7+000	1.0	1.2	2.48
Changamwe Pipeline	TPKM 7+500	0.2	0.9	2.57
Changamwe Pipeline	TPKM 8+000	0.8	1.0	2.52
Changamwe Pipeline	TPKM 8+500	0.8	1.0	2.41
Changamwe Pipeline	TPKM 9+000	0.9	1.5	2.55
Changamwe Pipeline	TPKM 11+000	1.4	1.6	2.57
Changamwe Pipeline	TPKM 11+500	0.3	1.6	2.47
Changamwe Pipeline	TPKM 11+618	0.3	1.2	2.56
Mzima Pipeline	TPKM 0+500	0.0	0.8	2.63
Mzima Pipeline	TPKM 1+000	0.0	1.4	2.62
Trunk Main Pipeline	TPKM 0+500	0.0	0.4	2.61
Trunk Main Pipeline	TPKM 1+500	0.0	0.5	2.50

Location	Survey Point	Depth (m)		Specific Gravity (%)
		From	To	
Trunk Main Pipeline	TPKM 1+740	1.0	1.4	2.48
Trunk Main Pipeline	TPKM 2+000	0.0	0.8	2.62
Trunk Main Pipeline	TPKM 2+500	0.0	1.0	2.53
Trunk Main Pipeline	TPKM 3+000	0.0	1.4	2.44
Trunk Main Pipeline	TPKM 3+500	0.0	1.4	2.53
Trunk Main Pipeline	TPKM 4+000	0.45	0.9	2.45
Trunk Main Pipeline	TPKM 4+500	0.2	0.6	2.44
Trunk Main Pipeline	TPKM 5+500	0.3	0.8	2.49
Trunk Main Pipeline	TPKM 5+505	0.8	1.0	2.54

4.2.5 Natural Moisture Content

Representative soil samples were examined for natural moisture content by oven-drying at 110 °C and expressing the mass lost after drying as a percentage of the resulting dry soil mass. The test results are tabulated below:

Table 7 - Summary of Natural Soil Moisture Content

Location	Survey Point	Depth (m)		Moisture Content (%)
		From	To	
Bonje Creek	BH01	3.0	4.0	4.1
Bonje Creek	BH01	7.0	8.0	5.2
Bonje Creek	BH01	12.0	13.0	3.0
Bonje Creek	BH01	19.0	20.0	3.3
Bonje Creek	BH02	1.0	2.0	4.2
Bonje Creek	BH02	2.0	3.0	1.8
Bonje Creek	BH02	8.0	9.0	4.5
Bonje Creek	BH02	14.0	15.0	8.3
Bonje Creek	BH02	18.0	19.0	9.0
Bonje Creek	BH02	24.0	25.0	8.4
Bonje Creek	BH02	28.0	29.0	3.1
Bonje Creek	BH03	2.0	3.0	5.6
Bonje Creek	BH03	11.0	12.0	2.3

Location	Survey Point	Depth (m)		Moisture Content (%)
		From	To	
Nguu Tatu Tank	BH02	1.0	2.0	5.7
Nguu Tatu Tank	BH02	19.0	20.0	5.9
Changamwe Tank	BH01	1.0	2.0	1.9
Changamwe Tank	BH01	7.0	8.0	5.6
Changamwe Tank	BH01	16.0	17.0	4.8
Changamwe Tank	BH02	7.0	8.0	13.6
Changamwe Tank	BH02	17.0	18.0	6.0

4.2.6 Standard Proctor Compaction

The dry density which can be achieved for a soil depends on the degree of compaction applied and the moisture content. The test involved compacting soil passing the 20 mm sieve at different moisture levels in a 1 litre mould using a 2.5 kg rammer with a 300 mm drop height. The test was performed on disturbed soil samples to determine the Maximum Dry Density (MDD) and the corresponding Optimum Moisture Content (OMC) of each soil specimen. The compaction parameters MDD and OMC are tabulated below:

Table 8 - Summary of Standard Proctor Parameters

Location	Survey Point	Depth (m)		MDD (%)	OMC (%)
		From	To		
Bonje Creek	BH01	7.0	8.0	1754	19.33
Bonje Creek	BH01	19.0	20.0	1981	10.2
Nguu Tatu Tank	BH02	1.0	2.0	1690	19.2
Changamwe Tank	BH02	7.0	8.0	1819	16.0
Changamwe Tank	BH02	14.0	15.0	1897	13.4
Nguu Tatu Pipeline	TPKM 2+500	0.0	3.0	1722	15.9
Nguu Tatu Pipeline	TPKM 4+000	0.0	1.3	1595	18.8
Nguu Tatu Pipeline	TPKM 7+500	0.5	1.3	1588	15.5
Nguu Tatu Pipeline	TPKM 9+500	0.4	1.4	1608	23.5
Nguu Tatu Pipeline	TPKM 11+500	0.0	0.6	1442	27.4
Nguu Tatu Pipeline	TPKM 13+500	0.0	2.1	1740	11.5
Nguu Tatu Pipeline	TPKM 14+000	0.3	0.9	1855	11.3

Location	Survey Point	Depth (m)		MDD (%)	OMC (%)
		From	To		
Nguu Tatu Pipeline	TPKM 16+500	0.5	1.4	1543	23.5
Nguu Tatu Pipeline	TPKM 18+000	0.4	1.2	1495	22.8
Kaya Bombo Pipeline	TPKM 3+500	-	-	1768	15.6
Kaya Bombo Pipeline	TPKM 5+500	0.0	-	1540	23.0
Kaya Bombo Pipeline	TPKM 6+500	1.0	1.7	1700	18.3
Kaya Bombo Pipeline	TPKM 8+000	0.3	0.6	1659	20.5
Kaya Bombo Pipeline	TPKM 10+000	-	-	1905	10.5
Kaya Bombo Pipeline	TPKM 13+500	-	-	1560	24.3
Kaya Bombo Pipeline	TPKM 15+000	-	-	1550	21.5
Kaya Bombo Pipeline	TPKM 19+000	1.3	2.0	1670	20.9
Kaya Bombo Pipeline	TPKM 20+500	1.5	2.0	1610	22.5
Kaya Bombo Pipeline	TPKM 22+500	1.4	-	1698	18.4
Kaya Bombo Pipeline	TPKM 24+500	-	-	2010	9.6
Kaya Bombo Pipeline	TPKM 26+000	-	-	1555	10.0
Changamwe Pipeline	TPKM 2+000	0.4	1.6	1875	12.0
Changamwe Pipeline	TPKM 4+500	0.2	1.7	1955	10.1
Changamwe Pipeline	TPKM 7+500	0.2	0.9	1758	16.5
Changamwe Pipeline	TPKM 8+000	0.0	1.0	1820	13.4
Changamwe Pipeline	TPKM 11+618	0.3	1.2	1772	14.0
Trunk Main Pipeline	TPKM 1+740	1.0	1.4	1668	20.0
Trunk Main Pipeline	TPKM 3+500	0.0	1.4	1885	10.8
Trunk Main Pipeline	TPKM 4+000	0.45	0.9	1535	22.8
Trunk Main Pipeline	TPKM 5+500	0.8	1.0	1669	20.6

4.2.7 Unconsolidated Undrained (UU) Triaxial Shear

In triaxial tests, a cylindrical soil specimen with a height approximately equal to twice its diameter is placed in a triaxial cell and subjected to three stresses at right angles to each other. The test consists of two phases, the consolidation phase and the shear phase.

The UU (Q) triaxial test was performed on remolded soil samples. In the test, each sample (assumed saturated) was first subjected to a confining pressure and then the principal stress difference applied

immediately without permitting drainage (i.e. no consolidation) at any phase of the test. In this case, the applied confining pressure was not entirely carried by the soil skeleton but rather also resulted in an increase in pore water pressure. Since the pore and back pressures are not measured in the UU test, the results have been interpreted in terms of total stress over a confinement pressure. The UU test was repeated for three different confining pressures and the undrained parameters, cohesion (c_u) and friction angle (φ_u) are summarized below:

Table 9 – Summary of Unconsolidated, Undrained Shear Parameters

Location	Survey Point	Depth (m)		c_u (kN/m²)	φ_u (°)
		From	To		
Nguu Tatu Pipeline	TPKM 2+500	0.0	0.3	26.0	23.5
Nguu Tatu Pipeline	TPKM 4+000	0.0	1.3	30.3	19.5
Nguu Tatu Pipeline	TPKM 2+500	0.5	1.3	37.0	22.2
Nguu Tatu Pipeline	TPKM 9+500	0.4	1.4	38.0	21.3
Nguu Tatu Pipeline	TPKM 11+500	0.0	0.6	26.1	25.5
Nguu Tatu Pipeline	TPKM 13+500	0.0	2.1	18.2	29.3
Nguu Tatu Pipeline	TPKM 14+000	0.3	0.9	20.0	28.5
Nguu Tatu Pipeline	TPKM 16+500	0.5	1.4	27.3	23.2
Nguu Tatu Pipeline	TPKM 18+000	0.4	1.2	32.1	25.2
Kaya Bombo Pipeline	TPKM 3+500	-	-	31.1	23.2
Kaya Bombo Pipeline	TPKM 5+500	0.0	-	35.2	20.5
Kaya Bombo Pipeline	TPKM 6+500	1.0	1.7	29.7	21.5
Kaya Bombo Pipeline	TPKM 8+000	0.3	0.6	22.2	22.4
Kaya Bombo Pipeline	TPKM 10+500	-	-	24.2	25.0
Kaya Bombo Pipeline	TPKM 13+500	-	-	34.0	18.3
Kaya Bombo Pipeline	TPKM 15+000	-	-	30.1	20.4
Kaya Bombo Pipeline	TPKM 19+000	1.3	2.0	33.3	21.0
Kaya Bombo Pipeline	TPKM 20+500	1.5	2.0	39.6	18.3
Kaya Bombo Pipeline	TPKM 22+500	1.4	-	38.4	17.4
Kaya Bombo Pipeline	TPKM 24+500	-	-	18.2	31.0
Kaya Bombo Pipeline	TPKM 26+000	-	-	19.0	29.5
Changamwe Pipeline	TPKM 2+000	0.4	1.6	28.4	20.5
Changamwe Pipeline	TPKM 4+500	0.2	1.7	20.0	30.5
Changamwe Pipeline	TPKM 7+500	0.2	0.9	25.5	22.1

Location	Survey Point	Depth (m)		c_u (kN/m²)	φ_u (°)
		From	To		
Changamwe Pipeline	TPKM 8+000	0.0	1.0	27.7	24.0
Changamwe Pipeline	TPKM 11+618	0.3	1.2	28.1	23.0
Trunk Main Pipeline	TPKM 1+740	1.0	1.4	29.2	19.4
Trunk Main Pipeline	TPKM 3+500	0.0	1.4	28.3	20.2
Trunk Main Pipeline	TPKM 4+000	0.45	0.9	33.1	21.3
Trunk Main Pipeline	TPKM 5+500	0.8	1.0	32.1	18.5

4.2.8 Direct Shear

The shear strength of a soil is controlled by the effective stress that acts upon it. Undisturbed soil samples were tested for the drained (effective) shear parameters: cohesion (c') and the angle of internal friction (ϕ').

In preparation for shearing, the typical test specimen was placed in a shear box assembly and first consolidated using a vertical/normal load. A horizontal force was then applied to the setup such that the laterally restrained, consolidated square prism of soil sheared in half along a failure plane guided by the two halves of the shear box. The rate of shearing was regulated such that failure occurred within about 5 minutes (rate of about 0.01 mm/min). Since there is no control of drainage in the shear box apparatus, the test sample was considered to be fully drained during shearing. A summary of the direct shear tests is provided below:

Table 10 – Summary of Consolidated, Drained, Direct Shear Parameters

Location	Survey Point	Depth (m)		c' (kN/m²)	φ' (°)
		From	To		
Nguu Tatu Pipeline	TPKM 2+500	0.0	0.3	25.01	21.5
Nguu Tatu Pipeline	TPKM 4+000	0.0	1.3	26.48	17.5
Nguu Tatu Pipeline	TPKM 7+500	0.5	1.3	34.81	20.0
Nguu Tatu Pipeline	TPKM 9+500	0.4	1.4	35.11	19.0
Nguu Tatu Pipeline	TPKM 11+500	0.0	0.6	24.02	23.0
Nguu Tatu Pipeline	TPKM 13+500	0.0	2.1	14.71	27.0
Nguu Tatu Pipeline	TPKM 14+000	0.3	0.9	16.67	26.5
Nguu Tatu Pipeline	TPKM 16+500	0.5	1.4	23.53	20.5
Nguu Tatu Pipeline	TPKM 18+000	0.4	1.2	27.95	22.5
Kaya Bombo Pipeline	TPKM 3+500	-	-	27.46	20.0

Location	Survey Point	Depth (m)		c' (kN/m^2)	φ' (°)
		From	To		
Kaya Bombo Pipeline	TPKM 5+500	0.0	-	30.40	18.5
Kaya Bombo Pipeline	TPKM 6+500	1.0	1.7	26.48	19.0
Kaya Bombo Pipeline	TPKM 8+000	0.3	0.6	20.10	21.0
Kaya Bombo Pipeline	TPKM 10+500	-	-	22.06	22.0
Kaya Bombo Pipeline	TPKM 13+500	-	-	29.12	16.5
Kaya Bombo Pipeline	TPKM 15+000	-	-	28.24	18.0
Kaya Bombo Pipeline	TPKM 19+000	1.3	2.0	27.95	19.0
Kaya Bombo Pipeline	TPKM 20+500	1.5	2.0	27.95	16.0
Kaya Bombo Pipeline	TPKM 22+500	1.4	-	35.30	15.5
Kaya Bombo Pipeline	TPKM 24+500	-	-	15.69	29.0
Kaya Bombo Pipeline	TPKM 26+000	-	-	17.16	27.5
Changamwe Pipeline	TPKM 2+000	0.4	1.6	26.77	18.5
Changamwe Pipeline	TPKM 4+500	0.2	1.7	15.69	29.5
Changamwe Pipeline	TPKM 7+500	0.2	0.9	21.08	19.5
Changamwe Pipeline	TPKM 8+000	0.0	1.0	24.52	22.0
Changamwe Pipeline	TPKM 11+618	0.3	1.2	25.79	20.5
Trunk Main Pipeline	TPKM 1+740	1.0	1.4	26.77	17.5
Trunk Main Pipeline	TPKM 3+500	0.0	1.4	25.79	18.0
Trunk Main Pipeline	TPKM 4+000	0.45	0.9	29.42	19.5
Trunk Main Pipeline	TPKM 5+500	0.8	1.0	28.93	16.5

4.2.9 One-Dimensional Consolidation

The objective of the consolidation test was to determine the compressibility characteristics of the soil found at the pipeline and tank sites. The test entailed determination of the magnitude and rate of the consolidation of a saturated or near-saturated specimen of soil in the form of a disc confined laterally, subjected to vertical axial pressure, and allowed to drain freely from the top and bottom surfaces. The consolidation test was also performed on undisturbed soil specimens.

Each test sample was loaded axially in increments ranging from 50 – 800 kN/m^2 whereby each stress increment was held constant until the primary consolidation was complete. Table 11 provides the results of the consolidation testing including the inferred settlement parameters. The consolidation parameters listed in the table are defined below:

σ = Pressure stage (kN/m^2)

M_v = Coefficient of volume compressibility (m^2/MN)

C_v = Coefficient of consolidation (m^2/year)

e = Voids ratio

σ_{max} = Pre-consolidation pressure (kN/m^2)

C_c = Compression index

C_{rec} = Re-compression index

Table 11 – Summary of Consolidation Parameters

Location	Survey Point	Depth (m)		σ_{max}	C_c	C_{rec}	σ	M_v	C_v	e
		From	To							
Bonje Creek	BH01	7.0	8.0	140	0.148	0.0548	50	0.615	6.727	0.509
							100	0.603	4.517	0.464
							200	0.420	3.676	0.402
							400	0.176	3.020	0.353
							800	0.083	3.171	0.309
							1600	0.054	2.818	0.253
Bonje Creek	BH01	19.0	20.0	142	0.039	0.0233	50	0.680	8.375	0.338
							100	0.135	3.858	0.329
							200	0.076	3.802	0.319
							400	0.045	3.898	0.307
							800	0.024	2.700	0.295
							1600	0.013	4.288	0.282
Nguu Tatu Tank	BH02	1.0	2.0	143	0.208	0.0282	50	0.955	7.628	0.543
							100	0.289	4.047	0.521
							200	0.256	2.708	0.482
							400	0.191	2.792	0.425
							800	0.114	2.652	0.360
							1600	0.057	2.504	0.299
Changamwe Tank	BH02	7.0	8.0	130	0.150	0.0400	50	1.065	6.610	0.425
							100	0.480	5.360	0.391
							200	0.368	5.710	0.340
							400	0.218	4.388	0.282

Location	Survey Point	Depth (m)		σ_{max}	C_c	C_{rec}	σ	M_v	C_v	e
		From	To							
							800	0.109	3.613	0.226
							1600	0.059	2.995	0.169
Changamwe Tank	BH02	14.0	15.0	255	0.130	0.032	50	0.855	9.968	0.384
							100	0.193	6.297	0.371
							200	0.121	4.404	0.354
							400	0.092	4.719	0.329
							800	0.069	7.137	0.293
							1600	0.042	4.239	0.250
Nguu Tatu Pipeline	TPKM 2+500	0.0	0.3	105	0.197	0.047	50	0.200	8.580	0.570
							100	0.157	3.749	0.558
							200	0.349	4.617	0.504
							400	0.203	3.907	0.443
							800	0.107	2.426	0.381
							1600	0.050	1.943	0.326
Nguu Tatu Pipeline	TPKM 4+000	0.0	1.3	130	0.272	0.073	50	0.530	5.332	0.670
							100	0.329	4.215	0.642
							200	0.402	3.817	0.576
							400	0.256	4.633	0.496
							800	0.135	2.582	0.415
							1600	0.074	1.960	0.331
Nguu Tatu Pipeline	TPKM 7+500	0.5	1.3	100	0.194	0.048	50	0.935	4.964	0.647
							100	0.734	5.360	0.586
							200	0.389	3.671	0.525
							400	0.176	3.131	0.472
							800	0.098	2.342	0.414
							1600	0.053	1.963	0.353
Nguu Tatu Pipeline	TPKM 9+500	0.4	1.4	85	0.218	0.068	50	0.320	5.117	0.675
							100	0.401	3.406	0.642
							200	0.428	4.213	0.572
							400	0.218	2.294	0.504

Location	Survey Point	Depth (m)		σ_{max}	C_c	C_{rec}	σ	M_v	C_v	e
		From	To							
							800	0.097	2.002	0.446
							1600	0.058	1.990	0.379
Nguu Tatu Pipeline	TPKM 11+500	0.0	0.6	110	0.268	0.083	50	0.355	6.390	0.859
							100	0.539	7.519	0.809
							200	0.465	6.048	0.725
							400	0.233	3.436	0.644
							800	0.119	2.139	0.567
							1600	0.064	2.185	0.486
Nguu Tatu Pipeline	TPKM 13+500	0.0	2.1	100	0.040	0.032	50	0.080	4.504	0.573
							100	0.090	4.468	0.566
							200	0.071	5.640	0.555
							400	0.038	5.004	0.543
							800	0.019	4.480	0.532
							1600	0.011	2.938	0.518
Nguu Tatu Pipeline	TPKM 14+000	0.3	0.9	380	0.099	0.030	50	0.270	5.403	0.454
							100	0.132	5.030	0.444
							200	0.107	3.955	0.429
							400	0.062	4.597	0.411
							800	0.044	4.683	0.386
							1600	0.031	5.280	0.352
Nguu Tatu Pipeline	TPKM 16+500	0.5	1.4	90	0.251	0.070	50	0.355	3.932	0.744
							100	0.682	5.709	0.684
							200	0.474	4.960	0.604
							400	0.246	2.889	0.525
							800	0.119	2.527	0.453
							1600	0.062	2.213	0.382
Nguu Tatu Pipeline	TPKM 18+000	0.4	1.2	90	0.237	0.070	50	1.050	8.222	0.737
							100	0.580	4.320	0.687
							200	0.413	3.671	0.617
							400	0.235	3.087	0.541
							800	0.112	2.342	0.472

Location	Survey Point	Depth (m)		σ_{max}	C_c	C_{rec}	σ	M_v	C_v	e
		From	To							
							1600	0.059	1.880	0.402
Kaya Bombo Pipeline	TPKM 3+500	-	-	90	0.174	0.025	50	0.540	9.201	0.511
							100	0.452	5.347	0.477
							200	0.358	6.979	0.424
							400	0.225	3.634	0.360
							800	0.089	2.750	0.312
							1600	0.042	2.873	0.268
Kaya Bombo Pipeline	TPKM 5+500	-	-	130	0.248	0.051	50	0.565	7.222	0.736
							100	0.448	4.807	0.697
							200	0.358	7.552	0.637
							400	0.226	4.394	0.536
							800	0.138	2.597	0.476
							1600	0.066	2.042	0.398
Kaya Bombo Pipeline	TPKM 6+500	1.0	1.7	90	0.198	0.055	50	0.370	7.857	0.570
							100	0.550	5.732	0.527
							200	0.382	4.561	0.469
							400	0.214	2.799	0.406
							800	0.100	1.838	0.350
							1600	0.057	2.212	0.289
Kaya Bombo Pipeline	TPKM 8+000	0.3	0.6	130	0.207	0.043	50	0.630	9.614	0.603
							100	0.341	3.690	0.576
							200	0.294	7.625	0.530
							400	0.200	4.488	0.469
							800	0.107	5.224	0.406
							1600	0.050	2.571	0.349
Kaya Bombo Pipeline	TPKM 10+500	-	-	100	0.127	0.030	50	0.580	7.215	0.396
							100	0.350	9.635	0.372
							200	0.262	7.682	0.336
							400	0.137	7.280	0.299
							800	0.080	8.219	0.257

Location	Survey Point	Depth (m)		σ_{max}	C_c	C_{rec}	σ	M_v	C_v	e
		From	To							
							1600	0.038	2.490	0.219
Kaya Bombo Pipeline	TPKM 13+500	-	-	100	0.063	0.020	50	0.540	10.121	0.710
							100	0.164	7.512	0.696
							200	0.104	7.373	0.678
							400	0.060	5.515	0.658
							800	0.029	3.978	0.639
							1600	0.015	2.883	0.620
Kaya Bombo Pipeline	TPKM 15+000	-	-	95	0.237	0.061	50	0.580	7.215	0.719
							100	0.541	3.079	0.673
							200	0.410	5.574	0.604
							400	0.232	4.797	0.530
							800	0.114	2.561	0.460
							1600	0.062	1.771	0.388
Kaya Bombo Pipeline	TPKM 19+000	1.3	2.0	255	0.137	0.048	50	0.865	9.958	0.562
							100	0.230	4.708	0.544
							200	0.161	3.983	0.520
							400	0.125	2.665	0.482
							800	0.068	2.227	0.442
							1600	0.041	1.812	0.396
Kaya Bombo Pipeline	TPKM 20+500	1.5	2.0	280	0.180	0.063	50	0.180	7.928	0.691
							100	0.141	3.622	0.679
							200	0.112	5.532	0.660
							400	0.121	3.205	0.620
							800	0.084	3.629	0.567
							1600	0.056	3.222	0.497
Kaya Bombo Pipeline	TPKM 22+500	1.4	-	95	0.189	0.056	50	0.485	6.345	0.574
							100	0.261	4.448	0.554
							200	0.353	7.764	0.499
							400	0.190	3.327	0.443
							800	0.106	2.956	0.382
							1600	0.051	2.038	0.327

Location	Survey Point	Depth (m)		σ_{max}	C_c	C_{rec}	σ	M_v	C_v	e
		From	To							
Kaya Bombo Pipeline	TPKM 24+500	-	-	170	0.090	0.027	50	0.210	5.148	0.349
							100	0.212	3.733	0.335
							200	0.115	8.213	0.320
							400	0.093	3.826	0.295
							800	0.051	7.666	0.269
							1600	0.030	3.997	0.239
Kaya Bombo Pipeline	TPKM 26+000	-	-	100	0.085	0.038	50	0.600	9.173	0.705
							100	0.237	4.837	0.685
							200	0.141	6.733	0.661
							400	0.077	6.100	0.635
							800	0.038	6.335	0.611
							1600	0.021	2.963	0.583
Changamwe Pipeline	TPKM 2+000	0.4	1.6	120	0.200	0.030	50	0.785	7.142	0.391
							100	0.437	6.264	0.360
							200	0.359	4.468	0.312
							400	0.245	4.068	0.247
							800	0.142	3.474	0.177
							1600	0.061	2.728	0.119
Changamwe Pipeline	TPKM 4+500	0.2	1.7	135	0.066	0.027	50	0.385	5.370	0.368
							100	0.183	5.219	0.356
							200	0.105	4.631	0.342
							400	0.070	6.782	0.323
							800	0.037	4.852	0.303
							1600	0.018	4.478	0.285
Changamwe Pipeline	TPKM 7+500	0.2	0.9	100	0.183	0.032	50	0.665	2.958	0.507
							100	0.300	3.423	0.485
							200	0.365	5.056	0.431
							400	0.215	4.664	0.369
							800	0.092	3.868	0.319
							1600	0.051	3.403	0.265

Location	Survey Point	Depth (m)		σ_{max}	C_c	C_{rec}	σ	M_v	C_v	e
		From	To							
Changamwe Pipeline	TPKM 8+000	0.0	1.0	90	0.135	0.030	50	0.815	5.549	0.440
							100	0.323	7.855	0.416
							200	0.273	6.016	0.378
							400	0.166	3.537	0.332
							800	0.068	2.660	0.296
							1600	0.041	3.267	0.254
Changamwe Pipeline	TPKM 11+618	0.3	1.2	105	0.195	0.032	50	0.570	3.064	0.500
							100	0.273	4.842	0.480
							200	0.318	7.715	0.433
							400	0.240	2.307	0.364
							800	0.127	1.927	0.295
							1600	0.048	1.954	0.245
Trunk Main Pipeline	TPKM 1+740	1.0	1.4	80	0.215	0.038	50	1.060	8.960	0.546
							100	0.681	5.634	0.494
							200	0.451	3.467	0.427
							400	0.260	3.969	0.353
							800	0.110	2.628	0.293
							1600	0.056	2.836	0.235
Trunk Main Pipeline	TPKM 3+500	0.0	1.0	200	0.175	0.030	50	0.290	6.032	0.431
							100	0.208	3.999	0.417
							200	0.195	4.852	0.389
							400	0.171	5.111	0.342
							800	0.101	4.061	0.288
							1600	0.055	5.584	0.231
Trunk Main Pipeline	TPKM 4+000	0.45	0.9	80	0.232	0.047	50	1.030	8.979	0.694
							100	0.722	5.013	0.633
							200	0.426	5.950	0.563
							400	0.251	3.987	0.485
							800	0.109	4.049	0.421
							1600	0.059	3.305	0.354

Location	Survey Point	Depth (m)		σ_{max}	C_c	C_{rec}	σ	M_v	C_v	e
		From	To							
Trunk Main Pipeline	TPKM 5+500	0.8	1.0	195	0.218	0.028	50	0.220	6.857	0.632
							100	0.258	7.730	0.611
							200	0.212	8.096	0.578
							400	0.137	7.707	0.535
							800	0.107	6.158	0.469
							1600	0.056	6.567	0.403

5 PRELIMINARY RECOMMENDATIONS

5.1 FOUNDATION MATERIAL

Sands with clay or silty fines (SC or SM) are considered competent for foundation support as they do not possess detrimental swelling properties.

Soils identified as fat clays (CH) should be categorically avoided for foundation support as they pose significant swelling risks. Elastic silts (MH), which are predominant along the Nguu Tatu pipeline route, are also susceptible to swelling upon inundation. We recommend replacing CH, CL and MH soils with structural fill. Otherwise, carefully designed special foundations (large pads or penetrative foundations) should be used on such soils. The design of the pipelines on the expansive soils must also anticipate foundation movements i.e. flexible design.

6 LIMITATIONS OF THE REPORT

6.1 GENERAL

The interpretation and recommendations submitted in this report are based in part upon data obtained from a limited number of boreholes and trial pits. Advice provided herein is intended for use by MIBP in the design phase of the project. If there are changes to the project scope and development features, the interpretations made of the subsurface information, the geotechnical design parameters and comments relating to constructability issues and quality control may not be relevant to the revised project.

There is no investigation which is thorough enough to determine all site conditions and anomalies, no matter how comprehensive the investigation program is as site data is derived from extrapolation of limited test locations (non-continuous sampling). The nature and extent of variations between test locations may not become evident until construction. The borings were carried out using investigation techniques consistent with those ordinarily exercised by other engineering practitioners, working under similar conditions and subject to the time, financial and physical constraints applicable to this project.

6.2 CHANGES IN SITE AND SCOPE

It must be recognized that the passage of time, natural occurrences, and direct or indirect human intervention at or near the site have the potential to alter subsurface conditions. In particular, caution should be exercised in the consideration of contractual responsibilities as they relate to disturbance of soils.

6.3 USE OF REPORT

This document is not intended to reduce the level of responsibility, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in to doing.

APPENDIX A

Core Box Photos

Nguu Tatu Tank BH01: 0.0 m – 5.0 m

Nguu Tatu Tank BH01: 5.0 m – 10.0 m

Nguu Tatu Tank BH01: 10.0 m – 15.0 m

Nguu Tatu Tank BH01: 15.0 m – 20.0 m

Nguu Tatu Tank BH02: 0.0 m – 5.0 m

Nguu Tatu Tank BH02: 5.0 m – 11.5 m

Nguu Tatu Tank BH02: 11.5 m – 17.0 m

Nguu Tatu Tank BH02: 17.0 m – 20.0 m

Changamwe Tank BH01: 0.0 m – 5.0 m

Changamwe Tank BH01: 5.0 m – 10.0 m

Changamwe Tank BH01: 10.0 m – 15.0 m

Changamwe Tank BH01: 15.0 m – 20.0 m

Changamwe Tank BH02: 0.0 m – 5.0 m

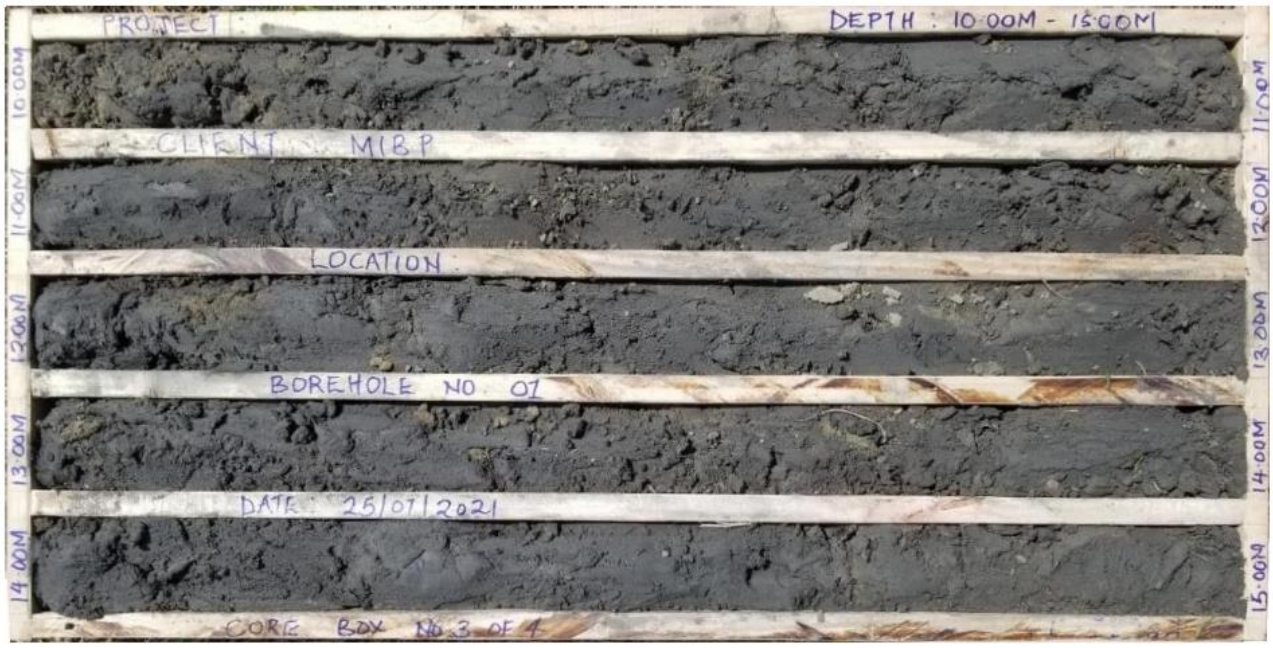
Changamwe Tank BH02: 5.0 m – 10.0 m

Changamwe Tank BH02: 10.0 m – 15.0 m

Changamwe Tank BH02: 15.0 m – 20.0 m

Bonje Creek BH01: 0.0 m – 5.0 m

Bonje Creek BH01: 5.0 m – 10.0 m



Bonje Creek BH01: 10.0 m – 15.0 m

Bonje Creek BH01: 15.0 m – 20.0 m

Bonje Creek BH01: 20.0 m – 25.0 m

Bonje Creek BH01: 25.0 m – 30.0 m

Bonje Creek BH02: 0.0 m – 5.0 m

Bonje Creek BH02: 5.0 m – 10.0 m

Bonje Creek BH02: 10.0 m – 15.0 m

Bonje Creek BH02: 15.0 m – 20.0 m

Bonje Creek BH03: 0.0 m – 5.0 m

Bonje Creek BH03: 5.0 m – 10.0 m

Bonje Creek BH03: 10.0 m – 15.5 m

Bonje Creek BH03: 15.5 m – 20.0 m

Trunk Main Tank BH01: 0.0 m – 5.0 m

Trunk Main Tank BH01: 5.0 m – 11.0 m

Trunk Main Tank BH01: 11.0 m – 16.0 m

Trunk Main Tank BH01: 16.0 m – 20.0 m

Trunk Main Tank BH02: 0.0 m – 5.0 m

Trunk Main Tank BH02: 5.0 m – 12.0 m

Trunk Main Tank BH02: 12.0 m – 17.0 m

Trunk Main Tank BH02: 17.0 m – 20.0 m

Trial Pit Photos

NGUU TATU SITE
TPKM 6+500
Date: 11/10/2021
NGUU TATU SITE
TPKM 7+000
Date: 11/10/2021
NGUU TATU SITE
TPKM 7+500
DATE: 11/10/2021
NGUU TATU SITE
TPKM 8+000
DATE: 11/10/2021

NGUU TATU SITE
TPKM 9+000
DATE: 06/10/2021
NGUU TATU SITE
TPKM 9+500
DATE: 06/10/2021
NGUU TATU SITE
TPKM 10+000
DATE: 06/10/2021
TPKM 10+500
DATE: 06/10/2021

NGUU TATU SITE
TPKM 11+000
DATE: 06/10/2021
KARTASI
COUNTER BOOK
1 QUIRE
NGUU TATU SITE
TPKM 11+500
DATE: 06/10/2021
NGUU TATU SITE
TPKM 12+000
DATE: 06/10/2021
NGUU TATU SITE
TPKM 12+500
DATE: 02/10/2021

NGUU TATU SITE
TPKM 13+000
DATE: 02/10/2021
NGUU TATU SITE
TPKM 13+500
DATE: 02/10/2021
COUNTER BOOK
1 QUIRE
NGUU TATU SITE
TPKM 14+000
DATE: 02/10/2021
NGUU TATU SITE
TPKM 14+500
DATE: 02/10/2021

NGUU TATU SITE
TPKM 15+000
DATE: 02/10/2021
NGUU TATU SITE
TPKM 15+500
DATE: 02/10/2021
NGUU TATU SITE
TPKM 16+000
DATE: 02/10/2021
NGUU TATU SITE
TPKM 16+500

NGUU TATU SITE
TPKM 17+000
DATE: 02/10/2021
NGUU TATU SITE
TPKM 17+500
DATE: 02/10/2021
NGUU TATU SITE
TPKM 18+500
DATE: 06/10/2021
TPKM 19+000

NGUU TATU PIPELINE
TPKM 19+500
DATE: 6/10/2021
NGUU TATU PIPELINE
TPKM 20+000
DATE: 6/10/2021
NGUU TATU PIPELINE
TPKM 20+500
DATE: 6/10/2021

KAYA BOMBO PIPLEINE

TP KM 2+000
DATE: 19/9/2021
COUNTER BOOK 1 QUIRE
KARTASI
COUNTER BOOK 1 QUIRE
TP KM 2+500
DATE: 19/09/2021
COUNTER BOOK 1 QUIRE
TP KM 3+500
DATE: 18/09/2021
TP KM 4+000
DATE: 18/09/2021
COUNTER BOOK 1 QUIRE

TP KM 4+000
DATE: 18/09/2021
COUNTER BOOK 1 QUIRE
TP KM 5+000
DATE: 18/09/2021
TP KM 5+500
DATE: 18/09/2021
TP KM 6+500
DATE: 18/09/2021

KARTASI
COUNTER BOOK
1 QUIRE
TP km 7+000
DATE: 18/09/2021
TP km 7+500
DATE: 18/09/2021
TP km 8+000
DATE: 18/09/2021
TP km 8+500
DATE: 18/09/2021

TP KM 9+000
DATE: 18/09/2021
COUNTER BOOK
1 QUIRE
TP KM 9+500
DATE: 18/09/2021
TP KM 10+000
TP KM 10+500

TP Km 11+000
DATE: 15/09/2021
TP Km 12+000
DATE: 15/09/2021

TP KM 13+000
TP KM 14+000
TP KM 14+500
TP KM 15+000
TP KM 15+500

TP KM 16+000
DATE: 15/09/2021
TP KM 16+500
DATE: 15/09/2021
TP KM 17+000
15/09/2021
TP KM 17+500
15/09/2021
TP KM 18+000
DATE: 15/09/2021
TP KM 18+500

TP km 19+000
DATE: 15/09/2021
TP km 19+500
DATE: 13/09/2021
TP km 20+000
DATE: 13/09/2021
TP km 20+500
DATE: 13/09/2021
TP km 21+000
DATE: 13/09/2021

TP KM 23+000
DATE: 13/09/2021
TP KM 23+500
DEPTH: 1.5M
DATE: 10/09/2021
TP KM 24+000
DATE: 13/09/2021
TP KM 24+500
DATE: 13/09/2021

CHANGAMWE PIPLEINE

CHANGAMWE
TP KM 2+000
DATE: 24/9/2021
TP KM 3+500
CHANGAMWE SITE
TPKM 3+000
DATE: 24/9/2021
CHANGAMWE SITE
TP KM 3+500
DATE: 24/9/2021

CHANGAMWE SITE
TP KM 4+000
DATE: 24/9/2021
KARTASI
COUNTER BOOK
1 QUIRE
CHANGAMWE SITE
TP KM 4+500
DATE: 24/9/2021
KARTASI
COUNTER BOOK
1 QUIRE
CHANGAMWE SITE
TP KM 5+000
DATE: 25/9/2021
KARTASI
COUNTER BOOK
1 QUIRE
CHANGAMWE SITE
TP KM 5+500
DATE: 24/9/2021

CHANGAMWE SITE
TP KM 6+000
DATE: 24/9/2021
CHANGAMWE PIPELINE SITE
TP KM 7+000
DATE: 25/9/2021
CHANGAMWE SITE
TP KM 7+500
DATE: 27/09/2021
COUNTER
BOOK
1 QUIRE
CHANGAMWE SITE
TPKM 8+000
Date: 27/9/2021

KARTASI
COUNTER BOOK 1 QUIRE
CHANGAMWE SITE
TPKM 8+500
Date: 27/9/2021
CHANGAMWE SITE
TPKM 9+000
DATE: 27/9/2021
CHANGAMWE SITE
TP KM 9+500
DATE: 27/9/2021
CHANGAMWE SITE
TP KM 10+000
DATE: 27/9/2021

CHANGAMWE SITE
TP KM 11+000
DATE: 29/07/2021
COUNTER BOOK
1 QUIRE
KARTASI

MZIMA PIPLEINE

TRUNK MAIN PIPLEINE

KARTASI
COUNTER BOOK
1 QUIRE
TRUNK MAIN SITE
TP KN 8+500
DATE: 21/09/2021
TRUNK MAIN SITE
P KN 4+000
TE: 21/9/2021
KARTASI
COUNTER BOOK
1 QUIRE
KARTASI
COUNTER BOOK
1 QUIRE
TRUNK MAIN SITE
TP KN 4+500
Date: 23/9/2021
KARTASI
COUNTER BOOK
1 QUIRE
TRUNK MAIN SITE
TP KN 5+000
Date: 23/09/2021

TRUNK MAIN SITE
TPKN 5+005
DATE: 23/09/2021
COUNTER
BOOK
1 QUIRE

APPENDIX B

Borehole Logs

ABBREVIATIONS AND GENERAL INFORMATION

Weathering Grades

I: Fresh & Hard
II: Slightly Weathered
III: Moderately Weathered
IV: Highly Weathered
V: Completely Weathered
VI: Residual Soil

Recovery Properties

TCR	Total Core Recovery
RQD	Rock Quality Designation

Fracture Asperities

SR	Fresh & Hard
M	Mechanical
RI	Rough and Irregular

Fracture Index

WR	With residual material

DYNAMIC CONE PENETRATION TEST

Dynamic Cone Penetration Test (DCPT) involves driving a 60° steel cone into the ground using an 8 Kg sliding hammer over a 575 mm drop height and recording the penetration for every blow.

STANDARD PENETRATION TEST

Standard Penetration Test (SPT) is an in-situ dynamic penetration test that entails the driving of a split spoon sampler into soil strata at the bottom of the open boreholes by dropping a standard weight (63.5 kg) hammer through a standard distance (760 mm) and recording the number of blows (N) required to achieve 300 mm penetration after an initial seating drive of 150 mm or 25 blows, whichever is achieved first (BS EN ISO 22476-3). Blow counts in excess of 50 in the 300 mm test phase are recorded as 'refusal' to penetration and abbreviated 'R' in the logs. Below are typical consistency descriptions of soils based on N - values. Note that the test termination criteria can be modified to conform to the standard insisted upon by the client.

Cohesionless Soils

Relative Density	N - Value
Very Loose	< 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	> 50

Cohesive Soils

Consistency	Undrained Shear Strength, kPa	N - Value
Very Soft	< 12	< 2
Soft	12 - 25	2 - 4
Firm	25 - 50	4 - 8
Stiff	50 - 100	8 - 16
Very Stiff	100 - 200	16 - 32
Hard	> 200	> 32

FIELD MOISTURE DESCRIPTIONS

Dry - refers to a soil sample with a moisture content well below optimum ($w < w_{opt}$), absence of moisture, dusty, dry to the touch.
Moist - refers to a soil sample with a moisture content at or near optimum ($w \approx w_{opt}$), no visible pore water.
Wet - refers to a soil sample with a moisture content well above optimum ($w > w_{opt}$), has visible pore water.

ROCK DESCRIPTIONS

RQD (%)	Rock Mass Quality
0 - 25	Very Poor
25 - 50	Poor
50 - 75	Fair
75 - 90	Good
90 - 100	Excellent

Compressive Strength (MPa)	Strength Classification
< 1	Extremely Weak
1 - 5	Very Weak
5 - 25	Weak
25 - 50	Medium Strong
50 - 100	Strong
100 - 250	Very Strong
> 250	Extremely Strong

SYMBOLS

▼ Last record of water level in the borehole. May not represent full equilibrium condition.

REGIONAL GEOPHYSICAL SURVEY

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	69.4		
Location: Nguu Tatu Tank		UTM Coordinates (ARC 1960)	E	0575262	Zone 37 S
Client: MIBP			N	9560289	
		Drilling Date	Start	08/07/2021	
			End	12/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH01
Drill Rig Type: GY 150	Drilled By: Richard	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: -	Inclination From Vertical: 0°

Sheet 1 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	Recovery TCR (%)	Recovery RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
0	69	1				Dark brown, slightly moist, Stiff gravelly Clay.			
1	68	1	100	0		Pale grey, highly weathered, soft, fine grained Shale. Characterized by cobbles and rubbles of Shale	IV	>20	
2	67	1	100	0		Pale grey, highly weathered, soft, fine grained Shale. Characterized by cobbles and rubbles of Shale	IV	>20	
3	66	1	100	0		Pale grey, highly weathered, soft, fine grained Shale. Characterized by cobbles and rubbles of Shale	IV	>20	
4	65	1	100	0		Pale grey, highly weathered, soft, fine grained Shale. Characterized by cobbles and rubbles of Shale	IV	>20	
5	64	1	100	0		Pale grey, highly weathered, soft, fine grained Shale. Characterized by cobbles and rubbles of Shale	IV	>20	
6	63	1	100	0		Pale grey, highly weathered, soft, fine grained Shale. Characterized by cobbles and rubbles of Shale	IV	>20	
7	62	1	100	0		Pale grey, slightly weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	II	>20	
8	61	1	100	21		Pale grey, slightly weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	II	14	
9	60	1	100	0		Pale grey, moderately weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	III	>20	
10									

KEY Gravelly Clay Shale

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	69.4		
Location: Nguu Tatu Tank		UTM Coordinates (ARC 1960)	E	0575262	Zone
Client: MIBP			N	9560289	37 S
		Drilling Date	Start	08/07/2021	
			End	12/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH01
Drill Rig Type: GY 150	Drilled By: Richard	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: -	Inclination From Vertical: 0°

Sheet 2 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	Recovery TCR (%)	Recovery RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
10	59	1	100	0		Pale grey, moderately weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	III	>20	
11	58	1	100	0		Pale grey, moderately weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	III	>20	
12	57	0.75	100	0		Pale grey, moderately weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	III	>20	
13	56	1.25	100	96		Grey, fresh, fine grained, soft, Shale. Characterized by closed horizontal fractures.	I	8	
14	55	1	100	97		Grey, fresh, fine grained, soft, Shale. Characterized by closed horizontal fractures.	I	6	
15	54	1	100	100		Grey, fresh, fine grained, soft, Shale. Characterized by closed horizontal fractures.	I	4	
16	53	1	100	100		Grey, fresh, fine grained, soft, Shale. Characterized by closed horizontal fractures.	I	2	
17	52	1	100	100		Grey, fresh, fine grained, soft, Shale. Characterized by closed horizontal fractures.	I	3	
18	51	1	100	79		Grey, fresh, fine grained, soft, Shale. Characterized by closed horizontal fractures.	I	9	
19	50	1	100	73		Grey, fresh, fine grained, soft, Shale. Characterized by closed horizontal fractures.	I	7	
20									

KEY Gravelly Clay Shale

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	65.9		
Location: Nguu Tatu Tank		UTM Coordinates (ARC 1960)	E	0575293	Zone
Client: MIBP			N	9560265	37 S
		Drilling Date	Start	13/07/2021	
			End	18/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH02
Drill Rig Type: GY 150	Drilled By: Richard	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: -	Inclination From Vertical: 0°

Sheet 1 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	Recovery TCR (%)	Recovery RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
0		1	100			Dark brown, slightly moist, Stiff gravelly Clay.	VI		
1	65	1	100	0		Pale grey, completely weathered, soft, fine grained Shale. Characterized by cobbles and rubbles of Shale	V	>20	
2	64	1	100	0		Pale grey, completely weathered, soft, fine grained Shale. Characterized by cobbles and rubbles of Shale	V	>20	
3	63	1	100	0		Pale grey, completely weathered, soft, fine grained Shale. Characterized by cobbles and rubbles of Shale	V	>20	
4	62	1	100	0		Pale grey, highly weathered, soft, fine grained Shale. Characterized by cobbles and rubbles of Shale	IV	>20	
5	61	1	100	0		Pale grey, moderately weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	III	>20	
6	60	1	100	0		Pale grey, moderately weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	III	>20	
7	59	1.5	67	0		Pale grey, moderately weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	III	>20	
8	58	1.5	67	0		Pale grey, moderately weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	III	>20	
9	57								
10	56								

KEY Gravelly Clay Shale

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	65.9	
Location: Nguu Tatu Tank		UTM Coordinates (ARC 1960)	E 0575293	Zone
Client: MIBP			N 9560265	37 S
		Drilling Date	Start 13/07/2021	
			End 18/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH02
Drill Rig Type: GY 150	Drilled By: Richard	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: -	Inclination From Vertical: 0°

Sheet 2 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	Recovery TCR (%)	Recovery RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
10									
	55	1.5	67	0		Pale grey, moderately weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	III	>20	
11									
	54	1	100	27		Pale grey, slightly weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	III	>20	
12									
	53	1.5	67	0		Pale grey, moderately weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	III	>20	
13									
	52	1	100	47		Pale grey, slightly weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	II	14	
14									
	51	1	100	18		Pale grey, slightly weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	II	16	
15									
	50	1	100	74		Pale grey, slightly weathered, soft, fine grained Shale. Characterised by closed, sub horizontal, rough and irregular fractures. Fracture surfaces are weathered to red brown.	II	6	
16									
	49	1	100	94		Grey, fresh, fine grained, soft, Shale. Characterized by closed horizontal fractures.	I	4	
17									
	48	1	100	66		Grey, fresh, fine grained, soft, Shale. Characterized by closed horizontal fractures.	I	10	
18									
	47	1	100	70		Grey, fresh, fine grained, soft, Shale. Characterized by closed horizontal fractures.	I	9	
19									
20	46								

KEY Gravelly Clay Shale

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	61.1		
Location: Changamwe Tank		UTM Coordinates (ARC 1960)	E	0570463	Zone
Client: MIBP			N	9555652	37 S
		Drilling Date	Start	09/07/2021	
			End	10/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH01
Drill Rig Type: GY 150	Drilled By: Hillary	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: -	Inclination From Vertical: 0°

Sheet 1 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	Recovery TCR (%)	Recovery RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
0	61	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	
1	60	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	17
2	59	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	
3	58	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	34
				-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	
4	57	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	29
5	56	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	
6	55	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	36
7	54	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	R
8	53	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	
9	52	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	R
10									

KEY Silty Clay

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	61.1	
Location: Changamwe Tank		UTM Coordinates (ARC 1960)	E 0570463	Zone 37 S
Client: MIBP			N 9555652	
		Drilling Date	Start 09/07/2021	
			End 10/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH01
Drill Rig Type: GY 150	Drilled By: Hillary	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: -	Inclination From Vertical: 0°

Sheet 2 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	Recovery TCR (%)	Recovery RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
10	51	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	42
11	50	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	
12	49	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	49
13	48	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	51
14	47	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	
15	46	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	40
16	45	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	42
17	44	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	
18	43	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	39
19	42	1	100	-		Yellowish grey, slightly moist, stiff Silty Clay. Residual soil	VI	-	R
20									

KEY Silty Clay

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	60.3		
Location: Changamwe Tank		UTM Coordinates (ARC 1960)	E	0570494	Zone
Client: MIBP			N	9555676	37 S
		Drilling Date	Start	12/07/2021	
			End	13/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH02
Drill Rig Type: GY 150	Drilled By: Hillary	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: -	Inclination From Vertical: 0°

Sheet 1 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	Recovery TCR (%)	Recovery RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
0	60	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	
1	59	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	34
2	58	1	98	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	
3	57	1	99	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	30
4	56	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	44
5	55	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	
6	54	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	R
7	53	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	R
8	52	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	
9	51	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	38
10									

KEY Silty Clay

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	60.3		
Location: Changamwe Tank		UTM Coordinates (ARC 1960)	E	0570494	Zone
Client: MIBP			N	9555676	37 S
		Drilling Date	Start	12/07/2021	
			End	13/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH02
Drill Rig Type: GY 150	Drilled By: Hillary	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: -	Inclination From Vertical: 0°

Sheet 2 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	Recovery TCR (%)	Recovery RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
10	50	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	43
11	49	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	
12	48	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	12
13	47	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	33
14	46	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	
15	45	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	47
16	44	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	R
17	43	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	
18	42	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	38
19	41	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	R
20									

KEY Silty Clay

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	109.7		
Location: West Main Land Tank		UTM Coordinates (ARC 1960)	E	0560969	Zone
Client: MIBP			N	9559696	37 S
		Drilling Date	Start	20/07/2021	
			End	26/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH01
Drill Rig Type: GY 150	Drilled By: Hillary	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: -	Inclination From Vertical: 0°

Sheet 1 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	TCR (%)	RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
0	109	1	100	-		Recovered as dry, reddish brown, dense sandy CLAY. Colluvium soil.	VI	-	
1	108	1	100	-		Recovered as dry, reddish brown, dense sandy CLAY. Colluvium soil.	VI	-	18
2	107	1	100	-		Recovered as grey brown, fine grained, stiff, completely weathered SHALE	V	-	22
3	106	1	100	-		Recovered as grey brown, fine grained, stiff, completely weathered SHALE	V	-	33
4	105	1	100	-		Recovered as grey brown, fine grained, stiff, completely weathered SHALE	V	-	37
5	104	1.5	100	-		Recovered as grey brown, fine grained, stiff, completely weathered SHALE	V	-	33
6									40
7	103	1	100	-		Recovered as grey brown, fine grained, stiff, completely weathered SHALE	V	-	44
8	102	1	100	12		Yellowish grey, moderately weathered, hard, fine grained siltstone. Characterised by open sub vertical, hrizontal, rough and irregular fracture surfaces. Rubbled in some sections.	III	>20	
9	101	1.5	67	0		Yellowish grey, highly weathered, hard, fine grained siltstone. Characterised by open sub vertical, horizontal, rough and irregular fracture surfaces. Rubbled in some sections.	IV	>20	
10	100								

KEY: Sandy Clay; Silty Clay; Siltstone

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	109.7		
Location: West Main Land Tank		UTM Coordinates (ARC 1960)	E	0560969	Zone
Client: MIBP			N	9559696	37 S
		Drilling Date	Start	20/07/2021	
			End	26/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH01
Drill Rig Type: GY 150	Drilled By: Hillary	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: -	Inclination From Vertical: 0°

Sheet 2 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	TCR (%)	RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
10	99	1	100	41		Yellowish grey, slightly weathered, hard, fine grained siltstone. Characterised by closed sub vertical, horizontal, rough and irregular fracture surfaces.	II	11	
11	98	1	100	11		Yellowish grey, slightly weathered, hard, fine grained siltstone. Characterised by closed sub vertical, horizontal, rough and irregular fracture surfaces.	II	13	
12	97	1	95	67		Yellowish grey, slightly weathered, hard, fine grained siltstone. Characterised by closed sub vertical, horizontal, rough and irregular fracture surfaces.	II	9	
13	96	1	100	13		Yellowish grey, slightly weathered, hard, fine grained siltstone. Characterised by closed sub vertical, horizontal, rough and irregular fracture surfaces.	II	17	
14	95	1	100	0		Yellowish grey, slightly weathered, hard, fine grained siltstone. Characterised by closed sub vertical, horizontal, rough and irregular fracture surfaces.	II	>20	
15	94	1	100	20		Yellowish grey, slightly weathered, hard, fine grained siltstone. Characterised by closed sub vertical, horizontal, rough and irregular fracture surfaces.	II	>20	
16	93	1.5	100	12		Yellowish grey, moderately weathered, hard, fine grained siltstone. Characterised by open sub vertical, hrizontal, rough and irregular fracture surfaces. Rubbled in some sections.	II	>20	
17	92	1	100	-		Yellowish grey, moderately weathered, hard, fine grained siltstone. Characterised by open sub vertical, hrizontal, rough and irregular fracture surfaces. Rubbled in some sections.	II	>20	
18	91	1.5	100	-		Yellowish grey, moderately weathered, hard, fine grained siltstone. Characterised by open sub vertical, hrizontal, rough and irregular fracture surfaces. Rubbled in some sections.	II	>20	
19	90								
20									

KEY: Sandy Clay | Silty Clay | Siltstone

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	105.5	
Location: West Main Land Tank		UTM Coordinates (ARC 1960)	E 0560996	Zone 37 S
Client: MIBP			N 9559688	
		Drilling Date	Start 27/07/2021	
			End 29/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH02
Drill Rig Type: GY 150	Drilled By: Hillary	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: -	Inclination From Vertical: 0°

Sheet 1 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	Recovery TCR (%)	Recovery RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
0	105	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	
1	104	1	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	21
2	103	0.5	100	-		Brownish red, Dry, firm Silty clay. Colluvium	VI	-	31
		0.5	100	0		Dark red, completely weathered, soft, medium to fine grained siltstone. Characterised by rubbled sections with cobbles of rock.	V	>20	
3	102	1	100	0		Dark red, completely weathered, soft, medium to fine grained siltstone. Characterised by rubbled sections with cobbles of rock.	V	>20	
4	101	1	100	0		Dark red, completely weathered, soft, medium to fine grained siltstone. Characterised by rubbled sections with cobbles of rock.	V	>20	
5	100	2	100	19		Dark red, completely weathered, soft, medium to fine grained siltstone. Characterised by rubbled sections with cobbles of rock.	II	12	
6	99								
7	98	1.5	67	6.7		Grey, slightly weathered, hard, medium grained siltstone. Characterised by closed, horizontal, rough and irregular fracture surfaces.	II	16	
8	97								
9	96	1.5	67	0		Grey, moderately weathered, hard, medium grained siltstone. Characterised by closed, horizontal, rough and irregular fracture surfaces.	III	>20	
10									

KEY: Silty Clay; Siltstone

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	105.5	
Location: West Main Land Tank		UTM Coordinates (ARC 1960)	E 0560996	Zone 37 S
Client: MIBP			N 9559688	
		Drilling Date	Start 27/07/2021	
			End 29/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH02
Drill Rig Type: GY 150	Drilled By: Hillary	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: -	Inclination From Vertical: 0°

Sheet 2 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	Recovery TCR (%)	Recovery RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
10	95	1	100	71		Grey, slightly weathered, hard, medium grained siltstone. Characterised by closed, horizontal, rough and irregular fracture surfaces.	II	8	
11	94	1	100	35		Grey, slightly weathered, hard, medium grained siltstone. Characterised by closed, horizontal, rough and irregular fracture surfaces.	II	12	
12	93	1	100	37		Grey, slightly weathered, hard, medium grained siltstone. Characterised by closed, horizontal, rough and irregular fracture surfaces.	II	11	
13	92	1	100	32		Grey, slightly weathered, hard, medium grained siltstone. Characterised by closed, horizontal, rough and irregular fracture surfaces.	II	13	
14	91	1	100	35		Grey, slightly weathered, hard, medium grained siltstone. Characterised by closed, horizontal, rough and irregular fracture surfaces.	II	15	
15	90	1	100	11		Grey, slightly weathered, hard, medium grained siltstone. Characterised by closed, horizontal, rough and irregular fracture surfaces.	II	>20	
16	89	1	100	14		Grey, slightly weathered, hard, medium grained siltstone. Characterised by closed, horizontal, rough and irregular fracture surfaces.	II	>20	
17	88	1	100	0		Grey, slightly weathered, hard, medium grained siltstone. Characterised by closed, horizontal, rough and irregular fracture surfaces.	II	>20	
18	87	1	100	77		Grey, slightly weathered, hard, medium grained siltstone. Characterised by closed, horizontal, rough and irregular fracture surfaces.	II	11	
19	86	1	100	47		Grey, slightly weathered, hard, medium grained siltstone. Characterised by closed, horizontal, rough and irregular fracture surfaces.	II	9	
20									

KEY Silty Clay Siltstone

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	5.2		
Location: Bonje Creek Pipe		UTM Coordinates (ARC 1960)	E	0558669	Zone 37 S
Client: MIBP			N	9556193	
		Drilling Date	Start	24/07/2021	
			End	30/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH01
Drill Rig Type: GY 150	Drilled By: Richard	Total Depth Drilled: 30 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: 1.5 m	Inclination From Vertical: 0°

Sheet 1 of 3

Depth (m)	Elevation (m)	Recovery Run (m)	TCR (%)	RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
0	5	1	100	-		Recovered as slightly moist, yellowish brown, loose, silty sand.	VI	-	
1	4	1	100	-		Recovered as slightly moist, yellowish brown, loose, silty sand.	VI	-	7
2	3	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
3	2	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	8
4	1	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	14
5	0	2	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
6	-1	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	12
7	-2	2	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	8
8	-3								
9	-4	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	22
10									

KEY: Sandy Clay, Sand

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	5.2	
Location: Bonje Creek Pipe		UTM Coordinates (ARC 1960)	E 0558669	Zone 37 S
Client: MIBP			N 9556193	
		Drilling Date	Start 24/07/2021	
			End 30/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH01
Drill Rig Type: GY 150	Drilled By: Richard	Total Depth Drilled: 30 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: 1.5 m	Inclination From Vertical: 0°

Sheet 2 of 3

Depth (m)	Elevation (m)	Recovery Run (m)	Recovery TCR (%)	Recovery RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
10	-5	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	14
11	-6	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
12	-7	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	12
13	-8	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	17
14	-9	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
15	-10	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	16
16	-11	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	15
17	-12	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
18	-13	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	21
19	-14	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
20									26

KEY Sandy Clay Sand

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	5.2		
Location: Bonje Creek Pipe		UTM Coordinates (ARC 1960)	E	0558669	Zone
Client: MIBP			N	9556193	37 S
		Drilling Date	Start	24/07/2021	
			End	30/07/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH01
Drill Rig Type: GY 150	Drilled By: Richard	Total Depth Drilled: 30 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: 1.5 m	Inclination From Vertical: 0°

Sheet 3 of 3

Depth (m)	Elevation (m)	Recovery Run (m)	TCR (%)	RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
20	-15	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
21	-16	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	24
22	-17	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	30
23	-18	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
24	-19	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	29
25	-20	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	38
26	-21	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
27	-22	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	31
28	-23					Dark brown to black, very moist, soft, Sandy Clay.			11
29	-24					Dark brown to black, very moist, soft, Sandy Clay.			
30									

KEY Sandy Clay Sand

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	13.6		
Location: Bonje Creek Pipe		UTM Coordinates (ARC 1960)	E	0558617	Zone 37 S
Client: MIBP			N	9556133	
		Drilling Date	Start	03/08/2021	
			End	03/08/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH02
Drill Rig Type: GY 150	Drilled By: Richard	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: 1.5 m	Inclination From Vertical: 0°

Sheet 1 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	Recovery TCR (%)	Recovery RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
0	13	1	100	-		Recovered as slightly moist, yellowish brown, loose, silty sand.	VI	-	
1	12	1	100	-		Recovered as slightly moist, yellowish brown, loose, silty sand.	VI	-	4
2	11	1	100	-		Recovered as slightly moist, yellowish brown, loose, silty sand.	VI	-	
3	10	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	6
4	9	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	9
5	8	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
6	7	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	9
7	6	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	8
8	5	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
9	4	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	12
10									

KEY: Sandy Clay; Clayey Silty Sand

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	13.6		
Location: Bonje Creek Pipe		UTM Coordinates (ARC 1960)	E	0558617	Zone
Client: MIBP			N	9556133	37 S
		Drilling Date	Start	03/08/2021	
			End	03/08/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH02
Drill Rig Type: GY 150	Drilled By: Richard	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: 1.5 m	Inclination From Vertical: 0°

Sheet 2 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	Recovery TCR (%)	Recovery RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
10	3	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	18
11	2	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
12	1	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	16
13	0	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	21
14	-1	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
15	-2	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	17
16	-3	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	26
17	-4	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
18	-5	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	25
19	-6	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	23
20									

KEY Sandy Clay Clayey Silty Sand

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	4.2	
Location: Bonje Creek Pipe		UTM Coordinates (ARC 1960)	E 0558683	Zone 37 S
Client: MIBP			N 9556207	
		Drilling Date	Start 06/08/2021	
			End 08/08/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH03
Drill Rig Type: GY 150	Drilled By: Richard	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: 1.5 m	Inclination From Vertical: 0°

Sheet 1 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	Recovery TCR (%)	Recovery RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
0	4	1	100	-		Recovered as slightly moist, yellowish brown, loose, silty sand.	VI	-	
1	3	1	100	-		Dark brown to black, very moist, soft, Sandy Clay. Marine deposits	VI	-	12
2	2	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
3	1	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	7
4	0	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	9
5	-1	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
6	-2	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	13
7	-3	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	14
8	-4	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
9	-5	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	18
10									

KEY: Sandy Clay; Clayey Silty Sand; Sandstone

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

Project: Mwache Transmission Pipelines	REGIONAL GEOPHYSICAL SURVEY	Elevation (m)	4.2		
Location: Bonje Creek Pipe		UTM Coordinates (ARC 1960)	E	0558683	Zone
Client: MIBP			N	9556207	37 S
		Drilling Date	Start	06/08/2021	
			End	08/08/2021	

BOREHOLE LOG

Drilling Method: Rotary	Logged By: Solomon	Borehole ID.: BH03
Drill Rig Type: GY 150	Drilled By: Richard	Total Depth Drilled: 20 m
Barrel Ø: 86/101 mm Augur Ø: 150 mm	Water rest Level: 1.5 m	Inclination From Vertical: 0°

Sheet 2 of 2

Depth (m)	Elevation (m)	Recovery Run (m)	TCR (%)	RQD (%)	Lithology	Lithology Description	Weathering Grade	Fracture Frequency	SPT N - Value
10	-6	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	17
11	-7	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
12	-8	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	22
13	-9	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	29
14	-10	1	100	-		Dark brown to black, very moist, soft, Sandy Clay.	VI	-	
15	-11								R
16	-12	2	75	0		, Grey, medium to fine grained, hard and highly to completely weathered sanstone. Characterized by rubbles.	IV	>20	
17	-13								
18	-14	0.5	100	44		Grey, medium grained, hard, slightly weathered sandstone characterized be closed, rough and irregular horizontal joints.	II	5	
19	-15	1.5	67	35		Grey, medium grained, hard, slightly weathered sandstone characterized be closed, rough and irregular horizontal joints.	II	13	
20									

KEY: Sandy Clay; Clayey Silty Sand; Sandstone

Note: See appended explanatory notes for details of abbreviations and basis of descriptions.

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	NGUU TATU PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 0+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	561128.3393	9559559.194	89.489
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.26	Red brown, dry, dense GRAVEL. Highly weathered SHALE with fibrous roots
0.26	0.56	Yellowish brown, Highly weathered, sandy GRAVEL. Residual SHALE
0.56	1.5	Yellowish grey, Highly fractured moderately weathered SHALE

Location ID	TPKM 0+500		
Date	13/10/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	561576.8417	9559709.187	77.527
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.5	Grey, dry, Sandy GRAVEL. Dumped soil material
0.5	1.5	Brown grey, highly weathered, highly fractured, sandy GRAVEL. Residual Shale

Location ID	TPKM 1+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	562042.9778	9559571.988	71.998
Excavation Method			
Excavated Depth (m)	1.36		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.05	Grey, dry, Sandy GRAVEL. Dumped soil material
1.05	1.36	Brown grey, highly weathered, highly fractured, sandy GRAVEL. Residual Shale

Location ID	TPKM 1+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	562514.7183	9559406.373	65.414
Excavation Method			
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.2	Grey, dry, Sandy GRAVEL. Dumped soil material

Location ID	TPKM 2+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	562949.6327	9559164.007	60.571
Excavation Method			
Excavated Depth (m)	1.35		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.35	Grey, dry, Sandy GRAVEL. Dumped soil material

Location ID	TPKM 2+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	563344.4157	9559167.883	51.687
Excavation Method			
Excavated Depth (m)	1.10		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Brown, dry, stiff, CLAY soil with some fibrous roots.
0.3	1.1	Tinge grey, stiff, slightly moist, CLAY. Completely weathered SHALE

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	NGUU TATU PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 3+000		
Date	13/10/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	563556.7835	9559619.2	26.523
Excavation Method			
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Reddish brown, dry, loose, clayey silty SAND with fibrous roots
0.3	0.8	Black, dry, stiff, SAND soil with organic content
0.8	1.4	Bownish red, wet, dense, stiff CLAY

Location ID	TPKM 3+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	563702.5199	9560097.396	49.394
Excavation Method			
Excavated Depth (m)	1.60		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.6	Red brown, dry, stiff, CLAY.

Location ID	TPKM 4+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	563854.9742	9560573.582	59.032
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.3	Tinge green, dry, very stiff, dense, gravely CLAY
1.3	1.5	Yellowish brown, dry, very stiff, MURRAM

Location ID	TPKM 4+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	564003.0891	9561051.073	55.94
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.9	Tinge green, dry, very stiff, dense, gravely CLAY
0.9	1.5	Highly fractured,moderate weathered SHALE

Location ID	TPKM 5+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	564214.1589	9561500.368	63.773
Excavation Method			
Excavated Depth (m)	2.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	2.5	Highly fractured, moderate weathered SHALE

Location ID	TPKM 5+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	564587.7595	9561830	69.65
Excavation Method			
Excavated Depth (m)	1.70		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Highly fractured, moderate weathered SHALE
0.4	1.7	Highly fractured, weathered SHALE

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	NGUU TATU PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 6+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	564984.8472	9562133.829	59.707
Excavation Method			
Excavated Depth (m)	1.70		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.5	Highly weathered SHALE
0.5	1.7	Highly fractured, moderate weathered SHALE

Location ID	TPKM 6+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	565378.4945	9562442.105	43.478
Excavation Method			
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Reddish brown highly weathered SHALE
0.3	1.2	Tinge green highly weathered SHALE

Location ID	TPKM 7+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	565769.7004	9562753.478	61.19
Excavation Method			
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.2	Reddish brown highly weathered SHALE
0.23	1.4	Highly fractured, slightly - moderate weathered SHALE

Location ID	TPKM 7+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566110.5354	9563115.52	49.173
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.5	Highly weatheredv SHALE (reddish brown turnish on their surfaces)
0.5	1.3	Highly fractured moderate weathered SHALE

Location ID	TPKM 8+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566356.2134	9563550.084	29.194
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Dark brown,dry, loose SAND soil with fibrous roots
0.3	0.8	Reddish tinge green, dry, stiff, dense, gravely CLAY
0.8	1.3	Beige, dry, stiff, MURRAM

Location ID	TPKM 8+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566673.668	9563935.869	39.746
Excavation Method			
Excavated Depth (m)	1.70		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.7	Yellowish grey, dry, loose, silty fine SAND
0.7	1.7	Yellowish grey, dry, stiff, clayey silty SAND

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	NGUU TATU PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 9+000		
Date	6/10/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	567032.4275	9564284.135	24.472
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Red Brown, dry, loose, clayey silty sandy CLAY
0.4	1.3	Yellowish brown, dry, dense, very stiff CLAY. Residual Dhale

Location ID	TPKM 9+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	567434.6931	9564574.585	17.266
Excavation Method			
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Brown, dry, loose, clayey silty SAND
0.4	1.4	Yellowish grey, dry, dense, very stiff CLAY

Location ID	TPKM 10+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	567919.518	9564655.431	21.521
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Brown, dry, loose,clayey SILT.
0.3	1.3	Brown, dry, loose,clayey silty CLAY. Completely weathered SHALE

Location ID	TPKM 10+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	568414.3318	9564640.361	55.544
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.25	Light brown, dry, loose fine SAND
0.25	1.3	Reddish brown, dry, dense, gravely CLAY

Location ID	TPKM 11+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	568913.7946	9564663.532	59.219
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.5	Reddish brown completely weathered SHALE
0.5	1.3	Yellowish brown highly weathered SHALE

Location ID	TPKM 11+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	569413.2574	9564686.703	52.862
Excavation Method			
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.6	Reddish brown completely weathered SHALE
0.6	0.9	Highly weathered SHALE
0.9	1.2	Highly-moderate weathered SHALE

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	NGUU TATU PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 12+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	569912.7202	9564709.874	52.478
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.2	Completely weathered SHALE
0.2	1.3	Highly-moderate weathered SHALE

Location ID	TPKM 12+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	570412.183	9564733.045	63.443
Excavation Method			
Excavated Depth (m)	1.25		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.2	Light brown, dry, loose, silty SAND (top soil)
0.2	1	Reddish brown, dry, sandy CLAY soil
1	1.25	Reddish grey, dry, stiff, gravely CLAY

Location ID	TPKM 13+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	570911.6459	9564756.216	60.326
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Light brown, loose, dry, silty SAND
0.3	1.5	Reddish brown, dry, stiff, gravely clayeye SAND

Location ID	TPKM 13+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	571411.0058	9564781.473	56.061
Excavation Method			
Excavated Depth (m)	2.10		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	2.1	Light brown, dry, loose, fine SAND with fibrous roots

Location ID	TPKM 14+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	571910.3237	9564807.579	23
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Tinge green, dry, stiff, gravely CLAY (colluvium)
0.3	0.9	Dark brown, dry, loose, silty SAND
0.9	1.5	Brown, dry, loose, fine SAND with fibrous roots

Location ID	TPKM 14+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	572409.6417	9564833.686	35.041
Excavation Method			
Excavated Depth (m)	1.70		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.4	Light brown, loose, dry, fine SAND
1.4	1.7	Beige, dry, loose, fine SAND

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	NGUU TATU PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 15+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	572908.9597	9564859.793	30.11
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.5	Brown, dry, loose, silty SAND
0.5	1.3	Reddish brown, dry, loose, silty SAND

Location ID	TPKM 15+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	573408.2777	9564885.899	21.988
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.25	Dark brown, dry, loose, clayey SAND soil
0.25	0.6	Reddish brown, dry, stiff, gravely sandy CLAY
0.6	1.3	Tinge green,wet, dense, stiff, gravely CLAY

Location ID	TPKM 16+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	573768.7707	9564697.089	23.559
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.75	Brownish tinge green, dry, dense, gravely CLAY
0.75	1.5	Brownish grey highly weathered SHALE

Location ID	TPKM 16+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	573953.0285	9564232.278	25.664
Excavation Method			
Excavated Depth (m)	1.80		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.8	Tinge green, slightly moist, very stiff CLAY. Residual shale

Location ID	TPKM 17+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	574137.2863	9563767.468	20.967
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.5	Tinge green, slightly moist, very stiff CLAY. Residual shale

Location ID	TPKM 17+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	574321.5441	9563302.657	35.306
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.3	Tinge green, slightly moist, very stiff CLAY. Residual shale

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	NGUU TATU PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 18+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	574453.7002	9562820.588	51.448
Excavation Method			
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Tinge green, dry, loose gravely CLAY
0.4	1.2	Highly fractured, weathered SHALE

Location ID	TPKM 18+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	574587.3135	9562338.771	50.043
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.1	Tinge green, slightly moist, very stiff CLAY. Residual shale
1.1	1.5	Highly weathered SHALE

Location ID	TPKM 19+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	574710.6599	9561862.273	44.123
Excavation Method			
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.4	Tinge green, slightly moist, very stiff CLAY. Residual shale

Location ID	TPKM 19+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	574687.84	9561363.349	20.562
Excavation Method			
Excavated Depth (m)	1.10		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.6	Yellowish to Tinge green, slightly moist, very stiff CLAY. Residual shalely weathered SHALE
0.6	1.1	Brownish grey completely weathered SHALE

Location ID	TPKM 20+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	574796.4788	9560881.795	28.627
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.5	Brown, dry, stiff, gravely CLAY
0.5	0.8	Highly to Completely weathered SHALE
0.8	1.5	Highly weathered SHALE

Location ID	TPKM 20+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	575018.8497	9560449.102	39.138
Excavation Method			
Excavated Depth (m)	1.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.2	Brown, dry, stiff, gravely CLAY
0.2	1	Yellow to tinge green, very stiff, Completely weathered SHALE

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	KAYA BOMBO PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 0+000		
Date	21/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560381.0745	9557980.28	76.302
Excavation Method			
Excavated Depth (m)	1.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Red brown, moist, stiff, Sandy CLAY soil. Colluvium
0.4	1	Red brown, moist, stiff completely weathered CLAY. Residual V

Location ID	TPKM 0+500		
Date	21/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560057.6442	9557598.976	77.144
Excavation Method			
Excavated Depth (m)	1.10		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Red brown, dry, dense,Completely weathered SHALE
0.4	1.1	Grey, Highly fractured, moderately weathered SHALE

Location ID	TPKM 1+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	559718.9916	9557231.558	67.657
Excavation Method	20/9/2021		
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.4	Red grey, medium dense, highly to completely weathered SHALE with fibrous roots.

Location ID	TPKM 1+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	559518.7329	9556780.365	29.388
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.3	Dark red brown, stiff, dry, Silty CLAY completely weathered shale weathered shale. Reworked residual soil.

Location ID	TPKM 2+000		
Date	19/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	559252.7843	9556424.651	45.657
Excavation Method			
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.5	Brown, dry, firm, gravely silty SAND with fibrous roots
0.5	1.4	Grey, highly weathered, fine grained and very dense SHALE (Silty Clay)

Location ID	TPKM 2+500		
Date	19/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558770.0757	9556304.922	6.731
Excavation Method			
Excavated Depth (m)	2.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	2	Light brown, dry, loose, fine SAND. (Alluvium)

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	KAYA BOMBO PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 3+000		
Date	18/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558772.4128	9555900.643	21.153
Excavation Method			
Excavated Depth (m)	1.80		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.32	Brown,dry, stiff, medium sizes gravely sandy CLAY with fibrous roots
0.32	1.8	Brown, dry, stiff, gravely sandy CLAY

Location ID	TPKM 3+500		
Date	18/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558902.3158	9555443.34	32.013
Excavation Method			
Excavated Depth (m)	1.60		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.5	Brown, firm, dry, fine SAND
0.5	1.6	Brown, dry, stiff decomposed SILTSTONE

Location ID	TPKM 4+000		
Date	18/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558816.0633	9554951.481	27.832
Excavation Method			
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Brown, dry. Soft, sandy CLAY soil. Completely weathered shale with fibrous roots.
0.3	1.2	Grey, Highly fractured and moderately to highly weathered SHALE

Location ID	TPKM 4+500		
Date	18/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558733.5406	9554458.79	25.457
Excavation Method			
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.4	Grey, Highly fractured and moderately to highly weathered SHALE

Location ID	TPKM 5+000		
Date	18/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558719.0069	9553959.655	42.014
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1	Brown, dry. Soft, sandy CLAY soil. Completely weathered shale with fibrous roots.
1	1.3	Grey, Highly fractured and moderately to highly weathered SHALE

Location ID	TPKM 5+500		
Date	18/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558523.5287	9553523.325	35.322
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.3	Brown, dry. Soft, sandy CLAY soil. Highly to completely weathered shale with fibrous roots.

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	KAYA BOMBO PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 6+000		
Date	18/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558356.7988	9553051.943	35.78
Excavation Method			
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Grey brown, stiff, dry clayey GRAVEL. Completely weathered shale.
0.3	0.9	Grey brown, stiff, dry clayey GRAVEL. Highly weathered shale.
0.9	1.4	Grey, moderately fractured, moderately weathered SHALE

Location ID	TPKM 6+500		
Date	18/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558337.0483	9552560.65	24.901
Excavation Method			
Excavated Depth (m)	1.70		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1	Brown, moist, firm, dense, large grained sandy CLAY
1	1.7	Grey, moist, firm, dense, medium grained sandy CLAY. Residual shale.

Location ID	TPKM 7+000		
Date	18/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558113.9467	9552151.468	21.386
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.05	Brown, moist, firm, dense, large grained sandy CLAY
1.05	1.5	Grey, moist, firm, dense, medium grained sandy CLAY. Residual shale.

Location ID	TPKM 7+500		
Date	18/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	557787.6776	9551775.666	20.029
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.05	Grey, Highly fractured, highly weathered SHALE
1.05	1.5	Grey, highly fractured, moderately weathered SHALE

Location ID	TPKM 8+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	557472.6422	9551393.282	36.677
Excavation Method	18/9/2021		
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Brown, moist, firm, dense, large grained sandy CLAY. Completely weathered SHALE
0.3	0.6	Grey, Highly fractured, highly weathered SHALE
0.6	1.4	Grey, Moderate weathered SHALE

Location ID	TPKM 8+500		
Date	18/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	557076.849	9551121.259	53.941
Excavation Method			
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Brown, dry, firm sandy CLAY. With some organic content.
0.4	1.2	Brown grey, Highly fractured, highly weathered silty CLAY. Residual SHALE

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	KAYA BOMBO PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 9+000		
Date	18/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	556583.6633	9551053.702	60.228
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Brown, dry, firm sandy CLAY
0.3	0.6	Grey brown, stiff, dry silty CLAY. Completely weathered residual SHALE
0.6	1.3	Grey brown, stiff, dry silty gravelly CLAY. Moderate to highly weathered SHALE

Location ID	TPKM 9+500		
Date	18/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	556220.3485	9550753.651	74.335
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.32	Brown, dry, stiff, sandy CLAY. Completely weathered SHALE
0.32	1.5	Grey, Highly fractured, weathered SHALE

Location ID	TPKM 10+000		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	556404.0632	9550469.292	55.511
Excavation Method			
Excavated Depth (m)	1.80		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.6	Brown, dry, firm, gravelly silty CLAY. Completely weathered Shale, residual V.
0.6	1.8	Grey, soft, highly fractured and moderately to ighly weathered SHALE.

Location ID	TPKM 10+500		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	556820.7524	9550193.173	52.863
Excavation Method			
Excavated Depth (m)	1.70		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.7	Red, dry, firm, silty CLAY soil. Colluvium.

Location ID	TPKM 11+000		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	557222.0965	9549894.997	33.692
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.8	Brown, dry, firm, gravelly silty CLAY. Completely weathered Shale, residual V.
0.8	1.3	Grey, soft, highly fractured and moderately to ighly weathered SHALE.

Location ID	TPKM 11+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	557579.7096	9549553.061	8.544
Excavation Method			
Excavated Depth (m)	2.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.6	Brown, dry, dense, sandy CLAY. Colluvium.
0.6	2	Red brown, dry, firm, sandy CLAY soil. Colluvium.

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	KAYA BOMBO PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 12+000		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	557867.5791	9549144.244	22.697
Excavation Method			
Excavated Depth (m)	1.10		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.1	Brown, dry, loose, sandy CLAY. Residual shale.
0.1	1.1	Red brown, Highly weathered altered SHALE. Residual IV

Location ID	TPKM 12+500		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558155.4486	9548735.428	41.076
Excavation Method			
Excavated Depth (m)	0.80		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.8	Grey, moderately to highly weathered, highly fractured SHALE

Location ID	TPKM 13+000		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558498.4853	9548374.088	52.177
Excavation Method			
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Brown. Highly to completely weathered sandy GRAVEL. Residual SHALE
0.4	1.2	Grey, highly weathered, highly fractured SHALE.

Location ID	TPKM 13+500		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558859.8436	9548028.516	32.606
Excavation Method			
Excavated Depth (m)	2.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	2.5	Dark brown, dry, stiff, sandy CLAY.

Location ID	TPKM 14+000		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	559221.2019	9547682.943	21.429
Excavation Method			
Excavated Depth (m)	2.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	2.5	Dark brown, dry, stiff sandy CLAY soil. Colluvium

Location ID	TPKM 14+500		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	559582.5602	9547337.371	34.36
Excavation Method			
Excavated Depth (m)	2.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	2.5	Dark brown, dry, stiff sandy CLAY soil. Colluvium

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	KAYA BOMBO PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 15+000		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	559943.9185	9546991.799	33.461
Excavation Method			
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Red brown, highly to completely weathered Silty CLAY. Residual shale
0.4	1.2	Grey, highly weathered, highly weathered SHALE.

Location ID	TPKM 15+500		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560305.2767	9546646.226	39.754
Excavation Method			
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Red brown, highly to completely weathered Silty CLAY. Residual shale
0.4	1.2	Grey, highly weathered, highly weathered SHALE.

Location ID	TPKM 16+000		
Date	16/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560666.635	9546300.654	64.824
Excavation Method			
Excavated Depth (m)	1.10		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Red brown, highly to completely weathered Silty CLAY. Residual shale
0.4	1.1	Grey, highly weathered, highly weathered SHALE.

Location ID	TPKM 16+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	561018.7698	9545945.903	62.221
Excavation Method			
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Red brown, highly to completely weathered Silty CLAY. Residual shale
0.3	1.4	Grey, highly weathered, highly weathered SHALE.

Location ID	TPKM 17+000		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	561362.5883	9545582.876	44.953
Excavation Method			
Excavated Depth (m)	2.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	2	Brown, stiff, slightly moist, gravelly Sandy CLAY. Residual soil.

Location ID	TPKM 17+500		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	561706.4068	9545219.848	52.016
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.6	Dark brown, firm, dry sandy CLAY. Colluvium.
0.6	1.5	Brown, stiff, dry, Sandy CLAY with some gravel. Residual Shale.

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	KAYA BOMBO PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 18+000		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	562050.2253	9544856.821	35.205
Excavation Method			
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Brown, dry, highly to completely weathered sandy GRAVEL. Residual Shale.
0.4	1.2	Grey, highly weathered, highly fractured SHALE.

Location ID	TPKM 18+500		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	562394.0438	9544493.794	16.381
Excavation Method			
Excavated Depth (m)	1.70		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.7	Dark brown, firm, dry, Sandy CLAY. Colluvium
0.7	1.7	Brown, stiff, dry, sandy CLAY with some Gravel. Residual SHALE.

Location ID	TPKM 19+000		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	562730.3048	9544124.08	20.456
Excavation Method			
Excavated Depth (m)	2.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.3	Dark brown, stiff, slightly moist, sandy CLAY. Colluvium
1.3	2.5	Brown, Very stiff, slightly moist, sandy CLAY.

Location ID	TPKM 19+500		
Date	13/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	563084.3491	9543774.108	10.029
Excavation Method			
Excavated Depth (m)	2.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.6	Dark brown, very stiff, drt, sandy CLAY. Colluvium.
0.6	1.6	Brown, very dense, dry, Clayey SAND. Residual soil.
1.6	2	Grey to light brown, completely weathered and dry SHALE.

Location ID	TPKM 20+000		
Date	13/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	563468.9429	9543454.596	12.526
Excavation Method			
Excavated Depth (m)	2.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Dark brown, dry, very stiff sandy CLAY soil. Colluvium.
0.4	1.35	Brown, dry, very dense, sandy CLAY. Reworked residual shale.
1.35	2.5	Yellowish brown, very dense, sandy CLAY soil. Residual shale.

Location ID	TPKM 20+500		
Date	13/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	563853.5368	9543135.085	20.584
Excavation Method			
Excavated Depth (m)	2.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.5	Brown, loose, dry, sandy GRAVEL characterized by fibrous roots. Colluvium
0.5	1.5	Dark brown to black, very stiff and dry fat CLAY. Colluvium.
1.5	2.5	Yellow brown, dry, very stiff, Sandy CLAY soil. Residual soil.

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	KAYA BOMBO PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 21+000		
Date	13/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	564238.1306	9542815.574	33.144
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Red brown, dense sandy GRAVEL. Colluvium
0.4	1	Grey brown, very stiff, dry, sandy CLAY. Residual soil.
1	1.5	Grey, moderately to highly weathered SHALE

Location ID	TPKM 21+500		
Date	15/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	564649.3777	9542533.303	43.791
Excavation Method			
Excavated Depth (m)	1.60		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.6	Yellowish grey, highly weathered and highly fractured SHALE.

Location ID	TPKM 22+000		
Date	13/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	565085.1558	9542294.764	67.529
Excavation Method			
Excavated Depth (m)	0.60		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Dark brown, dry, dense, sandy CLAY soil.
0.3	0.6	Brown, very dense, clayey SAND. Residual soil.

Location ID	TPKM 22+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	565526.5857	9542059.946	58.005
Excavation Method			
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.2	Dark brown, dry, dense sandy CLAY soil with organic content.
0.2	0.6	Brown, dry, dense sandy CLAY. Reworked residual soil.
0.6	0.9	Brown, dry, very dense, residual soil.
0.9	1.4	Grey brown, highly to completely weathered SHALE. Brownish on the fracture surfaces.

Location ID	TPKM23+000		
Date	13/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	565902.6794	9541983.87	43.105
Excavation Method			
Excavated Depth (m)	2.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Dark brown, dry, very stiff sandy CLAY soil with some organic content.
0.4	0.8	Reddish brown, dry, very stiff CLAY. Reworked residual soil.
0.8	2.5	Yellowish brown, dry, very stiff sandy CLAY soil.

Location ID	TPKM 23+500		
Date	10/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566050.9208	9542461.389	42.573
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Dark brown, stiff, dry, sandy CLAY.
0.3	1.5	Reddish brown, very stiff, Sandy CLAY. Residual shale

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	KAYA BOMBO PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 24+000		
Date	13/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566199.1623	9542938.908	42.782
Excavation Method			
Excavated Depth (m)	1.60		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Dark brown to grey, very stiff, dry, fine grained sandy CLAY with some organic content
0.3	1.6	Reddish brown, very stiff, dry sandy CLAY.

Location ID	TPKM 24+500		
Date	13/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566347.4037	9543416.427	46.447
Excavation Method			
Excavated Depth (m)	2.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.6	Dark grey, loose, medium grained, SAND soil. Characterized by fibrous roots and organic content.
0.6	2.5	Yellowish brown, loose, medium grained SAND soil. Colluvium.

Location ID	TPKM 25+000		
Date	10/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566495.6451	9543893.946	47.259
Excavation Method			
Excavated Depth (m)	2.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.5	Brown, dry, medium grained, loose, SAND soilwith organic content.
0.5	2.5	Red brown, dry, medium grained, loosed SAND soil . Colluvium

Location ID	TPKM 25+500		
Date	10/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566643.8865	9544371.465	47.991
Excavation Method			
Excavated Depth (m)	2.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.5	Dark brown, dry, loose, medium grained SAND with organic content.
0.5	2.5	Red brown, dry, loose, medium grained SAND. Colluvium.

Location ID	TPKM26+000		
Date	10/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566784.6535	9544850.974	46.459
Excavation Method			
Excavated Depth (m)	2.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.1	Dark brown, dry, loose, medium grained SAND soil with fibrous roots and organic content
1.1	2.5	Yellow brown, dry, medium dense SAND soil. Coluvium soil.

Location ID	TPKM 26+500		
Date	10/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566940.213	9545321.15	48.329
Excavation Method			
Excavated Depth (m)	2.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.7	Dark brown, dry, loose, medium grained SAND soil with Organic content
0.7	2.5	Yellow brown, dry, loose, medium grained SAND soil. Colluvium.

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	KAYA BOMBO PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 27+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566976.0256	9545792.259	52.575
Excavation Method			
Excavated Depth (m)	0.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
		NOT DONE

Location ID	TPKM 27+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566757.6833	9546239.561	67.662
Excavation Method			
Excavated Depth (m)	0.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
		NOT DONE

Location ID	TPKM 27+772.79		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566627.2387	9546479.145	74.351
Excavation Method			
Excavated Depth (m)	0.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
		NOT DONE

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	CHANGAMWE PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 0+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	561022.0644	9559654.454	98.206
Excavation Method			
Excavated Depth (m)	1.60		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Brownish brown green, dry, stiff, gravely CLAY
0.4	1.6	Highly weathered SHALE

Location ID	TPKM 0+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	561485.8731	9559673.546	77.439
Excavation Method			
Excavated Depth (m)	0.70		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Reddish brown highly weathered SHALE
0.3	0.7	Highly fractured, moderate weathered SHALE

Location ID	TPKM 1+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	561948.7901	9559596.426	80.546
Excavation Method			
Excavated Depth (m)	0.70		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Reddish brown dry loose highly weathered SHALE
0.3	0.7	Highly fractured, moderate weathered SHALE

Location ID	TPKM 1+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	562420.26	9559430.846	63.912
Excavation Method			
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Tinge green grey0 highly weathered SHALE
0.3	0.6	Grey highly weathered SHALE
0.6	1.2	Moderate weathered SHALE

Location ID	TPKM 2+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	562863.3017	9559204.599	62.486
Excavation Method			
Excavated Depth (m)	1.90		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Brownish grey, dry, medium dense clayey sand. Reworked residual soil.
0.3	1.9	Light brown, dry, dense, gravelly clay sand with some cobbles. Residual soil.

Location ID	TPKM 2+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	563293.8003	9558975.812	41
Excavation Method			
Excavated Depth (m)	1.60		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Brown grey, dry, completely weathered, very fine grained and soft SHALE
0.3	0.6	Brown grey, dry, moderately weathered, very fine grained and soft SHALE
0.6	1.6	Brown grey, dry, moderately weathered, very fine grained and soft SHALE

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	CHANGAMWE PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 3+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	563614.6484	9558594.567	67.951
Excavation Method			
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.5	Light brown, dry, loose silty fine SAND
0.5	1.4	Greenish brown, wet, Clayey SAND

Location ID	TPKM 3+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	563817.8339	9558165.118	69.69
Excavation Method			
Excavated Depth (m)	0.90		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.9	Red brown, medium dense to dense, gravelly clayey SAND soil with cobbles. Characterised with high moisture content.

Location ID	TPKM 4+000		
Date	24/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	563921.5935	9557724.701	63.538
Excavation Method	Hand dug		
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.4	Light brown, dry, slightly dense Silty SAND soil with cobbles. Colluvium soil.
0.4	1.2	Brown, slightly moist, medium dense SAND. Colluvium

Location ID	TPKM 4+500		
Date	24/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	564333.7122	9557441.908	67.911
Excavation Method			
Excavated Depth (m)	1.70		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.2	Light brown, dry, loose, fine silty SAND
0.2	1.7	Brown, wet, loose, fine silty SAND

Location ID	TPKM 5+000		
Date	24/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	564761.9757	9557188.436	60.756
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.8	Light brown, dry, loose, fane silty SAND soil characterised by dumped human waste.
0.8	1.5	Yellowish brown, dry, stiff, gravely clayey SAND

Location ID	TPKM 5+500		
Date	24/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	565258.0361	9557168.892	62.144
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.5	Light brown, dry, loose, fine silty SAND soil characterised by dumped human waste and cobbles.

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	CHANGAMWE PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 6+000		
Date	24/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	565753.6538	9557234.946	65.174
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.5	LANDFILL with high moisture content. Water oozing from the trial pit walls.
0.5	1.3	Light brown, wet, clayey SAND

Location ID	TPKM 6+500		
Date	25/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566249.9061	9557294.573	64.334
Excavation Method			
Excavated Depth (m)	0.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
		LANDFILL (Excavation was however stopped by police and pipeline staff.)

Location ID	TPKM 7+000		
Date	25/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	566748.9899	9557324.64	65.031
Excavation Method			
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1	Dark brown to grey, dry, dense gravelly sand soild with cobbles. (Dumped material from road excavation)
1	1.2	Brown, moist, loose, silty SAND

Location ID	TPKM 7+500		
Date	27/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	567224.4932	9557205.019	62.001
Excavation Method			
Excavated Depth (m)	0.90		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.2	Brown, slightly moist, dense, clayey SAND soil
0.2	0.9	Reddish brown, slightly moist, stiff, sandy CLAY soil

Location ID	TPKM 8+000		
Date	27/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	567722.5021	9557193.29	60
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.7	light brown to grey, dry, dense gravelly clayey SAND characterized by cobbles. Backfilled
0.7	1	light brown to grey, dry, dense gravelly clayey SAND characterized by cobbles. backfilled
1	1.3	Reddish brown, dry, dense, clayey SAND

Location ID	TPKM 8+500		
Date	27/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	568222.1614	9557211.743	62.037
Excavation Method			
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.8	light brown to grey, dry, dense gravelly clayey SAND characterized by cobbles and boulders. Backfilled
0.8	1.2	Reddish brown, wet, dense, silty SAND

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	CHANGAMWE PIPELINE
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 9+000		
Date	27/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	568714.8853	9557152.827	60.929
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.9	Dark brown to grey, dry, dense, gravelly clayey SAND. Backfilled
0.9	1.5	Yellowish brown, wet, dense, silty coarse SAND

Location ID	TPKM 9+500		
Date	27/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	569203.2967	9557045.802	54.997
Excavation Method			
Excavated Depth (m)	1.60		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.2	Dark brown to grey, dry, dense, gravelly clayey SAND. Backfilled
1.2	1.6	Yellowish brown, wet, dense, silty coarse SAND

Location ID	TPKM 10+000		
Date	27/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	569682.9967	9556907.82	47.543
Excavation Method			
Excavated Depth (m)	1.47		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.47	Dark brown to grey, dry, dense, gravelly clayey SAND. Backfilled

Location ID	TPKM 10+500		
Date	27/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	570096.3162	9556632.796	61.136
Excavation Method			
Excavated Depth (m)	0.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0	Dark brown to grey, dry, dense, gravelly clayey SAND. Backfilled
		No excavation done. Kenya pipeline company area.

Location ID	TPKM 11+000		
Date	29/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	570289.0638	9556206.973	60.858
Excavation Method			
Excavated Depth (m)	1.60		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.4	Dark brown to grey, dry, dense, gravelly clayey SAND. Backfilled
1.4	1.6	Brown, dry, loose gravelly SAND. Colluvium

Location ID	TPKM 11+500		
Date	29/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	570344.581	9555755.09	64.336
Excavation Method			
Excavated Depth (m)	1.60		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Light brown, loose, dry, fine SAND with fibrous roots
0.3	1.6	Reddish yellow,dry, stiff, gravely CLAY

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE	**REGIONAL GEOPHYSICAL SURVEY**
Location	CHANGAMWE PIPELINE	
Client	MIBP	

Location ID	TPKM 11+618.39		
Date	29/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	570462.9023	9555759.178	67.54
Excavation Method			
Excavated Depth (m)	1.20		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Light brown, dry, loose, fine SAND (top soil)
0.3	1.2	Reddish brown, dry, stiff, gravely CLAY

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	MZIMA PIPELINE REALIGNMENT
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 0+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560574.6719	9560945.153	169.643
Excavation Method			
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.4	Reddish brown, dry, loose, medium grained SAND soil. (colluvium)

Location ID	TPKM 0+500		
Date	23/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560703.0158	9560502.148	129.88
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.3	Reddish brown, dry, loose, medium grained SAND soil. (colluvium)

Location ID	TPKM 1+000		
Date	21.9.2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560552.6811	9560036.636	143.277
Excavation Method			
Excavated Depth (m)	0.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
		NOT DONE

Location ID	TPKM 1+500		
Date	23/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560841.4554	9559755.106	126.145
Excavation Method			
Excavated Depth (m)	1.50		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.5	Reddish brown, dry, loose, medium grained SAND soil. (colluvium)

Location ID	TPKM 1+740.59		
Date	23/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560963.2281	9559659.511	105.948
Excavation Method			
Excavated Depth (m)	1.30		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.3	Reddish brown, dry, loose, medium grained SAND soil. (colluvium)

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	TRUNK MAIN
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 0+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558445.3523	9559667.758	115.407
Excavation Method			
Excavated Depth (m)	0.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
		NOT DONE

Location ID	TPKM 0+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	558898.6631	9559506.673	62.764
Excavation Method			
Excavated Depth (m)	0.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
		NOT DONE

Location ID	TPKM 1+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	559378.7462	9559380.926	49.502
Excavation Method			
Excavated Depth (m)	0.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
		NOT DONE

Location ID	TPKM 1+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	559761.9302	9559089.029	72.802
Excavation Method			
Excavated Depth (m)	1.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.5	Brown, dry, dense silty SAND
0.5	1	Grey brown, highly fractured, moderately weathered SILTSTONE

Location ID	TPKM 2+000		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	559778.6948	9558597.605	84.874
Excavation Method			
Excavated Depth (m)	1.60		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.8	Brown, loose, dry, clayey SAND soil with fibrous roots
0.8	1.6	Grey brown, highly fractured, moderately weathered SILTSTONE

Location ID	TPKM 2+500		
Date			
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560046.3293	9558246.064	84.441
Excavation Method			
Excavated Depth (m)	1.60		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.9	Brown, dry, stiff, clayey silty SAND with fibrous roots
0.9	1.6	Tinge green, dry, dense, very stiff sandy CLAY

TRIAL PIT LOGS

Project	MWACHE TRANSMISSION PIPELINE
Location	TRUNK MAIN
Client	MIBP

REGIONAL GEOPHYSICAL SURVEY

Location ID	TPKM 3+000		
Date	21/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560446.6238	9558010.895	65.331
Excavation Method			
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.4	Highly fractured, highly to moderate weathered Clayey GRAVEL. Residual SHALE

Location ID	TPKM 3+500		
Date	21/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560802.5061	9558329.97	95.201
Excavation Method			
Excavated Depth (m)	1.40		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	1.4	Grey, Highly fractured, stiff, moderate weathered SHALE

Location ID	TPKM 4+000		
Date	21/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560960.5075	9558804.349	96
Excavation Method			
Excavated Depth (m)	0.90		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.45	Brown, dry, dense, GRAVEL. Highly weathered SHALE
0.45	0.9	Grey brown, dry, dense, GRAVELHighly weathered SHALE

Location ID	TPKM 4+500		
Date	23/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	561118.5089	9559278.728	95.939
Excavation Method			
Excavated Depth (m)	1.00		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Dark brown, dry, stiff sandy CLAY with some organic content.
0.3	1	Grey brown, dry, stiff Sandy CLAY. Reworked residual soil.

Location ID	TPKM 5+000		
Date	23/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560967.2246	9559658.242	105.31
Excavation Method			
Excavated Depth (m)	1.60		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Dark brown, dry, stiff sandy CLAY with some organic content.
0.3	1.1	Red brown, dry, stiff Sandy CLAY. Reworked residual soil.
1.1	1.6	Yellowish brown, dry, stiff Sandy CLAY. Residual soil.

Location ID	TPKM 5+005.1		
Date	23/9/2021		
Coordinates	**Easting**	**Northing**	**Elevation (m)**
	560961.9721	9559659.909	106.148
Excavation Method			
Excavated Depth (m)	1.80		
Excavated by			
Logged by	Solomon Ombasa		

Depth (m)		**Material Description**
From	**To**	
0	0.3	Dark brown, dry, stiff sandy CLAY with some organic content.
0.3	1.1	Red brown, dry, stiff Sandy CLAY. Reworked residual soil.
1.1	1.8	Yellowish brown, dry, stiff Sandy CLAY. Residual soil.

APPENDIX C

Atterberg Limits

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY
BONJE CREEK WATER TANK
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
BH 01(3.0-4.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

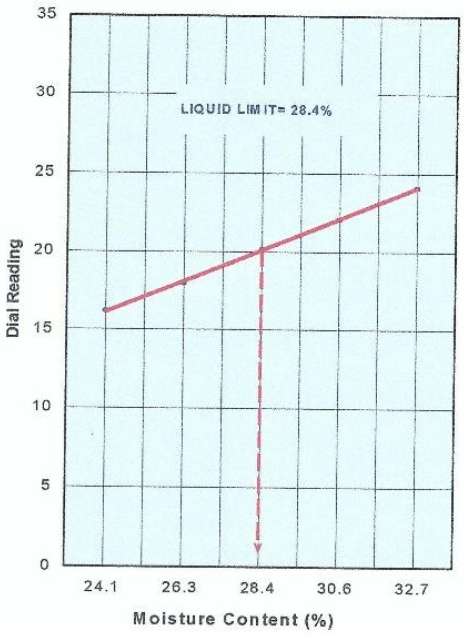
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4447 **Sample No.** 4447

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 3.0 - 4.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	NG	UU	TA	TU	CI	TY	AL
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.0	20.2	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	116.0	120.2	116.3	107.1	116.8	43.1	45.7
Mass of Container+Dry Soil, M3 (g)	93.5	95.2	90.6	80.7	88.0	36.6	38.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	22.5	25.0	25.7	26.4	28.8	6.5	6.9
Mass of Dry Soil (M3-M1) (g)	93.5	95.2	90.6	86.4	88.0	36.6	38.8
Moisture Content (%)	**24.1**	**26.3**	**28.4**	**30.6**	**32.7**	**17.7**	**17.8**

PLASTIC LIMIT = 17.8%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 5.0%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 28.4%

Plasticity Index, PI = LL - PL
= 10.6%

Plasticity Modulus = PI x 0.425mm % pass
=1054

SOIL CLASSIFICATION	
USCS	AASHTO
CL	A-4
Sandy Clay of Low Plasticity	

Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 01(7.0-8.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

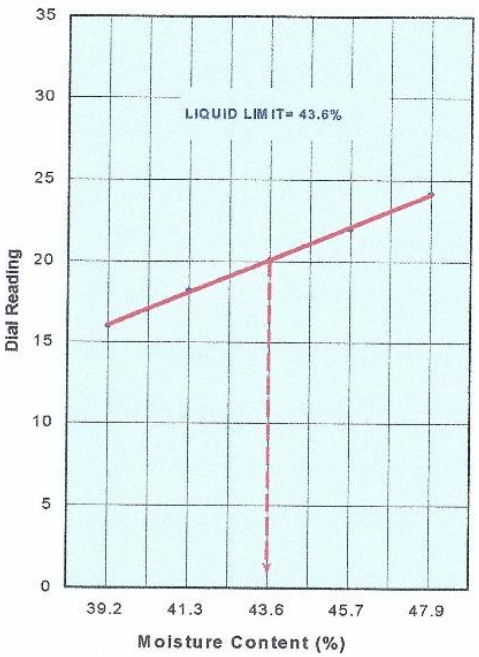
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4448 **Sample No.** 4448

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 7.0 - 8.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	LO	CA	TI	ON	MA	DU	LA
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.2	20.1	22.0	24.2	-	-
Mass of Container+Wet Soil, M2 (g)	119.2	119.1	115.6	116.9	120.5	49.5	52.1
Mass of Container+Dry Soil, M3 (g)	85.6	84.3	80.5	80.7	81.5	40.5	42.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	33.6	34.8	35.1	36.2	39.0	9.0	9.4
Mass of Dry Soil (M3-M1) (g)	85.6	84.3	80.5	79.3	81.5	40.5	42.7
Moisture Content (%)	**39.2**	**41.3**	**43.6**	**45.7**	**47.9**	**22.2**	**22.0**

PLASTIC LIMIT = 22.1%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 43.6%

Plasticity Index, PI = LL - PL
= 21.5%

Plasticity Modulus = PI x 0.425mm % pass
= 2108

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 01(12.0-13.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

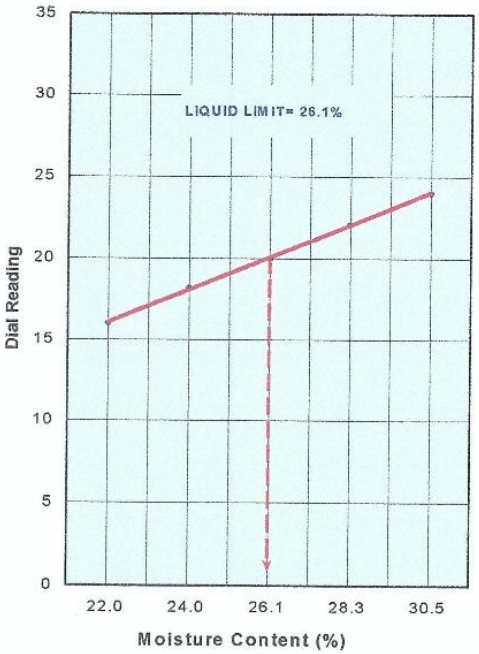
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4449 **Sample No.** 4449

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 12.0 - 13.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	WA	LO	WW	ME	SI	NY	RO
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.2	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	105.5	105.2	112.1	106.2	121.0	42.6	45.1
Mass of Container+Dry Soil, M3 (g)	86.5	84.8	88.9	80.7	92.7	36.4	38.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	19.0	20.4	23.2	25.5	28.3	6.2	6.5
Mass of Dry Soil (M3-M1) (g)	86.5	84.8	88.9	90.0	92.7	36.4	38.6
Moisture Content (%)	**22.0**	**24.0**	**26.1**	**28.3**	**30.5**	**17.1**	**16.9**

PLASTIC LIMIT = 17.0%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 4.3%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 26.1%

Plasticity Index, PI = LL - PL
= 9.1%

Plasticity Modulus = PI x 0.425mm % pass
= 865

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-4
Clayey Sand of Low Plasticity	

Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 01(19.0-20.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4451 **Sample No.** 4451

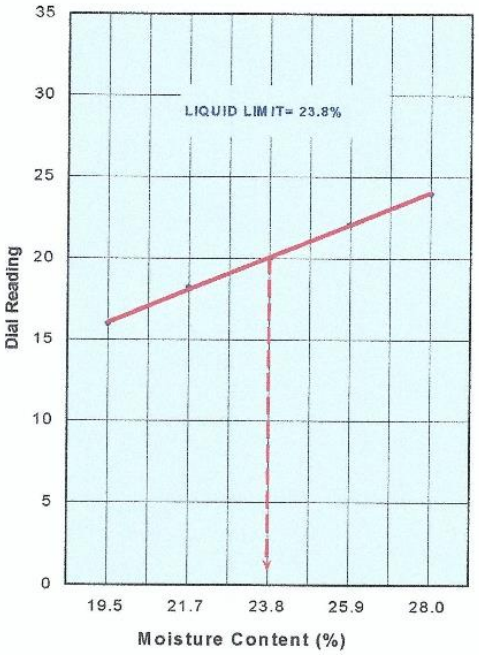
Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 19.0 - 20.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	LY	Q	UD	DY	LY		
Initial Dial Reading (mm)	0	0	0	0	0		
Final Dial Reading (mm)	16.0	18.2	20.0	22.1	24.0		
Mass of Container+Wet Soil, M2 (g)	103.2	106.6	111.2	104.3	120.1		
Mass of Container+Dry Soil, M3 (g)	86.4	87.6	89.8	80.7	93.8		
Mass of Container M1 (g)	-	-	-	-	-		
Mass of Moisture (M2-M3) (g)	16.8	19.0	21.4	23.6	26.3		
Mass of Dry Soil (M3-M1) (g)	86.4	87.6	89.8	91.0	93.8		
Moisture Content (%)	**19.5**	**21.7**	**23.8**	**25.9**	**28.0**		

NON-PLASTIC

PLASTIC LIMIT = NIL

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= NIL

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 23.8%

Plasticity Index, PI = LL - PL
= NIL

Plasticity Modulus = PI x 0.425mm % pass
= NIL

SOIL CLASSIFICATION	
USCS	AASHTO
SM	A-2-4
Silty Sand	

Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 02(1.0-2.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

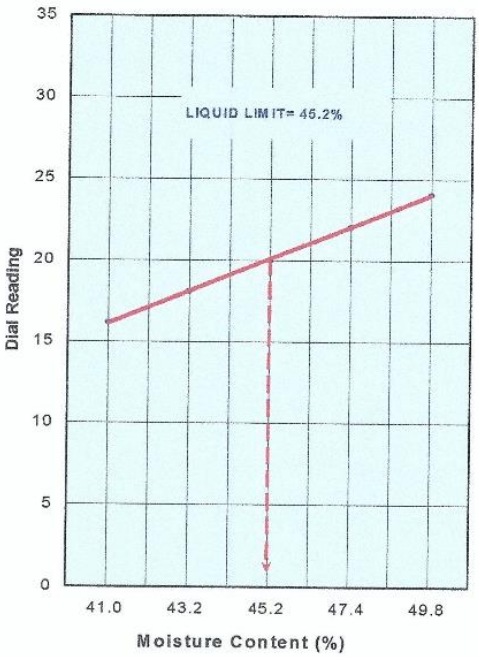
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4452 **Sample No.** 4452

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0 - 2.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	MI	CH	AE	LI	WN	OY	GN
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.1	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	115.8	121.0	126.2	122.6	133.3	52.6	55.1
Mass of Container+Dry Soil, M3 (g)	82.1	84.5	86.9	80.7	89.0	42.5	44.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	33.7	36.5	39.3	41.9	44.3	10.1	10.5
Mass of Dry Soil (M3-M1) (g)	82.1	84.5	86.9	88.4	89.0	42.5	44.6
Moisture Content (%)	**41.0**	**43.2**	**45.2**	**47.4**	**49.8**	**23.7**	**23.5**

PLASTIC LIMIT = 23.6%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.2%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 45.2%

Plasticity Index, PI = LL - PL
= 21.6%

Plasticity Modulus = PI x 0.425mm % pass
= 2056

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 02(2.0-3.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

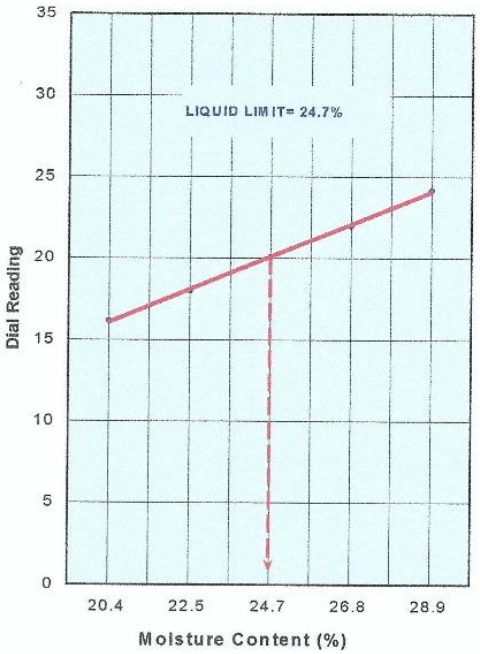
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4453 **Sample No.** 4453

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 2.0 - 3.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	PE	NE	TR	OM	TA	PO	WA
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.0	20.1	22.0	24.2	-	-
Mass of Container+Wet Soil, M2 (g)	114.4	112.8	113.0	103.7	112.9	50.2	52.8
Mass of Container+Dry Soil, M3 (g)	95.0	92.1	90.6	80.7	87.6	41.2	43.4
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	19.4	20.7	22.4	23.0	25.3	9.0	9.4
Mass of Dry Soil (M3-M1) (g)	95.0	92.1	90.6	85.8	87.6	41.2	43.4
Moisture Content (%)	**20.4**	**22.5**	**24.7**	**26.8**	**28.9**	**21.9**	**21.7**

PLASTIC LIMIT = 21.8%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 1.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 24.7%

Plasticity Index, PI = LL - PL
= 2.9%

Plasticity Modulus = PI x 0.425mm % pass
= 287

SOIL CLASSIFICATION	
USCS	AASHTO
SM	A-2-4
Silty Sand of Low Plasticity	

Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

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Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 02(8.0-9.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

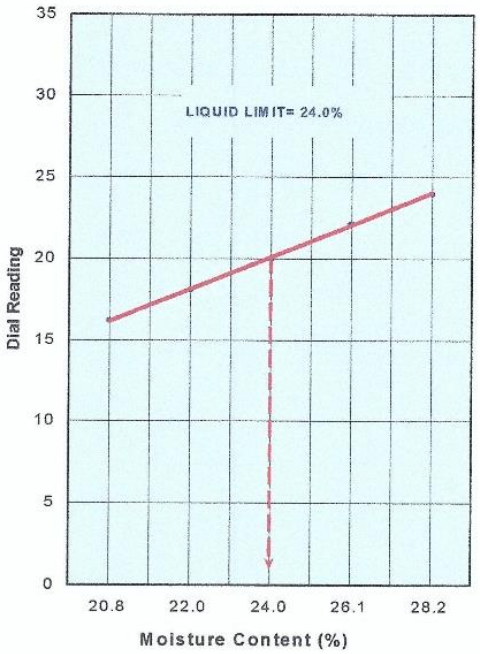
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4454 **Sample No.** 4454

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 8.0 - 9.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	MA	TE	RI	AL	DE	SC	PT
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.1	20.0	22.2	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	107.5	112.4	117.6	105.6	116.9	41.7	43.6
Mass of Container+Dry Soil, M3 (g)	89.0	92.1	94.8	80.7	91.2	35.8	37.5
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	18.5	20.3	22.8	24.9	25.7	5.9	6.1
Mass of Dry Soil (M3-M1) (g)	89.0	92.1	94.8	95.3	91.2	35.8	37.5
Moisture Content (%)	**20.8**	**22.0**	**24.0**	**26.1**	**28.2**	**16.5**	**16.3**

PLASTIC LIMIT = 16.4%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 3.6%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 24.0%

Plasticity Index, PI = LL - PL
= 7.6%

Plasticity Modulus = PI x 0.425mm % pass
= 755

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-4
Clayey Sand of Low Plasticity	

Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY
BONJE CREEK WATER TANK
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
BH 02(14.0-15.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

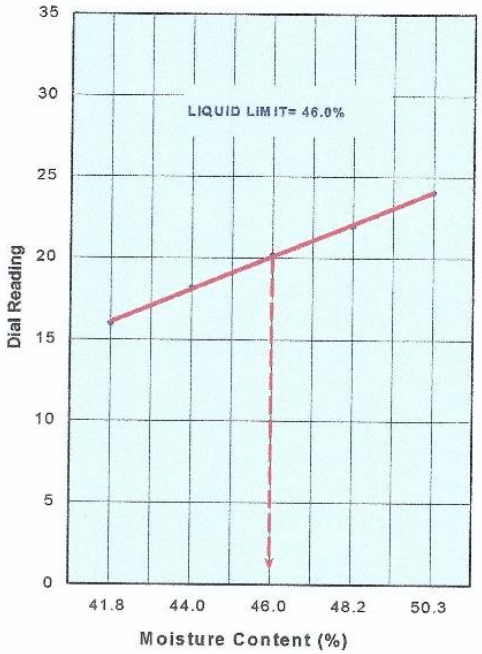
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4455 **Sample No.** 4455

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 14.0 - 15.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	IN	ON	DA	LI	NG	KE	NY
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.2	20.2	22.0	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	132.6	132.6	131.7	122.9	134.4	53.8	56.6
Mass of Container+Dry Soil, M3 (g)	93.5	92.1	90.2	80.7	89.4	43.4	45.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	39.1	40.5	41.5	42.2	45.0	10.4	10.9
Mass of Dry Soil (M3-M1) (g)	93.5	92.1	90.2	87.6	89.4	43.4	45.7
Moisture Content (%)	**41.8**	**44.0**	**46.0**	**48.2**	**50.3**	**24.0**	**23.8**

PLASTIC LIMIT = 23.9%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 46.0%

Plasticity Index, PI = LL - PL
= 22.1%

Plasticity Modulus = PI x 0.425mm % pass
= 2035

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 02(18.0-19.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

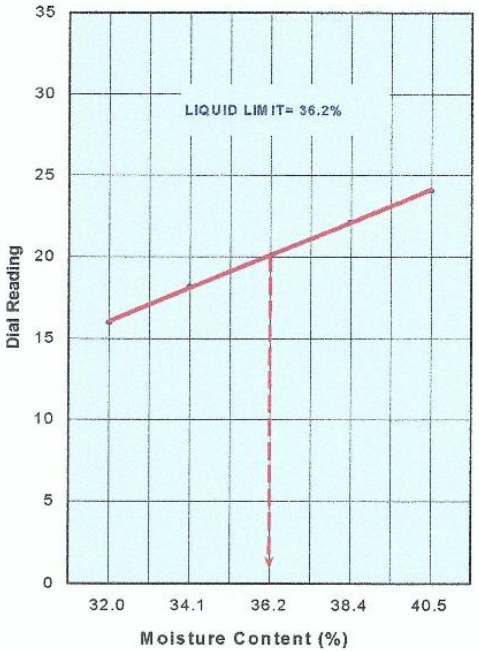
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4456 **Sample No.** 4456

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 18.0 - 19.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	CA	LO	SY	JI	RA	NI	WO
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.2	20.1	22.2	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	114.2	118.5	123.7	116.4	134.6	44.9	47.1
Mass of Container+Dry Soil, M3 (g)	86.5	88.4	90.8	80.7	95.8	37.9	39.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	27.7	30.1	32.9	35.7	38.8	7.0	7.3
Mass of Dry Soil (M3-M1) (g)	86.5	88.4	90.8	93.0	95.8	37.9	39.8
Moisture Content (%)	**32.0**	**34.1**	**36.2**	**38.4**	**40.5**	**18.5**	**18.3**

PLASTIC LIMIT = 18.4%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 8.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 36.2%

Plasticity Index, PI = LL - PL
= 17.8%

Plasticity Modulus = PI x 0.425mm % pass
= 1753

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY
BONJE CREEK WATER TANK
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
BH 02(24.0-25.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

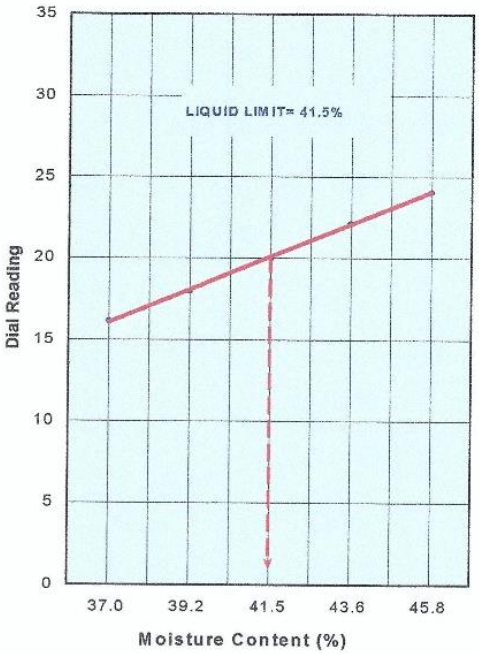
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4457 **Sample No.** 4457

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 24.0 - 25.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	BO	NJ	E	CR	EK	IN	MS
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.0	20.0	22.2	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	128.1	132.2	130.3	119.9	126.0	50.1	52.9
Mass of Container+Dry Soil, M3 (g)	93.5	95.0	92.1	80.7	86.4	41.2	43.5
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	34.6	37.2	38.2	39.2	39.6	8.9	9.4
Mass of Dry Soil (M3-M1) (g)	93.5	95.0	92.1	90.0	86.4	41.2	43.5
Moisture Content (%)	**37.0**	**39.2**	**41.5**	**43.6**	**45.8**	**21.7**	**21.5**

PLASTIC LIMIT = 21.6%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 41.5%

Plasticity Index, PI = LL - PL
= 19.9%

Plasticity Modulus = PI x 0.425mm % pass
= 1881

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 02(28.0-29.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

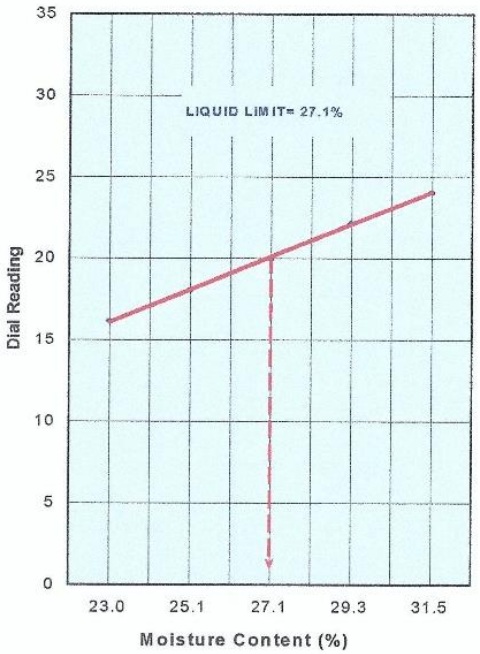
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4458 **Sample No.** 4458

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 28.0 - 29.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	CH	AK	UT	UM	IN	SI	NA
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.1	20.0	22.2	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	112.5	117.5	114.6	106.5	113.7	27.9	30.4
Mass of Container+Dry Soil, M3 (g)	91.5	93.9	90.2	80.7	86.5	24.3	26.5
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	21.0	23.6	24.4	25.8	27.2	3.6	3.9
Mass of Dry Soil (M3-M1) (g)	91.5	93.9	90.2	88.1	86.5	24.3	26.5
Moisture Content (%)	**23.0**	**25.1**	**27.1**	**29.3**	**31.5**	**14.9**	**14.7**

PLASTIC LIMIT = 14.8%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 5.8%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 27.1%

Plasticity Index, PI = LL - PL
= 12.3%

Plasticity Modulus = PI x 0.425mm % pass
= 1177

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-6
Clayey Sand of Low Plasticity	

Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY
BONJE CREEK WATER TANK
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
BH 03(2.0-3.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

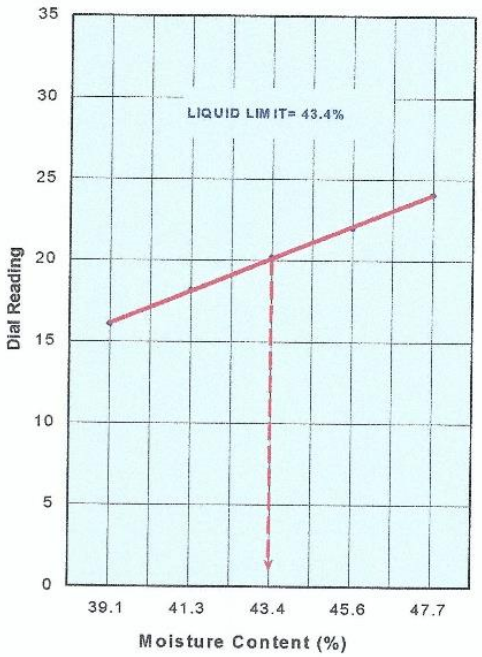
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4459 **Sample No.** 4459

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 2.0 - 3.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	AT	ER	BA	GS	CO	NE	TR
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.2	20.2	22.0	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	120.3	117.4	113.9	118.5	130.9	49.4	52.0
Mass of Container+Dry Soil, M3 (g)	86.5	83.1	79.4	80.7	88.6	40.5	42.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	33.8	34.3	34.5	37.8	42.3	8.9	9.3
Mass of Dry Soil (M3-M1) (g)	86.5	83.1	79.4	82.9	88.6	40.5	42.7
Moisture Content (%)	**39.1**	**41.3**	**43.4**	**45.6**	**47.7**	**21.9**	**21.7**

PLASTIC LIMIT = 21.8%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.2%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 43.4%

Plasticity Index, PI = LL - PL
= 21.6%

Plasticity Modulus = PI x 0.425mm % pass
= 2028

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
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Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 03(11.0-12.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

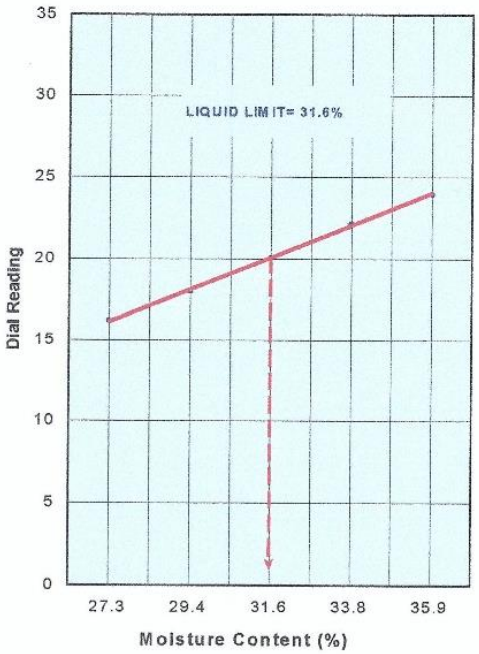
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4460 **Sample No.** 4460

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 11.0 - 12.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	VI	DA	OU	GO	ME	NO	YA
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.0	20.1	22.2	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	101.3	104.2	108.7	109.7	120.5	41.1	43.3
Mass of Container+Dry Soil, M3 (g)	79.6	80.5	82.6	80.7	88.7	35.3	37.2
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	21.7	23.7	26.1	29.0	31.8	5.8	6.1
Mass of Dry Soil (M3-M1) (g)	79.6	80.5	82.6	85.7	88.7	35.3	37.2
Moisture Content (%)	**27.3**	**29.4**	**31.6**	**33.8**	**35.9**	**16.5**	**16.3**

PLASTIC LIMIT = 16.4%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.2%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 31.6%

Plasticity Index, PI = LL - PL
= 15.2%

Plasticity Modulus = PI x 0.425mm % pass
= 1090

SOIL CLASSIFICATION	
USCS	AASHTO
CL	A-6
Sandy Clay of Low Plasticity	

Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
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Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 02(1.0-2.0M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 08-09-21

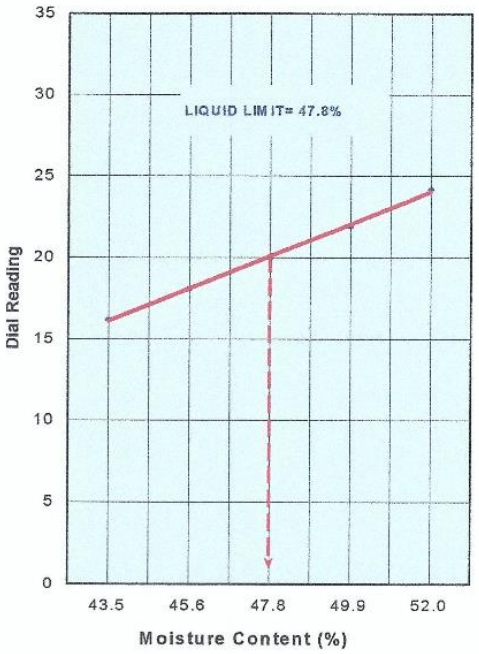
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/4461 **Sample No.** 4461

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0 - 2.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	M	GU	U	BT	UN	JK	LY
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.1	20.0	22.0	24.2	-	-
Mass of Container+Wet Soil, M2 (g)	134.2	125.9	129.2	120.8	129.4	58.4	60.9
Mass of Container+Dry Soil, M3 (g)	93.5	86.5	87.4	80.7	85.1	46.7	48.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	40.7	39.4	41.8	40.1	44.3	11.7	12.1
Mass of Dry Soil (M3-M1) (g)	93.5	86.5	87.4	80.3	85.1	46.7	48.8
Moisture Content (%)	**43.5**	**45.6**	**47.8**	**49.9**	**52.0**	**25.0**	**24.8**

PLASTIC LIMIT = 24.9%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.8%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 47.8%

Plasticity Index, PI = LL - PL
= 22.9%

Plasticity Modulus = PI x 0.425mm % pass
= 2198

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 16-09-21 **Checked by:**

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Email: danellilab3@gmail.com
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 02(19.0-20.0M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 08-09-21

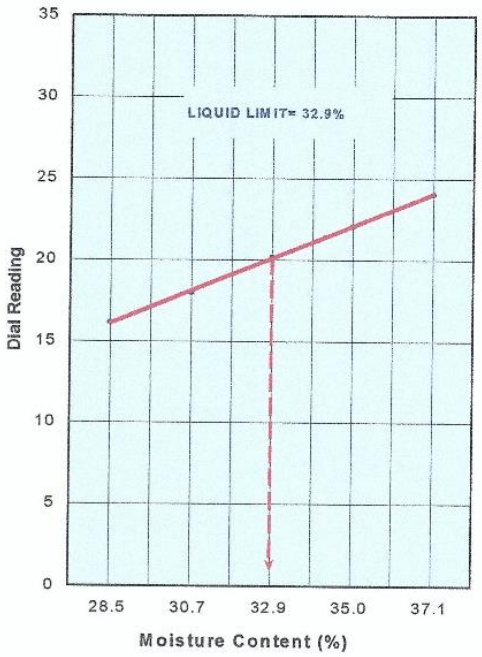
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/4462 **Sample No.** 4462

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 19.0 - 20.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	OS	LE	PA	JA	DU	OG	MA
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.0	20.2	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	112.8	117.1	120.3	113.3	129.7	42.7	45.2
Mass of Container+Dry Soil, M3 (g)	87.8	89.6	90.5	80.7	94.6	36.4	38.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	25.0	27.5	29.8	32.6	35.1	6.3	6.6
Mass of Dry Soil (M3-M1) (g)	87.8	89.6	90.5	93.2	94.6	36.4	38.6
Moisture Content (%)	**28.5**	**30.7**	**32.9**	**35.0**	**37.1**	**17.3**	**17.1**

PLASTIC LIMIT = 17.2%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 32.9%

Plasticity Index, PI = LL - PL
= 15.7%

Plasticity Modulus = PI x 0.425mm % pass
= 344

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-6
Clayey Sand of Low Plasticity	

Tested by: KEVIN **Date Reported:** 16-09-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 01(1.0-2.0M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 08-09-21

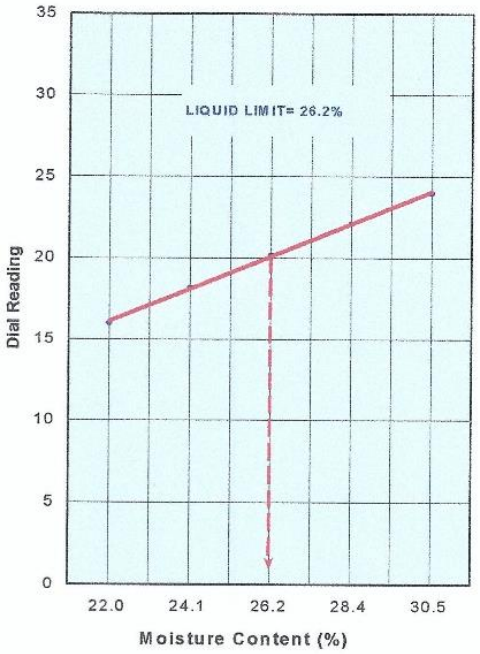
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/4463 **Sample No.** 4463

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0 - 2.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	CH	AN	GA	MW	EE	DD	PO
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.2	20.2	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	109.3	112.3	118.1	105.8	119.0	41.3	43.9
Mass of Container+Dry Soil, M3 (g)	89.6	90.5	93.6	80.7	91.2	35.4	37.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	19.7	21.8	24.5	25.1	27.8	5.9	6.2
Mass of Dry Soil (M3-M1) (g)	89.6	90.5	93.6	88.4	91.2	35.4	37.7
Moisture Content (%)	**22.0**	**24.1**	**26.2**	**28.4**	**30.5**	**16.8**	**16.5**

PLASTIC LIMIT = 16.7%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 4.5%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 26.2%

Plasticity Index, PI = LL - PL
= 9.5%

Plasticity Modulus = PI x 0.425mm % pass
= 942

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-4
Clayey Sand of Low Plasticity	

Tested by: KEVIN **Date Reported:** 16-09-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 01(7.0-8.0M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 08-09-21

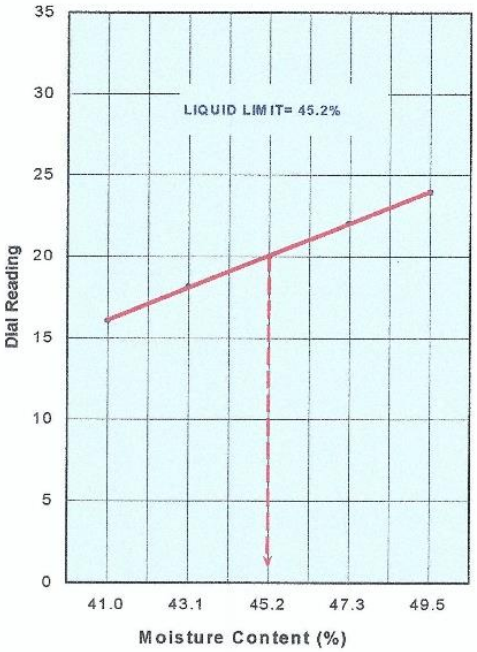
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/4464 **Sample No.** 4464

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 7.0 - 8.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	MU	TU	LA	NI	BA	ZE	KL
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.2	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	129.0	131.7	128.2	121.0	129.8	50.6	53.2
Mass of Container+Dry Soil, M3 (g)	91.5	92.0	88.3	80.7	86.8	41.3	43.5
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	37.5	39.7	39.9	40.3	43.0	9.3	9.7
Mass of Dry Soil (M3-M1) (g)	91.5	92.0	88.3	85.2	86.8	41.3	43.5
Moisture Content (%)	**41.0**	**43.1**	**45.2**	**47.3**	**49.5**	**22.4**	**22.2**

PLASTIC LIMIT = 22.3%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.8%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 45.2%

Plasticity Index, PI = LL - PL
= 22.9%

Plasticity Modulus = PI x 0.425mm % pass
= 1559

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 16-09-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 01(16.0-17.0M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 08-09-21

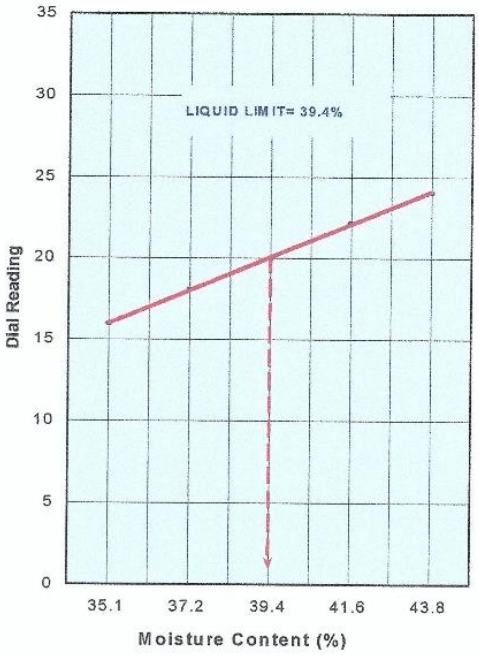
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/4465 **Sample No.** 4465

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 16.0 - 17.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	QW	LU	MA	KI	LY	MG	HN
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.2	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	0.0	122.0	125.7	116.5	121.2	49.2	51.3
Mass of Container+Dry Soil, M3 (g)	86.5	88.9	90.2	80.7	84.3	40.6	42.4
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	30.4	33.1	35.5	35.8	36.9	8.6	8.9
Mass of Dry Soil (M3-M1) (g)	86.5	88.9	90.2	86.0	84.3	40.6	42.4
Moisture Content (%)	**35.1**	**37.2**	**39.4**	**41.6**	**43.8**	**21.3**	**21.1**

PLASTIC LIMIT = 21.2%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 8.6%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 39.4%

Plasticity Index, PI = LL - PL
= 18.2%

Plasticity Modulus = PI x 0.425mm % pass
= 1176

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 16-09-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 02(7.0-8.0M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 08-09-21

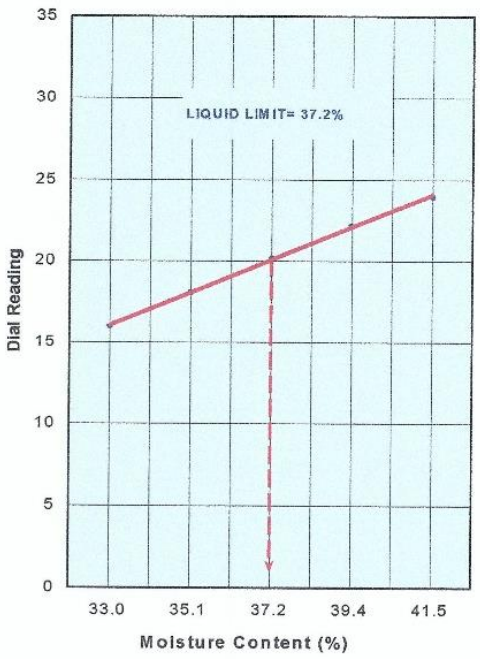
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/4466 **Sample No.** 4466

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 7.0 - 8.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	DE	PH	TH	KO	RU	DO	MO
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.2	22.2	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	0.0	122.5	109.1	113.6	123.4	45.9	48.4
Mass of Container+Dry Soil, M3 (g)	88.7	90.7	79.5	80.7	87.2	38.5	40.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	29.3	31.8	29.6	32.9	36.2	7.4	7.7
Mass of Dry Soil (M3-M1) (g)	88.7	90.7	79.5	83.6	87.2	38.5	40.7
Moisture Content (%)	**33.0**	**35.1**	**37.2**	**39.4**	**41.5**	**19.1**	**18.9**

PLASTIC LIMIT = 19.0%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 8.6%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 37.2%

Plasticity Index, PI = LL - PL
= 18.2%

Plasticity Modulus = PI x 0.425mm % pass
= 1121

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-6
Clayey Sand of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 16-09-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

BH 02(17.0-18.0M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 08-09-21

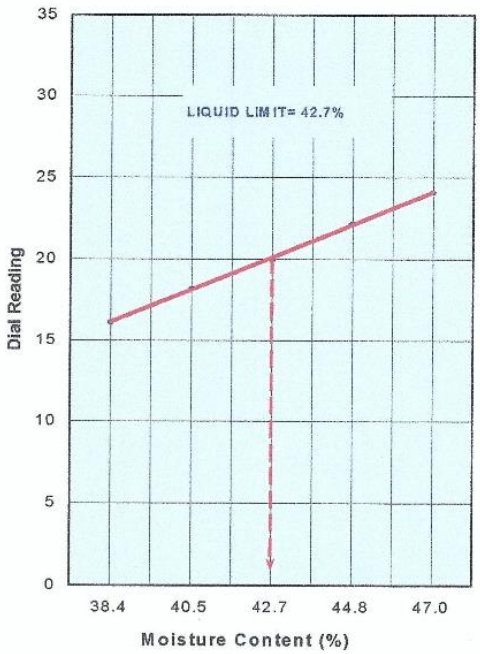
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/4467 **Sample No.** 4467

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 17.0 - 18.0M **Date Tested:** 10-09-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	SI	TE	RE	FF	RN	NG	EX
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.2	20.0	22.2	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	0.0	116.9	125.3	121.0	132.6	50.8	53.4
Mass of Container+Dry Soil, M3 (g)	85.6	83.2	87.8	80.7	90.2	41.6	43.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	32.9	33.7	37.5	40.3	42.4	9.2	9.6
Mass of Dry Soil (M3-M1) (g)	85.6	83.2	87.8	89.9	90.2	41.6	43.8
Moisture Content (%)	**38.4**	**40.5**	**42.7**	**44.8**	**47.0**	**22.2**	**22.0**

PLASTIC LIMIT = 22.1%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.7%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 42.7%

Plasticity Index, PI = LL - PL
= 20.6%

Plasticity Modulus = PI x 0.425mm % pass
= 1704

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 16-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY
NGUU TATU SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM2+500 (0.0-0.30m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

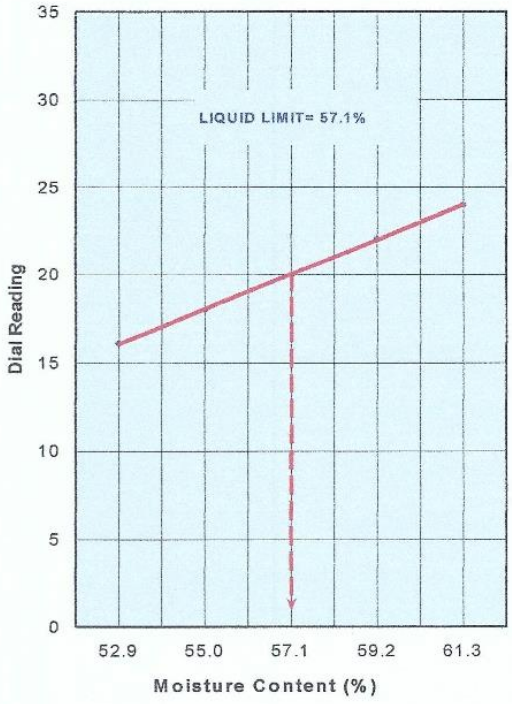
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5709 **Sample No.** 5709

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.30m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	IP	OT	JKC	TO	RC	ZK	KBW
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	163.8	186.9	186.5	127.2	161.0	56.2	59.2
Mass of Container+Dry Soil, M3 (g)	107.1	120.6	118.7	80.7	99.8	42.4	44.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	56.7	66.3	67.8	46.5	61.2	13.8	14.6
Mass of Dry Soil (M3-M1) (g)	107.1	120.6	118.7	78.6	99.8	42.4	44.6
Moisture Content (%)	**52.9**	**55.0**	**57.1**	**59.2**	**61.3**	**32.5**	**32.7**

PLASTIC LIMIT = 32.6%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 11.5%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 57.1%

Plasticity Index, PI = LL - PL
= 24.4%

Plasticity Modulus = PI x 0.425mm % pass
= 1179

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-5
Silty Sand of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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Independent Materials testing & Inspection Centre
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info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM3+000(0.8-1.4m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

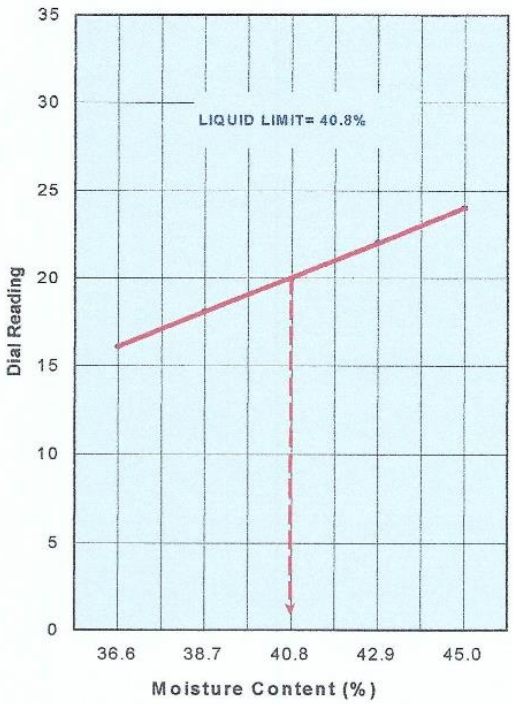
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5710 **Sample No.** 5710

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.8-1.4m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	S2	SK	P2	S5	L	D	CS
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.1	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	124.7	128.4	123.2	119.6	137.5	50.6	53.5
Mass of Container+Dry Soil, M3 (g)	91.3	92.6	87.5	80.7	94.8	41.3	43.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	33.4	35.8	35.7	38.9	42.7	9.3	9.9
Mass of Dry Soil (M3-M1) (g)	91.3	92.6	87.5	90.6	94.8	41.3	43.6
Moisture Content (%)	**36.6**	**38.7**	**40.8**	**42.9**	**45.0**	**22.4**	**22.6**

PLASTIC LIMIT = 22.5%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 8.6%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 40.8%

Plasticity Index, PI = LL - PL
= 18.3%

Plasticity Modulus = PI x 0.425mm % pass
= 1645

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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Email: danellilab3@gmail.com
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM4+000 (0.0-1.3m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

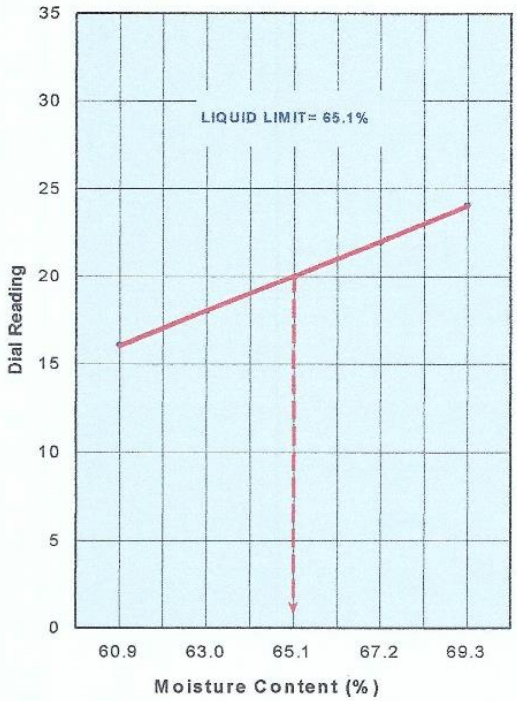
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5711 **Sample No.** 5711

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.3m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	BC	FB	CD	FF	PF	CK	BK
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.0	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	140.8	146.0	149.7	142.7	160.5	55.9	58.9
Mass of Container+Dry Soil, M3 (g)	87.5	89.6	90.7	80.7	94.8	42.1	44.3
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	53.3	56.4	59.0	62.0	65.7	13.8	14.6
Mass of Dry Soil (M3-M1) (g)	87.5	89.6	90.7	92.3	94.8	42.1	44.3
Moisture Content (%)	**60.9**	**63.0**	**65.1**	**67.2**	**69.3**	**32.8**	**33.0**

PLASTIC LIMIT = 32.9%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 15.1%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 65.1%

Plasticity Index, PI = LL - PL
= 32.2%

Plasticity Modulus = PI x 0.425mm % pass
= 2885

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-5
Sandy Elastic Silt of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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Independent Materials testing & Inspection Centre
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info@danellilab.com
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Mobil Plaza 00620
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM4+000 (1.3-1.5m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

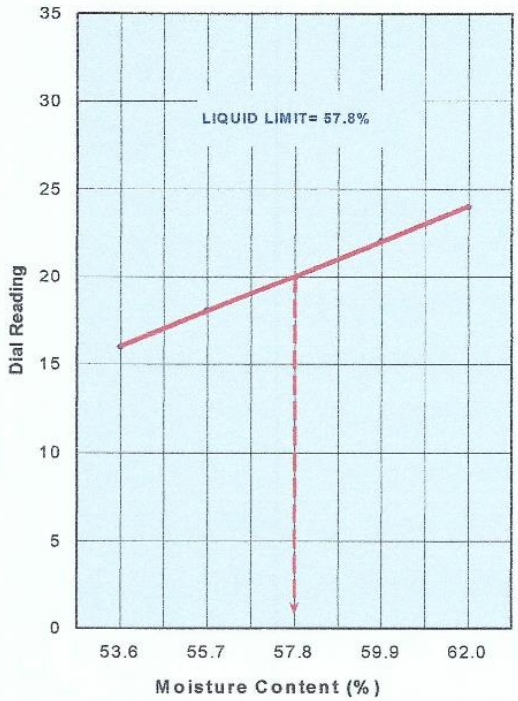
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5712 **Sample No.** 5712

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.3-1.5m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	KQ	SM	CK	N5	KS	Z4	N
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	141.5	140.6	137.8	134.0	146.4	57.6	60.6
Mass of Container+Dry Soil, M3 (g)	92.1	90.3	87.3	80.7	90.4	42.3	44.4
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	49.4	50.3	50.5	53.3	56.0	15.3	16.2
Mass of Dry Soil (M3-M1) (g)	92.1	90.3	87.3	88.9	90.4	42.3	44.4
Moisture Content (%)	**53.6**	**55.7**	**57.8**	**59.9**	**62.0**	**36.2**	**36.4**

PLASTIC LIMIT = 36.3%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.1%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 57.8%

Plasticity Index, PI = LL - PL
= 21.5%

Plasticity Modulus = PI x 0.425mm % pass
= 2092

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-5
Sandy Elastic Silt of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM4+500 (0.0-0.9m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

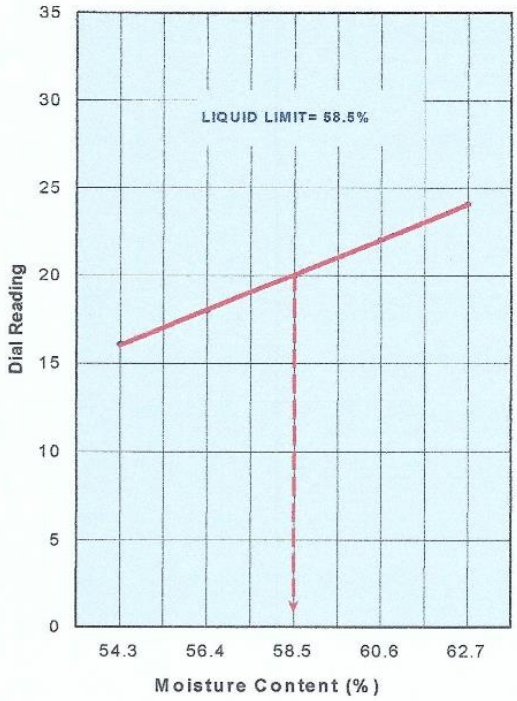
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5713 **Sample No.** 5713

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.9m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	Q	P2	GN	ST	NG	TA	TP
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	148.9	151.4	154.2	163.2	174.7	56.7	59.7
Mass of Container+Dry Soil, M3 (g)	96.5	96.8	97.3	101.6	107.4	41.6	43.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	52.4	54.6	56.9	61.6	67.3	15.1	15.9
Mass of Dry Soil (M3-M1) (g)	96.5	96.8	97.3	101.6	107.4	41.6	43.8
Moisture Content (%)	**54.3**	**56.4**	**58.5**	**60.6**	**62.7**	**36.2**	**36.4**

PLASTIC LIMIT = 36.3%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 58.5%

Plasticity Index, PI = LL - PL
= 22.2%

Plasticity Modulus = PI x 0.425mm % pass
=1940

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-5
Sandy Elastic Silt of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM6+500 (0.0-0.8m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

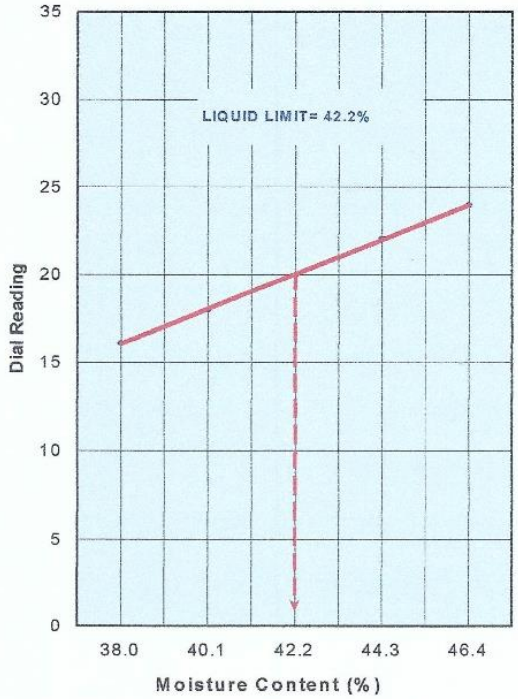
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5714 **Sample No.** 5714

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.8m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	CB	FB	CS	J8	L	UA	P2
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	105.3	110.8	116.0	118.1	130.1	50.2	53.0
Mass of Container+Dry Soil, M3 (g)	76.3	79.1	81.6	80.7	88.9	40.5	42.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	29.0	31.7	34.4	37.4	41.2	9.7	10.2
Mass of Dry Soil (M3-M1) (g)	76.3	79.1	81.6	84.5	88.9	40.5	42.8
Moisture Content (%)	**38.0**	**40.1**	**42.2**	**44.3**	**46.4**	**23.9**	**23.8**

PLASTIC LIMIT = 23.9%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 8.6%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 42.2%

Plasticity Index, PI = LL - PL
= 18.3%

Plasticity Modulus = PI x 0.425mm % pass
= 748

SOIL CLASSIFICATION	
USCS	AASHTO
SM	A-7-6
Silty Sand of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM7+500 (0.5-1.30m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

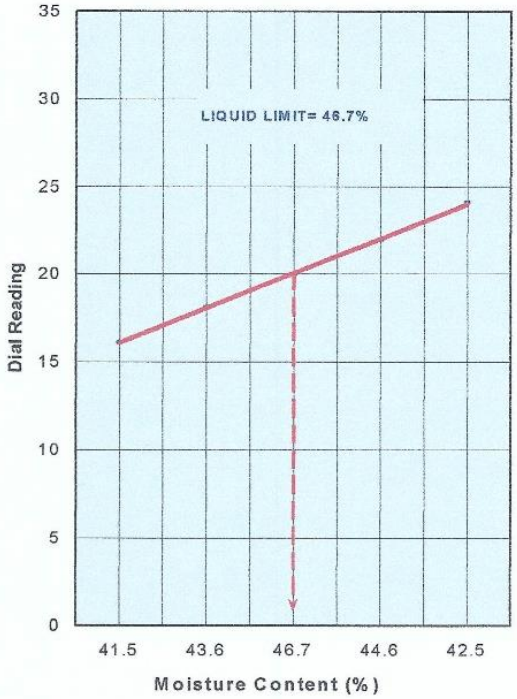
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5715 **Sample No.** 5715

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.3m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	H2	KQ	O8	V	N5	ZK	MD
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.1	20.0	22.0	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	127.5	133.0	139.1	141.6	142.2	51.8	53.2
Mass of Container+Dry Soil, M3 (g)	90.1	92.6	94.8	97.9	99.8	41.9	43.0
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	37.4	40.4	44.3	43.7	42.4	9.9	10.2
Mass of Dry Soil (M3-M1) (g)	90.1	92.6	94.8	97.9	99.8	41.9	43.0
Moisture Content (%)	**41.5**	**43.6**	**46.7**	**44.6**	**42.5**	**23.6**	**23.8**

PLASTIC LIMIT = 23.7%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.8%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 46.7%

Plasticity Index, PI = LL - PL
= 23.0%

Plasticity Modulus = PI x 0.425mm % pass
=1189

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-7-6
Clayey Sand of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM8+000 (0.3-0.8m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

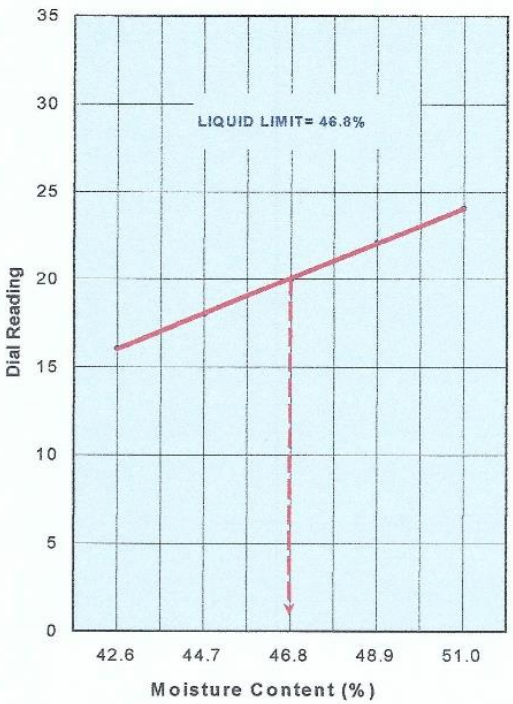
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5716 **Sample No.** 5716

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-0.8m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	K6	CA	L	MX	M5	BL	RL
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	123.3	128.3	132.6	138.2	138.9	54.3	57.0
Mass of Container+Dry Soil, M3 (g)	86.5	88.7	90.3	92.8	92.0	44.0	46.1
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	36.8	39.6	42.3	45.4	46.9	10.3	10.9
Mass of Dry Soil (M3-M1) (g)	86.5	88.7	90.3	92.8	92.0	44.0	46.1
Moisture Content (%)	**42.6**	**44.7**	**46.8**	**48.9**	**51.0**	**23.5**	**23.7**

PLASTIC LIMIT = 23.6%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.9%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 46.8%

Plasticity Index, PI = LL - PL
= 23.2%

Plasticity Modulus = PI x 0.425mm % pass
= 2018

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM8+500 (0.7-1.7m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

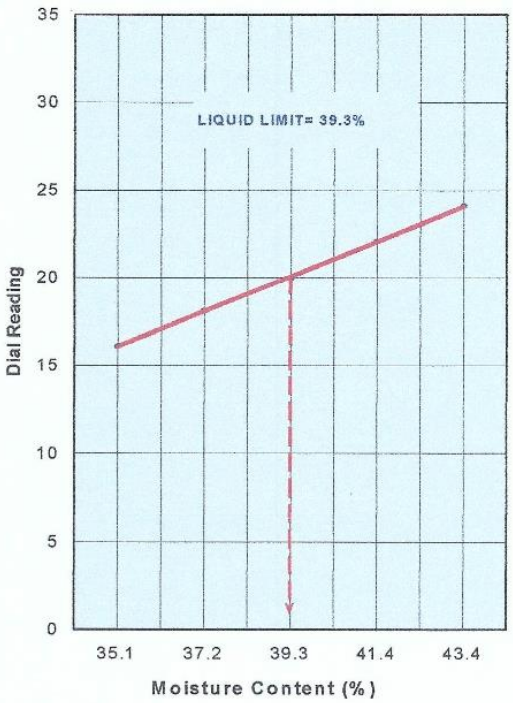
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5717 **Sample No.** 5717

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.7-1.7m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	SK	M2	T4	SV	MK	ST	UV
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.1	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	124.8	129.7	134.6	139.3	140.0	51.8	54.5
Mass of Container+Dry Soil, M3 (g)	92.4	94.5	96.6	98.5	97.6	41.8	43.9
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	32.4	35.2	38.0	40.8	42.4	10.0	10.6
Mass of Dry Soil (M3-M1) (g)	92.4	94.5	96.6	98.5	97.6	41.8	43.9
Moisture Content (%)	**35.1**	**37.2**	**39.3**	**41.4**	**43.4**	**23.9**	**24.1**

PLASTIC LIMIT = 24.0%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.2%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 39.3%

Plasticity Index, PI = LL - PL
= 15.3%

Plasticity Modulus = PI x 0.425mm % pass
= 1487

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-6
Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM9+500 (0.4-1.4m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

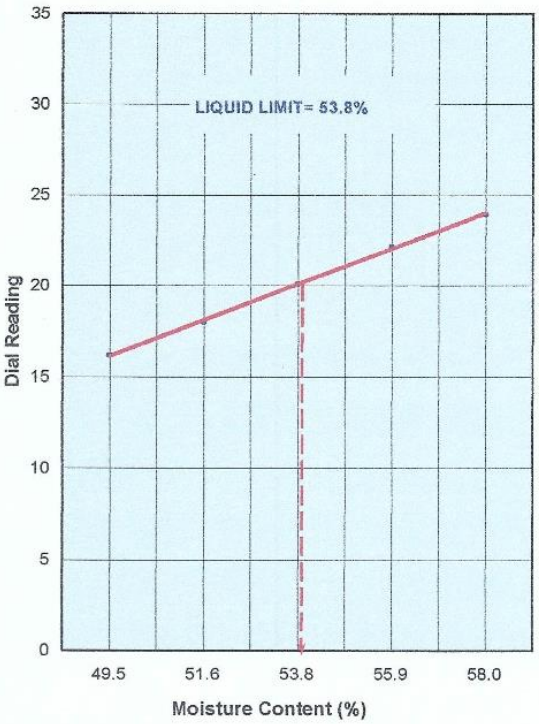
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5718 **Sample No.** 5718

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.4m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	WC	SQ	L	M4	ON	U2	11
Initial Dial Reading (mm)	0	0	0	0	0	0	0
Final Dial Reading (mm)	16.2	18.0	20.0	22.2	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	174.0	179.5	183.8	187.4	191.8	50.6	42.4
Mass of Container+Dry Soil, M3 (g)	116.4	118.4	119.5	120.2	121.4	39.5	33.2
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	57.6	61.1	64.3	67.2	70.4	11.1	9.2
Mass of Dry Soil (M3-M1) (g)	116.4	118.4	119.5	120.2	121.4	39.5	33.2
Moisture Content (%)	**49.5**	**51.6**	**53.8**	**55.9**	**58.0**	**28.0**	**27.8**

PLASTIC LIMIT = 27.9%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 12.2%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 53.8%

Plasticity Index, PI = LL - PL
= 25.9

Plasticity Modulus = PI x 0.425mm % pass
=2515

SOIL CLASSIFICATION	
USCS	AASHTO
CH	A-7-6
Sandy Clay of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
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Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM10+000 (0.3-1.30m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

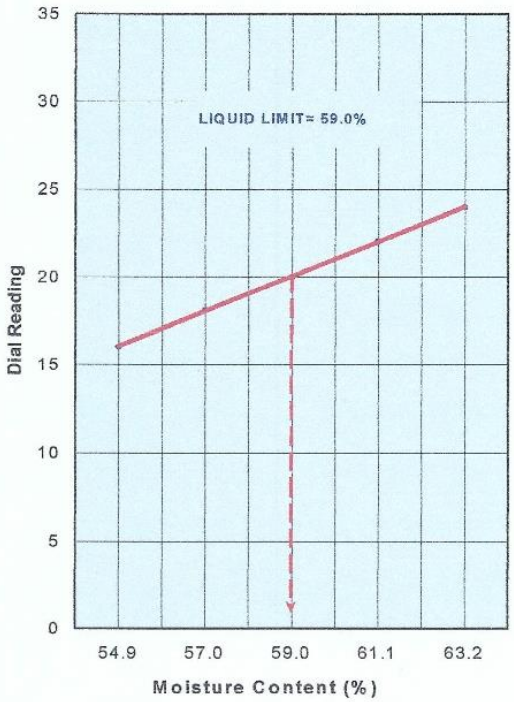
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5719 **Sample No.** 5719

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-1.3m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	KS	SP	MD	SQ	ZK	MV	VX
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	143.4	155.0	158.4	159.0	151.4	55.3	58.2
Mass of Container+Dry Soil, M3 (g)	92.6	98.7	99.6	98.7	92.8	42.6	44.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	50.8	56.3	58.8	60.3	58.6	12.7	13.4
Mass of Dry Soil (M3-M1) (g)	92.6	98.7	99.6	98.7	92.8	42.6	44.8
Moisture Content (%)	**54.9**	**57.0**	**59.0**	**61.1**	**63.2**	**29.7**	**29.9**

PLASTIC LIMIT = 29.8%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 13.7%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 59.0%

Plasticity Index, PI = LL - PL
= 29.2%

Plasticity Modulus = PI x 0.425mm % pass
= 2272

SOIL CLASSIFICATION	
USCS	AASHTO
CH	A-7-6
Sandy Clay of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
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P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM10+500 (0.25-1.3m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

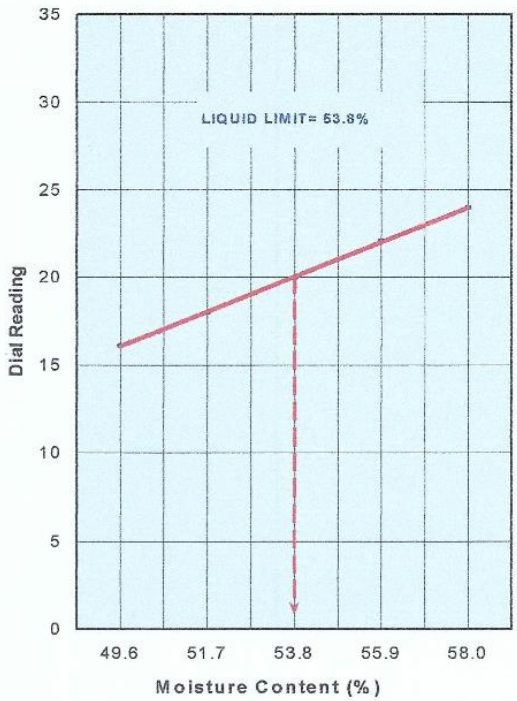
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5720 **Sample No.** 5720

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.25-1.3m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	KC	L5	M2	K6	PL	CC	SQ
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	129.3	134.9	139.2	143.9	149.3	53.4	56.3
Mass of Container+Dry Soil, M3 (g)	86.4	88.9	90.5	92.3	94.5	41.3	43.5
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	42.9	46.0	48.7	51.6	54.8	12.1	12.8
Mass of Dry Soil (M3-M1) (g)	86.4	88.9	90.5	92.3	94.5	41.3	43.5
Moisture Content (%)	**49.6**	**51.7**	**53.8**	**55.9**	**58.0**	**29.2**	**29.4**

PLASTIC LIMIT = 29.3%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 11.5%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 53.8%

Plasticity Index, PI = LL - PL
= 24.5%

Plasticity Modulus = PI x 0.425mm % pass
= 2291

SOIL CLASSIFICATION	
USCS	AASHTO
CH	A-7-6
Sandy Clay of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM11+000 (0.0-0.5m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

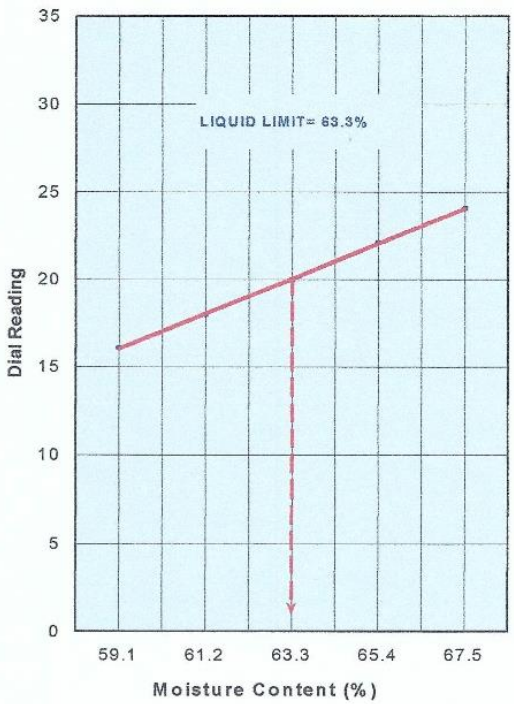
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5721 **Sample No.** 5721

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.5m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	P2	KS	MS	SP	MD	S	KQ
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	156.9	155.4	157.4	163.6	166.3	55.6	58.6
Mass of Container+Dry Soil, M3 (g)	98.6	96.4	96.4	98.9	99.3	40.6	42.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	58.3	59.0	61.0	64.7	67.0	15.0	15.8
Mass of Dry Soil (M3-M1) (g)	98.6	96.4	96.4	98.9	99.3	40.6	42.8
Moisture Content (%)	**59.1**	**61.2**	**63.3**	**65.4**	**67.5**	**36.9**	**36.8**

PLASTIC LIMIT = 36.9%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 12.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 63.3%

Plasticity Index, PI = LL - PL
= 26.4%

Plasticity Modulus = PI x 0.425mm % pass
= 2534

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-5
Sandy Elastic Silt of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM11+500 (0.0-0.6m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

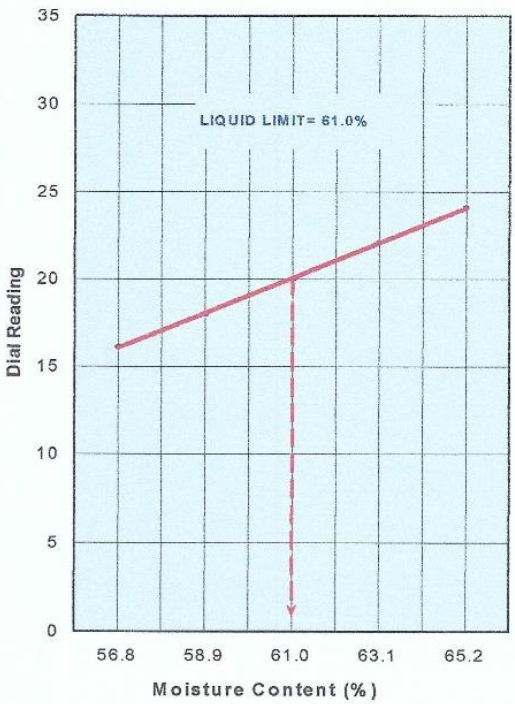
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5722 **Sample No.** 5722

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.6m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	PL	BC	OT	ND	J8	GN	P2
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	135.6	138.7	143.1	147.8	156.1	54.4	57.5
Mass of Container+Dry Soil, M3 (g)	86.5	87.3	88.9	90.6	94.5	41.3	43.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	49.1	51.4	54.2	57.2	61.6	13.1	13.9
Mass of Dry Soil (M3-M1) (g)	86.5	87.3	88.9	90.6	94.5	41.3	43.6
Moisture Content (%)	**56.8**	**58.9**	**61.0**	**63.1**	**65.2**	**31.7**	**31.9**

PLASTIC LIMIT = 31.8%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 13.7%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 61.0%

Plasticity Index, PI = LL - PL
= 29.2%

Plasticity Modulus = PI x 0.425mm % pass
= 2754

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-5
Sandy Elastic Silt of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM12+500 (0.2-1.0m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

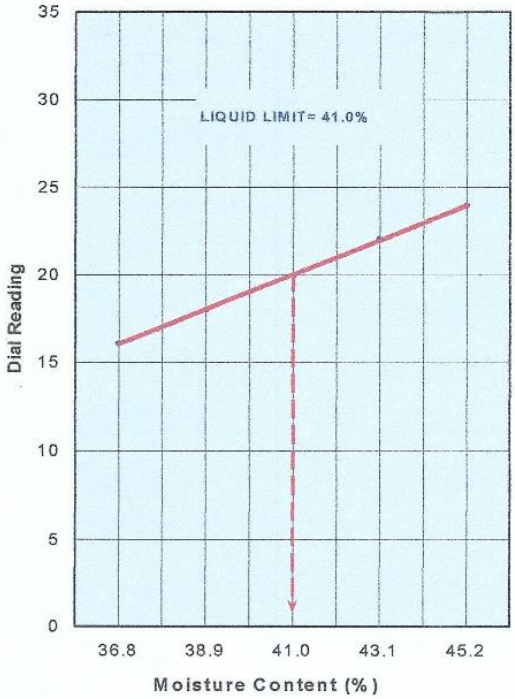
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5723 **Sample No.** 5723

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2-1.0m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	Z2	BF	RX	XV	CL	A2	GN
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	111.6	117.1	118.0	127.5	131.4	49.7	52.3
Mass of Container+Dry Soil, M3 (g)	81.6	84.3	83.7	89.1	90.5	40.5	42.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	30.0	32.8	34.3	38.4	40.9	9.2	9.7
Mass of Dry Soil (M3-M1) (g)	81.6	84.3	83.7	89.1	90.5	40.5	42.6
Moisture Content (%)	**36.8**	**38.9**	**41.0**	**43.1**	**45.2**	**22.6**	**22.8**

PLASTIC LIMIT = 22.7%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 8.6%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 41.0%

Plasticity Index, PI = LL - PL
= 18.3%

Plasticity Modulus = PI x 0.425mm % pass
= 1742

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by**

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM13+000 (0.3-1.5m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

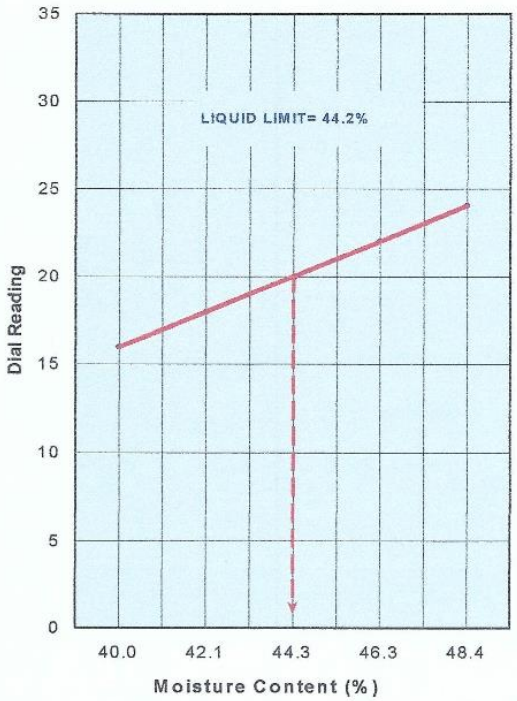
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5724 **Sample No.** 5724

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-1.5m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	J8	FB	N	SS	L	U	GN
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	123.8	140.8	140.7	143.7	140.4	56.7	59.4
Mass of Container+Dry Soil, M3 (g)	88.4	99.1	97.6	98.2	94.6	46.1	48.4
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	35.4	41.7	43.1	45.5	45.8	10.6	11.0
Mass of Dry Soil (M3-M1) (g)	88.4	99.1	97.6	98.2	94.6	46.1	48.4
Moisture Content (%)	**40.0**	**42.1**	**44.2**	**46.3**	**48.4**	**23.0**	**22.8**

PLASTIC LIMIT = 22.9%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.0%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 44.2%

Plasticity Index, PI = LL - PL
= 21.3%

Plasticity Modulus = PI x 0.425mm % pass
= 2049

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM13+500 (0.0-2.1m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5725 **Sample No.** 5725

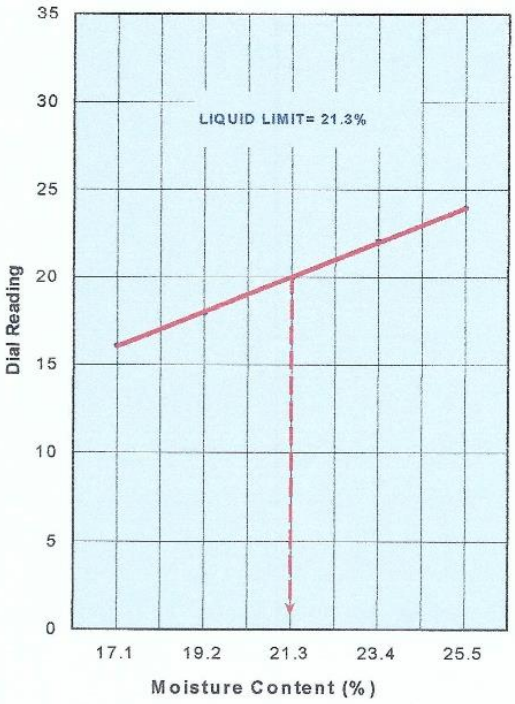
Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-2.1m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	P2	S5	QC	JK	CK		
Initial Dial Reading (mm)	0	0	0	0	0		
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0		
Mass of Container+Wet Soil, M2 (g)	101.1	106.0	109.8	103.2	128.1		
Mass of Container+Dry Soil, M3 (g)	86.3	88.9	90.5	80.7	102.1		
Mass of Container M1 (g)	-	-	-	-	-		
Mass of Moisture (M2-M3) (g)	14.8	17.1	19.3	22.5	26.0		
Mass of Dry Soil (M3-M1) (g)	86.3	88.9	90.5	96.3	102.1		
Moisture Content (%)	**17.1**	**19.2**	**21.3**	**23.4**	**25.5**		

NON-PLASTIC

PLASTIC LIMIT = NIL

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 1.7%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 21.3%

Plasticity Index, PI = LL - PL
= NIL

Plasticity Modulus = PI x 0.425mm % pass
= NIL

SOIL CLASSIFICATION	
USCS	AASHTO
SM	A-2-4
Silty Sand	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM14+000 (0.3-0.9m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5726 **Sample No.** 5726

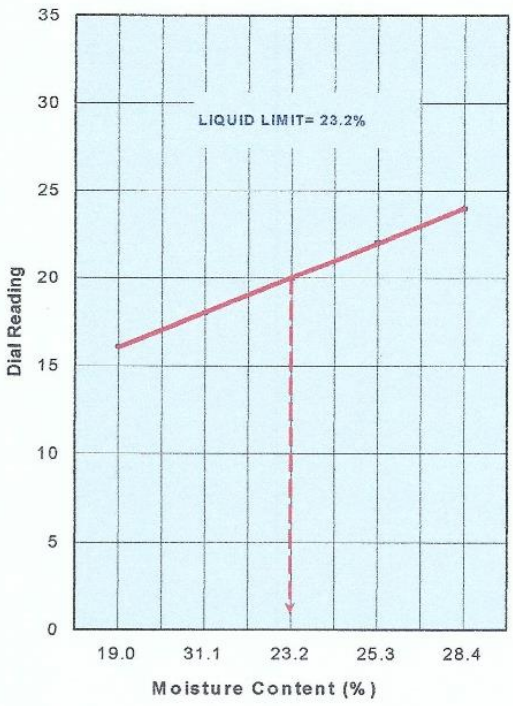
Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-0.9m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	VP	Q	SK	S2	CS		
Initial Dial Reading (mm)	0	0	0	0	0		
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0		
Mass of Container+Wet Soil, M2 (g)	109.0	118.4	120.2	106.0	115.0		
Mass of Container+Dry Soil, M3 (g)	91.6	97.8	97.6	84.6	89.6		
Mass of Container M1 (g)	-	-	-	-	-		
Mass of Moisture (M2-M3) (g)	17.4	20.6	22.6	21.4	25.4		
Mass of Dry Soil (M3-M1) (g)	91.6	97.8	97.6	84.6	89.6		
Moisture Content (%)	**19.0**	**21.1**	**23.2**	**25.3**	**28.4**		

NON-PLASTIC

PLASTIC LIMIT = NIL

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 2.1%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 23.2%

Plasticity Index, PI = LL - PL
= NIL

Plasticity Modulus = PI x 0.425mm % pass
= NIL

SOIL CLASSIFICATION	
USCS	AASHTO
SM	A-4
Silty Sand	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM14+500 (0.4-1.4m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5727 **Sample No.** 5727

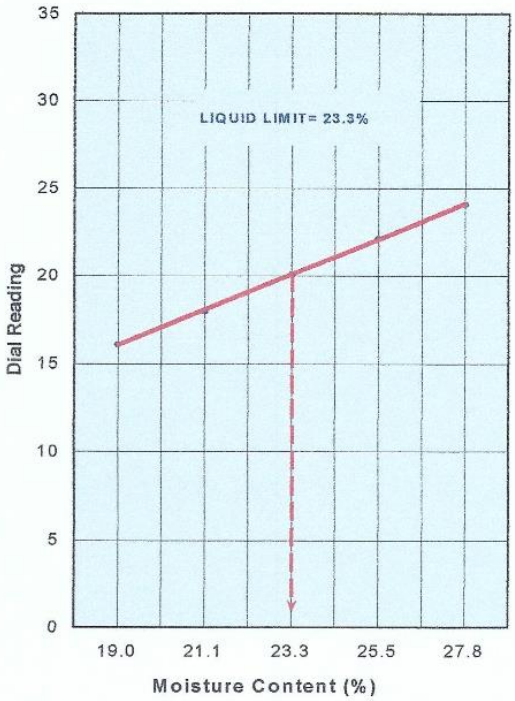
Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.0m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	RK	P2	CC	TO	CS		
Initial Dial Reading (mm)	0	0	0	0	0		
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.0		
Mass of Container+Wet Soil, M2 (g)	109.8	110.9	116.6	117.6	121.2		
Mass of Container+Dry Soil, M3 (g)	92.3	91.6	94.6	93.7	94.8		
Mass of Container M1 (g)	-	-	-	-	-		
Mass of Moisture (M2-M3) (g)	17.5	19.3	22.0	23.9	26.4		
Mass of Dry Soil (M3-M1) (g)	92.3	91.6	94.6	93.7	94.8		
Moisture Content (%)	**19.0**	**21.1**	**23.3**	**25.5**	**27.8**		

NON-PLASTIC

PLASTIC LIMIT = NIL

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= NIL%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 23.3%

Plasticity Index, PI = LL - PL
= NIL

Plasticity Modulus = PI x 0.425mm % pass
= NIL

SOIL CLASSIFICATION	
USCS	AASHTO
SM	A-2-4
Silty Sand	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM15+000 (0.5-1.0m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

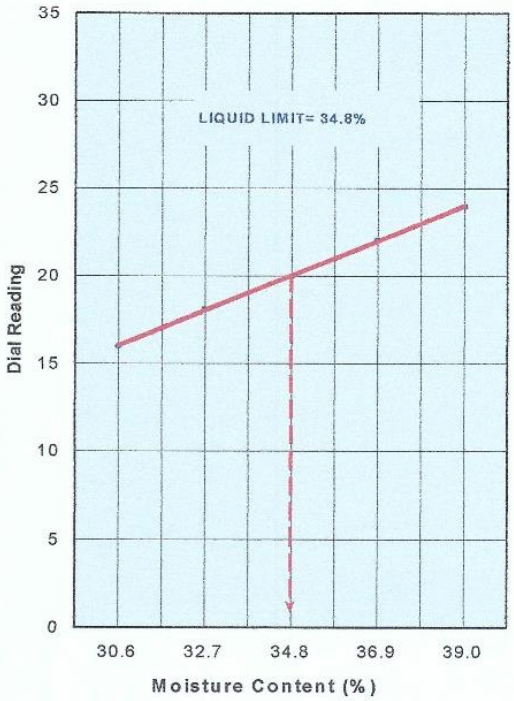
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5728 **Sample No.** 5728

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.0m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	ON	U	L	M4	MS	O8	ZK
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	115.7	118.4	118.0	123.3	134.4	49.7	52.4
Mass of Container+Dry Soil, M3 (g)	88.6	89.2	87.5	90.1	96.7	42.0	44.2
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	27.1	29.2	30.5	33.2	37.7	7.7	8.2
Mass of Dry Soil (M3-M1) (g)	88.6	89.2	87.5	90.1	96.7	42.0	44.2
Moisture Content (%)	**30.6**	**32.7**	**34.8**	**36.9**	**39.0**	**18.3**	**18.5**

PLASTIC LIMIT = 18.4%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.7%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 38.4%

Plasticity Index, PI = LL - PL
= 16.4%

Plasticity Modulus = PI x 0.425mm % pass
= 1627

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-6
Clayey Sand of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM15+500 (0.25-0.6m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

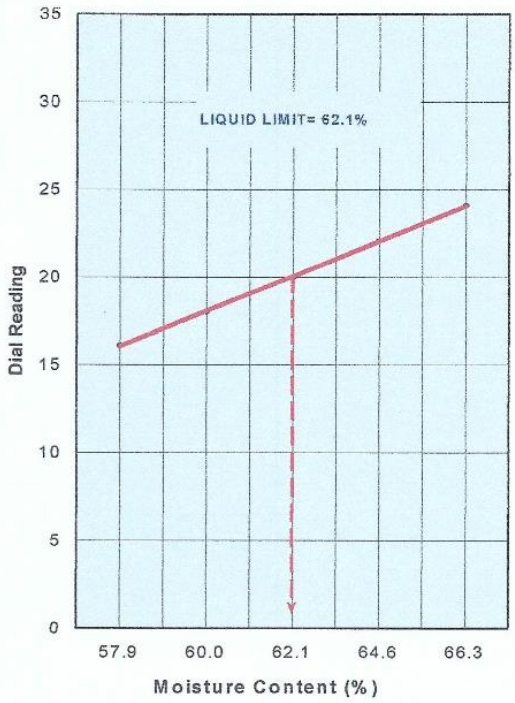
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5729 **Sample No.** 5729

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.25-0.6m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	O8	Q	M5	CB	T4	V	ZK
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	129.6	132.2	148.5	144.0	147.3	55.3	58.3
Mass of Container+Dry Soil, M3 (g)	82.1	82.6	91.6	87.5	88.6	41.4	43.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	47.5	49.6	56.9	56.5	58.7	13.9	14.7
Mass of Dry Soil (M3-M1) (g)	82.1	82.6	91.6	87.5	88.6	41.4	43.6
Moisture Content (%)	**57.9**	**60.0**	**62.1**	**64.6**	**66.3**	**33.5**	**33.7**

PLASTIC LIMIT = 33.6%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 13.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 62.1%

Plasticity Index, PI = LL - PL
= 28.5%

Plasticity Modulus = PI x 0.425mm % pass
= 2822

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-5
Sandy Elastic Silt of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
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P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM16+000 (0.0-0.75m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

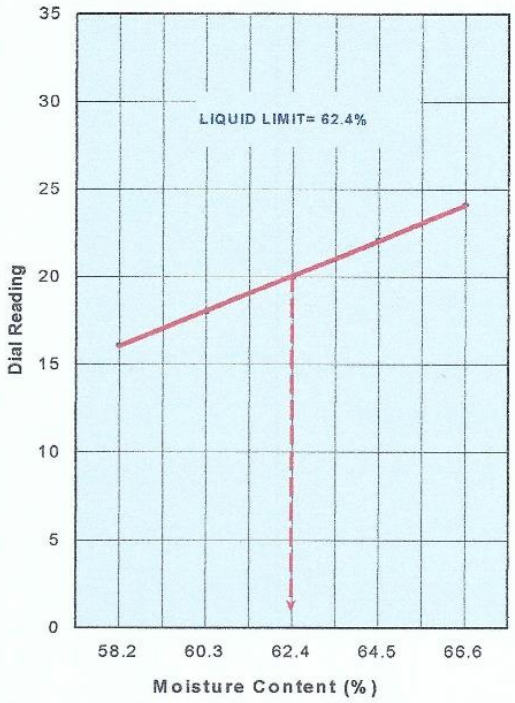
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5730 **Sample No.** 5730

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.75m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	J8	FB	N	SS	L	U	BF
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	152.7	158.1	158.2	155.5	164.3	61.9	64.9
Mass of Container+Dry Soil, M3 (g)	96.5	98.6	97.4	94.5	98.6	46.5	48.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	56.2	59.5	60.8	61.0	65.7	15.4	16.2
Mass of Dry Soil (M3-M1) (g)	96.5	98.6	97.4	94.5	98.6	46.5	48.7
Moisture Content (%)	**58.2**	**60.3**	**62.4**	**64.5**	**66.6**	**33.1**	**33.3**

PLASTIC LIMIT = 33.2%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 13.7%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 62.4%

Plasticity Index, PI = LL - PL
= 29.2%

Plasticity Modulus = PI x 0.425mm % pass
= 2867

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-5
Sandy Elastic Silt of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM16+500 (0.5-1.4m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

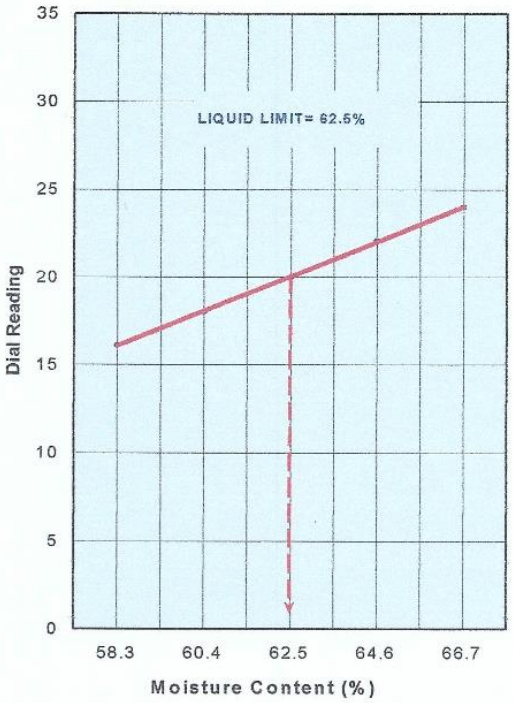
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5731 **Sample No.** 5731

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.4m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	IP	OT	BW	KB	A2	CL	BF
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	146.6	151.6	157.3	162.3	166.0	54.1	57.3
Mass of Container+Dry Soil, M3 (g)	92.6	94.5	96.8	98.6	99.6	40.5	42.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	54.0	57.1	60.5	63.7	66.4	13.6	14.5
Mass of Dry Soil (M3-M1) (g)	92.6	94.5	96.8	98.6	99.6	40.5	42.8
Moisture Content (%)	**58.3**	**60.4**	**62.5**	**64.6**	**66.7**	**33.6**	**33.8**

PLASTIC LIMIT = 33.7%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 13.5%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 62.5%

Plasticity Index, PI = LL - PL
= 28.8%

Plasticity Modulus = PI x 0.425mm % pass
= 2612

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-5
Sandy Elastic Silt of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM17+000 (0.0-1.5m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

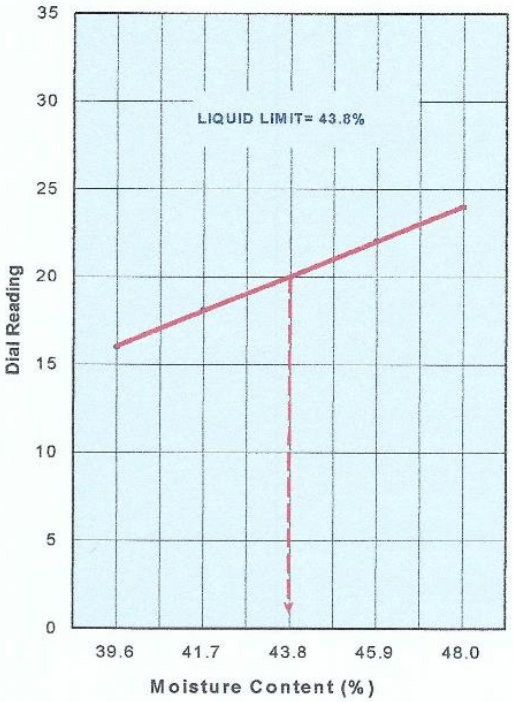
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5732 **Sample No.** 5732

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.5m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	Q	P2	RK	RC	A2	GN	D
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	134.7	133.6	133.2	144.3	134.1	51.5	54.4
Mass of Container+Dry Soil, M3 (g)	96.5	94.3	92.6	98.9	90.6	42.1	44.4
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	38.2	39.3	40.6	45.4	43.5	9.4	10.0
Mass of Dry Soil (M3-M1) (g)	96.5	94.3	92.6	98.9	90.6	42.1	44.4
Moisture Content (%)	**39.6**	**41.7**	**43.8**	**45.9**	**48.0**	**22.4**	**22.6**

PLASTIC LIMIT = 22.5%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.0%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 43.8%

Plasticity Index, PI = LL - PL
= 21.3%

Plasticity Modulus = PI x 0.425mm % pass
= 978

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-7-6
Clayey Sand of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM17+500 (0.0-1.3m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

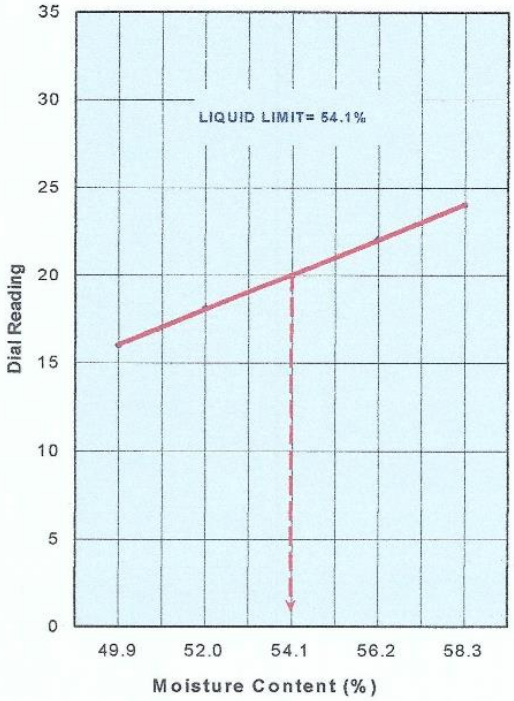
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5733 **Sample No.** 5733

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.3m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	RC	ZK	TO	GN	BC	A2	SK
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	144.1	149.4	146.1	154.8	161.9	57.6	60.7
Mass of Container+Dry Soil, M3 (g)	96.1	98.3	94.8	99.1	102.3	43.0	45.2
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	48.0	51.1	51.3	55.7	59.6	14.6	15.5
Mass of Dry Soil (M3-M1) (g)	96.1	98.3	94.8	99.1	102.3	43.0	45.2
Moisture Content (%)	**49.9**	**52.0**	**54.1**	**56.2**	**58.3**	**34.0**	**34.2**

PLASTIC LIMIT = 34.1%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 54.1%

Plasticity Index, PI = LL - PL
= 20.0%

Plasticity Modulus = PI x 0.425mm % pass
= 1412

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-5
Sandy Elastic Silt of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM18+000 (0.4-1.2m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

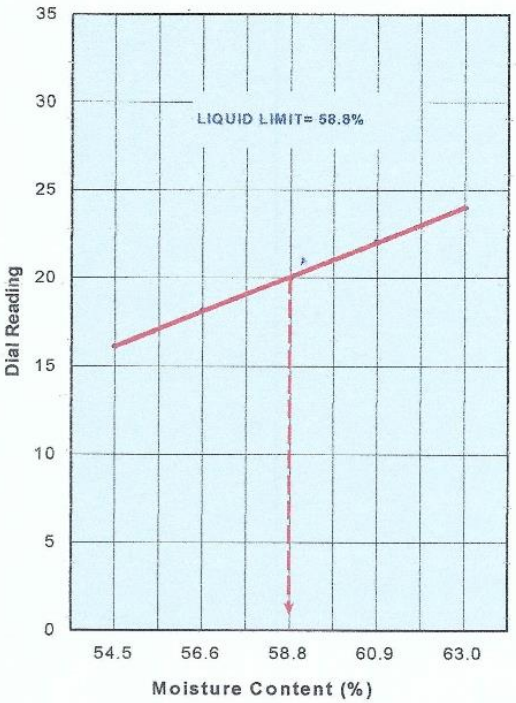
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5734 **Sample No.** 5734

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.2m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	NP	Q	BC	N	N1	JN	MU
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.1	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	131.8	135.3	145.5	164.6	162.7	41.6	44.4
Mass of Container+Dry Soil, M3 (g)	85.3	86.4	91.6	102.3	99.8	31.5	33.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	46.5	48.9	53.9	62.3	62.9	10.1	10.8
Mass of Dry Soil (M3-M1) (g)	85.3	86.4	91.6	102.3	99.8	31.5	33.6
Moisture Content (%)	**54.5**	**56.6**	**58.8**	**60.9**	**63.0**	**32.2**	**32.0**

PLASTIC LIMIT = 32.1%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

=11.9%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 58.8%

Plasticity Index, PI = LL - PL
= 26.7

Plasticity Modulus = PI x 0.425mm % pass
= 1816

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-5
Sandy Elastic Silt of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
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Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY
NGUU TATU SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM18+500 (0.0-0.8m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

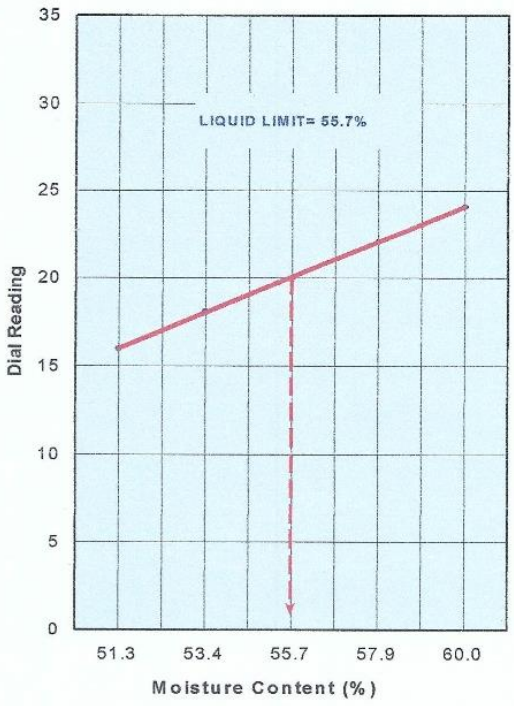
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5735 **Sample No.** 5735

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.8m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	XV	RX	BF	ZZ	RC	MD	SP
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	112.9	117.8	122.8	133.6	154.9	57.2	60.1
Mass of Container+Dry Soil, M3 (g)	74.6	76.8	78.9	80.7	96.8	42.1	44.2
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	38.3	41.0	43.9	52.9	58.1	15.1	15.9
Mass of Dry Soil (M3-M1) (g)	74.6	76.8	78.9	91.3	96.8	42.1	44.2
Moisture Content (%)	**51.3**	**53.4**	**55.7**	**57.9**	**60.0**	**35.8**	**36.0**

PLASTIC LIMIT = 35.9%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.3%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 55.7%

Plasticity Index, PI = LL - PL
= 19.8%

Plasticity Modulus = PI x 0.425mm % pass
= 1889

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-5
Sandy Elastic Silt of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

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P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM19+000 (0.0-1.1m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

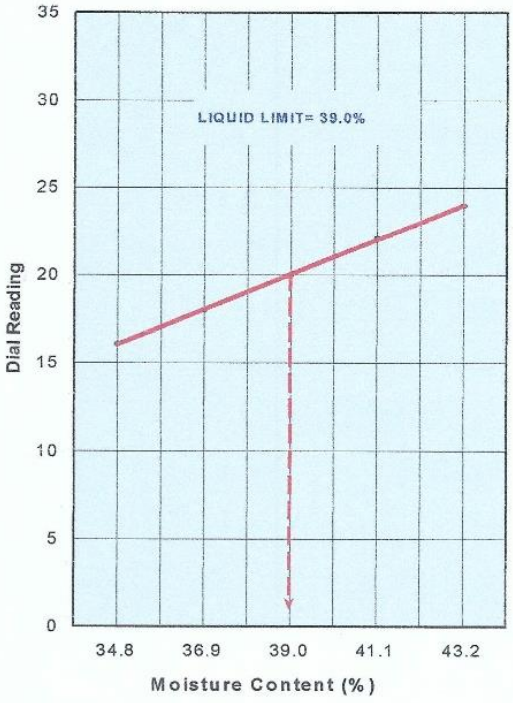
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5736 **Sample No.** 5736

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.1m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	BC	N	B6	G	NT	NZ	PL
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	123.5	126.5	131.5	130.9	142.6	50.2	52.8
Mass of Container+Dry Soil, M3 (g)	91.6	92.4	94.6	92.8	99.6	41.6	43.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	31.9	34.1	36.9	38.1	43.0	8.6	9.1
Mass of Dry Soil (M3-M1) (g)	91.6	92.4	94.6	92.8	99.6	41.6	43.7
Moisture Content (%)	**34.8**	**36.9**	**39.0**	**41.1**	**43.2**	**20.6**	**20.8**

PLASTIC LIMIT = 20.7%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 8.6%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 39.0%

Plasticity Index, PI = LL - PL
= 18.3%

Plasticity Modulus = PI x 0.425mm % pass
= 955

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-7-6
Clayey Sand of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
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P.O.Box 64932
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY
NGUU TATU SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM19+500 (0.5-1.1m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

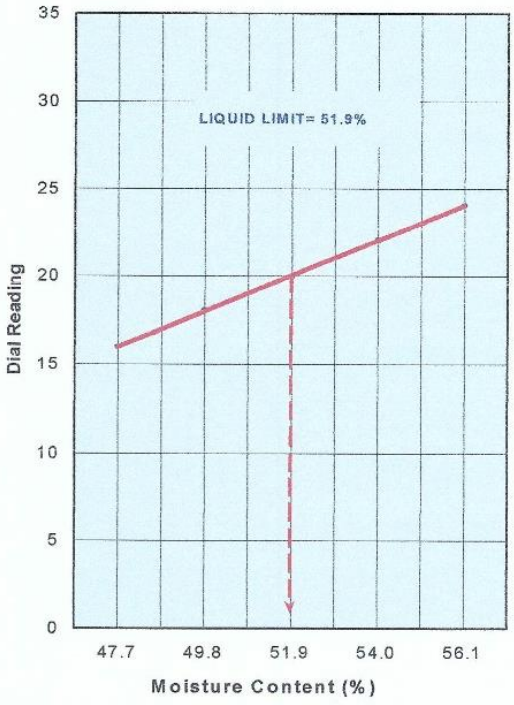
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5737 **Sample No.** 5737

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.1m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	MK	SV	L	J8	MX	TV	RD
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	145.6	141.6	146.3	131.8	155.5	57.1	60.0
Mass of Container+Dry Soil, M3 (g)	98.6	94.5	96.3	80.7	99.6	42.3	44.4
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	47.0	47.1	50.0	51.1	55.9	14.8	15.6
Mass of Dry Soil (M3-M1) (g)	98.6	94.5	96.3	94.6	99.6	42.3	44.4
Moisture Content (%)	**47.7**	**49.8**	**51.9**	**54.0**	**56.1**	**35.0**	**35.2**

PLASTIC LIMIT = 35.1%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.9%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 51.9%

Plasticity Index, PI = LL - PL
= 16.8%

Plasticity Modulus = PI x 0.425mm % pass
= 1621

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-5
Sandy Elastic Silt of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM20+000 (0.5-1.5m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

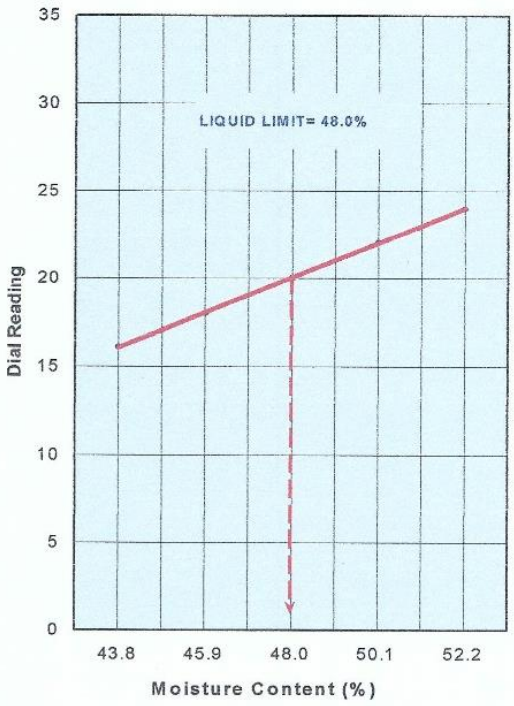
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5738 **Sample No.** 5738

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.5m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	KQ	CN	QC	JV	B6	G	N2
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	138.6	143.9	146.7	136.1	113.8	55.5	58.2
Mass of Container+Dry Soil, M3 (g)	96.4	98.6	99.1	90.7	74.8	43.8	45.9
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	42.2	45.3	47.6	45.4	39.0	11.7	12.3
Mass of Dry Soil (M3-M1) (g)	96.4	98.6	99.1	90.7	74.8	43.8	45.9
Moisture Content (%)	**43.8**	**45.9**	**48.0**	**50.1**	**52.2**	**26.6**	**26.8**

PLASTIC LIMIT = 26.7%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.1%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 48.0%

Plasticity Index, PI = LL - PL
= 21.3%

Plasticity Modulus = PI x 0.425mm % pass
= 1393

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
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REGIONAL GEOPHYSICAL SURVEY
NGUU TATU SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM20+500 (0.2-1.0m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

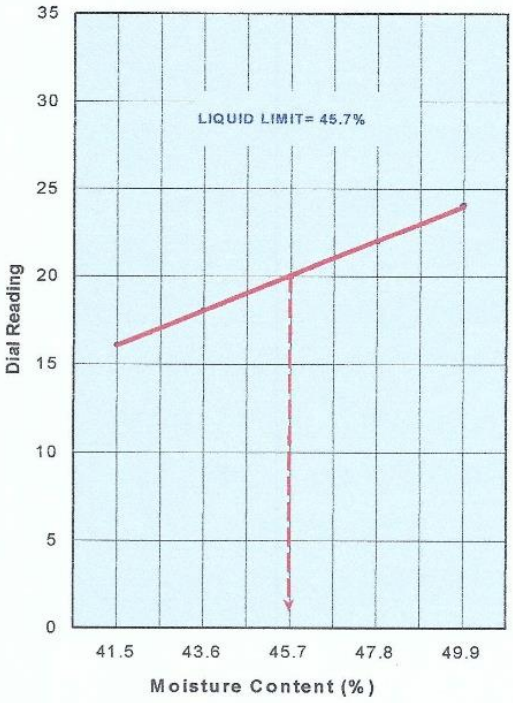
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5739 **Sample No.** 5739

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2-1.0m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	ZK	YZ	OT	MD	J8	FB	SS
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.1	20.0	22.0	.24.1	-	-
Mass of Container+Wet Soil, M2 (g)	129.6	132.7	140.3	145.9	149.3	52.2	55.0
Mass of Container+Dry Soil, M3 (g)	91.6	92.4	96.3	98.7	99.6	42.1	44.3
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	38.0	40.3	44.0	47.2	49.7	10.1	10.7
Mass of Dry Soil (M3-M1) (g)	91.6	92.4	96.3	98.7	99.6	42.1	44.3
Moisture Content (%)	**41.5**	**43.6**	**45.7**	**47.8**	**49.9**	**24.0**	**24.2**

PLASTIC LIMIT = 24.1%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.0%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 45.7%

Plasticity Index, PI = LL - PL
= 21.6%

Plasticity Modulus = PI x 0.425mm % pass
= 1421

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM0+000 (0.4-1.0m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 18-10-21

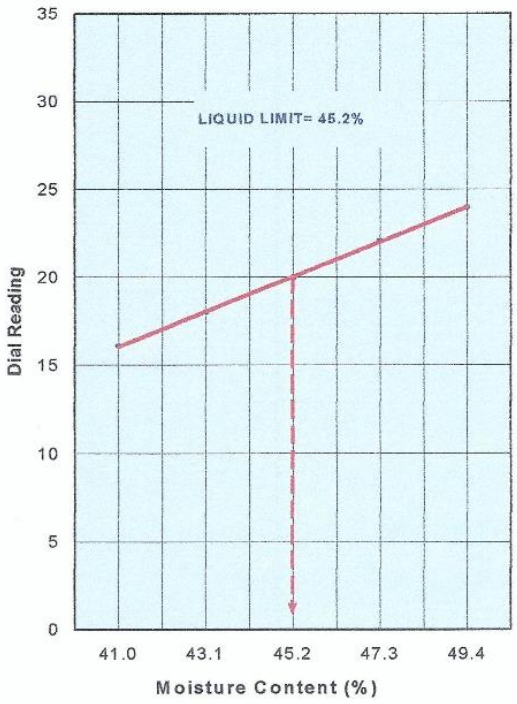
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/5751 **Sample No.** 5751

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4 -1.0m **Date Tested:** 29-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	CL	M2	N6	BC	T4	PL2	B6
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	114.8	117.8	125.6	123.3	137.9	51.8	53.2
Mass of Container+Dry Soil, M3 (g)	81.4	82.3	86.5	80.7	92.3	41.9	43.0
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	33.4	35.5	39.1	42.6	45.6	9.9	10.2
Mass of Dry Soil (M3-M1) (g)	81.4	82.3	86.5	90.1	92.3	41.9	43.0
Moisture Content (%)	**41.0**	**43.1**	**45.2**	**47.3**	**49.4**	**23.6**	**23.8**

PLASTIC LIMIT = 23.7%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.1%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 45.2%

Plasticity Index, PI = LL - PL
= 21.5%

Plasticity Modulus = PI x 0.425mm % pass
= 847

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-7-6
Clayey Sand of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 30-10-21 **Checked by:**

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM0+500 (0.4-1.1m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 18-10-21

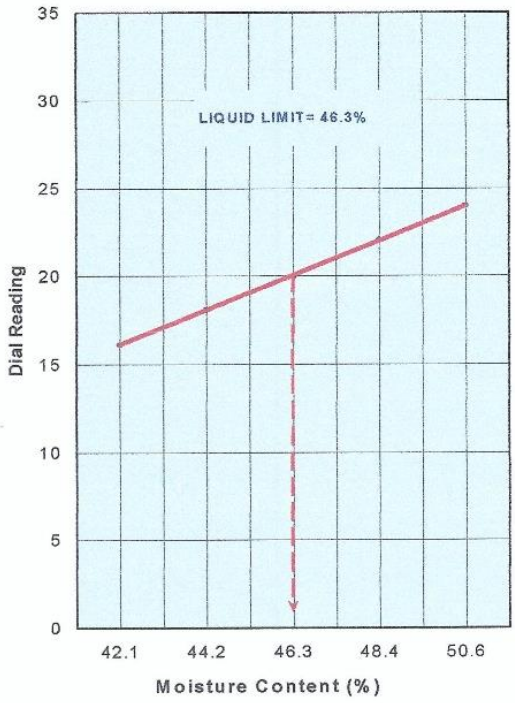
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/5752 **Sample No.** 5752

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4 -1.1m **Date Tested:** 29-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	TP	KM	T4	PL	CB	SP	VP
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.1	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	122.6	128.6	132.5	140.7	145.9	55.3	58.0
Mass of Container+Dry Soil, M3 (g)	86.3	89.2	90.6	94.8	96.9	43.8	45.9
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	36.3	39.4	41.9	45.9	49.0	11.5	12.1
Mass of Dry Soil (M3-M1) (g)	86.3	89.2	90.6	94.8	96.9	43.8	45.9
Moisture Content (%)	**42.1**	**44.2**	**46.3**	**48.4**	**50.6**	**26.2**	**26.4**

PLASTIC LIMIT = 26.3%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 46.3%

Plasticity Index, PI = LL - PL
= 20.0%

Plasticity Modulus = PI x 0.425mm % pass
= 686

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-7
Clayey Sand with Gravel of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 30-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM1+000 (0.0-1.4m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 18-10-21

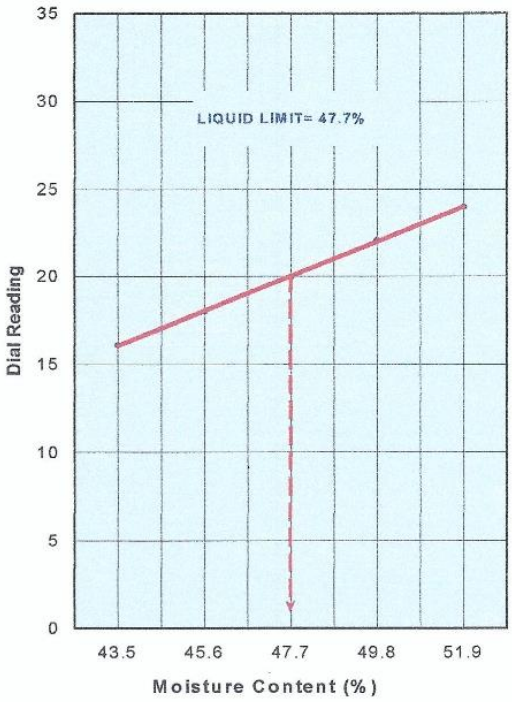
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/5753 **Sample No.** 5753

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0 -1.4m **Date Tested:** 29-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	LT	DZ	BG	A2	NP	Z4	PA
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	116.8	123.2	130.9	126.3	140.2	54.1	57.0
Mass of Container+Dry Soil, M3 (g)	81.4	84.6	88.6	80.7	92.3	42.1	44.3
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	35.4	38.6	42.3	45.6	47.9	12.0	12.7
Mass of Dry Soil (M3-M1) (g)	81.4	84.6	88.6	91.6	92.3	42.1	44.3
Moisture Content (%)	**43.5**	**45.6**	**47.7**	**49.8**	**51.9**	**28.4**	**28.6**

PLASTIC LIMIT = 28.5%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.0%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 47.7%

Plasticity Index, PI = LL - PL
= 19.2%

Plasticity Modulus = PI x 0.425mm % pass
= 470

SOIL CLASSIFICATION	
USCS	AASHTO
GM	A-2-7
Silty Gravel With Sand of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 30-10-21 **Checked by:**

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info@danellilab.com
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM1+500 (0.0-1.3m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 18-10-21

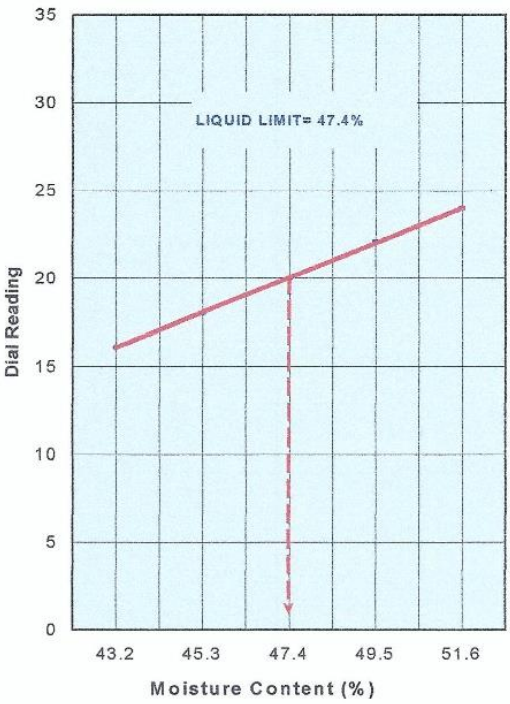
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/5754 **Sample No.** 5754

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0 -1.3m **Date Tested:** 29-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	BH	FB	B12	N	X3	AM	ND
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	116.9	130.2	136.5	126.3	129.8	54.2	57.0
Mass of Container+Dry Soil, M3 (g)	81.6	89.6	92.6	84.5	85.6	42.5	44.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	35.3	40.6	43.9	41.8	44.2	11.7	12.4
Mass of Dry Soil (M3-M1) (g)	81.6	89.6	92.6	84.5	85.6	42.5	44.6
Moisture Content (%)	**43.2**	**45.3**	**47.4**	**49.5**	**51.6**	**27.5**	**27.7**

PLASTIC LIMIT = 27.6%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.3%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 47.4%

Plasticity Index, PI = LL - PL
= 19.8%

Plasticity Modulus = PI x 0.425mm % pass
= 1350

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-6
Sandy Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 30-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
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Kenya

REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM2+000 (0.0-0.5m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/5755 **Sample No.** 5755

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0 -0.5m **Date Tested:** 29-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	K6	OT	IP	Q2	X3	AM	CS
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	124.6	122.4	125.6	120.2	124.9	51.2	54.0
Mass of Container+Dry Soil, M3 (g)	91.6	88.6	89.6	84.5	86.5	42.0	44.3
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	33.0	33.8	36.0	35.7	38.4	9.2	9.7
Mass of Dry Soil (M3-M1) (g)	91.6	88.6	89.6	84.5	86.5	42.0	44.3
Moisture Content (%)	**36.0**	**38.1**	**40.2**	**42.3**	**44.4**	**21.8**	**22.0**

PLASTIC LIMIT = 21.9%

LIQUID LIMIT

LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 8.6%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 40.2%

Plasticity Index, PI = LL - PL
= 18.3%

Plasticity Modulus = PI x 0.425mm % pass
= 1819

SOIL CLASSIFICATION	
USCS	AASHTO
CL	A-6
Sandy Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 30-10-21 **Checked by:**

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Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM2+500 (0.0-0.2m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/5756 **Sample No.** 5756

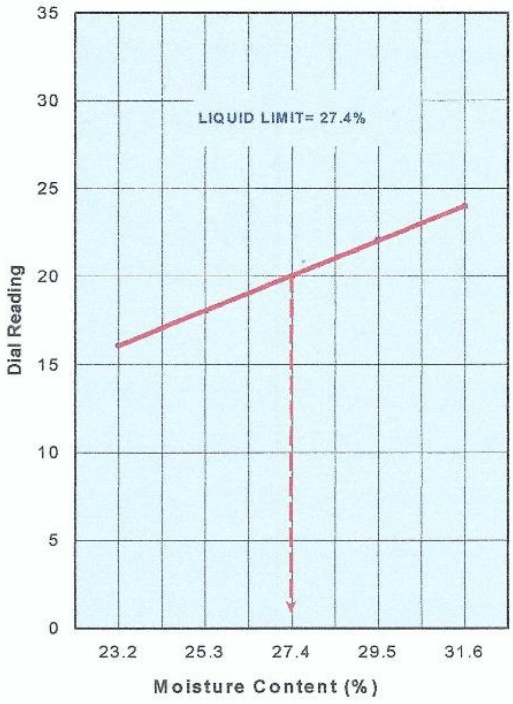
Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0 -0.2m **Date Tested:** 29-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	K4	OC	IP	Q2	BM		
Initial Dial Reading (mm)	0	0	0	0	0		
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0		
Mass of Container+Wet Soil, M2 (g)	124.6	122.4	125.6	120.2	124.9		
Mass of Container+Dry Soil, M3 (g)	91.6	88.6	89.6	84.5	86.5		
Mass of Container M1 (g)	-	-	-	-	-		
Mass of Moisture (M2-M3) (g)	33.0	33.8	36.0	35.7	38.4		
Mass of Dry Soil (M3-M1) (g)	91.6	88.6	89.6	84.5	86.5		
Moisture Content (%)	**36.0**	**38.1**	**40.2**	**42.3**	**44.4**		

NON-PLASTIC

PLASTIC LIMIT = NiL

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 1.0%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 27.5%

Plasticity Index, PI = LL - PL
= NIL

Plasticity Modulus = PI x 0.425mm % pass
=

SOIL CLASSIFICATION	
USCS	AASHTO
SM	A-4
Silty Sand	

Tested by: MICHAEL **Date Reported:** 30-10-21 **Checked by:**

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info@danellilab.com
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Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM3+000 (0.32-0.95m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

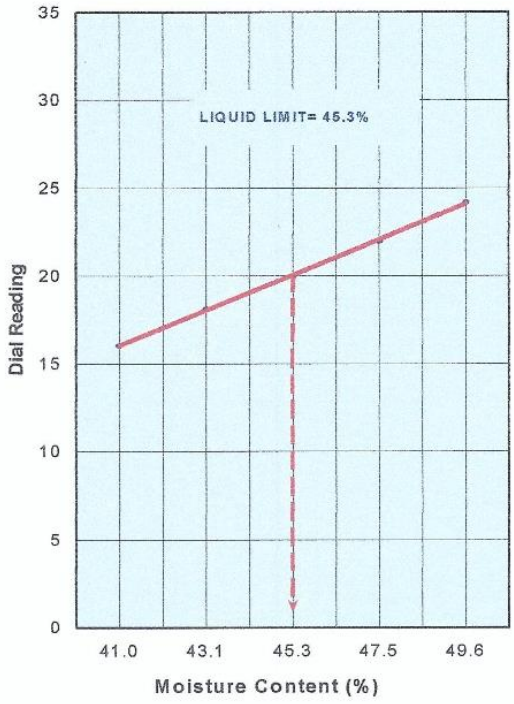
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4559 **Sample No.** 4559

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.32 - 0.59m **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	SI	TE	BY	MU	LU	NG	SI
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.0	24.2	-	-
Mass of Container+Wet Soil, M2 (g)	125.3	131.7	137.3	121.3	131.9	53.6	55.9
Mass of Container+Dry Soil, M3 (g)	88.9	92.0	94.5	80.7	88.2	43.5	45.4
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	36.4	39.7	42.8	40.6	43.7	10.1	10.5
Mass of Dry Soil (M3-M1) (g)	88.9	92.0	94.5	85.4	88.2	43.5	45.4
Moisture Content (%)	**41.0**	**43.1**	**45.3**	**47.5**	**49.6**	**23.3**	**23.1**

PLASTIC LIMIT = 23.2%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 45.3%

Plasticity Index, PI = LL - PL
= 22.1%

Plasticity Modulus = PI x 0.425mm % pass
= 1936

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
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Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM3+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

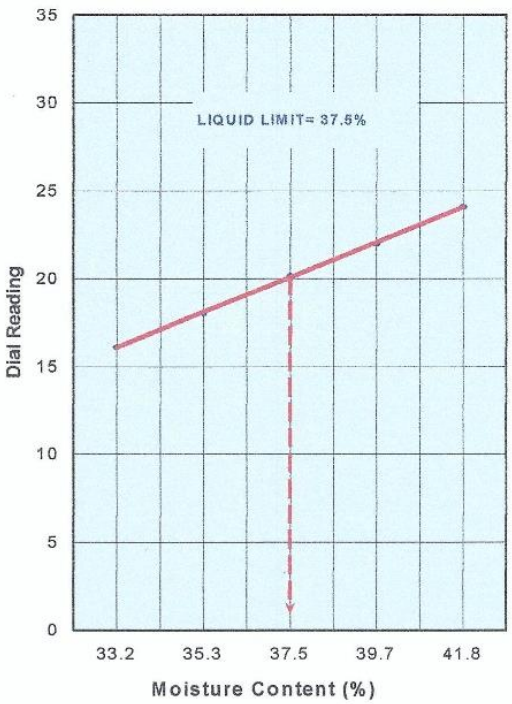
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4560 **Sample No.** 4560

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	XI	DA	OU	MA	ON	YE	GO
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.2	22.0	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	107.2	106.1	109.5	114.2	125.6	49.3	51.9
Mass of Container+Dry Soil, M3 (g)	80.5	78.4	79.6	80.7	88.6	40.6	42.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	26.7	27.7	29.9	33.5	37.0	8.7	9.1
Mass of Dry Soil (M3-M1) (g)	80.5	78.4	79.6	84.5	88.6	40.6	42.8
Moisture Content (%)	**33.2**	**35.3**	**37.5**	**39.7**	**41.8**	**21.5**	**21.3**

PLASTIC LIMIT = 21.4%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.6%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 37.5%

Plasticity Index, PI = LL - PL
= 16.1%

Plasticity Modulus = PI x 0.425mm % pass
= 1331

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM4+500 (0.0-1.4m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

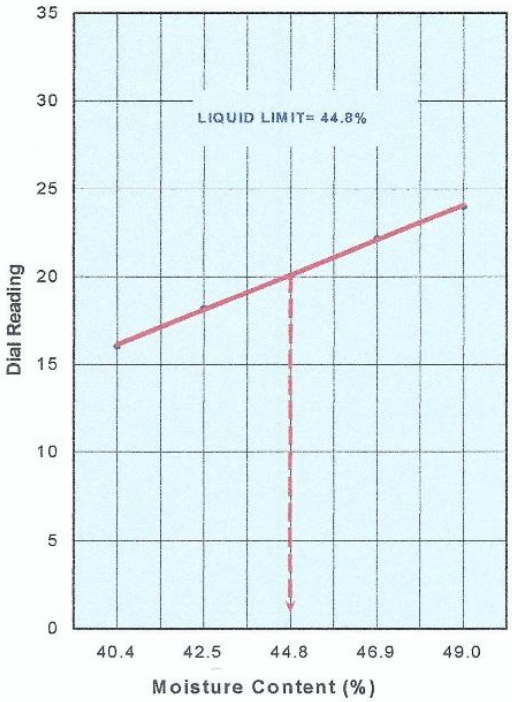
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4561 **Sample No.** 4561

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0 - 1.4m **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	PL	AS	TI	CN	LI	MI	TO
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.2	20.1	22.2	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	132.7	131.1	138.0	123.0	133.5	51.0	53.6
Mass of Container+Dry Soil, M3 (g)	94.5	92.0	95.3	80.7	89.6	41.5	43.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	38.2	39.1	42.7	42.3	43.9	9.5	9.9
Mass of Dry Soil (M3-M1) (g)	94.5	92.0	95.3	90.2	89.6	41.5	43.7
Moisture Content (%)	**40.4**	**42.5**	**44.8**	**46.9**	**49.0**	**23.3**	**23.5**

PLASTIC LIMIT = 23.4%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.1%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 44.8%

Plasticity Index, PI = LL - PL
= 21.4%

Plasticity Modulus = PI x 0.425mm % pass
= 1358

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM5+000 (0.35-1.0m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

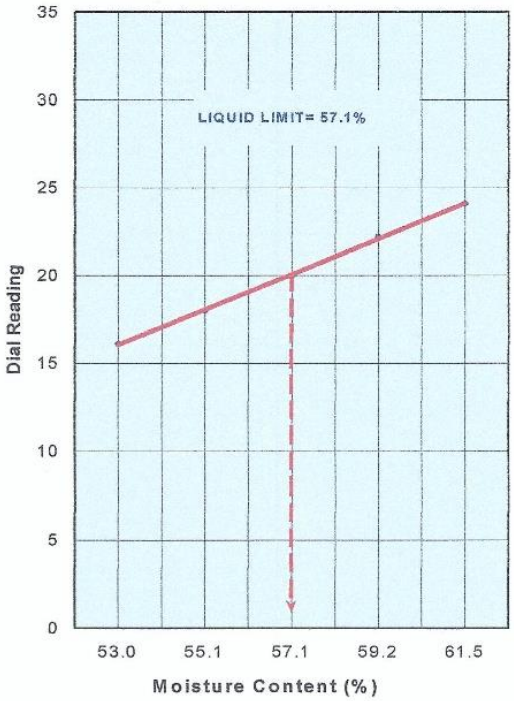
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4562 **Sample No.** 4562

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.35 - 1.0m **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	CO	NE	PE	NE	K	M	T
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.2	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	137.7	141.9	146.4	135.5	144.7	65.1	68.3
Mass of Container+Dry Soil, M3 (g)	90.0	91.5	93.2	80.7	89.6	50.0	52.5
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	47.7	50.4	53.2	54.8	55.1	15.1	15.8
Mass of Dry Soil (M3-M1) (g)	90.0	91.5	93.2	92.5	89.6	50.0	52.5
Moisture Content (%)	**53.0**	**55.1**	**57.1**	**59.2**	**61.5**	**30.2**	**30.0**

PLASTIC LIMIT = 30.1%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 12.7%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 57.1%

Plasticity Index, PI = LL - PL
= 27.0%

Plasticity Modulus = PI x 0.425mm % pass
= 2276

SOIL CLASSIFICATION	
USCS	AASHTO
CH	A-7-5
Sandy Clay of High Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM5+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

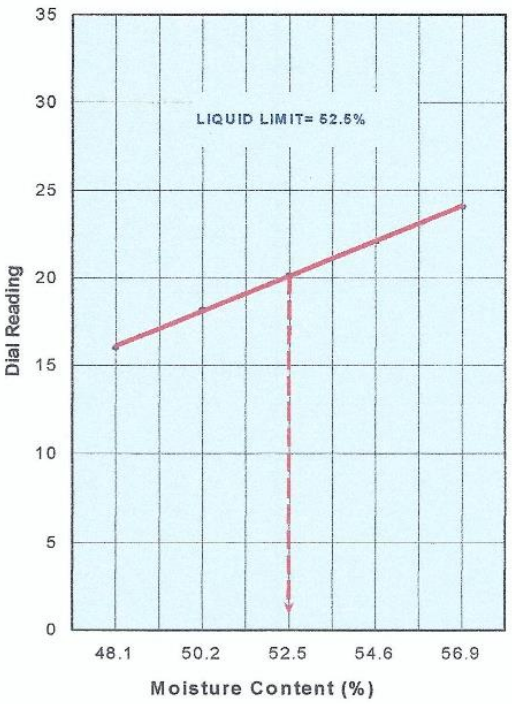
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4563 **Sample No.** 4563

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	LT	NE	AS	SH	NK	AG	EN
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.2	20.2	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	124.7	129.3	135.6	129.9	145.1	61.3	63.9
Mass of Container+Dry Soil, M3 (g)	84.2	86.1	88.9	80.7	92.5	47.6	49.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	40.5	43.2	46.7	49.2	52.6	13.7	14.2
Mass of Dry Soil (M3-M1) (g)	84.2	86.1	88.9	90.2	92.5	47.6	49.7
Moisture Content (%)	**48.1**	**50.2**	**52.5**	**54.6**	**56.9**	**28.8**	**28.6**

PLASTIC LIMIT = 28.7%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 11.2%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 52.5%

Plasticity Index, PI = LL - PL
= 23.8%

Plasticity Modulus = PI x 0.425mm % pass
= 2242

SOIL CLASSIFICATION	
USCS	AASHTO
CH	A-7-6
Sandy Clay of High Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM6+000 (0.8-0.9m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

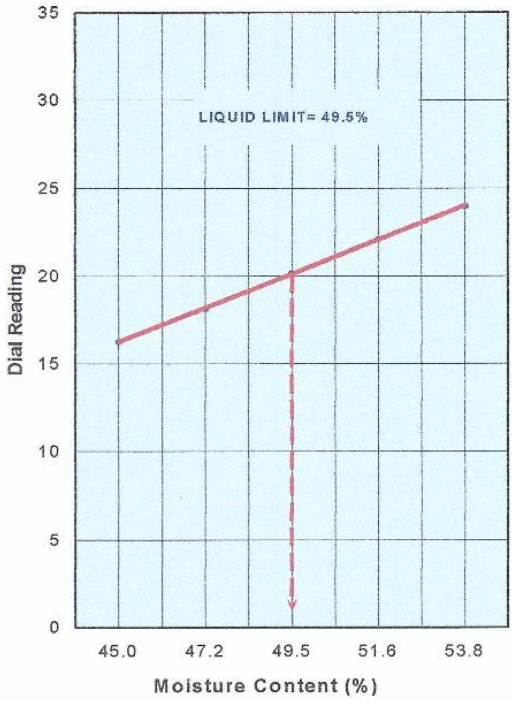
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4564 **Sample No.** 4564

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.8 - 0.9m **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	SA	MP	LI	NG	OK	UA	TY
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.1	20.2	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	123.4	117.8	129.8	126.7	138.9	55.6	58.4
Mass of Container+Dry Soil, M3 (g)	85.1	80.0	86.8	80.7	90.3	44.2	46.5
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	38.3	37.8	43.0	46.0	48.6	11.4	11.9
Mass of Dry Soil (M3-M1) (g)	85.1	80.0	86.8	89.2	90.3	44.2	46.5
Moisture Content (%)	**45.0**	**47.2**	**49.5**	**51.6**	**53.8**	**25.0**	**25.2**

PLASTIC LIMIT = 25.1%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 11.5%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 49.5%

Plasticity Index, PI = LL - PL
= 24.4%

Plasticity Modulus = PI x 0.425mm % pass
= 937

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-7
Clayey Sand of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM6+500 (0.0-1.0m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

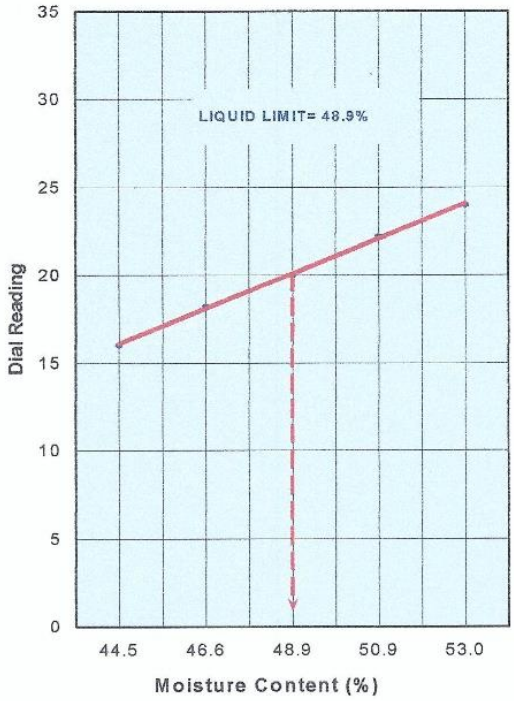
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4565 **Sample No.** 4565

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0 - 1.0m **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	DE	SC	RI	PT	ON	XN	JN
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.2	20.0	22.2	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	113.3	118.0	126.0	125.4	138.3	58.1	60.7
Mass of Container+Dry Soil, M3 (g)	78.4	80.5	84.6	80.7	90.4	45.8	47.9
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	34.9	37.5	41.4	44.7	47.9	12.3	12.8
Mass of Dry Soil (M3-M1) (g)	78.4	80.5	84.6	87.8	90.4	45.8	47.9
Moisture Content (%)	**44.5**	**46.6**	**48.9**	**50.9**	**53.0**	**26.9**	**26.7**

PLASTIC LIMIT = 26.8%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 48.9%

Plasticity Index, PI = LL - PL
= 22.1%

Plasticity Modulus = PI x 0.425mm % pass
= 2060

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM6+500 (1.0-1.7m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

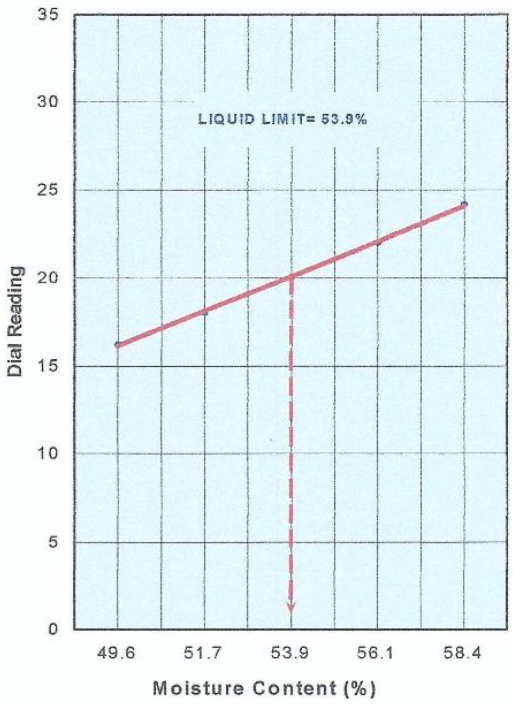
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4566 **Sample No.** 4566

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0 - 1.7m **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	GE	NE	RO	SI	TY	CO	PA
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.0	20.1	22.0	24.2	-	-
Mass of Container+Wet Soil, M2 (g)	130.2	140.8	145.6	133.4	150.6	62.1	64.8
Mass of Container+Dry Soil, M3 (g)	87.0	92.8	94.6	80.7	95.1	48.5	50.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	43.2	48.0	51.0	52.7	55.5	13.6	14.1
Mass of Dry Soil (M3-M1) (g)	87.0	92.8	94.6	94.0	95.1	48.5	50.7
Moisture Content (%)	**49.6**	**51.7**	**53.9**	**56.1**	**58.4**	**28.1**	**27.9**

PLASTIC LIMIT = 28.0%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 12.2%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 53.9%

Plasticity Index, PI = LL - PL
= 25.9%

Plasticity Modulus = PI x 0.425mm % pass
= 2246

SOIL CLASSIFICATION	
USCS	AASHTO
CH	A-7-6
Sandy Clay of High Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM7+000 (0.0-0.8m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

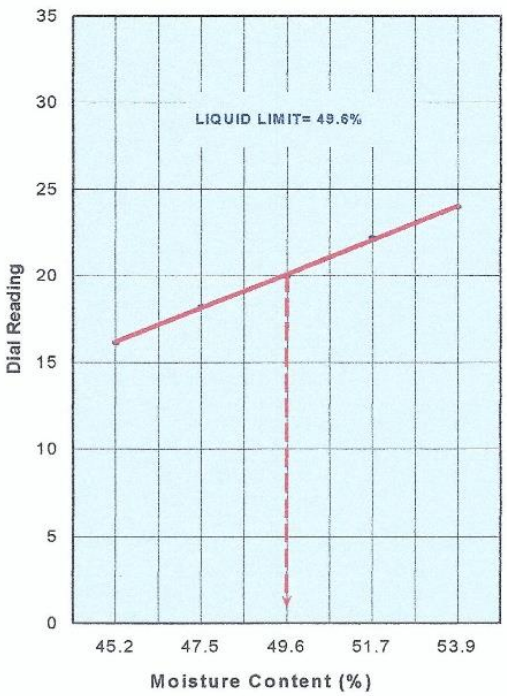
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4567 **Sample No.** 4567

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0 - 0.8m **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	UN	IT	ED	KN	DO	MO	OF
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.2	20.0	22.2	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	125.6	133.0	130.5	126.9	140.8	56.6	59.4
Mass of Container+Dry Soil, M3 (g)	86.5	90.2	87.2	80.7	91.5	45.2	47.5
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	39.1	42.8	43.3	46.2	49.3	11.4	11.9
Mass of Dry Soil (M3-M1) (g)	86.5	90.2	87.2	89.3	91.5	45.2	47.5
Moisture Content (%)	**45.2**	**47.5**	**49.6**	**51.7**	**53.9**	**25.3**	**25.1**

PLASTIC LIMIT = 25.2%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 11.5%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 49.6%

Plasticity Index, PI = LL - PL
= 24.4%

Plasticity Modulus = PI x 0.425mm % pass
= 1952

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Independent Materials testing & Inspection Centre
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM7+000 (0.8-1.7m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

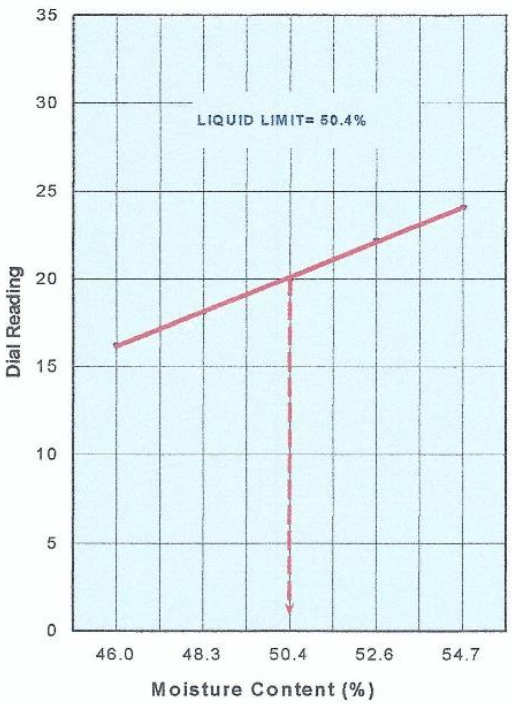
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4568 **Sample No.** 4568

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.8 - 1.7m **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	JO	MO	KE	NY	AT	TA	AI
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.1	20.0	22.2	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	128.6	132.9	137.2	129.9	145.4	57.8	60.3
Mass of Container+Dry Soil, M3 (g)	88.1	89.6	91.2	80.7	94.0	45.8	47.9
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	40.5	43.3	46.0	49.2	51.4	12.0	12.4
Mass of Dry Soil (M3-M1) (g)	88.1	89.6	91.2	93.5	94.0	45.8	47.9
Moisture Content (%)	**46.0**	**48.3**	**50.4**	**52.6**	**54.7**	**26.1**	**25.9**

PLASTIC LIMIT = 26.0%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 11.5%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 50.4%

Plasticity Index, PI = LL - PL
= 24.4%

Plasticity Modulus = PI x 0.425mm % pass
= 2211

SOIL CLASSIFICATION	
USCS	AASHTO
CH	A-7-6
Sandy Clay of High Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Email: danellilab3@gmail.com
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM8+000 (0.3-0.6m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

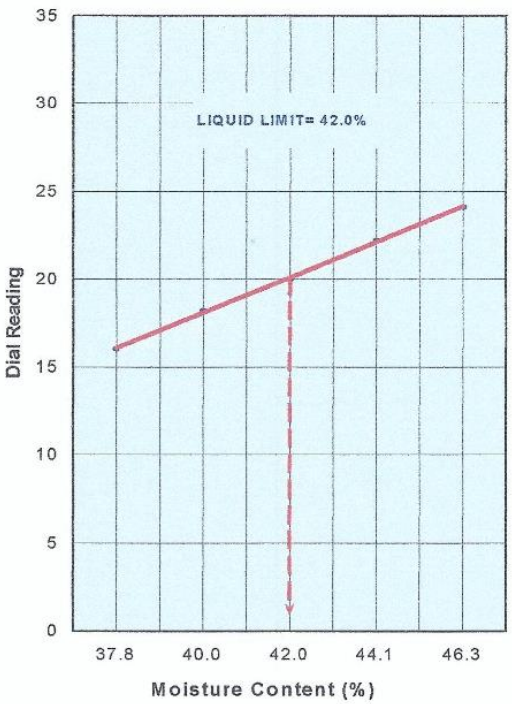
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4569 **Sample No.** 4569

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3 - 0.6m **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	TA	NZ	AN	IA	KE	NY	AN
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.2	20.0	22.2	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	120.7	125.3	128.9	121.4	137.8	50.8	53.3
Mass of Container+Dry Soil, M3 (g)	87.6	89.5	90.8	80.7	94.2	41.8	43.9
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	33.1	35.8	38.1	40.7	43.6	9.0	9.4
Mass of Dry Soil (M3-M1) (g)	87.6	89.5	90.8	92.3	94.2	41.8	43.9
Moisture Content (%)	**37.8**	**40.0**	**42.0**	**44.1**	**46.3**	**21.5**	**21.3**

PLASTIC LIMIT = 21.4%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.7%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 42.0%

Plasticity Index, PI = LL - PL
= 20.6%

Plasticity Modulus = PI x 0.425mm % pass
= 1605

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM8+500 (0.3-0.55m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

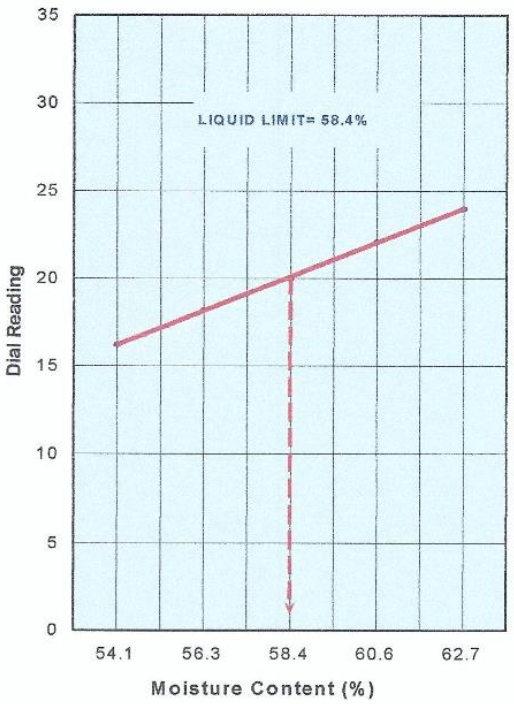
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4570 **Sample No.** 4570

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3 - 0.55m **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	RE	CI	VE	DE	AS	AT	CH
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.2	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	139.5	137.5	134.8	129.5	129.5	68.3	71.0
Mass of Container+Dry Soil, M3 (g)	90.5	88.0	85.1	80.7	79.6	51.5	53.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	49.0	49.5	49.7	48.8	49.9	16.8	17.4
Mass of Dry Soil (M3-M1) (g)	90.5	88.0	85.1	80.5	79.6	51.5	53.6
Moisture Content (%)	**54.1**	**56.3**	**58.4**	**60.6**	**62.7**	**32.6**	**32.4**

PLASTIC LIMIT = 32.5%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 12.2%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 58.4%

Plasticity Index, PI = LL - PL
= 25.9%

Plasticity Modulus = PI x 0.425mm % pass
= 1559

SOIL CLASSIFICATION	
USCS	AASHTO
SM	A-7-5
Silty Sand of High Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM10+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

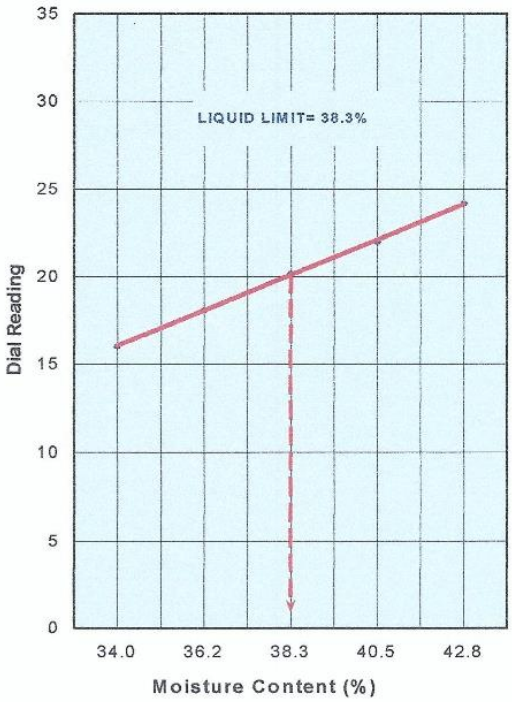
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4571 **Sample No.** 4571

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	UG	AN	DA	MA	SE	NO	UN
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	20.2	22.0	24.2	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	117.4	116.9	123.9	117.7	131.9	48.3	51.0
Mass of Container+Dry Soil, M3 (g)	87.6	85.8	89.6	80.7	92.4	40.2	42.5
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	29.8	31.1	34.3	37.0	39.5	8.1	8.5
Mass of Dry Soil (M3-M1) (g)	87.6	85.8	89.6	91.3	92.4	40.2	42.5
Moisture Content (%)	**34.0**	**36.2**	**38.3**	**40.5**	**42.8**	**20.2**	**20.0**

PLASTIC LIMIT = 20.1%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 8.6%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 38.3%

Plasticity Index, PI = LL - PL
= 18.2%

Plasticity Modulus = PI x 0.425mm % pass
= 349

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-6
Clayey Sand of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM10+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

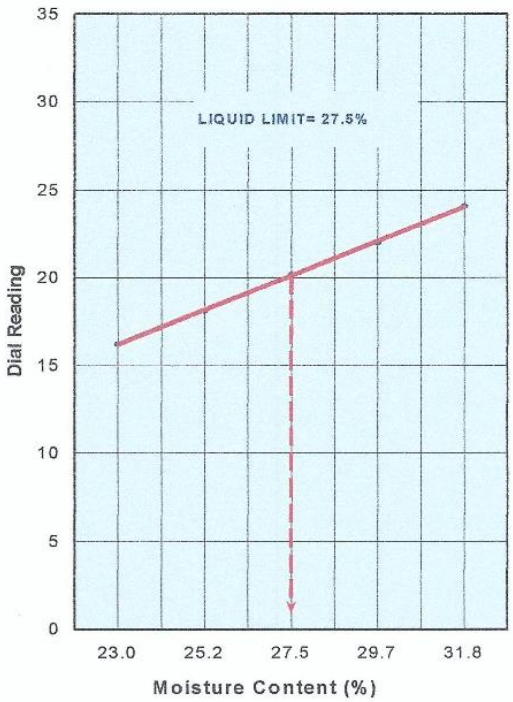
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4572 **Sample No.** 4572

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	DR	UM	AT	IS	SE	DE	KY
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.1	20.2	22.0	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	115.6	113.7	107.9	106.6	108.2	28.8	31.3
Mass of Container+Dry Soil, M3 (g)	94.0	90.8	84.6	80.7	82.1	25.2	27.4
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	21.6	22.9	23.3	25.9	26.1	3.6	3.9
Mass of Dry Soil (M3-M1) (g)	94.0	90.8	84.6	87.3	82.1	25.2	27.4
Moisture Content (%)	**23.0**	**25.2**	**27.5**	**29.7**	**31.8**	**14.3**	**14.1**

PLASTIC LIMIT = 14.2%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 6.3%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 27.5%

Plasticity Index, PI = LL - PL
= 13.3%

Plasticity Modulus = PI x 0.425mm % pass
= 915

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-6
Clayey Sand of Low Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM11+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

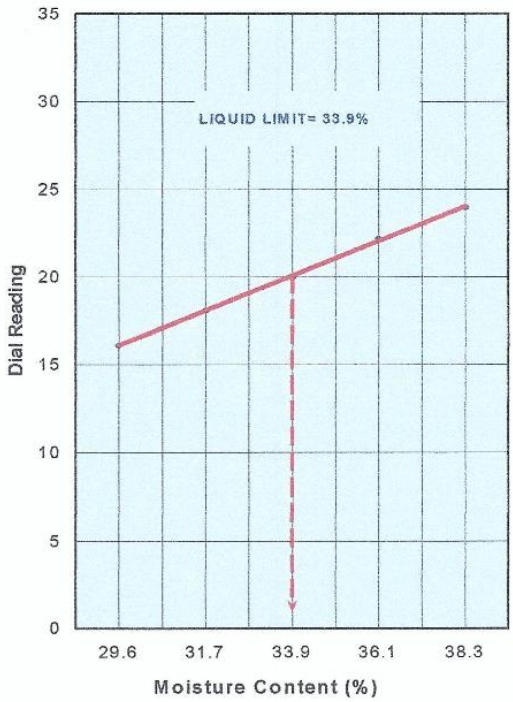
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4573 **Sample No.** 4573

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	MA	TE	RI	AL	DE	SC	PT
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.1	20.0	22.2	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	101.7	106.2	110.9	113.1	126.3	33.4	37.1
Mass of Container+Dry Soil, M3 (g)	78.5	80.6	82.8	80.7	91.3	28.5	31.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	23.2	25.6	28.1	32.4	35.0	4.9	5.4
Mass of Dry Soil (M3-M1) (g)	78.5	80.6	82.8	89.7	91.3	28.5	31.7
Moisture Content (%)	**29.6**	**31.7**	**33.9**	**36.1**	**38.3**	**17.3**	**17.1**

PLASTIC LIMIT = 17.2%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.9%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 33.9%

Plasticity Index, PI = LL - PL
= 16.7%

Plasticity Modulus = PI x 0.425mm % pass
= 969

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-6
Clayey Sand of Low Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM13+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

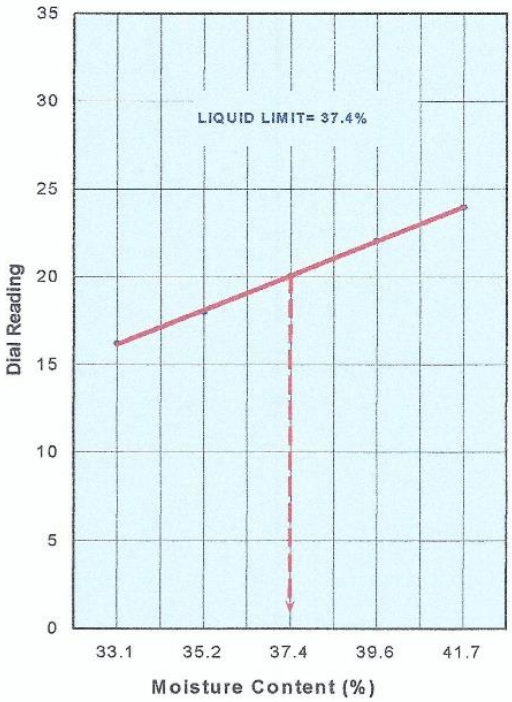
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4574 **Sample No.** 4574

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	MA	GE	NA	MI	YN	YO	UT
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.0	20.1	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	120.5	115.7	112.8	112.5	123.7	35.7	38.2
Mass of Container+Dry Soil, M3 (g)	90.5	85.6	82.1	80.7	87.3	29.8	32.0
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	30.0	30.1	30.7	31.8	36.4	5.9	6.2
Mass of Dry Soil (M3-M1) (g)	90.5	85.6	82.1	80.4	87.3	29.8	32.0
Moisture Content (%)	**33.1**	**35.2**	**37.4**	**39.6**	**41.7**	**19.7**	**19.5**

PLASTIC LIMIT = 19.6%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 8.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 37.4%

Plasticity Index, PI = LL - PL
= 17.8%

Plasticity Modulus = PI x 0.425mm % pass
= 263

SOIL CLASSIFICATION	
USCS	AASHTO
GW-GC	A-2-6
Well Graded Gravel with Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM13+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

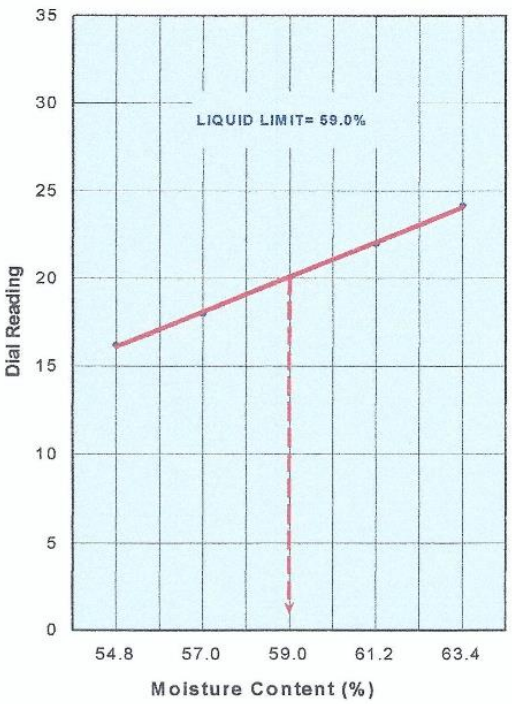
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4575 **Sample No.** 4575

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	CO	NT	AI	NA	NU	MB	AS
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.0	20.1	22.0	24.2	-	-
Mass of Container+Wet Soil, M2 (g)	137.6	141.6	145.5	137.7	154.6	66.3	69.1
Mass of Container+Dry Soil, M3 (g)	88.9	90.2	91.5	80.7	94.6	51.0	53.2
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	48.7	51.4	54.0	57.0	60.0	15.3	15.9
Mass of Dry Soil (M3-M1) (g)	88.9	90.2	91.5	93.2	94.6	51.0	53.2
Moisture Content (%)	**54.8**	**57.0**	**59.0**	**61.2**	**63.4**	**30.0**	**29.8**

PLASTIC LIMIT = 29.9%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 13.7%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 59.0%

Plasticity Index, PI = LL - PL
= 29.1%

Plasticity Modulus = PI x 0.425mm % pass
= 2305

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-7-6
Clayey Sand of High Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM14+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

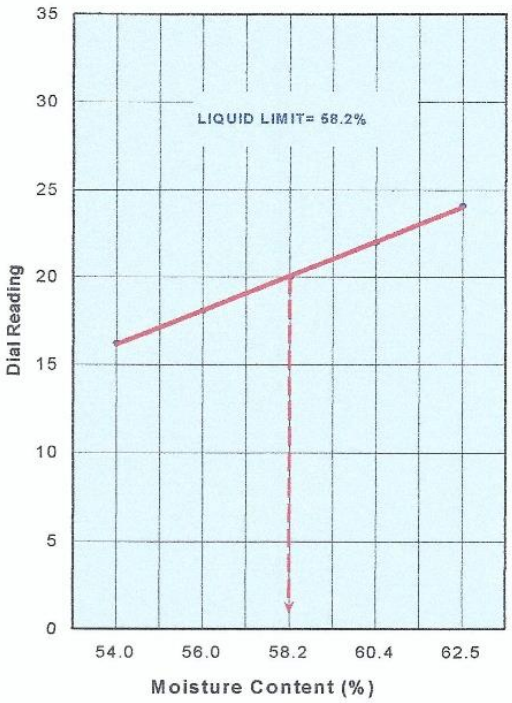
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4576 **Sample No.** 4576

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	CH	IN	ES	EM	AS	YN	AC
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.1	20.0	22.0	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	134.8	137.9	143.3	136.0	152.1	67.0	69.8
Mass of Container+Dry Soil, M3 (g)	87.5	88.4	90.6	80.7	93.6	51.2	53.4
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	47.3	49.5	52.7	55.3	58.5	15.8	16.4
Mass of Dry Soil (M3-M1) (g)	87.5	88.4	90.6	91.5	93.6	51.2	53.4
Moisture Content (%)	**54.0**	**56.0**	**58.2**	**60.4**	**62.5**	**30.9**	**30.7**

PLASTIC LIMIT = 30.8%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 12.9%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 58.2%

Plasticity Index, PI = LL - PL
= 27.4%

Plasticity Modulus = PI x 0.425mm % pass
= 2028

SOIL CLASSIFICATION	
USCS	AASHTO
CH	A-7-5
Sandy Clay of High Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM14+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

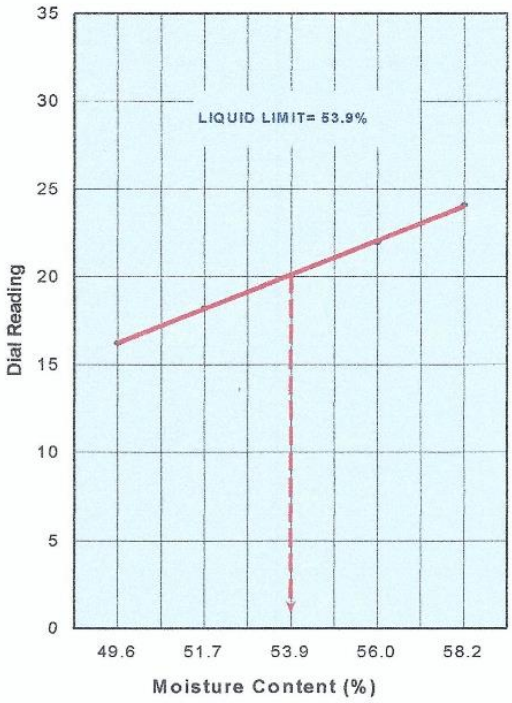
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4577 **Sample No.** 4577

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	TE	AM	WO	RK	NG	AR	EA
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.1	20.1	22.0	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	120.4	123.8	129.6	129.9	140.8	64.3	67.0
Mass of Container+Dry Soil, M3 (g)	80.5	81.6	84.2	80.7	89.0	49.6	51.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	39.9	42.2	45.4	49.2	51.8	14.7	15.2
Mass of Dry Soil (M3-M1) (g)	80.5	81.6	84.2	87.9	89.0	49.6	51.8
Moisture Content (%)	**49.6**	**51.7**	**53.9**	**56.0**	**58.2**	**29.6**	**29.4**

PLASTIC LIMIT = 29.5%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 11.5%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 53.9%

Plasticity Index, PI = LL - PL
= 24.4%

Plasticity Modulus = PI x 0.425mm % pass
= 1874

SOIL CLASSIFICATION	
USCS	AASHTO
CH	A-7-6
Sandy Clay of High Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM15+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

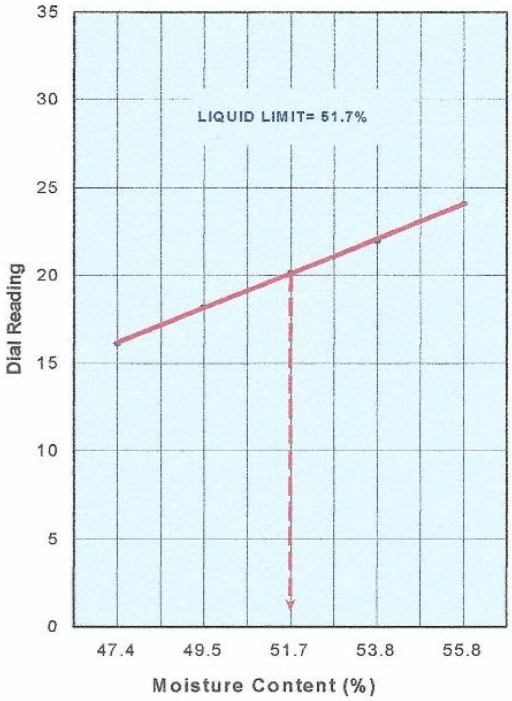
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4578 **Sample No.** 4578

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	NI	GE	RI	AN	SE	NE	GO
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.2	20.2	22.0	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	134.9	131.3	129.1	123.7	124.3	58.0	60.5
Mass of Container+Dry Soil, M3 (g)	91.5	87.8	85.1	80.7	79.8	45.8	47.9
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	43.4	43.5	44.0	43.0	44.5	12.2	12.6
Mass of Dry Soil (M3-M1) (g)	91.5	87.8	85.1	80.0	79.8	45.8	47.9
Moisture Content (%)	**47.4**	**49.5**	**51.7**	**53.8**	**55.8**	**26.6**	**26.4**

PLASTIC LIMIT = 26.5%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 11.9%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 51.7%

Plasticity Index, PI = LL - PL
= 25.2%

Plasticity Modulus = PI x 0.425mm % pass
= 2031

SOIL CLASSIFICATION	
USCS	AASHTO
CH	A-7-6
Sandy Clay of High Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM15+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

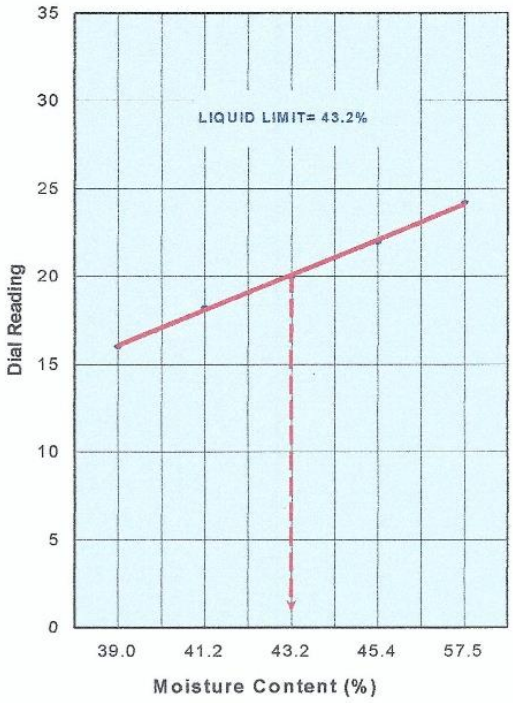
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4579 **Sample No.** 4579

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	RE	AD	IN	SN	SH	US	HO
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.2	20.0	22.0	24.2	-	-
Mass of Container+Wet Soil, M2 (g)	127.2	131.6	134.8	123.9	126.9	53.8	56.4
Mass of Container+Dry Soil, M3 (g)	91.5	93.2	94.1	80.7	80.6	43.6	45.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	35.7	38.4	40.7	43.2	46.3	10.2	10.6
Mass of Dry Soil (M3-M1) (g)	91.5	93.2	94.1	95.2	80.6	43.6	45.8
Moisture Content (%)	**39.0**	**41.2**	**43.2**	**45.4**	**57.5**	**23.4**	**23.2**

PLASTIC LIMIT = 23.3%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 43.2%

Plasticity Index, PI = LL - PL
= 19.9%

Plasticity Modulus = PI x 0.425mm % pass
= 185

SOIL CLASSIFICATION	
USCS	AASHTO
GW - GC	A-2-7
Well-Graded Gravel with Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM17+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

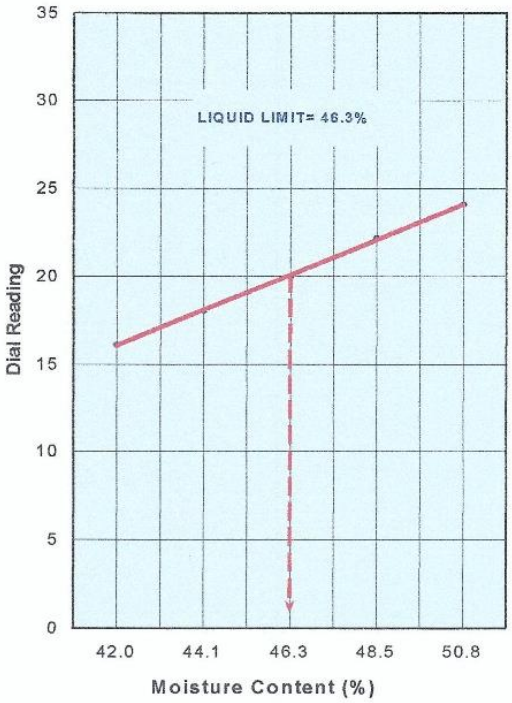
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4580 **Sample No.** 4580

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	LI	Q	UD	O	MA	RA	SE
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.2	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	135.2	130.6	133.9	124.1	131.5	57.4	60.0
Mass of Container+Dry Soil, M3 (g)	95.2	90.6	91.5	80.7	87.2	45.6	47.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	40.0	40.0	42.4	43.4	44.3	11.8	12.2
Mass of Dry Soil (M3-M1) (g)	95.2	90.6	91.5	89.5	87.2	45.6	47.8
Moisture Content (%)	**42.0**	**44.1**	**46.3**	**48.5**	**50.8**	**25.8**	**25.6**

PLASTIC LIMIT = 25.7%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.7%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 46.3%

Plasticity Index, PI = LL - PL
= 20.6%

Plasticity Modulus = PI x 0.425mm % pass
= 1277

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM18+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

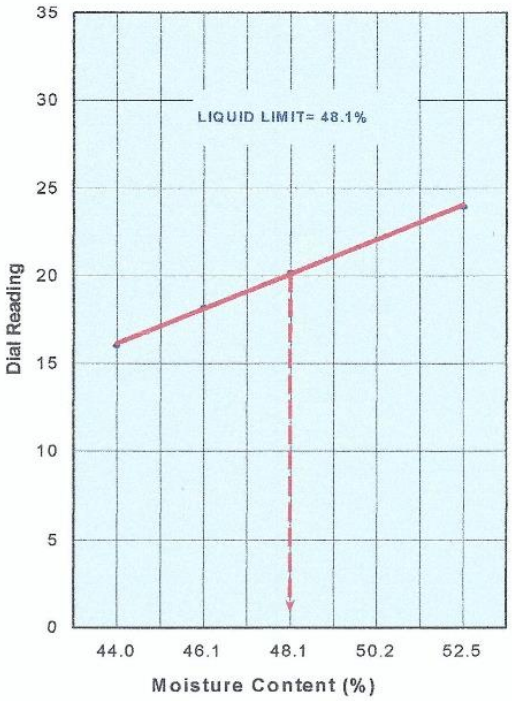
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4581 **Sample No.** 4581

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	MO	IS	TU	RE	CO	NT	EN
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.2	20.2	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	112.9	117.8	126.8	125.5	138.8	57.6	60.3
Mass of Container+Dry Soil, M3 (g)	78.4	80.6	85.6	80.7	91.0	46.0	48.2
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	34.5	37.2	41.2	44.8	47.8	11.6	12.1
Mass of Dry Soil (M3-M1) (g)	78.4	80.6	85.6	89.2	91.0	46.0	48.2
Moisture Content (%)	**44.0**	**46.1**	**48.1**	**50.2**	**52.5**	**25.3**	**25.1**

PLASTIC LIMIT = 25.2%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.8%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 48.1%

Plasticity Index, PI = LL - PL
= 22.9%

Plasticity Modulus = PI x 0.425mm % pass
= 1024

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-7
Clayey Sand of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM19+000 (1.3-2.0m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

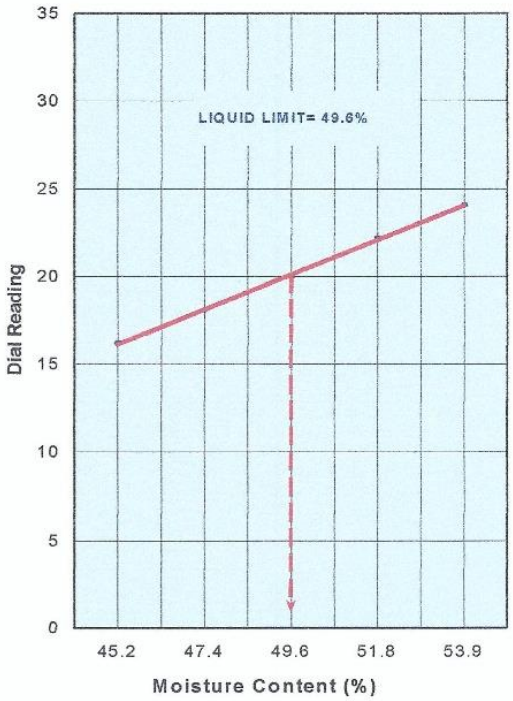
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4582 **Sample No.** 4582

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.3 - 2.0m **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	LO	CA	TI	NC	JK	MA	NU
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.1	20.0	22.2	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	130.1	137.4	142.7	128.4	138.7	56.9	59.7
Mass of Container+Dry Soil, M3 (g)	89.6	93.2	95.4	80.7	90.1	45.2	47.5
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	40.5	44.2	47.3	47.7	48.6	11.7	12.2
Mass of Dry Soil (M3-M1) (g)	89.6	93.2	95.4	92.0	90.1	45.2	47.5
Moisture Content (%)	**45.2**	**47.4**	**49.6**	**51.8**	**53.9**	**25.9**	**25.7**

PLASTIC LIMIT = 25.8%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 11.2%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 49.6%

Plasticity Index, PI = LL - PL
= 23.8%

Plasticity Modulus = PI x 0.425mm % pass
= 1211

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-7-6
Clayey Sand of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM19+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

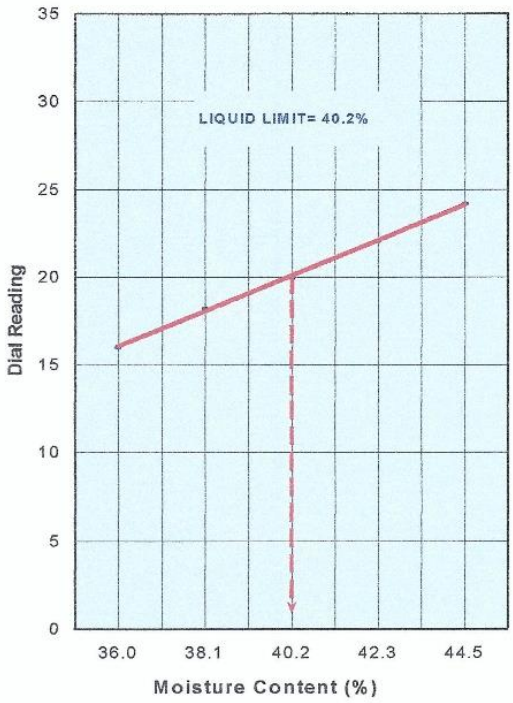
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4583 **Sample No.** 4583

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	MY	YA	NG	ON	LA	KI	SO
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.2	20.0	22.1	24.2	-	-
Mass of Container+Wet Soil, M2 (g)	105.9	108.8	110.8	115.6	123.1	49.1	51.8
Mass of Container+Dry Soil, M3 (g)	77.9	78.8	79.0	80.7	85.2	40.5	42.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	28.0	30.0	31.8	34.9	37.9	8.6	9.0
Mass of Dry Soil (M3-M1) (g)	77.9	78.8	79.0	82.5	85.2	40.5	42.8
Moisture Content (%)	**36.0**	**38.1**	**40.2**	**42.3**	**44.5**	**21.2**	**21.0**

PLASTIC LIMIT = 21.1%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.0%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 40.2%

Plasticity Index, PI = LL - PL
= 19.1%

Plasticity Modulus = PI x 0.425mm % pass
= 1442

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM20+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

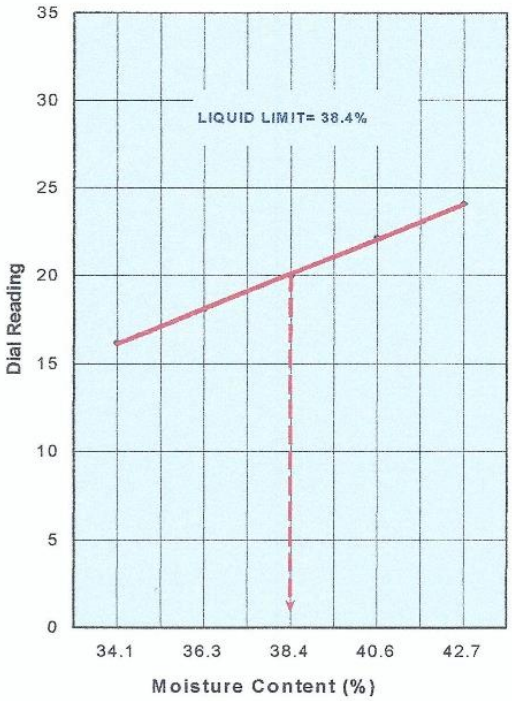
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4584 **Sample No.** 4584

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	GY	MN	AS	IU	MU	KO	RU
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.1	20.0	22.2	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	122.3	126.9	122.6	116.2	122.4	49.8	52.4
Mass of Container+Dry Soil, M3 (g)	91.2	93.1	88.6	80.7	85.8	41.2	43.4
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	31.1	33.8	34.0	35.5	36.6	8.6	9.0
Mass of Dry Soil (M3-M1) (g)	91.2	93.1	88.6	87.5	85.8	41.2	43.4
Moisture Content (%)	**34.1**	**36.3**	**38.4**	**40.6**	**42.7**	**20.9**	**20.7**

PLASTIC LIMIT = 20.8%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 8.3%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 38.4%

Plasticity Index, PI = LL - PL
= 17.6%

Plasticity Modulus = PI x 0.425mm % pass
= 1663

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM20+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

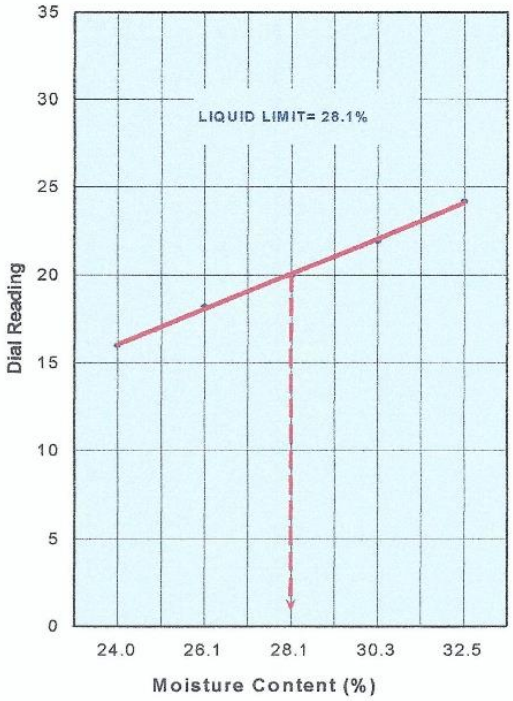
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4585 **Sample No.** 4585

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	GE	OC	ON	SU	LT	AT	TS
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.2	20.0	22.0	24.2	-	-
Mass of Container+Wet Soil, M2 (g)	97.3	100.4	102.7	105.3	109.7	32.8	35.5
Mass of Container+Dry Soil, M3 (g)	78.5	79.6	80.2	80.7	82.8	27.9	30.2
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	18.8	20.8	22.5	24.6	26.9	4.9	5.3
Mass of Dry Soil (M3-M1) (g)	78.5	79.6	80.2	81.3	82.8	27.9	30.2
Moisture Content (%)	**24.0**	**26.1**	**28.1**	**30.3**	**32.5**	**17.6**	**17.4**

PLASTIC LIMIT = 17.5%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 5.0%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 28.1%

Plasticity Index, PI = LL - PL
= 10.6%

Plasticity Modulus = PI x 0.425mm % pass
= 1003

SOIL CLASSIFICATION	
USCS	AASHTO
CL	A-6
Sandy Clay of Low Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
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Mombasa Road
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM20+500 (0.45-1.5m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

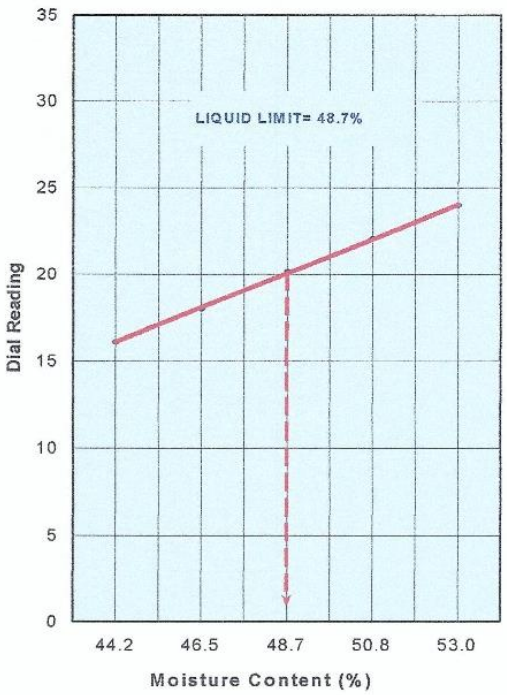
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4586 **Sample No.** 4586

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	MW	EN	DA	WA	ZI	MU	CH
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.2	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	126.3	134.0	140.2	121.2	133.0	58.4	61.1
Mass of Container+Dry Soil, M3 (g)	87.6	91.5	94.3	80.7	86.9	46.3	48.5
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	38.7	42.5	45.9	40.5	46.1	12.1	12.6
Mass of Dry Soil (M3-M1) (g)	87.6	91.5	94.3	79.8	86.9	46.3	48.5
Moisture Content (%)	**44.2**	**46.5**	**48.7**	**50.8**	**53.0**	**26.1**	**25.9**

PLASTIC LIMIT = 26.0%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.7%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 48.7%

Plasticity Index, PI = LL - PL
= 22.7%

Plasticity Modulus = PI x 0.425mm % pass
= 2154

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM20+500 (1.5-2.0m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

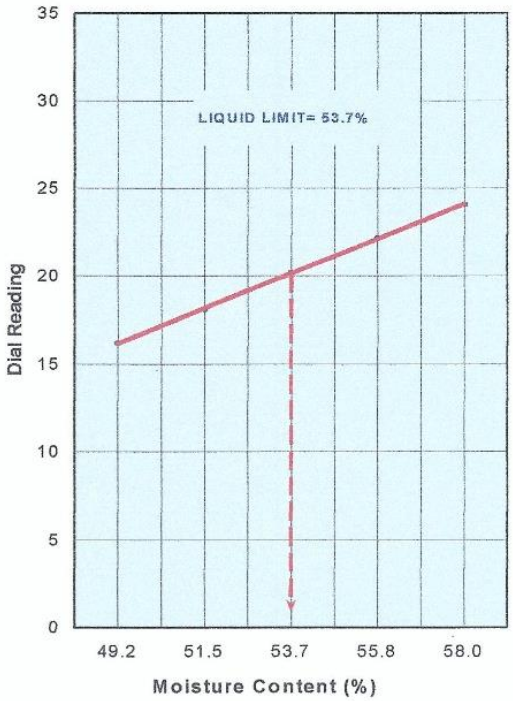
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4587 **Sample No.** 4587

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.5 - 2.0M **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	SA	MP	LE	LI	NG	JN	KL
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.1	20.2	22.2	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	133.7	137.1	129.1	128.8	140.1	61.1	63.8
Mass of Container+Dry Soil, M3 (g)	89.6	90.5	84.0	80.7	88.7	47.5	49.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	44.1	46.6	45.1	48.1	51.4	13.6	14.1
Mass of Dry Soil (M3-M1) (g)	89.6	90.5	84.0	86.2	88.7	47.5	49.7
Moisture Content (%)	**49.2**	**51.5**	**53.7**	**55.8**	**58.0**	**28.6**	**28.4**

PLASTIC LIMIT = 28.5%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 11.9%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 53.7%

Plasticity Index, PI = LL - PL
= 25.2%

Plasticity Modulus = PI x 0.425mm % pass
= 2399

SOIL CLASSIFICATION	
USCS	AASHTO
CH	A-7-6
Sandy Clay of High Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM21+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

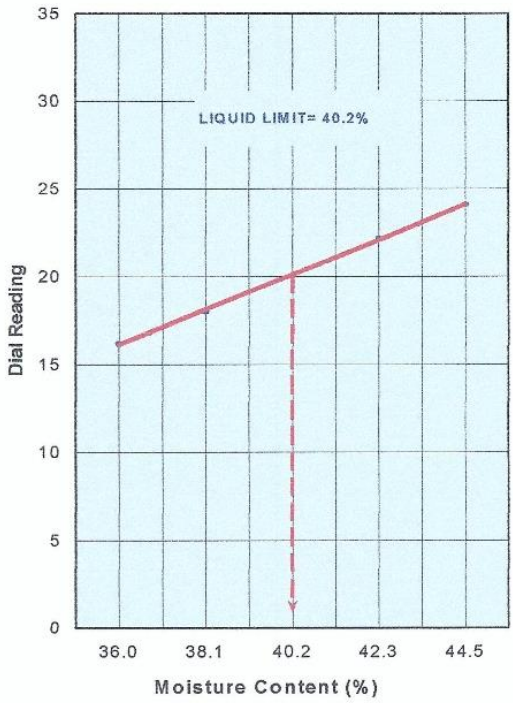
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4588 **Sample No.** 4588

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	LA	BO	RA	TO	RY	DA	TE
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.0	20.1	22.2	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	121.9	126.4	130.7	120.9	130.2	48.8	51.3
Mass of Container+Dry Soil, M3 (g)	89.6	91.5	93.2	80.7	90.1	40.5	42.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	32.3	34.9	37.5	40.2	40.1	8.3	8.6
Mass of Dry Soil (M3-M1) (g)	89.6	91.5	93.2	95.0	90.1	40.5	42.7
Moisture Content (%)	**36.0**	**38.1**	**40.2**	**42.3**	**44.5**	**20.4**	**20.2**

PLASTIC LIMIT = 20.3%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 40.2%

Plasticity Index, PI = LL - PL
= 19.9%

Plasticity Modulus = PI x 0.425mm % pass
= 639

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-6
Clayey Sand of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM21+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

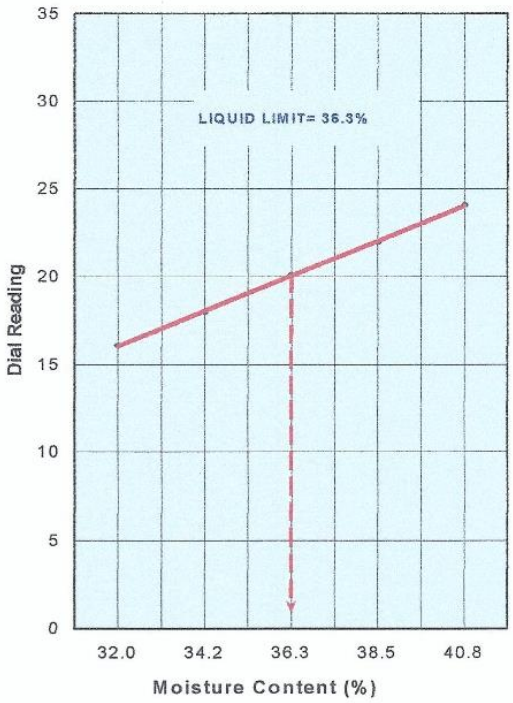
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4589 **Sample No.** 4589

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	DA	VI	DO	MO	YE	AH	WA
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.1	22.0	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	115.6	120.5	116.1	113.2	128.8	48.7	48.8
Mass of Container+Dry Soil, M3 (g)	87.6	89.8	85.2	80.7	91.5	40.5	40.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	28.0	30.7	30.9	32.5	37.3	8.2	8.2
Mass of Dry Soil (M3-M1) (g)	87.6	89.8	85.2	84.3	91.5	40.5	40.6
Moisture Content (%)	**32.0**	**34.2**	**36.3**	**38.5**	**40.8**	**20.3**	**20.1**

PLASTIC LIMIT = 20.2%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.6%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 36.3%

Plasticity Index, PI = LL - PL
= 16.1%

Plasticity Modulus = PI x 0.425mm % pass
= 855

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-6
Clayey Sand of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM22+500 (1.4m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

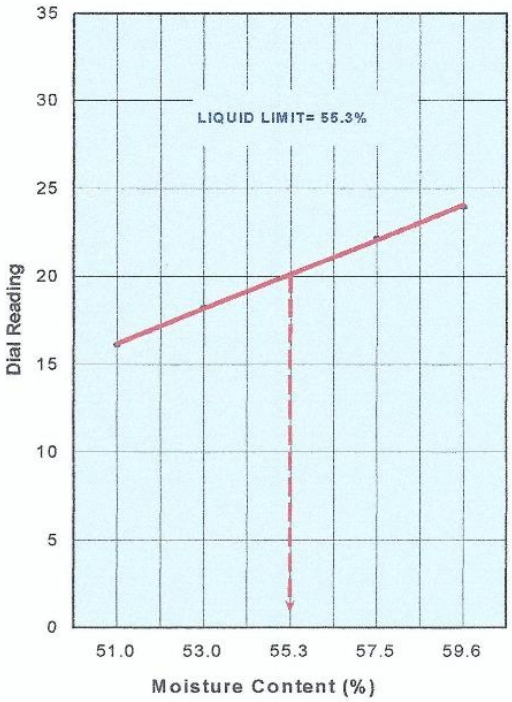
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4590 **Sample No.** 4590

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** (1.4m) **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	AT	TE	BA	GS	MU	CH	CA
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.2	20.1	22.2	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	136.7	131.0	138.5	130.8	138.7	74.0	76.8
Mass of Container+Dry Soil, M3 (g)	90.5	85.6	89.2	80.7	86.9	55.2	57.4
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	46.2	45.4	49.3	50.1	51.8	18.8	19.4
Mass of Dry Soil (M3-M1) (g)	90.5	85.6	89.2	87.2	86.9	55.2	57.4
Moisture Content (%)	**51.0**	**53.0**	**55.3**	**57.5**	**59.6**	**34.0**	**33.8**

PLASTIC LIMIT = 33.9%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.1%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 55.3%

Plasticity Index, PI = LL - PL
= 21.4%

Plasticity Modulus = PI x 0.425mm % pass
= 1838

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-5
Sandy Elastic Silt of High Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM23+500 (1.5m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

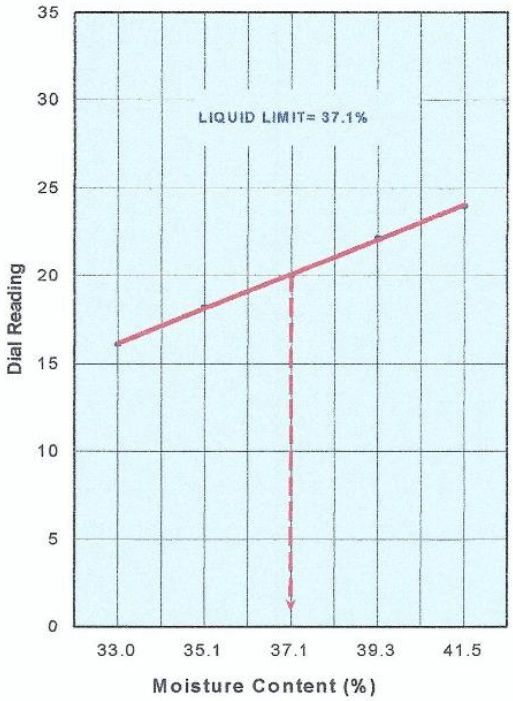
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4591 **Sample No.** 4591

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** (1.5m) **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	CO	NS	OL	ID	AT	ON	GS
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.2	20.0	22.2	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	122.9	125.6	125.4	115.9	125.2	35.6	37.0
Mass of Container+Dry Soil, M3 (g)	92.4	93.0	91.5	80.7	88.5	29.8	31.0
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	30.5	32.6	33.9	35.2	36.7	5.8	6.0
Mass of Dry Soil (M3-M1) (g)	92.4	93.0	91.5	89.6	88.5	29.8	31.0
Moisture Content (%)	**33.0**	**35.1**	**37.1**	**39.3**	**41.5**	**19.6**	**19.4**

PLASTIC LIMIT = 19.5%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 8.3%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 37.1%

Plasticity Index, PI = LL - PL
= 17.6%

Plasticity Modulus = PI x 0.425mm % pass
= 1630

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-6
Sand Clay of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Email: danellilab3@gmail.com
info@danellilab.com
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Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM24+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

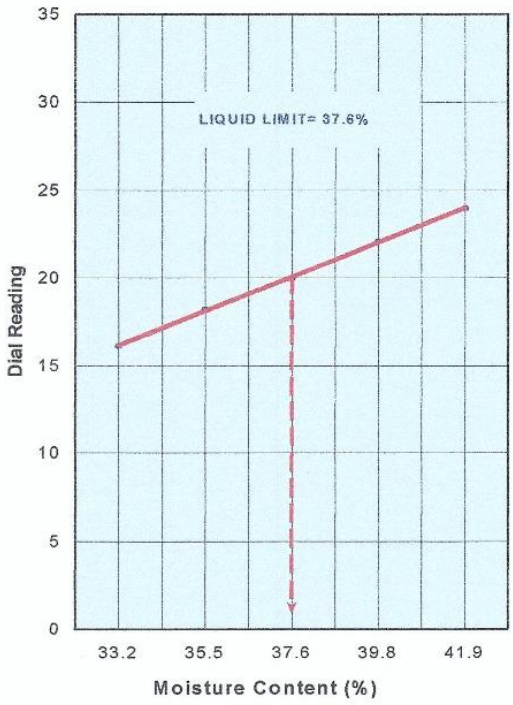
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4592 **Sample No.** 4592

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	KA	YA	BO	MB	OS	ST	KM
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.2	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	116.7	120.3	123.4	117.0	132.4	51.3	53.8
Mass of Container+Dry Soil, M3 (g)	87.6	88.8	89.7	80.7	93.3	42.2	44.3
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	29.1	31.5	33.7	36.3	39.1	9.1	9.5
Mass of Dry Soil (M3-M1) (g)	87.6	88.8	89.7	91.3	93.3	42.2	44.3
Moisture Content (%)	**33.2**	**35.5**	**37.6**	**39.8**	**41.9**	**21.6**	**21.4**

PLASTIC LIMIT = 21.5%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.6%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 37.6%

Plasticity Index, PI = LL - PL
= 16.1%

Plasticity Modulus = PI x 0.425mm % pass
= 1301

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-6
Clayey Sand of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM24+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

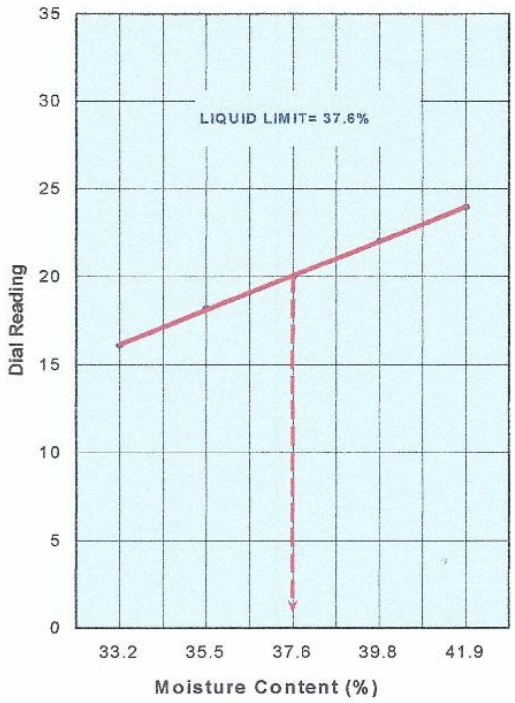
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4593 **Sample No.** 4593

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	RE	AN	DI	NG	JO	KO	YA
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.0	20.1	22.2	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	114.1	109.1	122.5	116.8	130.7	50.5	52.9
Mass of Container+Dry Soil, M3 (g)	85.7	80.6	89.0	80.7	92.1	41.5	43.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	28.4	28.5	33.5	36.1	38.6	9.0	9.3
Mass of Dry Soil (M3-M1) (g)	85.7	80.6	89.0	90.8	92.1	41.5	43.6
Moisture Content (%)	**33.1**	**35.3**	**37.6**	**39.8**	**41.9**	**21.6**	**21.4**

PLASTIC LIMIT = 21.6%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.5%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 37.6%

Plasticity Index, PI = LL - PL
= 16.0%

Plasticity Modulus = PI x 0.425mm % pass
= 957

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-6
Clayey Sand of Intermediate Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM25+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

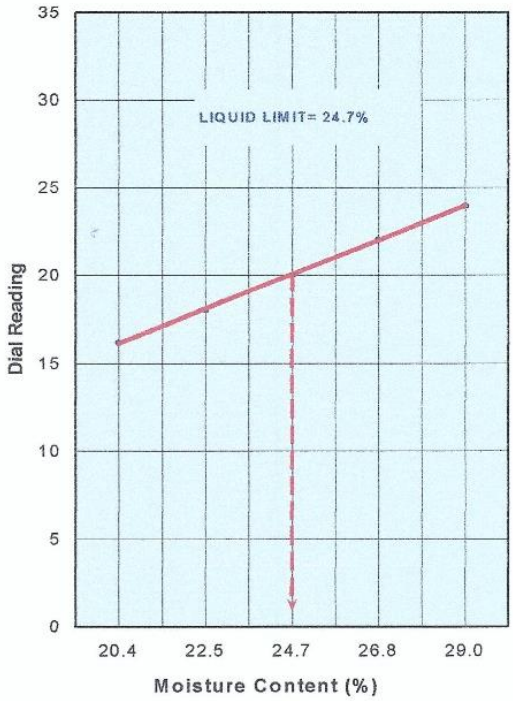
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4594 **Sample No.** 4594

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	JA	KA	MO	YO	LA	KO	NO
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	114.4	97.8	100.4	103.6	115.1	26.4	28.9
Mass of Container+Dry Soil, M3 (g)	95.0	79.8	80.5	80.7	89.2	23.5	25.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	19.4	18.0	19.9	22.9	25.9	2.9	3.2
Mass of Dry Soil (M3-M1) (g)	95.0	79.8	80.5	85.6	89.2	23.5	25.7
Moisture Content (%)	**20.4**	**22.5**	**24.7**	**26.8**	**29.0**	**12.5**	**12.3**

PLASTIC LIMIT = 12.4%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 5.8%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 24.7%

Plasticity Index, PI = LL - PL
= 12.3%

Plasticity Modulus = PI x 0.425mm % pass
= 796

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-6
Clayey Sand of Low Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM25+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4595 **Sample No.** 4595

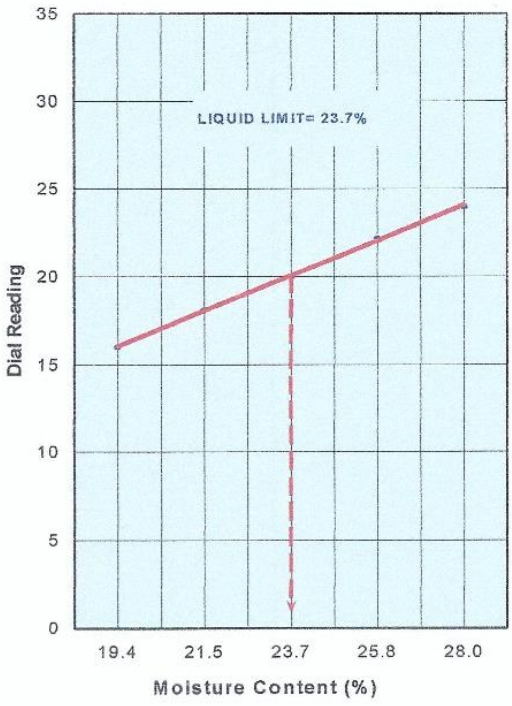
Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	GH	AN	AO	SU	DA		
Initial Dial Reading (mm)	0	0	0	0	0		
Final Dial Reading (mm)	16.0.	18.1	20.0	22.2	24.0		
Mass of Container+Wet Soil, M2 (g)	107.0	110.3	115.5	104.2	121.9		
Mass of Container+Dry Soil, M3 (g)	89.6	90.8	93.4	80.7	95.2		
Mass of Container M1 (g)	-	-	-	-	-		
Mass of Moisture (M2-M3) (g)	17.4	19.5	22.1	23.5	26.7		
Mass of Dry Soil (M3-M1) (g)	89.6	90.8	93.4	91.1	95.2		
Moisture Content (%)	**19.4**	**21.5**	**23.7**	**25.8**	**28.0**		

NON-PLASTIC

PLASTIC LIMIT = NiL

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 1.3%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 23.7%

Plasticity Index, PI = LL - PL
= NIL

Plasticity Modulus = PI x 0.425mm % pass
= NIL

SOIL CLASSIFICATION	
USCS	AASHTO
ML	A-2-4
Silty Sandy	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked By:**

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REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM26+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

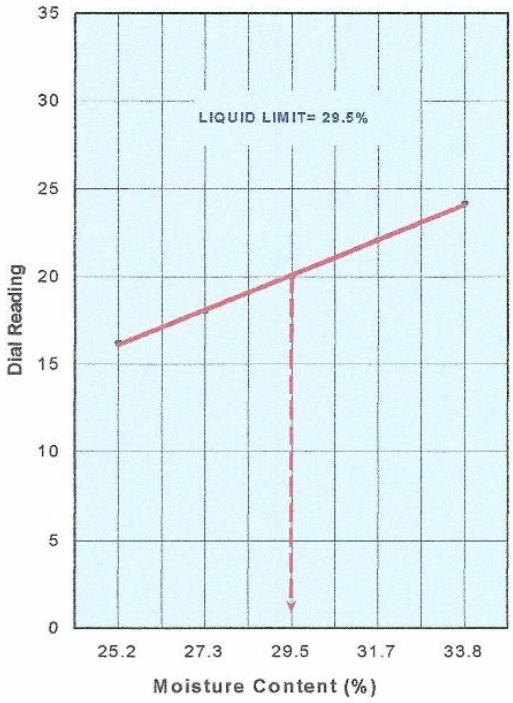
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4596 **Sample No.** 4596

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	UN	IT	ED	ST	AS	TE	OF
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.2	18.0	20.0	22.1	24.2	-	-
Mass of Container+Wet Soil, M2 (g)	109.9	114.1	118.2	107.7	115.1	51.2	52.6
Mass of Container+Dry Soil, M3 (g)	87.8	89.6	91.3	80.7	86.0	41.8	43.0
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	22.1	24.5	26.9	27.0	29.1	9.4	9.6
Mass of Dry Soil (M3-M1) (g)	87.8	89.6	91.3	85.1	86.0	41.8	43.0
Moisture Content (%)	**25.2**	**27.3**	**29.5**	**31.7**	**33.8**	**22.5**	**22.3**

PLASTIC LIMIT = 22.4%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 3.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 29.5%

Plasticity Index, PI = LL - PL
= 7.1%

Plasticity Modulus = PI x 0.425mm % pass
= 487

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-4
Silty Sandy of Low Plasticity	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM26+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 21-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4597 **Sample No.** 4597

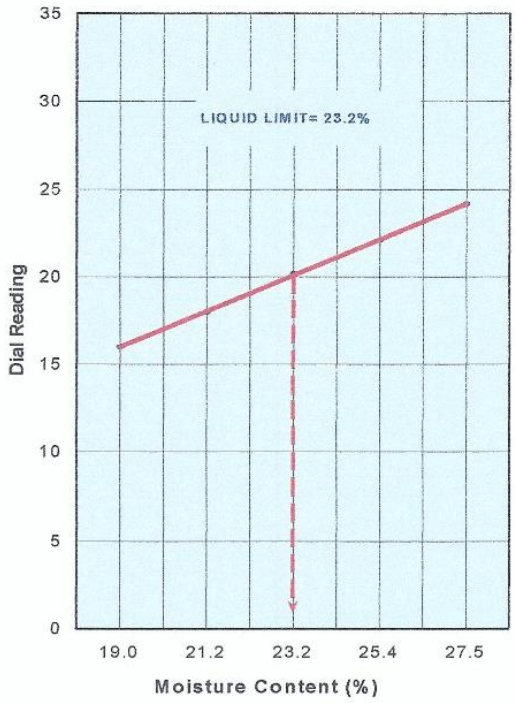
Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** **Date Tested:** 01-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	GE	MA	NY	MA	CH		
Initial Dial Reading (mm)	0	0	0	0	0		
Final Dial Reading (mm)	16.0	18.0	20.2	22.1	24.2		
Mass of Container+Wet Soil, M2 (g)	93.4	96.7	100.2	102.2	109.4		
Mass of Container+Dry Soil, M3 (g)	78.5	79.8	81.3	80.7	85.8		
Mass of Container M1 (g)	-	-	-	-	-		
Mass of Moisture (M2-M3) (g)	14.9	16.9	18.9	21.5	23.6		
Mass of Dry Soil (M3-M1) (g)	78.5	79.8	81.3	84.6	85.8		
Moisture Content (%)	**19.0**	**21.2**	**23.2**	**25.4**	**27.5**		

NON-PLASTIC

PLASTIC LIMIT = NIL

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 1.1%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 23.2%

Plasticity Index, PI = LL - PL
= NIL

Plasticity Modulus = PI x 0.425mm % pass
=NIL

SOIL CLASSIFICATION	
USCS	AASHTO
SW - SM	A-2-4
Well-Graded Sand With Silt	

Tested by: KEVIN **Date Reported:** 14-10-21 **Checked by:**

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Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM0+000 (0.0-0.30m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

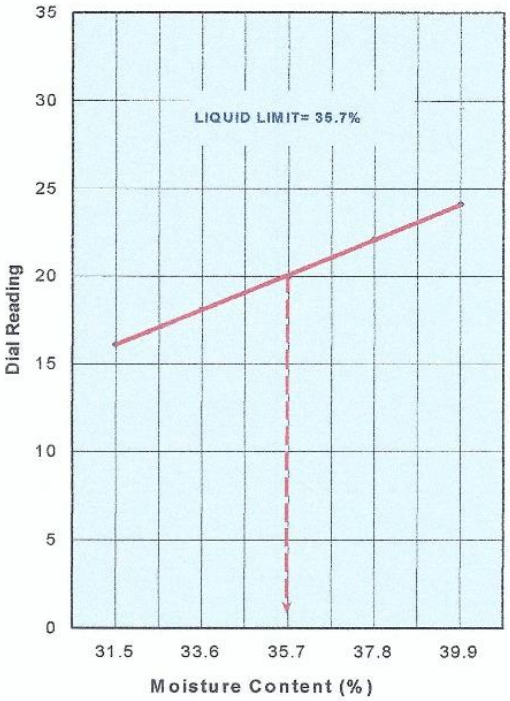
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5688 **Sample No.** 5688

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.30m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	KM	TP	B4	P	ST	DN	VD
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.1	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	121.5	128.7	133.7	137.2	142.8	51.2	54.0
Mass of Container+Dry Soil, M3 (g)	92.4	96.3	98.5	99.6	102.1	42.6	44.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	29.1	32.4	35.2	37.6	40.7	8.6	9.2
Mass of Dry Soil (M3-M1) (g)	92.4	96.3	98.5	99.6	102.1	42.6	44.8
Moisture Content (%)	**31.5**	**33.6**	**35.7**	**37.8**	**39.9**	**20.3**	**20.5**

PLASTIC LIMIT = 20.4%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.2%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 35.7%

Plasticity Index, PI = LL - PL
= 15.3%

Plasticity Modulus = PI x 0.425mm % pass
= 1002

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-6
Silty Clayey Sand of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM2+000 (0.4-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

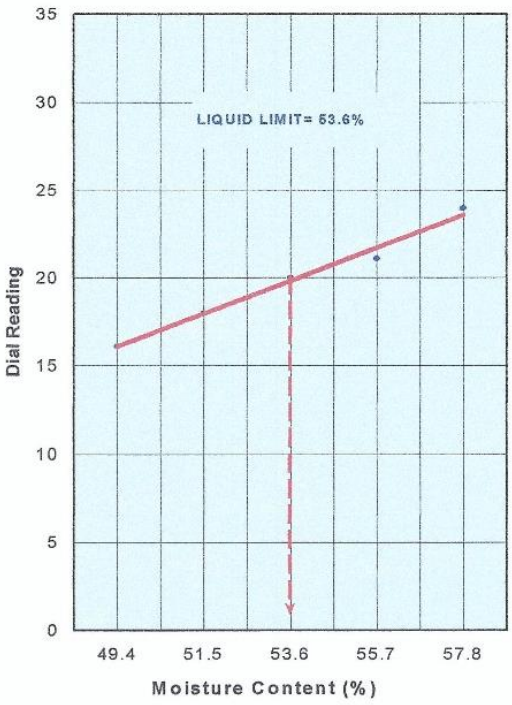
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5689 **Sample No.** 5689

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.6m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	D	CB	T4	BC	L5	M4	SP
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	118.5	121.4	126.7	135.6	140.3	57.1	60.0
Mass of Container+Dry Soil, M3 (g)	79.3	80.1	82.5	87.1	88.9	42.8	44.9
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	39.2	41.3	44.2	48.5	51.4	14.3	15.1
Mass of Dry Soil (M3-M1) (g)	79.3	80.1	82.5	87.1	88.9	42.8	44.9
Moisture Content (%)	**49.4**	**51.5**	**53.6**	**55.7**	**57.8**	**33.5**	**33.7**

PLASTIC LIMIT = 33.6%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 53.6%

Plasticity Index, PI = LL - PL
= 20.0%

Plasticity Modulus = PI x 0.425mm % pass
= 464

SOIL CLASSIFICATION	
USCS	AASHTO
GM	A-2-7

Silty Gravel with Sand of High Plasticity

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM2+500 (0.6-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

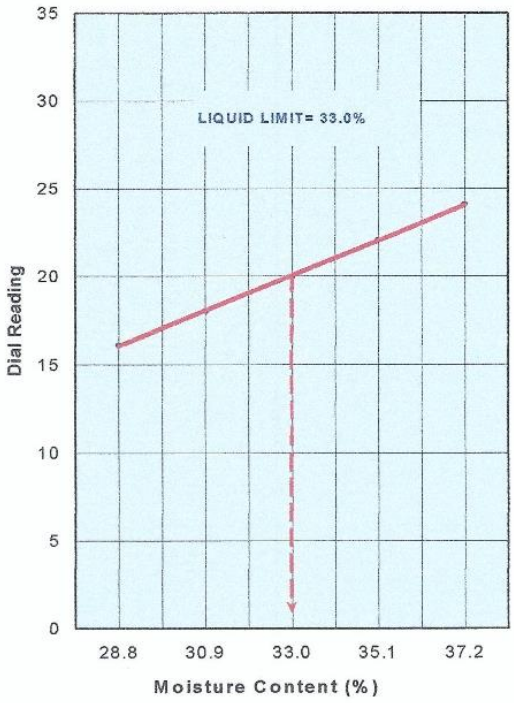
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5690 **Sample No.** 5690

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.6-1.6m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	B12	N	BG	A2	AM	X4	MV
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	111.2	116.4	120.1	124.7	135.4	50.5	53.2
Mass of Container+Dry Soil, M3 (g)	86.3	88.9	90.3	92.3	98.7	42.4	44.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	24.9	27.5	29.8	32.4	36.7	8.1	8.6
Mass of Dry Soil (M3-M1) (g)	86.3	88.9	90.3	92.3	98.7	42.4	44.6
Moisture Content (%)	**28.8**	**30.9**	**33.0**	**35.1**	**37.2**	**19.1**	**19.3**

PLASTIC LIMIT = 19.2%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 6.5%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 33.0%

Plasticity Index, PI = LL - PL
= 13.8%

Plasticity Modulus = PI x 0.425mm % pass
=235

SOIL CLASSIFICATION	
USCS	AASHTO
GC	A-2-6
Clayey Gravel with Sand of Low Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM3+000 (0.5-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

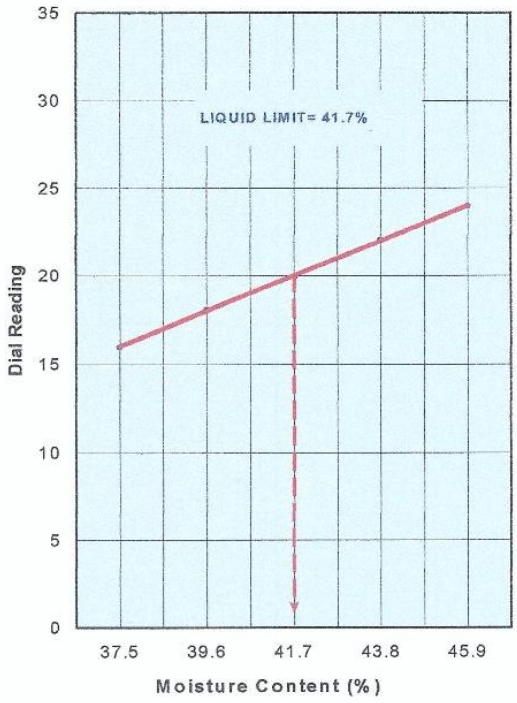
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5691 **Sample No.** 5691

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.6m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	CL	A2	BC	N	TX	M2	PL
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	111.8	118.0	118.2	129.6	126.5	49.4	52.0
Mass of Container+Dry Soil, M3 (g)	81.3	84.5	83.4	90.1	86.7	40.6	42.7
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	30.5	33.5	34.8	39.5	39.8	8.8	9.3
Mass of Dry Soil (M3-M1) (g)	81.3	84.5	83.4	90.1	86.7	40.6	42.7
Moisture Content (%)	**37.5**	**39.6**	**41.7**	**43.8**	**45.9**	**21.6**	**21.8**

PLASTIC LIMIT = 21.7%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 41.7%

Plasticity Index, PI = LL - PL
= 20.0%

Plasticity Modulus = PI x 0.425mm % pass
= 1736

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
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P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM3+500 (0.5-0.9m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5692 **Sample No.** 5692

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-0.9m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	MD	SK	KB	NP	X3		
Initial Dial Reading (mm)	0	0	0	0	0		
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.1		
Mass of Container+Wet Soil, M2 (g)	95.7	97.8	101.9	111.8	115.0		
Mass of Container+Dry Soil, M3 (g)	79.8	80.2	82.1	88.6	89.6		
Mass of Container M1 (g)	-	-	-	-	-		
Mass of Moisture (M2-M3) (g)	15.9	17.6	19.8	23.2	25.4		
Mass of Dry Soil (M3-M1) (g)	79.8	80.2	82.1	88.6	89.6		
Moisture Content (%)	**19.9**	**22.0**	**24.1**	**26.2**	**28.3**		

NON-PLASTIC

PLASTIC LIMIT =NIL

LIQUID LIMIT

LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 1.1%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 24.1

Plasticity Index, PI = LL - PL
= NIL

Plasticity Modulus = PI x 0.425mm % pass
= NIL

SOIL CLASSIFICATION	
USCS	AASHTO
SM	A-4
Silty Sand	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM4+500 (0.2-1.7m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

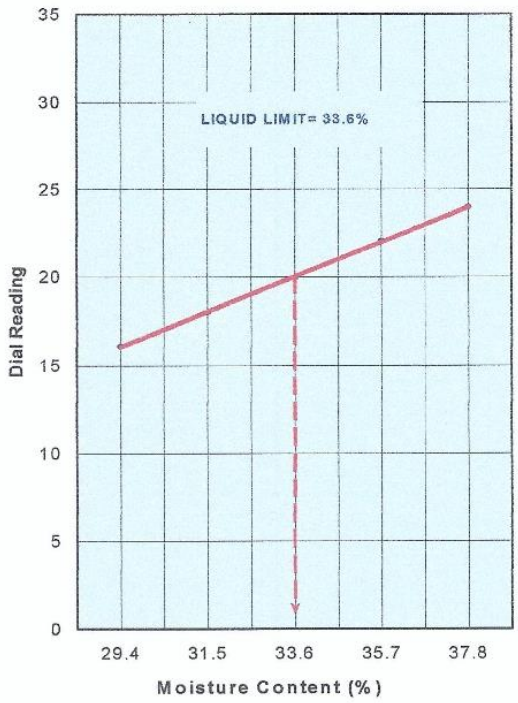
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- CHANGAMWE /5693 **Sample No.** 5693

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2-1.7m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	OK	OT	MX	KV	BY	UK	DN
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	126.9	121.4	126.4	125.5	126.5	50.4	50.7
Mass of Container+Dry Soil, M3 (g)	98.1	92.3	94.6	92.5	91.8	42.6	42.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	28.8	29.1	31.8	33.0	34.7	7.8	7.9
Mass of Dry Soil (M3-M1) (g)	98.1	92.3	94.6	92.5	91.8	42.6	42.8
Moisture Content (%)	**29.4**	**31.5**	**33.6**	**35.7**	**37.8**	**18.2**	**18.4**

PLASTIC LIMIT = 18.3%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.2%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 33.6%

Plasticity Index, PI = LL - PL
= 15.3%

Plasticity Modulus = PI x 0.425mm % pass
= 1518

SOIL CLASSIFICATION	
USCS	AASHTO
CL	A-6
Sandy Clay of Low Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM5+000 (0.0-0.8m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

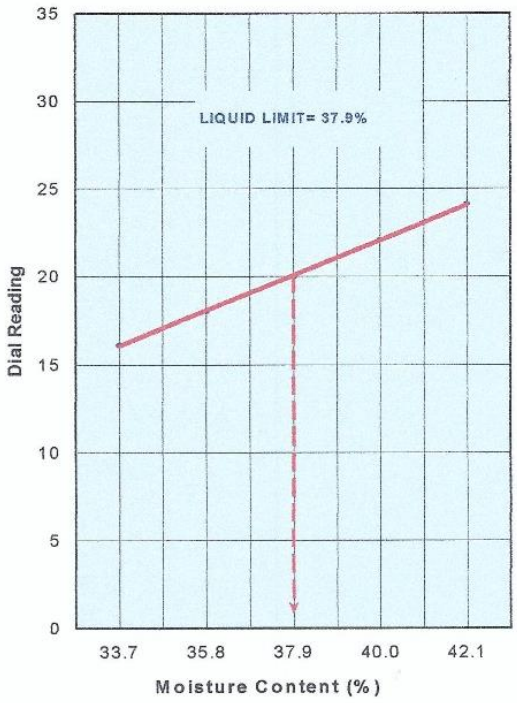
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- CHANGAMWE /5694 **Sample No.** 5694

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.8m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	KQ	CN	CL	BC	N	NT	M2
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	99.7	105.0	109.5	112.7	116.9	50.1	51.5
Mass of Container+Dry Soil, M3 (g)	74.6	77.3	79.4	80.5	82.3	41.9	43.0
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	25.1	27.7	30.1	32.2	34.6	8.2	8.5
Mass of Dry Soil (M3-M1) (g)	74.6	77.3	79.4	80.5	82.3	41.9	43.0
Moisture Content (%)	**33.7**	**35.8**	**37.9**	**40.0**	**42.1**	**19.5**	**19.7**

PLASTIC LIMIT = 19.6%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.2%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 37.9%

Plasticity Index, PI = LL - PL
= 15.3%

Plasticity Modulus = PI x 0.425mm % pass
= 1698

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-6
Clayey Sand of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM6+000 (0.5-1.2m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- CHANGAMWE /5695 **Sample No.** 5695

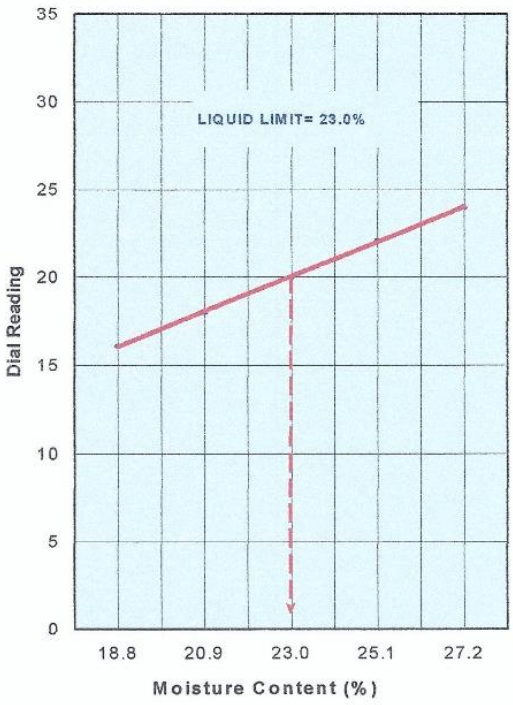
Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.2m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	CS	K6	KBW	NP	LT		
Initial Dial Reading (mm)	0	0	0	0	0		
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0		
Mass of Container+Wet Soil, M2 (g)	108.7	111.6	116.2	120.5	125.3		
Mass of Container+Dry Soil, M3 (g)	91.5	92.3	94.5	96.3	98.5		
Mass of Container M1 (g)	-	-	-	-	-		
Mass of Moisture (M2-M3) (g)	17.2	19.3	21.7	24.2	26.8		
Mass of Dry Soil (M3-M1) (g)	91.5	92.3	94.5	96.3	98.5		
Moisture Content (%)	**18.8**	**20.9**	**23.0**	**25.1**	**27.2**		

NON-PLASTIC

PLASTIC LIMIT = NIL

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 1.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 23.0%

Plasticity Index, PI = LL - PL
= NIL

Plasticity Modulus = PI x 0.425mm % pass
= NIL

SOIL CLASSIFICATION	
USCS	AASHTO
SM	A-2-4
Silty Sand	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM7+000 (1.0-1.2m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

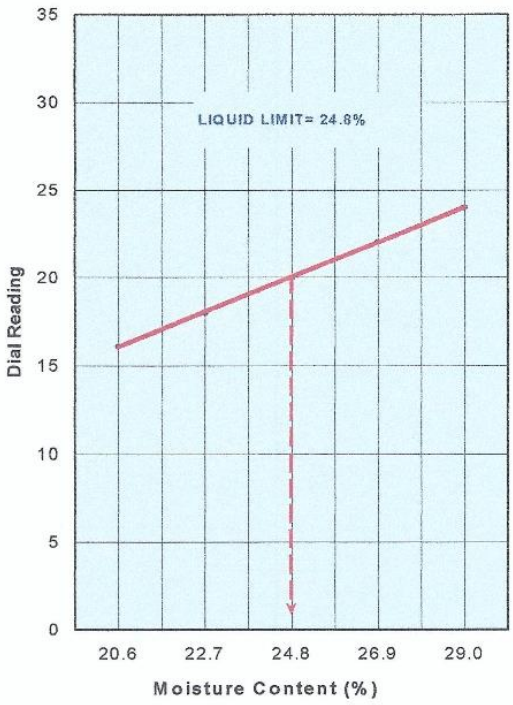
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- CHANGAMWE /5696 **Sample No.** 5696

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0-1.2m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	BC	N	NT	M2	T4	DL	Q
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	104.2	109.6	112.8	117.1	127.2	52.1	55.1
Mass of Container+Dry Soil, M3 (g)	86.4	89.3	90.4	92.3	98.6	45.1	47.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	17.8	20.3	22.4	24.8	28.6	7.0	7.5
Mass of Dry Soil (M3-M1) (g)	86.4	89.3	90.4	92.3	98.6	45.1	47.6
Moisture Content (%)	**20.6**	**22.7**	**24.8**	**26.9**	**29.0**	**15.5**	**15.7**

PLASTIC LIMIT = 15.6%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 4.3%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 24.8%

Plasticity Index, PI = LL - PL
= 9.2%

Plasticity Modulus = PI x 0.425mm % pass
= 618

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-4
Clayey Sand of Low Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM7+500 (0.2-0.9m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- CHANGAMWE /5697 **Sample No.** 5697

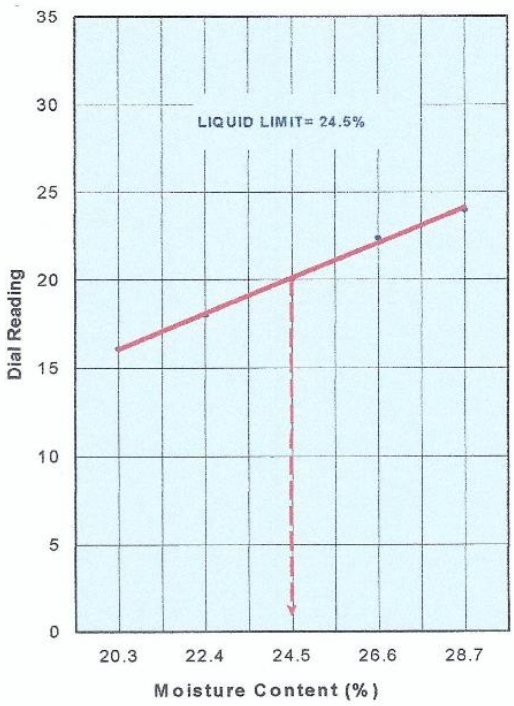
Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2-0.9m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	B12	N	TM	DZ	NP		
Initial Dial Reading (mm)	0	0	0	0	0		
Final Dial Reading (mm)	16.1	18.0	20.0	22.4	24.0		
Mass of Container+Wet Soil, M2 (g)	106.5	109.7	112.8	119.6	126.9		
Mass of Container+Dry Soil, M3 (g)	88.5	89.6	90.6	94.5	98.6		
Mass of Container M1 (g)	-	-	-	-	-		
Mass of Moisture (M2-M3) (g)	18.0	20.1	22.2	25.1	28.3		
Mass of Dry Soil (M3-M1) (g)	88.5	89.6	90.6	94.5	98.6		
Moisture Content (%)	**20.3**	**22.4**	**24.5**	**26.6**	**28.7**		

NON-PLASTIC

PLASTIC LIMIT = NIL

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 1.0%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 24.5%

Plasticity Index, PI = LL - PL
= NIL

Plasticity Modulus = PI x 0.425mm % pass
= NIL

SOIL CLASSIFICATION	
USCS	AASHTO
SM	A-2-4
Silty Sand	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY
CHANGAMWE SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM8+000 (0.0-1.0m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

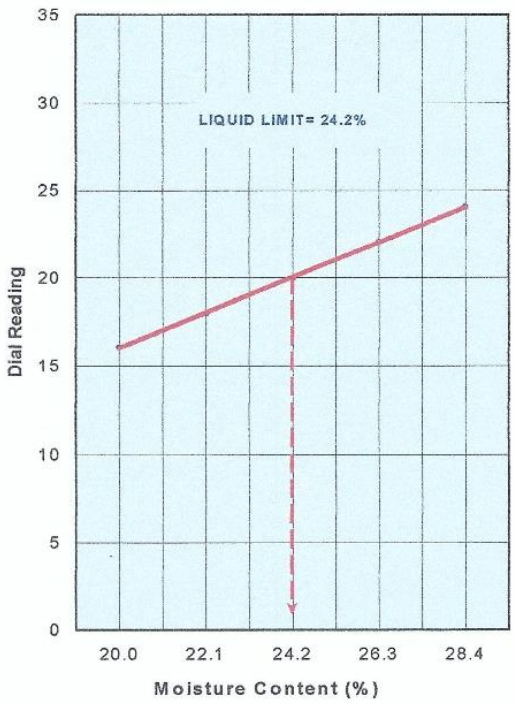
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- CHANGAMWE /5698 **Sample No.** 5698

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.0m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	B6	G	NT	M2	T4	PL	KQ
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	115.7	111.5	112.6	112.8	117.4	45.8	48.3
Mass of Container+Dry Soil, M3 (g)	96.4	91.3	90.7	89.3	91.4	40.1	42.3
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	19.3	20.2	21.9	23.5	26.0	5.7	6.0
Mass of Dry Soil (M3-M1) (g)	96.4	91.3	90.7	89.3	91.4	40.1	42.3
Moisture Content (%)	**20.0**	**22.1**	**24.2**	**26.3**	**28.4**	**14.1**	**14.3**

PLASTIC LIMIT = 14.2%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 4.7%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 24.2%

Plasticity Index, PI = LL - PL
= 10.0%

Plasticity Modulus = PI x 0.425mm % pass
= 895

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-4
Clayey Sand of Low Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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Email: danellilab3@gmail.com
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM8+500 (0.8-1.0m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

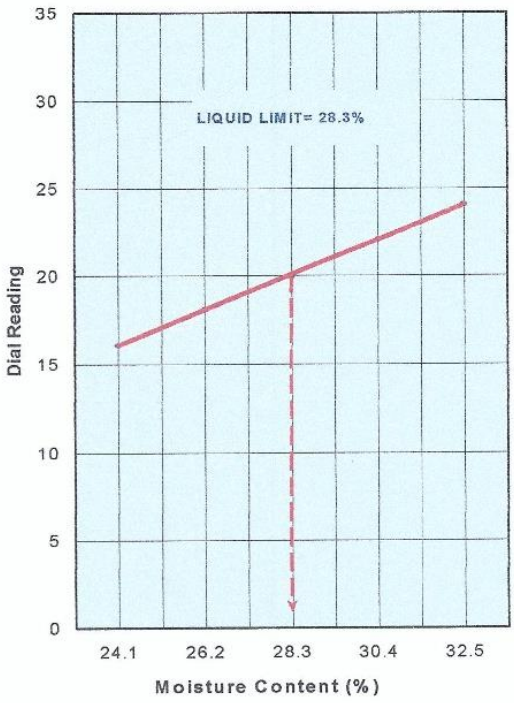
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- CHANGAMWE /5699 **Sample No.** 5699

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.8-1.0m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	MD	D	OM	C	KU	BH	MS
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.1	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	107.2	111.4	112.1	116.2	119.6	49.1	51.7
Mass of Container+Dry Soil, M3 (g)	86.4	88.3	87.4	89.1	90.3	41.8	43.9
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	20.8	23.1	24.7	27.1	29.3	7.3	7.8
Mass of Dry Soil (M3-M1) (g)	86.4	88.3	87.4	89.1	90.3	41.8	43.9
Moisture Content (%)	**24.1**	**26.2**	**28.3**	**30.4**	**32.5**	**17.5**	**17.7**

PLASTIC LIMIT = 17.6%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 5.0%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 28.3%

Plasticity Index, PI = LL - PL
= 10.7%

Plasticity Modulus = PI x 0.425mm % pass
=1015

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-6
Clayey Sand of Low Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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Email: danellilab3@gmail.com
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REGIONAL GEOPHYSICAL SURVEY
CHANGAMWE SITE
ATTERBERG LIMITS: CONE PENETROMETER
BS 1377: Part 2
TP KM9+000 (0.9-1.5m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

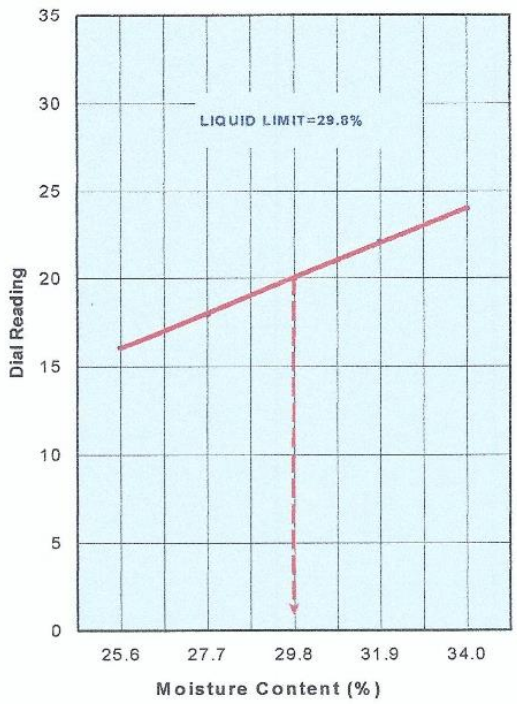
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- CHANGAMWE /5700 **Sample No.** 5700

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.9-1.5m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	J8	LT	MX	T4	BC	SS	P2
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	93.7	100.8	99.0	105.7	111.1	48.1	50.8
Mass of Container+Dry Soil, M3 (g)	74.6	78.9	76.3	80.1	82.9	41.0	43.2
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	19.1	21.9	22.7	25.6	28.2	7.1	7.6
Mass of Dry Soil (M3-M1) (g)	74.6	78.9	76.3	80.1	82.9	41.0	43.2
Moisture Content (%)	**25.6**	**27.7**	**29.8**	**31.9**	**34.0**	**17.3**	**17.5**

PLASTIC LIMIT = 17.4%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 5.8%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 29.8%

Plasticity Index, PI = LL - PL
= 12.4%

Plasticity Modulus = PI x 0.425mm % pass
= 1158

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-6
Clayey Sand of Low Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM11+000 (1.4-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- CHANGAMWE /5701 **Sample No.** 5701

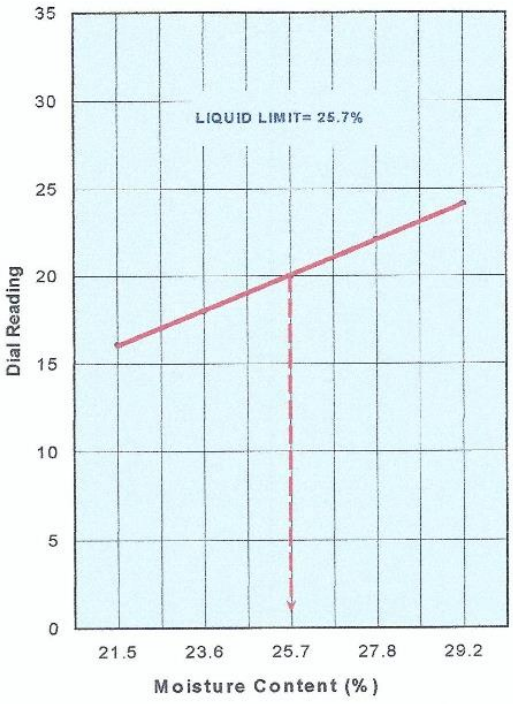
Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.4-1.6m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	IP	OT	JKC	RC	ZK		
Initial Dial Reading (mm)	0	0	0	0	0		
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.1		
Mass of Container+Wet Soil, M2 (g)	92.1	98.0	106.3	113.9	119.9		
Mass of Container+Dry Soil, M3 (g)	75.8	79.3	84.6	89.1	92.3		
Mass of Container M1 (g)	-	-	-	-	-		
Mass of Moisture (M2-M3) (g)	16.3	18.7	21.7	24.8	27.6		
Mass of Dry Soil (M3-M1) (g)	75.8	79.3	84.6	89.1	92.3		
Moisture Content (%)	**21.5**	**23.6**	**25.7**	**27.8**	**29.9**		

NON-PLASTIC

PLASTIC LIMIT = NIL

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 0.9%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 25.7%

Plasticity Index, PI = LL - PL
= NIL

Plasticity Modulus = PI x 0.425mm % pass
= NIL

SOIL CLASSIFICATION	
USCS	AASHTO
SM	A-2-4
Silty Sand	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM11+500 (0.3-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

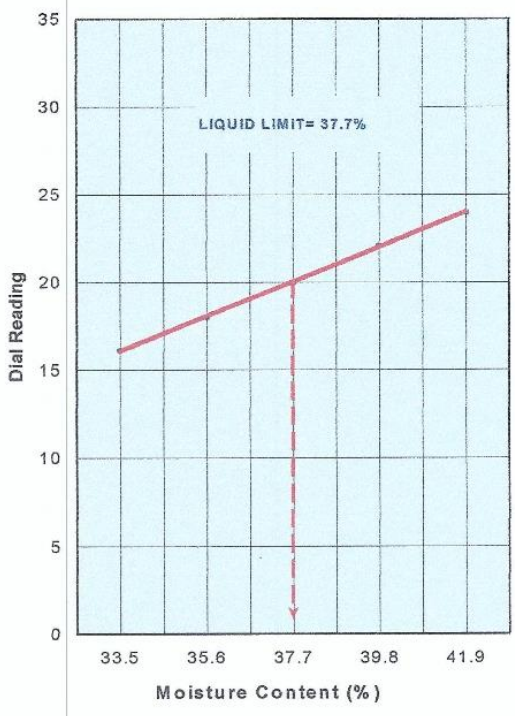
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- CHANGAMWE /5702 **Sample No.** 5702

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-1.6m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	LT	PZ	Z4	PA	BG	A2	X3
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	131.2	101.0	116.5	123.2	120.0	51.5	54.4
Mass of Container+Dry Soil, M3 (g)	98.3	74.5	84.6	88.7	84.6	42.0	44.3
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	32.9	26.5	31.9	34.5	35.4	9.5	10.1
Mass of Dry Soil (M3-M1) (g)	98.3	74.5	84.6	88.7	84.6	42.0	44.3
Moisture Content (%)	**33.5**	**35.6**	**37.7**	**38.9**	**41.9**	**22.7**	**22.9**

PLASTIC LIMIT = 22.8%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.0%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 37.7%

Plasticity Index, PI = LL - PL
= 14.9%

Plasticity Modulus = PI x 0.425mm % pass
= 1462

SOIL CLASSIFICATION	
USCS	AASHTO
Cl	A-6
Sandy Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM11+618 (0.3-1.2m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

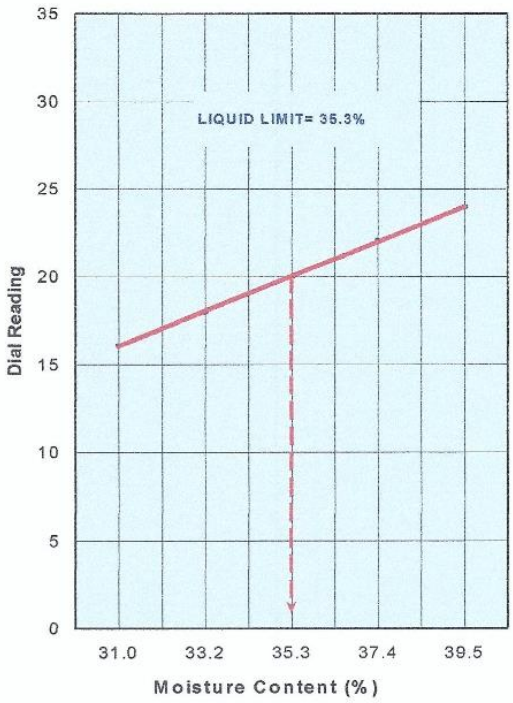
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- CHANGAMWE /5703 **Sample No.** 5703

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-1.2m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	L2	D	S2	SK	CS	J8	KQ
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	126.5	131.3	136.9	120.4	138.4	50.8	54.8
Mass of Container+Dry Soil, M3 (g)	96.5	98.6	101.2	87.6	99.2	42.4	45.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	30.0	32.7	35.7	32.8	39.2	8.4	9.2
Mass of Dry Soil (M3-M1) (g)	96.5	98.6	101.2	87.6	99.2	42.4	45.6
Moisture Content (%)	**31.1**	**33.2**	**35.3**	**37.4**	**39.5**	**19.9**	**20.1**

PLASTIC LIMIT = 20.0%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.2%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 35.3%

Plasticity Index, PI = LL - PL
= 15.3%

Plasticity Modulus = PI x 0.425mm % pass
= 1510

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-6
Sandy Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

MZIMA SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM0+500 (0.0-0.8m)

Site: MZIMA **Location:** KWALE **Date Received:** 18-10-21

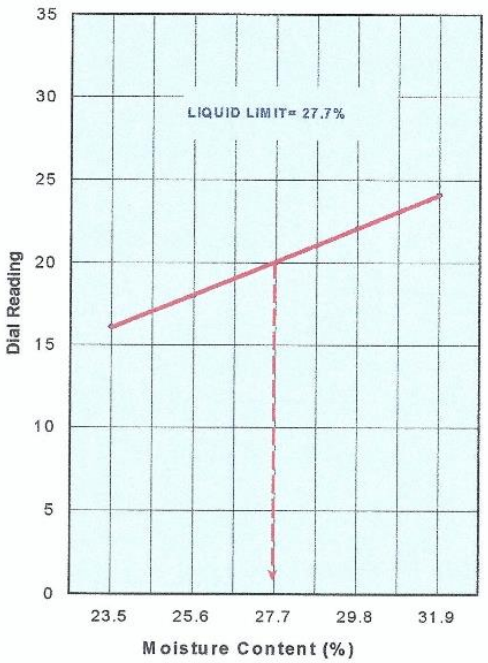
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-MZIMA/5707 **Sample No.** 5707

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0 -0.8m **Date Tested:** 29-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	FB	N	SS	Q	P2	RK	A2
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	117.7	109.5	124.8	130.1	135.3	54.0	56.7
Mass of Container+Dry Soil, M3 (g)	95.3	87.2	97.7	100.2	102.6	44.8	46.9
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	22.4	22.3	27.1	29.9	32.7	9.2	9.8
Mass of Dry Soil (M3-M1) (g)	95.3	87.2	97.7	100.2	102.6	44.8	46.9
Moisture Content (%)	**23.5**	**25.6**	**27.7**	**29.8**	**31.9**	**20.6**	**20.8**

PLASTIC LIMIT = 20.7%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 3.4 %

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 27.7%

Plasticity Index, PI = LL - PL
= 7.2%

Plasticity Modulus = PI x 0.425mm % pass
= 333

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-4
Clayey Sand of Low Plasticity	

Tested by: MICHAEL **Date Reported:** 30-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

MZIMA SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM1+000 (0.0-0.1.4m)

Site: MZIMA **Location:** KWALE **Date Received:** 18-10-21

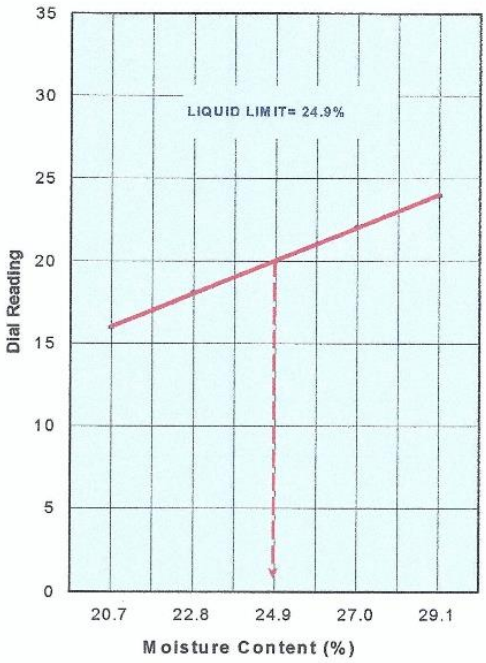
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-MZIMA/5708 **Sample No.** 5708

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0 -1.4m **Date Tested:** 29-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	B10	T4	B2	SP	L5	K4	J8
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	123.5	124.5	124.4	107.3	124.7	47.5	50.2
Mass of Container+Dry Soil, M3 (g)	102.3	101.4	99.6	84.5	96.6	40.6	42.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	21.2	23.1	24.8	22.8	28.1	6.9	7.4
Mass of Dry Soil (M3-M1) (g)	102.3	101.4	99.6	84.5	96.6	40.6	42.8
Moisture Content (%)	**20.7**	**22.8**	**24.9**	**27.0**	**29.1**	**17.1**	**17.3**

PLASTIC LIMIT = 17.2%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 3.6 %

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 24.9%

Plasticity Index, PI = LL - PL
= 7.7%

Plasticity Modulus = PI x 0.425mm % pass
= 489

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-4
Clayey Sand of Low Plasticity	

Tested by: MICHAEL **Date Reported:** 30-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM0+500 (0.0-0.4m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

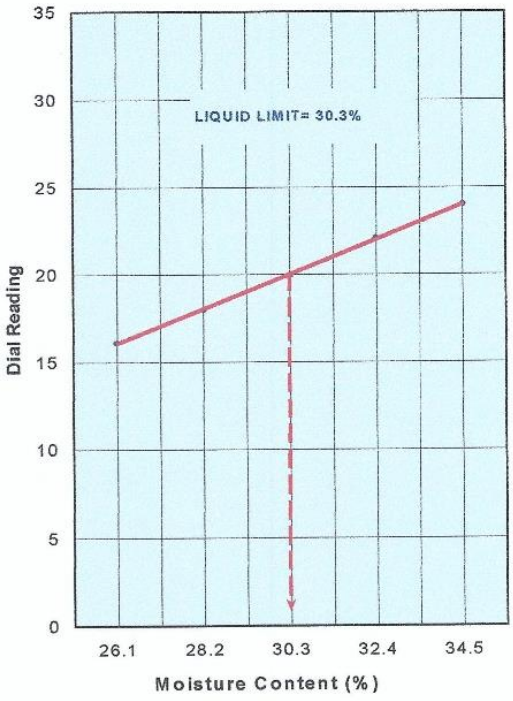
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5740 **Sample No.** 5740

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.4m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	K6	AM	JD	UT	BS	JSK	Q
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	100.2	117.0	112.6	113.7	104.6	51.4	54.3
Mass of Container+Dry Soil, M3 (g)	79.5	91.3	86.4	85.9	77.8	44.2	46.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	20.7	25.7	26.2	27.8	26.8	7.2	7.7
Mass of Dry Soil (M3-M1) (g)	79.5	91.3	86.4	85.9	77.8	44.2	46.6
Moisture Content (%)	**26.1**	**28.2**	**30.3**	**32.4**	**34.5**	**16.4**	**16.6**

PLASTIC LIMIT = 16.5%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 6.5%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 30.3%

Plasticity Index, PI = LL - PL
= 13.8%

Plasticity Modulus = PI x 0.425mm % pass
= 777

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-6
Clayey Sand of Low Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM1+500 (0.0-0.5m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

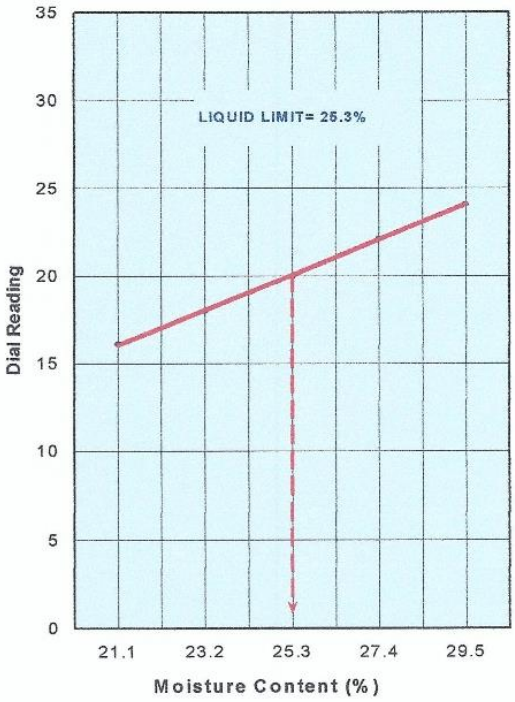
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5741 **Sample No.** 5741

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.5m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	K6	CA	JD	Y	B6	A7	NS
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	106.8	110.4	112.1	111.1	117.2	51.4	54.1
Mass of Container+Dry Soil, M3 (g)	88.2	89.6	89.5	87.2	90.5	44.3	46.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	18.6	20.8	22.6	23.9	26.7	7.1	7.5
Mass of Dry Soil (M3-M1) (g)	88.2	89.6	89.5	87.2	90.5	44.3	46.6
Moisture Content (%)	**21.1**	**23.2**	**25.3**	**27.4**	**29.5**	**16.0**	**16.2**

PLASTIC LIMIT = 16.1%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 4.3%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 25.3%

Plasticity Index, PI = LL - PL
= 9.2%

Plasticity Modulus = PI x 0.425mm % pass
= 742

SOIL CLASSIFICATION	
USCS	AASHTO
CL	A-4
Sandy Clay of Low Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM1+740 (1.0-1.4m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

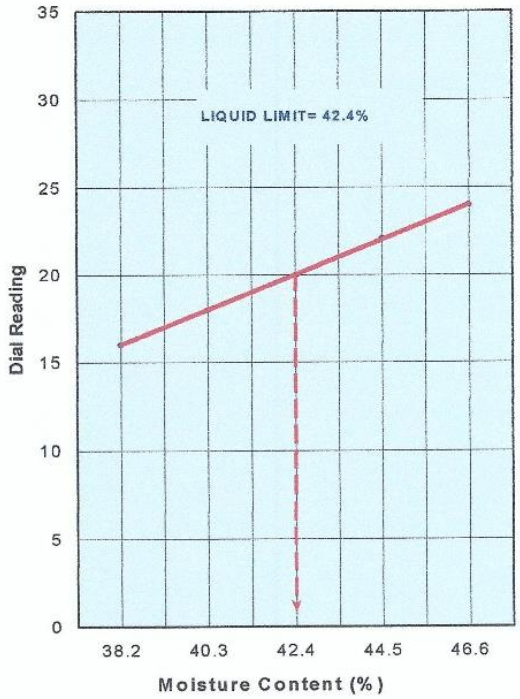
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5742 **Sample No.** 5742

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0-1.4m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	TO	CC	T4	RK	PL	M2	L5
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	119.1	118.6	125.0	128.9	146.7	49.4	52.2
Mass of Container+Dry Soil, M3 (g)	86.2	84.5	87.8	89.2	100.1	40.4	42.6
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	32.9	34.1	37.2	39.7	46.6	9.0	9.6
Mass of Dry Soil (M3-M1) (g)	86.2	84.5	87.8	89.2	100.1	40.4	42.6
Moisture Content (%)	**38.2**	**40.3**	**42.4**	**44.5**	**46.6**	**22.3**	**22.5**

PLASTIC LIMIT = 22.4%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 42.4%

Plasticity Index, PI = LL - PL
= 20.0%

Plasticity Modulus = PI x 0.425mm % pass
= 1318

SOIL CLASSIFICATION	
USCS	AASHTO
CL	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM2+000 (0.0-0.8m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

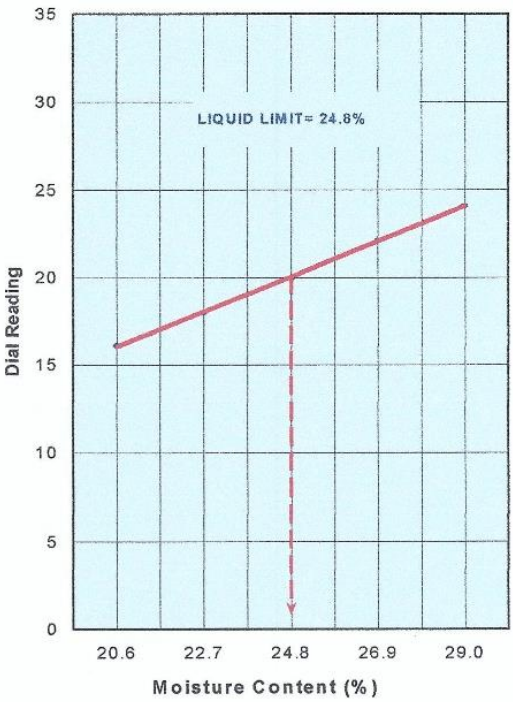
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5743 **Sample No.** 5743

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.8m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	BN	Z	BB	A2	J	A7	NT
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	104.3	108.8	111.3	115.0	119.7	46.9	49.5
Mass of Container+Dry Soil, M3 (g)	86.5	88.7	89.2	90.6	92.8	40.6	42.8
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	17.8	20.1	22.1	24.4	26.9	6.3	6.7
Mass of Dry Soil (M3-M1) (g)	86.5	88.7	89.2	90.6	92.8	40.6	42.8
Moisture Content (%)	**20.6**	**22.7**	**24.8**	**26.9**	**29.0**	**15.5**	**15.7**

PLASTIC LIMIT = 15.6%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 4.3%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 24.8%

Plasticity Index, PI = LL - PL
= 9.2%

Plasticity Modulus = PI x 0.425mm % pass
= 591

SOIL CLASSIFICATION	
USCS	AASHTO
SC	A-2-4
Clayey Sand of Low Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM2+500 (0.0-0.1m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

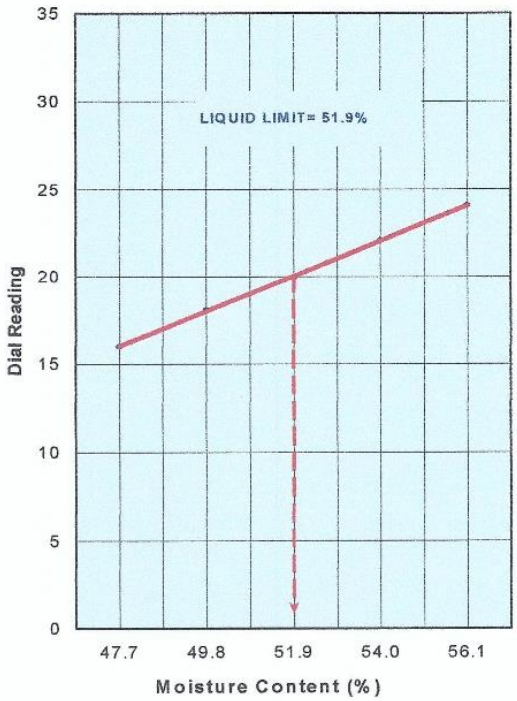
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5744 **Sample No.** 5744

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.1m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	RC	BF	P2	SS	N	J8	B10
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	147.0	147.7	148.1	135.8	136.6	56.5	59.8
Mass of Container+Dry Soil, M3 (g)	99.5	98.6	97.5	88.2	87.5	44.0	46.5
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	47.5	49.1	50.6	47.6	49.1	12.5	13.3
Mass of Dry Soil (M3-M1) (g)	99.5	98.6	97.5	88.2	87.5	44.0	46.5
Moisture Content (%)	**47.7**	**49.8**	**51.9**	**54.0**	**56.1**	**28.3**	**28.5**

PLASTIC LIMIT = 28.4%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 10.8%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 51.9%

Plasticity Index, PI = LL - PL
= 23.0%

Plasticity Modulus = PI x 0.425mm % pass
= 2003

SOIL CLASSIFICATION	
USCS	AASHTO
MH	A-7-6
Sandy Elastic Silt of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM3+000 (0.0-1.4m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

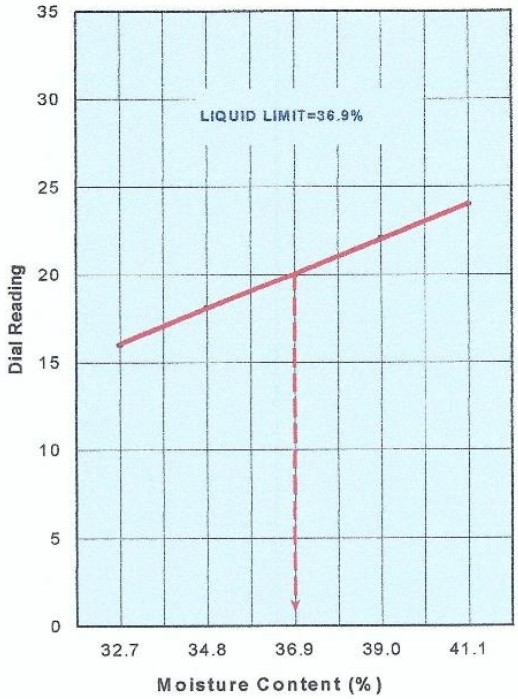
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5745 **Sample No.** 5745

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.4m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	M4	V	B	WC	PL	T4	SX
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	123.1	132.9	133.5	134.0	118.1	53.0	55.8
Mass of Container+Dry Soil, M3 (g)	99.5	98.6	97.5	96.4	83.7	44.2	46.5
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	23.6	34.3	36.0	37.6	34.4	8.8	9.3
Mass of Dry Soil (M3-M1) (g)	99.5	98.6	97.5	96.4	83.7	44.2	46.5
Moisture Content (%)	**23.7**	**34.8**	**36.9**	**39.0**	**41.1**	**20.0**	**20.1**

PLASTIC LIMIT = 20.1%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.9%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 36.9%

Plasticity Index, PI = LL - PL
= 16.8%

Plasticity Modulus = PI x 0.425mm % pass
= 623

SOIL CLASSIFICATION	
USCS	AASHTO
GC	A-6
Clayey Gravel of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM3+500 (0.0-1.4m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

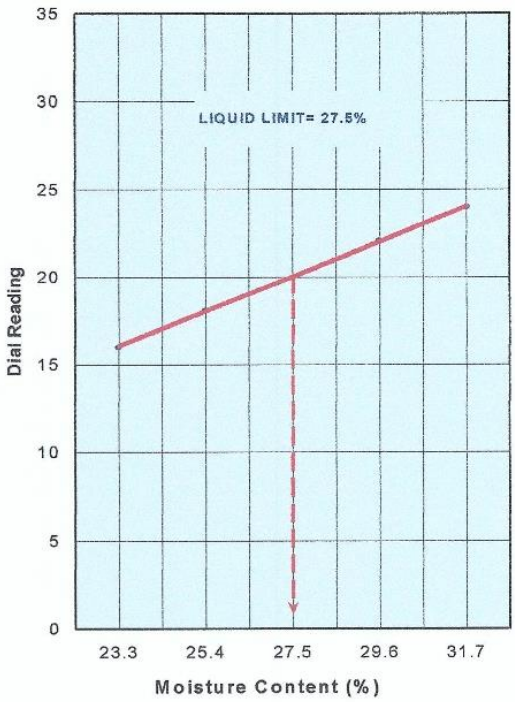
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5746 **Sample No.** 5746

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.4m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	R	QS2	B6	VC	V	MS	MD
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	109.2	112.5	115.0	119.8	123.3	46.8	49.4
Mass of Container+Dry Soil, M3 (g)	88.6	89.7	90.2	92.4	93.6	40.1	42.3
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	20.6	22.8	24.8	27.4	29.7	6.7	7.1
Mass of Dry Soil (M3-M1) (g)	88.6	89.7	90.2	92.4	93.6	40.1	42.3
Moisture Content (%)	**23.3**	**25.4**	**27.5**	**29.6**	**31.7**	**16.7**	**16.9**

PLASTIC LIMIT = 16.8%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 5.0%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 27.5%

Plasticity Index, PI = LL - PL
= 10.7%

Plasticity Modulus = PI x 0.425mm % pass
= 303

SOIL CLASSIFICATION	
USCS	AASHTO
GC	A-2-6
Clayey Gravel of Low Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
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REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM4+000 (0.45-0.9m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

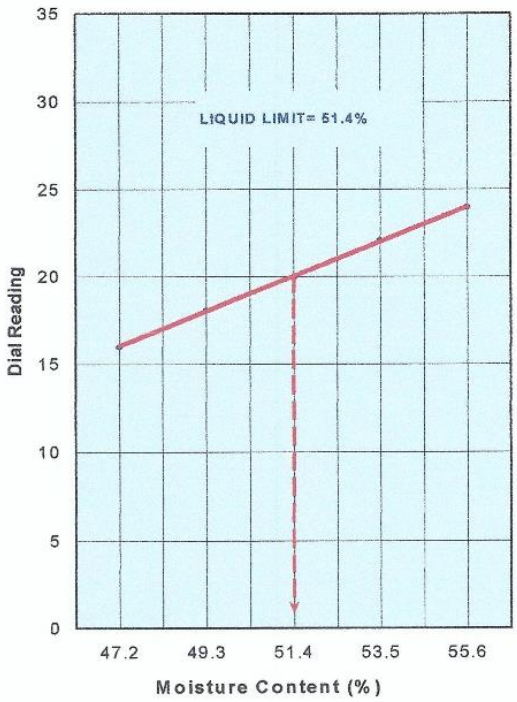
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5747 **Sample No.** 5747

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.45-0.9m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	NTS	KC	L5	Y	XV	CA	CM
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	141.9	147.2	142.8	142.1	141.6	53.4	56.3
Mass of Container+Dry Soil, M3 (g)	96.4	98.6	94.3	92.6	91.0	42.1	44.3
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	45.5	48.6	48.5	49.5	50.6	11.3	12.0
Mass of Dry Soil (M3-M1) (g)	96.4	98.6	94.3	92.6	91.0	42.1	44.3
Moisture Content (%)	**47.2**	**49.3**	**51.4**	**53.5**	**55.6**	**26.8**	**27.0**

PLASTIC LIMIT = 26.9%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 11.5%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 51.4%

Plasticity Index, PI = LL - PL
= 24.5%

Plasticity Modulus = PI x 0.425mm % pass
= 1972

SOIL CLASSIFICATION	
USCS	AASHTO
CH	A-7-6
Sandy Clay of High Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM4+500 (0.2-0.6m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

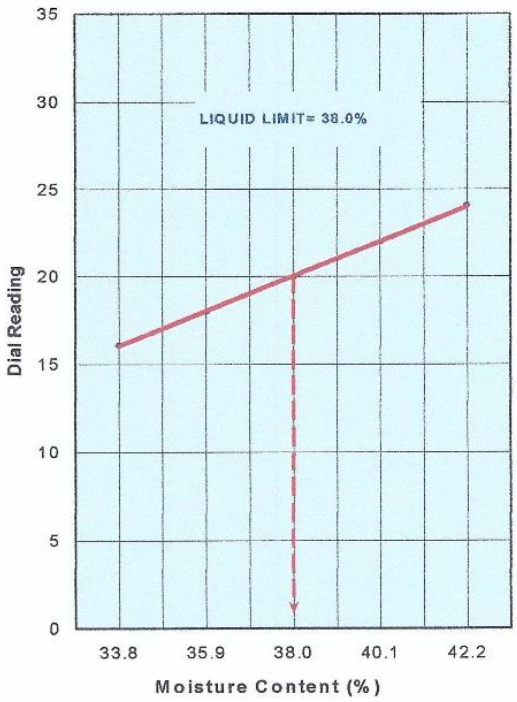
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5748 **Sample No.** 5748

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2-0.6m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	OT	B	NC	BBC	KTN	CNN	FM
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.0	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	115.7	120.8	124.8	129.3	137.6	49.4	52.5
Mass of Container+Dry Soil, M3 (g)	86.5	88.9	90.4	92.3	96.8	40.5	43.0
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	29.2	31.9	34.4	37.0	40.8	8.9	9.5
Mass of Dry Soil (M3-M1) (g)	86.5	88.9	90.4	92.3	96.8	40.5	43.0
Moisture Content (%)	**33.8**	**35.9**	**38.0**	**40.1**	**42.2**	**21.9**	**22.1**

PLASTIC LIMIT = 22.0%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.5%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 38.0%

Plasticity Index, PI = LL - PL
= 16.0%

Plasticity Modulus = PI x 0.425mm % pass
= 1421

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM5+000 (0.3-0.8m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

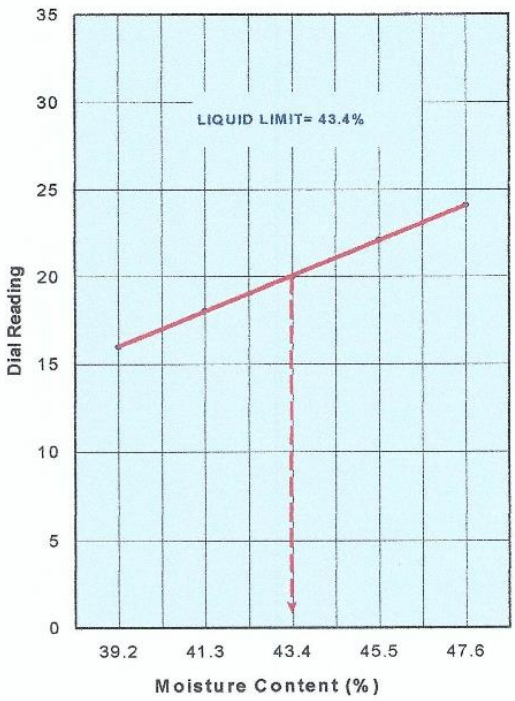
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5749 **Sample No.** 5749

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-0.8m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	CS	TO	CK	G	Q	NV	SK
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.0	18.1	20.0	22.1	24.1	-	-
Mass of Container+Wet Soil, M2 (g)	123.2	126.6	131.4	141.9	147.5	49.4	52.5
Mass of Container+Dry Soil, M3 (g)	88.5	89.6	91.6	97.5	99.9	40.1	42.5
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	34.7	37.0	39.8	44.4	47.6	9.3	10.0
Mass of Dry Soil (M3-M1) (g)	88.5	89.6	91.6	97.5	99.9	40.1	42.5
Moisture Content (%)	**39.2**	**41.3**	**43.4**	**45.5**	**47.6**	**23.3**	**23.5**

PLASTIC LIMIT = 23.4%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 9.4%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 43.4%

Plasticity Index, PI = LL - PL
= 20.0%

Plasticity Modulus = PI x 0.425mm % pass
= 1882

SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-7-6
Sandy Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

ATTERBERG LIMITS: CONE PENETROMETER

BS 1377: Part 2

TP KM5+005 (0.8-1.0m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

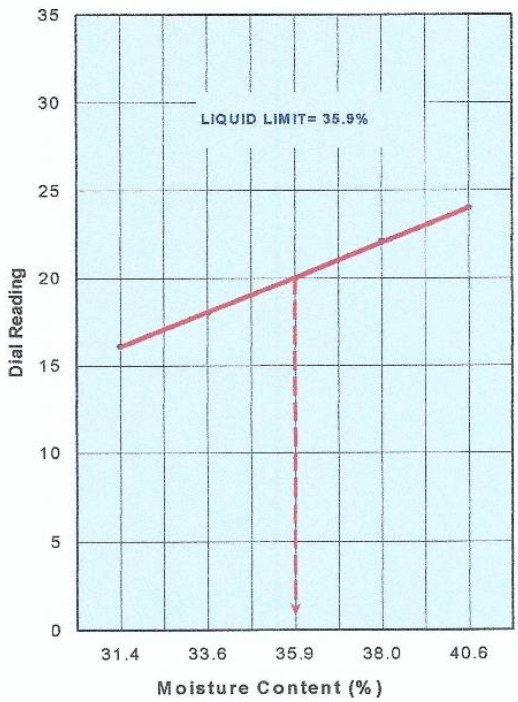
Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5750 **Sample No.** 5750

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.8-1.0m **Date Tested:** 27-10-21

	LIQUID LIMIT					PLASTIC LIMIT	
Container No.	BN	Z	BB	NTS	LC	J	BD
Initial Dial Reading (mm)	0	0	0	0	0	-	-
Final Dial Reading (mm)	16.1	18.0	20.0	22.1	24.0	-	-
Mass of Container+Wet Soil, M2 (g)	120.4	123.6	134.0	141.2	138.8	53.3	55.9
Mass of Container+Dry Soil, M3 (g)	91.6	92.5	98.6	102.3	98.7	44.8	46.9
Mass of Container M1 (g)	-	-	-	-	-	-	-
Mass of Moisture (M2-M3) (g)	28.8	31.1	35.4	38.9	40.1	8.5	9.0
Mass of Dry Soil (M3-M1) (g)	91.6	92.5	98.6	102.3	98.7	44.8	46.9
Moisture Content (%)	**31.4**	**33.6**	**35.9**	**38.0**	**40.6**	**19.0**	**19.2**

PLASTIC LIMIT = 19.1%

LIQUID LIMIT



LINEAR SHRINKAGE

LS = 1 - Length of dried sample x 100
Initial Length of sample

= 7.9%

PLASTICITY INDEX/PLASTICITY MODULUS

Liquid limit, LL= 35.9%

Plasticity Index, PI = LL - PL
= 16.8%

Plasticity Modulus = PI x 0.425mm % pass
= 1174

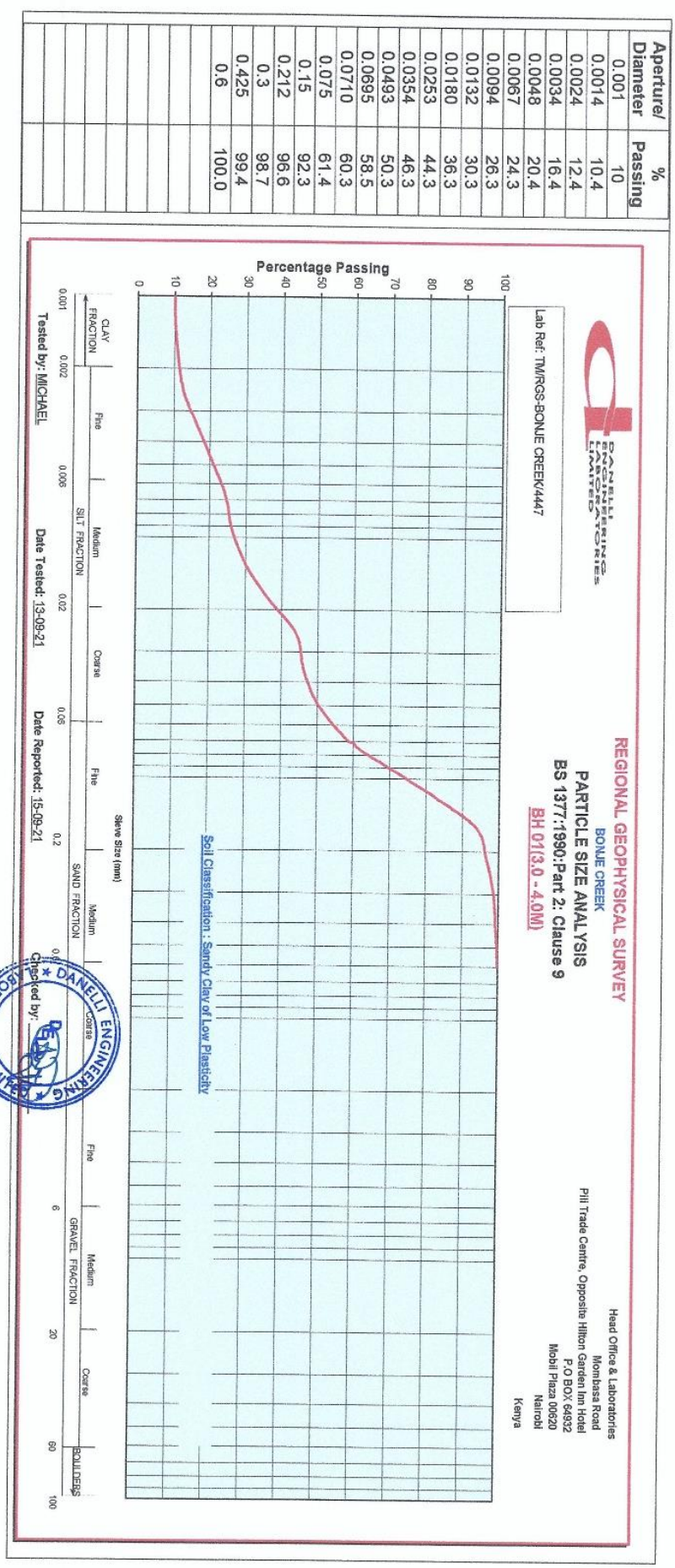
SOIL CLASSIFICATION	
USCS	AASHTO
CI	A-6
Sandy Clay of Intermediate Plasticity	

Tested by: MICHAEL **Date Reported:** 29-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Particle Size Distribution

Aperture/ Diameter	% Passing
0.001	10
0.0014	10.4
0.0024	12.4
0.0034	16.4
0.0048	20.4
0.0067	24.3
0.0094	26.3
0.0132	30.3
0.0180	36.3
0.0253	44.3
0.0354	46.3
0.0493	50.3
0.0695	58.5
0.0710	60.3
0.075	61.4
0.15	92.3
0.212	96.6
0.3	98.7
0.425	99.4
0.6	100.0



Aperture/ Diameter	% Passing
0.001	12
0.0014	12.3
0.0024	15.2
0.0034	18.1
0.0048	24.0
0.0067	29.8
0.0094	35.6
0.0132	44.4
0.0180	53.2
0.0253	61.9
0.0354	73.6
0.0493	82.4
0.0695	88.5
0.0720	88.2
0.075	89.9
0.15	94.1
0.212	94.6
0.3	95.1
0.425	95.4
0.6	95.9
1.18	96.7
2.36	97.5
3.35	98.0
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 01(7.0 - 8.0M)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-BONJE CREEK/4448

Tested by: MICHAEL Date Tested: 13-09-21 Date Reported: 15-09-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	1
0.0014	1.3
0.0024	2.3
0.0034	3.4
0.0048	7.7
0.0067	10.8
0.0094	13.0
0.0132	16.2
0.0180	17.2
0.0253	21.5
0.0354	23.6
0.0493	26.8
0.0695	30.0
0.0720	32.1
0.075	32.7
0.15	56.2
0.212	75.9
0.3	90.8
0.425	95.1
0.6	98.5
1.18	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 01(12.0 - 13.0M)

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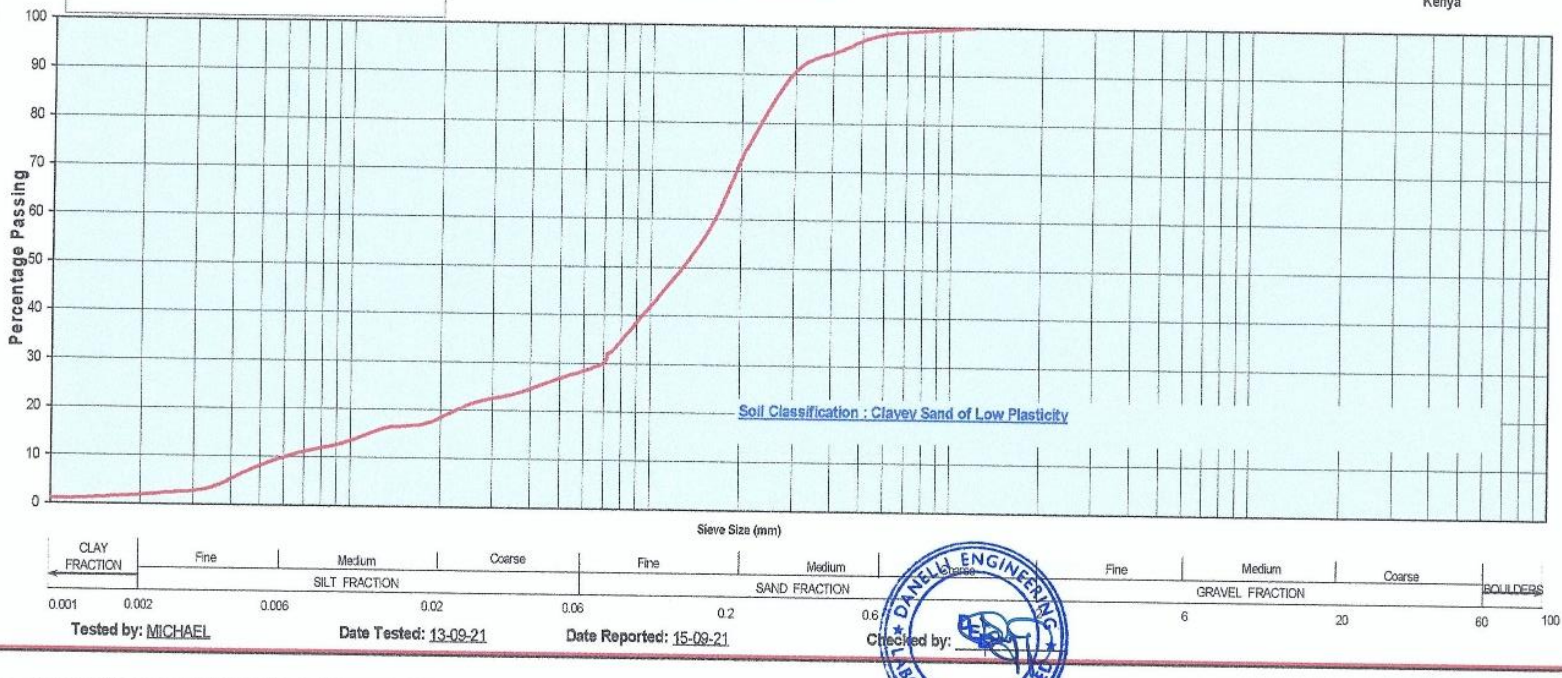
Kenya

Lab Ref: TM/RGS-BONJE CREEK/4450



Tested by: MICHAEL **Date Tested:** 13-09-21 **Date Reported:** 15-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	0.5
0.0014	0.5
0.0024	2.0
0.0034	2.7
0.0048	3.5
0.0067	5.7
0.0094	8.6
0.0132	11.5
0.0180	14.5
0.0253	17.4
0.0354	18.1
0.0493	19.6
0.0695	21.1
0.0720	22.5
0.075	22.6
0.15	31.9
0.212	64.6
0.3	75.8
0.425	89.4
0.6	94.5
1.18	98.7
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 01(19.0 - 20.0M)

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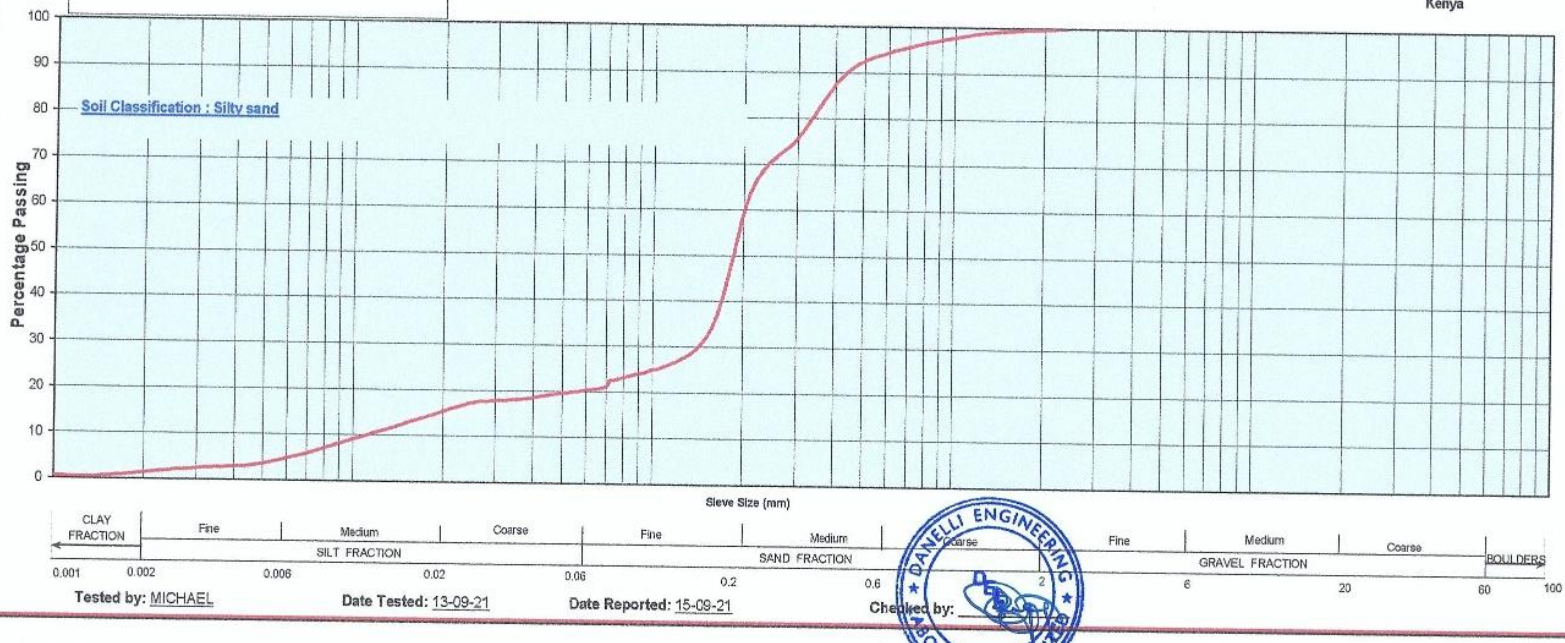
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-BONJE CREEK/4451



Tested by: MICHAEL **Date Tested:** 13-09-21 **Date Reported:** 15-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	24
0.0014	24.2
0.0024	28.7
0.0034	33.3
0.0048	37.8
0.0067	42.3
0.0094	46.8
0.0132	51.3
0.0180	55.3
0.0253	58.7
0.0354	61.3
0.0493	64.9
0.0695	68.2
0.0720	69.4
0.075	69.6
0.15	76.5
0.212	83.4
0.3	92.1
0.425	95.2
0.6	97.6
1.18	98.7
2.36	99.6
3.35	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 02(1.0 - 2.0M)

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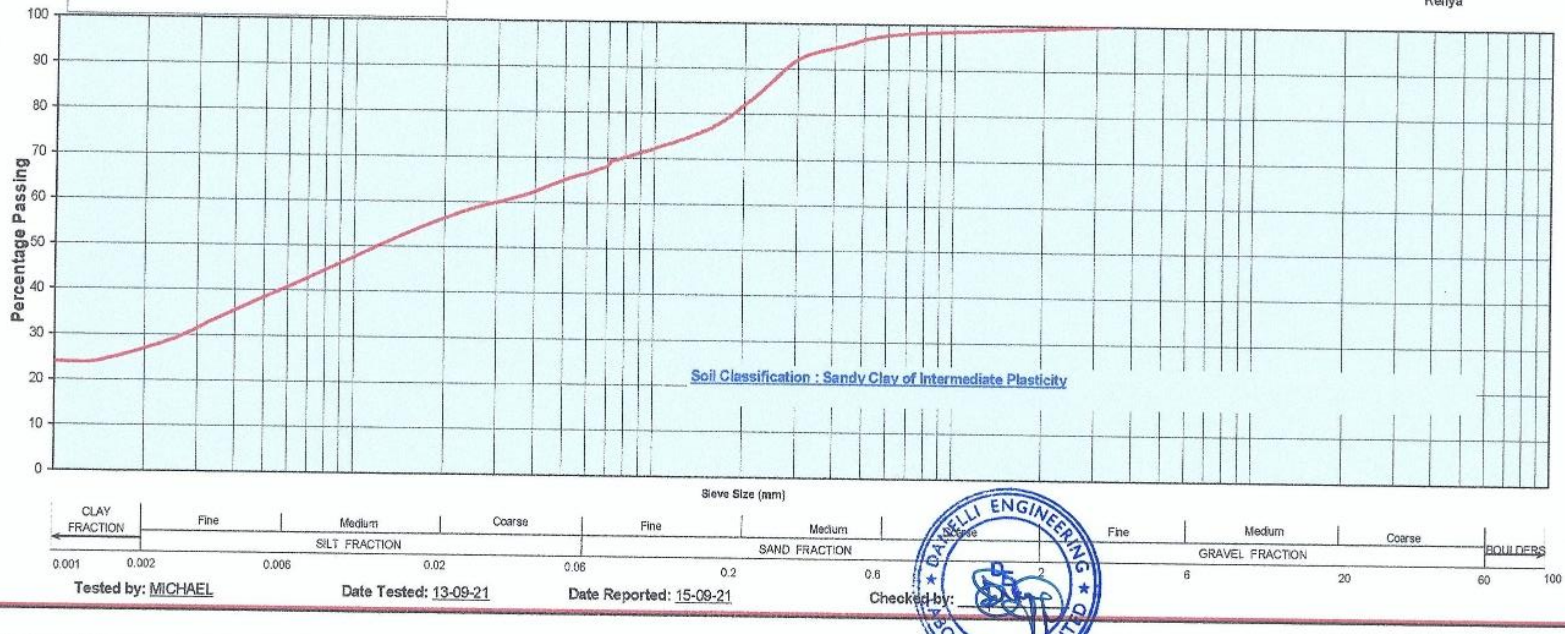
Nairobi
Kenya

Lab Ref: TM/RGS-BONJE CREEK/4452



Tested by: MICHAEL Date Tested: 13-09-21 Date Reported: 15-09-21 Checked by: _____

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	4.5
0.0014	4.5
0.0024	5.5
0.0034	6.5
0.0048	7.4
0.0067	8.4
0.0094	10.3
0.0132	12.3
0.0180	15.2
0.0253	18.1
0.0354	20.6
0.0493	23.8
0.0695	28.7
0.0720	29.6
0.075	29.7
0.15	60.1
0.212	89.1
0.3	97.2
0.425	98.8
0.6	99.8
1.18	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 02(2.0 - 3.0M)

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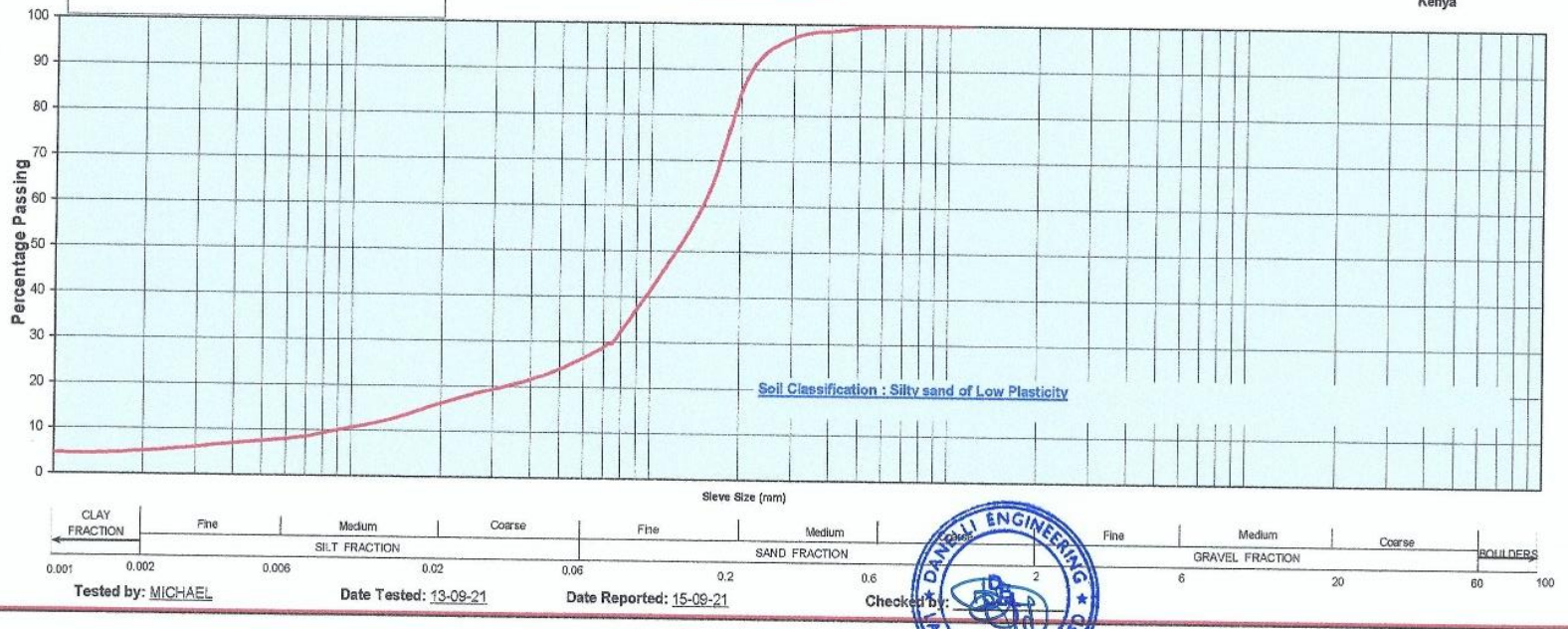
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-BONJE CREEK/4453



Tested by: MICHAEL **Date Tested:** 13-09-21 **Date Reported:** 15-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	2
0.0014	2.2
0.0024	3.4
0.0034	6.0
0.0048	8.5
0.0067	9.8
0.0094	11.1
0.0132	13.6
0.0180	16.1
0.0253	20.0
0.0354	23.8
0.0493	28.8
0.0695	36.7
0.0720	39.0
0.075	39.1
0.15	67.2
0.212	87.7
0.3	97.8
0.425	99.3
0.6	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 02(8.0-9.0M)

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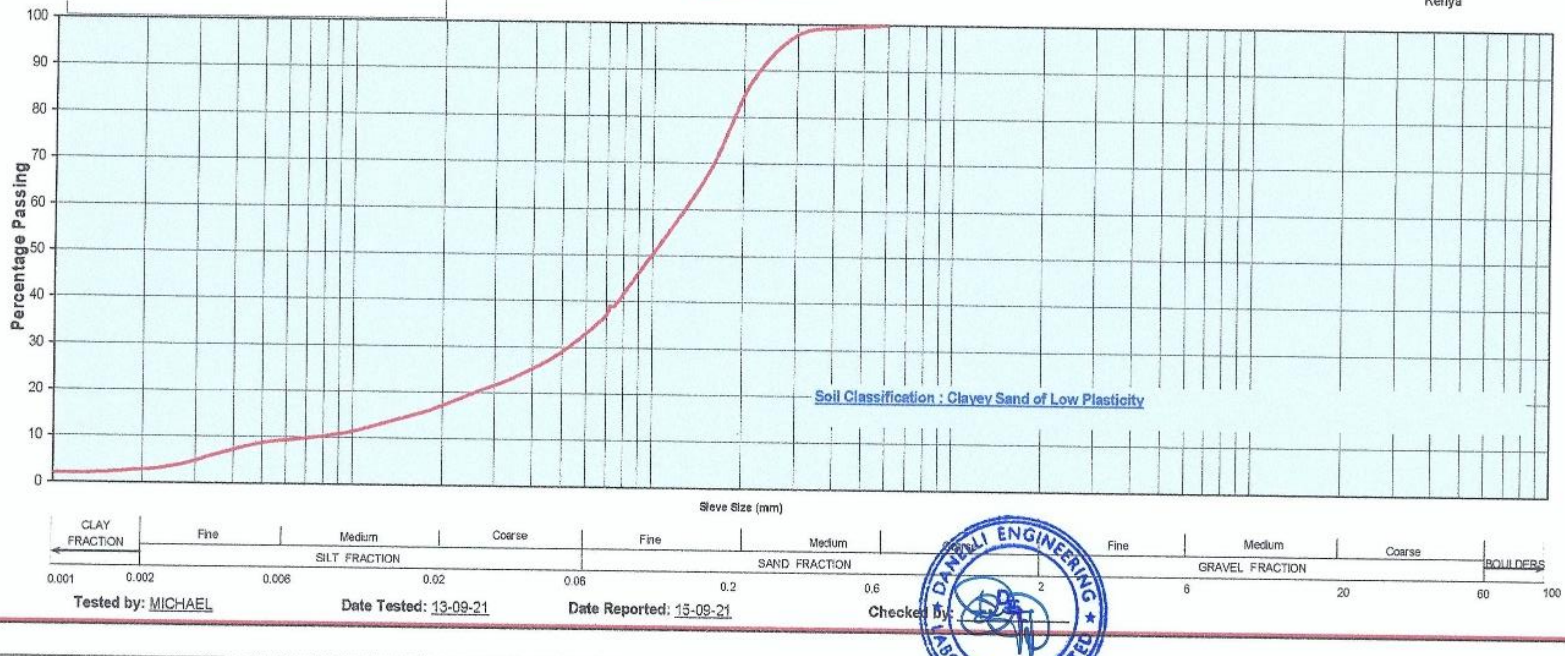
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-BONJE CREEK/4454



Tested by: MICHAEL Date Tested: 13-09-21 Date Reported: 15-09-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	23
0.0014	23.6
0.0024	29.0
0.0034	31.7
0.0048	34.4
0.0067	39.8
0.0094	42.6
0.0132	53.4
0.0180	62.2
0.0253	66.9
0.0354	72.4
0.0493	77.8
0.0695	81.9
0.0720	83.2
0.075	83.4
0.15	88.4
0.212	89.7
0.3	91.5
0.425	92.1
0.6	93.3
1.18	94.0
2.36	94.8
3.35	95.7
5	97.9
6.3	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 02(14.0-15.0M)

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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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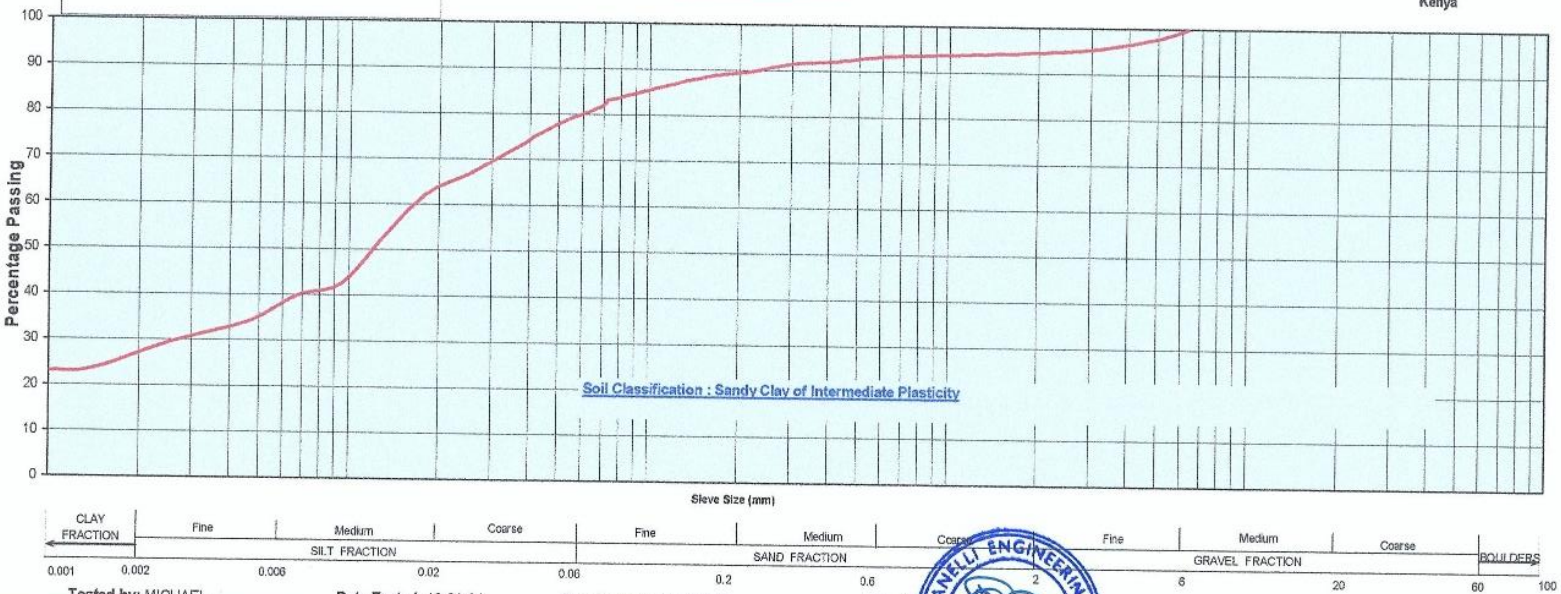
Nairobi
Kenya

Lab Ref: TM/RGS-BONJE CREEK/4455



Tested by: MICHAEL **Date Tested:** 13-09-21 **Date Reported:** 15-09-21 **Checked**

BANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	20
0.0014	20.0
0.0024	24.6
0.0034	29.2
0.0048	31.5
0.0067	33.8
0.0094	38.4
0.0132	43.0
0.0180	47.6
0.0253	52.2
0.0354	56.8
0.0493	61.4
0.0695	68.3
0.0720	70.6
0.075	70.8
0.15	87.4
0.212	94.2
0.3	98.0
0.425	98.5
0.6	99.3
1.18	99.5
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 02(18.0-19.0M)

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Mombasa Road
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P.O BOX 64932
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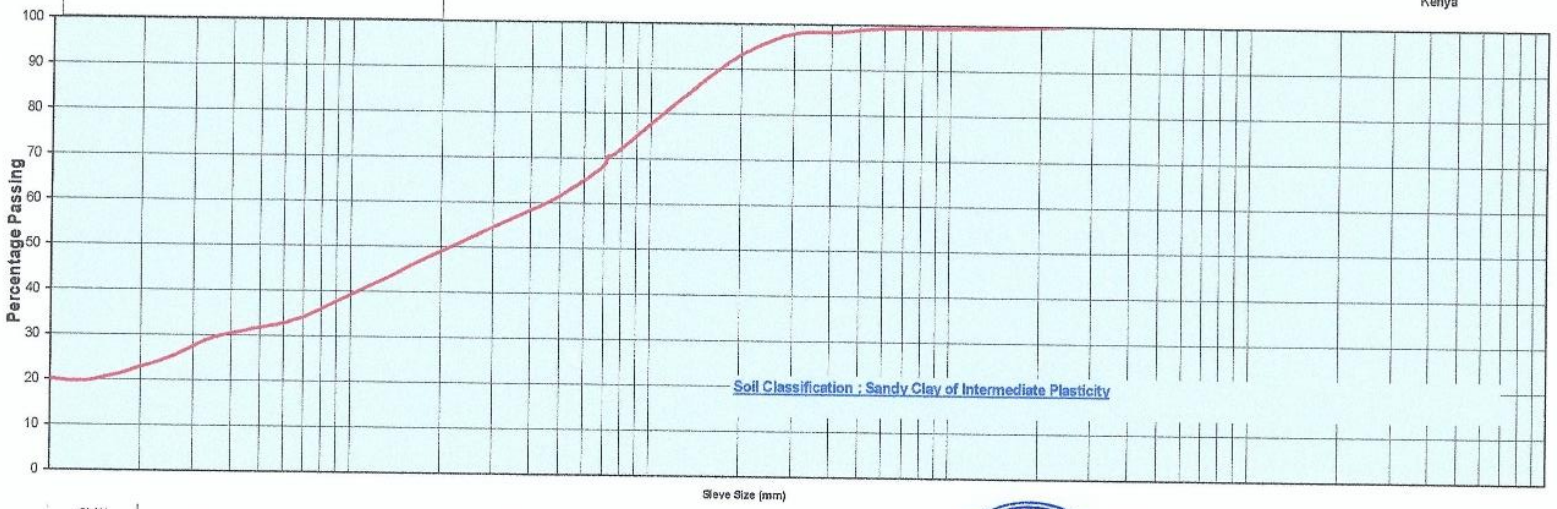
Nairobi
Kenya

Lab Ref: TM/RGS-BONJE CREEK/4456



Tested by: MICHAEL **Date Tested:** 13-09-21 **Date Reported:** 15-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	35.2
0.0014	35.2
0.0024	38.0
0.0034	40.8
0.0048	43.5
0.0067	46.3
0.0094	51.8
0.0132	57.4
0.0180	62.9
0.0253	68.5
0.0354	74.0
0.0493	79.6
0.0695	84.5
0.0720	85.1
0.075	85.3
0.15	92
0.212	93.2
0.3	94.5
0.425	95.3
0.6	97.3
1.18	98.1
2.36	99.1
3.35	99.5
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 02(24.0-25.0M)

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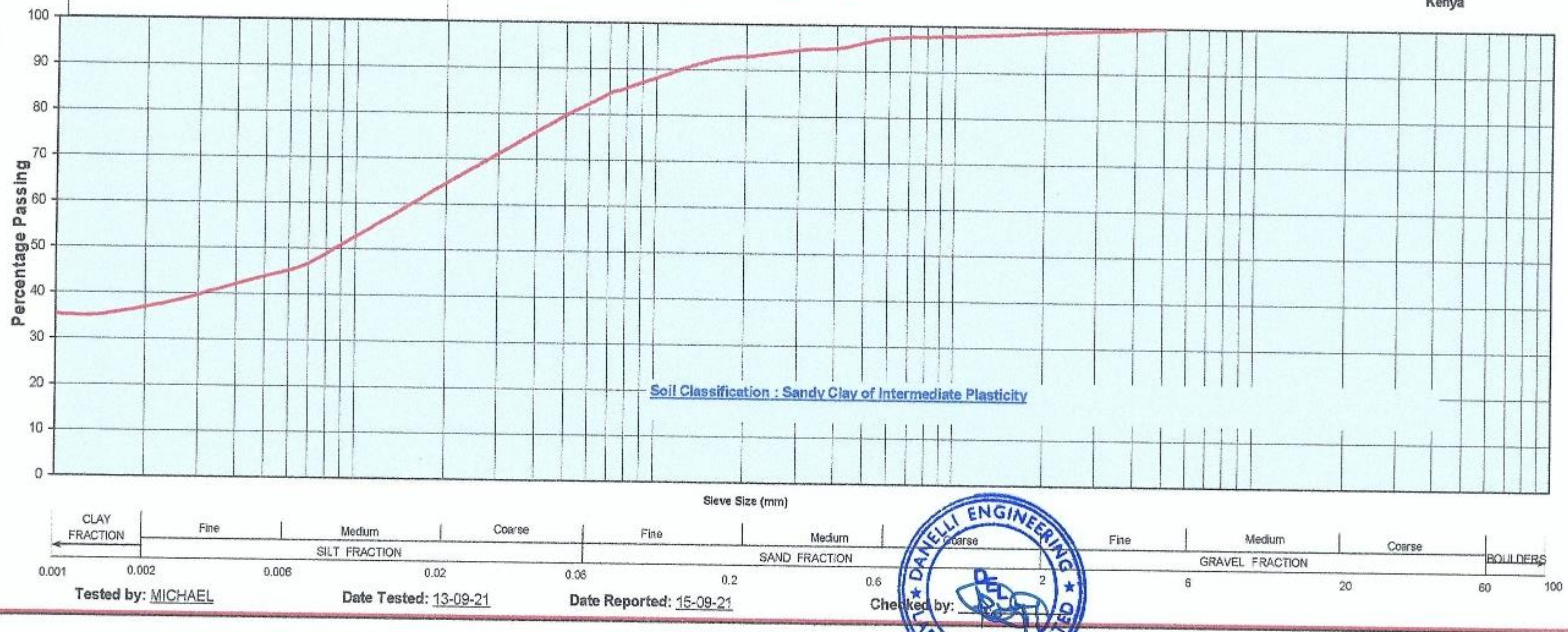
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-BONJE CREEK/4457



Tested by: MICHAEL Date Tested: 13-09-21 Date Reported: 15-09-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	1
0.0014	1.1
0.0024	4.2
0.0034	8.9
0.0048	10.4
0.0067	13.5
0.0094	16.7
0.0132	19.8
0.0180	24.4
0.0253	29.1
0.0354	33.8
0.0493	40.0
0.0695	44.7
0.0720	47.8
0.075	47.9
0.15	68.3
0.212	82.6
0.3	93.1
0.425	95.7
0.6	98.9
1.18	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK

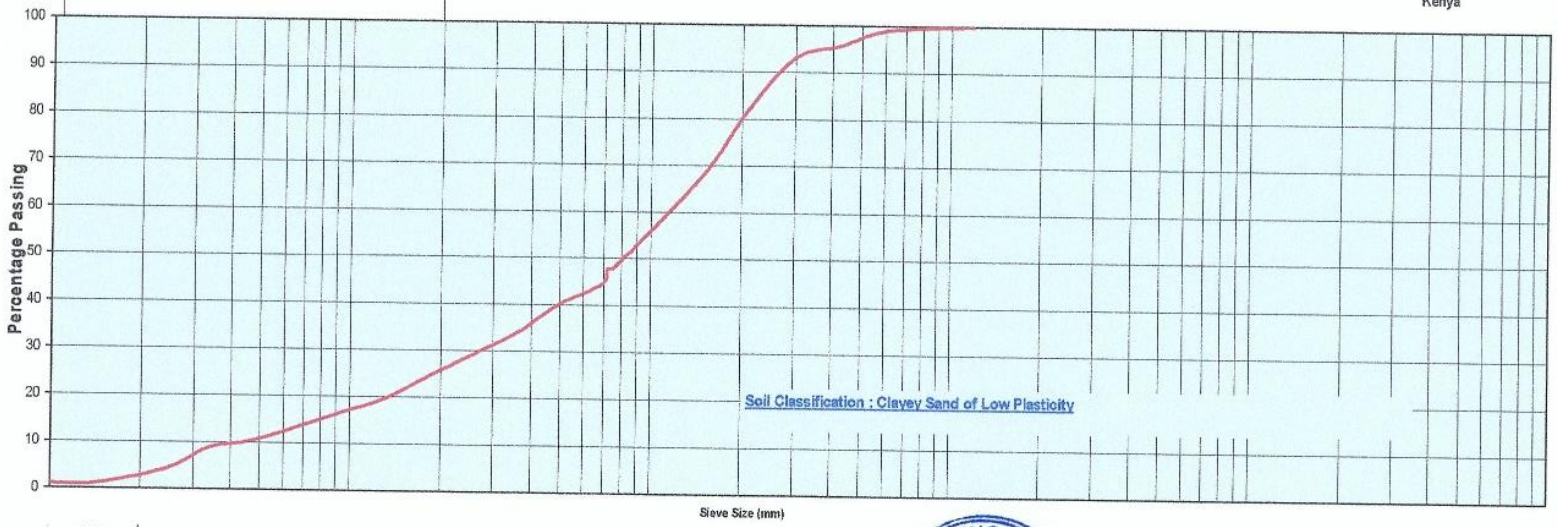
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 02(28.0-29.0M)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-BONJE CREEK/4458



Tested by: MICHAEL Date Tested: 13-09-21 Date Reported: 15-09-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	12
0.0014	12.5
0.0024	15.2
0.0034	17.8
0.0048	23.2
0.0067	28.5
0.0094	31.1
0.0132	39.1
0.0180	47.1
0.0253	52.4
0.0354	63.1
0.0493	71.1
0.0695	80.2
0.0720	81.7
0.075	81.9
0.15	90.5
0.212	92.1
0.3	93.5
0.425	93.9
0.6	94.8
1.18	95.8
2.36	97.0
3.35	97.6
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK

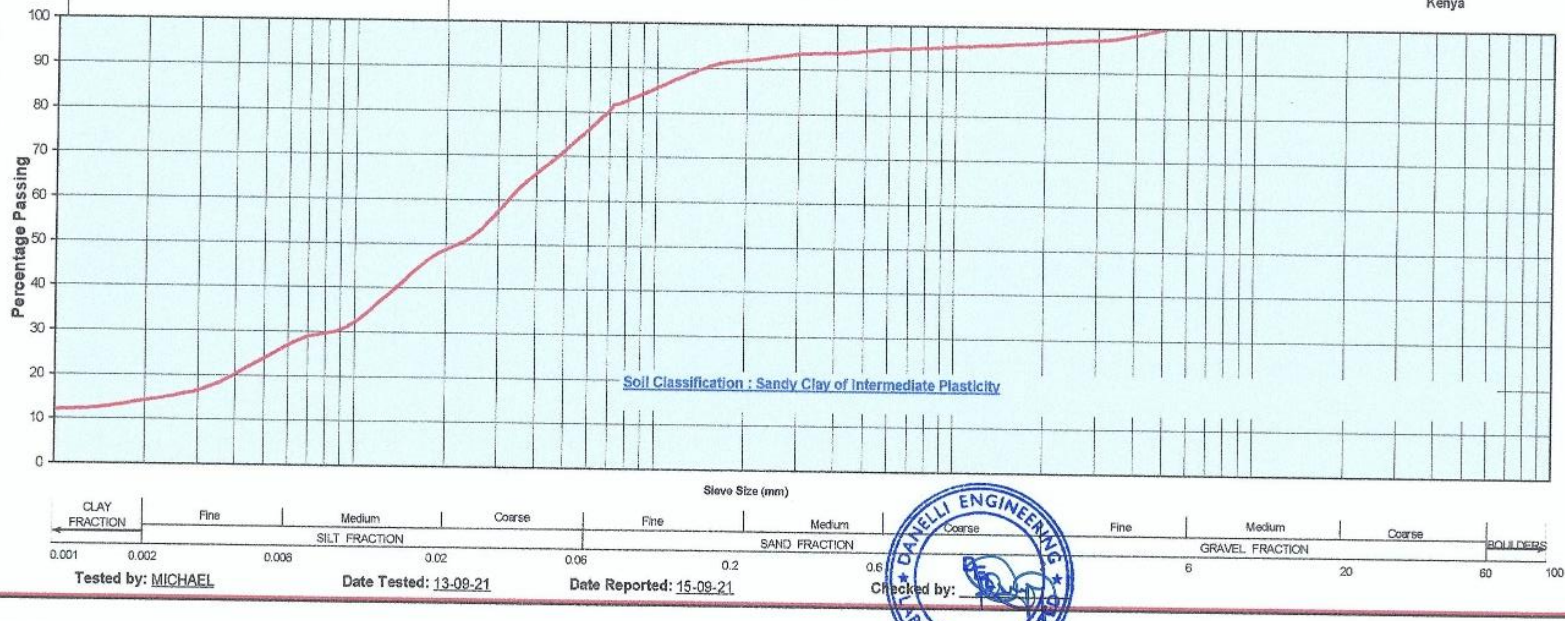
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 03(2.0-3.0M)

Head Office & Laboratories
Mombasa Road
Pill Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-BONJE CREEK/4459



Tested by: MICHAEL Date Tested: 13-09-21 Date Reported: 15-09-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	15
0.0014	15.8
0.0024	17.9
0.0034	22.0
0.0048	25.8
0.0067	30.2
0.0094	34.3
0.0132	38.4
0.0180	42.5
0.0253	46.6
0.0354	50.7
0.0493	57.0
0.0695	61.9
0.0720	63.1
0.075	63.2
0.15	68.5
0.212	69.1
0.3	71.1
0.425	71.7
0.6	73.3
1.18	76.0
2.36	79.5
3.35	82.5
5	86.7
6.3	88.1
10	93.9
14	96.7
20	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK

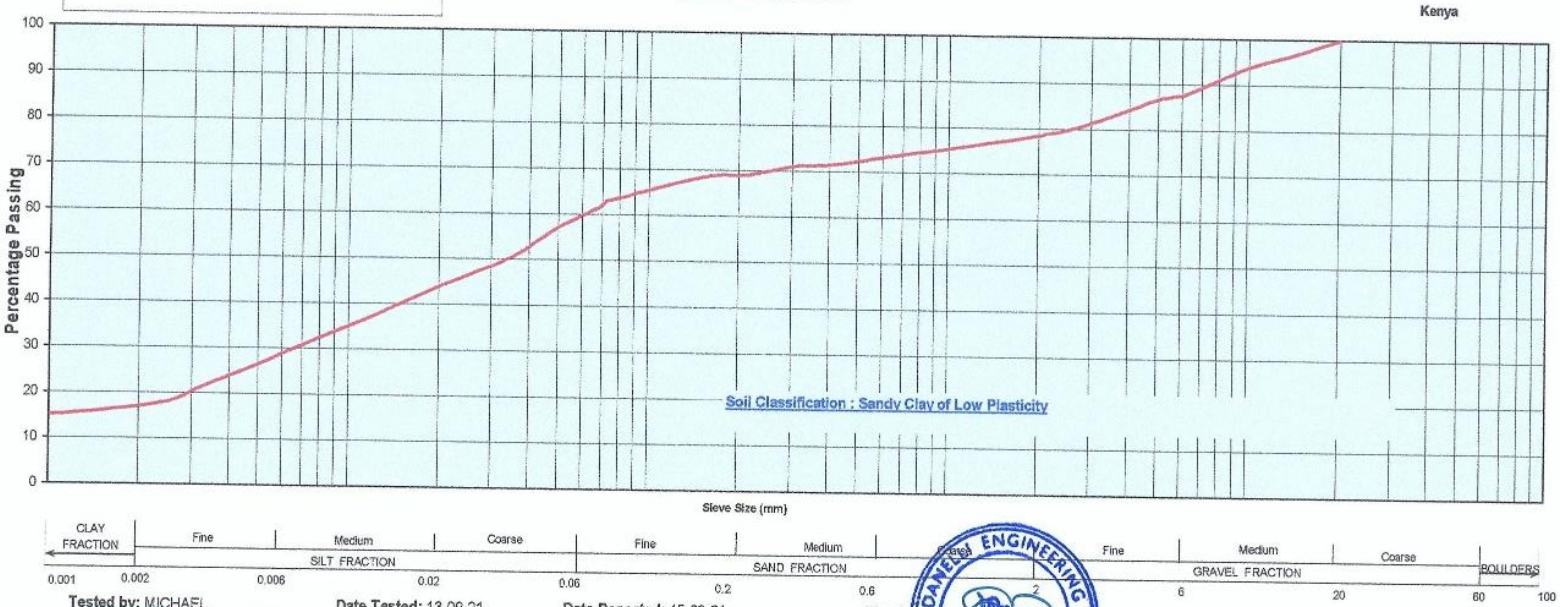
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 03(11.0-12.0M)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-BONJE CREEK/4460



Tested by: MICHAEL **Date Tested:** 13-09-21 **Date Reported:** 15-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	24
0.0014	24.7
0.0024	27.7
0.0034	30.7
0.0048	36.8
0.0067	42.8
0.0094	48.8
0.0132	51.8
0.0180	60.9
0.0253	69.9
0.0354	78.9
0.0493	85.0
0.0695	91.1
0.0720	91.0
0.075	92.7
0.15	93.8
0.212	95.1
0.3	95.5
0.425	96.0
0.6	96.3
1.18	96.9
2.36	97.9
3.35	99.0
5	99.6
6.3	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU

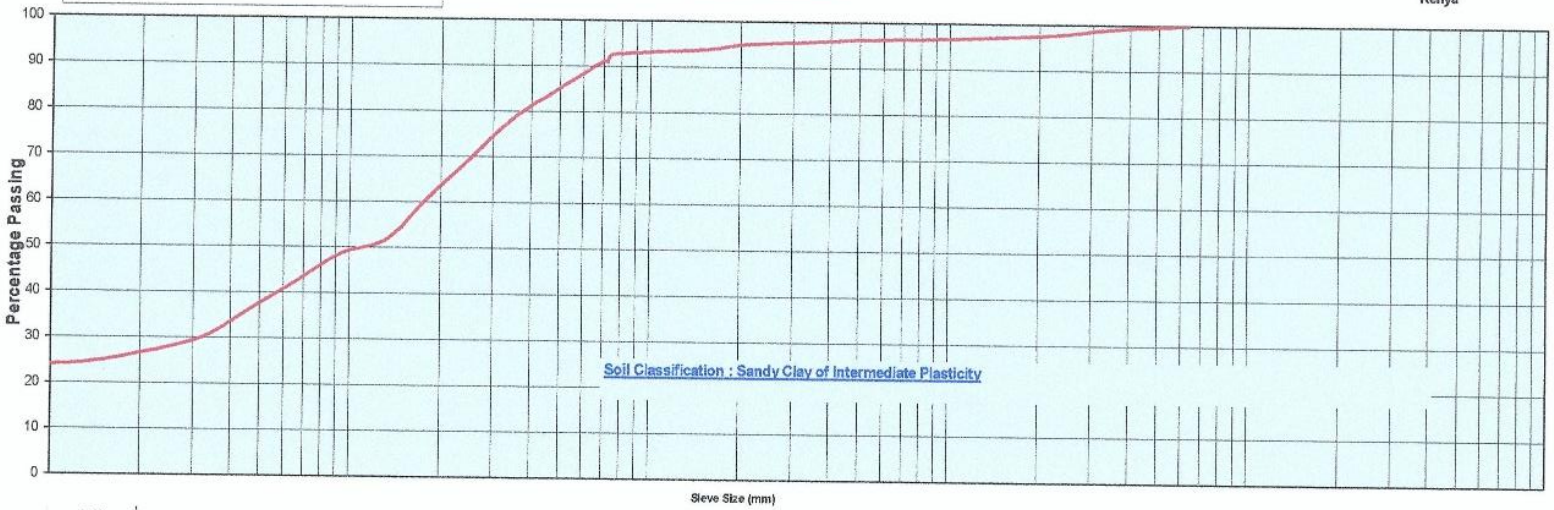
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 02(1.0 - 2.0M)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/4464



Tested by: MICHAEL **Date Tested:** 13-09-21 **Date Reported:** 15-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	2
0.0014	2.6
0.0024	2.9
0.0034	3.2
0.0048	3.8
0.0067	4.4
0.0094	5.1
0.0132	5.4
0.0180	6.3
0.0253	7.2
0.0354	8.2
0.0493	8.8
0.0695	9.1
0.0720	9.4
0.075	9.6
0.15	13.1
0.212	15.3
0.3	20.1
0.425	21.9
0.6	28.3
1.18	41.8
2.36	65.2
3.35	81.0
5	96.0
6.3	97.4
10	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU

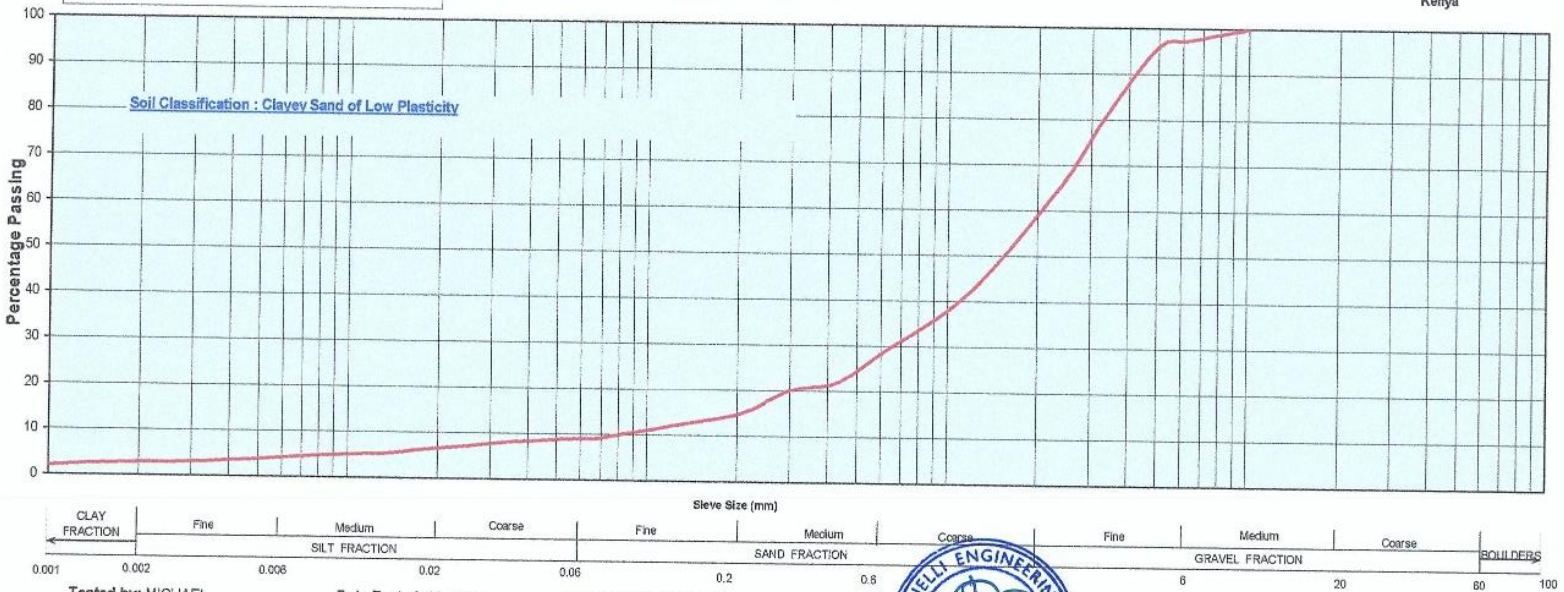
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 02(19.0 - 20.0M)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/4467



Tested by: MICHAEL Date Tested: 13-09-21 Date Reported: 15-09-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	5
0.0014	5.7
0.0024	8.4
0.0034	9.8
0.0048	11.1
0.0067	13.8
0.0094	17.9
0.0132	19.2
0.0180	22.0
0.0253	24.7
0.0354	28.7
0.0493	34.2
0.0695	39.5
0.0720	40.9
0.075	41.7
0.15	76.4
0.212	97.5
0.3	98.4
0.425	99.2
0.6	99.8
1.18	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE

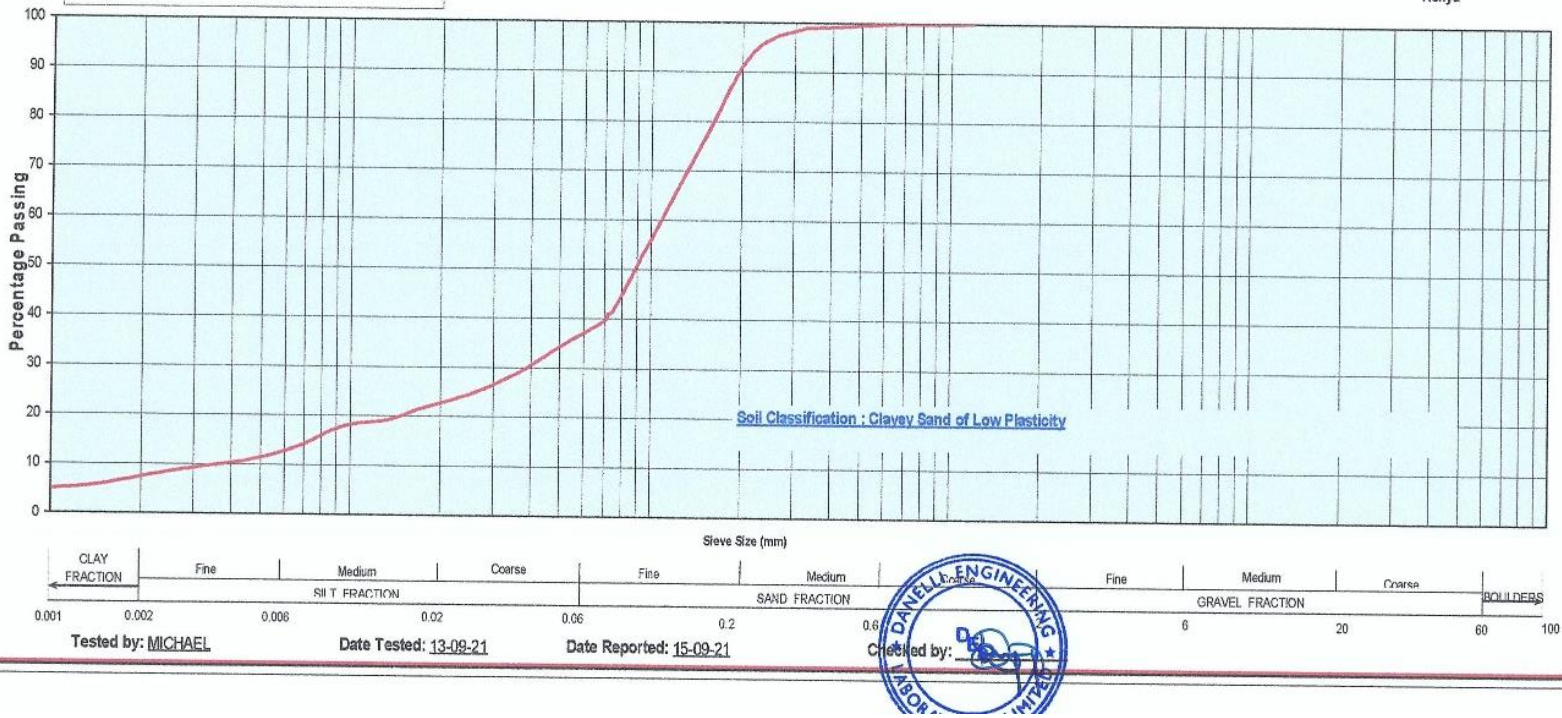
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 01(1.0 - 2.0M)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/4468



Tested by: MICHAEL Date Tested: 13-09-21 Date Reported: 15-09-21 Checked by: _____

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	14
0.0014	14.8
0.0024	18.6
0.0034	20.6
0.0048	22.5
0.0067	26.3
0.0094	28.2
0.0132	32.1
0.0180	37.8
0.0253	43.6
0.0354	51.3
0.0493	53.2
0.0695	57.0
0.0710	57.9
0.075	59.1
0.15	64.1
0.212	65.7
0.3	67.3
0.425	68.1
0.6	70.2
1.18	74.8
2.36	81.6
3.35	85.1
5	89.6
6.3	91.3
10	96.7
14	100.0

DANELI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE

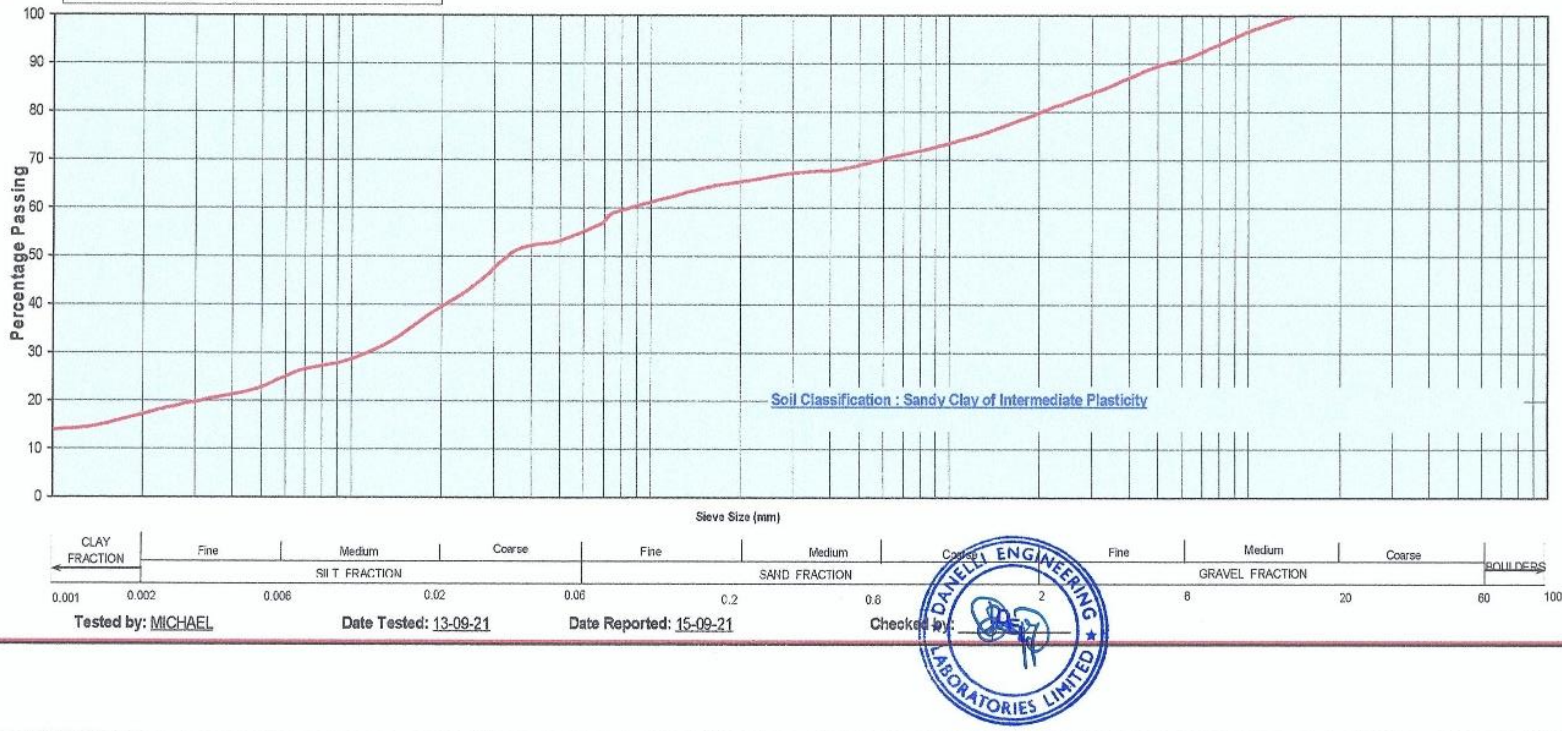
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 01(7.0-8.0M)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/4469



Tested by: MICHAEL Date Tested: 13-09-21 Date Reported: 15-09-21 Checked by:

DANELI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	15
0.0014	15.3
0.0024	17.1
0.0034	18.8
0.0048	20.6
0.0067	22.3
0.0094	24.1
0.0132	27.6
0.0180	32.9
0.0253	39.9
0.0354	43.4
0.0493	50.5
0.0695	52.2
0.0710	54.0
0.075	54.1
0.15	59.5
0.212	61.1
0.3	63.2
0.425	64.6
0.6	67.3
1.18	72.3
2.36	81.2
3.35	87.4
5	100.0

DANELI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE

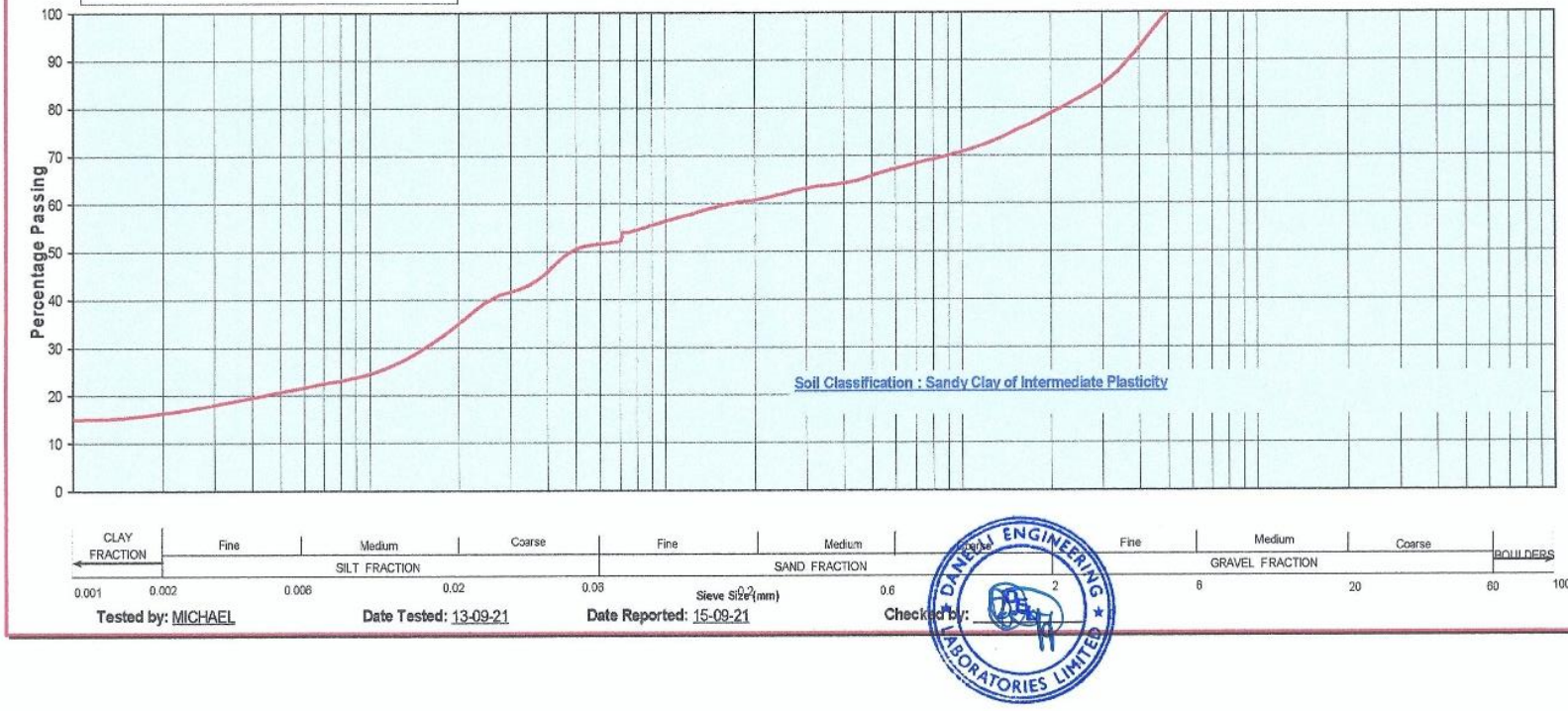
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 01(16.0-17.0M)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/4470



Tested by: MICHAEL Date Tested: 13-09-21 Date Reported: 15-09-21 Checked by:

DANELI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	24
0.0014	24.5
0.0024	26.1
0.0034	27.7
0.0048	29.3
0.0067	30.9
0.0094	32.5
0.0132	34.1
0.0180	35.7
0.0253	38.9
0.0354	43.8
0.0493	45.4
0.0695	47.0
0.0720	48.6
0.075	49.5
0.15	55.7
0.212	57.8
0.3	60.2
0.425	61.6
0.6	64.2
1.18	69.3
2.36	76.2
3.35	80.5
5	87.2
6.3	89.3
10	95.5
14	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE

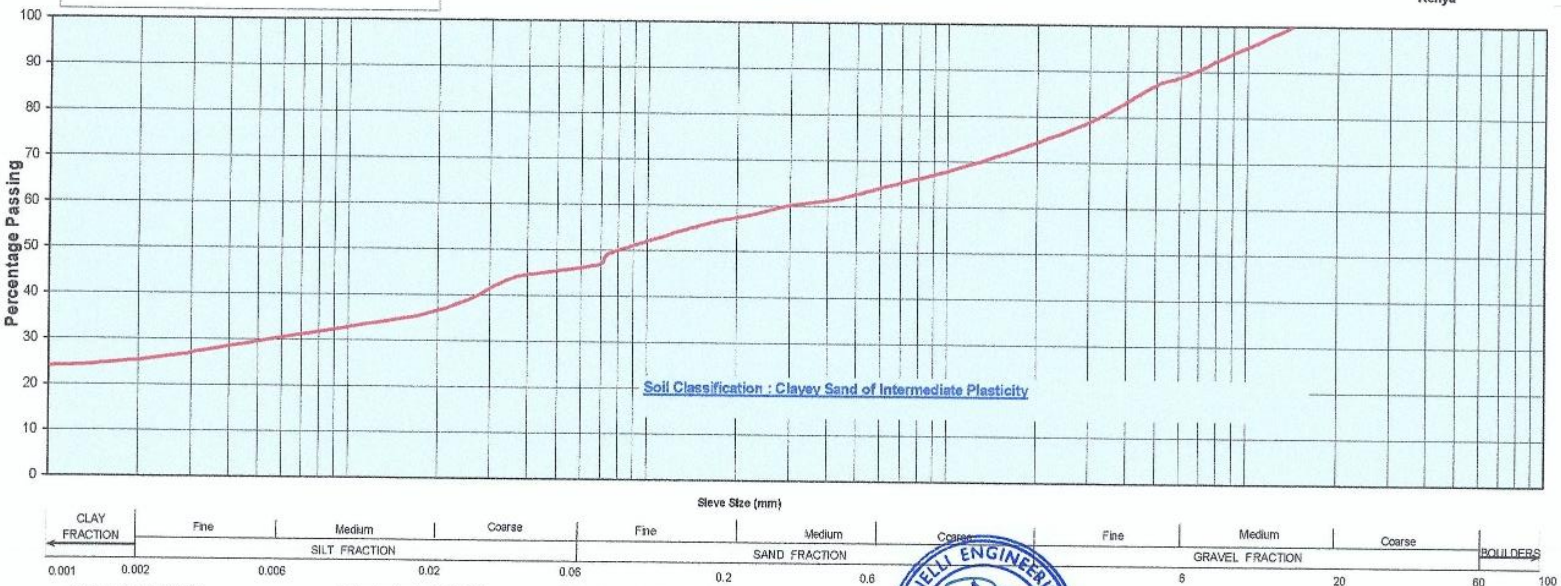
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 02(7.0-8.0M)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/4471



Tested by: MICHAEL **Date Tested:** 13-09-21 **Date Reported:** 15-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	26
0.0014	26.8
0.0024	29.2
0.0034	31.6
0.0048	34.0
0.0067	38.8
0.0094	41.2
0.0132	43.6
0.0180	48.4
0.0253	53.2
0.0354	58.0
0.0493	62.8
0.0695	71.3
0.0720	72.3
0.075	73.7
0.15	78.7
0.212	80.1
0.3	81.7
0.425	82.7
0.6	84.8
1.18	88.7
2.36	93.2
3.35	95.5
5	97.9
6.3	98.1
10	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE

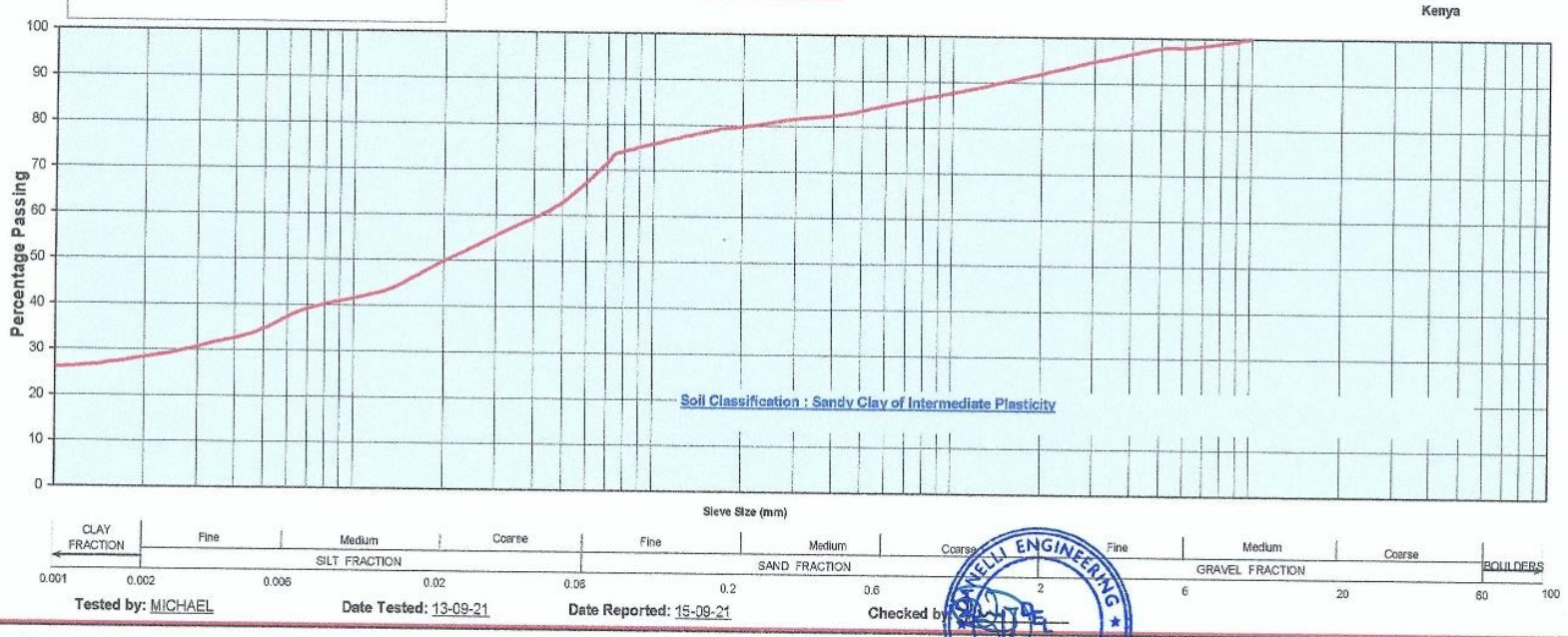
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

BH 02(17.0-18.0M)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/4473



Tested by: MICHAEL Date Tested: 13-09-21 Date Reported: 15-09-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	24.4
0.0014	24.4
0.0024	27.0
0.0034	29.6
0.0048	30.9
0.0067	29.6
0.0094	30.9
0.0132	32.2
0.0180	33.5
0.0253	34.8
0.0354	36.1
0.0493	37.4
0.0695	38.7
0.0720	40.0
0.075	40.1
0.15	42.5
0.212	43.9
0.3	46.5
0.425	48.3
0.6	52.9
1.18	64.1
2.36	81.0
3.35	89.6
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

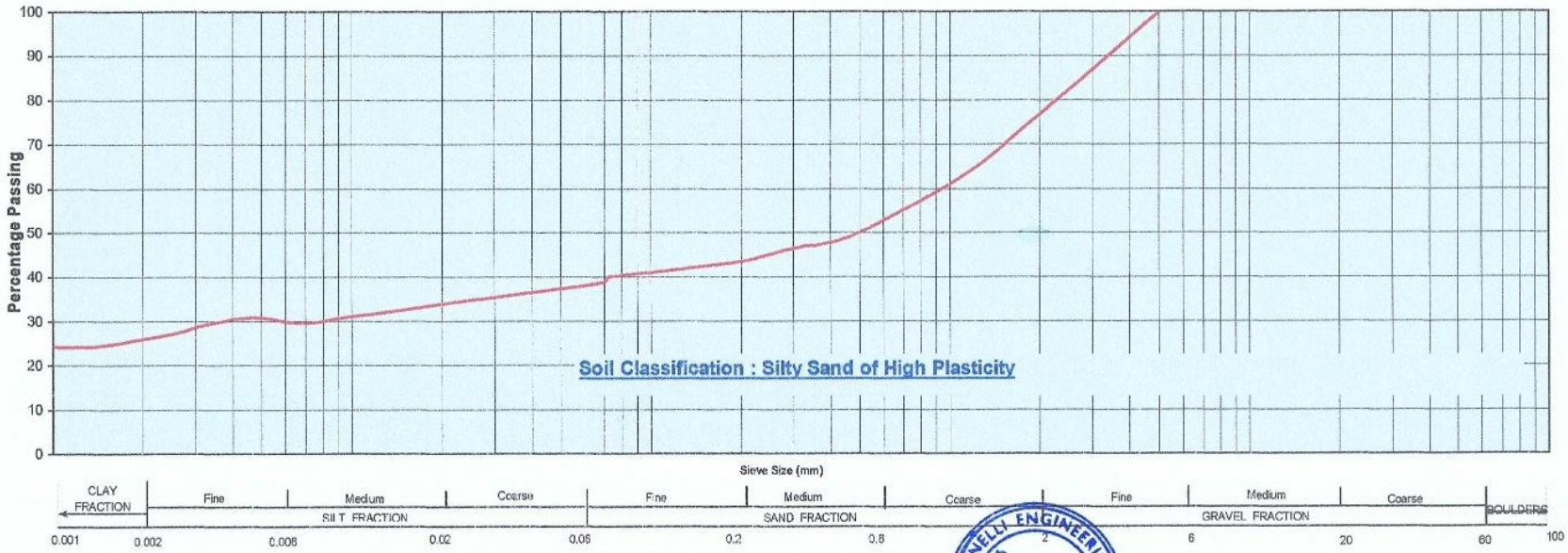
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM2+500 (Depth:0.0-0.3m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5709



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	32
0.0014	32.0
0.0024	34.4
0.0034	36.7
0.0048	39.0
0.0067	41.4
0.0094	43.7
0.0132	48.4
0.0180	53.0
0.0253	57.7
0.0354	62.4
0.0493	67.1
0.0695	69.4
0.0720	71.7
0.075	71.9
0.15	76.9
0.212	81.2
0.3	87.3
0.425	89.9
0.6	94.4
1.18	96.8
2.36	97.9
3.35	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

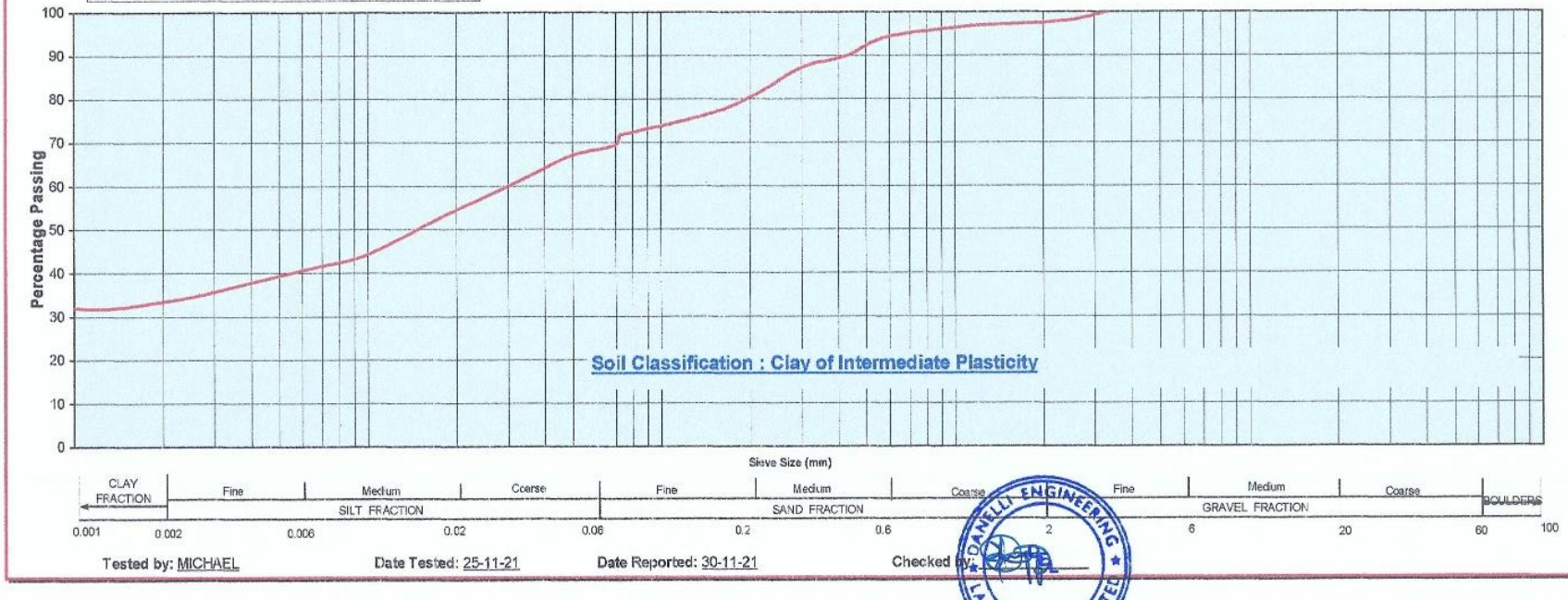
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM3+000 (Depth:0.8-1.4m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5710



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	30.4
0.0014	29.5
0.0024	32.2
0.0034	35.0
0.0048	37.8
0.0067	40.5
0.0094	43.3
0.0132	51.5
0.0180	57.0
0.0253	62.6
0.0354	70.8
0.0493	79.1
0.0695	83.9
0.0720	84.6
0.075	84.8
0.15	87.4
0.212	88.3
0.3	89.1
0.425	89.6
0.6	90.5
1.18	91.7
2.36	94.3
3.35	96.7
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS-NGUU TATU/5711

REGIONAL GEOPHYSICAL SURVEY

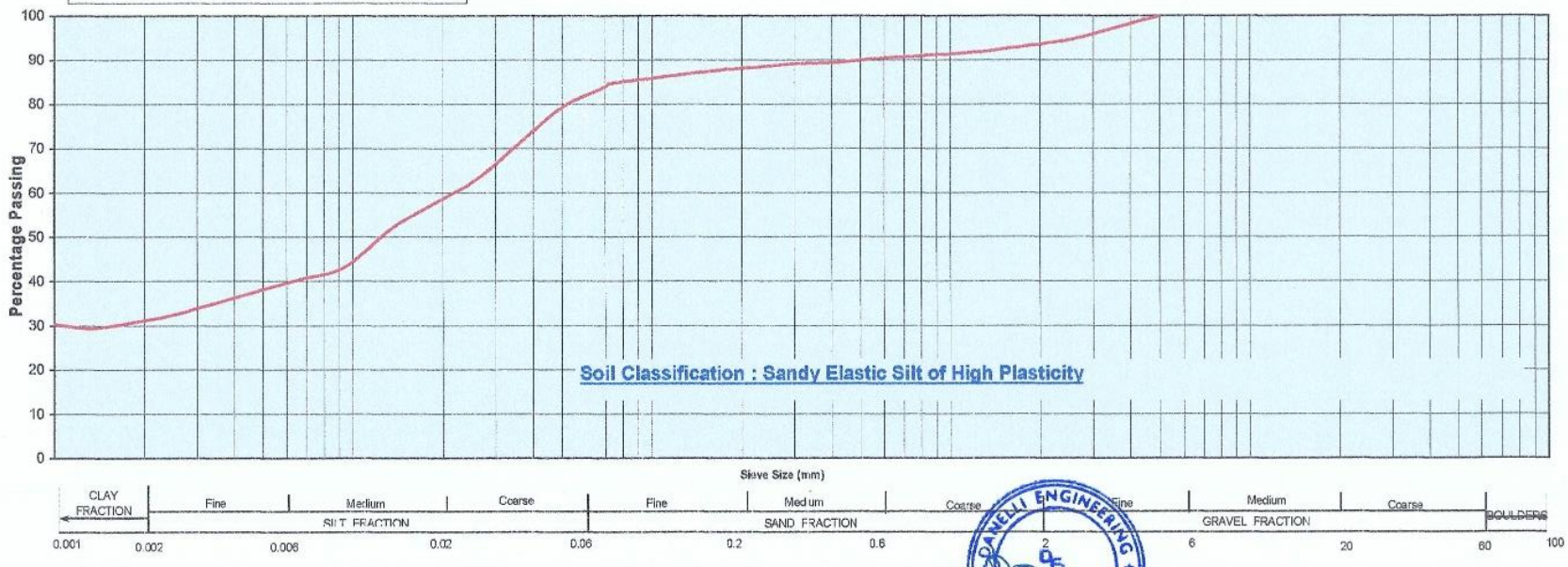
NGUU TATU SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM4+000 (Depth:0.0-1.3m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	38
0.0014	38.1
0.0024	41.1
0.0034	44.1
0.0048	47.1
0.0067	50.2
0.0094	56.2
0.0132	62.2
0.0180	71.2
0.0253	77.2
0.0354	80.2
0.0493	86.2
0.0695	91.1
0.0720	92.2
0.075	92.4
0.15	95.3
0.212	96.1
0.3	97.0
0.425	97.3
0.6	97.9
1.18	98.8
2.36	99.7
3.35	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM4+000 (Depth:1.3-1.5m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5712

Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	29.2
0.0014	29.2
0.0024	34.6
0.0034	40.1
0.0048	42.8
0.0067	45.5
0.0094	51.0
0.0132	56.4
0.0180	64.6
0.0253	70.1
0.0354	75.5
0.0493	78.3
0.0695	82.4
0.0720	83.7
0.075	83.9
0.15	85.3
0.212	85.9
0.3	86.8
0.425	87.4
0.6	88.6
1.18	91.2
2.36	96.1
3.35	98.5
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

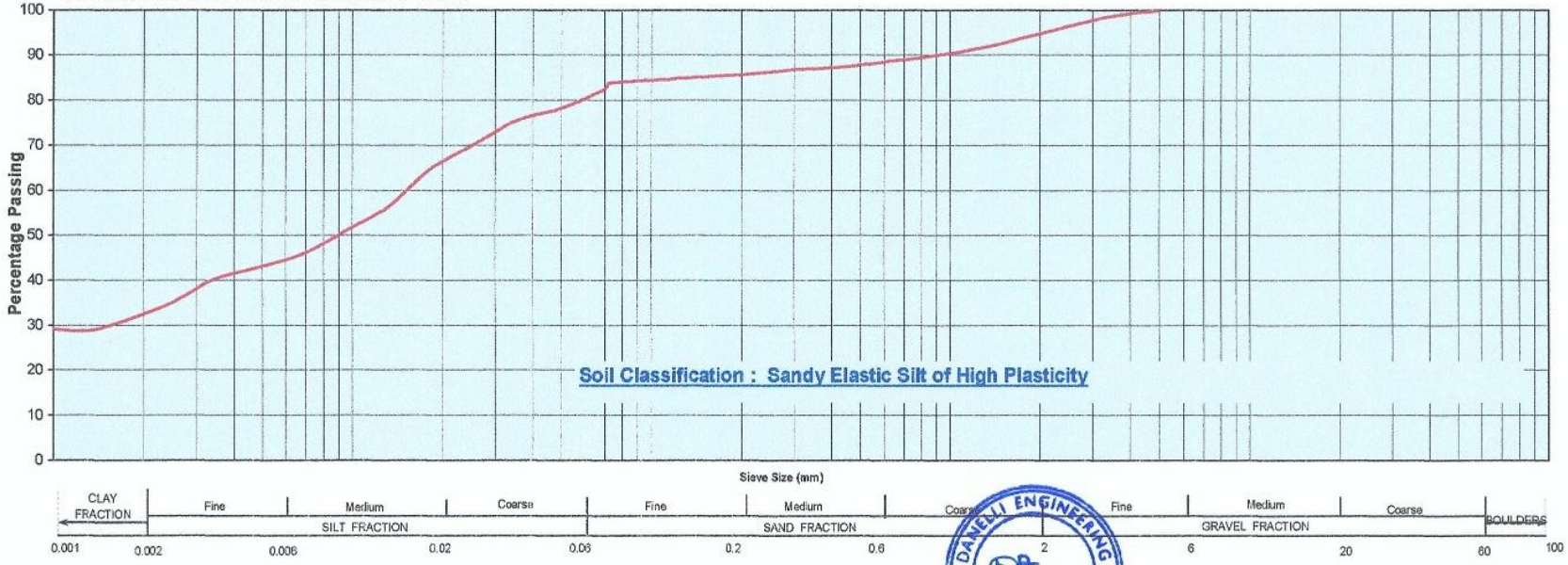
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM4+500 (Depth:0.0-0.9m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5713



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	17.9
0.0014	17.9
0.0024	19.1
0.0034	21.3
0.0048	22.5
0.0067	23.6
0.0094	25.9
0.0132	28.2
0.0180	29.3
0.0253	30.5
0.0354	31.6
0.0493	32.7
0.0695	33.9
0.0720	35.0
0.075	35.1
0.15	36.9
0.212	37.8
0.3	39.5
0.425	40.9
0.6	44.9
1.18	55.7
2.36	75.6
3.35	87.7
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM6+500 (Depth:0.0-0.8m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5714

Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	15
0.0014	15.9
0.0024	17.5
0.0034	19.1
0.0048	23.8
0.0067	25.3
0.0094	28.5
0.0132	33.1
0.0180	39.4
0.0253	41.0
0.0354	42.5
0.0493	44.1
0.0695	46.7
0.0720	47.2
0.075	48.1
0.15	49.4
0.212	50
0.3	51.1
0.425	51.7
0.6	53.3
1.18	58.2
2.36	69.3
3.35	78.0
5	87.1
6.3	88.7
10	93.6
14	97.7
20	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

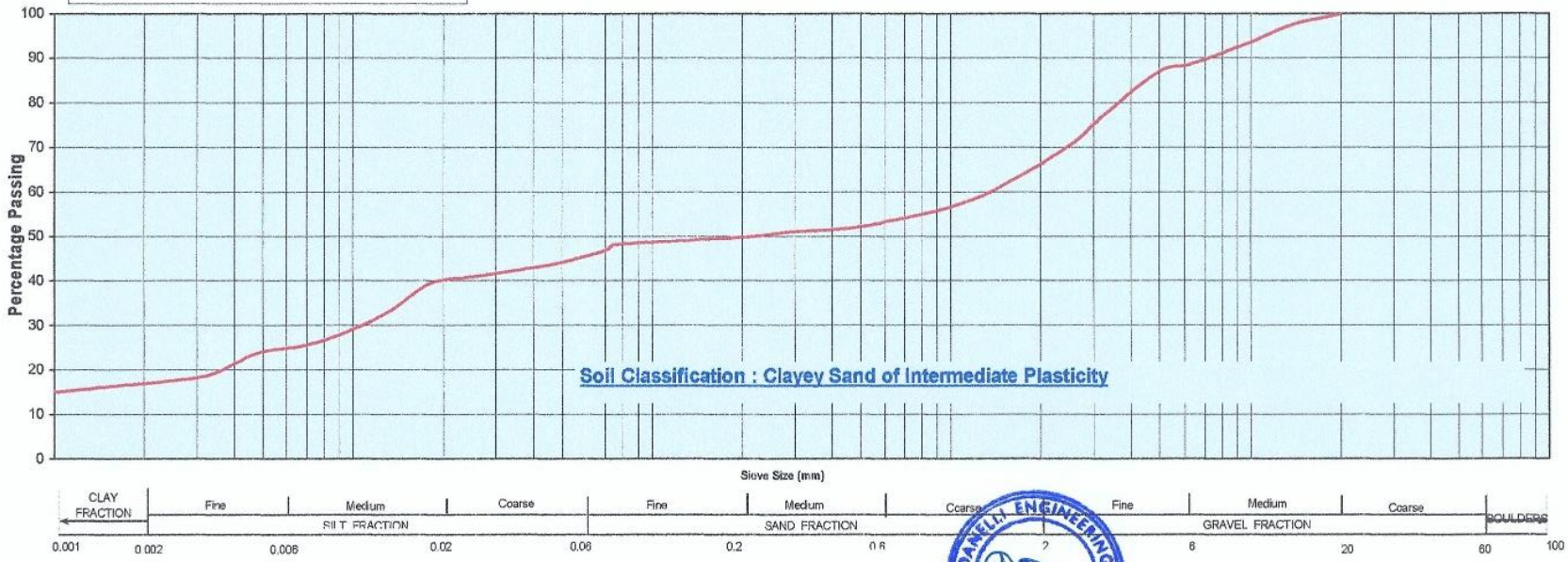
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM7+500 (Depth:0.50-1.30m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 84932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5715



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	7.7
0.0014	7.7
0.0024	10.1
0.0034	12.5
0.0048	14.9
0.0067	19.7
0.0094	24.5
0.0132	31.7
0.0180	38.9
0.0253	43.7
0.0354	50.9
0.0493	62.2
0.0695	71.8
0.0720	72.5
0.075	73.9
0.15	81
0.212	83
0.3	85.5
0.425	87.0
0.6	90.4
1.18	94.1
2.36	96.4
3.35	97.5
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

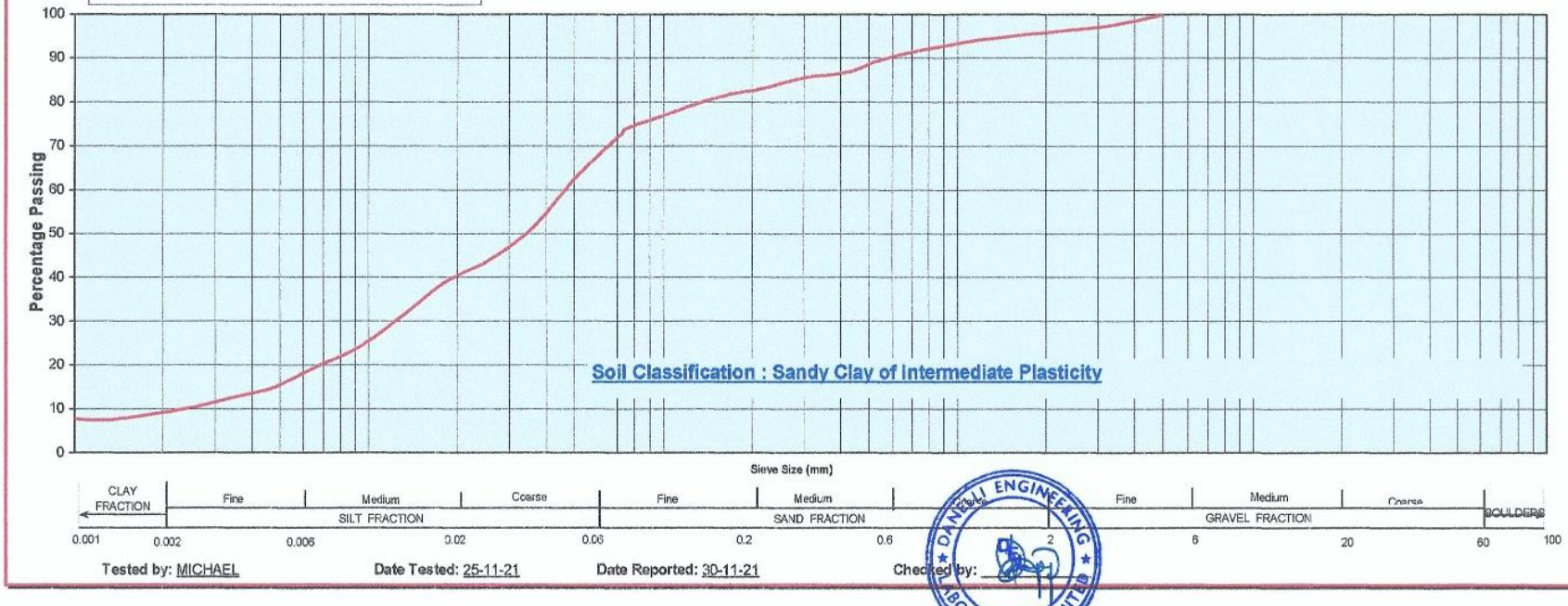
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM8+000 (Depth:0.3-0.8m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5716



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by: _____

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	12
0.0014	12.5
0.0024	14.6
0.0034	16.6
0.0048	20.6
0.0067	24.7
0.0094	28.7
0.0132	32.7
0.0180	36.8
0.0253	42.9
0.0354	48.9
0.0493	53.0
0.0695	59.4
0.0720	61.0
0.075	62.2
0.15	81.9
0.212	93.3
0.3	96.7
0.425	97.2
0.6	99.0
1.18	99.7
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

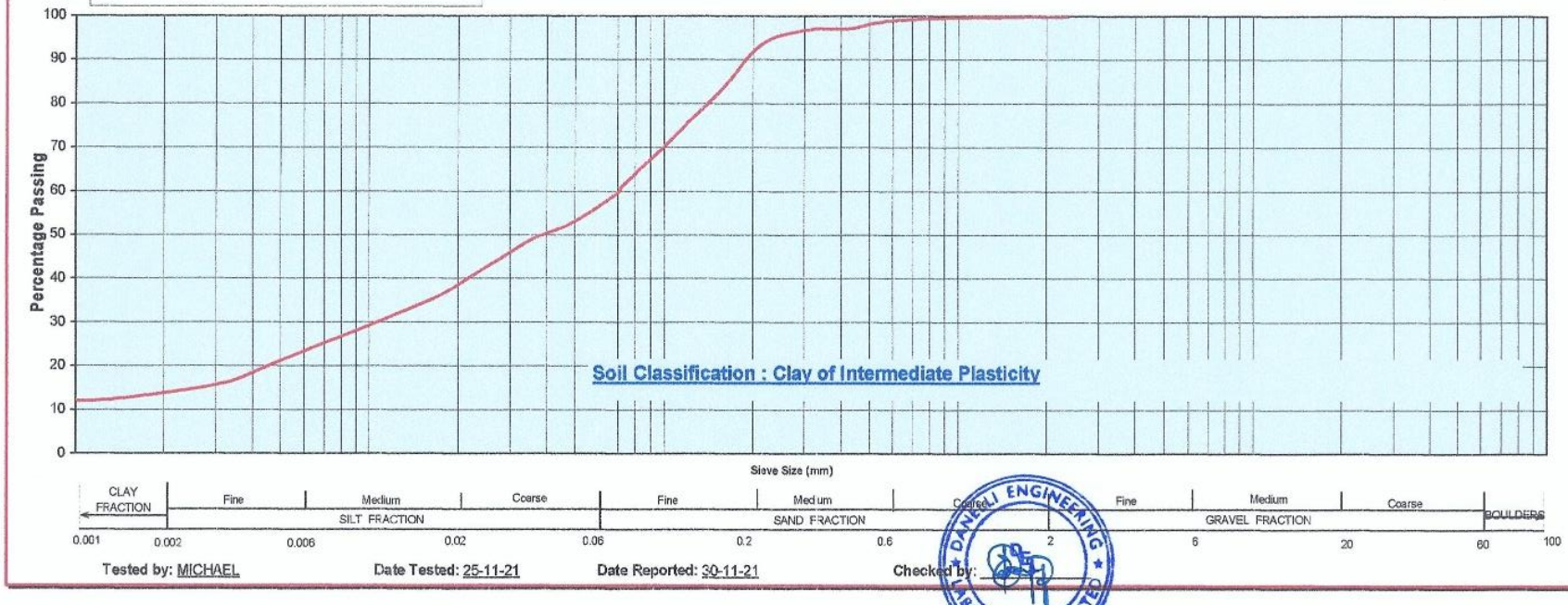
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM8+500 (Depth:0.7-1.7m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5717



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	14
0.0014	14.9
0.0024	17.0
0.0034	19.0
0.0048	21.1
0.0067	27.3
0.0094	29.4
0.0132	33.5
0.0180	37.7
0.0253	43.9
0.0354	50.1
0.0493	54.2
0.0695	61.4
0.0720	62.5
0.075	63.7
0.15	81.7
0.212	88.6
0.3	95.7
0.425	97.1
0.6	98.3
1.18	99.1
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

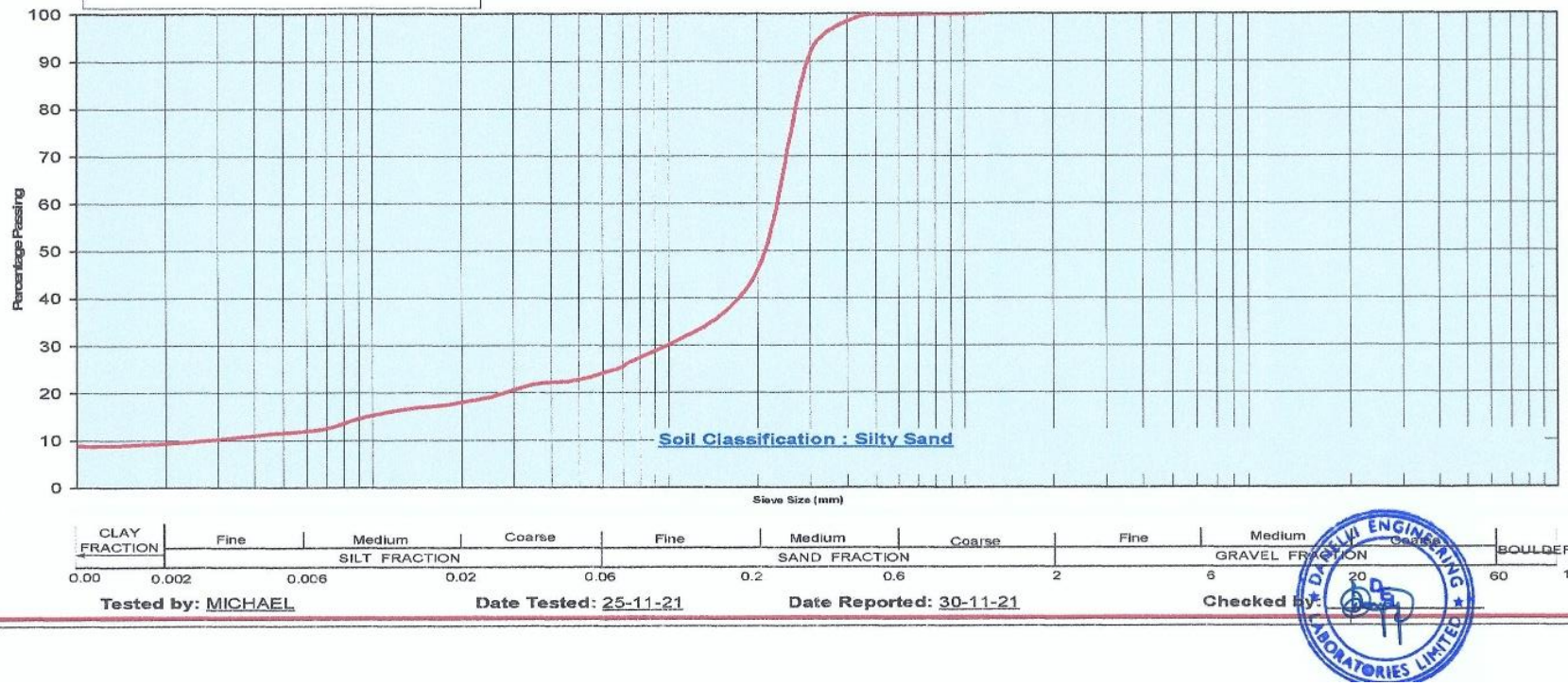
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM14+500 (Depth:0.4-1.4m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5718



Tested by: MICHAEL **Date Tested:** 25-11-21 **Date Reported:** 30-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	28.2
0.0014	28.2
0.0024	30.5
0.0034	32.9
0.0048	37.5
0.0067	42.1
0.0094	46.7
0.0132	51.4
0.0180	56.0
0.0253	59.4
0.0354	62.9
0.0493	66.0
0.0695	70.0
0.0720	69.9
0.075	71.2
0.15	74
0.212	75.5
0.3	77.1
0.425	77.8
0.6	79.6
1.18	83.2
2.36	89.9
3.35	93.7
5	100.0

DANELI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM10+000 (Depth:0.3-1.3m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5719

Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	13.8
0.0014	13.8
0.0024	16.0
0.0034	18.2
0.0048	24.9
0.0067	27.1
0.0094	31.6
0.0132	36.0
0.0180	42.7
0.0253	49.4
0.0354	56.0
0.0493	62.7
0.0695	66.0
0.0720	67.1
0.075	68.4
0.15	78.4
0.212	85.6
0.3	91.7
0.425	93.5
0.6	95.5
1.18	97.2
2.36	98.7
3.35	99.4
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

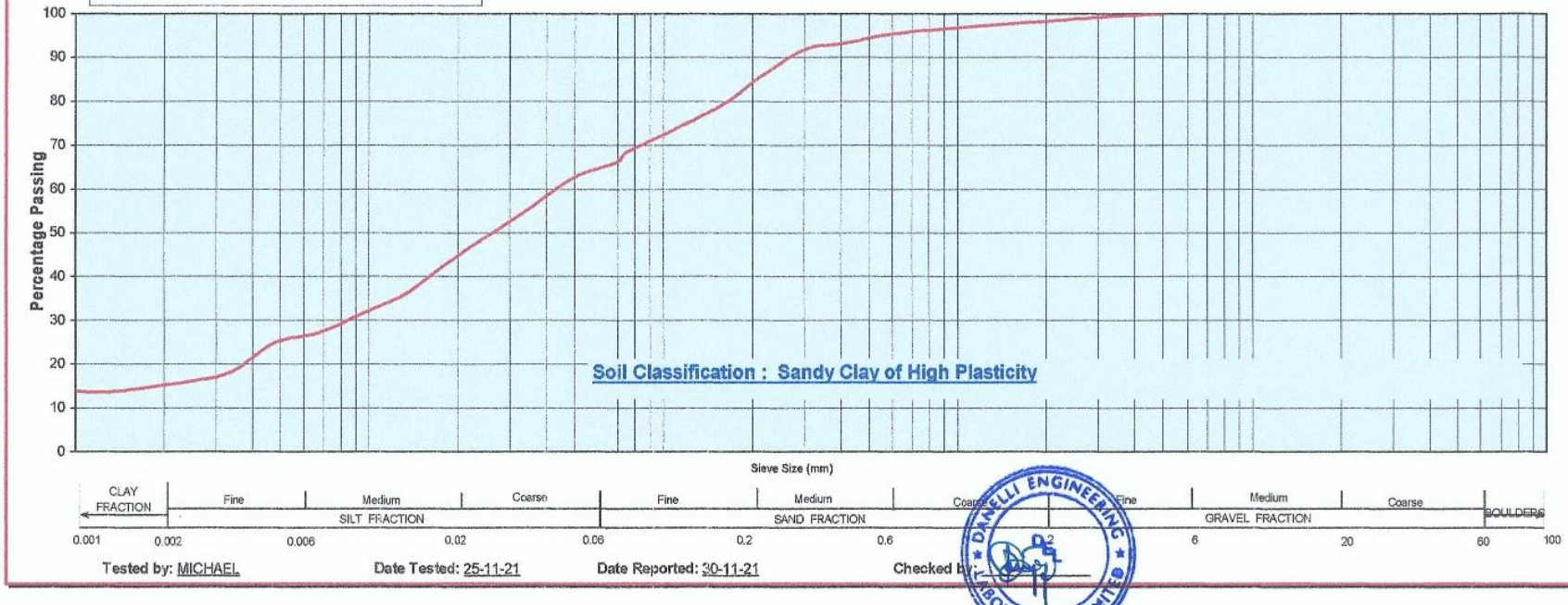
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM10+500 (Depth:0.25-1.30m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5720



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	21.7
0.0014	21.7
0.0024	24.7
0.0034	30.7
0.0048	36.7
0.0067	42.7
0.0094	51.8
0.0132	60.8
0.0180	66.8
0.0253	72.8
0.0354	78.8
0.0493	84.9
0.0695	91.6
0.0720	90.9
0.075	92.8
0.15	94.1
0.212	94.8
0.3	95.7
0.425	96.0
0.6	96.9
1.18	98.2
2.36	99.7
3.35	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM11+000 (Depth:0.0-0.5m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5721

Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	36.6
0.0014	36.6
0.0024	39.6
0.0034	42.6
0.0048	45.6
0.0067	48.6
0.0094	60.6
0.0132	66.6
0.0180	72.6
0.0253	75.6
0.0354	78.6
0.0493	84.6
0.0695	90.0
0.0720	90.6
0.075	91.6
0.15	92.3
0.212	92.8
0.3	93.7
0.425	94.3
0.6	95.1
1.18	96.3
2.36	97.7
3.35	98.4
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM11+500 (Depth:0.0-0.6m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5722

Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	17
0.0014	17.5
0.0024	19.4
0.0034	23.2
0.0048	25.1
0.0067	27.0
0.0094	30.8
0.0132	34.6
0.0180	38.4
0.0253	42.2
0.0354	46.0
0.0493	49.8
0.0695	56.2
0.0720	57.4
0.075	58.5
0.15	74.3
0.212	87.9
0.3	93.5
0.425	95.2
0.6	96.9
1.18	98.1
2.36	98.8
3.35	99.1
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM12+500 (Depth:0.2-1.0m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5723

Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	21.9
0.0014	21.9
0.0024	23.9
0.0034	27.8
0.0048	29.7
0.0067	31.7
0.0094	35.6
0.0132	39.5
0.0180	43.4
0.0253	47.3
0.0354	51.3
0.0493	55.2
0.0695	58.5
0.0720	59.1
0.075	60.2
0.15	69.1
0.212	78.6
0.3	93.7
0.425	96.2
0.6	98.4
1.18	99.3
2.36	99.6
3.35	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

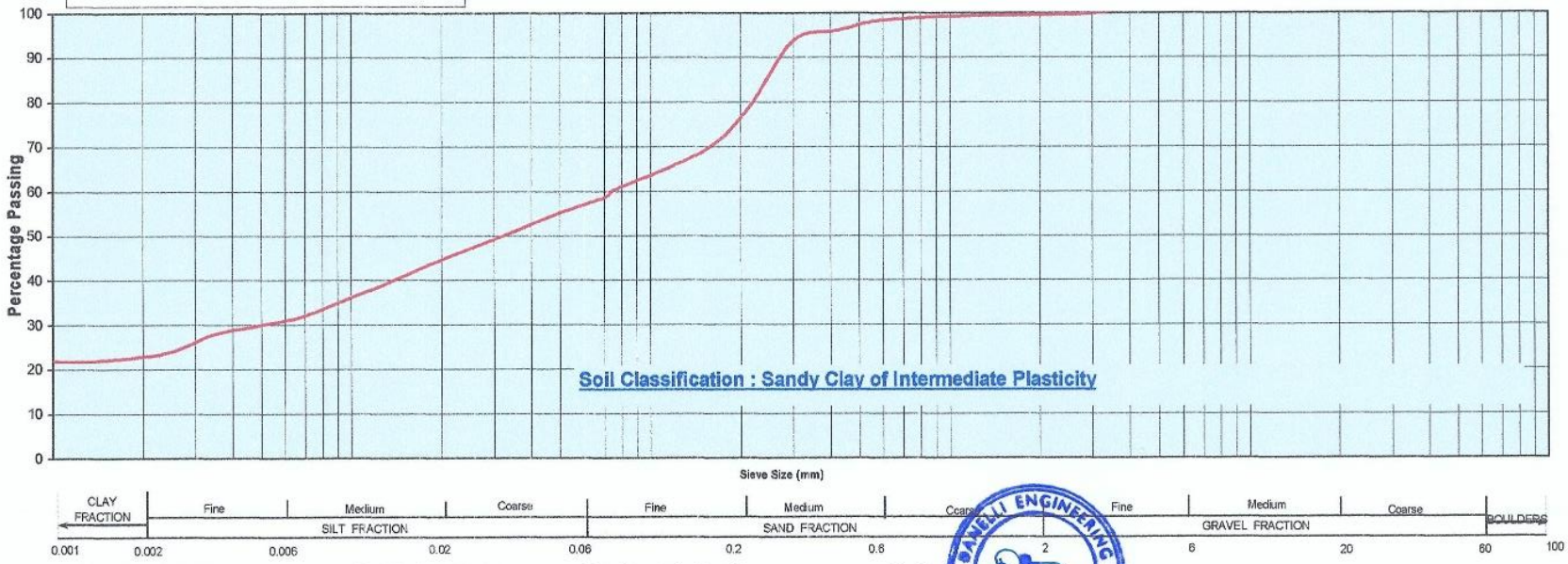
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM13+000 (Depth:0.3-1.5m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5724



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	11
0.0014	11.1
0.0024	13.2
0.0034	14.3
0.0048	15.4
0.0067	17.6
0.0094	18.7
0.0132	19.8
0.0180	21.9
0.0253	24.1
0.0354	26.3
0.0493	28.4
0.0695	31.7
0.0720	32.8
0.075	33.4
0.15	47.6
0.212	70.6
0.3	95.5
0.425	97.9
0.6	99.7
1.18	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

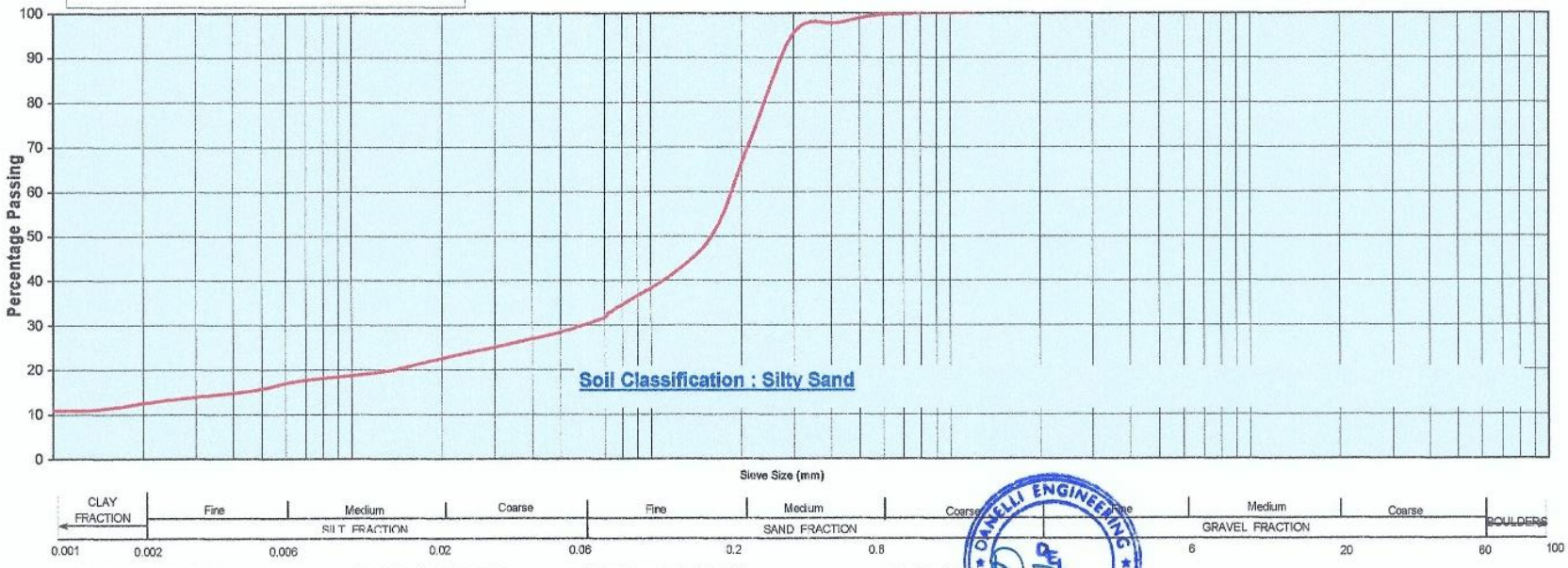
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM13+500 (Depth:0.0-2.1m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5725



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	16.9
0.0014	16.9
0.0024	18.1
0.0034	19.4
0.0048	20.7
0.0067	22.0
0.0094	23.2
0.0132	25.8
0.0180	27.1
0.0253	29.6
0.0354	32.2
0.0493	33.5
0.0695	37.5
0.0720	38.6
0.075	39.3
0.15	68.2
0.212	87.1
0.3	95.6
0.425	98.4
0.6	99.3
1.18	99.8
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM14+000 (Depth:0.3-0.9m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5726

Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	8.9
0.0014	8.9
0.0024	9.7
0.0034	10.6
0.0048	11.5
0.0067	12.3
0.0094	14.9
0.0132	16.7
0.0180	17.5
0.0253	19.3
0.0354	21.9
0.0493	22.7
0.0695	25.4
0.0720	26.2
0.075	26.7
0.15	36.4
0.212	50
0.3	91.6
0.425	99.1
0.6	99.8
1.18	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

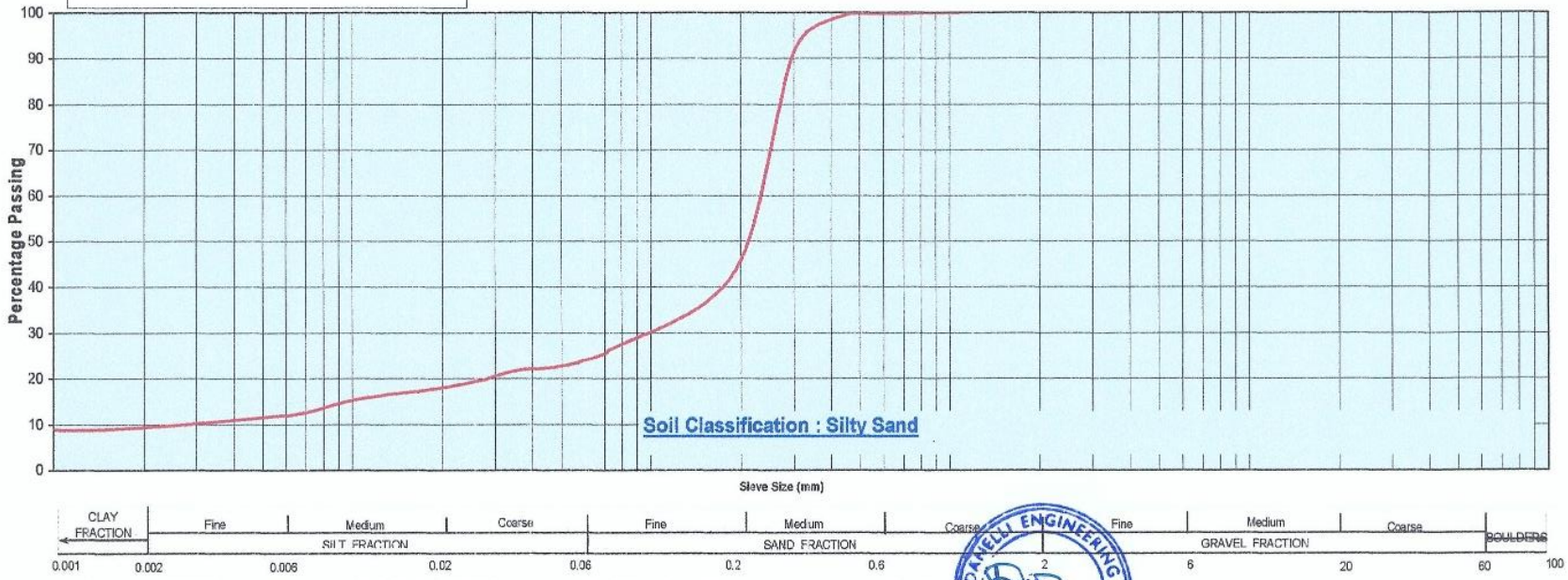
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM14+500 (Depth:0.4-1.4m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5727



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	11.9
0.0014	11.9
0.0024	13.1
0.0034	14.2
0.0048	15.4
0.0067	16.6
0.0094	20.1
0.0132	21.2
0.0180	23.6
0.0253	25.9
0.0354	29.4
0.0493	30.6
0.0695	34.9
0.0720	35.2
0.075	35.9
0.15	43.9
0.212	60.8
0.3	92.8
0.425	99.2
0.6	99.6
1.18	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

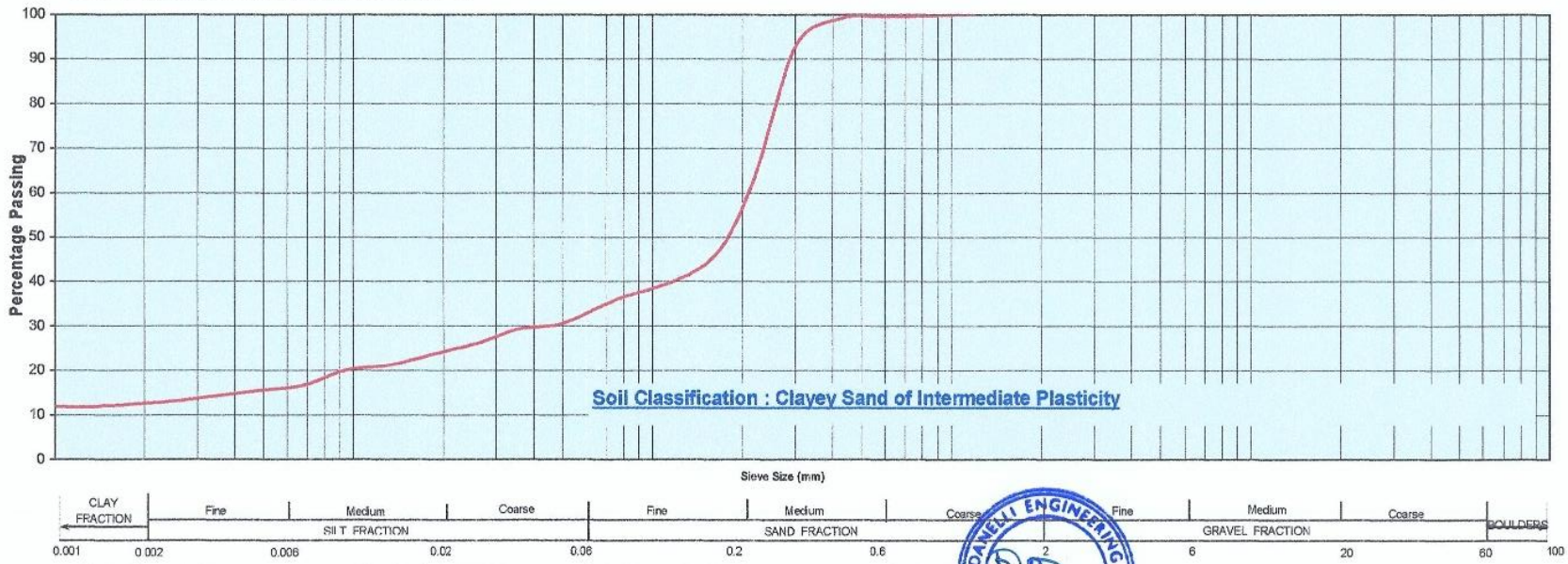
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM15+000 (Depth:0.5-1.0m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5728



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	30.9
0.0014	30.9
0.0024	33.8
0.0034	36.7
0.0048	39.6
0.0067	42.5
0.0094	51.1
0.0132	54.0
0.0180	59.8
0.0253	68.5
0.0354	74.3
0.0493	77.1
0.0695	87.6
0.0720	88.7
0.075	88.9
0.15	93.7
0.212	96.2
0.3	98.7
0.425	99.0
0.6	99.3
1.18	99.5
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM15+500 (Depth:0.25-0.6m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5729

Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	36.7
0.0014	36.7
0.0024	39.9
0.0034	43.0
0.0048	46.2
0.0067	55.6
0.0094	61.8
0.0132	68.1
0.0180	74.4
0.0253	77.5
0.0354	87.0
0.0493	90.1
0.0695	96.3
0.0720	96.4
0.075	96.6
0.15	97.2
0.212	97.5
0.3	97.9
0.425	98.2
0.6	98.6
1.18	99.1
2.36	99.7
3.35	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

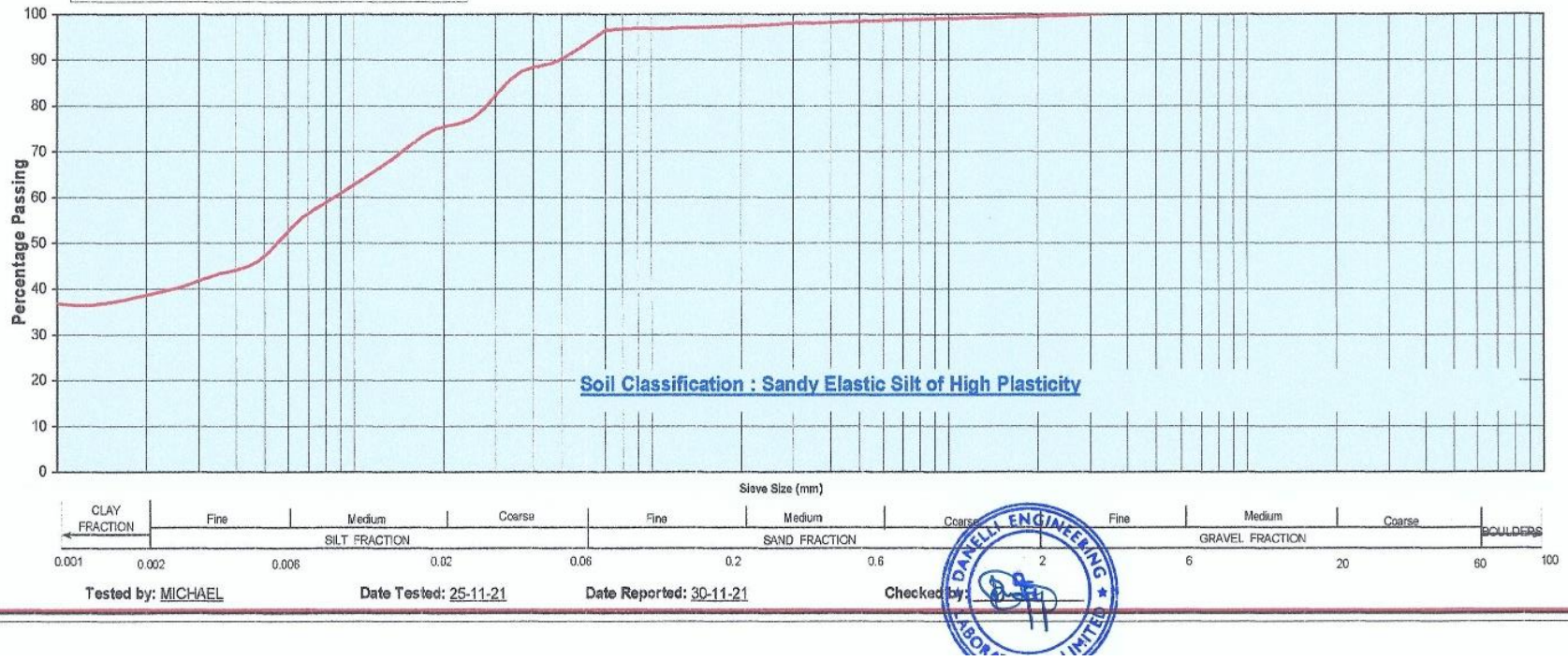
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM16+000 (Depth:0.0-0.75m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5730



Tested by: MICHAEL **Date Tested:** 25-11-21 **Date Reported:** 30-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	46
0.0014	46.5
0.0024	49.2
0.0034	54.4
0.0048	57.1
0.0067	59.7
0.0094	62.3
0.0132	64.9
0.0180	67.6
0.0253	70.2
0.0354	72.8
0.0493	75.5
0.0695	79.5
0.0720	80.7
0.075	80.9
0.15	84.4
0.212	86.8
0.3	89.4
0.425	90.7
0.6	94.3
1.18	97.1
2.36	99.3
3.35	99.7
5	100.0

DANELI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

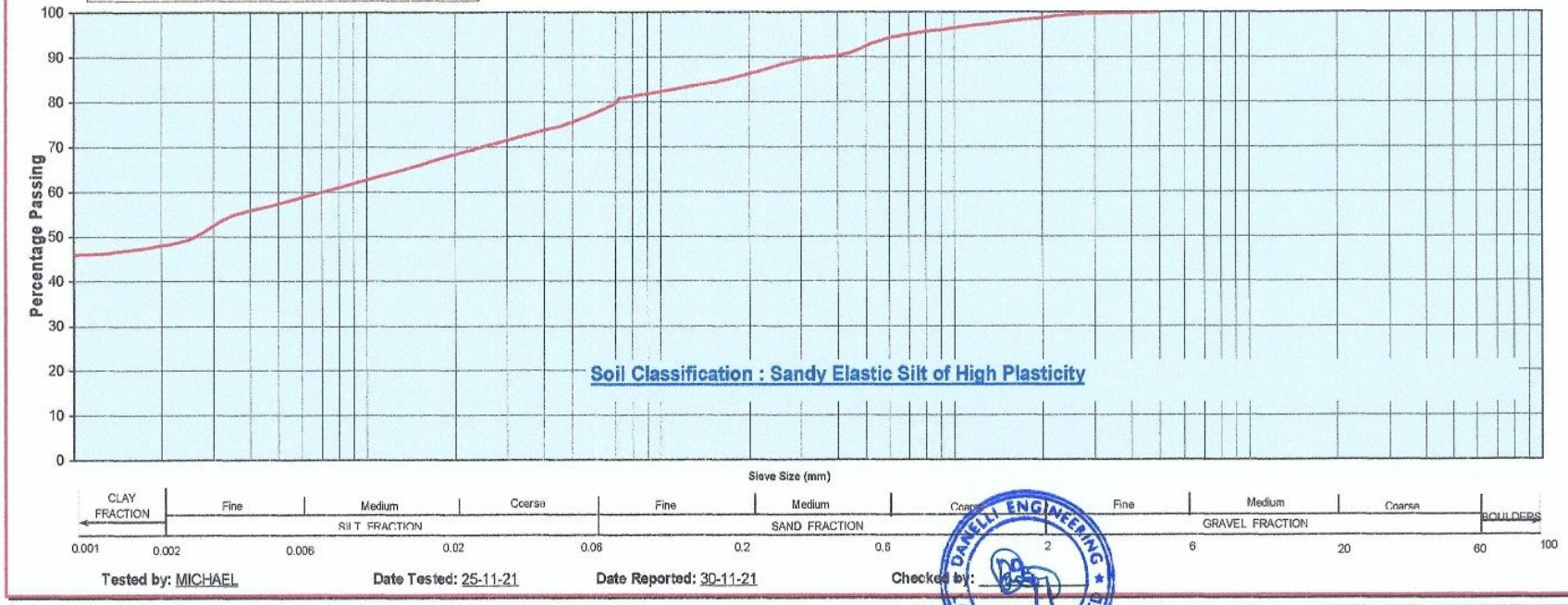
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM16+500 (Depth:0.5-1.4m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5731



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	22.7
0.0014	22.7
0.0024	23.9
0.0034	25.1
0.0048	26.3
0.0067	27.5
0.0094	28.7
0.0132	29.9
0.0180	31.2
0.0253	32.4
0.0354	33.6
0.0493	34.8
0.0695	36.0
0.0720	37.2
0.075	37.3
0.15	39.7
0.212	41.1
0.3	43.7
0.425	45.9
0.6	51.2
1.18	65.8
2.36	85.7
3.35	94.6
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

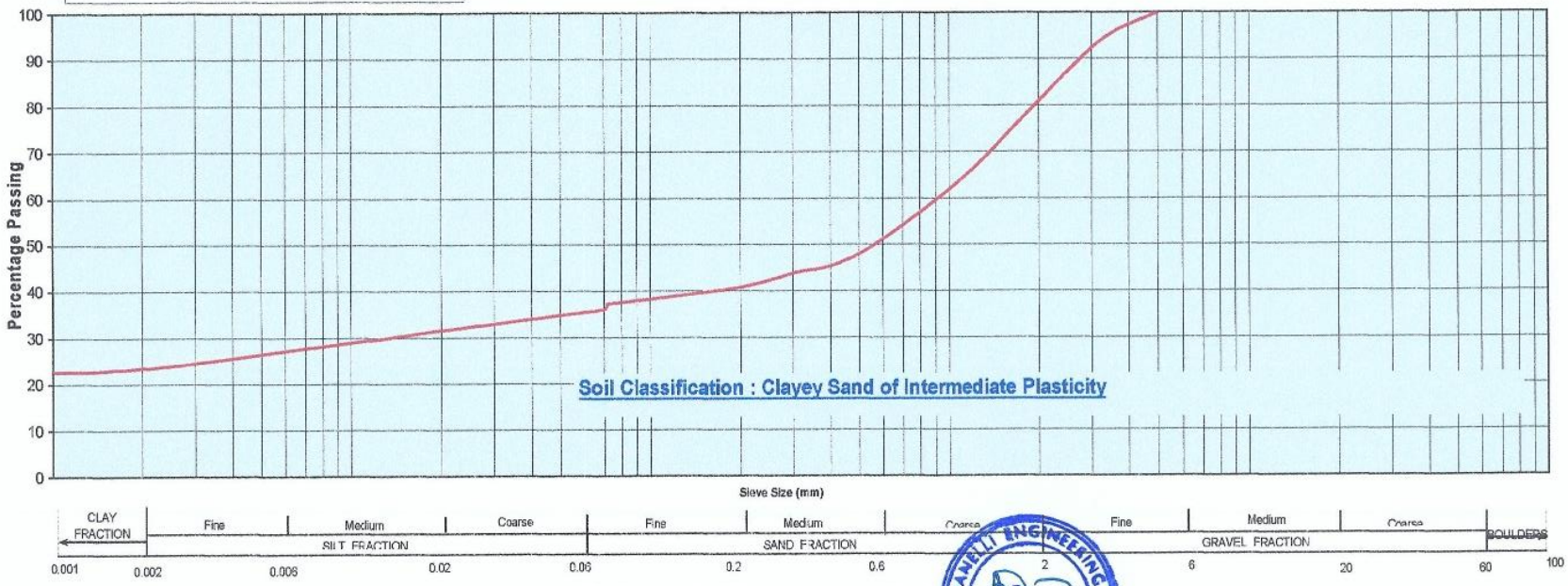
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM17+000 (Depth:0.0-1.5m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5732



Tested by: MICHAEL **Date Tested:** 25-11-21 **Date Reported:** 30-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	33
0.0014	33.0
0.0024	35.0
0.0034	37.0
0.0048	40.9
0.0067	44.9
0.0094	46.8
0.0132	48.8
0.0180	50.8
0.0253	52.8
0.0354	54.7
0.0493	56.7
0.0695	60.2
0.0720	60.7
0.075	60.8
0.15	62.8
0.212	64.3
0.3	67.6
0.425	70.6
0.6	76.2
1.18	86.8
2.36	97.4
3.35	99.1
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM17+500 (Depth:0.0-1.3m)

Head Office & Laboratories
Mombasa Road
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Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5733

Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	31.4
0.0014	32.3
0.0024	35.4
0.0034	37.4
0.0048	40.6
0.0067	43.8
0.0094	47.4
0.0132	49.4
0.0180	51.5
0.0253	54.2
0.0354	56.5
0.0493	58.5
0.0695	60.8
0.0720	61.5
0.075	61.6
0.15	63
0.212	64.1
0.3	66.3
0.425	68.0
0.6	71.9
1.18	81.9
2.36	94.4
3.35	98.8
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

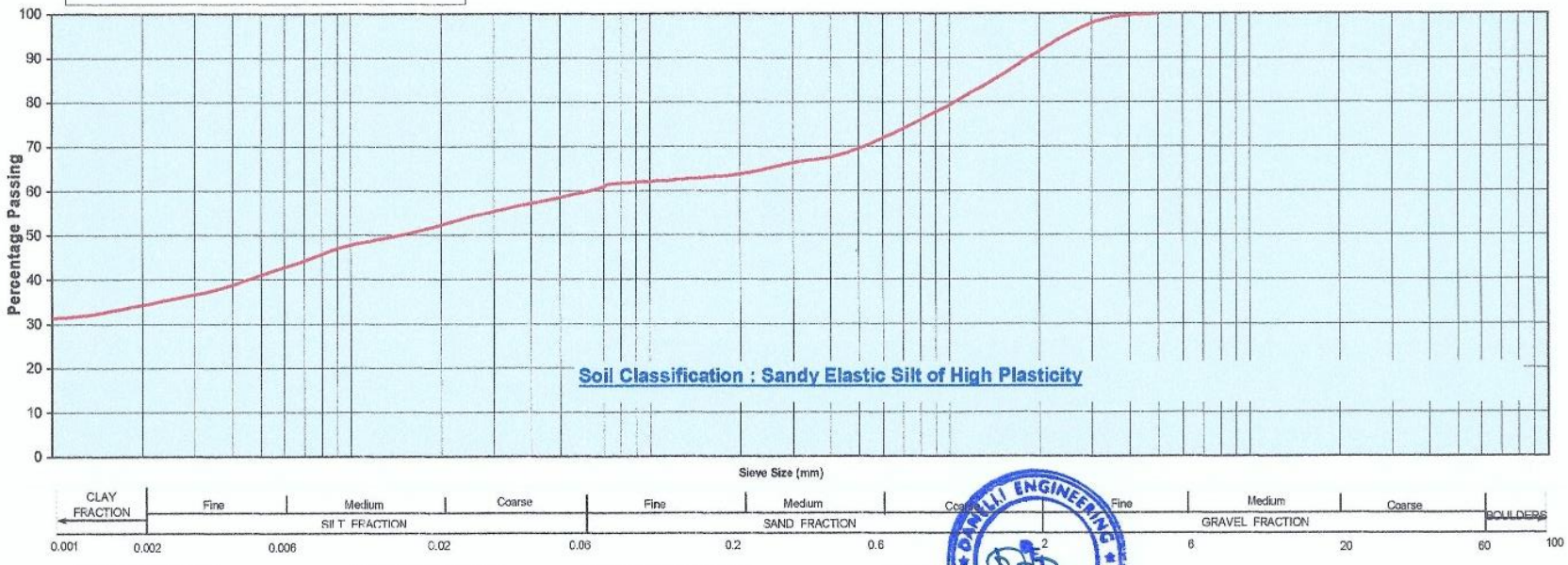
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM18+000 (Depth:0.4-1.2m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5734



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	56.2
0.0014	56.2
0.0024	59.2
0.0034	62.2
0.0048	65.2
0.0067	68.2
0.0094	71.2
0.0132	74.2
0.0180	77.2
0.0253	80.2
0.0354	83.2
0.0493	86.2
0.0695	91.4
0.0720	92.2
0.075	92.4
0.15	93.4
0.212	94
0.3	94.9
0.425	95.4
0.6	96.3
1.18	97.6
2.36	99.0
3.35	99.6
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM18+500 (Depth:0.0-0.8m)

Head Office & Laboratories
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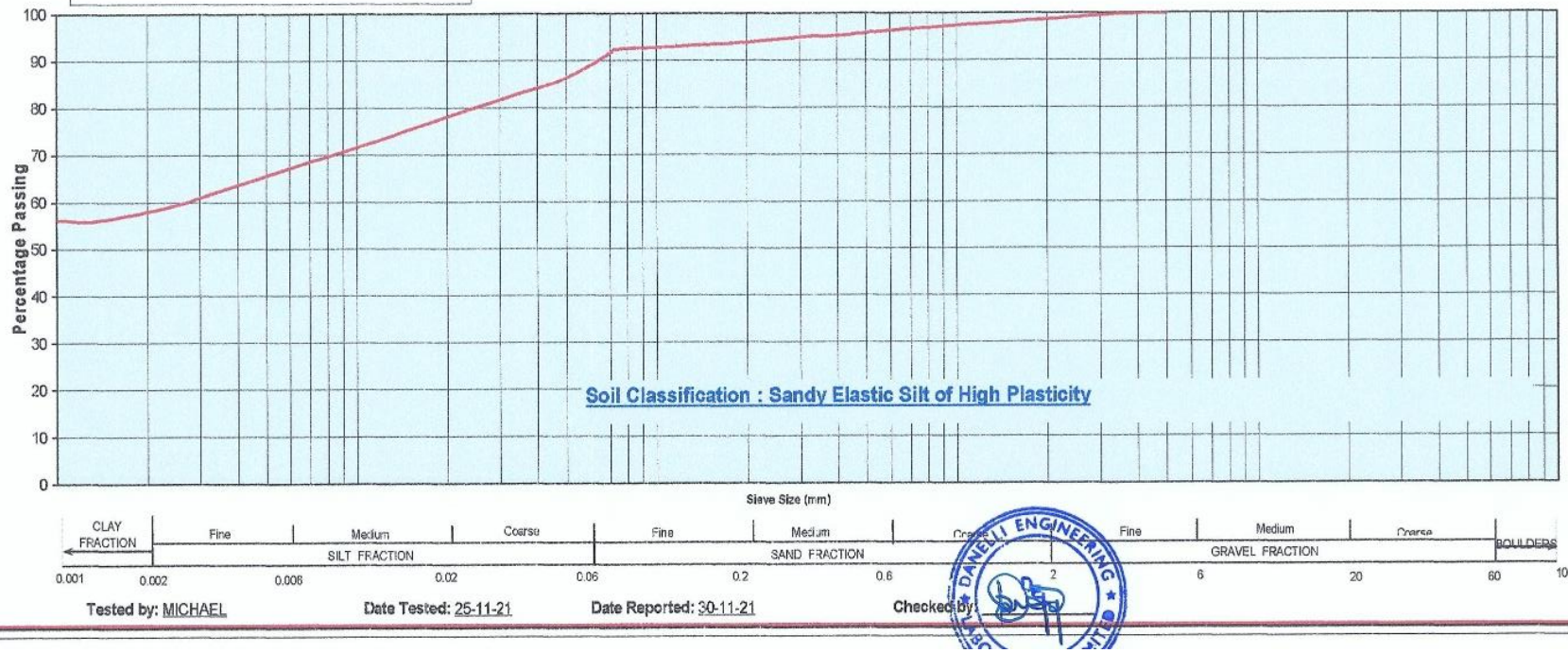
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5735



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING

Aperture/ Diameter	% Passing
0.001	26.9
0.0014	26.9
0.0024	28.3
0.0034	29.7
0.0048	31.2
0.0067	32.6
0.0094	34.0
0.0132	35.5
0.0180	36.9
0.0253	38.4
0.0354	39.8
0.0493	41.2
0.0695	42.7
0.0720	44.1
0.075	44.4
0.15	46.7
0.212	48.1
0.3	50.4
0.425	52.2
0.6	57.7
1.18	70.7
2.36	85.3
3.35	92.1
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM19+000 (Depth:0.0-1.1m)

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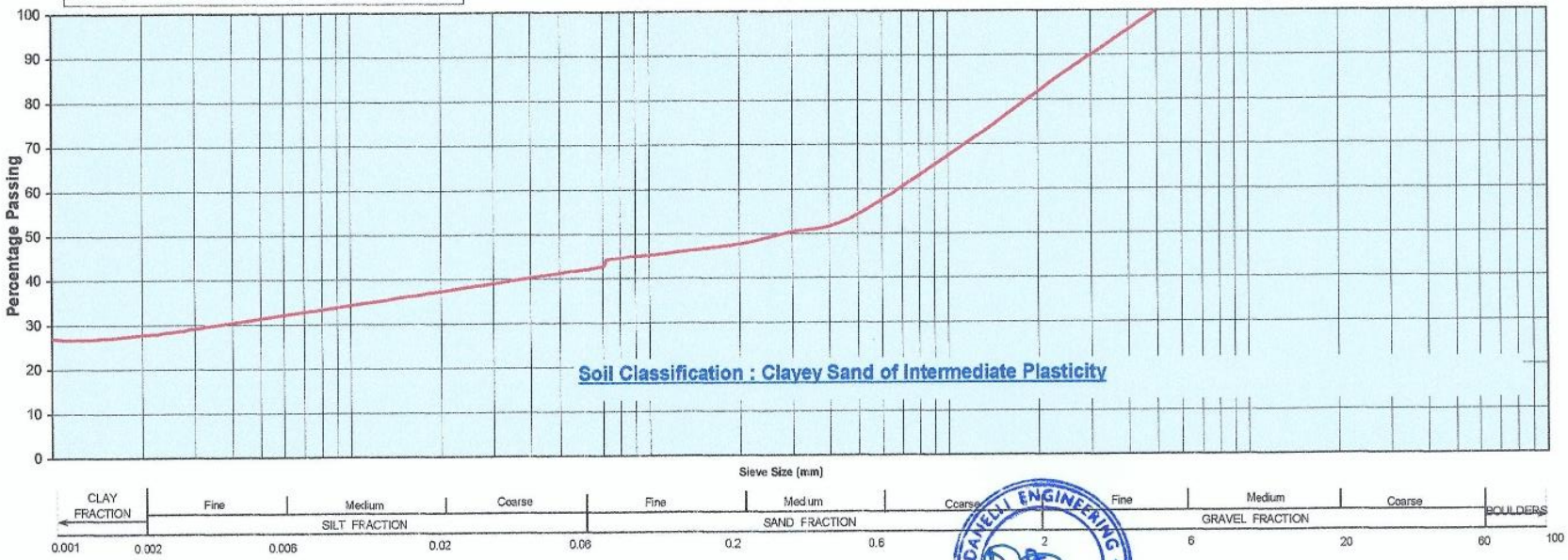
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5736



Tested by: MICHAEL

Date Tested: 25-11-21

Date Reported: 30-11-21

Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	44
0.0014	44.5
0.0024	47.5
0.0034	50.5
0.0048	56.6
0.0067	62.6
0.0094	68.7
0.0132	71.7
0.0180	74.7
0.0253	80.8
0.0354	83.8
0.0493	86.8
0.0695	91.4
0.0720	92.9
0.075	93.1
0.15	93.8
0.212	94.3
0.3	95.4
0.425	96.5
0.6	97.8
1.18	99.2
2.36	99.7
3.35	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

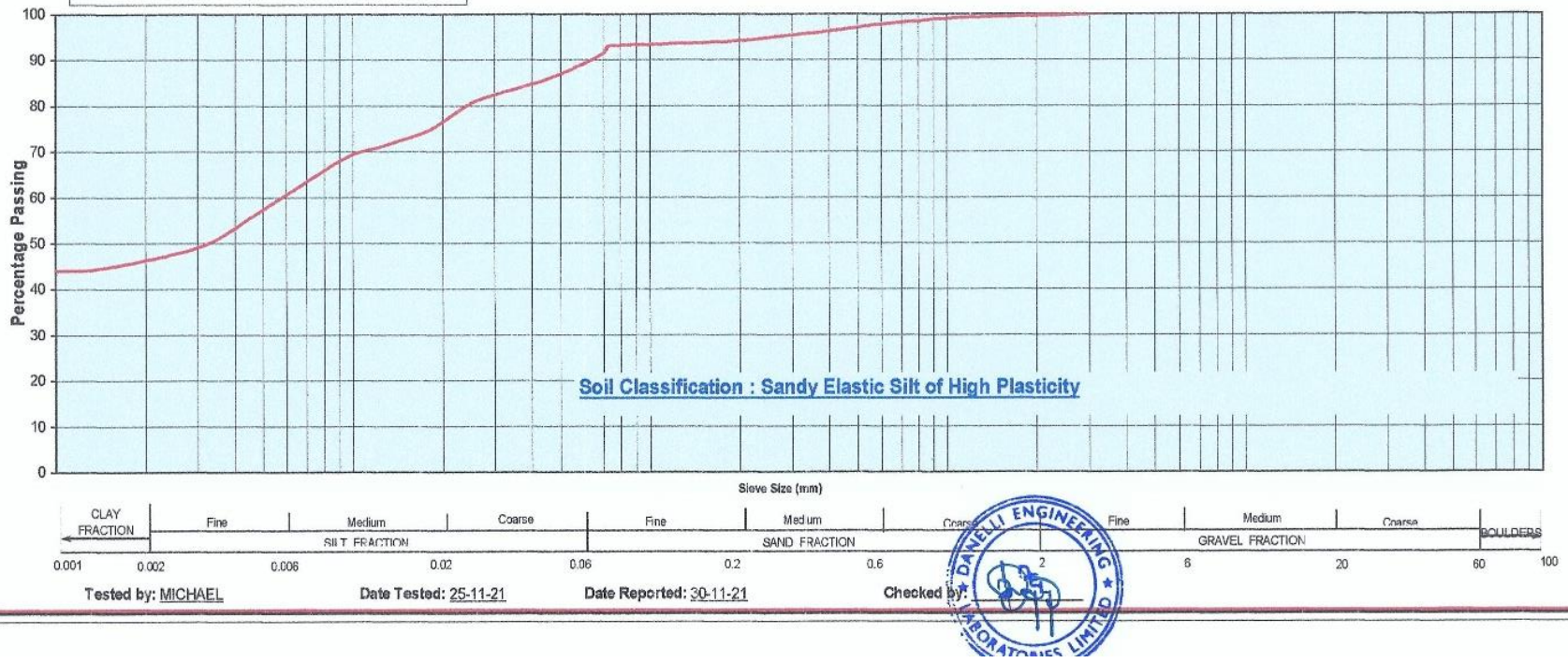
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM19+500 (Depth:0.5-1.1m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5737



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	33.2
0.0014	33.2
0.0024	35.1
0.0034	37.1
0.0048	39.0
0.0067	42.9
0.0094	44.8
0.0132	46.7
0.0180	48.6
0.0253	50.6
0.0354	52.5
0.0493	54.4
0.0695	57.9
0.0720	58.3
0.075	59.4
0.15	61.2
0.212	62.2
0.3	64.0
0.425	65.4
0.6	68.7
1.18	76.1
2.36	88.0
3.35	95.3
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

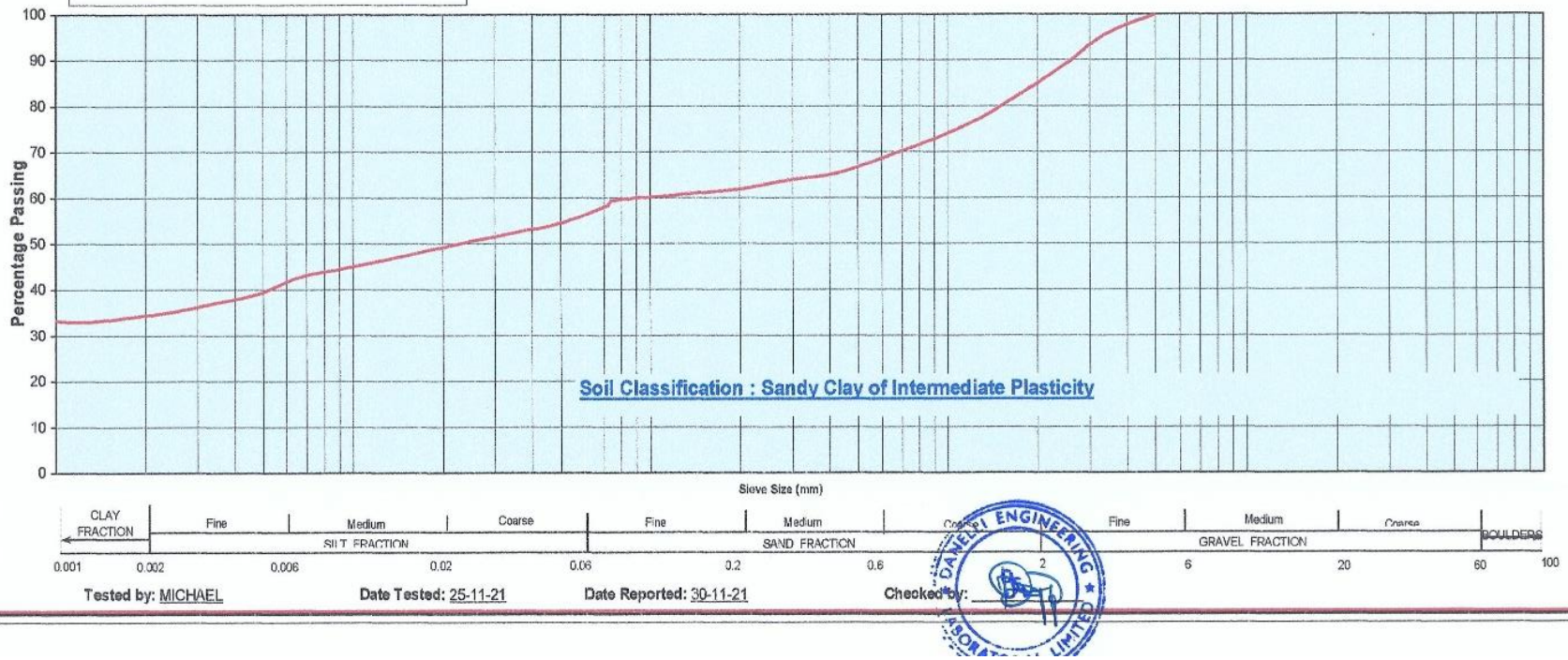
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM20+000 (Depth:0.5-1.5m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5738



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	26
0.0014	26.6
0.0024	28.5
0.0034	30.3
0.0048	32.2
0.0067	34.1
0.0094	37.8
0.0132	39.7
0.0180	41.6
0.0253	45.3
0.0354	49.0
0.0493	52.8
0.0695	54.7
0.0720	56.5
0.075	57.6
0.15	60.3
0.212	61.7
0.3	64.2
0.425	65.8
0.6	69.9
1.18	79.9
2.36	94.0
3.35	98.4
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM20+500 (Depth:0.2-1.0m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-NGUU TATU/5739

Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked By:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	19
0.0014	19.1
0.0024	20.2
0.0034	21.4
0.0048	23.7
0.0067	26.0
0.0094	27.1
0.0132	28.3
0.0180	29.4
0.0253	30.5
0.0354	31.7
0.0493	32.8
0.0695	34.0
0.0720	35.1
0.075	35.2
0.15	36.7
0.212	37.4
0.3	38.6
0.425	39.4
0.6	41.5
1.18	47.0
2.36	63.2
3.35	75.9
5	88.1
6.3	90.2
10.0	96.9
14	99.0
20	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 0+000 (Depth:0.4-1.0m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-KAYABOMBO/5751

Tested by: MICHAEL **Date Tested:** 25-11-21 **Date Reported:** 30-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	10.9
0.0014	10.9
0.0024	13.0
0.0034	16.0
0.0048	17.0
0.0067	19.1
0.0094	21.1
0.0132	22.1
0.0180	23.2
0.0253	25.2
0.0354	27.2
0.0493	29.3
0.0695	30.3
0.0720	31.3
0.075	31.4
0.15	32.4
0.212	32.9
0.3	33.7
0.425	34.3
0.6	35.7
1.18	39.1
2.36	48.3
3.35	56.1
5	68.1
6.3	70.5
10.0	79.1
14	85.3
20	94.8
28.0	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 0+500 (Depth:0.4-1.1m)

Head Office & Laboratories
Mombasa Road
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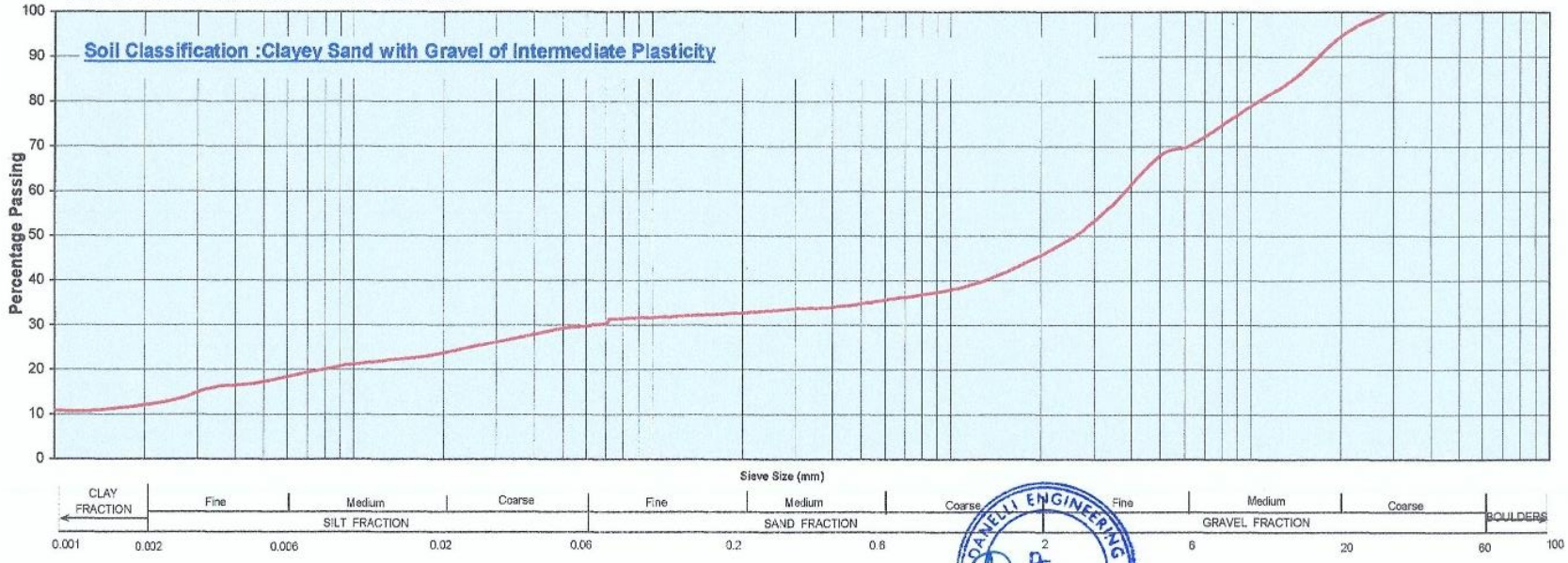
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-KAYABOMBO/5752



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	13
0.0014	13.0
0.0024	14.6
0.0034	16.1
0.0048	16.9
0.0067	17.7
0.0094	18.5
0.0132	19.3
0.0180	20.0
0.0253	20.8
0.0354	21.6
0.0493	22.4
0.0695	23.2
0.0720	23.9
0.075	24
0.15	24.2
0.212	24.4
0.3	24.5
0.425	24.9
0.6	26.3
1.18	30.5
2.36	35.6
3.35	46.4
5	49.4
6.3	64.1
10.0	74.4
14	81.8
20	92.1
28.0	96.4
37.5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 1+000 (Depth:0.0-1.4m)

Head Office & Laboratories
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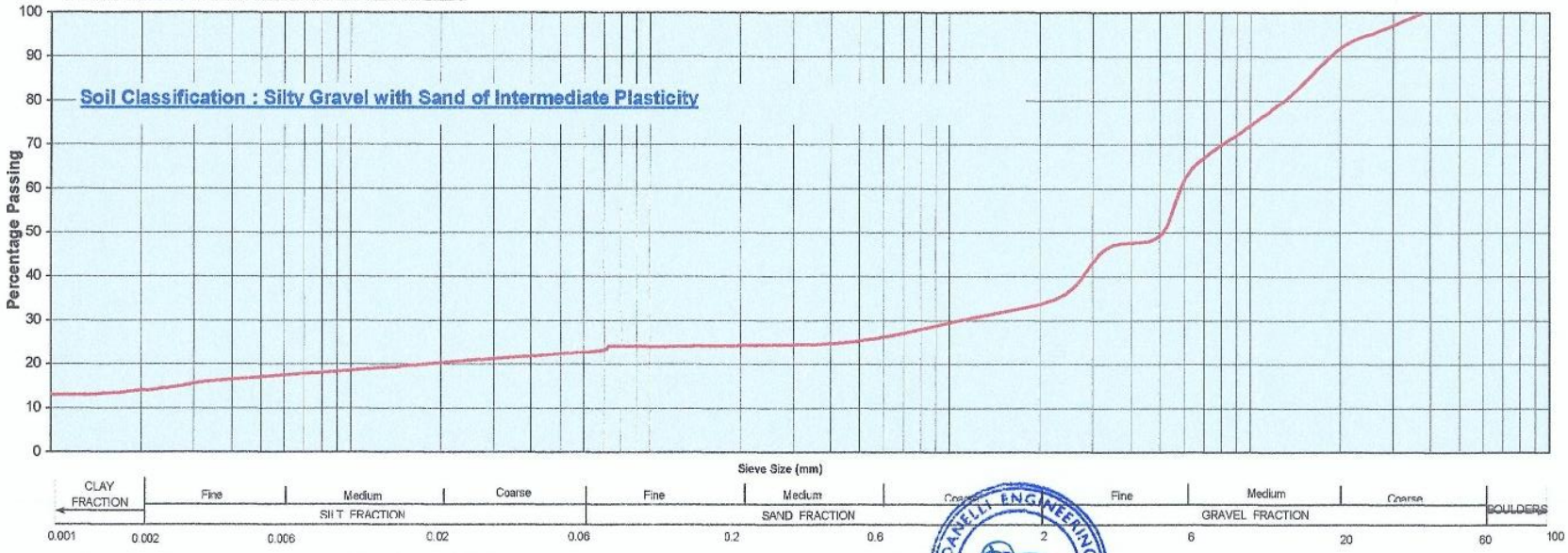
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-KAYABOMBO/5753



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	35.9
0.0014	35.9
0.0024	40.2
0.0034	44.5
0.0048	46.6
0.0067	48.8
0.0094	50.9
0.0132	53.1
0.0180	55.2
0.0253	57.4
0.0354	59.5
0.0493	61.7
0.0695	66.0
0.0720	66.0
0.075	66.1
0.15	66.9
0.212	67.2
0.3	67.8
0.425	68.2
0.6	69.3
1.18	72.5
2.36	79.6
3.35	85.6
5	91.8
6.3	93.1
10.0	97.5
14	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

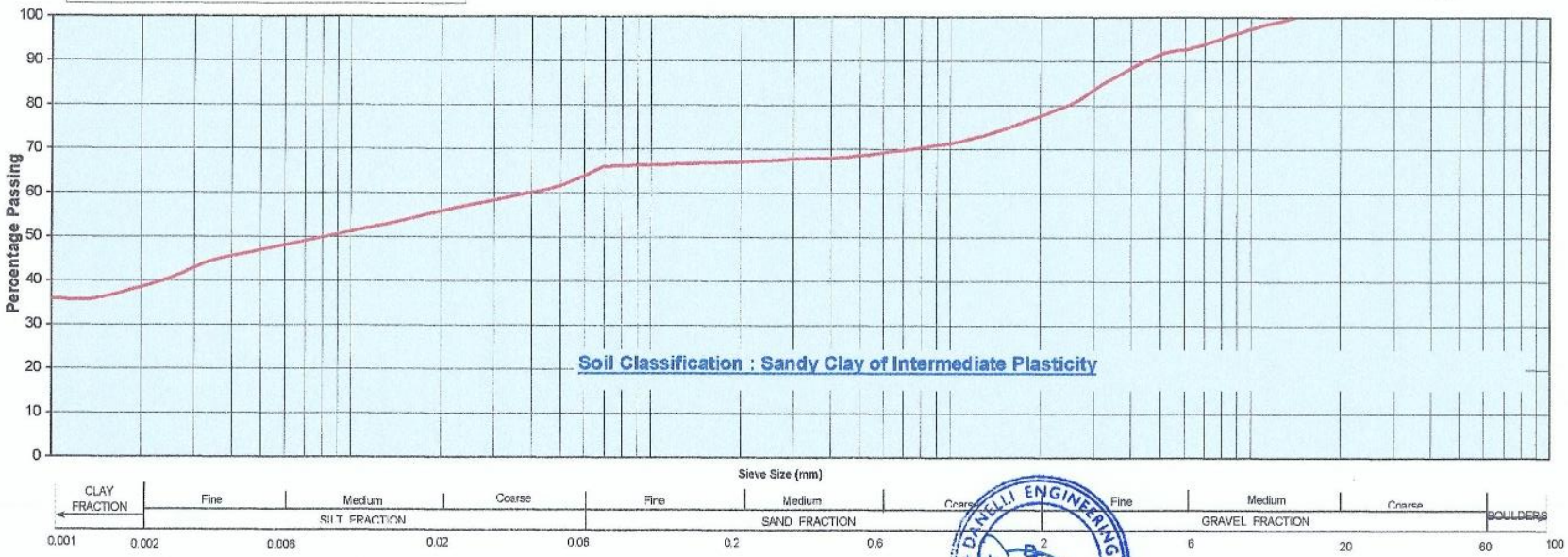
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 1+500 (Depth:0.0-1.3m)

Head Office & Laboratories
Mombasa Road
Pill Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-KAYABOMBO/5754



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	16.7
0.0014	16.7
0.0024	19.2
0.0034	21.7
0.0048	24.2
0.0067	26.7
0.0094	29.2
0.0132	36.6
0.0180	41.6
0.0253	49.1
0.0354	59.1
0.0493	66.6
0.0695	74.9
0.0720	76.5
0.075	76.7
0.15	96.3
0.212	97.7
0.3	98.8
0.425	99.4
0.6	99.8
1.18	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 2+000 (Depth:0.0-0.5m)

Head Office & Laboratories
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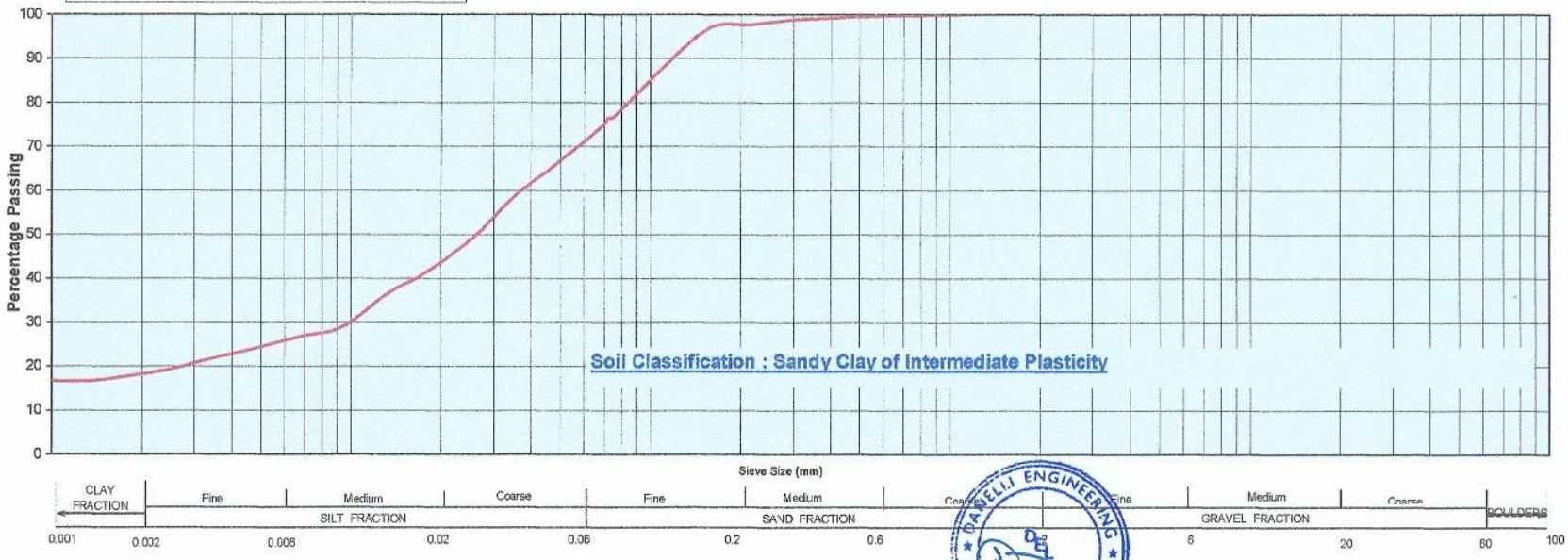
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-KAYABOMBO/5755



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	12.6
0.0014	12.6
0.0024	15.5
0.0034	16.9
0.0048	18.4
0.0067	19.8
0.0094	21.3
0.0132	24.2
0.0180	27.0
0.0253	29.9
0.0354	34.3
0.0493	38.6
0.0695	42.1
0.0720	44.4
0.075	44.5
0.15	63.2
0.212	94.4
0.3	99.5
0.425	99.7
0.6	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

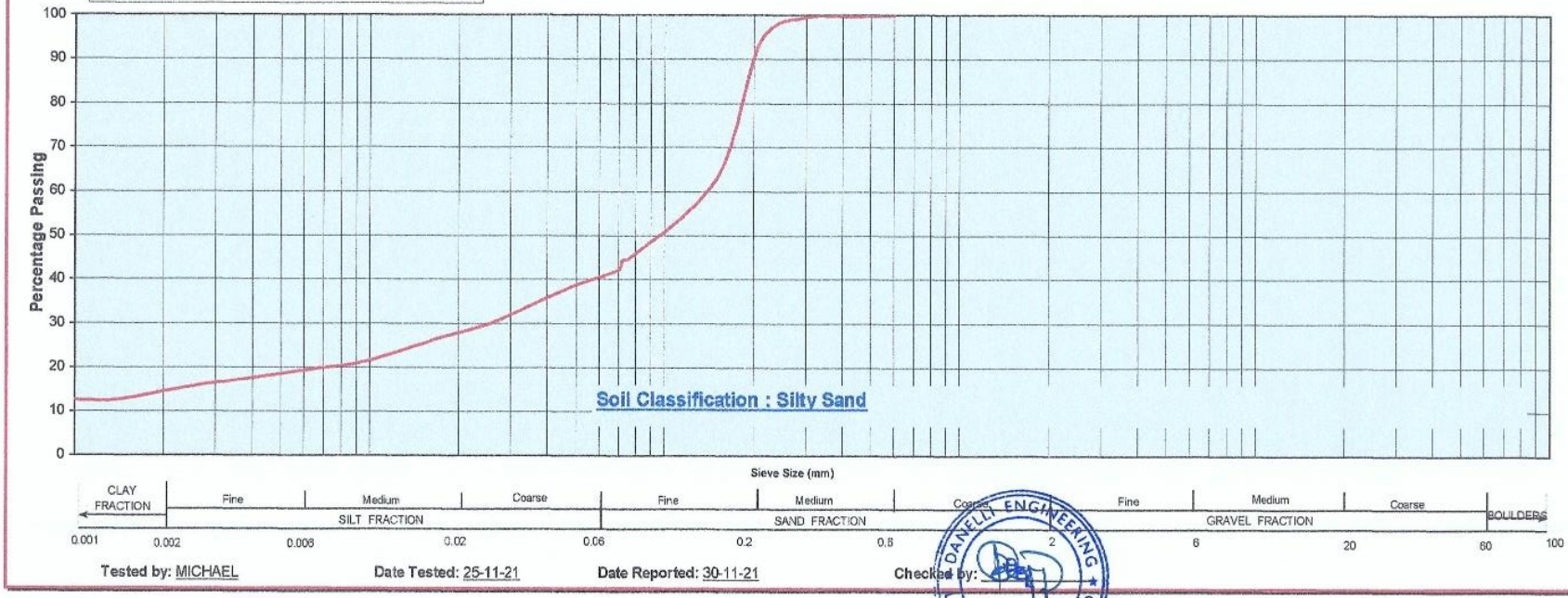
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 2+500 (Depth:0.0-0.2m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-KAYABOMBO/5756



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	26
0.0014	26.3
0.0024	28.7
0.0034	31.2
0.0048	33.6
0.0067	36.1
0.0094	38.5
0.0132	41.0
0.0180	48.3
0.0253	58.2
0.0354	68.0
0.0493	70.4
0.0695	72.9
0.0720	75.3
0.075	75.5
0.15	82.4
0.212	84.5
0.3	85.6
0.425	86.2
0.6	87.6
1.18	91.0
2.36	94.0
3.35	95.1
5	97.4
6.3	98.7
10.0	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4559

REGIONAL GEOPHYSICAL SURVEY

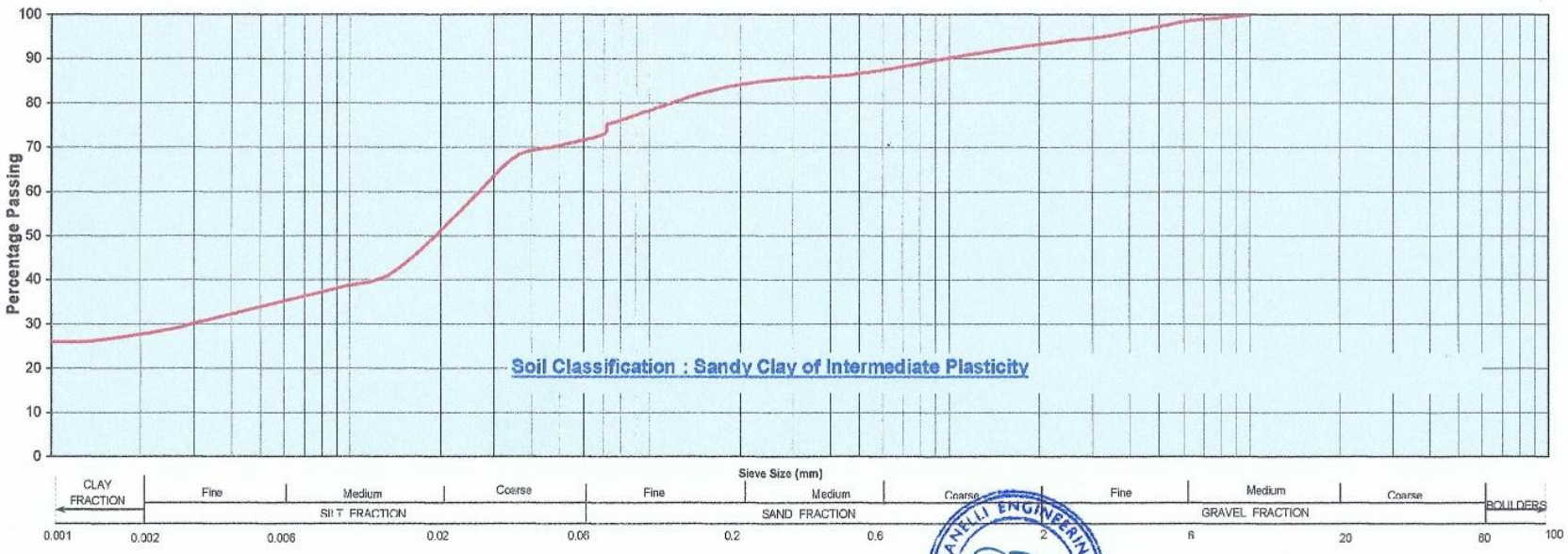
KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM3+000 (Depth:0.32-0.95m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	3.1
0.0014	3.1
0.0024	4.9
0.0034	6.7
0.0048	8.5
0.0067	12.1
0.0094	15.7
0.0132	21.1
0.0180	26.6
0.0253	30.2
0.0354	35.6
0.0493	42.8
0.0695	52.7
0.0720	55.5
0.075	55.6
0.15	72.5
0.212	78.5
0.3	80.9
0.425	82.7
0.6	89.6
1.18	98.7
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4560

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM3+500

Head Office & Laboratories
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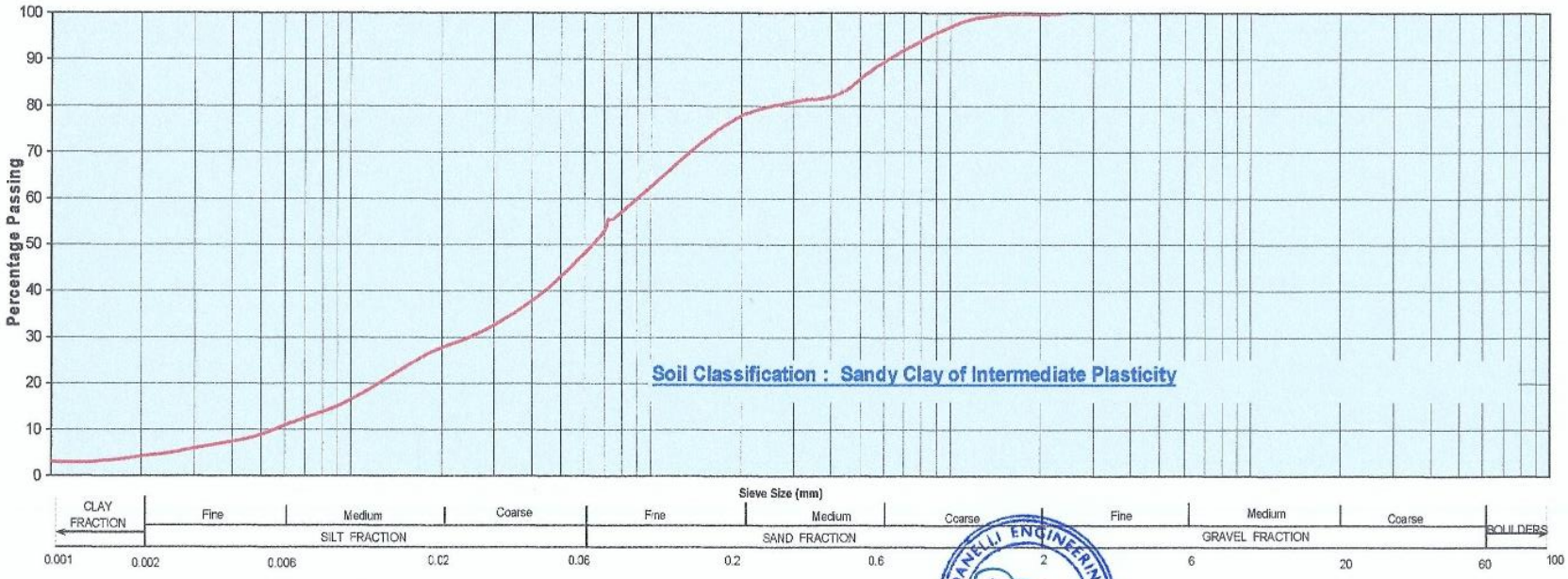

Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	35
0.0014	35.1
0.0024	37.0
0.0034	38.9
0.0048	40.8
0.0067	42.6
0.0094	44.5
0.0132	46.4
0.0180	48.3
0.0253	50.2
0.0354	52.0
0.0493	53.9
0.0695	55.8
0.0720	57.7
0.075	57.8
0.15	60
0.212	60.8
0.3	62.4
0.425	63.5
0.6	66.0
1.18	73.1
2.36	86.3
3.35	92.6
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4561

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM4+500 (Depth:0.0-1.4m)

Head Office & Laboratories
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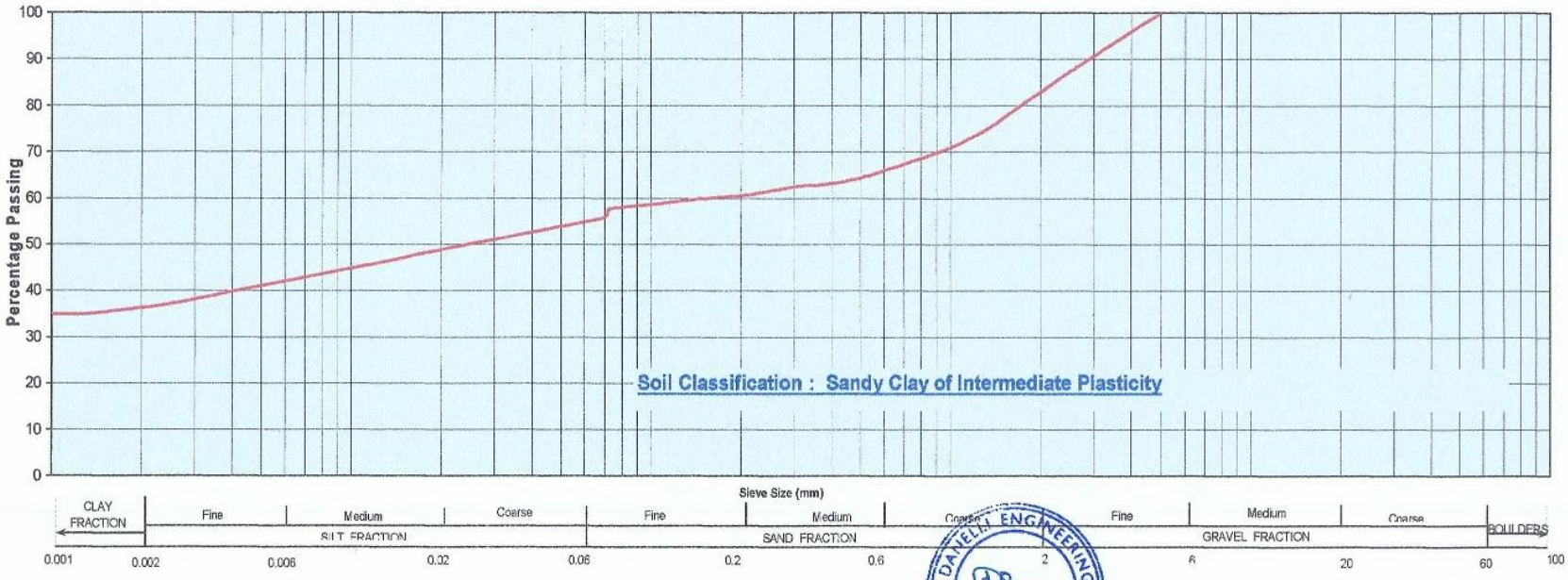
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	27
0.0014	27.3
0.0024	29.9
0.0034	32.4
0.0048	40.1
0.0067	42.7
0.0094	47.8
0.0132	55.4
0.0180	60.5
0.0253	65.7
0.0354	70.8
0.0493	73.3
0.0695	77.8
0.0720	78.4
0.075	78.6
0.15	80.1
0.212	81.5
0.3	83.2
0.425	84.3
0.6	86.5
1.18	89.9
2.36	93.9
3.35	96.8
5	99.4
6.3	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4562

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM5+000 (Depth: 0.35-1.0m)

Head Office & Laboratories
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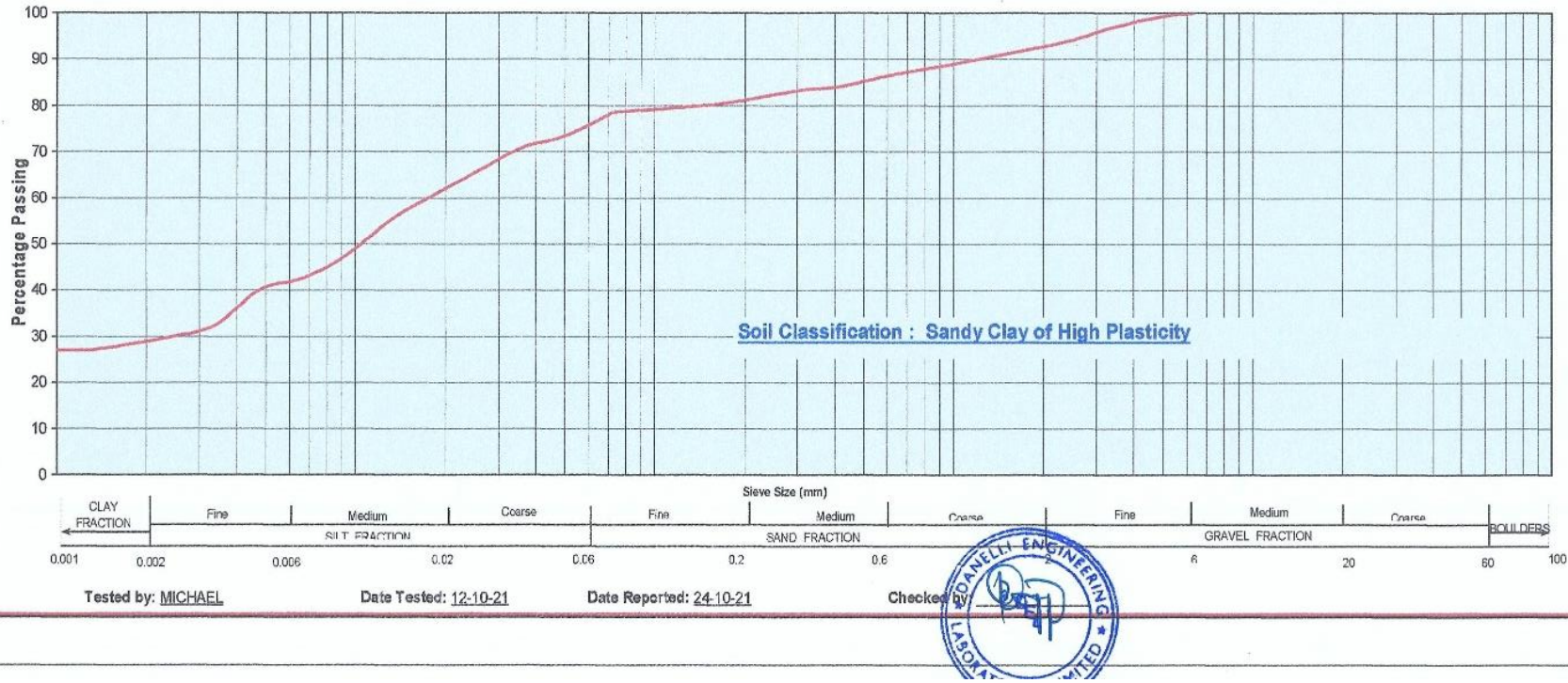
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	34.5
0.0014	34.5
0.0024	37.5
0.0034	43.4
0.0048	49.3
0.0067	52.2
0.0094	58.1
0.0132	61.1
0.0180	69.9
0.0253	75.8
0.0354	81.7
0.0493	84.7
0.0695	89.6
0.0720	90.6
0.075	90.8
0.15	92.1
0.212	92.8
0.3	93.7
0.425	94.2
0.6	95.2
1.18	96.7
2.36	97.8
3.35	98.4
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4563

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM5+500

Head Office & Laboratories
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Nairobi
Kenya

Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	11.9
0.0014	11.9
0.0024	14.1
0.0034	15.2
0.0048	16.3
0.0067	18.5
0.0094	20.7
0.0132	22.9
0.0180	25.2
0.0253	28.5
0.0354	30.7
0.0493	31.8
0.0695	32.9
0.0720	34.0
0.075	34.1
0.15	35.4
0.212	36
0.3	37.4
0.425	38.4
0.6	41.2
1.18	49.0
2.36	64.7
3.35	75.5
5	87.8
6.3	89.9
10.0	97.6
14	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4564

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM6+000 (0.8-0.9m)

Head Office & Laboratories
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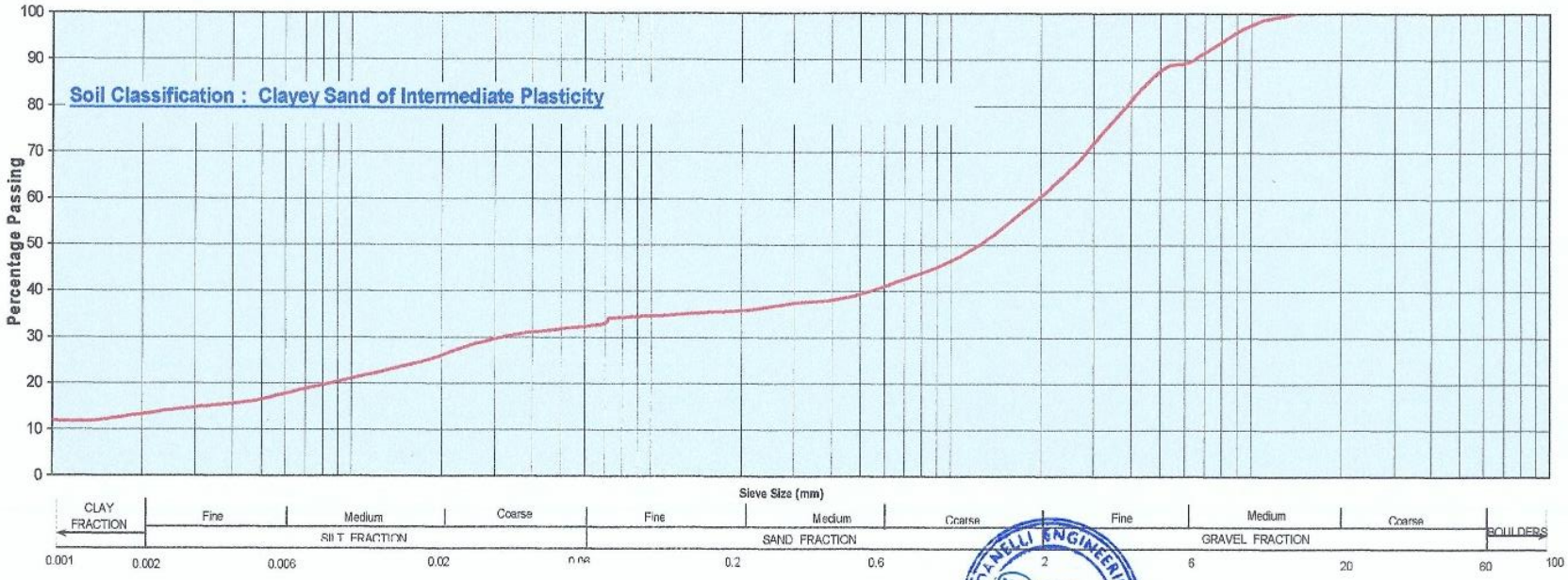
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	20
0.0014	20.2
0.0024	22.8
0.0034	28.0
0.0048	30.6
0.0067	35.9
0.0094	41.1
0.0132	49.0
0.0180	54.2
0.0253	62.1
0.0354	71.5
0.0493	75.2
0.0695	79.3
0.0720	80.4
0.075	80.6
0.15	86.7
0.212	89.6
0.3	91.4
0.425	93.2
0.6	94.5
1.18	97.0
2.36	98.8
3.35	99.4
5	99.7
6.3	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4565

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM6+500(Depth:0.0-1.0m)

Head Office & Laboratories
Mombasa Road
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Mobil Plaza 00620
Nairobi
Kenya

Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	21
0.0014	21.8
0.0024	26.8
0.0034	31.9
0.0048	41.9
0.0067	44.4
0.0094	46.9
0.0132	54.4
0.0180	59.5
0.0253	62.0
0.0354	69.5
0.0493	72.0
0.0695	75.8
0.0720	77.0
0.075	77.2
0.15	81.4
0.212	83.6
0.3	85.4
0.425	86.7
0.6	90.0
1.18	96.2
2.36	99.2
3.35	99.8
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4566

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM6+500(Depth:1.0-1.70m)

Head Office & Laboratories
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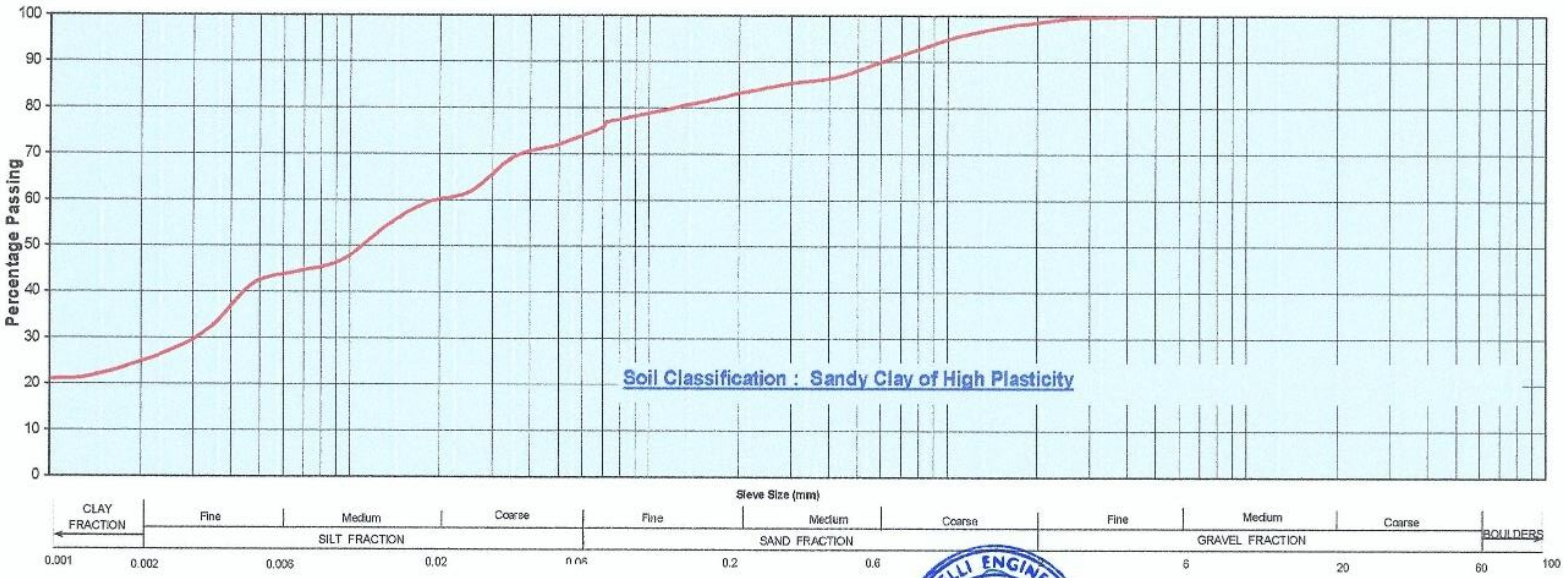
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	25.1
0.0014	25.1
0.0024	29.8
0.0034	34.5
0.0048	41.6
0.0067	43.9
0.0094	48.6
0.0132	53.3
0.0180	58.0
0.0253	62.7
0.0354	65.1
0.0493	67.4
0.0695	71.5
0.0720	72.1
0.075	72.3
0.15	74.8
0.212	76.3
0.3	78.5
0.425	80.0
0.6	83.1
1.18	88.0
2.36	93.3
3.35	95.8
5	97.8
6.3	98.7
10.0	100

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4567

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM7+000(Depth:0.0-0.8m)

Head Office & Laboratories
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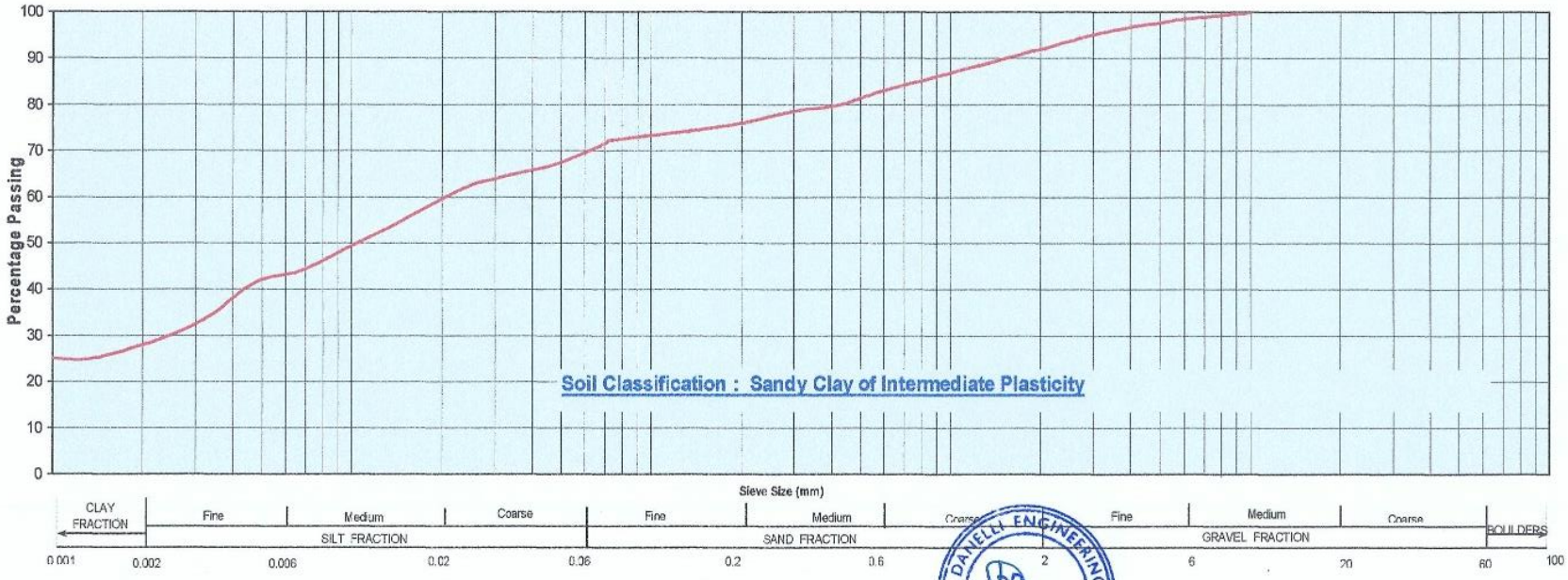
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	34
0.0014	34.4
0.0024	37.1
0.0034	39.8
0.0048	45.2
0.0067	53.3
0.0094	58.7
0.0132	61.5
0.0180	66.9
0.0253	72.3
0.0354	75.0
0.0493	77.7
0.0695	81.8
0.0720	83.1
0.075	83.3
0.15	86.1
0.212	87.6
0.3	89.4
0.425	90.6
0.6	93.0
1.18	95.9
2.36	98.6
3.35	99.5
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4568

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM7+000(Depth:0.8-1.7m)

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Mobil Plaza 00620
Nairobi
Kenya

Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	27
0.0014	27.7
0.0024	29.9
0.0034	32.1
0.0048	36.5
0.0067	43.0
0.0094	47.4
0.0132	49.6
0.0180	53.9
0.0253	58.3
0.0354	60.5
0.0493	62.7
0.0695	66.3
0.0720	67.0
0.075	67.2
0.15	70.6
0.212	72.7
0.3	75.8
0.425	77.9
0.6	82.9
1.18	90.7
2.36	97.3
3.35	98.6
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4569

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM8+000(Depth:0.30-0.60m)

Head Office & Laboratories
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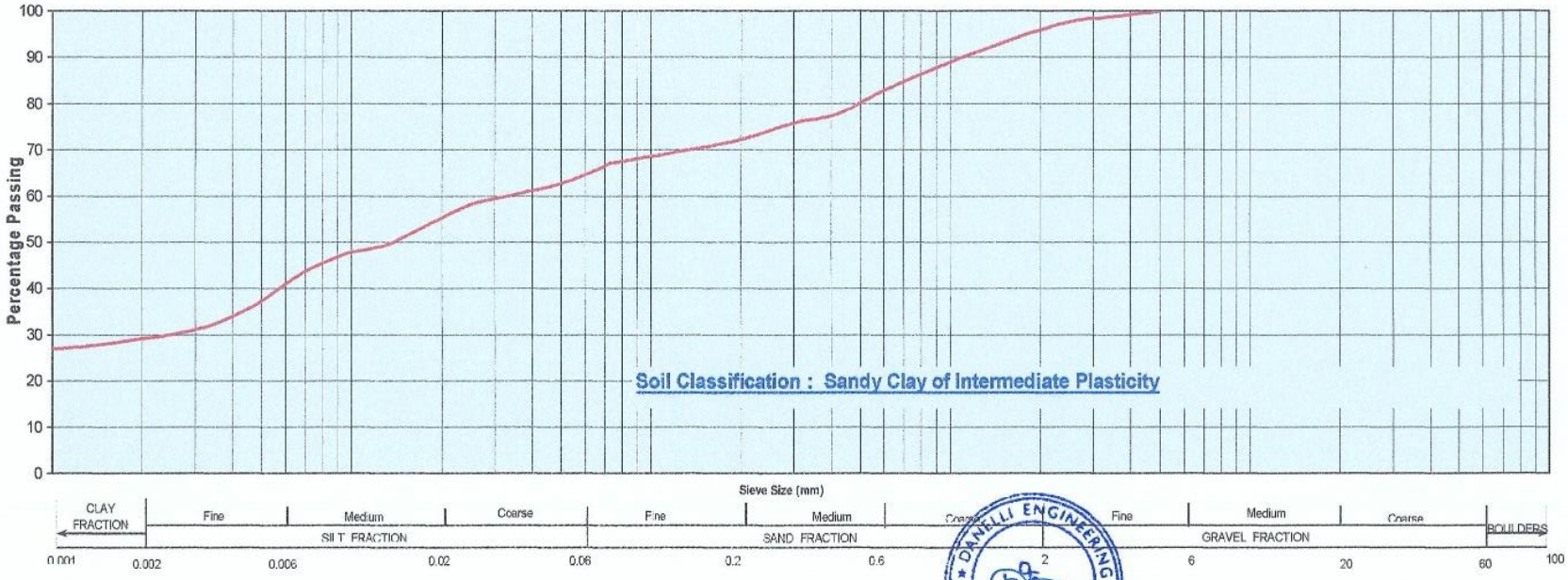
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	17
0.0014	17.3
0.0024	18.9
0.0034	20.5
0.0048	23.7
0.0067	27.0
0.0094	31.8
0.0132	35.1
0.0180	36.7
0.0253	39.9
0.0354	43.1
0.0493	46.4
0.0695	49.0
0.0720	49.6
0.075	49.7
0.15	52
0.212	55
0.3	58.0
0.425	60.2
0.6	65.8
1.18	77.1
2.36	90.4
3.35	95.5
5	99.0
6.3	100

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4570

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM8+500 (Depth:0.3-0.55m)

Head Office & Laboratories
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Mobil Plaza 00620
Nairobi
Kenya

Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	8.8
0.0014	8.8
0.0024	9.3
0.0034	9.8
0.0048	10.2
0.0067	10.7
0.0094	11.2
0.0132	11.6
0.0180	12.1
0.0253	12.6
0.0354	13.1
0.0493	13.5
0.0695	14.0
0.0720	14.5
0.075	14.5
0.15	15.8
0.212	16.4
0.3	17.9
0.425	19.2
0.6	22.4
1.18	30.0
2.36	42.7
3.35	52.9
5	69.4
6.3	75
10	92.9
14	100

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4571

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM10+000

Head Office & Laboratories
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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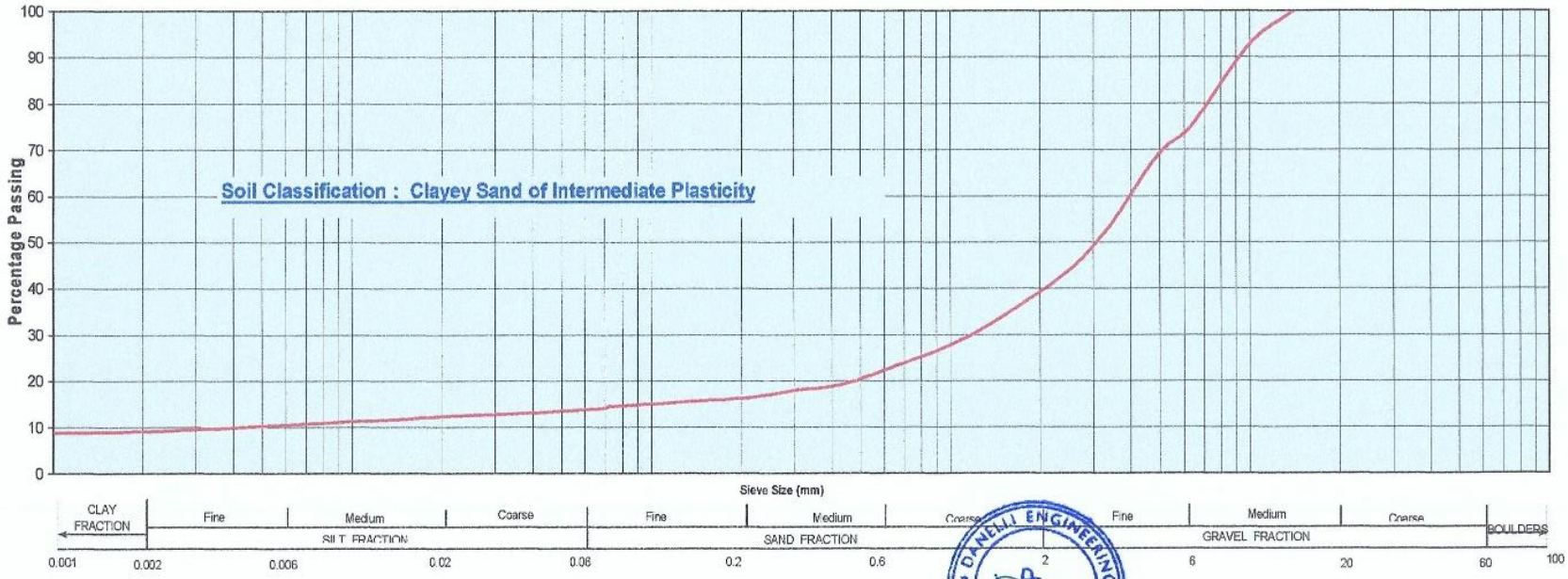
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL **Date Tested:** 12-10-21 **Date Reported:** 24-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	9
0.0014	9.5
0.0024	11.6
0.0034	13.8
0.0048	16.0
0.0067	18.2
0.0094	20.4
0.0132	22.5
0.0180	24.7
0.0253	26.9
0.0354	29.1
0.0493	31.2
0.0695	32.3
0.0720	33.4
0.075	32.3
0.15	37
0.212	51.3
0.3	60.8
0.425	68.8
0.6	88.8
1.18	96.8
2.36	98.0
3.35	98.4
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4572

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM10+500

Head Office & Laboratories
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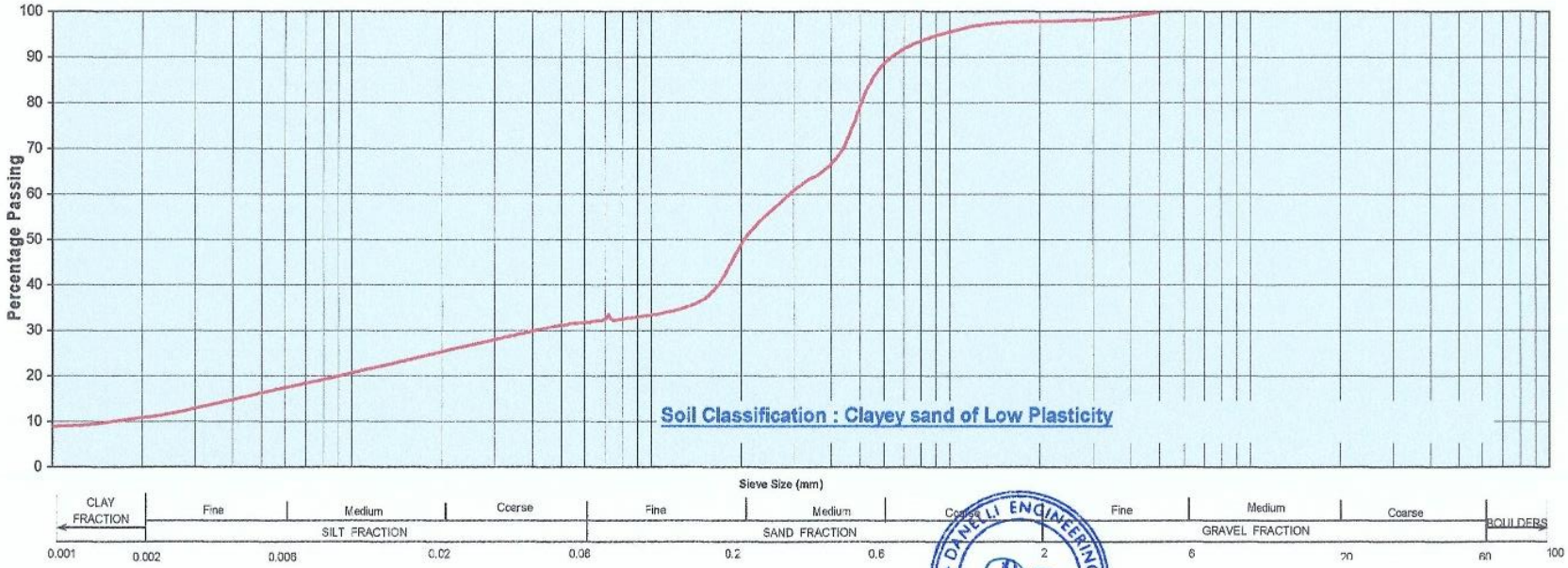
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	11
0.0014	11.6
0.0024	12.7
0.0034	13.8
0.0048	14.9
0.0067	16.0
0.0094	19.2
0.0132	21.4
0.0180	22.5
0.0253	24.6
0.0354	26.8
0.0493	29.0
0.0695	32.0
0.0720	31.7
0.075	33.4
0.15	39.2
0.212	43.7
0.3	51.3
0.425	58.0
0.6	80.3
1.18	97.4
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

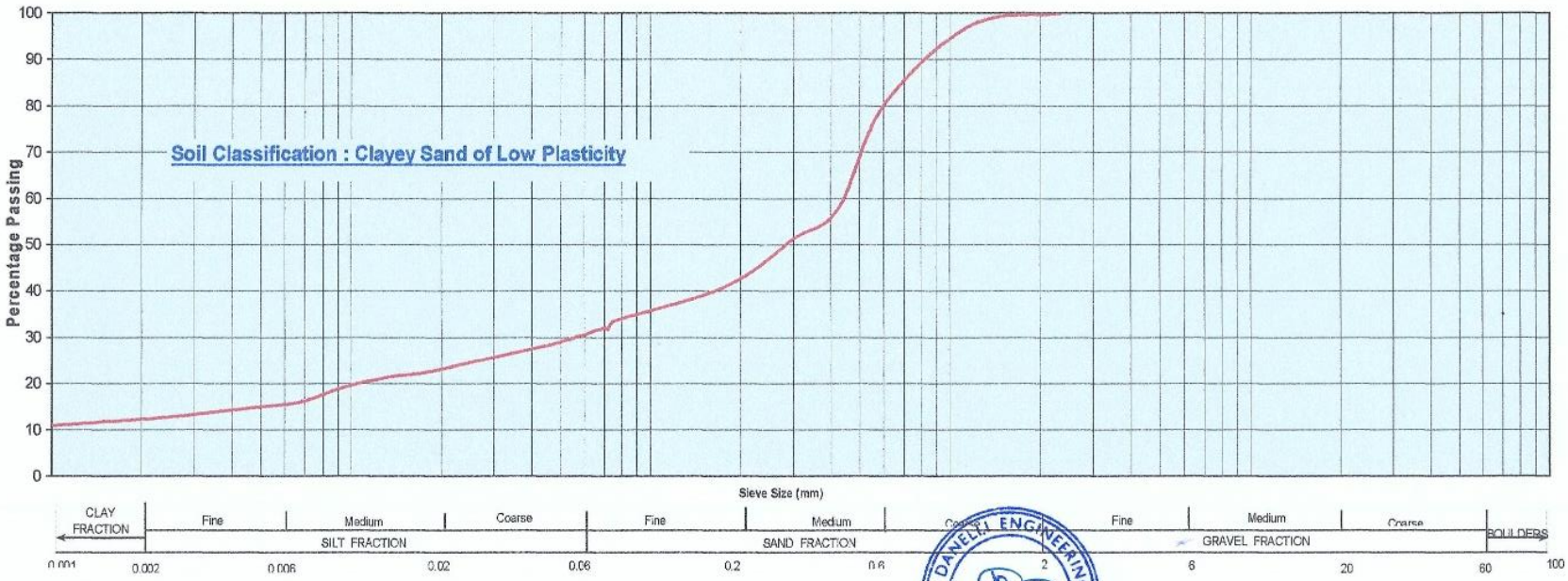
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM11+500

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS- KAYABOMBO/4573



Tested by: MICHAEL **Date Tested:** 12-10-21 **Date Reported:** 24-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	5
0.0014	5.7
0.0024	6.0
0.0034	6.3
0.0048	6.6
0.0067	6.9
0.0094	7.2
0.0132	7.5
0.0180	7.9
0.0253	8.2
0.0354	8.5
0.0493	8.8
0.0695	9.1
0.0720	9.4
0.075	9.4
0.15	10.2
0.212	10.7
0.3	11.9
0.425	14.8
0.6	18.3
1.18	24.3
2.36	32.4
3.35	40.5
5	60.6
6.3	67.3
10.0	90.3
14	98.8
20	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4574

REGIONAL GEOPHYSICAL SURVEY

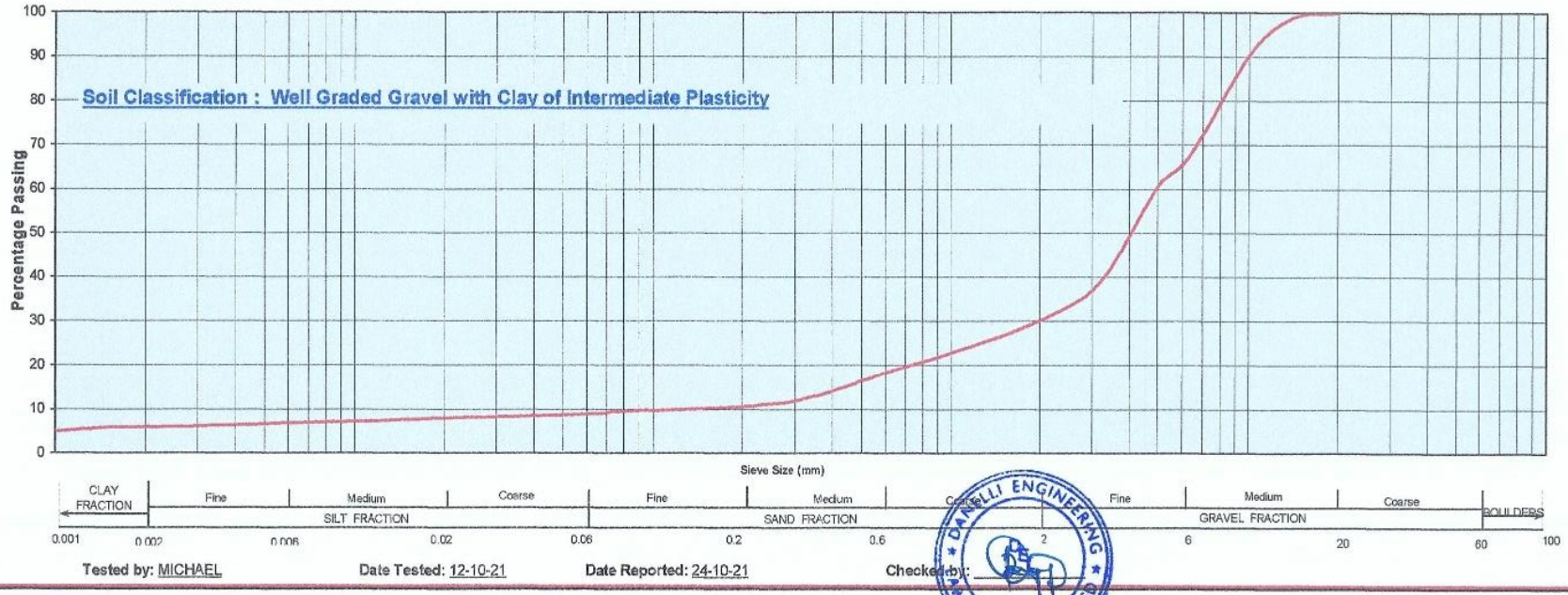
KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM13+000

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL **Date Tested:** 12-10-21 **Date Reported:** 24-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	41
0.0014	41.2
0.0024	43.4
0.0034	45.6
0.0048	47.8
0.0067	50.0
0.0094	52.2
0.0132	54.4
0.0180	56.6
0.0253	58.8
0.0354	61.0
0.0493	63.2
0.0695	66.3
0.0720	67.6
0.075	67.8
0.15	70.3
0.212	72.9
0.3	76.6
0.425	79.2
0.6	84.3
1.18	92.6
2.36	98.3
3.35	99.6
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

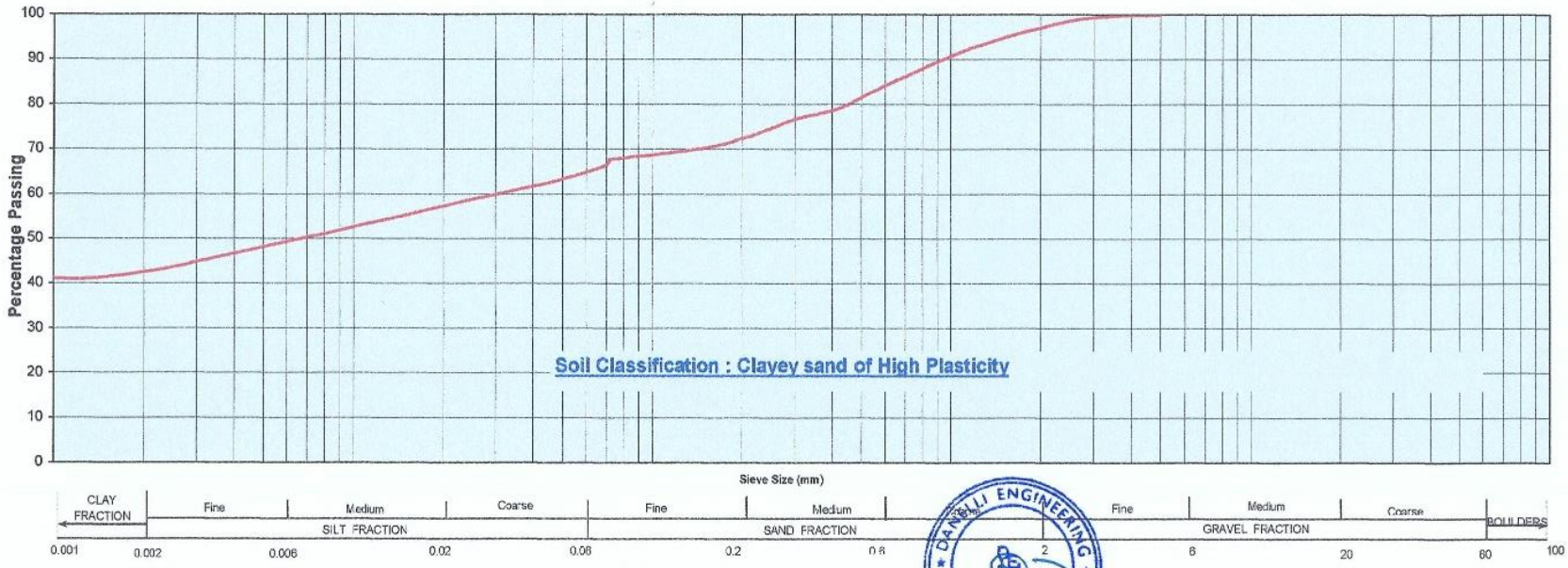
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM13+500

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS- KAYABOMBO/4575



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by: _____

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	34
0.0014	34.8
0.0024	36.8
0.0034	38.8
0.0048	40.8
0.0067	42.9
0.0094	44.9
0.0132	46.9
0.0180	48.9
0.0253	50.9
0.0354	53.0
0.0493	57.0
0.0695	60.8
0.0720	61.0
0.075	62.2
0.15	65.3
0.212	68.2
0.3	71.2
0.425	74.0
0.6	78.8
1.18	86.1
2.36	95.1
3.35	97.9
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM14+000

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS- KAYABOMBO/4576

Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	39.5
0.0014	39.5
0.0024	41.6
0.0034	43.8
0.0048	46.0
0.0067	48.1
0.0094	50.3
0.0132	52.5
0.0180	54.6
0.0253	56.8
0.0354	59.0
0.0493	61.1
0.0695	65.4
0.0720	65.5
0.075	66.7
0.15	69.6
0.212	71.6
0.3	74.9
0.425	76.8
0.6	80.0
1.18	92.7
2.36	98.3
3.35	99.2
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

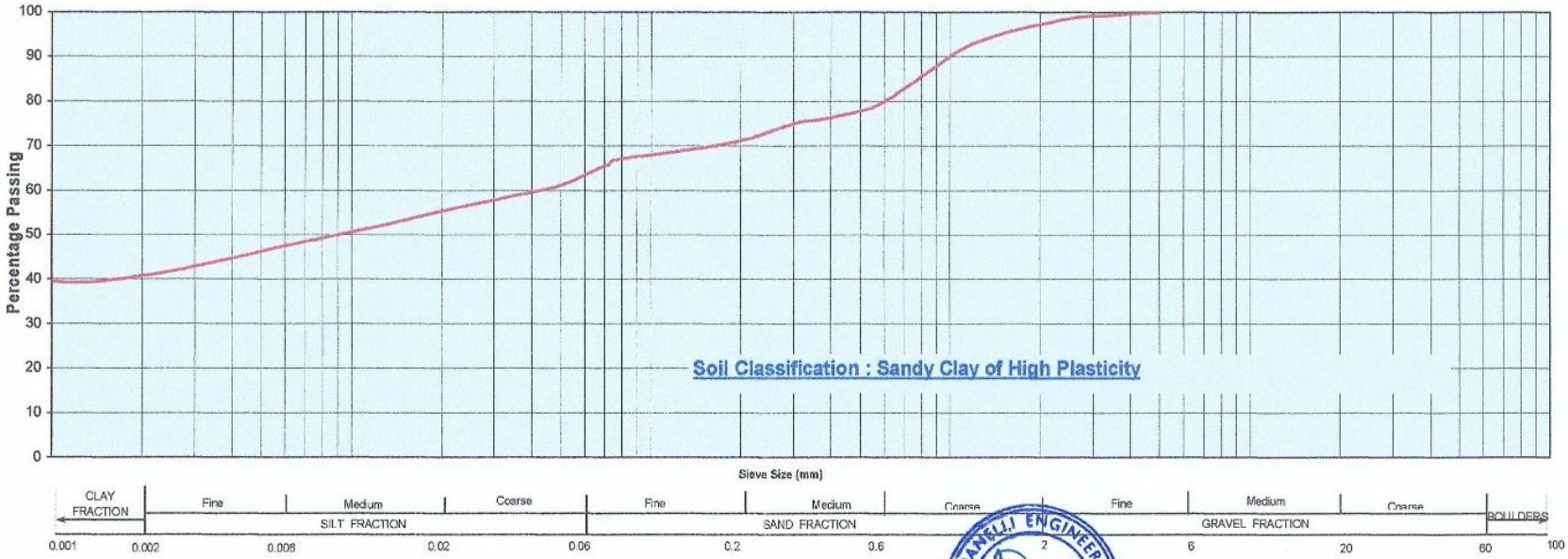
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM14+500

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS- KAYABOMBO/4577



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	40
0.0014	40.6
0.0024	42.8
0.0034	45.0
0.0048	47.3
0.0067	49.5
0.0094	51.7
0.0132	54.0
0.0180	56.2
0.0253	58.4
0.0354	60.6
0.0493	62.9
0.0695	66.9
0.0720	67.3
0.075	68.6
0.15	71.3
0.212	73.8
0.3	77.8
0.425	80.6
0.6	86.9
1.18	94.9
2.36	99.3
3.35	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

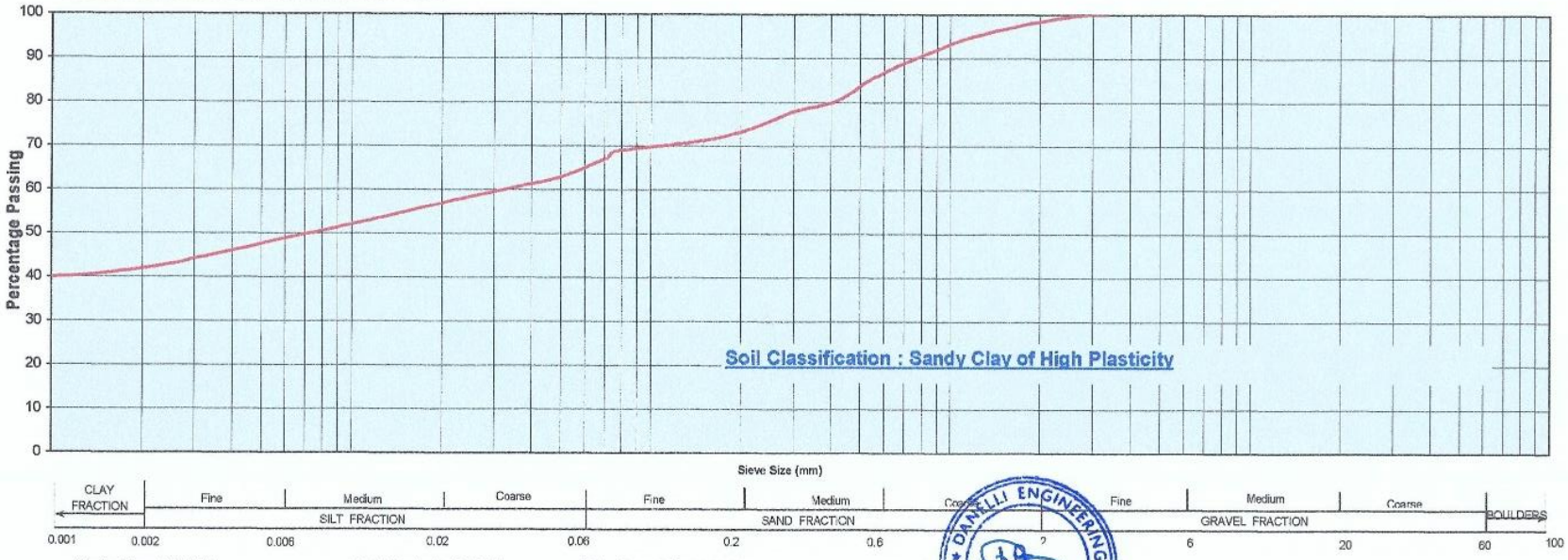
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM15+000

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS- KAYABOMBO/4578



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	2.5
0.0014	2.5
0.0024	3.0
0.0034	3.5
0.0048	3.9
0.0067	4.4
0.0094	4.9
0.0132	5.4
0.0180	5.9
0.0253	6.4
0.0354	6.6
0.0493	6.9
0.0695	7.1
0.0720	7.4
0.075	7.5
0.15	7.9
0.212	8.1
0.3	8.9
0.425	9.3
0.6	11.2
1.18	18.8
2.36	35.4
3.35	45.8
5	69.3
6.3	74.9
10	94.8
14	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

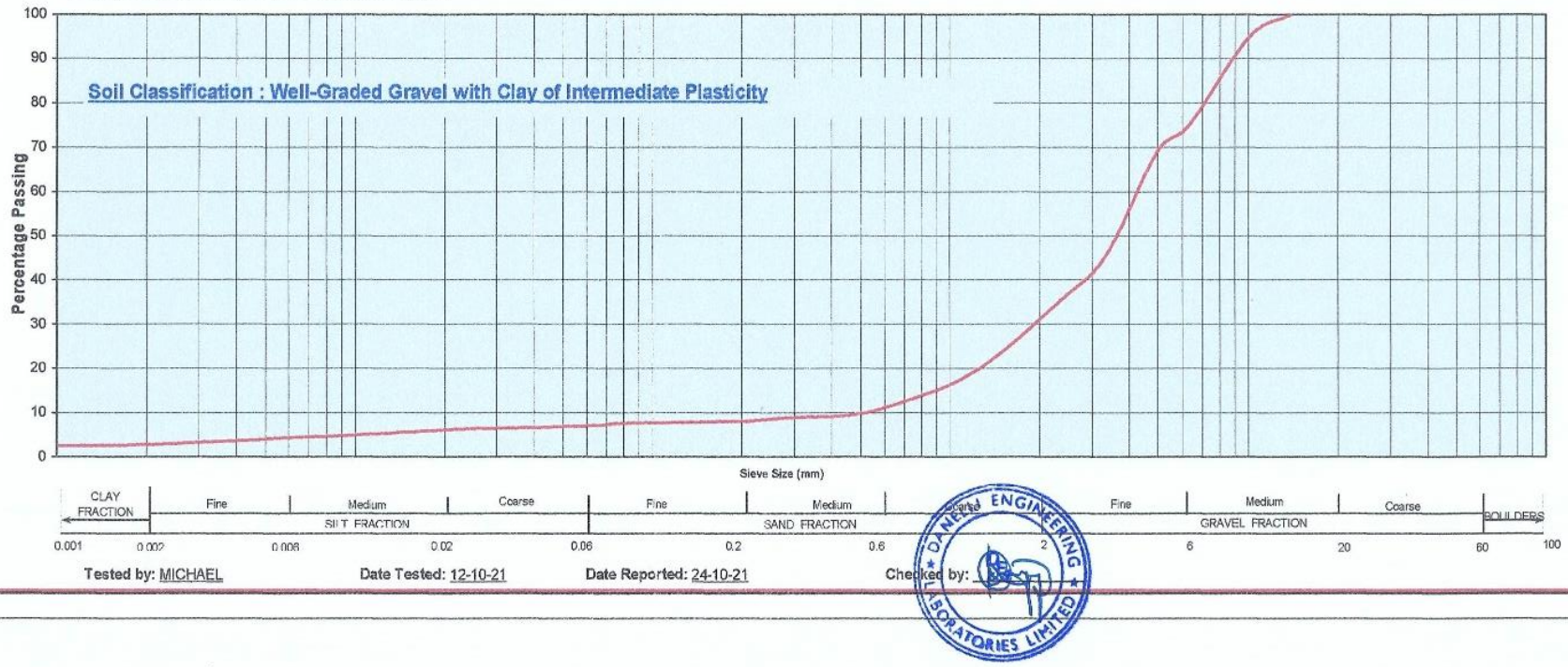
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM15+500

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS- KAYABOMBO/4579



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	16.7
0.0014	16.7
0.0024	18.4
0.0034	21.8
0.0048	27.0
0.0067	30.4
0.0094	32.1
0.0132	35.6
0.0180	40.7
0.0253	44.2
0.0354	47.6
0.0493	49.3
0.0695	51.9
0.0720	52.8
0.075	52.9
0.15	54.6
0.212	57.5
0.3	60.1
0.425	62.0
0.6	67.1
1.18	77.5
2.36	87.4
3.35	91.1
5	96.4
6.3	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

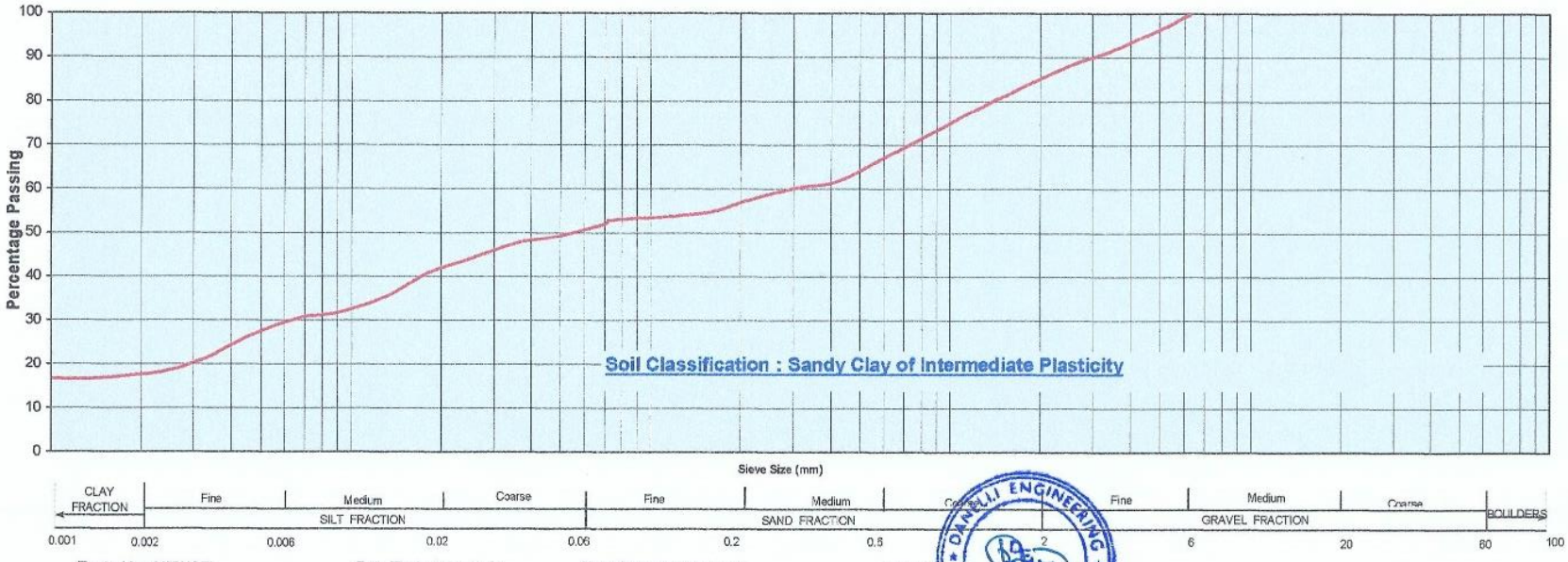
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM17+000

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS- KAYABOMBO/4580



Tested by: MICHAEL **Date Tested:** 12-10-21 **Date Reported:** 24-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	9.2
0.0014	9.2
0.0024	11.3
0.0034	13.4
0.0048	15.5
0.0067	17.6
0.0094	19.8
0.0132	21.9
0.0180	25.0
0.0253	27.1
0.0354	28.2
0.0493	30.3
0.0695	31.4
0.0720	32.4
0.075	32.5
0.15	36.2
0.212	38.4
0.3	42.2
0.425	44.7
0.6	51.0
1.18	63.3
2.36	79.2
3.35	88.0
5	95.3
6.3	97.1
10	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

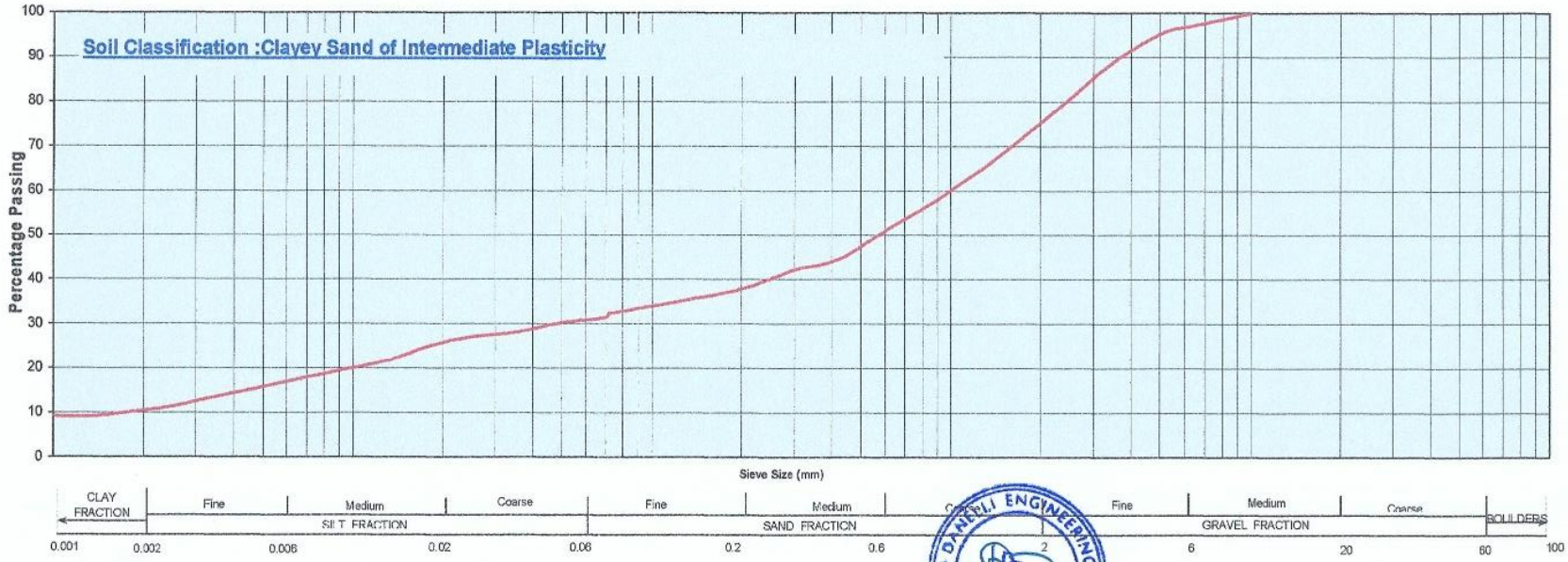
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM18+500

Head Office & Laboratories
Mombasa Road
Pill Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS- KAYABOMBO/4581



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	14.6
0.0014	14.6
0.0024	15.8
0.0034	18.3
0.0048	22.1
0.0067	24.6
0.0094	25.8
0.0132	27.1
0.0180	28.3
0.0253	30.8
0.0354	33.3
0.0493	35.8
0.0695	37.1
0.0720	38.3
0.075	38.4
0.15	40.5
0.212	42.4
0.3	45.1
0.425	50.9
0.6	55.2
1.18	63.7
2.36	78.6
3.35	86.9
5	98.9
6.3	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4582

REGIONAL GEOPHYSICAL SURVEY

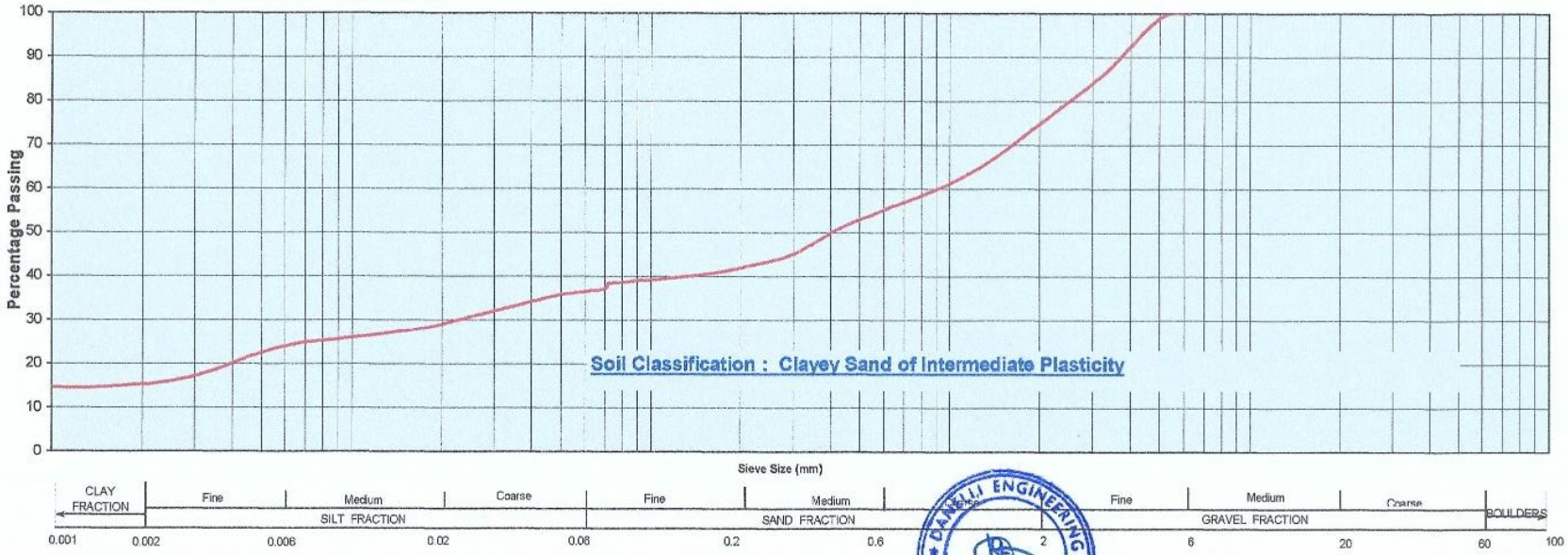
KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM19+000(1.3-2.0m)

Head Office & Laboratories
Mombasa Road
Pill Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	21.2
0.0014	21.2
0.0024	23.0
0.0034	26.7
0.0048	32.1
0.0067	35.7
0.0094	37.5
0.0132	39.4
0.0180	41.2
0.0253	44.8
0.0354	48.4
0.0493	52.0
0.0695	53.9
0.0720	55.7
0.075	55.8
0.15	60.9
0.212	65.6
0.3	75.5
0.425	85.8
0.6	93.6
1.18	97.8
2.36	99.1
3.35	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

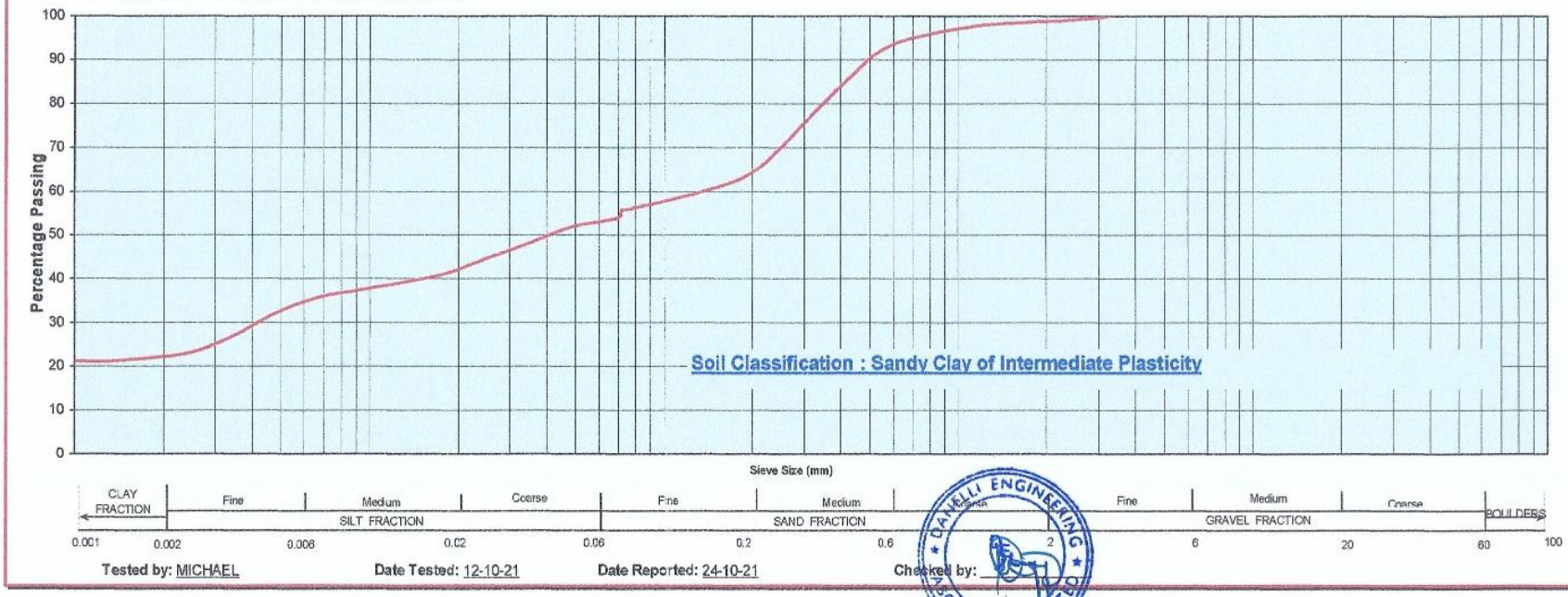
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM19+500

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS- KAYABOMBO/4583



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by: _____

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	27
0.0014	27.2
0.0024	30.0
0.0034	32.8
0.0048	35.6
0.0067	38.4
0.0094	41.2
0.0132	46.8
0.0180	52.4
0.0253	60.8
0.0354	69.2
0.0493	80.4
0.0695	85.0
0.0720	86.0
0.075	86.2
0.15	90.6
0.212	92.6
0.3	93.8
0.425	94.5
0.6	95.6
1.18	96.6
2.36	97.4
3.35	97.9
5	98.8
6.3	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4584

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM20+000

Head Office & Laboratories
Mombasa Road
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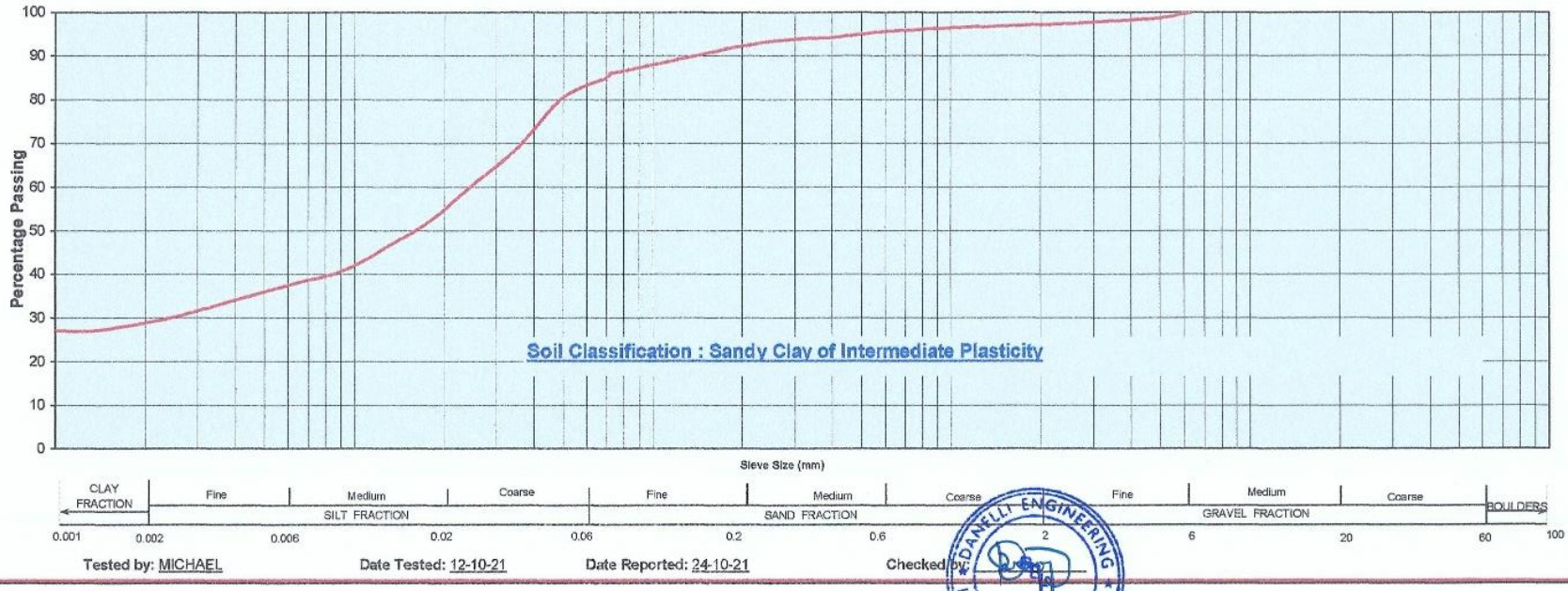
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	28
0.0014	28.5
0.0024	31.4
0.0034	34.4
0.0048	37.3
0.0067	40.3
0.0094	43.2
0.0132	49.1
0.0180	54.9
0.0253	63.8
0.0354	72.6
0.0493	84.3
0.0695	89.6
0.0720	90.2
0.075	90.4
0.15	91.8
0.212	93.8
0.3	94.1
0.425	94.6
0.6	95.3
1.18	96.1
2.36	97.5
3.35	98.4
5	98.9
6.3	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

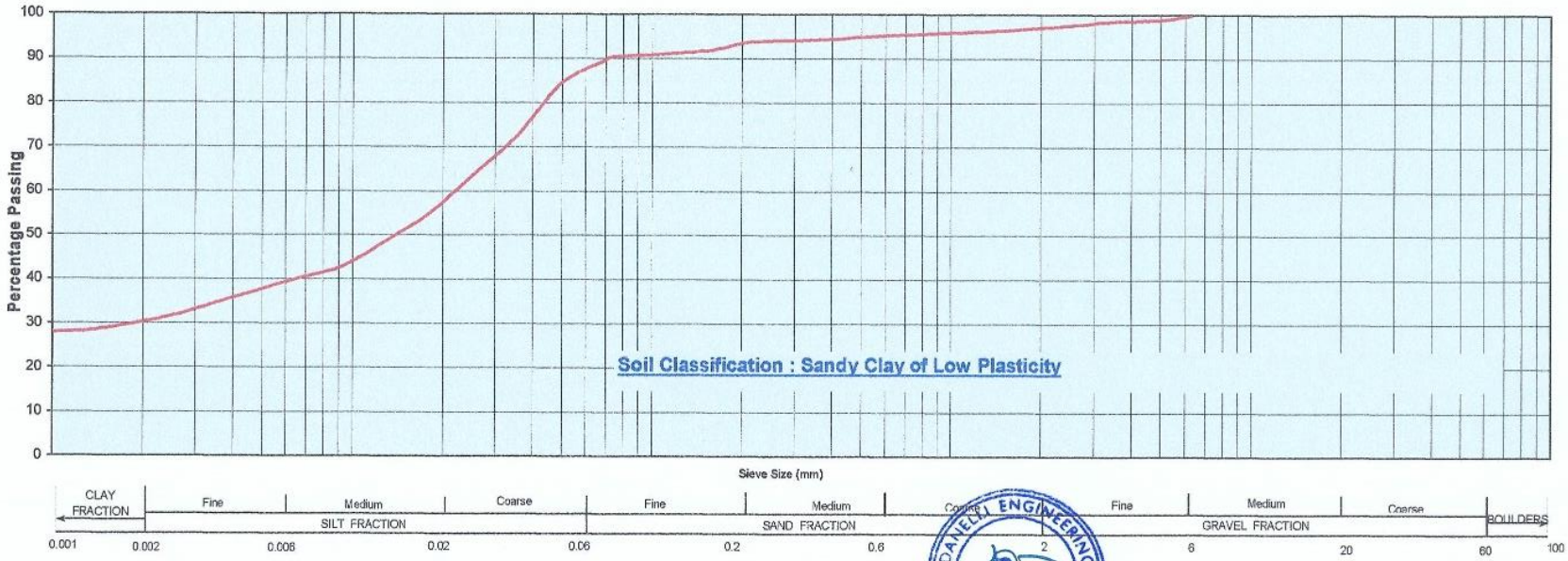
KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM20+500

Lab Ref: TM/RGS- KAYABOMBO/4585



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	26
0.0014	26.2
0.0024	32.2
0.0034	41.2
0.0048	44.2
0.0067	50.3
0.0094	56.3
0.0132	62.3
0.0180	68.3
0.0253	74.3
0.0354	80.4
0.0493	86.4
0.0695	91.1
0.0720	92.4
0.075	92.6
0.15	93.4
0.212	93.8
0.3	94.4
0.425	94.9
0.6	95.8
1.18	97.3
2.36	99.1
3.35	99.7
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

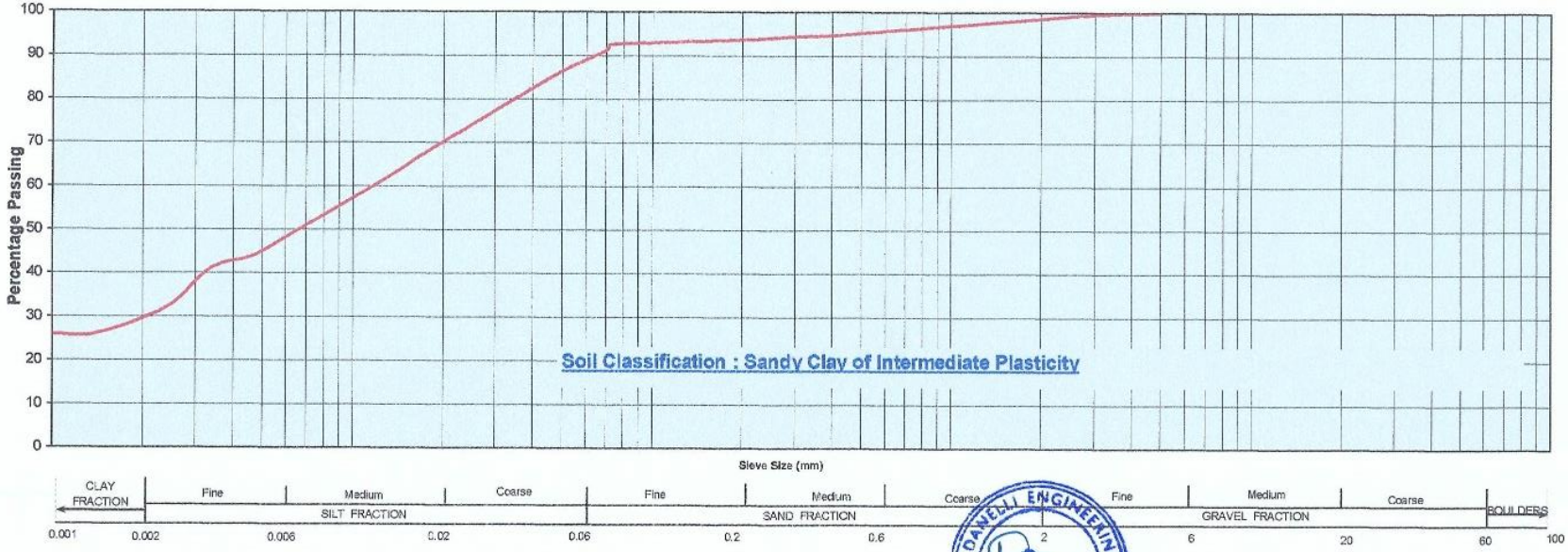
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM20+500(0.45-1.50m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS- KAYABOMBO/4586



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	34.2
0.0014	34.2
0.0024	37.3
0.0034	40.3
0.0048	43.4
0.0067	46.4
0.0094	49.5
0.0132	55.6
0.0180	61.7
0.0253	67.8
0.0354	73.9
0.0493	80.0
0.0695	91.9
0.0720	92.3
0.075	94.0
0.15	94.4
0.212	94.6
0.3	94.9
0.425	95.2
0.6	95.5
1.18	97.0
2.36	99.1
3.35	99.7
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

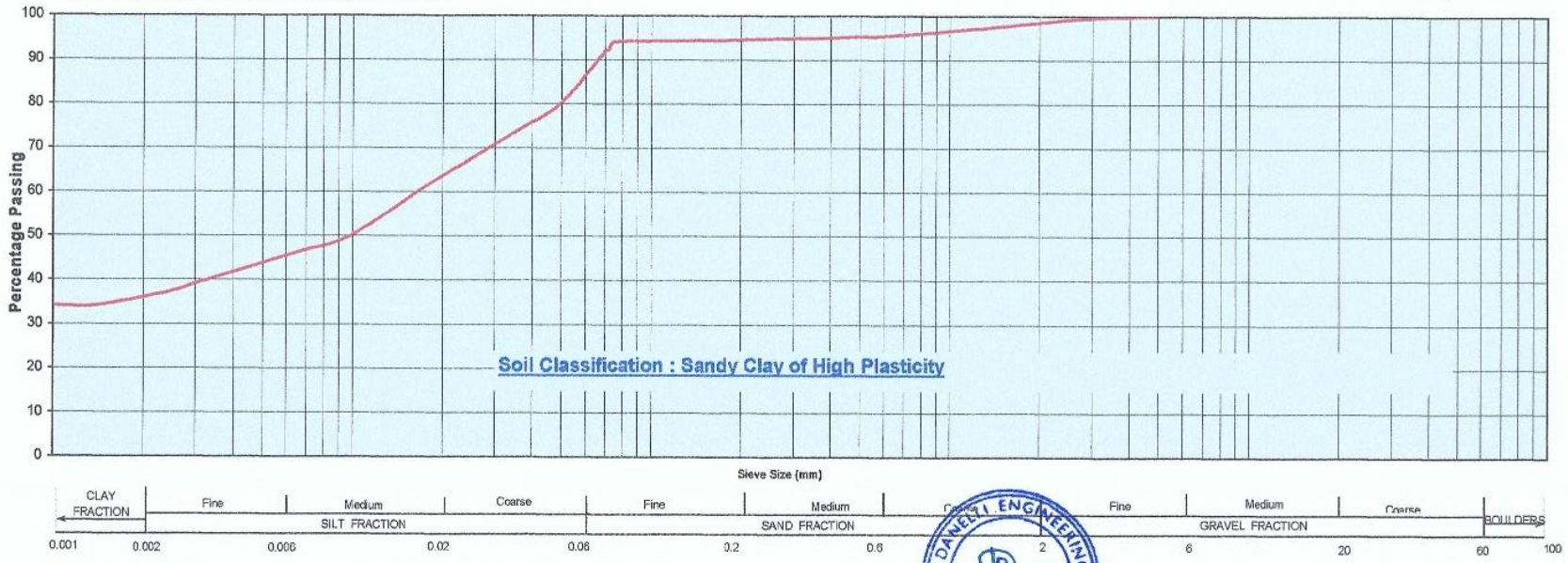
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM20+500(1.5-2.0m)

Head Office & Laboratories
Mombasa Road
Pill Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS- KAYABOMBO/4587



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	9.3
0.0014	9.3
0.0024	10.2
0.0034	11.0
0.0048	11.8
0.0067	12.6
0.0094	13.5
0.0132	15.1
0.0180	16.8
0.0253	18.5
0.0354	20.1
0.0493	21.8
0.0695	24.3
0.0720	25.1
0.075	25.6
0.15	27.8
0.212	29
0.3	31.0
0.425	32.1
0.6	35.2
1.18	42.5
2.36	59.5
3.35	75.2
5	91.4
6.3	94.2
10	99.2
14	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

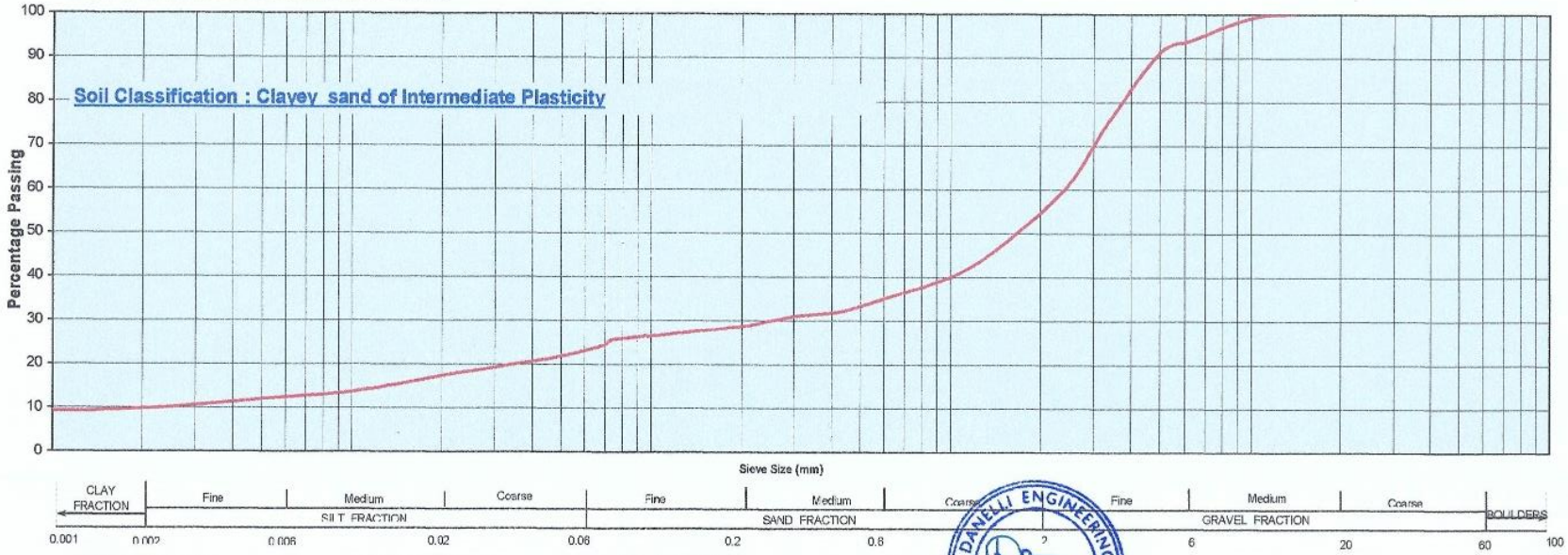
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM21+000

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS- KAYABOMBO/4588



Tested by: MICHAEL **Date Tested:** 12-10-21 **Date Reported:** 24-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	21
0.0014	21.6
0.0024	23.1
0.0034	24.5
0.0048	27.5
0.0067	30.4
0.0094	31.9
0.0132	33.3
0.0180	34.8
0.0253	36.3
0.0354	37.8
0.0493	40.7
0.0695	44.7
0.0720	45.1
0.075	45.2
0.15	46.7
0.212	47.8
0.3	50.2
0.425	53.1
0.6	59.5
1.18	73.5
2.36	89.8
3.35	94.4
5	98.4
6.3	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4589

REGIONAL GEOPHYSICAL SURVEY

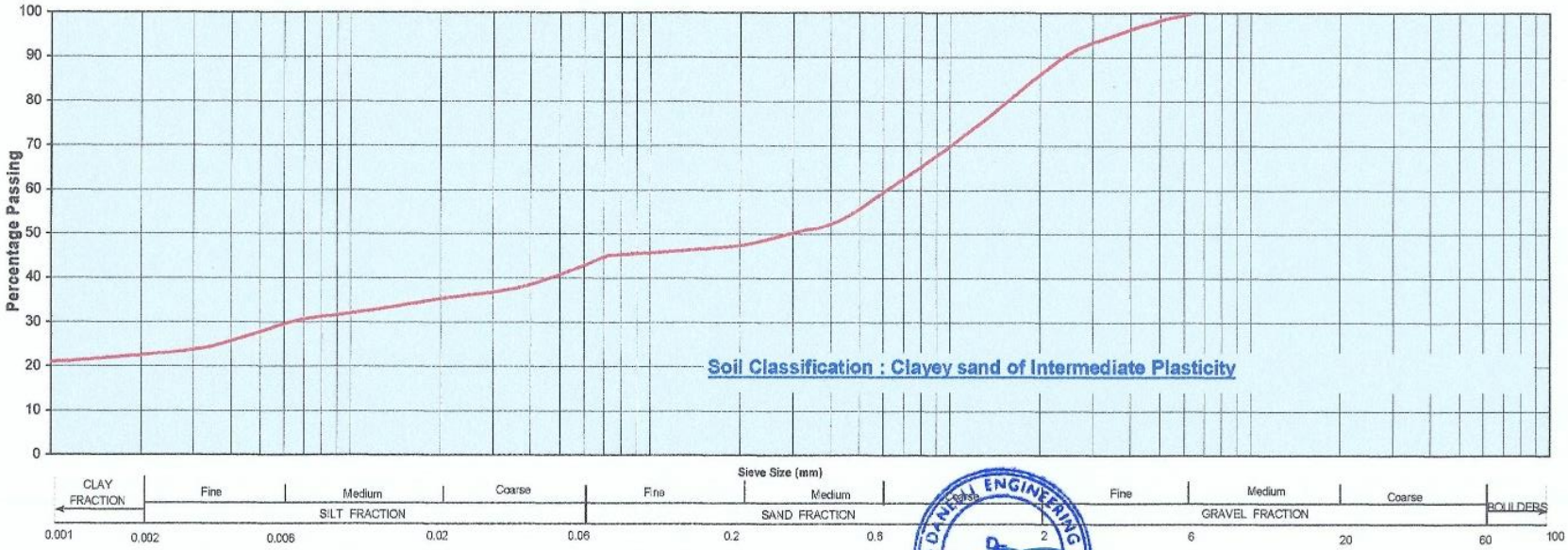
KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM21+500

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	21.4
0.0014	21.4
0.0024	26.3
0.0034	31.2
0.0048	33.7
0.0067	36.1
0.0094	41.0
0.0132	48.4
0.0180	50.9
0.0253	55.8
0.0354	60.7
0.0493	70.5
0.0695	74.6
0.0720	75.4
0.075	75.6
0.15	78.7
0.212	79.5
0.3	80.6
0.425	81.2
0.6	82.9
1.18	87.0
2.36	94.5
3.35	97.6
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4590

REGIONAL GEOPHYSICAL SURVEY

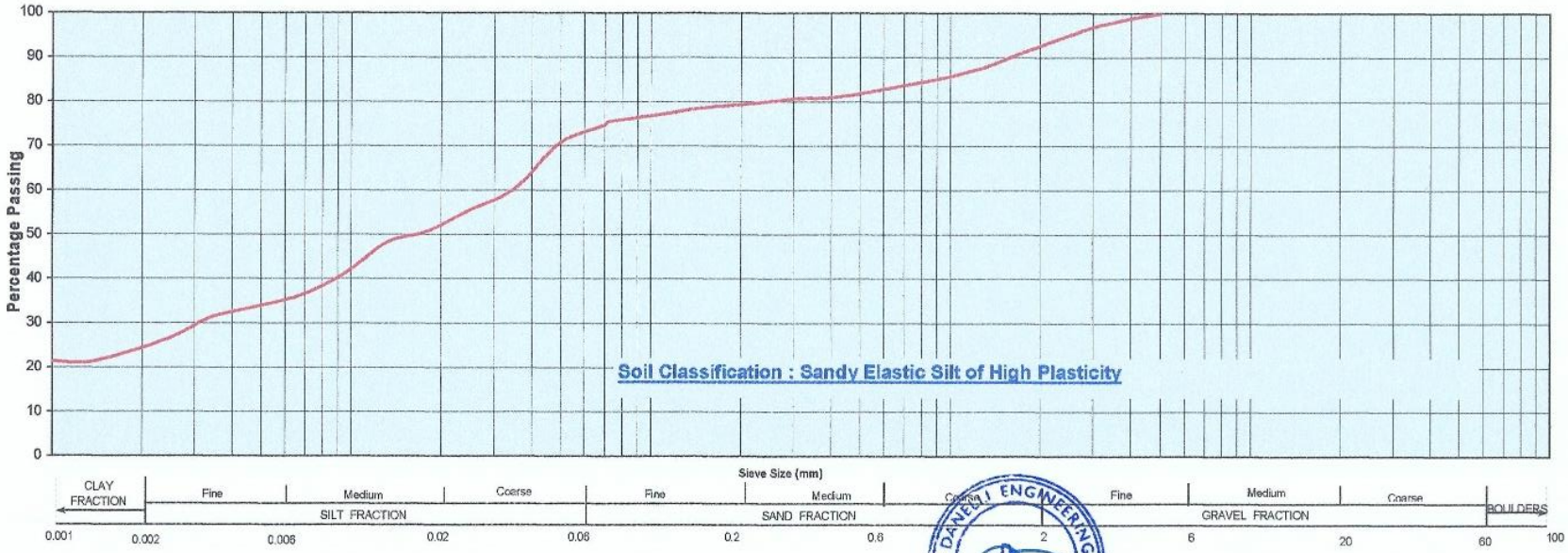
KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM22+500 (Depth:1.4m)

Head Office & Laboratories
Mombasa Road
Pill Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	22
0.0014	22.1
0.0024	24.7
0.0034	27.2
0.0048	34.8
0.0067	37.4
0.0094	42.4
0.0132	47.5
0.0180	52.6
0.0253	60.2
0.0354	67.9
0.0493	72.9
0.0695	77.8
0.0720	78.0
0.075	78.2
0.15	84.4
0.212	87
0.3	90.7
0.425	92.6
0.6	96.4
1.18	99.5
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4591

REGIONAL GEOPHYSICAL SURVEY

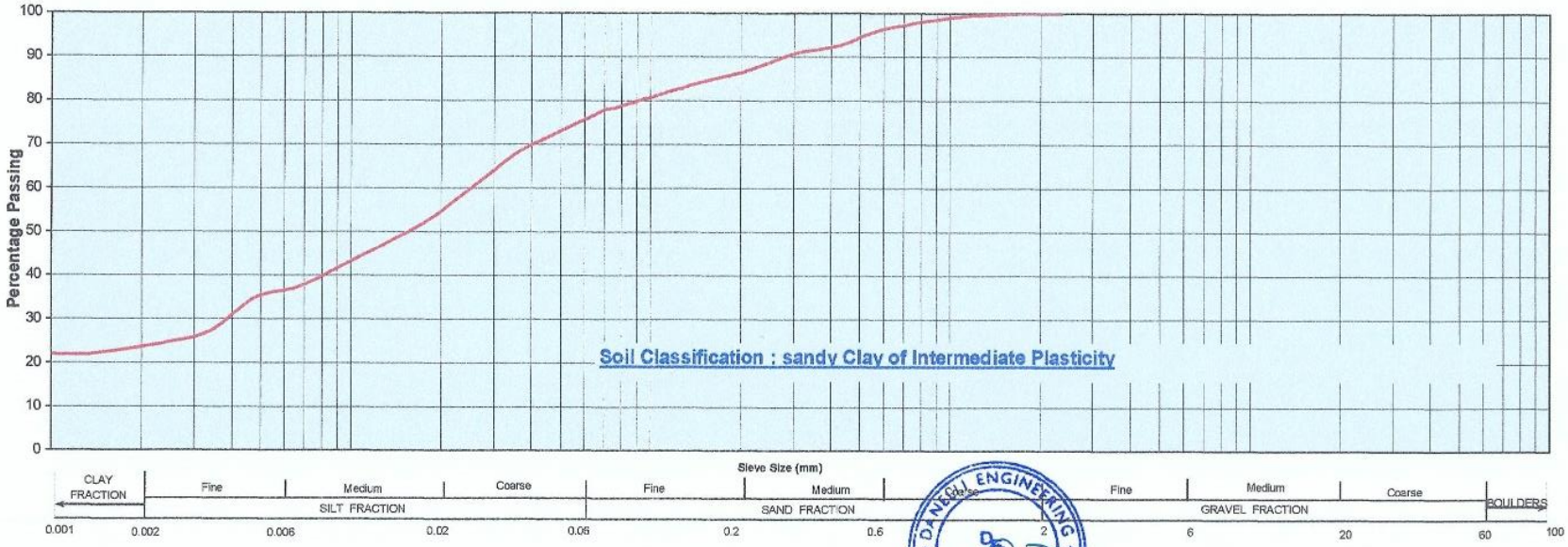
KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM23+500 (Depth: 1.5m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	15
0.0014	15.3
0.0024	16.9
0.0034	18.5
0.0048	20.1
0.0067	23.2
0.0094	26.4
0.0132	29.5
0.0180	32.7
0.0253	35.9
0.0354	39.0
0.0493	42.2
0.0695	47.3
0.0720	48.5
0.075	48.6
0.15	55.7
0.212	63.2
0.3	73.4
0.425	80.8
0.6	93.5
1.18	99.4
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4592

REGIONAL GEOPHYSICAL SURVEY

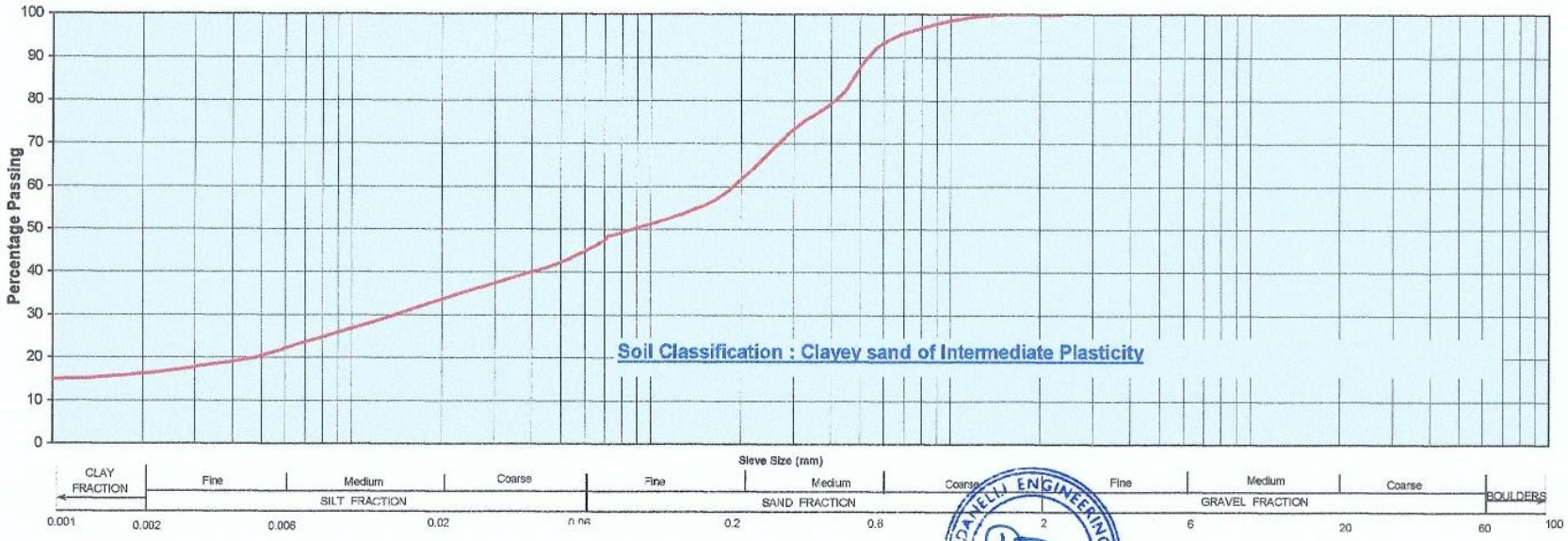
KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM24+000

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	9
0.0014	9.1
0.0024	9.7
0.0034	10.3
0.0048	12.0
0.0067	10.9
0.0094	13.2
0.0132	14.4
0.0180	15.0
0.0253	15.5
0.0354	16.1
0.0493	16.7
0.0695	17.3
0.0720	17.9
0.075	17.9
0.15	24.7
0.212	32.4
0.3	50.4
0.425	59.8
0.6	82.6
1.18	98.5
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4593

REGIONAL GEOPHYSICAL SURVEY

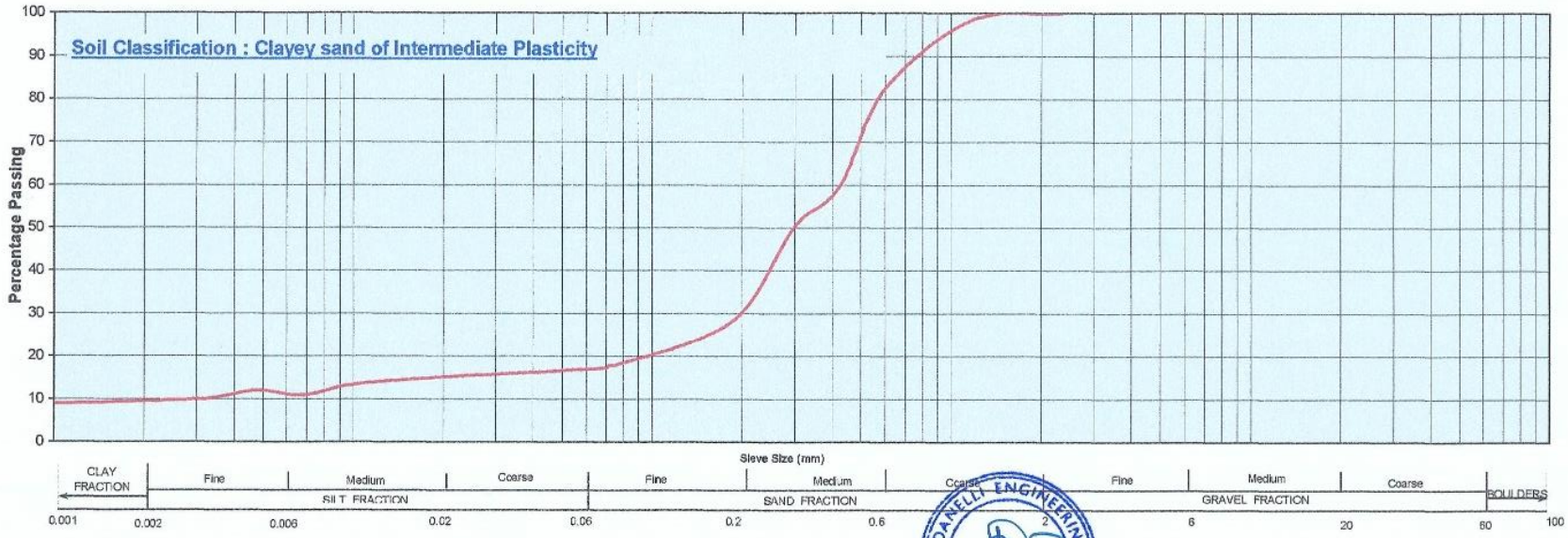
KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM24+500

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	4
0.0014	4.6
0.0024	5.1
0.0034	5.7
0.0048	6.8
0.0067	7.4
0.0094	7.9
0.0132	9.1
0.0180	10.2
0.0253	11.3
0.0354	12.4
0.0493	14.1
0.0695	15.8
0.0720	16.9
0.075	17.2
0.15	29.9
0.212	40.2
0.3	53.4
0.425	64.7
0.6	88.5
1.18	99.5
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

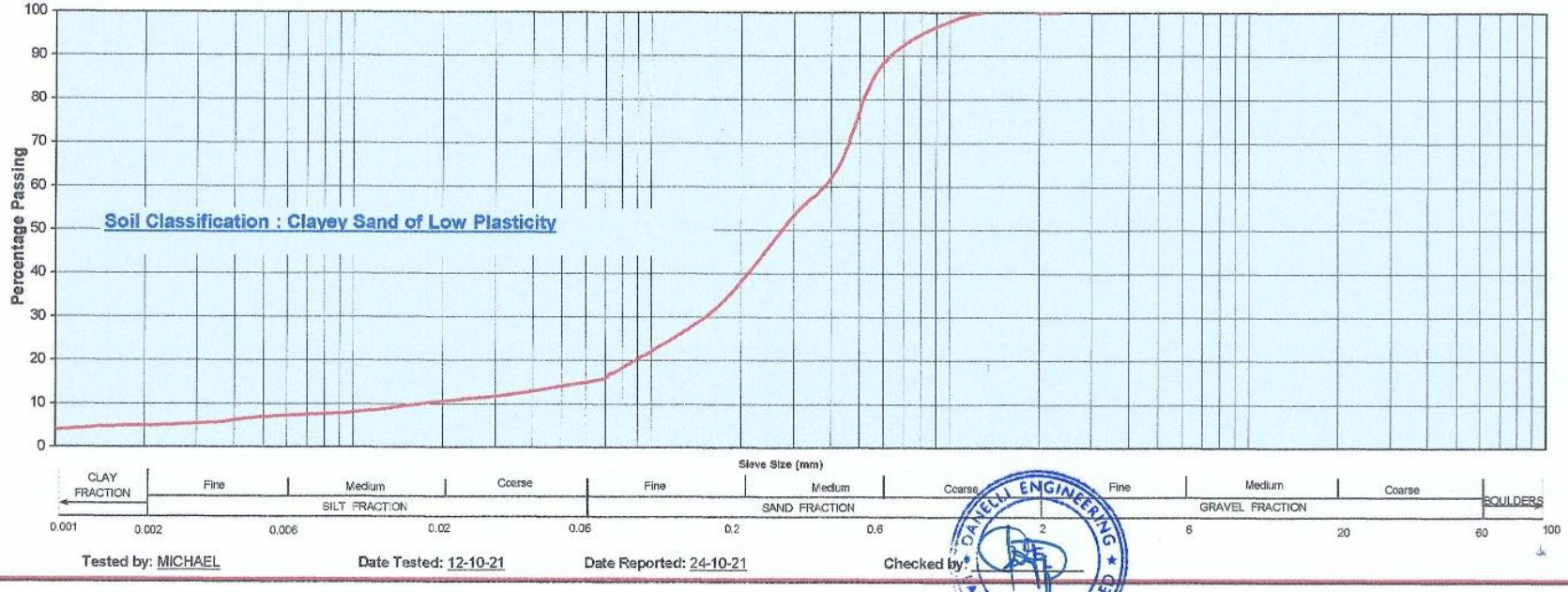
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM25+000

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS- KAYABOMBO/4594



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	3.5
0.0014	3.5
0.0024	3.9
0.0034	4.3
0.0048	5.2
0.0067	5.6
0.0094	6.0
0.0132	6.8
0.0180	7.7
0.0253	8.5
0.0354	9.4
0.0493	10.6
0.0695	11.9
0.0720	12.8
0.075	13
0.15	24.5
0.212	40.5
0.3	56.8
0.425	67.3
0.6	85.4
1.18	99.3
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4595

REGIONAL GEOPHYSICAL SURVEY

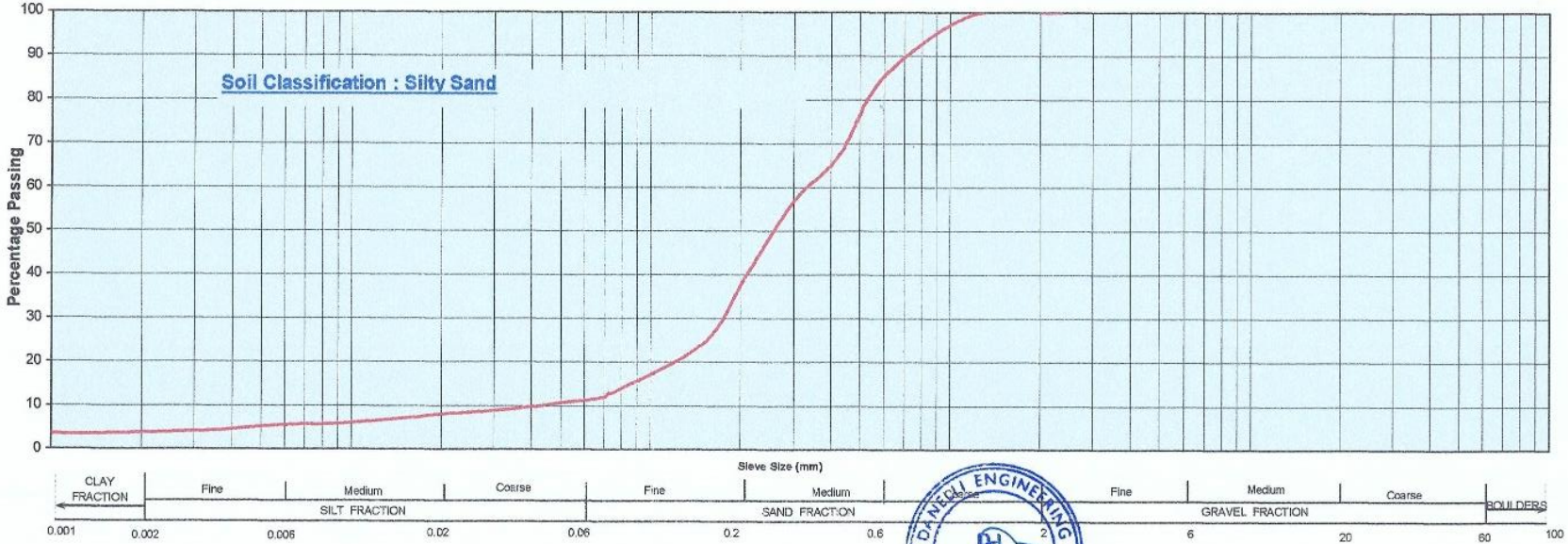
KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM25+500

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	4
0.0014	3.2
0.0024	3.7
0.0034	4.2
0.0048	4.7
0.0067	5.2
0.0094	5.8
0.0132	6.3
0.0180	7.3
0.0253	8.3
0.0354	9.9
0.0493	11.9
0.0695	14.0
0.0720	15.5
0.075	15.8
0.15	33.7
0.212	45.4
0.3	61.5
0.425	68.6
0.6	85.1
1.18	99.0
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4596

REGIONAL GEOPHYSICAL SURVEY

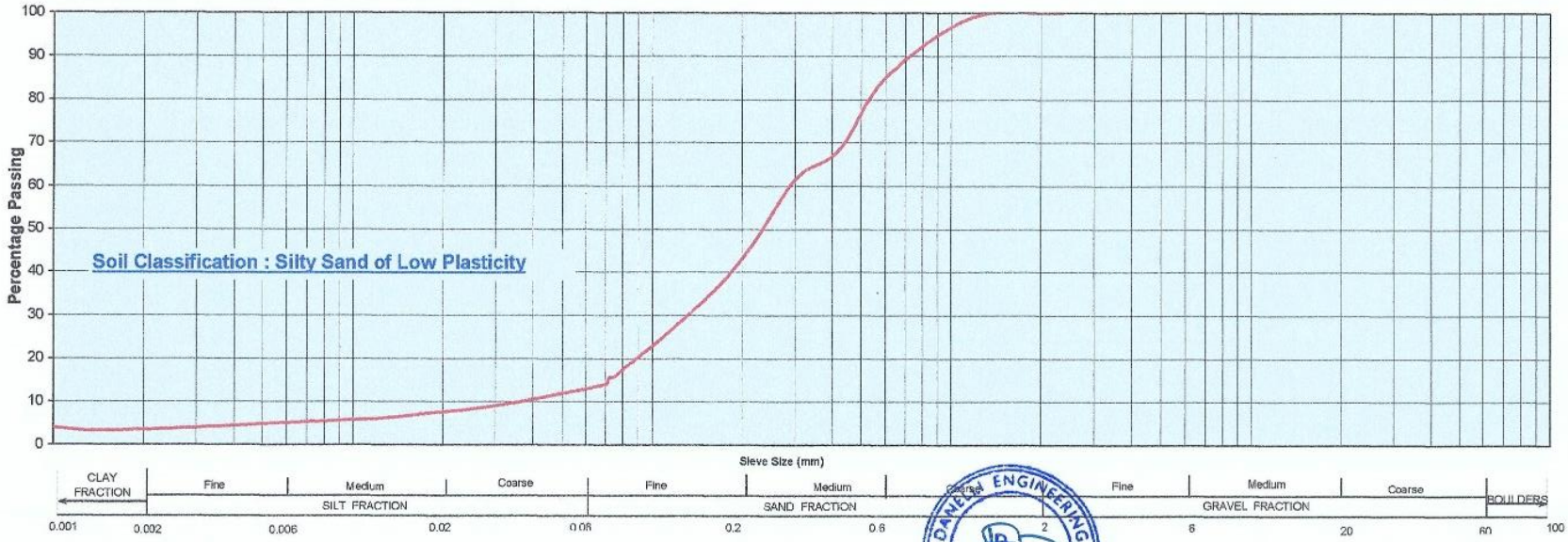
KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM26+000

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	3.3
0.0014	3.3
0.0024	3.7
0.0034	4.0
0.0048	4.2
0.0067	4.4
0.0094	4.7
0.0132	4.9
0.0180	5.1
0.0253	5.4
0.0354	5.6
0.0493	6.0
0.0695	6.5
0.0720	7.0
0.075	7.1
0.15	14.7
0.212	26.5
0.3	48.5
0.425	59.6
0.6	86.6
1.18	99.5
2.36	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS- KAYABOMBO/4597

REGIONAL GEOPHYSICAL SURVEY

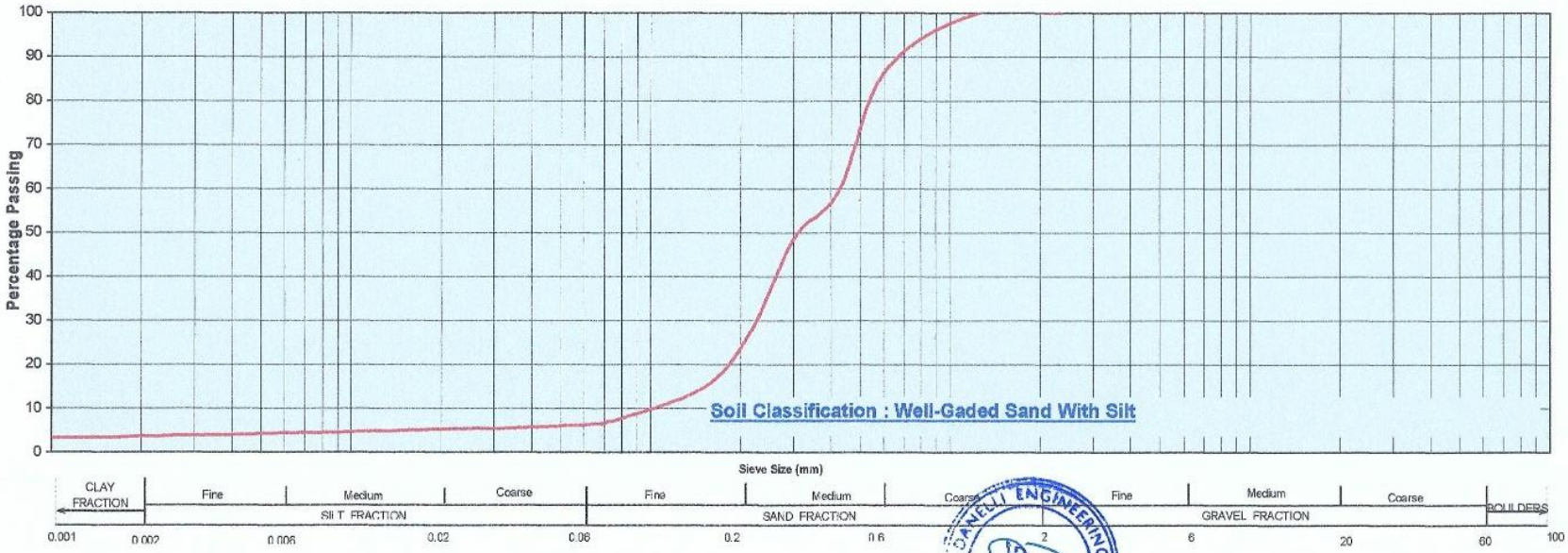
KAYABOMBO SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM26+500

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL Date Tested: 12-10-21 Date Reported: 24-10-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	16
0.0014	16.4
0.0024	18.1
0.0034	19.7
0.0048	21.3
0.0067	22.9
0.0094	26.1
0.0132	29.3
0.0180	32.6
0.0253	35.8
0.0354	39.0
0.0493	43.8
0.0695	47.1
0.0720	48.7
0.075	49.8
0.15	54.3
0.212	57.9
0.3	63.1
0.425	65.5
0.6	70.5
1.18	79.2
2.36	87.8
3.35	91.0
5	94.3
6.3	94.9
10.0	97.2
14	99.0
20	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE PIPELINE SITE

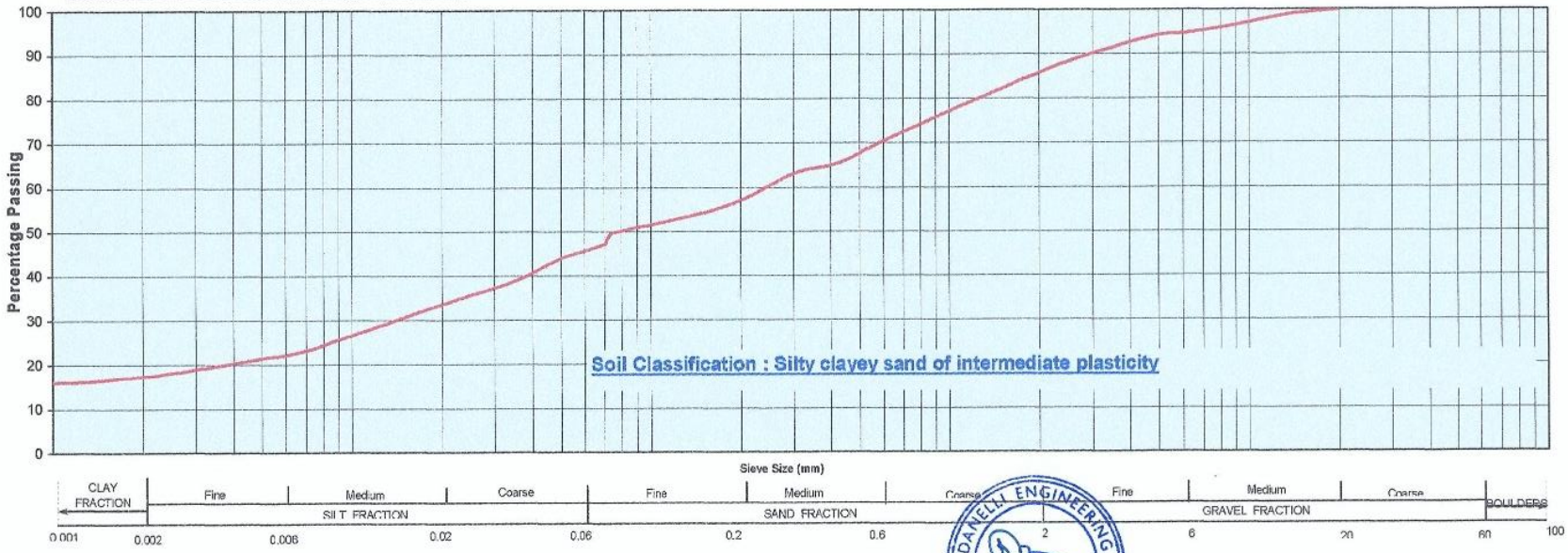
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM0+000 (Depth:0.0-0.3m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/5688



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	10
0.0014	10.8
0.0024	11.4
0.0034	12.0
0.0048	12.6
0.0067	13.2
0.0094	13.8
0.0132	14.4
0.0180	15.0
0.0253	15.6
0.0354	16.2
0.0493	16.8
0.0695	17.4
0.0720	18.0
0.075	18.3
0.15	19.7
0.212	21.1
0.3	22.4
0.425	23.2
0.6	25.6
1.18	33.3
2.36	50.2
3.35	61.4
5	78.7
6.3	82.5
10	97.0
14	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS-CHANGAMWE/5689

REGIONAL GEOPHYSICAL SURVEY

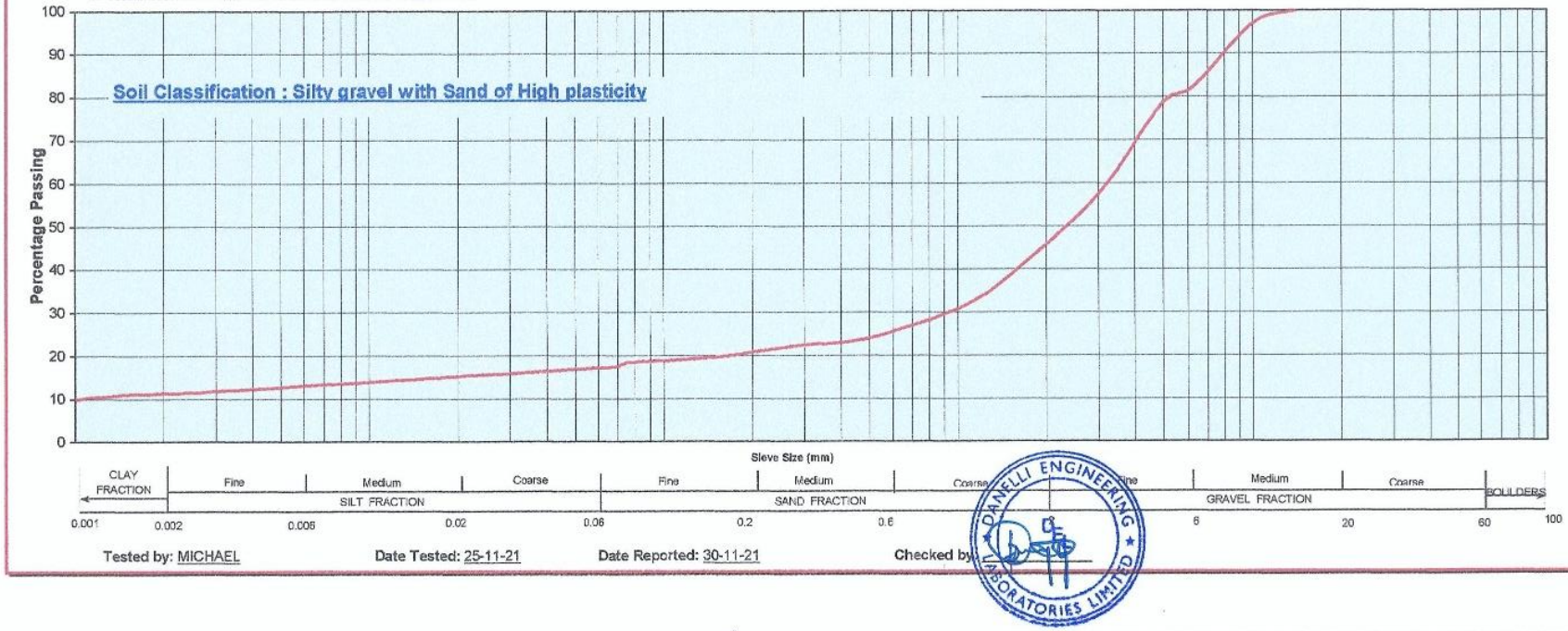
CHANGAMWE PIPELINE SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM2+000 (Depth:0.4-1.6m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL

Date Tested: 25-11-21

Date Reported: 30-11-21

Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	6
0.0014	6.9
0.0024	7.4
0.0034	7.8
0.0048	8.7
0.0067	9.5
0.0094	10.0
0.0132	10.4
0.0180	10.8
0.0253	11.2
0.0354	11.7
0.0493	12.1
0.0695	12.5
0.0720	13.0
0.075	13.2
0.15	14.3
0.212	14.9
0.3	16.1
0.425	17.0
0.6	19.9
1.18	30.0
2.36	49.8
3.35	64.8
5	85.6
6.3	89.2
10	96.9
14	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

Lab Ref: TM/RGS-CHANGAMWE/5690

REGIONAL GEOPHYSICAL SURVEY

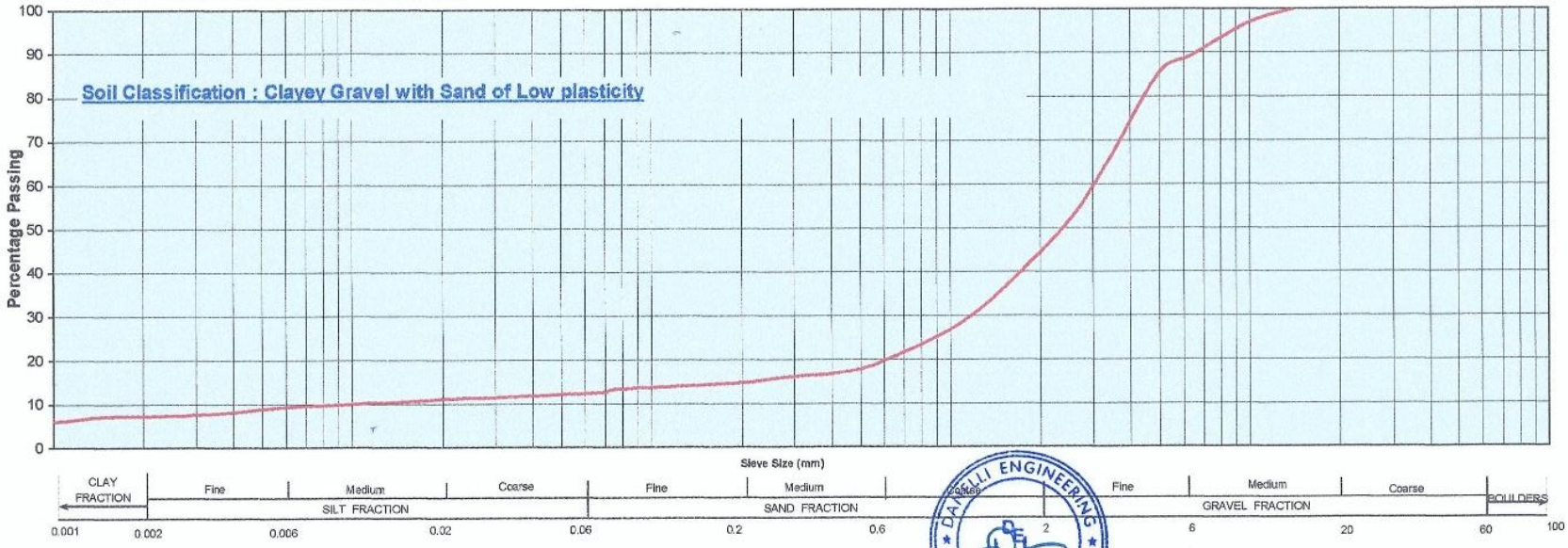
CHANGAMWE PIPELINE SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM2+500 (Depth:0.6-1.6m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya



Tested by: MICHAEL

Date Tested: 25-11-21

Date Reported: 30-11-21

Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	19.4
0.0014	19.4
0.0024	23.9
0.0034	30.5
0.0048	32.8
0.0067	39.5
0.0094	41.7
0.0132	46.2
0.0180	52.8
0.0253	55.1
0.0354	59.5
0.0493	64.0
0.0695	67.7
0.0720	68.4
0.075	68.6
0.15	71.8
0.212	74.7
0.3	80.9
0.425	86.8
0.6	94.5
1.18	97.9
2.36	99.0
3.35	99.5
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE PIPELINE SITE

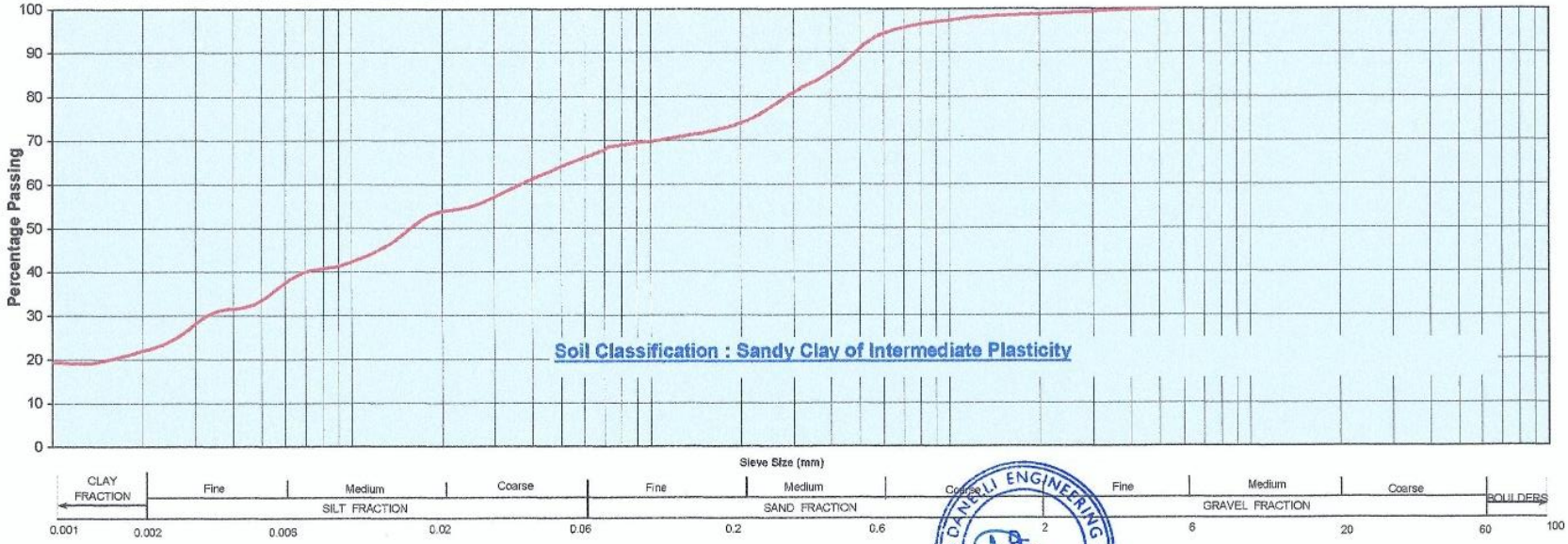
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM3+000 (Depth:0.5-1.6m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/5691



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	20
0.0014	20.7
0.0024	22.0
0.0034	23.3
0.0048	24.6
0.0067	25.9
0.0094	27.2
0.0132	29.9
0.0180	32.5
0.0253	35.1
0.0354	36.5
0.0493	37.8
0.0695	39.1
0.0720	40.4
0.075	40.5
0.15	42.9
0.212	44.3
0.3	46.9
0.425	49.0
0.6	53.3
1.18	64.4
2.36	81.5
3.35	89.9
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE PIPELINE SITE

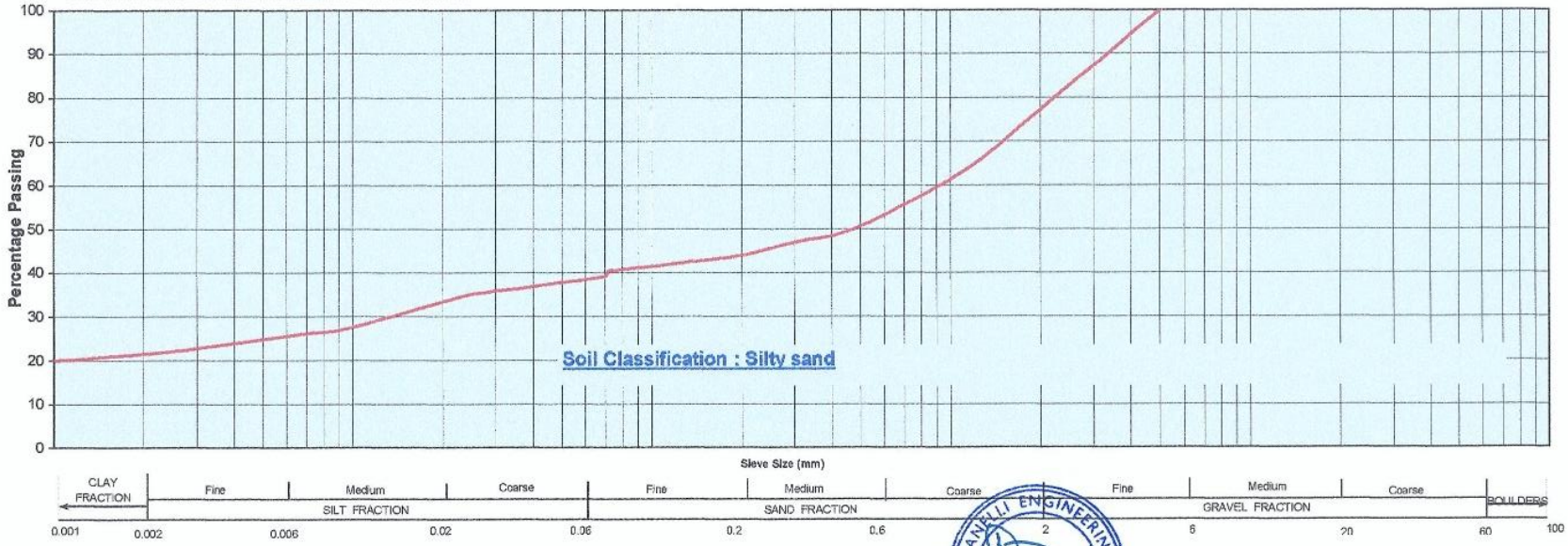
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM3+500 (Depth:0.5-0.9m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/5692



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	8.0
0.0014	8.8
0.0024	10.6
0.0034	12.5
0.0048	14.3
0.0067	16.2
0.0094	19.9
0.0132	23.7
0.0180	29.2
0.0253	36.7
0.0354	44.1
0.0493	49.7
0.0695	55.6
0.0720	57.2
0.075	57.3
0.15	90.2
0.212	97
0.3	98.8
0.425	99.2
0.6	99.6
1.18	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE PIPELINE SITE

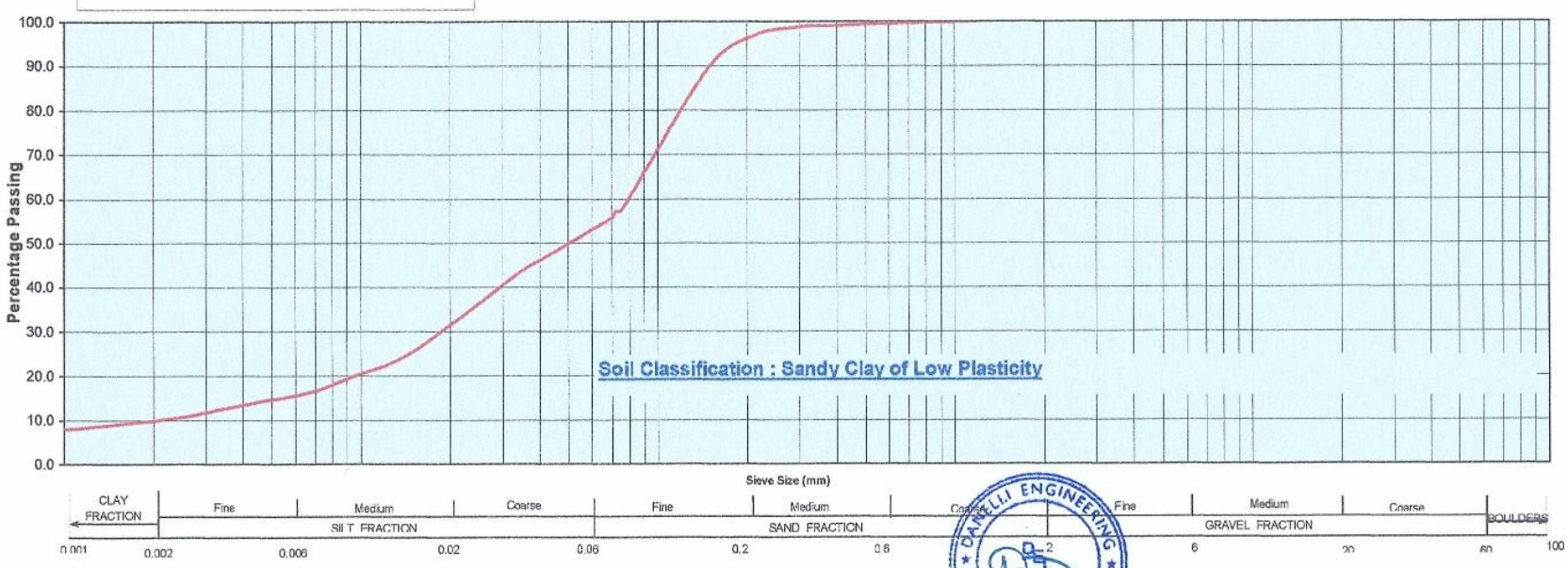
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM4+500 (Depth:0.2-1.7m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/5693



Tested by: MICHAEL **Date Tested:** 25-11-21 **Date Reported:** 30-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	9.6
0.0014	9.6
0.0024	11.1
0.0034	12.5
0.0048	14.0
0.0067	15.4
0.0094	18.3
0.0132	21.2
0.0180	24.0
0.0253	28.4
0.0354	34.1
0.0493	38.4
0.0695	42.7
0.0720	44.2
0.075	44.3
0.15	65.5
0.212	86.7
0.3	91.3
0.425	92.8
0.6	94.6
1.18	95.6
2.36	96.7
3.35	97.5
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE PIPELINE SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM5+000 (Depth:0.0-0.8m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/5694

Tested by: MICHAEL **Date Tested:** 25-11-21 **Date Reported:** 30-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	6.0
0.0014	6.2
0.0024	7.6
0.0034	8.3
0.0048	9.0
0.0067	11.1
0.0094	11.8
0.0132	13.2
0.0180	15.4
0.0253	16.1
0.0354	17.5
0.0493	18.9
0.0695	20.3
0.0720	21.8
0.075	21.8
0.15	40.2
0.212	64.6
0.3	78.6
0.425	84.2
0.6	96.0
1.18	99.3
2.36	99.5
3.35	99.7
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE PIPELINE SITE

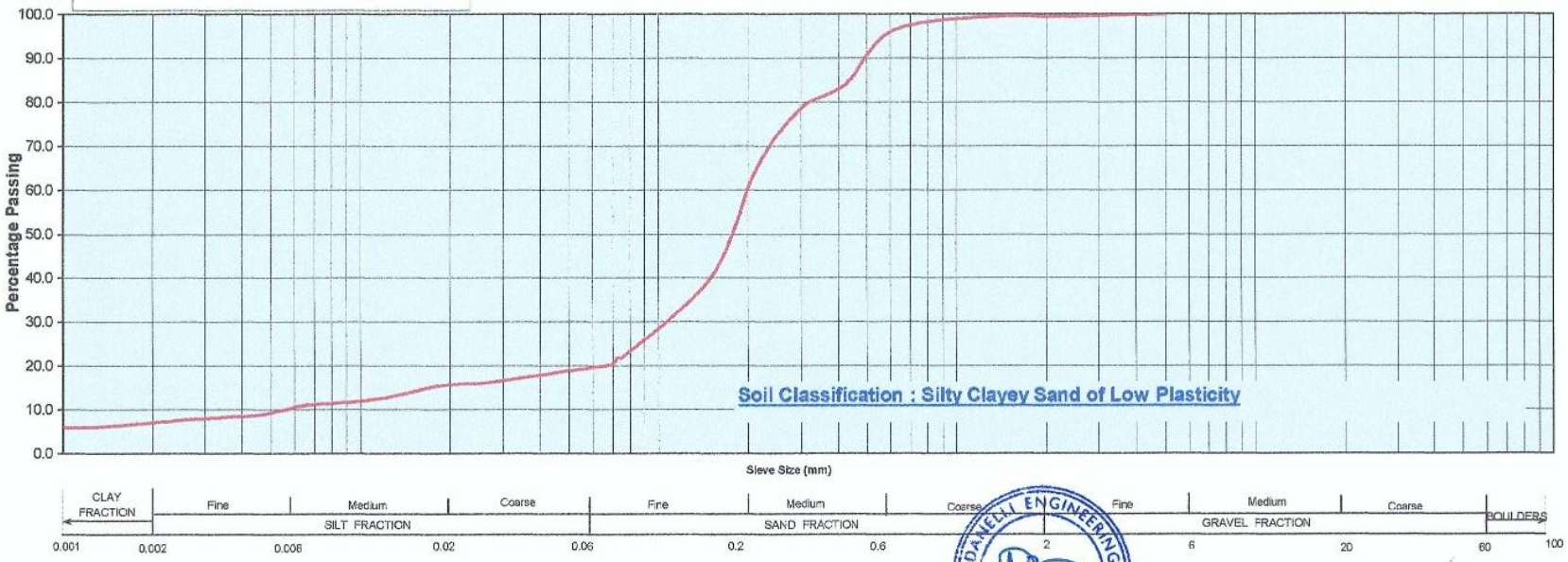
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM6+000 (Depth:0.5-1.2m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/5695



Tested by: MICHAEL **Date Tested:** 25-11-21 **Date Reported:** 30-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	9.0
0.0014	9.6
0.0024	11.8
0.0034	14.0
0.0048	15.1
0.0067	16.2
0.0094	18.4
0.0132	20.6
0.0180	22.8
0.0253	25.0
0.0354	27.2
0.0493	29.4
0.0695	32.7
0.0720	33.8
0.075	33.9
0.15	45.7
0.212	55.4
0.3	63.4
0.425	67.2
0.6	74.3
1.18	80.7
2.36	85.0
3.35	87.0
5	90.4
6.3	91.3
10	95.4
14	97.8
20	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE PIPELINE SITE

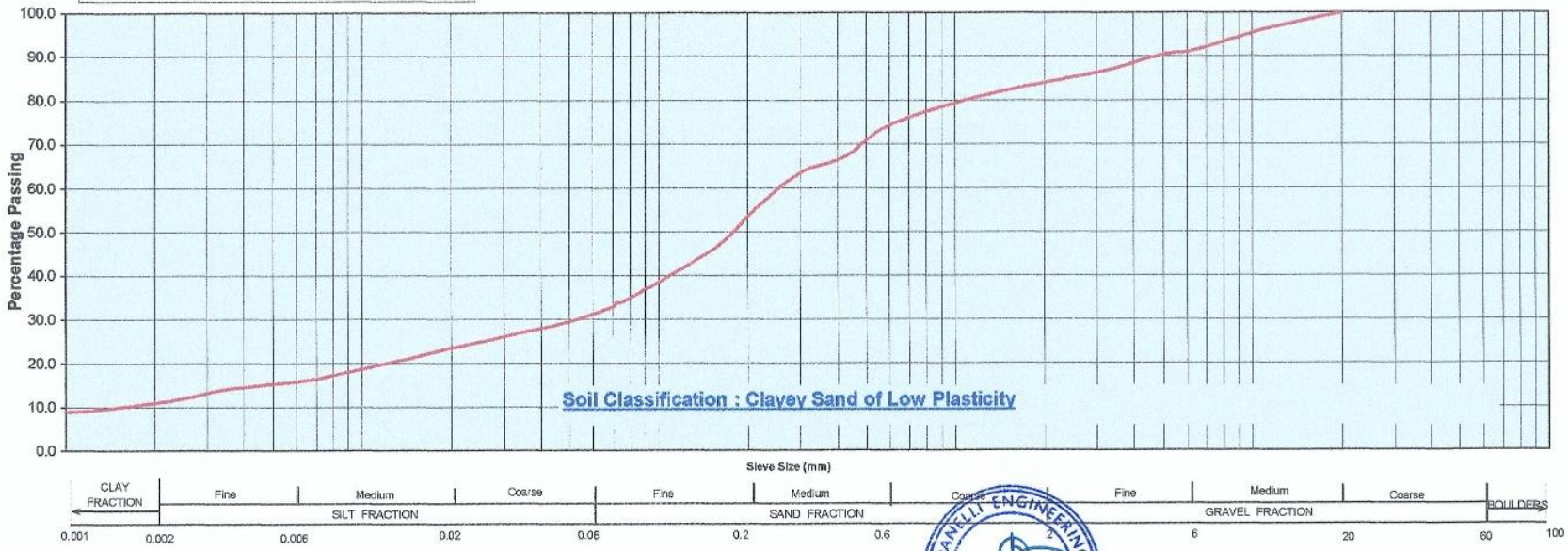
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM7+000 (Depth:1.0-1.2m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/5696



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	3.2
0.0014	3.2
0.0024	4.6
0.0034	5.9
0.0048	7.3
0.0067	8.6
0.0094	10.7
0.0132	11.3
0.0180	12.7
0.0253	14.1
0.0354	16.1
0.0493	18.1
0.0695	19.5
0.0720	20.9
0.075	20.9
0.15	36.6
0.212	57.1
0.3	78.7
0.425	84.9
0.6	95.5
1.18	99.4
2.36	99.6
3.35	99.8
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE PIPELINE SITE

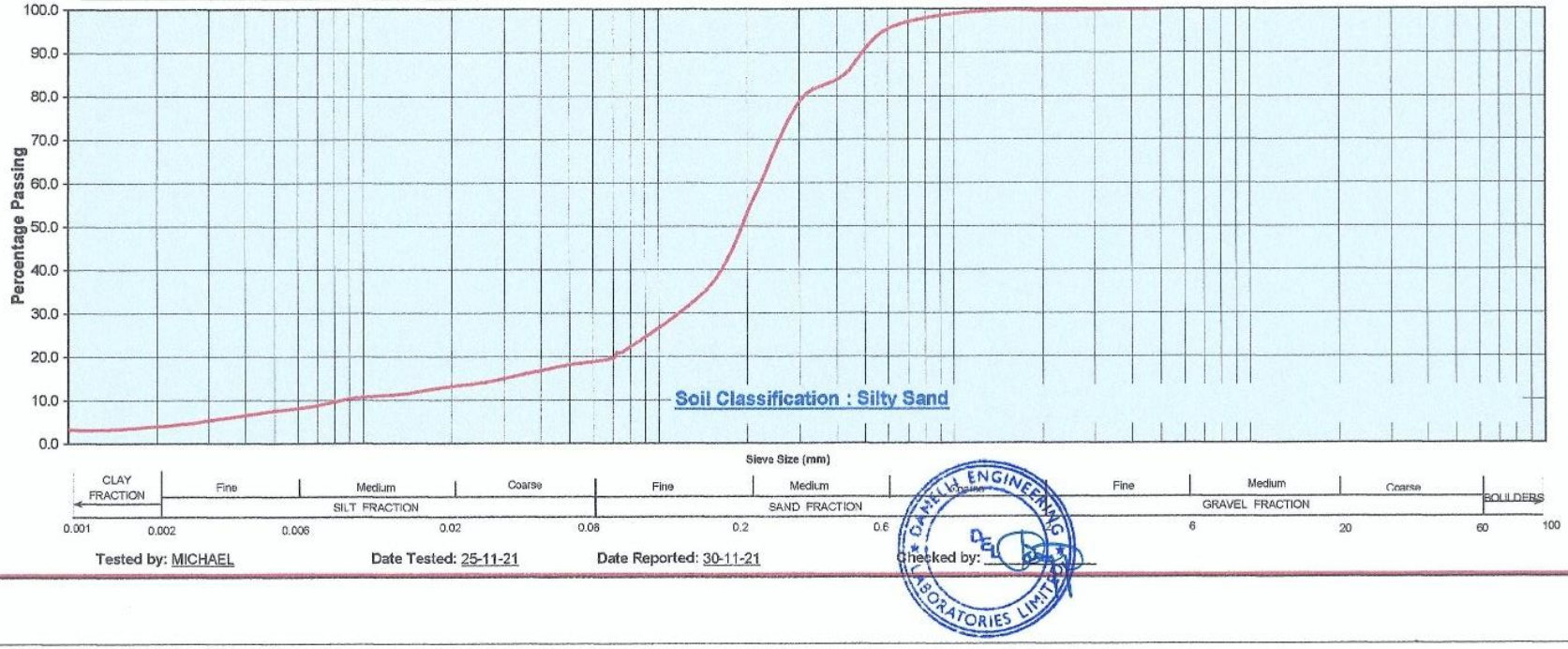
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM7+500 (Depth:0.2-0.9m)

Head Office & Laboratories
Mombasa Road
Pill Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/5697



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	0.9
0.0014	0.9
0.0024	3.3
0.0034	7.0
0.0048	8.3
0.0067	10.7
0.0094	13.2
0.0132	15.6
0.0180	19.3
0.0253	23.0
0.0354	26.7
0.0493	31.7
0.0695	35.4
0.0720	37.8
0.075	37.9
0.15	55.4
0.212	67.9
0.3	84.5
0.425	89.5
0.6	96.4
1.18	99.6
2.36	99.8
3.35	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE PIPELINE SITE

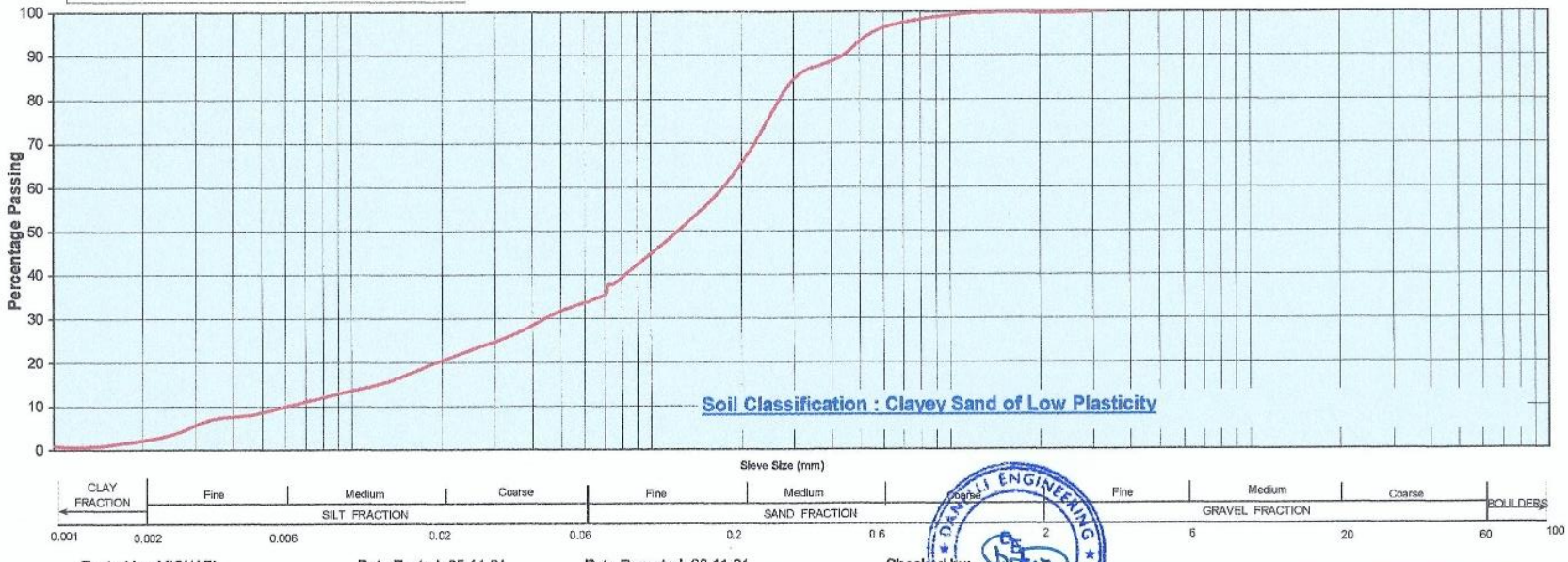
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM8+000 (Depth:0.0-1.0m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/5698



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	7.0
0.0014	7.5
0.0024	9.1
0.0034	10.7
0.0048	13.9
0.0067	17.1
0.0094	18.7
0.0132	23.5
0.0180	28.2
0.0253	31.4
0.0354	37.8
0.0493	42.6
0.0695	47.8
0.0710	49.0
0.075	49.1
0.15	80.3
0.212	87.1
0.3	93.5
0.425	94.9
0.6	96.3
1.18	97.4
2.36	98.1
3.35	98.5
5	99.7
6.3	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE PIPELINE SITE

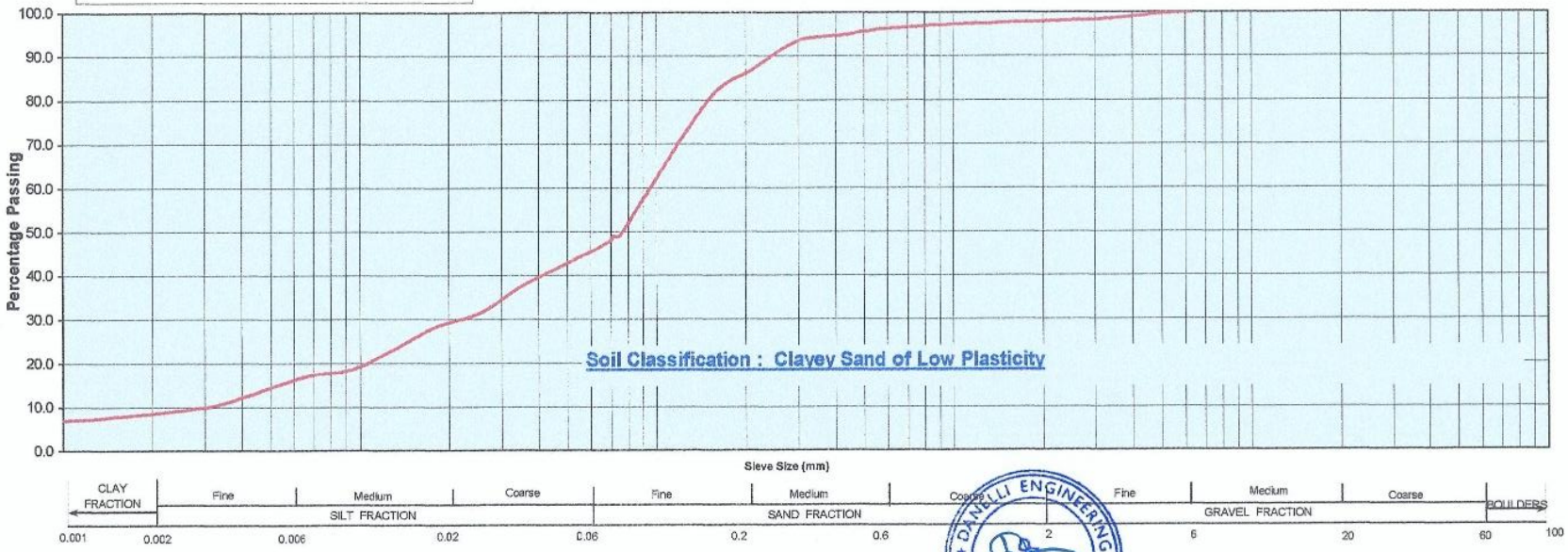
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM8+500 (Depth:0.8-1.0m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/5699



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	9.7
0.0014	9.7
0.0024	10.9
0.0034	13.5
0.0048	17.2
0.0067	18.5
0.0094	21.0
0.0132	23.5
0.0180	26.0
0.0253	28.6
0.0354	31.1
0.0493	33.6
0.0695	37.5
0.0720	38.6
0.075	38.7
0.15	53.3
0.212	69.5
0.3	87.9
0.425	93.4
0.6	98.3
1.18	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE PIPELINE SITE

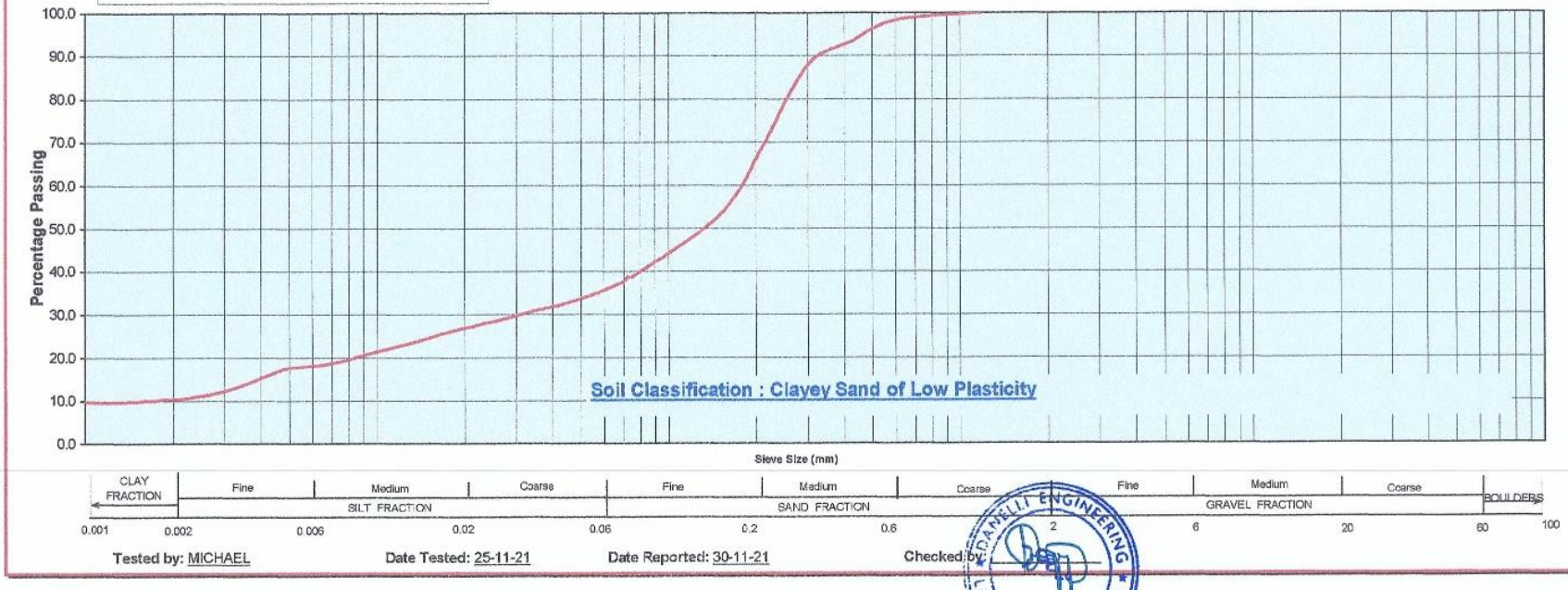
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM9+000 (Depth:0.9-1.5m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/5700



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	2.5
0.0014	2.5
0.0024	3.2
0.0034	4.0
0.0048	4.8
0.0067	5.6
0.0094	6.3
0.0132	7.9
0.0180	10.2
0.0253	12.5
0.0354	14.9
0.0493	17.9
0.0695	21.6
0.0720	23.4
0.075	23.8
0.15	48.8
0.212	73.9
0.3	85.2
0.425	89.0
0.6	96.2
1.18	98.9
2.36	99.1
3.35	99.3
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE PIPELINE SITE

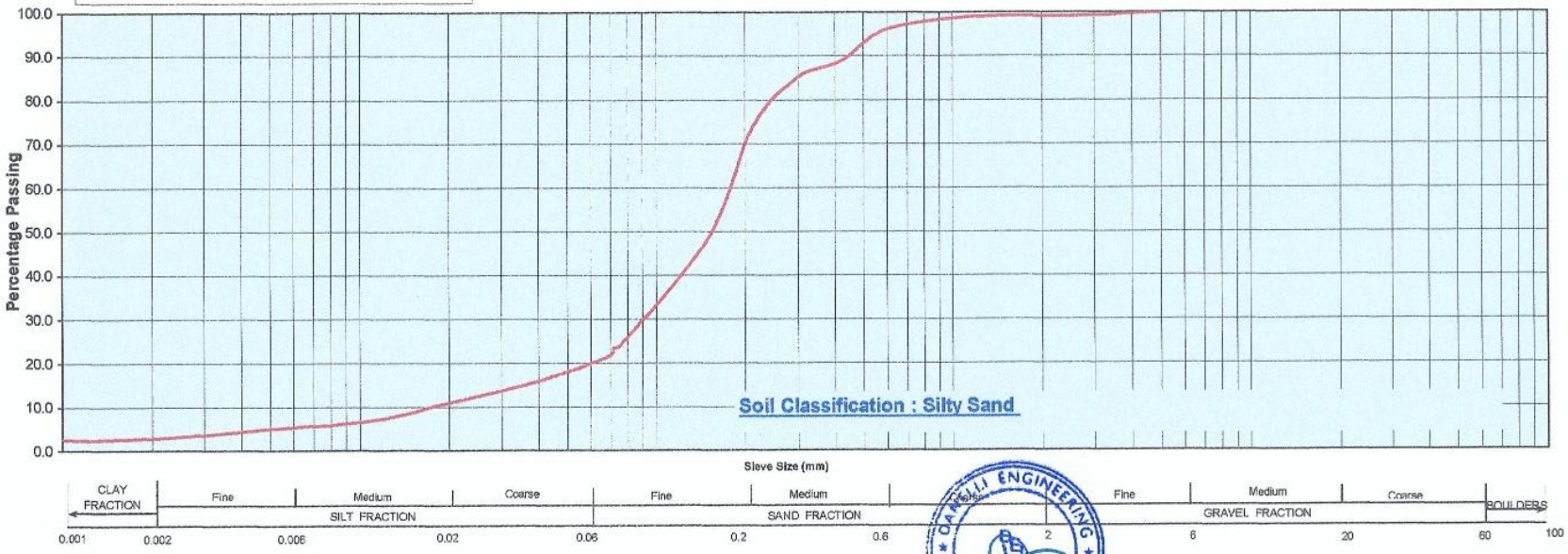
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM11+000 (Depth:1.4-1.6m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/5701



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	8.0
0.0014	8.4
0.0024	10.4
0.0034	12.4
0.0048	14.4
0.0067	16.4
0.0094	20.5
0.0132	22.5
0.0180	28.5
0.0253	34.5
0.0354	42.5
0.0493	50.5
0.0695	58.2
0.0720	60.6
0.075	61.7
0.15	86.5
0.212	94.6
0.3	96.7
0.425	98.1
0.6	99.5
1.18	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE PIPELINE SITE

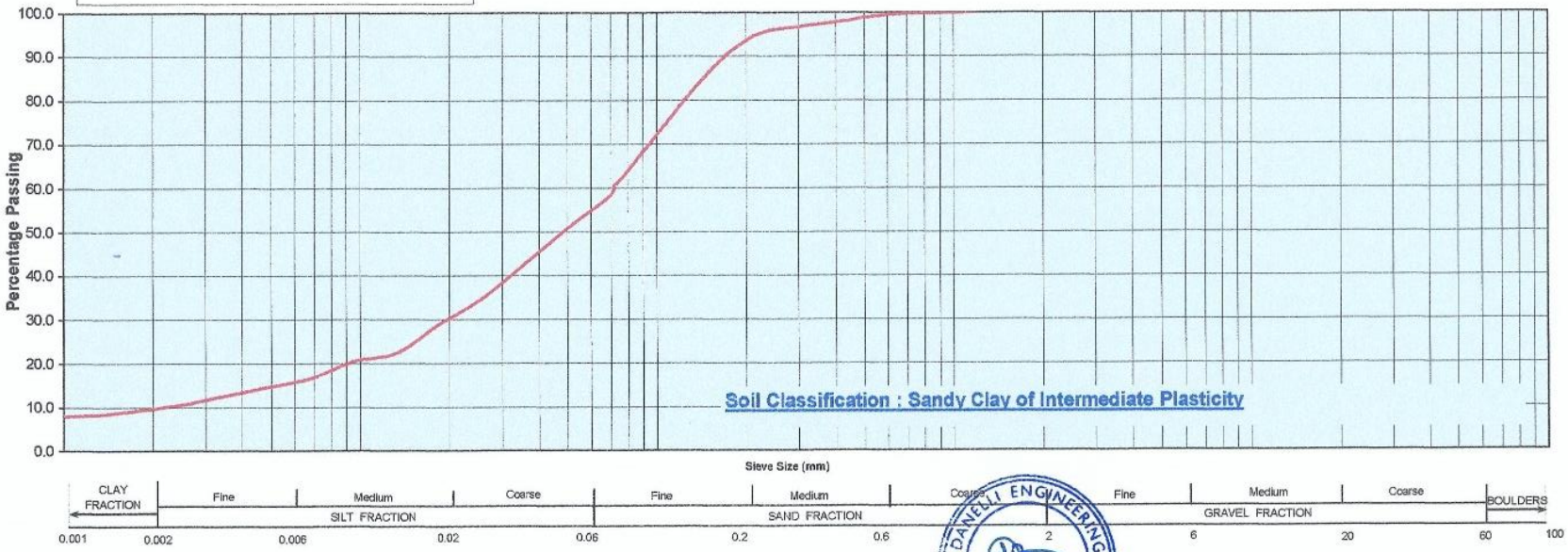
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM11+500 (Depth:0.3-1.6m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/5702



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	7.7
0.0014	7.7
0.0024	11.4
0.0034	13.2
0.0048	15.1
0.0067	18.8
0.0094	24.3
0.0132	26.1
0.0180	29.8
0.0253	33.5
0.0354	39.0
0.0493	46.4
0.0695	53.3
0.0720	55.6
0.075	56.6
0.15	88.8
0.212	96.5
0.3	98.1
0.425	98.7
0.6	99.5
1.18	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE PIPELINE SITE

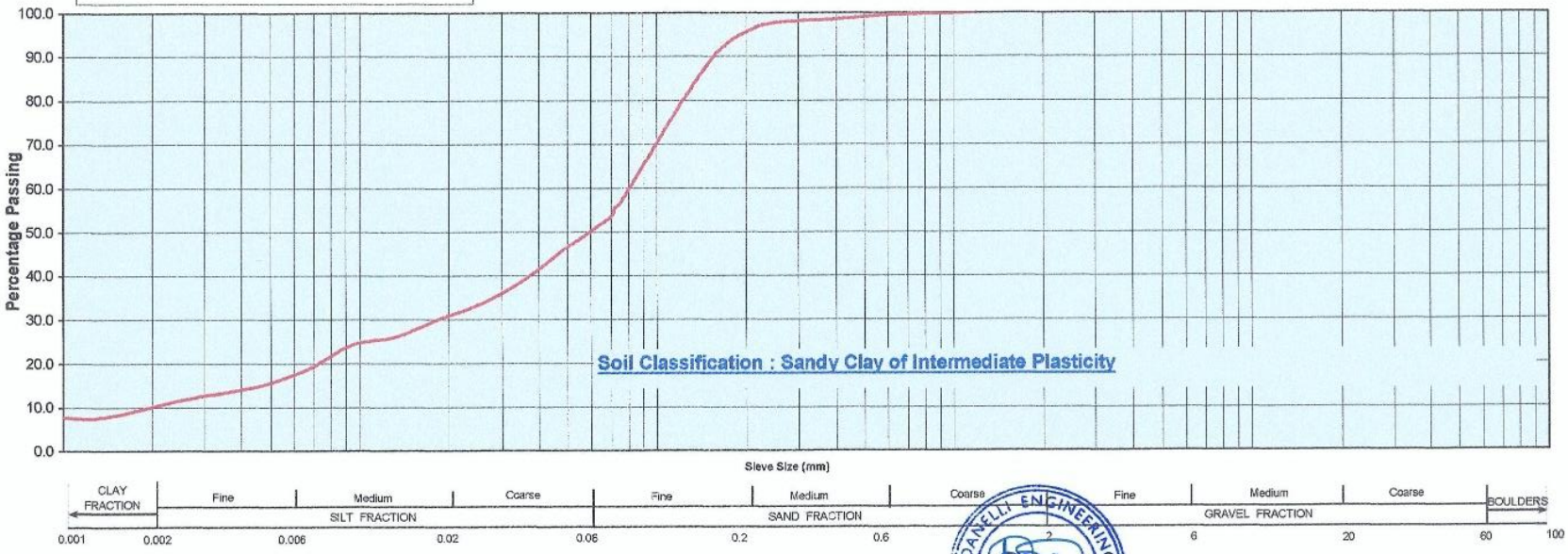
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM11+618 (Depth:0.3-1.2m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-CHANGAMWE/5703



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	7.9
0.0014	7.9
0.0024	8.9
0.0034	9.8
0.0048	12.5
0.0067	13.4
0.0094	15.3
0.0132	18.0
0.0180	18.9
0.0253	20.7
0.0354	22.6
0.0493	25.3
0.0695	26.2
0.0720	28.0
0.075	28.1
0.15	33.8
0.212	37.4
0.3	43.4
0.425	46.2
0.6	58.7
1.18	74.9
2.36	83.5
3.35	86.6
5	90.9
6.3	92.6
10.0	97.8
14	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

MZIMA SITE

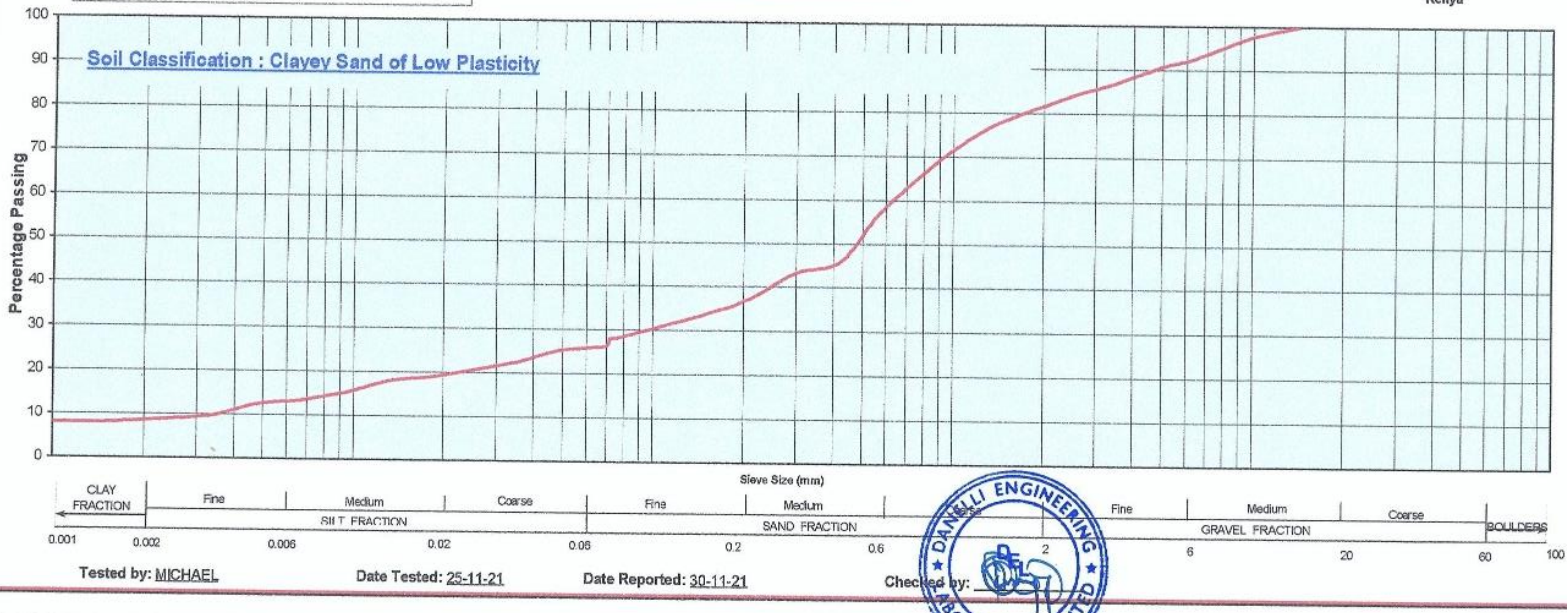
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM0+500 (Depth:0.0-0.8m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-MZIMA/5707



Tested by: MICHAEL **Date Tested:** 25-11-21 **Date Reported:** 30-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	8.5
0.0014	8.5
0.0024	9.5
0.0034	10.5
0.0048	12.4
0.0067	13.4
0.0094	14.4
0.0132	16.3
0.0180	18.3
0.0253	20.2
0.0354	23.2
0.0493	26.1
0.0695	28.1
0.0720	30.0
0.075	30.1
0.15	39.4
0.212	48
0.3	58.9
0.425	63.5
0.6	72.4
1.18	79.8
2.36	82.5
3.35	84.7
5	90.2
6.3	92.2
10.0	99.7
14	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

MZIMA SITE

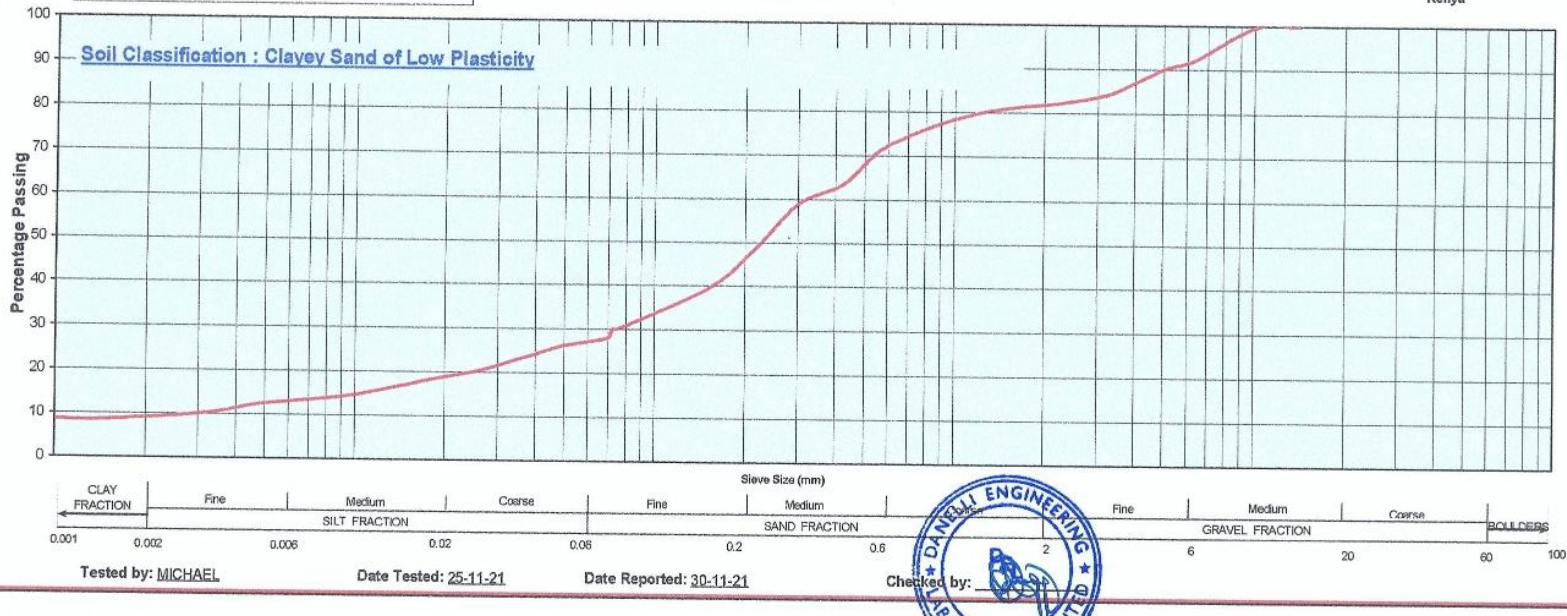
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM1+000 (Depth:0.0-1.4m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-MZIMA/5708



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by: _____

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	14.7
0.0014	14.7
0.0024	15.9
0.0034	17.0
0.0048	18.2
0.0067	19.3
0.0094	20.5
0.0132	21.6
0.0180	25.1
0.0253	26.3
0.0354	28.6
0.0493	30.9
0.0695	34.6
0.0720	35.5
0.075	35.6
0.15	39.5
0.212	42.8
0.3	51.3
0.425	56.3
0.6	76.3
1.18	89.7
2.36	94.7
3.35	95.7
5	96.4
6.3	96.7
10.0	98.6
14	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

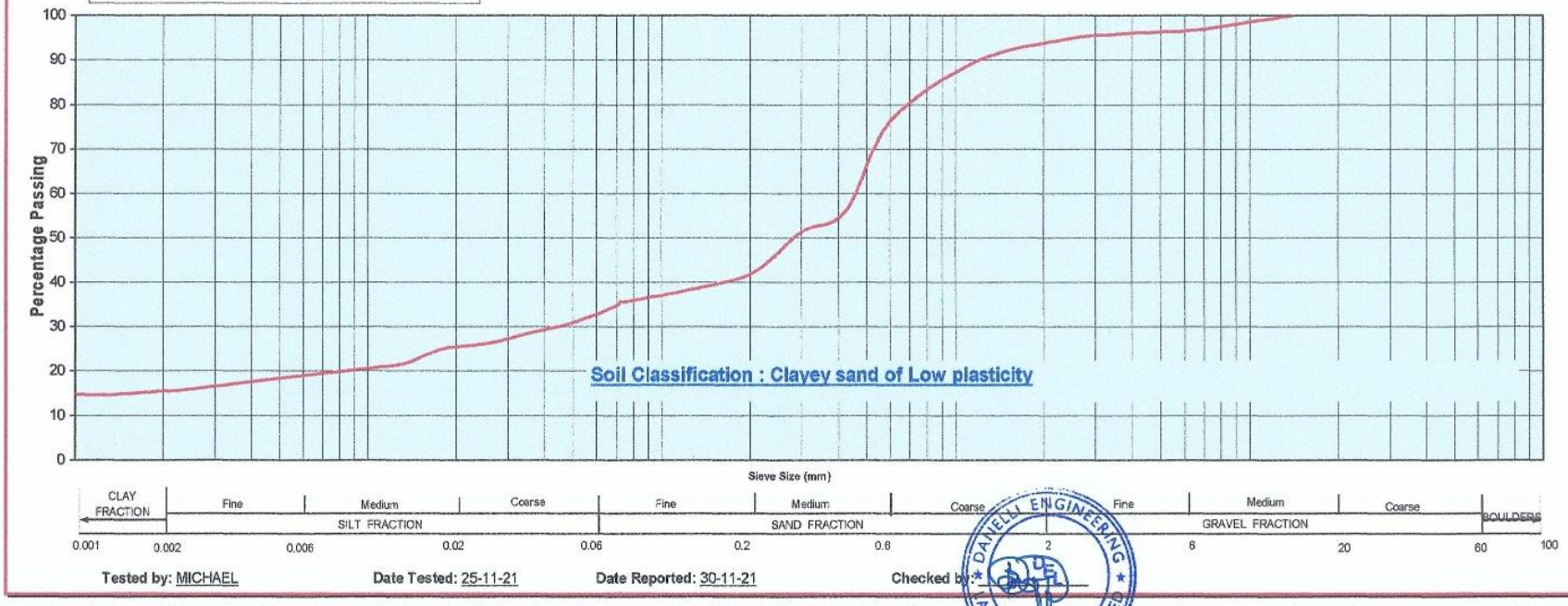
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 0+500 (Depth:0.0-0.4m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-TRUNK MAIN/5740



Tested by: MICHAEL **Date Tested:** 25-11-21 **Date Reported:** 30-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	11.8
0.0014	11.8
0.0024	13.5
0.0034	15.3
0.0048	17.1
0.0067	18.8
0.0094	24.1
0.0132	29.4
0.0180	32.9
0.0253	38.2
0.0354	43.4
0.0493	46.9
0.0695	51.9
0.0720	54.0
0.075	54.1
0.15	60.9
0.212	67.3
0.3	76.5
0.425	80.6
0.6	87.0
1.18	91.8
2.36	94.2
3.35	95.1
5	96.2
6.3	96.7
10.0	98.8
14	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

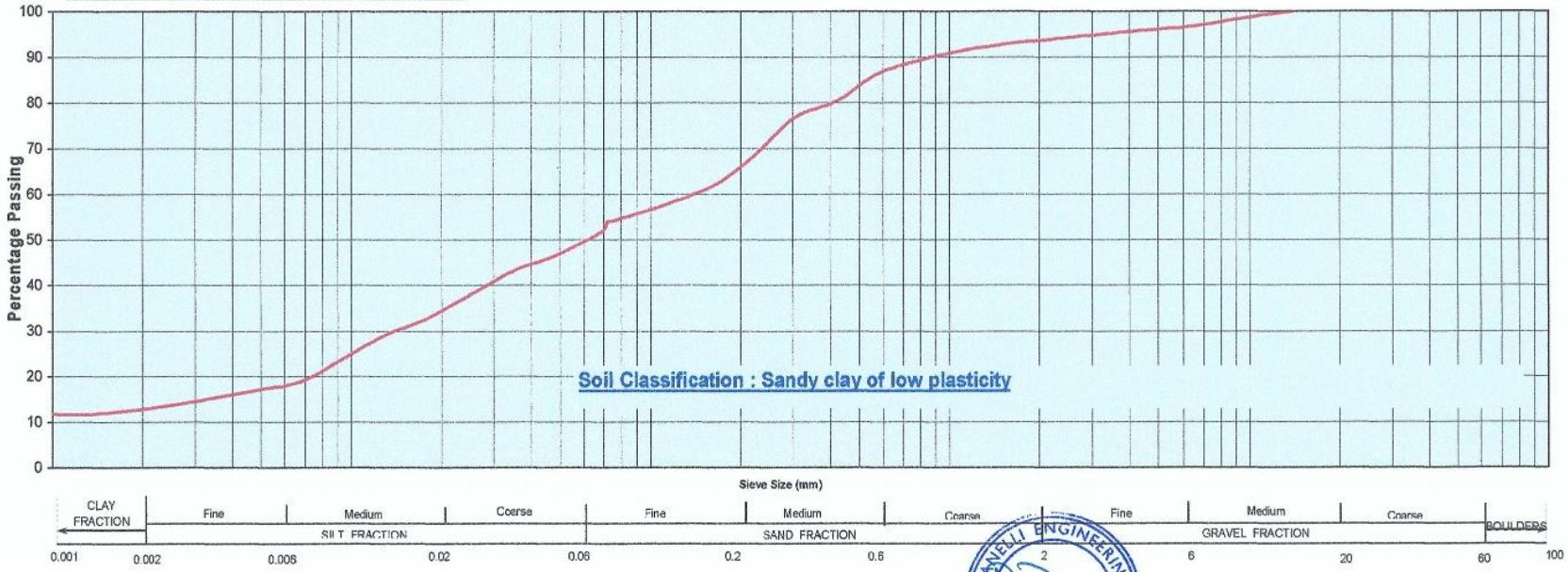
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 1+500 (Depth:0.0-0.5m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-TRUNK MAIN/5741



Tested by: MICHAEL **Date Tested:** 25-11-21 **Date Reported:** 30-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	30.1
0.0014	30.1
0.0024	32.0
0.0034	35.9
0.0048	41.6
0.0067	43.5
0.0094	45.4
0.0132	47.4
0.0180	49.3
0.0253	51.2
0.0354	53.1
0.0493	55.0
0.0695	56.9
0.0720	58.9
0.075	59
0.15	61.1
0.212	63.1
0.3	65.0
0.425	65.9
0.6	66.8
1.18	67.9
2.36	71.5
3.35	75.5
5	81.8
6.3	83.9
10.0	92.9
14	98.4
20	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 1+740 (Depth:1.0-1.4m)

Head Office & Laboratories
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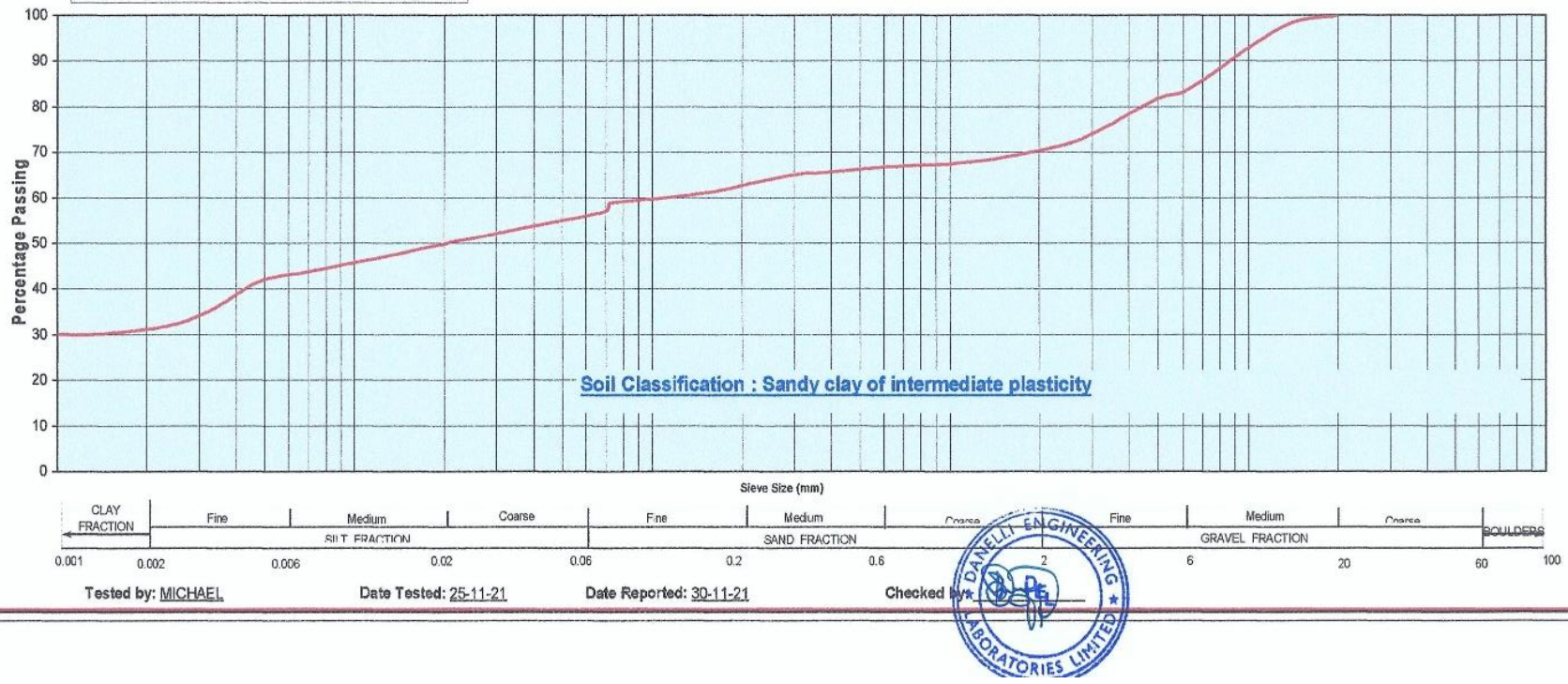
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-TRUNK MAIN/5742



Tested by: MICHAEL **Date Tested:** 25-11-21 **Date Reported:** 30-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	11.8
0.0014	11.8
0.0024	12.9
0.0034	14.0
0.0048	15.0
0.0067	16.1
0.0094	18.3
0.0132	20.5
0.0180	22.7
0.0253	24.9
0.0354	27.1
0.0493	29.3
0.0695	31.5
0.0720	33.7
0.075	33.8
0.15	39.7
0.212	44.1
0.3	56.8
0.425	64.2
0.6	79.2
1.18	90.7
2.36	95.1
3.35	96.0
5	96.8
6.3	97.1
10.0	97.7
14	98.3
20	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

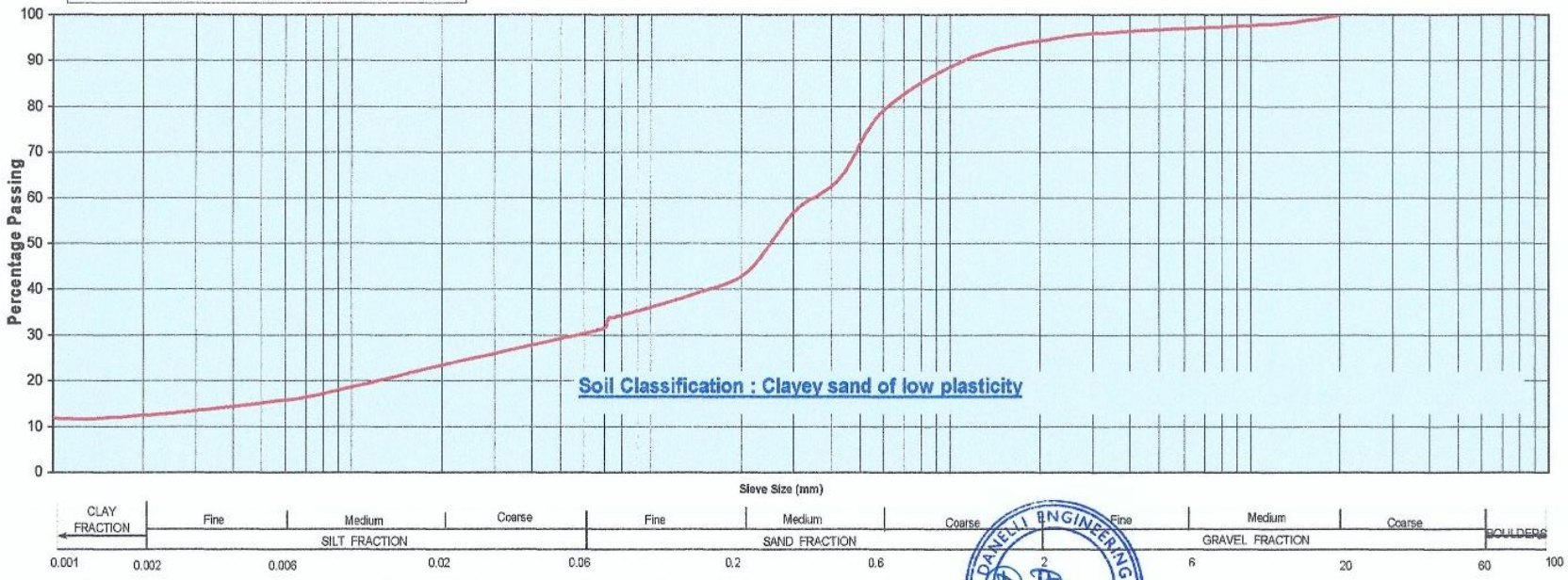
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 2+000 (Depth:0.0-0.8m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-TRUNK MAIN/5743



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	34.7
0.0014	34.7
0.0024	39.5
0.0034	41.8
0.0048	44.2
0.0067	48.9
0.0094	53.6
0.0132	56.0
0.0180	58.4
0.0253	60.7
0.0354	63.1
0.0493	67.8
0.0695	71.5
0.0720	72.5
0.075	72.7
0.15	75.7
0.212	78.5
0.3	83.7
0.425	87.1
0.6	94.8
1.18	98.4
2.36	99.4
3.35	100.0

DANELI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

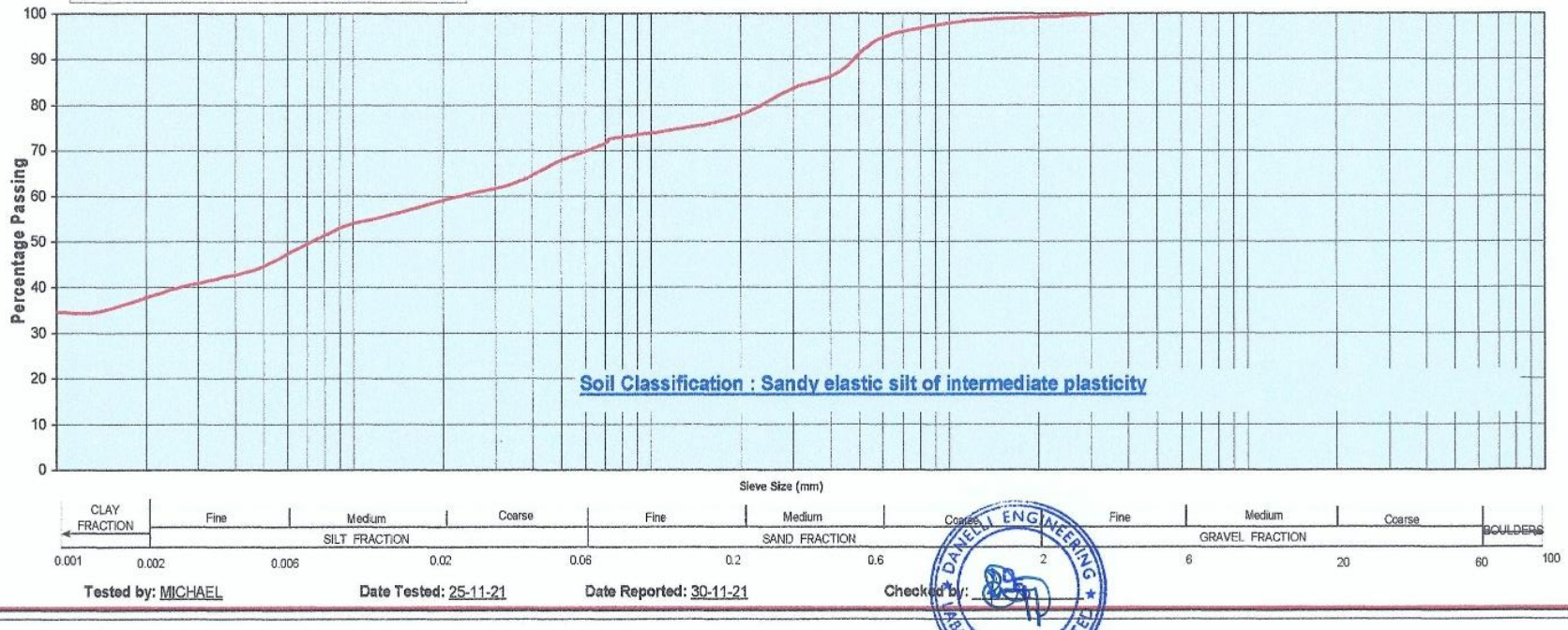
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 2+500 (Depth:0.0-0.1m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-TRUNK MAIN/5744



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	13.2
0.0014	13.2
0.0024	15.0
0.0034	15.9
0.0048	16.8
0.0067	18.6
0.0094	20.4
0.0132	21.3
0.0180	22.2
0.0253	23.1
0.0354	24.0
0.0493	25.8
0.0695	26.7
0.0720	27.6
0.075	27.7
0.15	31.4
0.212	34.4
0.3	35.7
0.425	37.1
0.6	40.5
1.18	48.2
2.36	55.5
3.35	69.9
5	72.9
6.3	84.6
10.0	90.4
14	95.7
20	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 3+000 (Depth:0.0-1.4m)

Head Office & Laboratories
Mombasa Road
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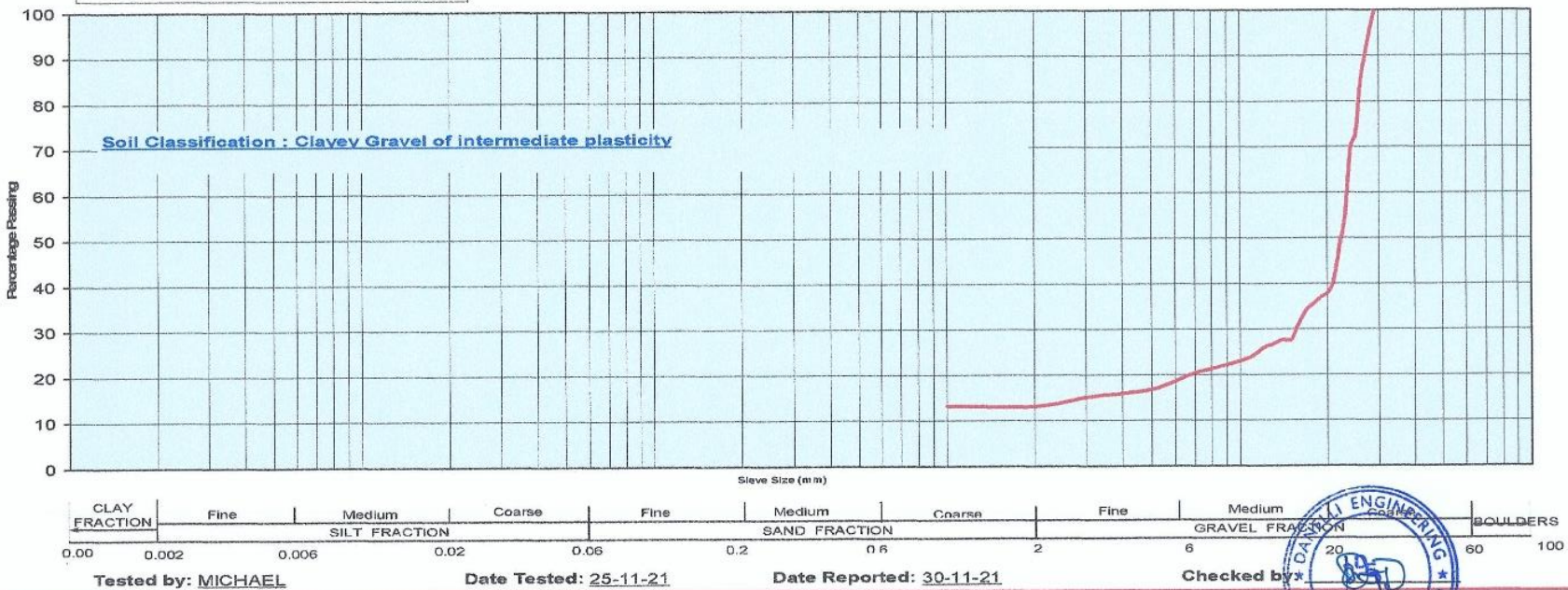
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-TRUNK MAIN/5745



Tested by: MICHAEL **Date Tested:** 25-11-21 **Date Reported:** 30-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	16.5
0.0014	16.5
0.0024	17.4
0.0034	18.3
0.0048	19.2
0.0067	20.1
0.0094	21.0
0.0132	21.8
0.0180	22.7
0.0253	23.6
0.0354	24.5
0.0493	25.4
0.0695	26.3
0.0720	27.1
0.075	27.6
0.15	28
0.212	28.3
0.3	29.2
0.425	32.5
0.6	40.5
1.18	46.7
2.36	58.1
3.35	61.8
5	73.5
6.3	86.8
10.0	95.0
14	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

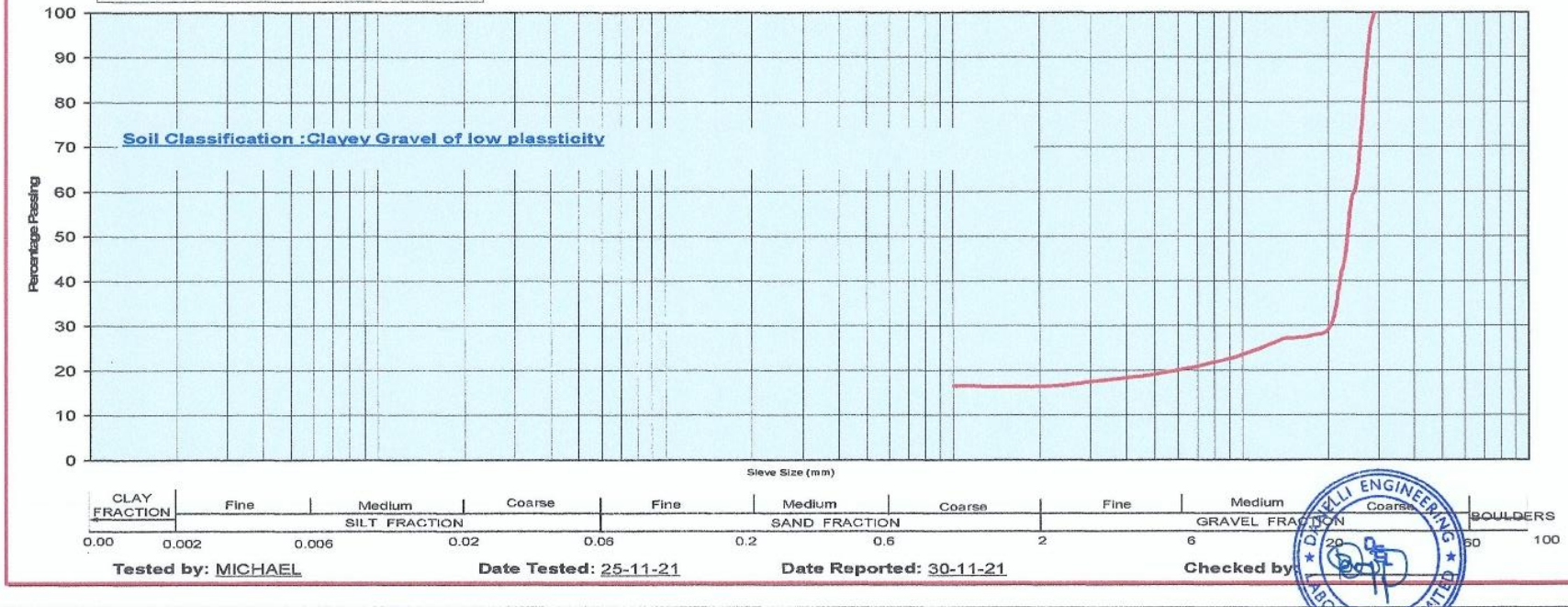
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 3+500 (Depth:0.0-1.4m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-TRUNK MAIN/5746



Tested by: MICHAEL **Date Tested:** 25-11-21 **Date Reported:** 30-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	45.4
0.0014	45.4
0.0024	48.0
0.0034	48.0
0.0048	50.6
0.0067	53.1
0.0094	55.7
0.0132	58.3
0.0180	63.4
0.0253	68.6
0.0354	71.1
0.0493	73.7
0.0695	78.4
0.0720	78.8
0.075	79
0.15	79.3
0.212	79.8
0.3	80.1
0.425	80.5
0.6	80.8
1.18	81.8
2.36	84.5
3.35	87.6
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

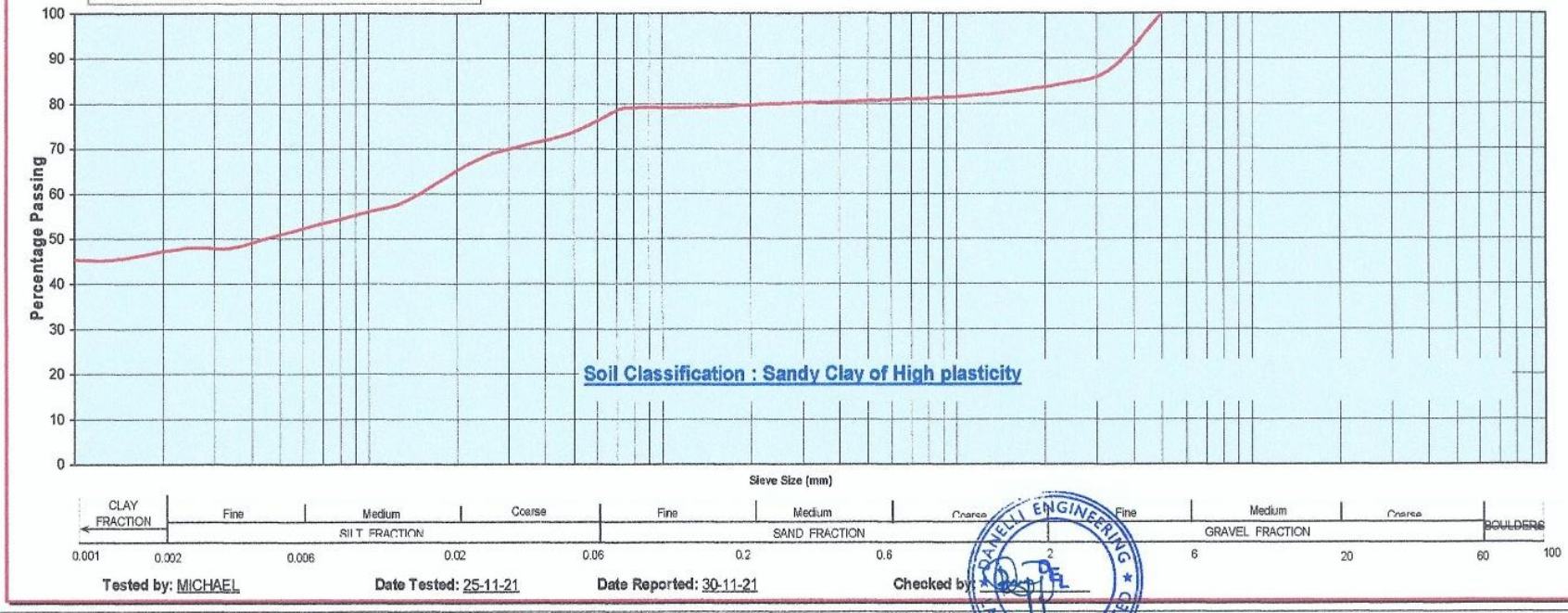
PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 4+000 (Depth:0.45-0.9m)

Head Office & Laboratories
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-TRUNK MAIN/5747



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	53.2
0.0014	53.2
0.0024	56.0
0.0034	58.9
0.0048	61.7
0.0067	64.6
0.0094	67.4
0.0132	70.2
0.0180	73.1
0.0253	75.9
0.0354	78.8
0.0493	81.6
0.0695	86.7
0.0720	87.3
0.075	87.5
0.15	87.8
0.212	88.1
0.3	88.5
0.425	88.8
0.6	89.2
1.18	90.0
2.36	91.8
3.35	94.4
5	96.1
6.3	96.7
10	98.4
14	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 4+500 (Depth:0.2-0.6m)

Head Office & Laboratories
Mombasa Road
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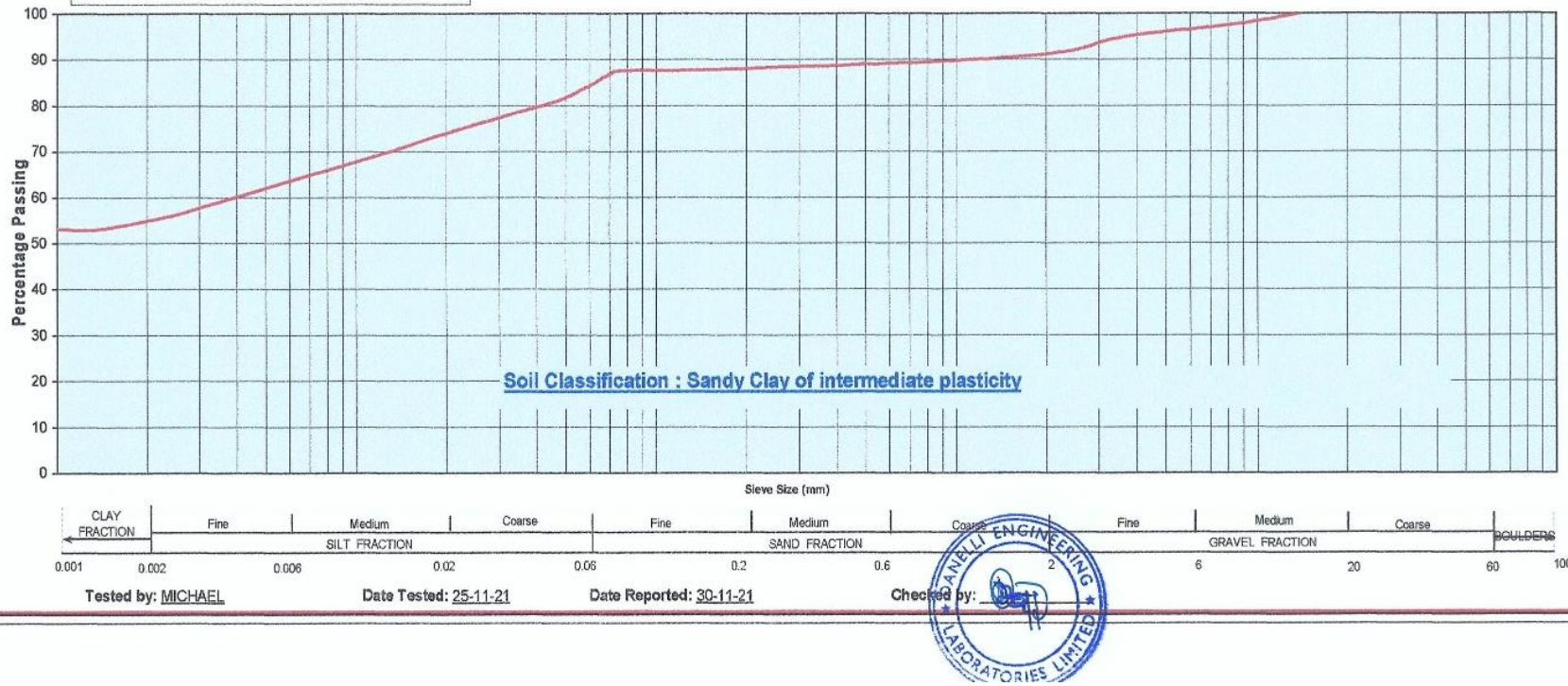
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-TRUNK MAIN/5748



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	22.3
0.0014	22.3
0.0024	24.8
0.0034	27.4
0.0048	29.9
0.0067	32.5
0.0094	40.2
0.0132	47.8
0.0180	52.9
0.0253	60.6
0.0354	70.8
0.0493	73.4
0.0695	76.0
0.0720	78.5
0.075	78.7
0.15	81.3
0.212	85.4
0.3	91.3
0.425	94.1
0.6	95.5
1.18	96.2
2.36	97.6
3.35	98.4
5	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 5+000 (Depth:0.3-0.8m)

Head Office & Laboratories
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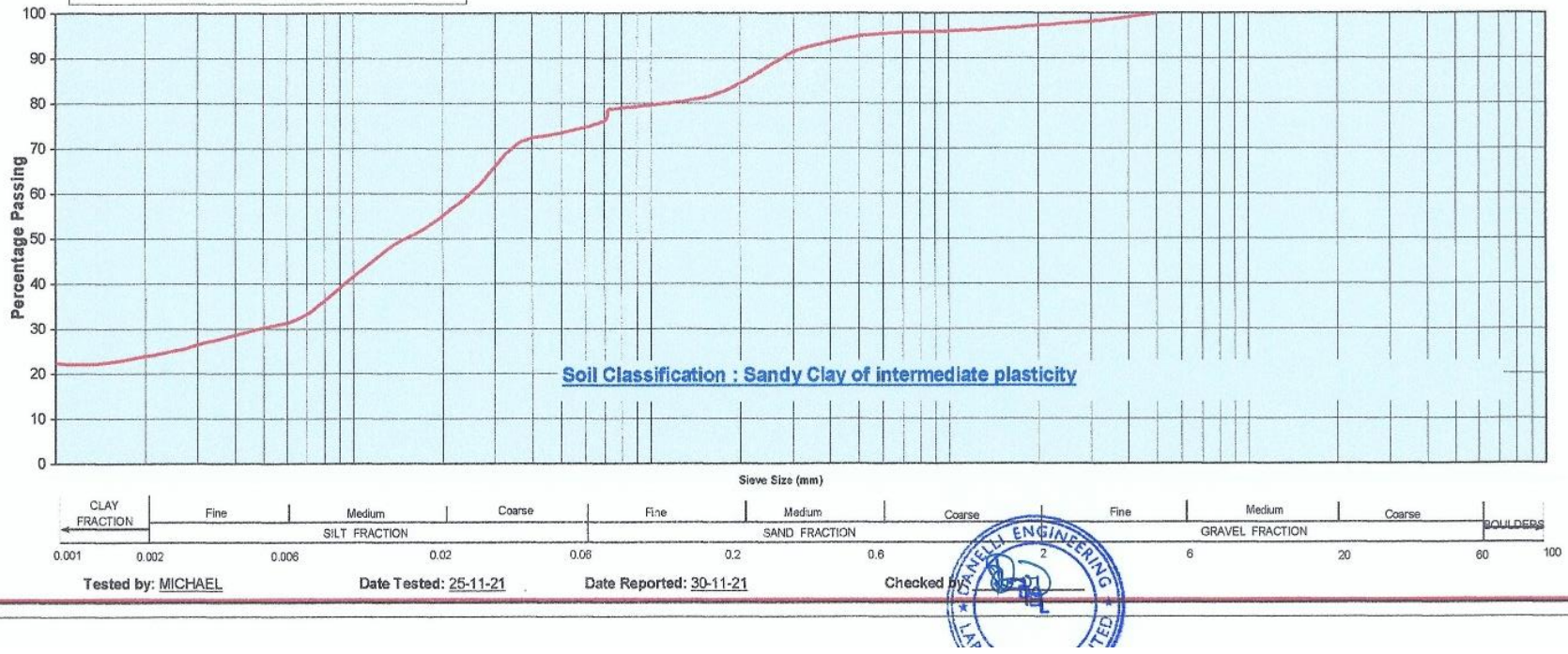
P.O BOX 64932
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-TRUNK MAIN/5749



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Aperture/ Diameter	% Passing
0.001	14.9
0.0014	14.9
0.0024	16.9
0.0034	18.8
0.0048	20.7
0.0067	26.5
0.0094	32.3
0.0132	38.2
0.0180	45.9
0.0253	51.7
0.0354	53.7
0.0493	55.6
0.0695	57.5
0.0720	59.5
0.075	59.6
0.15	61.9
0.212	64.6
0.3	68.6
0.425	69.9
0.6	72.1
1.18	76.1
2.36	80.5
3.35	86.6
5	88.5
6.3	96.5
10	98.6
14	100.0

DANELLI ENGINEERING LABORATORIES LIMITED

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

PARTICLE SIZE ANALYSIS

BS 1377:1990:Part 2: Clause 9

TP KM 5+005 (Depth:0.8-1.0m)

Head Office & Laboratories
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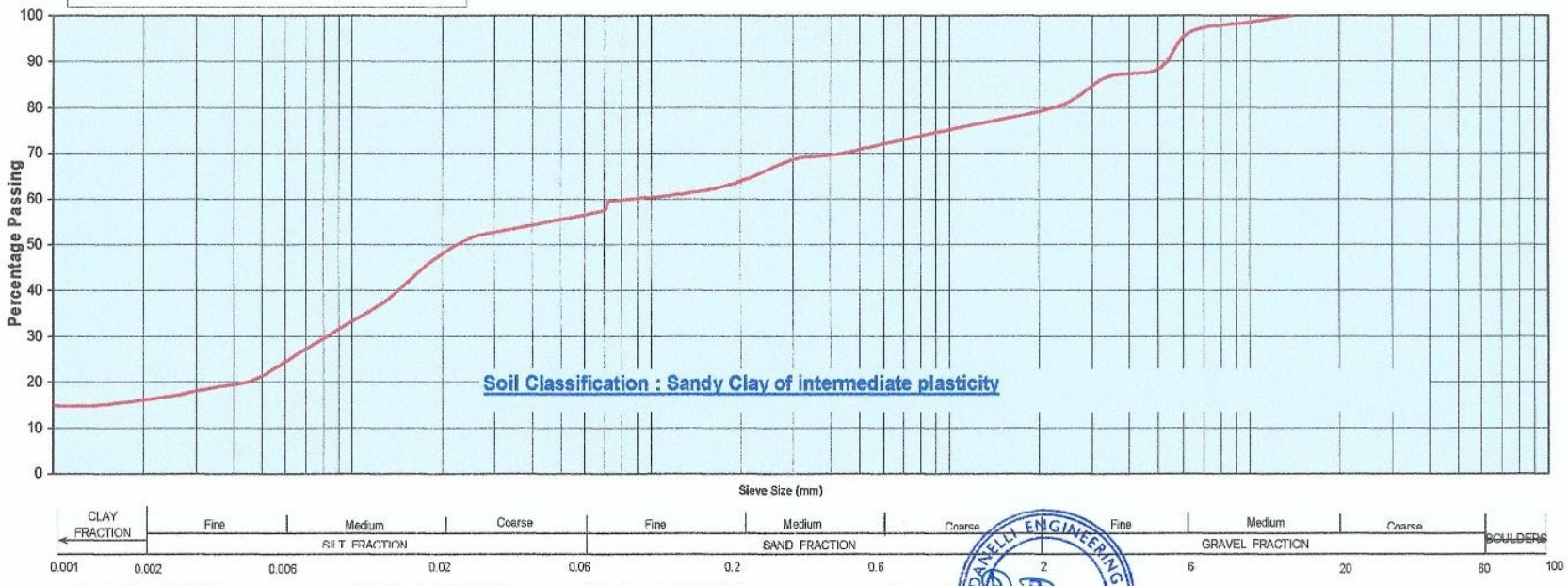
Mobil Plaza 00620
Nairobi
Kenya

Lab Ref: TM/RGS-TRUNK MAIN/5750



Tested by: MICHAEL Date Tested: 25-11-21 Date Reported: 30-11-21 Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

Specific Gravity

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 01(Depth: 3.0-4.0m)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-BONJE CREEK/4447 **Sample No:** 4447

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	96.6	96.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	25.1	24.4	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.49	2.46	2.48
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 01(Depth: 7.0-8.0m)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-BONJE CREEK/4448 **Sample No:** 4448

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	93.2	91.9	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	19.6	17.5	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.45	2.43	2.44
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:** E.

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 01(Depth: 12.0-13.0m)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-BONJE CREEK/4450 **Sample No:** 4450

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	92.9	92.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	19.1	17.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.45	2.42	2.44
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 01(Depth: 19.0-20.0m)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-BONJE CREEK/4451 **Sample No:** 4451

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	94.7	94.4	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	21.7	21.3	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.52	2.51	2.52
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 02(Depth: 1.0-2.0m)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-BONJE CREEK/4452 **Sample No:** 4452

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	93.0	92.6	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	19.2	18.6	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.46	2.45	2.46
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 02(Depth: 2.0-3.0m)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-BONJE CREEK/4453 **Sample No:** 4453

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	97.4	97.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	26.2	26.0	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.52	2.50	2.51
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

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Nairobi
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BONJE CREEK WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 02(Depth: 8.0-9.0m)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-BONJE CREEK/4454 **Sample No:** 4454

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	95.5	95.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	23.2	22.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.49	2.46	2.48
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

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Nairobi
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BONJE CREEK WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 02(Depth: 14.0-15.0m)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-BONJE CREEK/4455 **Sample No:** 4455

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	90.3	92.0	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	14.8	17.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.43	2.42	2.43
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

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BONJE CREEK WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 02(Depth: 18.0-19.0m)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-BONJE CREEK/4456 **Sample No:** 4456

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	92.3	92.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	18.1	18.0	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.45	2.43	2.44
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

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Web site: www.danellilab.com
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Nairobi
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BONJE CREEK WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 02(Depth: 24.0-25.0m)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-BONJE CREEK/4457 **Sample No:** 4457

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	93.4	93.7	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	19.9	20.5	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.46	2.44	2.45
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

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BONJE CREEK WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 02(Depth: 28.0-29.0m)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-BONJE CREEK/4458 **Sample No:** 4458

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	94.6	92.6	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	21.9	18.4	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.46	2.49	2.48
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 03(Depth: 2.0-3.0m)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-BONJE CREEK/4459 **Sample No:** 4459

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	94.9	94.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	22.7	21.5	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.41	2.44	2.43
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 03(Depth: 11.0-12.0m)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-BONJE CREEK/4460 **Sample No:** 4460

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	96.2	94.0	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	24.3	20.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.51	2.49	2.50
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 02(Depth: 1.0-2.0m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-NGUU TATU/4464 **Sample No:** 4464

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	94.6	92.5	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	21.9	18.4	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.46	2.45	2.46
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 02(Depth: 19.0-20.0m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-NGUU TATU/4467 **Sample No:** 4467

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	94.2	92.5	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	21.5	18.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.42	2.40	2.41
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 01(Depth: 1.0-2.0m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-CHANGAMWE/4468 **Sample No:** 4468

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	97.4	96.5	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	26.1	24.8	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.53	2.51	2.52
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
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Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 01(Depth: 7.0-8.0m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-CHANGAMWE/4469 **Sample No:** 4469

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	91.1	89.7	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	15.9	13.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.48	2.45	2.47
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
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Head Office & Laboratories:
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Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 01(Depth: 16.0-17.0m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-CHANGAMWE/4470 **Sample No:** 4470

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	91.8	90.6	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	17.3	15.3	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.44	2.43	2.44
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 02(Depth: 7.0-8.0m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-CHANGAMWE/4471 **Sample No:** 4471

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	94.8	94.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	22.5	21.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.42	2.41	2.42
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
BH 02(Depth: 17.0-18.0m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 06-09-21

Material Description: SOIL **Lab Ref:** TM/RGS-CHANGAMWE/4473 **Sample No:** 4473

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** MOMBASA **Date Tested:** 17-09-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	92.7	92.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	18.8	18.2	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.44	2.43	2.44
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 20-09-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
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info@danellilab.com
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM2+500 (Depth: 0.0-0.30m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5709 **Sample No:** 5709

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.7	97.8	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	34.2	27.5	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.44	2.46	2.45
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Nairobi
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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM3+000(0.80-1.4m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5710 **Sample No:** 5710

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	97.3	99.5	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	26.3	30.1	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.50	2.49	2.50
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM4+000 (Depth: 0.0-1.3m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5711 **Sample No:** 5711

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	98.5	97.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	28.4	26.5	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.49	2.48	2.49
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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Head Office & Laboratories:
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM4+000 (Depth: 1.3-1.5m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5712 **Sample No:** 5712

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	99.5	98.4	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	30.4	28.4	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.45	2.47	2.46
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM4+500 (Depth: 0.0-0.90m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5713 **Sample No:** 5713

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	99.1	103.5	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	29.5	37.0	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.48	2.47	2.48
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
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Mob: +254(0) 726 721 935

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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM6+500 (Depth: 0.0-0.80m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5714 **Sample No:** 5714

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	99.6	97.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	30.0	25.8	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.52	2.53	2.53
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
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Nairobi
Kenya

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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM7+500 (Depth: 0.50-1.3m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5715 **Sample No:** 5715

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	99.9	95.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	31.3	23.6	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.43	2.41	2.42
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM8+000 (Depth: 0.3-0.8m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5716 **Sample No:** 5716

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.8	101.5	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	33.6	32.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.53	2.55	2.54
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
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Head Office & Laboratories:
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM8+500 (Depth: 0.7-1.70m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5717 **Sample No:** 5717

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.7	99.0	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	35.0	28.8	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.54	2.55	2.55
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM9+500 (Depth: 0.4-1.4m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5718 **Sample No:** 5718

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.5	98.6	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	35.3	28.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.45	2.43	2.44
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM10+000 (Depth: 0.3-1.3m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5719 **Sample No:** 5719

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	95.8	97.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	24.3	26.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.43	2.41	2.42
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM10+500 (Depth: 0.25-1.3m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5720 **Sample No:** 5720

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.1	97.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	33.9	25.8	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.55	2.53	2.54
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM11+000(0.0-0.50m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5721 **Sample No:** 5721

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	100.5	99.5	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	31.2	29.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.56	2.54	2.55
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM11+500(0.0-0.6m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5722 **Sample No:** 5722

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	97.0	95.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	25.9	22.6	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.49	2.51	2.50
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Nairobi
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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM12+500(0.2-1.0m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5723 **Sample No:** 5723

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	98.6	97.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	28.5	26.0	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.50	2.52	2.51
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
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Mobil Plaza 00620
Nairobi
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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM13+000(0.3-1.5m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5724 **Sample No:** 5724

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	98.6	98.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	28.5	28.1	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.50	2.49	2.50
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked By:**

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Independent Materials testing & Inspection Centre
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info@danellilab.com
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Nairobi
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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM13+500(0.0-2.10m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5725 **Sample No:** 5725

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	106.5	103.9	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	40.4	36.3	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.62	2.61	2.62
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Head Office & Laboratories:
Mombasa Road
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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM14+000(0.3-0.9m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5726 **Sample No:** 5726

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	97.6	99.6	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	26.4	29.6	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.56	2.57	2.57
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Independent Materials testing & Inspection Centre
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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM14+500(0.4-1.0m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5727 **Sample No:** 5727

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.8	101.6	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	32.7	32.3	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.64	2.65	2.65
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Independent Materials testing & Inspection Centre
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Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM15+000(0.5-1.30Zm)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5728 **Sample No:** 5728

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	100.0	102.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	30.5	34.2	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.54	2.55	2.55
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
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Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM15+500(0.25-0.60m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5729 **Sample No:** 5729

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	96.6	98.7	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	24.8	28.1	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.56	2.58	2.57
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM16+000(0.0-0.75m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5730 **Sample No:** 5730

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	97.2	99.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	26.4	29.8	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.47	2.48	2.48
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Mob: +254(0) 726 721 935

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Mombasa Road
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Nairobi
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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM16+500(0.50-1.40m)

Site: NGUU TATU
Material Description: SOIL SAMPLE
Location: MOMBASA
Lab Ref: TM/RGS-NGUU TATU/5731
Date Received: 18-10-21
Sample No: 5731
Sampled by: R.G.S
Source: SITE
Date Tested: 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	97.7	99.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	27.5	30.2	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.43	2.42	2.43
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL
Date Reported: 27-10-21
Checked by:

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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM17+000(0.0-1.5m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5732 **Sample No:** 5732

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	104.1	103.0	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	37.5	35.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.52	2.51	2.52
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Head Office & Laboratories:
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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM17+500(0.0-1.3m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5733 **Sample No:** 5733

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	99.3	101.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	29.6	32.4	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.51	2.53	2.52
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM18+000(0.40-1.20m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5734 **Sample No:** 5734

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.3	100.6	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	34.9	31.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.48	2.49	2.49
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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BS 1377: Part 2: 1990: Clause 8
TP KM18+500(0.0-1.80m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5735 **Sample No:** 5735

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	100.8	98.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	32.5	28.0	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.46	2.48	2.47
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM19+000(0.0-1.10m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5736 **Sample No:** 5736

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.3	100.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	34.7	30.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.50	2.51	2.51
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM19+500(0.5-1.10m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5737 **Sample No:** 5737

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.7	100.8	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	33.2	31.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.55	2.53	2.54
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM20+000(0.5-1.5m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5738 **Sample No:** 5738

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	96.0	101.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	24.0	32.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.53	2.51	2.52
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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NGUU TATU SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM20+500(0.2-1.0m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5739 **Sample No:** 5739

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.4	100.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	33.2	31.3	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.50	2.48	2.49
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Nairobi
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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM0+000 (Depth: 0.4-1.0m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/5751 **Sample No:** 5751

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.6	97.4	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	33.8	26.8	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.45	2.44	2.45
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 21-11-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
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info@danellilab.com
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Nairobi
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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM0+500 (Depth: 0.4-1.1m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/5752 **Sample No:** 5752

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	93.3	92.9	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	19.5	18.8	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.50	2.51	2.51
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 21-11-21 **Checked by:**

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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM1+000 (Depth: 0.0-1.4m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/5753 **Sample No:** 5753

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	90.5	90.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	14.7	14.1	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.53	2.52	2.53
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 21-11-21 **Checked by:**

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Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Nairobi
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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM1+500 (Depth: 0.0-1.3m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/5754 **Sample No:** 5754

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	99.7	98.8	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	30.4	29.0	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.47	2.46	2.47
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 21-11-21 **Checked by:**

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Independent Materials testing & Inspection Centre
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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
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P.O.Box 64932
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Nairobi
Kenya

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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM2+000 (Depth: 0.0-0.5m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/5755 **Sample No:** 5755

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	97.2	95.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	26.3	22.8	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.46	2.45	2.46
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 21-11-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM2+500 (Depth: 0.0-2.0m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/5756 **Sample No:** 5756

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.1	99.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	33.3	28.6	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.60	2.58	2.59
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 21-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
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Nairobi
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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM3+000 (Depth: 0.32-0.95m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4559 **Sample No:** 4559

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.3	102.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	32.5	34.0	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.54	2.56	2.55
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM3+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4560 **Sample No:** 4560

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	103.0	101.7	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	35.3	32.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.56	2.59	2.58
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM4+500 (Depth: 0.0-1.4m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4561 **Sample No:** 4561

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	99.7	101.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	29.7	32.0	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.58	2.58	2.58
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM5+000 (Depth: 0.32-1.0m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4562 **Sample No:** 4562

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	100.0	102.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	30.9	34.3	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.49	2.50	2.50
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM5+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4563 **Sample No:** 4563

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.7	100.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	33.6	31.2	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.51	2.50	2.50
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM6+000 (Depth: 0.80-0.90m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4564 **Sample No:** 4564

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	95.5	100.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	22.7	30.3	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.61	2.63	2.62
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM6+500 (Depth: 0.0-1.0m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4565 **Sample No:** 4565

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	100.7	103.5	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	31.8	36.2	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.52	2.55	2.54
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM6+500 (Depth: 1.0-1.7m)

Site: KAYABOMBO | **Location:** KWALE | **Date Received:** 20-09-21

Material Description: SOIL SAMPLE | **Lab Ref:** TM/RGS-KAYABOMBO/4566 | **Sample No:** 4566

Sampled by: R.G.S | **Source:** SITE | **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.4	100.6	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	34.2	31.4	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.57	2.55	2.56
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN | **Date Reported:** 04-10-21 | **Checked by:**

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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM7+000 (Depth: 0.0-0.80m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4567 **Sample No:** 4567

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	99.4	99.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	29.5	29.3	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.54	2.53	2.54
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM7+000 (Depth: 0.8-1.7m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4568 **Sample No:** 4568

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.8	101.0	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	33.4	32.3	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.55	2.52	2.54
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM8+000 (Depth: 0.3-0.6m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4569 **Sample No:** 4569

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	105.5	104.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	40.4	38.6	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.46	2.43	2.45
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM8+500 (Depth: 0.3-0.55m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4570 **Sample No:** 4570

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	96.6	95.4	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	25.9	23.6	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.40	2.43	2.42
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked By:**

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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM10+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4571 **Sample No:** 4571

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	107.4	106.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	41.4	39.6	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.67	2.66	2.67
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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Mob: +254(0) 726 721 935

Head Office & Laboratories:
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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM10+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4572 **Sample No:** 4572

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	103.9	102.5	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	36.5	34.5	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.59	2.56	2.57
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM11+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4573 **Sample No:** 4573

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	107.1	106.5	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	41.7	40.4	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.59	2.61	2.60
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Email: danellilab3@gmail.com
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Mob: +254(0) 726 721 935

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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM13+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4574 **Sample No:** 4574

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	104.9	105.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	37.8	38.1	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.63	2.65	2.64
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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info@danellilab.com
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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM13+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4575 **Sample No:** 4575

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	105.2	104.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	38.6	36.6	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.59	2.61	2.60
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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P.O.Box 64932
Mobil Plaza 00620
Nairobi
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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM14+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4576 **Sample No:** 4576

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	99.5	100.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	29.5	30.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.57	2.55	2.56
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM14+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4577 **Sample No:** 4577

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.7	100.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	33.4	31.0	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.53	2.54	2.54
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM15+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4578 **Sample No:** 4578

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	95.1	97.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	23.1	26.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.43	2.45	2.44
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM15+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4579 **Sample No:** 4579

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	103.2	104.4	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	36.5	39.6	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.66	2.68	2.67
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

DANELLI ENGINEERING

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM17+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4580 **Sample No:** 4580

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	103.6	102.4	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	36.8	34.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.50	2.51	2.51
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM18+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4581 **Sample No:** 4581

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.5	103.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	34.4	35.5	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.57	2.55	2.56
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM19+000 (Depth: 1.3-2.0m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4582 **Sample No:** 4582

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	106.0	103.4	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	40.1	35.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.57	2.56	2.57
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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Independent Materials testing & Inspection Centre
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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
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Nairobi
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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM19+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4583 **Sample No:** 4583

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	97.8	98.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	26.7	27.5	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.57	2.55	2.56
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
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info@danellilab.com
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Mob: +254(0) 726 721 935

Head Office & Laboratories:
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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM20+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4584 **Sample No:** 4584

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.8	104.8	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	35.0	38.4	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.55	2.54	2.55
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM20+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4585 **Sample No:** 4585

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.3	103.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	33.0	36.1	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.50	2.49	2.49
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM20+500 (Depth: 0.45-1.50m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4586 **Sample No:** 4586

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.7	103.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	35.5	36.3	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.48	2.47	2.48
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
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Nairobi
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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM20+500 (Depth: 1.5-2.0m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4587 **Sample No:** 4587

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	99.6	101.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	29.8	32.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.55	2.53	2.54
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

DANELLI ENGINEERING

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM21+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4588 **Sample No:** 4588

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	103.1	104.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	35.0	37.0	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.61	2.59	2.60
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM21+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4589 **Sample No:** 4589

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.6	103.0	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	34.0	34.5	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.64	2.65	2.64
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM22+500 (Depth: 1.4m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4590 **Sample No:** 4590

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.8	99.7	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	33.4	29.8	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.55	2.57	2.56
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM23+500 (Depth: 1.5m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4591 **Sample No:** 4591

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	100.0	102.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	30.6	34.2	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.53	2.53	2.53
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

DANELLI ENGINEERING

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Mobil Plaza 00620
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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM24+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4592 **Sample No:** 4592

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	103.1	101.7	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	34.9	32.8	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.62	2.60	2.61
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM24+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4593 **Sample No:** 4593

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	103.6	104.0	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	35.6	36.4	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.64	2.63	2.63
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM25+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4594 **Sample No:** 4594

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	96.8	100.5	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	24.9	30.8	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.59	2.61	2.60
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM25+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4595 **Sample No:** 4595

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.7	103.0	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	32.7	34.6	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.62	2.64	2.63
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM26+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4596 **Sample No:** 4596

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	106.2	107.0	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	39.6	40.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.66	2.68	2.67
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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info@danellilab.com
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KAYABOMBO SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM26+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4597 **Sample No:** 4597

Sampled by: R.G.S **Source:** SITE **Date Tested:** 03-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	99.5	100.3	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	28.9	30.3	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.65	2.63	2.64
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 04-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM0+000 (Depth: 0.0-0.3m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5688 **Sample No:** 5688

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.5	97.6	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	33.1	26.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.51	2.50	2.51
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Independent Materials testing & Inspection Centre
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Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM2+000 (Depth: 0.4-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5689 **Sample No:** 5689

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	99.8	92.5	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	30.8	18.6	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.44	2.42	2.43
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
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CHANGAMWE SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM2+500 (Depth: 0.6-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5690 **Sample No:** 5690

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	97.4	95.7	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	25.9	23.2	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.56	2.55	2.56
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Independent Materials testing & Inspection Centre
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Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM3+000 (Depth: 0.5-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5691 **Sample No:** 5691

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	99.9	98.7	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	30.3	28.4	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.53	2.51	2.52
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
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info@danellilab.com
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Head Office & Laboratories:
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CHANGAMWE SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM3+500 (Depth: 0.5-0.9m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5692 **Sample No:** 5692

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	93.8	93.6	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	20.1	19.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.54	2.52	2.53
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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info@danellilab.com
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CHANGAMWE SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM4+500 (Depth: 0.2-1.7m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5693 **Sample No:** 5693

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	96.9	95.6	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	25.8	23.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.46	2.44	2.45
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Independent Materials testing & Inspection Centre
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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Nairobi
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CHANGAMWE SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM5+000 (Depth: 0.0-0.8m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5694 **Sample No:** 5694

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	98.2	96.8	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	28.2	25.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.43	2.42	2.43
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Independent Materials testing & Inspection Centre
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info@danellilab.com
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CHANGAMWE SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM6+000 (Depth: 0.5-1.2m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5695 **Sample No:** 5695

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.9	101.7	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	34.9	33.1	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.57	2.55	2.56
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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CHANGAMWE SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM7+000 (Depth: 1.0-1.2m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5696 **Sample No:** 5696

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	100.8	99.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	32.3	29.4	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.47	2.49	2.48
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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CHANGAMWE SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM7+500 (Depth: 0.2-0.9m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5697 **Sample No:** 5697

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.8	100.9	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	33.1	31.7	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.57	2.56	2.57
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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CHANGAMWE SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM8+000 (Depth: 0.8-1.0m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5698 **Sample No:** 5698

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	94.4	93.9	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	21.3	20.4	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.51	2.52	2.52
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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CHANGAMWE SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM8+500 (Depth: 0.8-1.0m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5699 **Sample No:** 5699

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.8	97.4	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	36.1	27.1	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.42	2.40	2.41
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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BS 1377: Part 2: 1990: Clause 8
TP KM9+000 (Depth: 0.9-1.5m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5700 **Sample No:** 5700

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.6	101.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	34.5	32.2	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.56	2.54	2.55
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM11+000 (Depth: 1.4-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5701 **Sample No:** 5701

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.9	101.9	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	34.9	33.3	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.57	2.56	2.57
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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CHANGAMWE SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM11+500 (Depth: 0.3-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5702 **Sample No:** 5702

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	97.0	96.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	25.9	24.6	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.47	2.46	2.47
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Mob: +254(0) 726 721 935

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Mobil Plaza 00620
Nairobi
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CHANGAMWE SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM11+618 (Depth: 0.3-1.2m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5703 **Sample No:** 5703

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.6	101.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.6	81.6	
D	The mass of oven-dried sample in (g)	34.5	32.0	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.56	2.55	2.56
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: MICHAEL **Date Reported:** 27-10-21 **Checked by:**

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Mob: +254(0) 726 721 935

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

MZIMA SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM0+500 (0.0-0.8m)

Site: MZIMA **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-MZIMA/5707 **Sample No:** 5707

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	103.0	102.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	34.8	33.2	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.62	2.63	2.63
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 27-10-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
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info@danellilab.com
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Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
Kenya

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MZIMA SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM1+000 (0.0-1.4m)

Site: MZIMA **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-MZIMA/5708 **Sample No:** 5708

Sampled by: R.G.S **Source:** SITE **Date Tested:** 26-10-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	98.6	104.7	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	27.7	37.5	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.61	2.62	2.62
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 27-10-21 **Checked by:**

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TRUNK MAIN SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM0+500 (Depth: 0.0-0.4m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5740 **Sample No:** 5740

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	110.1	109.5	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	46.3	45.5	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.62	2.60	2.61
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 20-11-21 **Checked by:**

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Independent Materials testing & Inspection Centre
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info@danellilab.com
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Head Office & Laboratories:
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TRUNK MAIN SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM1+500 (Depth: 0.0-0.5m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5741 **Sample No:** 5741

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	101.3	102.9	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	32.9	35.8	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.51	2.49	2.50
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 20-11-21 **Checked by:**

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Head Office & Laboratories:
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TRUNK MAIN SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM1+740 (Depth: 1.0-1.4m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5742 **Sample No:** 5742

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.0	101.4	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	34.4	33.3	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.47	2.49	2.48
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 27-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM2+000 (Depth: 0.0-0.8m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5743 **Sample No:** 5743

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	102.2	98.7	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	33.5	27.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.62	2.61	2.62
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 27-11-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
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TRUNK MAIN SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM2+500 (Depth: 0.0-0.1m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5744 **Sample No:** 5744

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	104.4	103.4	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	38.0	36.2	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.52	2.53	2.53
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 27-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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TRUNK MAIN SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM3+000 (Depth: 0.0-1.4m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5745 **Sample No:** 5745

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	98.5	102.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	28.9	34.8	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.43	2.45	2.44
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 27-11-21 **Checked by:**

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Email: danellilab3@gmail.com
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Web site: www.danellilab.com
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TRUNK MAIN SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM3+500 (Depth: 0.0-1.4m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5746 **Sample No:** 5746

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	104.6	106.4	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	38.2	41.3	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.53	2.52	2.53
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 27-11-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
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TRUNK MAIN SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM4+000 (Depth: 0.45-0.9m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5747 **Sample No:** 5747

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	97.9	98.7	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	27.9	29.0	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.43	2.46	2.45
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 27-11-21 **Checked by:**

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TRUNK MAIN SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM4+500 (Depth: 0.2-0.6m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5748 **Sample No:** 5748

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	100.6	99.1	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	32.3	29.9	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.45	2.43	2.44
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 27-11-21 **Checked by:**

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BS 1377: Part 2: 1990: Clause 8
TP KM5+500 (Depth: 0.3-0.8m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5749 **Sample No:** 5749

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	99.6	101.2	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	30.3	32.8	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.48	2.50	2.49
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 27-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

Specific Gravity Test
BS 1377: Part 2: 1990: Clause 8
TP KM5+005 (Depth: 0.8-1.0m)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Material Description: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAIN/5750 **Sample No:** 5750

Sampled by: R.G.S **Source:** SITE **Date Tested:** 19-11-21

TEST NO.		1	2	Average Values
A	The mass of saturated surface dry in (g)	-	-	
B	The mass of Density bottle or wide mouthed glass vessel containing sample & filled with water (g)	100.3	100.5	
C	The mass of Density bottle or wide mouthed glass vessel filled with water only (g)	81.5	81.5	
D	The mass of oven-dried sample in (g)	30.9	31.4	
Relative Density on an oven-dried basis =D/A-(B-C)		-	-	
Relative Density on a saturated & surface-dried basis = A/A-(B-C)		-	-	
Apparent Relative Density = D/D-(B-C)		2.55	2.53	2.54
Water Absorption (% of dry mass) =100(A-D)/D		-	-	

Tested by: KEVIN **Date Reported:** 27-11-21 **Checked by:**

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Independent Materials testing & inspection Centre
Email: danellilab3@gmail.com
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Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

NATURAL MOISTURE CONTENT

BS 1377: 1990 Part 2: Clause 3

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-BONJE CREEK	**Date of Test:**	13-09-21
Project:	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Site:**	BONJE CREEK
Material Description					

Sample Reference.	**BH01**		**BH01**		**BH01**		**BH01**	
Depth (m):	**3.0-4.0M**		**7.0-8.0M**		**12.0-13.0M**		**19.0-20.0M**	
Sample No.	**4447**		**4448**		**4450**		**4451**	
Test No.	**1**	**2**	**1**	**2**	**1**	**2**	**1**	**2**
Initial Weight of Sample (g)	133.2	141.8	97.1	112.8	170.1	161.7	105.8	101.8
Weight of Dry Sample (g)	128.3	135.8	92.2	107.4	165.8	156.6	102.4	98.6
Weight of Water (g)	4.9	6.0	4.9	5.4	4.3	5.1	3.4	3.2
% Moisture Content	3.8	4.4	5.3	5.0	2.6	3.3	3.3	3.2
Average Moisture Content (%)	**4.1**		**5.2**		**3.0**		**3.3**	

Tested by: MICHAEL

Date Reported: 20-09-21

Checked by:

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Moisture Content

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & inspection Centre
Email: danellilab3@gmail.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

NATURAL MOISTURE CONTENT

BS 1377: 1990 Part 2: Clause 3

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-BONJE CREEK	**Date of Test:**	13-09-21
Project:	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Site:**	BONJE CREEK
Material Description					

Sample Reference.	**BH02**		**BH02**		**BH02**		**BH02**	
Depth (m):	**1.0-2.0M**		**2.0-3.0M**		**8.0-9.0M**		**14.0-15.0M**	
Sample No.	**4452**		**4453**		**4454**		**4455**	
Test No.	**1**	**2**	**1**	**2**	**1**	**2**	**1**	**2**
Initial Weight of Sample (g)	96.3	81.8	97.7	169.8	173.7	139.9	102.8	188.7
Weight of Dry Sample (g)	92.1	78.8	96.0	143.9	166.0	134.1	94.7	109.9
Weight of Water (g)	4.2	3.0	1.7	25.9	7.7	5.8	8.1	8.8
% Moisture Content	4.6	3.8	1.8	1.8	4.6	4.3	8.6	8.0
Average Moisture Content (%)	**4.2**		**1.8**		**4.5**		**8.3**	

Tested by: MICHAEL

Date Reported: 20-09-21

Checked by:

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Independent Materials testing & inspection Centre
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Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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Nairobi
Kenya

NATURAL MOISTURE CONTENT

BS 1377: 1990 Part 2: Clause 3

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-BONJE CREEK	**Date of Test:**	13-09-21
Project:	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Site:**	BONJE CREEK
Material Description					

Sample Reference.	**BH02**		**BH02**		**BH02**		**BH03**	
Depth (m):	**18.0-19.0M**		**24.0-25.0M**		**28.0-29.0M**		**2.0-3.0M**	
Sample No.	**4456**		**4457**		**4458**		**4459**	
Test No.	**1**	**2**	**1**	**2**	**1**	**2**	**1**	**2**
Initial Weight of Sample (g)	120.6	114.5	145.5	119.4	161.1	163.1	79.3	73.6
Weight of Dry Sample (g)	110.6	105.1	134.1	110.4	156.3	158.2	75.1	69.7
Weight of Water (g)	10.0	9.4	11.4	9.0	4.8	4.9	4.2	3.9
% Moisture Content	9.0	8.9	8.5	8.2	3.1	3.1	5.6	5.6
Average Moisture Content (%)	**9.0**		**8.4**		**3.1**		**5.6**	

Tested by: MICHAEL

Date Reported: 20-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & inspection Centre
Email: danellilab3@gmail.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

NATURAL MOISTURE CONTENT

BS 1377: 1990 Part 2: Clause 3

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-BONJE CREEK	**Date of Test:**	13-09-21
Project:	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Site:**	BONJE CREEK
Material Description					

Sample Reference.	**BH03**	
Depth (m):	**11.0-12.0M**	
Sample No.	**4460**	
Test No.	1	2
Initial Weight of Sample (g)	95.9	145.2
Weight of Dry Sample (g)	93.8	141.8
Weight of Water (g)	2.1	3.4
% Moisture Content	2.2	2.4
Average Moisture Content (%)	**2.3**	

Tested by: MICHAEL

Date Reported: 20-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & inspection Centre
Email: danellilab3@gmail.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
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NATURAL MOISTURE CONTENT

BS 1377: 1990 Part 2: Clause 3

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-NGUU TATU	**Date of Test:**	13-09-21
Project:	NGUU TATU WATER TANK	**Location:**	MOMBASA	**Site:**	NGUU TATU
Material Description					

Sample Reference.	**BH02**		**BH02**					
Depth (m):	**1.0-2.0M**		**19.0-20.0M**					
Sample No.	**4464**		**4467**					
Test No.	**1**	**2**	**1**	**2**				
Initial Weight of Sample (g)	112.6	126.4	95.3	103.9				
Weight of Dry Sample (g)	106.4	119.8	89.9	98.2				
Weight of Water (g)	6.2	6.6	5.4	5.7				
% Moisture Content	5.8	5.5	6.0	5.8				
Average Moisture Content (%)	**5.7**		**5.9**					

Tested by: MICHAEL

Date Reported: 20-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & inspection Centre
Email: danellilab3@gmail.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

NATURAL MOISTURE CONTENT

BS 1377: 1990 Part 2: Clause 3

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-CHANGAMWE	**Date of Test:**	13-09-21
Project:	CHANGAMWE WATER TANK	**Location:**	MOMBASA	**Site:**	CHANGAMWE
Material Description					

Sample Reference.	**BH01**		**BH01**		**BH01**		**BH02**	
Depth (m):	**1.0-2.0M**		**7.0-8.0M**		**16.0-17.0M**		**7.0-8.0M**	
Sample No.	**4468**		**4469**		**4470**		**4471**	
Test No.	**1**	**2**	**1**	**2**	**1**	**2**	**1**	**2**
Initial Weight of Sample (g)	118.8	142.5	116.8	128.5	121.5	143.5	116.2	156.2
Weight of Dry Sample (g)	116.5	140.0	110.2	122.2	116.2	136.8	102.5	137.4
Weight of Water (g)	2.3	2.5	6.6	6.3	5.3	6.7	13.7	18.8
% Moisture Content	1.9	1.8	6.0	5.2	4.6	4.9	13.4	13.7
Average Moisture Content (%)	**1.9**		**5.6**		**4.8**		**13.6**	

Tested by: MICHAEL

Date Reported: 20-09-21

Checked by:

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Independent Materials testing & inspection Centre
Email: danellilab3@gmail.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

NATURAL MOISTURE CONTENT

BS 1377: 1990 Part 2: Clause 3

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-CHANGAMWE	**Date of Test:**	13-09-21
Project:	CHANGAMWE WATER TANK	**Location:**	MOMBASA	**Site:**	CHANGAMWE
Material Description					

Sample Reference.	**BH02**	
Depth (m):	**17.0-18.0M**	
Sample No.	**4473**	
Test No.	**1**	**2**
Initial Weight of Sample (g)	124.0	98.0
Weight of Dry Sample (g)	116.9	92.6
Weight of Water (g)	7.1	5.4
% Moisture Content	6.1	5.8
Average Moisture Content (%)	**6.0**	

Tested by: MICHAEL

Date Reported: 20-09-21

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Standard Proctor Compaction

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

BH 01(7.0-8.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4448 **Sample No.** 4448

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 7.0 -8.0M **Date Tested:** 09-09-21

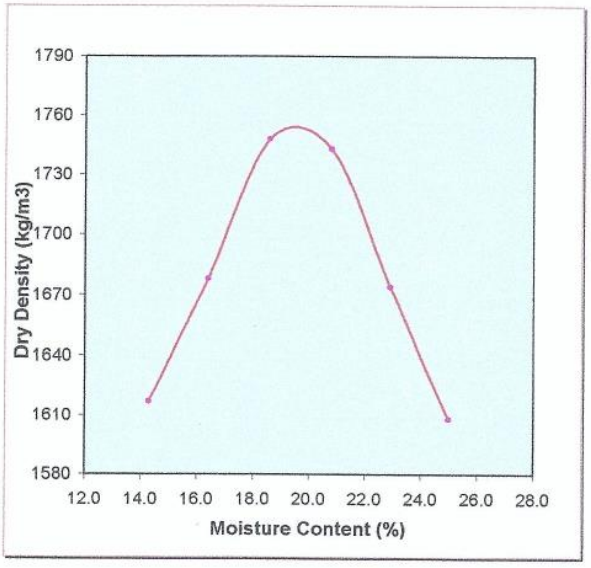
Method of Compaction: standard

Moisture Addition	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**
Mass of Mould+Base+Soil	5287	5386	5499	5529	5484	5439
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1737	1836	1949	1979	1934	1889
Bulk Density (kgs/m^3)	1848	1953	2073	2106	2057	2010

Tin No.	**MU**	**SO**	**MA**	**LE**	**VA**	**C5**
Wgt of Wet Soil + Tin	137.7	141.2	147.7	143.6	147.0	159.0
Wgt of Dry Soil + Tin	120.5	121.3	124.5	118.9	119.6	127.2
Wgt of Water	17.2	19.9	23.2	24.7	27.4	31.8
Wgt of Tin						
Wgt of Dry Soil	120.5	121.3	124.5	118.9	119.6	127.2
Moisture Content %	**14.3**	**16.4**	**18.6**	**20.8**	**22.9**	**25.0**

Dry Density (Kgs/m^3)	**1617**	**1678**	**1748**	**1743**	**1674**	**1608**

Maximum Dry Density = 1754Kg/m^3 **Optimum Moisture Content = 19.3%**



Tested by: KEVIN **Date Reported:** 14-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

BH 01(19.0-20.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-BONJE CREEK/4450 **Sample No.** 4450

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 19.0 -20.0M **Date Tested:** 09-09-21

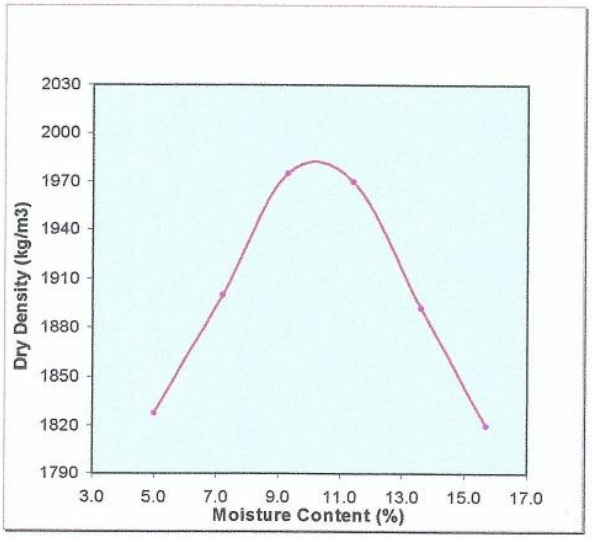
Method of Compaction: standard

Moisture Addition	**150cc**	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**
Mass of Mould+Base+Soil	5354	5465	5579	5613	5570	5529
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1804	1915	2029	2063	2020	1979
Bulk Density (kgs/m^3)	1919	2037	2159	2195	2149	2106

Tin No.	**PA**	**TI**	**ON**	**NI**	**OF**	**MX**
Wgt of Wet Soil + Tin	110.9	118.1	129.0	133.2	139.0	131.9
Wgt of Dry Soil + Tin	105.6	110.2	118.0	119.6	122.4	114.0
Wgt of Water	5.3	7.9	11.0	13.6	16.6	17.9
Wgt of Tin	-	-	-	-	-	-
Wgt of Dry Soil	105.6	110.2	118.0	119.6	122.4	114.0
Moisture Content %	**5.0**	**7.2**	**9.3**	**11.4**	**13.6**	**15.7**

Dry Density (Kgs/m^3)	**1828**	**1900**	**1975**	**1970**	**1892**	**1820**

Maximum Dry Density = 1981Kg/m^3 **Optimum Moisture Content = 10.2%**



Tested by: KEVIN **Date Reported:** 14-09-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU WATER TANK

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

BH 02(1.0-2.0M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 08-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/4460 **Sample No.** 4460

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0 -2.0M **Date Tested:** 09-09-21

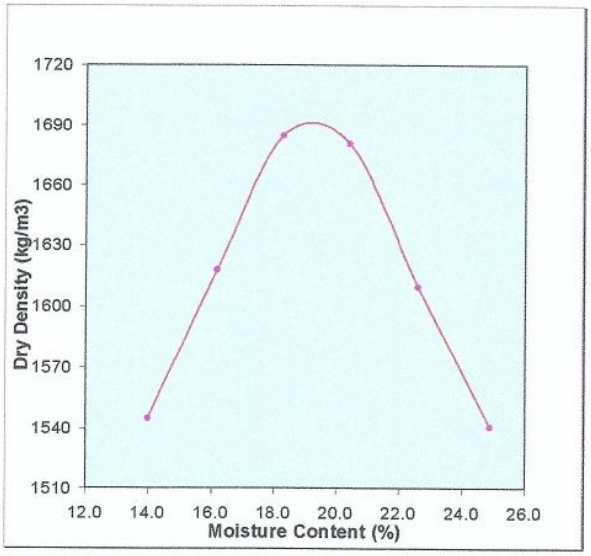
Method of Compaction: standard

Moisture Addition	250cc	300cc	350cc	400cc	450cc	500cc
Mass of Mould+Base+Soil	5206	5317	5424	5452	5405	5359
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1656	1767	1874	1902	1855	1809
Bulk Density (kgs/m^3)	1761	1880	1993	2024	1974	1925

Tin No.	DE	NS	TY	IN	CH	MG
Wgt of Wet Soil + Tin	120.2	126.2	129.2	132.4	139.3	138.9
Wgt of Dry Soil + Tin	105.4	108.6	109.2	110.0	113.6	111.2
Wgt of Water	14.8	17.6	20.0	22.4	25.7	27.7
Wgt of Tin	-	-	-	-	-	-
Wgt of Dry Soil	105.4	108.6	109.2	110.0	113.6	111.2
Moisture Content %	**14.0**	**16.2**	**18.3**	**20.4**	**22.6**	**24.9**

Dry Density (Kgs/m^3)	**1545**	**1618**	**1685**	**1681**	**1610**	**1541**

Maximum Dry Density = 1690Kg/m^3 **Optimum Moisture Content = 19.2%**



Tested by: KEVIN **Date Reported:** 14-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

BH 02(7.0-8.0M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 08-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/4463 **Sample No.** 4463

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 7.0 -8.0M **Date Tested:** 09-09-21

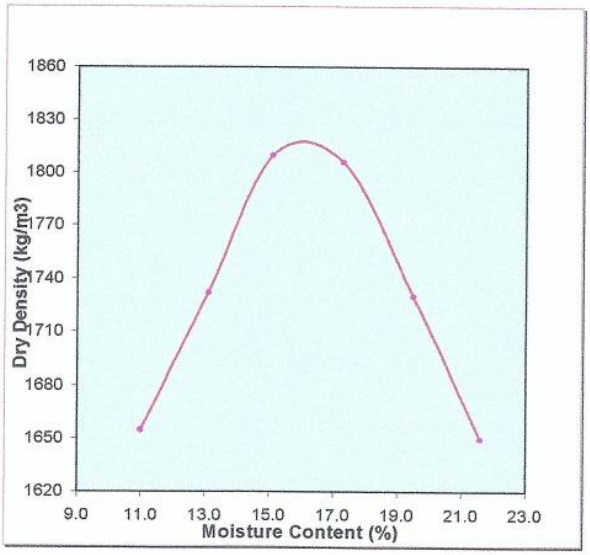
Method of Compaction: standard

Moisture Addition	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**
Mass of Mould+Base+Soil	5277	5391	5508	5541	5493	5436
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1727	1841	1958	1991	1943	1886
Bulk Density (kgs/m^3)	1837	1959	2083	2118	2067	2006

Tin No.	**CH**	**AN**	**GE**	**MW**	**EO**	**KC**
Wgt of Wet Soil + Tin	140.4	145.0	139.6	140.9	148.1	140.9
Wgt of Dry Soil + Tin	126.5	128.2	121.3	120.1	123.9	115.9
Wgt of Water	13.9	16.8	18.3	20.8	24.2	25.0
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	126.5	128.2	121.3	120.1	123.9	115.9
Moisture Content %	**11.0**	**13.1**	**15.1**	**17.3**	**19.5**	**21.6**

Dry Density (Kgs/m^3)	**1655**	**1732**	**1810**	**1806**	**1730**	**1650**

Maximum Dry Density = 1819Kg/m^3 **Optimum Moisture Content = 16.0%**



Tested by: KEVIN **Date Reported:** 14-09-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

BH 02(14.0-15.0M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 08-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/4466 **Sample No.** 4466

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 14.0 -15.0M **Date Tested:** 09-09-21

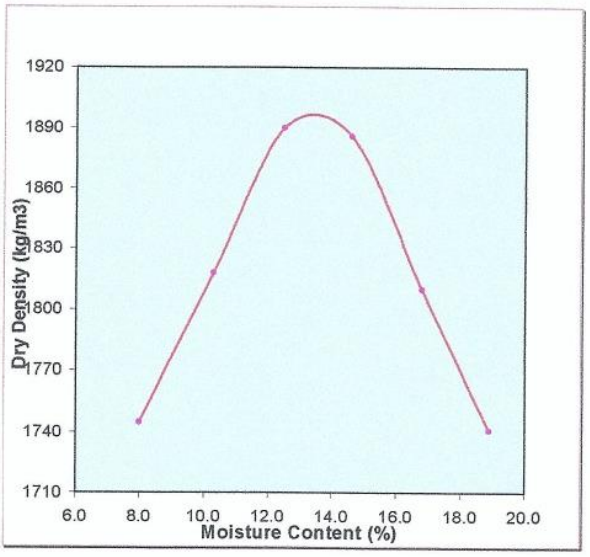
Method of Compaction: standard

Moisture Addition	**150cc**	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**
Mass of Mould+Base+Soil	5322	5435	5549	5582	5537	5496
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1772	1885	1999	2032	1987	1946
Bulk Density (kgs/m^3)	1885	2005	2126	2161	2114	2070

Tin No.	**RE**	**LA**	**TI**	**ON**	**SH**	**PH**
Wgt of Wet Soil + Tin	125.7	130.0	134.1	130.9	135.5	131.4
Wgt of Dry Soil + Tin	116.4	117.9	119.2	114.2	116.0	110.5
Wgt of Water	9.3	12.1	14.9	16.7	19.5	20.9
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	116.4	117.9	119.2	114.2	116.0	110.5
Moisture Content %	**8.0**	**10.3**	**12.5**	**14.6**	**16.8**	**18.9**

Dry Density (Kgs/m^3)	**1745**	**1818**	**1890**	**1886**	**1810**	**1741**

Maximum Dry Density = 1897Kg/m^3 **Optimum Moisture Content = 13.4%**



Tested by: KEVIN **Date Reported:** 14-09-21 **Checked by:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
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Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM2+500(0.0-0.3m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 21-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- NGUU TATU /5709 **Sample No.** 5709

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.3m **Date Tested:** 16-11-21

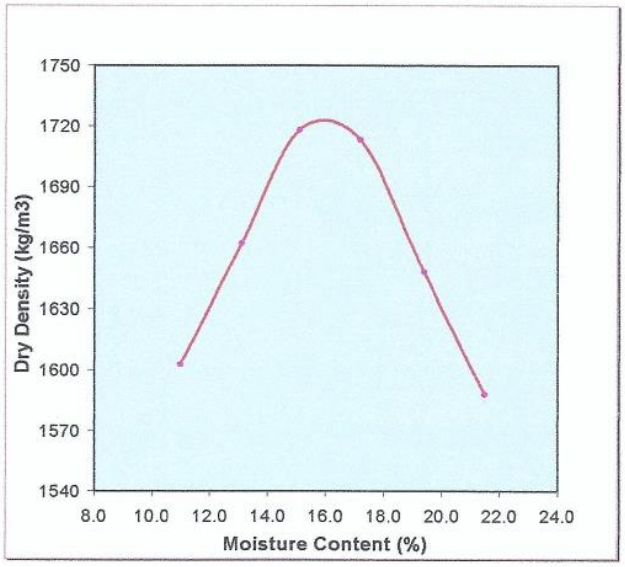
Method of Compaction: standard

Moisture Addition	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**
Mass of Mould+Base+Soil	5223	5317	5409	5437	5400	5364
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1673	1767	1859	1887	1850	1814
Bulk Density (kgs/m^3)	1779	1880	1977	2008	1968	1929

Tin No.	**NG**	**UU**	**TA**	**TU**	**CL**	**TY**
Wgt of Wet Soil + Tin	115.7	119.7	122.4	126.5	129.4	133.2
Wgt of Dry Soil + Tin	104.2	105.8	106.3	107.9	108.4	109.6
Wgt of Water	11.5	13.9	16.1	18.6	21.0	23.6
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	104.2	105.8	106.3	107.9	108.4	109.6
Moisture Content %	**11.0**	**13.1**	**15.1**	**17.2**	**19.4**	**21.5**

Dry Density (Kgs/m^3)	**1603**	**1662**	**1718**	**1713**	**1648**	**1588**

Maximum Dry Density = 1722Kg/m^3 **Optimum Moisture Content = 15.9%**



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM4+000(0.0-1.3m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 21-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-NGUU TATU/5711 **Sample No.** 5711

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.3m **Date Tested:** 16-11-21

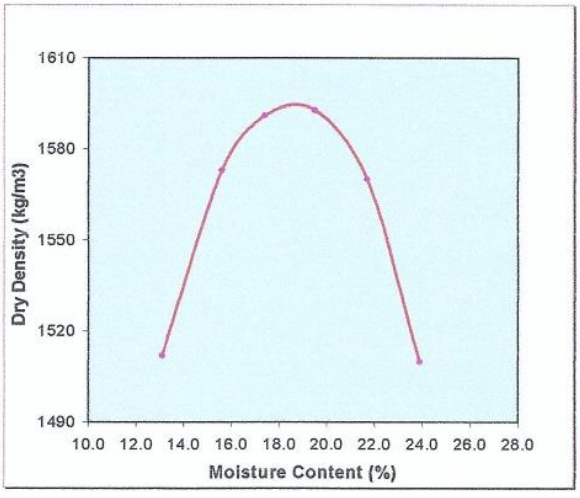
Method of Compaction: standard

Moisture Addition	**300cc**	**350cc**	**400cc**	**450cc**	**500cc**	**550cc**
Mass of Mould+Base+Soil	5157	5259	5306	5339	5346	5309
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1607	1709	1756	1789	1796	1759
Bulk Density (kgs/m^3)	1710	1818	1868	1904	1911	1871

Tin No.	**ER**	**IC**	**GA**	**ND**	**HI**	**DE**
Wgt of Wet Soil + Tin	125.1	132.4	131.5	138.1	138.0	144.7
Wgt of Dry Soil + Tin	110.6	114.5	112.0	115.6	113.4	116.8
Wgt of Water	14.5	17.9	19.5	22.5	24.6	27.9
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	110.6	114.5	112.0	115.6	113.4	116.8
Moisture Content %	**13.1**	**15.6**	**17.4**	**19.5**	**21.7**	**23.9**

Dry Density (Kgs/m^3)	**1512**	**1573**	**1591**	**1593**	**1570**	**1510**

Maximum Dry Density = 1595Kg/m^3 **Optimum Moisture Content = 18.8%**



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Email: danellilab3@gmail.com
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P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM7+500(0.5-1.3M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 21-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- NGUU TATU /5715 **Sample No.** 5715

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.3m **Date Tested:** 16-11-21

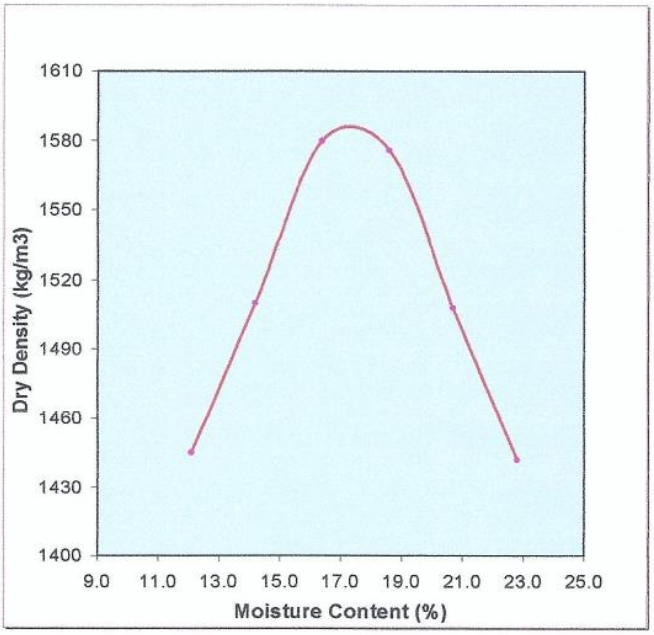
Method of Compaction: standard

Moisture Addition	**300cc**	**350cc**	**400cc**	**450cc**	**500cc**	**550cc**
Mass of Mould+Base+Soil	5073	5171	5279	5307	5261	5215
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1523	1621	1729	1757	1711	1665
Bulk Density (kgs/m^3)	1620	1724	1839	1869	1820	1771

Tin No.	**RE**	**LA**	**TI**	**ON**	**SH**	**PH**
Wgt of Wet Soil + Tin	121.2	124.9	128.4	132.4	137.0	141.0
Wgt of Dry Soil + Tin	108.1	109.4	110.3	111.6	113.5	114.8
Wgt of Water	13.1	15.5	18.1	20.8	23.5	26.2
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	108.1	109.4	110.3	111.6	113.5	114.8
Moisture Content %	**12.1**	**14.2**	**16.4**	**18.6**	**20.7**	**22.8**

Dry Density (Kgs/m^3)	**1445**	**1510**	**1580**	**1576**	**1508**	**1442**

Maximum Dry Density = 1588Kg/m^3 **Optimum Moisture Content = 15.5%**



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM9+500(0.4-1.4M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 21-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- NGUU TATU /5718 **Sample No.** 5718

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.4m **Date Tested:** 16-11-21

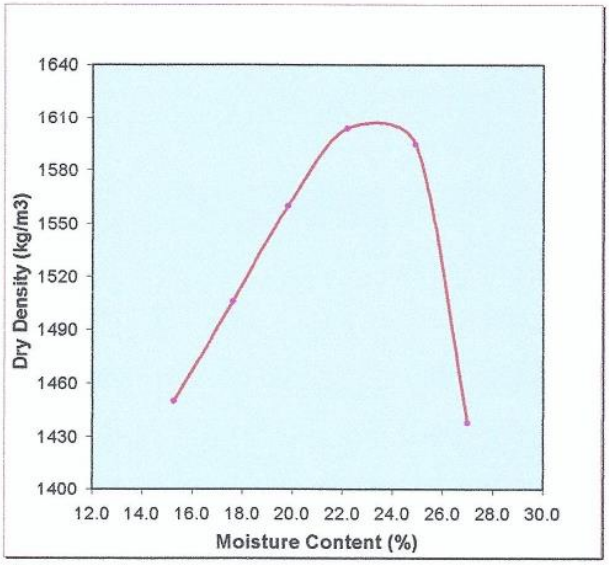
Method of Compaction: standard

Moisture Addition	**400cc**	**450cc**	**500cc**	**550cc**	**600cc**	**650cc**
Mass of Mould+Base+Soil	5122	5215	5307	5392	5423	5267
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1572	1665	1757	1842	1873	1717
Bulk Density (kgs/m^3)	1672	1771	1869	1960	1992	1826

Tin No.	**MI**	**KE**	**KI**	**OK**	**OM**	**PR**
Wgt of Wet Soil + Tin	123.6	127.6	131.4	135.4	141.4	146.8
Wgt of Dry Soil + Tin	107.2	108.5	109.7	110.8	113.2	115.6
Wgt of Water	16.4	19.1	21.7	24.6	28.2	31.2
Wgt of Tin	-	-	-	-	-	-
Wgt of Dry Soil	107.2	108.5	109.7	110.8	113.2	115.6
Moisture Content %	**15.3**	**17.6**	**19.8**	**22.2**	**24.9**	**27.0**

Dry Density (Kgs/m^3)	**1450**	**1506**	**1560**	**1604**	**1595**	**1438**

Maximum Dry Density = 1608Kg/m^3 **Optimum Moisture Content = 23.5%**



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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM11+500(0.0-0.6m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 21-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- NGUU TATU /5722 **Sample No.** 5722

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.6m **Date Tested:** 16-11-21

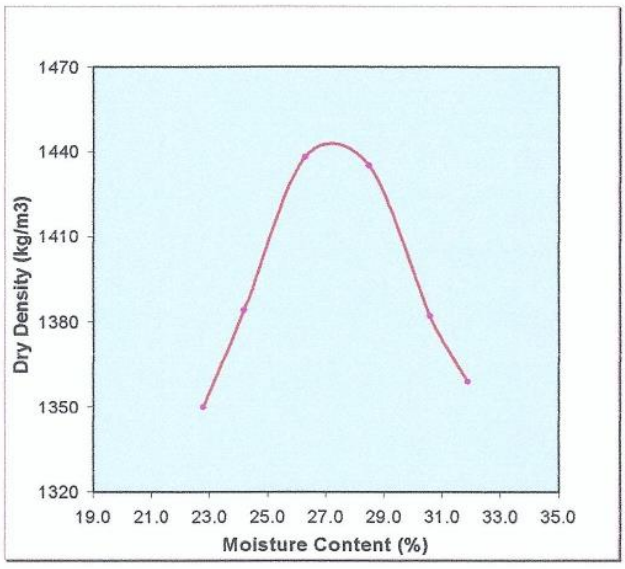
Method of Compaction: standard

Moisture Addition	**450cc**	**500cc**	**550cc**	**600cc**	**650cc**	**700cc**
Mass of Mould+Base+Soil	5108	5166	5257	5283	5247	5235
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1558	1616	1707	1733	1697	1685
Bulk Density (kgs/m^3)	1658	1719	1816	1844	1805	1793

Tin No.	**TR**	**RA**	**NK**	**MA**	**IN**	**SI**
Wgt of Wet Soil + Tin	139.5	141.8	146.3	149.1	153.3	156.7
Wgt of Dry Soil + Tin	113.6	114.2	115.8	116.0	117.4	118.8
Wgt of Water	25.9	27.6	30.5	33.1	35.9	37.9
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	113.6	114.2	115.8	116.0	117.4	118.8
Moisture Content %	**22.8**	**24.2**	**26.3**	**28.5**	**30.6**	**31.9**

Dry Density (Kgs/m^3)	**1350**	**1384**	**1438**	**1435**	**1382**	**1359**

Maximum Dry Density = 1442Kg/m^3 **Optimum Moisture Content = 27.4%**



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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
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Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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P.O.Box 64932
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM13+500(0.0-2.1m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 21-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- NGUU TATU /5725 **Sample No.** 5725

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-2.1m **Date Tested:** 16-11-21

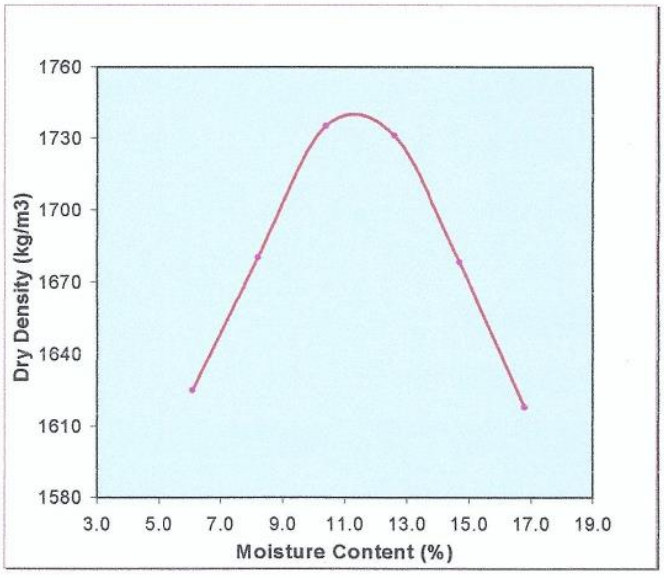
Method of Compaction: standard

Moisture Addition	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**	**500cc**
Mass of Mould+Base+Soil	5171	5259	5351	5382	5359	5326
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1621	1709	1801	1832	1809	1776
Bulk Density (kgs/m^3)	1724	1818	1915	1949	1925	1890

Tin No.	**KA**	**YA**	**BO**	**MB**	**ON**	**KI**
Wgt of Wet Soil + Tin	127.4	131.2	135.2	138.5	143.1	146.6
Wgt of Dry Soil + Tin	120.1	121.3	122.5	123.0	124.8	125.5
Wgt of Water	7.3	9.9	12.7	15.5	18.3	21.1
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	120.1	121.3	122.5	123.0	124.8	125.5
Moisture Content %	**6.1**	**8.2**	**10.4**	**12.6**	**14.7**	**16.8**

Dry Density (Kgs/m^3)	**1625**	**1680**	**1735**	**1731**	**1678**	**1618**

Maximum Dry Density = 1740Kg/m^3 **Optimum Moisture Content = 11.5%**



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Email: danellilab3@gmail.com
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM14+000(0.3-0.9m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 21-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- NGUU TATU /5726 **Sample No.** 5726

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-0.9m **Date Tested:** 16-11-21

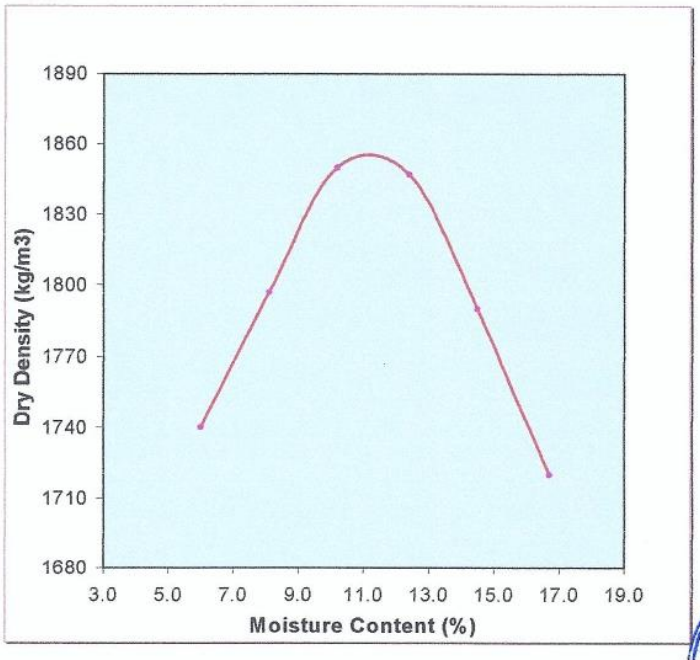
Method of Compaction: standard

Moisture Addition	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**
Mass of Mould+Base+Soil	5284	5376	5466	5501	5477	5437
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1734	1826	1916	1951	1927	1887
Bulk Density (kgs/m^3)	1844	1943	2039	2076	2050	2007

Tin No.	**CO**	**NT**	**EN**	**TO**	**XU**	**ZM**
Wgt of Wet Soil + Tin	121.4	125.0	128.8	132.0	135.5	139.2
Wgt of Dry Soil + Tin	114.5	115.6	116.9	117.4	118.3	119.3
Wgt of Water	6.9	9.4	11.9	14.6	17.2	19.9
Wgt of Tin	-	-	-	-	-	-
Wgt of Dry Soil	114.5	115.6	116.9	117.4	118.3	119.3
Moisture Content %	**6.0**	**8.1**	**10.2**	**12.4**	**14.5**	**16.7**

Dry Density (Kgs/m^3)	**1740**	**1797**	**1850**	**1847**	**1790**	**1720**

Maximum Dry Density = 1855Kg/m^3 **Optimum Moisture Content = 11.3%**



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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM16+500(0.5-1.4m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 21-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- NGUU TATU /5731 **Sample No.** 5731

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.4m **Date Tested:** 16-11-21

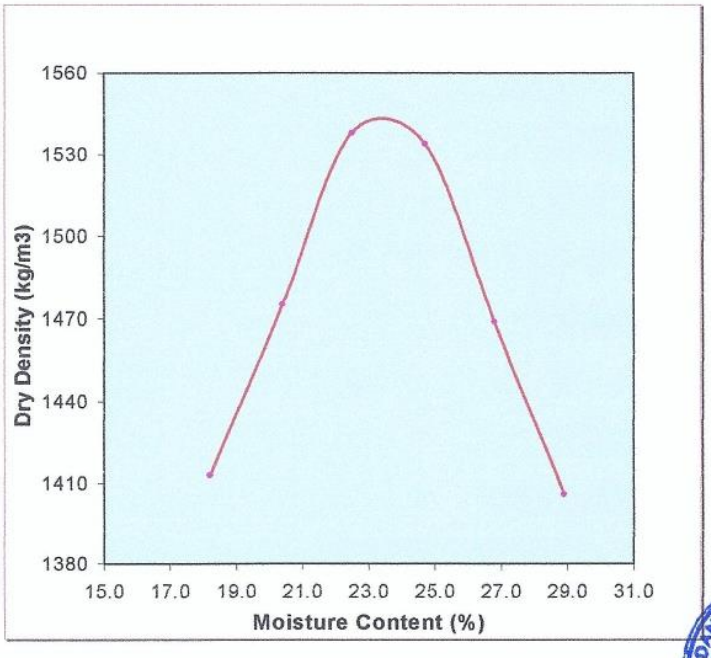
Method of Compaction: standard

Moisture Addition	**350cc**	**400cc**	**450cc**	**500cc**	**550cc**	**600cc**
Mass of Mould+Base+Soil	5120	5219	5321	5348	5301	5254
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1570	1669	1771	1798	1751	1704
Bulk Density (kgs/m^3)	1670	1776	1884	1913	1863	1812

Tin No.	**CH**	**AN**	**GA**	**MW**	**EK**	**LM**
Wgt of Wet Soil + Tin	125.9	129.7	133.3	136.4	140.2	144.1
Wgt of Dry Soil + Tin	106.5	107.7	108.8	109.4	110.6	111.8
Wgt of Water	19.4	22.0	24.5	27.0	29.6	32.3
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	106.5	107.7	108.8	109.4	110.6	111.8
Moisture Content %	**18.2**	**20.4**	**22.5**	**24.7**	**26.8**	**28.9**

Dry Density (Kgs/m^3)	**1413**	**1475**	**1538**	**1534**	**1469**	**1406**

Maximum Dry Density = 1543Kg/m^3 **Optimum Moisture Content = 23.5%**



Tested by: KEVIN **Date Reported:** 22-11-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM18+000(0.4-1.2m)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 21-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- NGUU TATU /5734 **Sample No.** 5734

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.2m **Date Tested:** 16-11-21

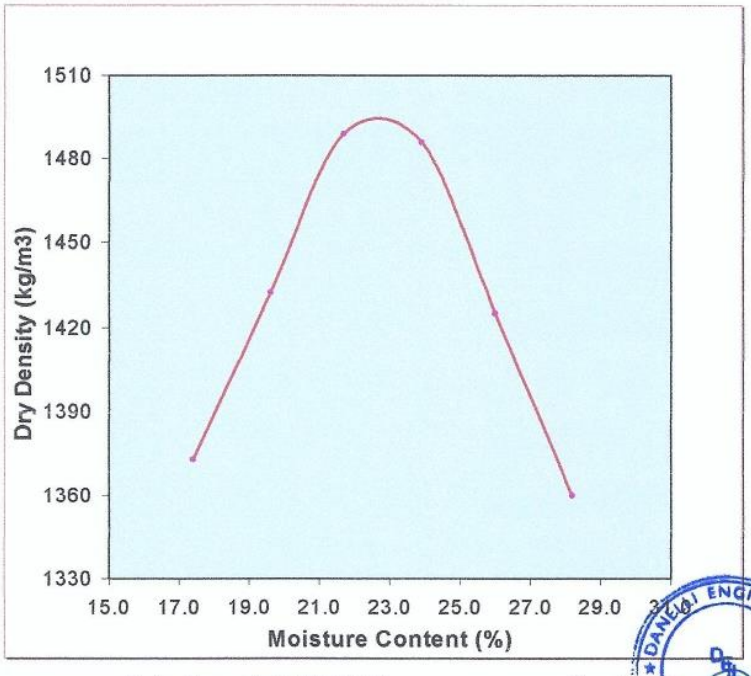
Method of Compaction: standard

Moisture Addition	**300cc**	**350cc**	**400cc**	**450cc**	**500cc**	**450cc**
Mass of Mould+Base+Soil	5065	5160	5253	5281	5238	5189
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1515	1610	1703	1731	1688	1639
Bulk Density (kgs/m^3)	1612	1713	1812	1841	1796	1744

Tin No.	VI	DA	OU	GO	UM	MA
Wgt of Wet Soil + Tin	122.3	126.5	129.1	132.9	137.2	140.4
Wgt of Dry Soil + Tin	104.2	105.8	106.1	107.3	108.9	109.5
Wgt of Water	18.1	20.7	23.0	25.6	28.3	30.9
Wgt of Tin	-	-	-	-	-	-
Wgt of Dry Soil	104.2	105.8	106.1	107.3	108.9	109.5
Moisture Content %	**17.4**	**19.6**	**21.7**	**23.9**	**26.0**	**28.2**

Dry Density (Kgs/m^3)	**1373**	**1432**	**1489**	**1486**	**1425**	**1360**

Maximum Dry Density = 1495Kg/m^3 **Optimum Moisture Content = 22.8%**



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
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Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM3+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- KAYABOMBO/4560 **Sample No.** 4560

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** **Date Tested:** 16-11-21

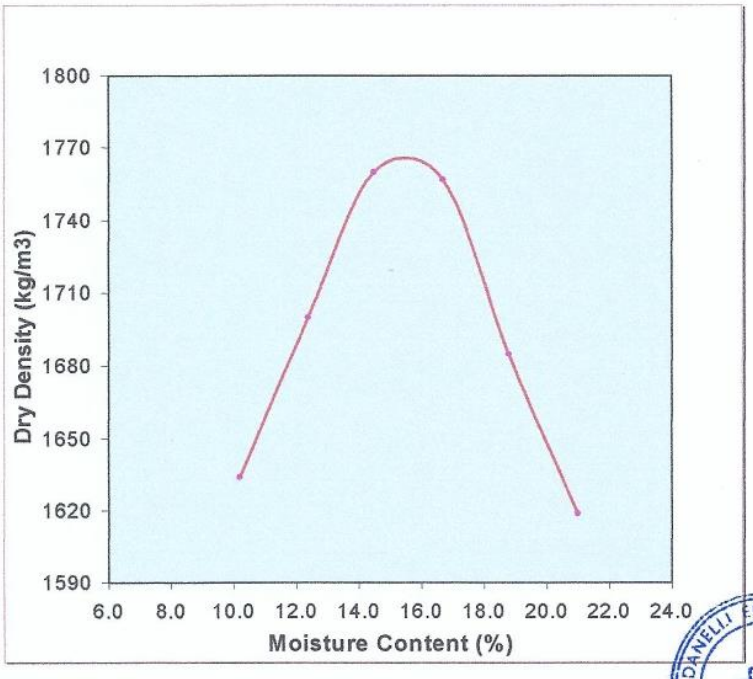
Method of Compaction: standard

Moisture Addition	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**
Mass of Mould+Base+Soil	5243	5346	5444	5477	5432	5391
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1693	1796	1894	1927	1882	1841
Bulk Density (kgs/m^3)	1801	1911	2015	2050	2002	1959

Tin No.	**KE**	**RU**	**BO**	**MA**	**RS**	**LY**
Wgt of Wet Soil + Tin	127.7	123.9	131.3	129.1	138.5	142.8
Wgt of Dry Soil + Tin	115.9	110.2	114.7	110.6	116.6	118.0
Wgt of Water	11.8	13.7	16.6	18.5	21.9	24.8
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	115.9	110.2	114.7	110.6	116.6	118.0
Moisture Content %	**10.2**	**12.4**	**14.5**	**16.7**	**18.8**	**21.0**

Dry Density (Kgs/m^3)	**1634**	**1700**	**1760**	**1757**	**1685**	**1619**

Maximum Dry Density = 1768Kg/m^3 **Optimum Moisture Content = 15.6%**



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM5+500 (0.0m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- KAYABOMBO /4563 **Sample No.** 4563

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0m **Date Tested:** 16-11-21

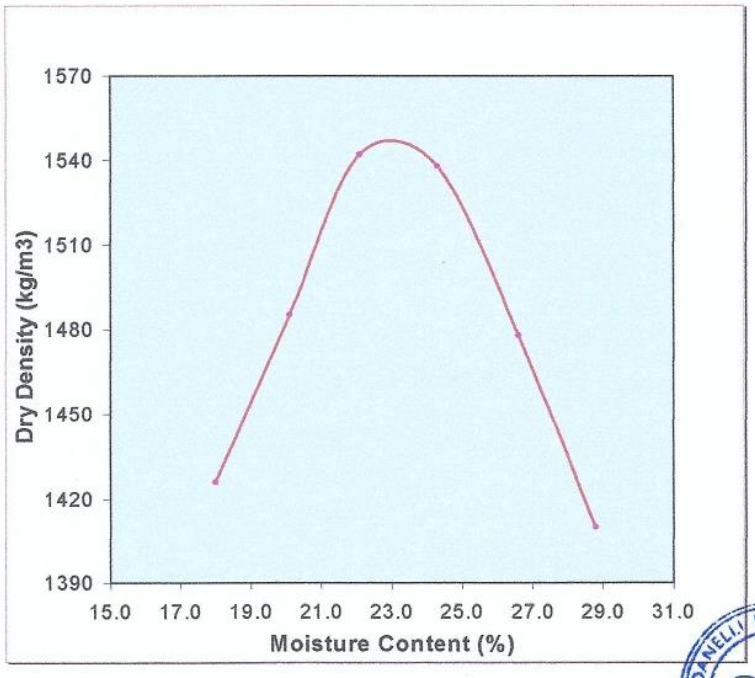
Method of Compaction: standard

Moisture Addition	**400cc**	**450cc**	**500cc**	**550cc**	**600cc**	**650cc**
Mass of Mould+Base+Soil	5132	5226	5320	5347	5309	5257
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1582	1676	1770	1797	1759	1707
Bulk Density (kgs/m^3)	1683	1783	1883	1912	1871	1816

Tin No.	**B.5**	**B.6**	**X.7**	**ZO**	**X.5**	**O.N**
Wgt of Wet Soil + Tin	130.4	142.3	136.3	145.9	142.4	149.7
Wgt of Dry Soil + Tin	110.5	118.5	111.6	117.4	112.5	116.2
Wgt of Water	19.9	23.8	24.7	28.5	29.9	33.5
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	110.5	118.5	111.6	117.4	112.5	116.2
Moisture Content %	**18.0**	**20.1**	**22.1**	**24.3**	**26.6**	**28.8**

Dry Density (Kgs/m^3)	**1426**	**1485**	**1542**	**1538**	**1478**	**1410**

Maximum Dry Density = 1540Kg/m^3 **Optimum Moisture Content = 23.0%**



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM6+500 (1.0-1.7m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- KAYABOMBO/4566 **Sample No.** 4566

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0-1.7m **Date Tested:** 16-11-21

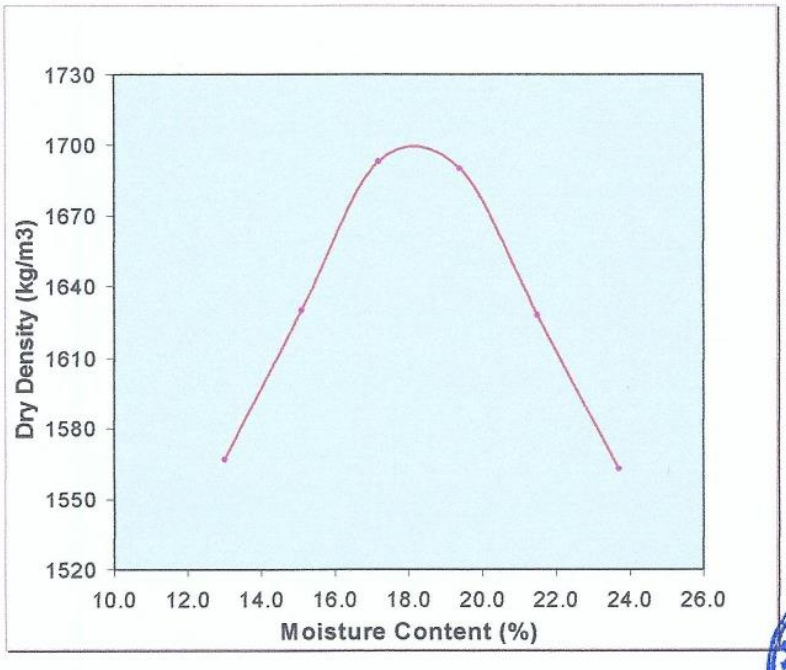
Method of Compaction: standard

Moisture Addition	**350cc**	**400cc**	**450cc**	**500cc**	**550cc**	**600cc**
Mass of Mould+Base+Soil	5214	5314	5415	5447	5409	5367
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1664	1764	1865	1897	1859	1817
Bulk Density (kgs/m^3)	1771	1876	1984	2018	1978	1933

Tin No.	**MU**	**SO**	**GA**	**KI**	**TU**	**KU**
Wgt of Wet Soil + Tin	120.2	127.2	135.7	143.4	142.9	144.0
Wgt of Dry Soil + Tin	106.4	110.5	115.8	120.1	117.6	116.4
Wgt of Water	13.8	16.7	19.9	23.3	25.3	27.6
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	106.4	110.5	115.8	120.1	117.6	116.4
Moisture Content %	**13.0**	**15.1**	**17.2**	**19.4**	**21.5**	**23.7**

Dry Density (Kgs/m^3)	**1567**	**1630**	**1693**	**1690**	**1628**	**1563**

Maximum Dry Density = 1700Kg/m^3 **Optimum Moisture Content = 18.3%**



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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM8+000 (0.3-0.6m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- KAYABOMBO /4569 **Sample No.** 4569

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-0.6m **Date Tested:** 16-11-21

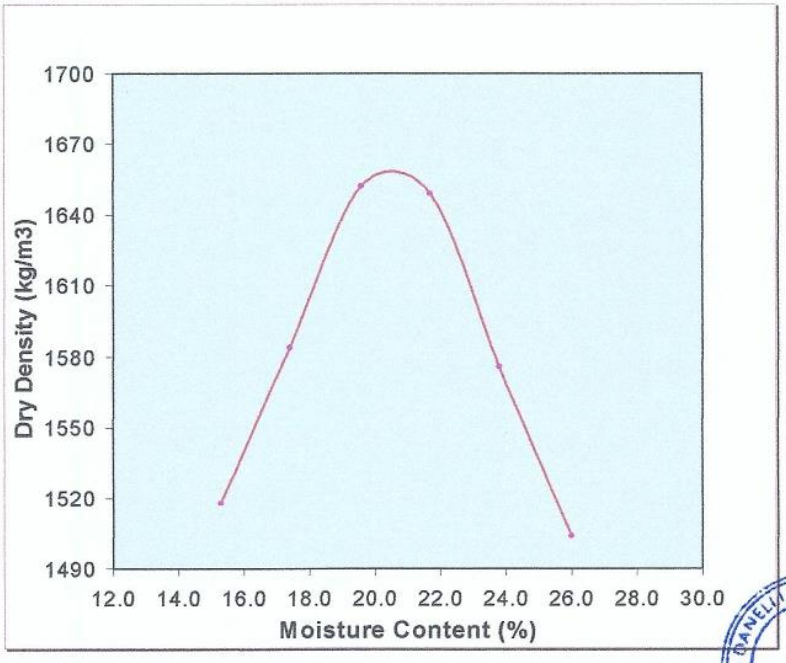
Method of Compaction: standard

Moisture Addition	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**
Mass of Mould+Base+Soil	5195	5298	5407	5436	5384	5331
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1645	1748	1857	1886	1834	1781
Bulk Density (kgs/m^3)	1750	1860	1976	2007	1951	1895

Tin No.	**MU**	**TU**	**GA**	**WI**	**LY**	**KO**
Wgt of Wet Soil + Tin	120.5	133.4	126.1	136.8	132.2	139.7
Wgt of Dry Soil + Tin	104.5	113.6	105.4	112.4	106.8	110.9
Wgt of Water	16.0	19.8	20.7	24.4	25.4	28.8
Wgt of Tin						
Wgt of Dry Soil	104.5	113.6	105.4	112.4	106.8	110.9
Moisture Content %	**15.3**	**17.4**	**19.6**	**21.7**	**23.8**	**26.0**

Dry Density (Kgs/m^3)	**1518**	**1584**	**1652**	**1649**	**1576**	**1504**

Maximum Dry Density = 1659Kg/m^3 **Optimum Moisture Content = 20.5%**



Tested by: KEVIN **Date Reported:** 22-11-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM10+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- KAYABOMBO /4572 **Sample No.** 4572

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** **Date Tested:** 16-11-21

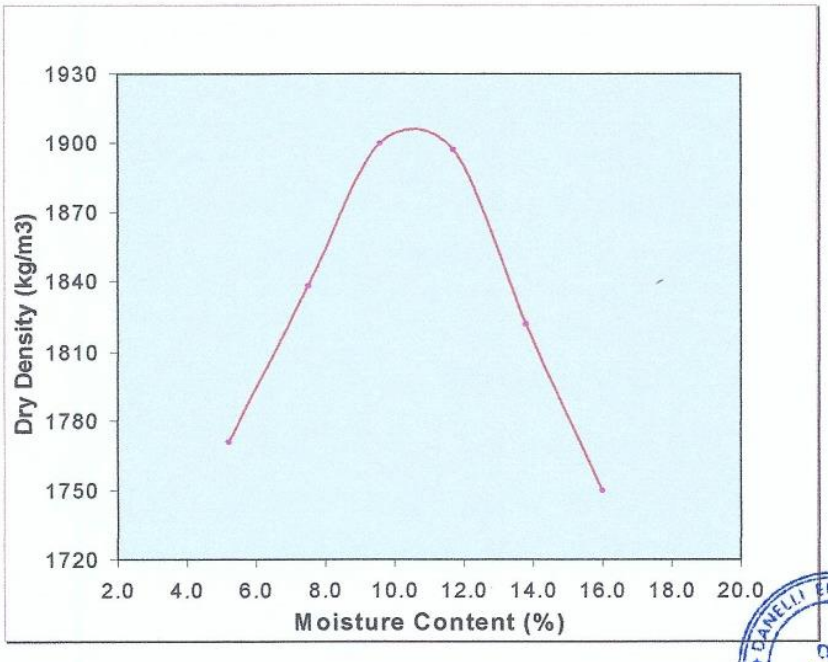
Method of Compaction: standard

Moisture Addition	**100cc**	**150cc**	**200cc**	**250cc**	**300cc**	**350cc**
Mass of Mould+Base+Soil	5301	5407	5507	5542	5499	5458
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1751	1857	1957	1992	1949	1908
Bulk Density (kgs/m^3)	1863	1976	2082	2119	2073	2030

Tin No.	**FE**	**LI**	**ST**	**AA**	**CC**	**DD**
Wgt of Wet Soil + Tin	116.2	120.5	124.2	128.7	132.9	136.9
Wgt of Dry Soil + Tin	110.5	112.1	113.3	115.2	116.8	118.0
Wgt of Water	5.7	8.4	10.9	13.5	16.1	18.9
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	110.5	112.1	113.3	115.2	116.8	118.0
Moisture Content %	**5.2**	**7.5**	**9.6**	**11.7**	**13.8**	**16.0**

Dry Density (Kgs/m^3)	**1771**	**1838**	**1900**	**1897**	**1822**	**1750**

Maximum Dry Density = 1905Kg/m^3 **Optimum Moisture Content = 10.5%**



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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM13+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4574 **Sample No.** 4574

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** **Date Tested:** 16-11-21

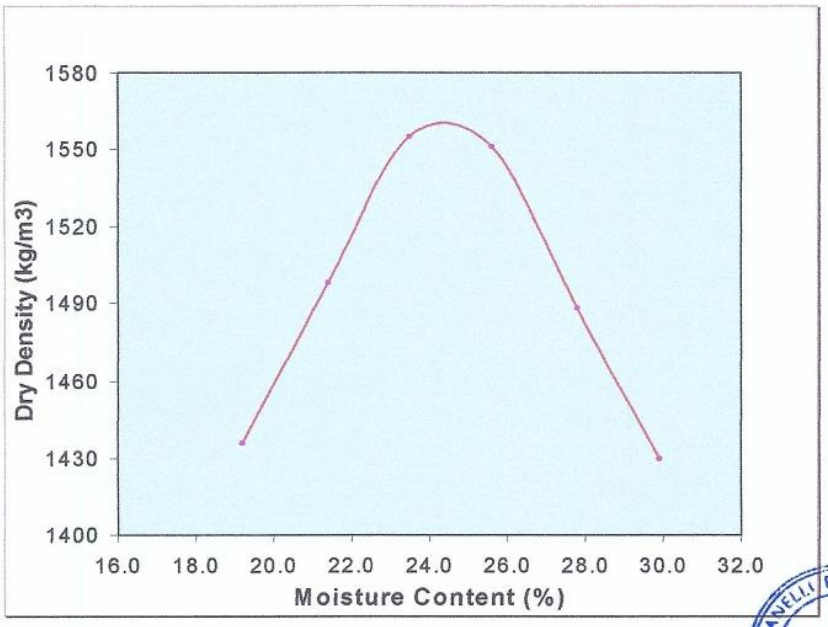
Method of Compaction: standard

Moisture Addition	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**	**500cc**
Mass of Mould+Base+Soil	5159	5259	5355	5381	5338	5296
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1609	1709	1805	1831	1788	1746
Bulk Density (kgs/m^3)	1712	1819	1920	1948	1902	1858

Tin No.	**RE**	**LA**	**TI**	**ON**	**SH**	**IP**
Wgt of Wet Soil + Tin	135.3	145.2	138.8	149.0	145.2	152.5
Wgt of Dry Soil + Tin	113.5	119.6	112.4	118.6	113.6	117.4
Wgt of Water	21.8	25.6	26.4	30.4	31.6	35.1
Wgt of Tin	-	-	-	-	-	-
Wgt of Dry Soil	113.5	119.6	112.4	118.6	113.6	117.4
Moisture Content %	**19.2**	**21.4**	**23.5**	**25.6**	**27.8**	**29.9**

Dry Density (Kgs/m^3)	**1436**	**1498**	**1555**	**1551**	**1488**	**1430**

Maximum Dry Density = 1560Kg/m^3 **Optimum Moisture Content = 24.3%**



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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM15+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4578 **Sample No.** 4578

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** **Date Tested:** 16-11-21

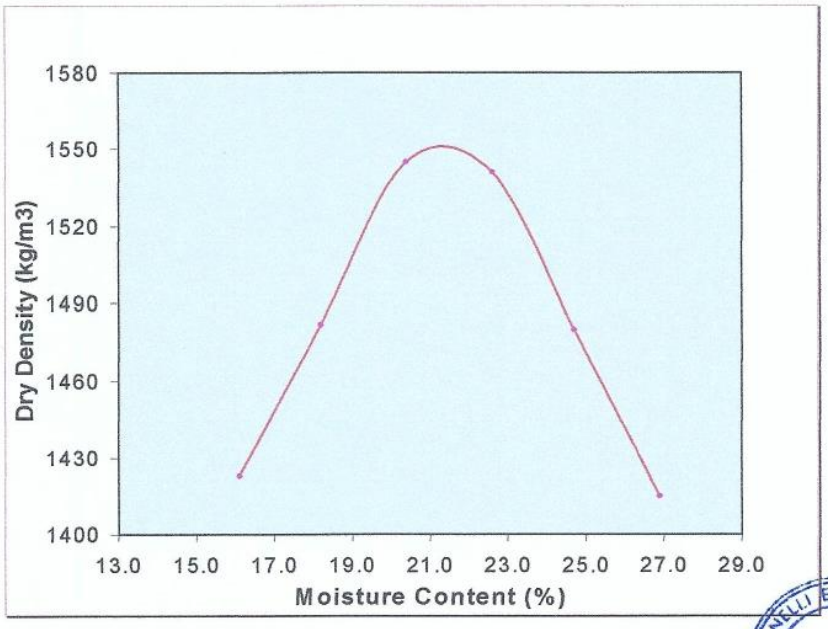
Method of Compaction: standard

Moisture Addition	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**
Mass of Mould+Base+Soil	5103	5197	5299	5326	5285	5238
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1553	1647	1749	1776	1735	1688
Bulk Density (kgs/m^3)	1652	1752	1860	1889	1846	1796

Tin No.	**RE**	**LA**	**TI**	**ON**	**SH**	**IP**
Wgt of Wet Soil + Tin	**DE**	**MA**	**KU**	**FU**	**VU**	**LY**
Wgt of Dry Soil + Tin	121.3	140.2	128.5	142.5	134.8	145.0
Wgt of Water	104.5	118.6	106.7	116.2	108.1	114.3
Wgt of Tin	16.8	21.6	21.8	26.3	26.7	30.7
Wgt of Dry Soil	_	_	_	_	_	_
Moisture Content %	104.5	118.6	106.7	116.2	108.1	114.3

Dry Density (Kgs/m^3)	**1423**	**1482**	**1545**	**1541**	**1480**	**1415**

Maximum Dry Density = 1550Kg/m^3 **Optimum Moisture Content = 21.5%**



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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM19+000(1.3-2.0m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4582 **Sample No.** 4582

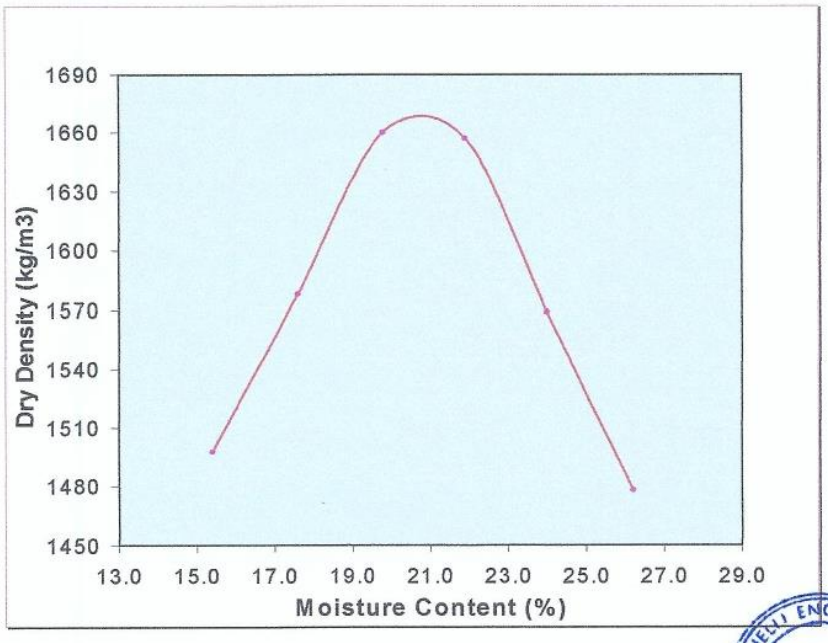
Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.3-2.0m **Date Tested:** 16-11-21

Method of Compaction: standard

Moisture Addition	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**
Mass of Mould+Base+Soil	5175	5294	5419	5449	5379	5303
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1625	1744	1869	1899	1829	1753
Bulk Density (kgs/m^3)	1729	1856	1989	2020	1946	1865

Tin No.	MU	LE	VU	KA	LU	LI
Wgt of Wet Soil + Tin	127.5	132.4	137.2	141.6	146.4	152.3
Wgt of Dry Soil + Tin	110.5	112.6	114.5	116.2	118.1	120.7
Wgt of Water	17.0	19.8	22.7	25.4	28.3	31.6
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	110.5	112.6	114.5	116.2	118.1	120.7
Moisture Content %	**15.4**	**17.6**	**19.8**	**21.9**	**24.0**	**26.2**
Dry Density (Kgs/m^3)	**1498**	**1578**	**1660**	**1657**	**1569**	**1478**

Maximum Dry Density = 1670Kg/m^3 **Optimum Moisture Content = 20.9%**



Tested by: KEVIN **Date Reported:** 22-11-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM20+500(1.5-2.0m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4587 **Sample No.** 4587

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.5-2.0m **Date Tested:** 16-11-21

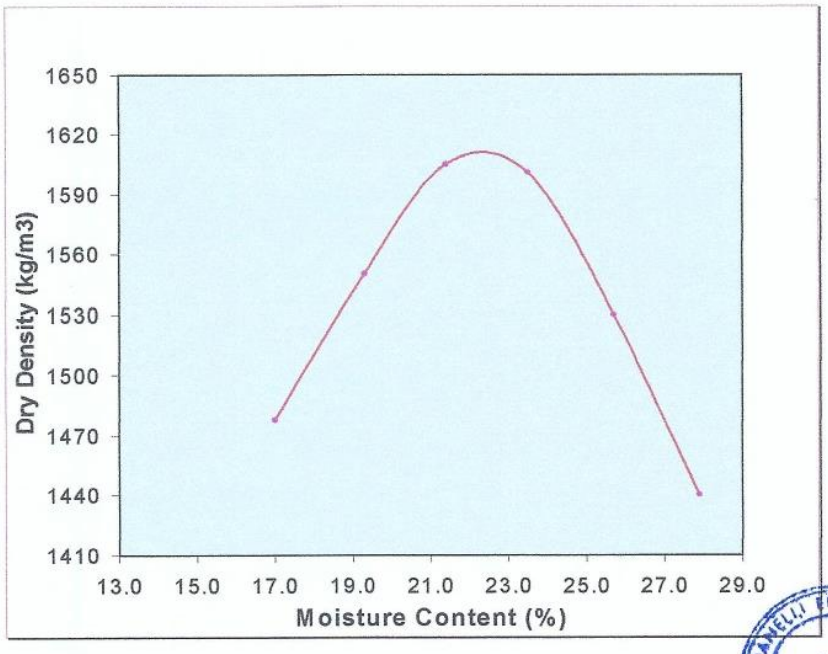
Method of Compaction: standard

Moisture Addition	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**	**500cc**
Mass of Mould+Base+Soil	5176	5288	5382	5409	5358	5281
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1626	1738	1832	1859	1808	1731
Bulk Density (kgs/m^3)	1729	1849	1948	1977	1923	1842

Tin No.	CO	NT	EN	TN	OK	AY
Wgt of Wet Soil + Tin	129.3	133.7	137.8	142.9	146.7	151.8
Wgt of Dry Soil + Tin	110.5	112.1	113.5	115.7	116.7	118.7
Wgt of Water	18.8	21.6	24.3	27.2	30.0	33.1
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	110.5	112.1	113.5	115.7	116.7	118.7
Moisture Content %	**17.0**	**19.3**	**21.4**	**23.5**	**25.7**	**27.9**

Dry Density (Kgs/m^3)	**1478**	**1550**	**1605**	**1601**	**1530**	**1440**

Maximum Dry Density = 1610Kg/m^3 **Optimum Moisture Content = 22.5%**



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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM22+500(1.4m)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4590 **Sample No.** 4590

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.4m **Date Tested:** 16-11-21

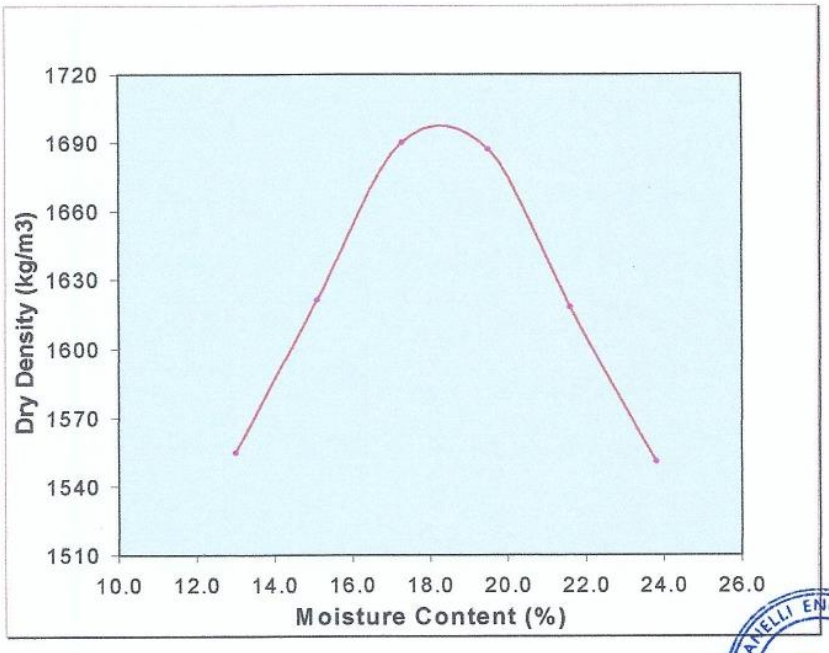
Method of Compaction: standard

Moisture Addition	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**
Mass of Mould+Base+Soil	5202	5304	5413	5445	5399	5355
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1652	1754	1863	1895	1849	1805
Bulk Density (kgs/m^3)	1757	1866	1982	2016	1967	1920

Tin No.	**KI**	**LI**	**KO**	**KW**	**VO**	**ZA**
Wgt of Wet Soil + Tin	120.2	124.5	130.1	133.8	138.9	142.4
Wgt of Dry Soil + Tin	106.4	108.2	110.9	112.0	114.2	115.0
Wgt of Water	13.8	16.3	19.2	21.8	24.7	27.4
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	106.4	108.2	110.9	112.0	114.2	115.0
Moisture Content %	**13.0**	**15.1**	**17.3**	**19.5**	**21.6**	**23.8**

Dry Density (Kgs/m^3)	**1555**	**1621**	**1690**	**1687**	**1618**	**1551**

Maximum Dry Density = 1698Kg/m^3 **Optimum Moisture Content = 18.4%**



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM24+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4593 **Sample No.** 4593

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** **Date Tested:** 16-11-21

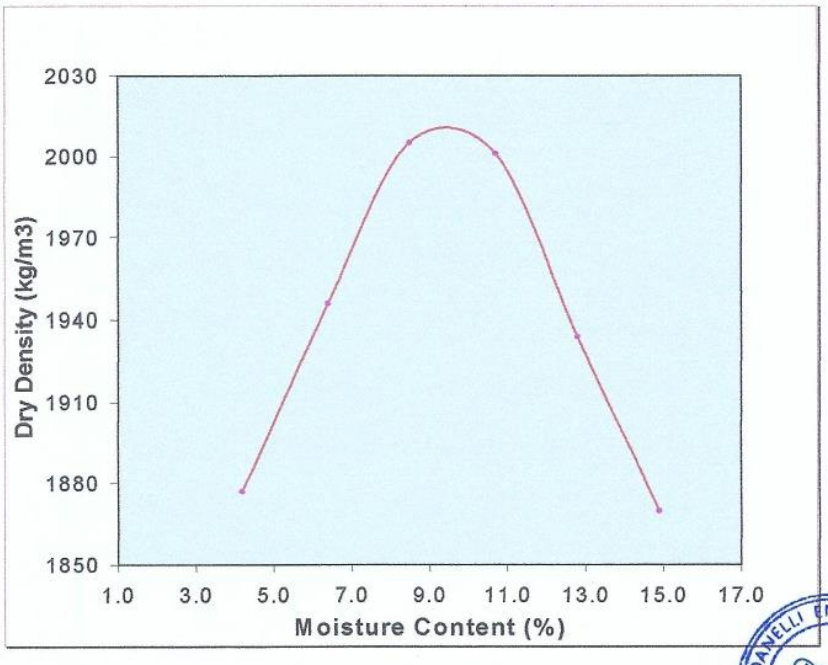
Method of Compaction: standard

Moisture Addition	**150cc**	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**
Mass of Mould+Base+Soil	5388	5496	5595	5632	5601	5570
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1838	1946	2045	2082	2051	2020
Bulk Density (kgs/m^3)	1956	2071	2175	2215	2182	2149

Tin No.	**BR**	**IT**	**SH**	**ST**	**AR**	**DA**
Wgt of Wet Soil + Tin	120.7	126.6	126.3	130.4	133.2	131.6
Wgt of Dry Soil + Tin	115.8	119.0	116.4	117.8	118.1	114.5
Wgt of Water	4.9	7.6	9.9	12.6	15.1	17.1
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	115.8	119.0	116.4	117.8	118.1	114.5
Moisture Content %	**4.2**	**6.4**	**8.5**	**10.7**	**12.8**	**14.9**

Dry Density (Kgs/m^3)	**1877**	**1946**	**2005**	**2001**	**1934**	**1870**

Maximum Dry Density = 2010Kg/m^3 **Optimum Moisture Content = 9.6%**



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM26+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 20-09-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-KAYABOMBO/4596 **Sample No.** 4596

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** **Date Tested:** 16-11-21

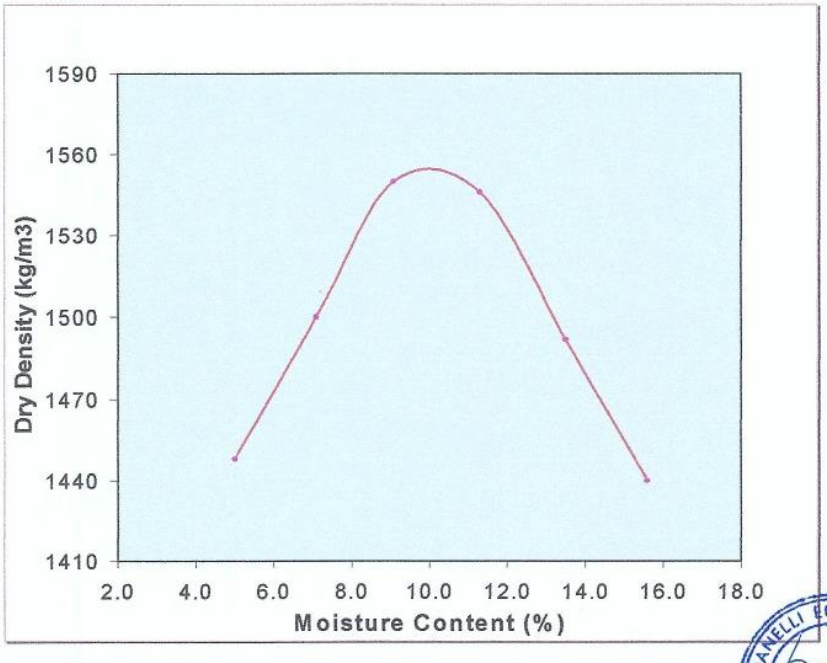
Method of Compaction: standard

Moisture Addition	**150cc**	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**
Mass of Mould+Base+Soil	4979	5060	5140	5167	5142	5115
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1429	1510	1590	1617	1592	1565
Bulk Density (kgs/m^3)	1520	1607	1691	1721	1693	1665

Tin No.	**BU**	**LK**	**DE**	**NS**	**AT**	**AB**
Wgt of Wet Soil + Tin	111.7	107.3	117.0	112.7	119.4	120.0
Wgt of Dry Soil + Tin	106.4	100.2	107.2	101.3	105.2	103.8
Wgt of Water	5.3	7.1	9.8	11.4	14.2	16.2
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	106.4	100.2	107.2	101.3	105.2	103.8
Moisture Content %	**5.0**	**7.1**	**9.1**	**11.3**	**13.5**	**15.6**

Dry Density (Kgs/m^3)	**1448**	**1500**	**1550**	**1546**	**1492**	**1440**

Maximum Dry Density = 1555Kg/m^3 **Optimum Moisture Content = 10.0%**



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM2+000 (0.4-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5688 **Sample No.** 5688

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.6m **Date Tested:** 16-11-21

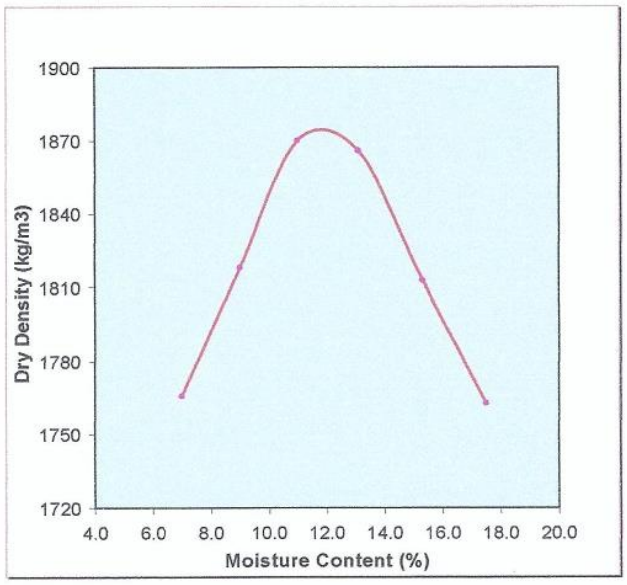
Method of Compaction: standard

Moisture Addition	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**
Mass of Mould+Base+Soil	5326	5413	5501	5534	5515	5496
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1776	1863	1951	1984	1965	1946
Bulk Density (kgs/m^3)	1890	1982	2076	2110	2090	2070

Tin No.	**DR**	**YN**	**OV**	**EN**	**CH**	**GA**
Wgt of Wet Soil + Tin	118.3	121.5	128.3	134.5	137.4	141.6
Wgt of Dry Soil + Tin	110.6	111.5	115.6	118.9	119.2	120.5
Wgt of Water	7.7	10.0	12.7	15.6	18.2	21.1
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	110.6	111.5	115.6	118.9	119.2	120.5
Moisture Content %	**7.0**	**9.0**	**11.0**	**13.1**	**15.3**	**17.5**

Dry Density (Kgs/m^3)	**1766**	**1818**	**1870**	**1866**	**1813**	**1762**

Maximum Dry Density = 1875Kg/m^3 **Optimum Moisture Content = 12.0%**



Tested by: KEVIN **Date Reported:** 22-11-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM4+500 (0.2-1.7M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5689 **Sample No.** 5689

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2-1.7m **Date Tested:** 16-11-21

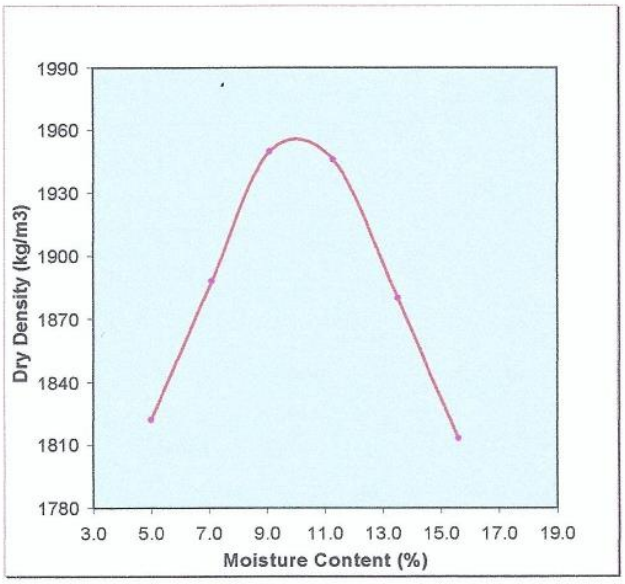
Method of Compaction: standard

Moisture Addition	**100cc**	**150cc**	**200cc**	**250cc**	**300cc**	**350cc**
Mass of Mould+Base+Soil	5348	5451	5550	5586	5556	5520
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1798	1901	2000	2036	2006	1970
Bulk Density (kgs/m^3)	1913	2022	2127	2166	2134	2096

Tin No.	**MU**	**TI**	**DA**	**ED**	**WA**	**RD**
Wgt of Wet Soil + Tin	116.0	120.6	124.9	129.0	132.8	136.6
Wgt of Dry Soil + Tin	110.5	112.6	114.5	115.9	117.0	118.2
Wgt of Water	5.5	8.0	10.4	13.1	15.8	18.4
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	110.5	112.6	114.5	115.9	117.0	118.2
Moisture Content %	**5.0**	**7.1**	**9.1**	**11.3**	**13.5**	**15.6**

Dry Density (Kgs/m^3)	**1822**	**1888**	**1950**	**1946**	**1880**	**1813**

Maximum Dry Density =1955Kg/m^3 **Optimum Moisture Content = 10.1%**



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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM7+500(0.2-0.9M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5690 **Sample No.** 5690

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2-0.9m **Date Tested:** 16-11-21

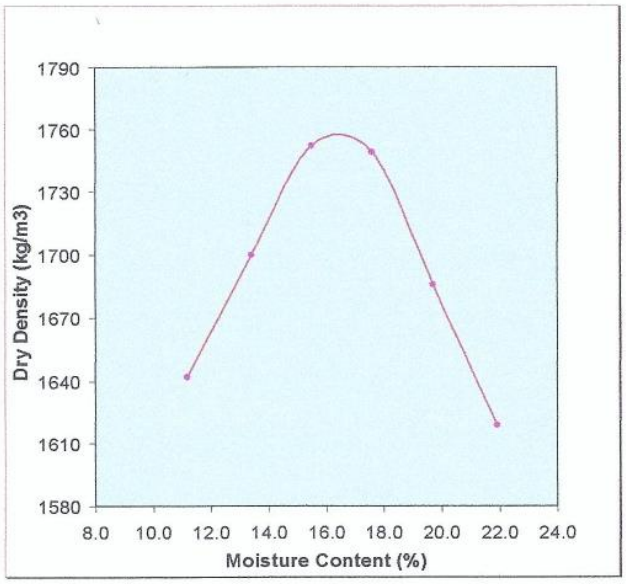
Method of Compaction: standard

Moisture Addition	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**
Mass of Mould+Base+Soil	5266	5362	5452	5483	5447	5405
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1716	1812	1902	1933	1897	1855
Bulk Density (kgs/m^3)	1826	1928	2024	2057	2018	1974

Tin No.	**SA**	**VE**	**YI**	**CH**	**CO**	**LA**
Wgt of Wet Soil + Tin	126.2	131.1	134.1	137.9	142.2	145.1
Wgt of Dry Soil + Tin	113.5	115.6	116.1	117.3	118.8	119.0
Wgt of Water	12.7	15.5	18.0	20.6	23.4	26.1
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	113.5	115.6	116.1	117.3	118.8	119.0
Moisture Content %	**11.2**	**13.4**	**15.5**	**17.6**	**19.7**	**21.9**

Dry Density (Kgs/m^3)	**1642**	**1700**	**1752**	**1749**	**1686**	**1619**

Maximum Dry Density =1758Kg/m^3 **Optimum Moisture Content = 16.5%**



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM8+000(0.0-1.0M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5691 **Sample No.** 5691

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.0m **Date Tested:** 16-11-21

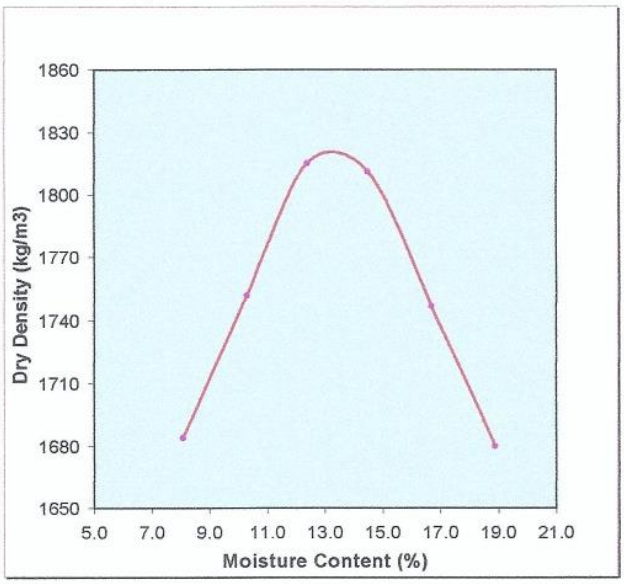
Method of Compaction: standard

Moisture Addition	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**
Mass of Mould+Base+Soil	5261	5367	5468	5499	5466	5428
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1711	1817	1918	1949	1916	1878
Bulk Density (kgs/m^3)	1820	1932	2040	2074	2039	1998

Tin No.	**UK**	**WA**	**LA**	**DE**	**MI**	**ON**
Wgt of Wet Soil + Tin	126.9	131.1	136.0	140.3	143.9	148.1
Wgt of Dry Soil + Tin	117.4	118.9	121.0	122.5	123.3	124.6
Wgt of Water	9.5	12.2	15.0	17.8	20.6	23.5
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	117.4	118.9	121.0	122.5	123.3	124.6
Moisture Content %	**8.1**	**10.3**	**12.4**	**14.5**	**16.7**	**18.9**

Dry Density (Kgs/m^3)	**1684**	**1752**	**1815**	**1811**	**1747**	**1680**

Maximum Dry Density =1820Kg/m^3 **Optimum Moisture Content = 13.4%**



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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM11+618(0.3-1.2M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-CHANGAMWE/5692 **Sample No.** 5692

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-1.2m **Date Tested:** 16-11-21

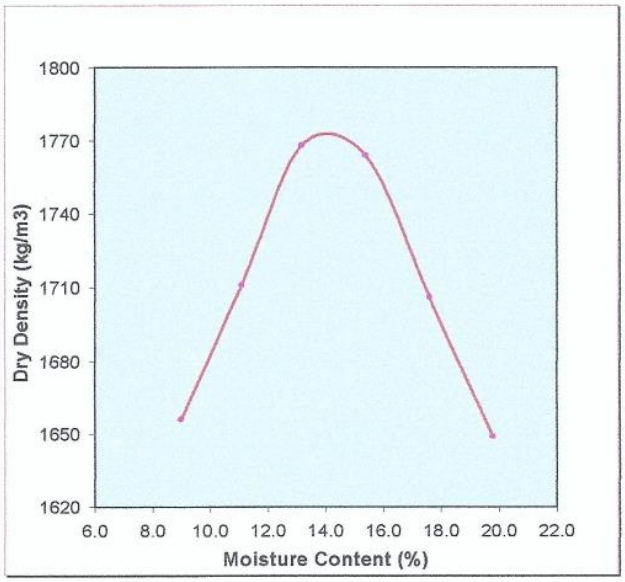
Method of Compaction: standard

Moisture Addition	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**	**500cc**
Mass of Mould+Base+Soil	5247	5337	5431	5464	5436	5407
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1697	1787	1881	1914	1886	1857
Bulk Density (kgs/m^3)	1805	1901	2001	2036	2006	1976

Tin No.	VI	DA	OU	MA	LO	KO
Wgt of Wet Soil + Tin	150.0	145.0	153.0	153.6	158.2	158.1
Wgt of Dry Soil + Tin	137.6	130.5	135.2	133.1	134.5	132.0
Wgt of Water	12.4	14.5	17.8	20.5	23.7	26.1
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	137.6	130.5	135.2	133.1	134.5	132.0
Moisture Content %	**9.0**	**11.1**	**13.2**	**15.4**	**17.6**	**19.8**

Dry Density (Kgs/m^3)	1656	1711	1768	1764	1706	1649

Maximum Dry Density =1772Kg/m^3 **Optimum Moisture Content = 14.0%**



Tested by: KEVIN **Date Reported:** 22-11-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM1+740(1.0-1.4M)

Site: TRANK MAN **Location:** KWALE **Date Received:** 16-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS-TRUNK MAN/5701 **Sample No.** 5701

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0-1.4m **Date Tested:** 16-11-21

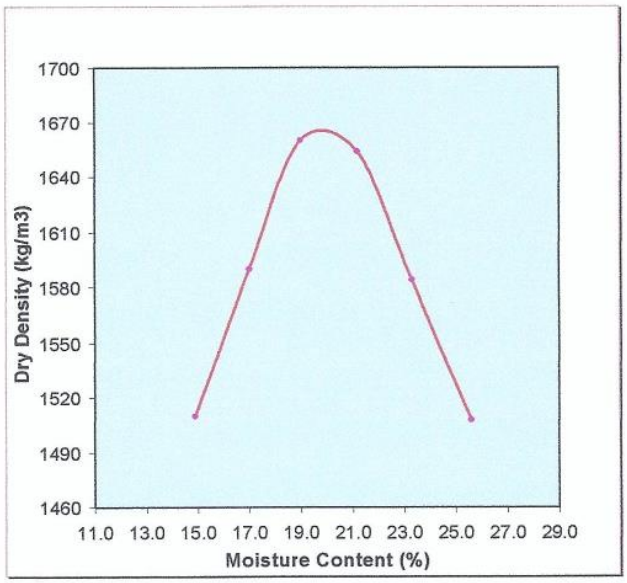
Method of Compaction: standard

Moisture Addition	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**	**500cc**
Mass of Mould+Base+Soil	5181	5299	5407	5434	5386	5330
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1631	1749	1857	1884	1836	1780
Bulk Density (kgs/m^3)	1735	1860	1975	2005	1953	1894

Tin No.	**CL**	**AS**	**SI**	**FI**	**CA**	**TO**
Wgt of Wet Soil + Tin	129.1	132.9	137.0	138.4	144.0	145.6
Wgt of Dry Soil + Tin	112.4	113.6	115.1	114.2	116.8	115.9
Wgt of Water	16.7	19.3	21.9	24.2	27.2	29.7
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	112.4	113.6	115.1	114.2	116.8	115.9
Moisture Content %	**14.9**	**17.0**	**19.0**	**21.2**	**23.3**	**25.6**

Dry Density (Kgs/m^3)	**1510**	**1590**	**1660**	**1654**	**1584**	**1508**

Maximum Dry Density = 1668Kg/m^3 **Optimum Moisture Content = 20.0%**



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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM3+500(0.0-1.4M)

Site: TRANK MAN **Location:** KWALE **Date Received:** 16-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- TRUNK MAN /5703 **Sample No.** 5703

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.4m **Date Tested:** 16-11-21

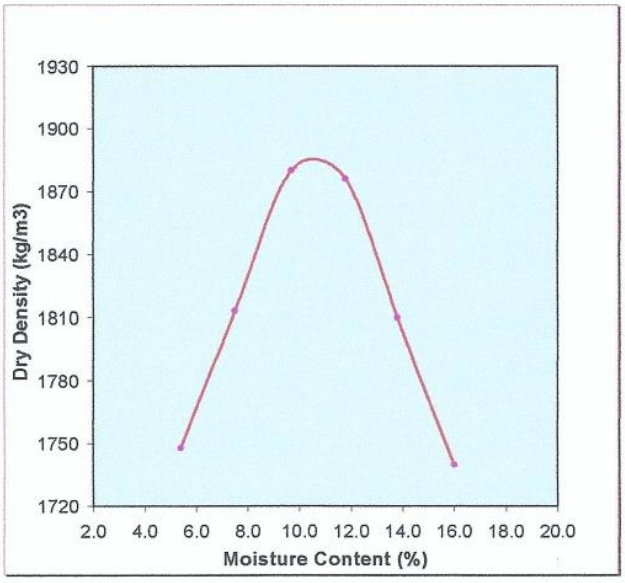
Method of Compaction: standard

Moisture Addition	**200cc**	**250cc**	**300cc**	**350cc**	**400cc**	**450cc**
Mass of Mould+Base+Soil	5282	5382	5489	5522	5486	5447
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1732	1832	1939	1972	1936	1897
Bulk Density (kgs/m^3)	1842	1949	2062	2097	2060	2018

Tin No.	**SA**	**MP**	**LI**	**NG**	**PO**	**NT**
Wgt of Wet Soil + Tin	106.7	110.2	116.7	116.0	119.9	121.0
Wgt of Dry Soil + Tin	101.2	102.5	106.4	103.8	105.4	104.3
Wgt of Water	5.5	7.7	10.3	12.2	14.5	16.7
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	101.2	102.5	106.4	103.8	105.4	104.3
Moisture Content %	**5.4**	**7.5**	**9.7**	**11.8**	**13.8**	**16.0**

Dry Density (Kgs/m^3)	**1748**	**1813**	**1880**	**1876**	**1810**	**1740**

Maximum Dry Density = 1885Kg/m^3 **Optimum Moisture Content = 10.8%**



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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM4+000(0.45-0.9M)

Site: TRANK MAN **Location:** KWALE **Date Received:** 16-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- TRUNK MAN /5704 **Sample No.** 5704

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.45-0.9m **Date Tested:** 16-11-21

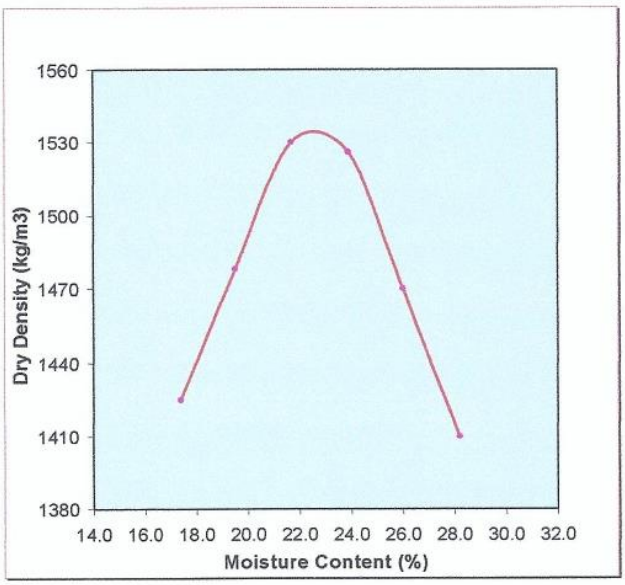
Method of Compaction: standard

Moisture Addition	**350cc**	**400cc**	**450cc**	**500cc**	**550cc**	**600cc**
Mass of Mould+Base+Soil	5123	5210	5300	5327	5291	5249
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1573	1660	1750	1777	1741	1699
Bulk Density (kgs/m^3)	1673	1766	1862	1891	1852	1808

Tin No.	**MY**	**VE**	**RY**	**EA**	**SY**	**MS**
Wgt of Wet Soil + Tin	119.0	129.8	124.9	132.9	129.9	136.9
Wgt of Dry Soil + Tin	101.4	108.6	102.6	107.3	103.1	106.8
Wgt of Water	17.6	21.2	22.3	25.6	26.8	30.1
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	101.4	108.6	102.6	107.3	103.1	106.8
Moisture Content %	**17.4**	**19.5**	**21.7**	**23.9**	**26.0**	**28.2**

Dry Density (Kgs/m^3)	**1425**	**1478**	**1530**	**1526**	**1470**	**1410**

Maximum Dry Density = 1535Kg/m^3 **Optimum Moisture Content = 22.8%**



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DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

Dry Density/Moisture Content Relationship

BS 1377: Part 4: 1990

TP KM5+500(0.8-1.0)

Site: TRANK MAN **Location:** KWALE **Date Received:** 16-10-21

Sample Classification: SOIL SAMPLE **Lab Ref:** TM/RGS- TRUNK MAN /5705 **Sample No.** 5705

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.8-1.0m **Date Tested:** 16-11-21

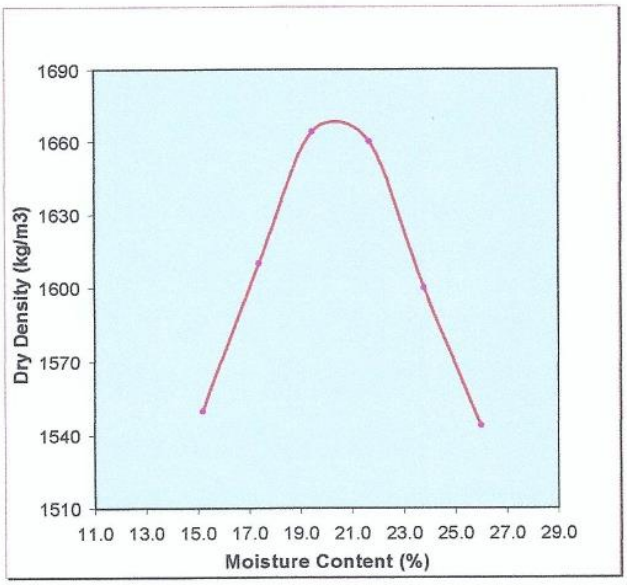
Method of Compaction: standard

Moisture Addition	**300cc**	**350cc**	**400cc**	**450cc**	**500cc**	**550cc**
Mass of Mould+Base+Soil	5228	5327	5419	5449	5412	5379
Mass of Mould + Base	3550	3550	3550	3550	3550	3550
Mass of Compacted Soil	1678	1777	1869	1899	1862	1829
Bulk Density (kgs/m^3)	1786	1890	1988	2020	1981	1945

Tin No.	NI	CH	OZ	AS	MA	KE
Wgt of Wet Soil + Tin	120.7	129.7	126.2	132.9	132.1	136.2
Wgt of Dry Soil + Tin	104.8	110.5	105.6	109.2	106.7	108.1
Wgt of Water	15.9	19.2	20.6	23.7	25.4	28.1
Wgt of Tin	_	_	_	_	_	_
Wgt of Dry Soil	104.8	110.5	105.6	109.2	106.7	108.1
Moisture Content %	**15.2**	**17.4**	**19.5**	**21.7**	**23.8**	**26.0**

Dry Density (Kgs/m^3)	**1550**	**1610**	**1664**	**1660**	**1600**	**1544**

Maximum Dry Density = 1669Kg/m^3 **Optimum Moisture Content = 20.6%**



Tested by: KEVIN **Date Reported:** 22-11-21 **Checked by:**

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Unconsolidated Undrained Triaxial Shear

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 2+500 (Depth: 0.0-0.3M)

Site: NGUU TATU | **Location:** MOMBASA | **Date Received:** 18-10-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-NGUUTATU/5709 | **Sample No. :** 5709

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

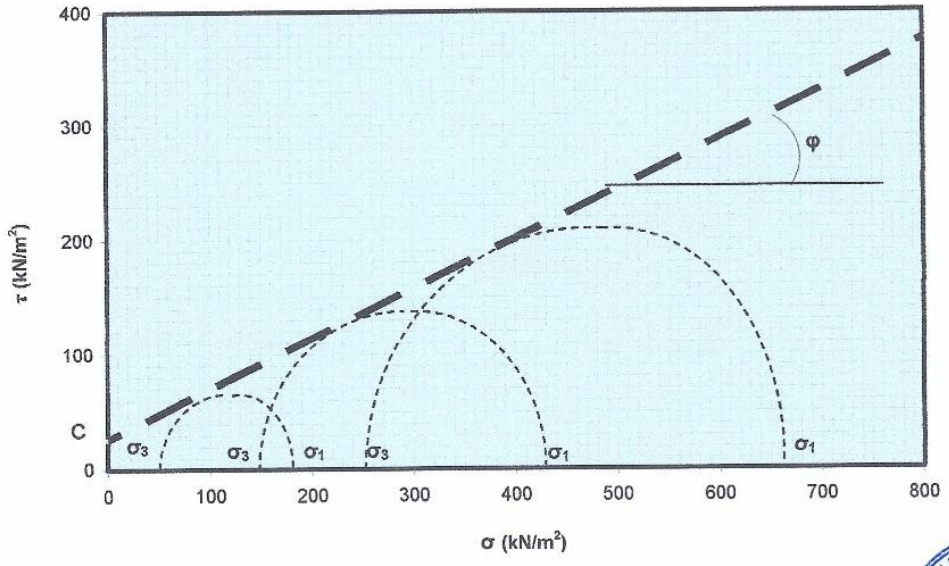
Weight of Specimen: 715.5 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 29-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	129	278	421

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	179	428	671
σ_3	50	150	250

c = 26.0 kN/m^2 φ =23.5°



Tested By: ERIC | **Date Reported:** 30-11-21 | **Checked By:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 4+000 (Depth: 0.0-1.3M)

Site: NGUU TATU | **Location:** MOMBASA | **Date Received:** 18-10-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-NGUUTATU/5711 | **Sample No. :** 5711

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

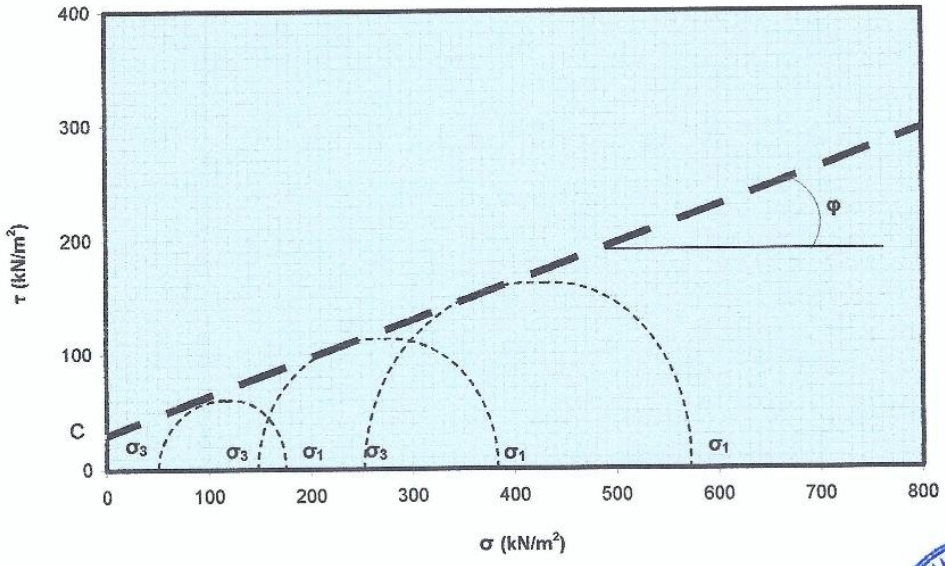
Weight of Specimen: 679.3 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 29-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	122	232	322

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	172	382	572
σ_3	50	150	250

c = 30.3 kN/m^2 φ = 19.5°



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 7+500 (Depth: 0.5-1.3M)

Site: NGUU TATU | **Location:** MOMBASA | **Date Received:** 18-10-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-NGUUTATU/5715 | **Sample No. :** 5715

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

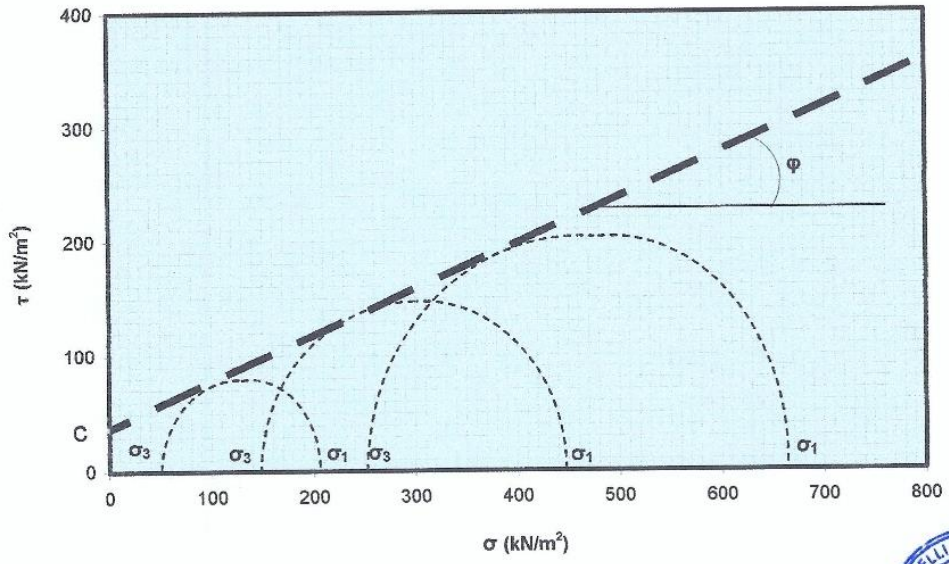
Weight of Specimen: 657.4 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 29-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	161	296	413

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	211	446	663
σ_3	50	150	250

c = 37.0 kN/m^2 φ = 22.2°



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 9+500 (Depth: 0.4-1.4M)

Site: NGUU TATU | **Location:** MOMBASA | **Date Received:** 18-10-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-NGUUTATU/5718 | **Sample No. :** 5718

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

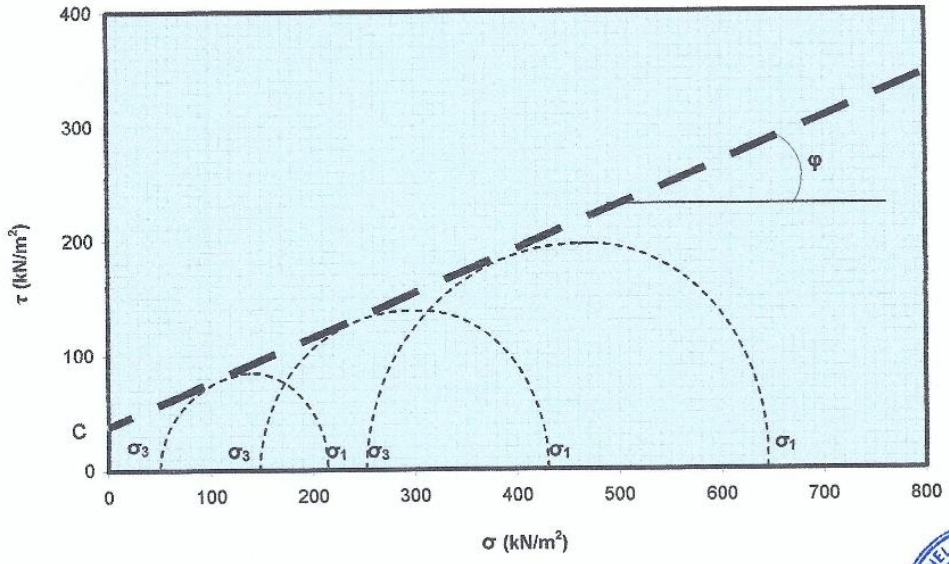
Weight of Specimen: 712.1 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 29-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	163	280	392

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	213	430	642
σ_3	50	150	250

c = 38.0 kN/m^2 φ =21.3°



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 11+500 (Depth: 0.0-0.6M)

Site: NGUU TATU | **Location:** MOMBASA | **Date Received:** 18-10-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-NGUUTATU/5722 | **Sample No. :** 5722

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

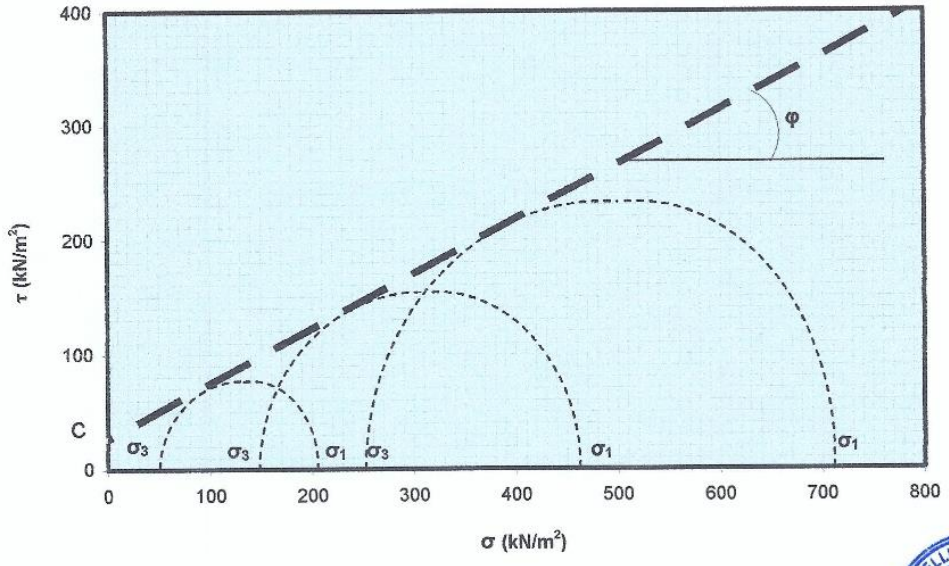
Weight of Specimen: 658.5 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 29-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	151	309	461

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	201	459	711
σ_3	50	150	250

c = 26.1 kN/m^2 | φ = 25.5°



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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

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NGUU TATU SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 13+500 (Depth: 0.0-2.1M)

Site: NGUU TATU | **Location:** MOMBASA | **Date Received:** 18-10-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-NGUUTATU/5725 | **Sample No. :** 5725

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

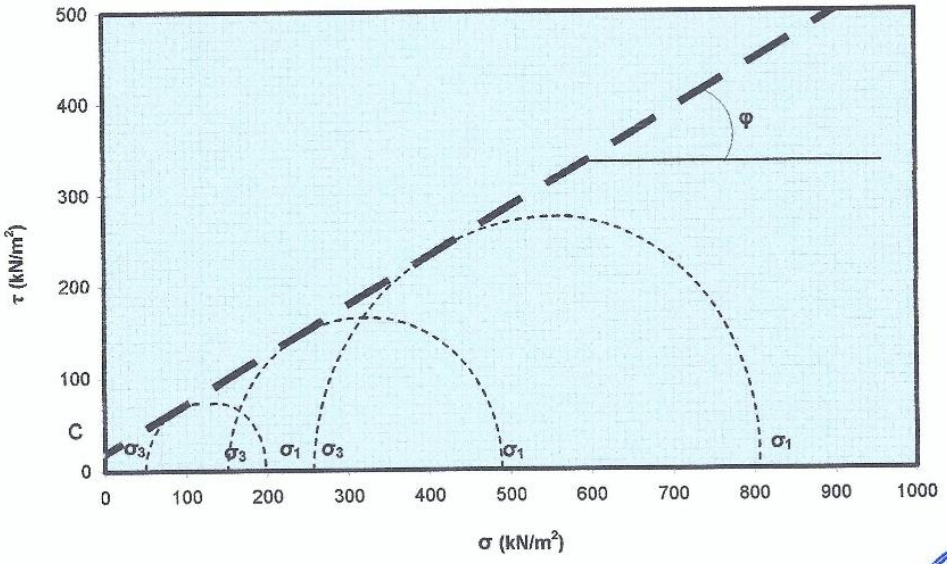
Weight of Specimen: 695.5 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 29-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	144	337	552

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	194	487	802
σ_3	50	150	250

c = 18.2 kN/m^2 φ = 29.3°



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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 14+000 (Depth: 0.3-0.9M)

Site: NGUU TATU | **Location:** MOMBASA | **Date Received:** 18-10-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-NGUUTATU/5726 | **Sample No. :** 5726

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

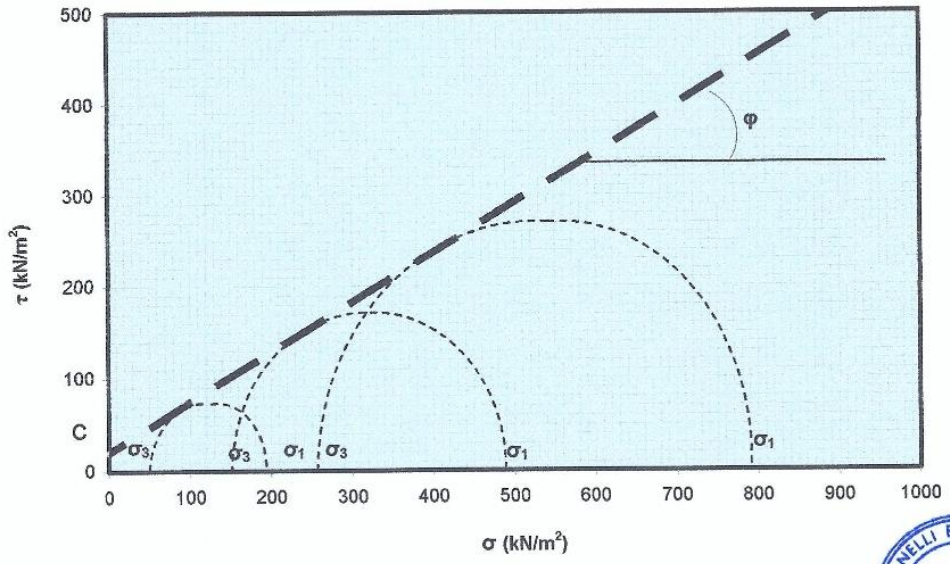
Weight of Specimen: 740.0 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 30-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	148	339	542

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	198	489	792
σ_3	50	150	250

c = 20.0 kN/m^2 φ = 28.5°



Tested By: ERIC | **Date Reported:** 30-11-21 | **Checked By:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 16+500 (Depth: 0.5-1.4M)

Site: NGUU TATU | **Location:** MOMBASA | **Date Received:** 18-10-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-NGUUTATU/5731 | **Sample No. :** 5731

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

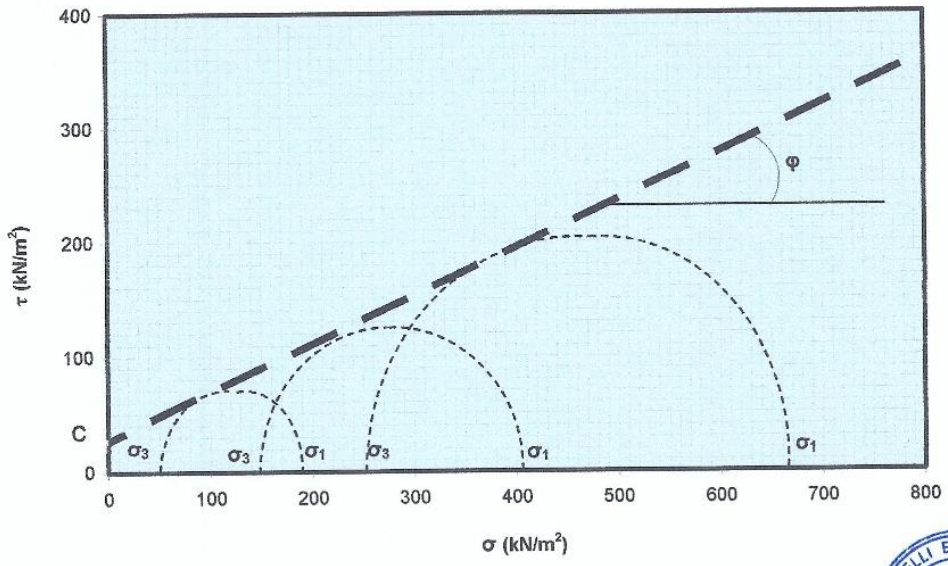
Weight of Specimen: 683.1 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 30-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	137	253	412

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	187	403	662
σ_3	50	150	250

$c = 27.3\ kN/m^2$ $\varphi = 23.2°$



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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 18+000 (Depth: 0.4-1.2M)

Site: NGUU TATU | **Location:** MOMBASA | **Date Received:** 18-10-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-NGUUTATU/5734 | **Sample No. :** 5734

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

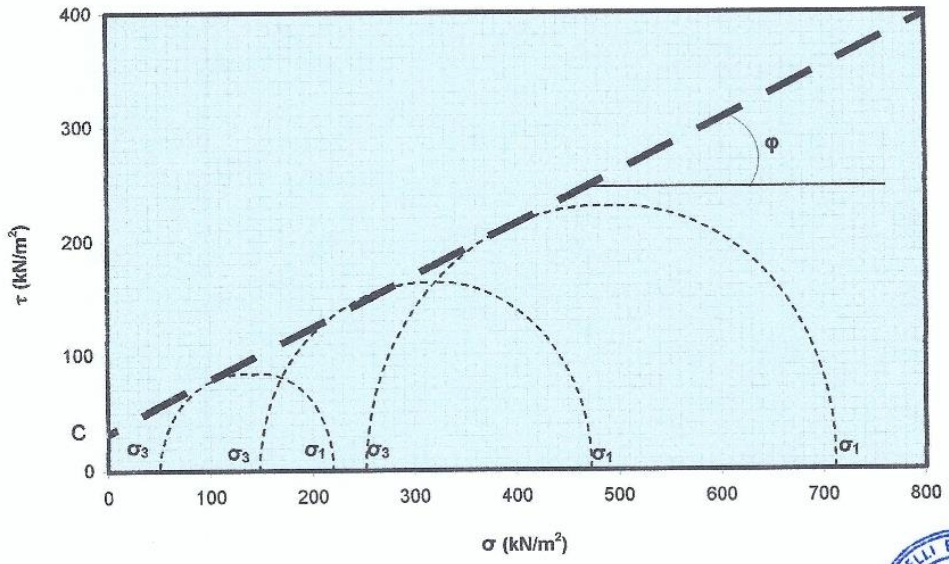
Weight of Specimen: 658.2 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 30-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	168	323	460

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	218	473	710
σ_3	50	150	250

c = 32.1 kN/m^2 φ = 25.2°



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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Mobil Plaza 00620
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 3+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Soil Type: DISTURBED **Lab Ref:** TM/RGS-KAYABOMBO/4560 **Sample No. :** 4560

Mean Diameter of Sample: 62 mm **Height of Sample:** 125 mm **Mean Area:** 3019.1 mm^2

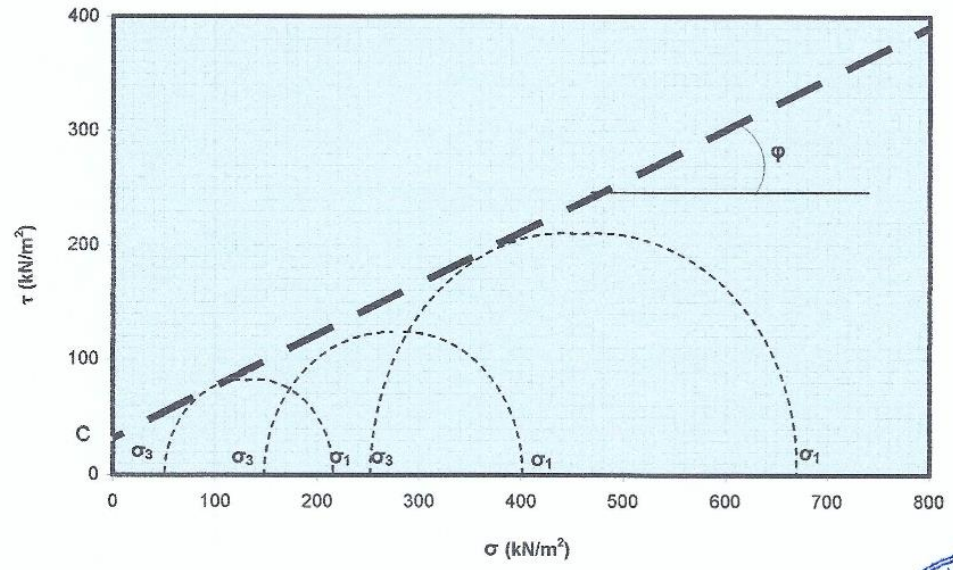
Weight of Specimen: 732.9 grams **Volume of Specimen:** 377.38 cm^3 **Date of Test:** 25-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	162	251	420

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	212	401	670
σ_3	50	150	250

c = 31.1 kN/m^2 φ =23.2°



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
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Mob: +254(0) 726 721 935

Head Office & Laboratories:
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P.O.Box 64932
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 5+500 (Depth: 0.0m)

Site: KAYABOMBO | **Location:** KWALE | **Date Received:** 29-09-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-KAYABOMBO/4563 | **Sample No. :** 4563

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

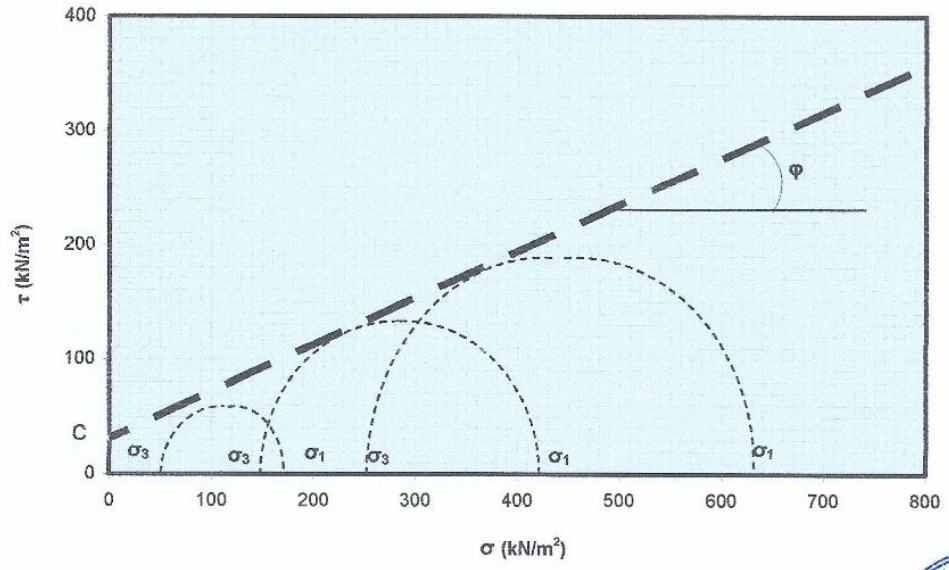
Weight of Specimen: 678.9 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 25-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	120	270	378

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	170	420	628
σ_3	50	150	250

$c = 35.2\ kN/m^2$ $\varphi = 20.5°$



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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 6+500 (Depth: 1.0-1.7m)

Site: KAYABOMBO | **Location:** KWALE | **Date Received:** 29-09-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-KAYABOMBO/4566 | **Sample No. :** 4566

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

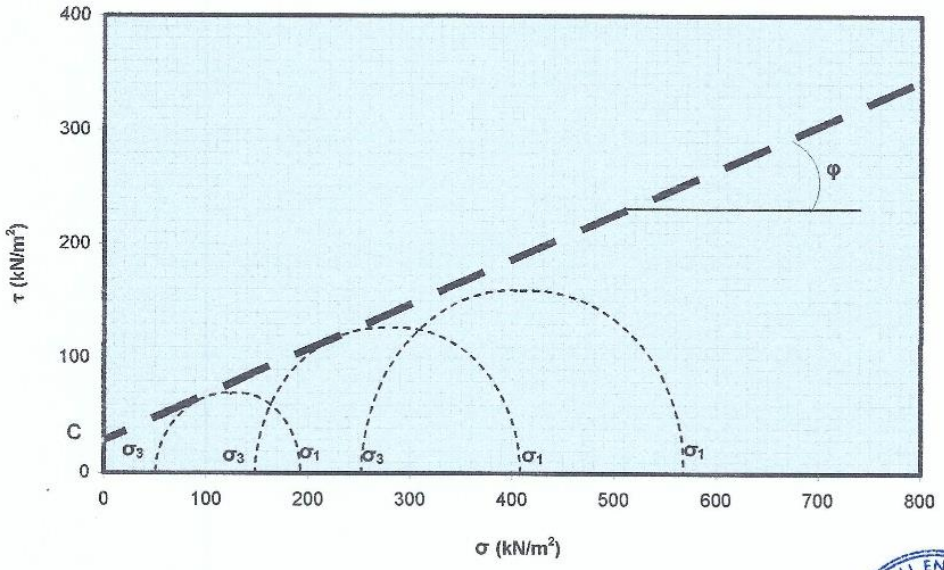
Weight of Specimen: 721.2 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 25-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	140	255	318

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	190	405	568
σ_3	50	150	250

$c = 29.7\ kN/m^2$ $\varphi = 21.5°$



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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
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P.O.Box 64932
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 8+000 (Depth: 0.3-0.6m)

Site: KAYABOMBO | **Location:** KWALE | **Date Received:** 29-09-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-KAYABOMBO/4569 | **Sample No. :** 4569

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

Weight of Specimen: 716.6 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 25-11-21

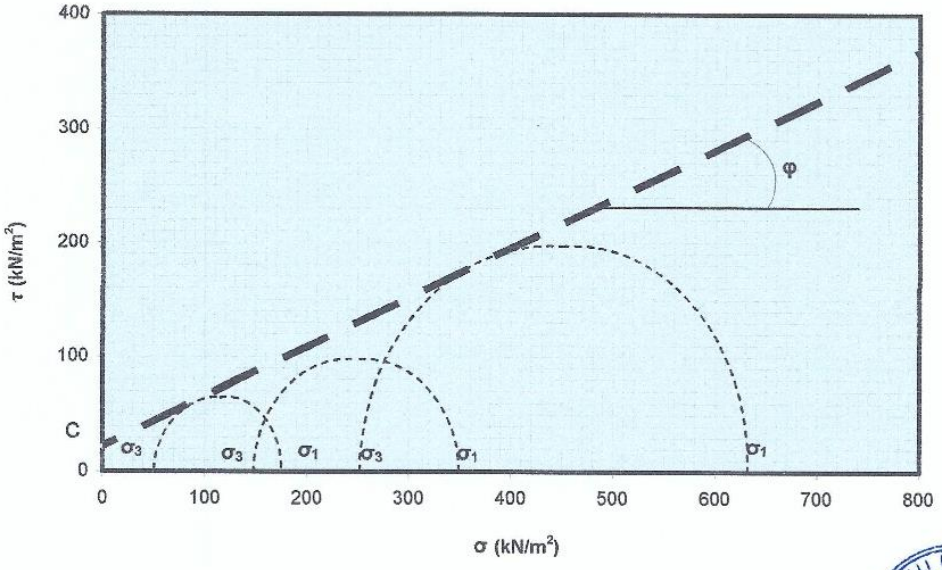
TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	132	198	383

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	182	348	633
σ_3	50	150	250

c = 22.2 kN/m^2

φ =22.4°



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info@danellilab.com
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KAYABOMBO SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 10+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Soil Type: DISTURBED **Lab Ref:** TM/RGS-KAYABOMBO/4572 **Sample No. :** 4572

Mean Diameter of Sample: 62 mm **Height of Sample:** 125 mm **Mean Area:** 3019.1 mm^2

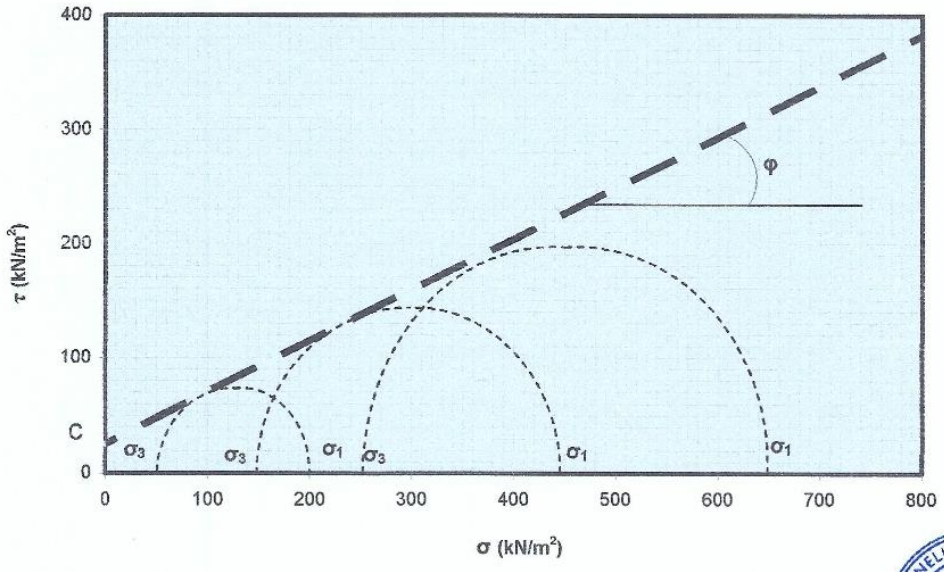
Weight of Specimen: 754.8 grams **Volume of Specimen:** 377.38 cm^3 **Date of Test:** 25-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	150	292	398

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	200	442	648
σ_3	50	150	250

c = 24.2 kN/m^2 φ =25.0°



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info@danellilab.com
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Mob: +254(0) 726 721 935

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 13+500

Site: KAYABOMBO | **Location:** KWALE | **Date Received:** 29-09-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-KAYABOMBO/4574 | **Sample No. :** 4574

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

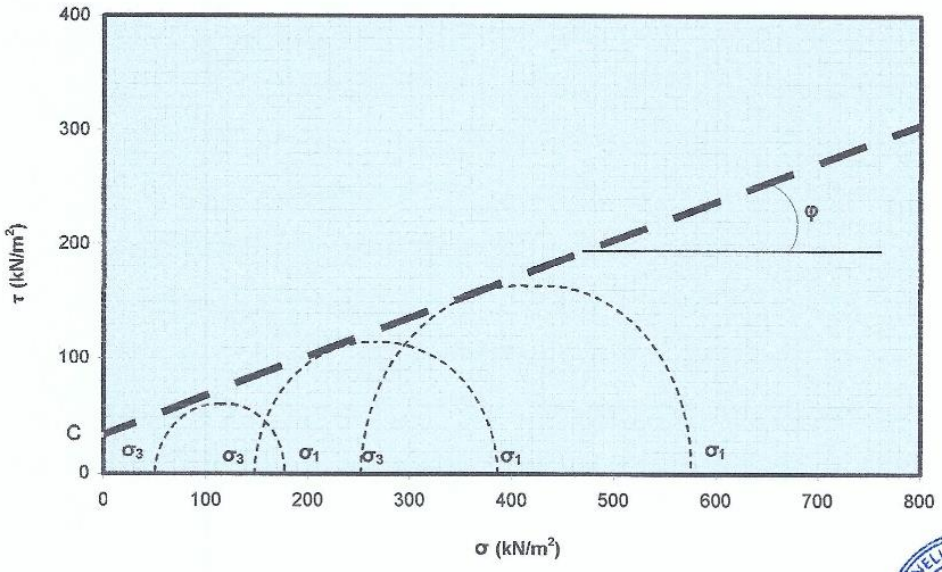
Weight of Specimen: 695.1 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 25-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	128	233	321

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	178	383	571
σ_3	50	150	250

c = 34.0 kN/m^2 φ = 18.3°



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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 15+000

Site: KAYABOMBO | **Location:** KWALE | **Date Received:** 29-09-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-KAYABOMBO/4578 | **Sample No. :** 4578

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

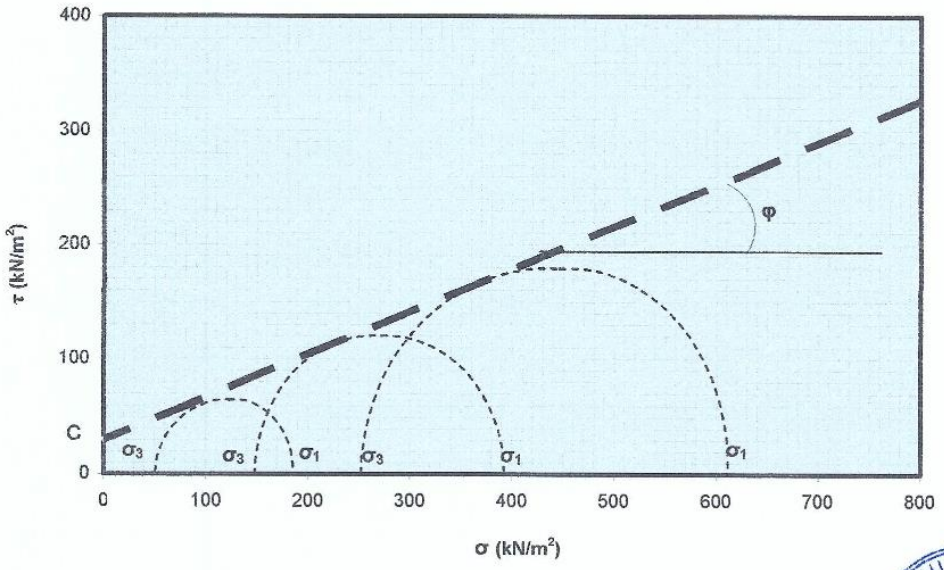
Weight of Specimen: 675.1 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 25-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	132	239	360

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	182	389	610
σ_3	50	150	250

c = 30.1 kN/m^2 φ = 20.4°



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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 19+000 (Depth: 1.3-2.0m)

Site: KAYABOMBO | **Location:** KWALE | **Date Received:** 29-09-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-KAYABOMBO/4582 | **Sample No. :** 4582

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

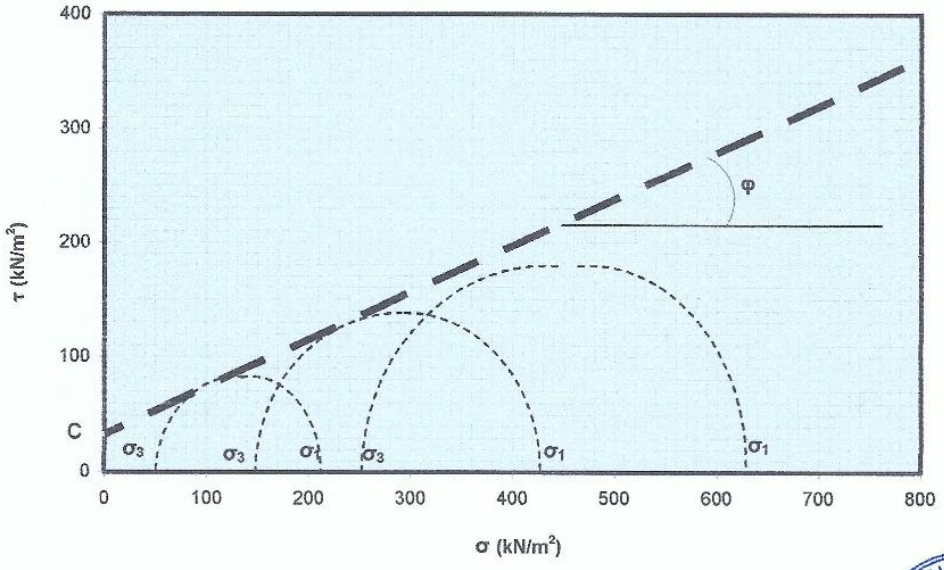
Weight of Specimen: 723.8 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 26-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	161	277	378

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	211	427	628
σ_3	50	150	250

$c = 33.3\ kN/m^2$ $\varphi = 21.0°$



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info@danellilab.com
Web site: www.danellilab.com
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Mombasa Road
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 20+500 (Depth: 1.5-2.0m)

Site: KAYABOMBO | **Location:** KWALE | **Date Received:** 29-09-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-KAYABOMBO/4587 | **Sample No. :** 4587

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

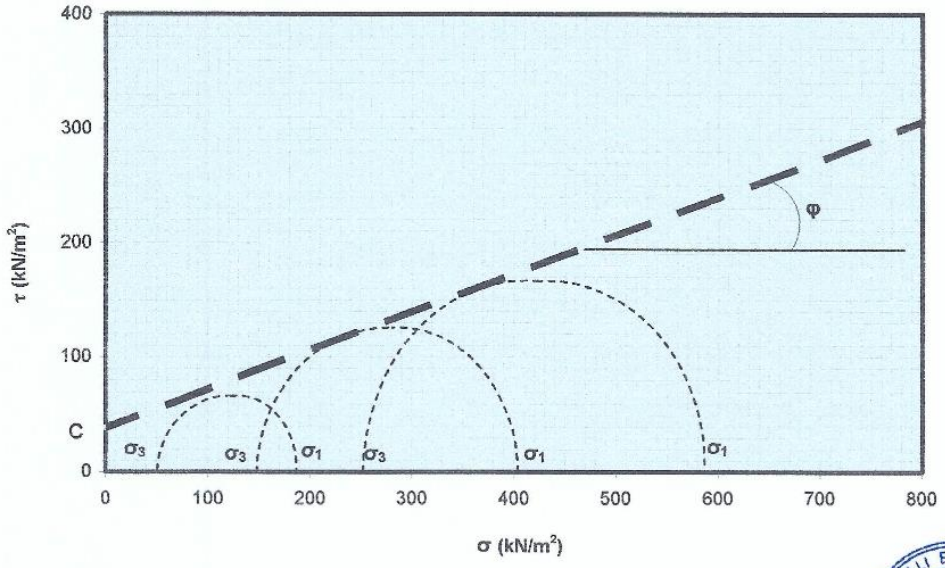
Weight of Specimen: 707.2 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 26-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	137	253	339

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	187	403	589
σ_3	50	150	250

c = 39.6 kN/m^2 φ = 18.3°



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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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KAYABOMBO SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 22+500 (Depth: 1.4m)

Site: KAYABOMBO | **Location:** KWALE | **Date Received:** 29-09-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-KAYABOMBO/4590 | **Sample No. :** 4590

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

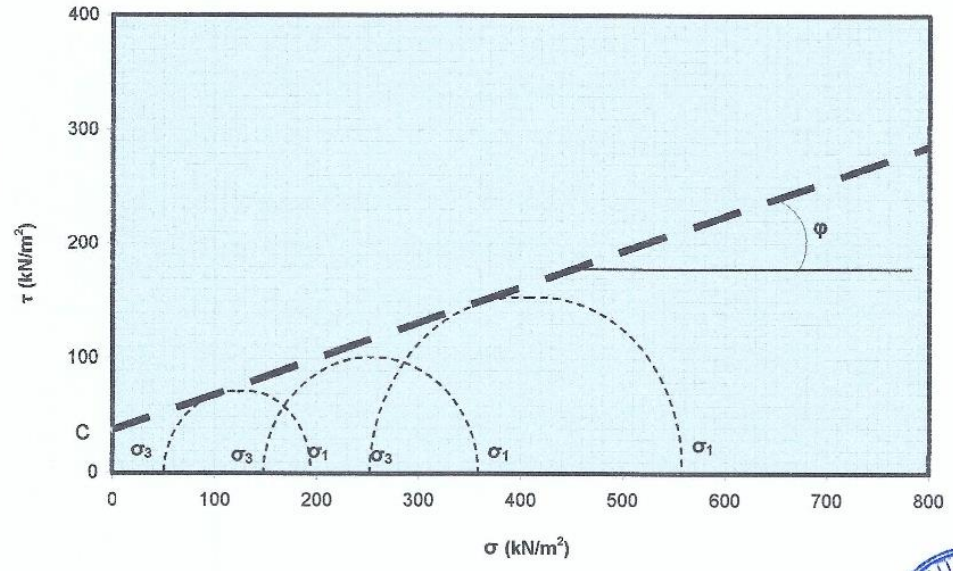
Weight of Specimen: 720.8 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 26-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	144	207	307

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	194	357	557
σ_3	50	150	250

$c = 38.4\ kN/m^2$ $\varphi = 17.4°$



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KAYABOMBO SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 24+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Soil Type: DISTURBED **Lab Ref:** TM/RGS-KAYABOMBO/4593 **Sample No. :** 4593

Mean Diameter of Sample: 62 mm **Height of Sample:** 125 mm **Mean Area:** 3019.1 mm^2

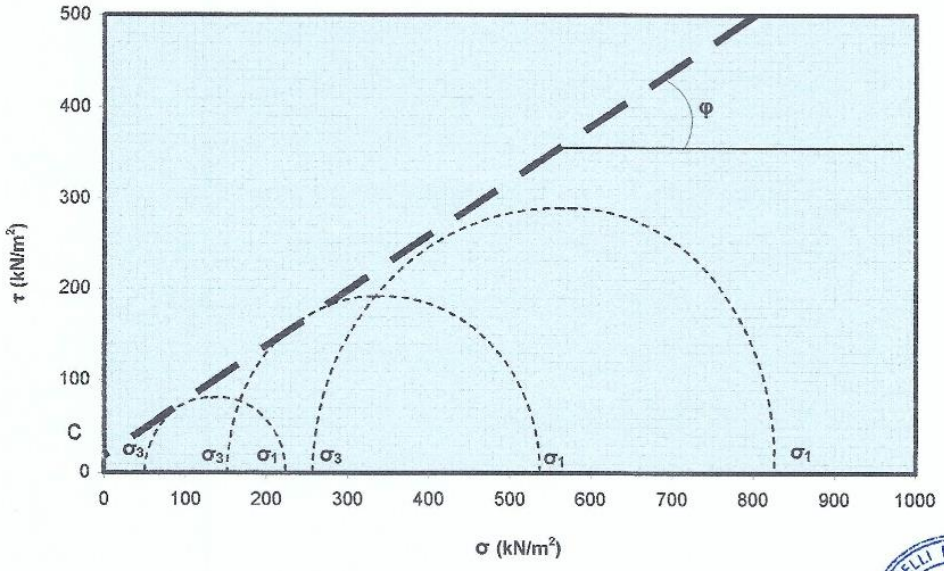
Weight of Specimen: 789.9 grams **Volume of Specimen:** 377.38 cm^3 **Date of Test:** 26-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	170	383	577

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	220	533	827
σ_3	50	150	250

c = 18.2 kN/m^2 φ =31.0°



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Mob: +254(0) 726 721 935

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Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 26+000

Site: KAYABOMBO | **Location:** KWALE | **Date Received:** 29-09-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-KAYABOMBO/4596 | **Sample No. :** 4596

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

Weight of Specimen: 613.2 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 26-11-21

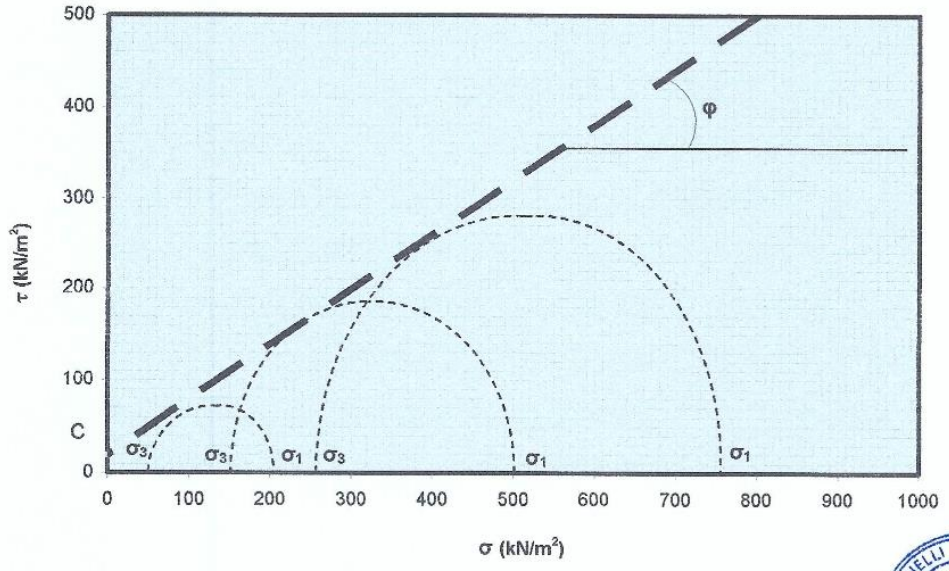
TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	150	350	545

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	200	500	795
σ_3	50	150	250

c = 19.0 kN/m^2

φ = 29.5°



Tested By: ERIC | Date Reported: 30-11-21 | Checked By:

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 2+000 (Depth: 0.4-1.6M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Soil Type: DISTURBED **Lab Ref:** TM/RGS-CHANGAMWE/5689 **Sample No. :** 5689

Mean Diameter of Sample: 62 mm **Height of Sample:** 125 mm **Mean Area:** 3019.1 mm^2

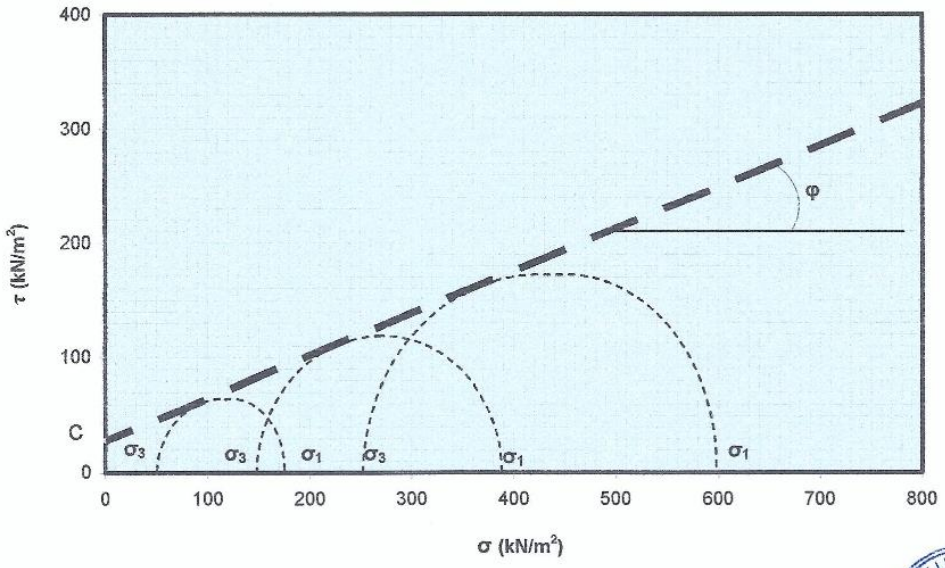
Weight of Specimen: 752.9 grams **Volume of Specimen:** 377.38 cm^3 **Date of Test:** 24-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	121	238	348

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	171	388	598
σ_3	50	150	250

c = 28.4 kN/m^2 φ = 20.5°



Tested By: ERIC **Date Reported:** 30-11-21 **Checked By:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 4+500 (Depth: 0.2-1.7M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Soil Type: DISTURBED **Lab Ref:** TM/RGS-CHANGAMWE/5693 **Sample No. :** 5693

Mean Diameter of Sample: 62 mm **Height of Sample:** 125 mm **Mean Area:** 3019.1 mm^2

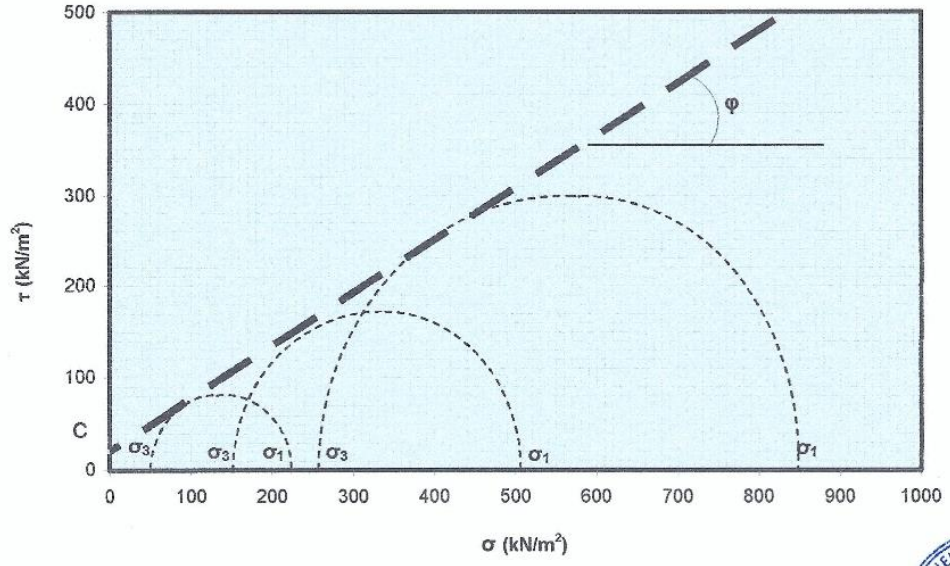
Weight of Specimen: 771.7 grams **Volume of Specimen:** 377.38 cm^3 **Date of Test:** 24-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	169	355	598

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	219	505	848
σ_3	50	150	250

c = 20.0 kN/m^2 φ =30.5°



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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 7+500 (Depth: 0.2-0.9M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Soil Type: DISTURBED **Lab Ref:** TM/RGS-CHANGAMWE/5696 **Sample No. :** 5696

Mean Diameter of Sample: 62 mm **Height of Sample:** 125 mm **Mean Area:** 3019.1 mm^2

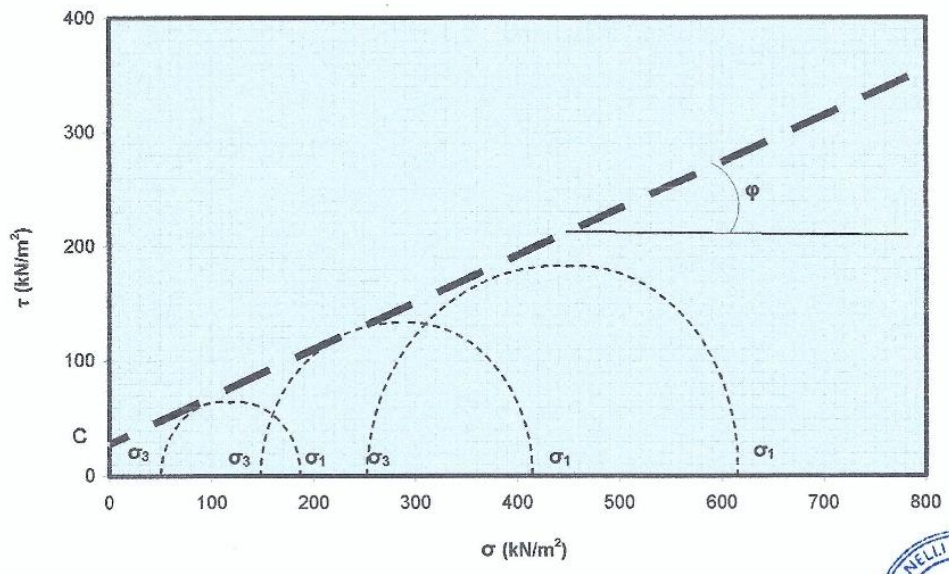
Weight of Specimen: 734.4 grams **Volume of Specimen:** 377.38 cm^3 **Date of Test:** 24-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	135	263	366

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	185	413	616
σ_3	50	150	250

c = 25.5 kN/m^2 φ =22.1°



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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 8+000 (Depth: 0.0-1.0M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Soil Type: DISTURBED **Lab Ref:** TM/RGS-CHANGAMWE/5698 **Sample No. :** 5698

Mean Diameter of Sample: 62 mm **Height of Sample:** 125 mm **Mean Area:** 3019.1 mm^2

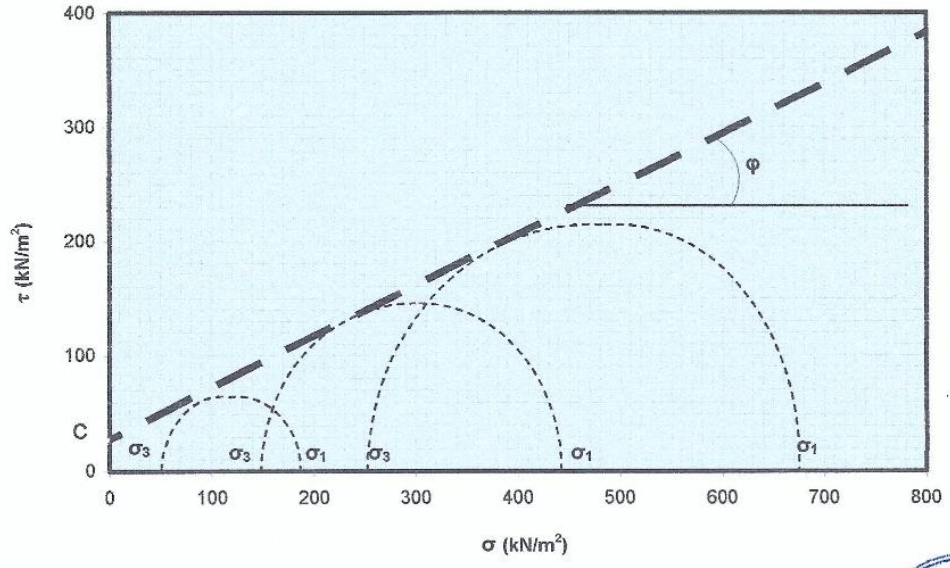
Weight of Specimen: 740.0 grams **Volume of Specimen:** 377.38 cm^3 **Date of Test:** 24-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	131	291	429

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	181	441	679
σ_3	50	150	250

c = 27.7 kN/m^2 φ = 24.0°



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 11+618 (Depth: 0.3-1.2M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Soil Type: DISTURBED **Lab Ref:** TM/RGS-CHANGAMWE/5703 **Sample No. :** 5703

Mean Diameter of Sample: 62 mm **Height of Sample:** 125 mm **Mean Area:** 3019.1 mm^2

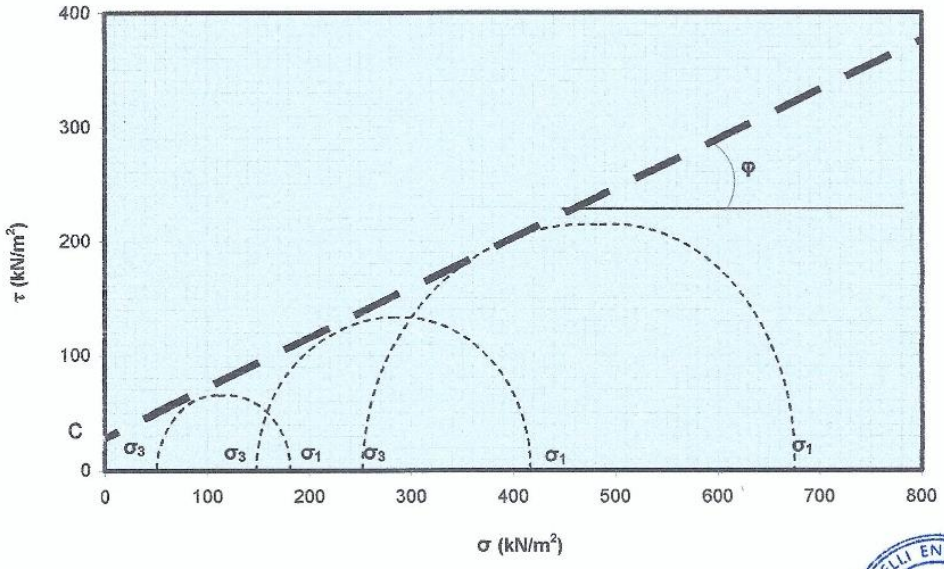
Weight of Specimen: 724.2 grams **Volume of Specimen:** 377.38 cm^3 **Date of Test:** 24-11-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	130	265	424

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	180	415	674
σ_3	50	150	250

c = 28.1 kN/m^2 φ =23.0°



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
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REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 1+740 (Depth: 1.0-1.4M)

Site: TRUNK MAIN | **Location:** KWALE | **Date Received:** 18-10-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-TRUNKMAIN/5742 | **Sample No. :** 5742

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

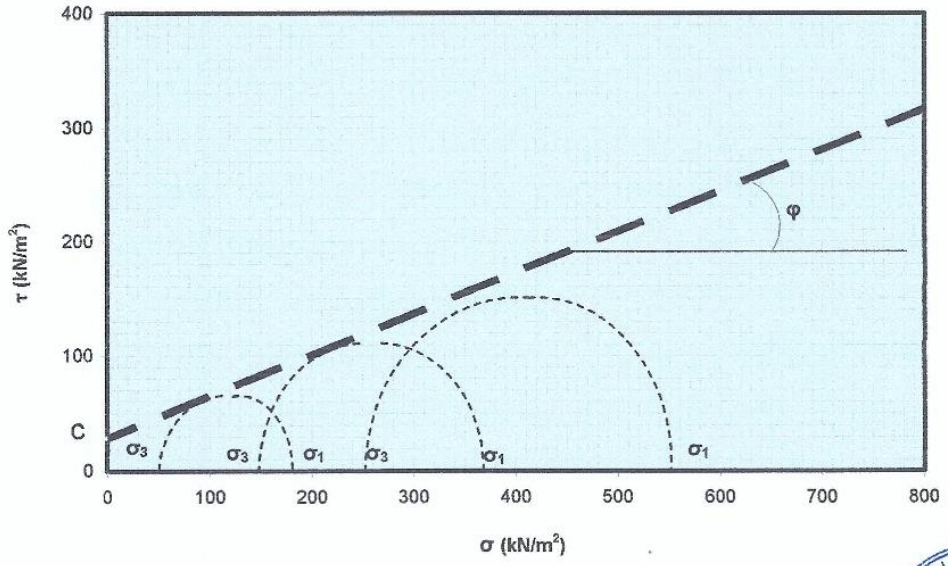
Weight of Specimen: 717.8 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 02-12-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	129	220	300

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	179	370	550
σ_3	50	150	250

c = 29.2 kN/m^2 | φ = 19.4°



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 3+500 (Depth: 0.0-1.4M)

Site: TRUNK MAIN | **Location:** KWALE | **Date Received:** 18-10-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-TRUNKMAIN/5746 | **Sample No. :** 5746

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

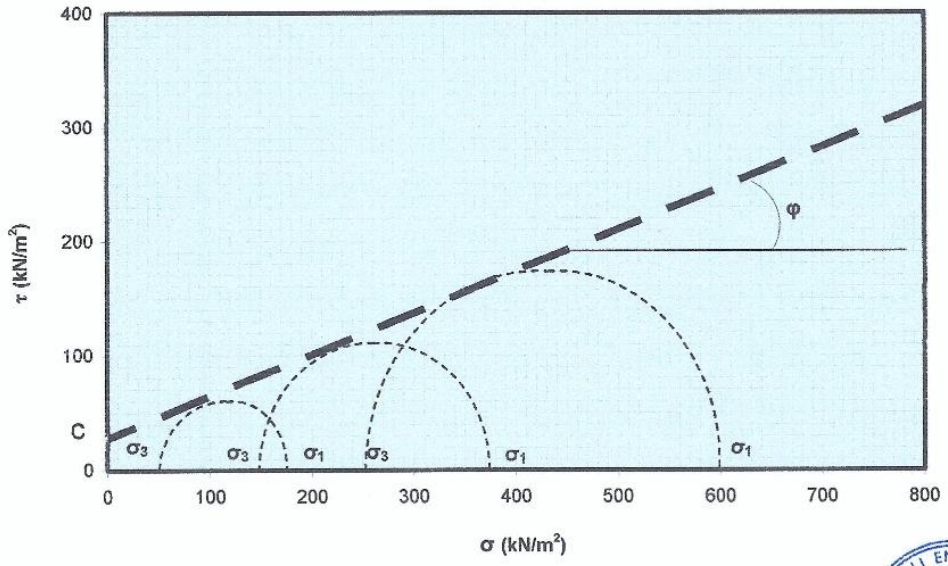
Weight of Specimen: 748.7 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 02-12-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	124	223	349

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	174	373	599
σ_3	50	150	250

c = 28.3 kN/m^2 φ = 20.2°



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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 4+000 (Depth: 0.45-0.9M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Soil Type: DISTURBED **Lab Ref:** TM/RGS-TRUNKMAIN/5747 **Sample No. :** 5747

Mean Diameter of Sample: 62 mm **Height of Sample:** 125 mm **Mean Area:** 3019.1 mm^2

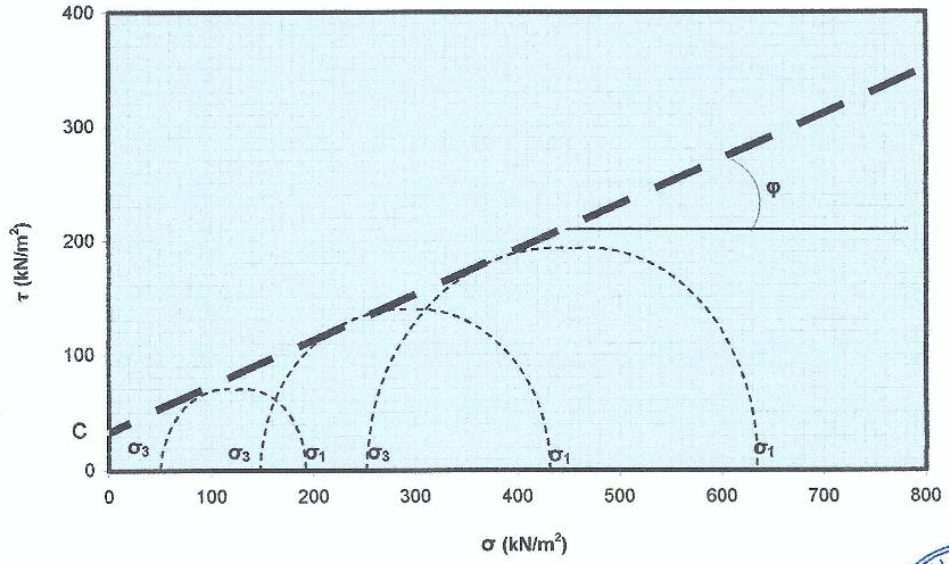
Weight of Specimen: 675.5 grams **Volume of Specimen:** 377.38 cm^3 **Date of Test:** 02-12-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	140	280	386

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	190	430	636
σ_3	50	150	250

c = 33.1 kN/m^2 φ =21.3°



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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
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REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

Quick Undrained Triaxial Test

BS 1377: Part 8: 1990

TP KM 5+500 (Depth: 0.8-1.0M)

Site: TRUNK MAIN | **Location:** KWALE | **Date Received:** 18-10-21

Soil Type: DISTURBED | **Lab Ref:** TM/RGS-TRUNKMAIN/5750 | **Sample No. :** 5750

Mean Diameter of Sample: 62 mm | **Height of Sample:** 125 mm | **Mean Area:** 3019.1 mm^2

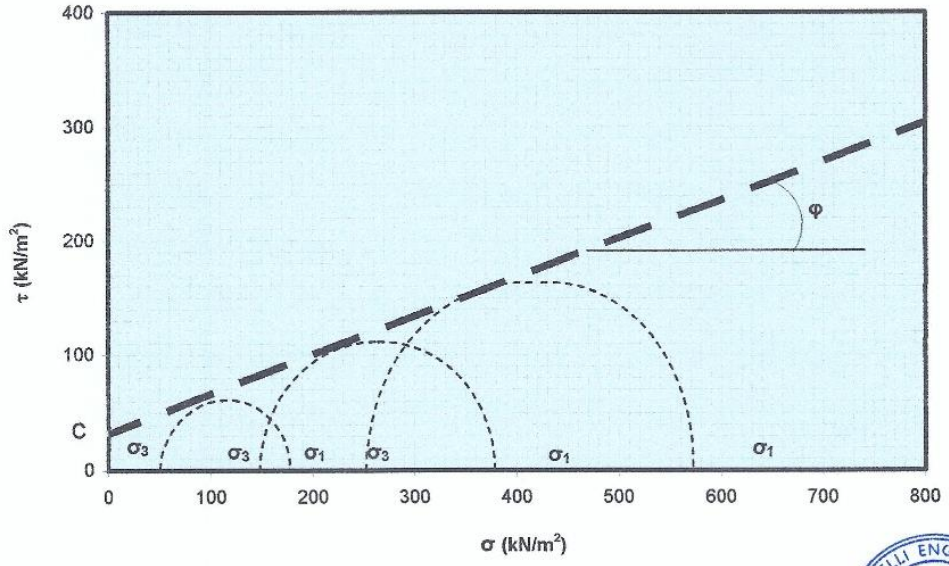
Weight of Specimen: 721.6 grams | **Volume of Specimen:** 377.38 cm^3 | **Date of Test:** 02-12-21

TEST	1	2	3
Cell Pressure (kN/m^2)	50	150	250
Principal Stress difference at failure (kN/m^2)	126	227	322

a) TOTAL STRESS ANALYSIS

TEST	1	2	3
σ_1	176	377	572
σ_3	50	150	250

c = 32.1 kN/m^2 φ =18.5°



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Direct Shear

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
NGUU TATU SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM2+500(0.0-0.3M)

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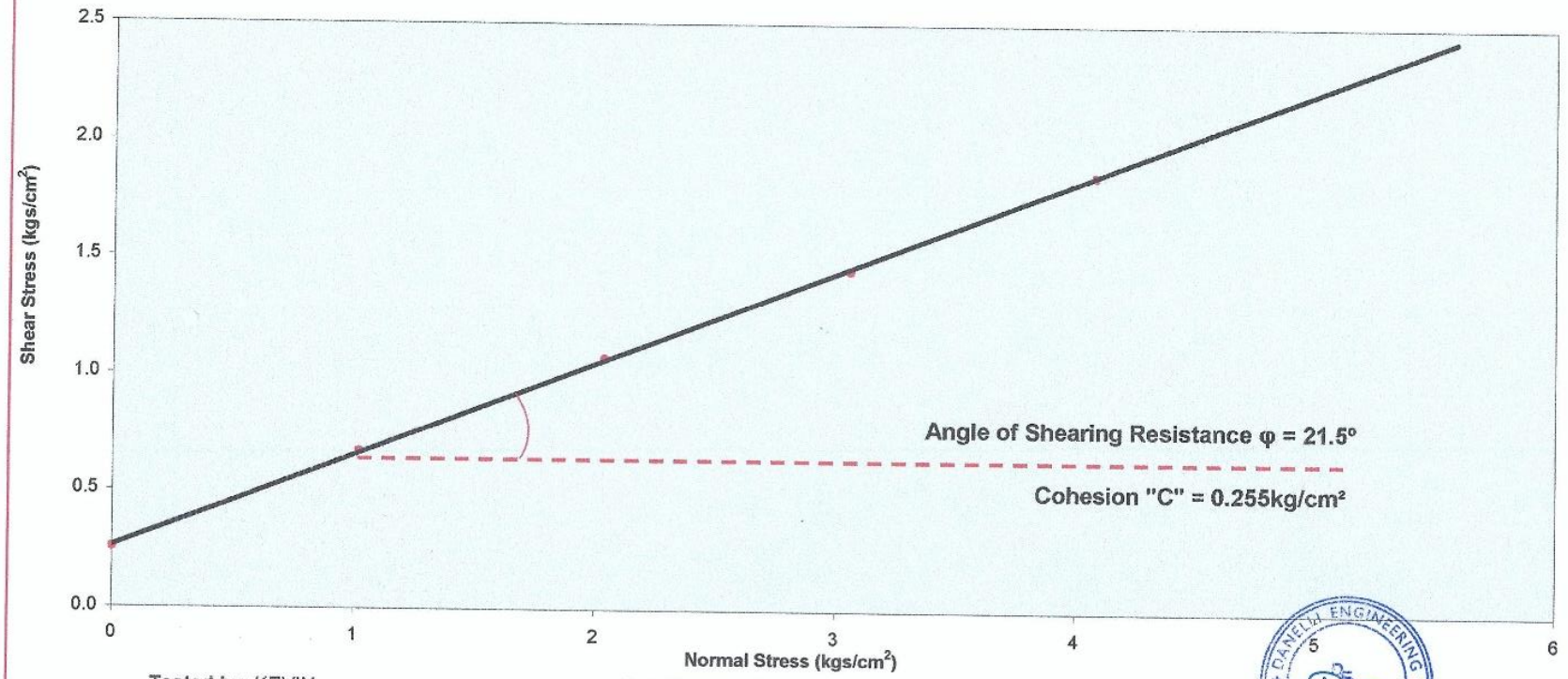

Tested by: KEVIN
Date Tested: 27-11-21
Checked by:

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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P.O. Box 64932
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

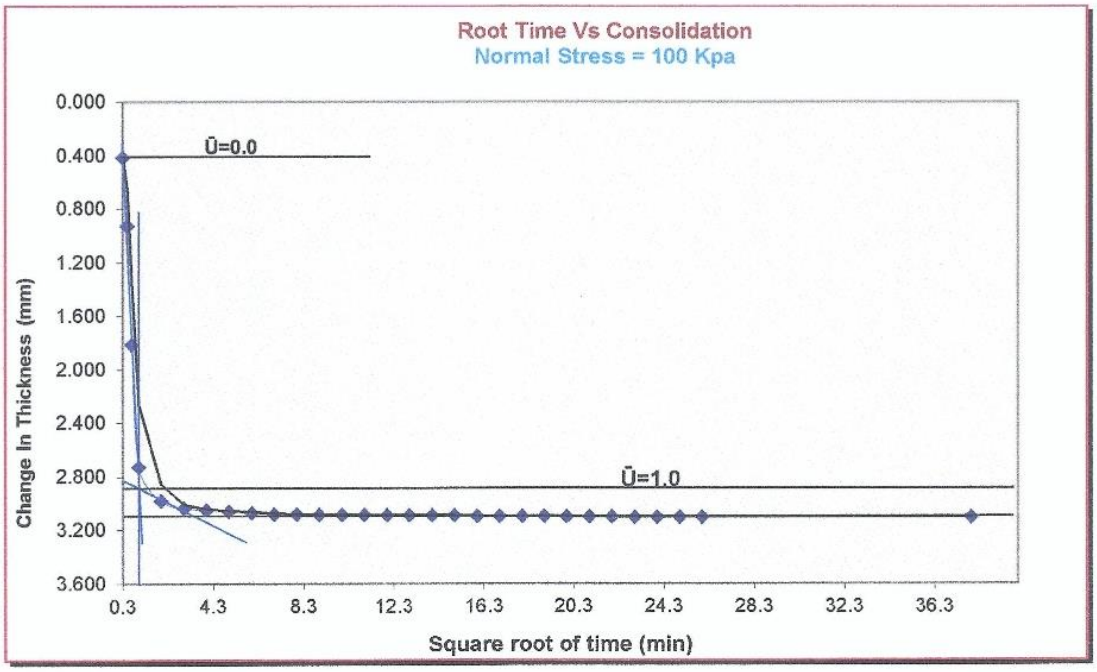
BS 1377: Part 7: 1990

TP KM 2+500 (Depth: 0.0-0.3M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5709 **Sample No.** 5709

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.3M **Date Tested:** 27-11-21



Deformation (mm)	3.105
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.81
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	2.880
Rate of displacement mm/min	0.279965
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.275463

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

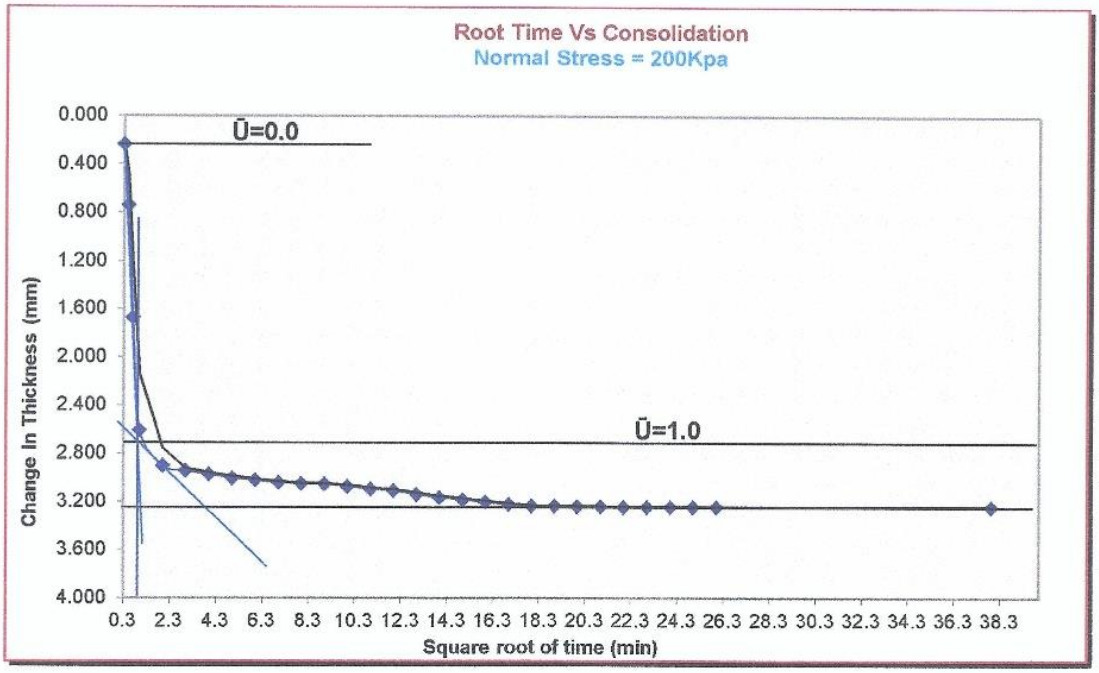
BS 1377: Part 7: 1990

TP KM 2+500 (Depth: 0.0-0.3M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5709 **Sample No.** 5709

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.3M **Date Tested:** 27-11-21



Deformation (mm)	3.240
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.81
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	2.725
Rate of displacement mm/min	0.264897
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.265271

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

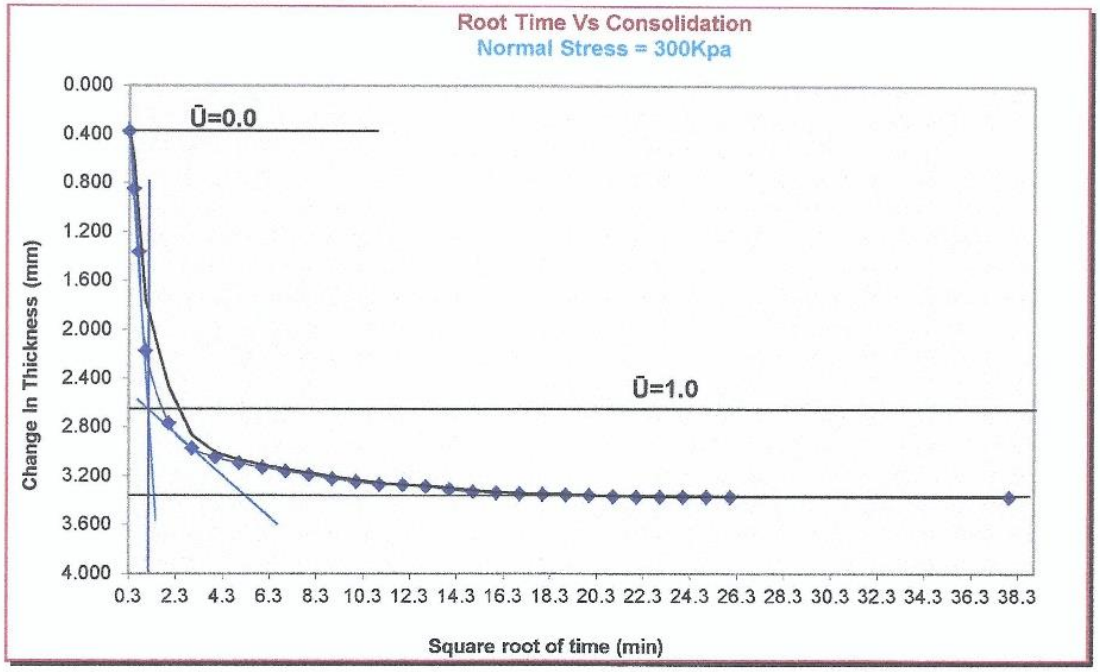
BS 1377: Part 7: 1990

TP KM 2+500 (Depth: 0.0-0.3M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5709 **Sample No.** 5709

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.3M **Date Tested:** 27-11-21



Deformation (mm)	3.370
From graph $\sqrt{t_{100}}$	1.20
t_{100} (min)	1.440
$t_f = 12.7 \times t_{100}$	18.288
Estimated displacement at Failure (mm)	2.66
Rate of displacement mm/min	0.145451
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.255457

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

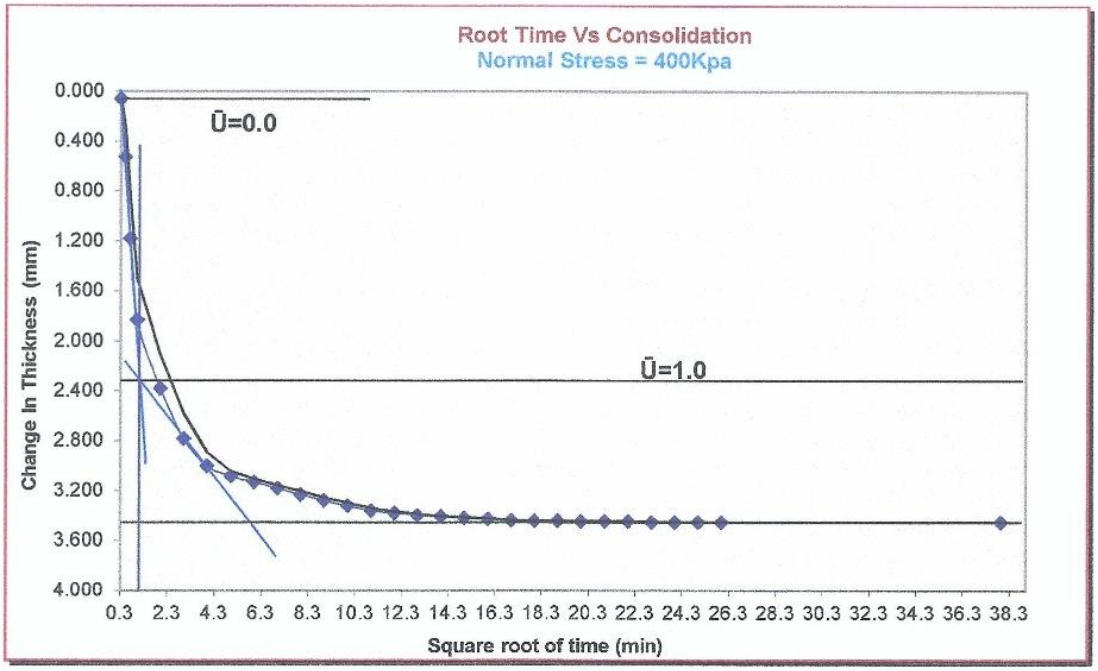
BS 1377: Part 7: 1990

TP KM 2+500 (Depth: 0.0-0.3M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5709 **Sample No.** 5709

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.3M **Date Tested:** 27-11-21



Deformation (mm)	3.455
From graph $\sqrt{t_{100}}$	1.10
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.325
Rate of displacement mm/min	0.151298
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.2490399

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
NGUU TATU SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM4+000(0.0-1.3M)

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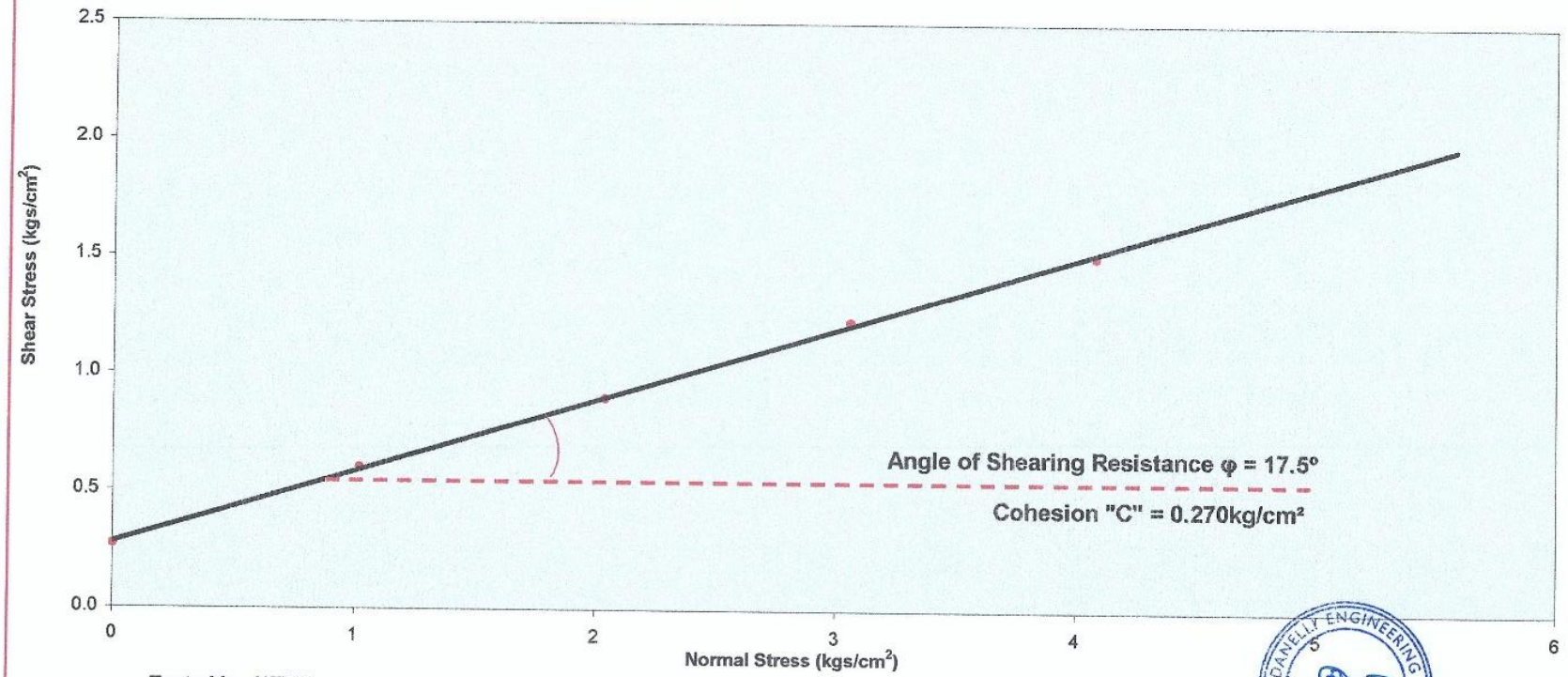

Tested by: KEVIN
Date Tested: 28-11-21
Checked by:

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

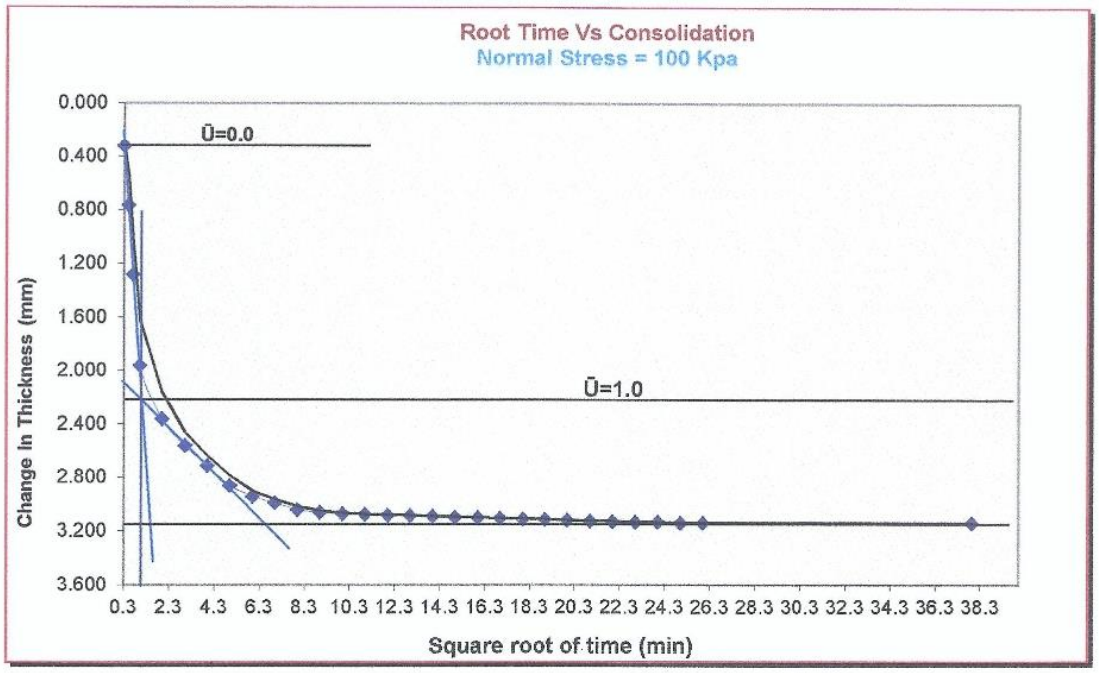
BS 1377: Part 7: 1990

TP KM 4+000 (Depth: 0.0-1.3M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5711 **Sample No.** 5711

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.3M **Date Tested:** 28-11-21



Deformation (mm)	3.140
From graph $\sqrt{t_{100}}$	1.05
t_{100} (min)	1.1025
$t_f = 12.7 \times t_{100}$	14.0175
Estimated displacement at Failure (mm)	2.22
Rate of displacement mm/min	0.1583735
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.374976

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

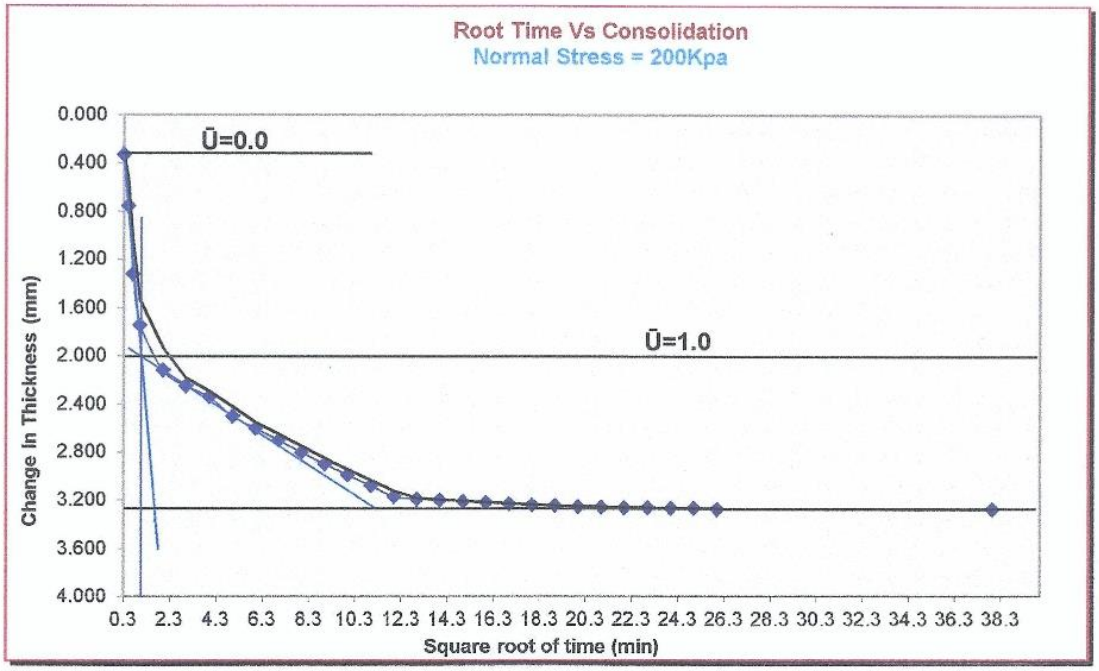
BS 1377: Part 7: 1990

TP KM 4+000 (Depth: 0.0-1.3M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5711 **Sample No.** 5711

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.3M **Date Tested:** 28-11-21



Deformation (mm)	3.270
From graph $\sqrt{t_{100}}$	1.10
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.010
Rate of displacement mm/min	0.130799
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.364380

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

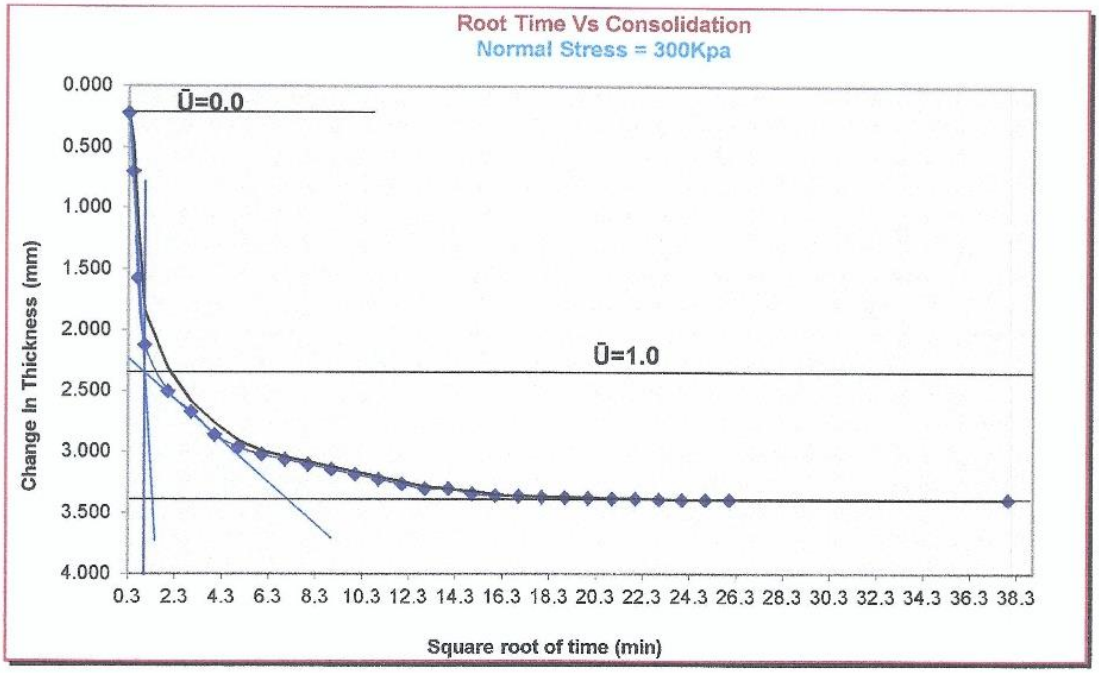
BS 1377: Part 7: 1990

TP KM 4+000 (Depth: 0.0-1.3M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5711 **Sample No.** 5711

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.3M **Date Tested:** 28-11-21



Deformation (mm)	3.390
From graph $\sqrt{t_{100}}$	1.05
t_{100} (min)	1.1025
$t_f = 12.7 \times t_{100}$	14.00175
Estimated displacement at Failure (mm)	2.340
Rate of displacement mm/min	0.16712197
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.35378975

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

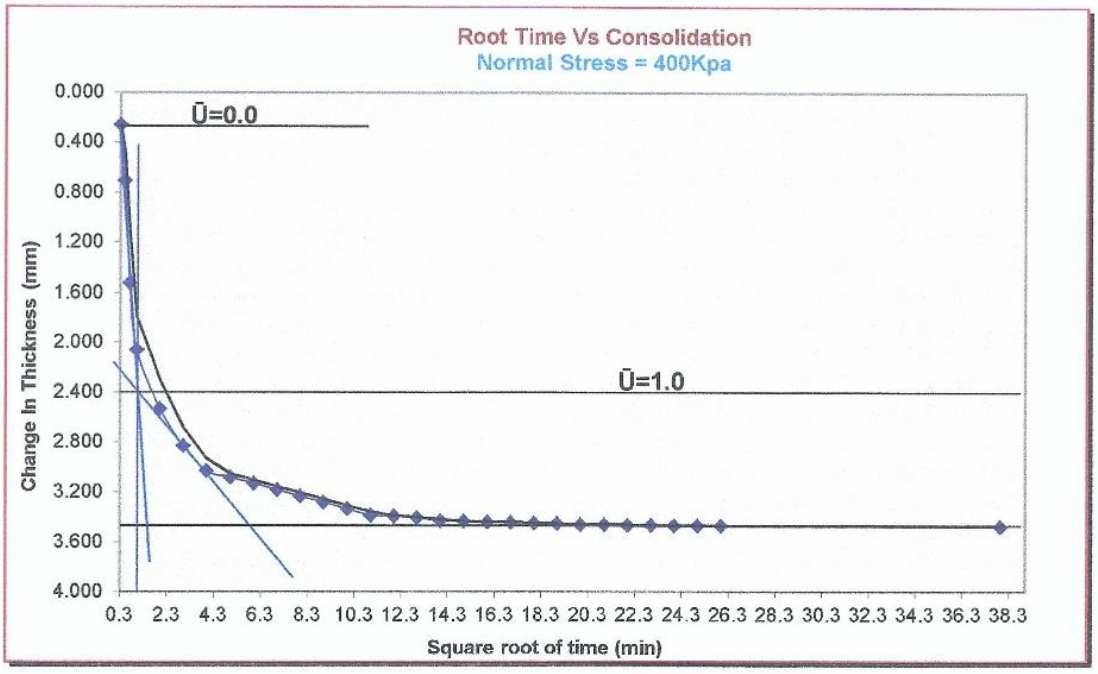
BS 1377: Part 7: 1990

TP KM 4+000 (Depth: 0.0-1.3M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5711 **Sample No.** 5711

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.3M **Date Tested:** 28-11-21



Deformation (mm)	3.47
From graph $\sqrt{t_{100}}$	1.05
t_{100} (min)	1.1025
$t_f = 12.7 \times t_{100}$	14.00175
Estimated displacement at Failure (mm)	2.40
Rate of displacement mm/min	0.1714071
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.3472694

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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info@danellilab.com
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NGUU TATU SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM7+500(0.5-1.3M)

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Pili Trade Centre,
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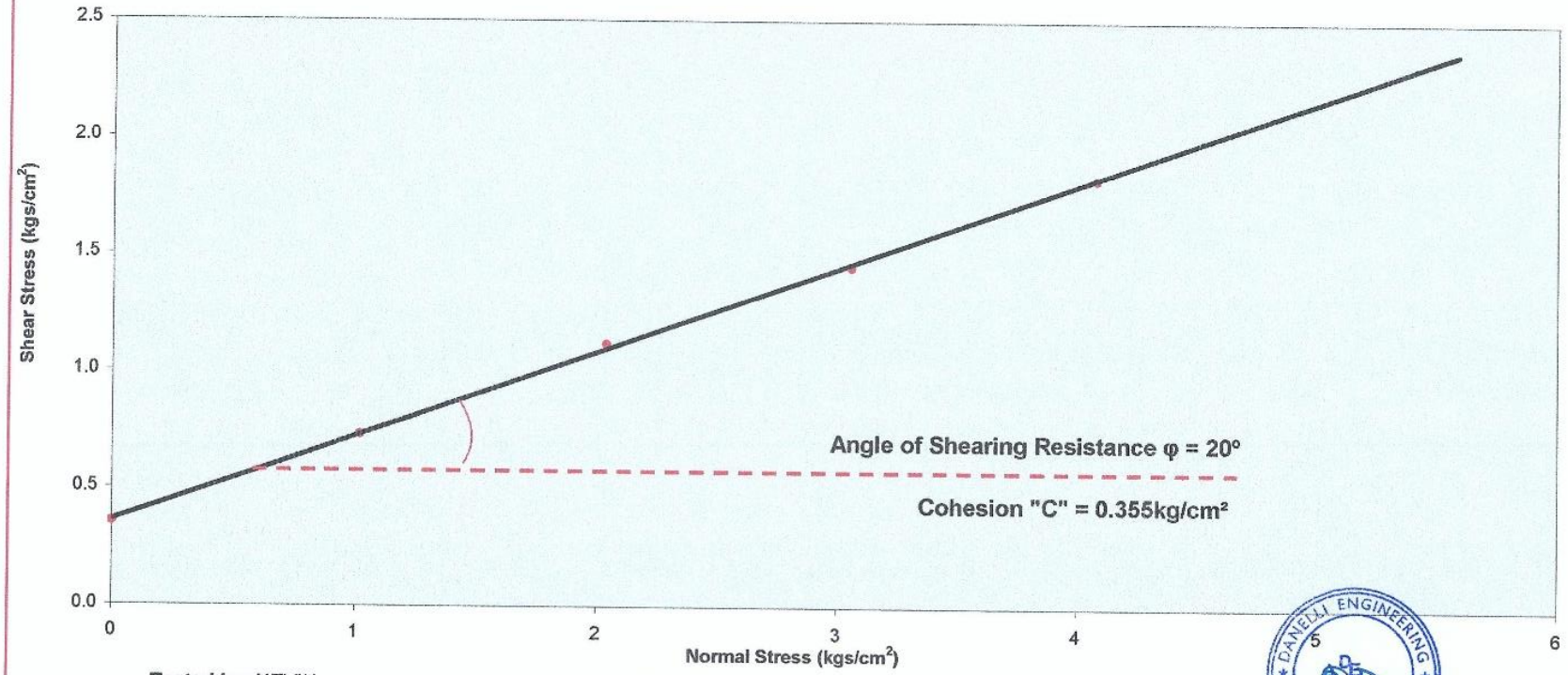

Tested by: KEVIN
Date Tested: 28-11-21
Checked by:

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

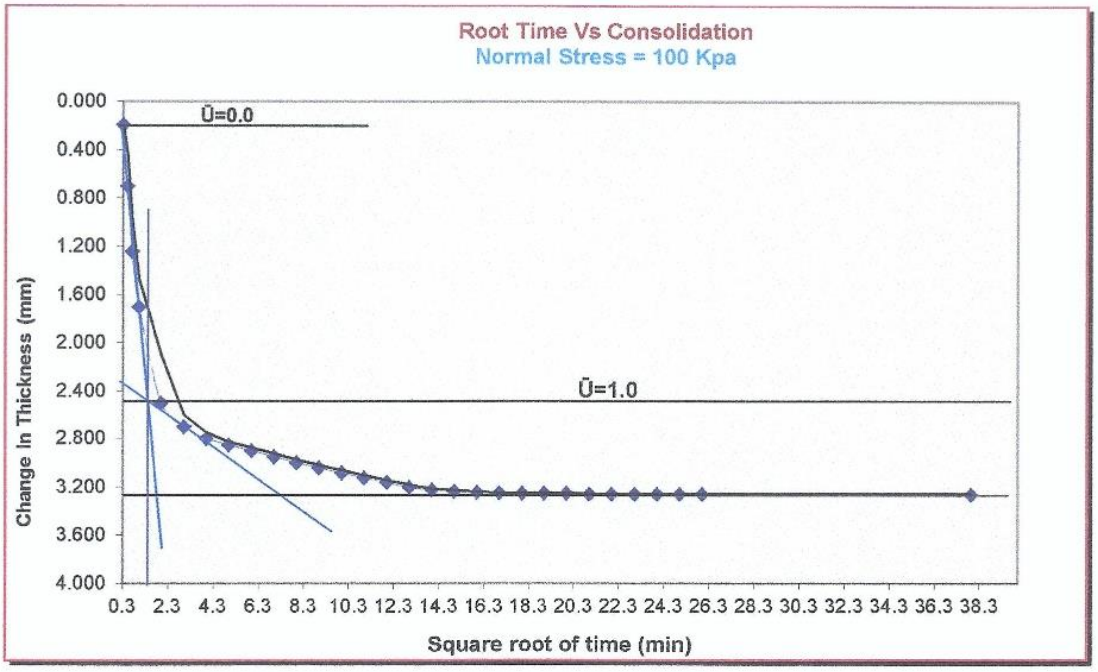
BS 1377: Part 7: 1990

TP KM 7+500 (Depth: 0.5-1.3M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5715 **Sample No.** 5715

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.3M **Date Tested:** 28-11-21



Deformation (mm)	3.260
From graph $\sqrt{t_{100}}$	1.40
t_{100} (min)	1.960
$t_f = 12.7 \times t_{100}$	24.892
Estimated displacement at Failure (mm)	2.490
Rate of displacement mm/min	0.100032
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.370403

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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info@danellilab.com
Web site: www.danellilab.com
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

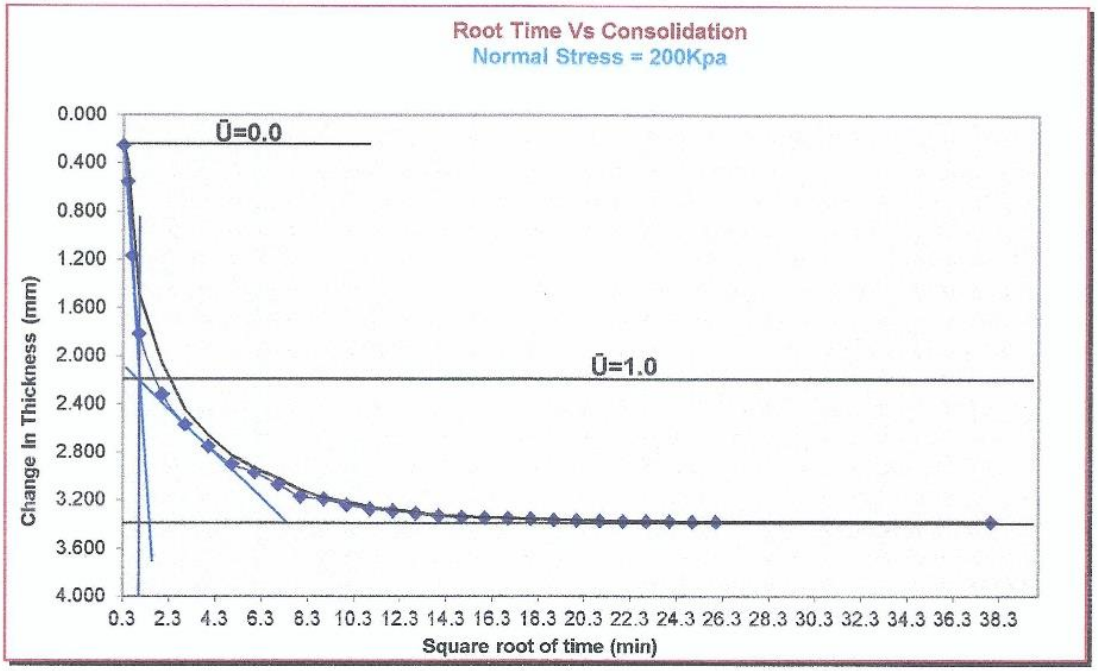
BS 1377: Part 7: 1990

TP KM 7+500 (Depth: 0.5-1.3M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5715 **Sample No.** 5715

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.3M **Date Tested:** 28-11-21



Deformation (mm)	3.380
From graph $\sqrt{t_{100}}$	1.050
t_{100} (min)	1.1025
$t_f = 12.7 \times t_{100}$	14.00175
Estimated displacement at Failure (mm)	2.20
Rate of displacement mm/min	0.1571232
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.3605797

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

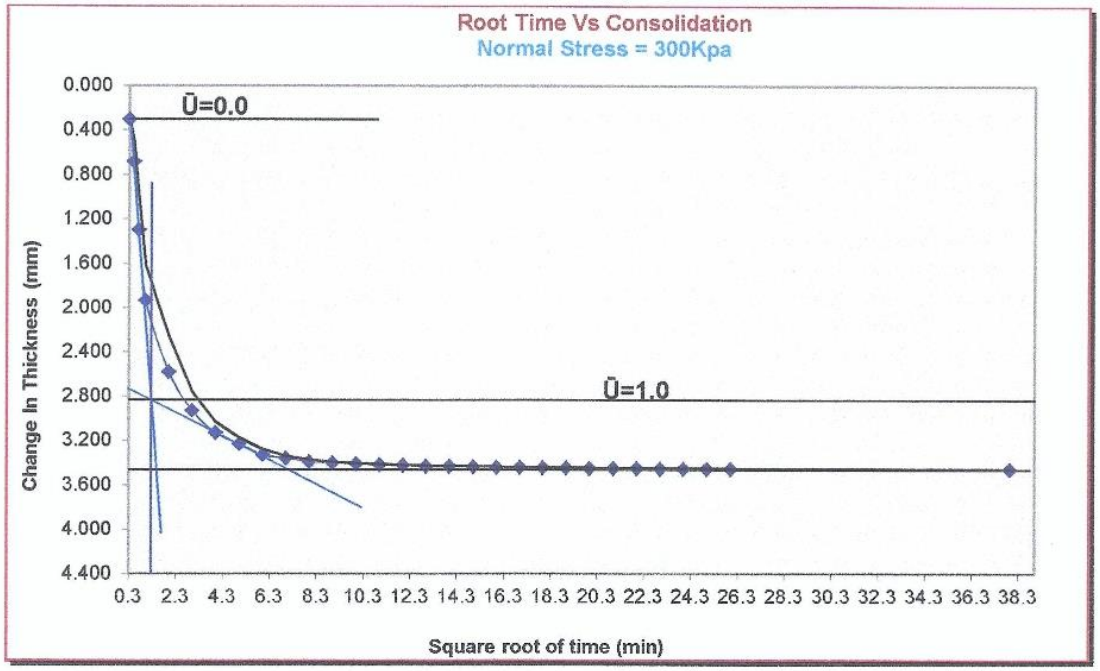
BS 1377: Part 7: 1990

TP KM 7+500 (Depth: 0.5-1.3M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5715 **Sample No.** 5715

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.3M **Date Tested:** 28-11-21



Deformation (mm)	3.460
From graph $\sqrt{t_{100}}$	1.250
t_{100} (min)	1.5625
$t_f = 12.7 \times t_{100}$	19.84375
Estimated displacement at Failure (mm)	2.840
Rate of displacement mm/min	0.1431181
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.3540306

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

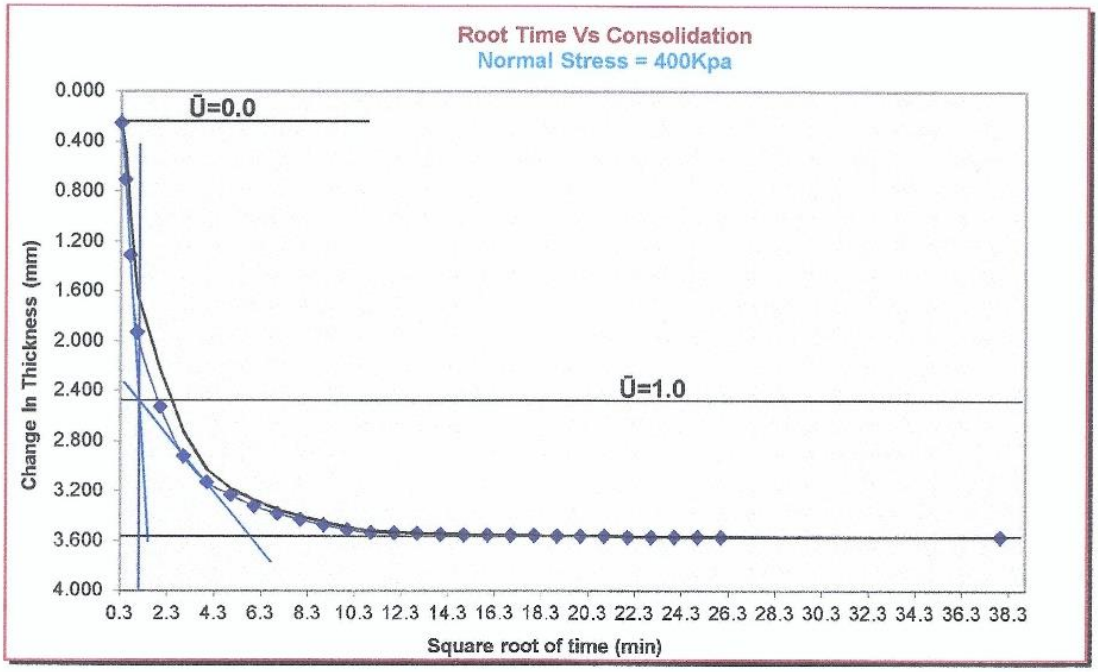
BS 1377: Part 7: 1990

TP KM 7+500 (Depth: 0.5-1.3M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5715 **Sample No.** 5715

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.3M **Date Tested:** 28-11-21



Deformation (mm)	3.565
From graph $\sqrt{t_{100}}$	1.10
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.480
Rate of displacement mm/min	0.161385
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.345435

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
NGUU TATU SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM9+500(0.4-1.4M)

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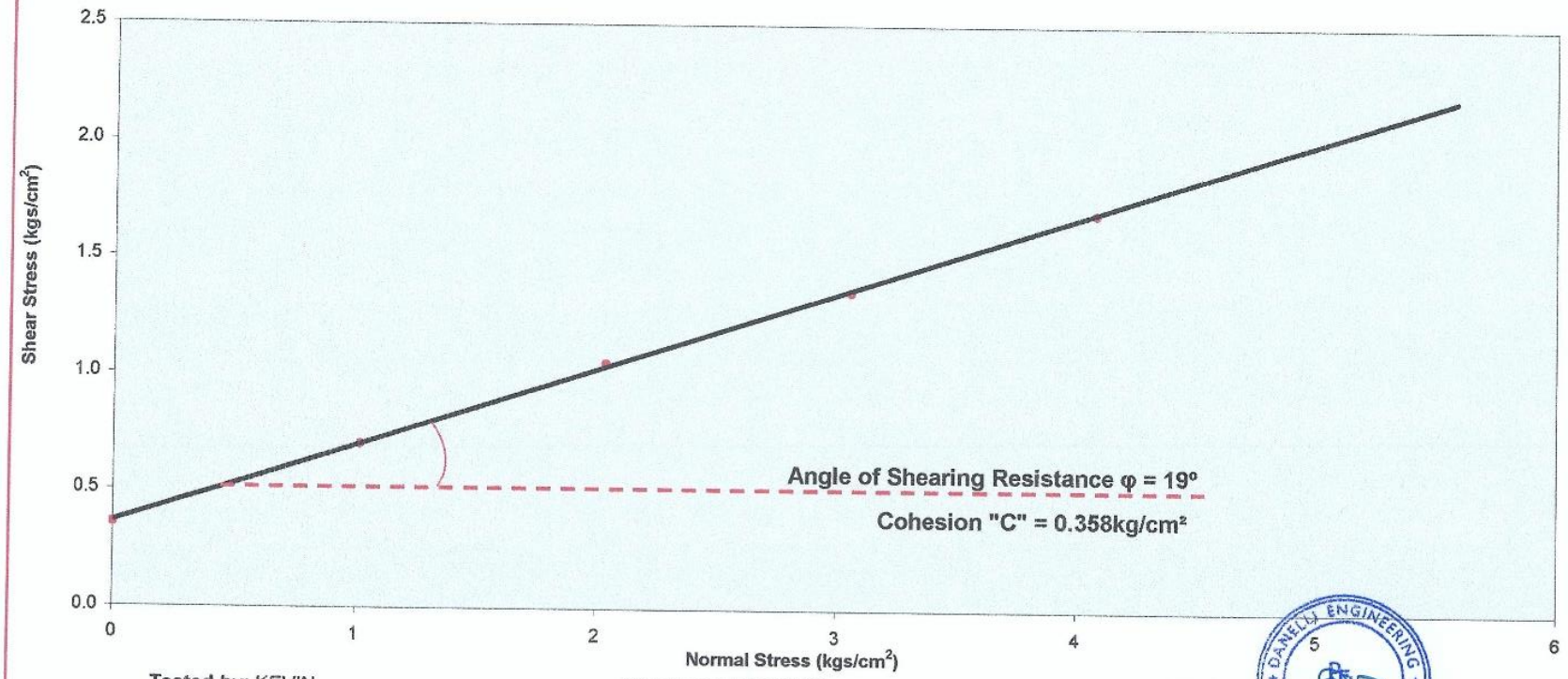

Tested by: KEVIN
Date Tested: 28-11-21
Checked by:

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

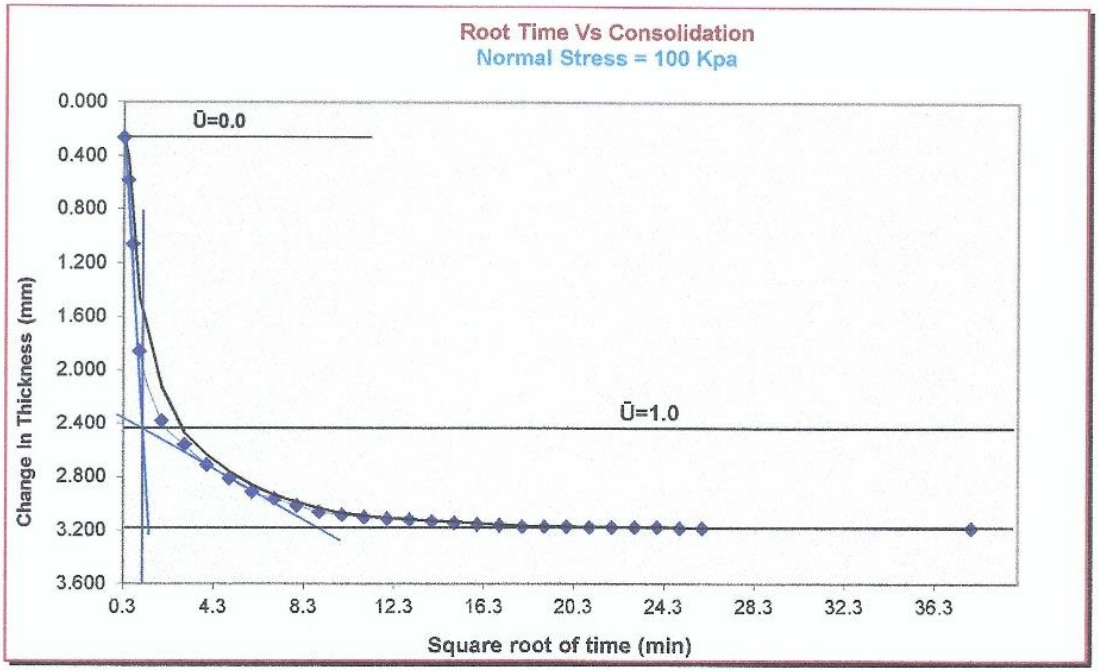
BS 1377: Part 7: 1990

TP KM 9+500 (Depth: 0.4-1.4M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5718 **Sample No.** 5718

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.4M **Date Tested:** 28-11-21



Deformation (mm)	3.180
From graph $\sqrt{t_{100}}$	1.15
t_{100} (min)	1.3225
$t_f = 12.7 \times t_{100}$	16.79575
Estimated displacement at Failure (mm)	2.445
Rate of displacement mm/min	0.145573
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.359826

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

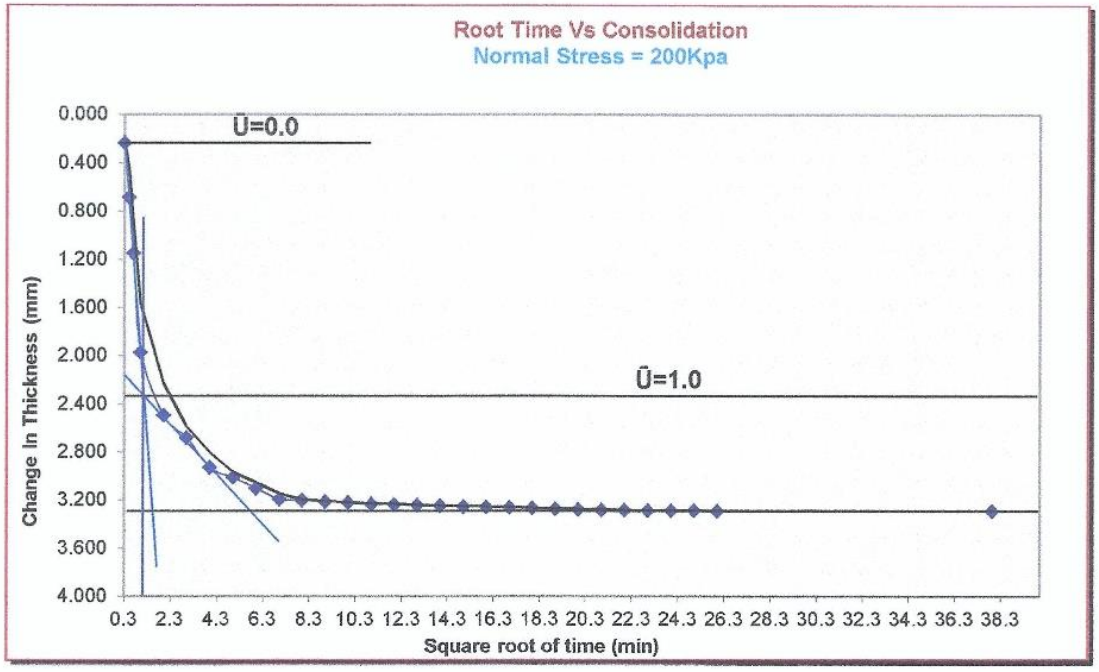
BS 1377: Part 7: 1990

TP KM 9+500 (Depth: 0.4-1.4M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5718 **Sample No.** 5718

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.4M **Date Tested:** 28-11-21



Deformation (mm)	3.290
From graph $\sqrt{t_{100}}$	1.105
t_{100} (min)	1.221025
$t_f = 12.7 \times t_{100}$	15.50702
Estimated displacement at Failure (mm)	2.340
Rate of displacement mm/min	0.150899
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.3509325

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

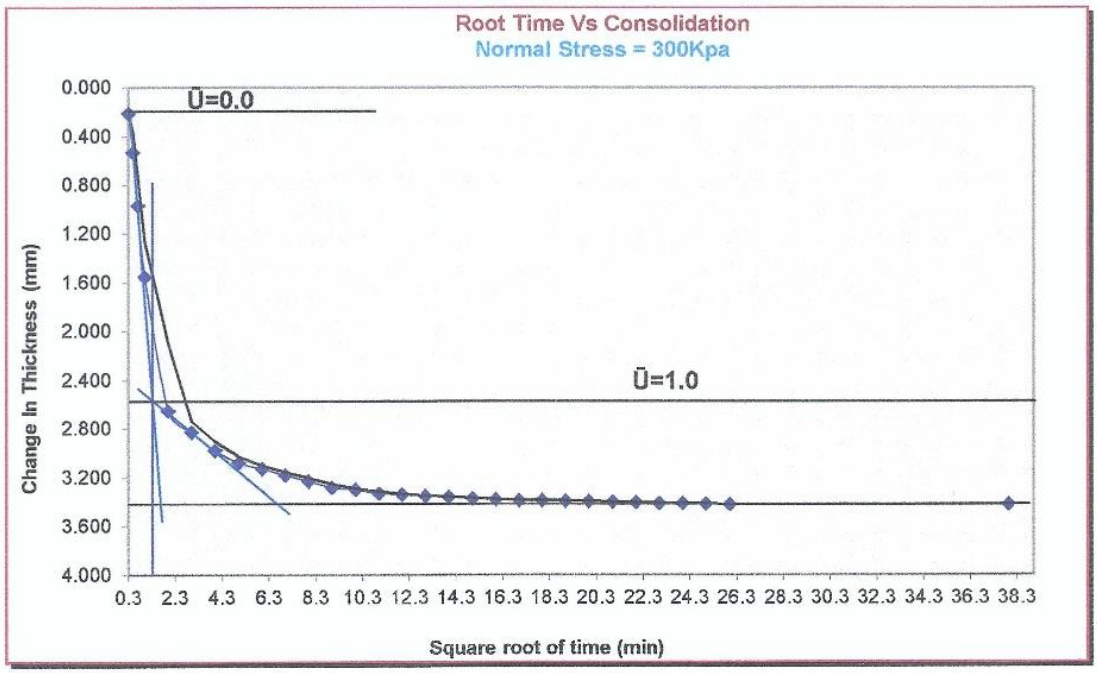
BS 1377: Part 7: 1990

TP KM 9+500 (Depth: 0.4-1.4M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5718 **Sample No.** 5718

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.4M **Date Tested:** 28-11-21



Deformation (mm)	3.420
From graph $\sqrt{t_{100}}$	0.95
t_{100} (min)	0.9025
$t_f = 12.7 \times t_{100}$	11.46175
Estimated displacement at Failure (mm)	2.575
Rate of displacement mm/min	0.224660
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.3404225

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

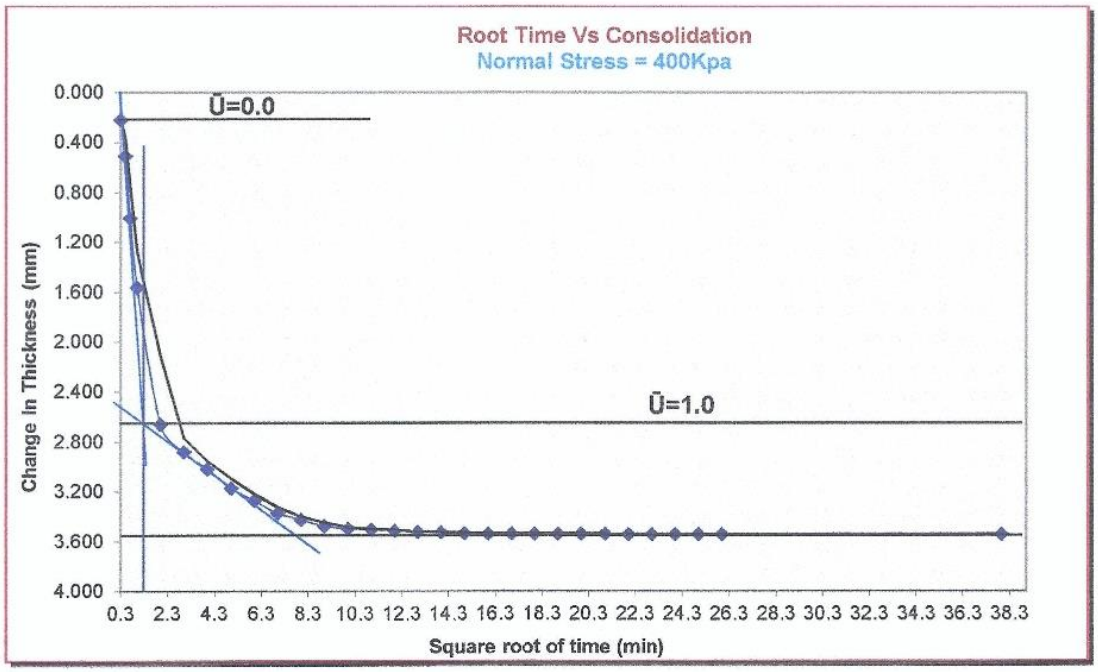
BS 1377: Part 7: 1990

TP KM 9+500 (Depth: 0.4-1.4M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5718 **Sample No.** 5718

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.4M **Date Tested:** 28-11-21



Deformation (mm)	3.540
From graph $\sqrt{t_{100}}$	1.30
t_{100} (min)	1.690
$t_f = 12.7 \times t_{100}$	21.463
Estimated displacement at Failure (mm)	2.650
Rate of displacement mm/min	0.123468
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.286194

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY
NGUU TATU SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM11+500(0.0-0.6M)

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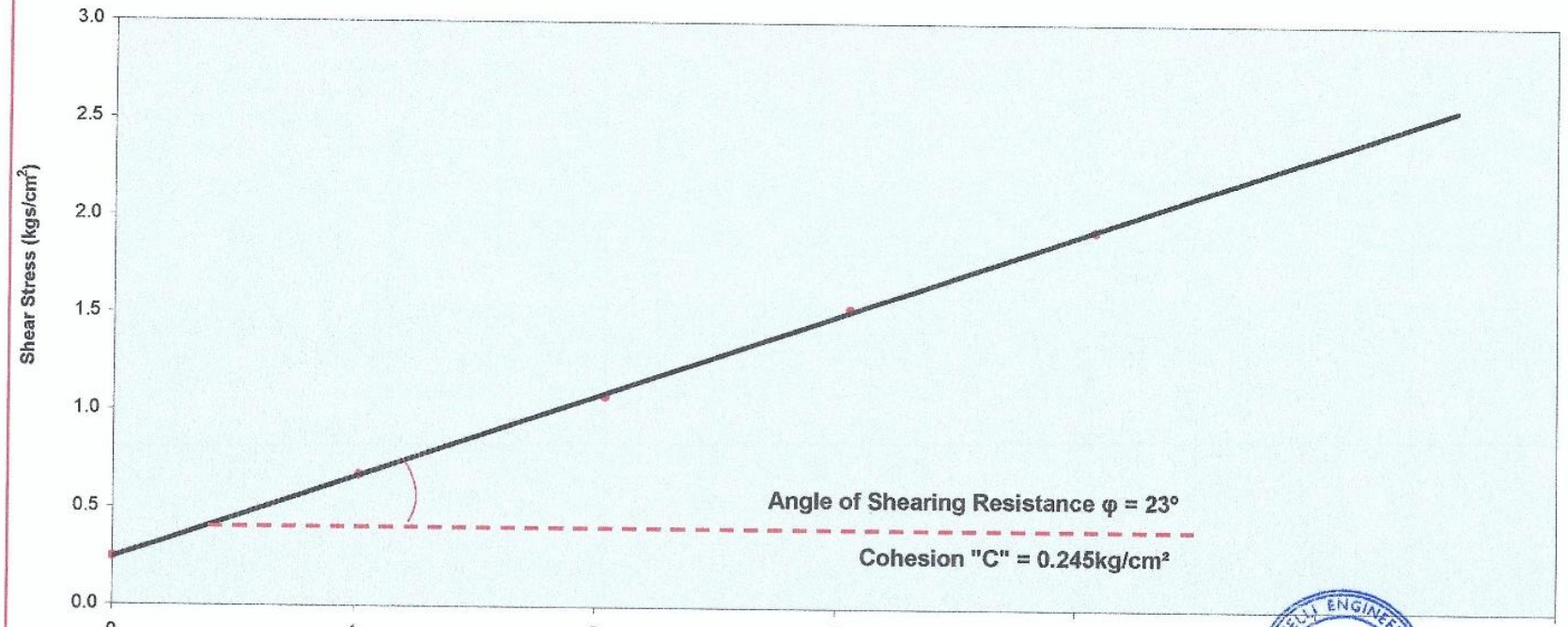

Tested by: KEVIN
Date Tested: 29-11-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

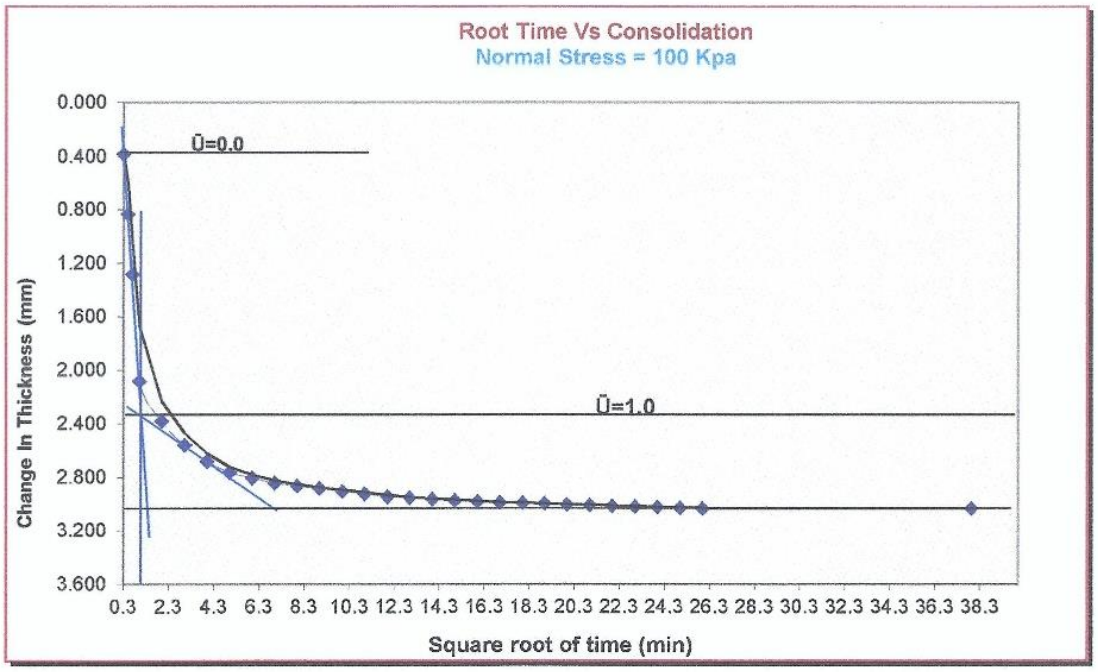
BS 1377: Part 7: 1990

TP KM 11+500 (Depth: 0.0-0.6M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5722 **Sample No.** 5722

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.6M **Date Tested:** 29-11-21



Deformation (mm)	3.030
From graph $\sqrt{t_{100}}$	1.090
t_{100} (min)	1.1881
$t_f = 12.7 \times t_{100}$	15.08887
Estimated displacement at Failure (mm)	2.340
Rate of displacement mm/min	0.155081
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.529889

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

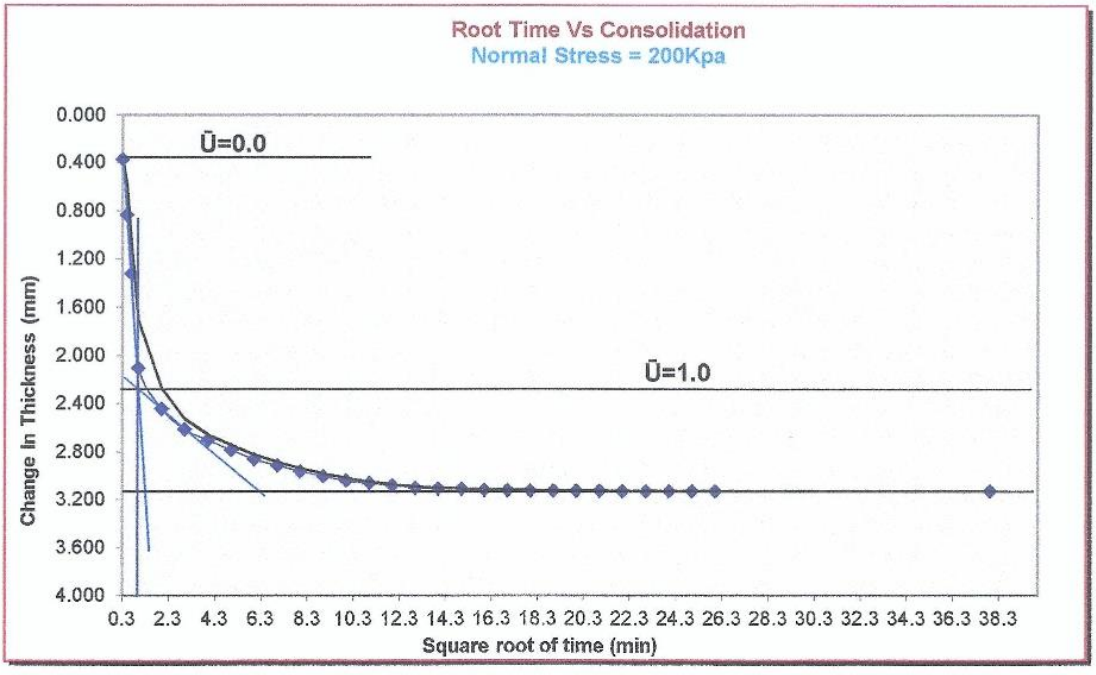
BS 1377: Part 7: 1990

TP KM 11+500 (Depth: 0.0-0.6M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5722 **Sample No.** 5722

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.6M **Date Tested:** 29-11-21



Deformation (mm)	3.130
From graph $\sqrt{t_{100}}$	0.950
t_{100} (min)	0.9025
$t_f = 12.7 \times t_{100}$	11.46175
Estimated displacement at Failure (mm)	2.280
Rate of displacement mm/min	0.1989225
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.5208735

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

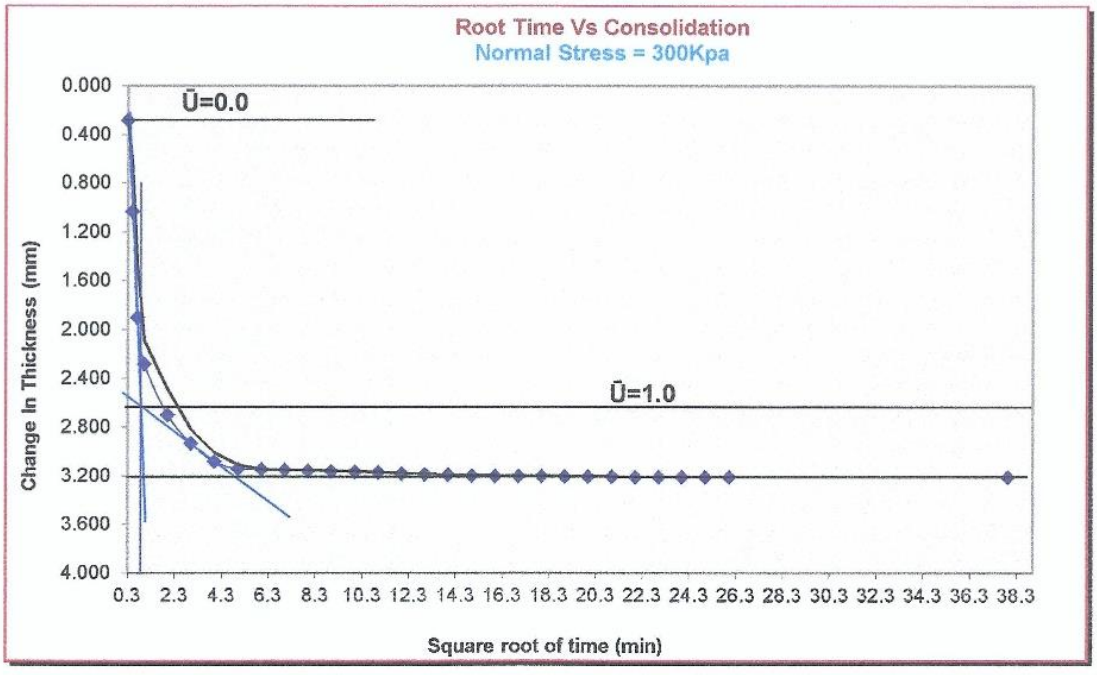
BS 1377: Part 7: 1990

TP KM 11+500 (Depth: 0.0-0.6M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5722 **Sample No.** 5722

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.6M **Date Tested:** 29-11-21



Deformation (mm)	3.210
From graph $\sqrt{t_{100}}$	0.900
t_{100} (min)	0.810
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	2.640
Rate of displacement mm/min	0.256635
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.513661

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

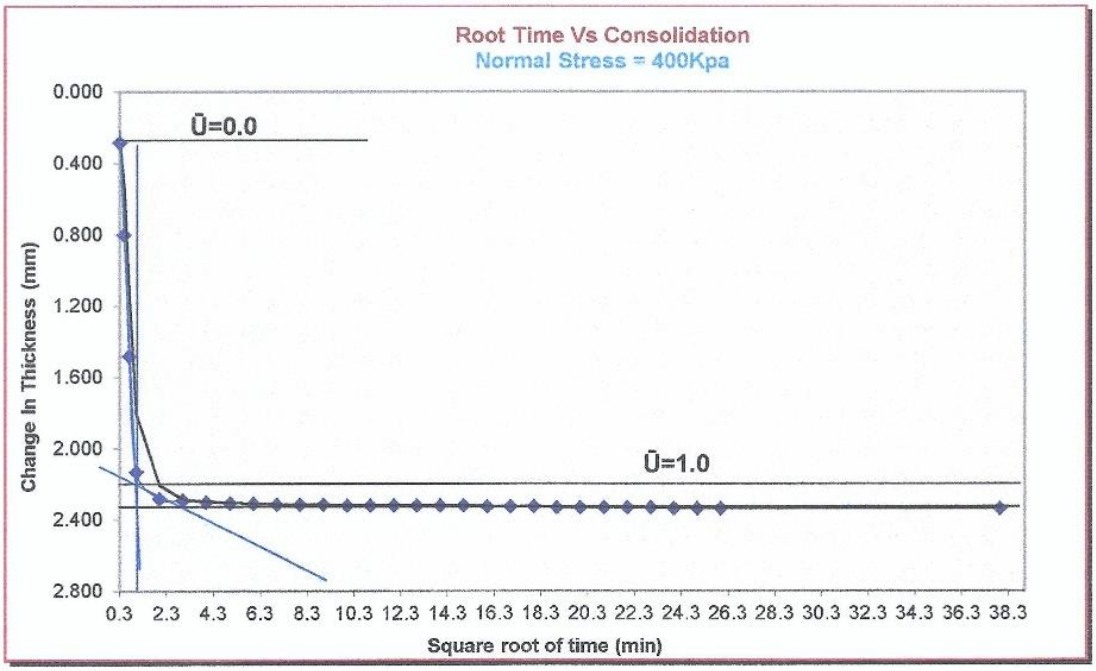
BS 1377: Part 7: 1990

TP KM 11+500 (Depth: 0.0-0.6M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5722 **Sample No.** 5722

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-0.6M **Date Tested:** 28-11-21



Deformation (mm)	2.335
From graph $\sqrt{t_{100}}$	1.00
t_{100} (min)	1.00
$t_f = 12.7 \times t_{100}$	12.70
Estimated displacement at Failure (mm)	2.20
Rate of displacement mm/min	0.173228
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.5925447

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

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Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM13+500(0.0-2.1M)

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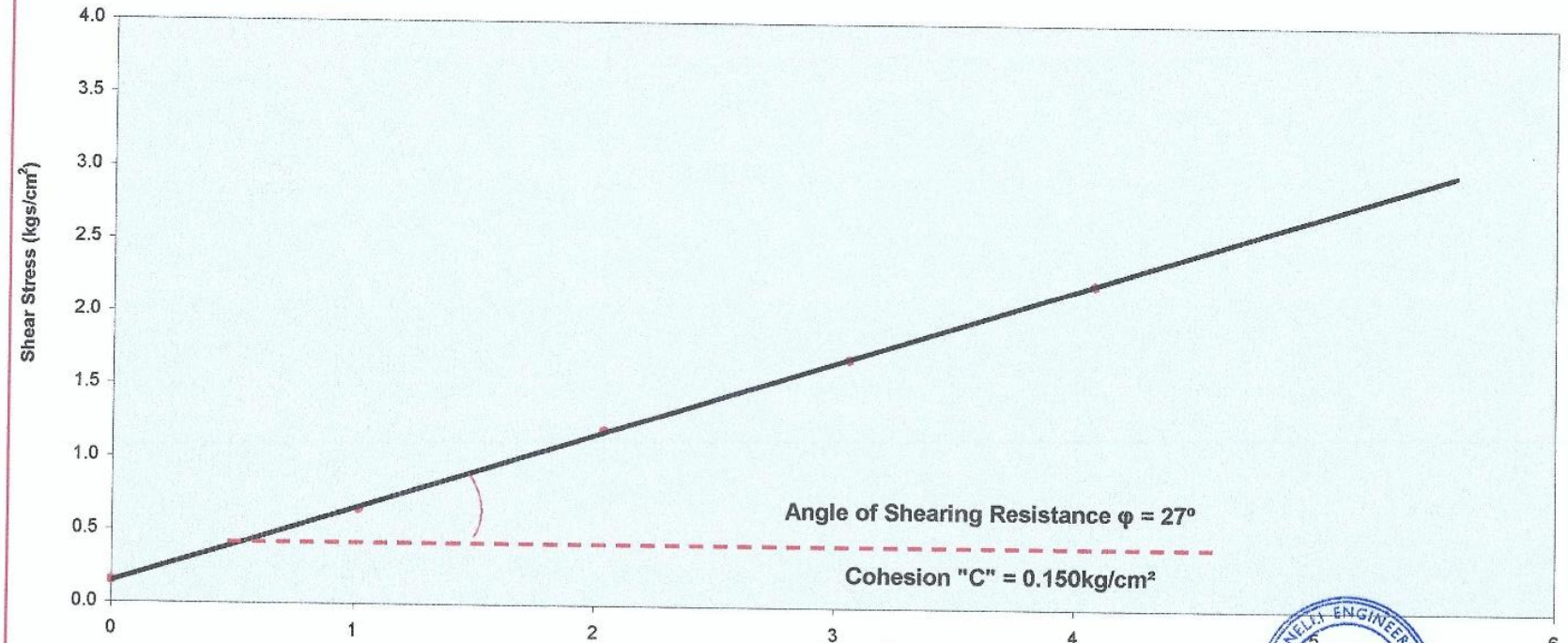

Tested by: KEVIN
Date Tested: 30-11-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

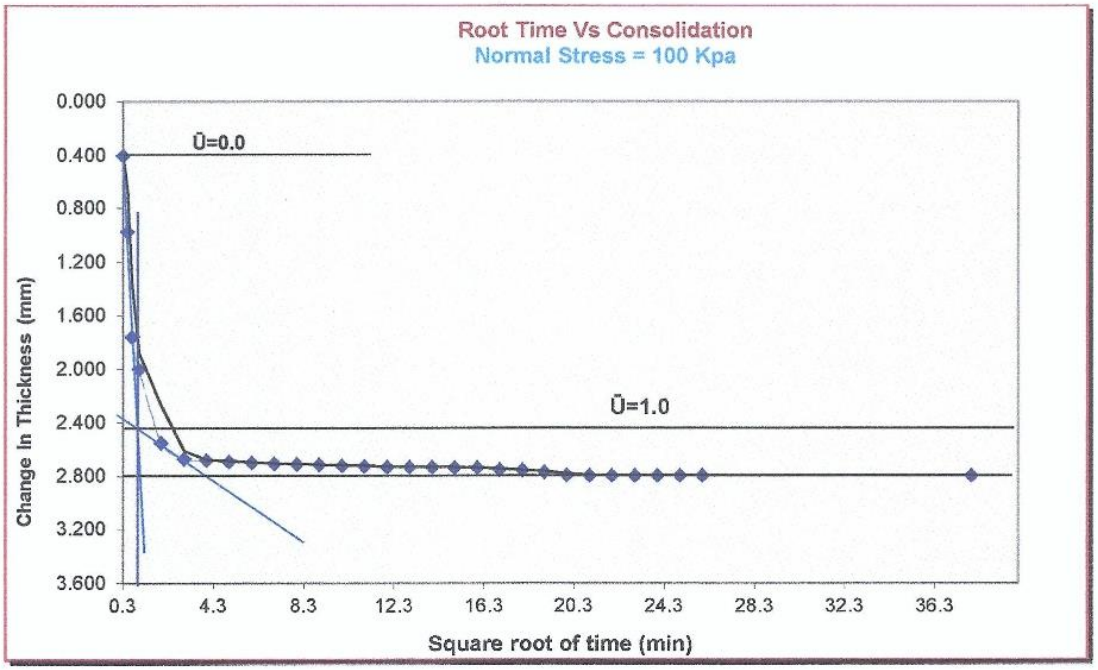
BS 1377: Part 7: 1990

TP KM 13+500 (Depth: 0.0-2.1M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5725 **Sample No.** 5725

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-2.1M **Date Tested:** 30-11-21



Deformation (mm)	2.795
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.81
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	2.450
Rate of displacement mm/min	0.238165
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.2854286

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

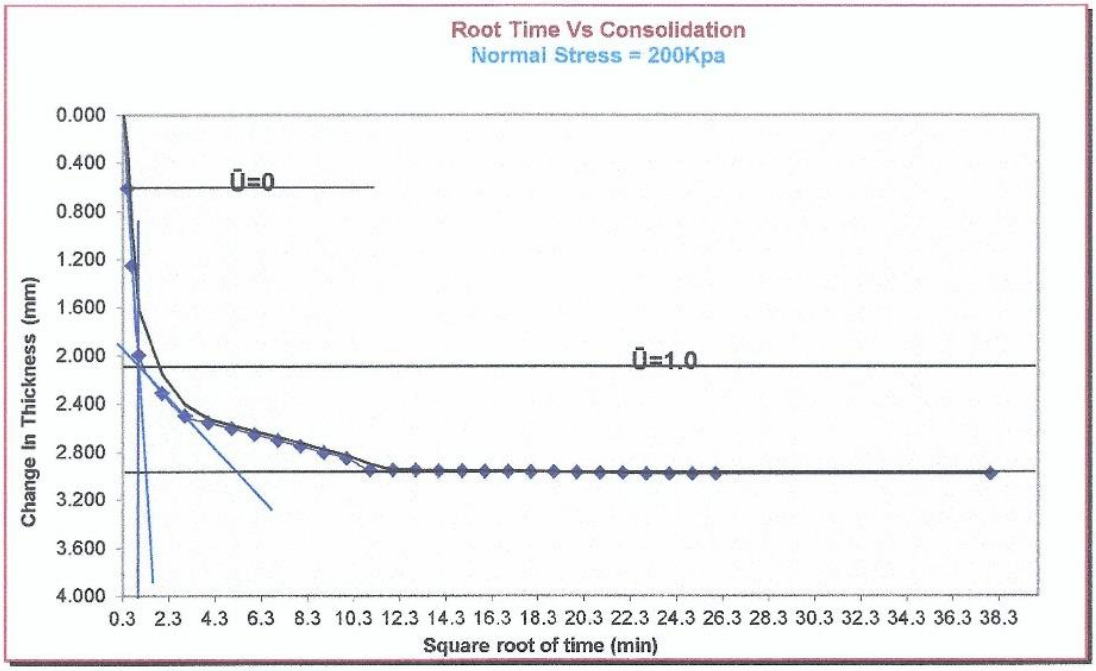
BS 1377: Part 7: 1990

TP KM 13+500 (Depth: 0.0-2.1M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5725 **Sample No.** 5725

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-2.1M **Date Tested:** 30-11-21



Deformation (mm)	2.980
From graph $\sqrt{t_{100}}$	0.95
t_{100} (min)	0.9025
$t_f = 12.7 \times t_{100}$	11.46175
Estimated displacement at Failure (mm)	2.970
Rate of displacement mm/min	0.2591227
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.2716068

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

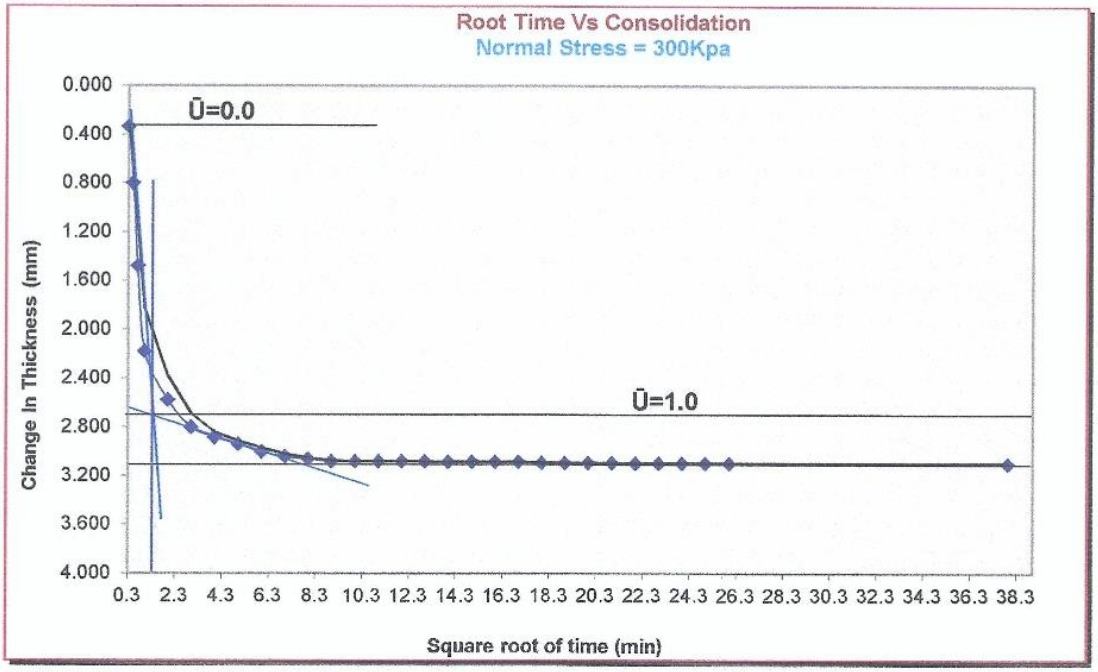
BS 1377: Part 7: 1990

TP KM 13+500 (Depth: 0.0-2.1M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5725 **Sample No.** 5725

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-2.1M **Date Tested:** 30-11-21



Deformation (mm)	3.100
From graph $\sqrt{t_{100}}$	1.30
t_{100} (min)	1.690
$t_f = 12.7 \times t_{100}$	21.463
Estimated displacement at Failure (mm)	2.700
Rate of displacement mm/min	0.1257979
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.2626413

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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info@danellilab.com
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SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

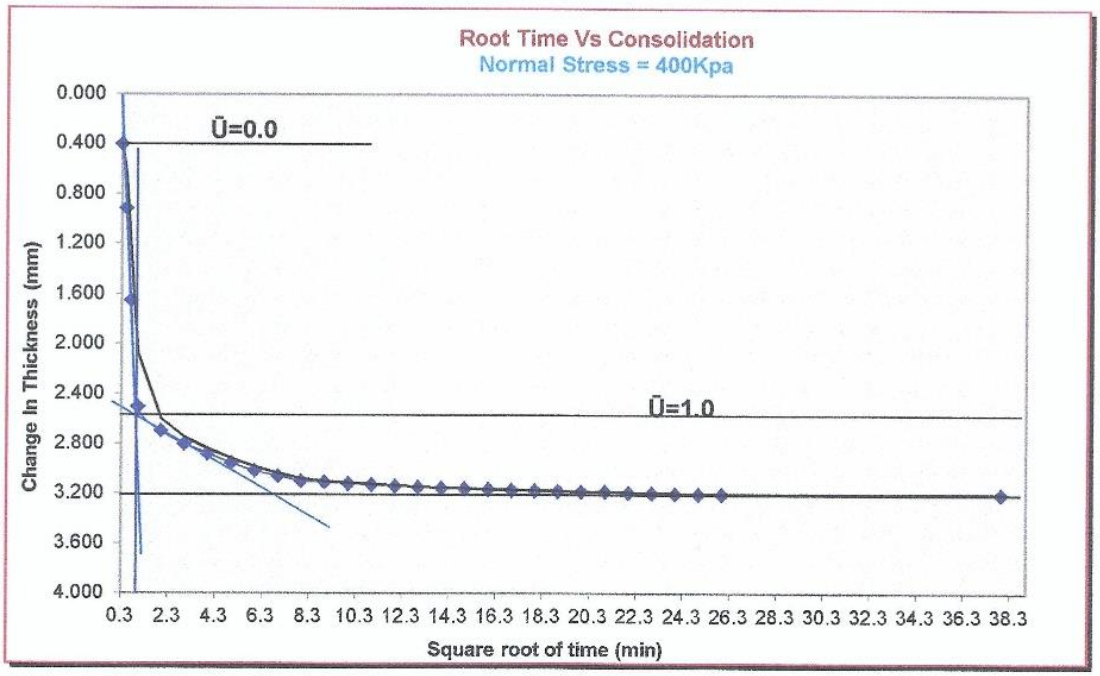
BS 1377: Part 7: 1990

TP KM 13+500 (Depth: 0.0-2.1M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5725 **Sample No.** 5725

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-2.1M **Date Tested:** 30-11-21



Deformation (mm)	3.205
From graph $\sqrt{t_{100}}$	0.92
t_{100} (min)	0.8464
$t_f = 12.7 \times t_{100}$	10.74928
Estimated displacement at Failure (mm)	2.5750
Rate of displacement mm/min	0.2395509
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.2394536

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
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REGIONAL GEOPHYSICAL SURVEY
NGUU TATU SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM14+000(0.3-0.9M)

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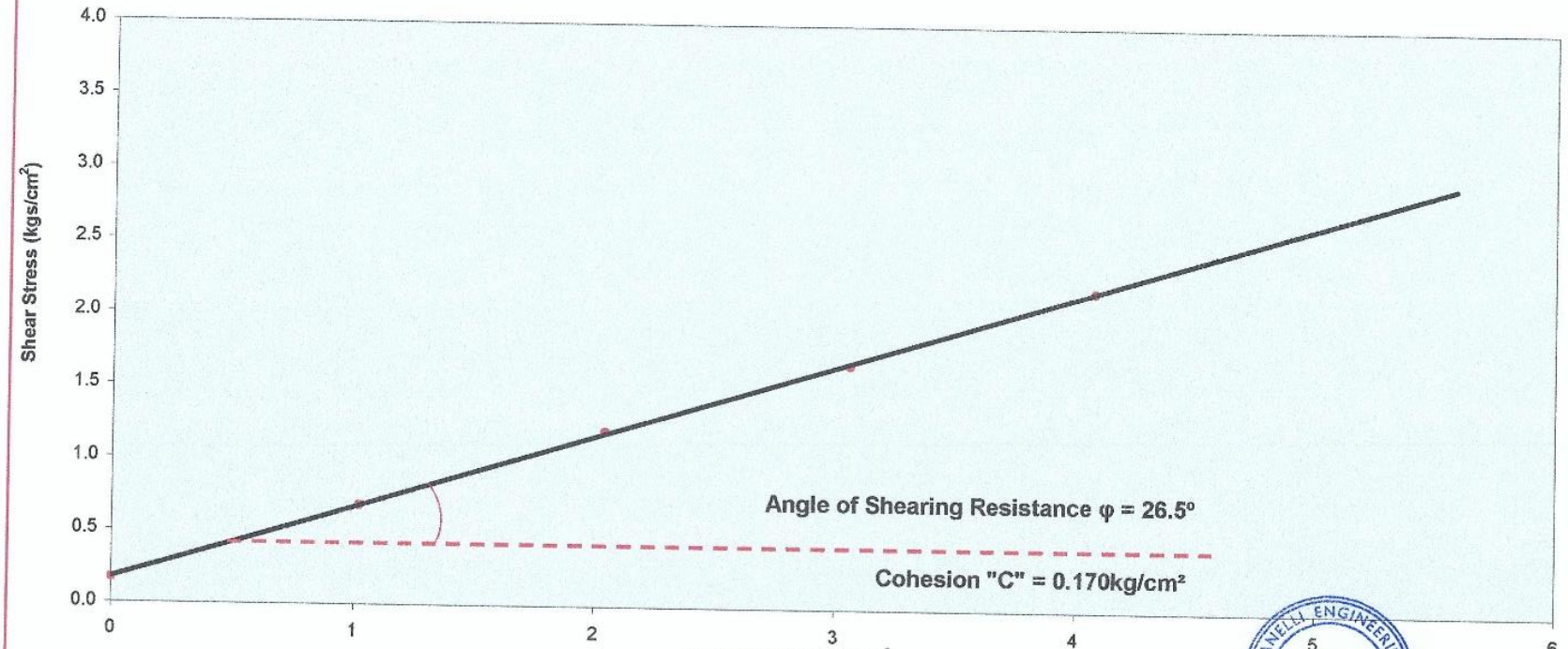

Tested by: KEVIN
Date Tested: 01-12-21
Checked by: _____

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Email: danellilab3@gmail.com
info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

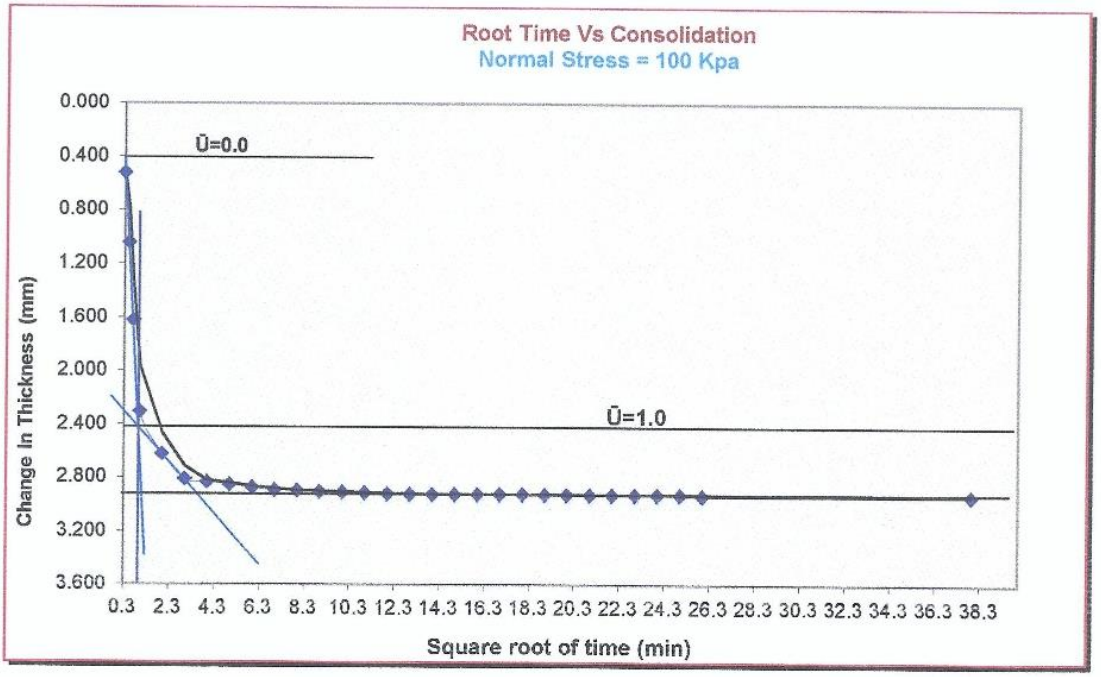
BS 1377: Part 7: 1990

TP KM 14+000 (Depth: 0.3-0.9M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5726 **Sample No.** 5726

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-0.9M **Date Tested:** 01-12-21



Deformation (mm)	2.930
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.81
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	2.425
Rate of displacement mm/min	0.237344
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.196280

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

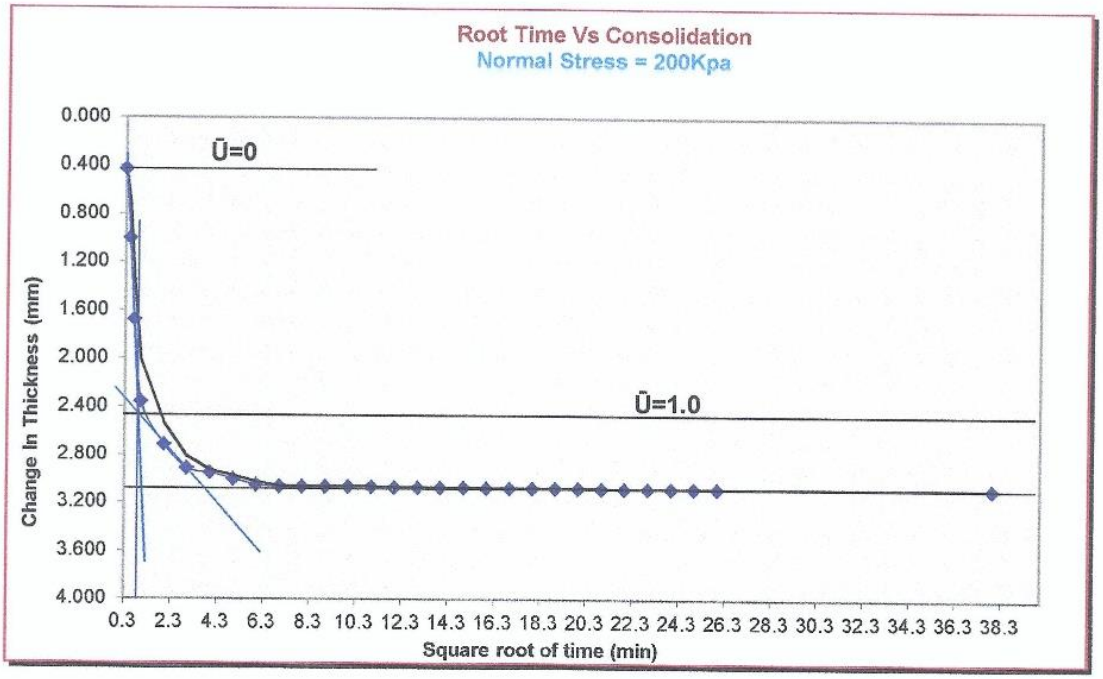
BS 1377: Part 7: 1990

TP KM 14+000 (Depth: 0.3-0.9M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5726 **Sample No.** 5726

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-0.9M **Date Tested:** 01-12-21



Deformation (mm)	3.080
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.81
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	2.475
Rate of displacement mm/min	0.2405949
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.18579798

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

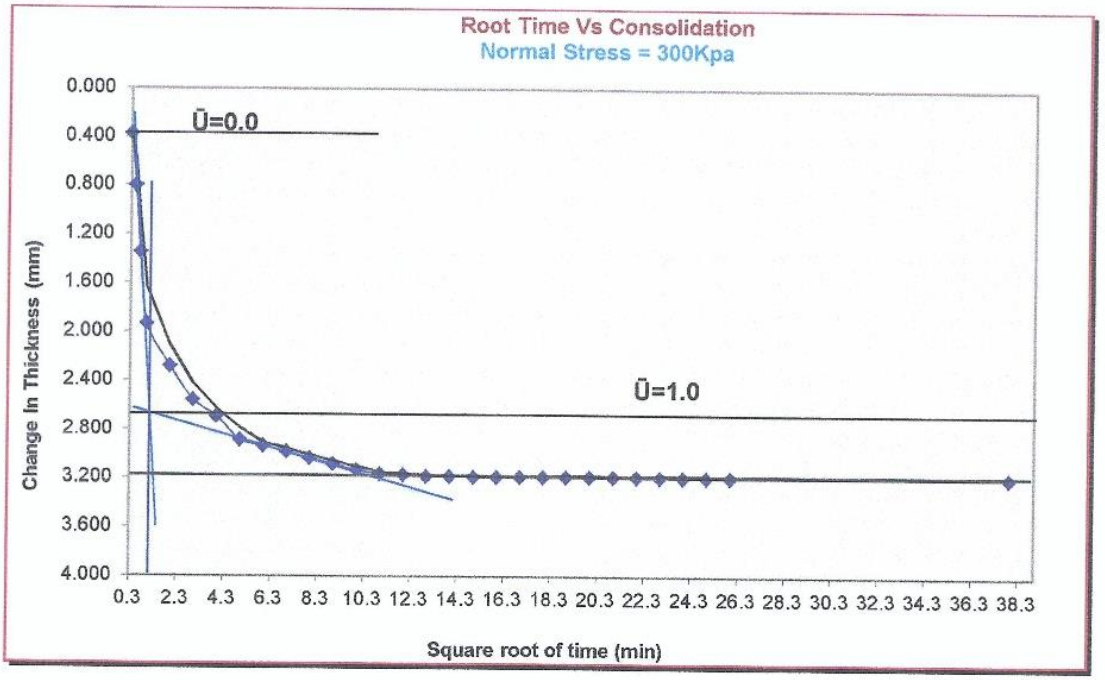
BS 1377: Part 7: 1990

TP KM 14+000 (Depth: 0.3-0.9M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5726 **Sample No.** 5726

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-0.9M **Date Tested:** 01-12-21



Deformation (mm)	3.190
From graph $\sqrt{t_{100}}$	1.20
t_{100} (min)	1.440
$t_f = 12.7 \times t_{100}$	18.288
Estimated displacement at Failure (mm)	2.6750
Rate of displacement mm/min	0.1462708
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.1780591

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

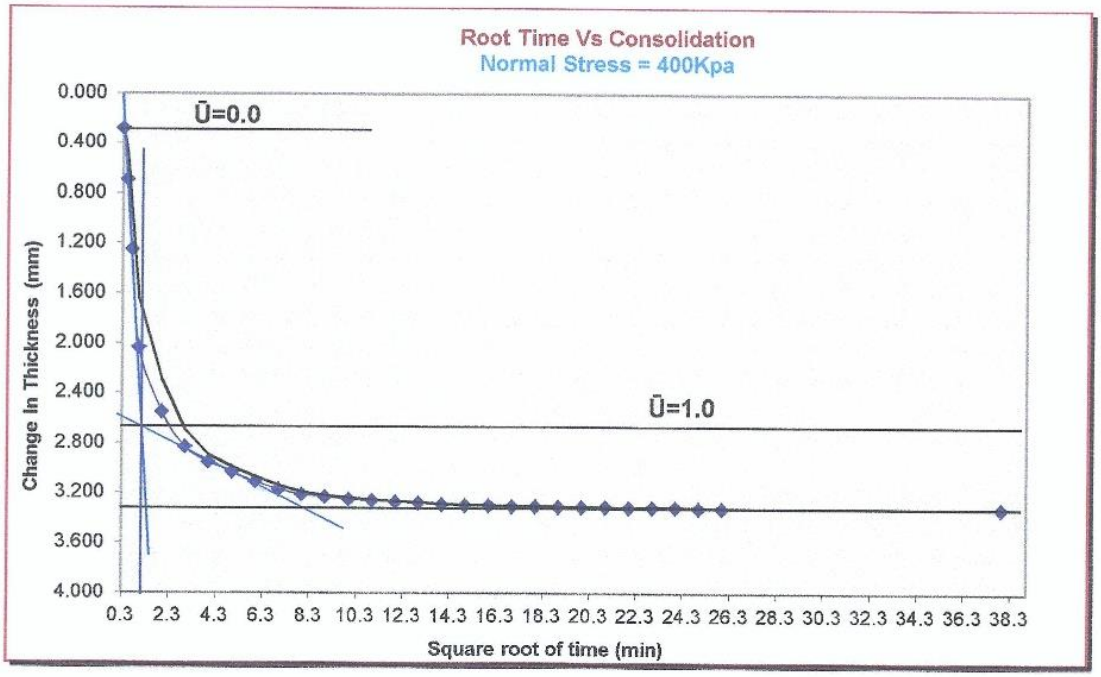
BS 1377: Part 7: 1990

TP KM 14+000 (Depth: 0.3-0.9M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5726 **Sample No.** 5726

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-0.9M **Date Tested:** 01-12-21



Deformation (mm)	3.320
From graph $\sqrt{t_{100}}$	1.15
t_{100} (min)	1.3225
$t_f = 12.7 \times t_{100}$	16.79575
Estimated displacement at Failure (mm)	2.670
Rate of displacement mm/min	0.1589689
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.1689486

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
NGUU TATU SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM16+500(0.5-1.4M)

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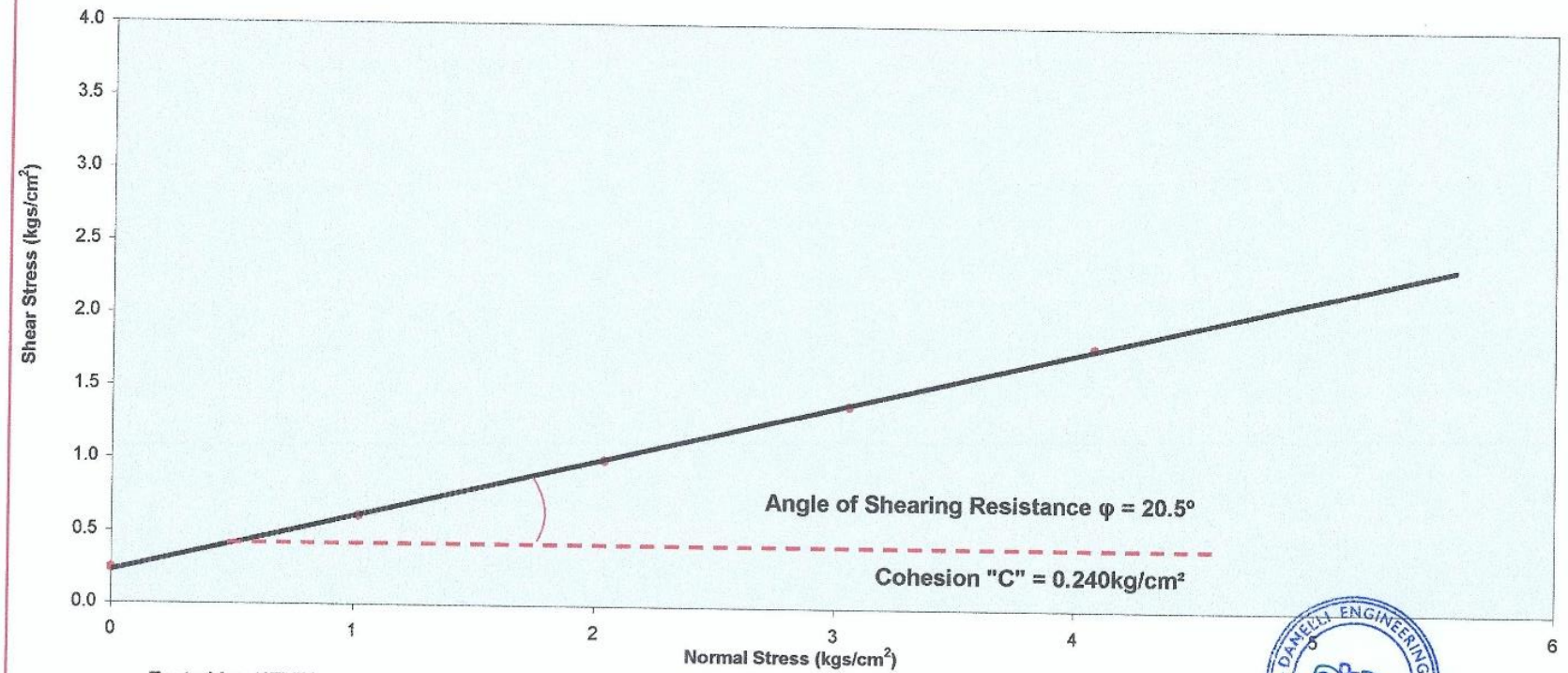

Tested by: KEVIN
Date Tested: 02-12-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

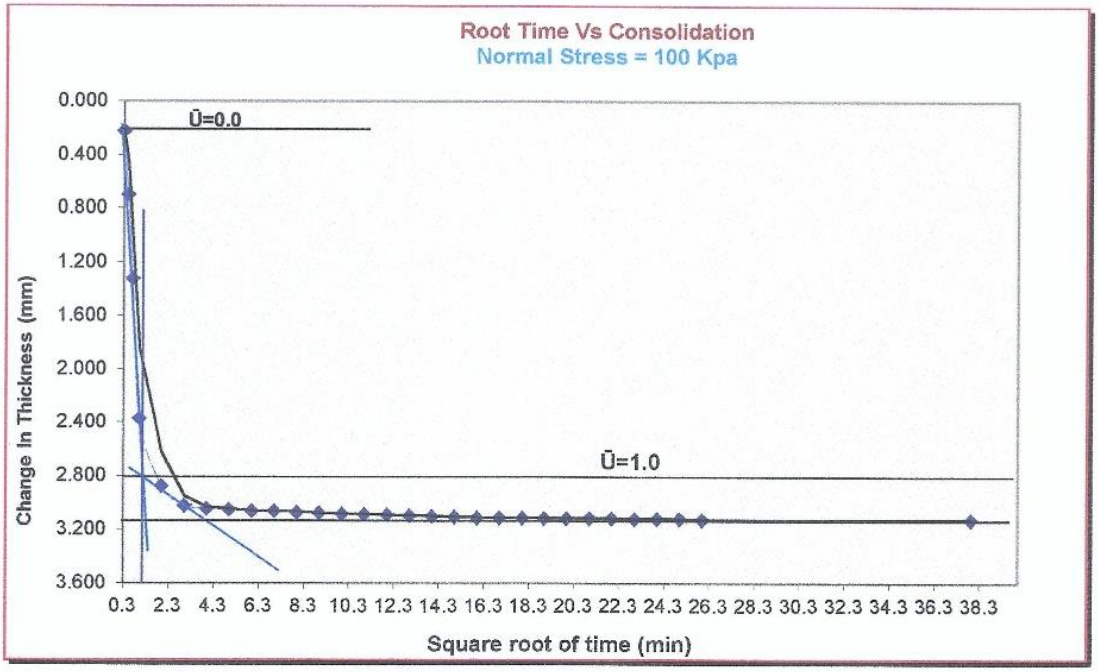
BS 1377: Part 7: 1990

TP KM 16+500 (Depth: 0.5-1.4M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5731 **Sample No.** 5731

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.4M **Date Tested:** 02-12-21



Deformation (mm)	3.125
From graph $\sqrt{t_{100}}$	1.15
t_{100} (min)	1.3225
$t_f = 12.7 \times t_{100}$	16.79575
Estimated displacement at Failure (mm)	2.810
Rate of displacement mm/min	0.167304
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.421743

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

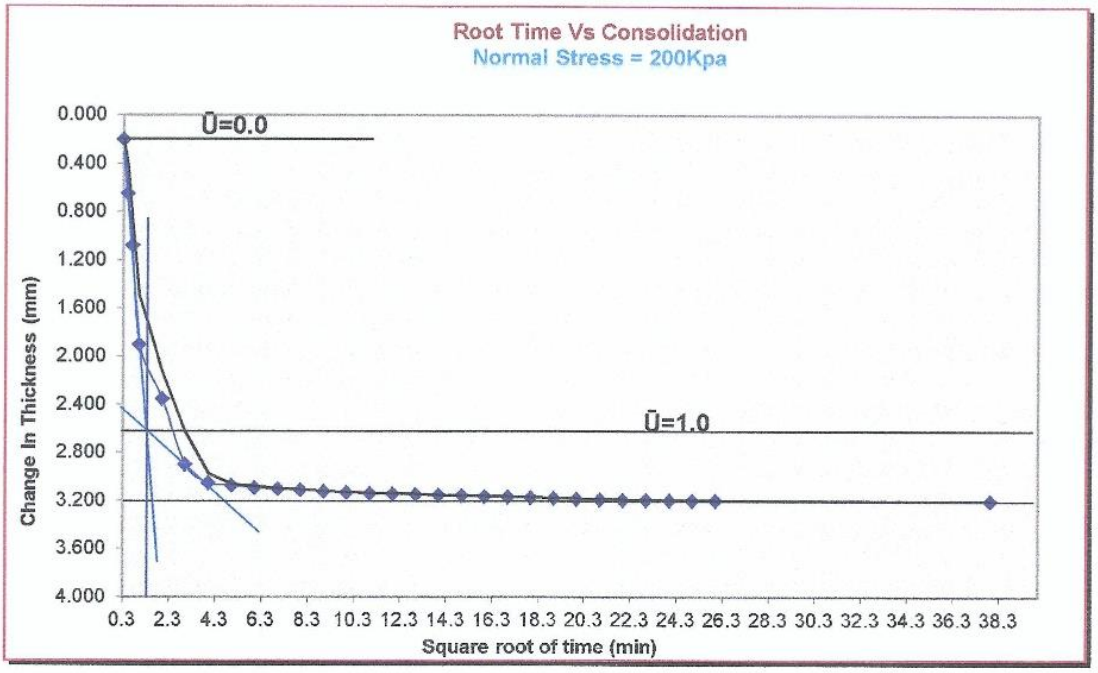
BS 1377: Part 7: 1990

TP KM 16+500 (Depth: 0.5-1.4M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5731 **Sample No.** 5731

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.4M **Date Tested:** 02-12-21



Deformation (mm)	3.200
From graph $\sqrt{t_{100}}$	1.40
t_{100} (min)	1.960
$t_f = 12.7 \times t_{100}$	24.892
Estimated displacement at Failure (mm)	2.675
Rate of displacement mm/min	0.1074642
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.4154244

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
info@danellilab.com
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Mob: +254(0) 726 721 935

Head Office & Laboratories:
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

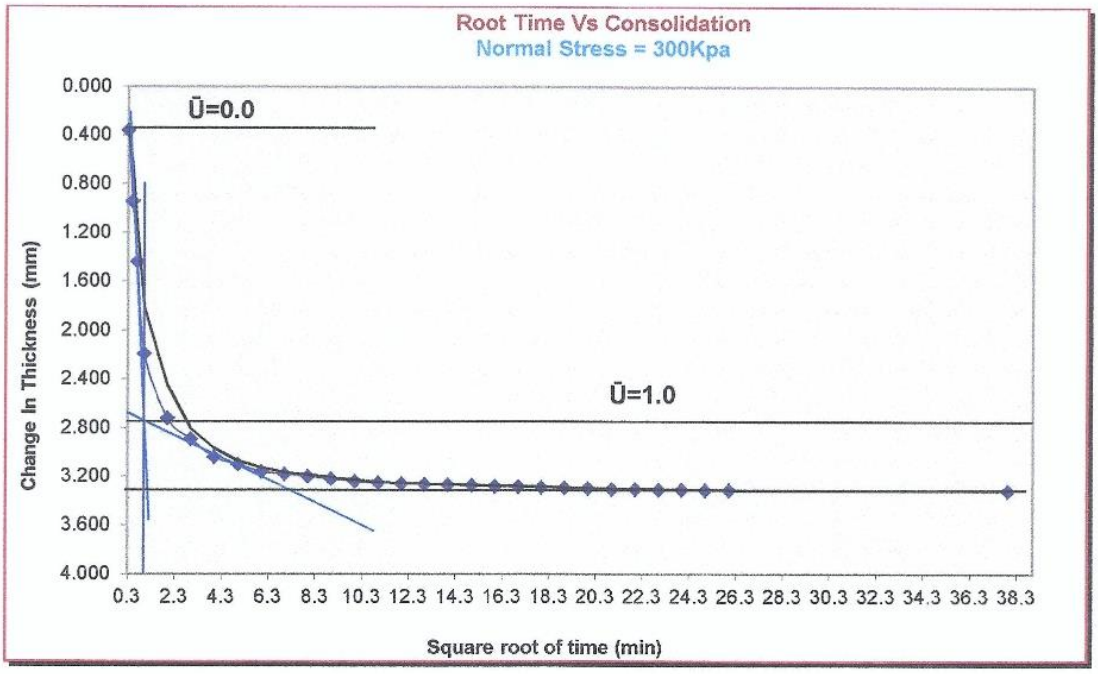
BS 1377: Part 7: 1990

TP KM 16+500 (Depth: 0.5-1.4M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5731 **Sample No.** 5731

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.4M **Date Tested:** 02-12-21



Deformation (mm)	3.320
From graph $\sqrt{t_{100}}$	1.05
t_{100} (min)	1.1025
$t_f = 12.7 \times t_{100}$	14.00175
Estimated displacement at Failure (mm)	2.750
Rate of displacement mm/min	0.1964040
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.4053142

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

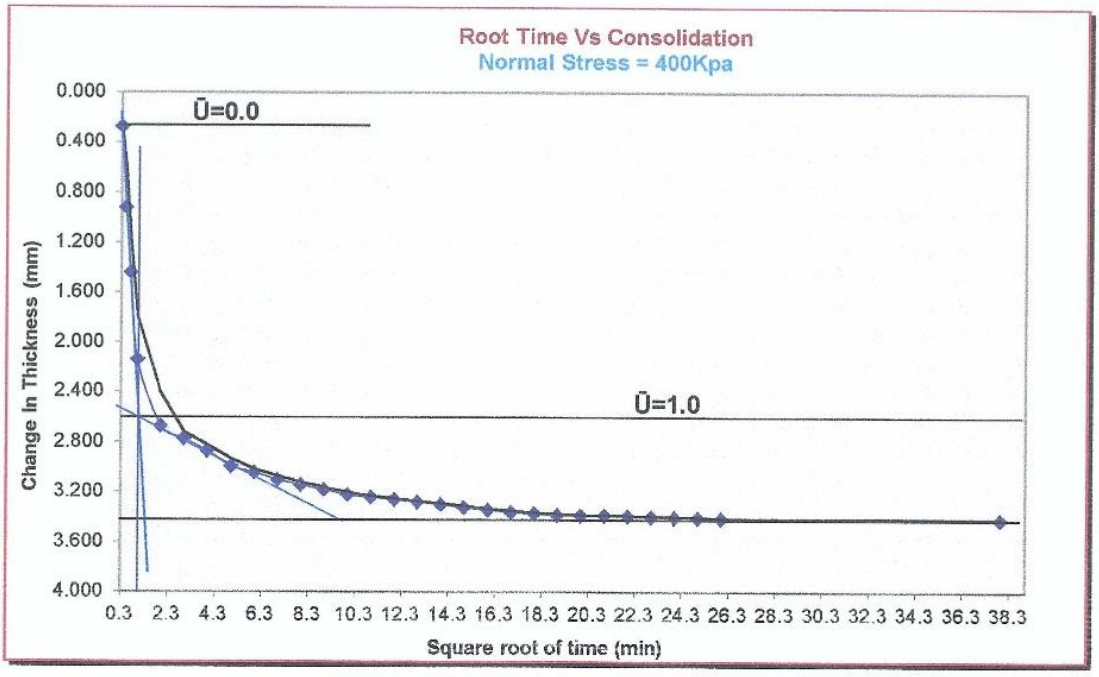
BS 1377: Part 7: 1990

TP KM 16+500 (Depth: 0.5-1.4M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5731 **Sample No.** 5731

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.5-1.4M **Date Tested:** 02-12-21



Deformation (mm)	3.415
From graph $\sqrt{t_{100}}$	1.08
t_{100} (min)	1.1664
$t_f = 12.7 \times t_{100}$	14.81328
Estimated displacement at Failure (mm)	2.610
Rate of displacement mm/min	0.1761933
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.3973103

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
NGUU TATU SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM18+000(0.4-1.2M)

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Pili Trade Centre,
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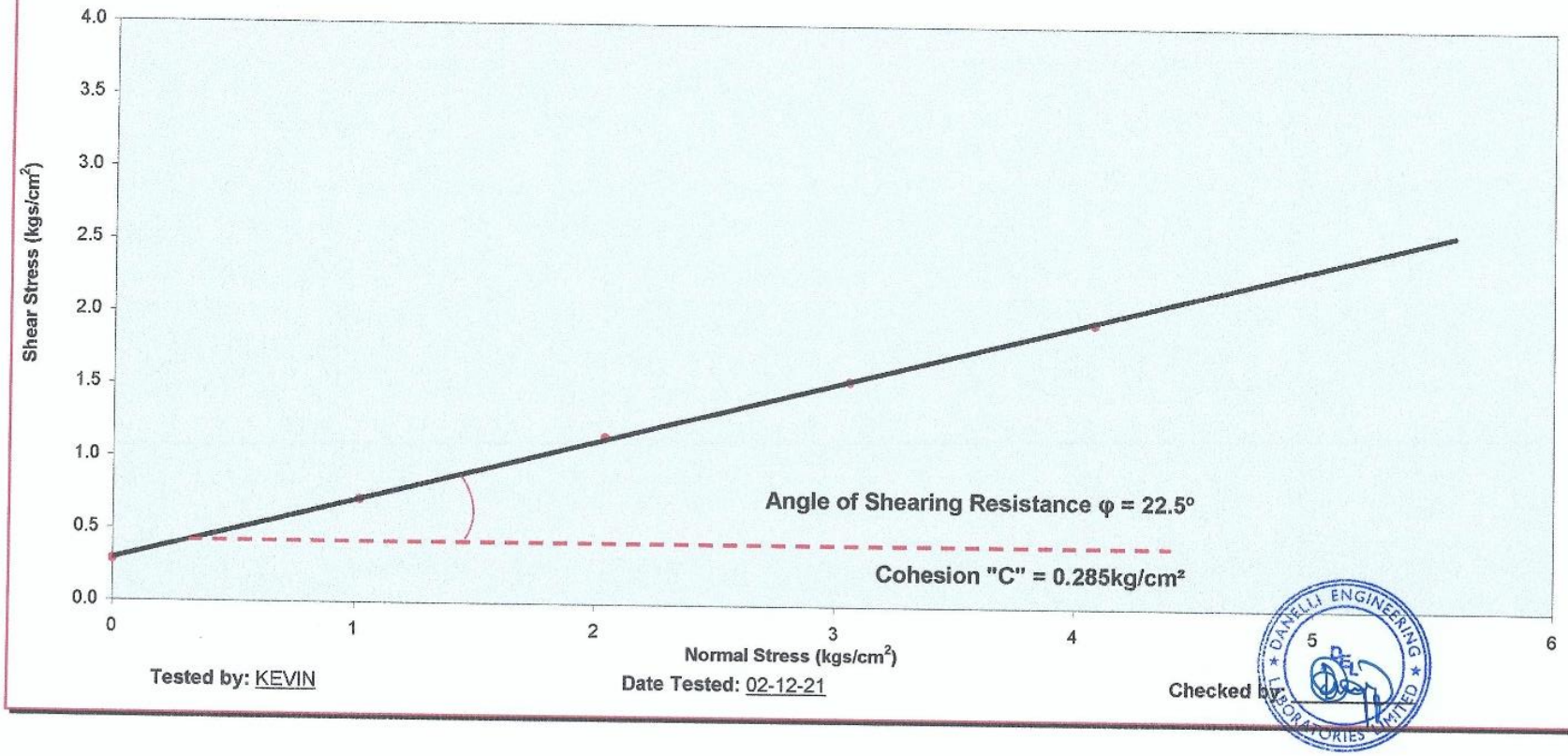

Tested by: KEVIN
Date Tested: 02-12-21
Checked by:

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

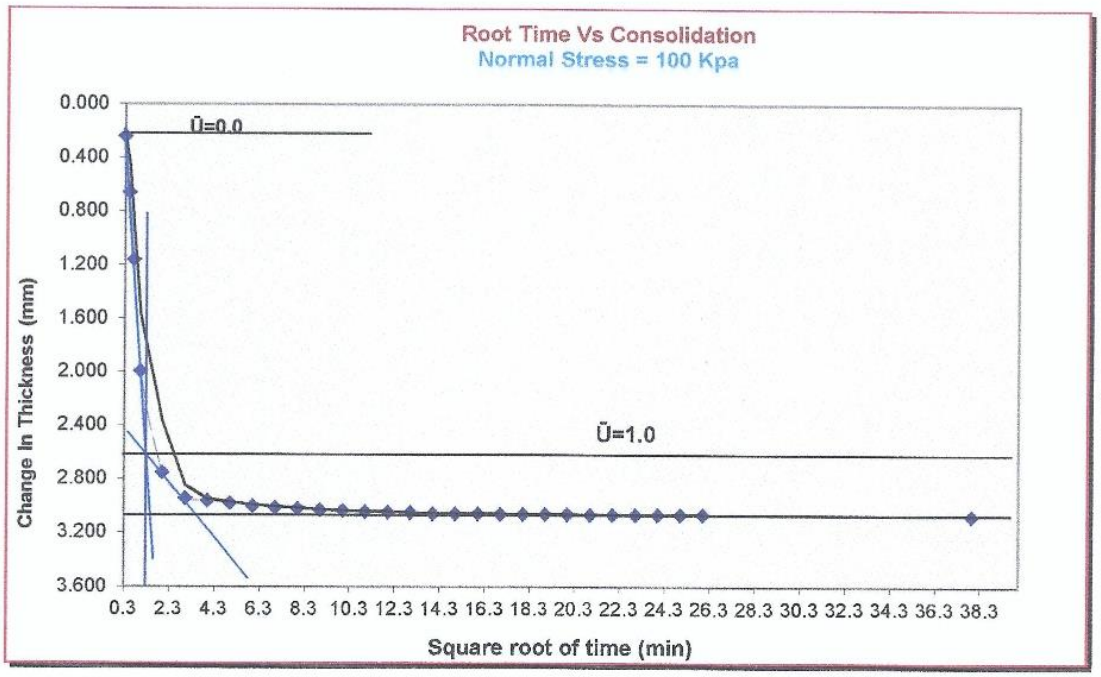
BS 1377: Part 7: 1990

TP KM 18+000 (Depth: 0.4-1.2M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5734 **Sample No.** 5734

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.2M **Date Tested:** 02-12-21



Deformation (mm)	3.070
From graph $\sqrt{t_{100}}$	1.20
t_{100} (min)	1.440
$t_f = 12.7 \times t_{100}$	18.288
Estimated displacement at Failure (mm)	2.625
Rate of displacement mm/min	0.14353675
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.47217355

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

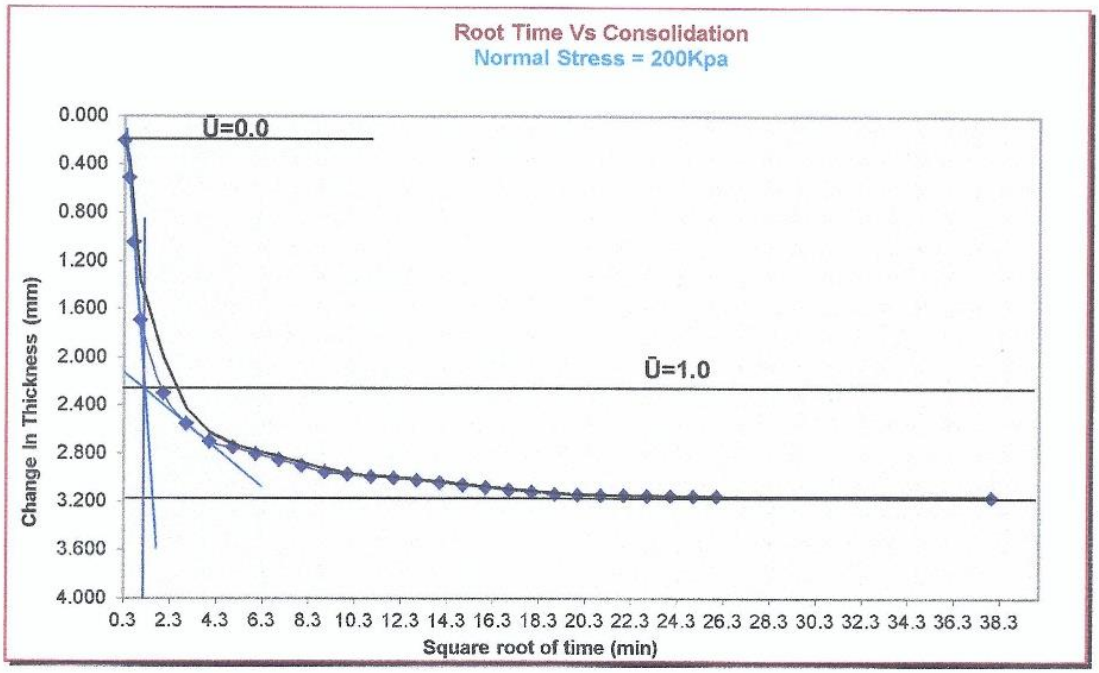
BS 1377: Part 7: 1990

TP KM 18+000 (Depth: 0.4-1.2M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5734 **Sample No.** 5734

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.2M **Date Tested:** 02-12-21



Deformation (mm)	3.160
From graph $\sqrt{t_{100}}$	1.180
t_{100} (min)	1.3924
$t_f = 12.7 \times t_{100}$	17.68348
Estimated displacement at Failure (mm)	2.270
Rate of displacement mm/min	0.1283684
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.4652170

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

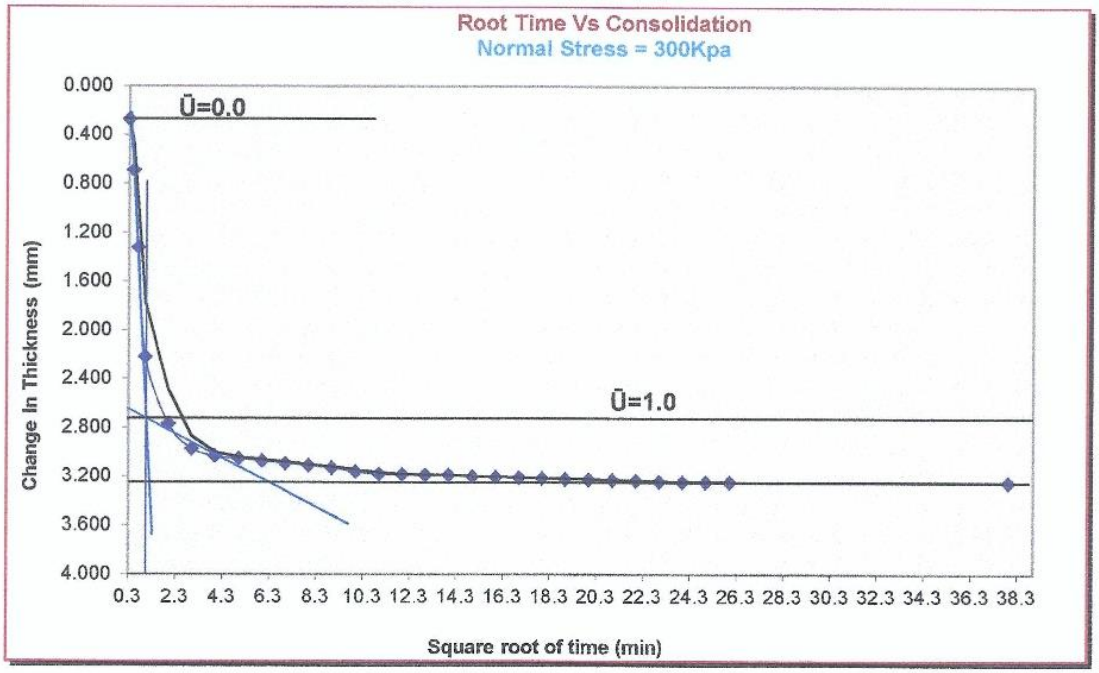
BS 1377: Part 7: 1990

TP KM 18+000 (Depth: 0.4-1.2M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5734 **Sample No.** 5734

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.2M **Date Tested:** 02-12-21



Deformation (mm)	3.250
From graph $\sqrt{t_{100}}$	1.10
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.725
Rate of displacement mm/min	0.1773280
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.4565214

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

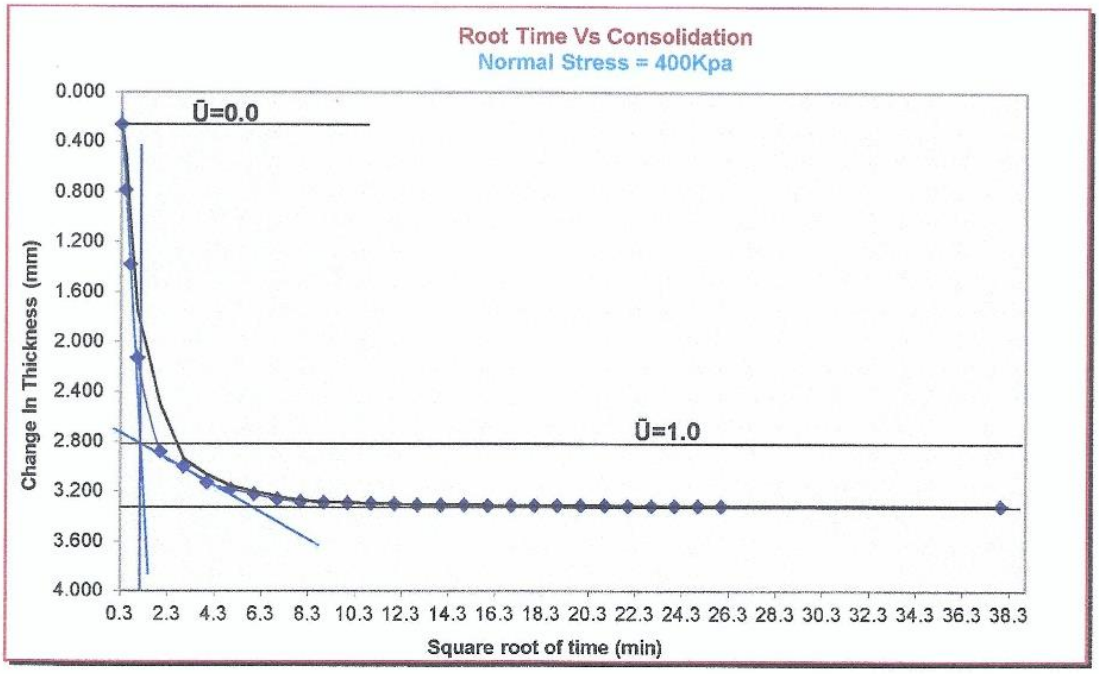
BS 1377: Part 7: 1990

TP KM 18+000 (Depth: 0.4-1.2M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-NGUUTATU/5734 **Sample No.** 5734

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4-1.2M **Date Tested:** 02-12-21



Deformation (mm)	3.315
From graph $\sqrt{t_{100}}$	1.15
t_{100} (min)	1.3225
$t_f = 12.7 \times t_{100}$	16.79575
Estimated displacement at Failure (mm)	2.815
Rate of displacement mm/min	0.167602
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.4508692

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM15+000

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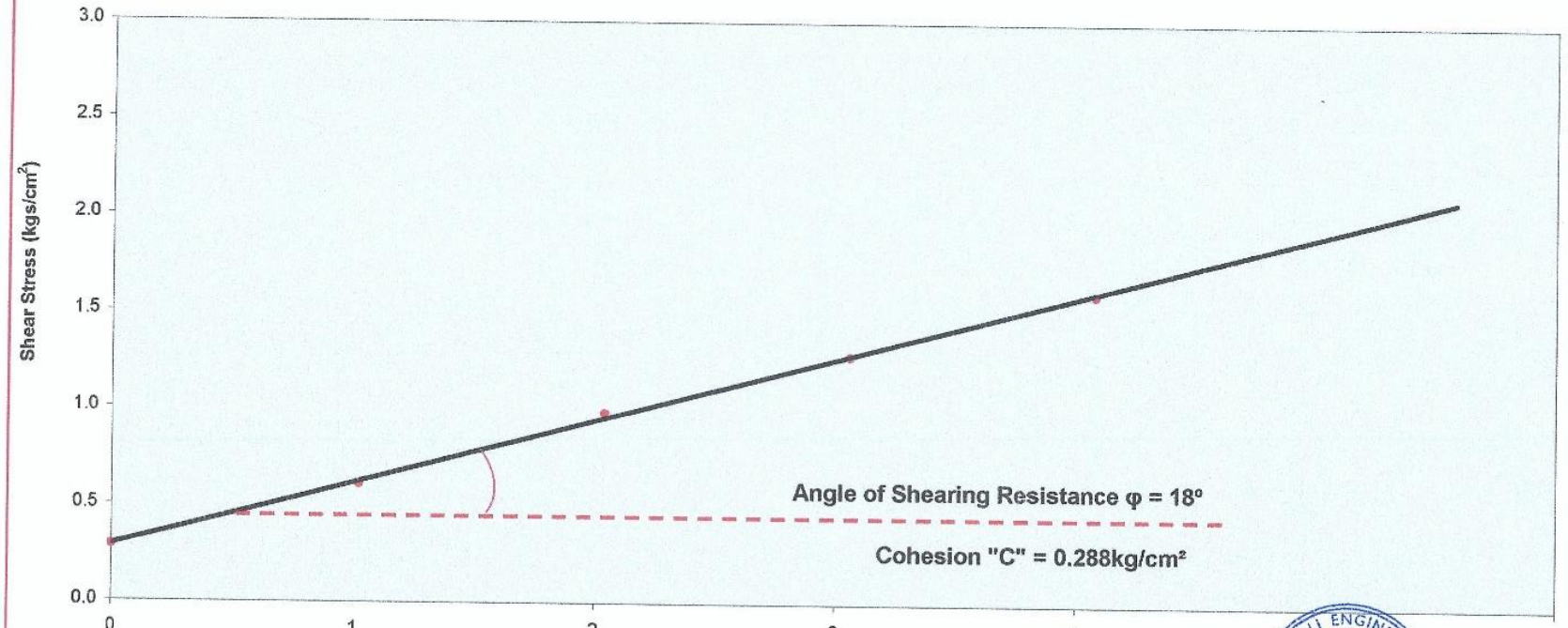

Tested by: KEVIN
Date Tested: 24-11-21
Checked by:

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DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

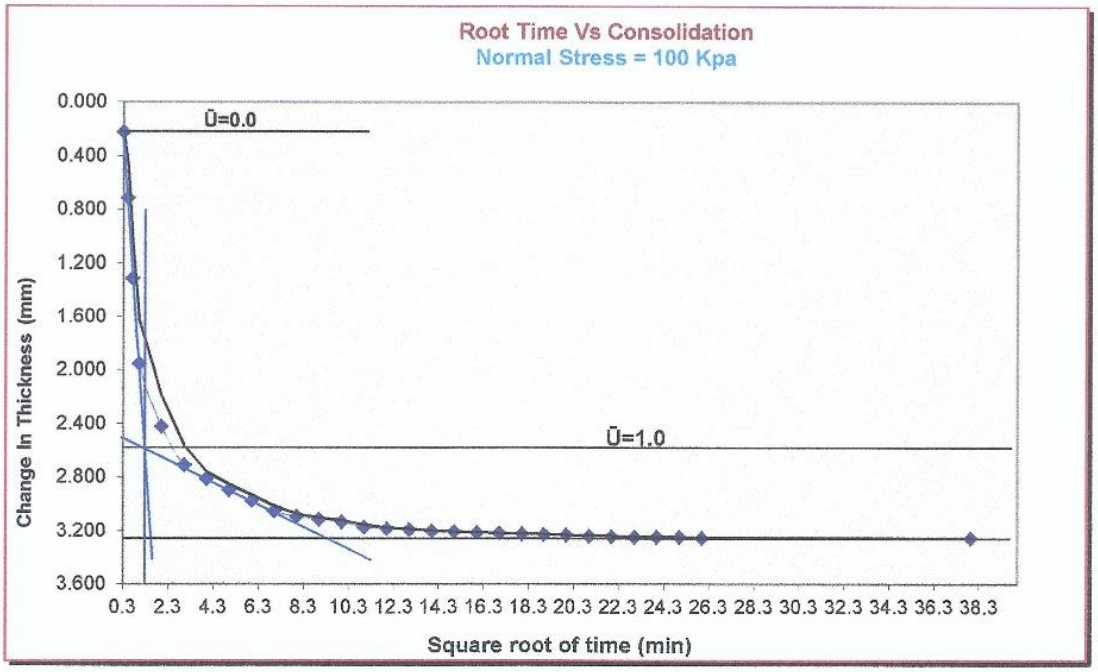
BS 1377: Part 7: 1990

TP KM 15+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4578 **Sample No.** 4578

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 24-11-21



Deformation (mm)	3.250
From graph $\sqrt{t_{100}}$	1.150
t_{100} (min)	1.3225
$t_f = 12.7 \times t_{100}$	16.79575
Estimated displacement at Failure (mm)	2.590
Rate of displacement mm/min	0.1542057
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.4048393

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Email: danellilab3@gmail.com
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Head Office & Laboratories:
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

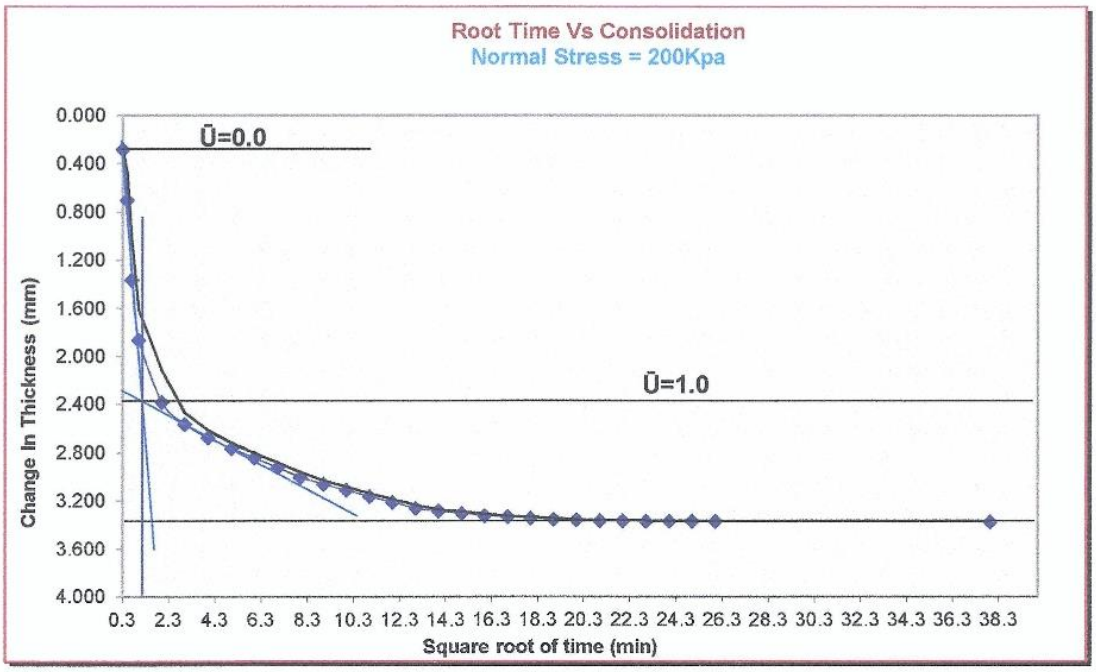
BS 1377: Part 7: 1990

TP KM 15+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4578 **Sample No.** 4578

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 24-11-21



Deformation (mm)	3.370
From graph $\sqrt{t_{100}}$	1.10
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.375
Rate of displacement mm/min	0.1545519
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.3947747

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

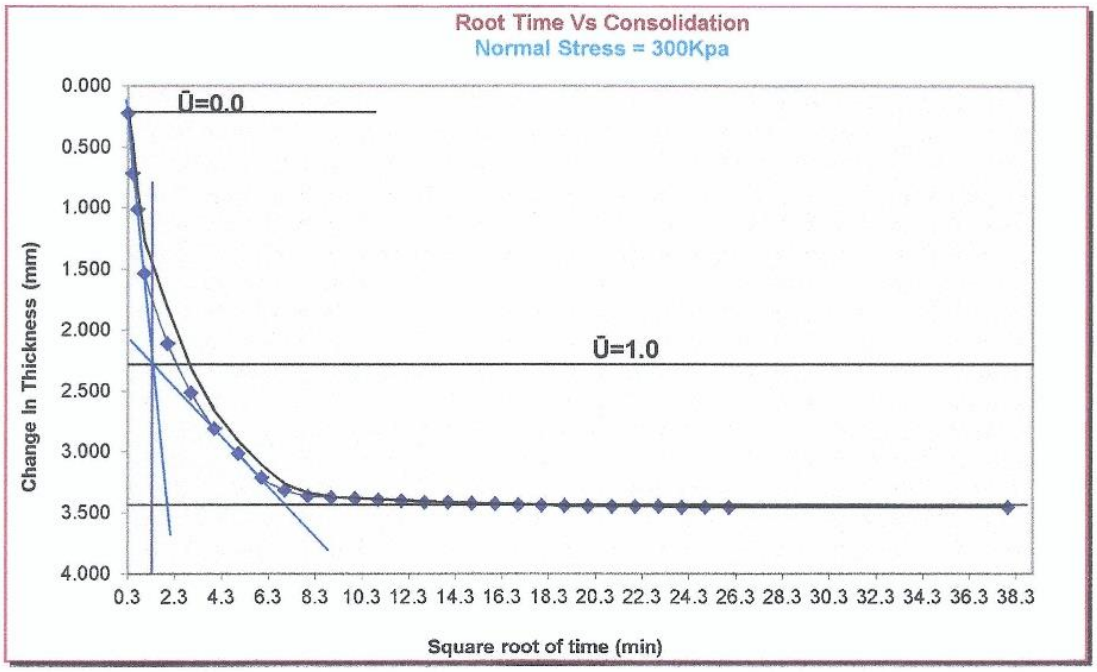
BS 1377: Part 7: 1990

TP KM 15+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4578 **Sample No.** 4578

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 24-11-21



Deformation (mm)	3.450
From graph $\sqrt{t_{100}}$	1.350
t_{100} (min)	1.8225
$t_f = 12.7 \times t_{100}$	23.14575
Estimated displacement at Failure (mm)	2.260
Rate of displacement mm/min	0.097642
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.388065

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

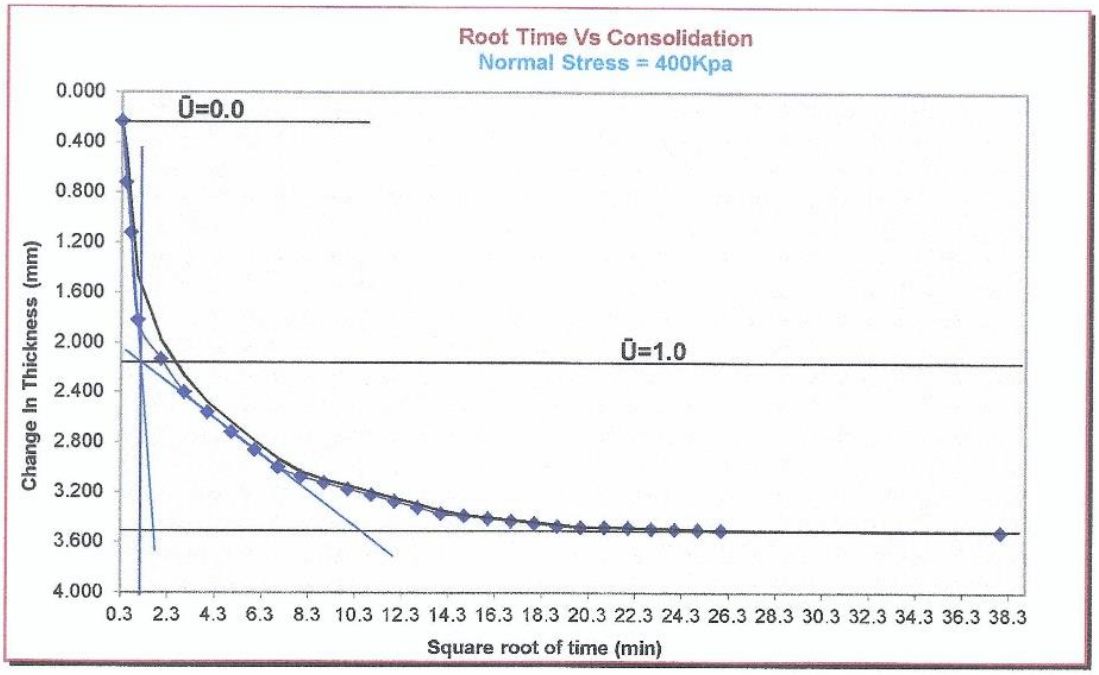
BS 1377: Part 7: 1990

TP KM 15+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4578 **Sample No.** 4578

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 24-11-21



Deformation (mm)	3.515
From graph $\sqrt{t_{100}}$	1.10
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.160
Rate of displacement mm/min	0.140561
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.3826134

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM19+000(1.3-2.0M)

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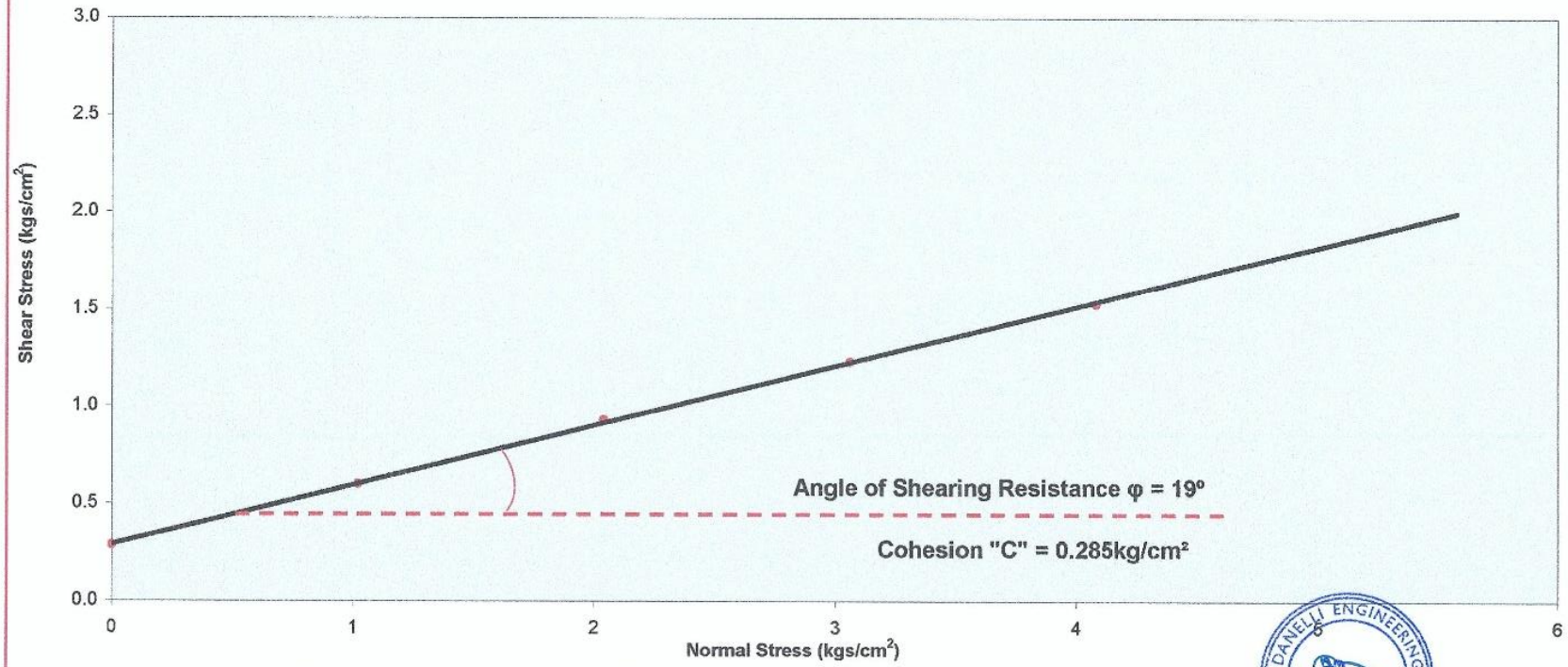

Tested by: KEVIN
Date Tested: 25-11-21
Checked by:

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

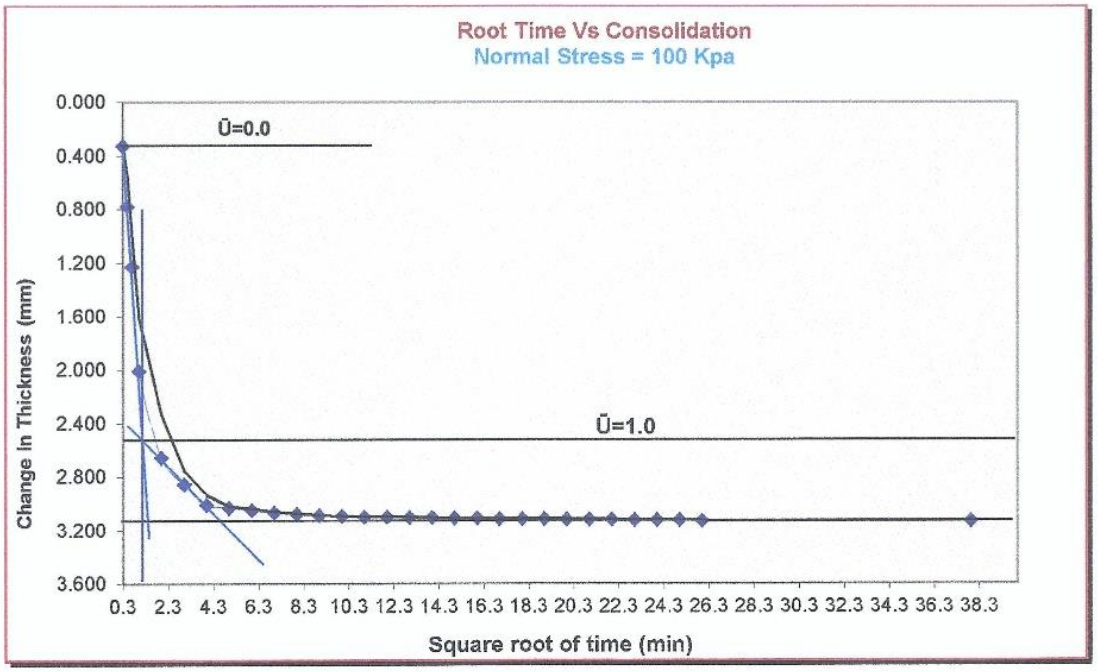
BS 1377: Part 7: 1990

TP KM 19+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4582 **Sample No.** 4582

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.3-2.0M **Date Tested:** 25-11-21



Deformation (mm)	3.125
From graph $\sqrt{t_{100}}$	1.1
t_{100} (min)	1.21
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.580
Rate of displacement mm/min	0.167892
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.313623

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

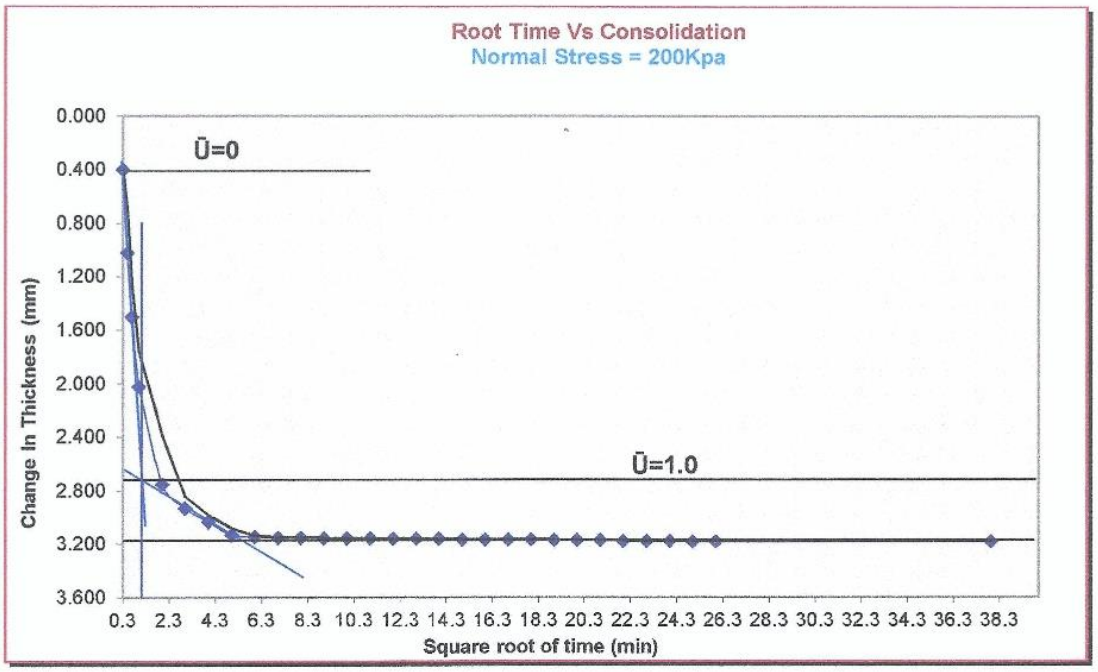
BS 1377: Part 7: 1990

TP KM 19+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4582 **Sample No.** 4582

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.3-2.0M **Date Tested:** 25-11-21



Deformation (mm)	3.180
From graph $\sqrt{t_{100}}$	1.11
t_{100} (min)	1.2321
$t_f = 12.7 \times t_{100}$	15.64767
Estimated displacement at Failure (mm)	2.720
Rate of displacement mm/min	0.173828
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.309341

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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info@danellilab.com
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Mob: +254(0) 726 721 935

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

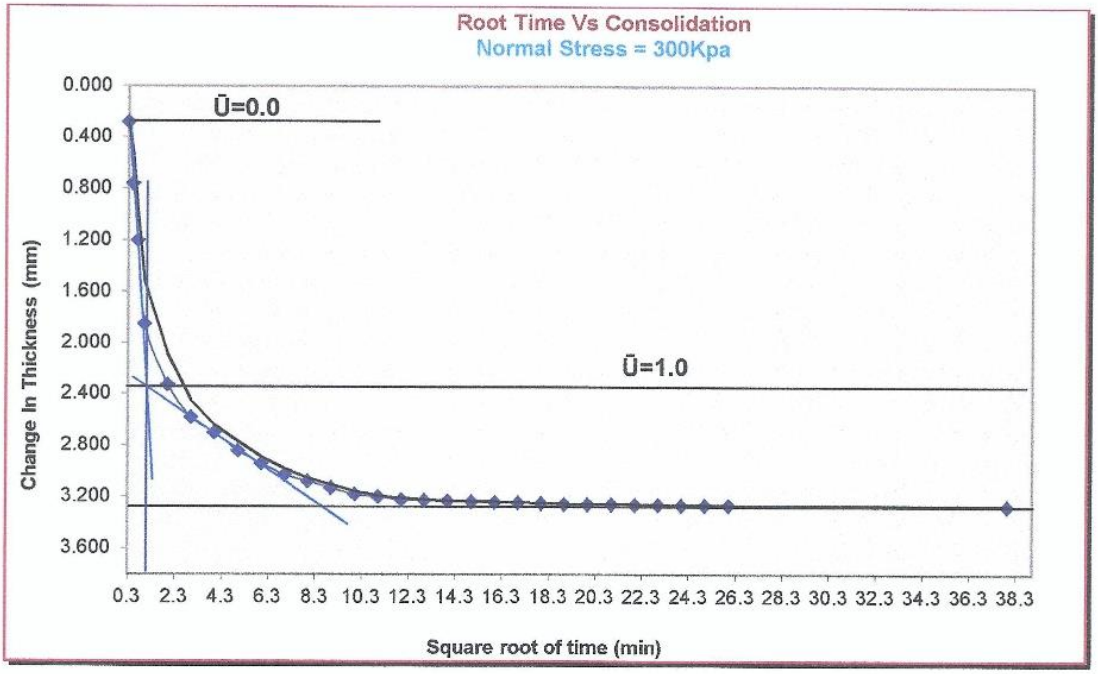
BS 1377: Part 7: 1990

TP KM 19+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4582 **Sample No.** 4582

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.3-2.0M **Date Tested:** 25-11-21



Deformation (mm)	3.270
From graph $\sqrt{t_{100}}$	1.11
t_{100} (min)	1.2321
$t_f = 12.7 \times t_{100}$	15.64767
Estimated displacement at Failure (mm)	2.35
Rate of displacement mm/min	0.150182
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.3023351

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Web site: www.danellilab.com
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

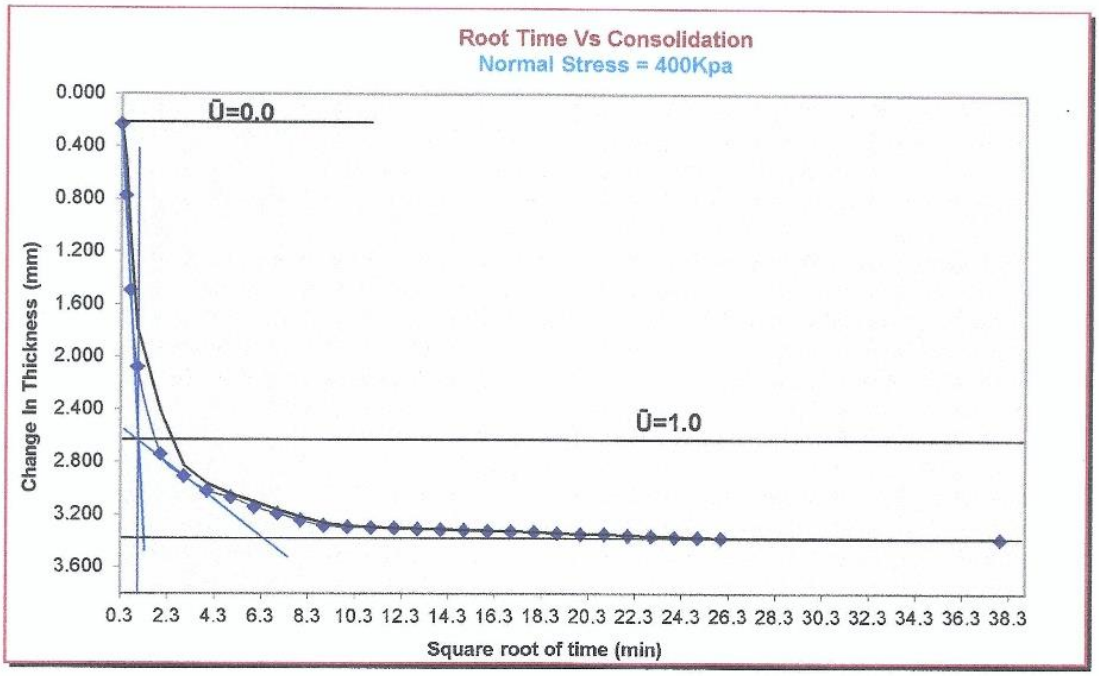
BS 1377: Part 7: 1990

TP KM 19+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4582 **Sample No.** 4582

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.3-2.0M **Date Tested:** 25-11-21



Deformation (mm)	3.38
From graph $\sqrt{t_{100}}$	1.0
t_{100} (min)	1.0
$t_f = 12.7 \times t_{100}$	12.7
Estimated displacement at Failure (mm)	2.64
Rate of displacement mm/min	0.207874
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.293772

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM20+500(1.5-2.0M)

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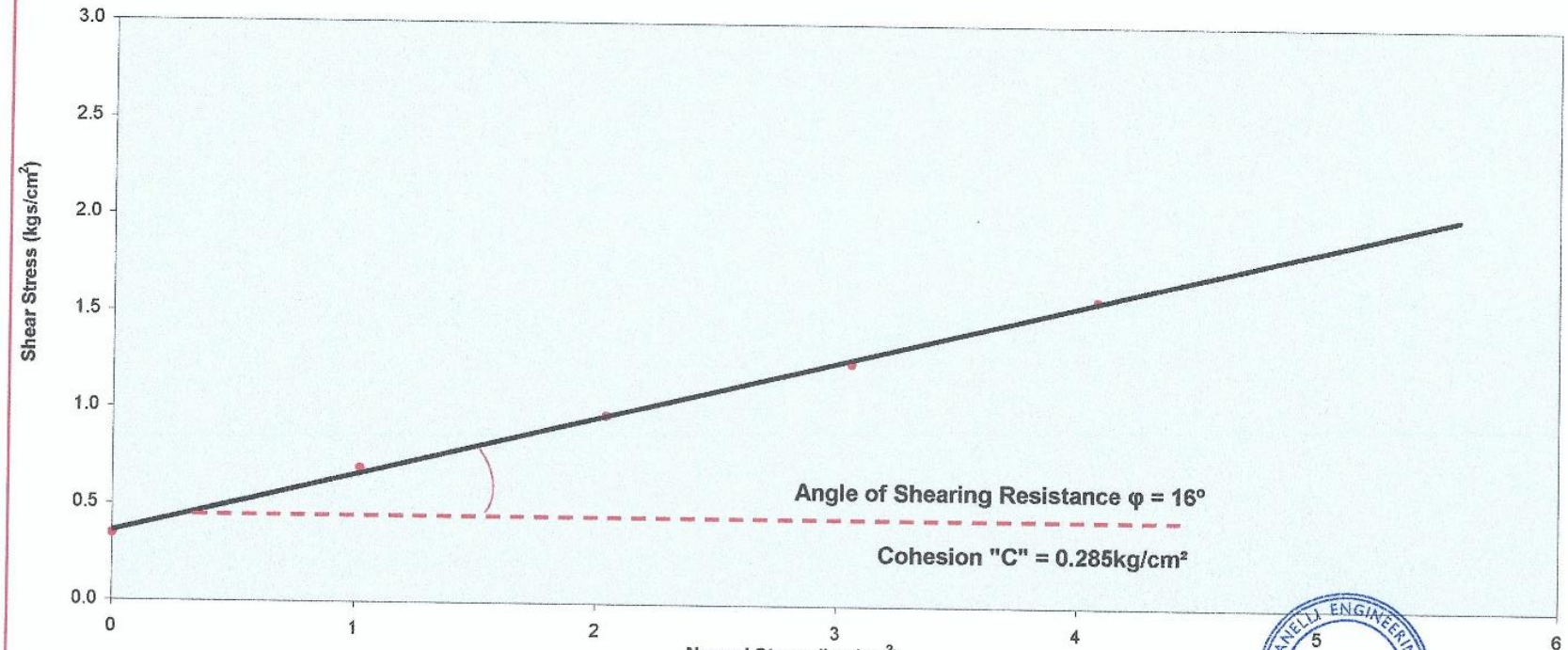

Tested by: KEVIN
Date Tested: 25-11-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

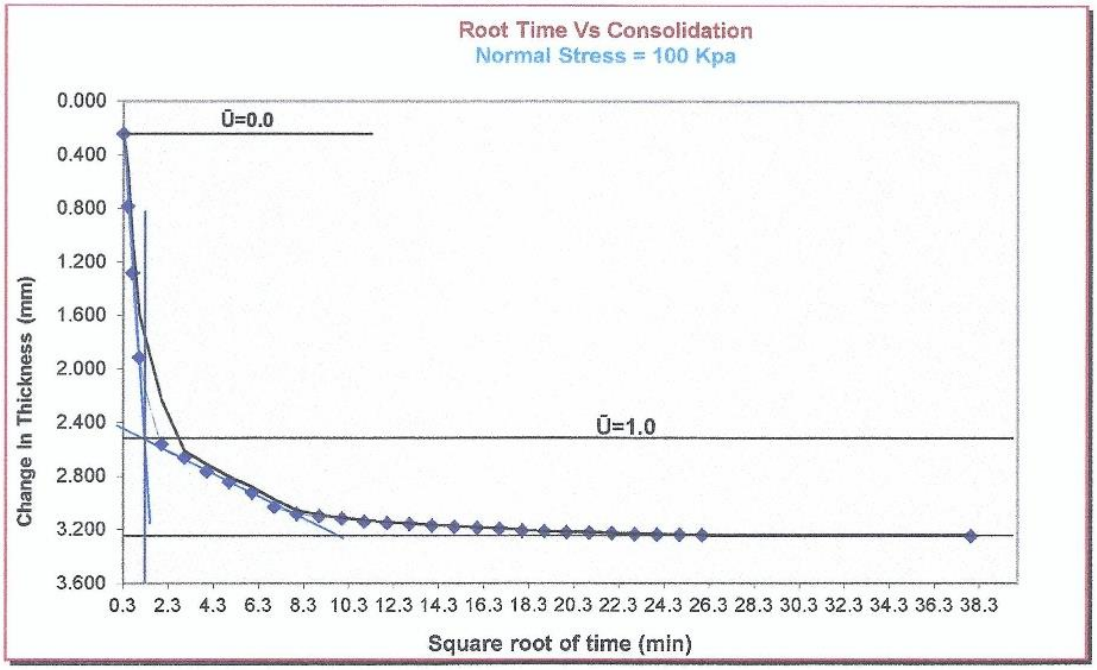
BS 1377: Part 7: 1990

TP KM 20+500 (Depth: 1.5-2.0M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4587 **Sample No.** 4587

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.5-2.0M **Date Tested:** 25-11-21



Deformation (mm)	3.25
From graph $\sqrt{t_{100}}$	1.2
t_{100} (min)	1.44
$t_f = 12.7 \times t_{100}$	18.288
Estimated displacement at Failure (mm)	2.525
Rate of displacement mm/min	0.138069
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.352487

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Mobil Plaza 00620
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

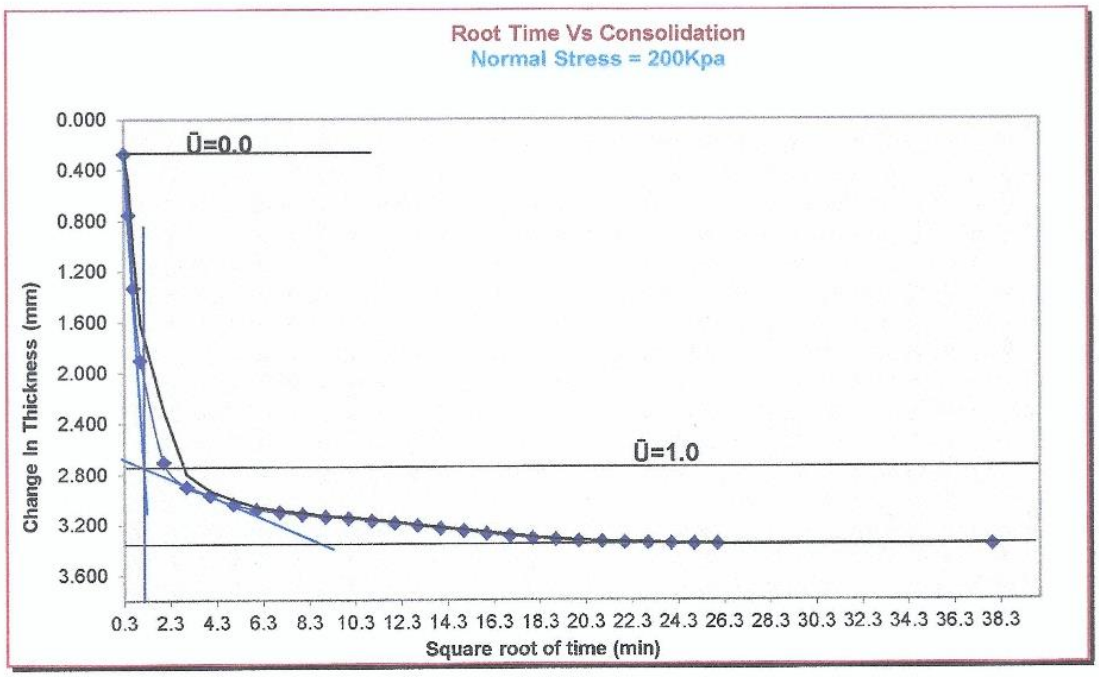
BS 1377: Part 7: 1990

TP KM 20+500 (Depth: 1.5-2.0M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4587 **Sample No.** 4587

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.5-2.0M **Date Tested:** 25-11-21



Deformation (mm)	3.36
From graph $\sqrt{t_{100}}$	1.20
t_{100} (min)	1.440
$t_f = 12.7 \times t_{100}$	18.288
Estimated displacement at Failure (mm)	2.750
Rate of displacement mm/min	0.1503718
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.343605

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

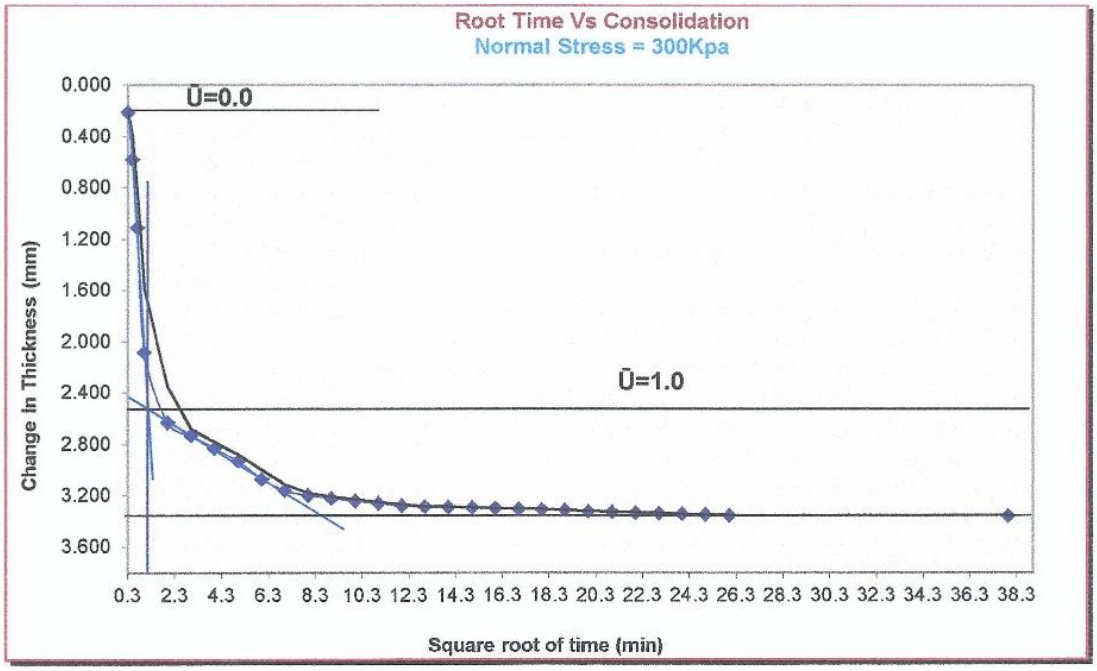
BS 1377: Part 7: 1990

TP KM 20+500 (Depth: 1.5-2.0M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4587 **Sample No.** 4587

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.5-2.0M **Date Tested:** 25-11-21



Deformation (mm)	3.360
From graph $\sqrt{t_{100}}$	1.20
t_{100} (min)	1.44
$t_f = 12.7 \times t_{100}$	18.288
Estimated displacement at Failure (mm)	2.750
Rate of displacement mm/min	0.150372
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.343605

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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info@danellilab.com
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Head Office & Laboratories:
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

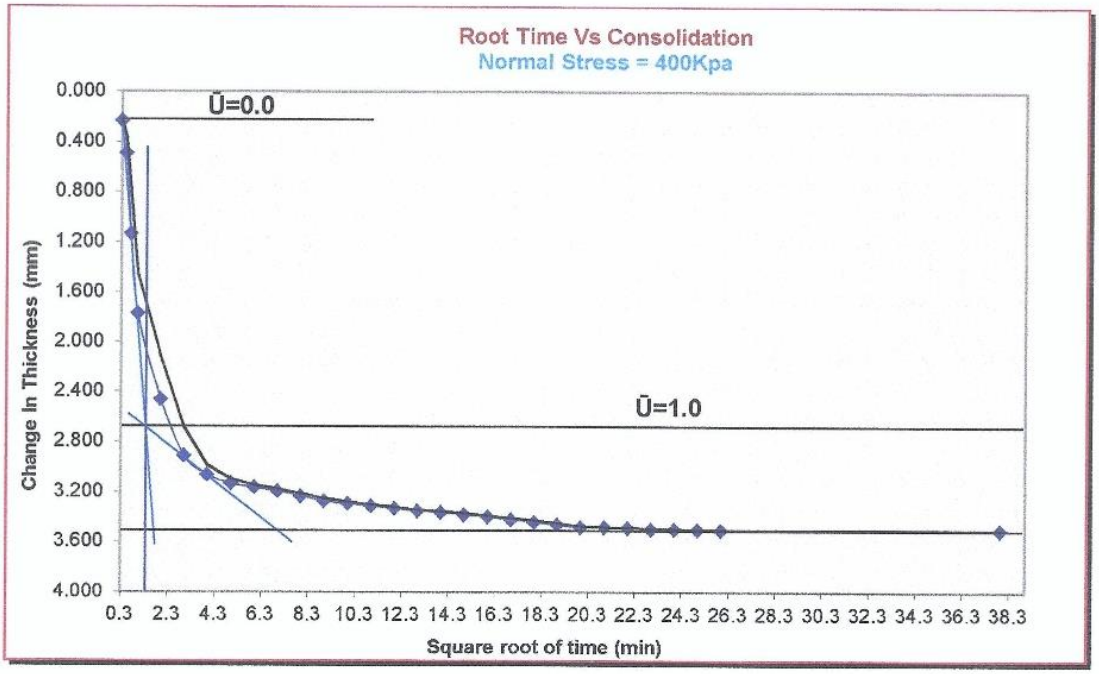
BS 1377: Part 7: 1990

TP KM 20+500 (Depth: 1.5-2.0M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4587 **Sample No.** 4587

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.5-2.0M **Date Tested:** 25-11-21



Deformation (mm)	3.505
From graph $\sqrt{t_{100}}$	1.4
t_{100} (min)	1.96
$t_f = 12.7 \times t_{100}$	24.892
Estimated displacement at Failure (mm)	2.680
Rate of displacement mm/min	0.107665
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.331897

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM22+500(1.4M)

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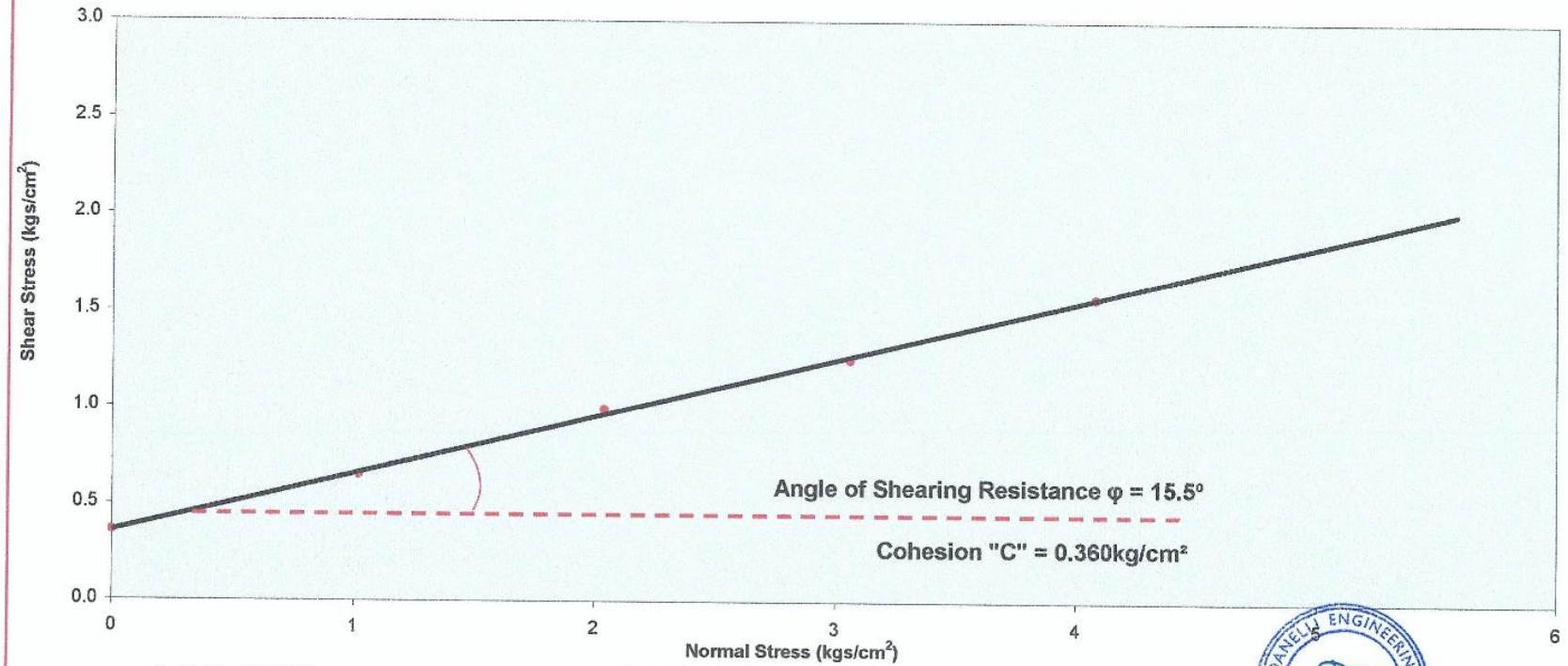

Tested by: KEVIN
Date Tested: 25-11-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

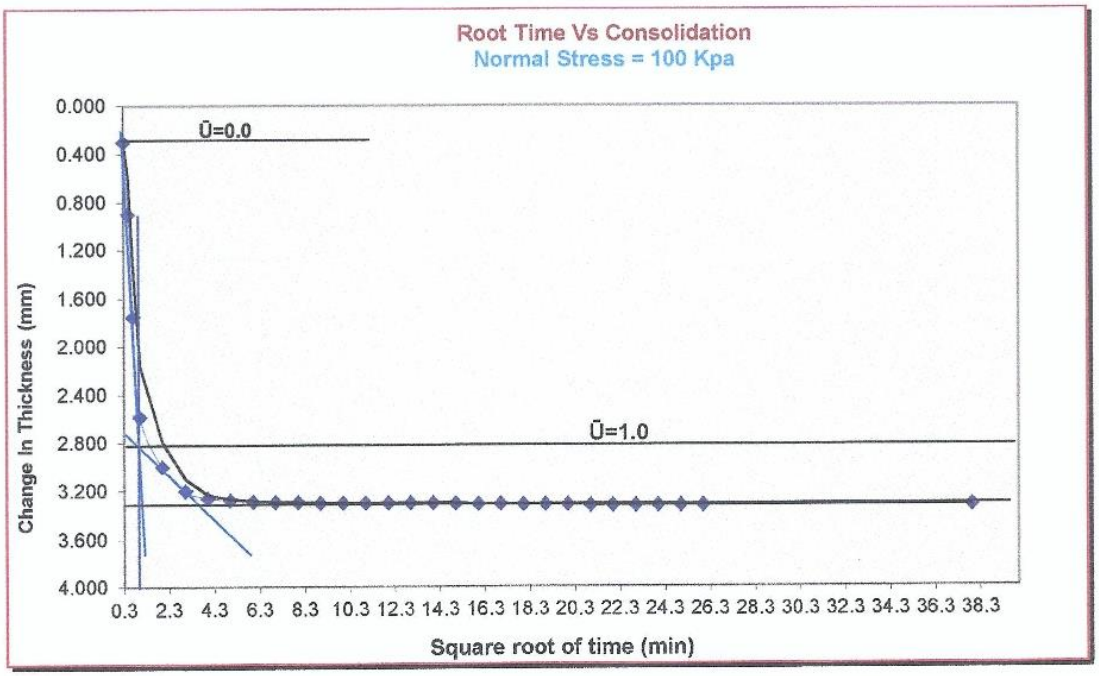
BS 1377: Part 7: 1990

TP KM 22+500 (Depth: 1.4M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4590 **Sample No.** 4590

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.4M **Date Tested:** 25-11-21



Deformation (mm)	3.320
From graph $\sqrt{t_{100}}$	0.95
t_{100} (min)	0.9025
$t_f = 12.7 \times t_{100}$	11.46175
Estimated displacement at Failure (mm)	2.825
Rate of displacement mm/min	0.046346
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.277029

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

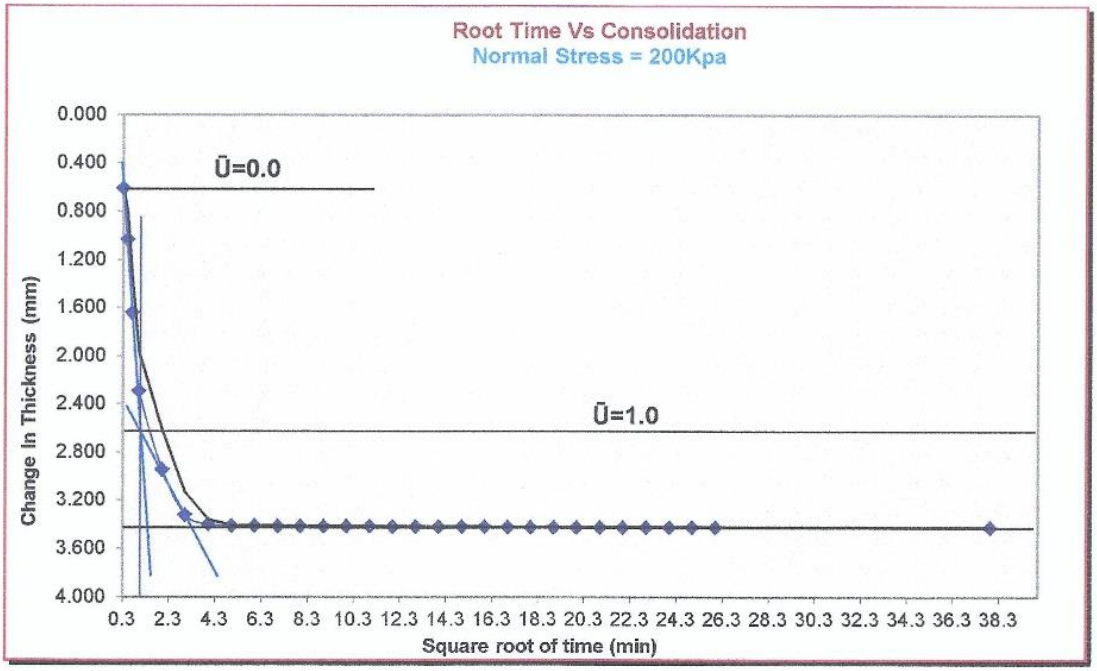
BS 1377: Part 7: 1990

TP KM 22+500 (Depth: 1.4M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4590 **Sample No.** 4590

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.4M **Date Tested:** 25-11-21



Deformation (mm)	3.425
From graph $\sqrt{t_{100}}$	1.10
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.630
Rate of displacement mm/min	0.1711459
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.268990

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

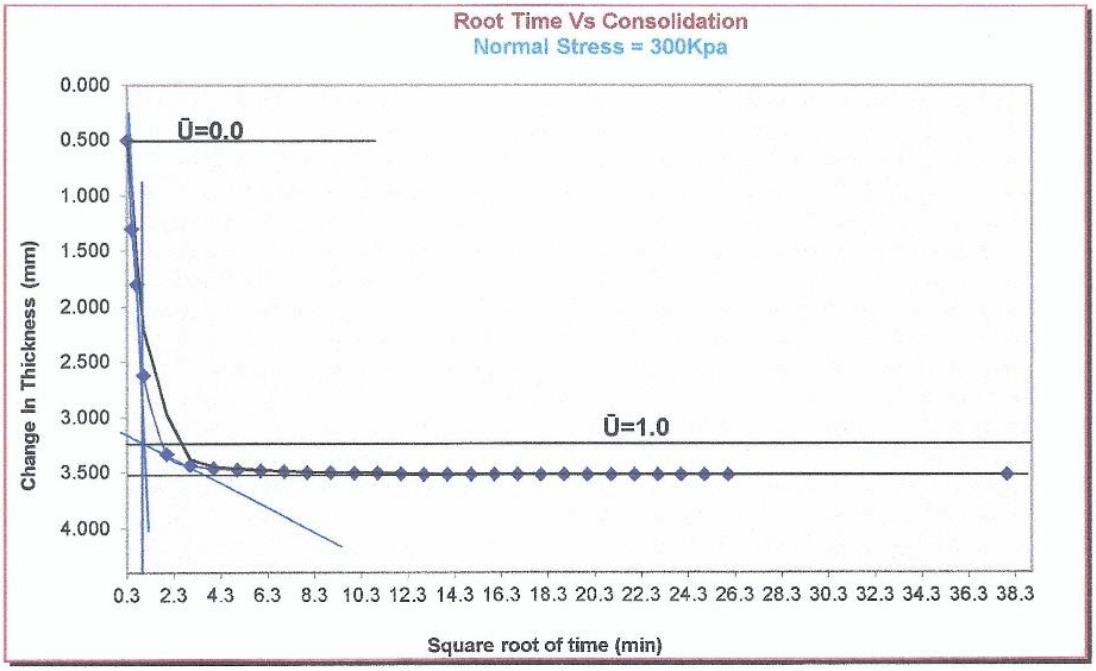
BS 1377: Part 7: 1990

TP KM 22+500 (Depth: 1.4M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4590 **Sample No.** 4590

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.4M **Date Tested:** 25-11-21



Deformation (mm)	3.520
From graph $\sqrt{t_{100}}$	0.98
t_{100} (min)	0.9604
$t_f = 12.7 \times t_{100}$	12.19708
Estimated displacement at Failure (mm)	3.240
Rate of displacement mm/min	0.265637
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.261717

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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Nairobi
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KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

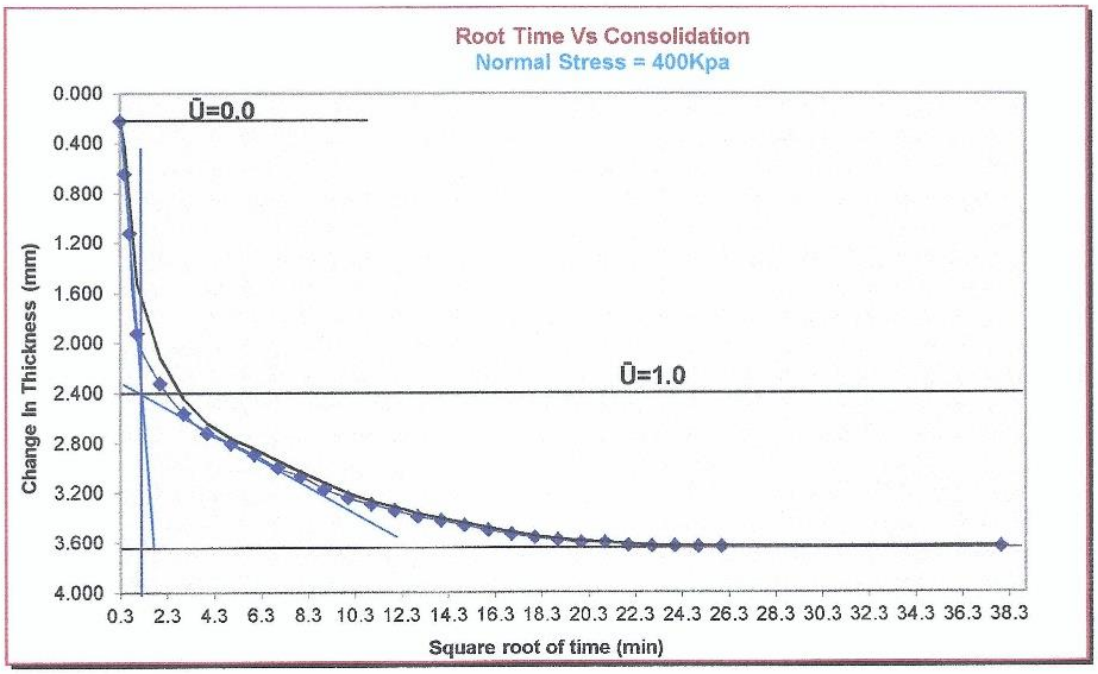
BS 1377: Part 7: 1990

TP KM 22+500 (Depth: 1.4M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4590 **Sample No.** 4590

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.4M **Date Tested:** 25-11-21



Deformation (mm)	3.635
From graph $\sqrt{t_{100}}$	1.20
t_{100} (min)	1.440
$t_f = 12.7 \times t_{100}$	18.288
Estimated displacement at Failure (mm)	2.40
Rate of displacement mm/min	0.1312336
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.2529126

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM24+500

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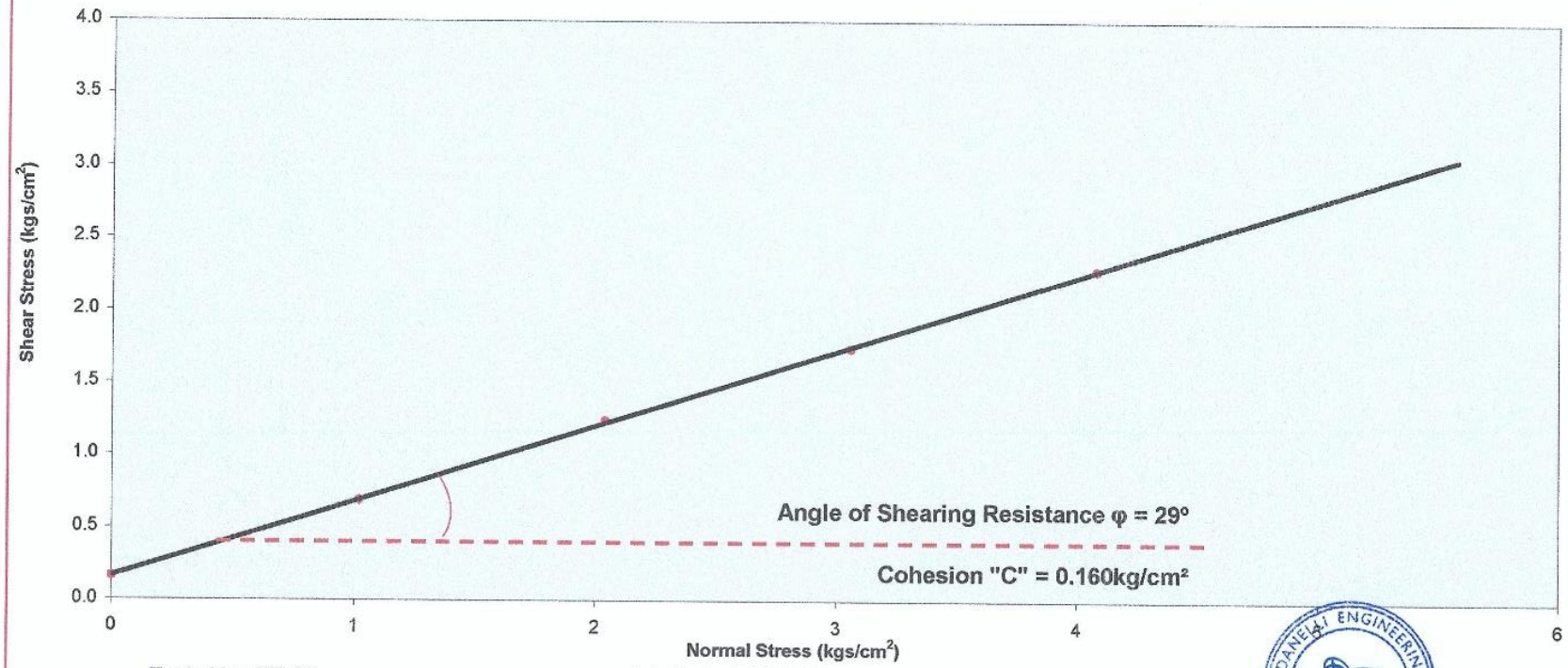

Tested by: KEVIN
Date Tested: 25-11-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

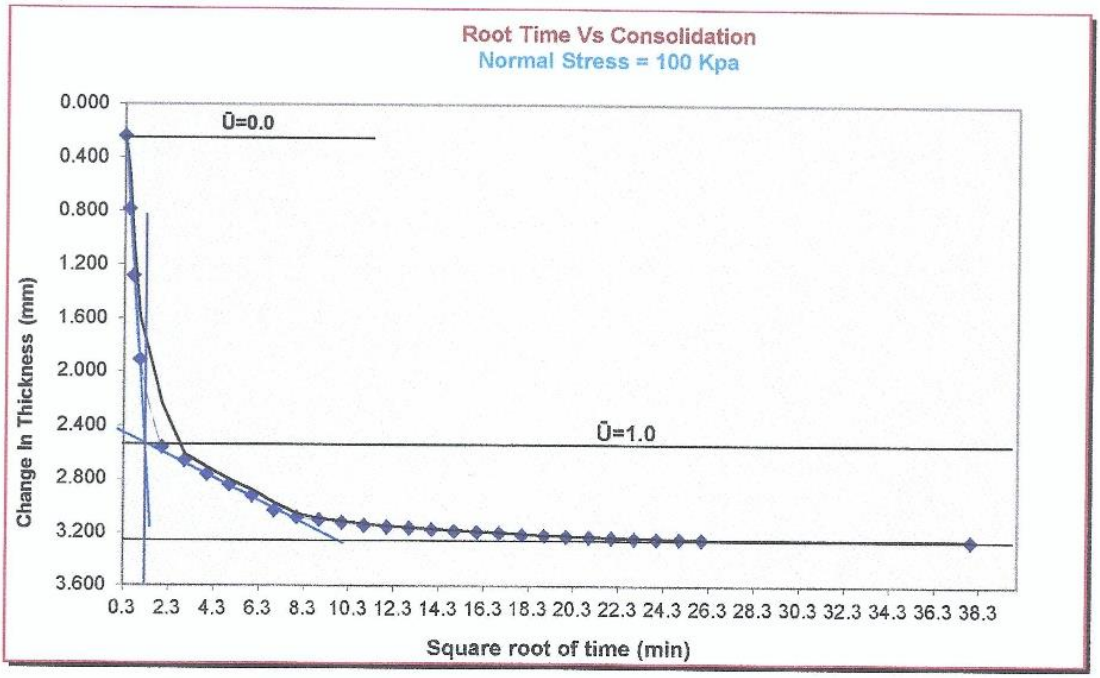
BS 1377: Part 7: 1990

TP KM 24+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4593 **Sample No.** 4593

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 25-11-21



Deformation (mm)	3.250
From graph $\sqrt{t_{100}}$	1.2
t_{100} (min)	1.44
$t_f = 12.7 \times t_{100}$	18.288
Estimated displacement at Failure (mm)	2.540
Rate of displacement mm/min	0.138889
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.083333

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

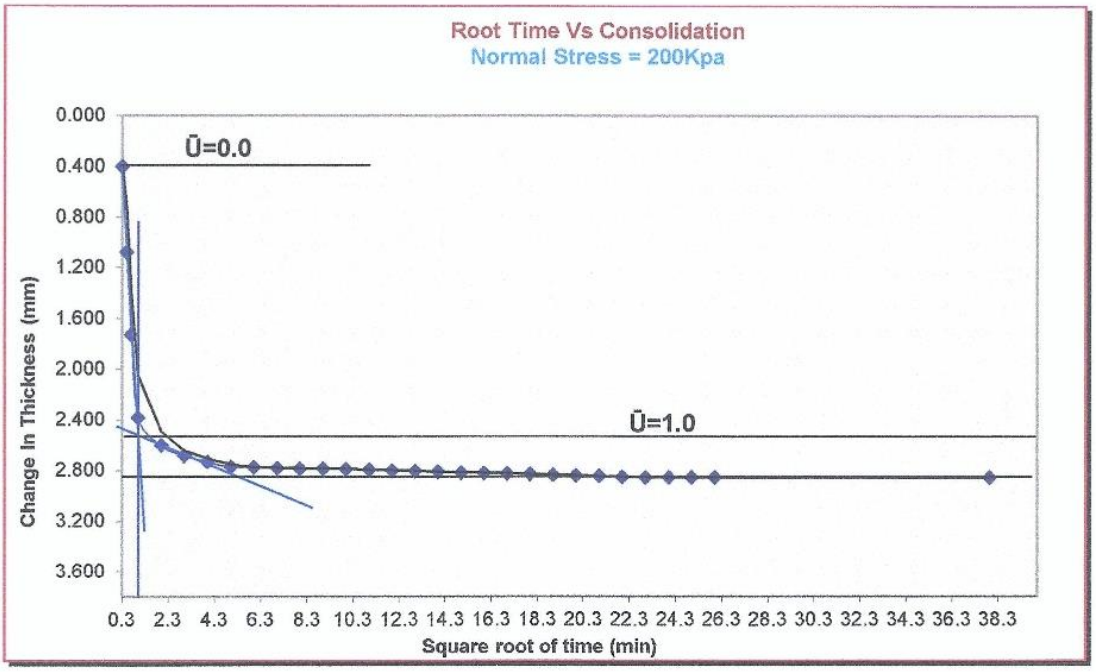
BS 1377: Part 7: 1990

TP KM 24+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4593 **Sample No.** 4593

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 25-11-21



Deformation (mm)	2.855
From graph $\sqrt{t_{100}}$	1.09
t_{100} (min)	1.1881
$t_f = 12.7 \times t_{100}$	15.08887
Estimated displacement at Failure (mm)	2.525
Rate of displacement mm/min	0.167342
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.108880

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KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

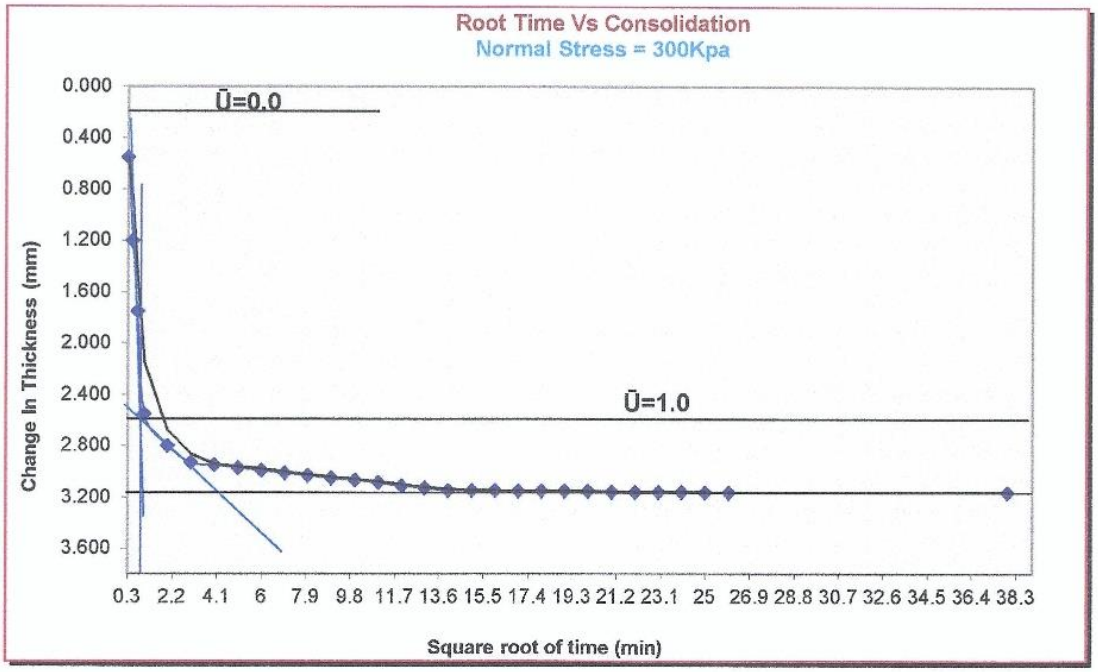
BS 1377: Part 7: 1990

TP KM 24+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4593 **Sample No.** 4593

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 25-11-21



Deformation (mm)	3.16
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.810
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	2.580
Rate of displacement mm/min	0.250802
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.089154

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Web site: www.danellilab.com
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Head Office & Laboratories:
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KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

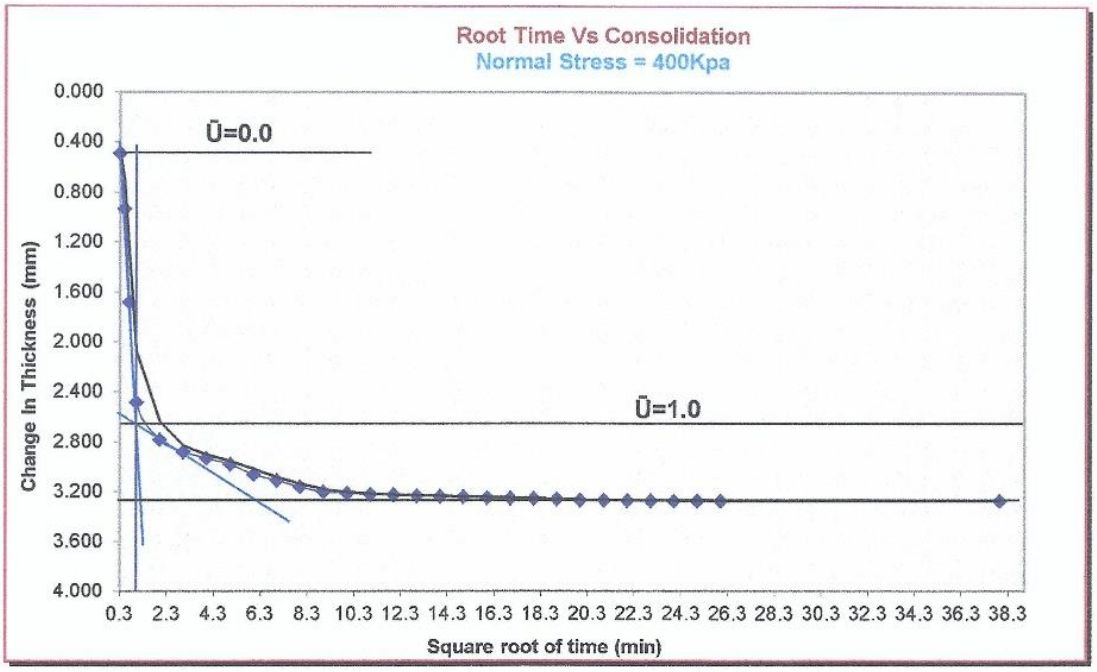
BS 1377: Part 7: 1990

TP KM 24+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4593 **Sample No.** 4593

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 25-11-21



Deformation (mm)	3.275
From graph $\sqrt{t_{100}}$	1.00
t_{100} (min)	1.00
$t_f = 12.7 \times t_{100}$	12.70
Estimated displacement at Failure (mm)	2.660
Rate of displacement mm/min	0.209449
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.081716

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

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KAYABOMBO SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM26+000

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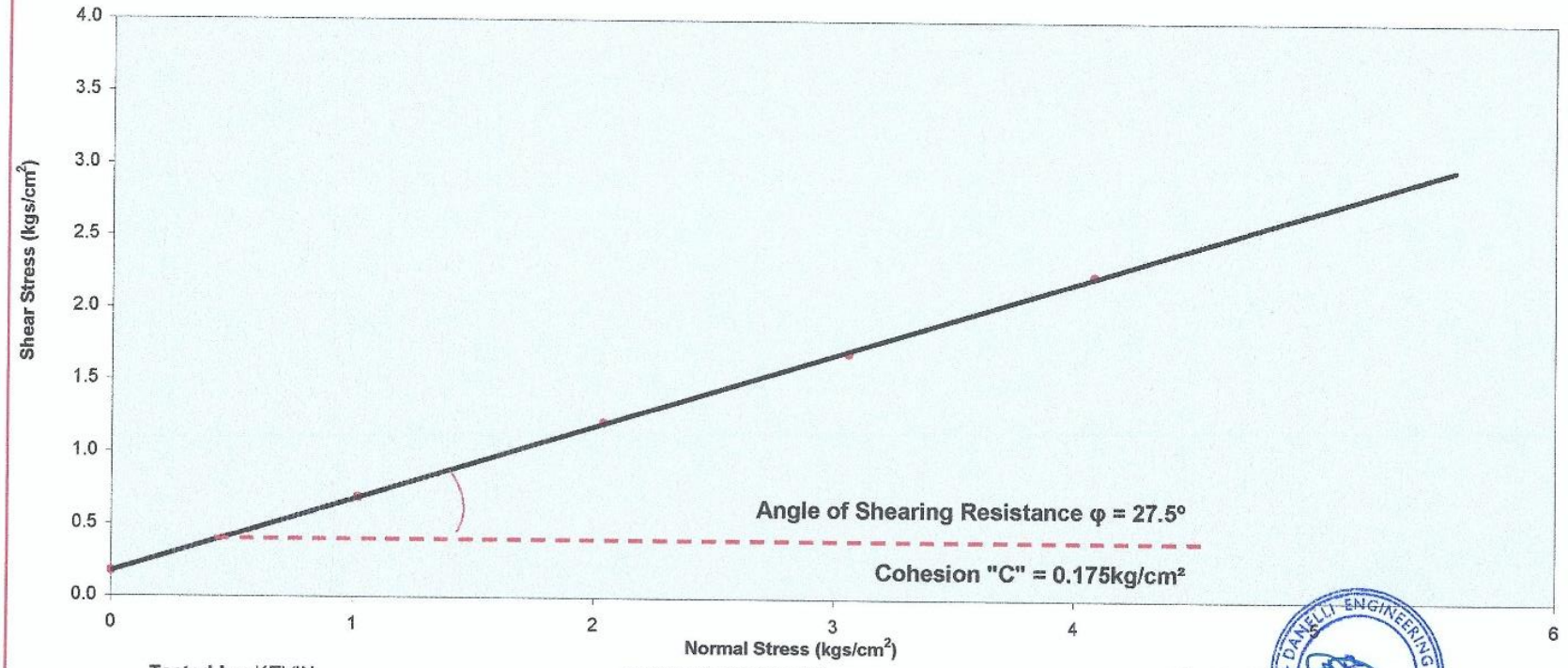

Tested by: KEVIN
Date Tested: 26-11-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

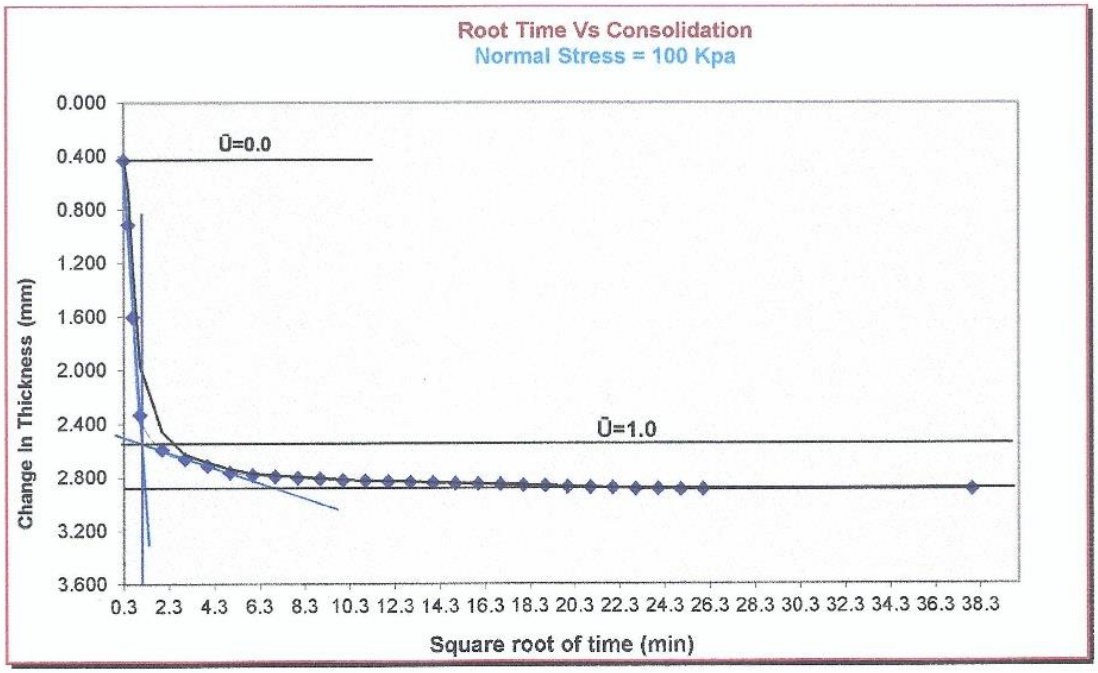
BS 1377: Part 7: 1990

TP KM 26+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4596 **Sample No.** 4596

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 26-11-21



Deformation (mm)	2.890
From graph $\sqrt{t_{100}}$	1.1
t_{100} (min)	1.21
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.550
Rate of displacement mm/min	0.16594
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.430417

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

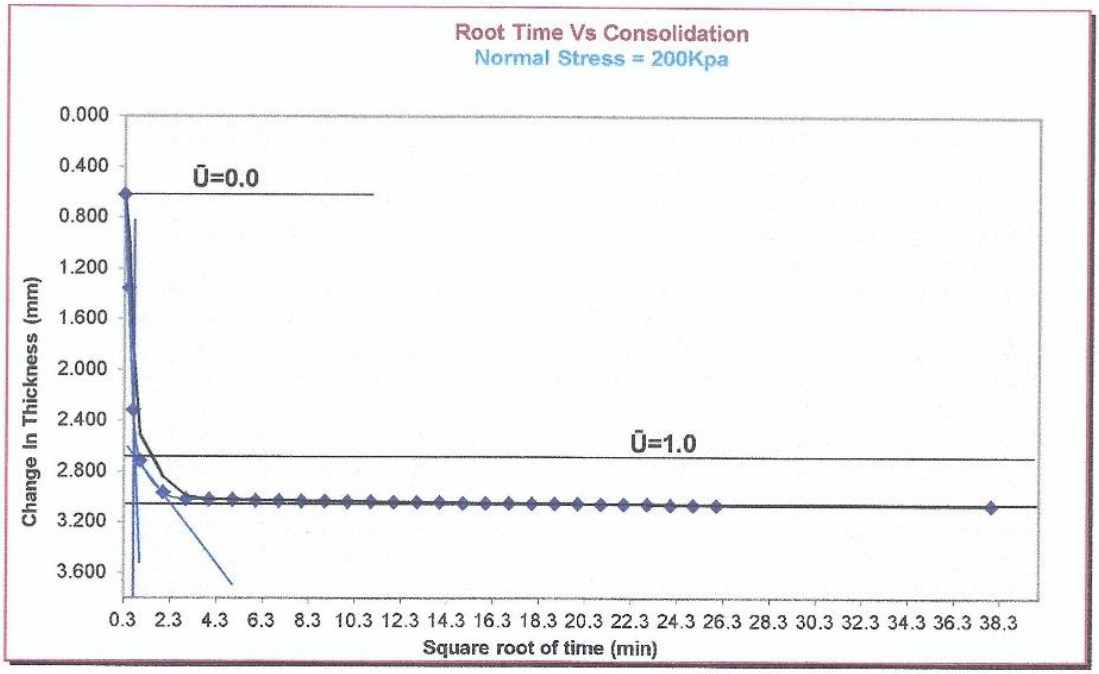
BS 1377: Part 7: 1990

TP KM 26+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4596 **Sample No.** 4596

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 26-11-21



Deformation (mm)	3.060
From graph $\sqrt{t_{100}}$	0.80
t_{100} (min)	0.64
$t_f = 12.7 \times t_{100}$	8.125
Estimated displacement at Failure (mm)	2.69
Rate of displacement mm/min	0.330955
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.416205

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

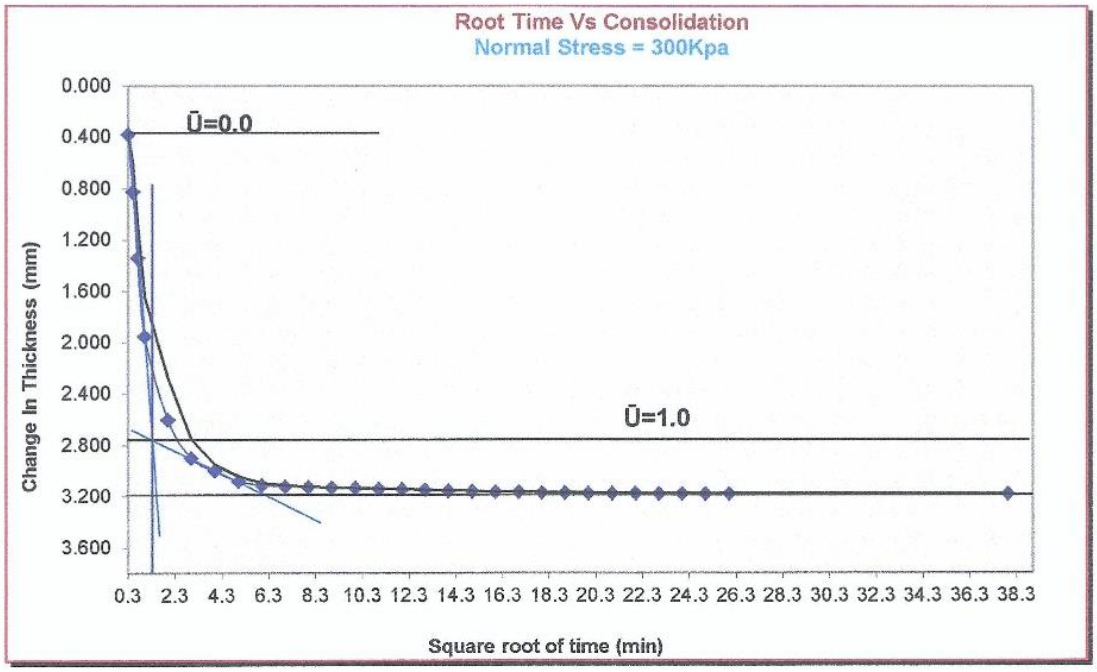
BS 1377: Part 7: 1990

TP KM 26+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4596 **Sample No.** 4596

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 26-11-21



Deformation (mm)	3.18
From graph $\sqrt{t_{100}}$	1.30
t_{100} (min)	1.69
$t_f = 12.7 \times t_{100}$	21.563
Estimated displacement at Failure (mm)	2.76
Rate of displacement mm/min	0.128593
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.406173

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

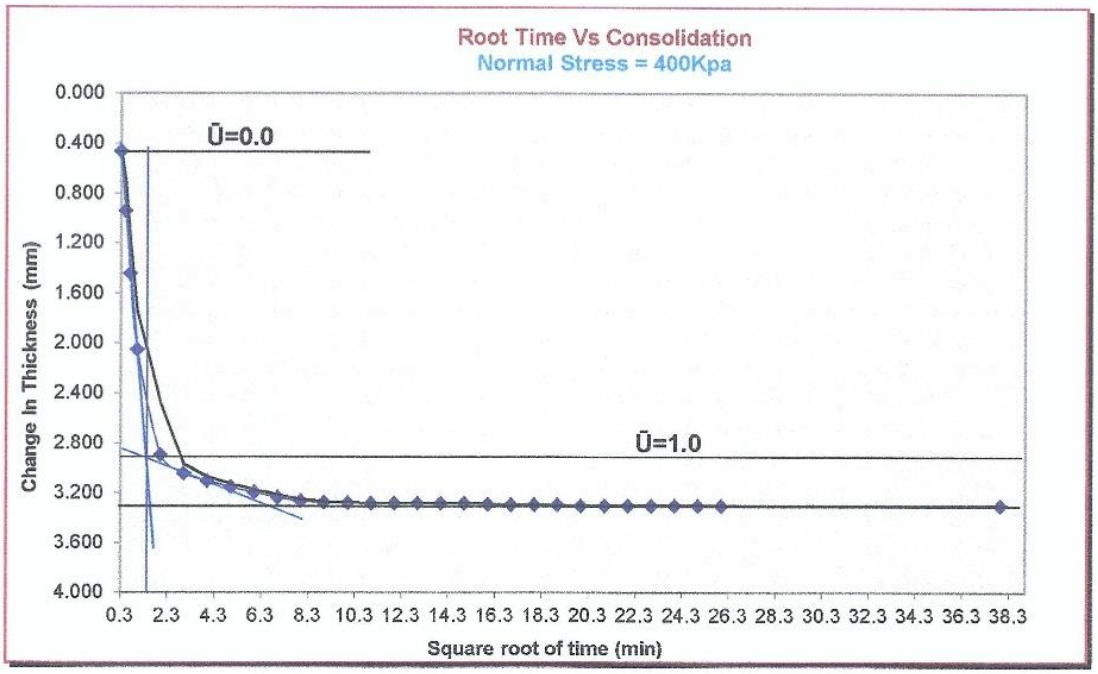
BS 1377: Part 7: 1990

TP KM 26+000

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4596 **Sample No.** 4596

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 26-11-21



Deformation (mm)	3.30
From graph $\sqrt{t_{100}}$	1.40
t_{100} (min)	1.96
$t_f = 12.7 \times t_{100}$	24.892
Estimated displacement at Failure (mm)	2.92
Rate of displacement mm/min	0.11731
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.39614

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
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BS 1377: 1990: Part 7: Clause 4
TP KM3+500

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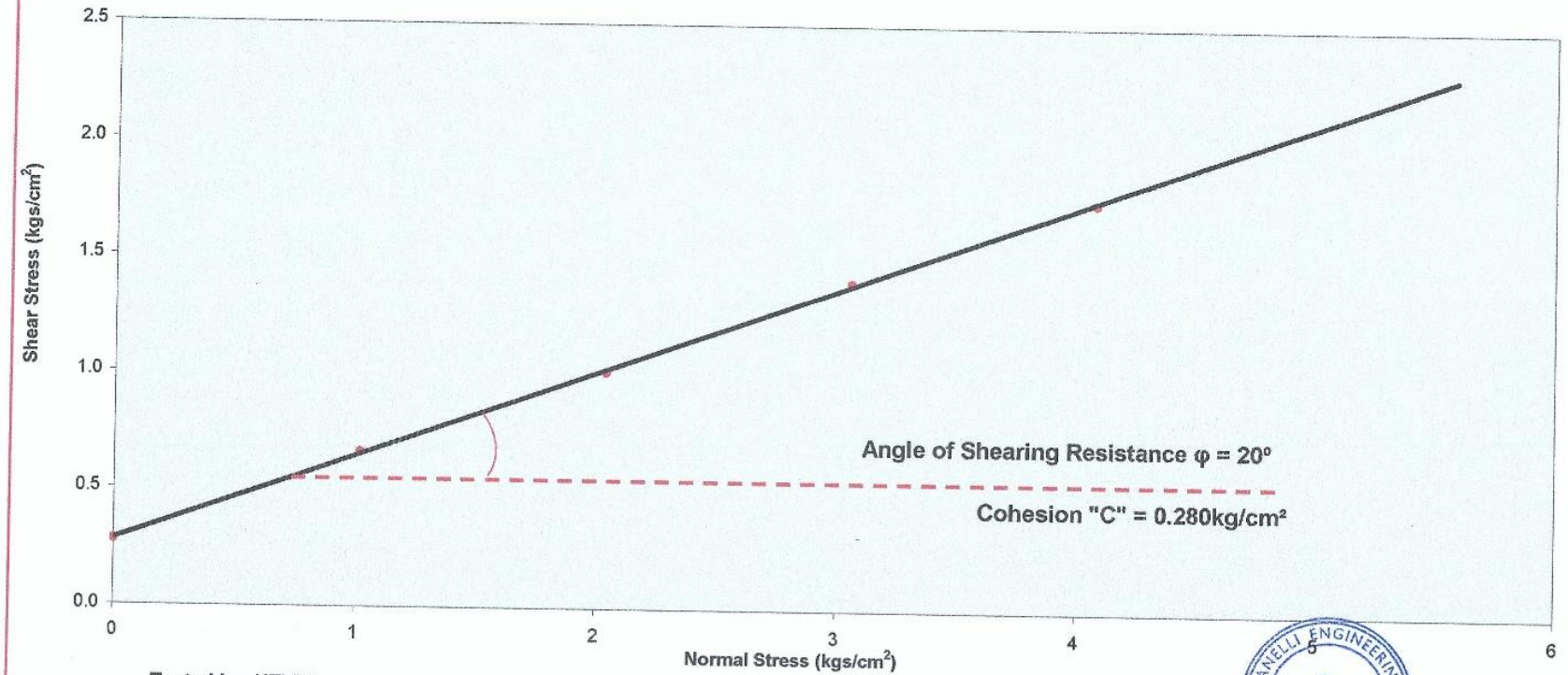

Tested by: KEVIN
Date Tested: 19-11-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
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Web site: www.danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

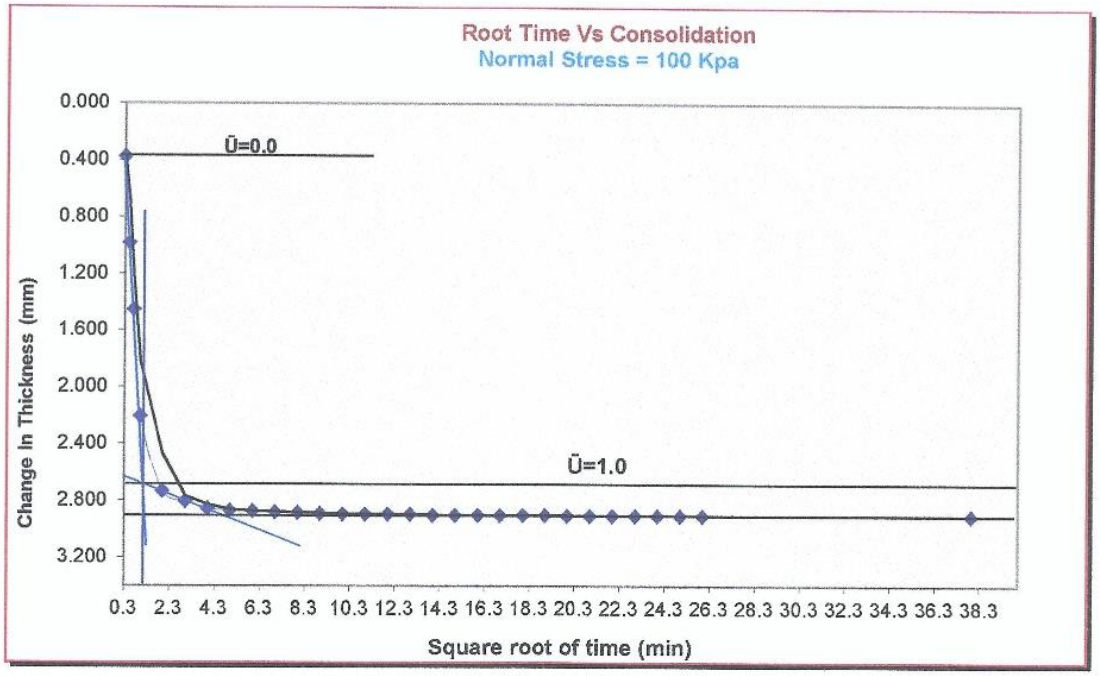
BS 1377: Part 7: 1990

TP KM 3+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4560 **Sample No.** 4560

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 19-11-21



Deformation (mm)	2.900
From graph $\sqrt{t_{100}}$	1.12
t_{100} (min)	1.2544
$t_f = 12.7 \times t_{100}$	15.93088
Estimated displacement at Failure (mm)	2.69
Rate of displacement mm/min	0.168854
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.25736

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

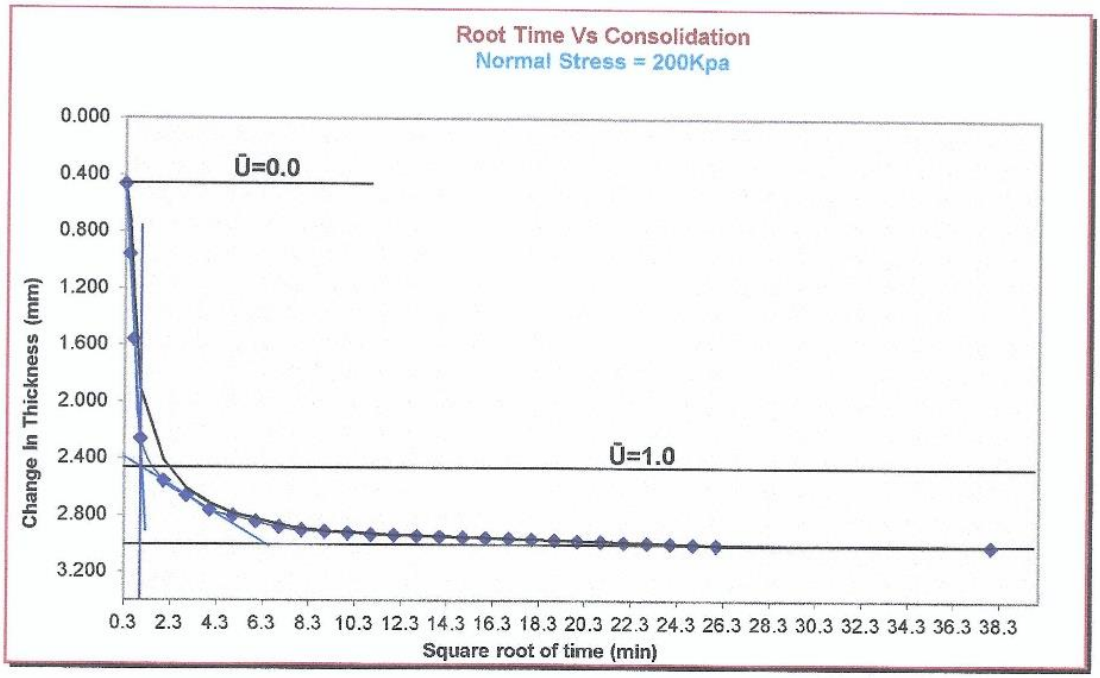
BS 1377: Part 7: 1990

TP KM 3+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4560 **Sample No.** 4560

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 19-11-21



Deformation (mm)	3.010
From graph $\sqrt{t_{100}}$	1.0
t_{100} (min)	1.0
$t_f = 12.7 \times t_{100}$	12.7
Estimated displacement at Failure (mm)	2.470
Rate of displacement mm/min	0.194488
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.249275

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

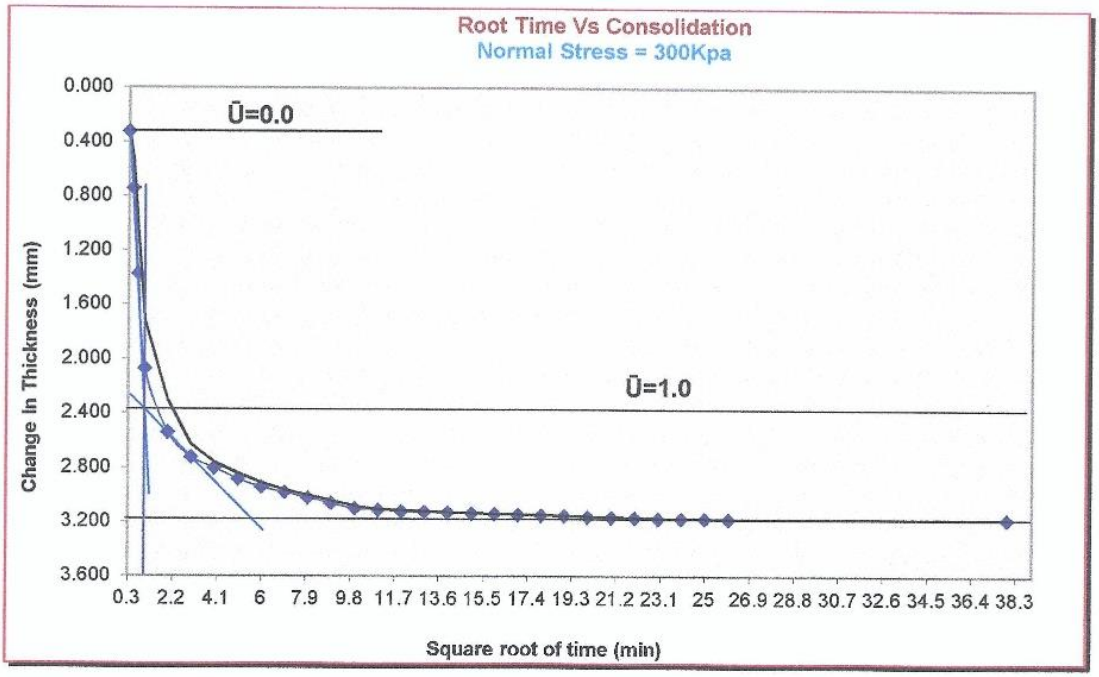
BS 1377: Part 7: 1990

TP KM 3+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4560 **Sample No.** 4560

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 19-11-21



Deformation (mm)	3.180
From graph $\sqrt{t_{100}}$	1.0
t_{100} (min)	1.0
$t_f = 12.7 \times t_{100}$	12.7
Estimated displacement at Failure (mm)	2.375
Rate of displacement mm/min	0.187008
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.236775

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

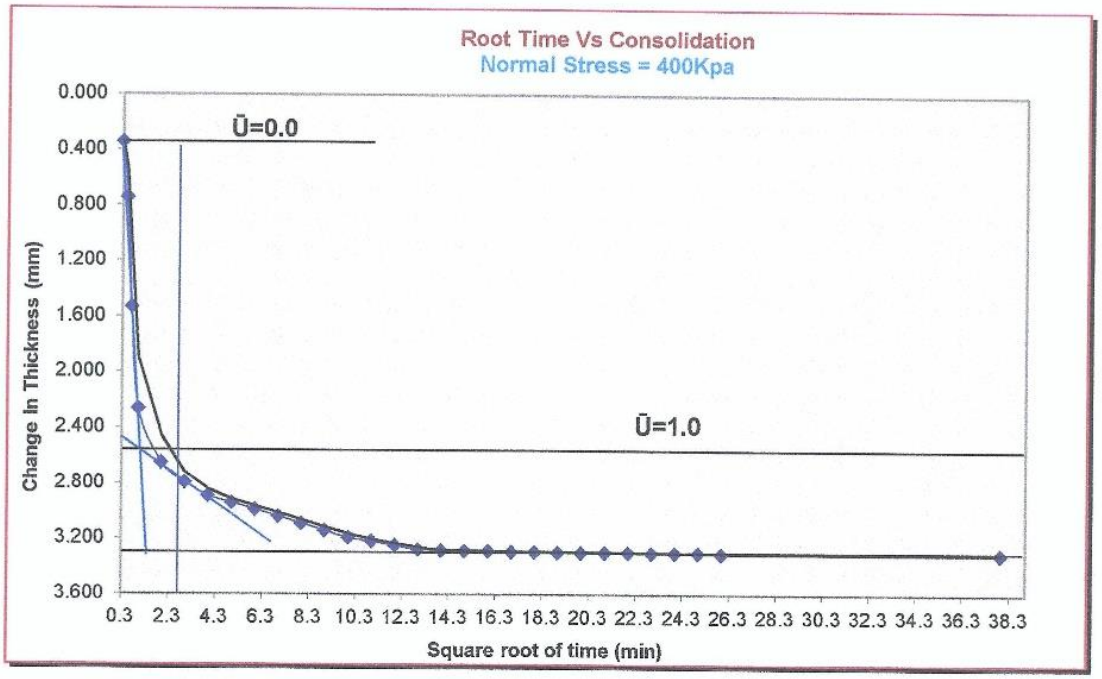
BS 1377: Part 7: 1990

TP KM 3+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4560 **Sample No.** 4560

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 19-11-21



Deformation (mm)	3.305
From graph $\sqrt{t_{100}}$	1.1
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.560
Rate of displacement mm/min	0.166591
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.227583

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM5+500(0.0M)

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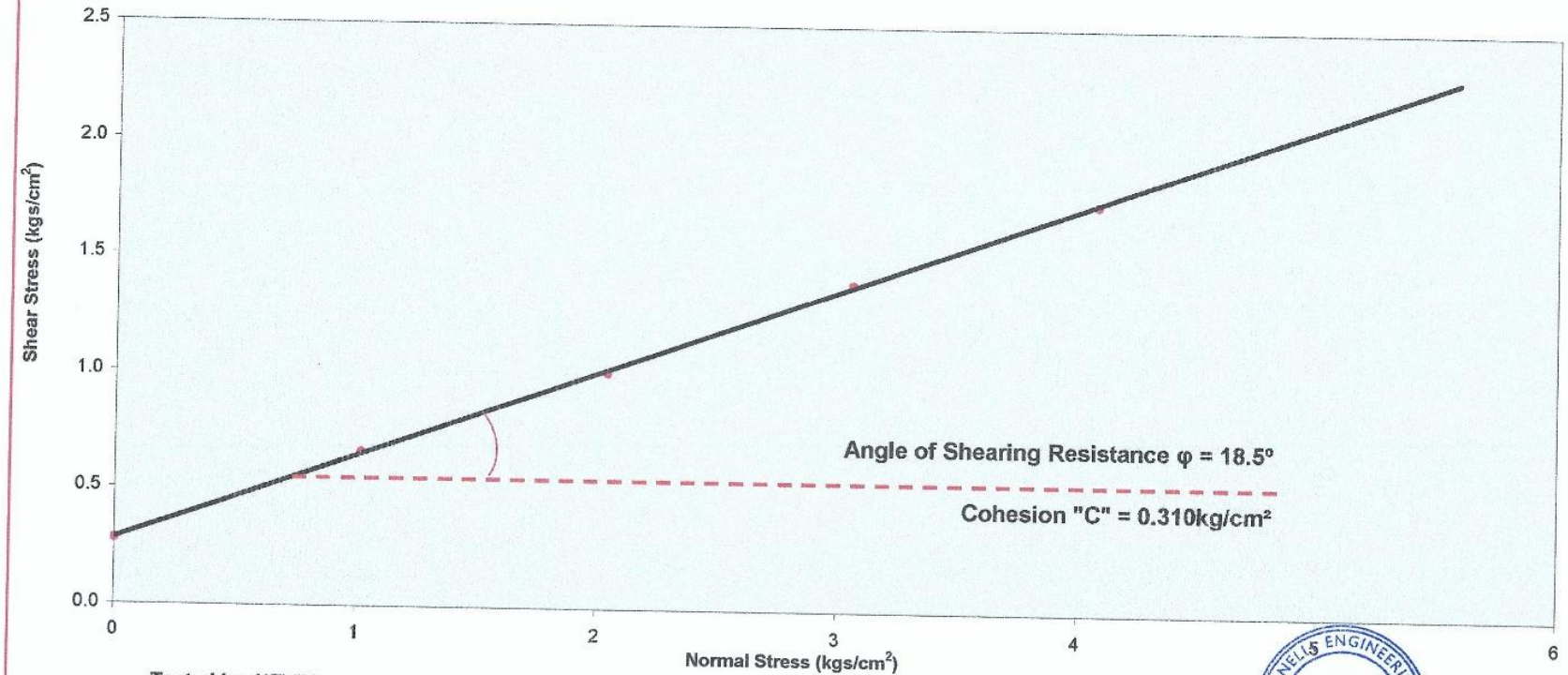

Tested by: KEVIN
Date Tested: 20-11-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

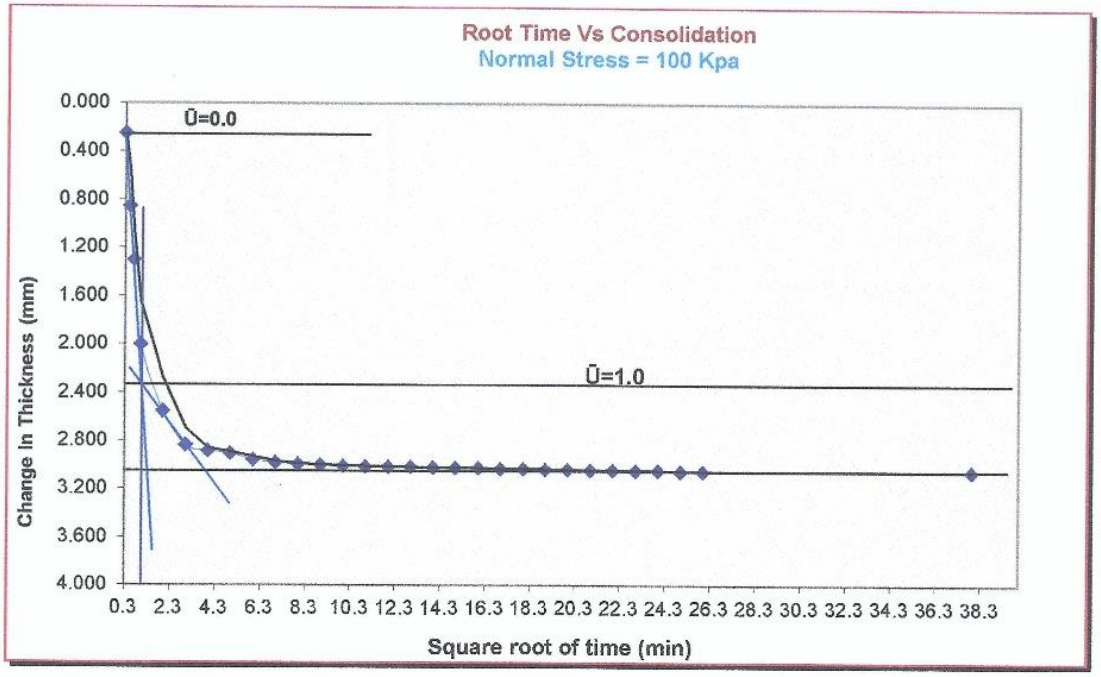
BS 1377: Part 7: 1990

TP KM 5+500 (0.0M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4563 **Sample No.** 4563

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 20-11-21



Deformation (mm)	3.050
From graph $\sqrt{t_{100}}$	1.05
t_{100} (min)	1.1025
$t_f = 12.7 \times t_{100}$	14.00175
Estimated displacement at Failure (mm)	2.340
Rate of displacement mm/min	0.167122
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.430843

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

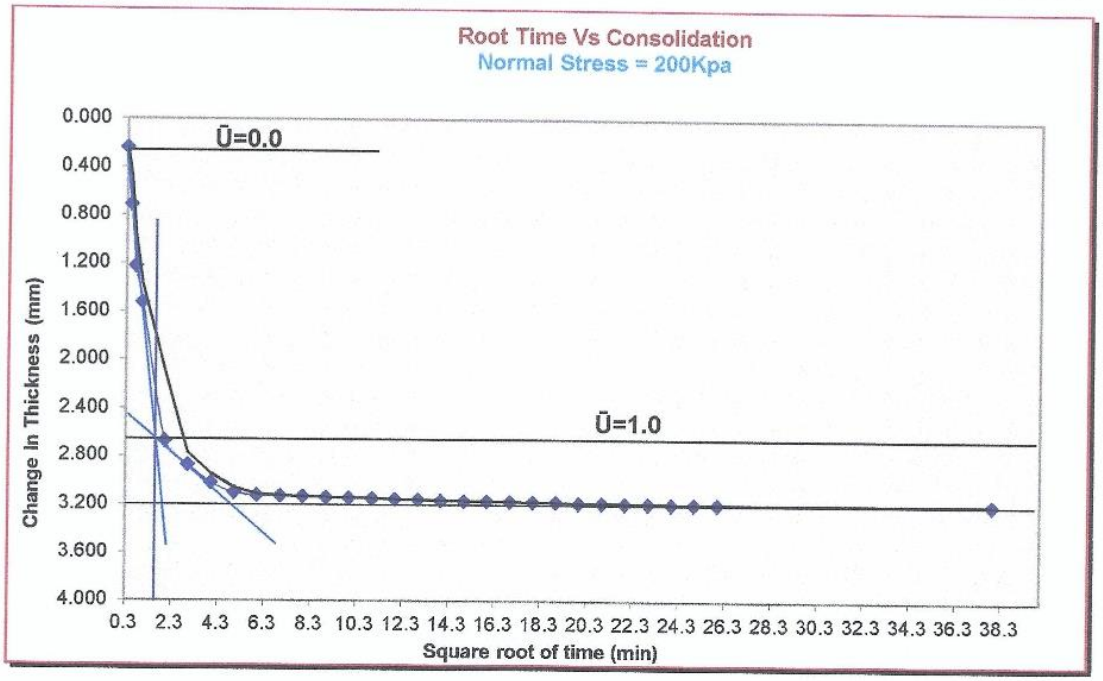
BS 1377: Part 7: 1990

TP KM 5+500 (0.0M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4563 **Sample No.** 4563

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 20-11-21



Deformation (mm)	3.190
From graph $\sqrt{t_{100}}$	1.60
t_{100} (min)	2.56
$t_f = 12.7 \times t_{100}$	32.512
Estimated displacement at Failure (mm)	2.660
Rate of displacement mm/min	0.0818159
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.4190246

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

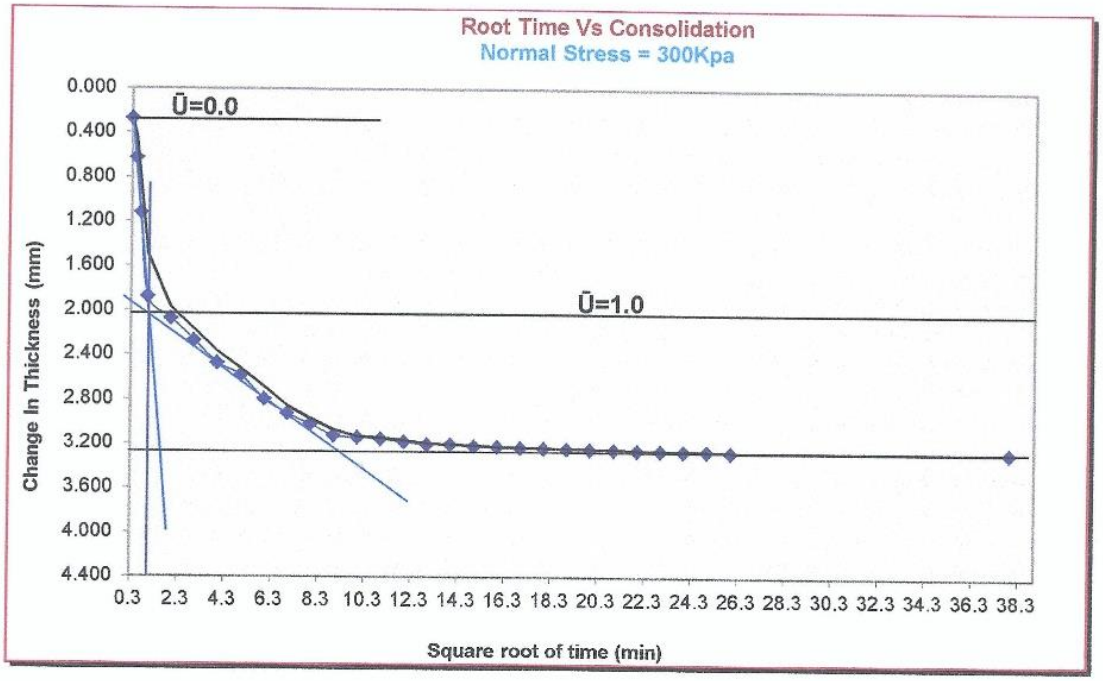
BS 1377: Part 7: 1990

TP KM 5+500 (0.0M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4563 **Sample No.** 4563

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 20-11-21



Deformation (mm)	3.270
From graph $\sqrt{t_{100}}$	1.10
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.040
Rate of displacement mm/min	0.1327520
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.4122713

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
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KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

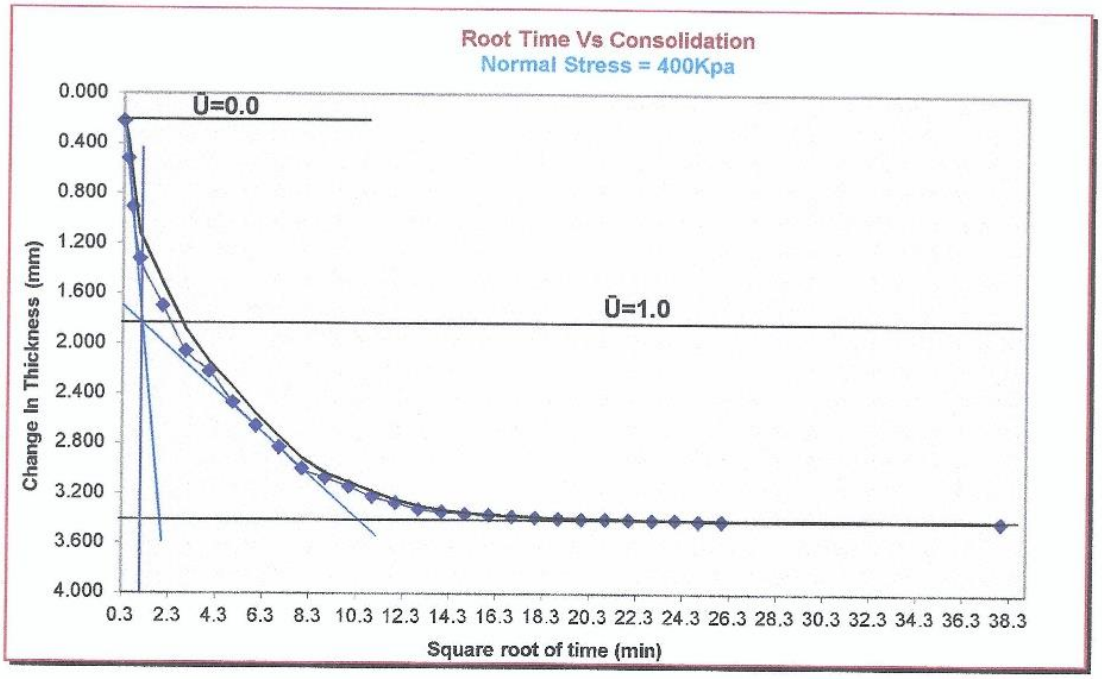
BS 1377: Part 7: 1990

TP KM 5+500 (0.0M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4563 **Sample No.** 4563

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 20-11-21



Deformation (mm)	3.420
From graph $\sqrt{t_{100}}$	1.10
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	1.840
Rate of displacement mm/min	0.119737
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.399609

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM6+500(1.0-1.7M)

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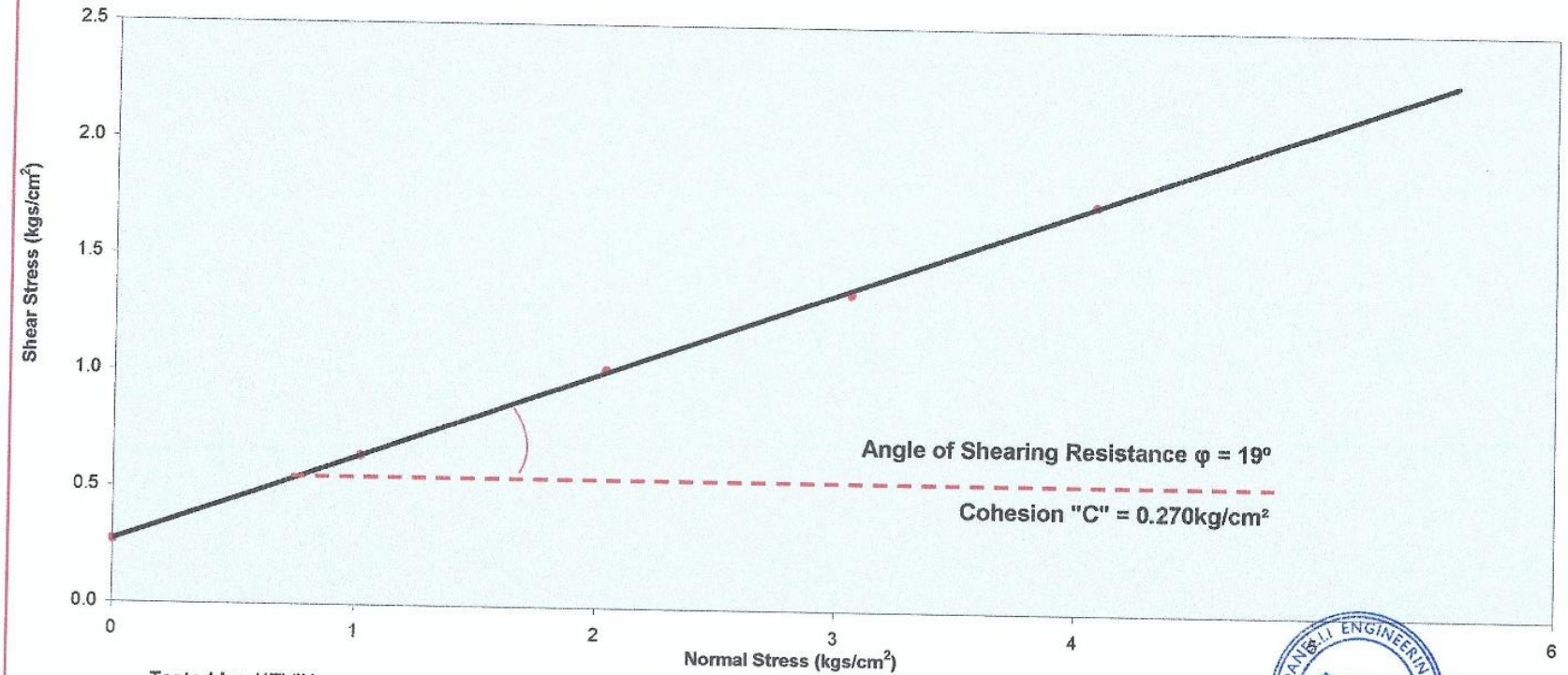

Tested by: KEVIN
Date Tested: 20-11-21
Checked by:

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

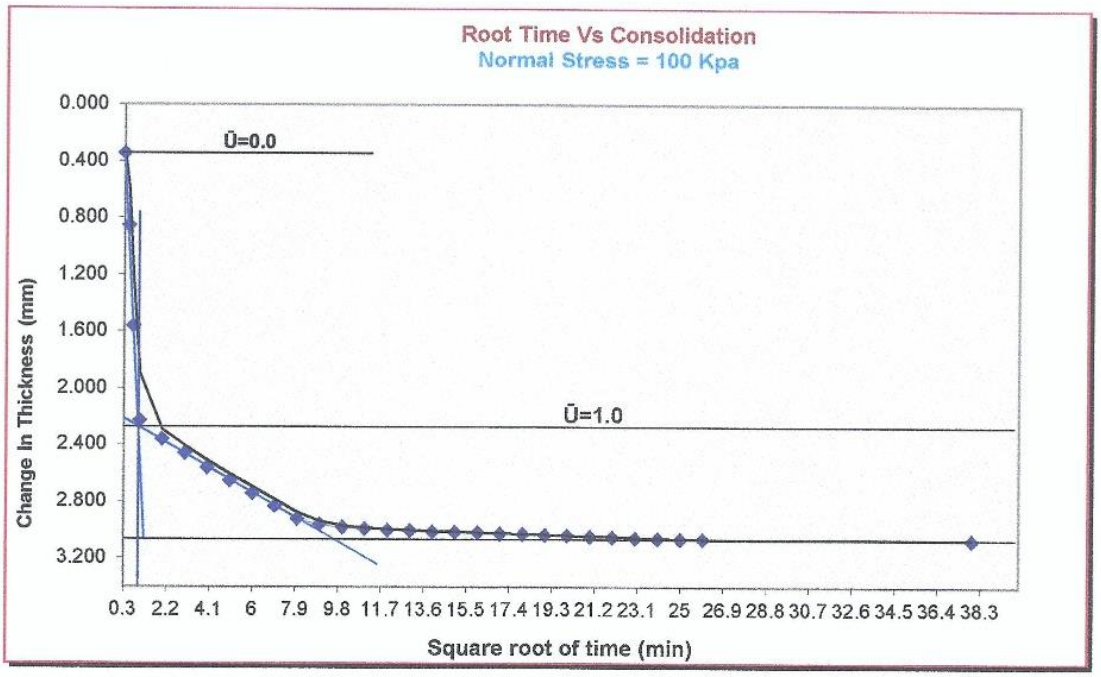
BS 1377: Part 7: 1990

TP KM 6+500 (1.0-1.7M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4566 **Sample No.** 4566

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0-1.7M **Date Tested:** 20-11-21



Deformation (mm)	3.070
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.810
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	2.275
Rate of displacement mm/min	0.221153
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.294646

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

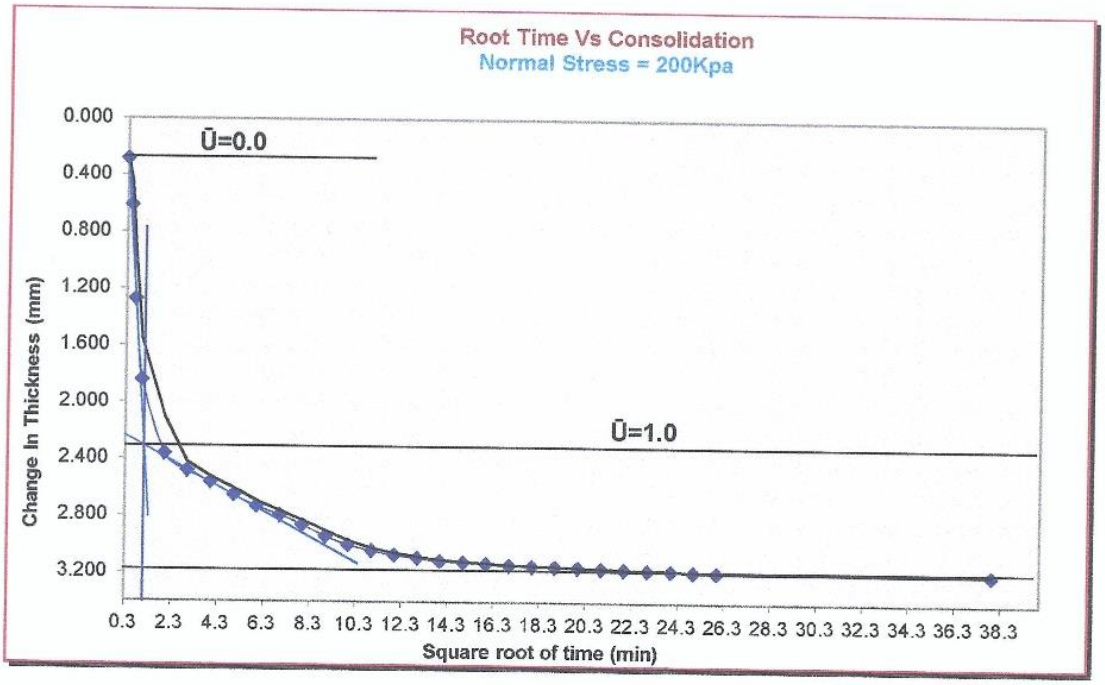
BS 1377: Part 7: 1990

TP KM 6+500 (1.0-1.7M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4566 **Sample No.** 4566

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0-1.7M **Date Tested:** 20-11-21



Deformation (mm)	3.19
From graph $\sqrt{t_{100}}$	1.11
t_{100} (min)	1.2321
$t_f = 12.7 \times t_{100}$	15.64767
Estimated displacement at Failure (mm)	2.31
Rate of displacement mm/min	0.1476258
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.285469

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

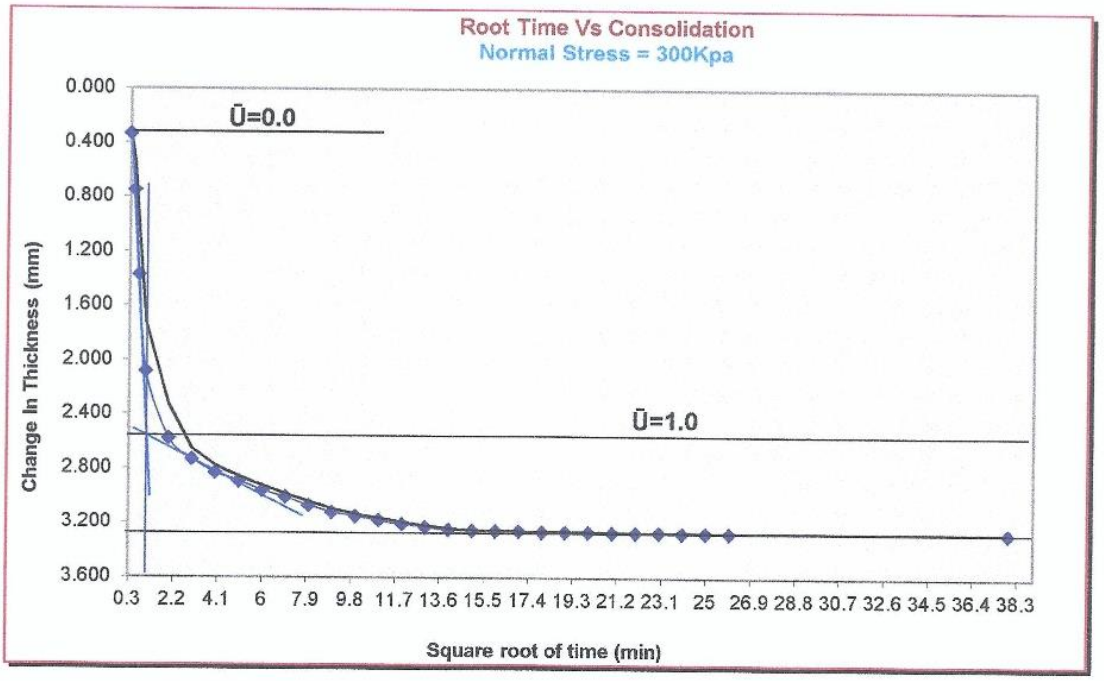
BS 1377: Part 7: 1990

TP KM 6+500 (1.0-1.7M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4566 **Sample No.** 4566

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0-1.7M **Date Tested:** 20-11-21



Deformation (mm)	3.275
From graph $\sqrt{t_{100}}$	1.10
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.560
Rate of displacement mm/min	0.166591
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.278969

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

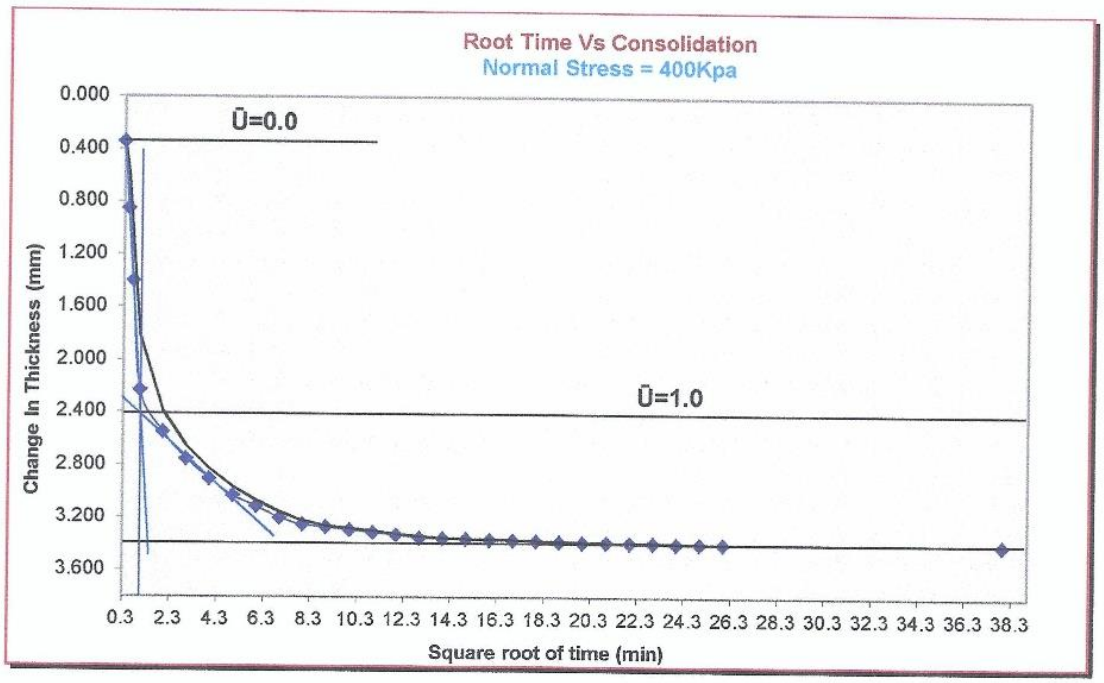
BS 1377: Part 7: 1990

TP KM 6+500 (1.0-1.7M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4566 **Sample No.** 4566

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0-1.7M **Date Tested:** 20-11-21



Deformation (mm)	3.40
From graph $\sqrt{t_{100}}$	1.0
t_{100} (min)	1.0
$t_f = 12.7 \times t_{100}$	12.7
Estimated displacement at Failure (mm)	2.42
Rate of displacement mm/min	0.190551
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.269410

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
KAYABOMBO SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM8+000(0.3-0.6M)

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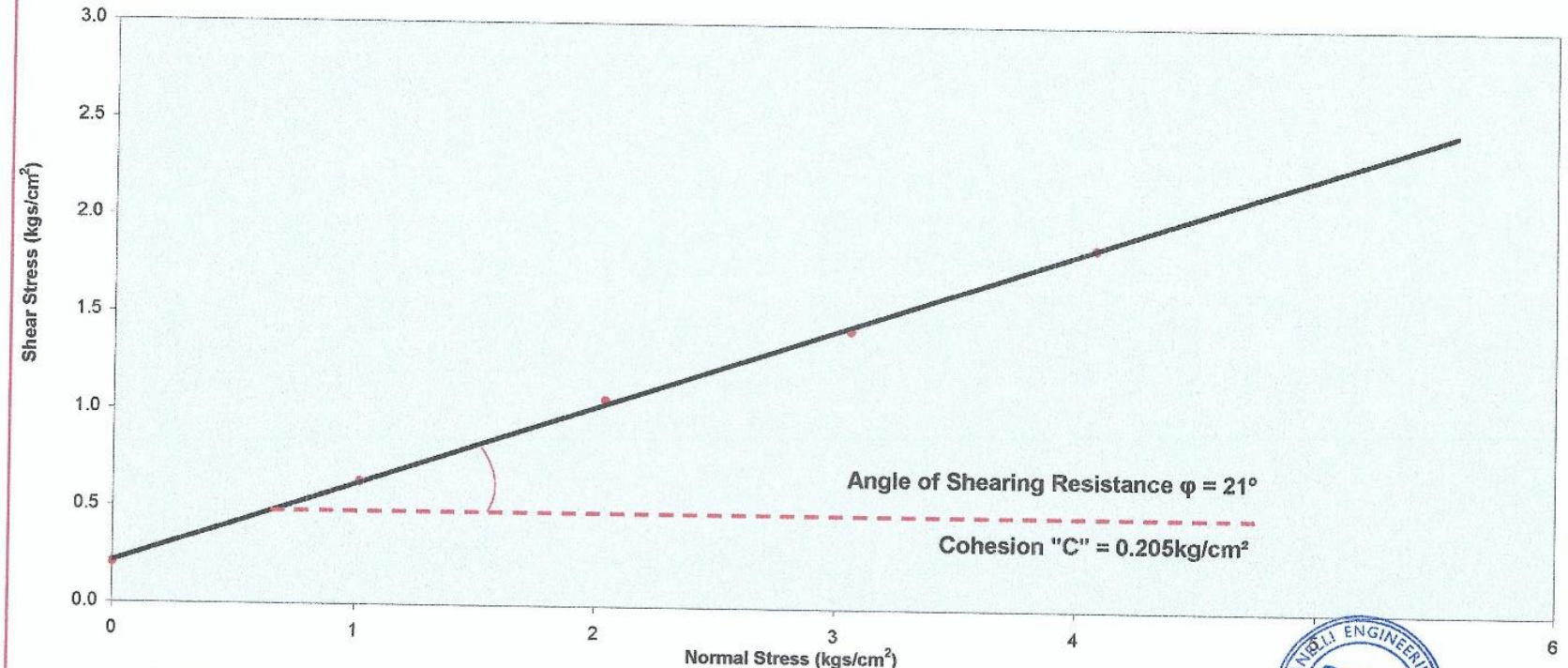

Tested by: KEVIN
Date Tested: 21-11-21
Checked by:

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

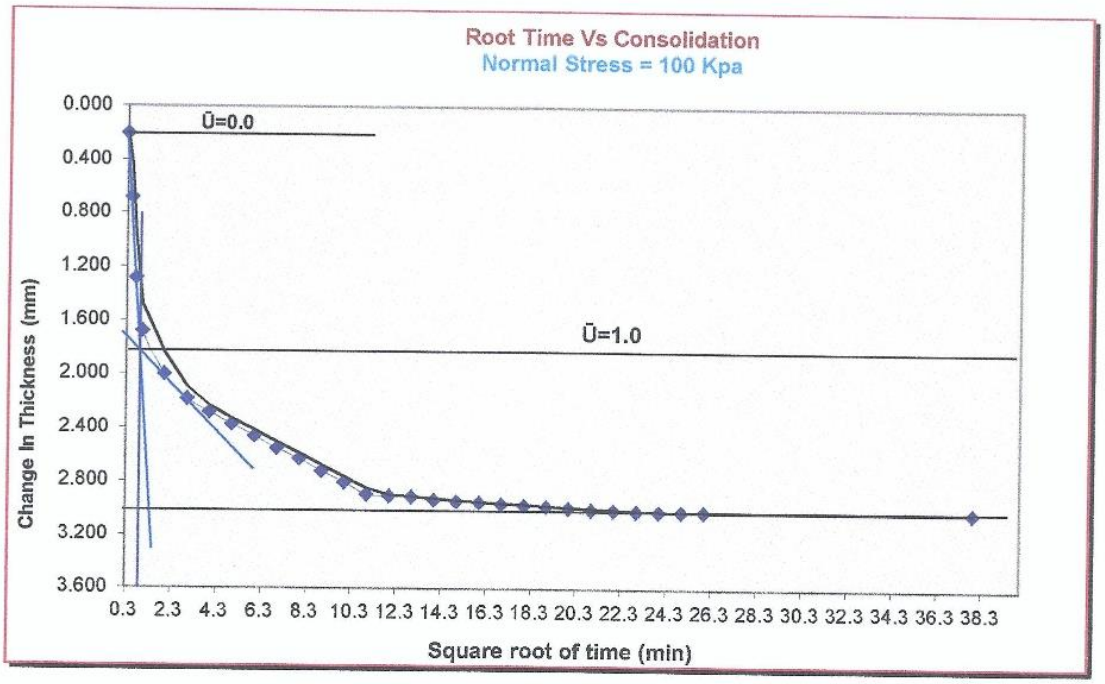
BS 1377: Part 7: 1990

TP KM 8+000 (0.3-0.6M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4569 **Sample No.** 4569

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-0.6M **Date Tested:** 21-11-21



Deformation (mm)	3.020
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.810
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	1.830
Rate of displacement mm/min	0.1778944
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.3305604

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

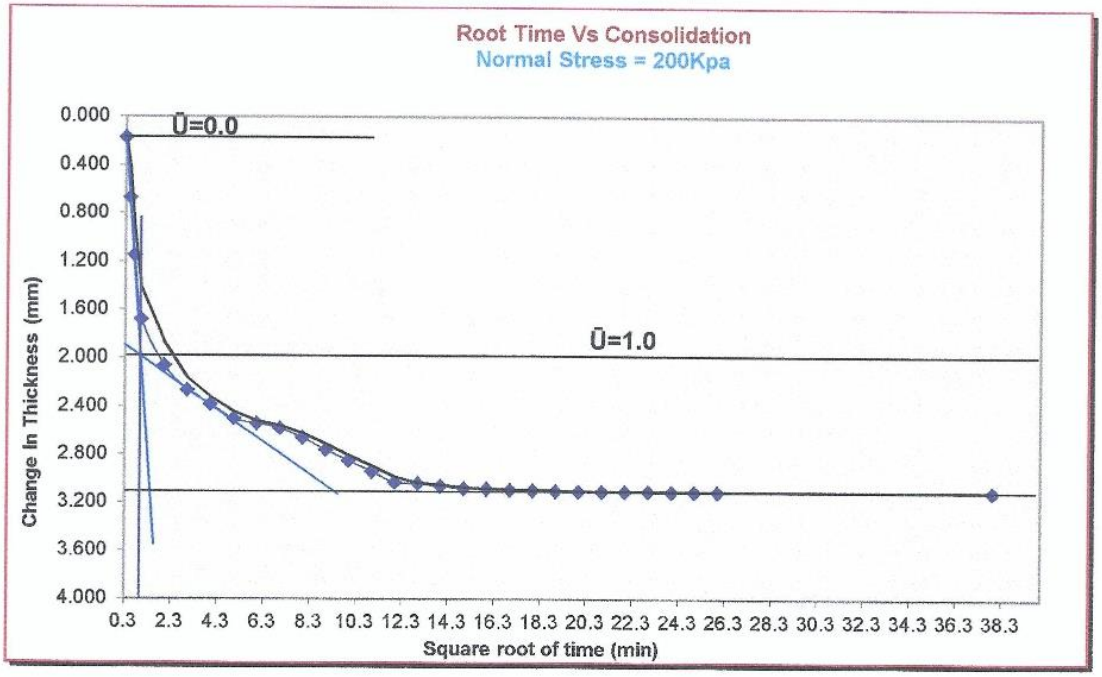
BS 1377: Part 7: 1990

TP KM 8+000 (0.3-0.6M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4569 **Sample No.** 4569

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-0.6M **Date Tested:** 21-11-21



Deformation (mm)	3.110
From graph $\sqrt{t_{100}}$	1.00
t_{100} (min)	1.00
$t_f = 12.7 \times t_{100}$	12.70
Estimated displacement at Failure (mm)	1.980
Rate of displacement mm/min	0.155906
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.323508

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

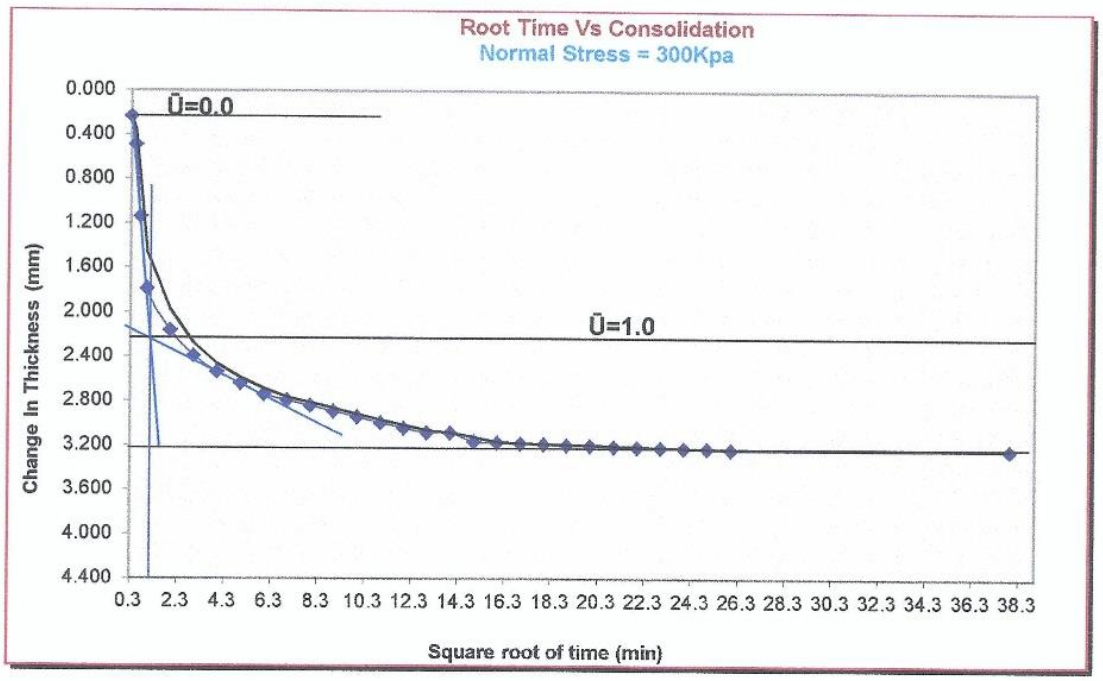
BS 1377: Part 7: 1990

TP KM 8+000 (0.3-0.6M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4569 **Sample No.** 4569

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-0.6M **Date Tested:** 21-11-21



Deformation (mm)	3.235
From graph $\sqrt{t_{100}}$	1.20
t_{100} (min)	1.44
$t_f = 12.7 \times t_{100}$	18.288
Estimated displacement at Failure (mm)	2.240
Rate of displacement mm/min	0.122485
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.313713

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Nairobi
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KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

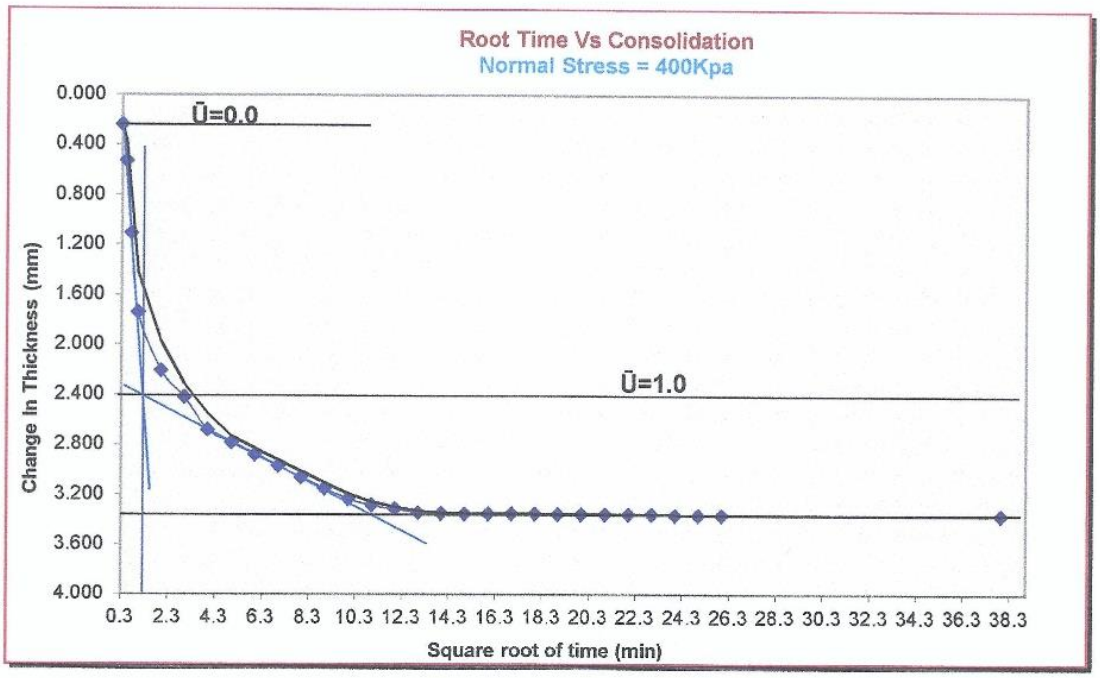
BS 1377: Part 7: 1990

TP KM 8+000 (0.3-0.6M)

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4569 **Sample No.** 4569

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3-0.6M **Date Tested:** 21-11-21



Deformation (mm)	3.360
From graph $\sqrt{t_{100}}$	1.250
t_{100} (min)	1.5625
$t_f = 12.7 \times t_{100}$	19.84375
Estimated displacement at Failure (mm)	2.240
Rate of displacement mm/min	0.1209449
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.3039179

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

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KAYABOMBO SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM10+500

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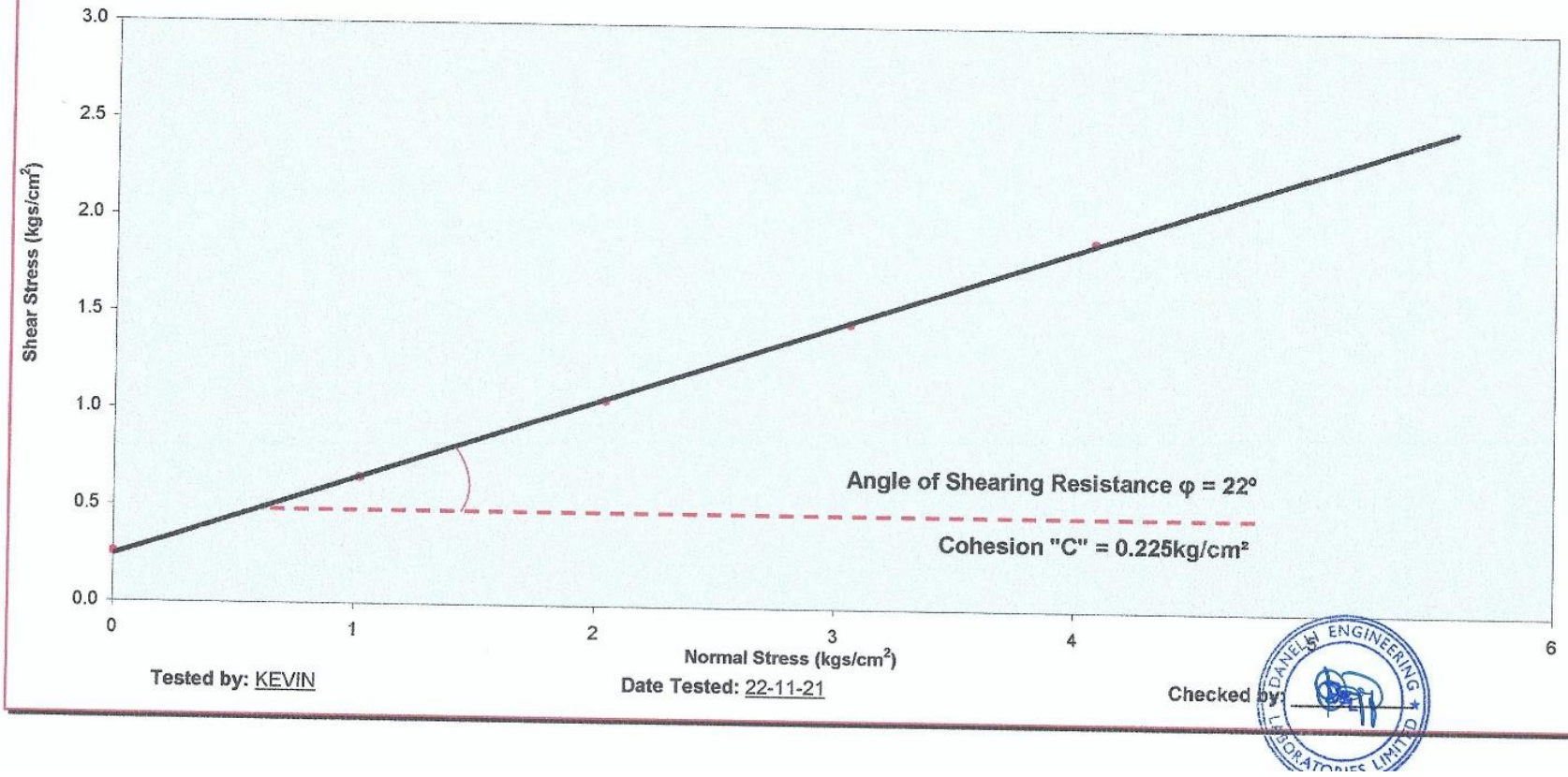

Tested by: KEVIN
Date Tested: 22-11-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

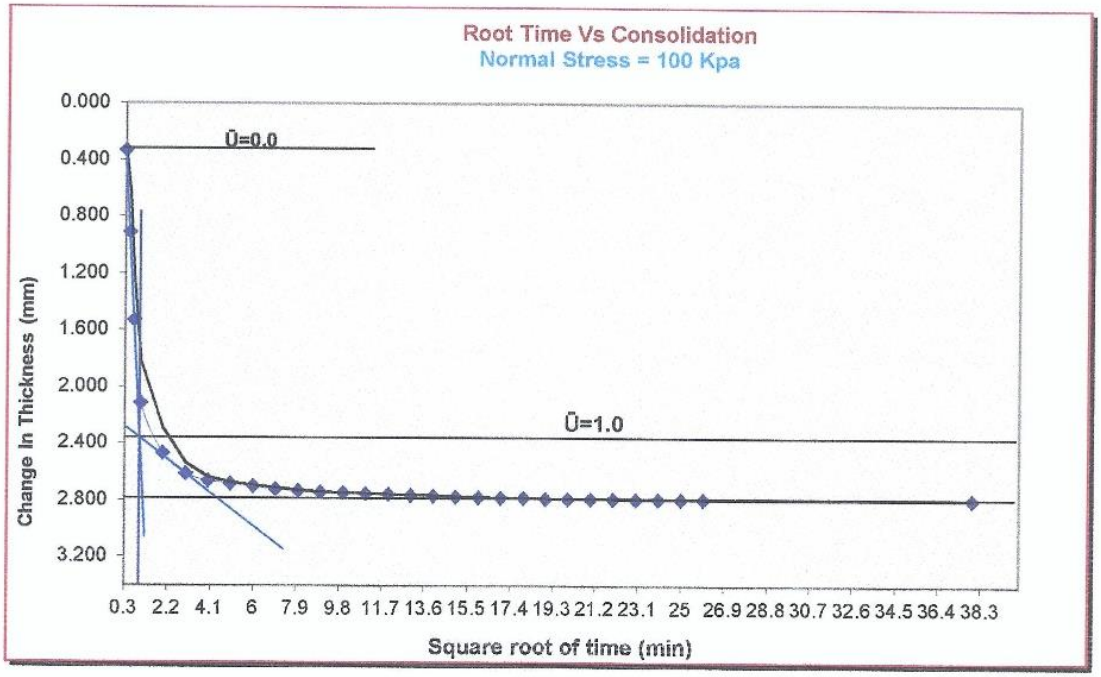
BS 1377: Part 7: 1990

TP KM 10+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4572 **Sample No.** 4572

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 22-11-21



Deformation (mm)	2.790
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.810
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	2.370
Rate of displacement mm/min	0.230388
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.174435

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
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Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

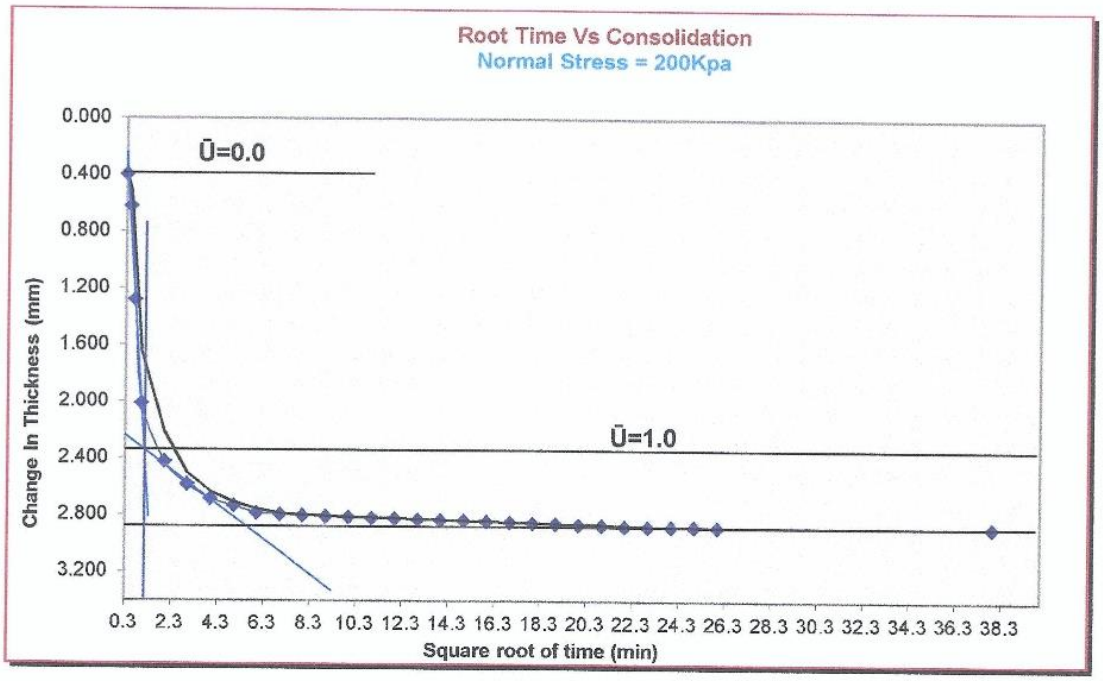
BS 1377: Part 7: 1990

TP KM 10+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4572 **Sample No.** 4572

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 22-11-21



Deformation (mm)	2.880
From graph $\sqrt{t_{100}}$	1.6
t_{100} (min)	2.56
$t_f = 12.7 \times t_{100}$	32.512
Estimated displacement at Failure (mm)	2.34
Rate of displacement mm/min	0.071973
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.168294

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Nairobi
Kenya

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KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

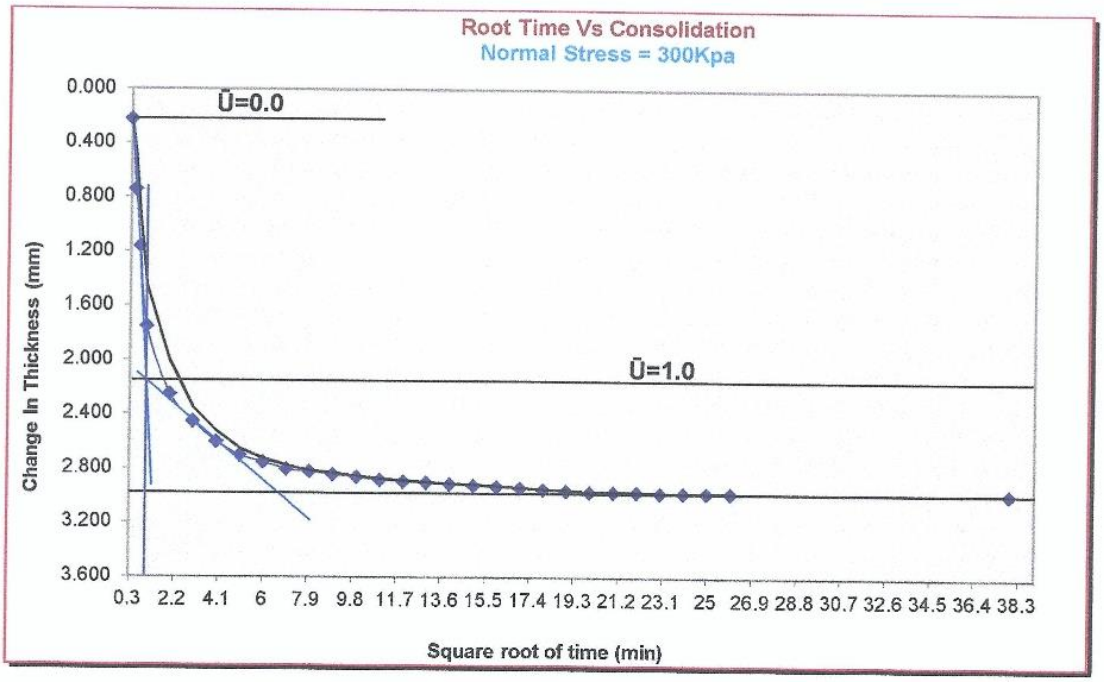
BS 1377: Part 7: 1990

TP KM 10+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4572 **Sample No.** 4572

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 22-11-21



Deformation (mm)	2.980
From graph $\sqrt{t_{100}}$	1.0
t_{100} (min)	1.0
$t_f = 12.7 \times t_{100}$	12.7
Estimated displacement at Failure (mm)	2.15
Rate of displacement mm/min	0.169291
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.1614695

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Nairobi
Kenya

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KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

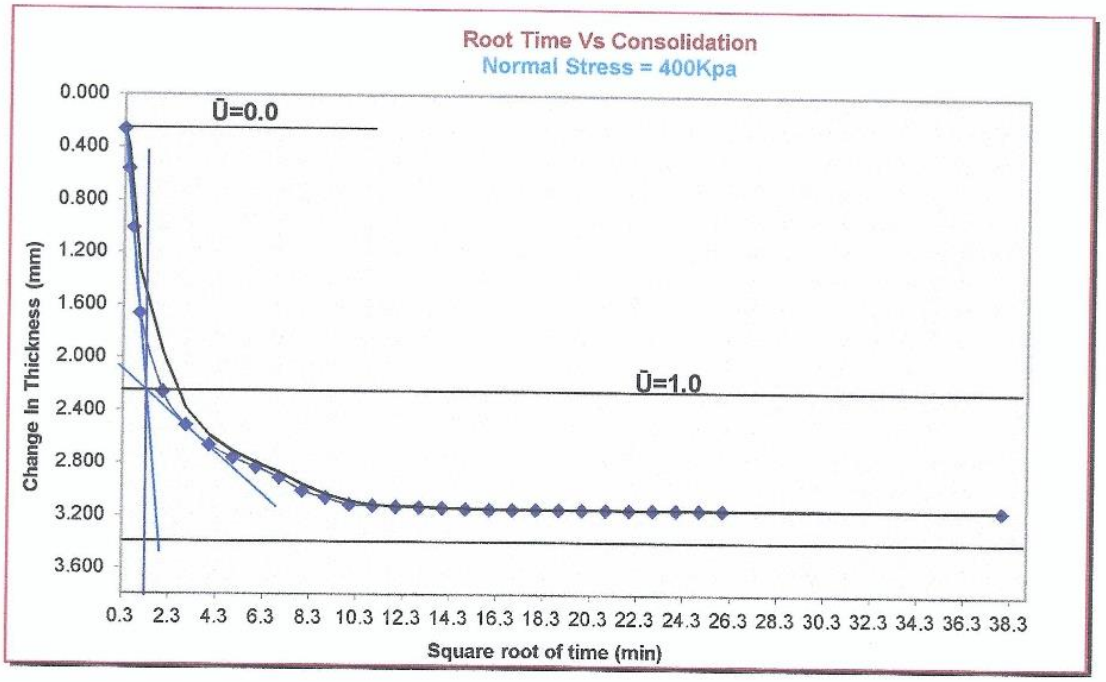
BS 1377: Part 7: 1990

TP KM 10+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4572 **Sample No.** 4572

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 22-11-21



Deformation (mm)	3.145
From graph $\sqrt{t_{100}}$	1.13
t_{100} (min)	1.2769
$t_f = 12.7 \times t_{100}$	16.21663
Estimated displacement at Failure (mm)	2.26
Rate of displacement mm/min	0.1393631
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.1502096

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

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BS 1377: 1990: Part 7: Clause 4
TP KM13+500

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Nairobi
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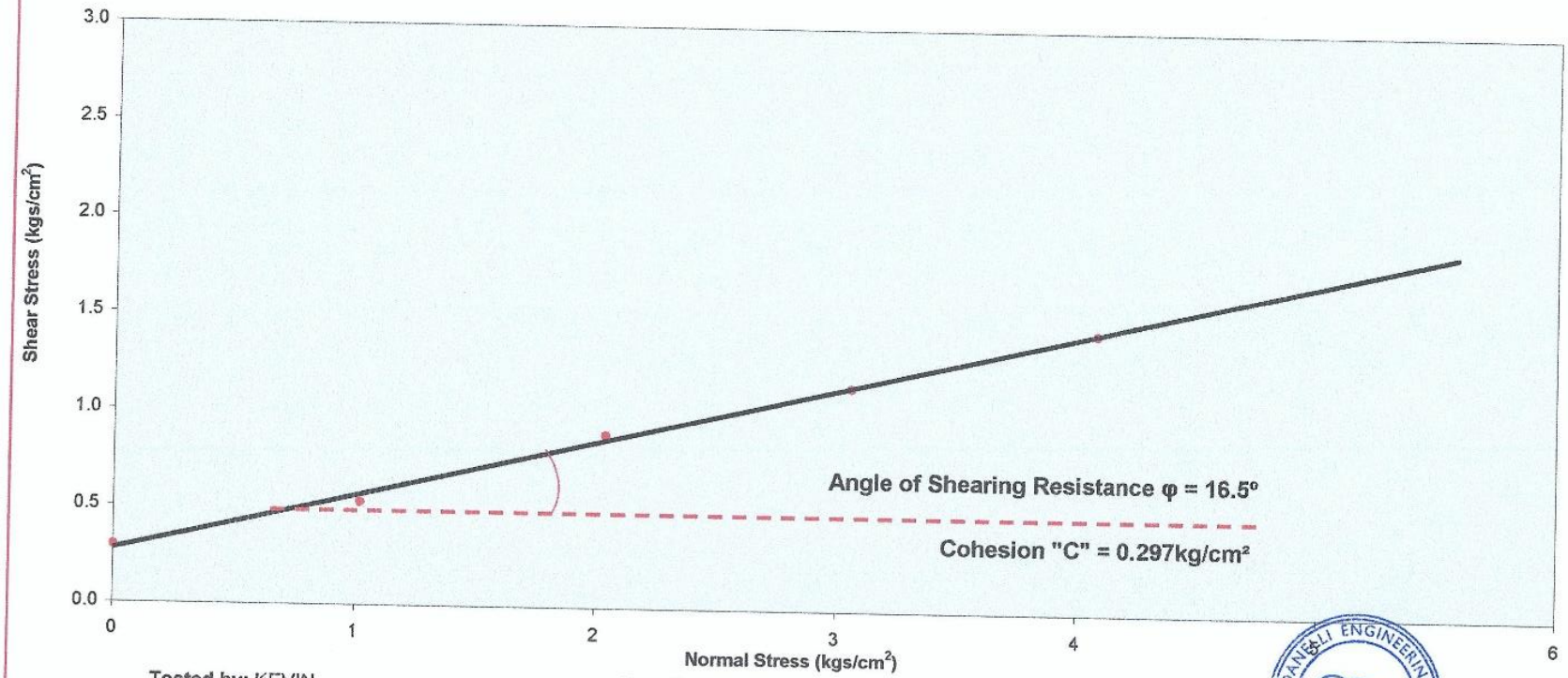

Tested by: KEVIN
Date Tested: 23-11-21
Checked by:

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

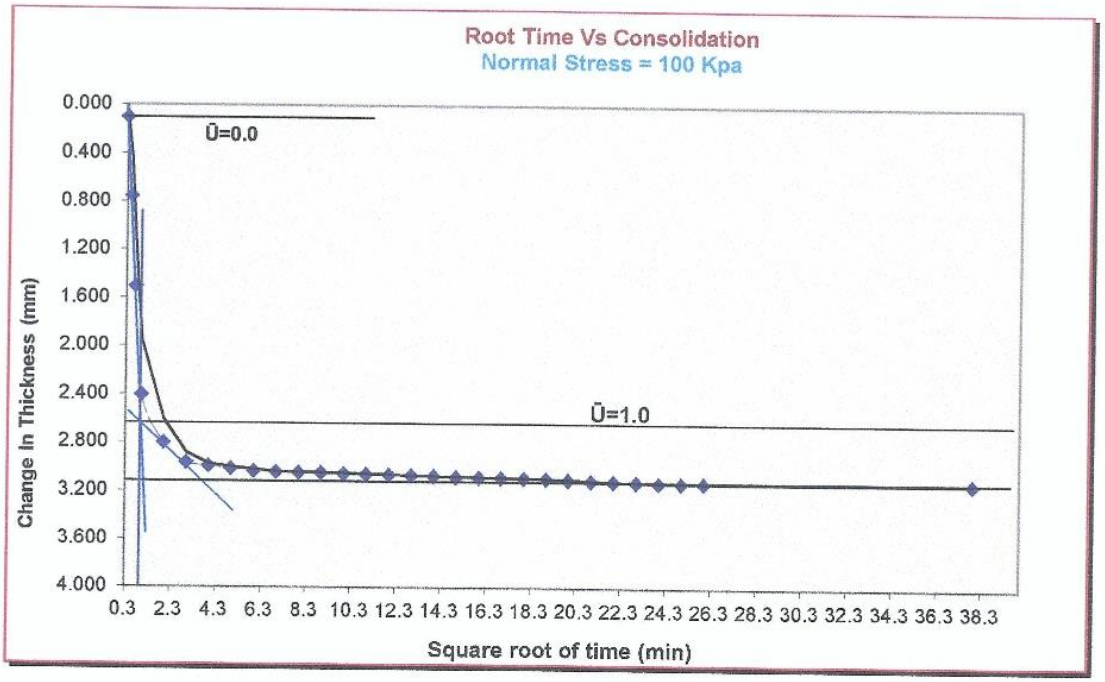
BS 1377: Part 7: 1990

TP KM 13+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4574 **Sample No.** 4574

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 23-11-21



Deformation (mm)	3.120
From graph $\sqrt{t_{100}}$	0.950
t_{100} (min)	0.9025
$t_f = 12.7 \times t_{100}$	11.46175
Estimated displacement at Failure (mm)	2.630
Rate of displacement mm/min	0.2294588
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.4066948

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Email: danellilab3@gmail.com
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Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

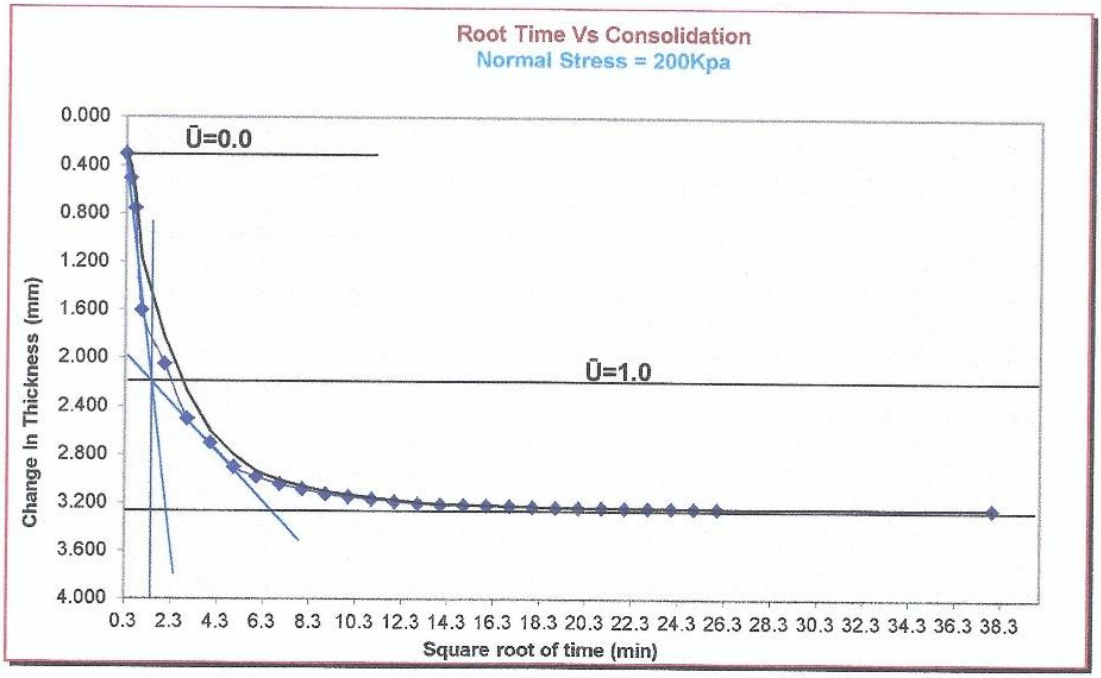
BS 1377: Part 7: 1990

TP KM 13+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4574 **Sample No.** 4574

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 23-11-21



Deformation (mm)	3.240
From graph $\sqrt{t_{100}}$	1.10
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.20
Rate of displacement mm/min	0.143164
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.3966946

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

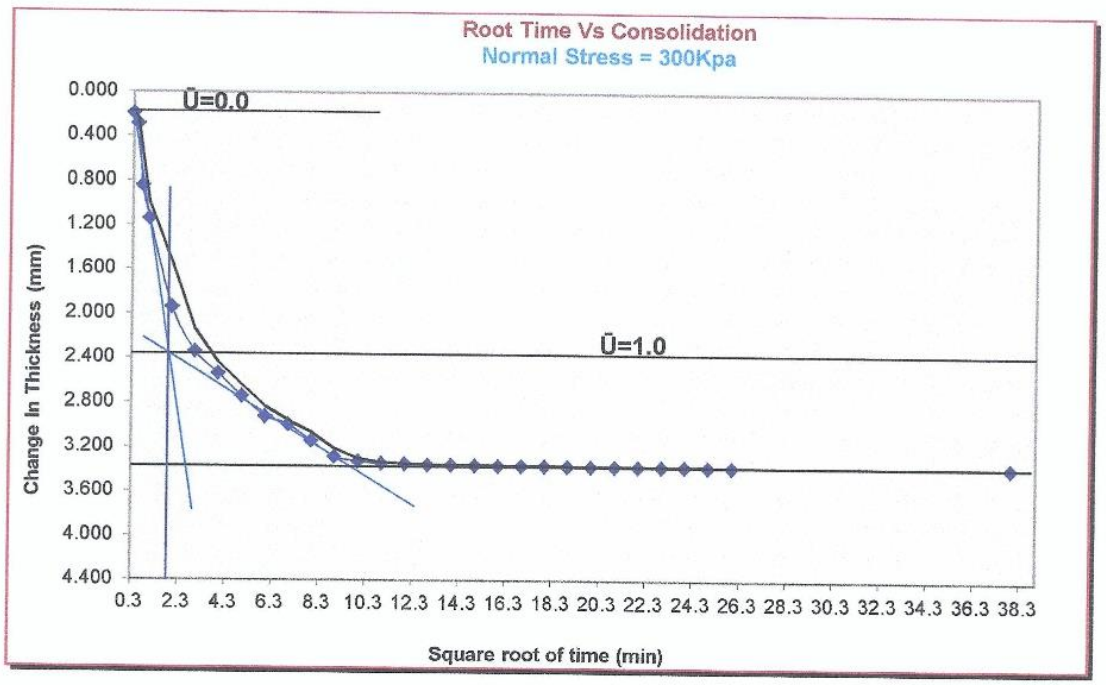
BS 1377: Part 7: 1990

TP KM 13+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4574 **Sample No.** 4574

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 23-11-21



Deformation (mm)	3.370
From graph $\sqrt{t_{100}}$	1.50
t_{100} (min)	2.250
$t_f = 12.7 \times t_{100}$	28.575
Estimated displacement at Failure (mm)	2.370
Rate of displacement mm/min	0.0829395
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.3858610

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Email: danellilab3@gmail.com
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

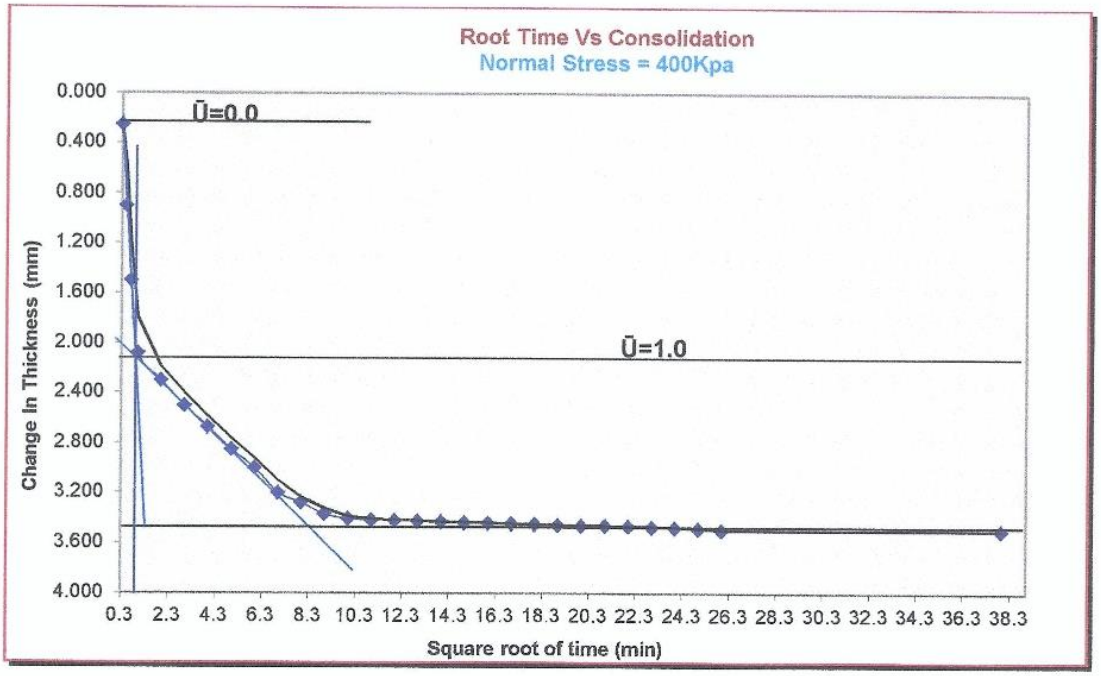
BS 1377: Part 7: 1990

TP KM 13+500

Site: KAYABOMBO **Location:** KWALE **Date Received:** 29-09-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-KAYABOMBO/4574 **Sample No.** 4574

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** - **Date Tested:** 23-11-21



Deformation (mm)	3.495
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.810
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	2.130
Rate of displacement mm/min	0.207057
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.375444

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
CHANGAMWE SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM2+000(0.4-1.6M)

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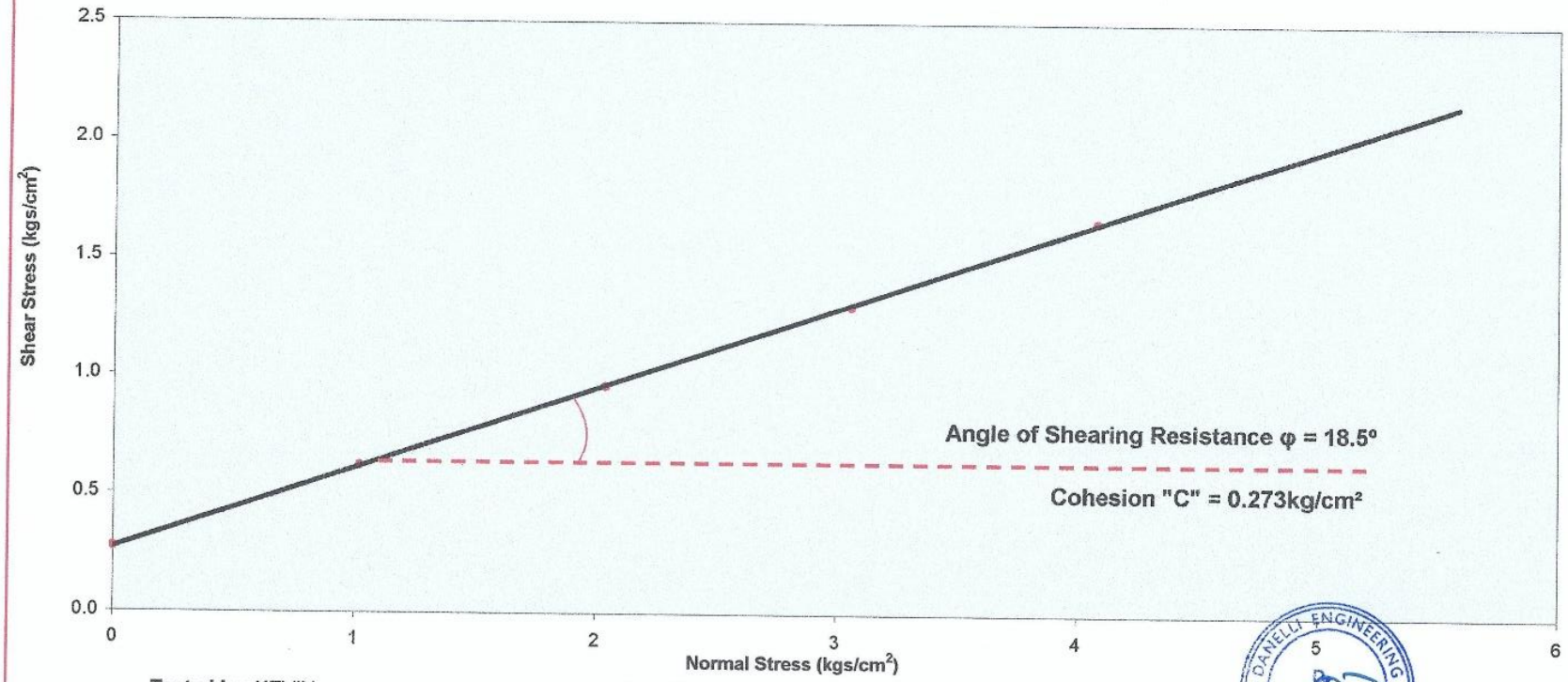

Tested by: KEVIN
Date Tested: 17-11-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

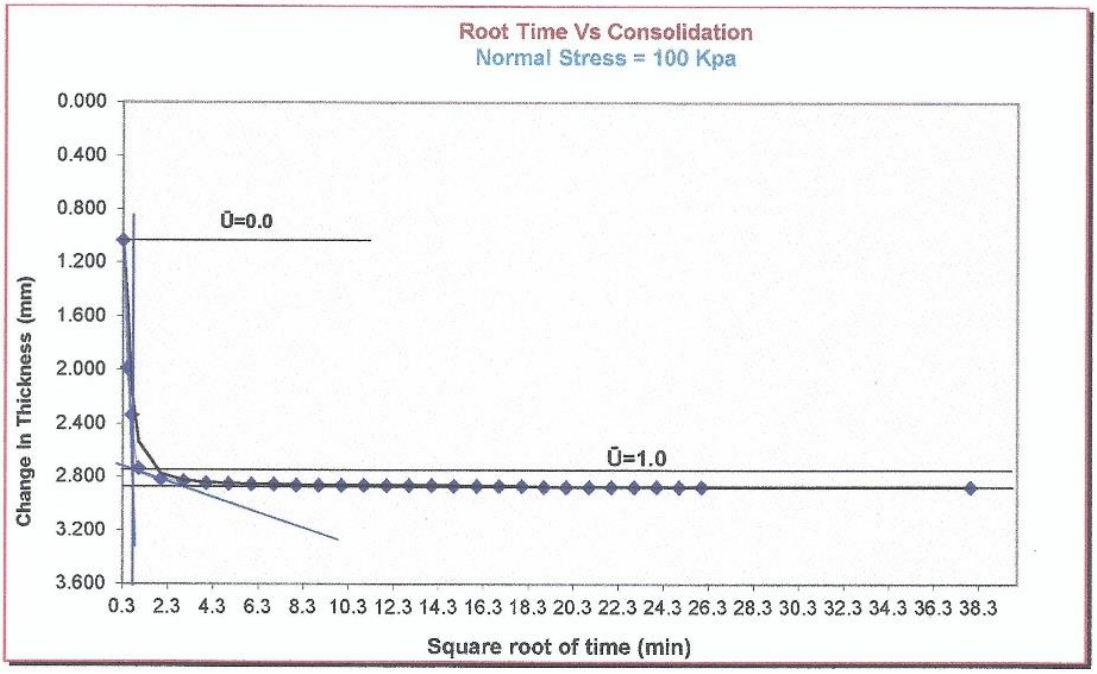
BS 1377: Part 7: 1990

TP KM 2+000 (Depth: 0.4-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5689 **Sample No.** 5689

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4–1.6 M **Date Tested:** 17-11-21



Deformation (mm)	2.870
From graph $\sqrt{t_{100}}$	0.75
t_{100} (min)	0.5625
$t_f = 12.7 \times t_{100}$	7.14375
Estimated displacement at Failure (mm)	2.745
Rate of displacement mm/min	0.384252
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.187683

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

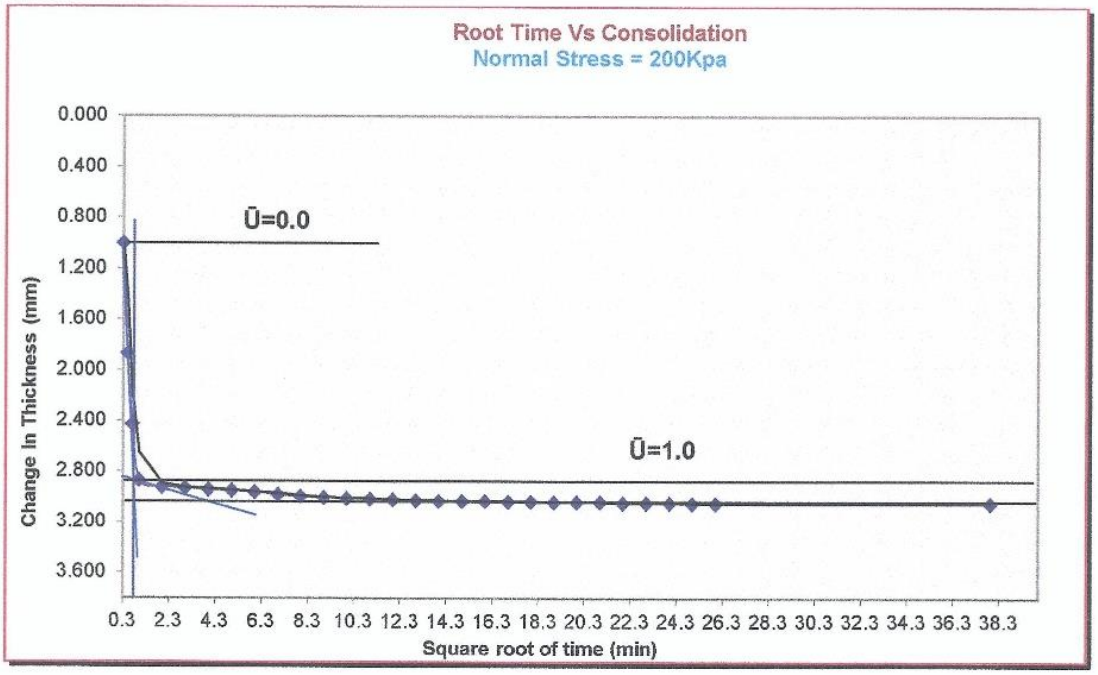
BS 1377: Part 7: 1990

TP KM 2+000 (Depth: 0.4-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5689 **Sample No.** 5689

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4–1.6 M **Date Tested:** 17-11-21



Deformation (mm)	3.050
From graph $\sqrt{t_{100}}$	0.80
t_{100} (min)	0.64
$t_f = 12.7 \times t_{100}$	8.128
Estimated displacement at Failure (mm)	2.875
Rate of displacement mm/min	0.342643
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.175200

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

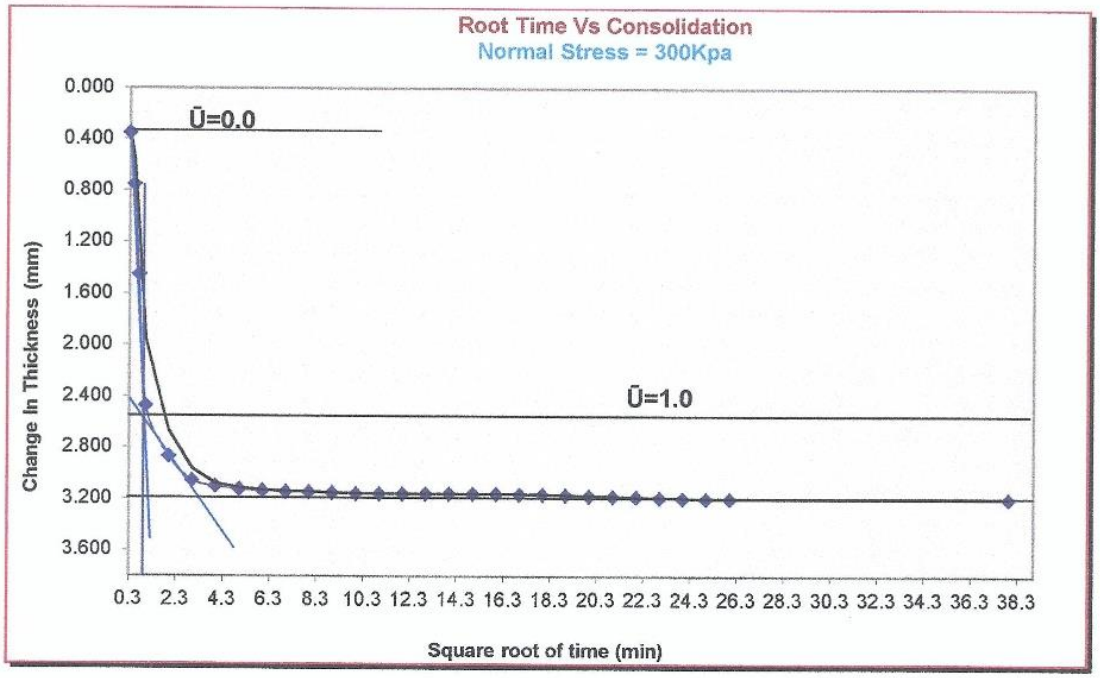
BS 1377: Part 7: 1990

TP KM 2+000 (Depth: 0.4-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5689 **Sample No.** 5689

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4–1.6 M **Date Tested:** 17-11-21



Deformation (mm)	3.195
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.81
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	2.580
Rate of displacement mm/min	0.250802
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.165147

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

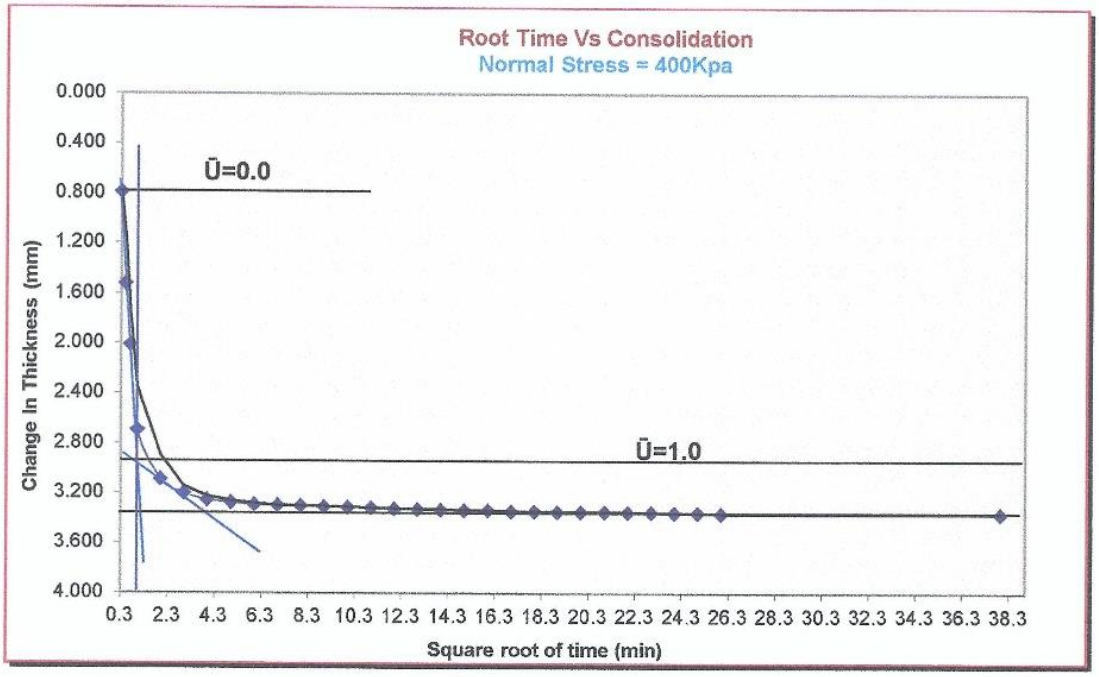
BS 1377: Part 7: 1990

TP KM 2+000 (Depth: 0.4-1.6m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5689 **Sample No.** 5689

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.4--1.6 M **Date Tested:** 17-11-21



Deformation (mm)	3.360
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.81
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	2.970
Rate of displacement mm/min	0.288714
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.153707

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY
CHANGAMWE SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM4+500(0.2-1.7M)

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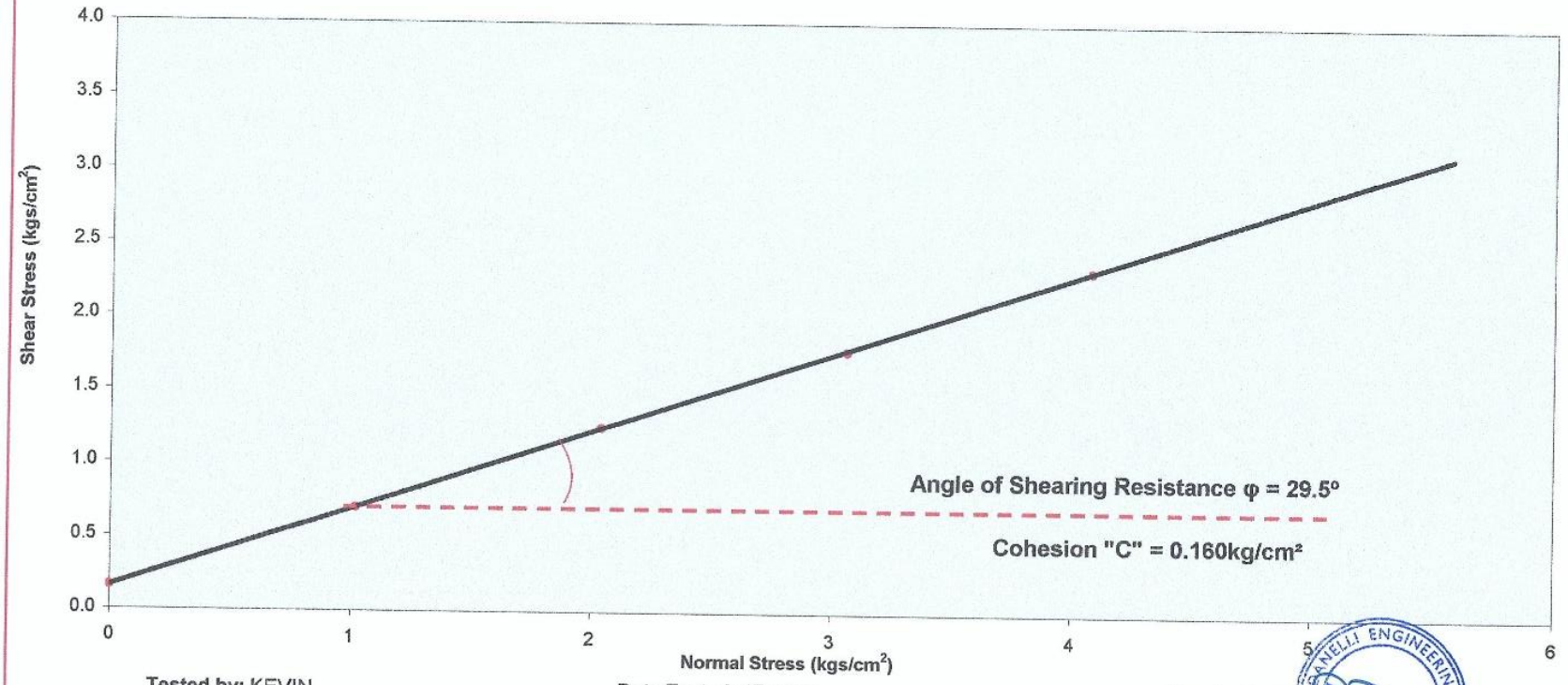

Tested by: KEVIN
Date Tested: 17-11-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

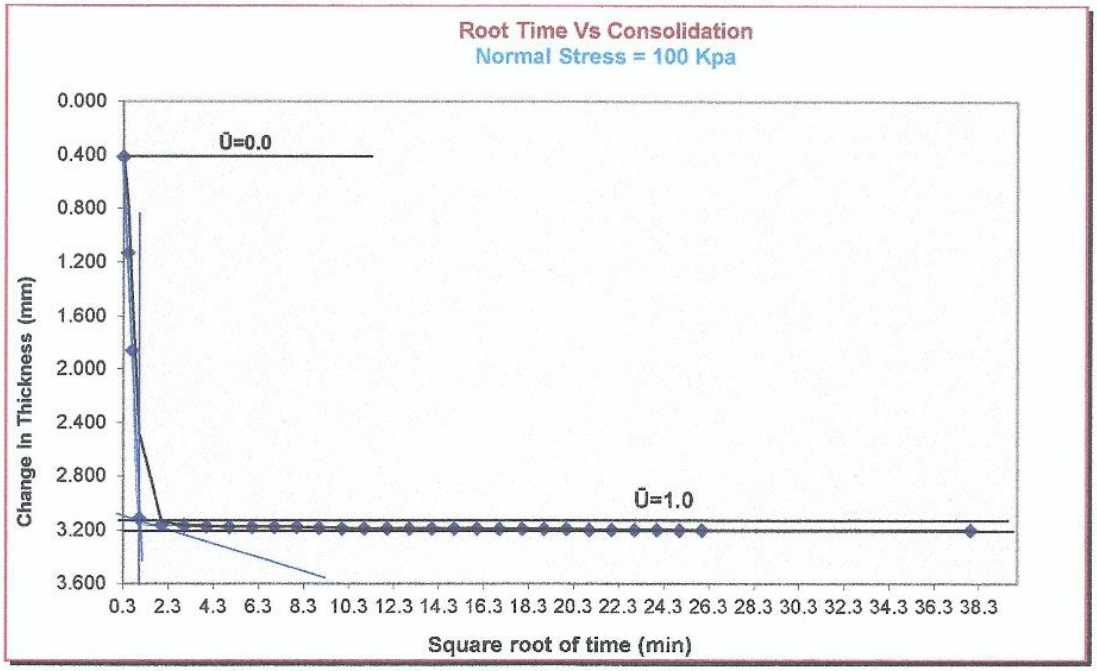
BS 1377: Part 7: 1990

TP KM 4+500 (Depth: 0.2-1.7m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5693 **Sample No.** 5693

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2--1.7 M **Date Tested:** 17-11-21



Deformation (mm)	3.20
From graph $\sqrt{t_{100}}$	1.0
t_{100} (min)	1.0
$t_f = 12.7 \times t_{100}$	12.7
Estimated displacement at Failure (mm)	3.125
Rate of displacement mm/min	0.24606
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.117133

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

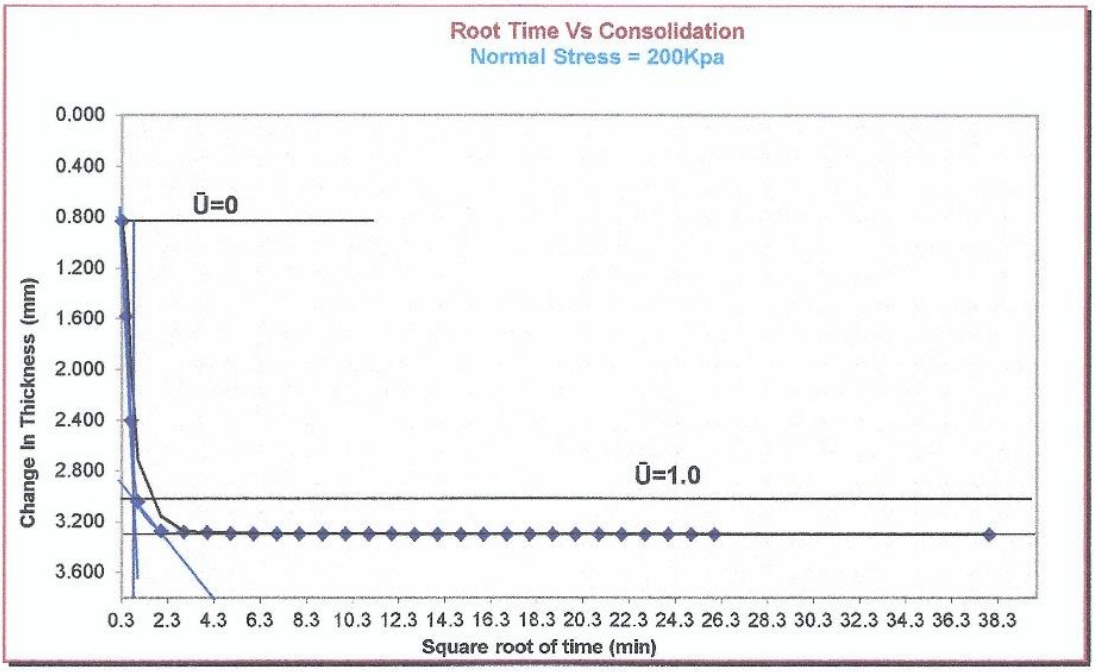
BS 1377: Part 7: 1990

TP KM 4+500 (Depth: 0.2-1.7m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5693 **Sample No.** 5693

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2–1.7 M **Date Tested:** 17-11-21



Deformation (mm)	3.30
From graph $\sqrt{t_{100}}$	0.85
t_{100} (min)	0.7225
$t_f = 12.7 \times t_{100}$	9.17575
Estimated displacement at Failure (mm)	3.025
Rate of displacement mm/min	0.329673
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.1104832

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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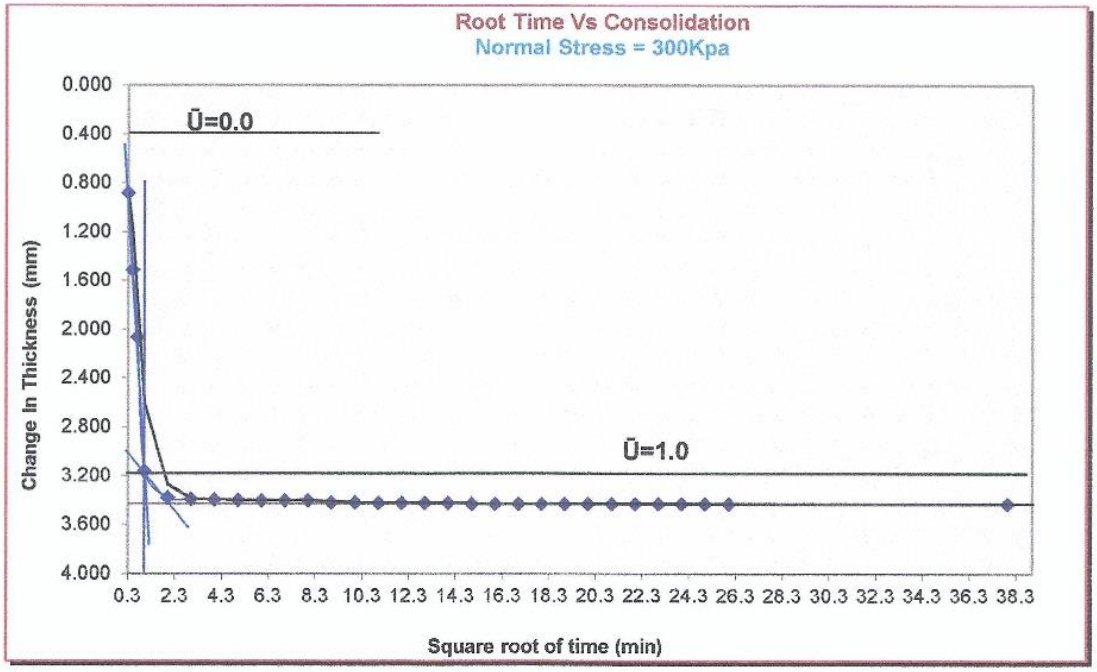
TP KM 4+500 (Depth: 0.2-1.7m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5693 **Sample No.** 5693

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2–1.7 M **Date Tested:** 17-11-21



Deformation (mm)	3.430
From graph $\sqrt{t_{100}}$	1.0
t_{100} (min)	1.0
$t_f = 12.7 \times t_{100}$	12.7
Estimated displacement at Failure (mm)	3.180
Rate of displacement mm/min	0.2503937
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.1018387

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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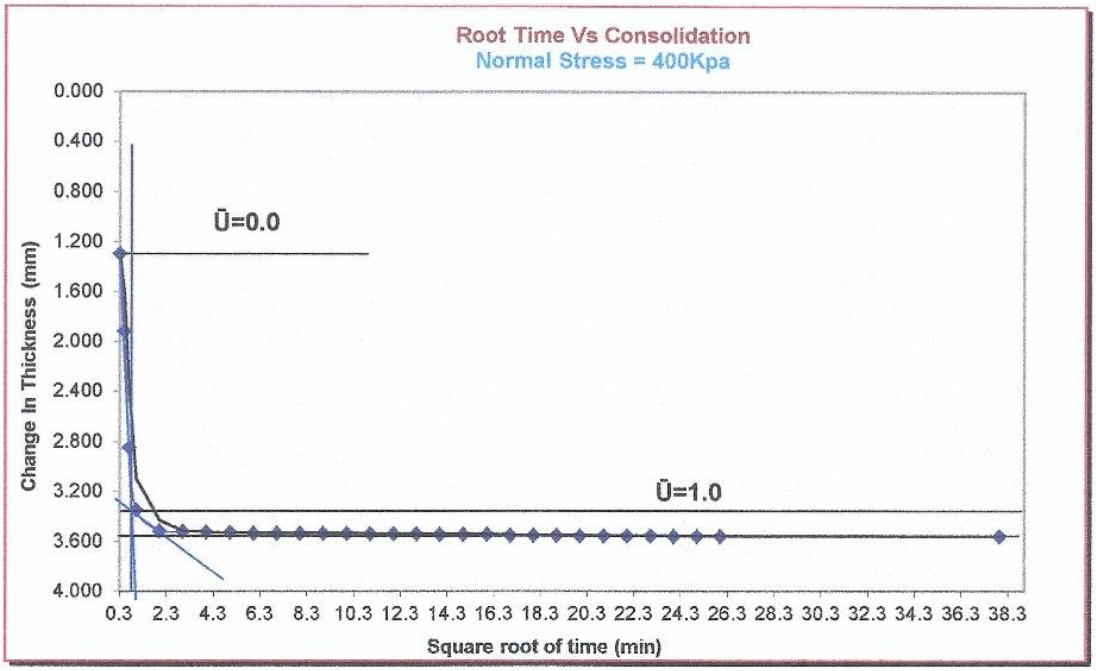
TP KM 4+500 (Depth: 0.2-1.7m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5693 **Sample No.** 5693

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2–1.7 M **Date Tested:** 17-11-21



Deformation (mm)	3.555
From graph $\sqrt{t_{100}}$	0.9
t_{100} (min)	0.81
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	3.350
Rate of displacement mm/min	0.325654
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.0935267

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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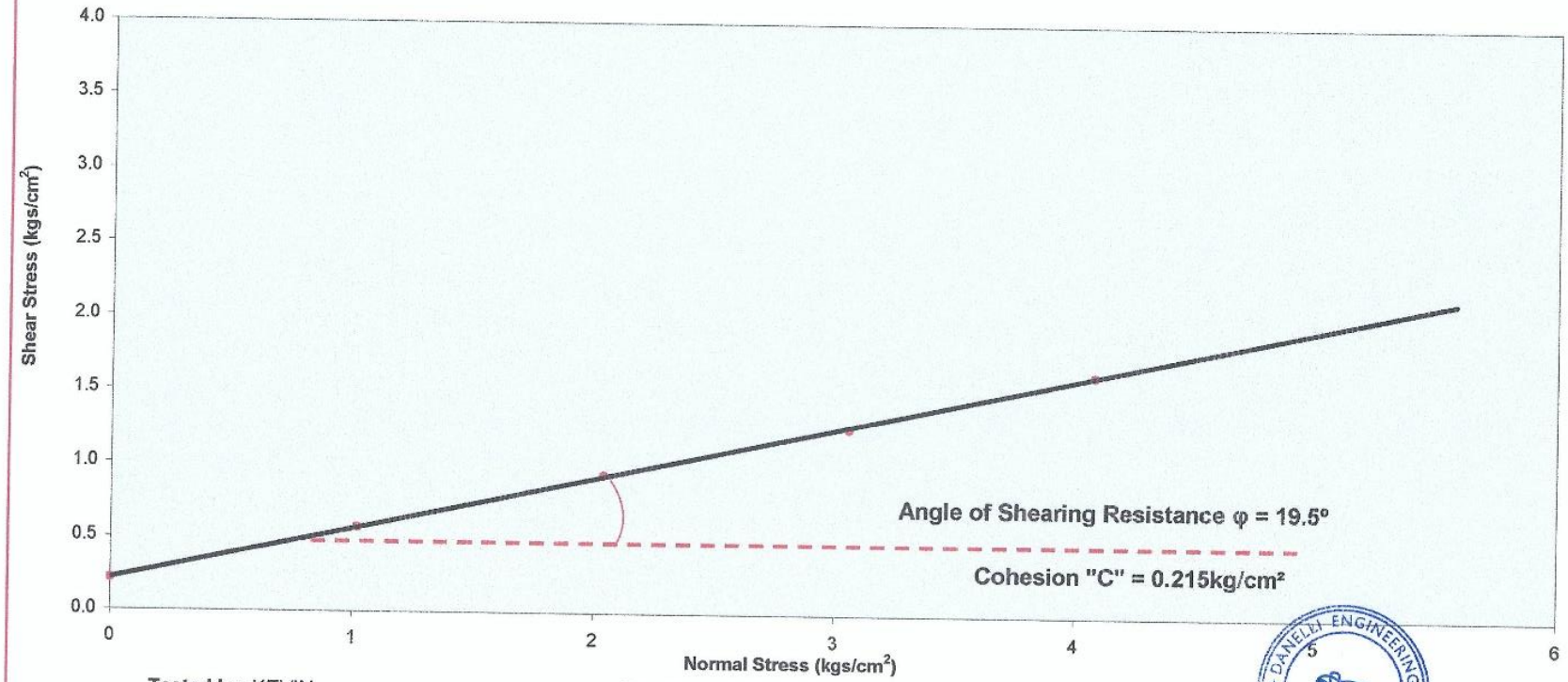

Tested by: KEVIN
Date Tested: 18-11-21
Checked by:

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info@danellilab.com
Web site: www.danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

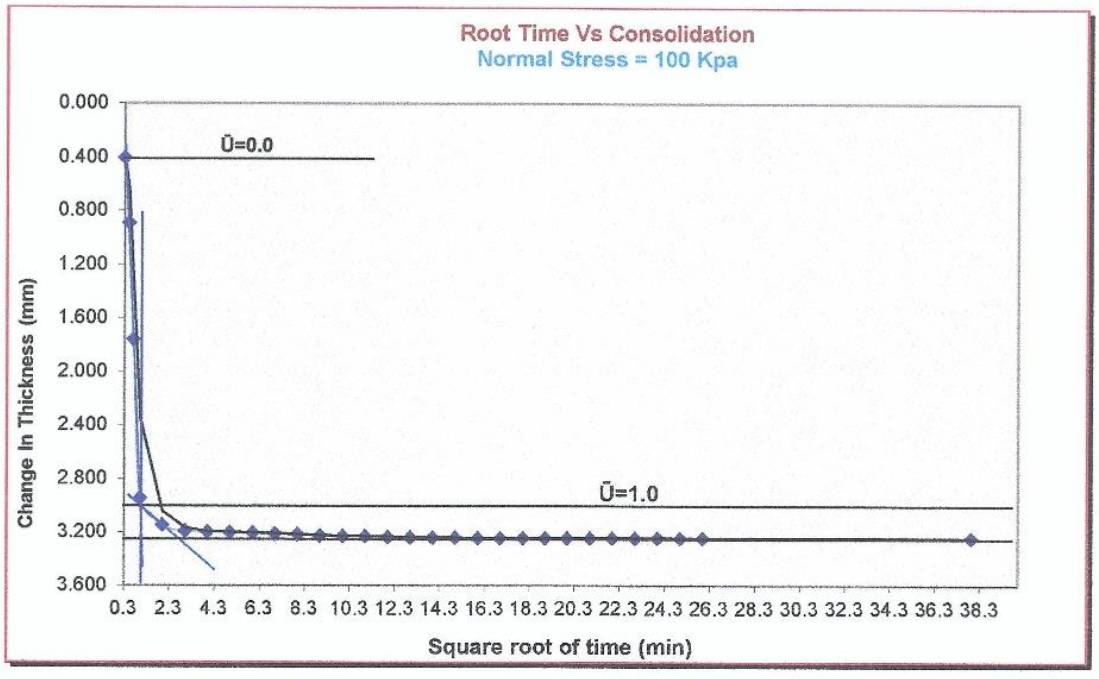
BS 1377: Part 7: 1990

TP KM 7+500 (Depth: 0.2-0.9m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5696 **Sample No.** 5696

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2–0.9 M **Date Tested:** 18-11-21



Deformation (mm)	3.245
From graph $\sqrt{t_{100}}$	1.0
t_{100} (min)	1.0
$t_f = 12.7 \times t_{100}$	12.7
Estimated displacement at Failure (mm)	3.00
Rate of displacement mm/min	0.23622
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.23996

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

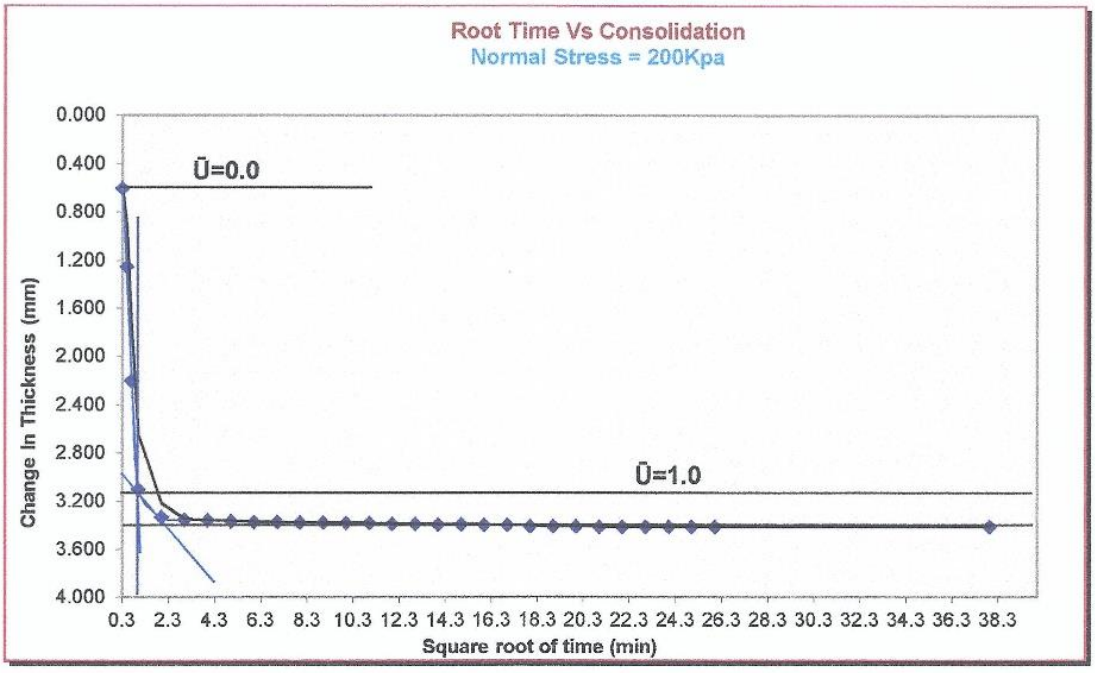
BS 1377: Part 7: 1990

TP KM 7+500 (Depth: 0.2-0.9m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5696 **Sample No.** 5696

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2–0.9 M **Date Tested:** 18-11-21



Deformation (mm)	3.410
From graph $\sqrt{t_{100}}$	0.95
t_{100} (min)	0.9025
$t_f = 12.7 \times t_{100}$	11.46175
Estimated displacement at Failure (mm)	3.140
Rate of displacement mm/min	0.273955
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.253161

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

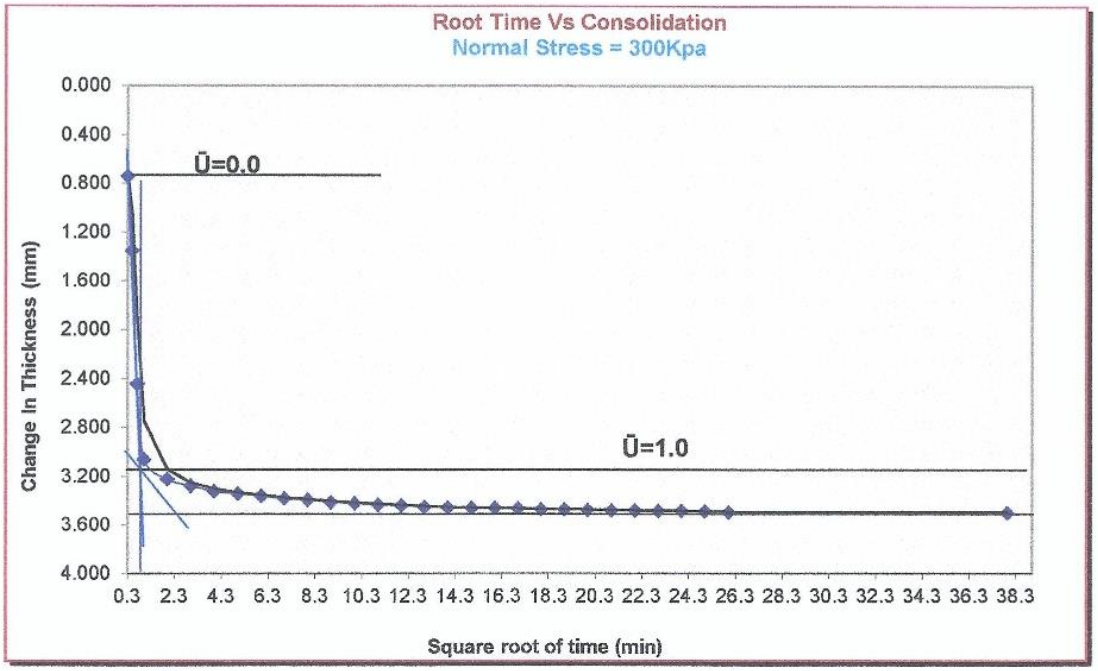
BS 1377: Part 7: 1990

TP KM 7+500 (Depth: 0.2-0.9m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5696 **Sample No.** 5696

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2–0.9 M **Date Tested:** 18-11-21



Deformation (mm)	3.500
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.81
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	3.150
Rate of displacement mm/min	0.306212
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.258816

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

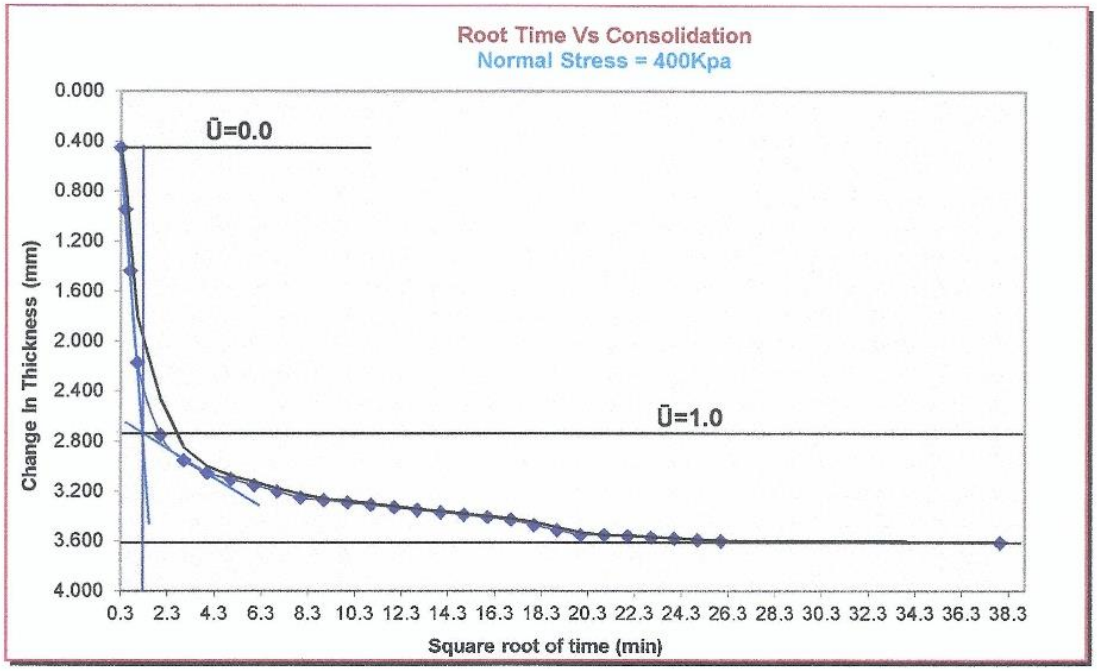
BS 1377: Part 7: 1990

TP KM 7+500 (Depth: 0.2-0.9m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5696 **Sample No.** 5696

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.2–0.9 M **Date Tested:** 18-11-21



Deformation (mm)	3.610
From graph $\sqrt{t_{100}}$	1.25
t_{100} (min)	1.5625
$t_f = 12.7 \times t_{100}$	19.84375
Estimated displacement at Failure (mm)	2.740
Rate of displacement mm/min	0.138078
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.211999

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY
CHANGAMWE SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM8+000(0.0-1.0M)

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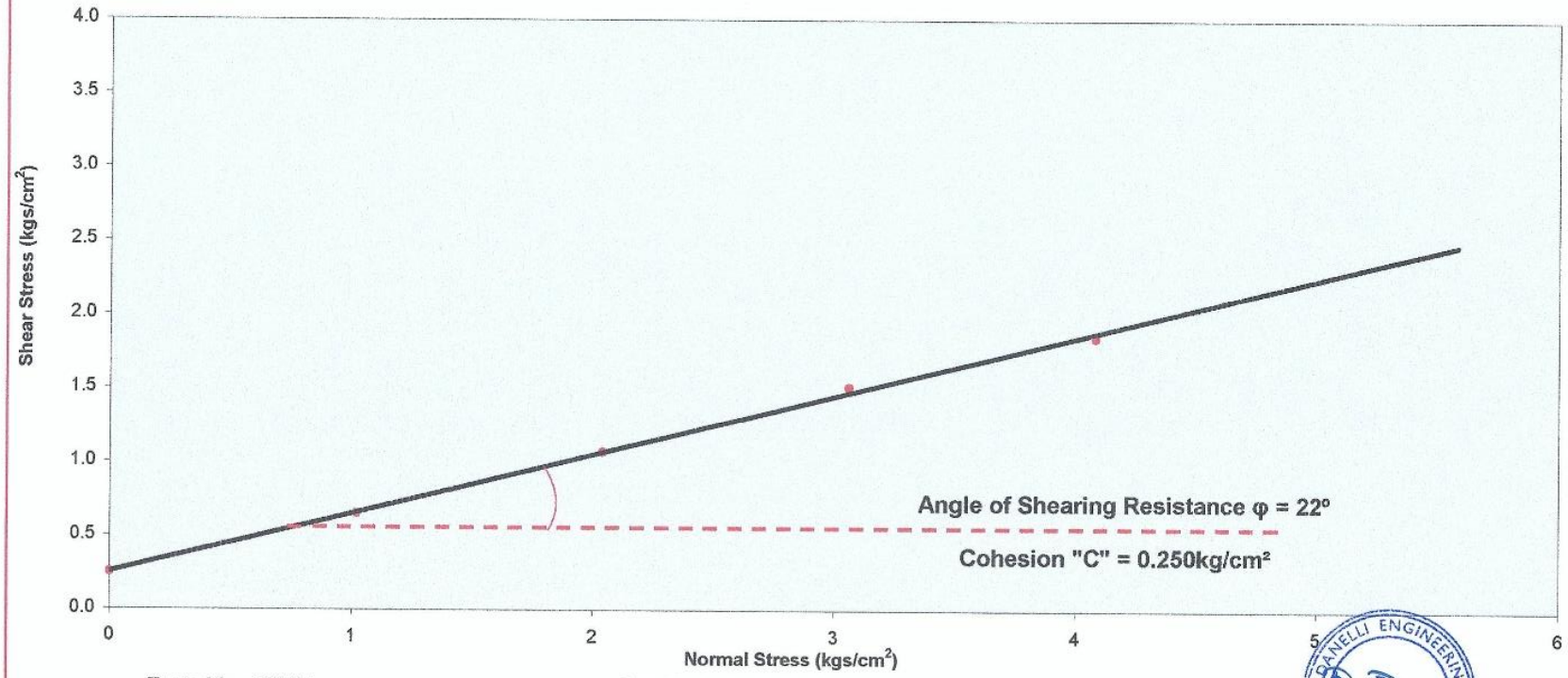

Tested by: KEVIN
Date Tested: 18-11-21
Checked by:

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

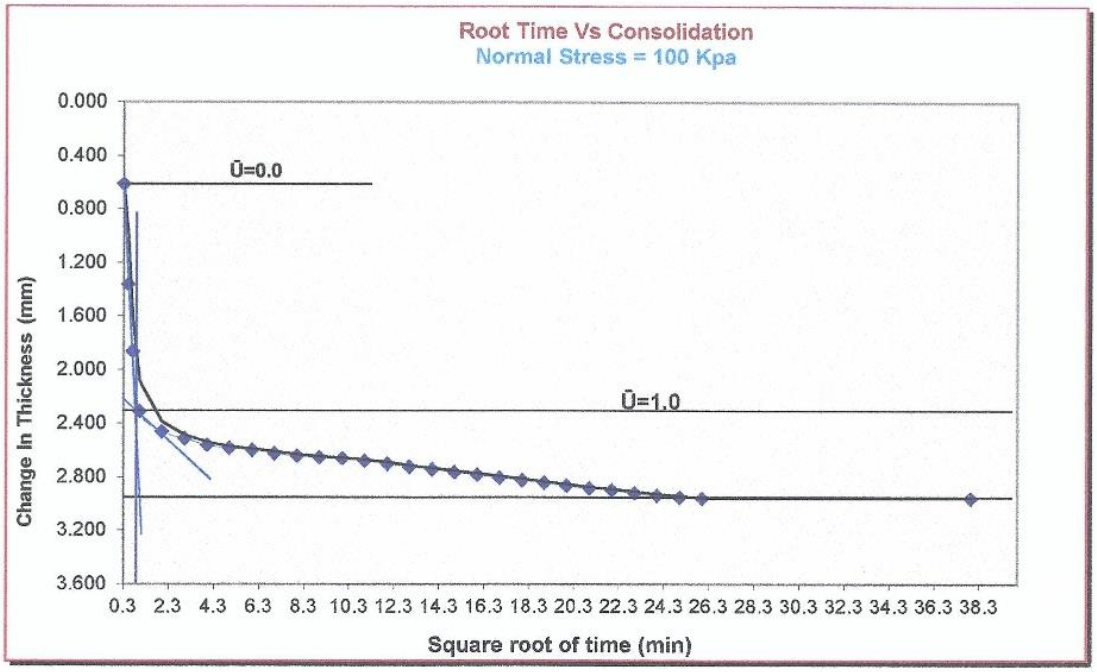
BS 1377: Part 7: 1990

TP KM 8+000 (Depth: 0.0-1.0m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5698 **Sample No.** 5698

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0–1.0 M **Date Tested:** 18-11-21



Deformation (mm)	2.955
From graph $\sqrt{t_{100}}$	0.85
t_{100} (min)	0.7225
$t_f = 12.7 \times t_{100}$	9.17575
Estimated displacement at Failure (mm)	2.305
Rate of displacement mm/min	0.25121
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.217498

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

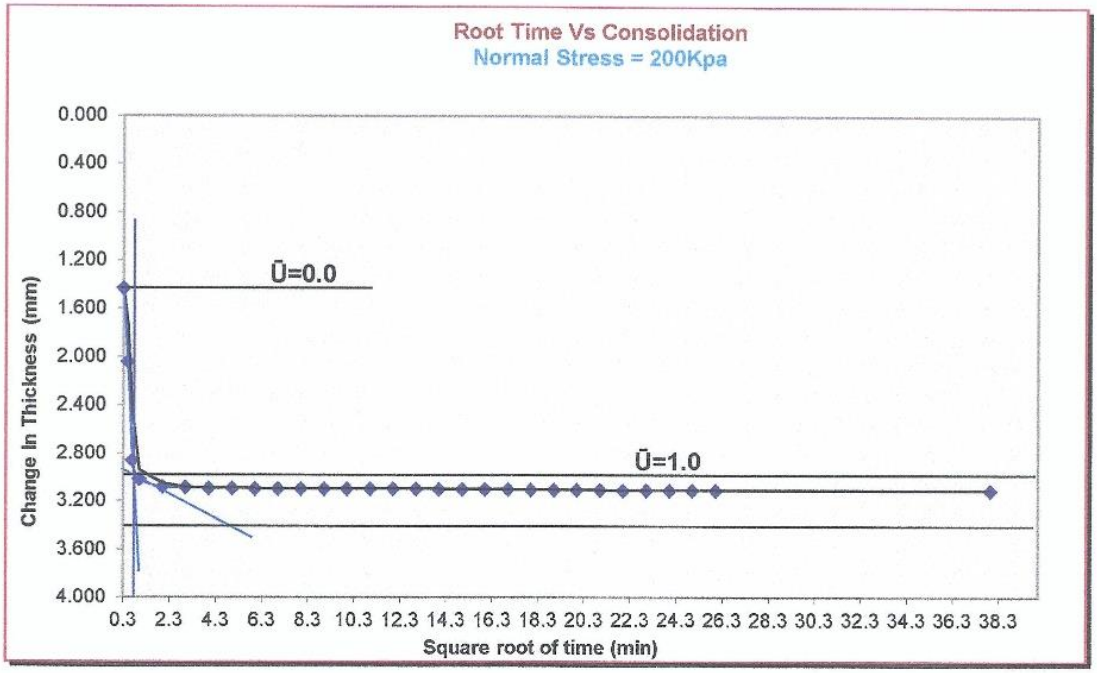
BS 1377: Part 7: 1990

TP KM 8+000 (Depth: 0.0-1.0m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5698 **Sample No.** 5698

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0–1.0 M **Date Tested:** 18-11-21



Deformation (mm)	3.110
From graph $\sqrt{t_{100}}$	0.80
t_{100} (min)	0.640
$t_f = 12.7 \times t_{100}$	8.128
Estimated displacement at Failure (mm)	2.98
Rate of displacement mm/min	0.366634
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.2064274

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

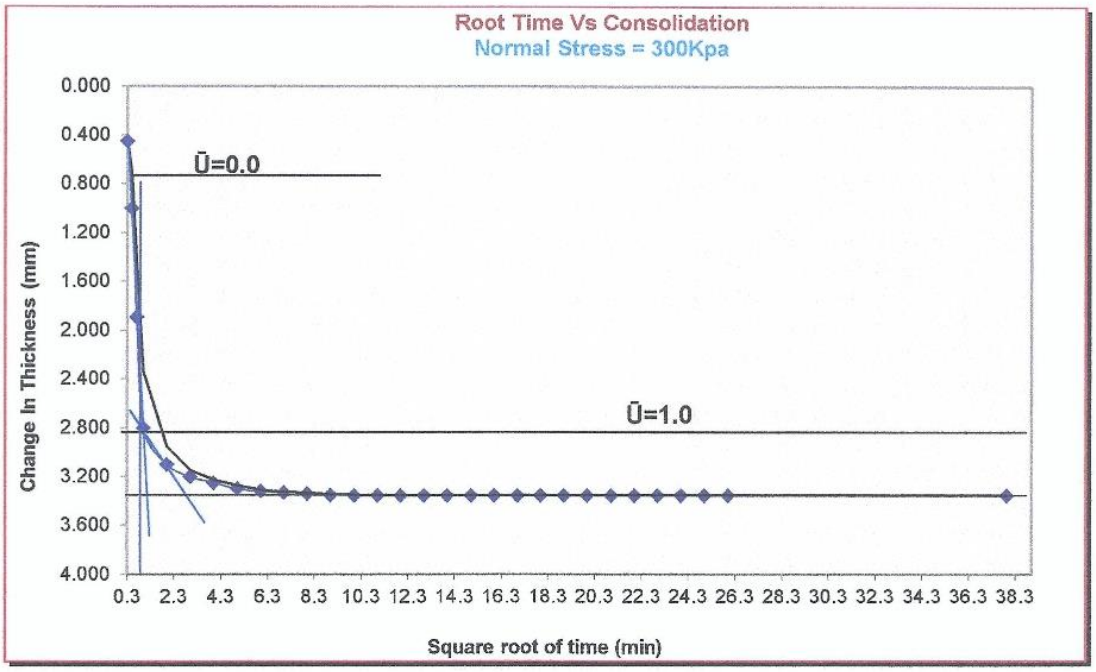
BS 1377: Part 7: 1990

TP KM 8+000 (Depth: 0.0-1.0m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5698 **Sample No.** 5698

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0–1.0 M **Date Tested:** 18-11-21



Deformation (mm)	3.355
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.81
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	2.850
Rate of displacement mm/min	0.277049
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.1889274

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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CHANGAMWE SITE

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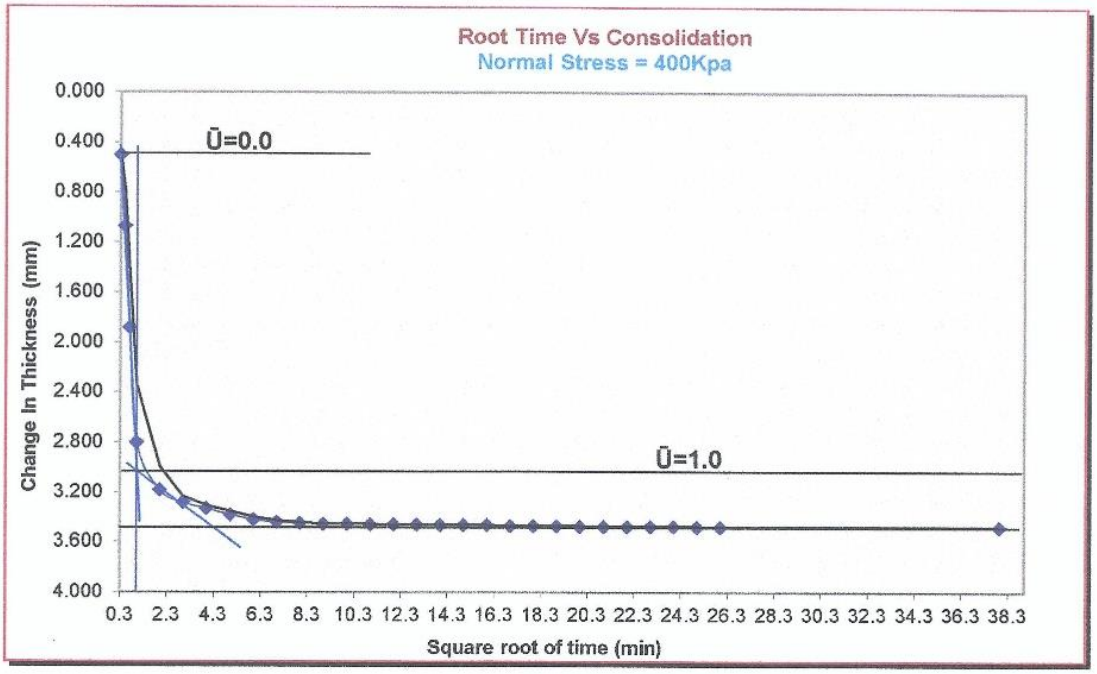
BS 1377: Part 7: 1990

TP KM 8+000 (Depth: 0.0-1.0m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5698 **Sample No.** 5698

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0–1.0 M **Date Tested:** 18-11-21



Deformation (mm)	3.480
From graph $\sqrt{t_{100}}$	1.09
t_{100} (min)	1.1881
$t_f = 12.7 \times t_{100}$	15.08887
Estimated displacement at Failure (mm)	3.030
Rate of displacement mm/min	0.200810
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.2485712

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY
CHANGAMWE SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM11+618(0.3-1.2M)

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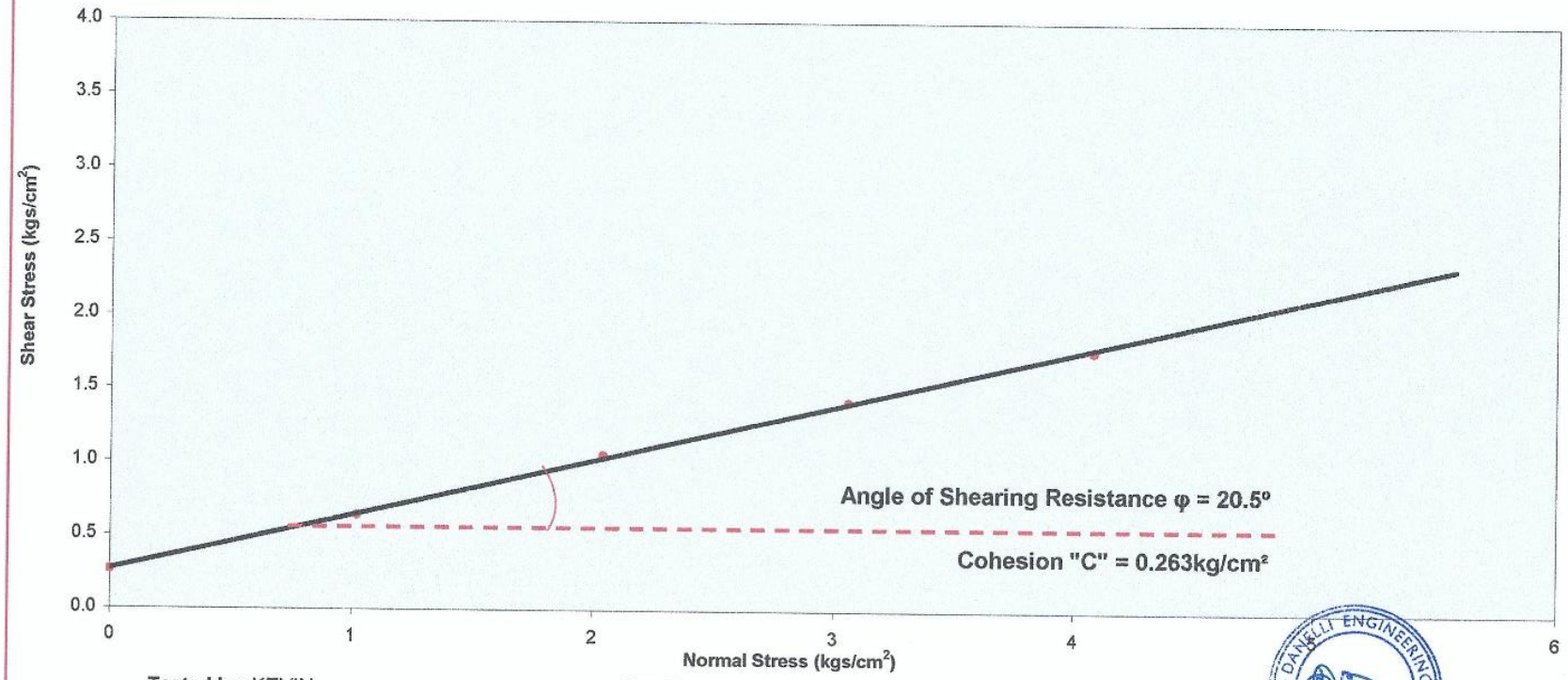

Tested by: KEVIN
Date Tested: 18-11-21
Checked by:

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

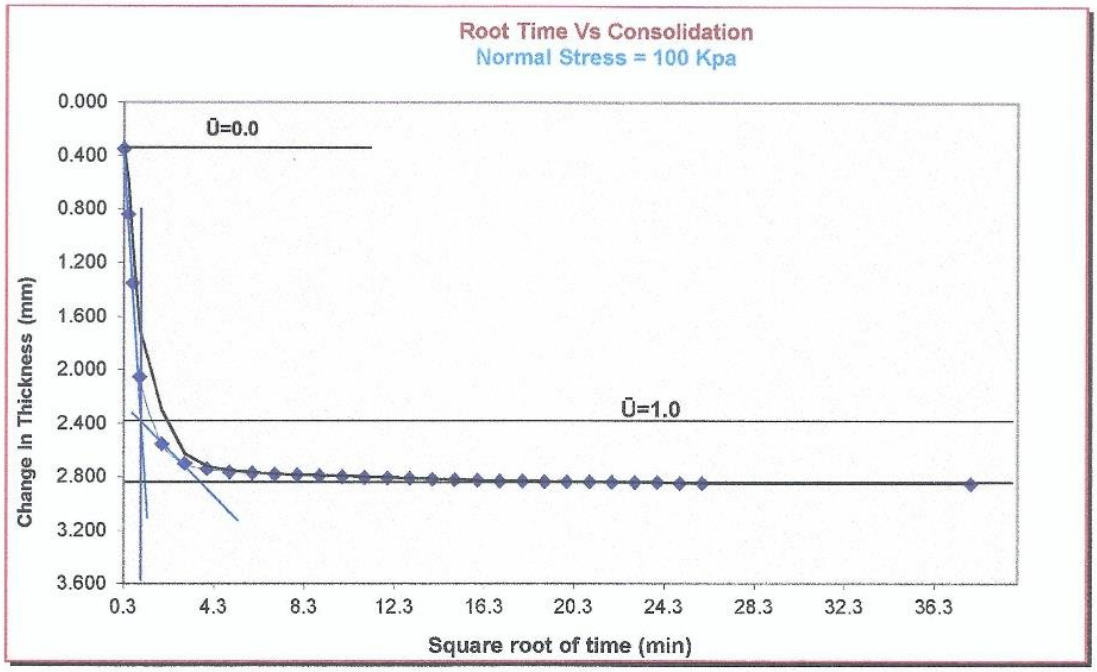
BS 1377: Part 7: 1990

TP KM 11+618 (Depth: 0.3-1.2m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5703 **Sample No.** 5703

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3–1.2 M **Date Tested:** 18-11-21



Deformation (mm)	2.850
From graph $\sqrt{t_{100}}$	1.10
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.380
Rate of displacement mm/min	0.15877
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.258183

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

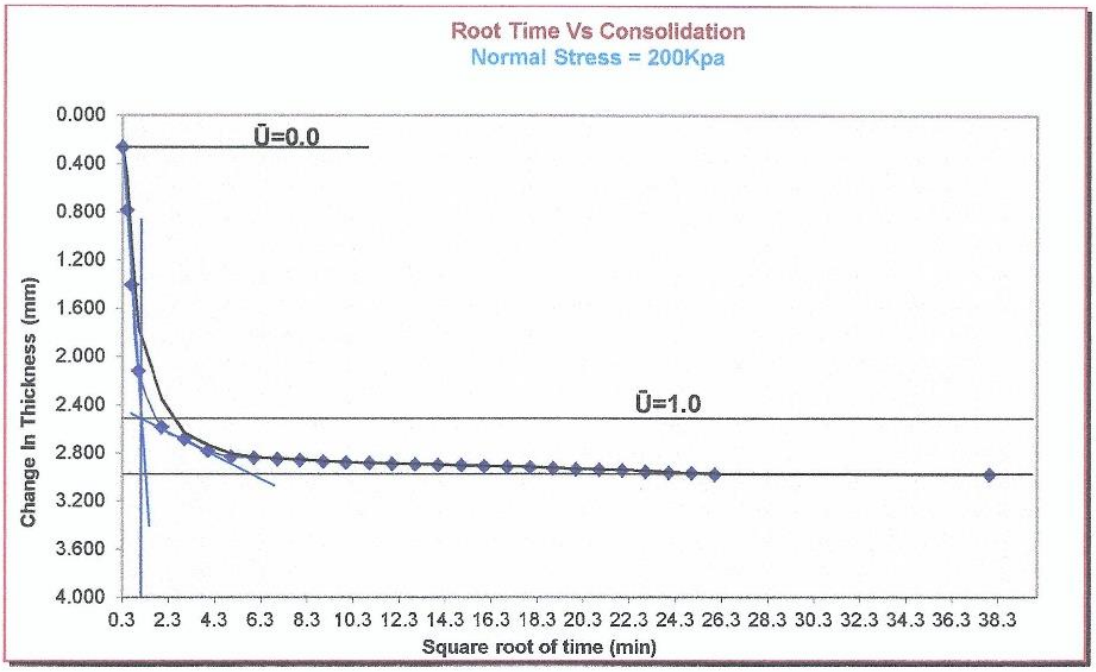
BS 1377: Part 7: 1990

TP KM 11+618 (Depth: 0.3-1.2m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5703 **Sample No.** 5703

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3–1.2 M **Date Tested:** 18-11-21



Deformation (mm)	2.980
From graph $\sqrt{t_{100}}$	1.110
t_{100} (min)	1.2321
$t_f = 12.7 \times t_{100}$	15.64767
Estimated displacement at Failure (mm)	2.520
Rate of displacement mm/min	0.161046
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.248646

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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CHANGAMWE SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

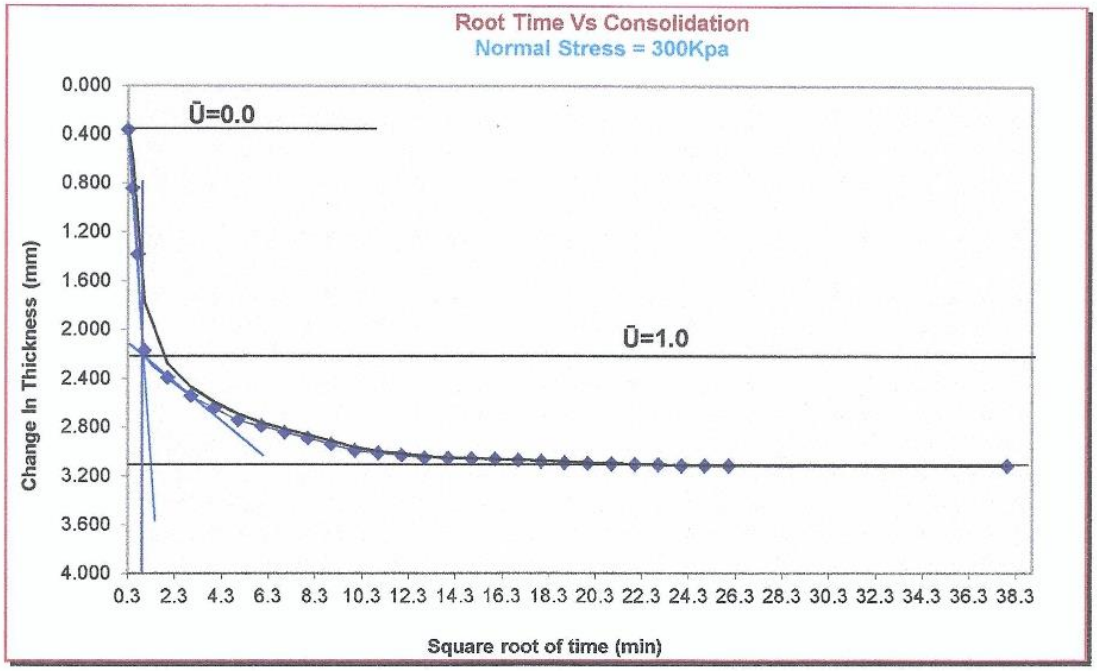
BS 1377: Part 7: 1990

TP KM 11+618 (Depth: 0.3-1.2m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5703 **Sample No.** 5703

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3–1.2 M **Date Tested:** 18-11-21



Deformation (mm)	3.115
From graph $\sqrt{t_{100}}$	0.90
t_{100} (min)	0.81
$t_f = 12.7 \times t_{100}$	10.287
Estimated displacement at Failure (mm)	2.220
Rate of displacement mm/min	0.215806
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.228527

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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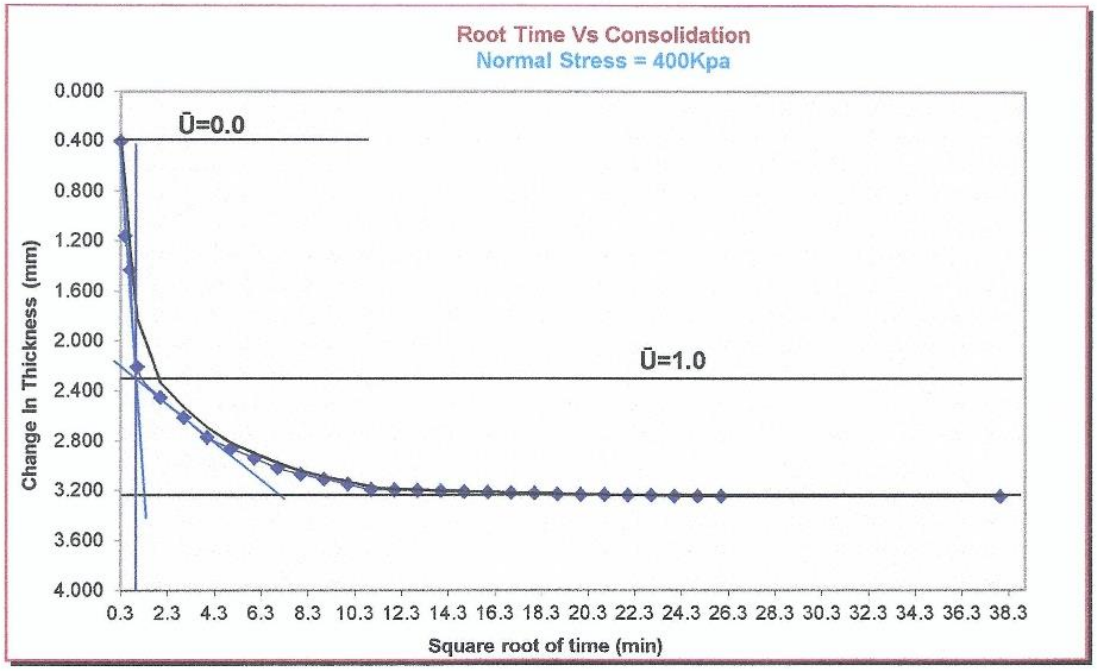
BS 1377: Part 7: 1990

TP KM 11+618 (Depth: 0.3-1.2m)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-CHANGAMWE/5703 **Sample No.** 5703

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.3–1.2 M **Date Tested:** 18-11-21



Deformation (mm)	3.250
From graph $\sqrt{t_{100}}$	0.95
t_{100} (min)	0.9025
$t_f = 12.7 \times t_{100}$	11.46175
Estimated displacement at Failure (mm)	2.300
Rate of displacement mm/min	0.200667
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.228104

Tested by: GANDHI **Date Reported:** 14-12-21 **Checked by:**

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Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
TRUNK MAIN SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM1+740(1.0-1.4M)

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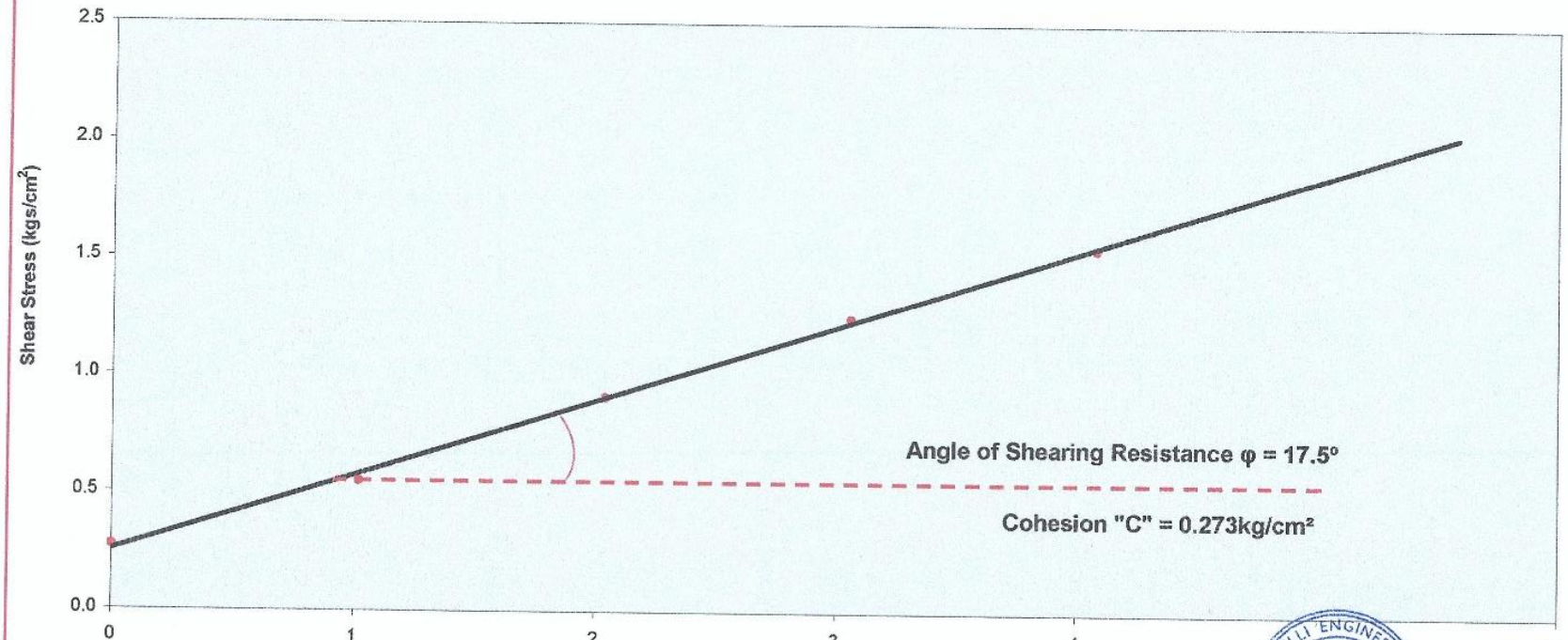

Tested by: KEVIN
Date Tested: 03-12-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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Mombasa Road
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REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

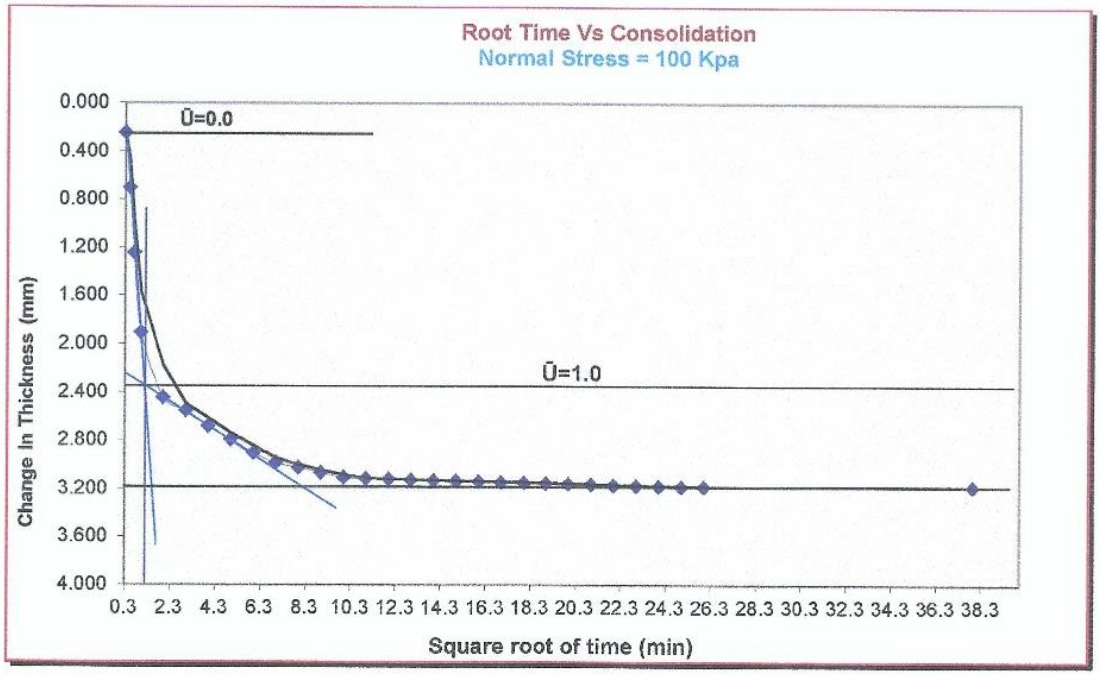
BS 1377: Part 7: 1990

TP KM 1+740 (Depth: 1.0-1.4M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5742 **Sample No.** 5742

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0-1.4M **Date Tested:** 03-12-21



Deformation (mm)	3.180
From graph $\sqrt{t_{100}}$	1.20
t_{100} (min)	1.440
$t_f = 12.7 \times t_{100}$	18.288
Estimated displacement at Failure (mm)	2.350
Rate of displacement mm/min	0.128499
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.31091

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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TRUNK MAIN SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

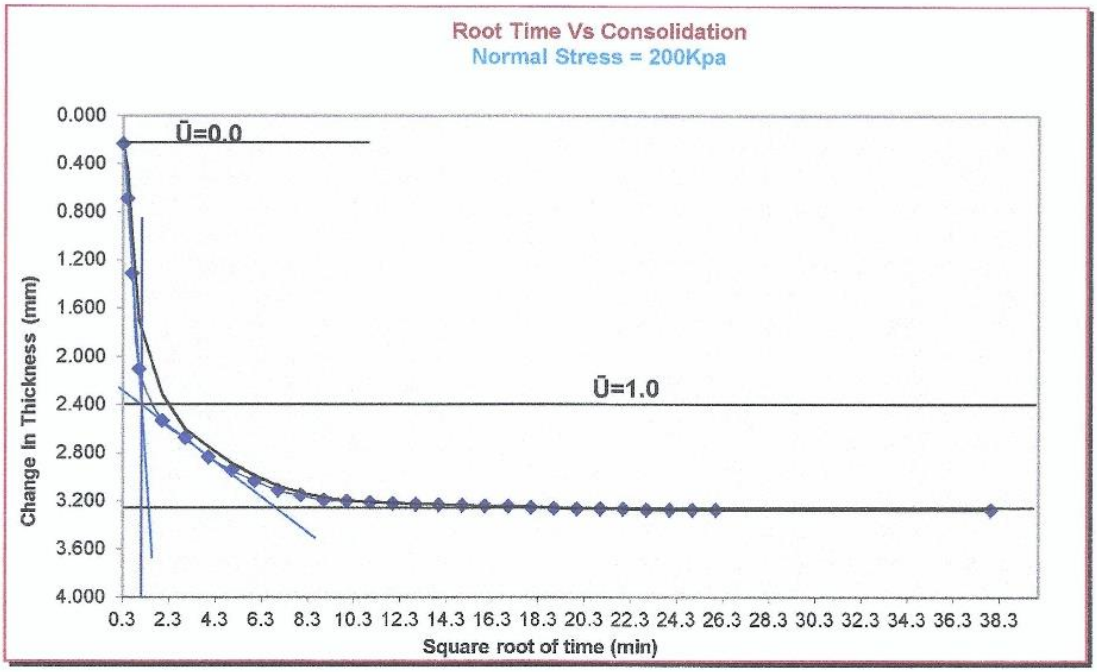
BS 1377: Part 7: 1990

TP KM 1+740 (Depth: 1.0-1.4M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5742 **Sample No.** 5742

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0-1.4M **Date Tested:** 03-12-21



Deformation (mm)	3.270
From graph $\sqrt{t_{100}}$	1.15
t_{100} (min)	1.3225
$t_f = 12.7 \times t_{100}$	16.79575
Estimated displacement at Failure (mm)	2.40
Rate of displacement mm/min	0.142893
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.303894

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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TRUNK MAIN SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

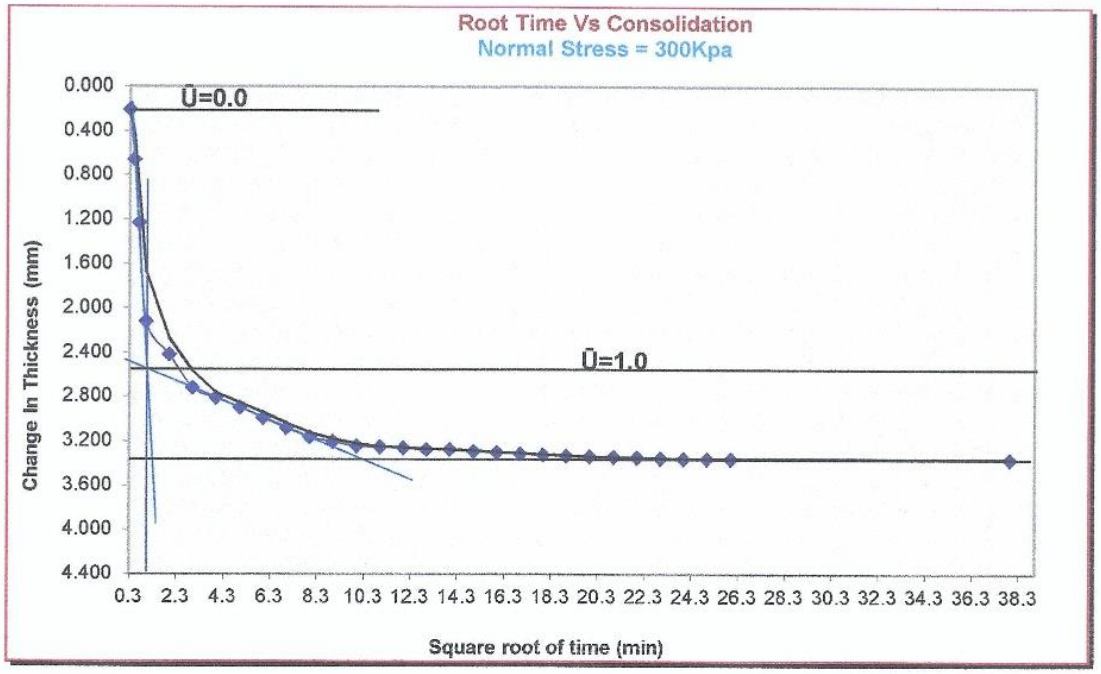
BS 1377: Part 7: 1990

TP KM 1+740 (Depth: 1.0-1.4M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5742 **Sample No.** 5742

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0-1.4M **Date Tested:** 03-12-21



Deformation (mm)	3.360
From graph $\sqrt{t_{100}}$	1.10
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.560
Rate of displacement mm/min	0.166591
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.296880

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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TRUNK MAIN SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

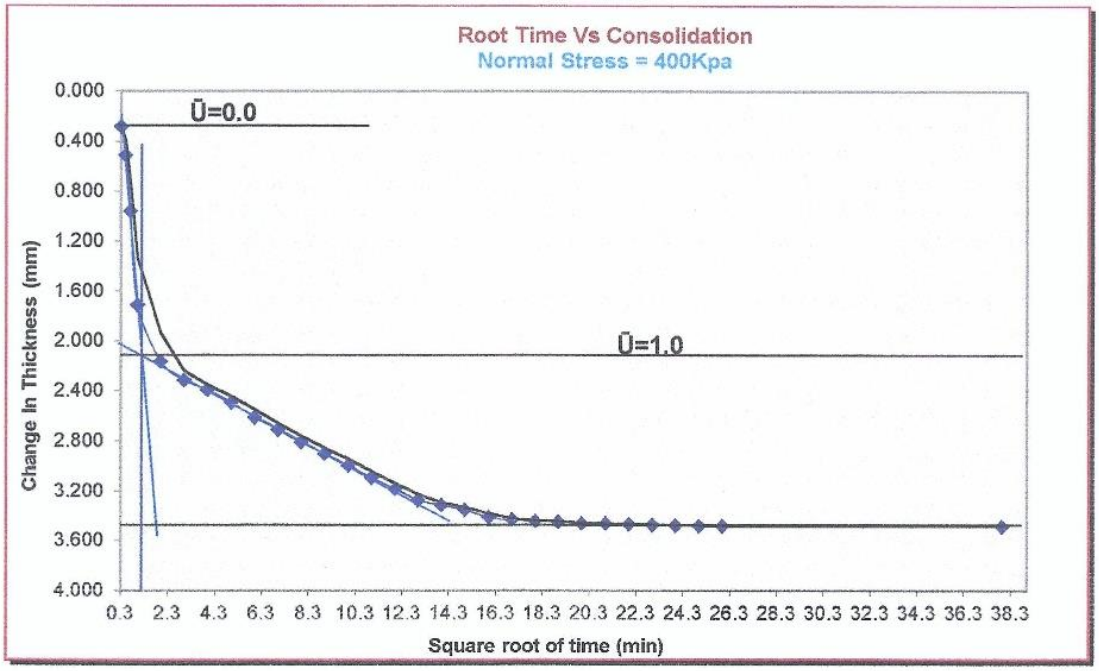
BS 1377: Part 7: 1990

TP KM 1+740 (Depth: 1.0-1.4M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5742 **Sample No.** 5742

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 1.0-1.4M **Date Tested:** 03-12-21



Deformation (mm)	3.485
From graph $\sqrt{t_{100}}$	1.30
t_{100} (min)	1.690
$t_f = 12.7 \times t_{100}$	21.463
Estimated displacement at Failure (mm)	2.120
Rate of displacement mm/min	0.098775
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.287138

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY
TRUNK MAIN SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM3+500(0.0-1.4M)

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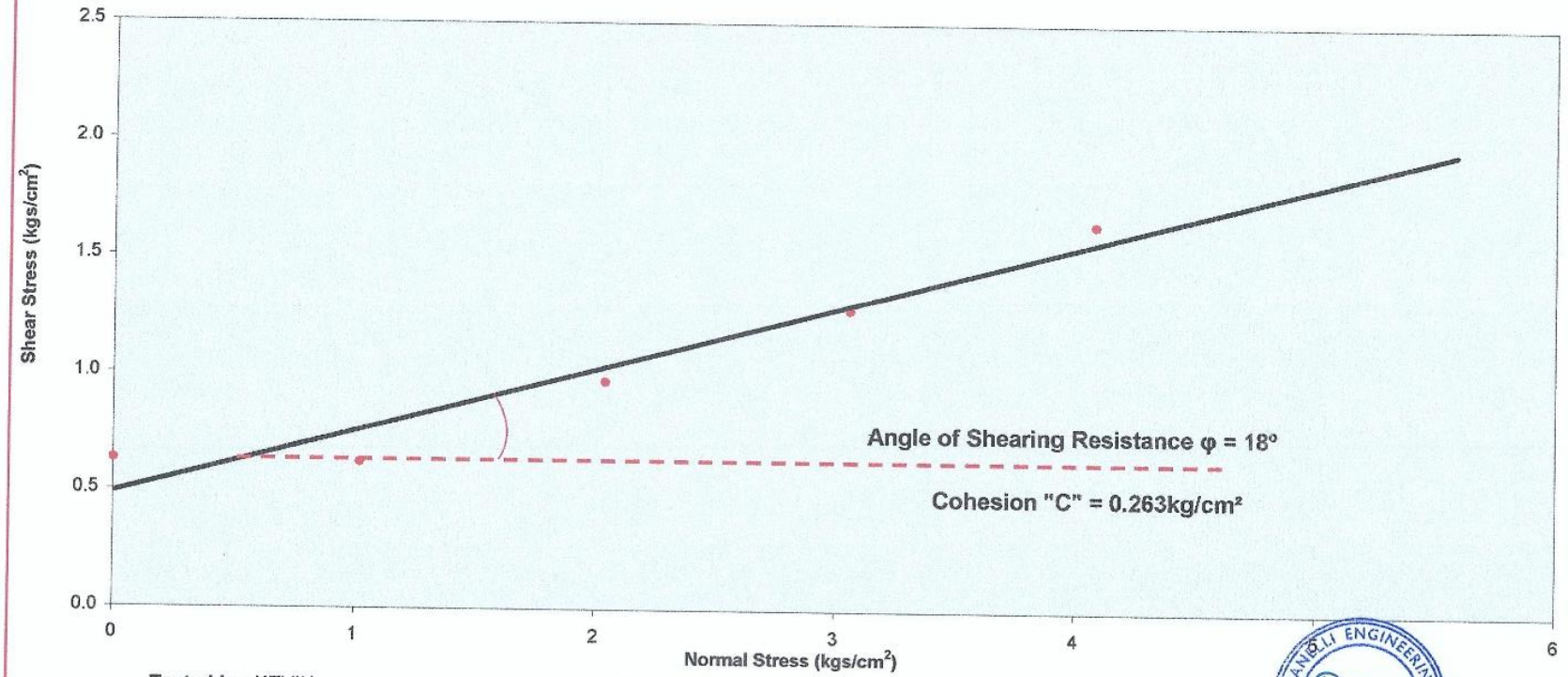

Tested by: KEVIN
Date Tested: 04-12-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
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REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

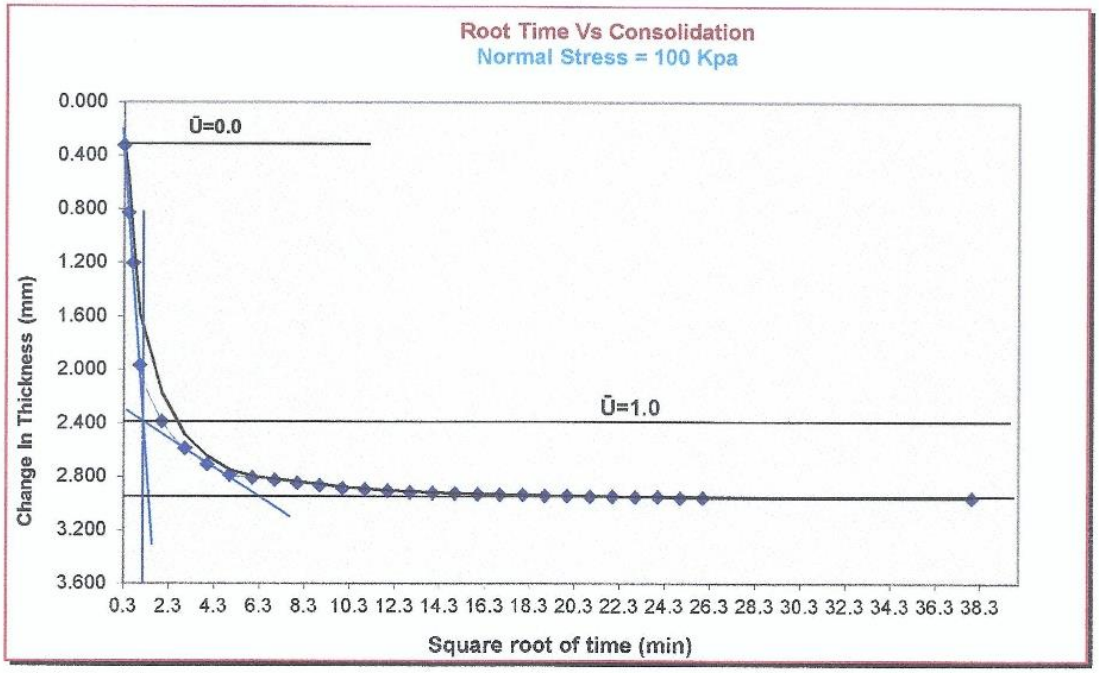
BS 1377: Part 7: 1990

TP KM 3+500 (Depth: 0.0-1.4M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5746 **Sample No.** 5746

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.4M **Date Tested:** 04-12-21



Deformation (mm)	2.955
From graph $\sqrt{t_{100}}$	1.15
t_{100} (min)	1.3225
$t_f = 12.7 \times t_{100}$	16.79575
Estimated displacement at Failure (mm)	2.390
Rate of displacement mm/min	0.142298
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.1755169

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

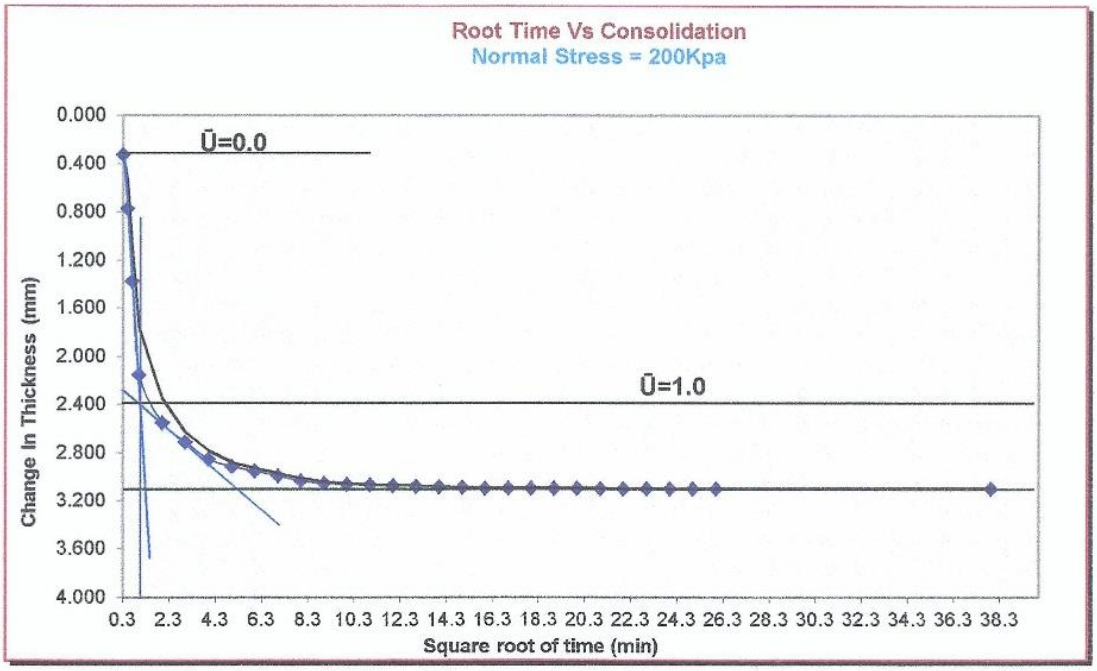
BS 1377: Part 7: 1990

TP KM 3+500 (Depth: 0.0-1.4M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5746 **Sample No.** 5746

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.4M **Date Tested:** 04-12-21



Deformation (mm)	3.095
From graph $\sqrt{t_{100}}$	1.10
t_{100} (min)	1.210
$t_f = 12.7 \times t_{100}$	15.367
Estimated displacement at Failure (mm)	2.410
Rate of displacement mm/min	0.1568296
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.1658618

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

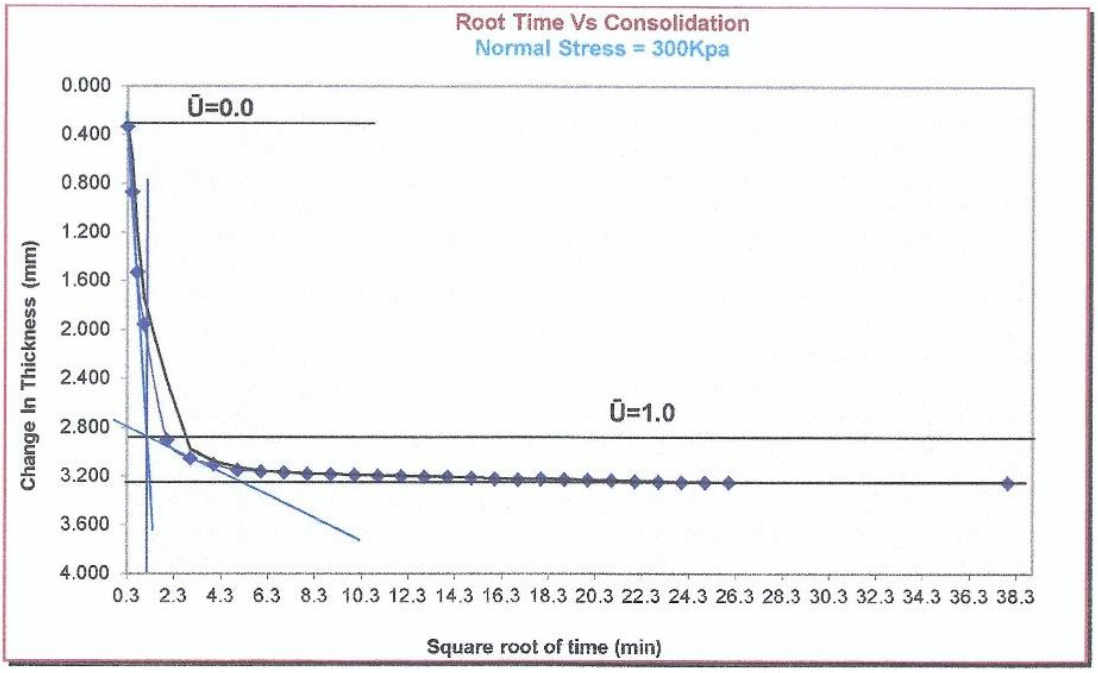
BS 1377: Part 7: 1990

TP KM 3+500 (Depth: 0.0-1.4M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5746 **Sample No.** 5746

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.4M **Date Tested:** 04-12-21



Deformation (mm)	3.2450
From graph $\sqrt{t_{100}}$	1.12
t_{100} (min)	1.2544
$t_f = 12.7 \times t_{100}$	15.93088
Estimated displacement at Failure (mm)	2.870
Rate of displacement mm/min	0.180153
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.1555169

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

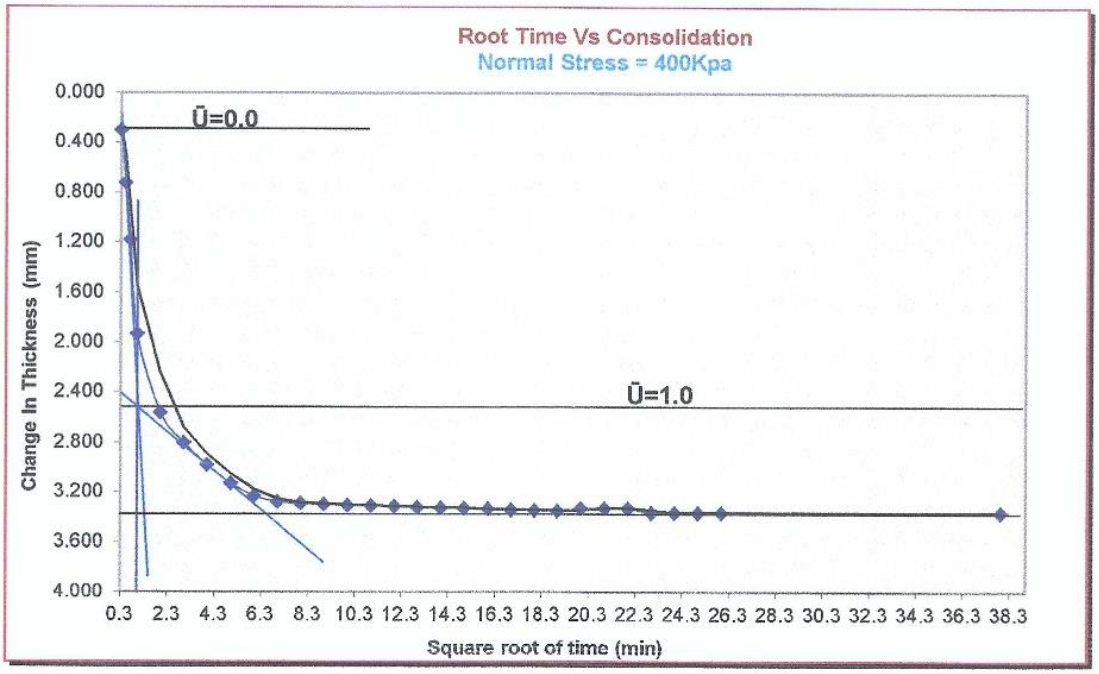
BS 1377: Part 7: 1990

TP KM 3+500 (Depth: 0.0-1.4M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5746 **Sample No.** 5746

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.0-1.4M **Date Tested:** 04-12-21



Deformation (mm)	3.365
From graph $\sqrt{t_{100}}$	1.05
t_{100} (min)	1.1025
$t_f = 12.7 \times t_{100}$	14.00175
Estimated displacement at Failure (mm)	2.520
Rate of displacement mm/min	0.1799775
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.147241

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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info@danellilab.com
Website: www.danellilab.com
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REGIONAL GEOPHYSICAL SURVEY
TRUNK MAIN SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM4+000(0.45-0.9M)

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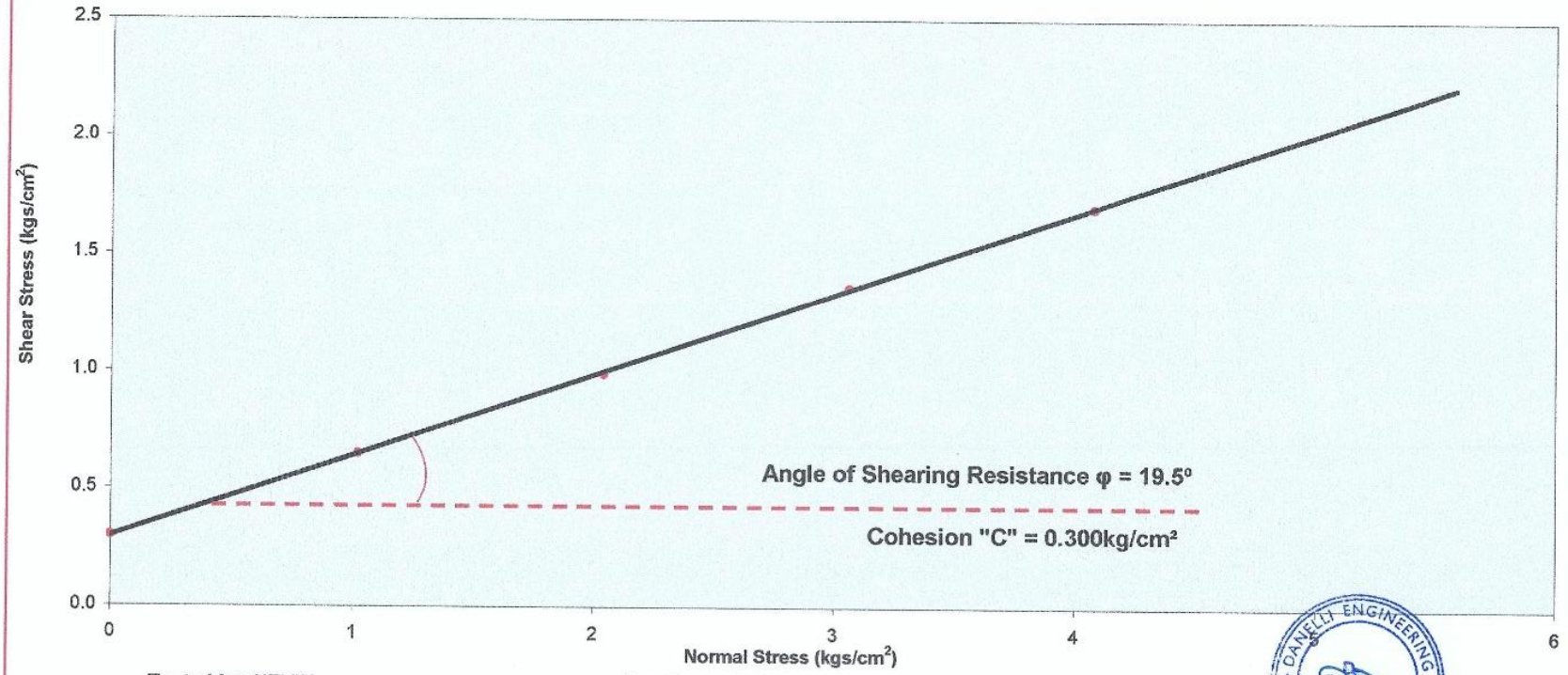

Tested by: KEVIN
Date Tested: 06-12-21
Checked by:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
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P.O. Box 64932
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

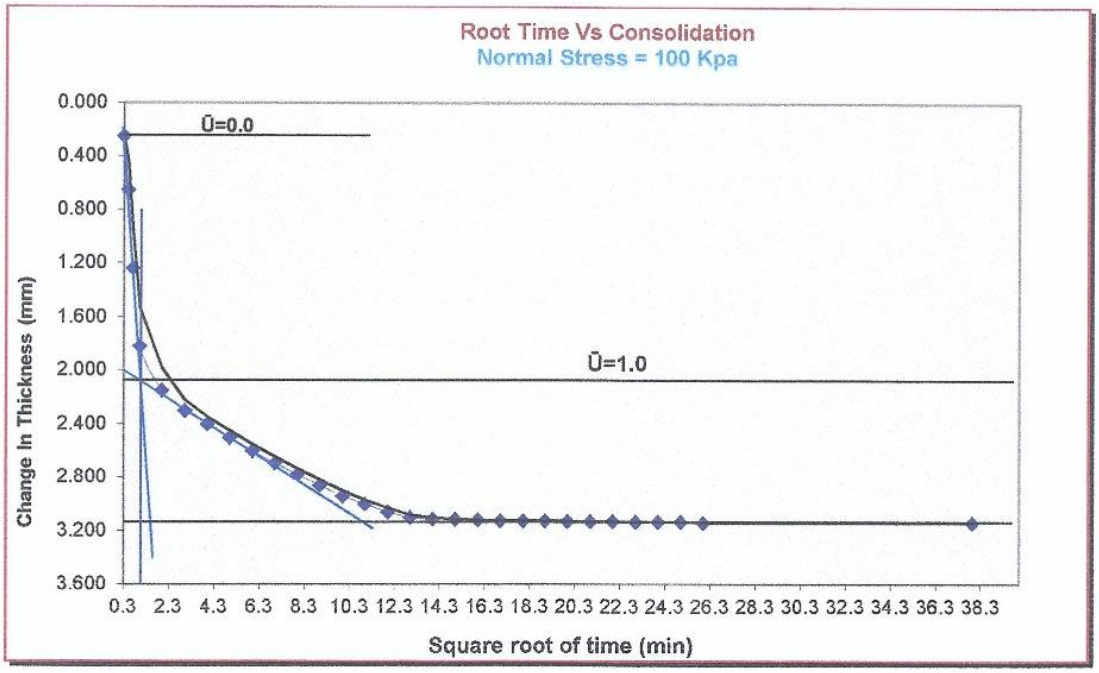
BS 1377: Part 7: 1990

TP KM 4+000 (Depth: 0.45-0.9M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5747 **Sample No.** 5747

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.45-0.9M **Date Tested:** 06-12-21



Deformation (mm)	3.140
From graph $\sqrt{t_{100}}$	1.05
t_{100} (min)	1.1025
$t_f = 12.7 \times t_{100}$	14.0175
Estimated displacement at Failure (mm)	2.07
Rate of displacement mm/min	0.14783866
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.4278734

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

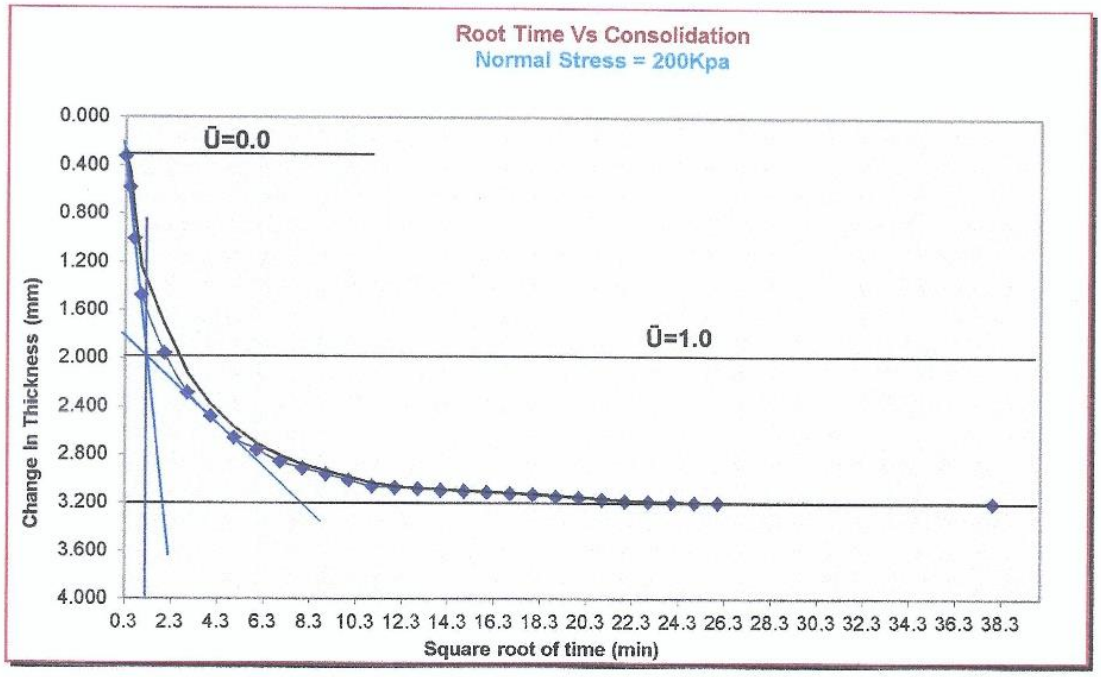
BS 1377: Part 7: 1990

TP KM 4+000 (Depth: 0.45-0.9M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5747 **Sample No.** 5747

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.45-0.9M **Date Tested:** 06-12-21



Deformation (mm)	3.20
From graph $\sqrt{t_{100}}$	1.25
t_{100} (min)	1.5625
$t_f = 12.7 \times t_{100}$	19.84375
Estimated displacement at Failure (mm)	1.980
Rate of displacement mm/min	0.0099779
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.422792

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

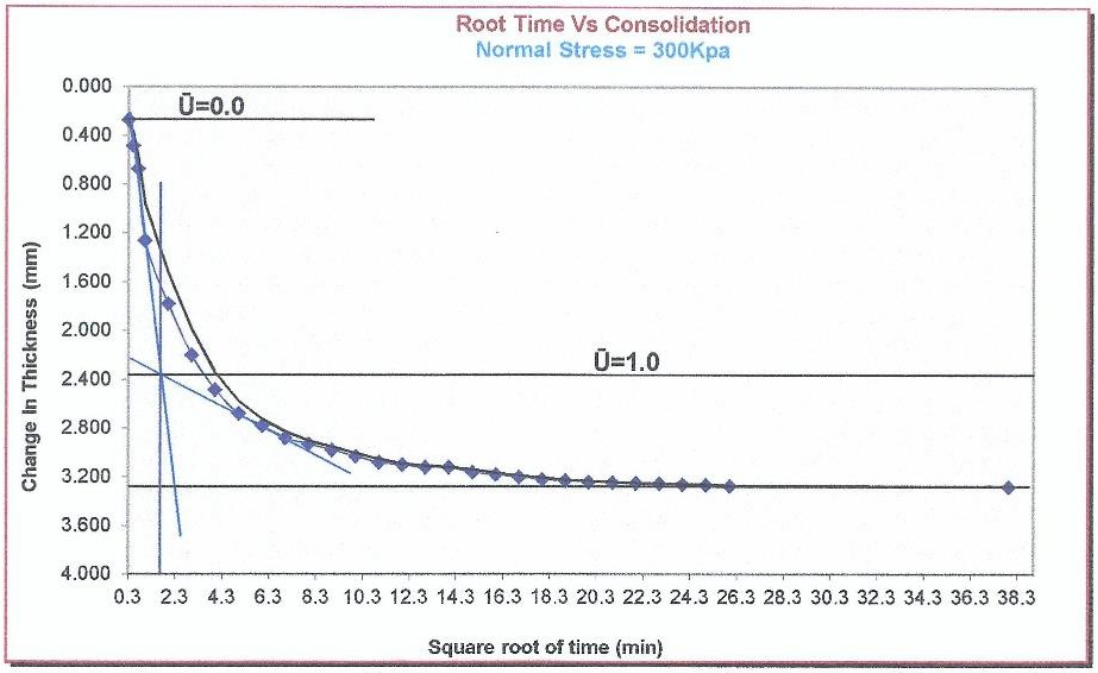
BS 1377: Part 7: 1990

TP KM 4+000 (Depth: 0.45-0.9M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5747 **Sample No.** 5747

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.45-0.9M **Date Tested:** 06-12-21



Deformation (mm)	3.280
From graph $\sqrt{t_{100}}$	1.7
t_{100} (min)	2.890
$t_f = 12.7 \times t_{100}$	36.703
Estimated displacement at Failure (mm)	2.36
Rate of displacement mm/min	0.0642999
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.4160168

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

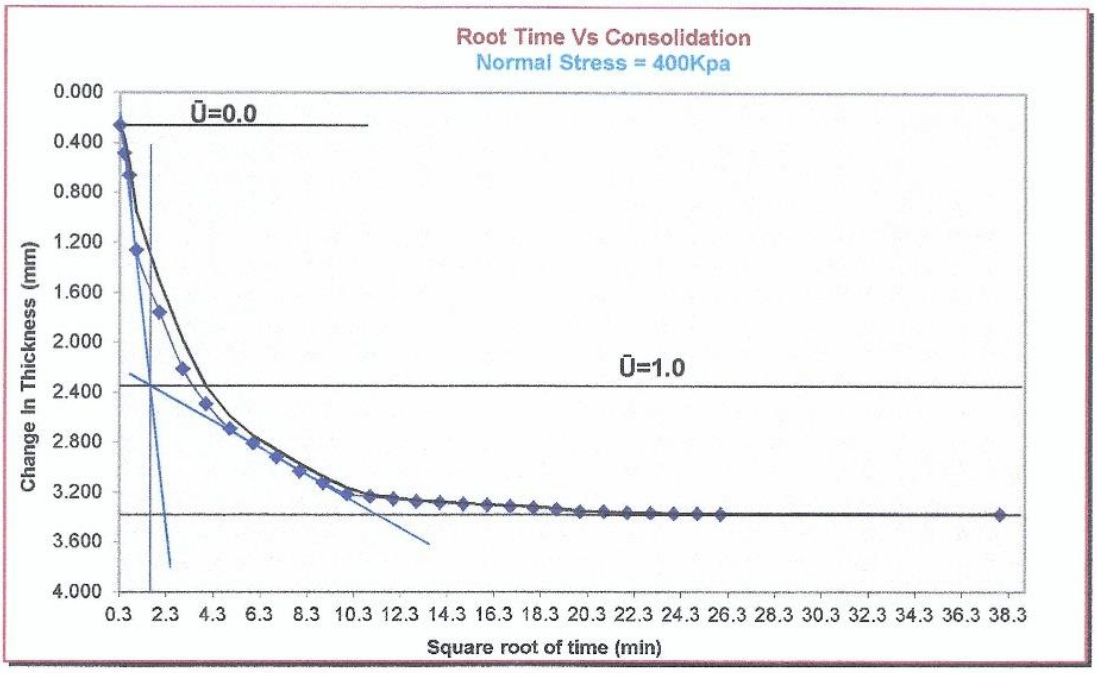
BS 1377: Part 7: 1990

TP KM 4+000 (Depth: 0.45-0.9M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5747 **Sample No.** 5747

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.45-0.9M **Date Tested:** 06-12-21



Deformation (mm)	3.375
From graph $\sqrt{t_{100}}$	1.650
t_{100} (min)	2.7225
$t_f = 12.7 \times t_{100}$	34.57575
Estimated displacement at Failure (mm)	2.350
Rate of displacement mm/min	0.0679667
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.4079713

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Website: www.danellilab.com
Mob: +254(0) 726 721 935

REGIONAL GEOPHYSICAL SURVEY
TRUNK MAIN SITE
Cosolidated Drained Shear Test
BS 1377: 1990: Part 7: Clause 4
TP KM5+500(0.8-1.0M)

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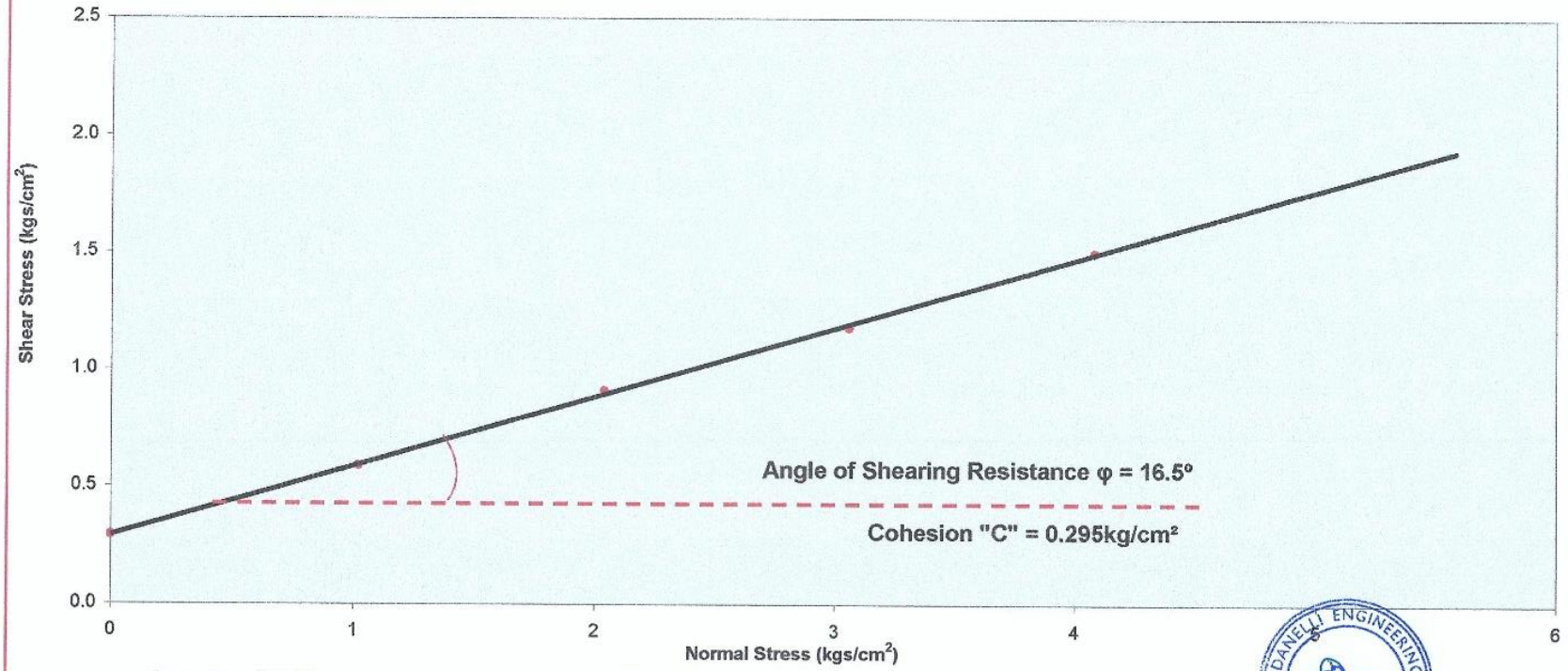

Tested by: KEVIN
Date Tested: 06-12-21
Checked by:

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Email: danellilab3@gmail.com
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REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

SHEAR BOX TEST: CONSOLIDATED DRAINED TEST

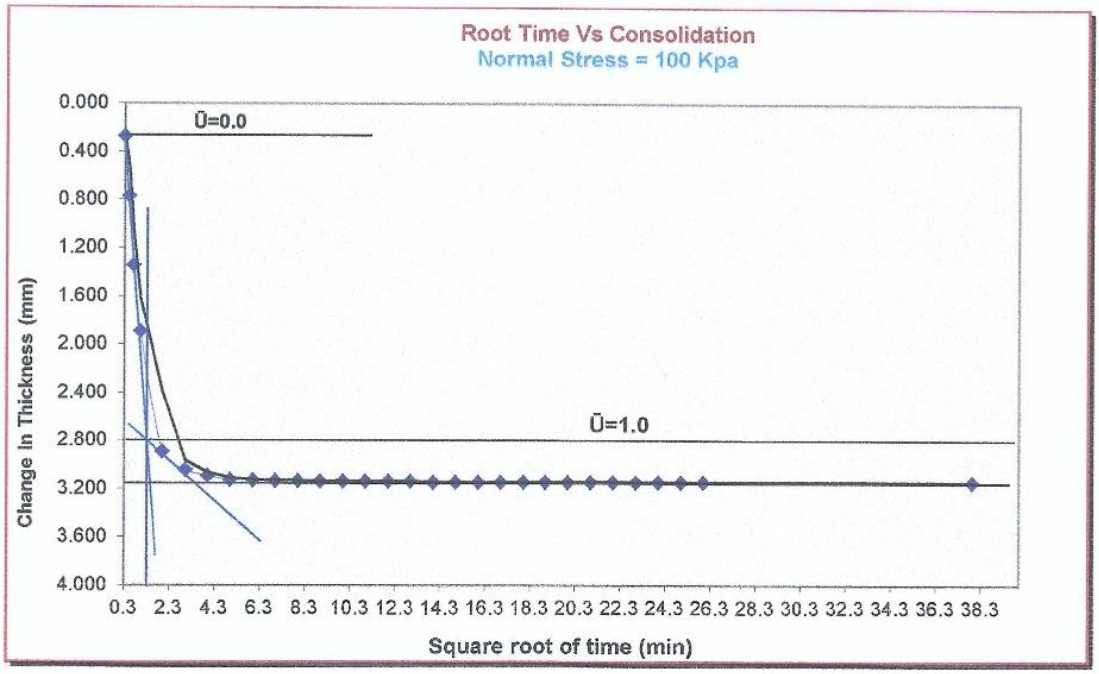
BS 1377: Part 7: 1990

TP KM 5+500 (Depth: 0.8-1.0M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5750 **Sample No.** 5750

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.8-1.0M **Date Tested:** 06-12-21



Deformation (mm)	3.140
From graph $\sqrt{t_{100}}$	1.30
t_{100} (min)	1.690
$t_f = 12.7 \times t_{100}$	21.463
Estimated displacement at Failure (mm)	2.80
Rate of displacement mm/min	0.130457
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.313252

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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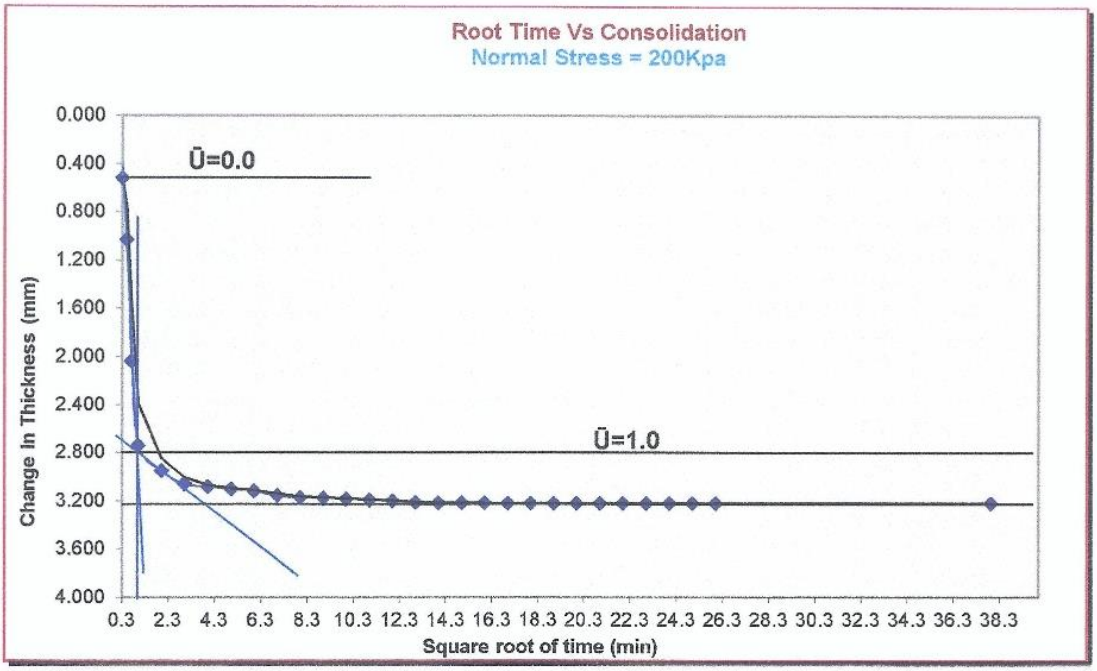
BS 1377: Part 7: 1990

TP KM 5+500 (Depth: 0.8-1.0M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5750 **Sample No.** 5750

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.8-1.0M **Date Tested:** 06-12-21



Deformation (mm)	3.220
From graph $\sqrt{t_{100}}$	1.00
t_{100} (min)	1.00
$t_f = 12.7 \times t_{100}$	12.7
Estimated displacement at Failure (mm)	2.800
Rate of displacement mm/min	0.2204724
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.3070110

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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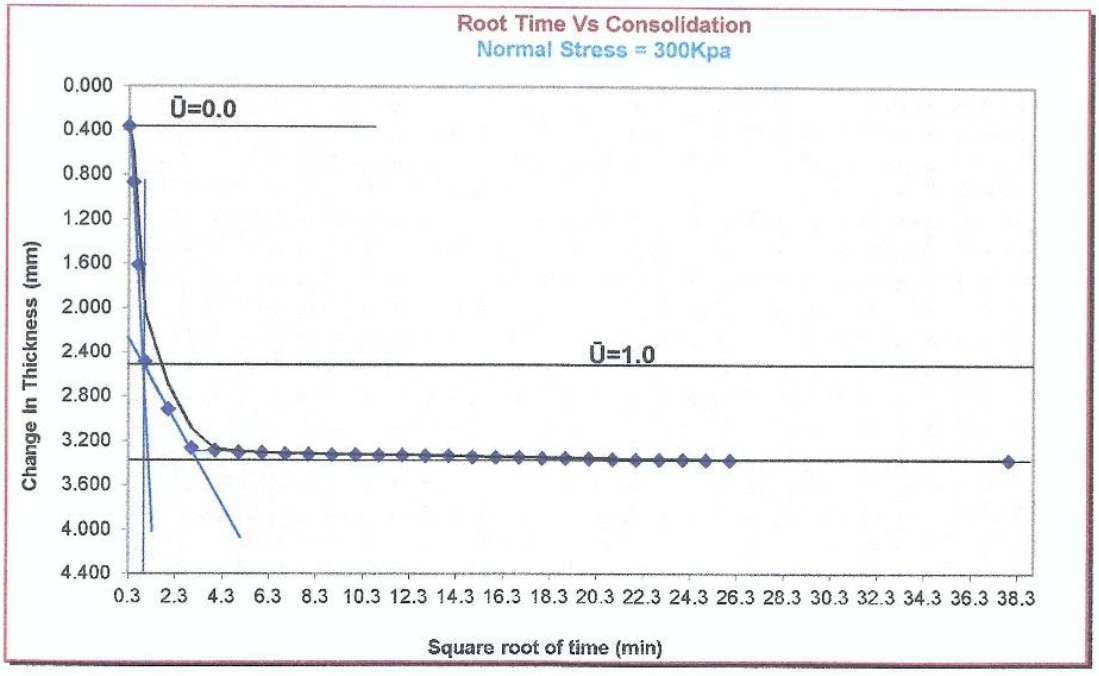
BS 1377: Part 7: 1990

TP KM 5+500 (Depth: 0.8-1.0M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5750 **Sample No.** 5750

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.8-1.0M **Date Tested:** 06-12-21



Deformation (mm)	3.370
From graph $\sqrt{t_{100}}$	1.00
t_{100} (min)	1.00
$t_f = 12.7 \times t_{100}$	12.7
Estimated displacement at Failure (mm)	2.500
Rate of displacement mm/min	0.1968504
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.2953273

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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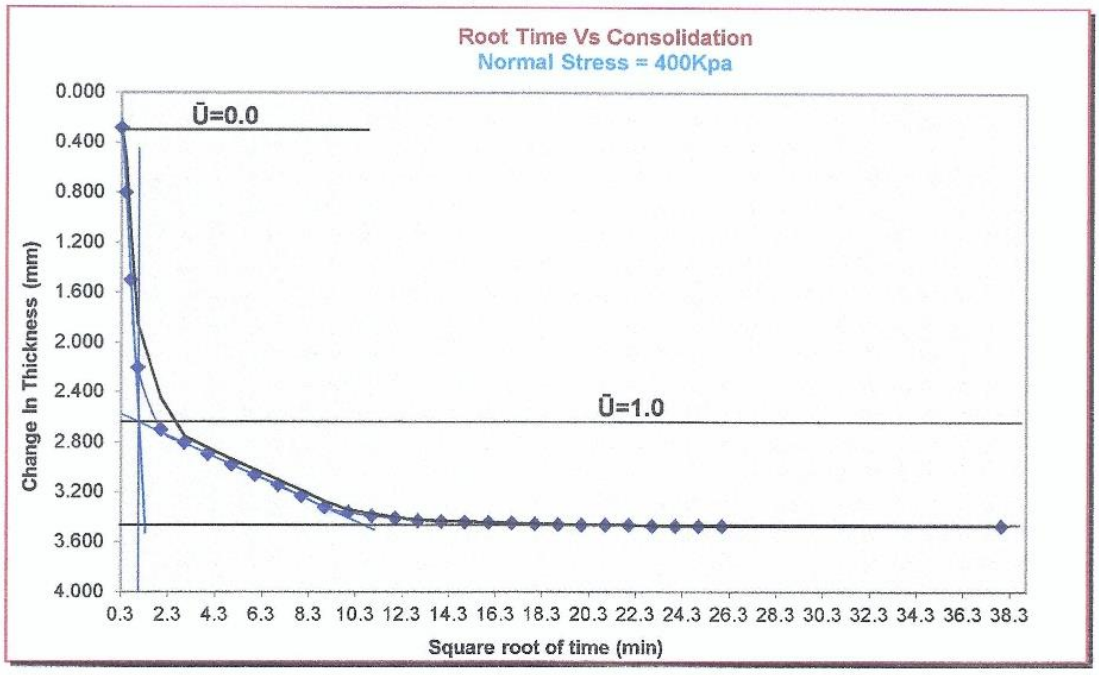
BS 1377: Part 7: 1990

TP KM 5+500 (Depth: 0.8-1.0M)

Site: TRUNK MAIN **Location:** KWALE **Date Received:** 18-10-21

Sample Classification: DISTURBED SOIL **Lab Ref:** TM/RGS-TRUNKMAIN/5750 **Sample No.** 5750

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Depth:** 0.8-1.0M **Date Tested:** 06-12-21



Deformation (mm)	3.470
From graph $\sqrt{t_{100}}$	1.05
t_{100} (min)	1.1025
$t_f = 12.7 \times t_{100}$	14.00175
Estimated displacement at Failure (mm)	2.640
Rate of displacement mm/min	0.1885479
At end of consolidation $e = e_0 - [\Delta H/H_0(1+ e_0)]$	0.28753823

Date Reported: 14-12-21 **Tested by:** GANDHI **Checked by:**

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One-Dimensional Consolidation

DANELLI ENGINEERING LABORATORIES LIMITED
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info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

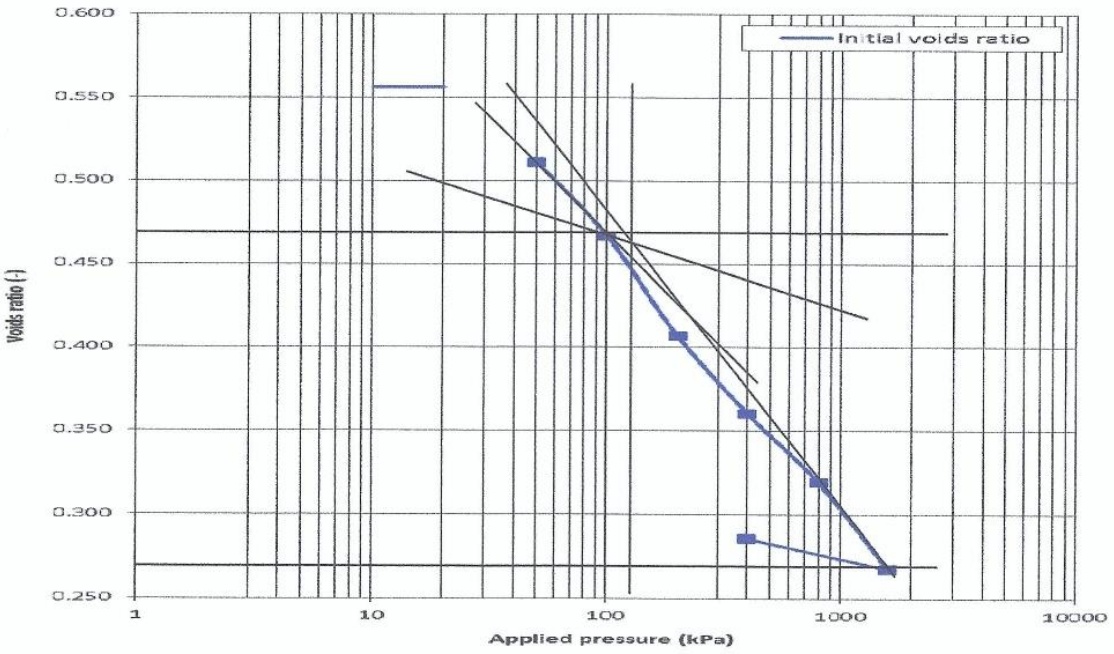
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

BH 01 (Depth: 7.0-8.0m)

Site: BONJE CREEK
Location: MOMBASA
Depth: 7.0-8.0M
Classification Group Name: -
Lab Ref: TM/RGS-BONJECREEK/4448
Sample No. 4448
Ring Diameter: 62.0 mm
Height of soil particles: 12.85mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 19.3%
Bulk Density: 1988kg/m^3
Initial voids ratio: 0.561
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1666kg/m^3
Pre-consolidation stress: 140 Kn/m^2
Coefficient of Compression Index: 0.148
Coefficient of Re-Compression Index: 0.0548

Voids Ratio against Applied Pressure



Tested By: KEVIN
Date Reported: 20-09-21
Checked By:

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

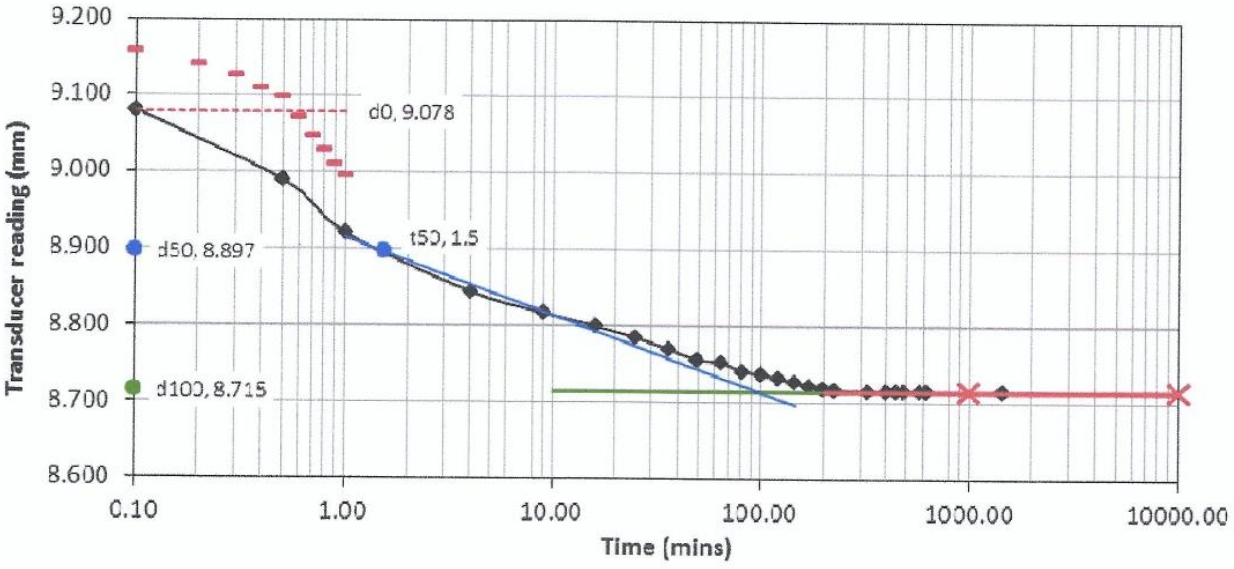
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 01(Depth: 7.0-8.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-BONJECREEK/4448	**Date:**	13-09-21
Project	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Sample**	BH 01 7.0-8.0m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.615 mm
From the plot, t_{50} = 1.5 mins
H_1 = 20.00 mm
H_2 = 19.39 mm
H = (20.00+19.39)/2
= 19.70 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.727 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.615 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.615
Net compression (mm)	= 0.583
Height mm (H_2)	= 19.39
Equivalent height of solids Hs	= 12.85
Voids Ratio = (H_2 – Hs)/Hs	= **0.509**

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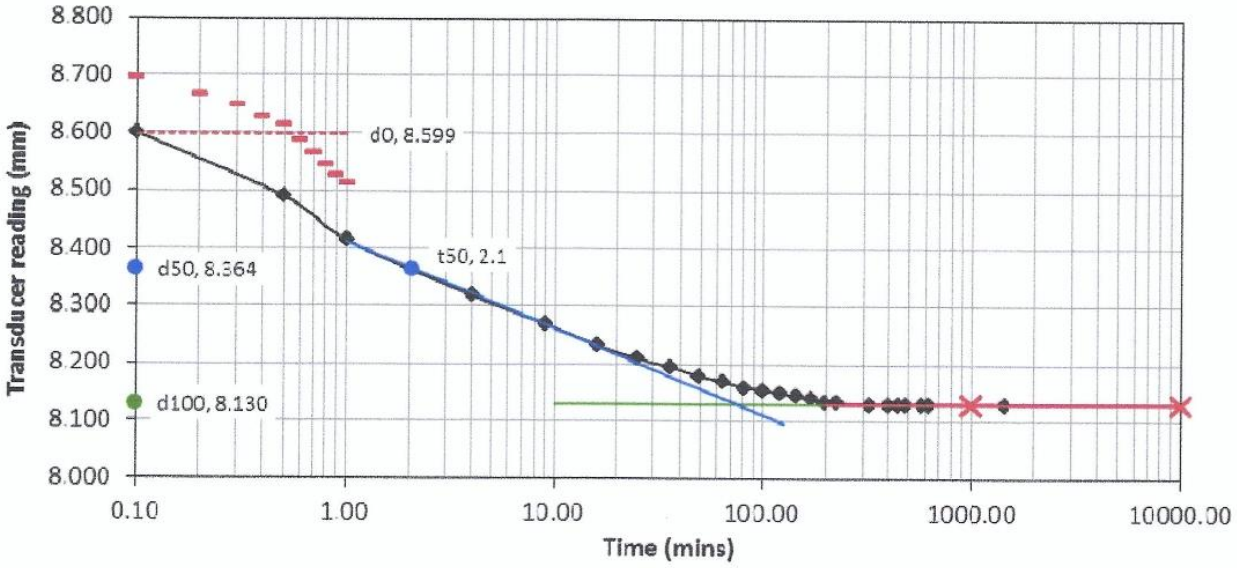
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 01(Depth: 7.0-8.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-BONJECREEK/4448	**Date:**	14-09-21
Project	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Sample**	BH 01 7.0-8.0m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.585 mm
From the plot, t_{50} = 2.1 mins
H_1 = 19.39 mm
H_2 = 18.81 mm
H = (18.81+19.39)/2
= 19.10 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.517 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.603 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.200
Net compression (mm) = 1.150
Height mm (H_2) = 18.81
Equivalent height of solids Hs = 12.85
Voids Ratio = (H_2 – Hs)/Hs = **0.464**

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Nairobi
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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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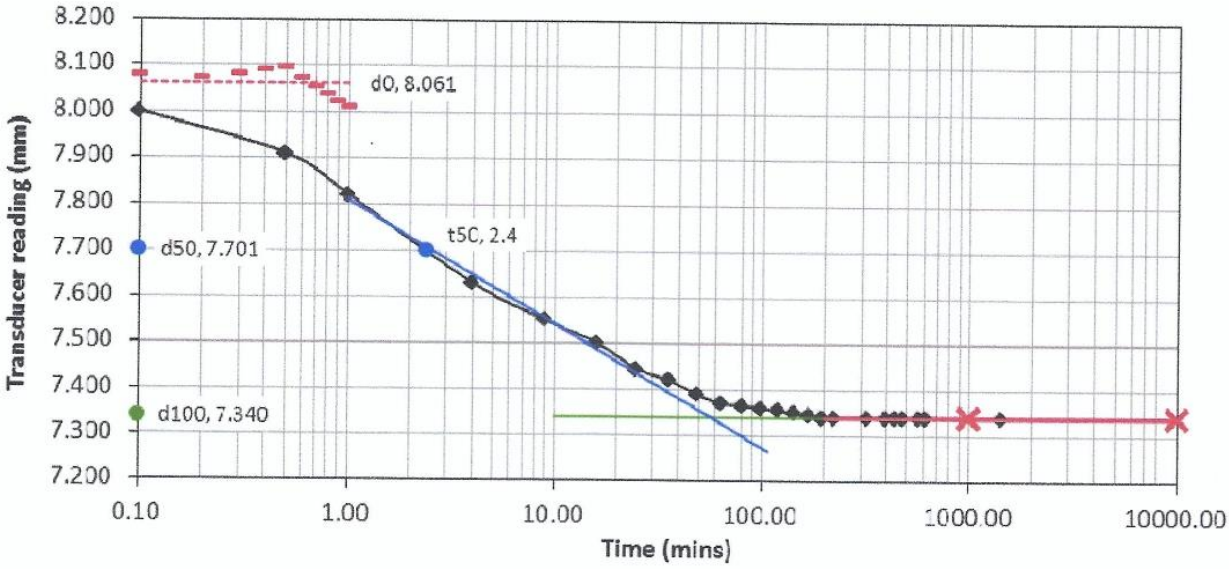
BH 01(Depth: 7.0-8.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-BONJECREEK/4448	**Date:**	15-09-21
Project	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Sample**	BH 01 7.0-8.0m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.790 mm
From the plot, t_{50} = 2.4 mins
H_1 = 18.81 mm
H_2 = 18.02 mm
H = (18.81+18.02)/2
= 18.42 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.676 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.420 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.990
Net compression (mm) = 1.918
Height mm (H_2) = 18.02
Equivalent height of solids Hs = 12.85
Voids Ratio = (H_2 – Hs)/Hs = **0.402**

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Nairobi
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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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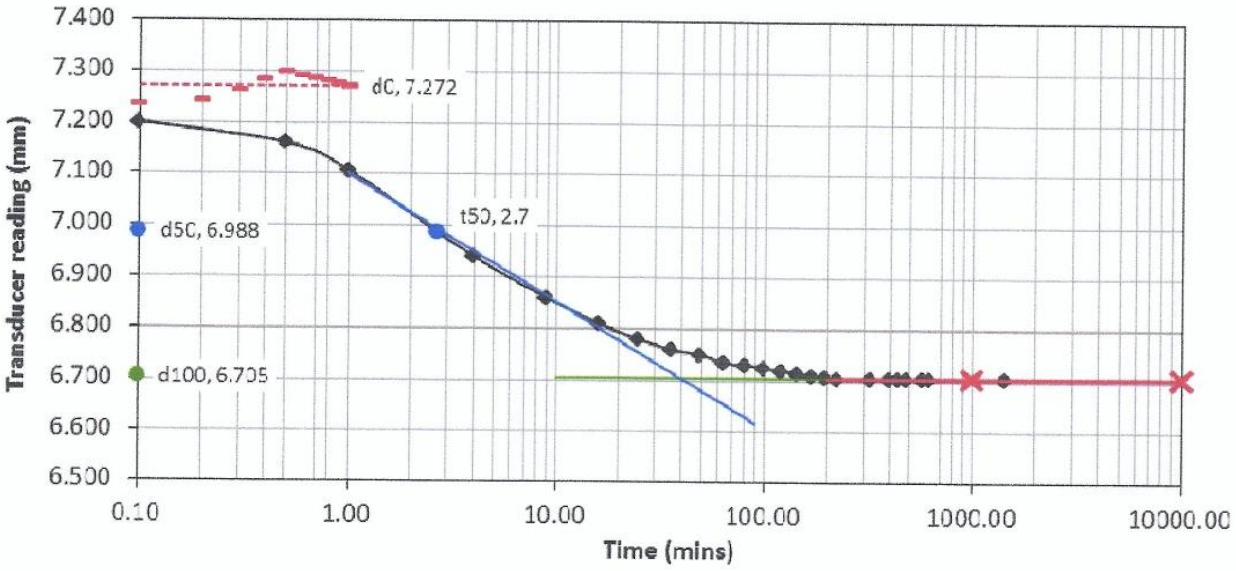
BH 01(Depth: 7.0-8.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-BONJECREEK/4448	**Date:**	16-09-21
Project	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Sample**	BH 01 7.0-8.0m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.635 mm
From the plot, t_{50} = 2.7 mins
H_1 = 18.02 mm
H_2 = 17.39 mm
H = (17.39+18.02)/2
= 17.71 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.020 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.176 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.625
Net compression (mm) = 2.520
Height mm (H_2) = 17.39
Equivalent height of solids Hs = 12.85
Voids Ratio = (H_2 – Hs)/Hs = **0.353**

Tested By: KEVIN

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Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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Nairobi
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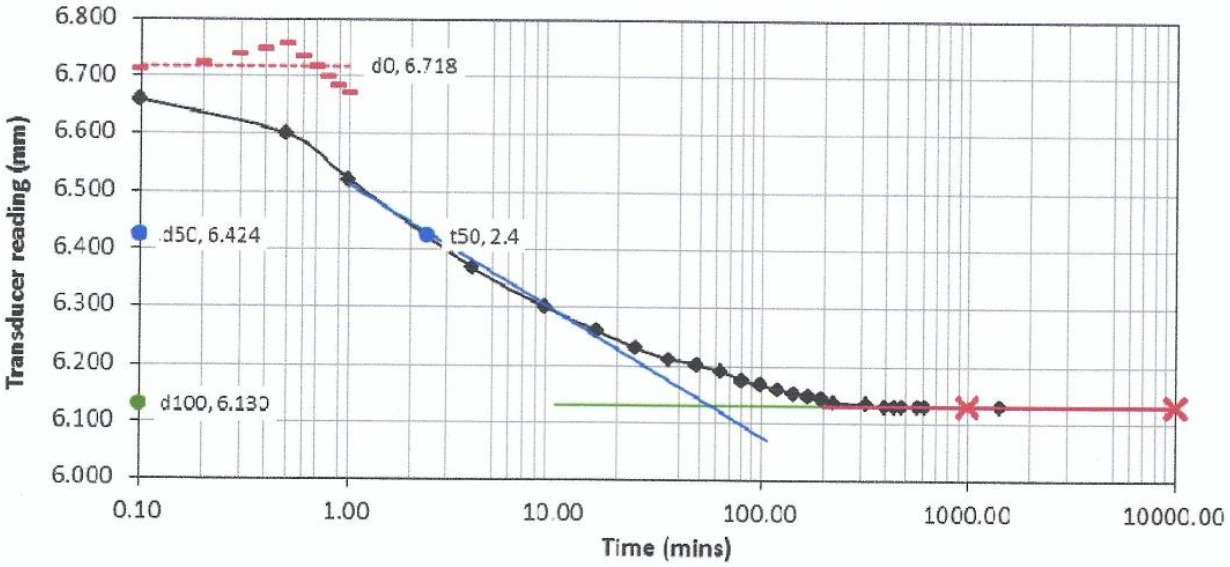
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 01(Depth: 7.0-8.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-BONJECREEK/4448	**Date:**	17-09-21
Project	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Sample**	BH 01 7.0-8.0m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.575 mm
From the plot, t_{50} = 2.4 mins
H_1 = 17.39 mm
H_2 = 16.82 mm
H = (17.39+16.82)/2
= 17.11 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.171 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.083 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.200
Net compression (mm) = 3.049
Height mm (H_2) = 16.82
Equivalent height of solids Hs = 12.85
Voids Ratio = (H_2 – Hs)/Hs = **0.309**

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info@danellilab.com
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Mombasa Road
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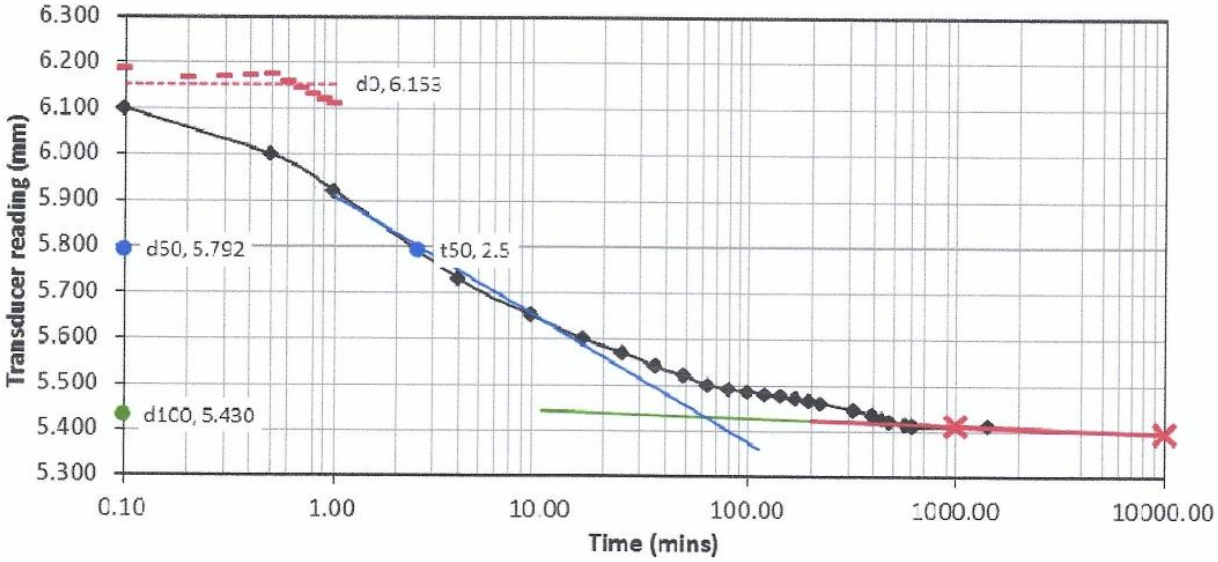
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 01(Depth: 7.0-8.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-BONJECREEK/4448	**Date:**	18-09-21
Project	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Sample**	BH 01 7.0-8.0m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.720 mm
From the plot, t_{50} = 2.5 mins
H_1 = 16.82 mm
H_2 = 16.10 mm
H = (16.10+16.82)/2
= 16.46 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.818 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.054 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.920
Net compression (mm) = 3.713
Height mm (H_2) = 16.10
Equivalent height of solids Hs = 12.85
Voids Ratio = (H_2 – Hs)/Hs = **0.253**

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

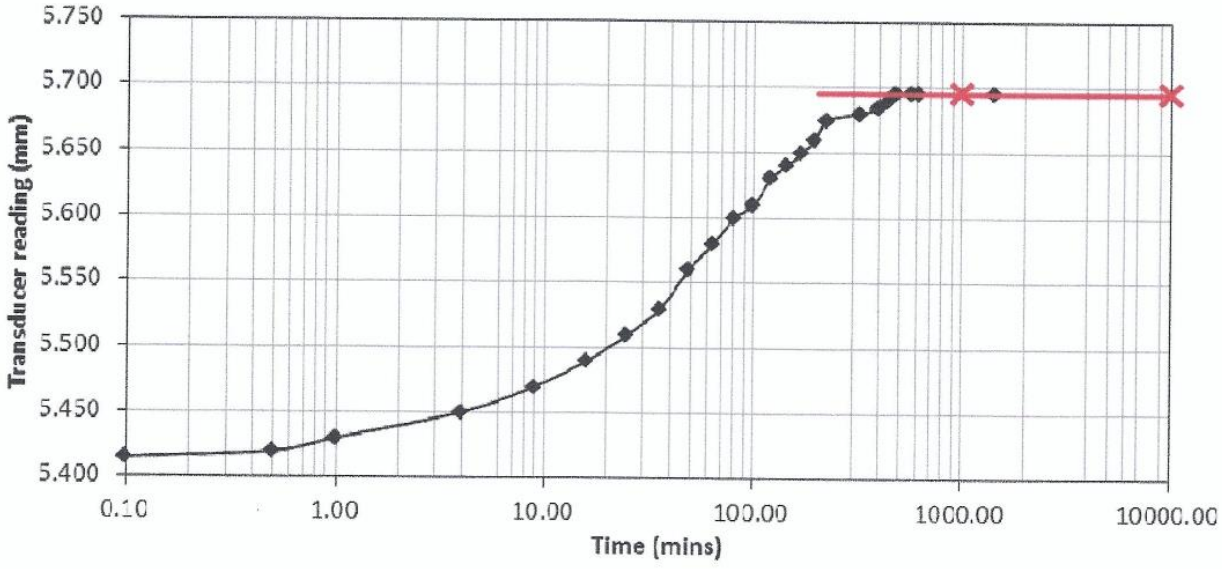
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 01(Depth: 7.0-8.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-BONJECREEK/4448	**Date:**	19-09-21
Project	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Sample**	BH 01 7.0-8.0m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.285 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 3.635
Net compression (mm)	= 3.477
Height mm (H_2)	= 16.52
Equivalent height of solids Hs	= 12.85
Voids Ratio = $(H_2 - Hs)/Hs$	= 0.286

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Email: danellilab3@gmail.com
info@danellilab.com
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Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Mobil Plaza 00620
Nairobi
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REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

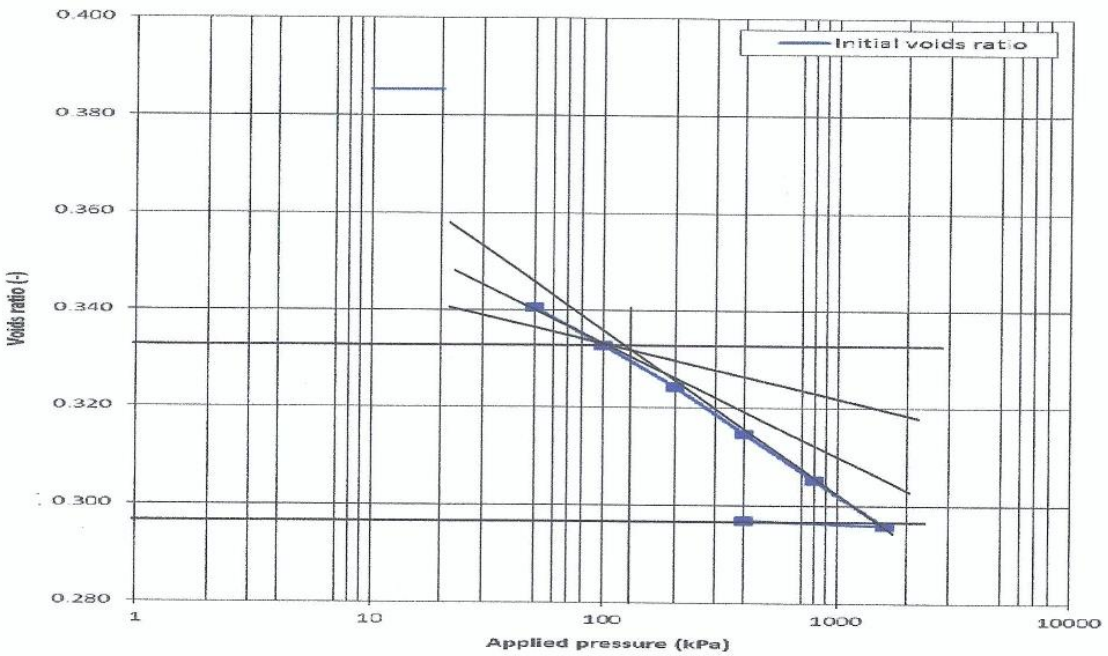
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

BH 01 (Depth: 19.0-20.0m)

Site: BONJE CREEK
Location: MOMBASA
Depth: 19.0-20.0M
Classification Group Name: -
Lab Ref: TM/RGS-BONJECREEK/4450
Sample No. 4450
Ring Diameter: 62.0 mm
Height of soil particles: 14.44mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 10.2%
Bulk Density: 2074kg/m^3
Initial voids ratio: 0.382
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1882kg/m^3
Pre-consolidation stress: 142 Kn/m^2
Coefficient of Compression Index: 0.0390
Coefficient of Re-Compression Index: 0.0233

Voids Ratio against Applied Pressure



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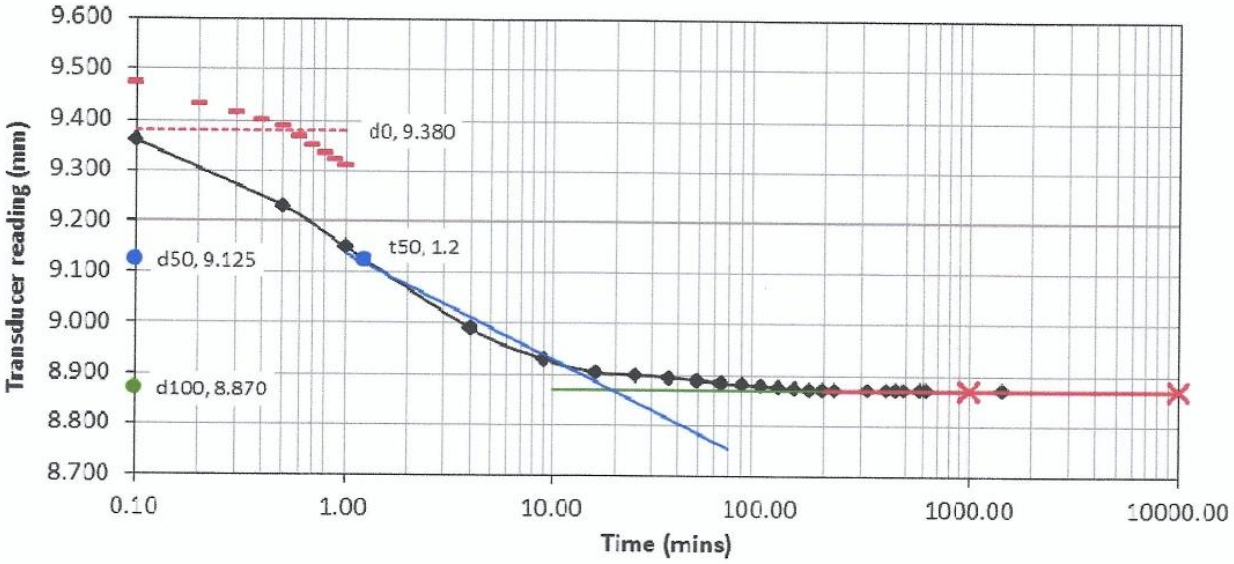
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 01(Depth: 19.0-20.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-BONJECREEK/4450	**Date:**	13-09-21
Project	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Sample**	BH 01 19.0-20.0m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.680 mm
From the plot, t_{50} = 1.2 mins
H_1 = 20.00 mm
H_2 = 19.32 mm
H = (20.00+19.32)/2
= 19.66 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **8.375 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.680 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.680
Net compression (mm)	= 0.648
Height mm (H_2)	= 19.32
Equivalent height of solids Hs	= 14.44
Voids Ratio = (H_2 – Hs)/Hs	= **0.338**

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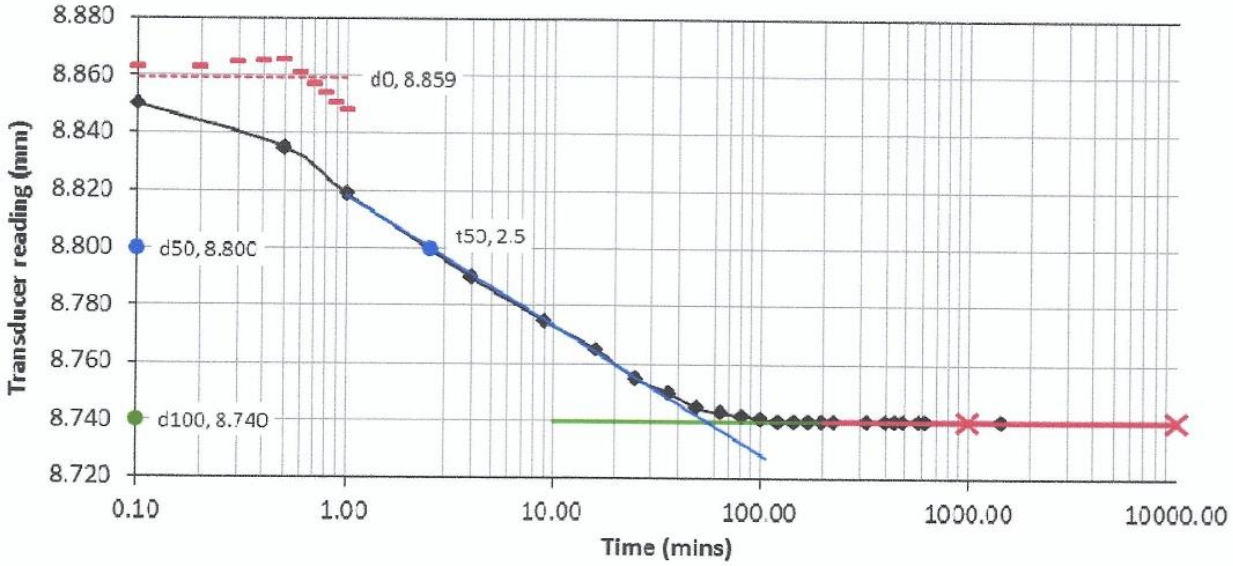
BH 01(Depth: 19.0-20.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-BONJECREEK/4450	**Date:**	14-09-21
Project	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Sample**	BH 01 19.0-20.0m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.130 mm
From the plot, t_{50} = 2.5 mins
H_1 = 19.32 mm
H_2 = 19.19 mm
H = (19.19+19.32)/2
= 19.26 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.858 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.135 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.810
Net compression (mm) = 0.760
Height mm (H_2) = 19.19
Equivalent height of solids Hs = 14.44
Voids Ratio = (H_2 – Hs)/Hs = **0.329**

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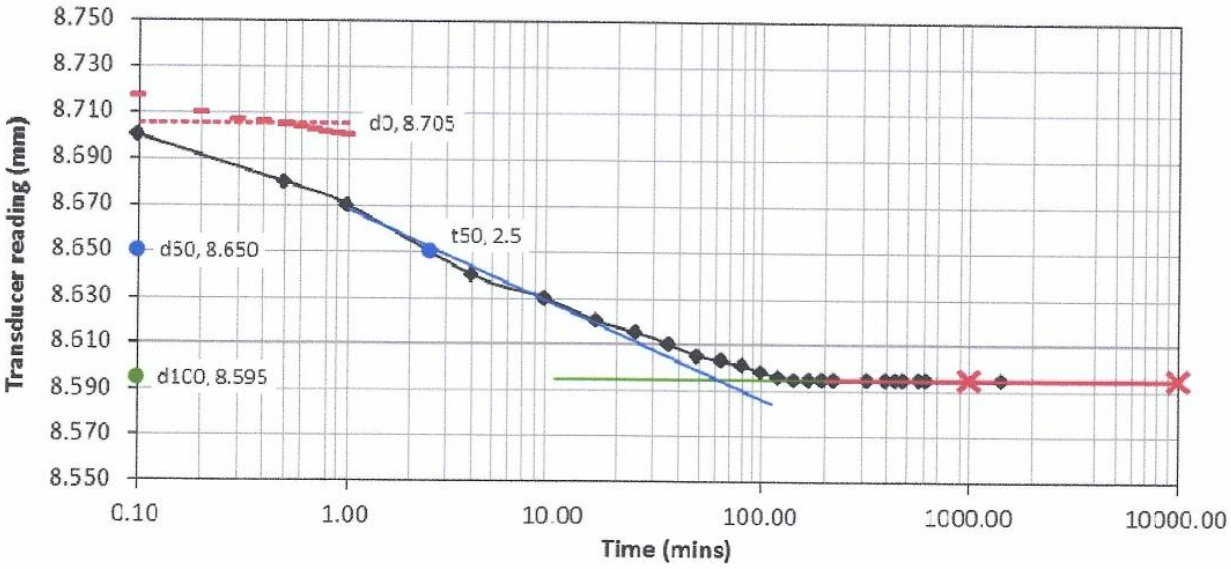
BH 01(Depth: 19.0-20.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-BONJECREEK/4450	**Date:**	15-09-21
Project	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Sample**	BH 01 19.0-20.0m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.145 mm
From the plot, t_{50} = 2.5 mins
H_1 = 19.19 mm
H_2 = 19.05 mm
H = (19.19+19.05)/2
= 19.12 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.802 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.076 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.955
Net compression (mm) = 0.883
Height mm (H_2) = 19.05
Equivalent height of solids Hs = 14.44
Voids Ratio = (H_2 – Hs)/Hs = **0.319**

Tested By: KEVIN

Date Reported: 20-08-21

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

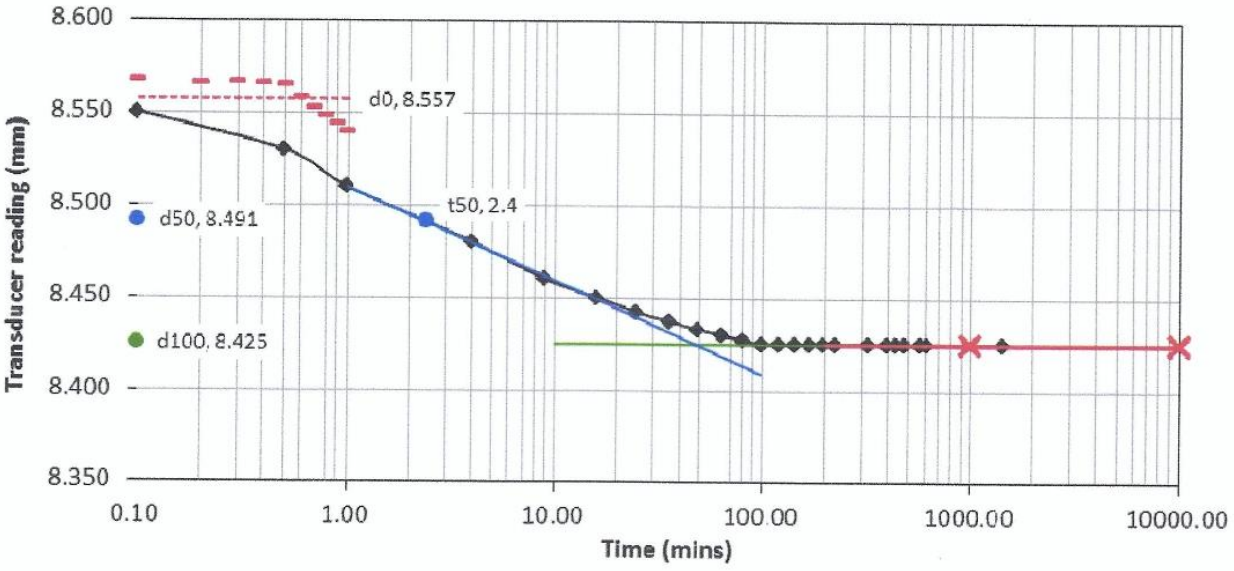
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 01(Depth: 19.0-20.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-BONJECREEK/4450	**Date:**	16-09-21
Project	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Sample**	BH 01 19.0-20.0m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.170 mm
From the plot, t_{50} = 2.4 mins
H_1 = 19.05 mm
H_2 = 18.88 mm
H = (18.88+19.05)/2
= 18.97 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.898 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.045 m²/MN**

Specimen information (cumulative)
Compression (mm) = 1.125
Net compression (mm) = 1.020
Height mm (H_2) = 18.88
Equivalent height of solids Hs = 14.44
Voids Ratio = (H_2 – Hs)/Hs = **0.307**

Tested By: KEVIN

Date Reported: 20-08-21

Checked By:

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Web site: www.danellilab.com
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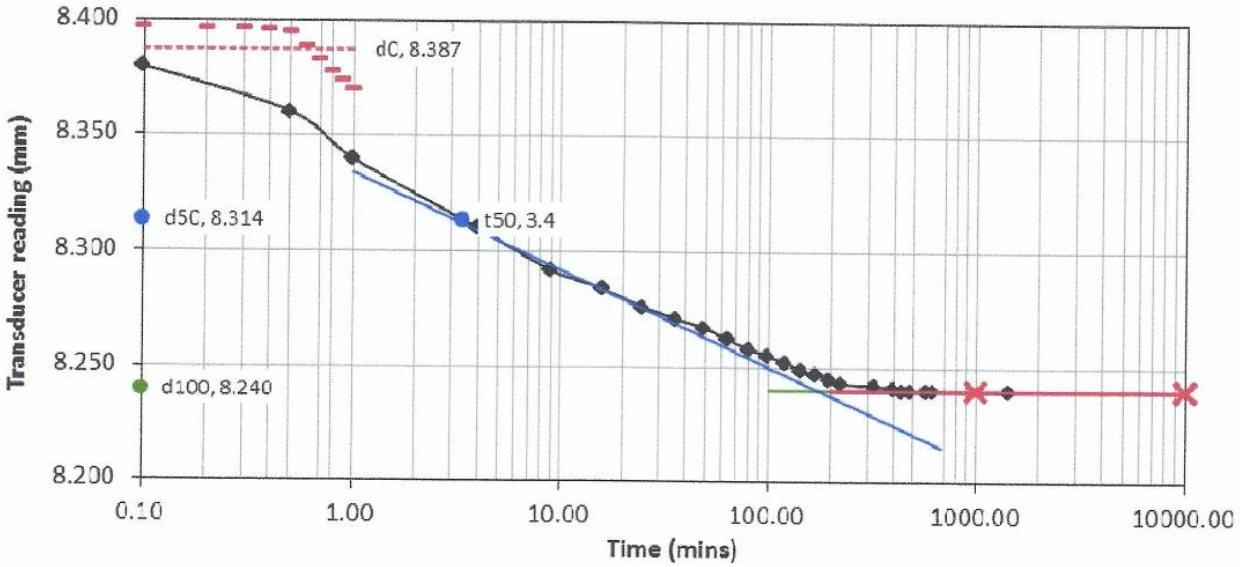
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 01(Depth: 19.0-20.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-BONJECREEK/4450	**Date:**	17-09-21
Project	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Sample**	BH 01 19.0-20.0m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.185 mm
From the plot, t_{50} = 3.4 mins
H_1 = 18.88 mm
H_2 = 18.70 mm
H = (18.88+18.70)/2
= 18.79 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.700 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.024 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.310
Net compression (mm) = 1.159
Height mm (H_2) = 18.70
Equivalent height of solids Hs = 14.44
Voids Ratio = (H_2 – Hs)/Hs = **0.295**

Tested By: KEVIN **Date Reported:** 20-08-21 **Checked By:**

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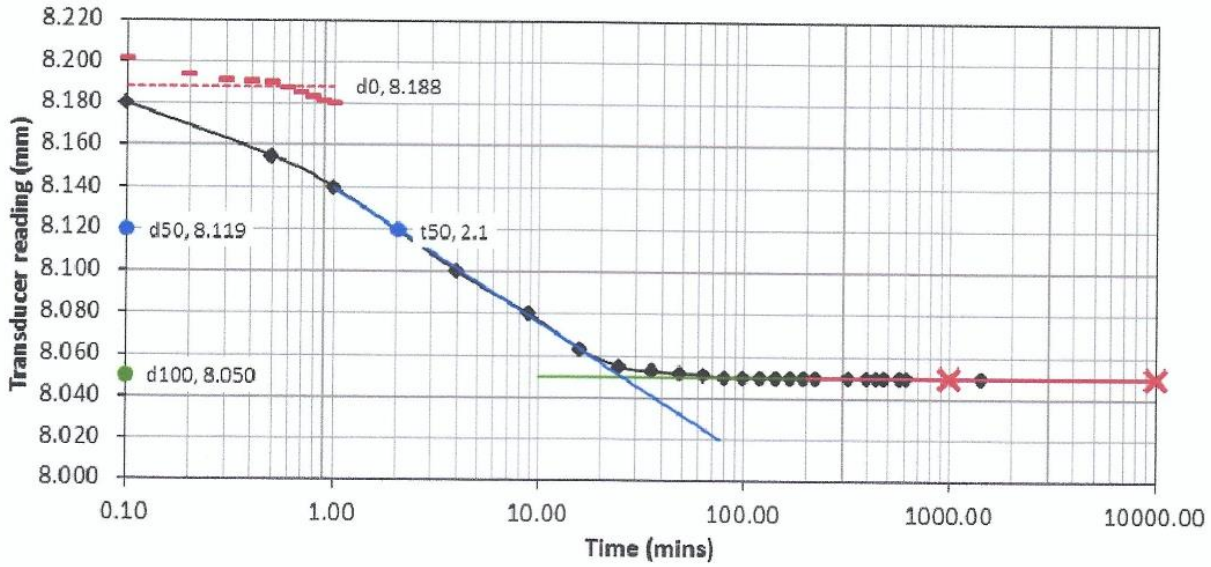
BH 01(Depth: 19.0-20.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-BONJECREEK/4450	**Date:**	18-09-21
Project	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Sample**	BH 01 19.0-20.0m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.190 mm
From the plot, t_{50} = 2.1 mins
H_1 = 18.70 mm
H_2 = 18.51 mm
H = (18.51+18.70)/2
= 18.61 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.288 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.013 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 1.500
Net compression (mm)	= 1.293
Height mm (H_2)	= 18.51
Equivalent height of solids Hs	= 14.44
Voids Ratio = (H_2 – Hs)/Hs	= **0.282**

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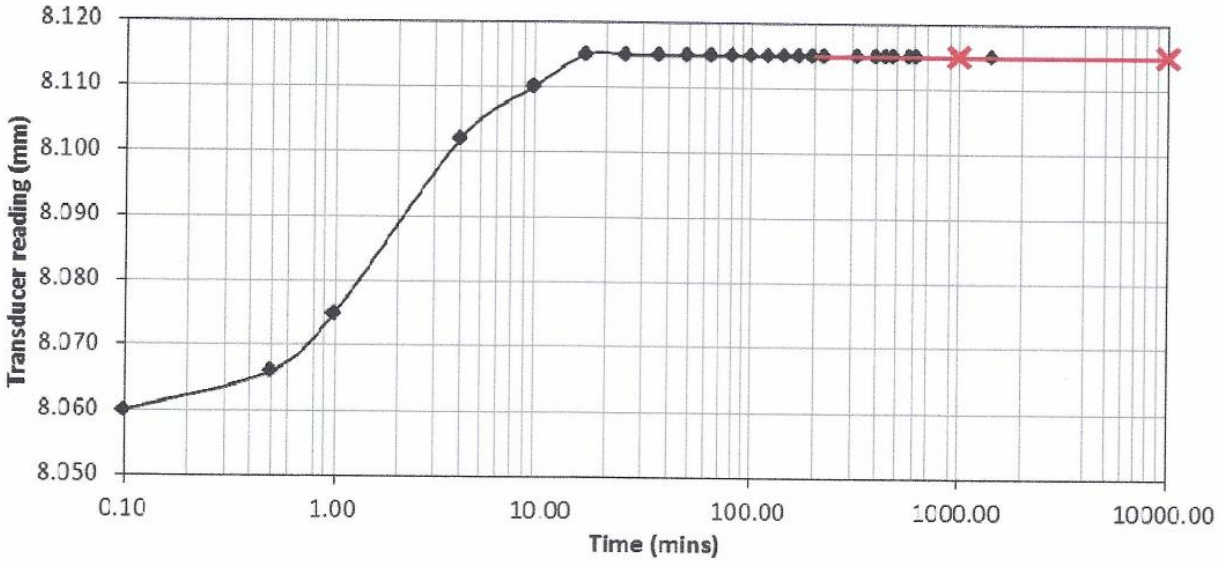
BH 01(Depth: 19.0-20.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-BONJECREEK/4450	**Date:**	19-09-21
Project	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Sample**	BH 01 19.0-20.0m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.065 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 1.435
Net compression (mm)	= 1.277
Height mm (H_2)	= 18.72
Equivalent height of solids Hs	= 14.44
Voids Ratio = (H_2 – Hs)/Hs	= 0.296

Tested By: KEVIN

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Email: danellilab3@gmail.com
info@danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU WATER TANK

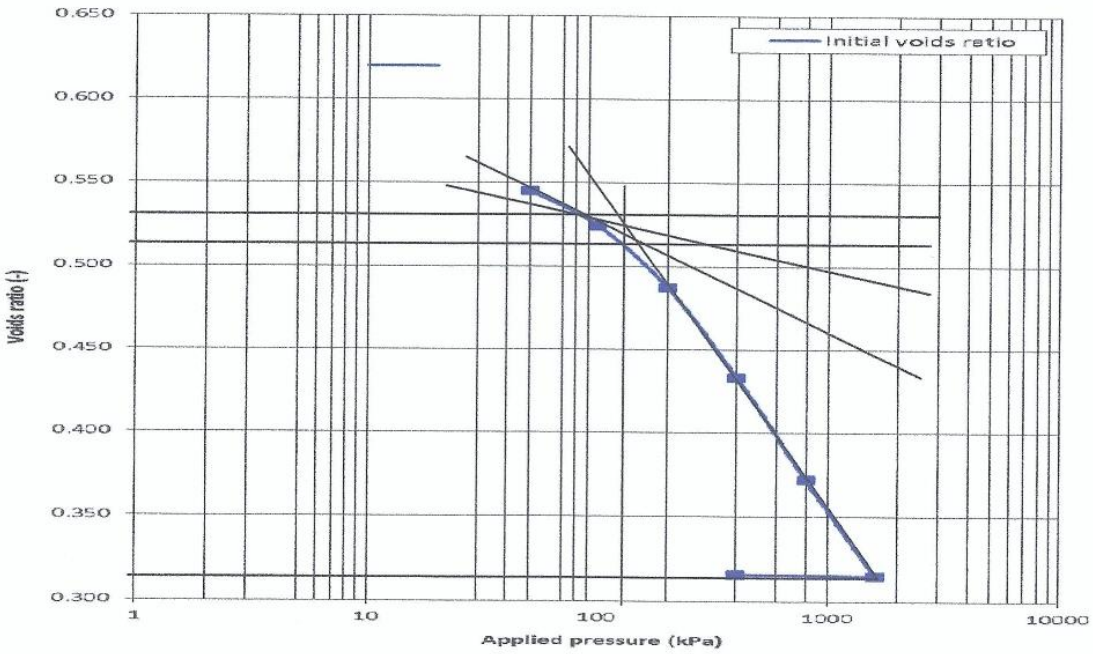
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

BH 02 (Depth: 1.0-2.0m)

Site: NGUU TATU
Location: MOMBASA
Depth: 1.0-2.0M
Classification Group Name: -
Lab Ref: TM/RGS-BONJECREEK/4460
Sample No. 4460
Ring Diameter: 62.0 mm
Height of soil particles: 12.35mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 19.2%
Bulk Density: 1914kg/m^3
Initial voids ratio: 0.619
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1606kg/m^3
Pre-consolidation stress: 143 Kn/m^2
Coefficient of Compression Index: 0.208
Coefficient of Re-Compression Index: 0.0282

Voids Ratio against Applied Pressure



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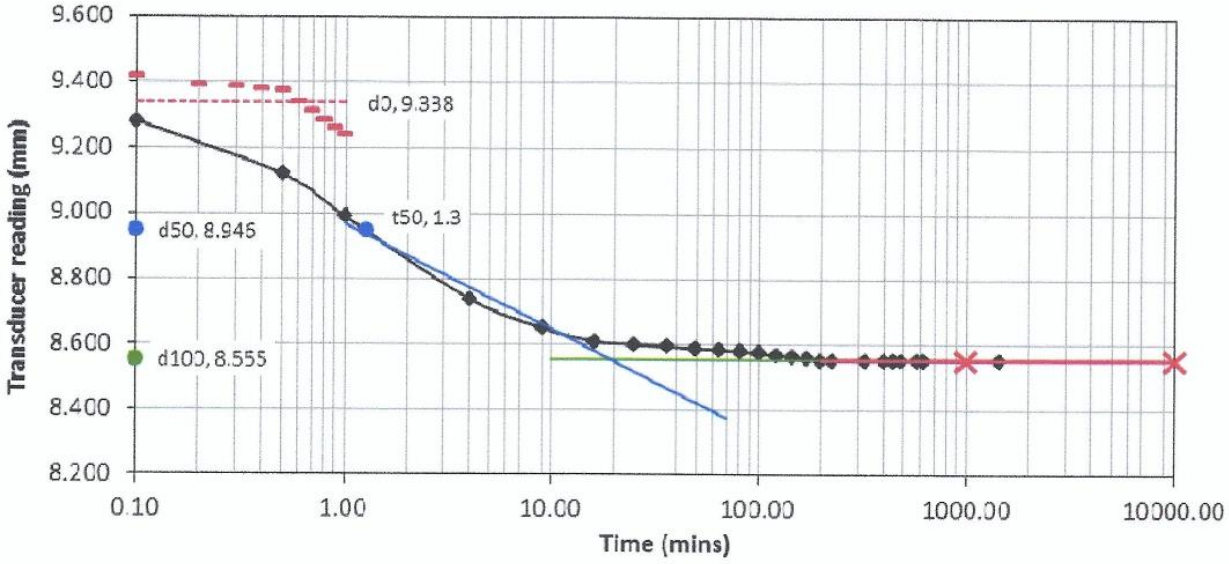
BH 02(Depth: 1.0-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/4460	**Date:**	13-09-21
Project	NGUU TATAU WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 1.0-2.0m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.955 mm
From the plot, t_{50} = 1.3 mins
H_1 = 20.00 mm
H_2 = 19.05 mm
H = (20.00+19.05)/2
= 19.53 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.628 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.955 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.955
Net compression (mm)	= 0.923
Height mm (H_2)	= 19.05
Equivalent height of solids Hs	= 12.35
Voids Ratio = (H_2 – Hs)/Hs	= **0.543**

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Email: danellilab3@gmail.com
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Nairobi
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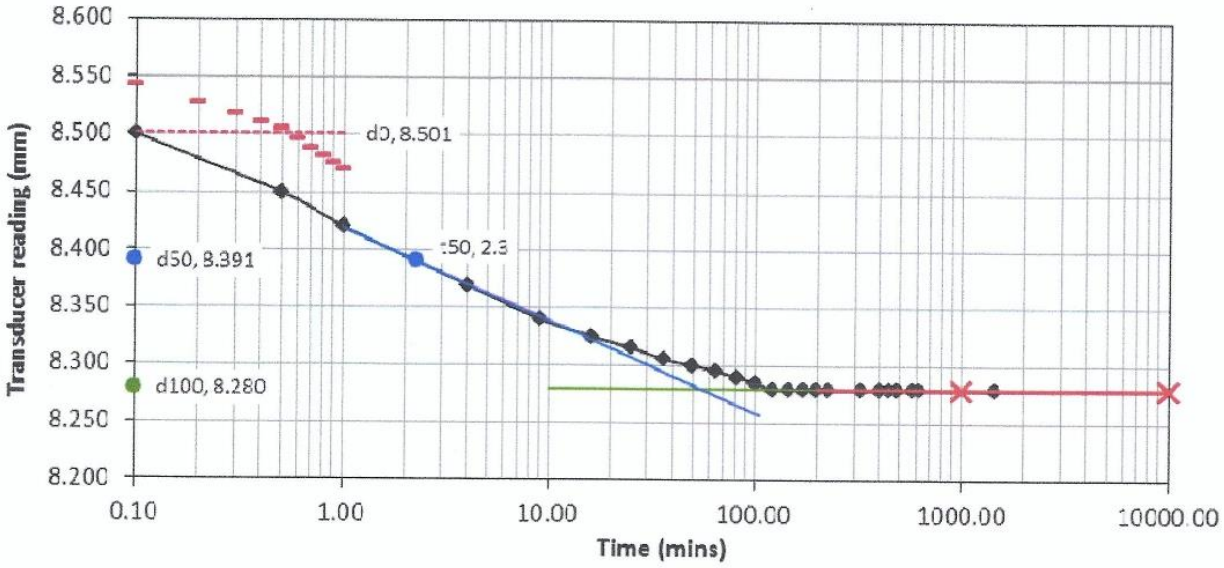
BH 02(Depth: 1.0-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/4460	**Date:**	14-09-21
Project	NGUU TATAU WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 1.0-2.0m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.275 mm
From the plot, t_{50} = 2.3 mins
H_1 = 19.05 mm
H_2 = 18.78 mm
H = (18.78+19.05)/2
= 18.92 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.047 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.289 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.230
Net compression (mm) = 1.180
Height mm (H_2) = 18.78
Equivalent height of solids Hs = 12.35
Voids Ratio = (H_2 – Hs)/Hs = **0.521**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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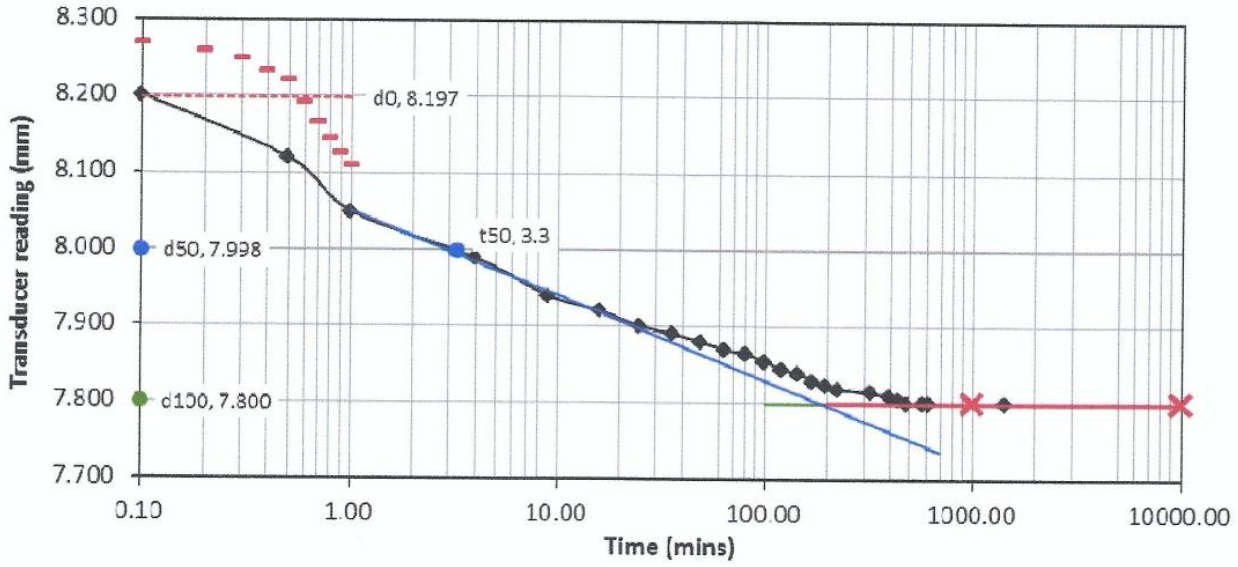
BH 02(Depth: 1.0-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/4460	**Date:**	15-09-21
Project	NGUU TATAU WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 1.0-2.0m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.480 mm
From the plot, t_{50} = 3.3 mins
H_1 = 18.78 mm
H_2 = 18.30 mm
H = (18.78+18.30)/2
= 18.54 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.708 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.256 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.710
Net compression (mm) = 1.638
Height mm (H_2) = 18.30
Equivalent height of solids Hs = 12.35
Voids Ratio = (H_2 – Hs)/Hs = **0.482**

Tested By: KEVIN **Date Reported:** 20-08-21 **Checked By:**

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Mobil Plaza 00620
Nairobi
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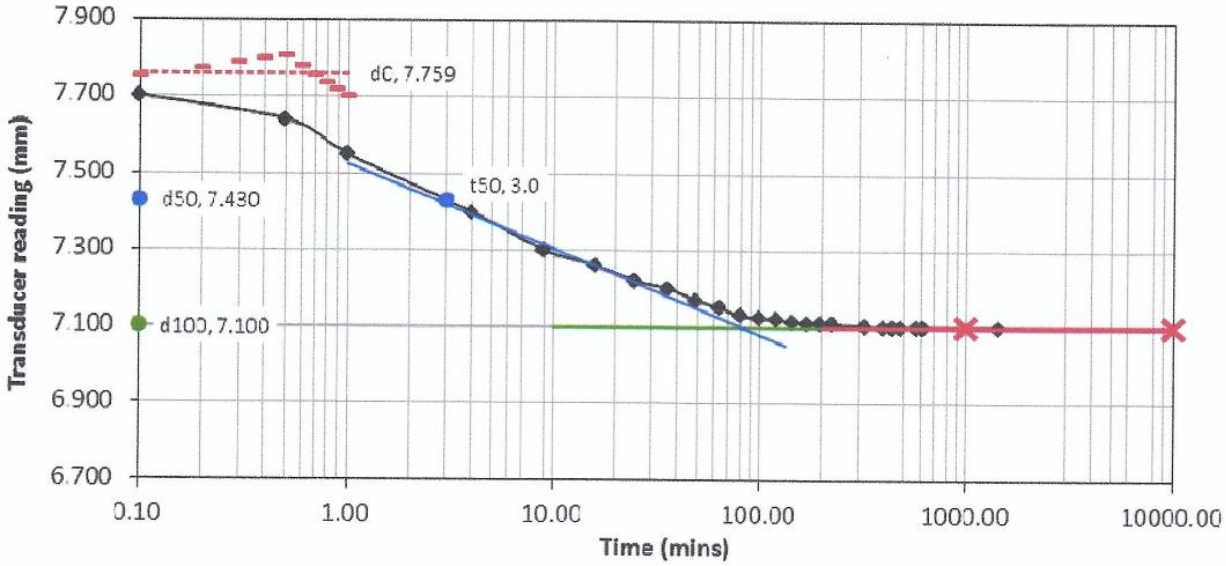
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 02(Depth: 1.0-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/4460	**Date:**	16-09-21
Project	NGUU TATAU WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 1.0-2.0m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.700 mm
From the plot, t_{50} = 3.0 mins
H_1 = 18.30 mm
H_2 = 17.60 mm
H = (18.30+17.60)/2
= 17.95 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.792 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.191 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.410
Net compression (mm) = 2.305
Height mm (H_2) = 17.60
Equivalent height of solids Hs = 12.35
Voids Ratio = (H_2 – Hs)/Hs = **0.425**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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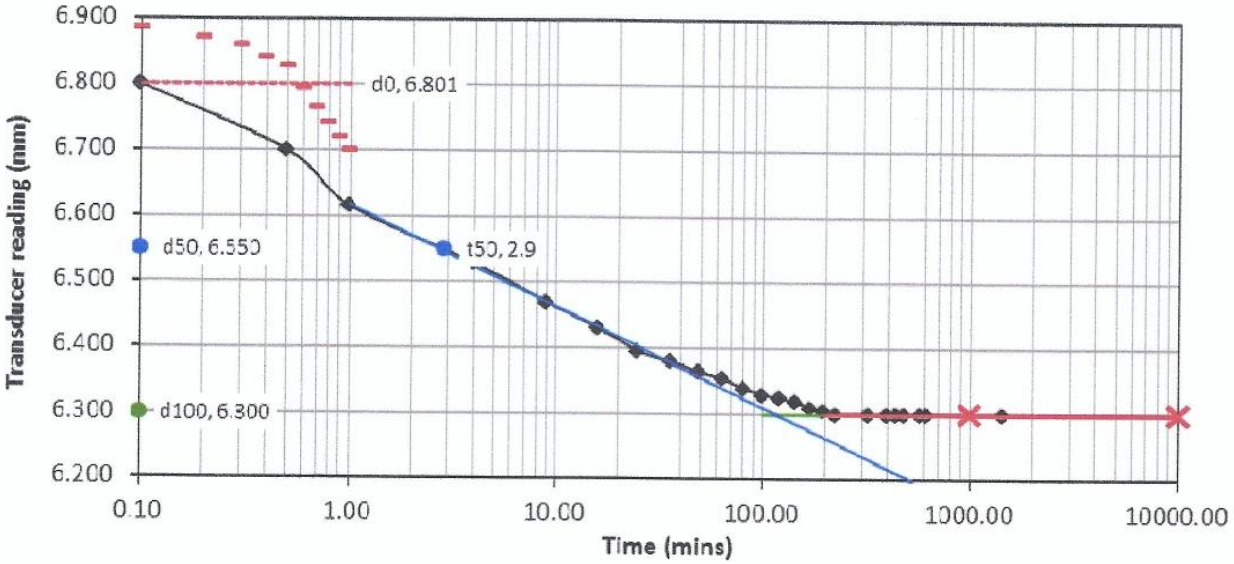
BH 02(Depth: 1.0-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/4460	**Date:**	17-09-21
Project	NGUU TATAU WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 1.0-2.0m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.800 mm
From the plot, t_{50} = 2.9 mins
H_1 = 17.60 mm
H_2 = 16.80 mm
H = (16.80+17.60)/2
= 17.20 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.652 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.114 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.210
Net compression (mm) = 3.059
Height mm (H_2) = 16.80
Equivalent height of solids Hs = 12.35
Voids Ratio = (H_2 – Hs)/Hs = **0.360**

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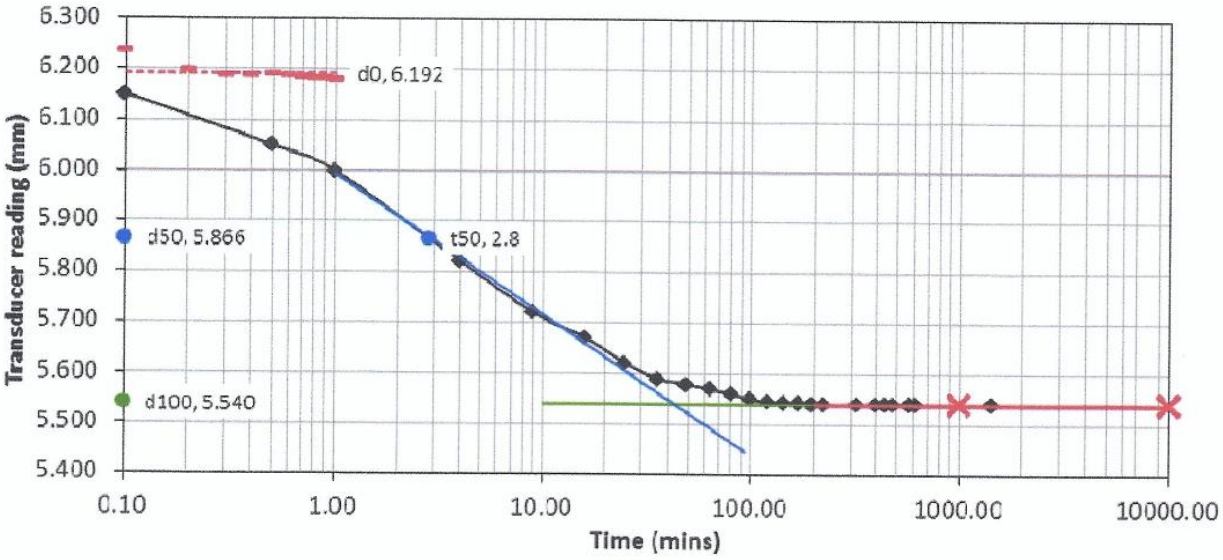
BH 02(Depth: 1.0-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/4460	**Date:**	18-09-21
Project	NGUU TATAU WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 1.0-2.0m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.760 mm
From the plot, t_{50} = 2.8 mins
H_1 = 16.80 mm
H_2 = 16.04 mm
H = (16.80+16.04)/2
= 16.42 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.504 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.057 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.970
Net compression (mm) = 3.763
Height mm (H_2) = 16.04
Equivalent height of solids Hs = 12.35
Voids Ratio = (H_2 – Hs)/Hs = **0.299**

Tested By: KEVIN **Date Reported:** 20-08-21 **Checked By:**

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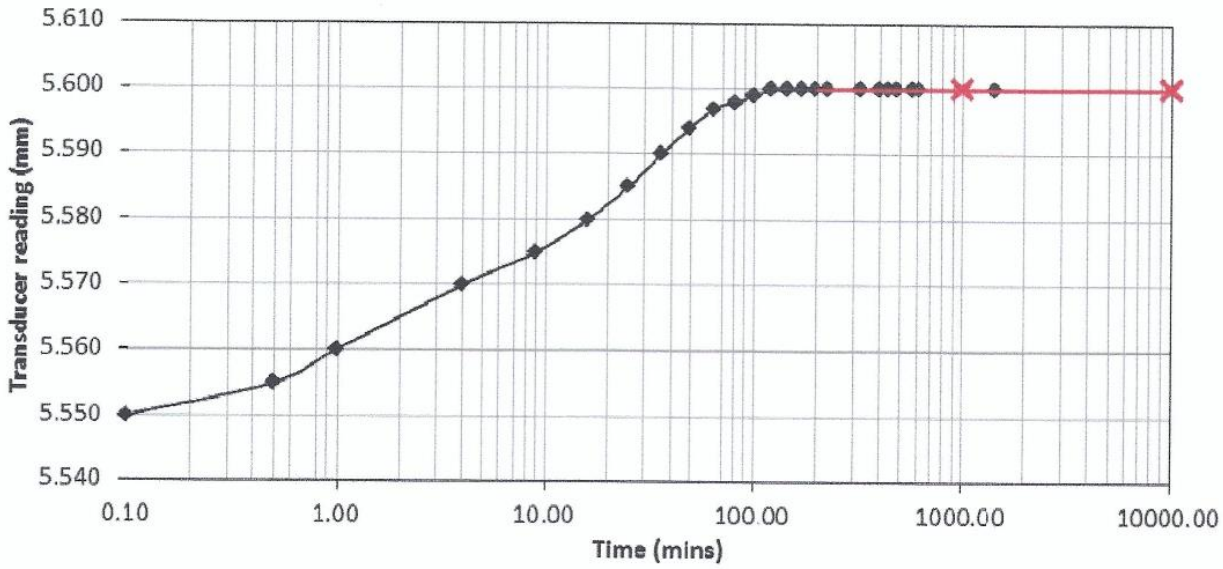
BH 02(Depth: 1.0-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/4460	**Date:**	19-09-21
Project	NGUU TATAU WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 1.0-2.0m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.060 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 3.910
Net compression (mm)	= 3.752
Height mm (H_2)	= 16.25
Equivalent height of solids Hs	= 12.35
Voids Ratio = (H_2 – Hs)/Hs	= 0.316

Tested By: KEVIN

Date Reported: 20-08-21

Checked By:

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

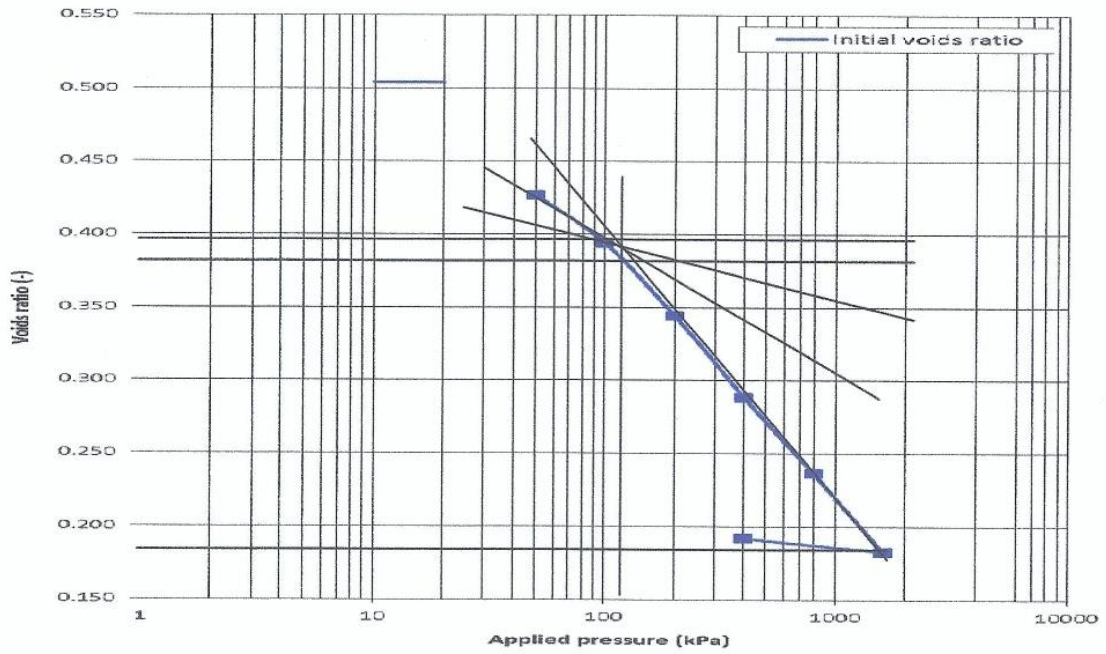
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

BH 02 (Depth: 7.0-8.0m)

Site: CHANGAMWE
Location: MOMBASA
Depth: 7.0-8.0M
Classification Group Name: -
Lab Ref: TM/RGS-CHANGAMWE/4463
Sample No. 4463
Ring Diameter: 62.0 mm
Height of soil particles: 13.29mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 16.0%
Bulk Density: 2005kg/m^3
Initial voids ratio: 0.505
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1728kg/m^3
Pre-consolidation stress: 130 Kn/m^2
Coefficient of Compression Index: 0.150
Coefficient of Re-Compression Index: 0.040

Voids Ratio against Applied Pressure



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P.O. Box 64932
Mobil Plaza 00620
Nairobi
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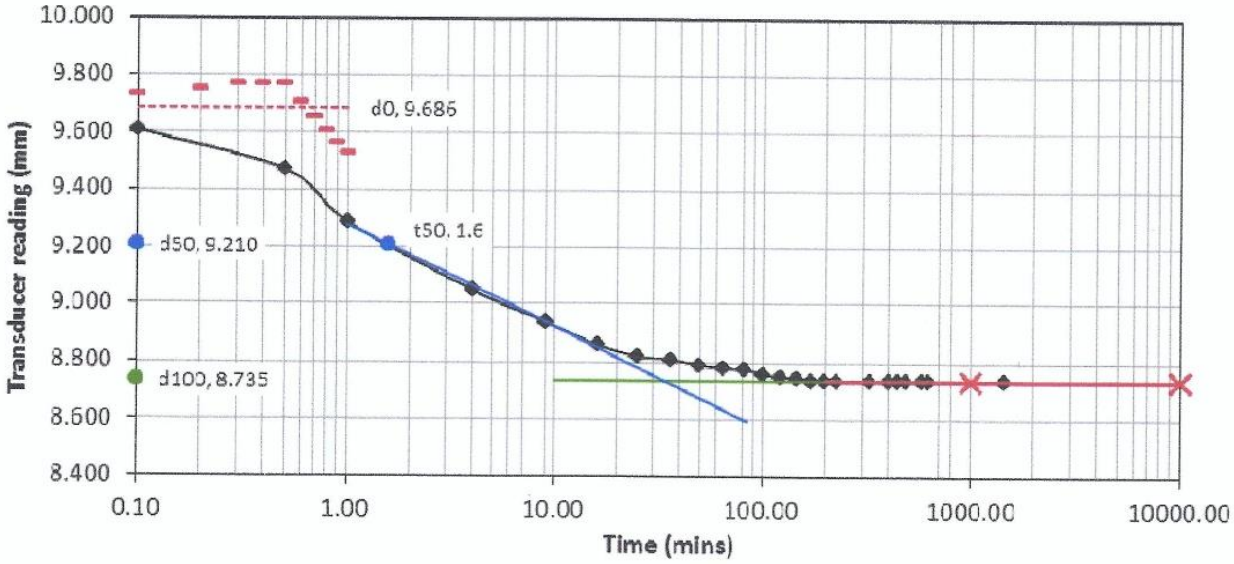
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 02(Depth: 7.0-8.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/4463	**Date:**	13-09-21
Project	CHANGMWE WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 7.0-8.0m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 1.065 mm
From the plot, t_{50} = 1.6 mins
H_1 = 20.00 mm
H_2 = 18.94 mm
H = (20.00+18.94)/2
= 19.47 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.160 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **1.065 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.065
Net compression (mm) = 1.033
Height mm (H_2) = 18.94
Equivalent height of solids Hs = 13.29
Voids Ratio = (H_2 – Hs)/Hs = **0.425**

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Mobil Plaza 00620
Nairobi
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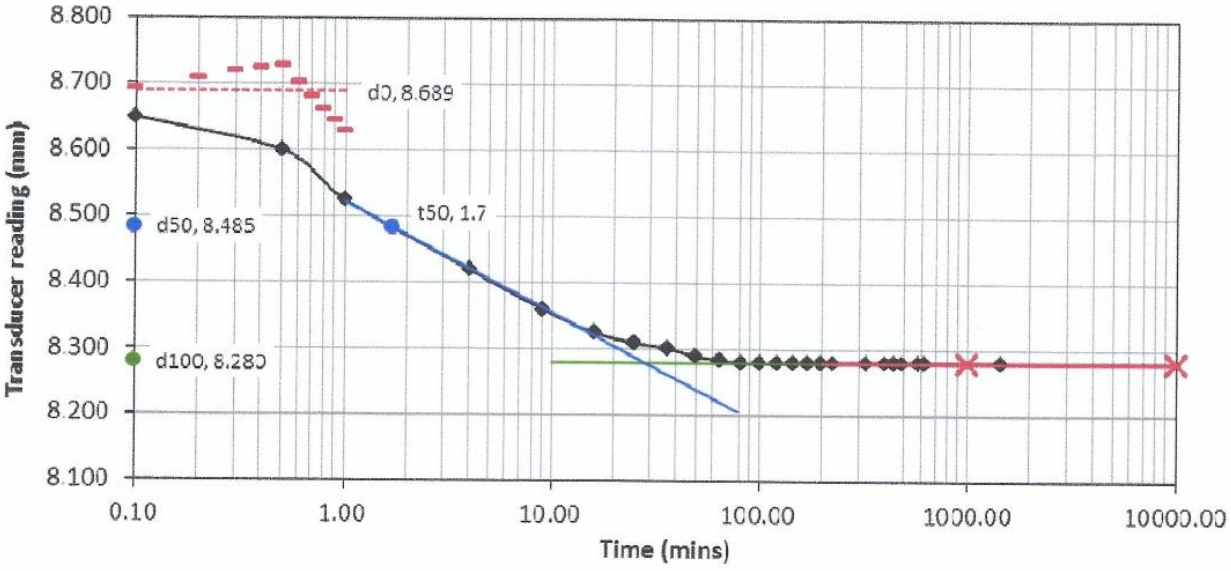
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 02(Depth: 7.0-8.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/4463	**Date:**	14-09-21
Project	CHANGMWE WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 7.0-8.0m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.455 mm
From the plot, t_{50} = 1.7 mins
H_1 = 18.94 mm
H_2 = 18.49 mm
H = (18.49+18.94)/2
= 18.72 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.360 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.480 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.520
Net compression (mm) = 1.470
Height mm (H_2) = 18.49
Equivalent height of solids Hs = 13.29
Voids Ratio = (H_2 – Hs)/Hs = **0.391**

Tested By: KEVIN **Date Reported:** 20-08-21 **Checked By:**

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Email: danellilab3@gmail.com
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P.O. Box 64932
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Nairobi
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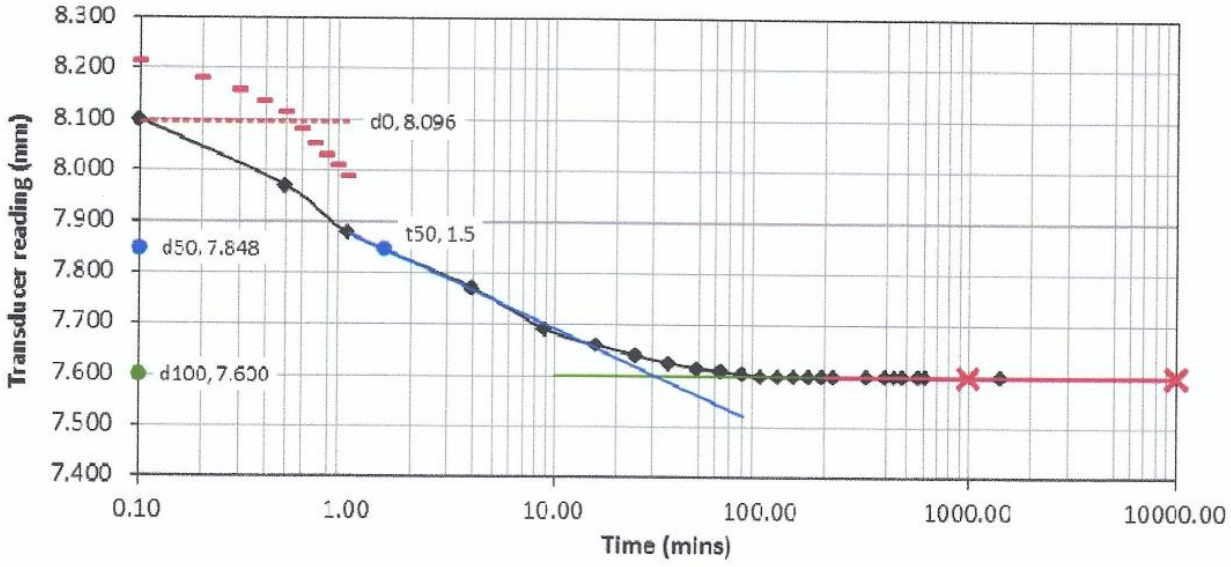
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 02(Depth: 7.0-8.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/4463	**Date:**	15-09-21
Project	CHANGMWE WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 7.0-8.0m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.680 mm
From the plot, t_{50} = 1.5 mins
H_1 = 18.49 mm
H_2 = 17.81 mm
H = (18.49+17.81)/2
= 18.15 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.710 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.368 m²/MN**

Specimen information (cumulative)
Compression (mm) = 2.200
Net compression (mm) = 2.128
Height mm (H_2) = 17.81
Equivalent height of solids Hs = 13.29
Voids Ratio = (H_2 – Hs)/Hs = **0.340**

Tested By: KEVIN

Date Reported: 20-08-21

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Nairobi
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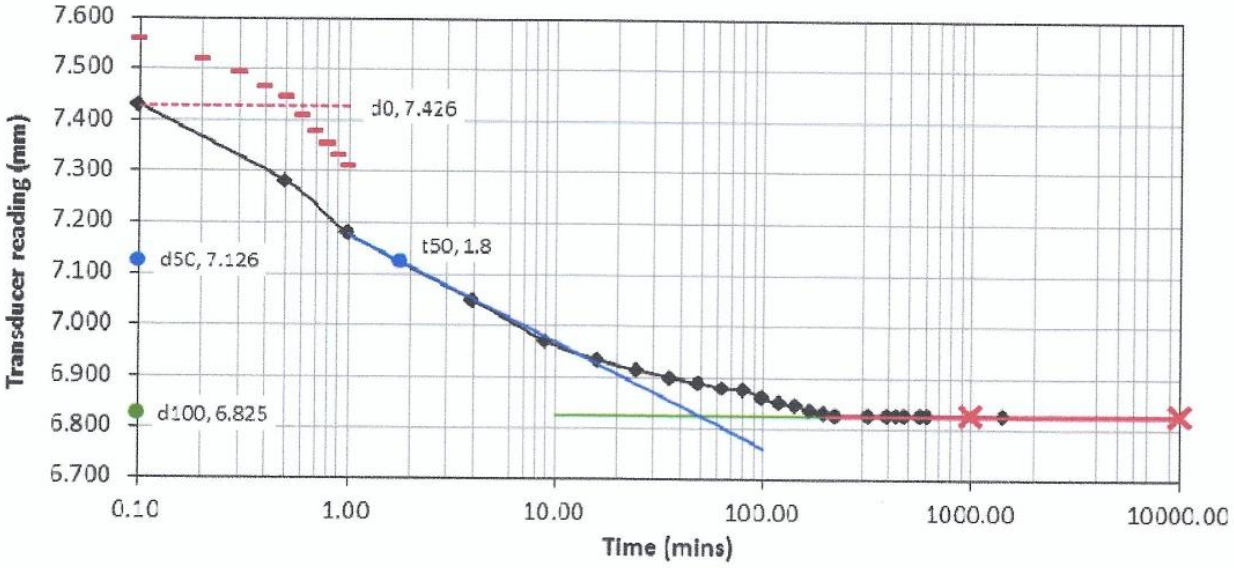
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 02(Depth: 7.0-8.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/4463	**Date:**	16-09-21
Project	CHANGMWE WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 7.0-8.0m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.775 mm
From the plot, t_{50} = 1.8 mins
H_1 = 17.81 mm
H_2 = 17.04 mm
H = (17.04+17.81)/2
= 17.43 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.388 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.218 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.975
Net compression (mm) = 2.870
Height mm (H_2) = 17.04
Equivalent height of solids Hs = 13.29
Voids Ratio = (H_2 – Hs)/Hs = **0.282**

Tested By: KEVIN

Date Reported: 20-08-21

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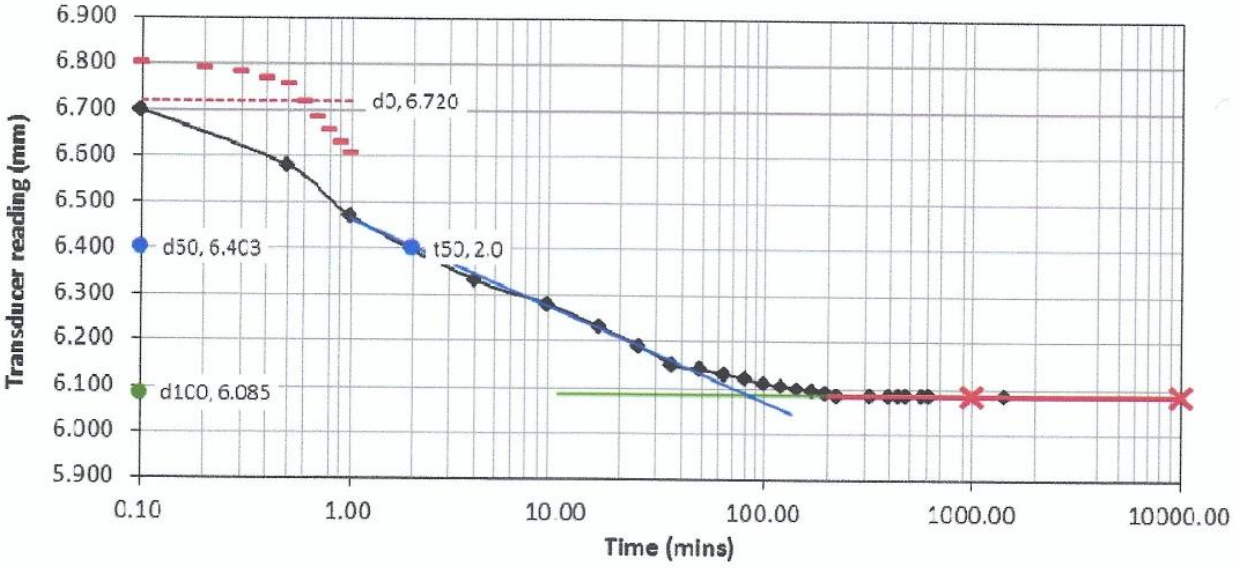
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 02(Depth: 7.0-8.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/4463	**Date:**	17-09-21
Project	CHANGMWE WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 7.0-8.0m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.740 mm
From the plot, t_{50} = 2.0 mins
H_1 = 17.04 mm
H_2 = 16.30 mm
H = (17.04+16.30)/2
= 16.67 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.613 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.109 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 3.715
Net compression (mm)	= 3.564
Height mm (H_2)	= 16.30
Equivalent height of solids Hs	= 13.29
Voids Ratio = (H_2 – Hs)/Hs	= **0.226**

Tested By: KEVIN **Date Reported:** 20-08-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
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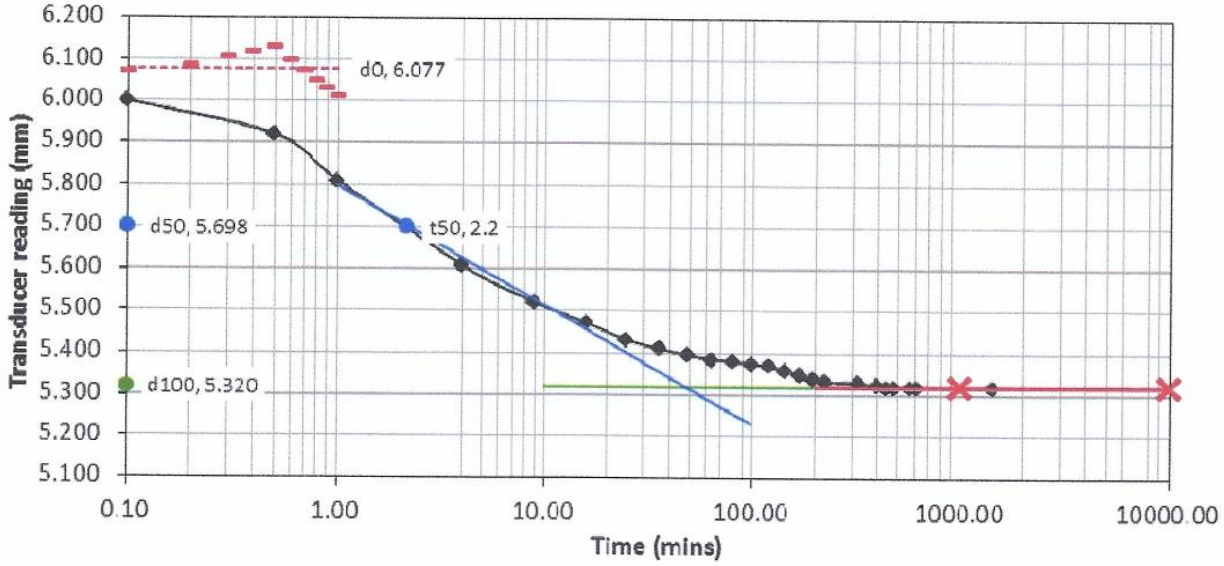
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 02(Depth: 7.0-8.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/4463	**Date:**	18-09-21
Project	CHANGMWE WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 7.0-8.0m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.765 mm
From the plot, t_{50} = 2.2 mins
H_1 = 16.30 mm
H_2 = 15.54 mm
H = (15.54+16.30)/2
= 15.92 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.995 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.059 m²/MN**

Specimen information (cumulative)
Compression (mm) = 4.480
Net compression (mm) = 4.273
Height mm (H_2) = 15.54
Equivalent height of solids Hs = 13.29
Voids Ratio = (H_2 – Hs)/Hs = **0.169**

Tested By: KEVIN **Date Reported:** 20-08-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Nairobi
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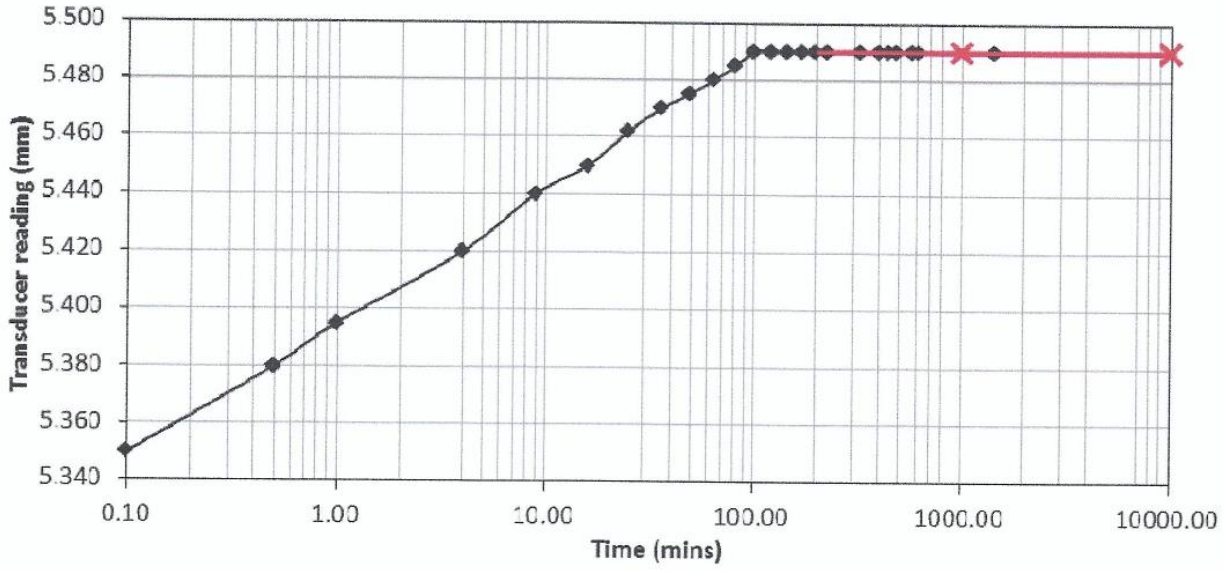
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 02(Depth: 7.0-8.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/4463	**Date:**	19-09-21
Project	CHANGMWE WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 7.0-8.0m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.170 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 4.310
Net compression (mm)	= 4.152
Height mm (H_2)	= 15.85
Equivalent height of solids Hs	= 13.29
Voids Ratio = (H_2 – Hs)/Hs	= 0.193

Tested By: KEVIN

Date Reported: 20-08-21

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Email: danellilab3@gmail.com
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Mob: +254(0) 726 721 935

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

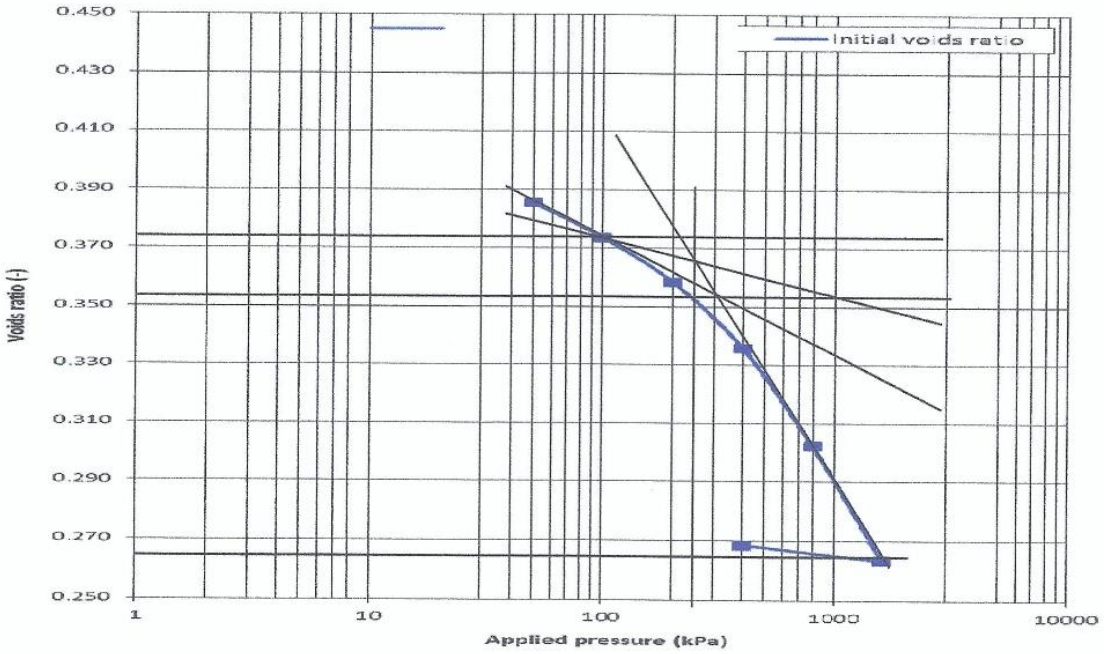
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

BH 02 (Depth: 14.0-15.0m)

Site: CHANGAMWE
Location: MOMBASA
Depth: 14.0-15.0M
Classification Group Name: -
Lab Ref: TM/RGS-CHANGAMWE/4466
Sample No. 4466
Ring Diameter: 62.0 mm
Height of soil particles: 13.84mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 13.4%
Bulk Density: 2044kg/m^3
Initial voids ratio: 0.443
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1802kg/m^3
Pre-consolidation stress: 255 Kn/m^2
Coefficient of Compression Index: 0.130
Coefficient of Re-Compression Index: 0.032

Voids Ratio against Applied Pressure



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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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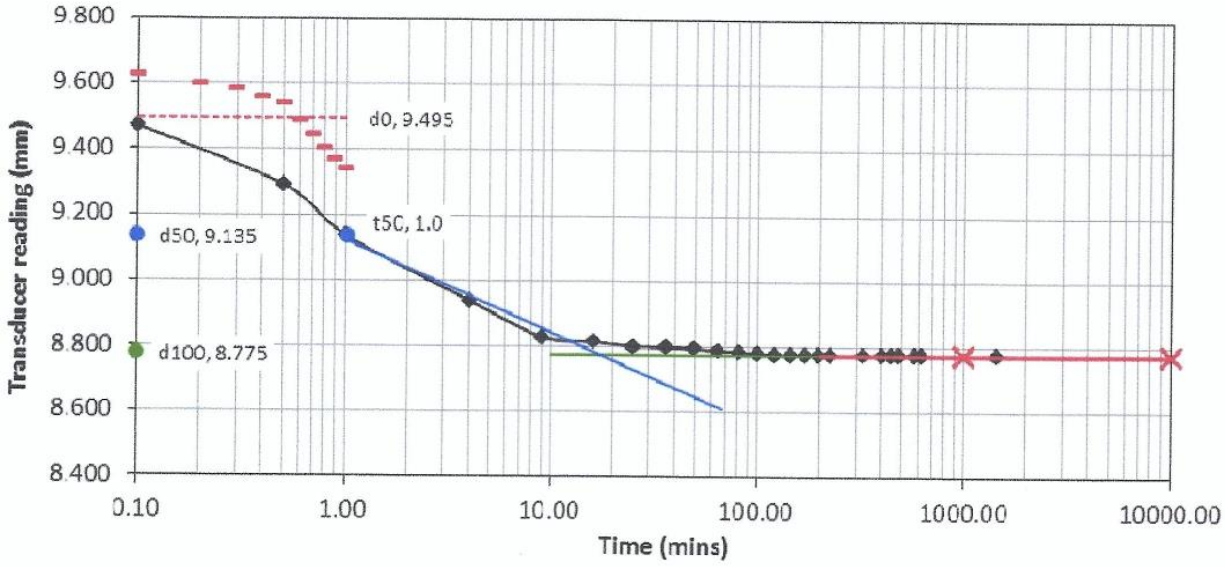
BH 02(Depth: 14.0-15.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/4466	**Date:**	13-09-21
Project	CHANGMWE WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 14.0-15.0m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.855 mm
From the plot, t_{50} = 1.0 mins
H_1 = 20.00 mm
H_2 = 19.15 mm
H = (20.00+19.15)/2
= 19.58 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **9.968 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.855 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.855
Net compression (mm)	= 0.823
Height mm (H_2)	= 19.15
Equivalent height of solids Hs	= 13.84
Voids Ratio = (H_2 – Hs)/Hs	= **0.384**

Tested By: KEVIN

Date Reported: 20-08-21

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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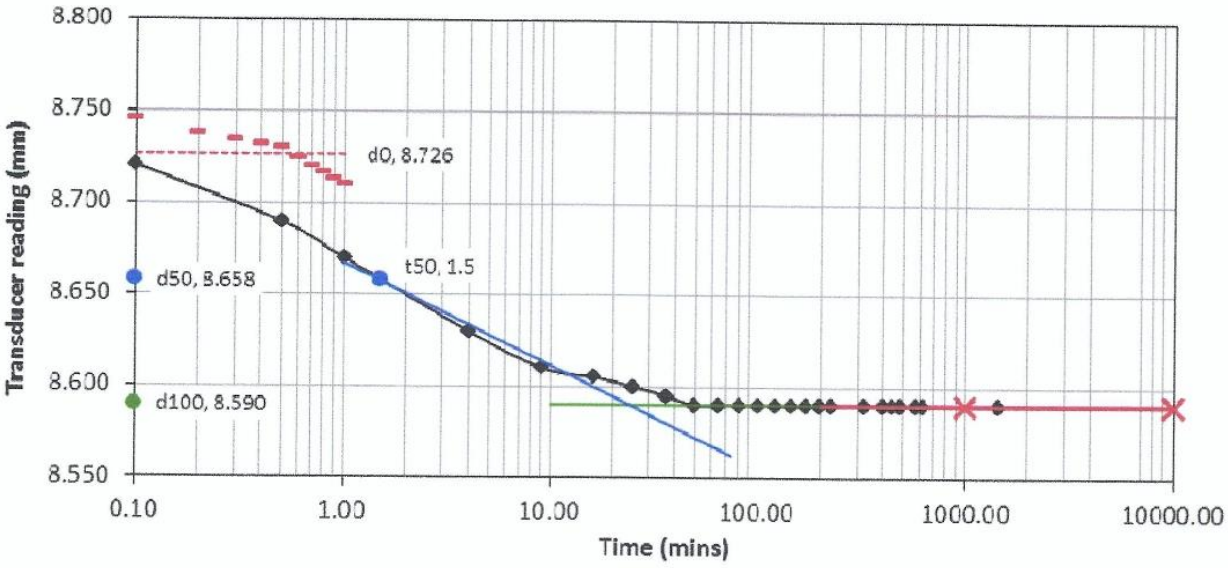
BH 02(Depth: 14.0-15.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/4466	**Date:**	14-09-21
Project	CHANGMWE WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 14.0-15.0m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.185 mm
From the plot, t_{50} = 1.5 mins
H_1 = 19.15 mm
H_2 = 18.97 mm
H = (18.97+19.15)/2
= 19.06 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.297 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.193 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 1.040
Net compression (mm)	= 0.990
Height mm (H_2)	= 18.97
Equivalent height of solids Hs	= 13.84
Voids Ratio = (H_2 – Hs)/Hs	= 0.371

Tested By: KEVIN **Date Reported:** 20-08-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

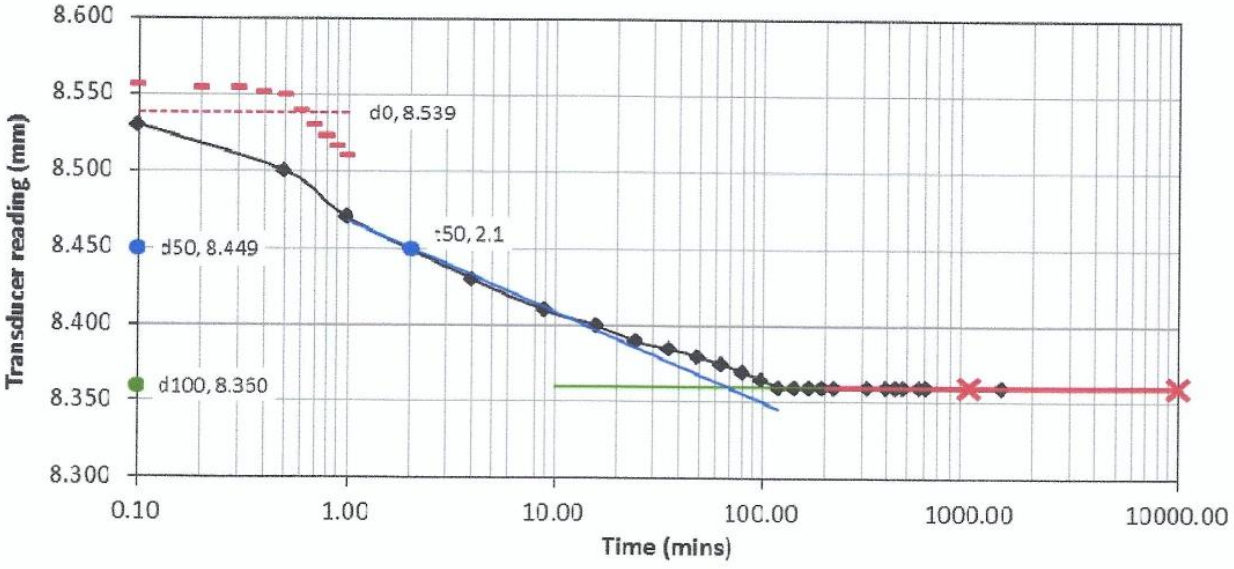
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 02(Depth: 14.0-15.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/4466	**Date:**	15-09-21
Project	CHANGMWE WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 14.0-15.0m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.230 mm
From the plot, t_{50} = 2.1 mins
H_1 = 18.97 mm
H_2 = 18.74 mm
H = (18.97+18.74)/2
= 18.86 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.404 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.121 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.270
Net compression (mm) = 1.198
Height mm (H_2) = 18.74
Equivalent height of solids Hs = 13.84
Voids Ratio = (H_2 – Hs)/Hs = **0.354**

Tested By: KEVIN

Date Reported: 20-08-21

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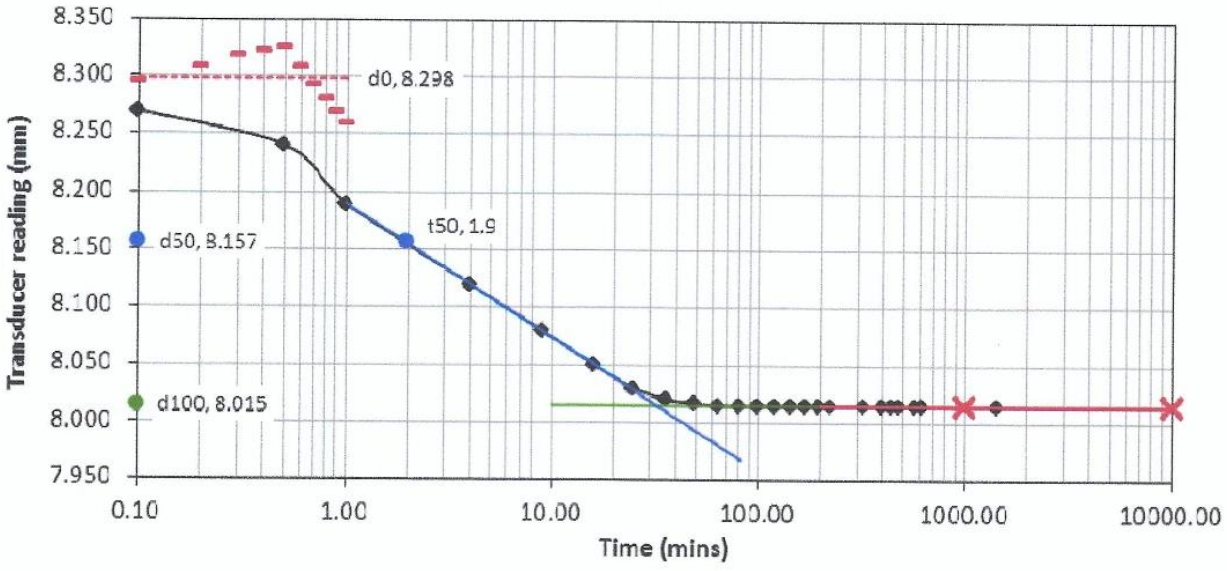
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 02(Depth: 14.0-15.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/4466	**Date:**	16-09-21
Project	CHANGMWE WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 14.0-15.0m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.345 mm
From the plot, t_{50} = 1.9 mins
H_1 = 18.74 mm
H_2 = 18.40 mm
H = (18.40+18.74)/2
= 18.57 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.719 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.092 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.615
Net compression (mm) = 1.510
Height mm (H_2) = 18.40
Equivalent height of solids Hs = 13.84
Voids Ratio = (H_2 – Hs)/Hs = **0.329**

Tested By: KEVIN **Date Reported:** 20-08-21 **Checked By:**

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Nairobi
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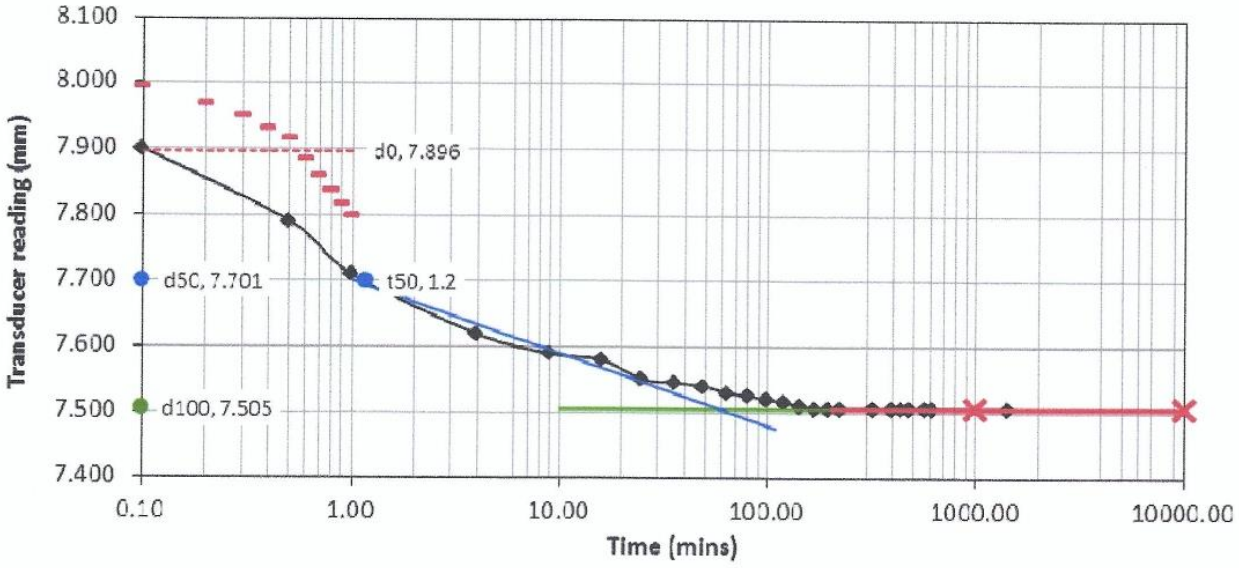
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 02(Depth: 14.0-15.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/4466	**Date:**	17-09-21
Project	CHANGMWE WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 14.0-15.0m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.510 mm
From the plot, t_{50} = 1.2 mins
H_1 = 18.40 mm
H_2 = 17.89 mm
H = (18.40+17.89)/2
= 18.15 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.137 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.069 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.125
Net compression (mm) = 1.974
Height mm (H_2) = 17.89
Equivalent height of solids Hs = 13.84
Voids Ratio = (H_2 – Hs)/Hs = **0.293**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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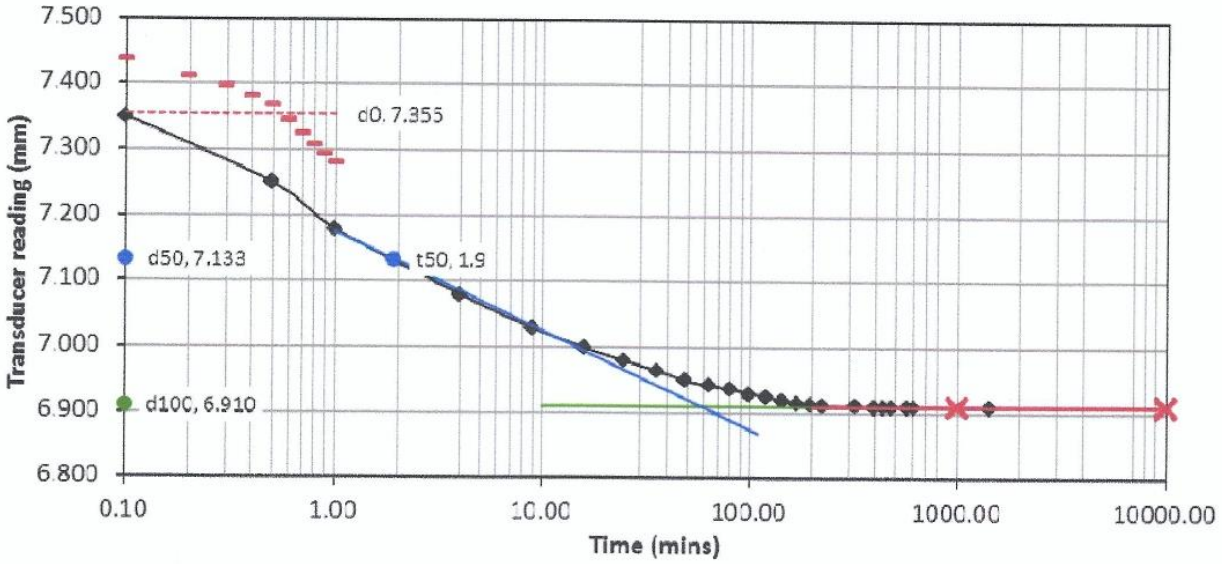
BH 02(Depth: 14.0-15.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/4466	**Date:**	18-09-21
Project	CHANGMWE WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 14.0-15.0m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.595 mm
From the plot, t_{50} = 1.9 mins
H_1 = 17.89 mm
H_2 = 17.30 mm
H = (17.30+17.89)/2
= 17.60 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.239 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.042 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 2.720
Net compression (mm)	= 2.513
Height mm (H_2)	= 17.30
Equivalent height of solids Hs	= 13.84
Voids Ratio = (H_2 – Hs)/Hs	= **0.250**

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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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Nairobi
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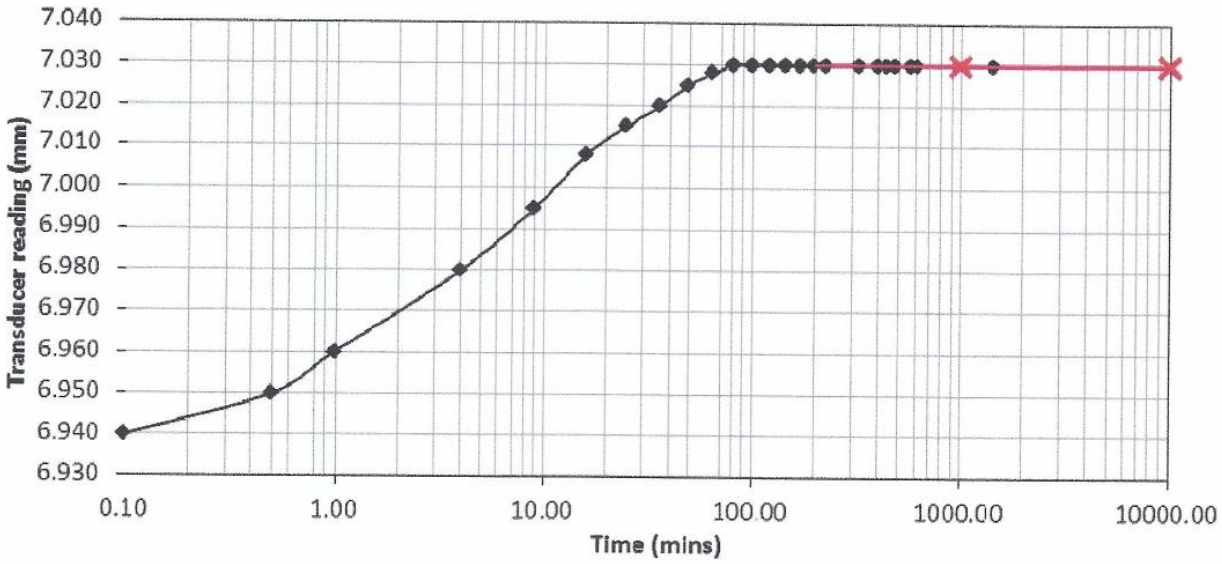
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

BH 02(Depth: 14.0-15.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/4466	**Date:**	19-09-21
Project	CHANGMWE WATER TANK	**Location:**	MOMBASA	**Sample**	BH 02 14.0-15.0m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.120 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}} =$ - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 2.600
Net compression (mm)	= 2.442
Height mm (H_2)	= 17.56
Equivalent height of solids Hs	= 13.84
Voids Ratio = (H_2 – Hs)/Hs	= 0.269

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Email: danellilab3@gmail.com
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Mob: +254(0) 726 721 935

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Mombasa Road
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P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

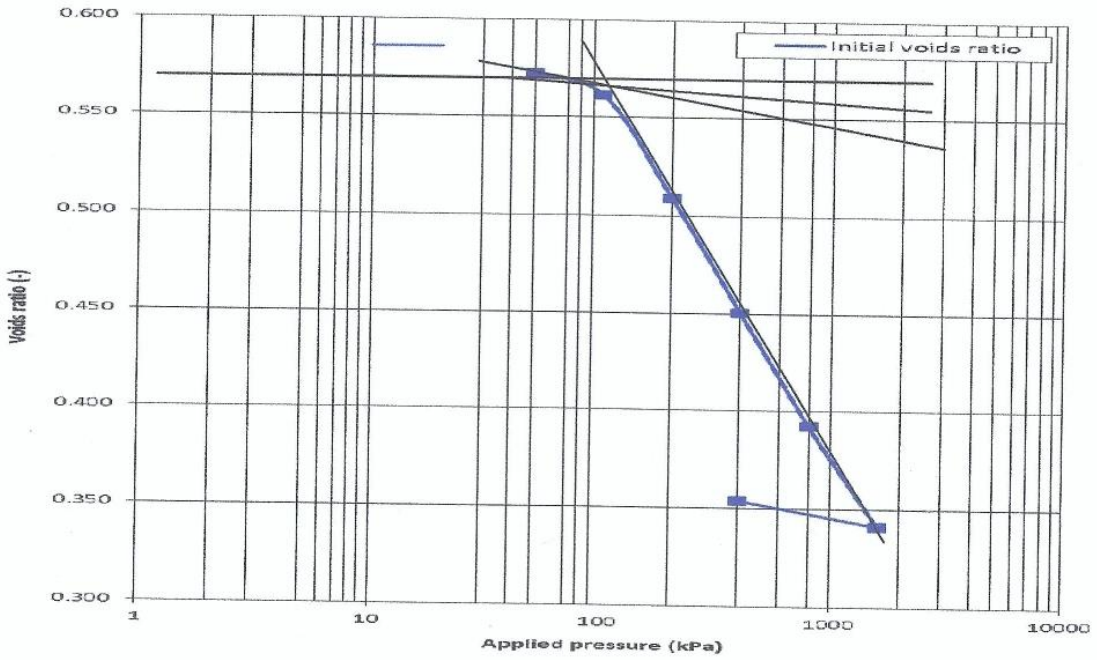
TP KM 2+500 (Depth: 0.0-0.3m)

Site: NGUU TATU
Classification Group Name: -
Ring Diameter: 62.0 mm
Area (A): 3019.1mm^2
Initial voids ratio: 0.589
Pre-consolidation stress: 105 Kn/m^2
Coefficient of Re-Compression Index: 0.047

Location: MOMBASA
Lab Ref: TM/RGS-NGUUTATU/5709
Height of soil particles: 12.61mm
Moisture Content after Test: 13.4%
Assumed Soil Density: 2600 kg/m^3

Depth: 0.0-0.3M
Sample No. 5709
Height of Ring: 20 mm
Bulk Density: 1896kg/m^3
Dry Density: 1636kg/m^3
Coefficient of Compression Index: 0.197

Voids Ratio against Applied Pressure



Tested By: KEVIN

Date Reported: 30-11-21

Checked By:

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

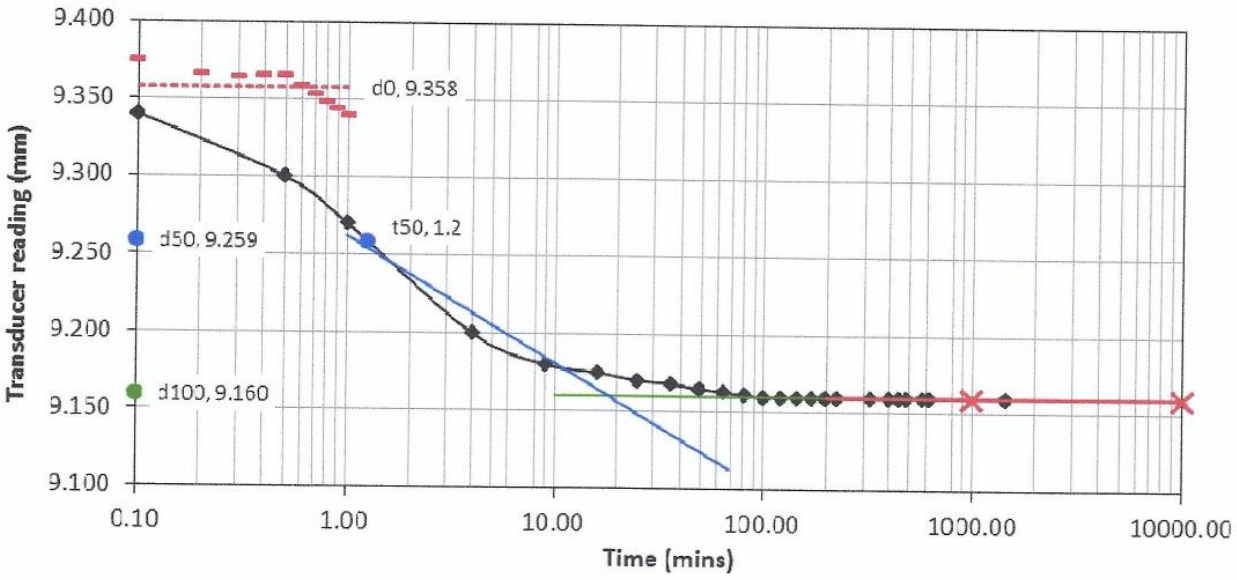
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 2+500(Depth: 0.0-0.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5709	**Date:**	18-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 2+500 0.0-0.3m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.200 mm
From the plot, t_{50} = 1.2 mins
H_1 = 20.00 mm
H_2 = 19.80 mm
H = (20.00+19.80)/2
= 19.90 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **8.580 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.200 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.200
Net compression (mm) = 0.168
Height mm (H_2) = 19.80
Equivalent height of solids Hs = 12.61
Voids Ratio = (H_2 – Hs)/Hs = **0.570**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Email: danellilab3@gmail.com
info@danellilab.com
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Mob: +254(0) 726 721 935

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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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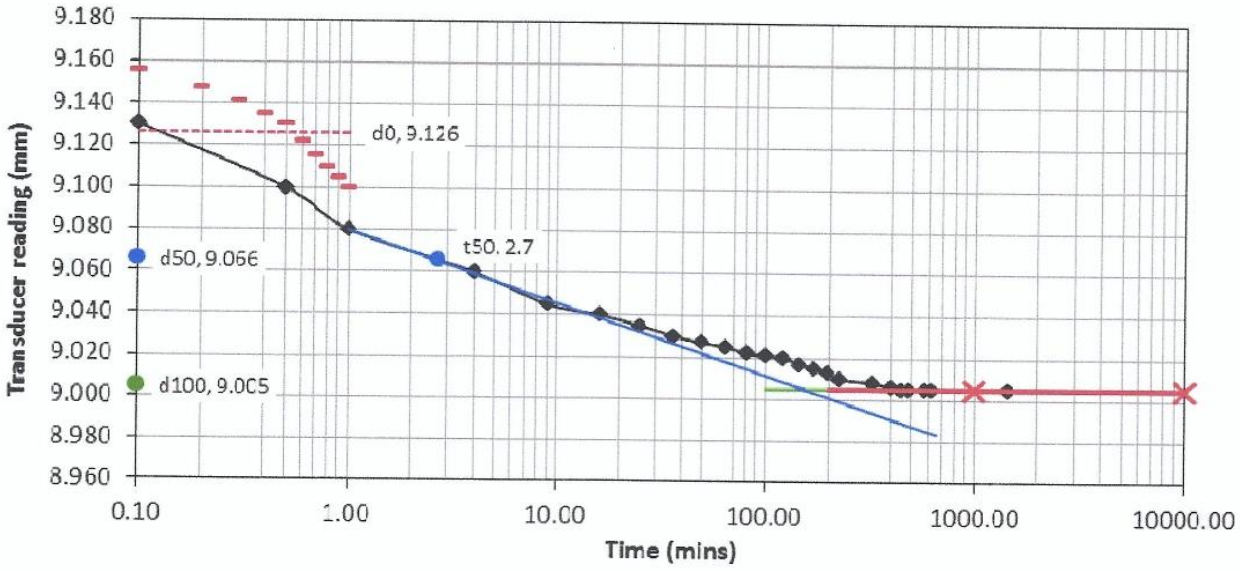
TP KM 2+500(Depth: 0.0-0.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5709	**Date:**	19-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 2+500 0.0-0.3m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.155 mm
From the plot, t_{50} = 2.7 mins
H_1 = 19.80 mm
H_2 = 19.65 mm
H = (19.65+19.80)/2
= 19.73 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.749 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.157 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.355
Net compression (mm) = 0.305
Height mm (H_2) = 19.65
Equivalent height of solids Hs = 12.61
Voids Ratio = (H_2 – Hs)/Hs = **0.558**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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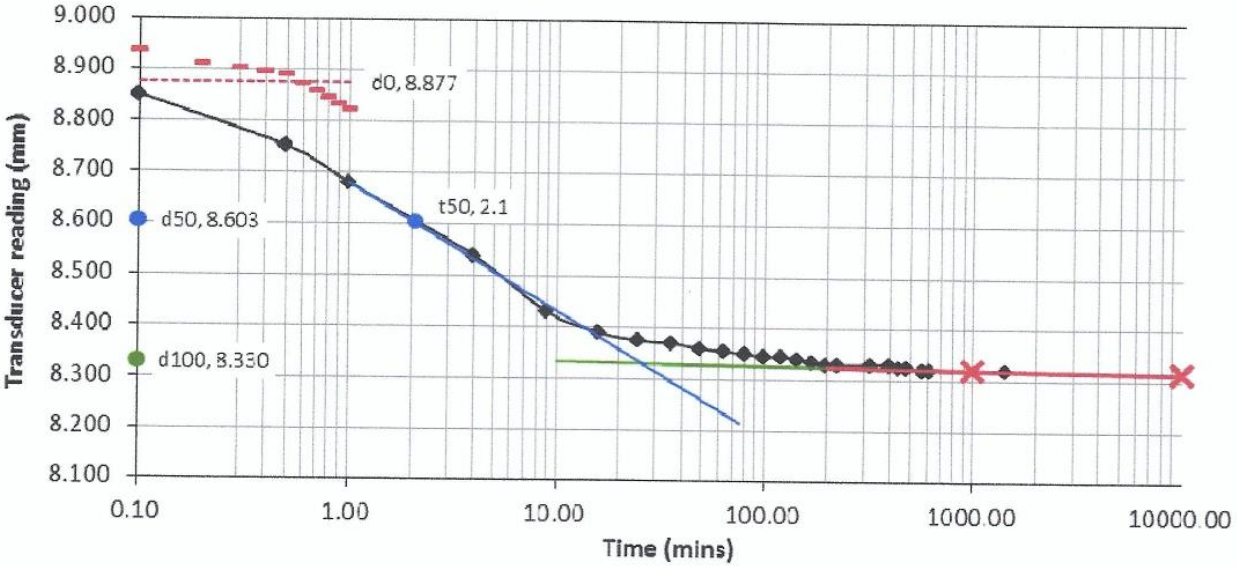
TP KM 2+500(Depth: 0.0-0.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5709	**Date:**	20-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 2+500 0.0-0.3m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.685 mm
From the plot, t_{50} = 2.1 mins
H_1 = 19.65 mm
H_2 = 18.97 mm
H = (19.65+18.97)/2
= 19.31 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.617 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.349 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.040
Net compression (mm) = 0.968
Height mm (H_2) = 18.97
Equivalent height of solids Hs = 12.61
Voids Ratio = (H_2 – Hs)/Hs = **0.504**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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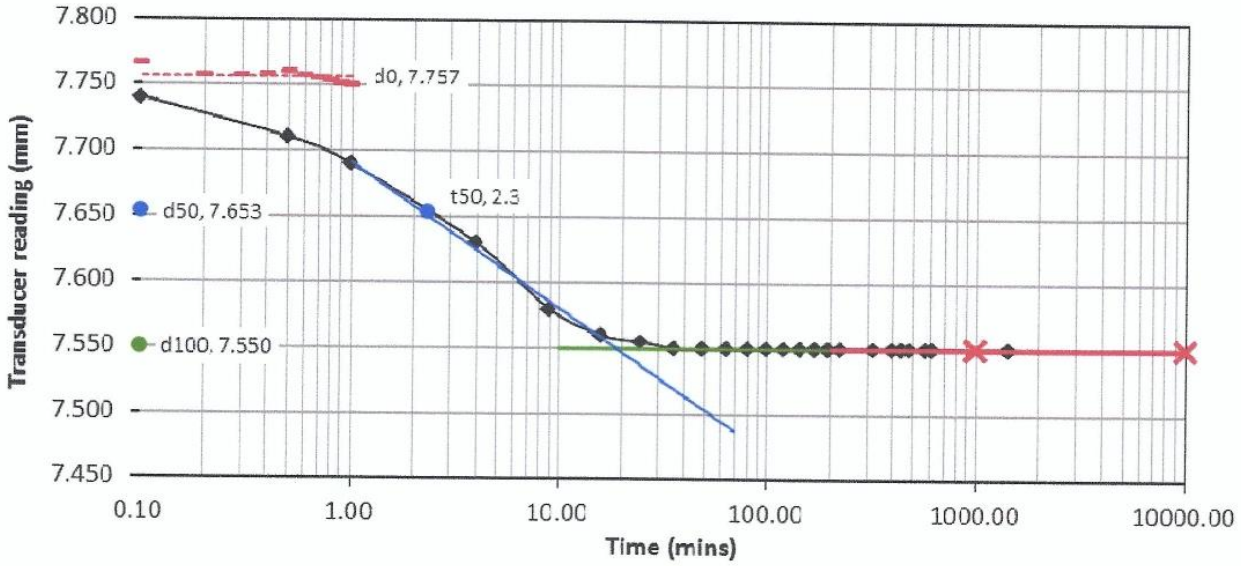
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 2+500(Depth: 0.0-0.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5709	**Date:**	21-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 2+500 0.0-0.3m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.770 mm
From the plot, t_{50} = 2.3 mins
H_1 = 18.97 mm
H_2 = 18.20 mm
H = (18.20+18.97)/2
= 18.59 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.907 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.203 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.810
Net compression (mm) = 1.705
Height mm (H_2) = 18.20
Equivalent height of solids Hs = 12.61
Voids Ratio = (H_2 – Hs)/Hs = **0.443**

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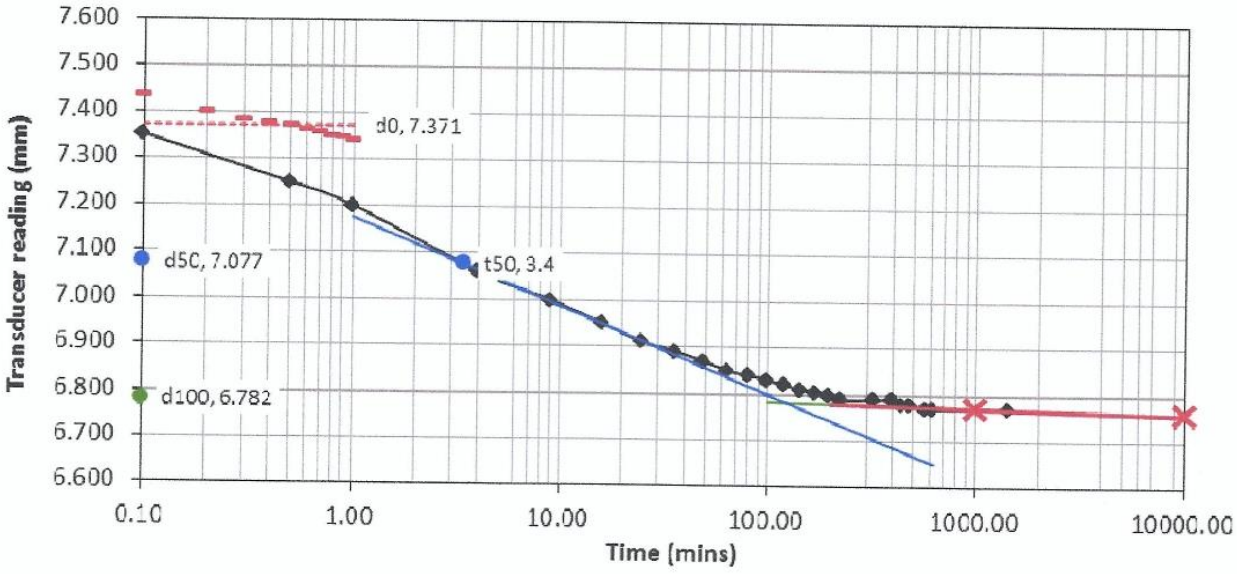
TP KM 2+500(Depth: 0.0-0.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5709	**Date:**	22-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 2+500 0.0-0.3m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.780 mm
From the plot, t_{50} = 3.4 mins
H_1 = 18.20 mm
H_2 = 17.42 mm
H = (18.20+17.42)/2
= 17.81 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.426 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.107 m²/MN**

Specimen information (cumulative)
Compression (mm) = 2.590
Net compression (mm) = 2.439
Height mm (H_2) = 17.42
Equivalent height of solids Hs = 12.61
Voids Ratio = (H_2 – Hs)/Hs = **0.381**

Tested By: KEVIN

Date Reported: 30-11-21

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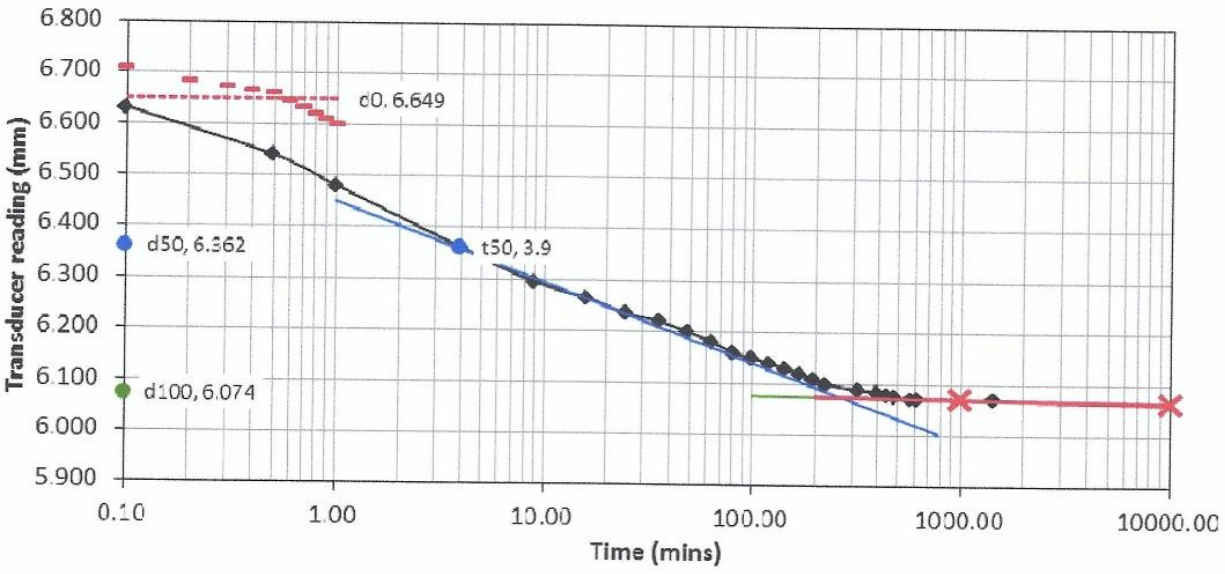
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 2+500(Depth: 0.0-0.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5709	**Date:**	23-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 2+500 0.0-0.3m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.700 mm
From the plot, t_{50} = 3.9 mins
H_1 = 17.42 mm
H_2 = 16.72 mm
H = (16.72+17.42)/2
= 17.07 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **1.943 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.050 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.290
Net compression (mm) = 3.083
Height mm (H_2) = 16.72
Equivalent height of solids Hs = 12.61
Voids Ratio = (H_2 – Hs)/Hs = **0.326**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

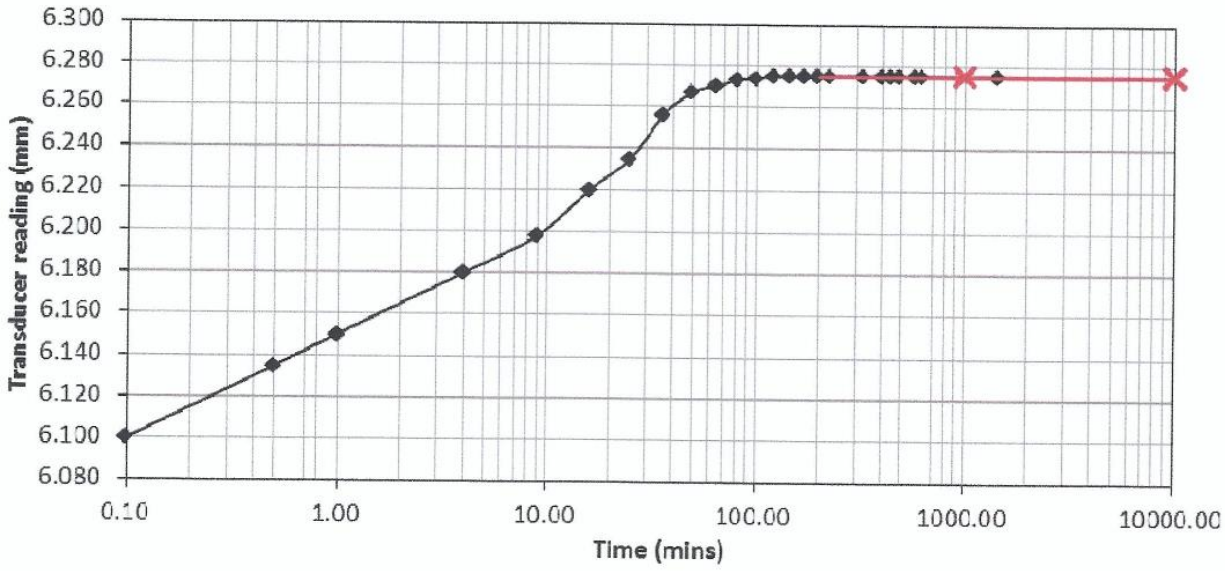
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 2+500(Depth: 0.0-0.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5709	**Date:**	24-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 2+500 0.0-0.3m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.205 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 3.085
Net compression (mm)	= 2.927
Height mm (H_2)	= 17.07
Equivalent height of solids Hs	= 12.61
Voids Ratio = (H_2 – Hs)/Hs	= 0.354

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Email: danellilab3@gmail.com
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

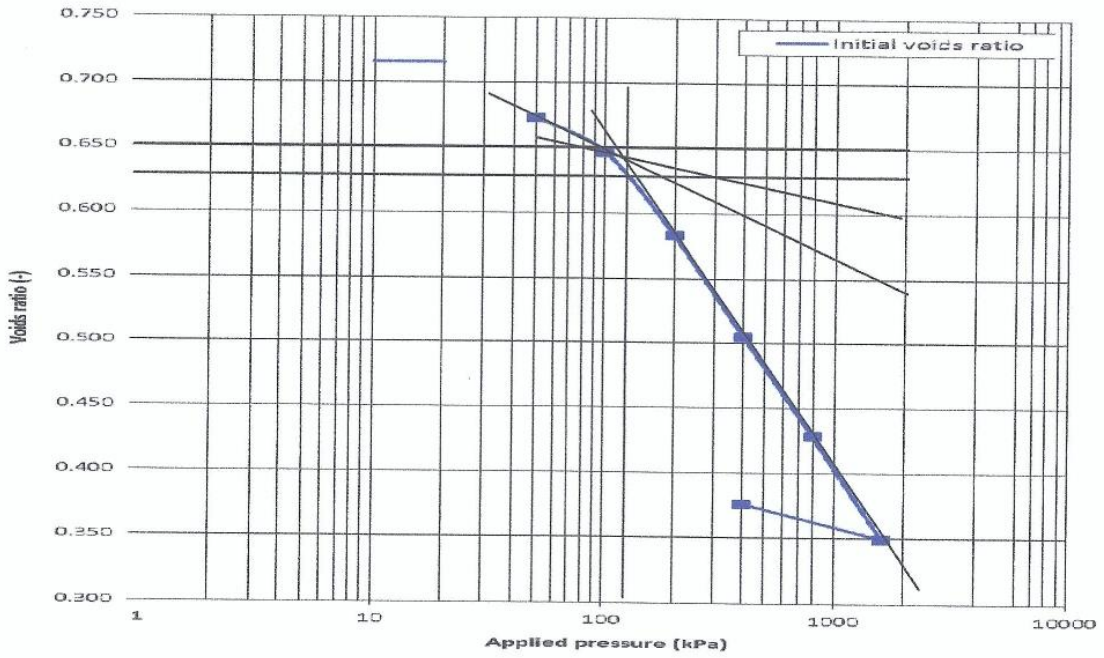
TP KM 4+000 (Depth: 0.0-1.3m)

Site: NGUU TATU
Classification Group Name: -
Ring Diameter: 62.0 mm
Area (A): 3019.1mm^2
Initial voids ratio: 0.716
Pre-consolidation stress: 130 Kn/m^2
Coefficient of Re-Compression Index: 0.073

Location: MOMBASA
Lab Ref: TM/RGS-NGUUTATU/5711
Height of soil particles: 11.66mm
Moisture Content after Test: 18.8%
Assumed Soil Density: 2600 kg/m^3

Depth: 0.0-1.3M
Sample No. 5711
Height of Ring: 20 mm
Bulk Density: 1800kg/m^3
Dry Density: 1515kg/m^3
Coefficient of Compression Index: 0.272

Voids Ratio against Applied Pressure



Tested By: KEVIN

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
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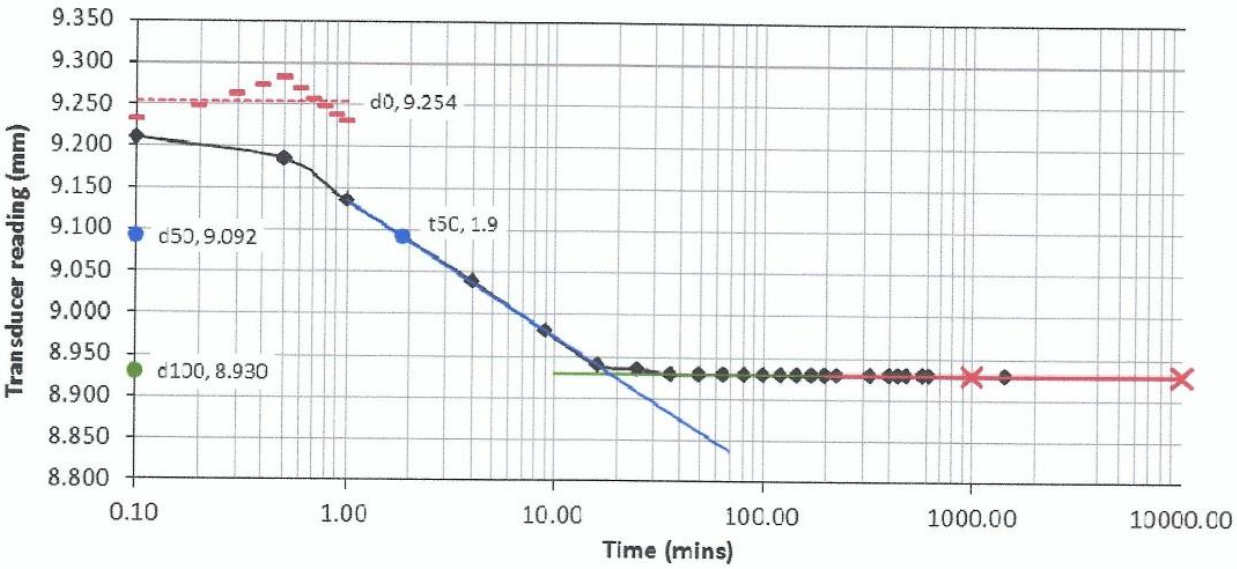
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 4+000(Depth: 0.0-1.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5711	**Date:**	18-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 4+000 0.0-1.3m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.530 mm
From the plot, t_{50} = 1.9 mins
H_1 = 20.00 mm
H_2 = 19.47 mm
H = (20.00+19.47)/2
= 19.74 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.332 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.530 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.530
Net compression (mm) = 0.498
Height mm (H_2) = 19.47
Equivalent height of solids Hs = 11.66
Voids Ratio = (H_2 – Hs)/Hs = **0.670**

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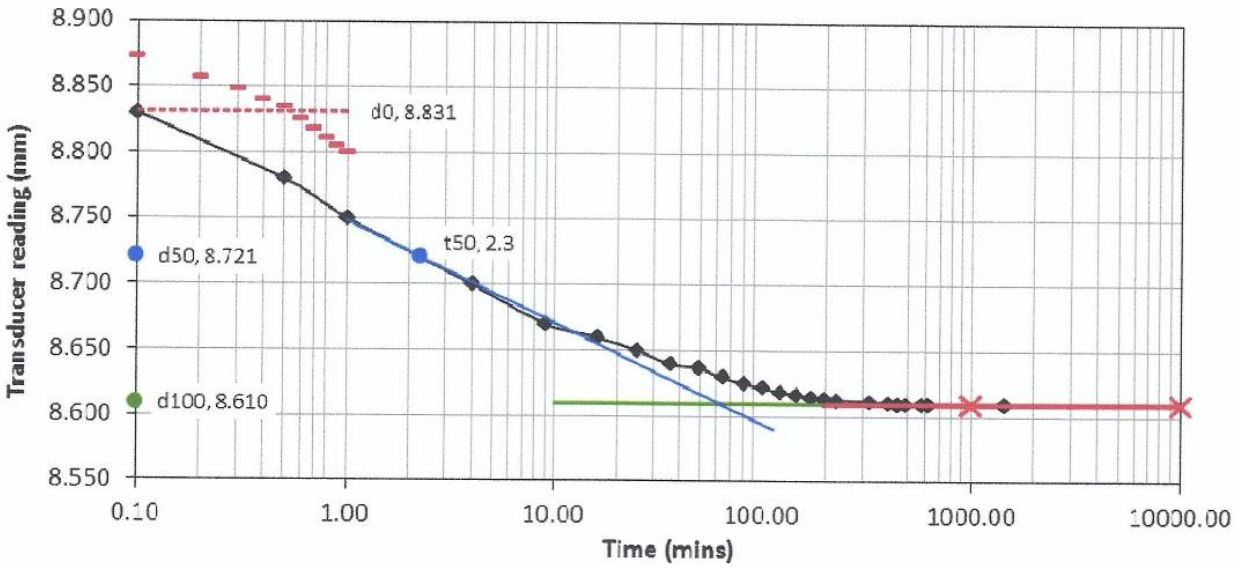
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 4+000(Depth: 0.0-1.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5711	**Date:**	19-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 4+000 0.0-1.3m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.320 mm
From the plot, t_{50} = 2.3 mins
H_1 = 19.47 mm
H_2 = 19.15 mm
H = (19.15+19.47)/2
= 19.31 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.215 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.329 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.850
Net compression (mm) = 0.800
Height mm (H_2) = 19.15
Equivalent height of solids Hs = 11.66
Voids Ratio = (H_2 – Hs)/Hs = **0.642**

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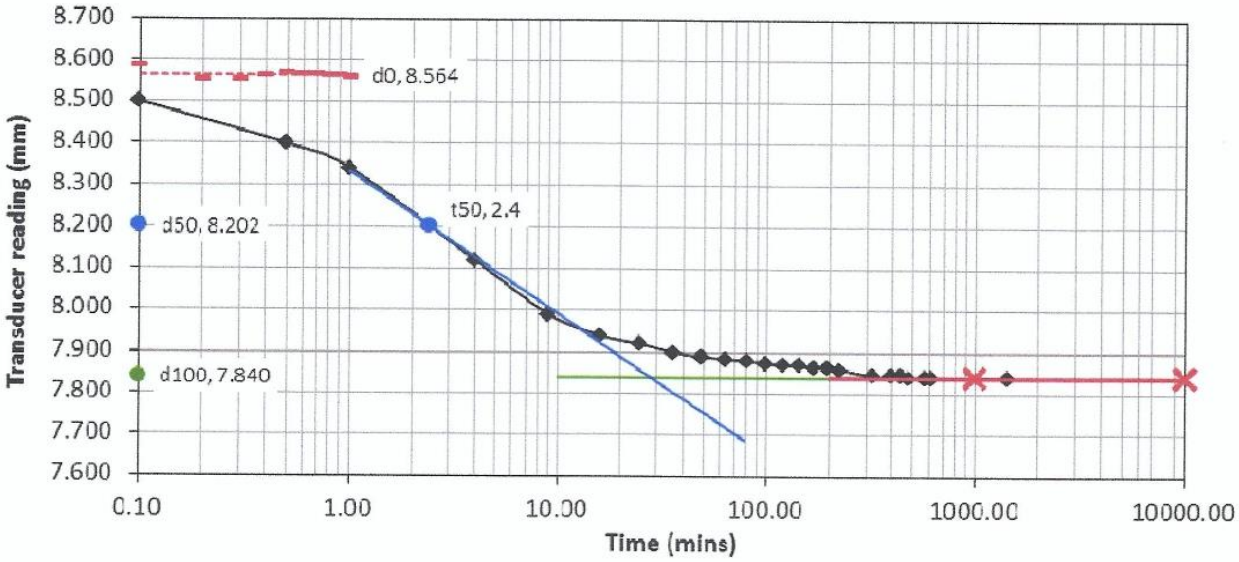
TP KM 4+000(Depth: 0.0-1.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5711	**Date:**	20-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 4+000 0.0-1.3m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.770 mm
From the plot, t_{50} = 2.4 mins
H_1 = 19.15 mm
H_2 = 18.38 mm
H = (19.15+18.38)/2
= 18.77 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.817 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.402 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.620
Net compression (mm) = 1.548
Height mm (H_2) = 18.38
Equivalent height of solids Hs = 11.66
Voids Ratio = (H_2 – Hs)/Hs = **0.576**

Tested By: KEVIN

Date Reported: 30-11-21

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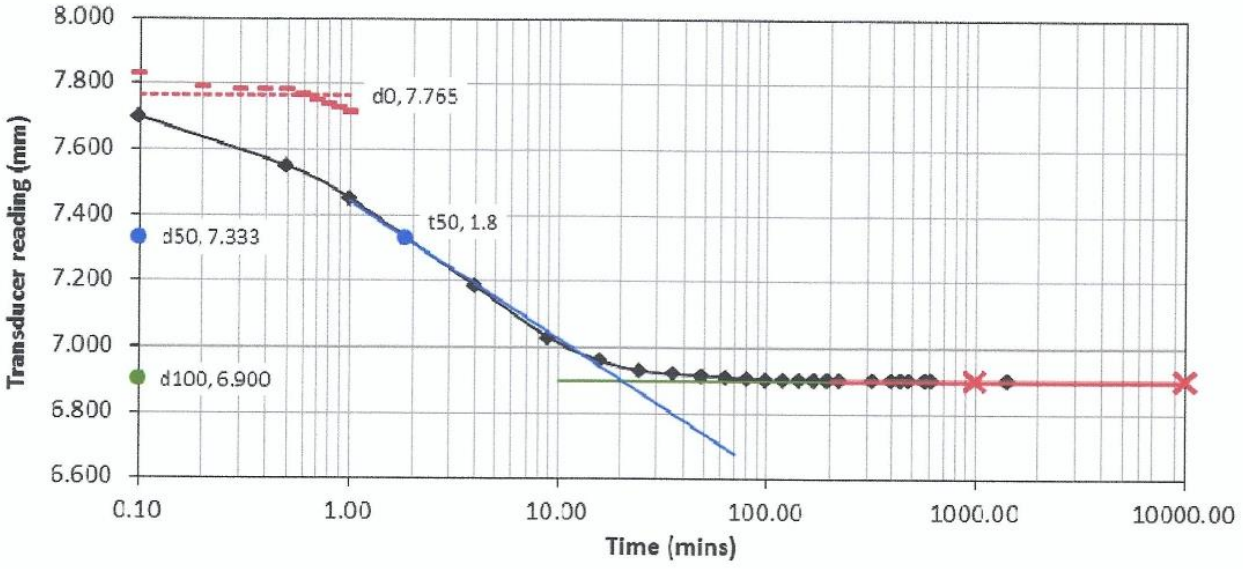
Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 4+000(Depth: 0.0-1.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5711	**Date:**	21-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 4+000 0.0-1.3m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.940 mm
From the plot, t_{50} = 1.8 mins
H_1 = 18.38 mm
H_2 = 17.44 mm
H = (17.44+18.38)/2
= 17.91 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.633 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.256 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.560
Net compression (mm) = 2.455
Height mm (H_2) = 17.44
Equivalent height of solids Hs = 11.66
Voids Ratio = (H_2 – Hs)/Hs = **0.496**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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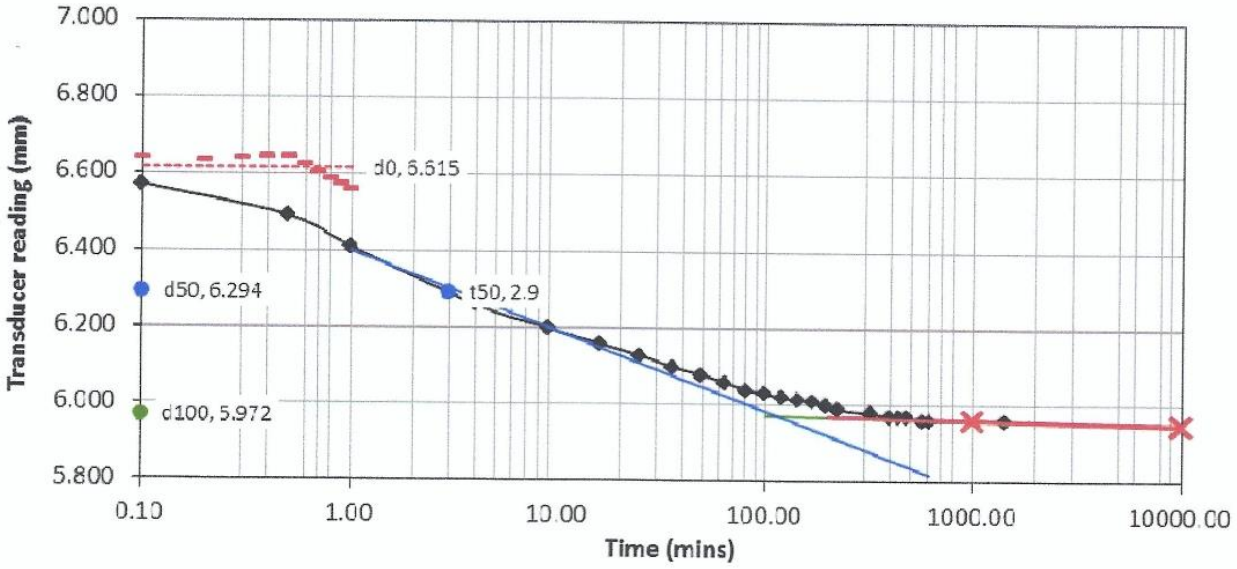
TP KM 4+000(Depth: 0.0-1.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5711	**Date:**	22-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 4+000 0.0-1.3m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.940 mm
From the plot, t_{50} = 2.9 mins
H_1 = 17.44 mm
H_2 = 16.50 mm
H = (17.44+16.50)/2
= 16.97 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.582 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.135 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.500
Net compression (mm) = 3.349
Height mm (H_2) = 16.50
Equivalent height of solids Hs = 11.66
Voids Ratio = (H_2 – Hs)/Hs = **0.415**

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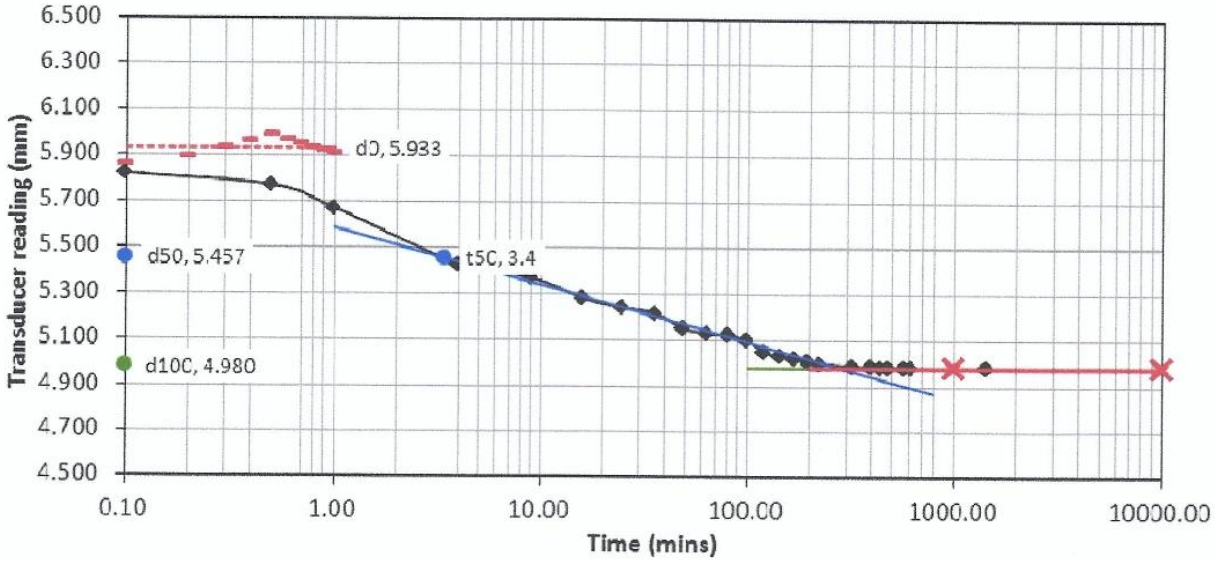
TP KM 4+000(Depth: 0.0-1.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5711	**Date:**	23-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 4+000 0.0-1.3m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.980 mm
From the plot, t_{50} = 3.4 mins
H_1 = 16.50 mm
H_2 = 15.52 mm
H = (15.52+16.50)/2
= 16.01 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **1.960 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.074 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 4.480
Net compression (mm) = 4.273
Height mm (H_2) = 15.52
Equivalent height of solids Hs = 11.66
Voids Ratio = (H_2 – Hs)/Hs = **0.331**

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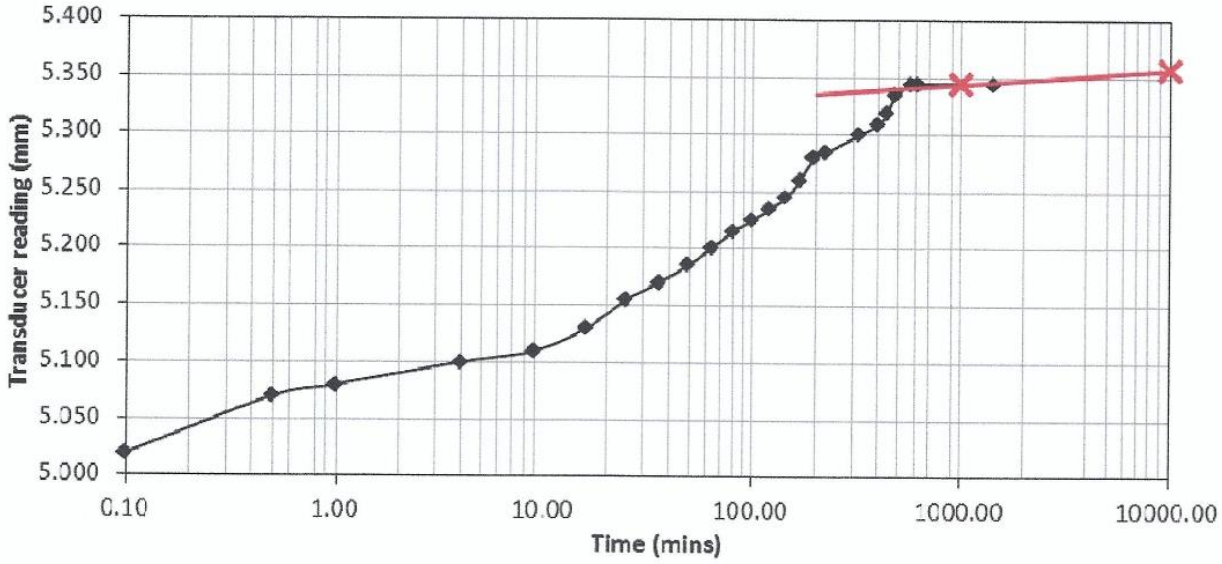
Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 4+000(Depth: 0.0-1.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5711	**Date:**	24-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 4+000 0.0-1.3m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.365 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 4.115
Net compression (mm)	= 3.957
Height mm (H_2)	= 16.04
Equivalent height of solids Hs	= 11.66
Voids Ratio = (H_2 – Hs)/Hs	= 0.375

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Email: danellilab3@gmail.com
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

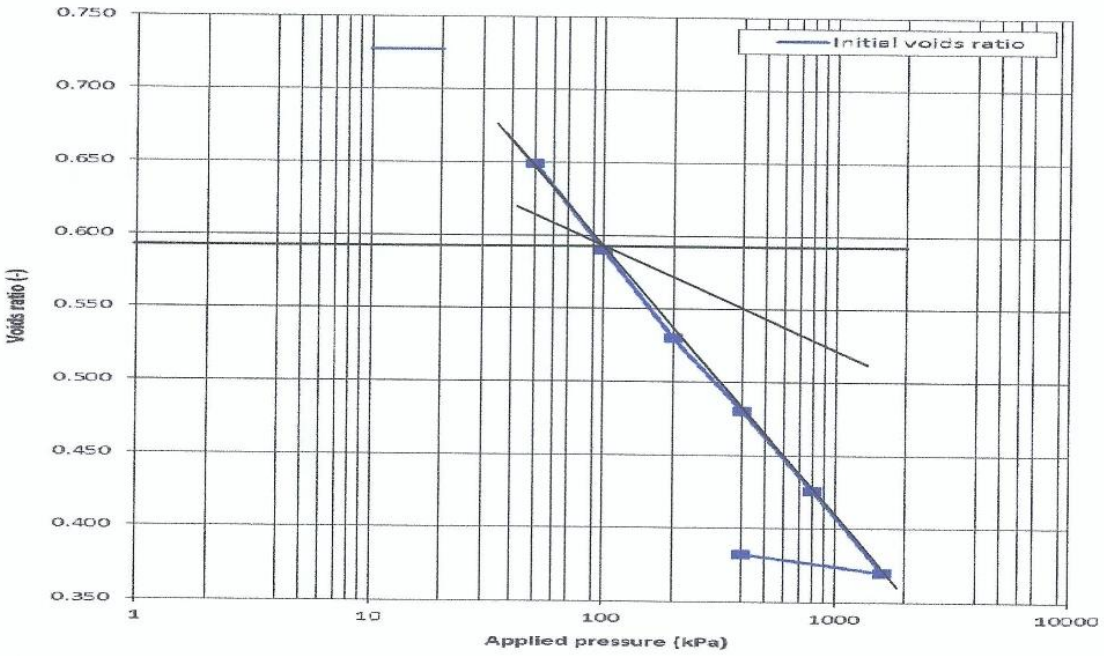
TP KM 7+500 (Depth: 0.5-1.3m)

Site: NGUU TATU
Classification Group Name: -
Ring Diameter: 62.0 mm
Area (A): 3019.1mm^2
Initial voids ratio: 0.724
Pre-consolidation stress: 100 Kn/m^2
Coefficient of Re-Compression Index: 0.048

Location: MOMBASA
Lab Ref: TM/RGS-NGUUTATU/5715
Height of soil particles: 11.58mm
Moisture Content after Test: 15.5%
Assumed Soil Density: 2600 kg/m^3

Depth: 0.5-1.3M
Sample No. 5715
Height of Ring: 20 mm
Bulk Density: 1742kg/m^3
Dry Density: 1508kg/m^3
Coefficient of Compression Index: 0.194

Voids Ratio against Applied Pressure



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DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
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Nairobi
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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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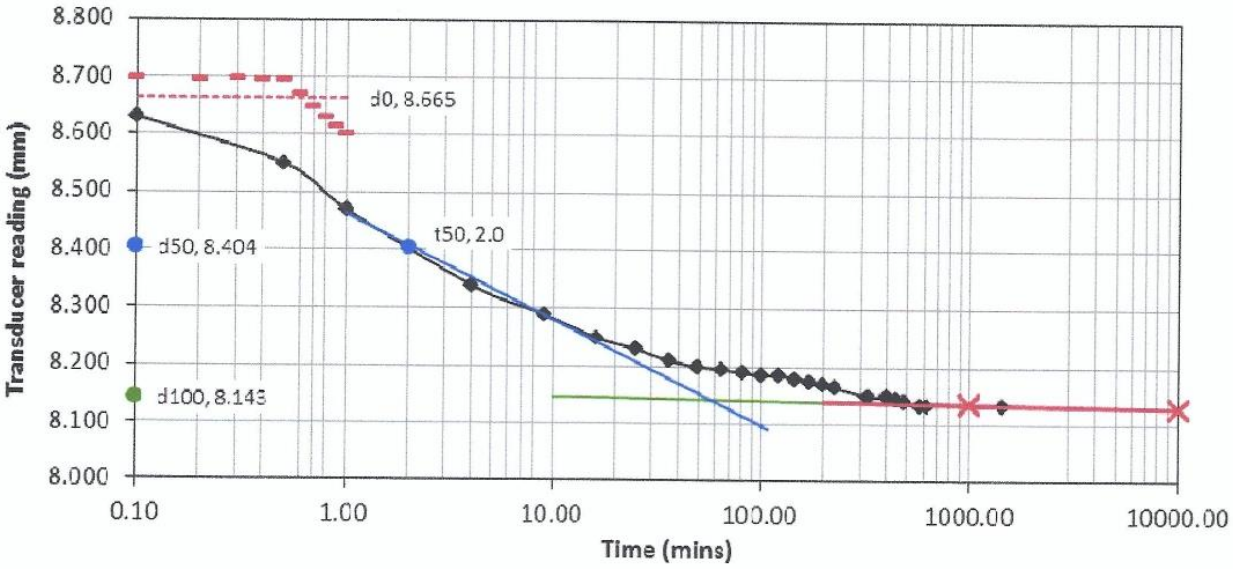
TP KM 7+500(Depth: 0.5-1.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5715	**Date:**	18-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 7+500 0.5-1.3m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.935 mm
From the plot, t_{50} = 2.0 mins
H_1 = 20.00 mm
H_2 = 19.07 mm
H = (20.00+19.07)/2
= 19.54 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.964 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.935 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.935
Net compression (mm) = 0.903
Height mm (H_2) = 19.07
Equivalent height of solids Hs = 11.58
Voids Ratio = (H_2 – Hs)/Hs = **0.647**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

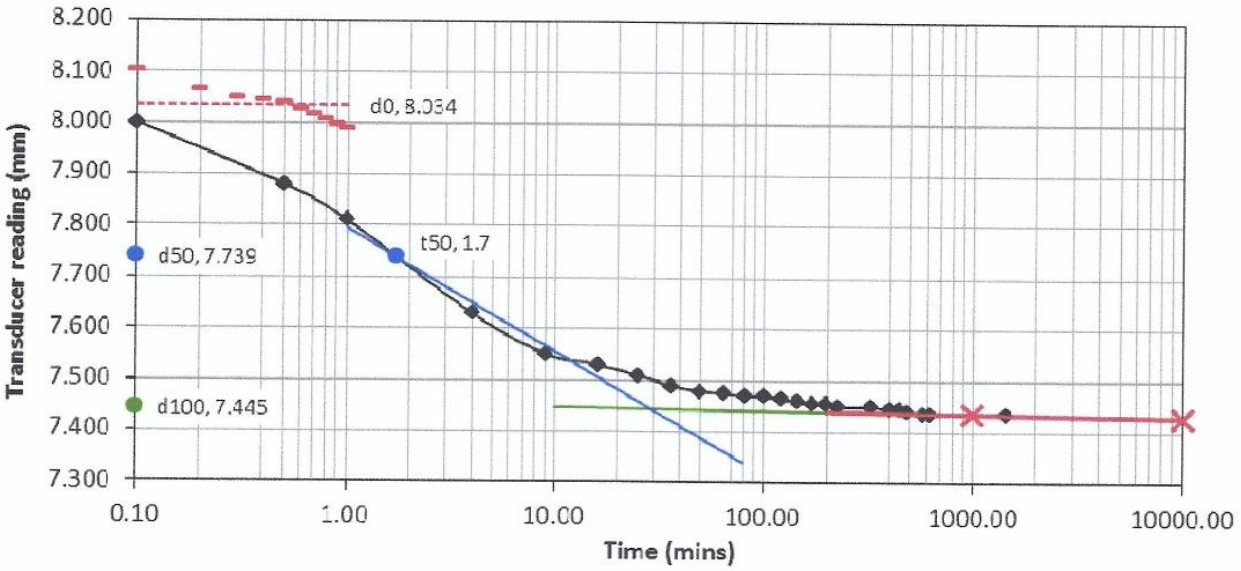
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 7+500(Depth: 0.5-1.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5715	**Date:**	19-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 7+500 0.5-1.3m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.700 mm
From the plot, t_{50} = 1.7 mins
H_1 = 19.07 mm
H_2 = 18.37 mm
H = (18.37+19.07)/2
= 18.72 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.360 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.734 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 1.635
Net compression (mm)	= 1.585
Height mm (H_2)	= 18.37
Equivalent height of solids Hs	= 11.58
Voids Ratio = (H_2 – Hs)/Hs	= **0.586**

Tested By: KEVIN

Date Reported: 30-11-21

Checked By:

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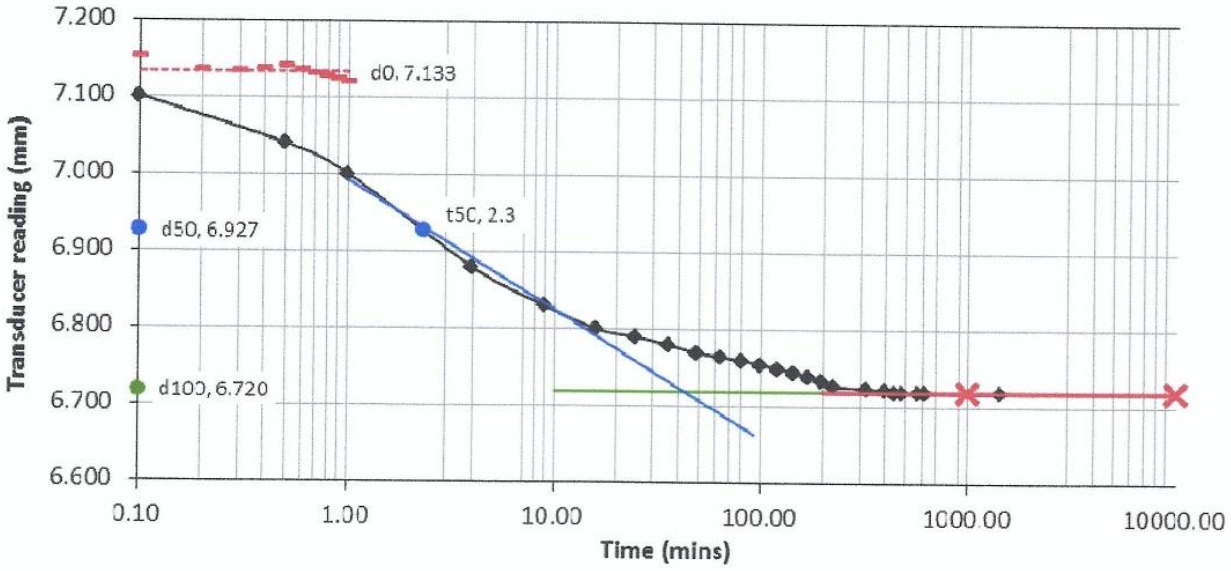
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 7+500(Depth: 0.5-1.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5715	**Date:**	20-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 7+500 0.5-1.3m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.715 mm
From the plot, t_{50} = 2.3 mins
H_1 = 18.37 mm
H_2 = 17.66 mm
H = (18.37+17.66)/2
= 18.02 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.671 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.389 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.350
Net compression (mm) = 2.278
Height mm (H_2) = 17.66
Equivalent height of solids Hs = 11.58
Voids Ratio = (H_2 – Hs)/Hs = **0.525**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Nairobi
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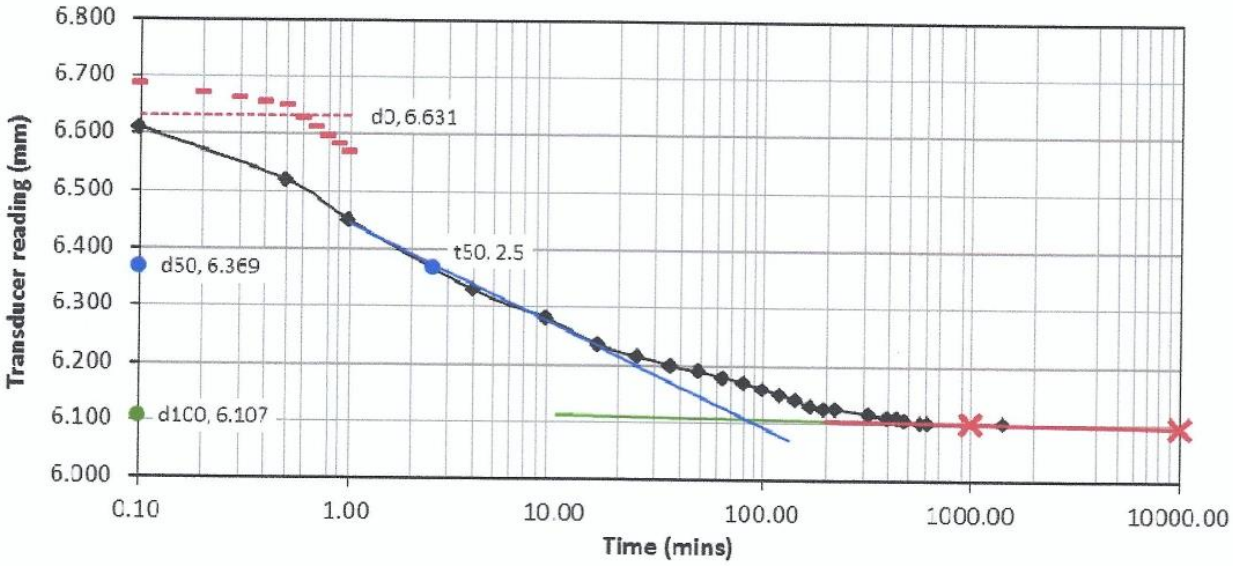
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 7+500(Depth: 0.5-1.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5715	**Date:**	21-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 7+500 0.5-1.3m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.620 mm
From the plot, t_{50} = 2.5 mins
H_1 = 17.66 mm
H_2 = 17.04 mm
H = (17.04+17.66)/2
= 17.35 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.131 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.176 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.970
Net compression (mm) = 2.865
Height mm (H_2) = 17.04
Equivalent height of solids Hs = 11.58
Voids Ratio = (H_2 – Hs)/Hs = **0.472**

Tested By: KEVIN

Date Reported: 30-11-21

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Nairobi
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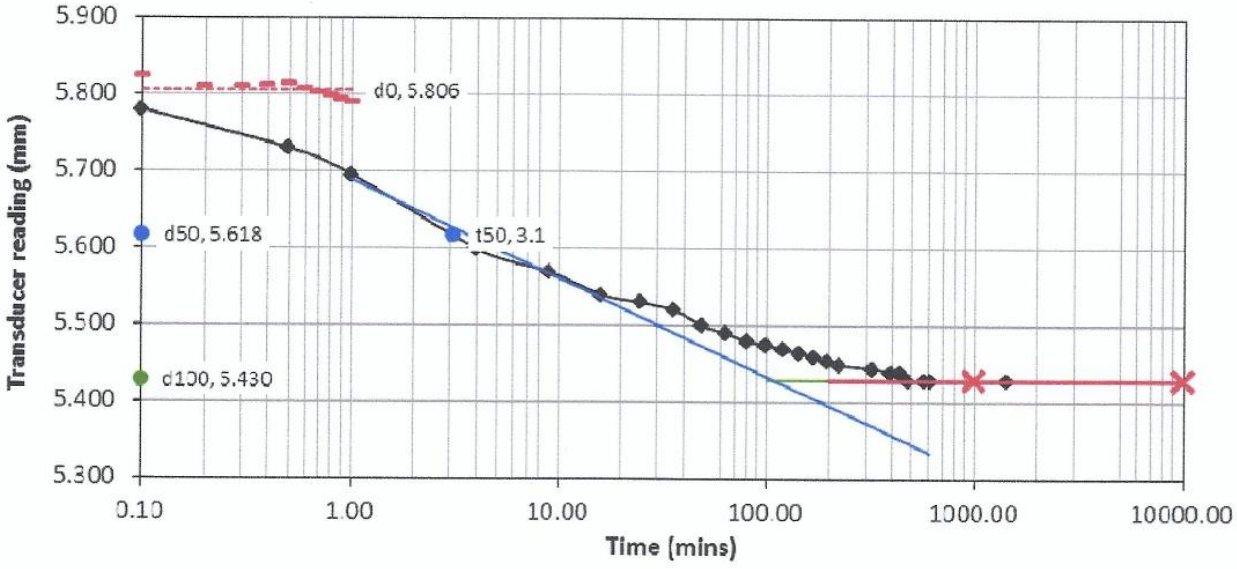
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 7+500(Depth: 0.5-1.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5715	**Date:**	22-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 7+500 0.5-1.3m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.670 mm
From the plot, t_{50} = 3.1 mins
H_1 = 17.04 mm
H_2 = 16.37 mm
H = (17.04+16.37)/2
= 16.71 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.342 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.098 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.640
Net compression (mm) = 3.489
Height mm (H_2) = 16.37
Equivalent height of solids Hs = 11.58
Voids Ratio = (H_2 – Hs)/Hs = **0.414**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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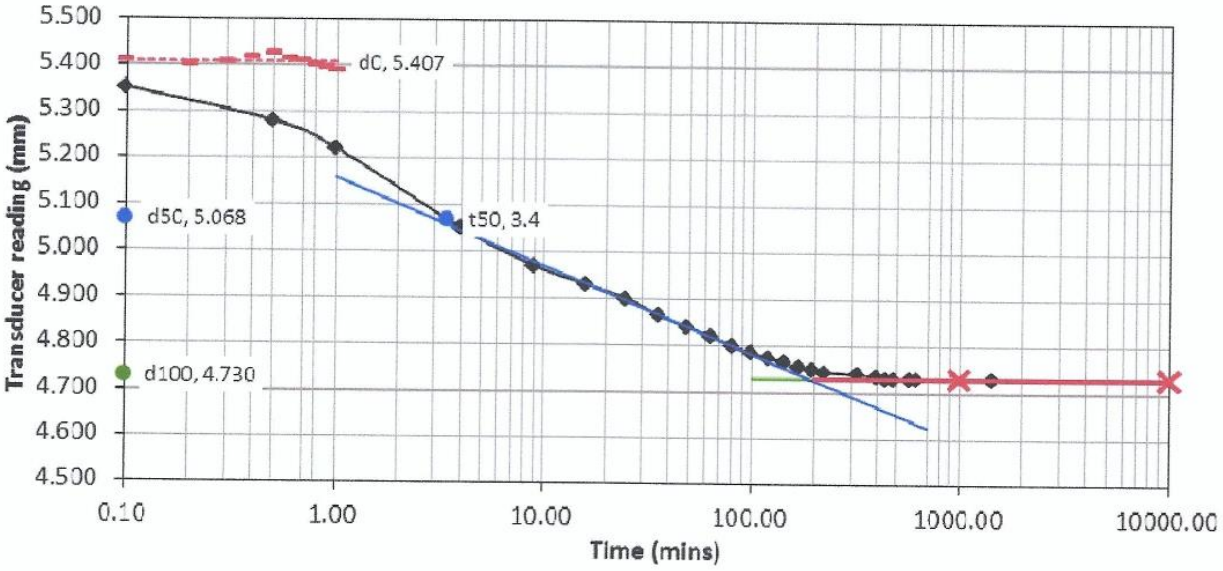
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 7+500(Depth: 0.5-1.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5715	**Date:**	23-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 7+500 0.5-1.3m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.700 mm
From the plot, t_{50} = 3.4 mins
H_1 = 16.37 mm
H_2 = 15.67 mm
H = (15.67+16.37)/2
= 16.02 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **1.963 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.053 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 4.340
Net compression (mm) = 4.133
Height mm (H_2) = 15.67
Equivalent height of solids Hs = 11.58
Voids Ratio = (H_2 – Hs)/Hs = **0.353**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Independent Materials testing & Inspection Centre
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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
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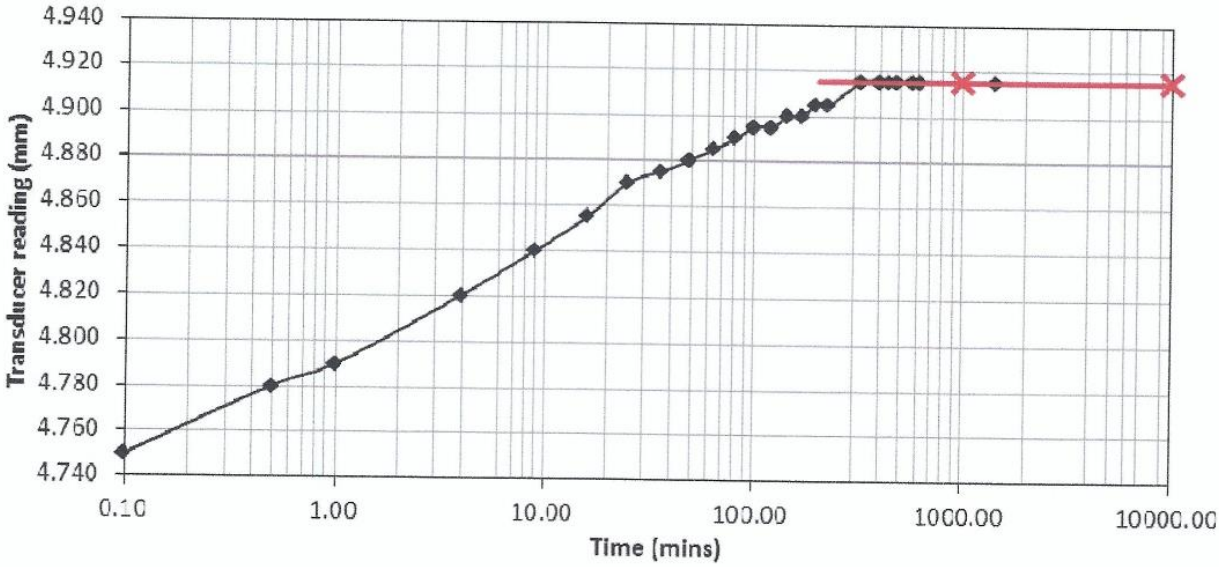
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 7+500(Depth: 0.5-1.3m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5715	**Date:**	24-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 7+500 0.5-1.3m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.185 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 4.155
Net compression (mm)	= 3.997
Height mm (H_2)	= 16.00
Equivalent height of solids Hs	= 11.58
Voids Ratio = (H_2 – Hs)/Hs	= 0.382

Tested By: KEVIN

Date Reported: 30-11-21

Checked By:

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

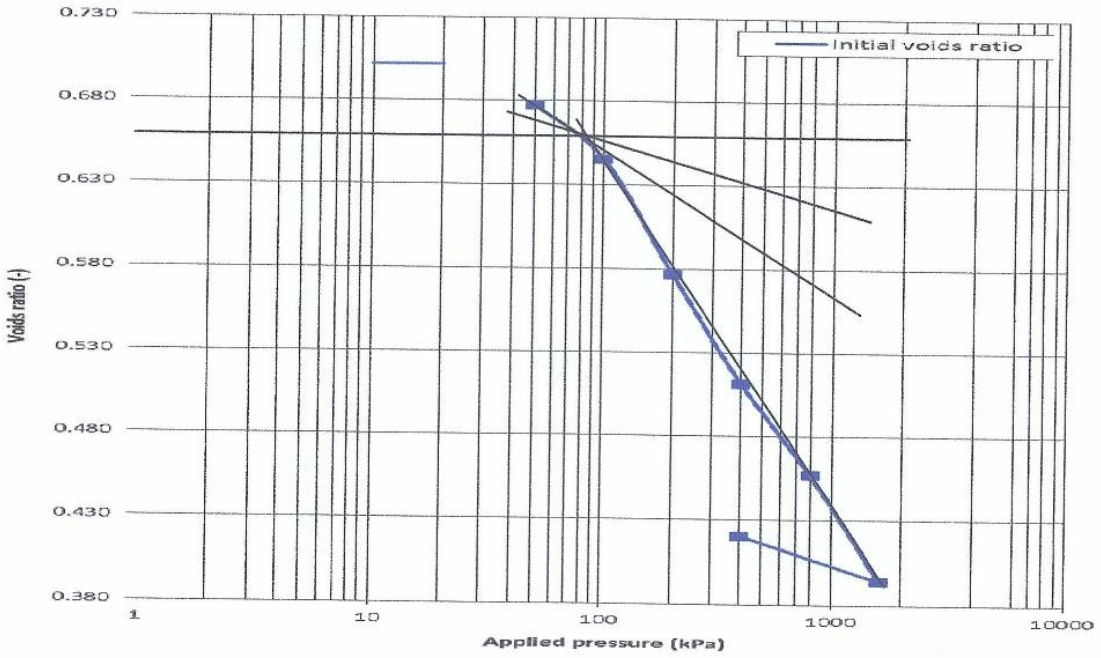
TP KM 9+500 (Depth: 0.4-1.4m)

Site: NGUU TATU
Classification Group Name: -
Ring Diameter: 62.0 mm
Area (A): 3019.1mm^2
Initial voids ratio: 0.702
Pre-consolidation stress: 085 Kn/m^2
Coefficient of Re-Compression Index: 0.068

Location: MOMBASA
Lab Ref: TM/RGS-NGUUTATU/5718
Height of soil particles: 11.75mm
Moisture Content after Test: 23.5%
Assumed Soil Density: 2600 kg/m^3

Depth: 0.4-1.4M
Sample No. 5718
Height of Ring: 20 mm
Bulk Density: 1887kg/m^3
Dry Density: 1528kg/m^3
Coefficient of Compression Index: 0.218

Voids Ratio against Applied Pressure



Tested By: KEVIN

Date Reported: 30-11-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
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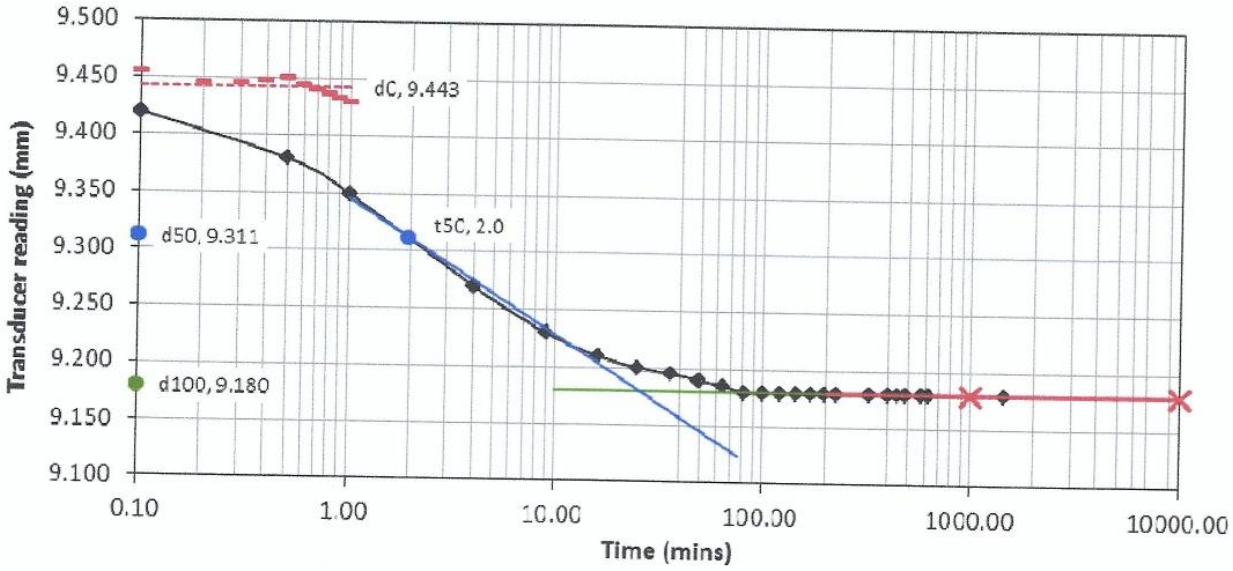
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 9+500(Depth: 0.4-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5718	**Date:**	18-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 9+500 0.4-1.4m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.320 mm
From the plot, t_{50} = 2.0 mins
H_1 = 20.00 mm
H_2 = 19.68 mm
H = (20.00+19.68)/2
= 19.84 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.117 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.320 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.320
Net compression (mm)	= 0.288
Height mm (H_2)	= 19.68
Equivalent height of solids Hs	= 11.75
Voids Ratio = (H_2 – Hs)/Hs	= **0.675**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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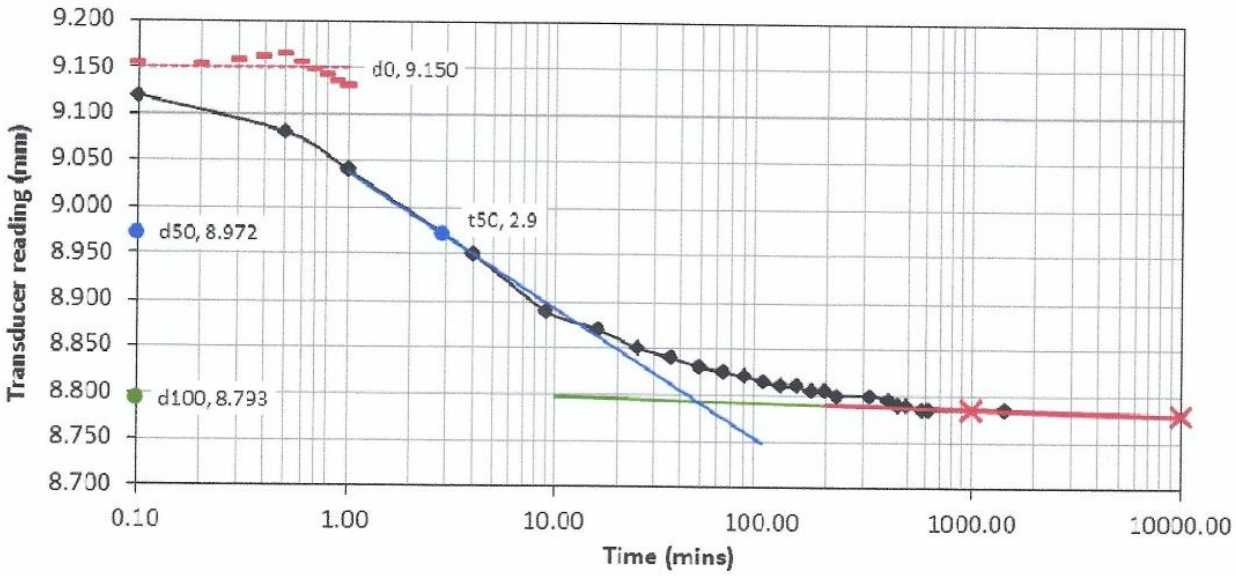
TP KM 9+500(Depth: 0.4-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5718	**Date:**	19-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 9+500 0.4-1.4m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.395 mm
From the plot, t_{50} = 2.9 mins
H_1 = 19.68 mm
H_2 = 19.29 mm
H = (19.29+19.68)/2
= 19.49 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.406 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.401 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.715
Net compression (mm) = 0.665
Height mm (H_2) = 19.29
Equivalent height of solids Hs = 11.75
Voids Ratio = (H_2 – Hs)/Hs = **0.642**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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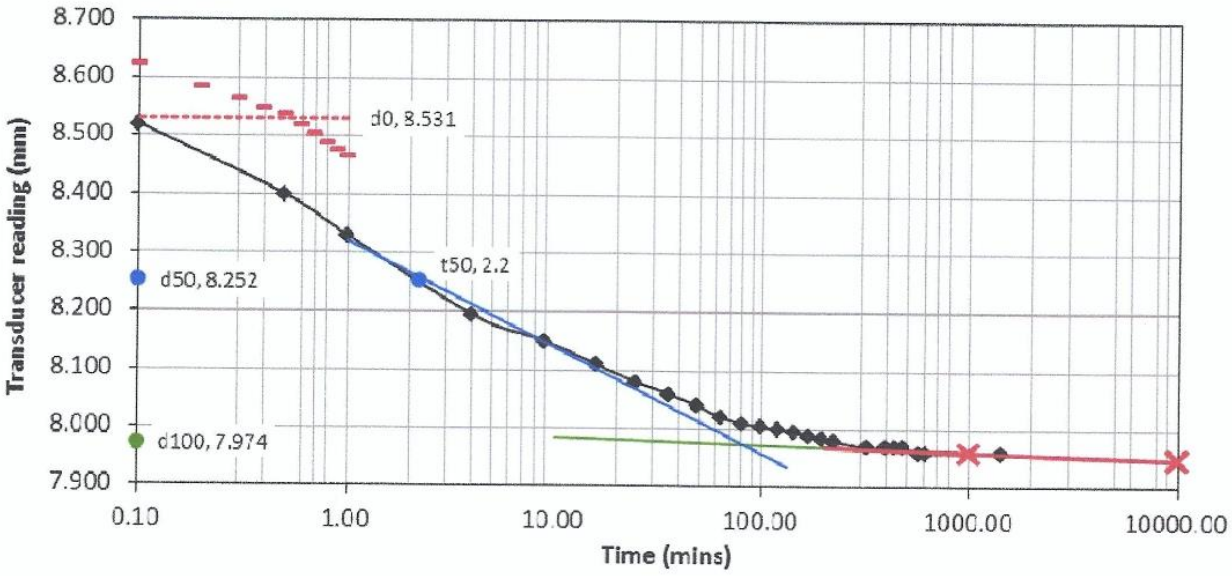
TP KM 9+500(Depth: 0.4-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5718	**Date:**	20-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 9+500 0.4-1.4m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.825 mm
From the plot, t_{50} = 2.2 mins
H_1 = 19.29 mm
H_2 = 18.47 mm
H = (19.29+18.47)/2
= 18.88 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.213 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.428 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.540
Net compression (mm) = 1.468
Height mm (H_2) = 18.47
Equivalent height of solids Hs = 11.75
Voids Ratio = (H_2 – Hs)/Hs = **0.572**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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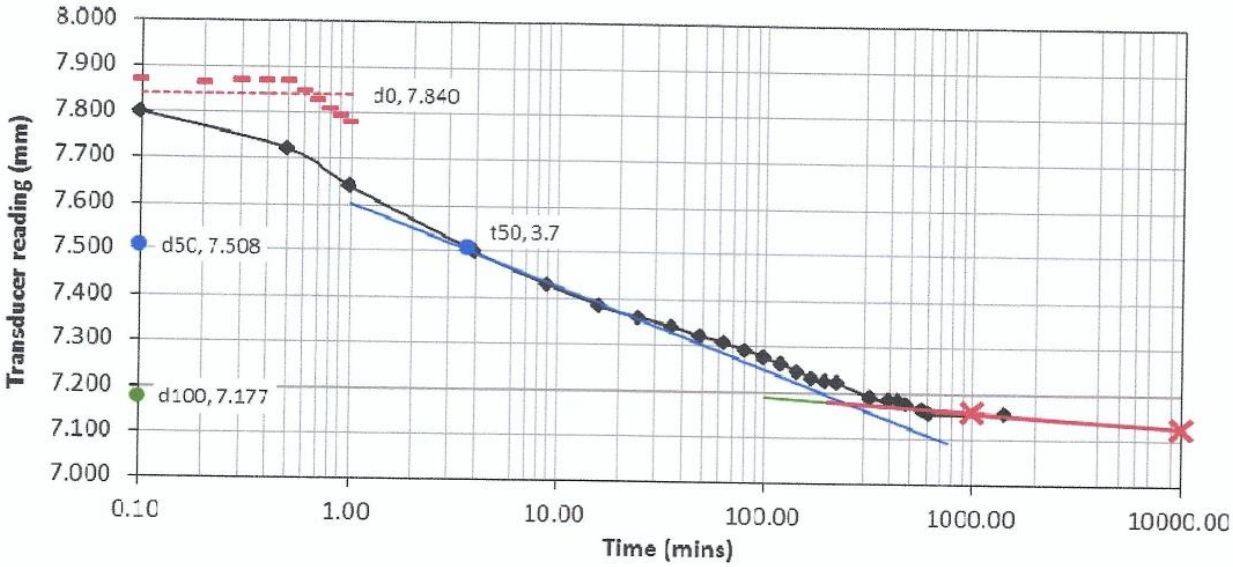
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 9+500(Depth: 0.4-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5718	**Date:**	21-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 9+500 0.4-1.4m
LOADING STAGE:	**No. 4**	**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.805 mm
From the plot, t_{50} = 3.7 mins
H_1 = 18.47 mm
H_2 = 17.67 mm
H = (17.67+18.47)/2
= 18.07 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.294 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.218 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.345
Net compression (mm) = 2.240
Height mm (H_2) = 17.67
Equivalent height of solids Hs = 11.75
Voids Ratio = (H_2 – Hs)/Hs = **0.504**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

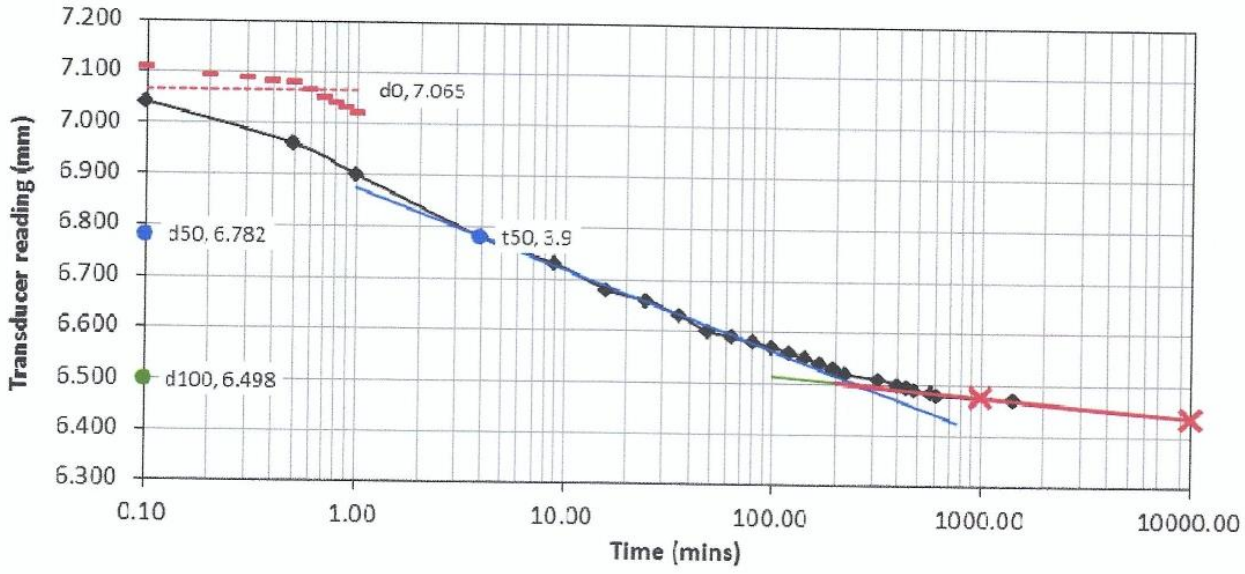
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 9+500(Depth: 0.4-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5718	**Date:**	22-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 9+500 0.4-1.4m
LOADING STAGE:	**No. 5**	**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.685 mm
From the plot, t_{50} = 3.9 mins
H_1 = 17.67 mm
H_2 = 16.99 mm
H = (17.67+16.99)/2
= 17.33 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.002 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.097 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.030
Net compression (mm) = 2.879
Height mm (H_2) = 16.99
Equivalent height of solids Hs = 11.75
Voids Ratio = (H_2 – Hs)/Hs = **0.446**

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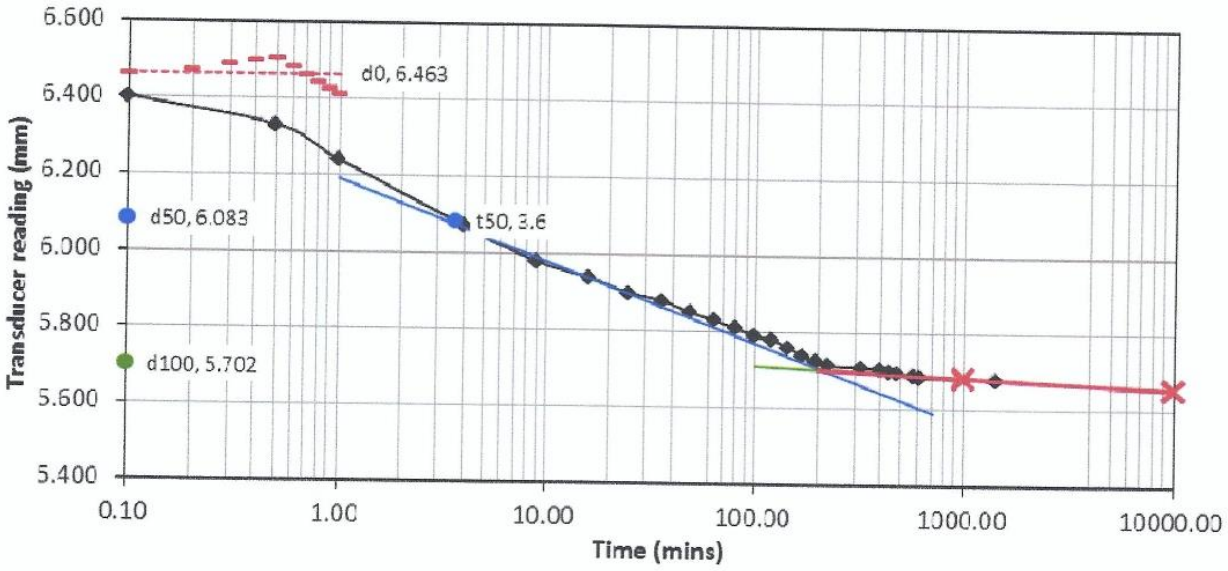
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 9+500(Depth: 0.4-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5718	**Date:**	23-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 9+500 0.4-1.4m
LOADING STAGE:	**No. 6**	**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.790 mm
From the plot, t_{50} = 3.6 mins
H_1 = 16.99 mm
H_2 = 16.20 mm
H = (16.20+16.99)/2
= 16.60 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **1.990 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.058 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 3.820
Net compression (mm)	= 3.613
Height mm (H_2)	= 16.20
Equivalent height of solids Hs	= 11.75
Voids Ratio = (H_2 – Hs)/Hs	= **0.379**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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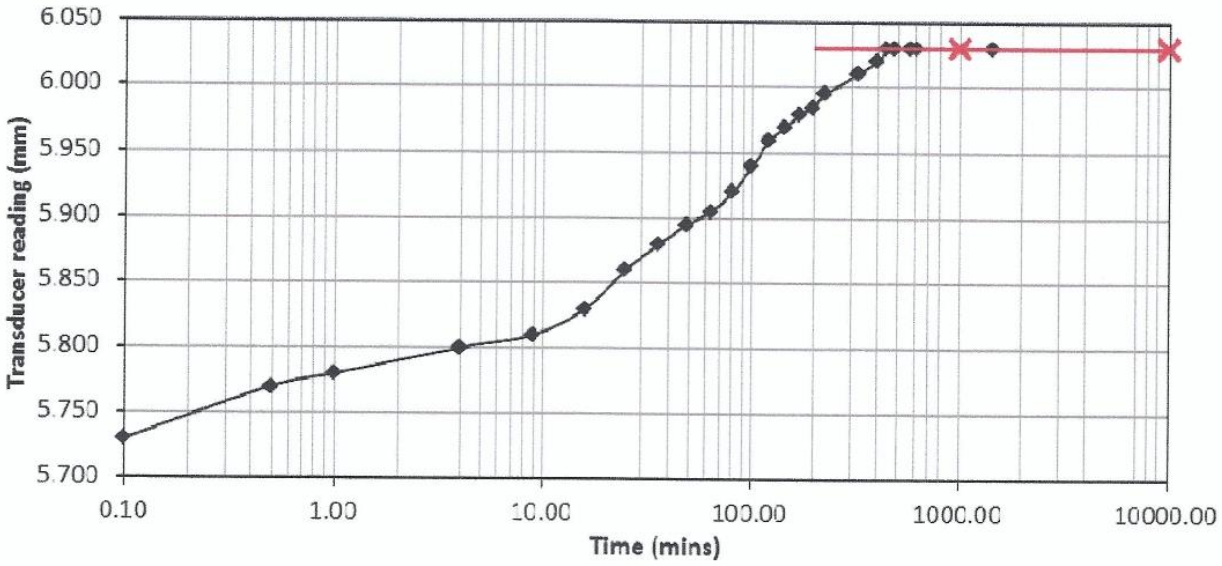
TP KM 9+500(Depth: 0.4-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5718	**Date:**	24-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 9+500 0.4-1.4m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.350 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 3.470
Net compression (mm)	= 3.312
Height mm (H_2)	= 16.69
Equivalent height of solids Hs	= 11.75
Voids Ratio = (H_2 – Hs)/Hs	= 0.420

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

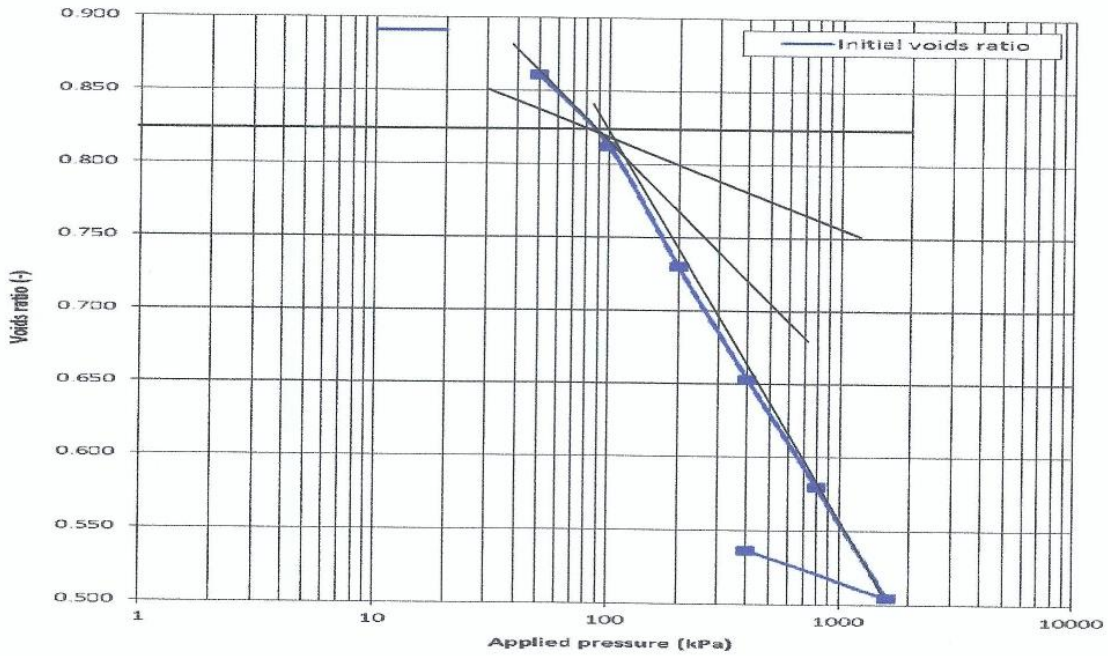
TP KM 11+500 (Depth: 0.0-0.6m)

Site: NGUU TATU
Classification Group Name: -
Ring Diameter: 62.0 mm
Area (A): 3019.1mm^2
Initial voids ratio: 0.898
Pre-consolidation stress: 110 Kn/m^2
Coefficient of Re-Compression Index: 0.083

Location: MOMBASA
Lab Ref: TM/RGS-NGUUTATU/5722
Height of soil particles: 10.57mm
Moisture Content after Test: 27.4%
Assumed Soil Density: 2600 kg/m^3

Depth: 0.0-0.6M
Sample No. 5722
Height of Ring: 20 mm
Bulk Density: 1745kg/m^3
Dry Density: 1370kg/m^3
Coefficient of Compression Index: 0.268

Voids Ratio against Applied Pressure



Tested By: KEVIN

Date Reported: 30-11-21

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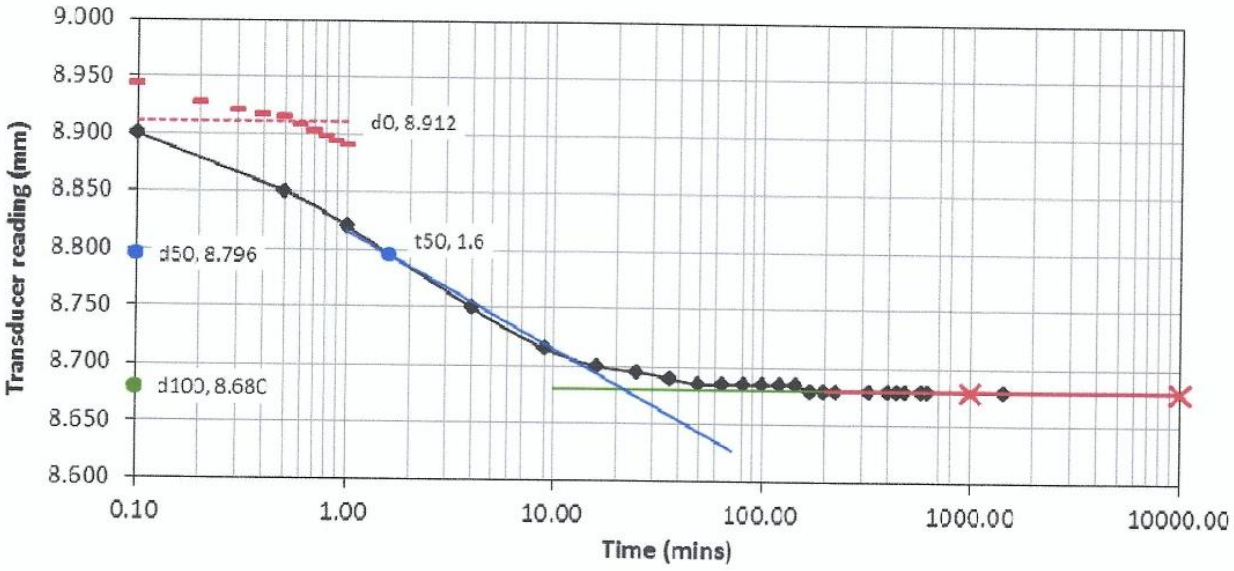
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 11+500(Depth: 0.0-0.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5722	**Date:**	18-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 11+500 0.0-0.6m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.355 mm
From the plot, t_{50} = 1.6 mins
H_1 = 20.00 mm
H_2 = 19.65 mm
H = (20.00+19.65)/2
= 19.83 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.390 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.355 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.355
Net compression (mm)	= 0.323
Height mm (H_2)	= 19.65
Equivalent height of solids Hs	= 10.57
Voids Ratio = (H_2 – Hs)/Hs	= **0.859**

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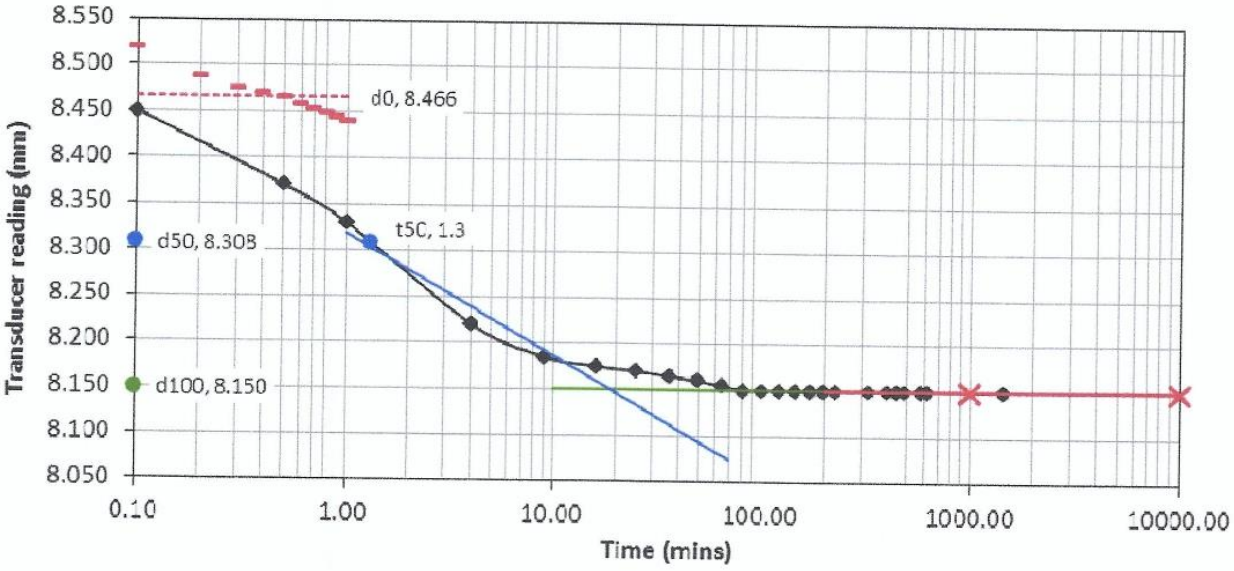
TP KM 11+500(Depth: 0.0-0.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5722	**Date:**	19-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 11+500 0.0-0.6m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.530 mm
From the plot, t_{50} = 1.3 mins
H_1 = 19.65 mm
H_2 = 19.12 mm
H = (19.65+19.12)/2
= 19.39 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}} =$ **7.519 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.539 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.885
Net compression (mm)	= 0.835
Height mm (H_2)	= 19.12
Equivalent height of solids Hs	= 10.57
Voids Ratio = (H_2 – Hs)/Hs	= **0.809**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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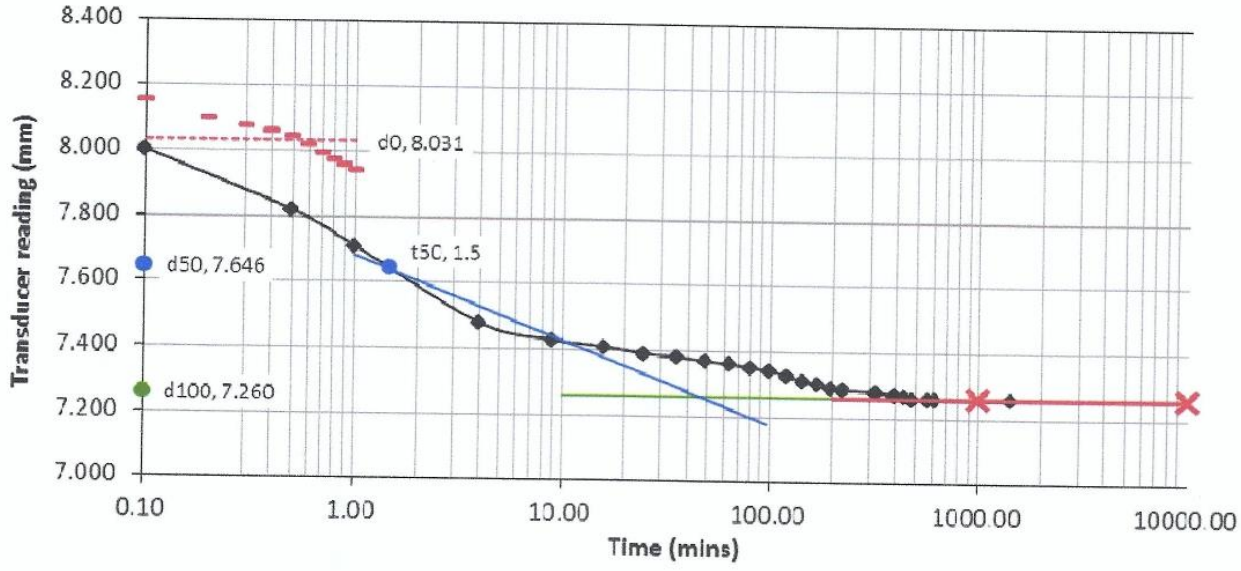
TP KM 11+500(Depth: 0.0-0.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5722	**Date:**	20-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 11+500 0.0-0.6m
LOADING STAGE:	**No. 3**	**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.890 mm
From the plot, t_{50} = 1.5 mins
H_1 = 19.12 mm
H_2 = 18.23 mm
H = (19.12+18.23)/2
= 18.68 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.048 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.465 m²/MN**

Specimen information (cumulative)

Compression (mm)	= 1.775
Net compression (mm)	= 1.703
Height mm (H_2)	= 18.23
Equivalent height of solids Hs	= 10.57
Voids Ratio = (H_2 – Hs)/Hs	= **0.725**

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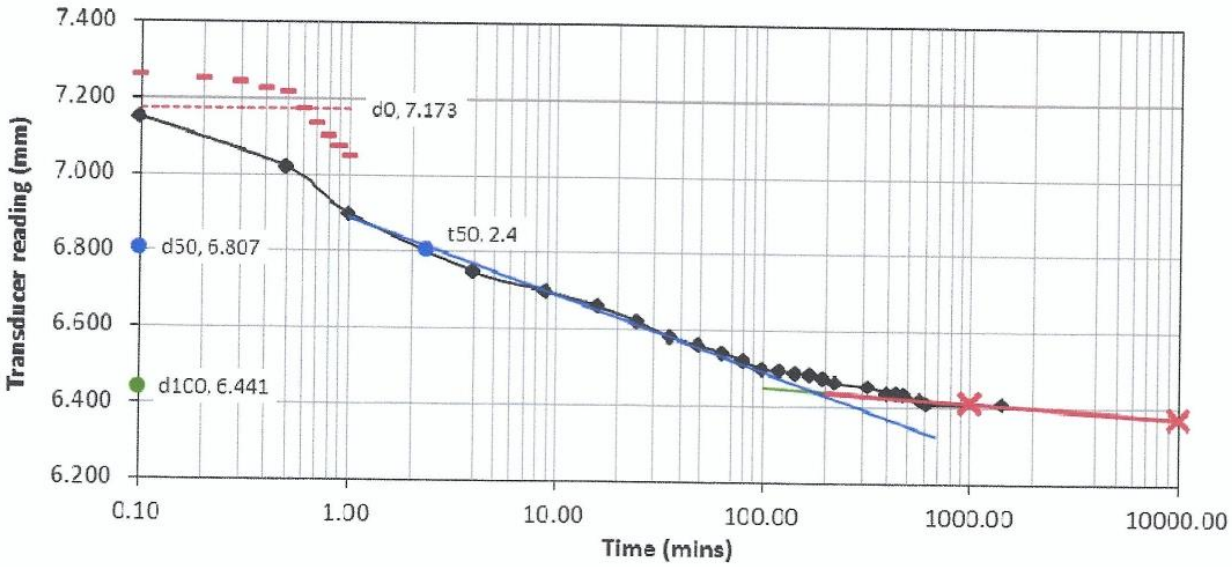
TP KM 11+500(Depth: 0.0-0.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5722	**Date:**	21-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 11+500 0.0-0.6m
LOADING STAGE:	**No. 4**	**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.850 mm
From the plot, t_{50} = 2.4 mins
H_1 = 18.23 mm
H_2 = 17.38 mm
H = (18.23+17.38)/2
= 17.81 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.436 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.233 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.625
Net compression (mm) = 2.520
Height mm (H_2) = 17.38
Equivalent height of solids Hs = 10.57
Voids Ratio = (H_2 – Hs)/Hs = **0.644**

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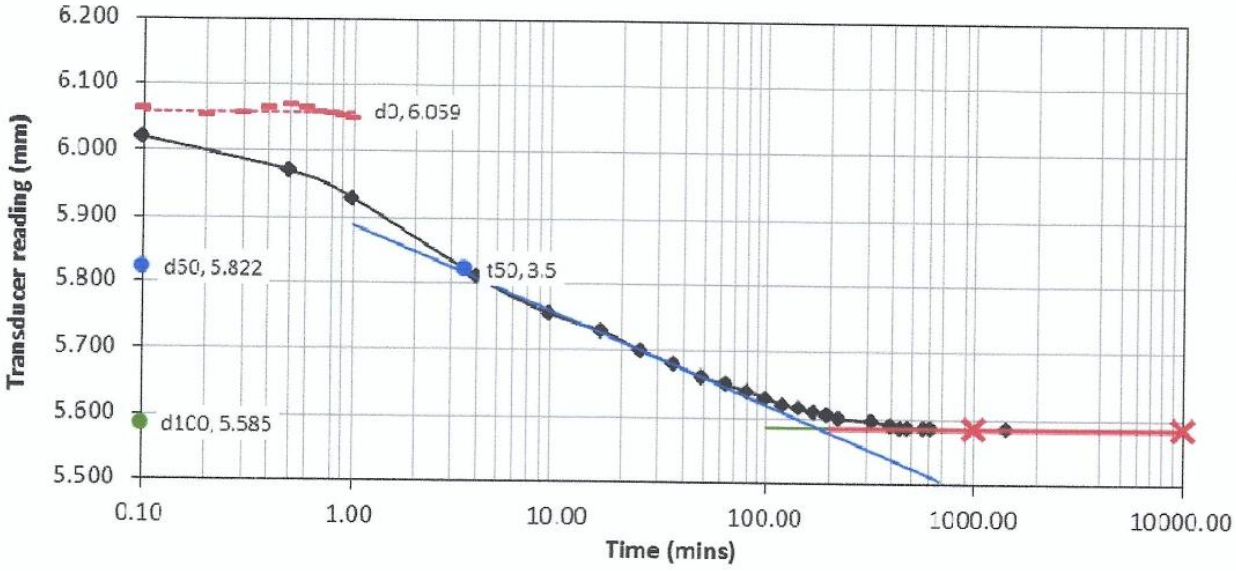
TP KM 11+500(Depth: 0.0-0.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5722	**Date:**	22-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 11+500 0.0-0.6m
LOADING STAGE:	**No. 5**	**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.825 mm
From the plot, t_{50} = 3.5 mins
H_1 = 17.38 mm
H_2 = 16.56 mm
H = (17.38+16.56)/2
= 16.97 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.139 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.119 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.450
Net compression (mm) = 3.299
Height mm (H_2) = 16.56
Equivalent height of solids Hs = 10.57
Voids Ratio = (H_2 – Hs)/Hs = **0.567**

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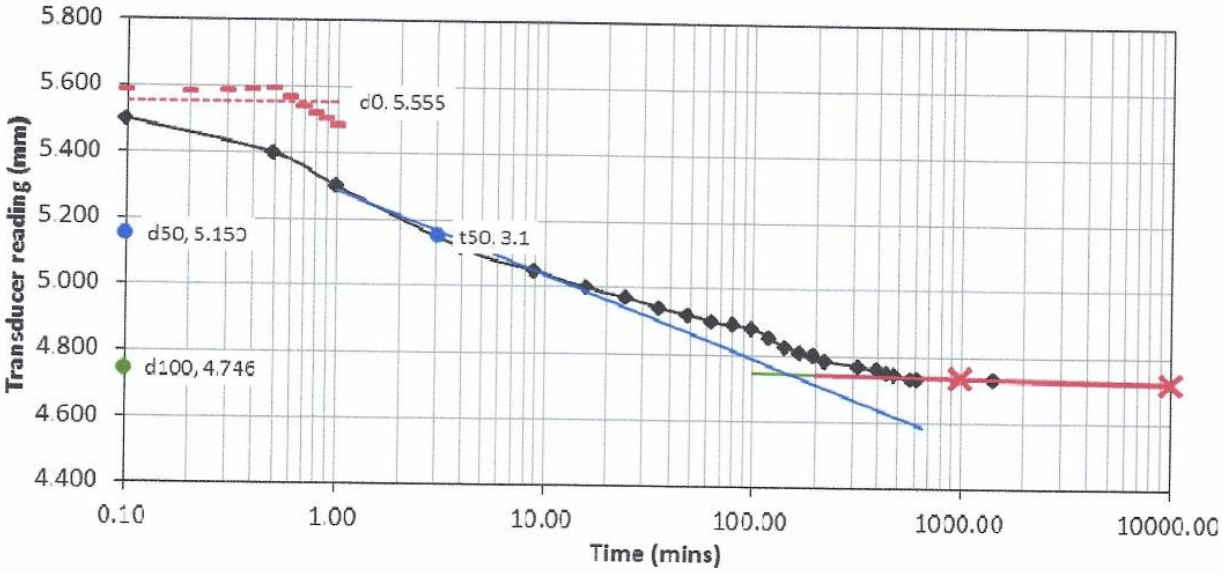
TP KM 11+500(Depth: 0.0-0.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5722	**Date:**	23-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 11+500 0.0-0.6m
LOADING STAGE:	**No. 6**	**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.850 mm
From the plot, t_{50} = 3.1 mins
H_1 = 16.56 mm
H_2 = 15.71 mm
H = (16.56+15.71)/2
= 16.14 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.185 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.064 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 4.300
Net compression (mm)	= 4.093
Height mm (H_2)	= 15.71
Equivalent height of solids Hs	= 10.57
Voids Ratio = (H_2 – Hs)/Hs	= **0.486**

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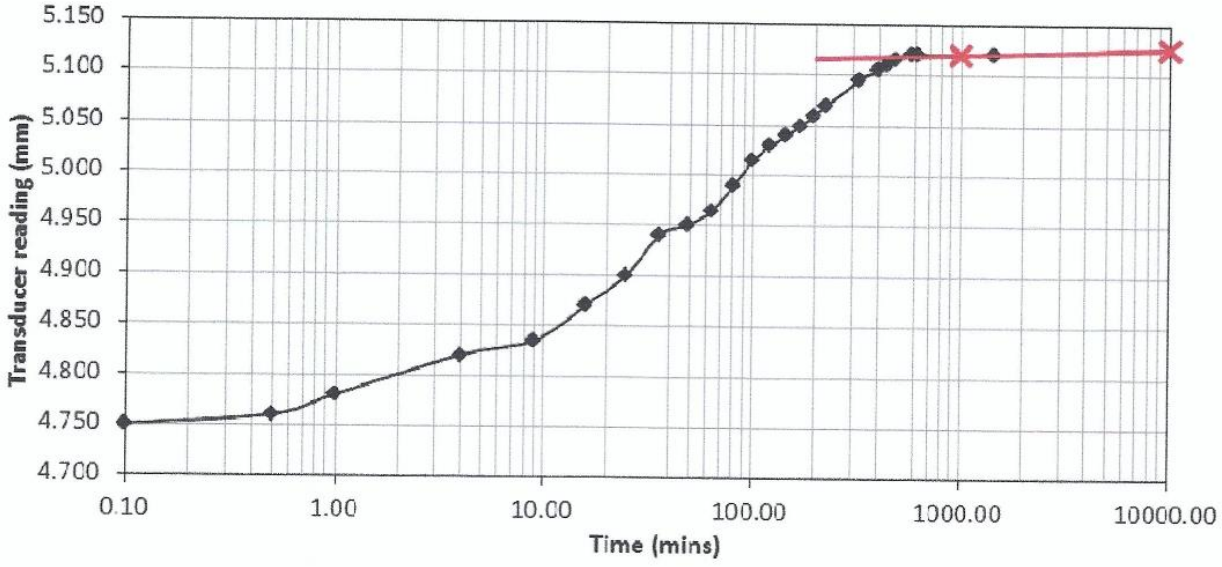
TP KM 11+500(Depth: 0.0-0.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5722	**Date:**	24-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 11+500 0.0-0.6m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.385 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 3.915
Net compression (mm)	= 3.757
Height mm (H_2)	= 16.24
Equivalent height of solids Hs	= 10.57
Voids Ratio = (H_2 – Hs)/Hs	= 0.536

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

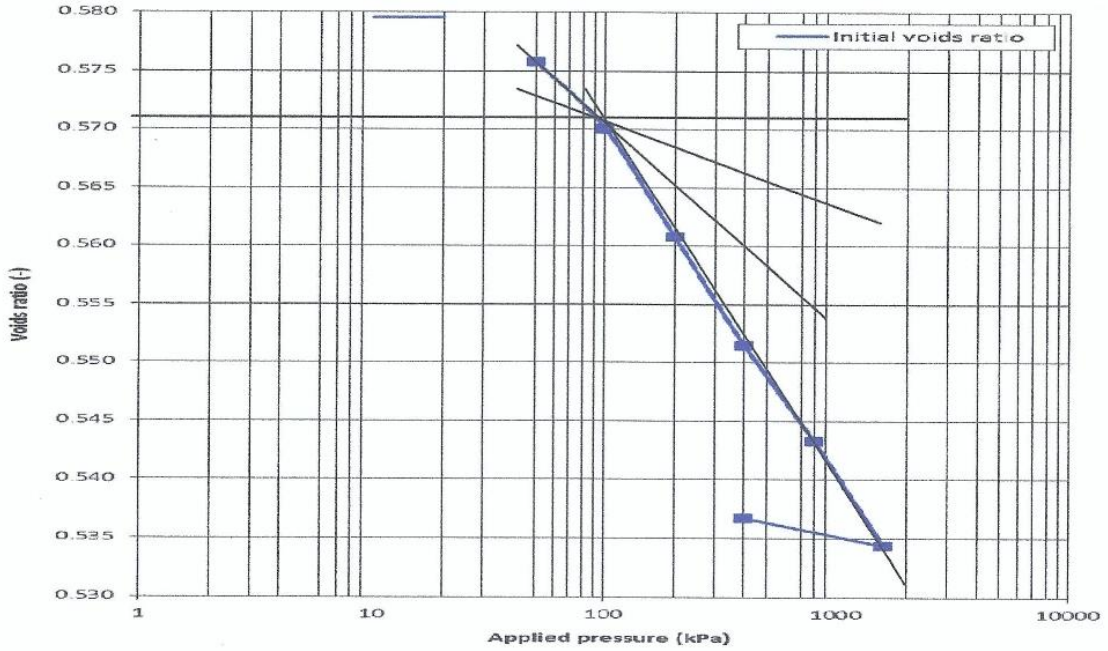
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 13+500 (Depth: 0.0-2.1m)

Site: NGUU TATU
Location: MOMBASA
Depth: 0.0-2.1M
Classification Group Name: -
Lab Ref: TM/RGS-NGUUTATU/5725
Sample No. 5725
Ring Diameter: 62.0 mm
Height of soil particles: 12.66mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 11.5%
Bulk Density: 1843kg/m^3
Initial voids ratio: 0.573
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1653kg/m^3
Pre-consolidation stress: 100 Kn/m^2
Coefficient of Compression Index: 0.040
Coefficient of Re-Compression Index: 0.032

Voids Ratio against Applied Pressure



Tested By: KEVIN
Date Reported: 30-11-21
Checked By:

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

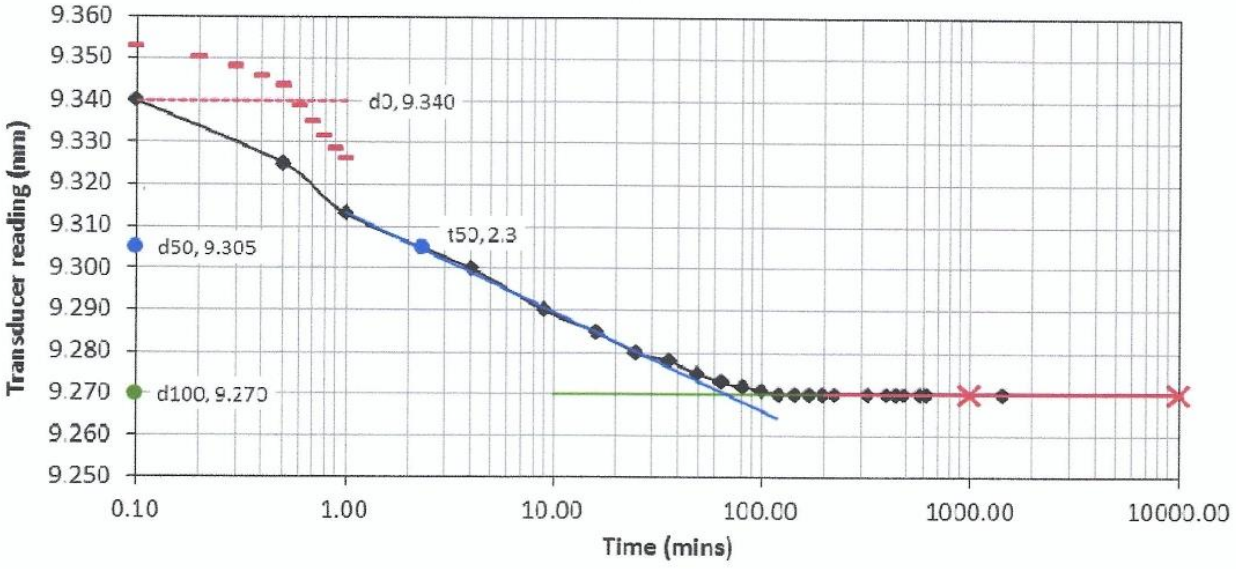
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 13+500(Depth: 0.0-2.1m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5725	**Date:**	18-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 13+500 0.0-2.1m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.080 mm
From the plot, t_{50} = 2.3 mins
H_1 = 20.00 mm
H_2 = 19.92 mm
H = (20.00+19.92)/2
= 19.96 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.504 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.080 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.080
Net compression (mm)	= 0.048
Height mm (H_2)	= 19.92
Equivalent height of solids Hs	= 12.66
Voids Ratio = (H_2 – Hs)/Hs	= **0.573**

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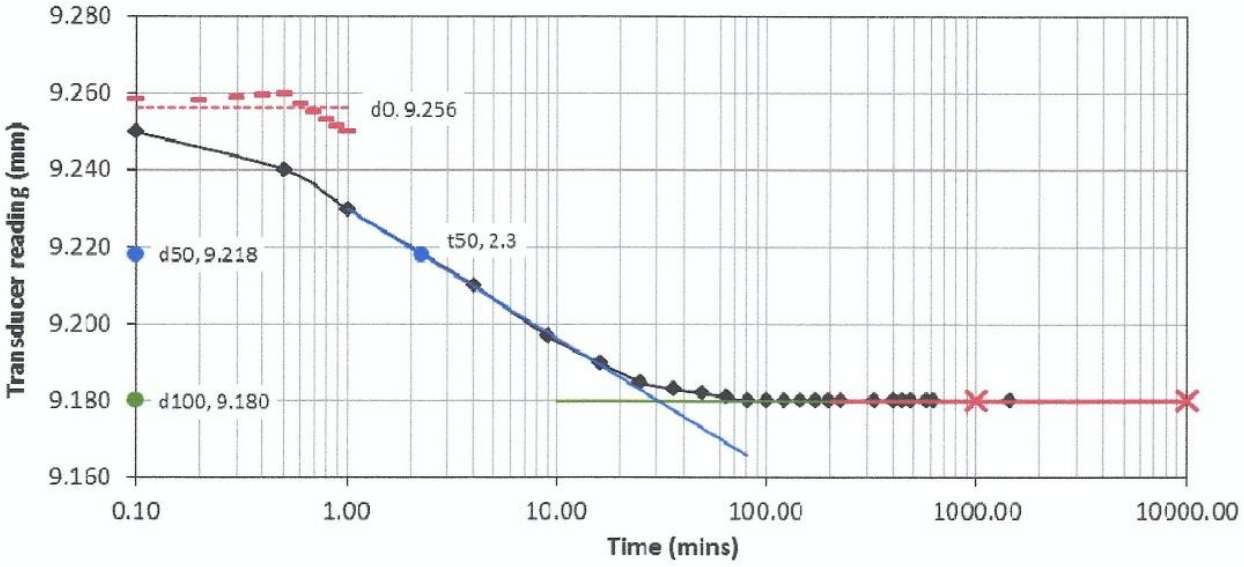
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 13+500(Depth: 0.0-2.1m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5725	**Date:**	19-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 13+500 0.0-2.1m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.090 mm
From the plot, t_{50} = 2.3 mins
H_1 = 19.92 mm
H_2 = 19.83 mm
H = (19.83+19.92)/2
= 19.88 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.468 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.090 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.170
Net compression (mm) = 0.120
Height mm (H_2) = 19.83
Equivalent height of solids Hs = 12.66
Voids Ratio = (H_2 – Hs)/Hs = **0.566**

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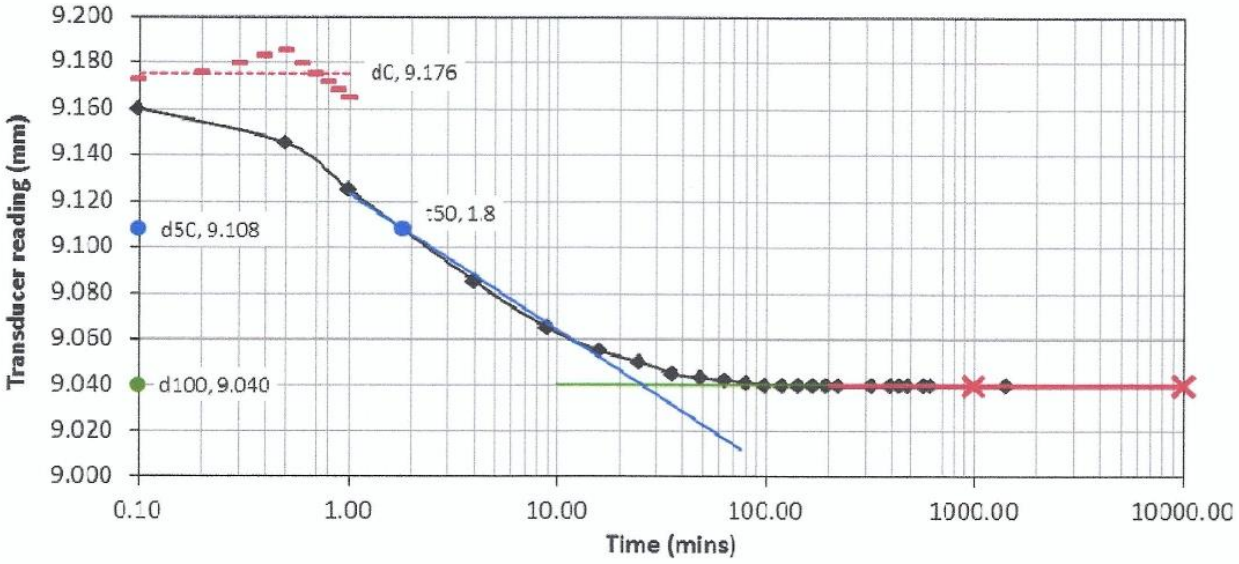
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 13+500(Depth: 0.0-2.1m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5725	**Date:**	20-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 13+500 0.0-2.1m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.140 mm
From the plot, t_{50} = 1.8 mins
H_1 = 19.83 mm
H_2 = 19.69 mm
H = (19.83+19.69)/2
= 19.76 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.640 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.071 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.310
Net compression (mm)	= 0.238
Height mm (H_2)	= 19.69
Equivalent height of solids Hs	= 12.66
Voids Ratio = (H_2 – Hs)/Hs	= **0.555**

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Nairobi
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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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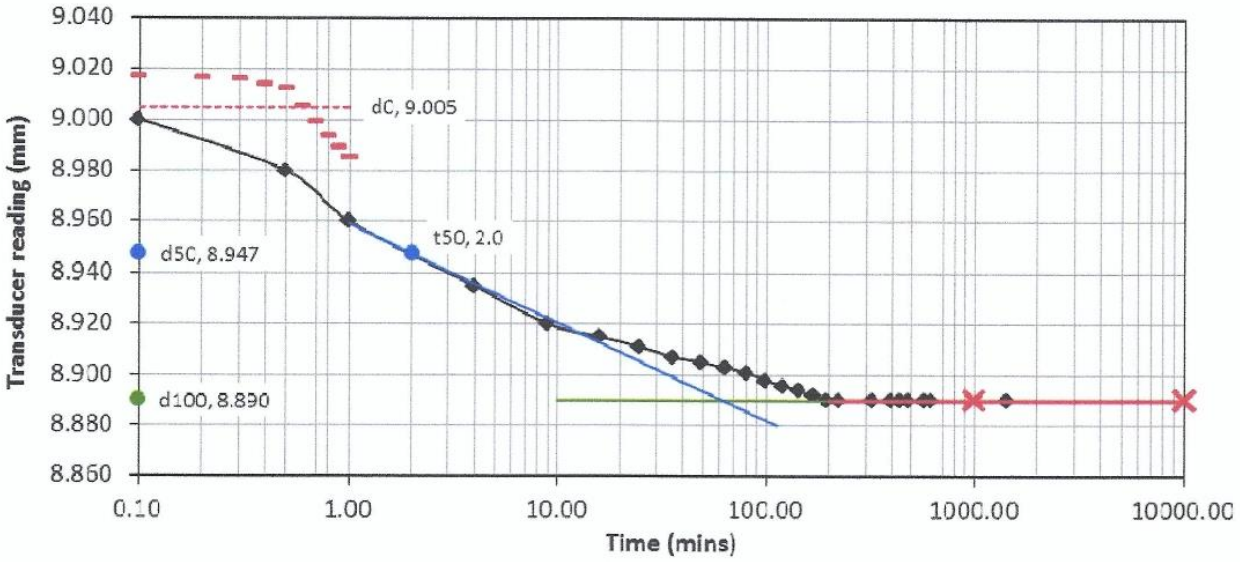
TP KM 13+500(Depth: 0.0-2.1m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5725	**Date:**	21-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 13+500 0.0-2.1m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.150 mm
From the plot, t_{50} = 2.0 mins
H_1 = 19.69 mm
H_2 = 19.54 mm
H = (19.54+19.69)/2
= 19.62 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.004 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.038 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.460
Net compression (mm) = 0.355
Height mm (H_2) = 19.54
Equivalent height of solids Hs = 12.66
Voids Ratio = (H_2 – Hs)/Hs = **0.543**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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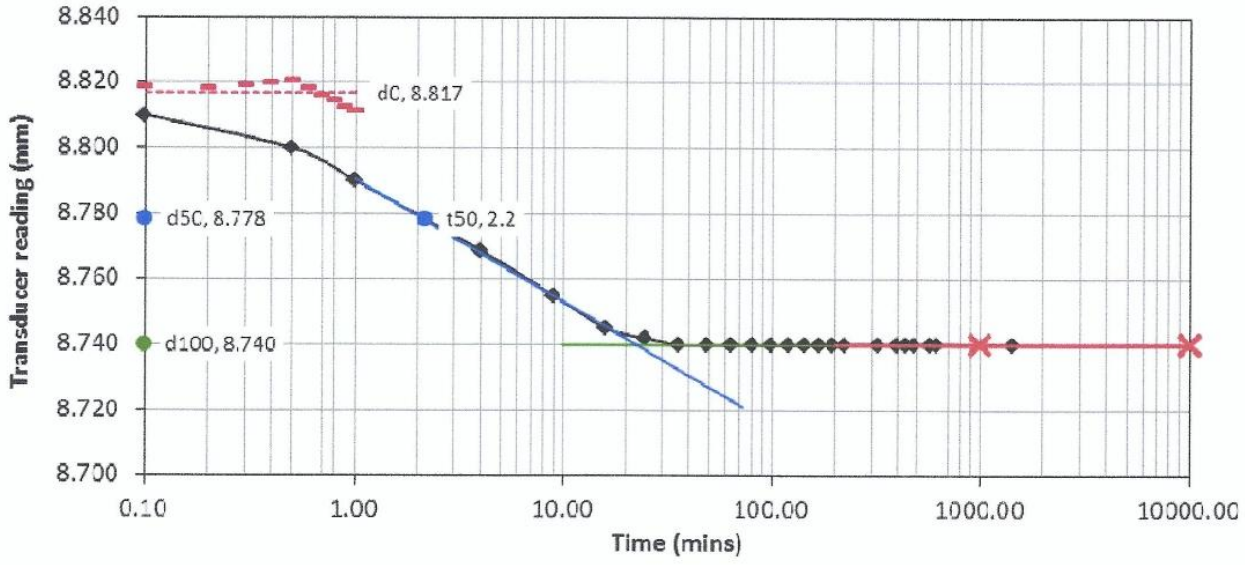
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 13+500(Depth: 0.0-2.1m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5725	**Date:**	22-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 13+500 0.0-2.1m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.150 mm
From the plot, t_{50} = 2.2 mins
H_1 = 19.54 mm
H_2 = 19.39 mm
H = (19.54+19.39)/2
= 19.47 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.480 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.019 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.610
Net compression (mm) = 0.459
Height mm (H_2) = 19.39
Equivalent height of solids Hs = 12.66
Voids Ratio = (H_2 – Hs)/Hs = **0.532**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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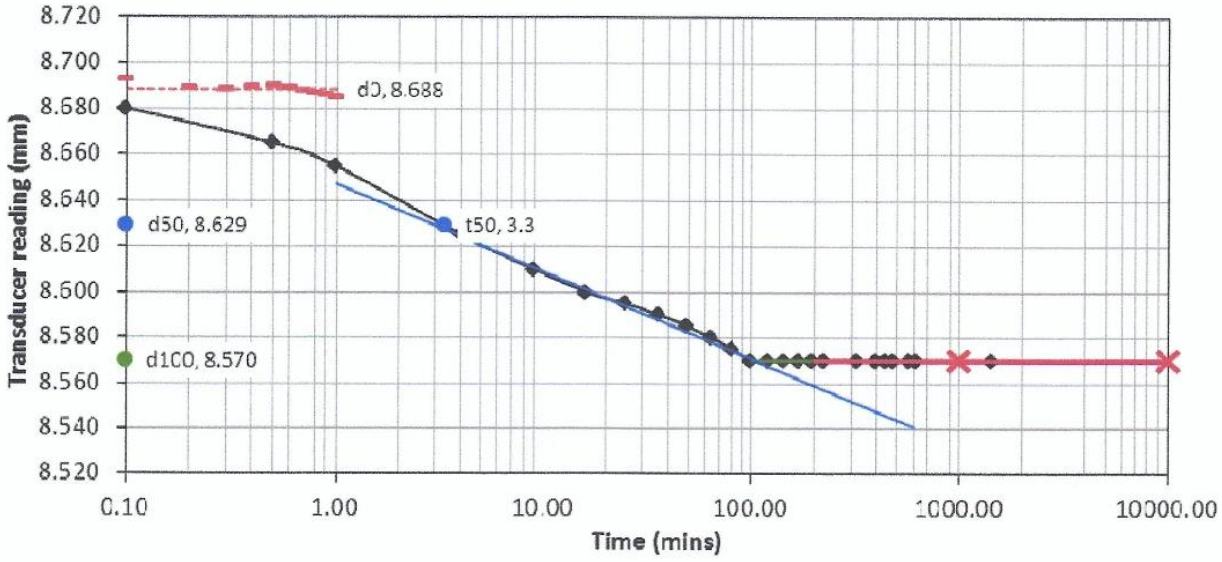
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 13+500(Depth: 0.0-2.1m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5725	**Date:**	23-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 13+500 0.0-2.1m
LOADING STAGE:	**No. 6**	**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.170 mm
From the plot, t_{50} = 3.3 mins
H_1 = 19.39 mm
H_2 = 19.22 mm
H = (19.22+19.39)/2
= 19.31 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.938 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.011 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.780
Net compression (mm) = 0.573
Height mm (H_2) = 19.22
Equivalent height of solids Hs = 12.66
Voids Ratio = (H_2 – Hs)/Hs = **0.518**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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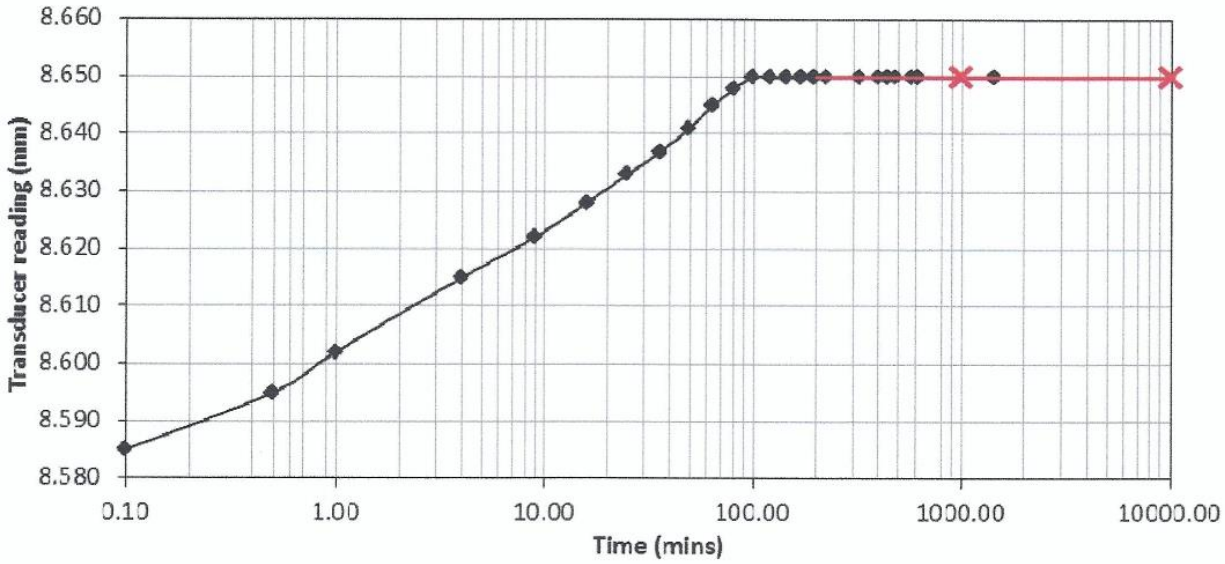
TP KM 13+500(Depth: 0.0-2.1m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5725	**Date:**	24-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 13+500 0.0-2.1m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.080 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 0.700
Net compression (mm)	= 0.542
Height mm (H_2)	= 19.46
Equivalent height of solids Hs	= 12.66
Voids Ratio = (H_2 – Hs)/Hs	= 0.537

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

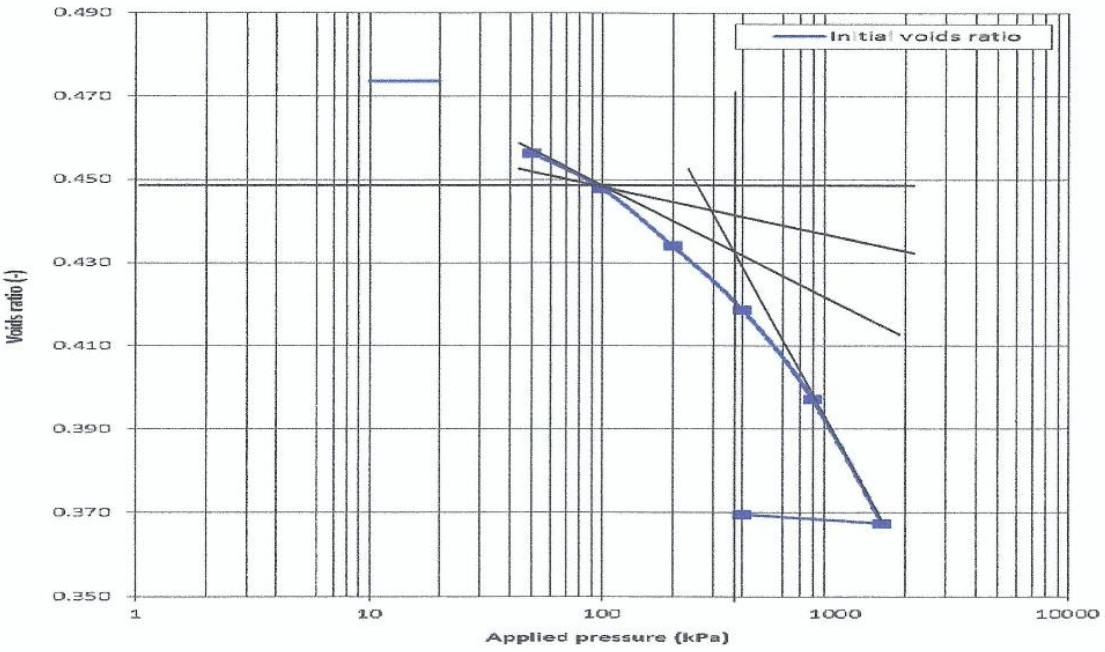
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 14+000 (Depth: 0.3-0.9m)

Site: NGUU TATU
Location: MOMBASA
Depth: 0.3-0.9M
Classification Group Name: -
Lab Ref: TM/RGS-NGUUTATU/5726
Sample No. 5726
Ring Diameter: 62.0 mm
Height of soil particles: 13.57mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 11.3%
Bulk Density: 1961kg/m^3
Initial voids ratio: 0.476
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1762kg/m^3
Pre-consolidation stress: 380 Kn/m^2
Coefficient of Compression Index: 0.099
Coefficient of Re-Compression Index: 0.030

Voids Ratio against Applied Pressure



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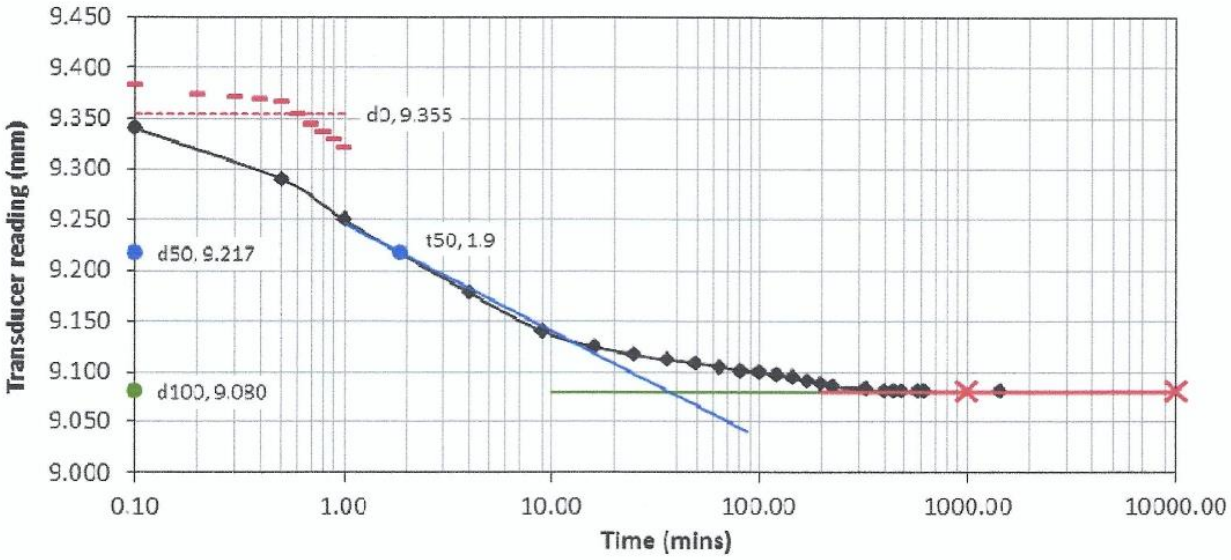
TP KM 14+000(Depth: 0.3-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5726	**Date:**	18-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 14+000 0.3-0.9m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.270 mm
From the plot, t_{50} = 1.9 mins
H_1 = 20.00 mm
H_2 = 19.73 mm
H = (20.00+19.73)/2
= 19.87 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.403 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.270 m²/MN**

Specimen information (cumulative)
Compression (mm) = 0.270
Net compression (mm) = 0.238
Height mm (H_2) = 19.73
Equivalent height of solids Hs = 13.57
Voids Ratio = (H_2 – Hs)/Hs = **0.454**

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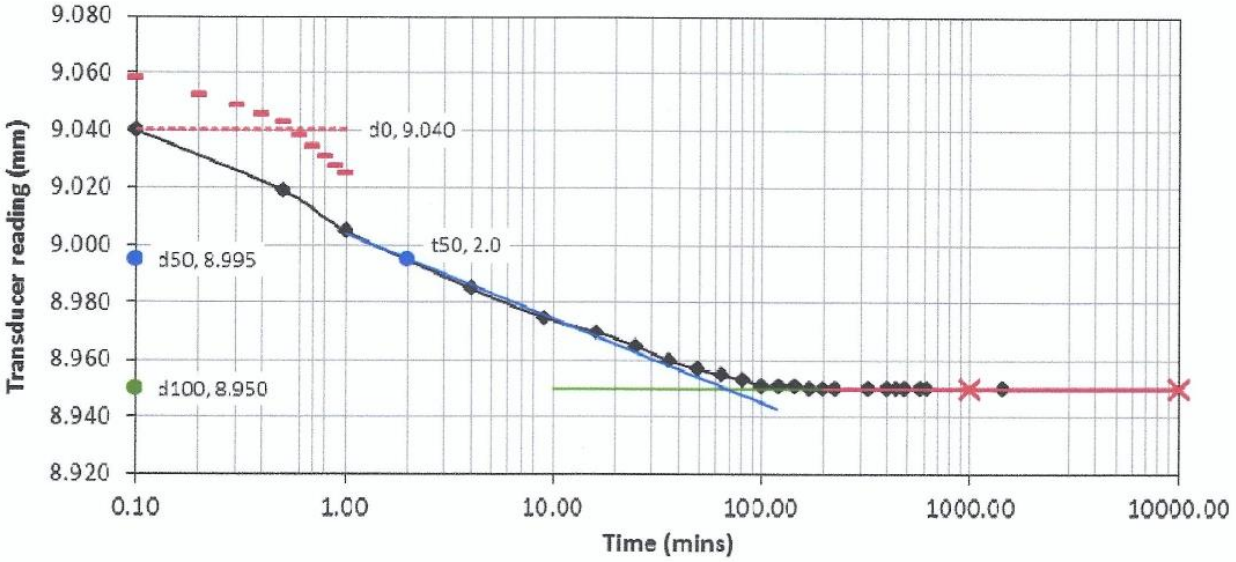
TP KM 14+000(Depth: 0.3-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5726	**Date:**	19-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 14+000 0.3-0.9m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.130 mm
From the plot, t_{50} = 1.9 mins
H_1 = 19.73 mm
H_2 = 19.60 mm
H = (19.60+19.73)/2
= 19.67 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.030 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.132 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.400
Net compression (mm) = 0.350
Height mm (H_2) = 19.60
Equivalent height of solids Hs = 13.57
Voids Ratio = (H_2 – Hs)/Hs = **0.444**

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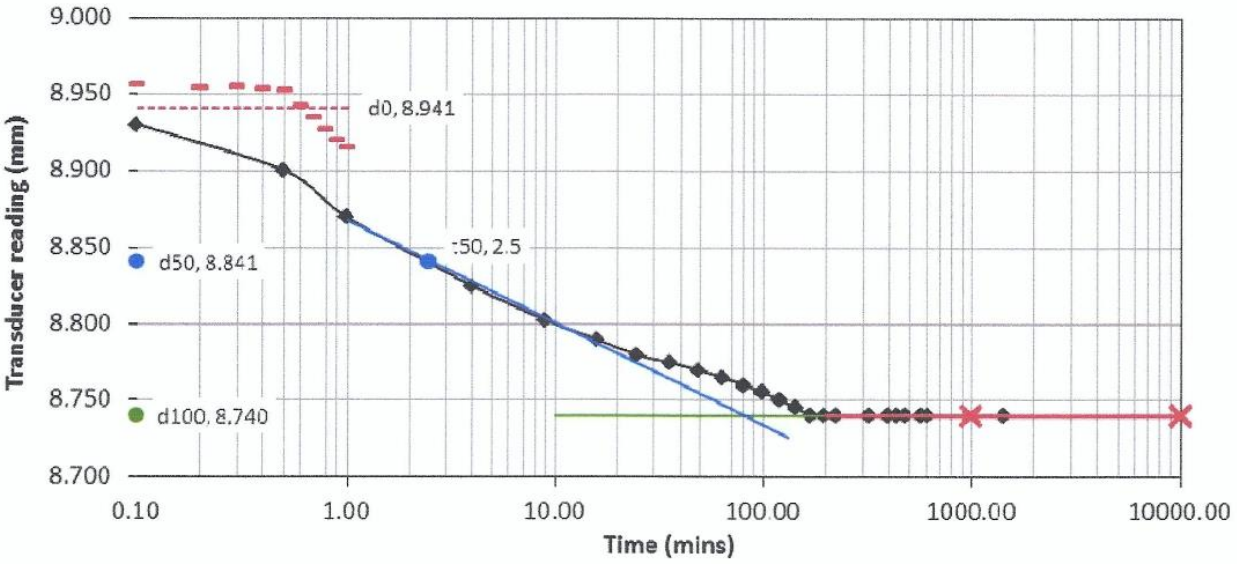
TP KM 14+000(Depth: 0.3-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5726	**Date:**	20-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 14+000 0.3-0.9m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.210 mm
From the plot, t_{50} = 2.5 mins
H_1 = 19.60 mm
H_2 = 19.39 mm
H = (19.60+19.39)/2
= 19.50 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}} = 3.955\ m^2/year$

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

$= 0.107\ m^2/MN$

Specimen information (cumulative)
Compression (mm) = 0.610
Net compression (mm) = 0.538
Height mm (H_2) = 19.39
Equivalent height of solids Hs = 13.57
Voids Ratio = $(H_2 - Hs)/Hs$ = 0.429

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

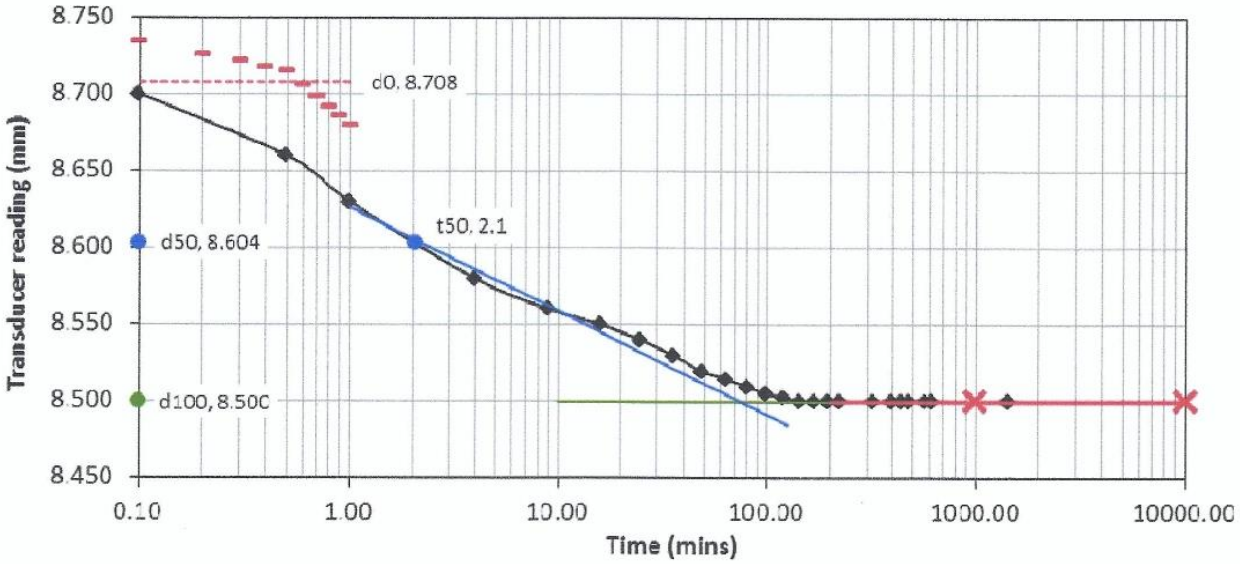
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 14+000(Depth: 0.3-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5726	**Date:**	21-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 14+000 0.3-0.9m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.240 mm
From the plot, t_{50} = 2.1 mins
H_1 = 19.39 mm
H_2 = 19.15 mm
H = (19.15+19.39)/2
= 19.27 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.597 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.062 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.850
Net compression (mm)	= 0.745
Height mm (H_2)	= 19.15
Equivalent height of solids Hs	= 13.57
Voids Ratio = (H_2 – Hs)/Hs	= 0.411

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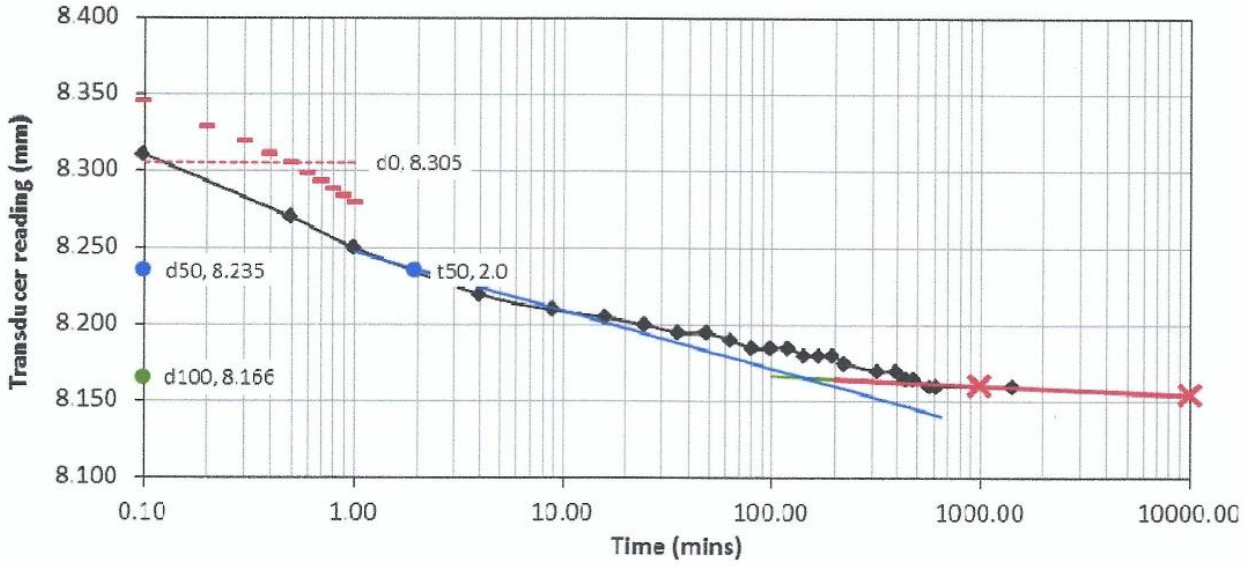
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 14+000(Depth: 0.3-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5726	**Date:**	22-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 14+000 0.3-0.9m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.340 mm
From the plot, t_{50} = 2.0 mins
H_1 = 19.15 mm
H_2 = 18.81 mm
H = (19.15+18.81)/2
= 18.98 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.683 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.044 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.190
Net compression (mm) = 1.039
Height mm (H_2) = 18.81
Equivalent height of solids Hs = 13.57
Voids Ratio = $(H_2 - Hs)/Hs$ = **0.386**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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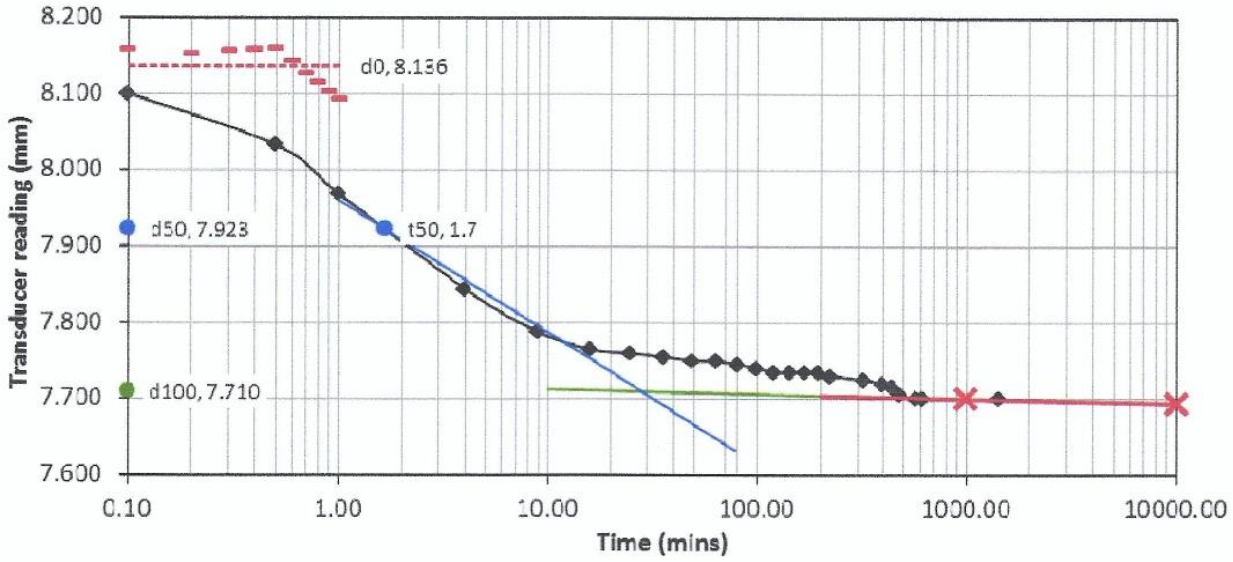
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 14+000(Depth: 0.3-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5726	**Date:**	23-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 14+000 0.3-0.9m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.460 mm
From the plot, t_{50} = 1.7 mins
H_1 = 18.81 mm
H_2 = 18.35 mm
H = (18.35+18.81)/2
= 18.58 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.280 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.031 m²/MN**

Specimen information (cumulative)
Compression (mm) = 1.650
Net compression (mm) = 1.443
Height mm (H_2) = 18.35
Equivalent height of solids Hs = 13.57
Voids Ratio = (H_2 – Hs)/Hs = **0.352**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Nairobi
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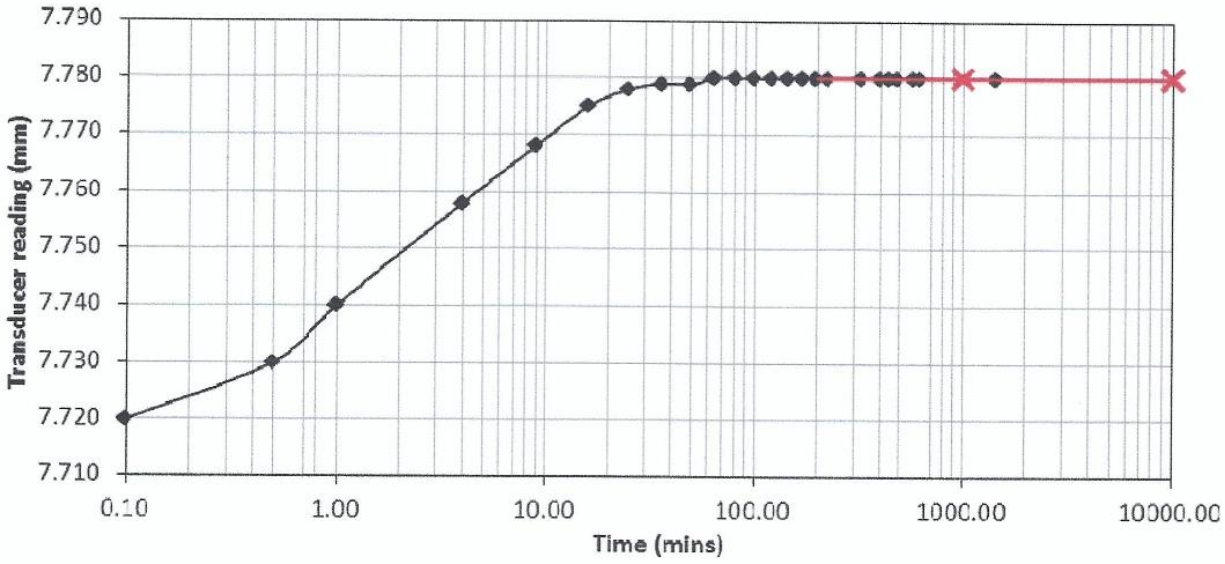
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 14+000(Depth: 0.3-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5726	**Date:**	24-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 14+000 0.3-0.9m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.080 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 1.570
Net compression (mm)	= 1.412
Height mm (H_2)	= 18.59
Equivalent height of solids Hs	= 13.57
Voids Ratio = (H_2 – Hs)/Hs	= 0.370

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

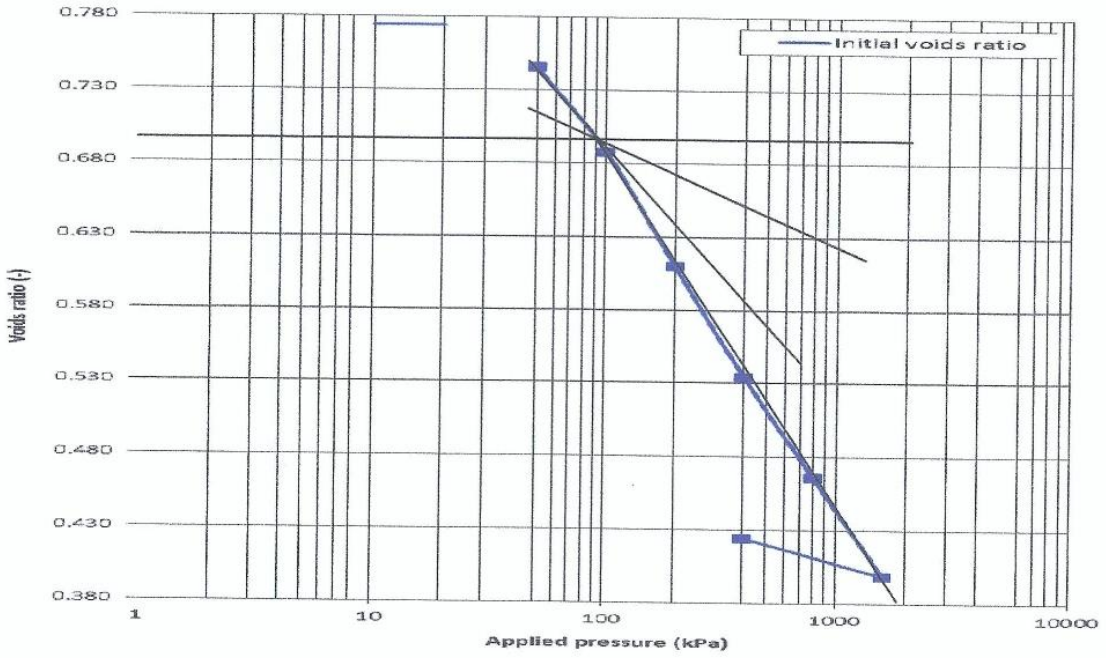
TP KM 16+500 (Depth: 0.5-1.4m)

Site: NGUU TATU
Classification Group Name: -
Ring Diameter: 62.0 mm
Area (A): 3019.1mm^2
Initial voids ratio: 0.774
Pre-consolidation stress: 090 Kn/m^2
Coefficient of Re-Compression Index: 0.070

Location: MOMBASA
Lab Ref: TM/RGS-NGUUTATU/5731
Height of soil particles: 11.27mm
Moisture Content after Test: 23.5%
Assumed Soil Density: 2600 kg/m^3

Depth: 0.5-1.4M
Sample No. 5731
Height of Ring: 20 mm
Bulk Density: 1810kg/m^3
Dry Density: 1466kg/m^3
Coefficient of Compression Index: 0.251

Voids Ratio against Applied Pressure



Tested By: KEVIN

Date Reported: 30-11-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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Nairobi
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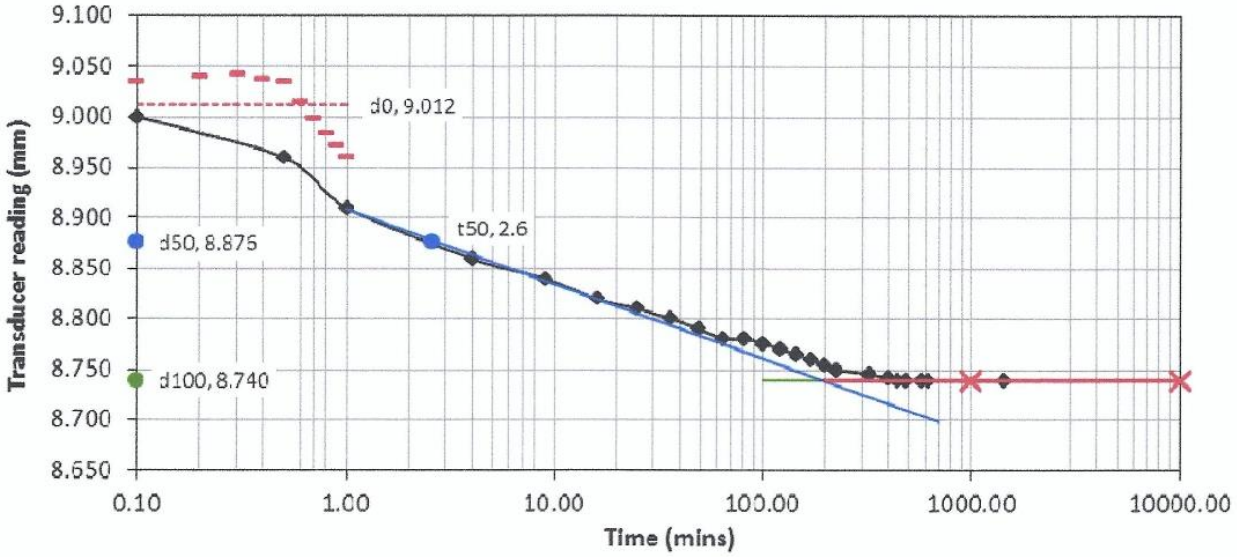
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 16+500(Depth: 0.5-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5731	**Date:**	18-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 16+500 0.5-1.4m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.355 mm
From the plot, t_{50} = 2.6 mins
H_1 = 20.00 mm
H_2 = 19.65 mm
H = (20.00+19.65)/2
= 19.83 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.932 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.355 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.355
Net compression (mm) = 0.323
Height mm (H_2) = 19.65
Equivalent height of solids Hs = 11.27
Voids Ratio = (H_2 – Hs)/Hs = **0.744**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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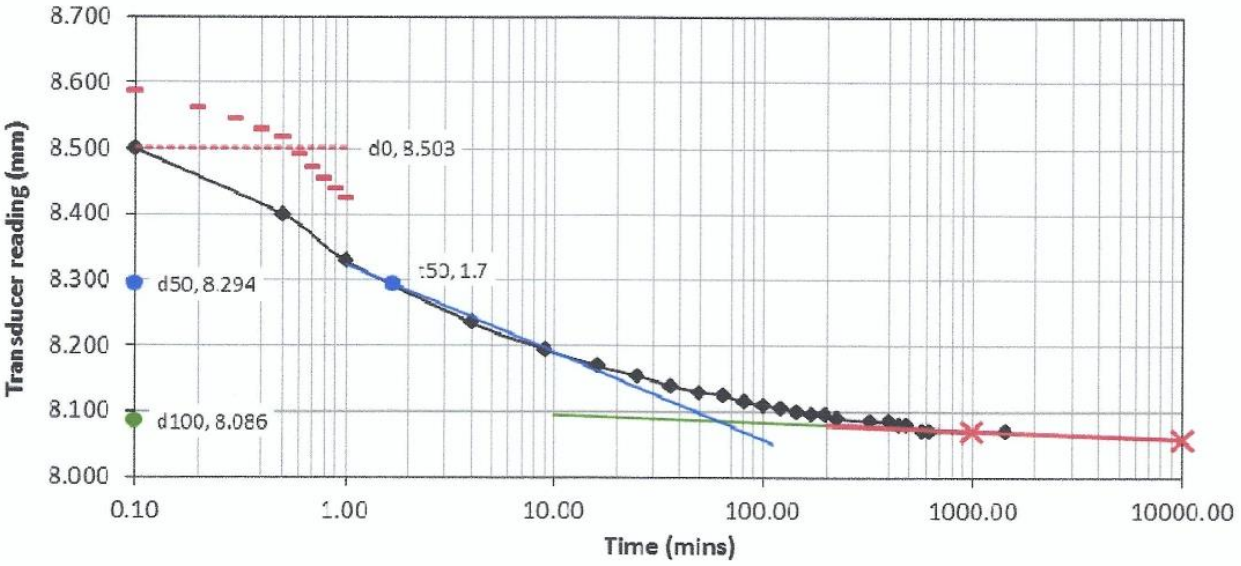
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 16+500(Depth: 0.5-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5731	**Date:**	19-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 16+500 0.5-1.4m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.670 mm
From the plot, t_{50} = 1.7 mins
H_1 = 19.65 mm
H_2 = 18.98 mm
H = (18.98+19.65)/2
= 19.32 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.709 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.682 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.025
Net compression (mm) = 0.975
Height mm (H_2) = 18.98
Equivalent height of solids Hs = 11.27
Voids Ratio = (H_2 – Hs)/Hs = **0.684**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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P.O. Box 64932
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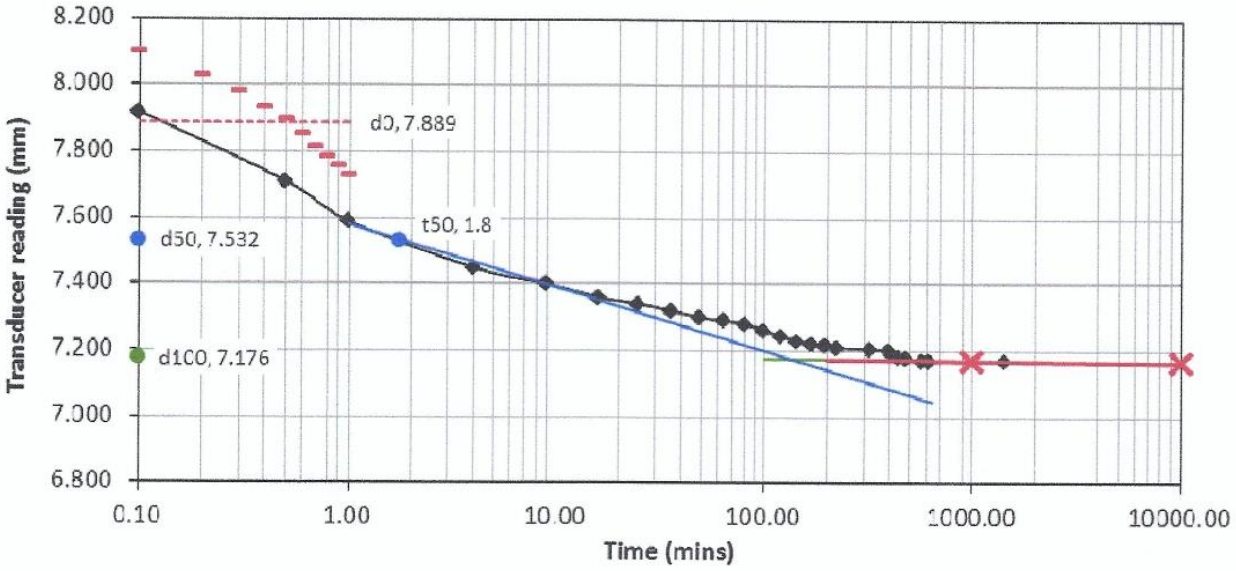
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 16+500(Depth: 0.5-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5731	**Date:**	20-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 16+500 0.5-1.4m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.900 mm
From the plot, t_{50} = 1.8 mins
H_1 = 18.98 mm
H_2 = 18.08 mm
H = (18.98+18.08)/2
= 18.53 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.960 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.474 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.925
Net compression (mm) = 1.853
Height mm (H_2) = 18.08
Equivalent height of solids Hs = 11.27
Voids Ratio = $(H_2 - Hs)/Hs$ = **0.604**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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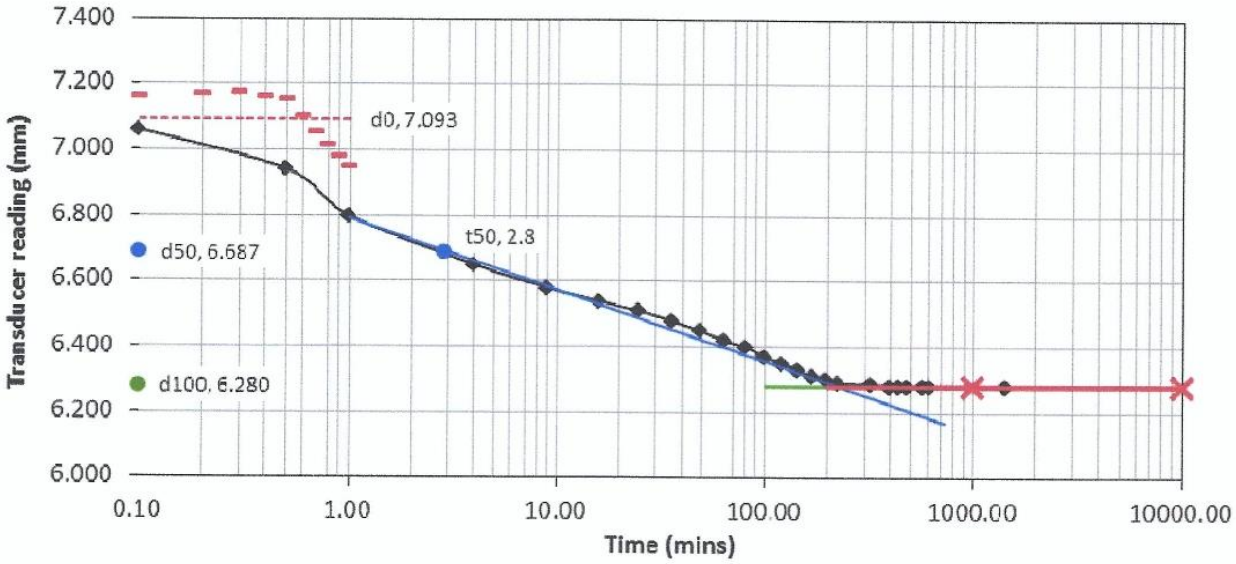
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 16+500(Depth: 0.5-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5731	**Date:**	21-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 16+500 0.5-1.4m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.890 mm
From the plot, t_{50} = 2.8 mins
H_1 = 18.08 mm
H_2 = 17.19 mm
H = (17.19+18.08)/2
= 17.64 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.889 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.246 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.815
Net compression (mm) = 2.710
Height mm (H_2) = 17.19
Equivalent height of solids Hs = 11.27
Voids Ratio = (H_2 – Hs)/Hs = **0.525**

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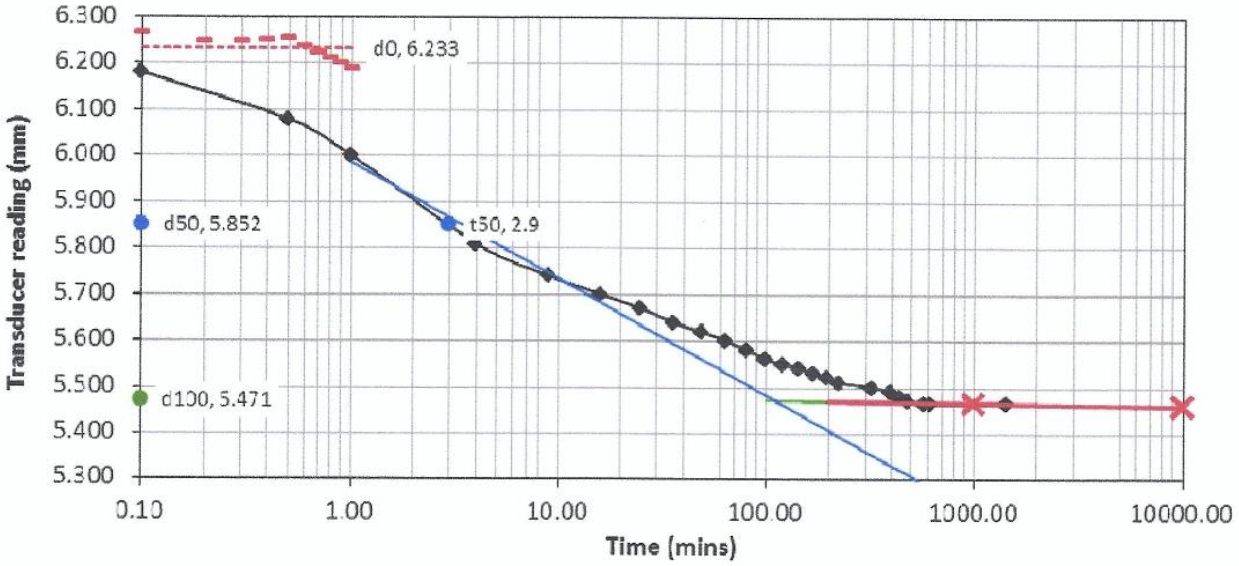
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 16+500(Depth: 0.5-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5731	**Date:**	22-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 16+500 0.5-1.4m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.815 mm
From the plot, t_{50} = 2.9 mins
H_1 = 17.19 mm
H_2 = 16.38 mm
H = (17.19+16.38)/2
= 16.79 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.527 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.119 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 3.630
Net compression (mm)	= 3.479
Height mm (H_2)	= 16.38
Equivalent height of solids Hs	= 11.27
Voids Ratio = (H_2 – Hs)/Hs	= **0.453**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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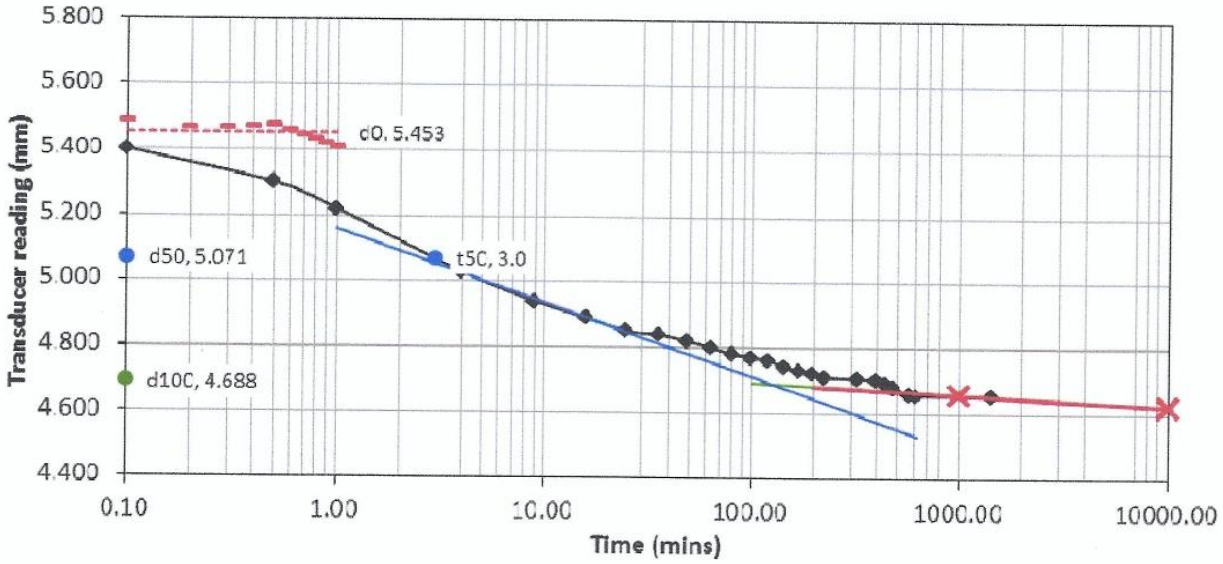
TP KM 16+500(Depth: 0.5-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5731	**Date:**	23-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 16+500 0.5-1.4m
LOADING STAGE:	**No. 6**	**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.810 mm
From the plot, t_{50} = 3.0 mins
H_1 = 16.38 mm
H_2 = 15.57 mm
H = (15.57+16.38)/2
= 15.98 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.213 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.062 m²/MN**

Specimen information (cumulative)
Compression (mm) = 4.440
Net compression (mm) = 4.233
Height mm (H_2) = 15.57
Equivalent height of solids Hs = 11.27
Voids Ratio = (H_2 – Hs)/Hs = **0.382**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

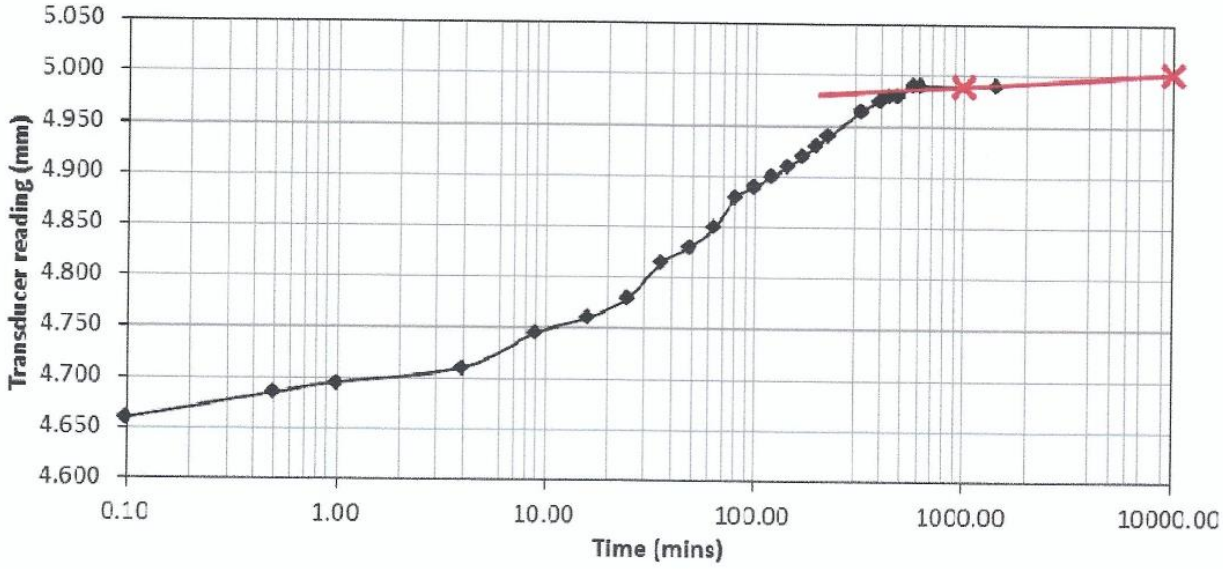
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 16+500(Depth: 0.5-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5731	**Date:**	24-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 16+500 0.5-1.4m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.335 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 4.105
Net compression (mm)	= 3.497
Height mm (H_2)	= 16.05
Equivalent height of solids Hs	= 11.27
Voids Ratio = $(H_2 - Hs)/Hs$	= 0.424

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU SITE

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

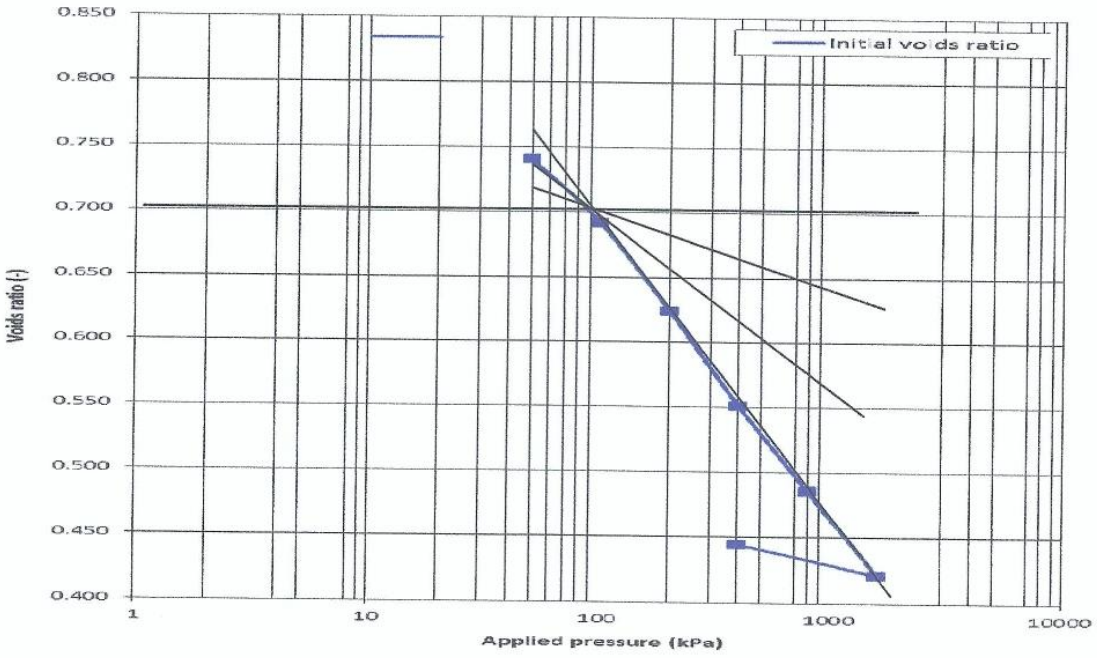
TP KM 18+000 (Depth: 0.4-1.2m)

Site: NGUU TATU
Classification Group Name: -
Ring Diameter: 62.0 mm
Area (A): 3019.1mm^2
Initial voids ratio: 0.831
Pre-consolidation stress: 090 Kn/m^2
Coefficient of Re-Compression Index: 0.070

Location: MOMBASA
Lab Ref: TM/RGS-NGUUTATU/5734
Height of soil particles: 10.91mm
Moisture Content after Test: 22.8%
Assumed Soil Density: 2600 kg/m^3

Depth: 0.4-1.2M
Sample No. 5734
Height of Ring: 20 mm
Bulk Density: 1744kg/m^3
Dry Density: 1420kg/m^3
Coefficient of Compression Index: 0.237

Voids Ratio against Applied Pressure



Tested By: KEVIN

Date Reported: 30-11-21

Checked By:

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info@danellilab.com
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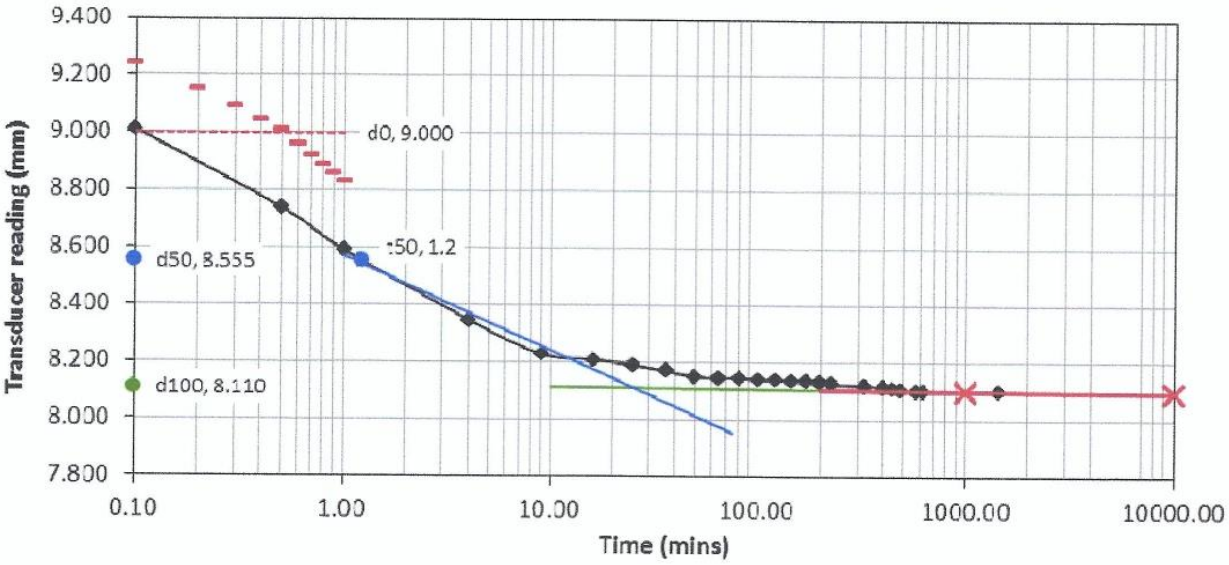
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 18+000(Depth: 0.4-1.2m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5734	**Date:**	18-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 18+000 0.4-1.2m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 1.050 mm
From the plot, t_{50} = 1.2 mins
H_1 = 20.00 mm
H_2 = 18.95 mm
H = (20.00+18.95)/2
= 19.48 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **8.222 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **1.050 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.050
Net compression (mm) = 1.018
Height mm (H_2) = 18.95
Equivalent height of solids Hs = 10.91
Voids Ratio = (H_2 – Hs)/Hs = **0.737**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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Nairobi
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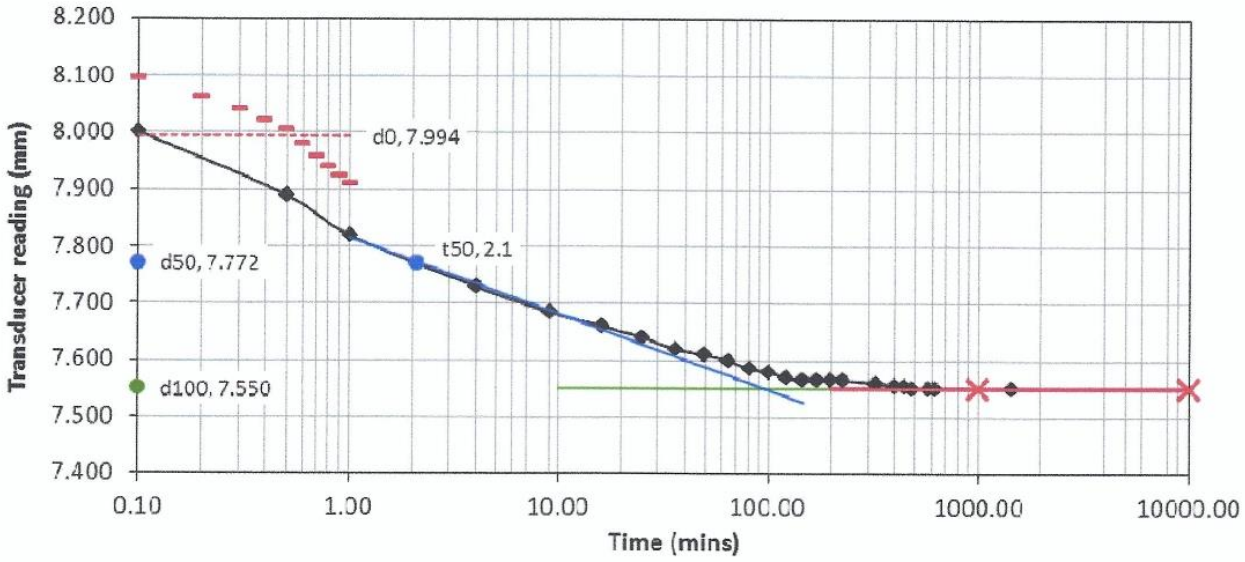
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 18+000(Depth: 0.4-1.2m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5734	**Date:**	19-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 18+000 0.4-1.2m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.550 mm
From the plot, t_{50} = 2.1 mins
H_1 = 18.95 mm
H_2 = 18.40 mm
H = (18.40+18.95)/2
= 18.68 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.320 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.580 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.600
Net compression (mm) = 1.550
Height mm (H_2) = 18.40
Equivalent height of solids Hs = 10.91
Voids Ratio = (H_2 – Hs)/Hs = **0.687**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Mobil Plaza 00620
Nairobi
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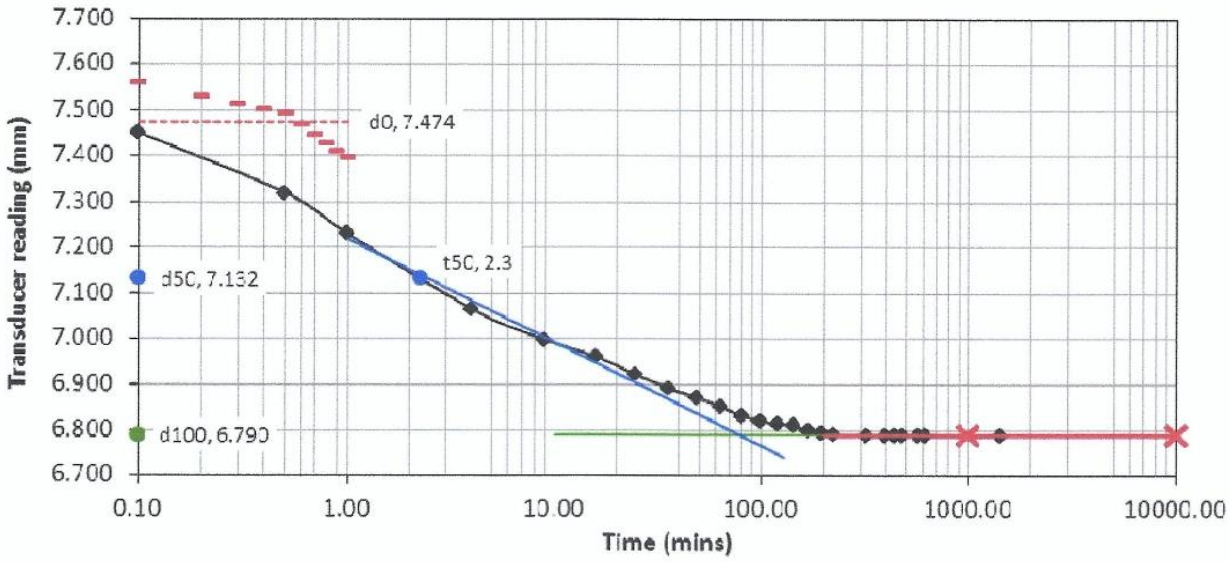
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 18+000(Depth: 0.4-1.2m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5734	**Date:**	20-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 18+000 0.4-1.2m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.760 mm
From the plot, t_{50} = 2.3 mins
H_1 = 18.40 mm
H_2 = 17.64 mm
H = (18.40+17.64)/2
= 18.02 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.671 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.413 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.360
Net compression (mm) = 2.288
Height mm (H_2) = 17.64
Equivalent height of solids Hs = 10.91
Voids Ratio = (H_2 – Hs)/Hs = **0.617**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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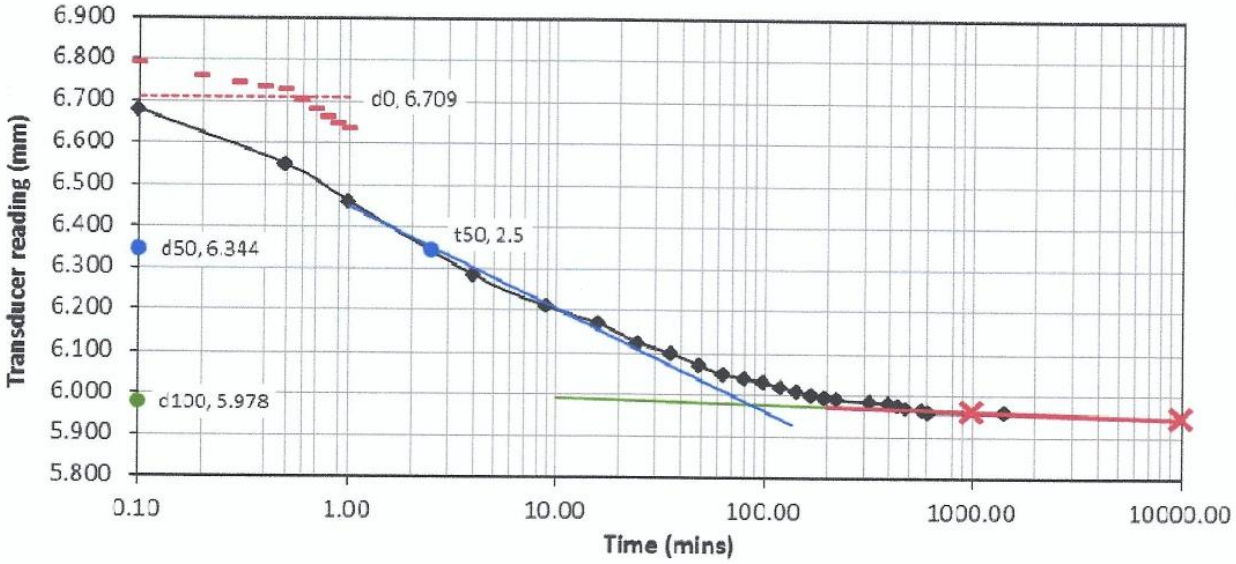
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 18+000(Depth: 0.4-1.2m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5734	**Date:**	21-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 18+000 0.4-1.2m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.830 mm
From the plot, t_{50} = 2.5 mins
H_1 = 17.64 mm
H_2 = 16.81 mm
H = (16.81+17.64)/2
= 17.23 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.087 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.235 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.190
Net compression (mm) = 3.085
Height mm (H_2) = 16.81
Equivalent height of solids Hs = 10.91
Voids Ratio = (H_2 – Hs)/Hs = **0.541**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

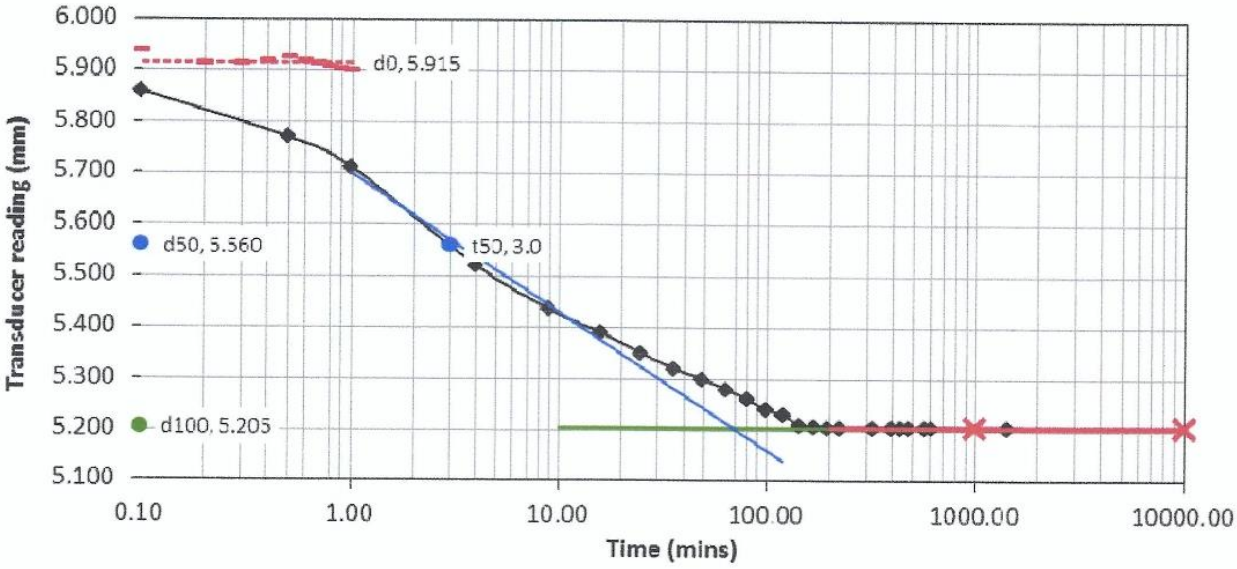
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 18+000(Depth: 0.4-1.2m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5734	**Date:**	22-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 18+000 0.4-1.2m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.755 mm
From the plot, t_{50} = 3.0 mins
H_1 = 16.81 mm
H_2 = 16.06 mm
H = (16.81+16.06)/2
= 16.44 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.342 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.112 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.945
Net compression (mm) = 3.794
Height mm (H_2) = 16.06
Equivalent height of solids Hs = 10.91
Voids Ratio = (H_2 – Hs)/Hs = **0.472**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

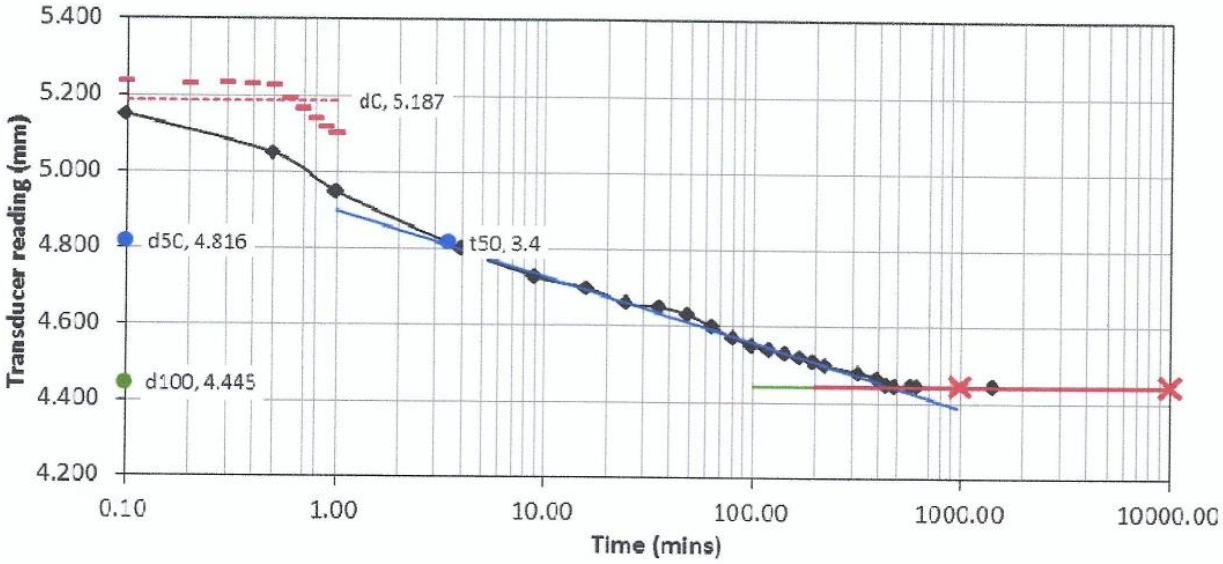
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 18+000(Depth: 0.4-1.2m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5734	**Date:**	23-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 18+000 0.4-1.2m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.760 mm
From the plot, t_{50} = 3.4 mins
H_1 = 16.06 mm
H_2 = 15.30 mm
H = (15.30+16.06)/2
= 15.68 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **1.880 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.059 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 4.705
Net compression (mm) = 4.498
Height mm (H_2) = 15.30
Equivalent height of solids Hs = 10.91
Voids Ratio = $(H_2 - Hs)/Hs$ = **0.402**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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info@danellilab.com
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Nairobi
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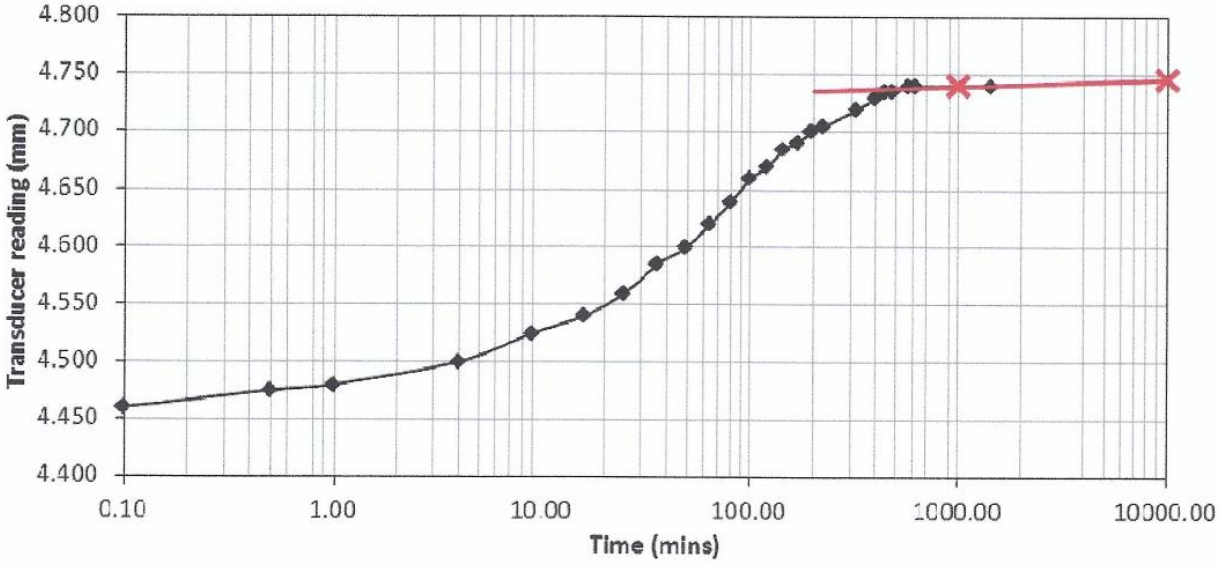
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 18+000(Depth: 0.4-1.2m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-NGUUTATU/5734	**Date:**	24-11-21
Project	NGUU TATU SITE	**Location:**	MOMBASA	**Sample**	TP KM 18+000 0.4-1.2m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.295 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 4.410
Net compression (mm)	= 4.252
Height mm (H_2)	= 15.75
Equivalent height of solids Hs	= 10.91
Voids Ratio = (H_2 – Hs)/Hs	= 0.444

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

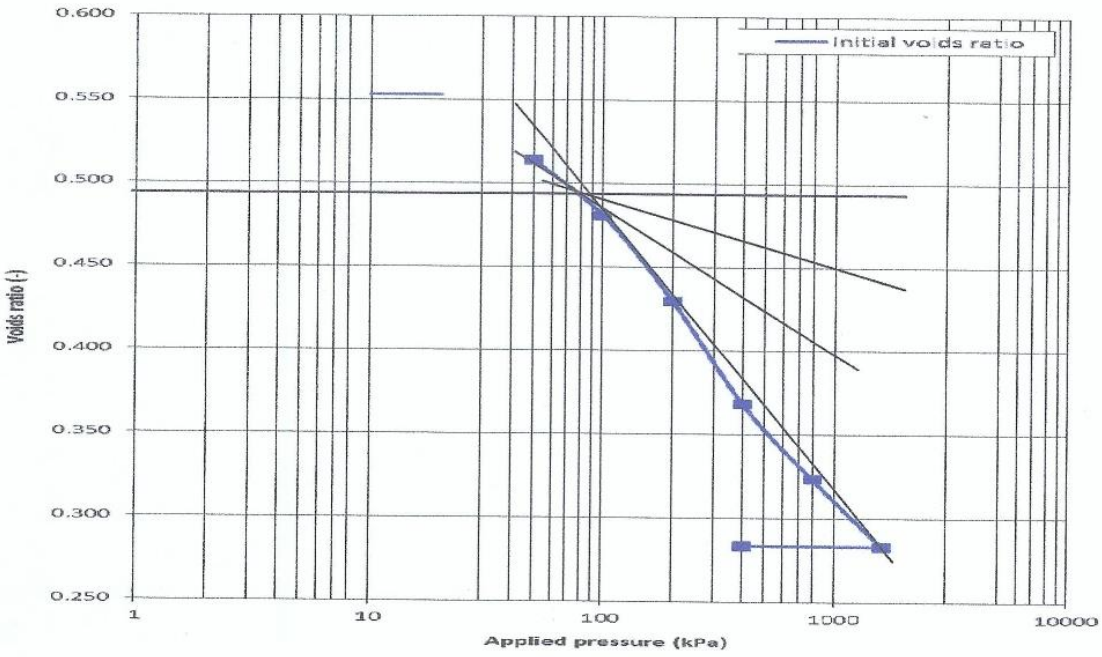
TP KM 3+500

Site: KAYABOMBO
Classification Group Name: -
Ring Diameter: 62.0 mm
Area (A): 3019.1mm^2
Initial voids ratio: 0.548
Pre-consolidation stress: 090 Kn/m^2
Coefficient of Re-Compression Index: 0.025

Location: KWALE
Lab Ref: TM/RGS-KAYABOMBO/4560
Height of soil particles: 12.88mm
Moisture Content after Test: 15.6%
Assumed Soil Density: 2600 kg/m^3

Depth: -
Sample No. 4560
Height of Ring: 20 mm
Bulk Density: 1942kg/m^3
Dry Density: 1680kg/m^3
Coefficient of Compression Index: 0.174

Voids Ratio against Applied Pressure



Tested By: KEVIN

Date Reported: 30-11-21

Checked By:

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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Head Office & Laboratories:
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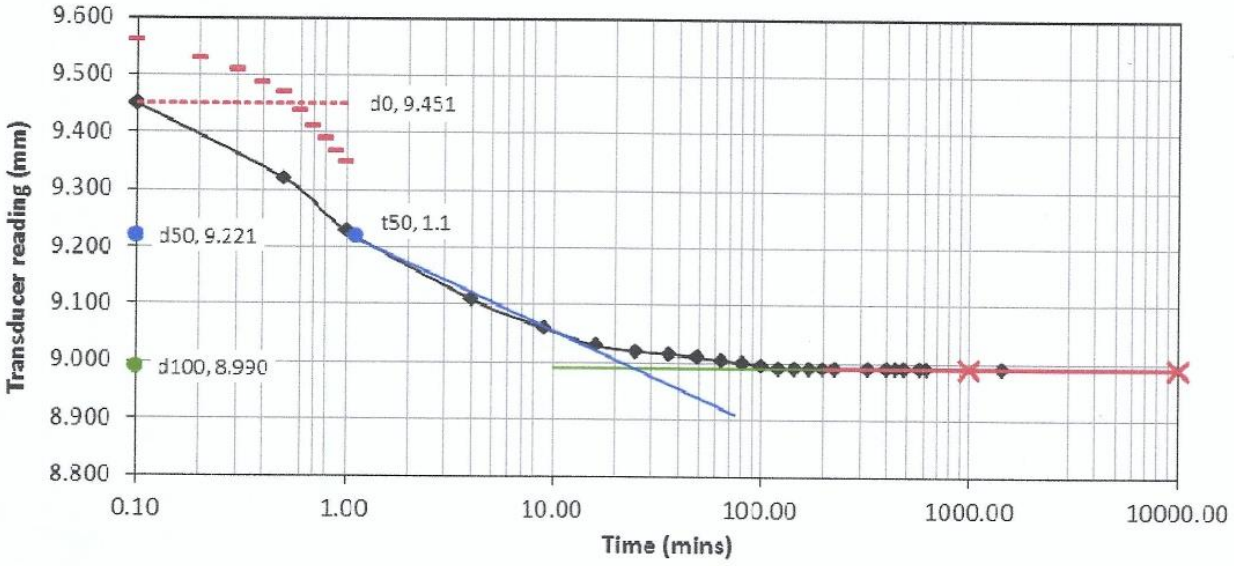
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 3+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4560	**Date:**	18-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 3+500
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.540 mm
From the plot, t_{50} = 1.1 mins
H_1 = 20.00 mm
H_2 = 19.46 mm
H = (20.00+19.46)/2
= 19.73 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **9.201 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.540 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.540
Net compression (mm)	= 0.508
Height mm (H_2)	= 19.46
Equivalent height of solids Hs	= 12.88
Voids Ratio = (H_2 – Hs)/Hs	= **0.511**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
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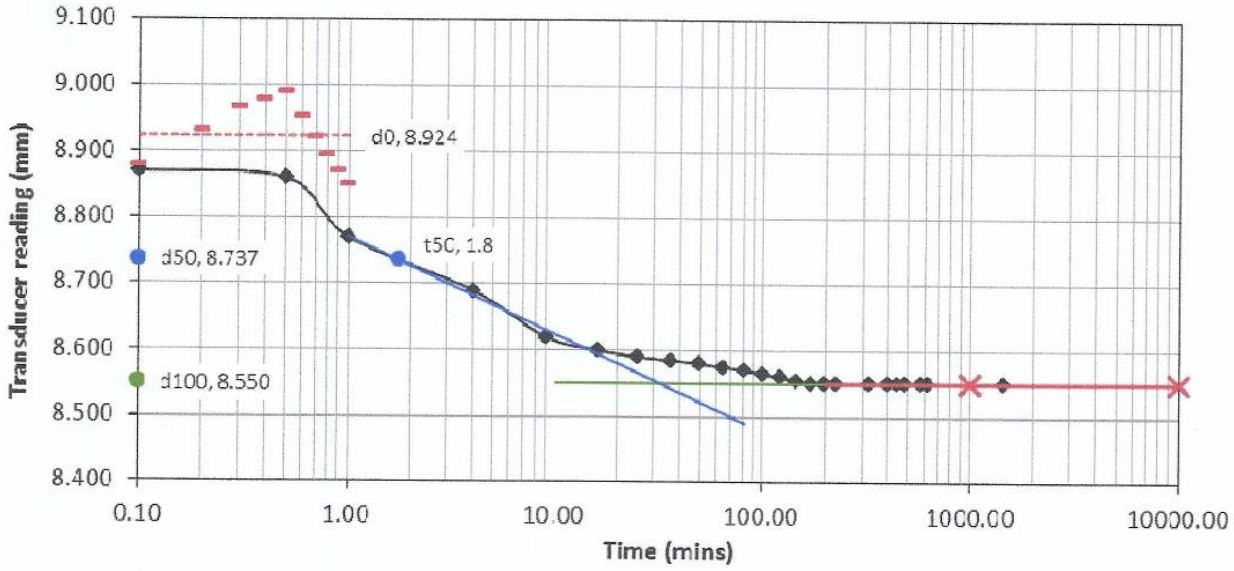
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 3+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4560	**Date:**	19-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 3+500
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.440 mm
From the plot, t_{50} = 1.8 mins
H_1 = 19.46 mm
H_2 = 19.02 mm
H = (19.02+19.46)/2
= 19.24 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.347 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.452 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.980
Net compression (mm) = 0.930
Height mm (H_2) = 19.02
Equivalent height of solids Hs = 12.88
Voids Ratio = (H_2 – Hs)/Hs = **0.477**

Tested By: KEVIN

Date Reported: 30-11-21

Checked By:

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

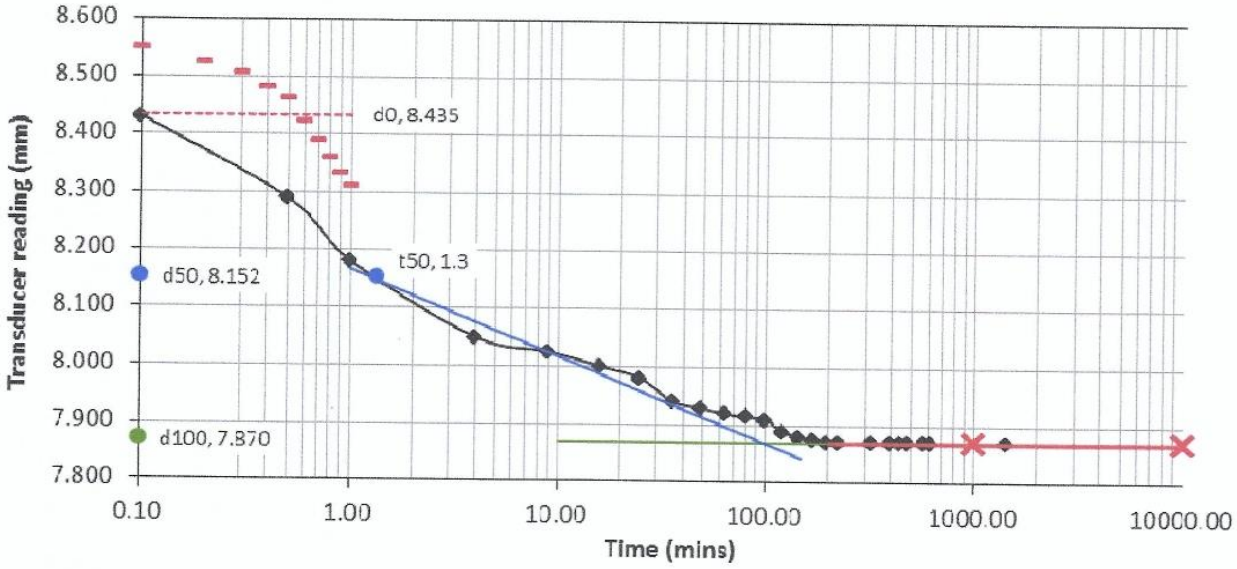
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 3+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4560	**Date:**	20-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 3+500
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.680 mm
From the plot, t_{50} = 1.3 mins
H_1 = 19.02 mm
H_2 = 18.34 mm
H = (19.02+18.34)/2
= 18.68 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.979 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.358 m²/MN**

Specimen information (cumulative)

Compression (mm)	= 1.660
Net compression (mm)	= 1.588
Height mm (H_2)	= 18.34
Equivalent height of solids Hs	= 12.88
Voids Ratio = (H_2 – Hs)/Hs	= **0.424**

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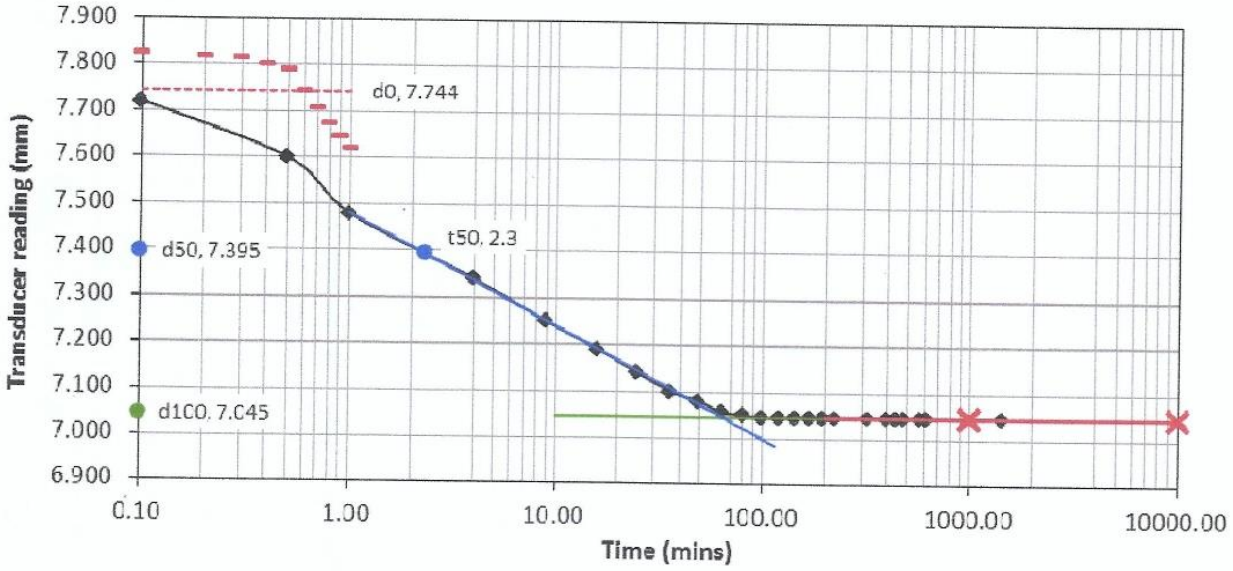
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 3+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4560	**Date:**	21-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 3+500
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.825 mm
From the plot, t_{50} = 2.3 mins
H_1 = 18.34 mm
H_2 = 17.52 mm
H = (17.52+18.34)/2
= 17.93 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.634 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.225 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.485
Net compression (mm) = 2.380
Height mm (H_2) = 17.52
Equivalent height of solids Hs = 12.88
Voids Ratio = (H_2 – Hs)/Hs = **0.360**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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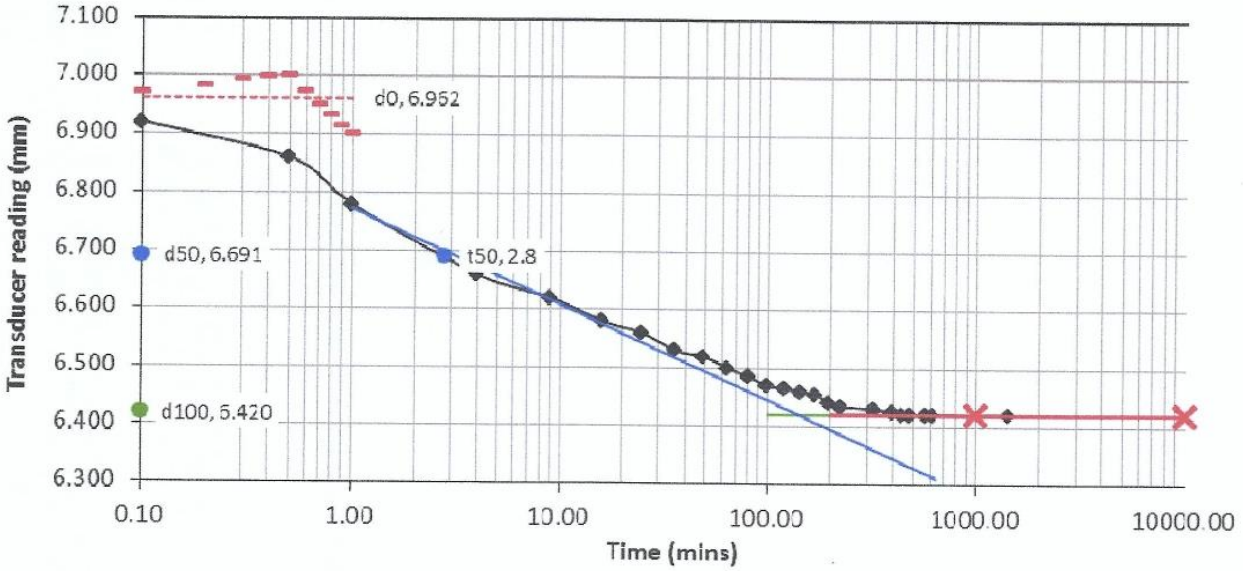
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 3+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4560	**Date:**	22-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 3+500
LOADING STAGE:	**No. 5**	**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.625 mm
From the plot, t_{50} = 2.8 mins
H_1 = 17.52 mm
H_2 = 16.90 mm
H = (17.52+16.90)/2
= 17.21 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.750 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.089 m²/MN**

Specimen information (cumulative)
Compression (mm) = 3.110
Net compression (mm) = 2.959
Height mm (H_2) = 16.90
Equivalent height of solids Hs = 12.88
Voids Ratio = (H_2 – Hs)/Hs = **0.312**

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DANELLI ENGINEERING LABORATORIES LIMITED
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info@danellilab.com
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Head Office & Laboratories:
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Nairobi
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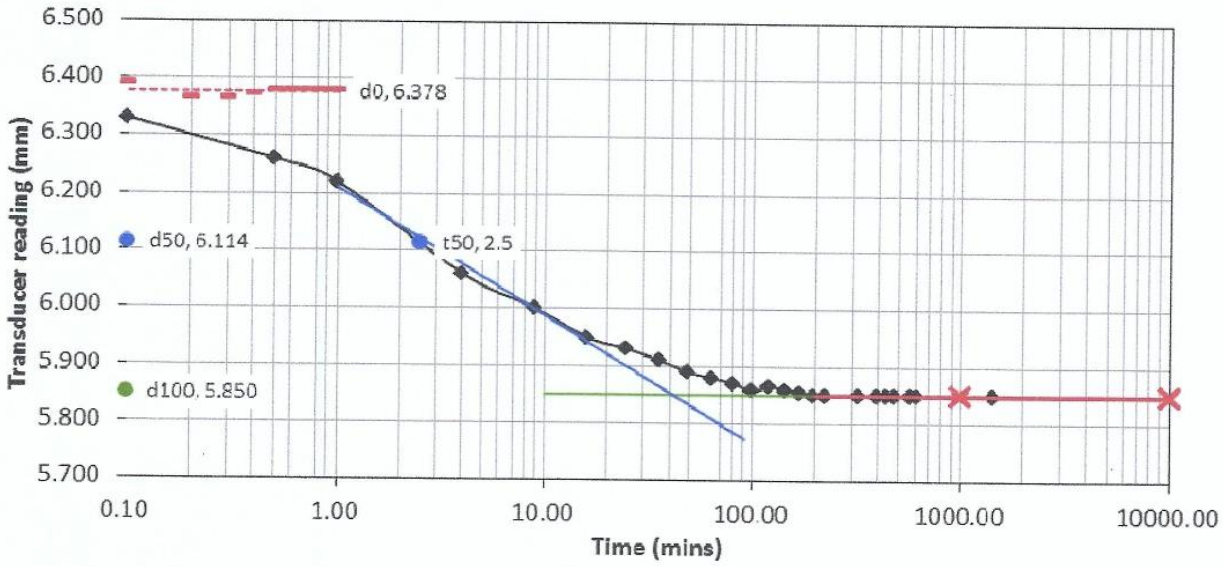
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 3+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4560	**Date:**	23-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 3+500
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.570 mm
From the plot, t_{50} = 2.5 mins
H_1 = 16.90 mm
H_2 = 16.33 mm
H = (16.33+16.90)/2
= 16.62 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.873 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.042 m²/MN**

Specimen information (cumulative)
Compression (mm) = 3.680
Net compression (mm) = 3.473
Height mm (H_2) = 16.33
Equivalent height of solids Hs = 12.88
Voids Ratio = (H_2 – Hs)/Hs = **0.268**

Tested By: KEVIN

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Checked By:

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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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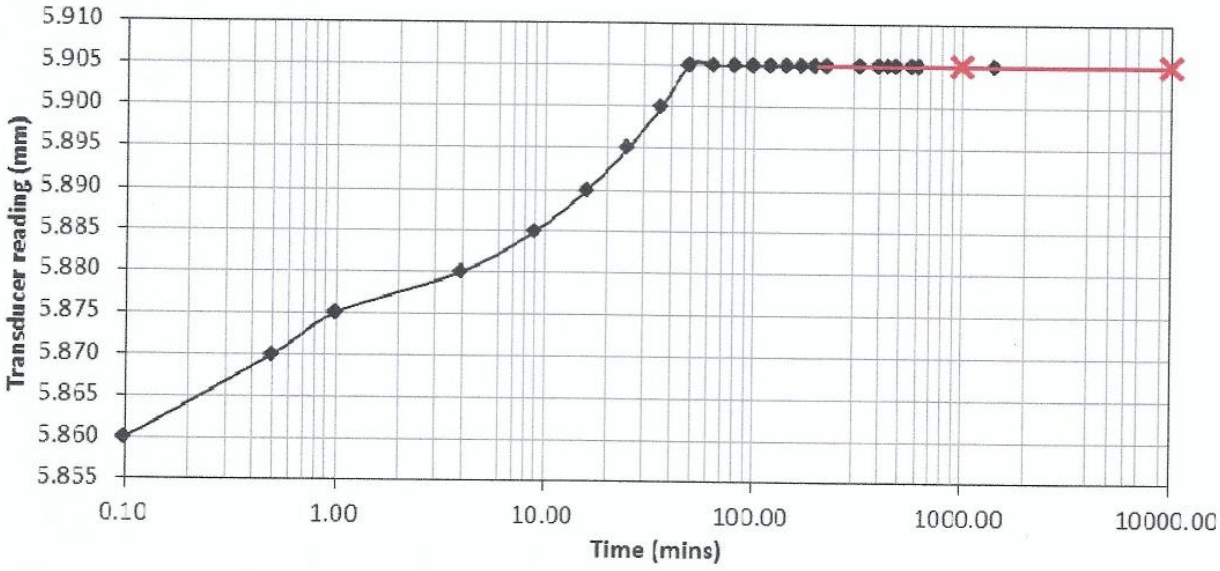
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 3+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4560	**Date:**	24-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 3+500
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.055 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 3.625
Net compression (mm)	= 3.467
Height mm (H_2)	= 16.53
Equivalent height of solids Hs	= 12.88
Voids Ratio = (H_2 – Hs)/Hs	= 0.283

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

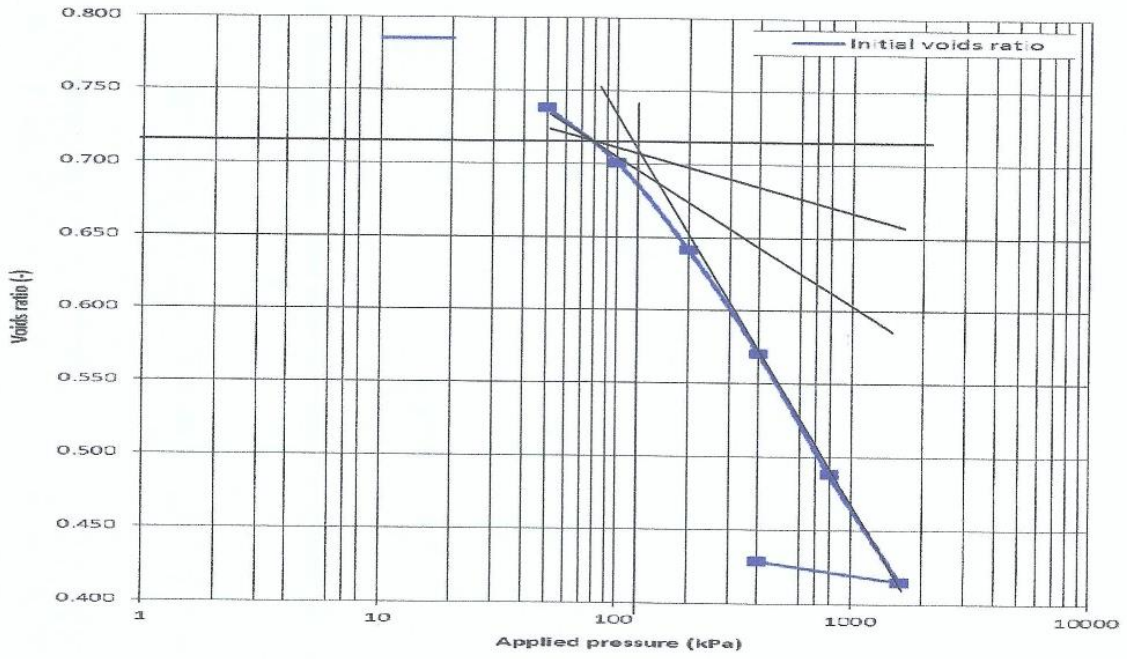
TP KM 5+500

Site: KAYABOMBO
Classification Group Name: -
Ring Diameter: 62.0 mm
Area (A): 3019.1mm^2
Initial voids ratio: 0.777
Pre-consolidation stress: 130 Kn/m^2
Coefficient of Re-Compression Index: 0.051

Location: KWALE
Lab Ref: TM/RGS-KAYABOMBO/4563
Height of soil particles: 11.20mm
Moisture Content after Test: 23.0%
Assumed Soil Density: 2600 kg/m^3

Depth: 0.0M
Sample No. 4563
Height of Ring: 20 mm
Bulk Density: 1799kg/m^3
Dry Density: 1463kg/m^3
Coefficient of Compression Index: 0.248

Voids Ratio against Applied Pressure



Tested By: KEVIN

Date Reported: 30-11-21

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P.O. Box 64932
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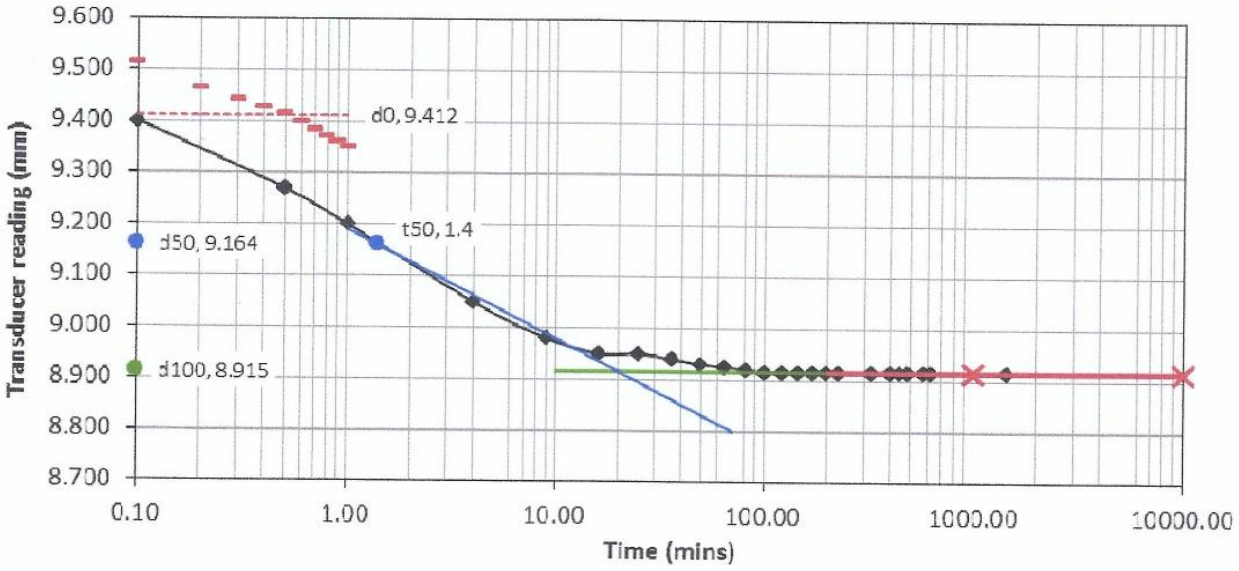
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 5+500 (Depth: 0.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4563	**Date:**	18-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 5+500 0.0m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.565 mm
From the plot, t_{50} = 1.4 mins
H_1 = 20.00 mm
H_2 = 19.44 mm
H = (20.00+19.44)/2
= 19.72 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}} =$ **7.222 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.565 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.565
Net compression (mm)	= 0.533
Height mm (H_2)	= 19.44
Equivalent height of solids Hs	= 11.20
Voids Ratio = (H_2 – Hs)/Hs	= **0.736**

Tested By: KEVIN

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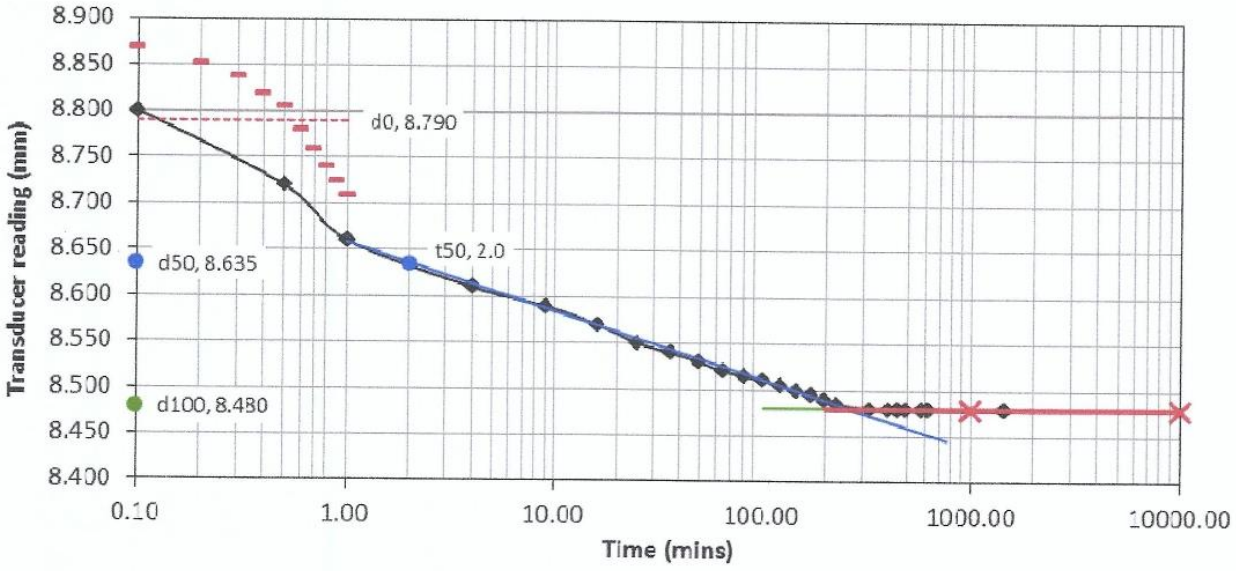
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 5+500 (Depth: 0.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4563	**Date:**	19-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 5+500 0.0m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.435 mm
From the plot, t_{50} = 1.4 mins
H_1 = 19.44 mm
H_2 = 19.01 mm
H = (19.01+19.44)/2
= 19.23 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.807 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.448 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 1.000
Net compression (mm)	= 0.950
Height mm (H_2)	= 19.01
Equivalent height of solids Hs	= 11.20
Voids Ratio = $(H_2 - Hs)/Hs$	= **0.697**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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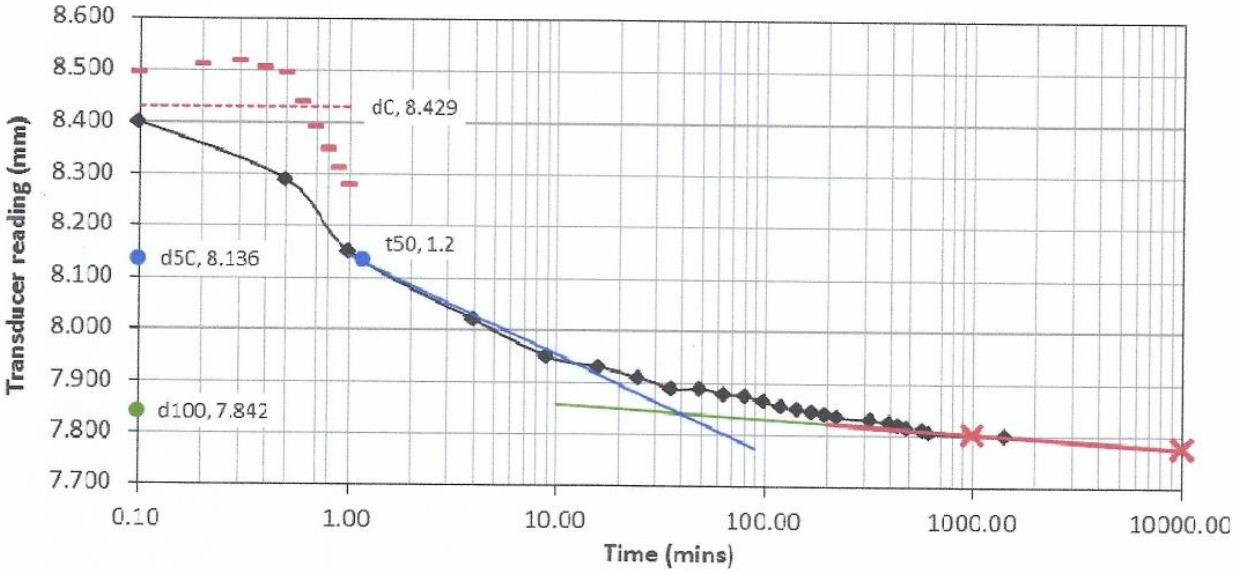
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 5+500 (Depth: 0.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4563	**Date:**	20-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 5+500 0.0m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.680 mm
From the plot, t_{50} = 1.2 mins
H_1 = 19.01 mm
H_2 = 18.33 mm
H = (19.01+18.33)/2
= 18.67 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.552 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.358 m²/MN**

Specimen information (cumulative)

Compression (mm)	= 1.680
Net compression (mm)	= 1.608
Height mm (H_2)	= 18.33
Equivalent height of solids Hs	= 11.20
Voids Ratio = (H_2 – Hs)/Hs	= **0.637**

Tested By: KEVIN

Date Reported: 30-11-21

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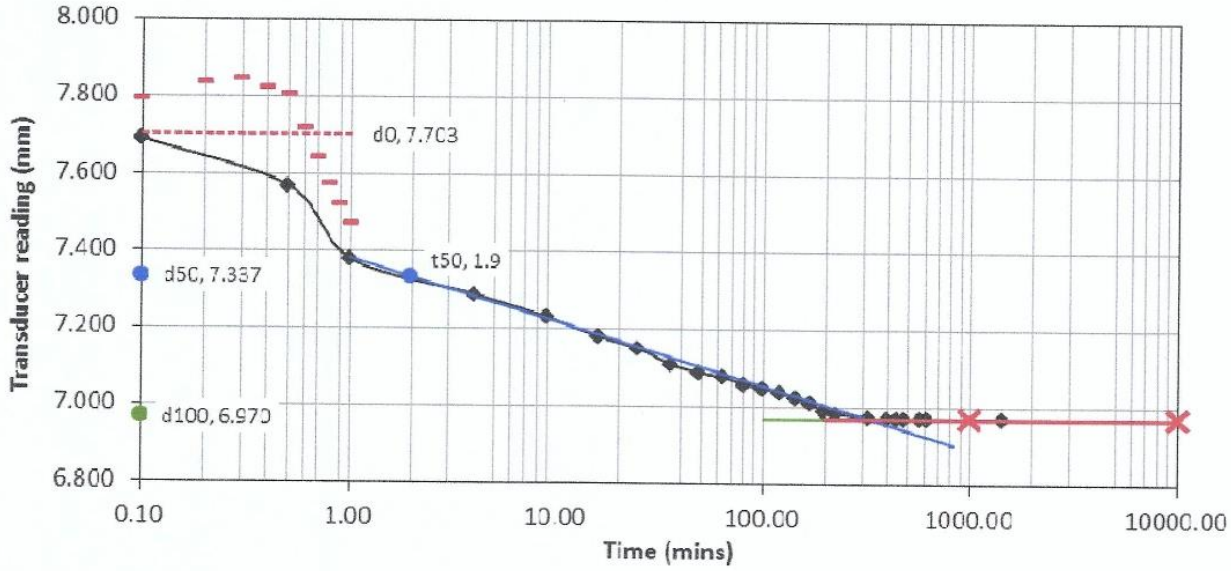
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 5+500 (Depth: 0.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4563	**Date:**	21-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 5+500 0.0m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.830 mm
From the plot, t_{50} = 1.9 mins
H_1 = 18.33 mm
H_2 = 17.50 mm
H = (17.50+18.33)/2
= 17.92 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.394 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.226 m²/MN**

Specimen information (cumulative)
Compression (mm) = 2.510
Net compression (mm) = 2.405
Height mm (H_2) = 17.50
Equivalent height of solids Hs = 11.20
Voids Ratio = (H_2 – Hs)/Hs = **0.536**

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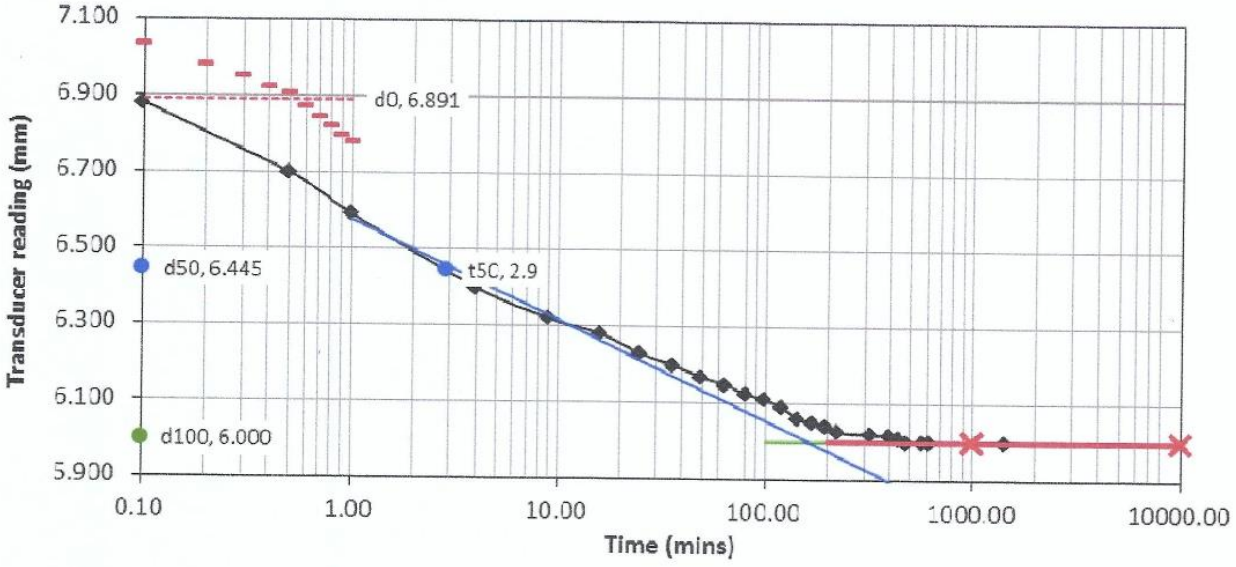
Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 5+500 (Depth: 0.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4563	**Date:**	22-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 5+500 0.0m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.970 mm
From the plot, t_{50} = 2.9 mins
H_1 = 17.50 mm
H_2 = 16.53 mm
H = (17.50+16.53)/2
= 17.02 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.597 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.138 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 3.480
Net compression (mm)	= 3.329
Height mm (H_2)	= 16.53
Equivalent height of solids Hs	= 11.20
Voids Ratio = (H_2 – Hs)/Hs	= **0.476**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

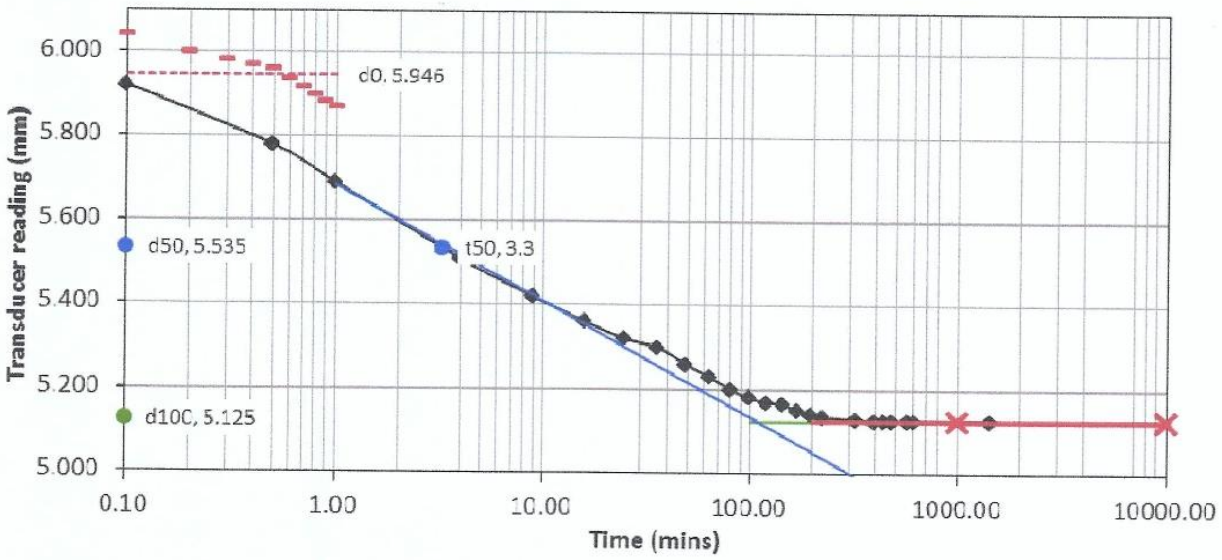
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 5+500 (Depth: 0.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4563	**Date:**	23-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 5+500 0.0m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.875 mm
From the plot, t_{50} = 3.3 mins
H_1 = 16.53 mm
H_2 = 15.66 mm
H = (15.66+16.53)/2
= 16.10 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.042 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.066 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 4.355
Net compression (mm) = 4.148
Height mm (H_2) = 15.66
Equivalent height of solids Hs = 11.20
Voids Ratio = (H_2 – Hs)/Hs = **0.398**

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Nairobi
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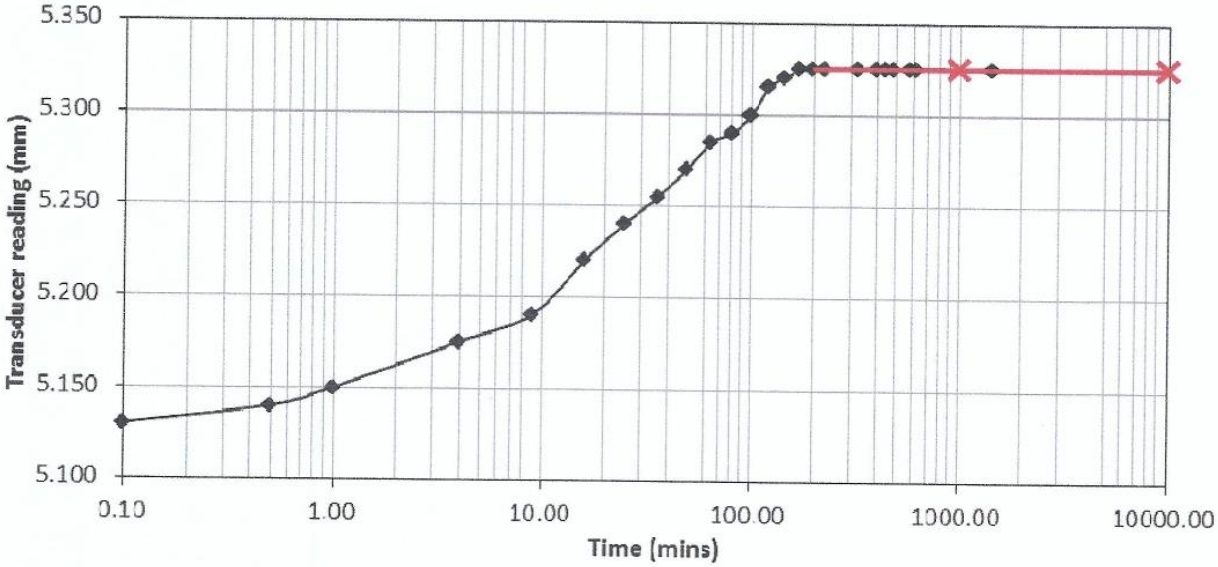
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 5+500 (Depth: 0.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4563	**Date:**	24-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 5+500 0.0m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.200 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 4.155
Net compression (mm)	= 3.997
Height mm (H_2)	= 16.00
Equivalent height of solids Hs	= 11.20
Voids Ratio = (H_2 – Hs)/Hs	= 0.429

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Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

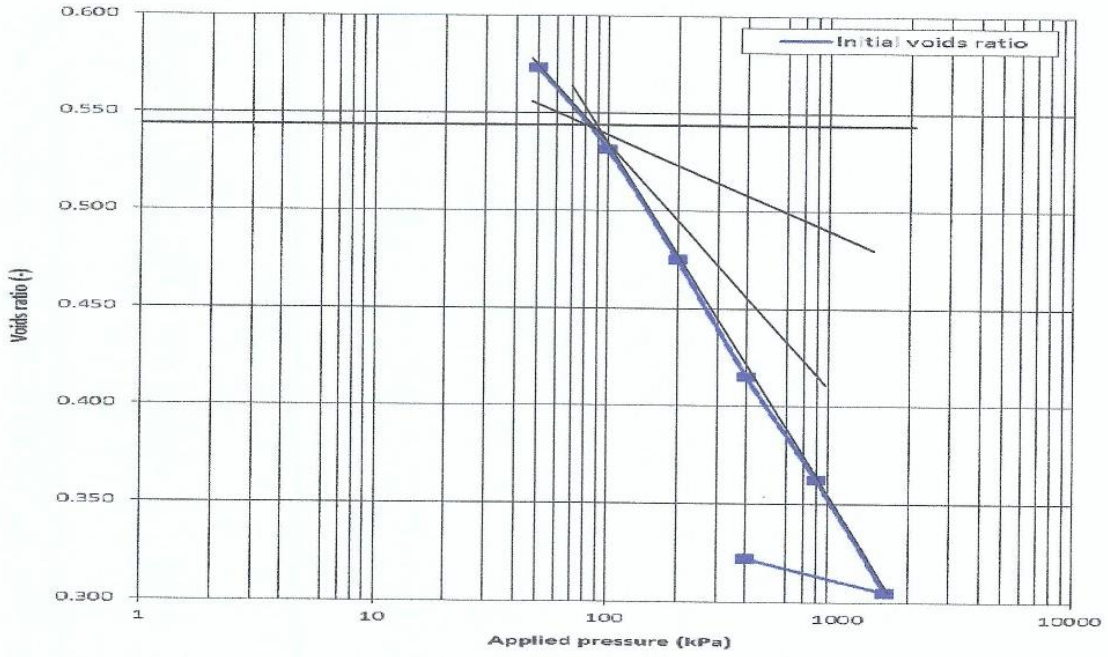
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 6+500 (Depth: 1.0-1.7m)

Site: KAYABOMBO
Location: KWALE
Depth: 1.0-1.7M
Classification Group Name: -
Lab Ref: TM/RGS-KAYABOMBO/4566
Sample No. 4566
Ring Diameter: 62.0 mm
Height of soil particles: 12.50mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 18.3%
Bulk Density: 1911kg/m^3
Initial voids ratio: 0.610
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1615kg/m^3
Pre-consolidation stress: 090 Kn/m^2
Coefficient of Compression Index: 0.198
Coefficient of Re-Compression Index: 0.055

Voids Ratio against Applied Pressure



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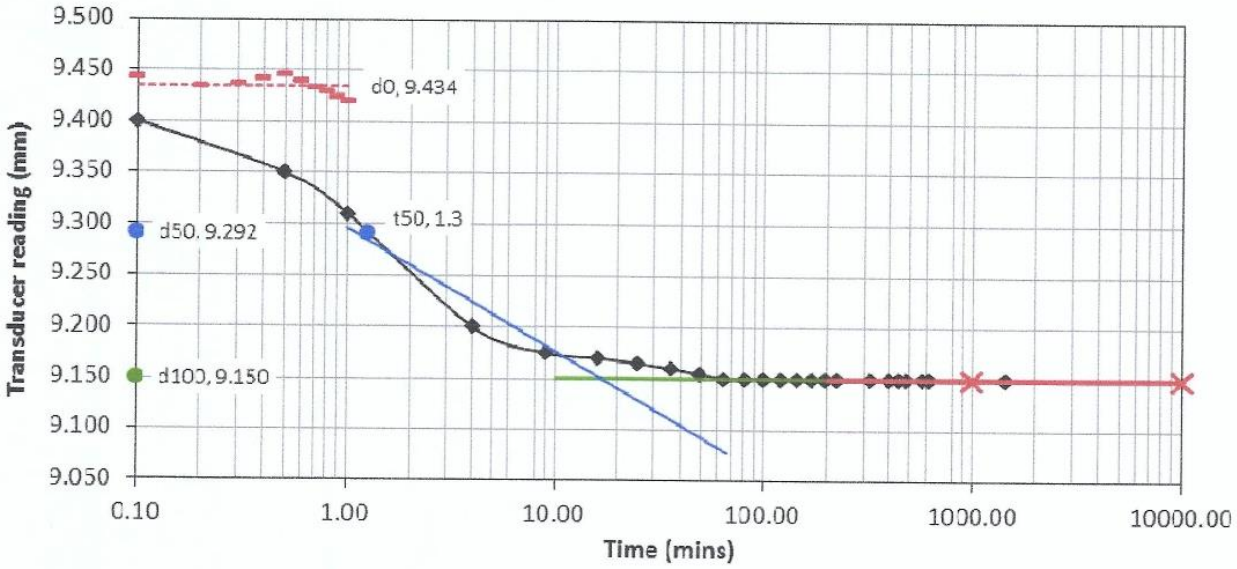
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 6+500 (Depth: 1.0-1.7m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4566	**Date:**	18-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 6+500 1.0-1.7m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.370 mm
From the plot, t_{50} = 1.3 mins
H_1 = 20.00 mm
H_2 = 19.63 mm
H = (20.00+19.63)/2
= 19.82 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.857 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.370 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.370
Net compression (mm)	= 0.338
Height mm (H_2)	= 19.63
Equivalent height of solids Hs	= 12.50
Voids Ratio = (H_2 – Hs)/Hs	= **0.570**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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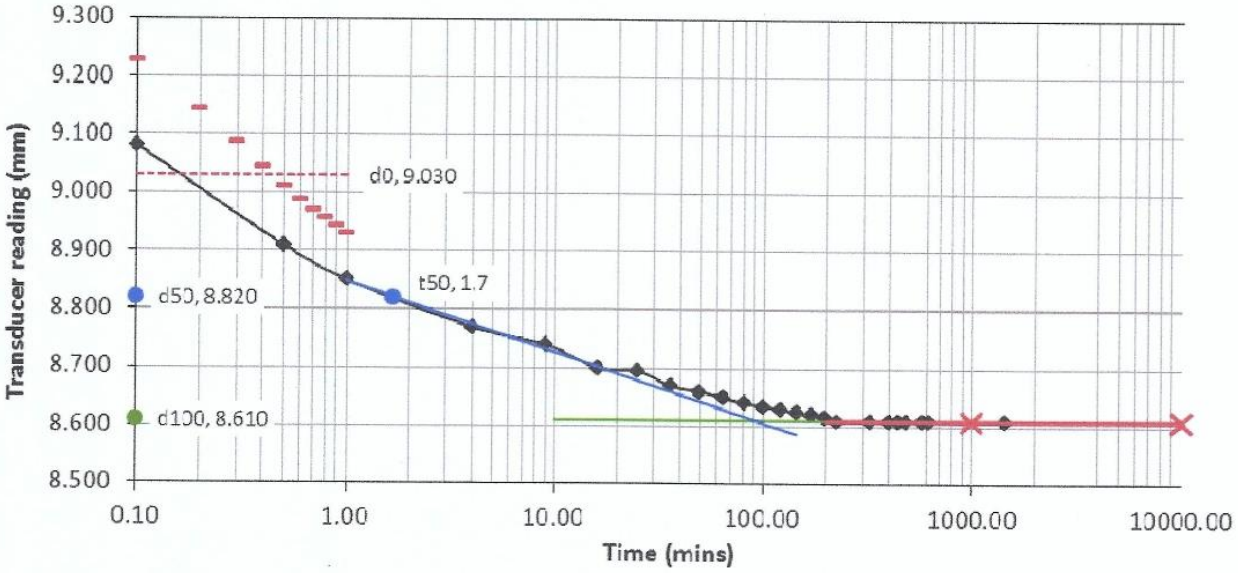
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 6+500 (Depth: 1.0-1.7m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4566	**Date:**	19-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 6+500 1.0-1.7m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.540 mm
From the plot, t_{50} = 1.7 mins
H_1 = 19.63 mm
H_2 = 19.09 mm
H = (19.09+19.63)/2
= 19.36 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.732 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.550 m²/MN**

Specimen information (cumulative)
Compression (mm) = 0.910
Net compression (mm) = 0.860
Height mm (H_2) = 19.09
Equivalent height of solids Hs = 12.50
Voids Ratio = (H_2 – Hs)/Hs = **0.527**

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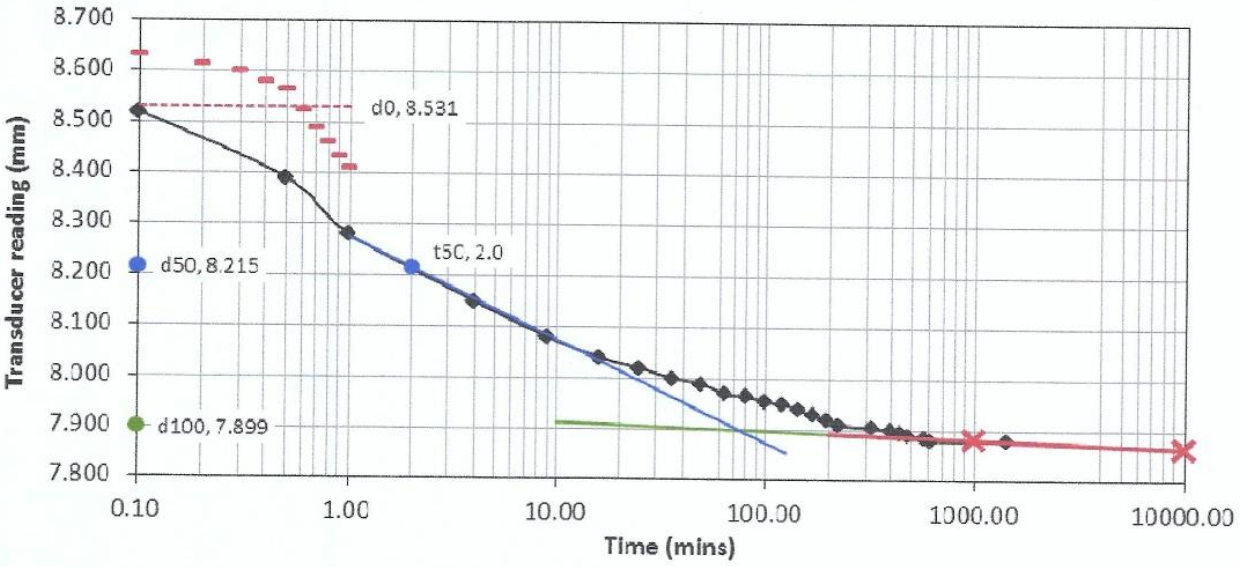
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 6+500 (Depth: 1.0-1.7m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4566	**Date:**	20-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 6+500 1.0-1.7m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.730 mm
From the plot, t_{50} = 2.0 mins
H_1 = 19.09 mm
H_2 = 18.36 mm
H = (19.09+18.36)/2
= 18.73 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.561 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.382 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 1.640
Net compression (mm)	= 1.568
Height mm (H_2)	= 18.36
Equivalent height of solids Hs	= 12.50
Voids Ratio = (H_2 – Hs)/Hs	= **0.469**

Tested By: KEVIN

Date Reported: 30-11-21

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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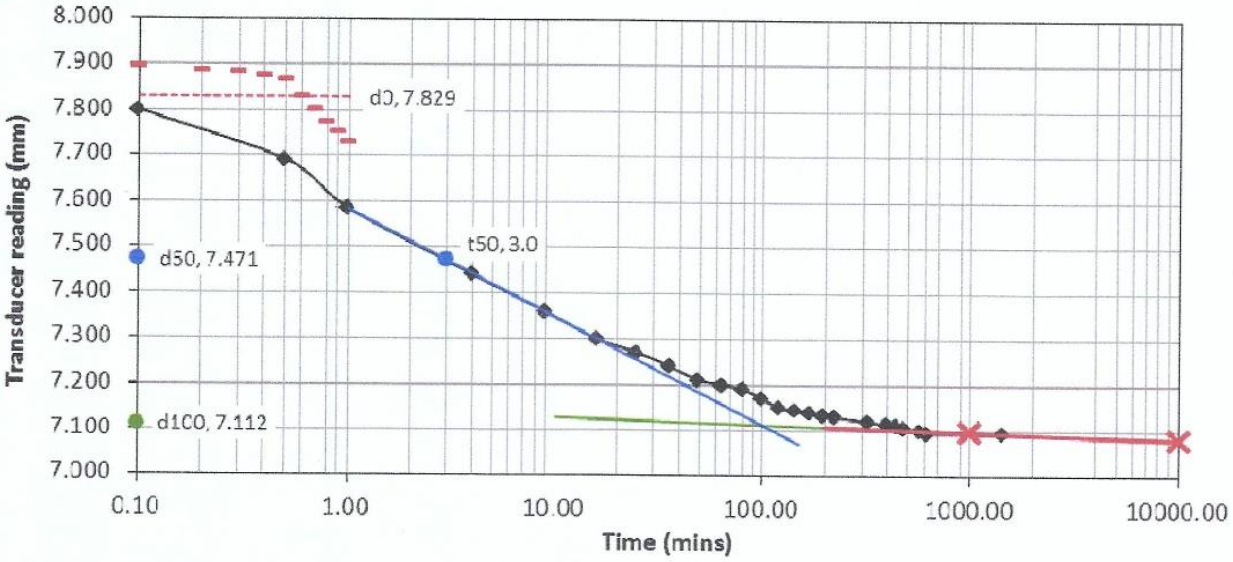
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 6+500 (Depth: 1.0-1.7m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4566	**Date:**	21-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 6+500 1.0-1.7m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.785 mm
From the plot, t_{50} = 3.0 mins
H_1 = 18.36 mm
H_2 = 17.58 mm
H = (17.58+18.36)/2
= 17.97 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.799 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.214 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 2.425
Net compression (mm)	= 2.320
Height mm (H_2)	= 17.58
Equivalent height of solids Hs	= 12.50
Voids Ratio = (H_2 – Hs)/Hs	= **0.406**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Nairobi
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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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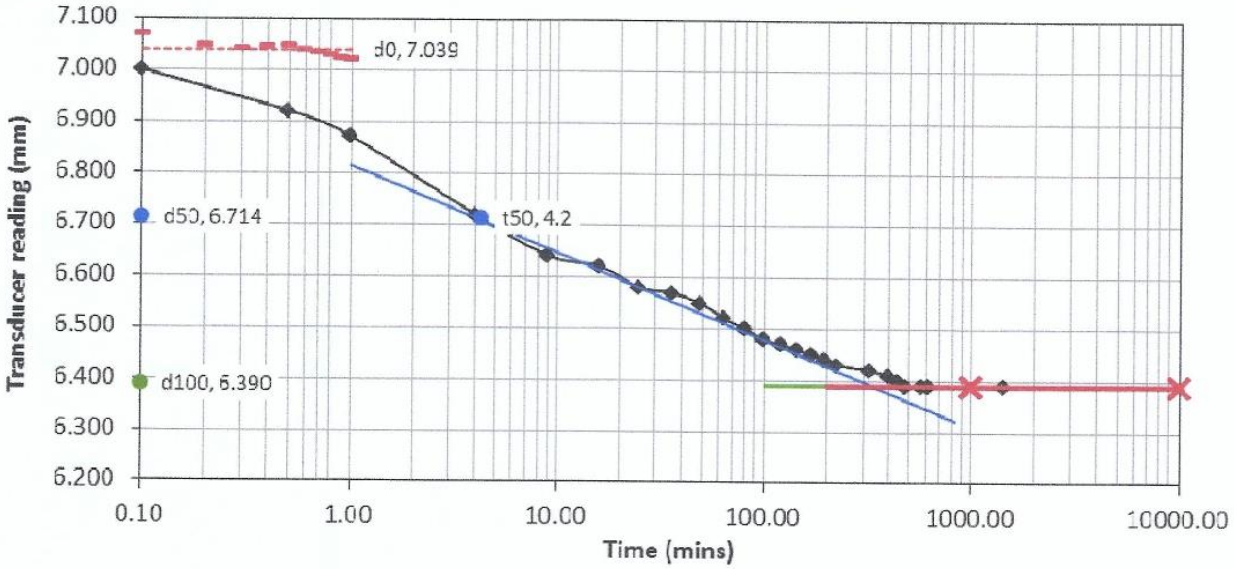
TP KM 6+500 (Depth: 1.0-1.7m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4566	**Date:**	22-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 6+500 1.0-1.7m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.705 mm
From the plot, t_{50} = 4.2 mins
H_1 = 17.58 mm
H_2 = 16.88 mm
H = (17.58+16.88)/2
= 17.23 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **1.838 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.100 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 3.130
Net compression (mm)	= 2.979
Height mm (H_2)	= 16.88
Equivalent height of solids Hs	= 12.50
Voids Ratio = (H_2 – Hs)/Hs	= **0.350**

Tested By: KEVIN

Date Reported: 30-11-21

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Email: danellilab3@gmail.com
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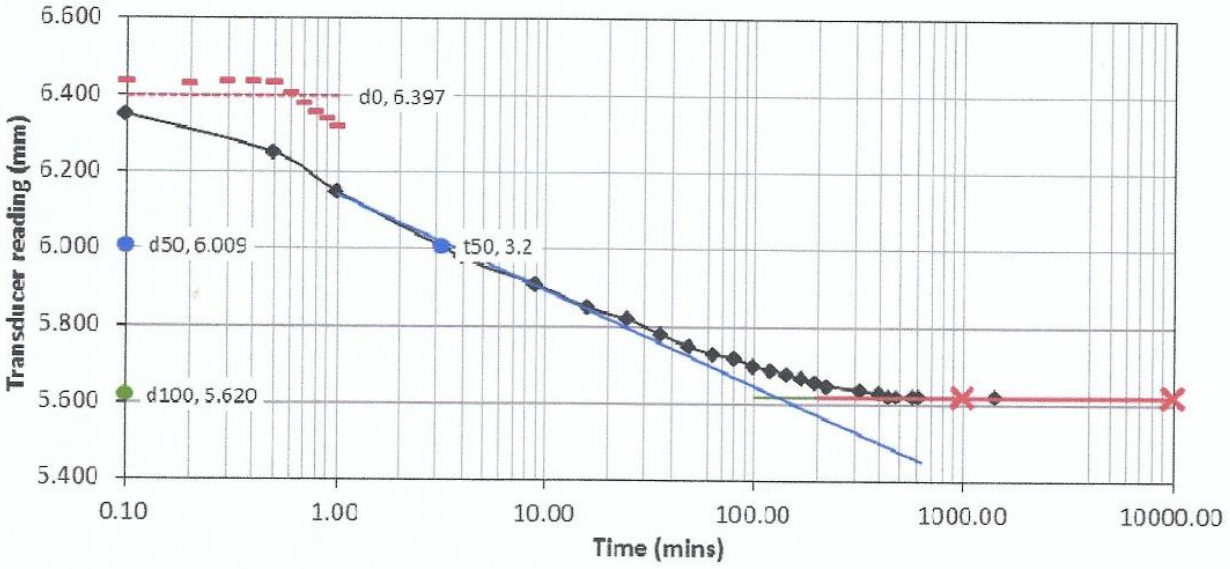
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 6+500 (Depth: 1.0-1.7m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4566	**Date:**	23-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 6+500 1.0-1.7m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.770 mm
From the plot, t_{50} = 3.2 mins
H_1 = 16.88 mm
H_2 = 16.11 mm
H = (16.11+16.88)/2
= 16.50 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.212 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.057 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.900
Net compression (mm) = 3.693
Height mm (H_2) = 16.11
Equivalent height of solids Hs = 12.50
Voids Ratio = (H_2 – Hs)/Hs = **0.289**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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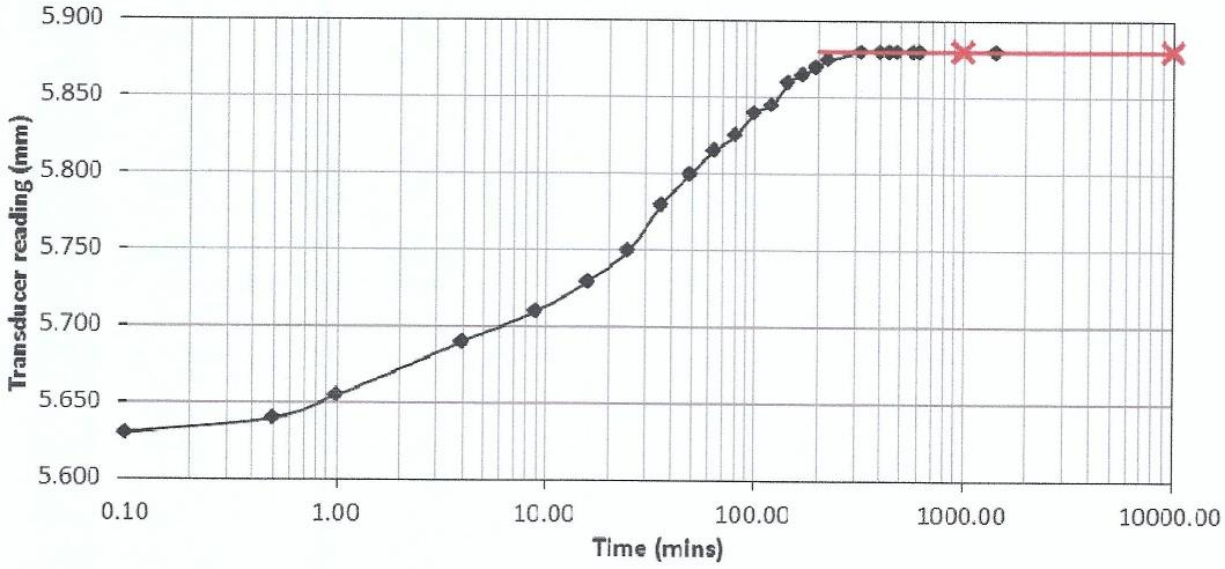
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 6+500 (Depth: 1.0-1.7m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4566	**Date:**	24-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 6+500 1.0-1.7m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.260 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 3.640
Net compression (mm)	= 3.482
Height mm (H_2)	= 16.52
Equivalent height of solids Hs	= 12.50
Voids Ratio = (H_2 – Hs)/Hs	= 0.322

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

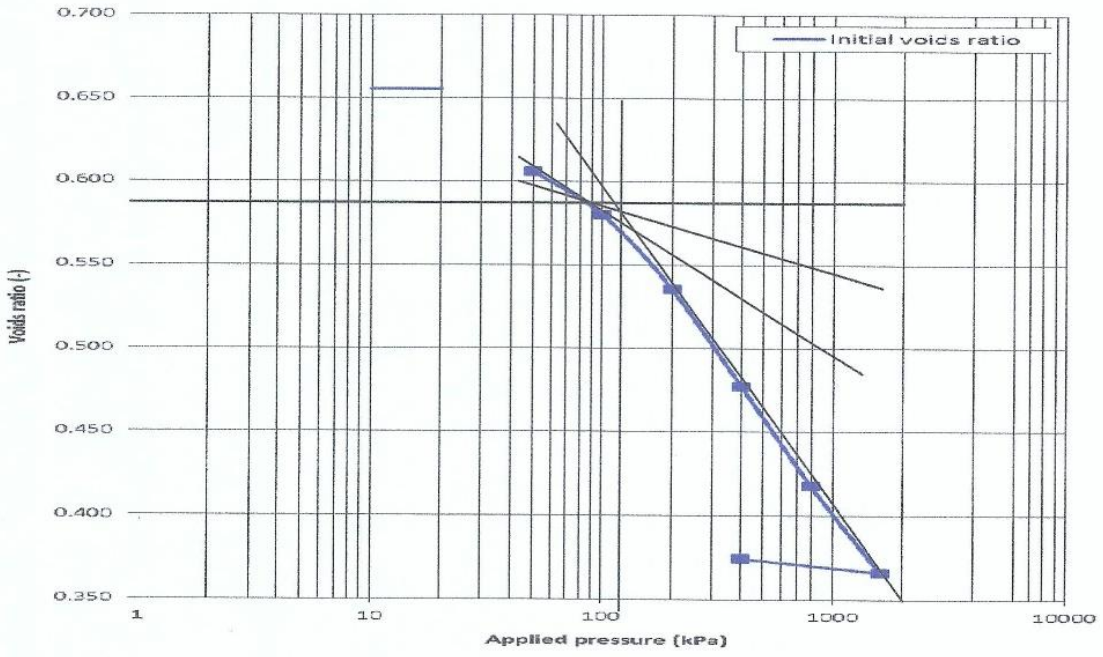
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 8+000 (Depth: 0.3-0.6m)

Site: KAYABOMBO
Location: KWALE
Depth: 0.3-0.6M
Classification Group Name: -
Lab Ref: TM/RGS-KAYABOMBO/4569
Sample No. 4569
Ring Diameter: 62.0 mm
Height of soil particles: 12.08mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 20.5%
Bulk Density: 1899kg/m^3
Initial voids ratio: 0.650
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1576kg/m^3
Pre-consolidation stress: 130 Kn/m^2
Coefficient of Compression Index: 0.207
Coefficient of Re-Compression Index: 0.043

Voids Ratio against Applied Pressure



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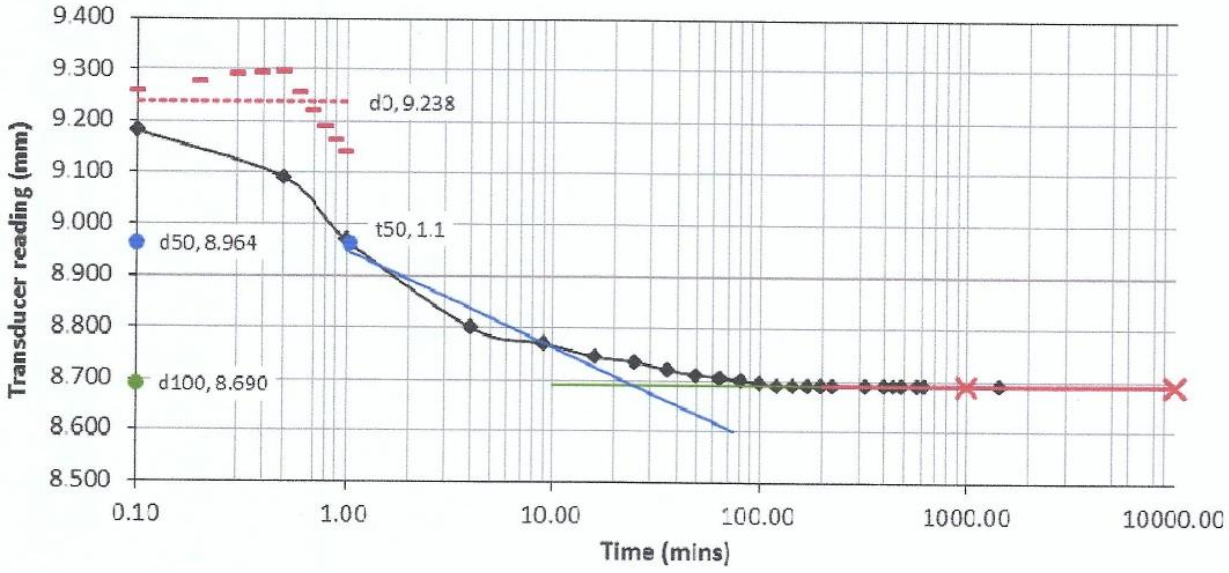
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 8+000 (Depth: 0.3-0.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4569	**Date:**	18-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 8+000 0.3-0.6m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.630 mm
From the plot, t_{50} = 1.1 mins
H_1 = 20.00 mm
H_2 = 19.37 mm
H = (20.00+19.37)/2
= 19.69 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **9.164 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.630 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.630
Net compression (mm)	= 0.598
Height mm (H_2)	= 19.37
Equivalent height of solids Hs	= 12.08
Voids Ratio = (H_2 – Hs)/Hs	= **0.603**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

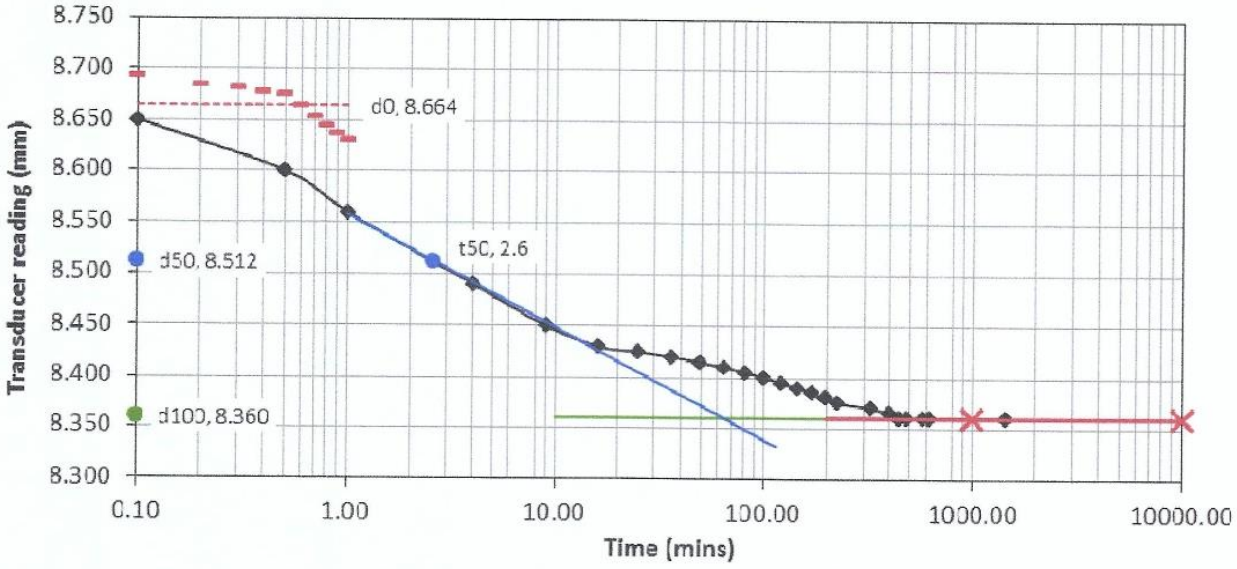
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 8+000 (Depth: 0.3-0.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4569	**Date:**	19-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 8+000 0.3-0.6m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.330 mm
From the plot, t_{50} = 2.6 mins
H_1 = 19.37 mm
H_2 = 19.04 mm
H = (19.04+19.37)/2
= 19.21 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.690 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.341 m²/MN**

Specimen information (cumulative)
Compression (mm) = 0.960
Net compression (mm) = 0.910
Height mm (H_2) = 19.04
Equivalent height of solids Hs = 12.08
Voids Ratio = (H_2 – Hs)/Hs = **0.576**

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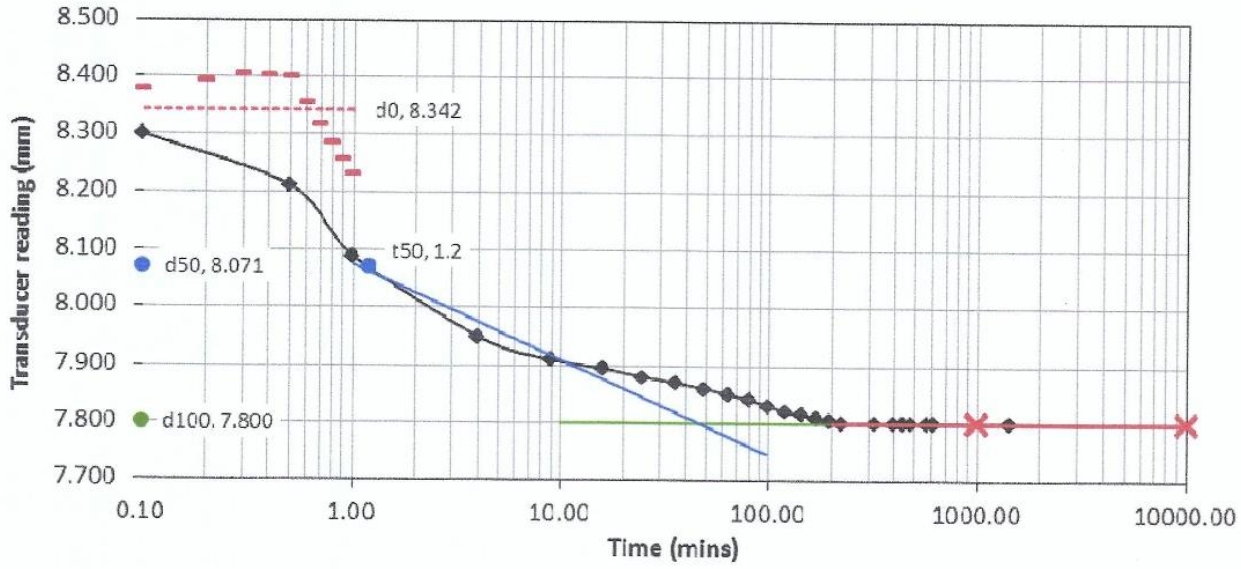
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 8+000 (Depth: 0.3-0.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4569	**Date:**	20-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 8+000 0.3-0.6m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.560 mm
From the plot, t_{50} = 1.2 mins
H_1 = 19.04 mm
H_2 = 18.48 mm
H = (19.04+18.48)/2
= 18.76 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.625 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.294 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.520
Net compression (mm) = 1.448
Height mm (H_2) = 18.48
Equivalent height of solids Hs = 12.08
Voids Ratio = (H_2 – Hs)/Hs = **0.530**

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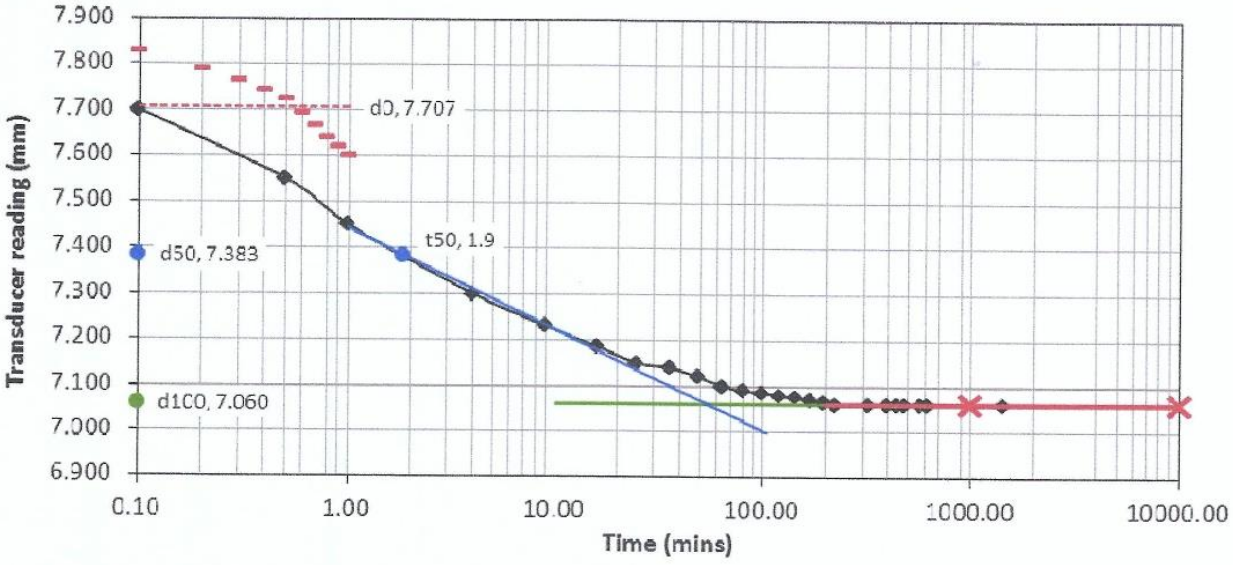
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 8+000 (Depth: 0.3-0.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4569	**Date:**	21-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 8+000 0.3-0.6m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.740 mm
From the plot, t_{50} = 1.9 mins
H_1 = 18.48 mm
H_2 = 17.74 mm
H = (17.74+18.48)/2
= 18.11 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.488 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.200 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.260
Net compression (mm) = 2.155
Height mm (H_2) = 17.74
Equivalent height of solids Hs = 12.08
Voids Ratio = (H_2 – Hs)/Hs = **0.469**

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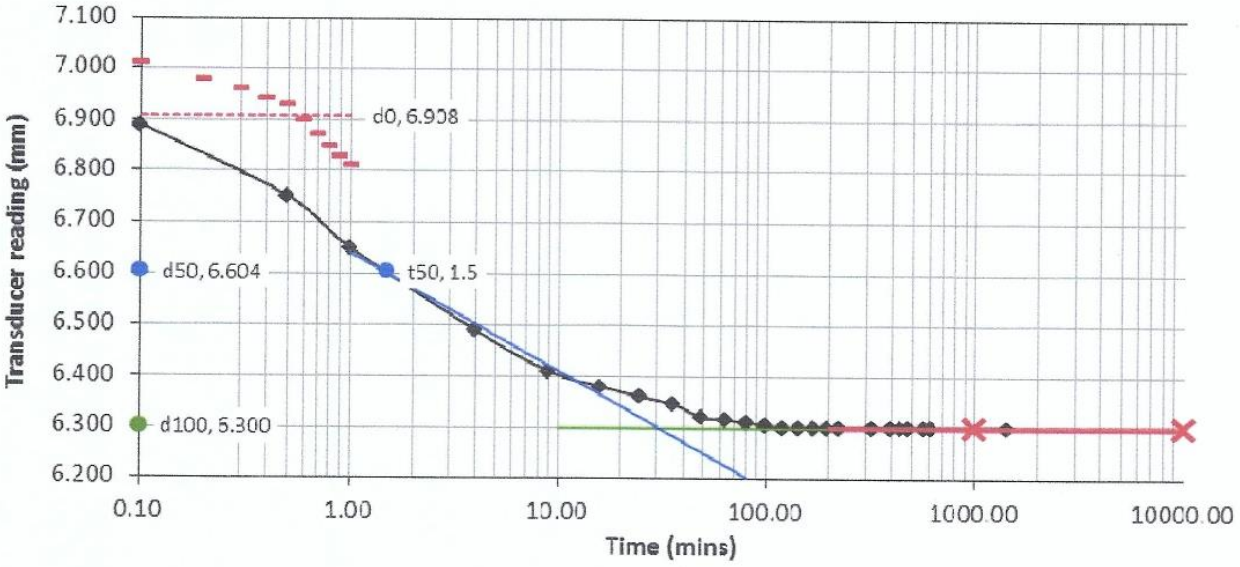
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 8+000 (Depth: 0.3-0.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4569	**Date:**	22-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 8+000 0.3-0.6m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.760 mm
From the plot, t_{50} = 1.5 mins
H_1 = 17.74 mm
H_2 = 16.98 mm
H = (17.74+16.98)/2
= 17.36 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.224 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.107 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.020
Net compression (mm) = 2.869
Height mm (H_2) = 16.98
Equivalent height of solids Hs = 12.08
Voids Ratio = (H_2 – Hs)/Hs = **0.406**

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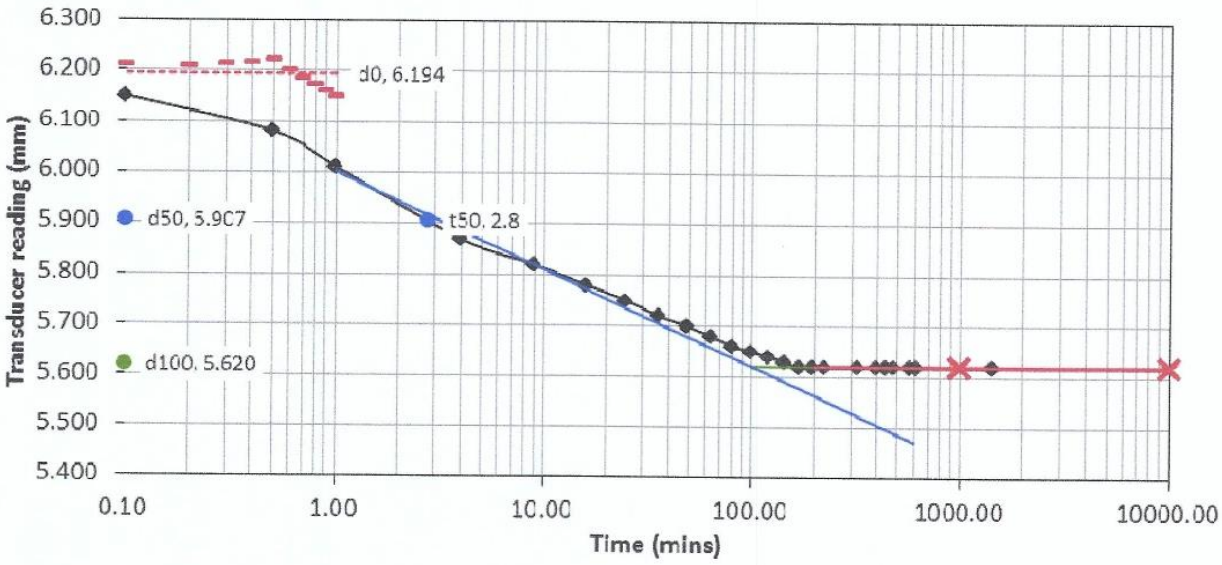
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 8+000 (Depth: 0.3-0.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4569	**Date:**	23-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 8+000 0.3-0.6m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.680 mm
From the plot, t_{50} = 2.8 mins
H_1 = 16.98 mm
H_2 = 16.30 mm
H = (16.30+16.98)/2
= 16.64 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.571 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.050 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.700
Net compression (mm) = 3.493
Height mm (H_2) = 16.30
Equivalent height of solids Hs = 12.08
Voids Ratio = (H_2 – Hs)/Hs = **0.349**

Tested By: KEVIN

Date Reported: 30-11-21

Checked By:

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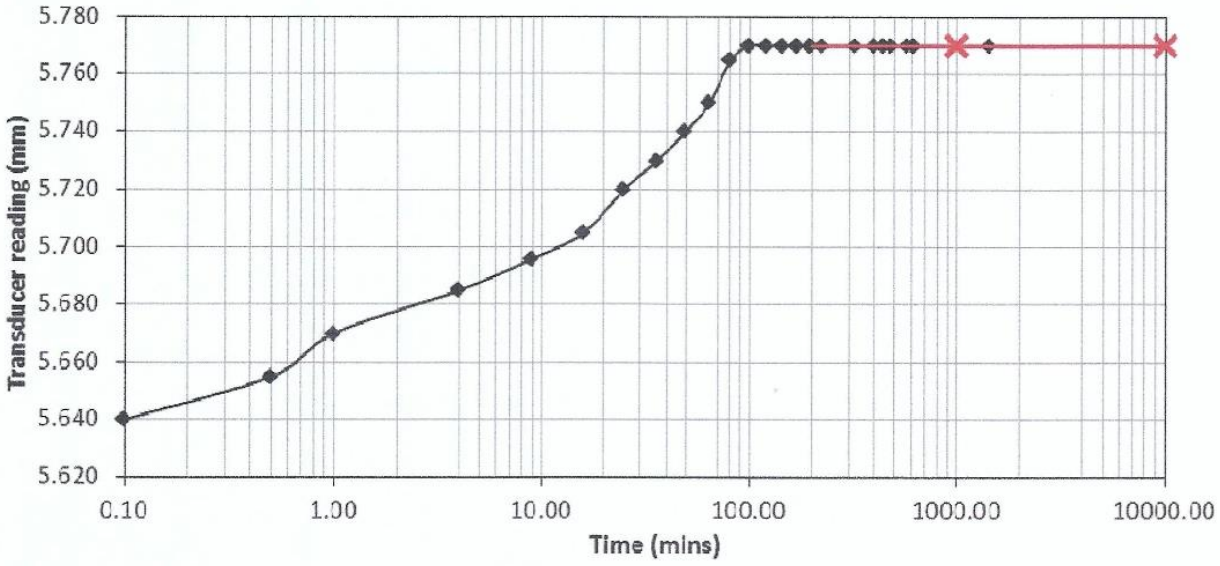
TP KM 8+000 (Depth: 0.3-0.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4569	**Date:**	24-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 8+000 0.3-0.6m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.150 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 3.550
Net compression (mm)	= 3.392
Height mm (H_2)	= 16.61
Equivalent height of solids Hs	= 12.08
Voids Ratio = (H_2 – Hs)/Hs	= 0.375

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Mombasa Road
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Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

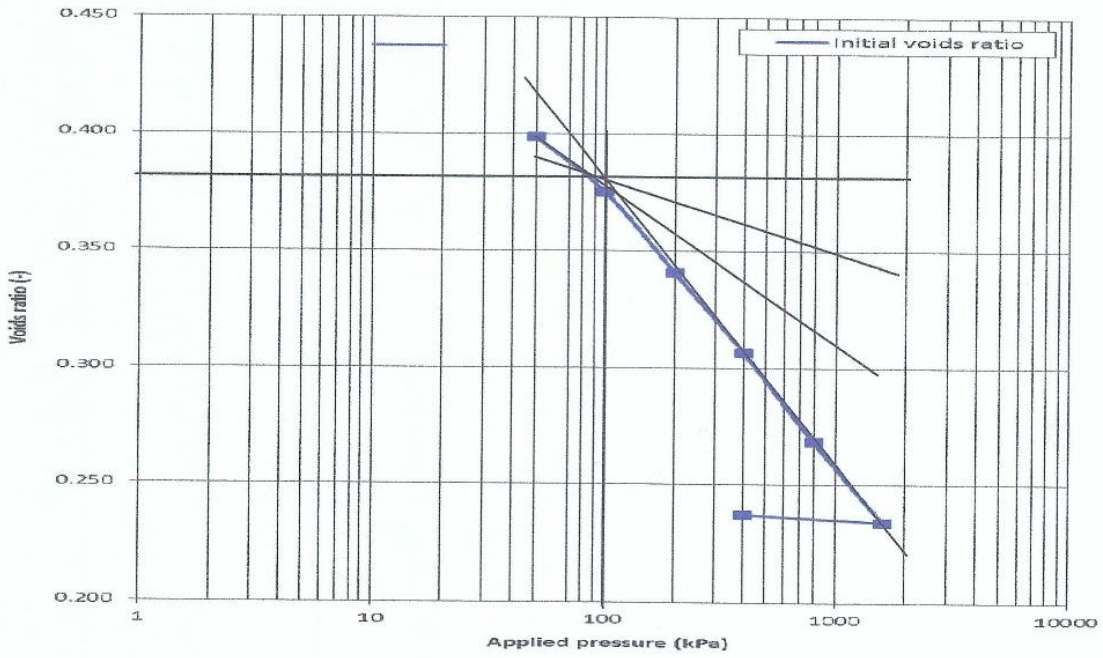
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 10+500

Site: KAYABOMBO
Location: KWALE
Depth: -
Classification Group Name: -
Lab Ref: TM/RGS-KAYABOMBO/4572
Sample No. 4572
Ring Diameter: 62.0 mm
Height of soil particles: 13.91mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 10.5%
Bulk Density: 2000kg/m^3
Initial voids ratio: 0.436
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1810kg/m^3
Pre-consolidation stress: 100 Kn/m^2
Coefficient of Compression Index: 0.127
Coefficient of Re-Compression Index: 0.030

Voids Ratio against Applied Pressure



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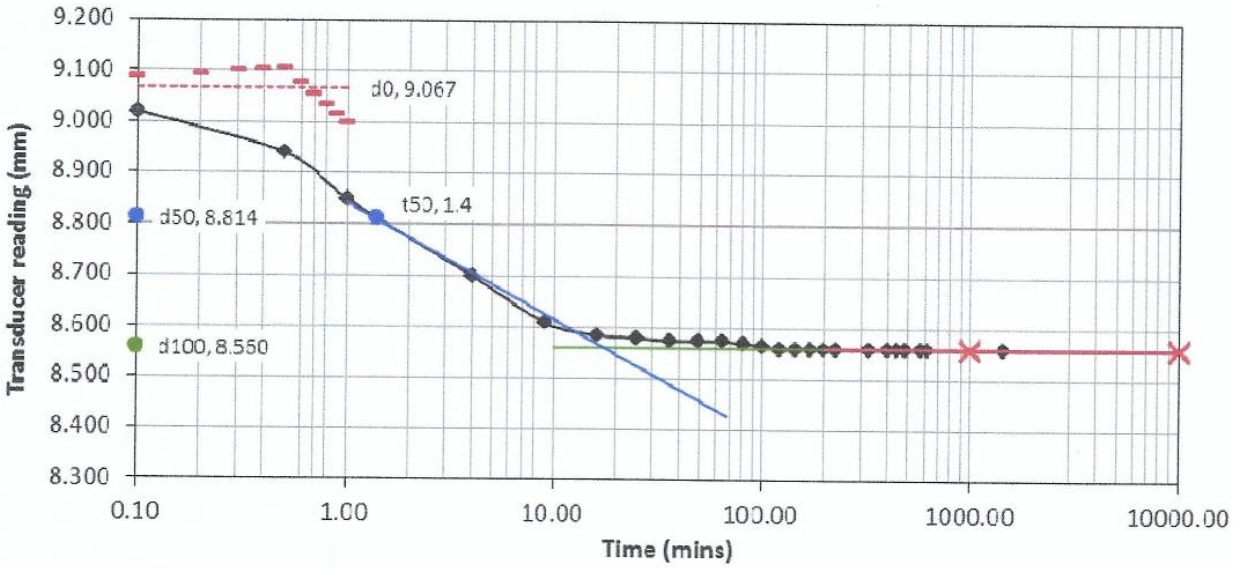
Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 10+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4572	**Date:**	18-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 10+500
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.580 mm
From the plot, t_{50} = 1.4 mins
H_1 = 20.00 mm
H_2 = 19.42 mm
H = (20.00+19.42)/2
= 19.71 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.215 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.580 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.580
Net compression (mm)	= 0.548
Height mm (H_2)	= 19.42
Equivalent height of solids Hs	= 13.91
Voids Ratio = (H_2 – Hs)/Hs	= **0.396**

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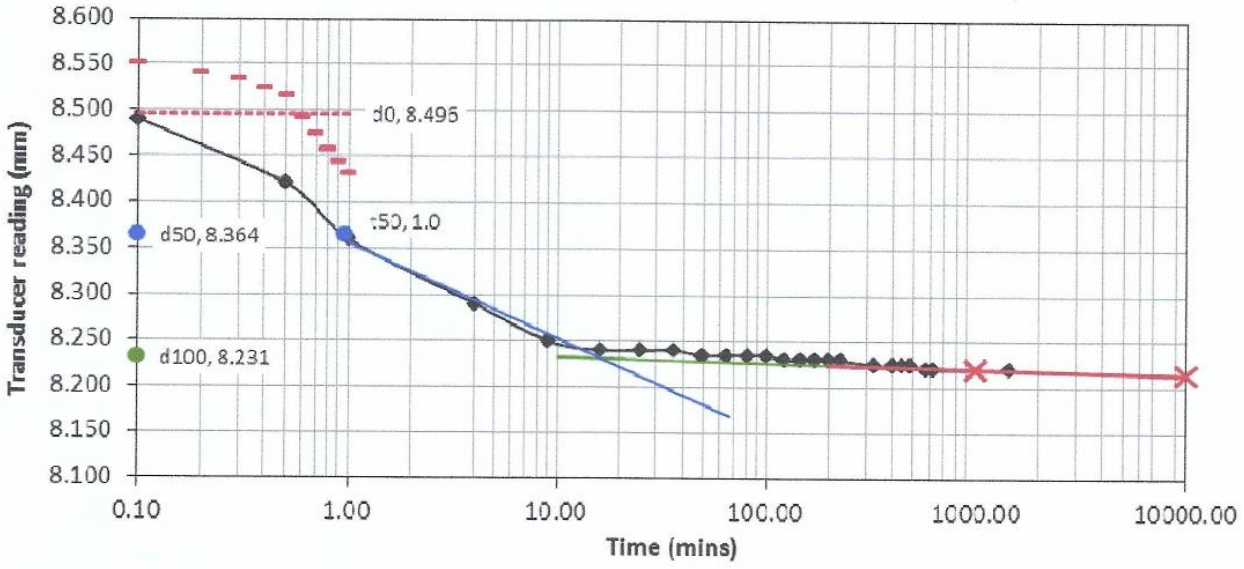
TP KM 10+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4572	**Date:**	19-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 10+500
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.340 mm
From the plot, t_{50} = 1.0 mins
H_1 = 19.42 mm
H_2 = 19.08 mm
H = (19.08+19.42)/2
= 19.25 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **9.635 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.350 m²/MN**

Specimen information (cumulative)
Compression (mm) = 0.920
Net compression (mm) = 0.870
Height mm (H_2) = 19.08
Equivalent height of solids Hs = 13.91
Voids Ratio = (H_2 – Hs)/Hs = **0.372**

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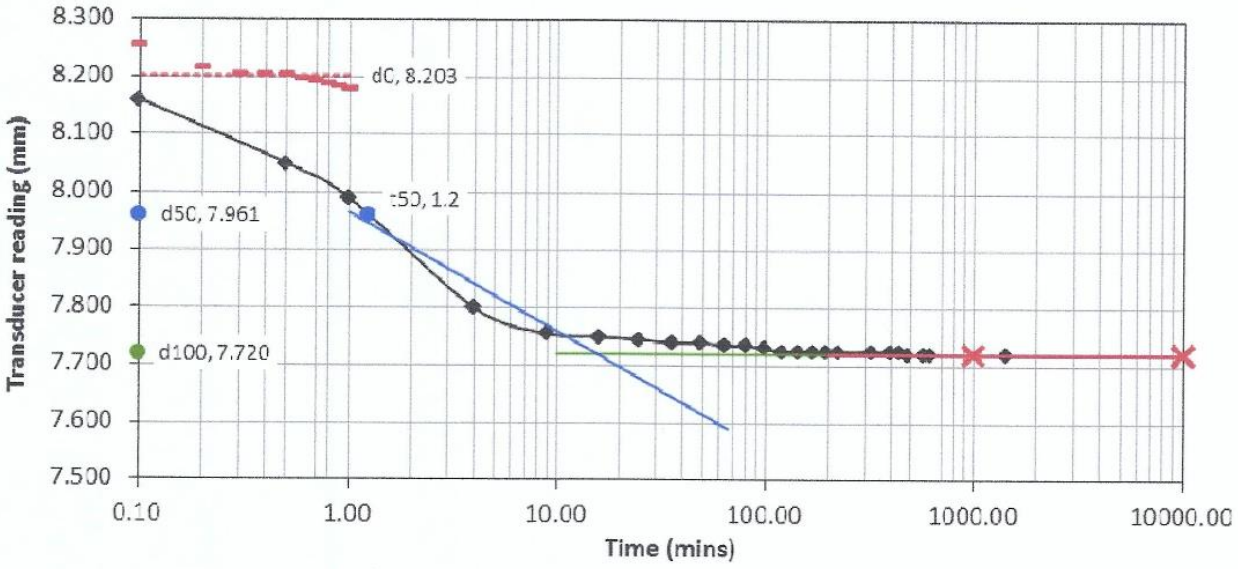
TP KM 10+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4572	**Date:**	20-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 10+500
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.500 mm
From the plot, t_{50} = 1.2 mins
H_1 = 19.08 mm
H_2 = 18.58 mm
H = (19.08+18.58)/2
= 18.83 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.682 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.262 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.420
Net compression (mm) = 1.348
Height mm (H_2) = 18.58
Equivalent height of solids Hs = 13.91
Voids Ratio = (H_2 – Hs)/Hs = **0.336**

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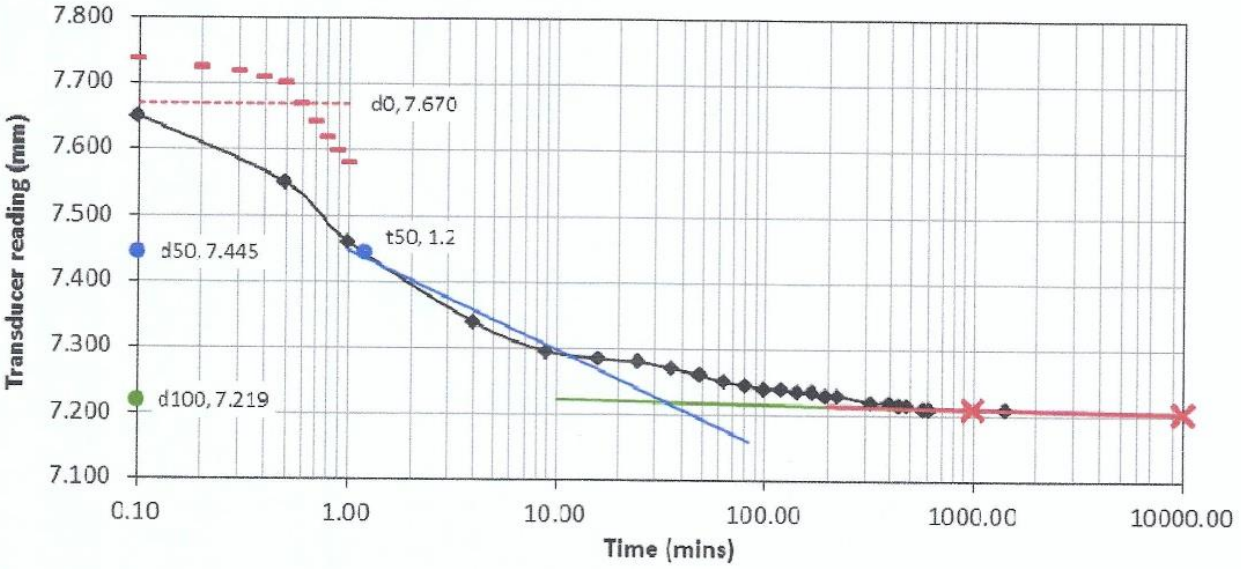
TP KM 10+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4572	**Date:**	21-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 10+500
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.510 mm
From the plot, t_{50} = 1.2 mins
H_1 = 18.58 mm
H_2 = 18.07 mm
H = (18.07+18.58)/2
= 18.33 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.280 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.137 m²/MN**

Specimen information (cumulative)
Compression (mm) = 1.930
Net compression (mm) = 1.825
Height mm (H_2) = 18.07
Equivalent height of solids Hs = 13.91
Voids Ratio = (H_2 – Hs)/Hs = **0.299**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

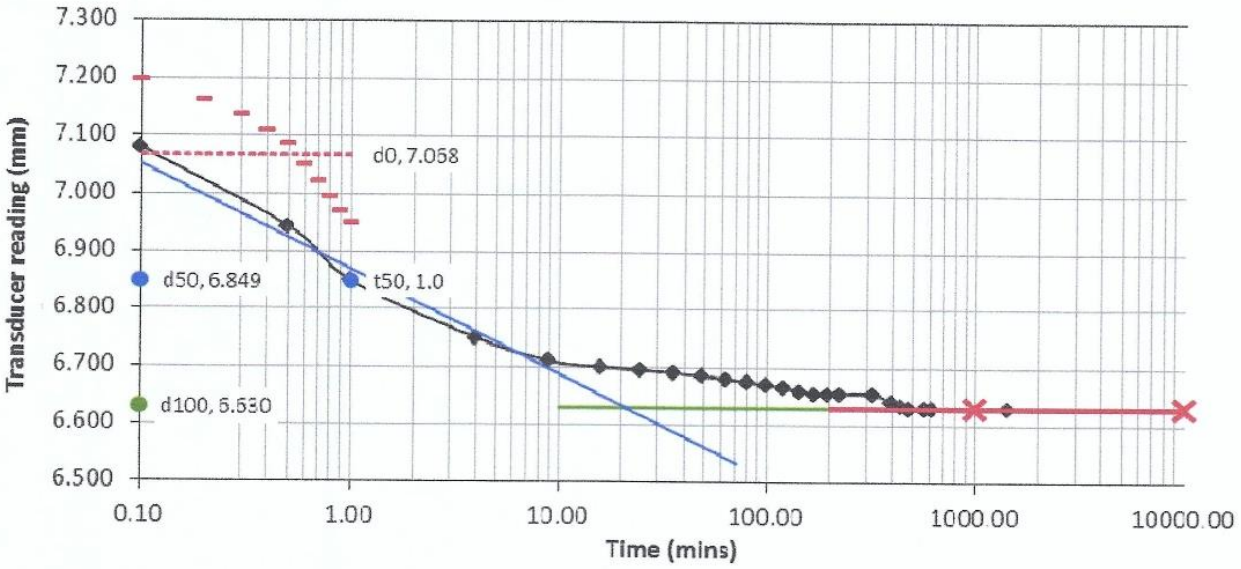
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 10+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4572	**Date:**	22-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 10+500
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.580 mm
From the plot, t_{50} = 1.0 mins
H_1 = 18.07 mm
H_2 = 17.49 mm
H = (18.07+17.49)/2
= 17.78 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **8.219 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.080 m²/MN**

Specimen information (cumulative)
Compression (mm) = 2.510
Net compression (mm) = 2.359
Height mm (H_2) = 17.49
Equivalent height of solids Hs = 13.91
Voids Ratio = (H_2 – Hs)/Hs = **0.257**

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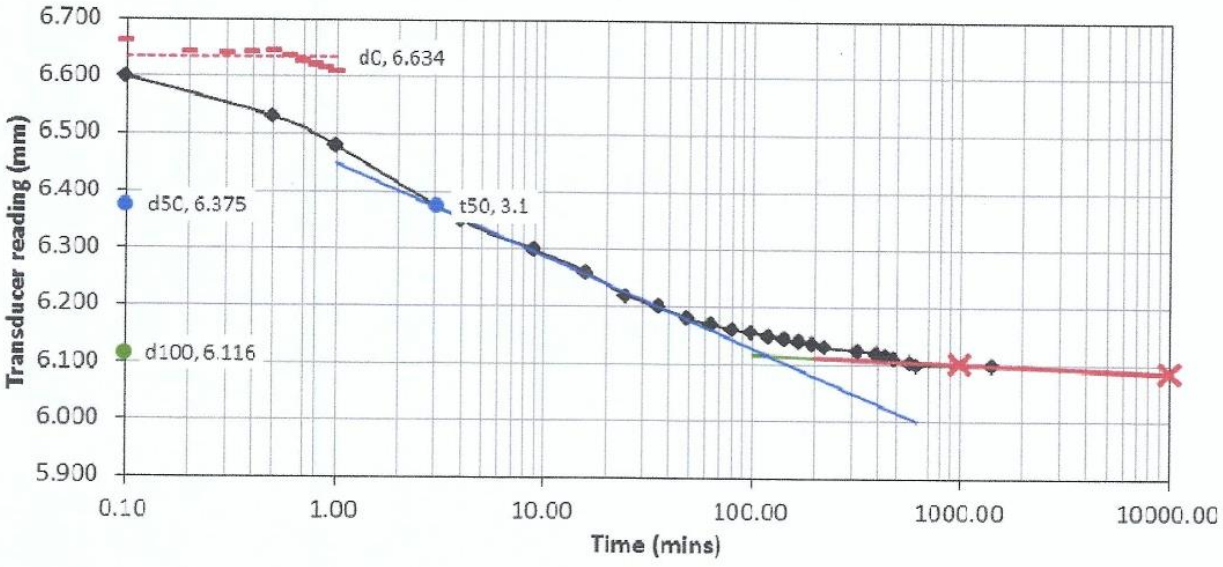
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 10+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4572	**Date:**	23-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 10+500
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.530 mm
From the plot, t_{50} = 3.0 mins
H_1 = 17.49 mm
H_2 = 16.96 mm
H = (16.96+17.49)/2
= 17.23 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.490 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.038 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 3.040
Net compression (mm)	= 2.833
Height mm (H_2)	= 16.96
Equivalent height of solids Hs	= 13.91
Voids Ratio = (H_2 – Hs)/Hs	= **0.219**

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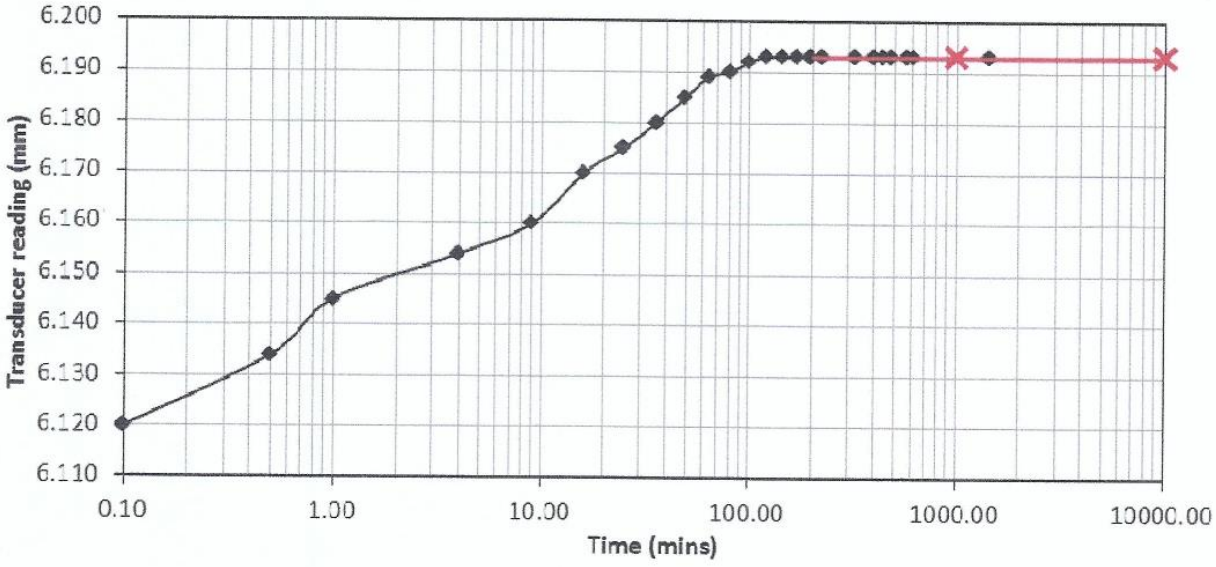
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 10+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4572	**Date:**	24-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 10+500
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.093 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 2.947
Net compression (mm)	= 2.789
Height mm (H_2)	= 17.21
Equivalent height of solids Hs	= 13.91
Voids Ratio = (H_2 – Hs)/Hs	= 0.237

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

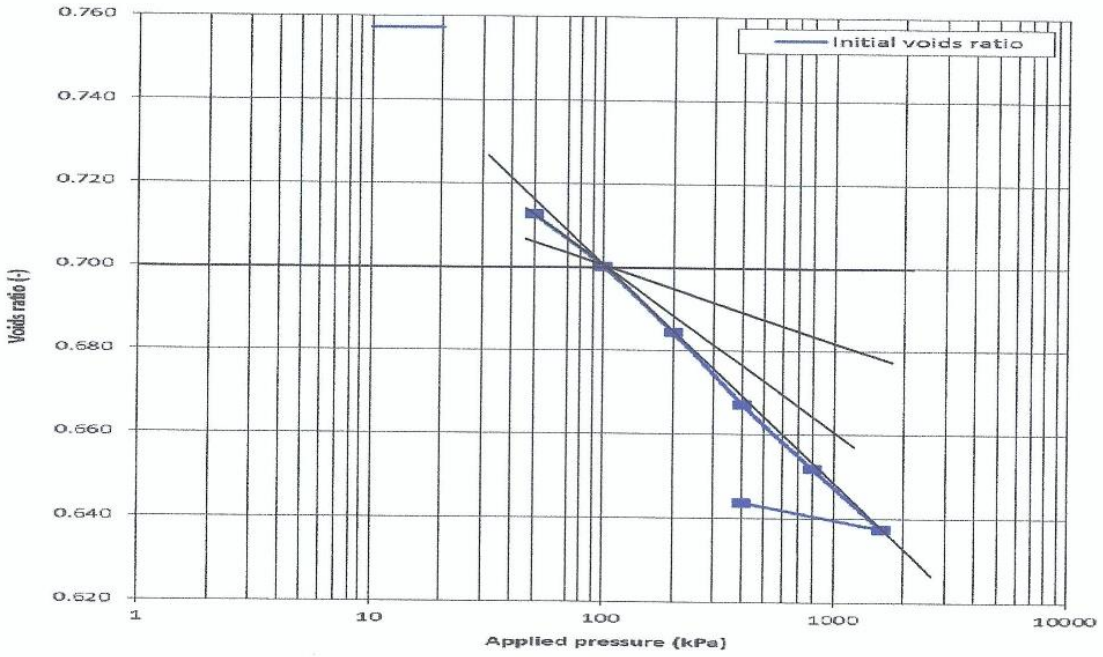
TP KM 13+500

Site: KAYABOMBO
Classification Group Name: -
Ring Diameter: 62.0 mm
Area (A): 3019.1mm^2
Initial voids ratio: 0.754
Pre-consolidation stress: 100 Kn/m^2
Coefficient of Re-Compression Index: 0.020

Location: KWALE
Lab Ref: TM/RGS-KAYABOMBO/4574
Height of soil particles: 11.38mm
Moisture Content after Test: 24.3%
Assumed Soil Density: 2600 kg/m^3

Depth: -
Sample No. 4574
Height of Ring: 20 mm
Bulk Density: 1842kg/m^3
Dry Density: 1482kg/m^3
Coefficient of Compression Index: 0.063

Voids Ratio against Applied Pressure



Tested By: KEVIN

Date Reported: 30-11-21

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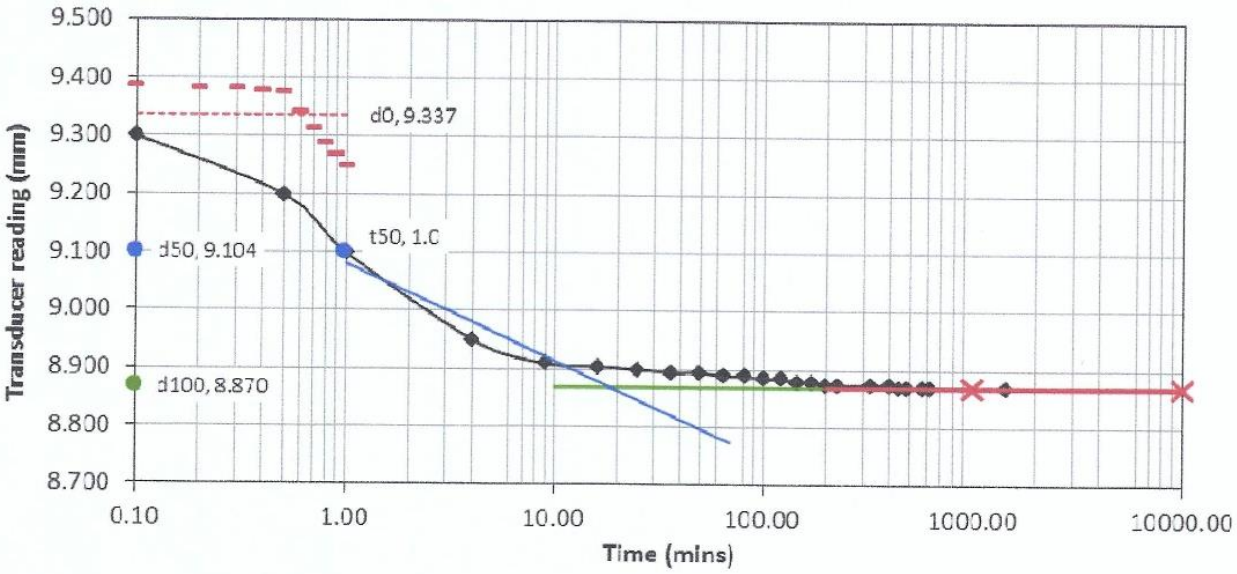
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 13+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4574	**Date:**	18-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 13+500
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.540 mm
From the plot, t_{50} = 1.0 mins
H_1 = 20.00 mm
H_2 = 19.46 mm
H = (20.00+19.46)/2
= 19.73 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **10.121 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.540 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.540
Net compression (mm) = 0.508
Height mm (H_2) = 19.46
Equivalent height of solids Hs = 11.38
Voids Ratio = (H_2 – Hs)/Hs = **0.710**

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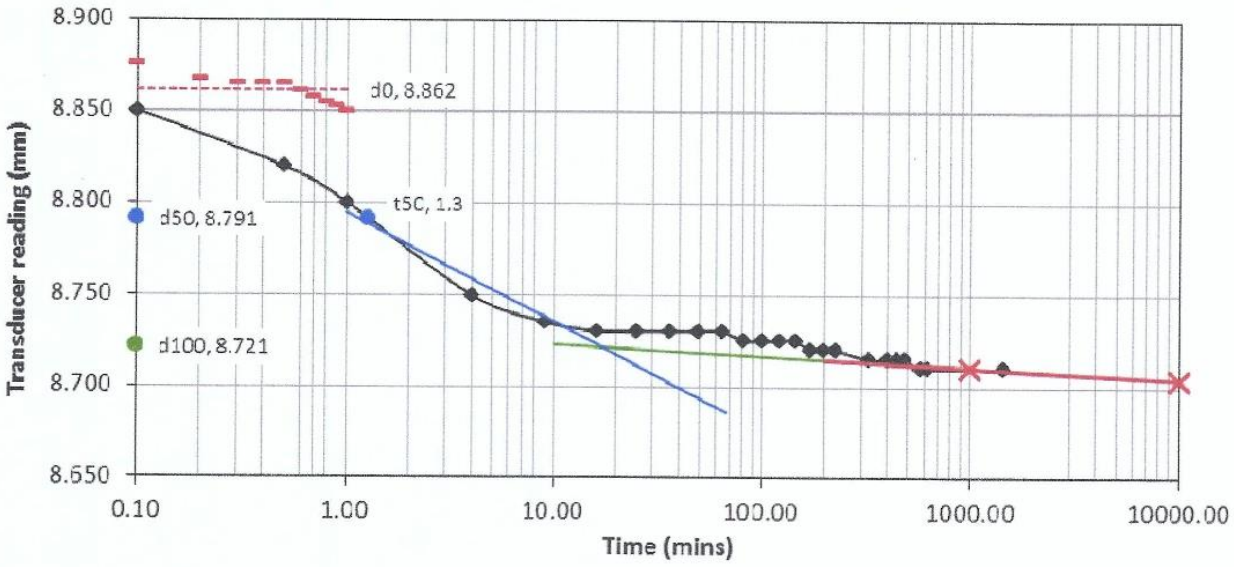
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 13+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4574	**Date:**	19-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 13+500
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.160 mm
From the plot, t_{50} = 1.3 mins
H_1 = 19.46 mm
H_2 = 19.30 mm
H = (19.30+19.46)/2
= 19.38 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.512 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.164 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.700
Net compression (mm) = 0.650
Height mm (H_2) = 19.30
Equivalent height of solids Hs = 11.38
Voids Ratio = $(H_2 - Hs)/Hs$ = **0.696**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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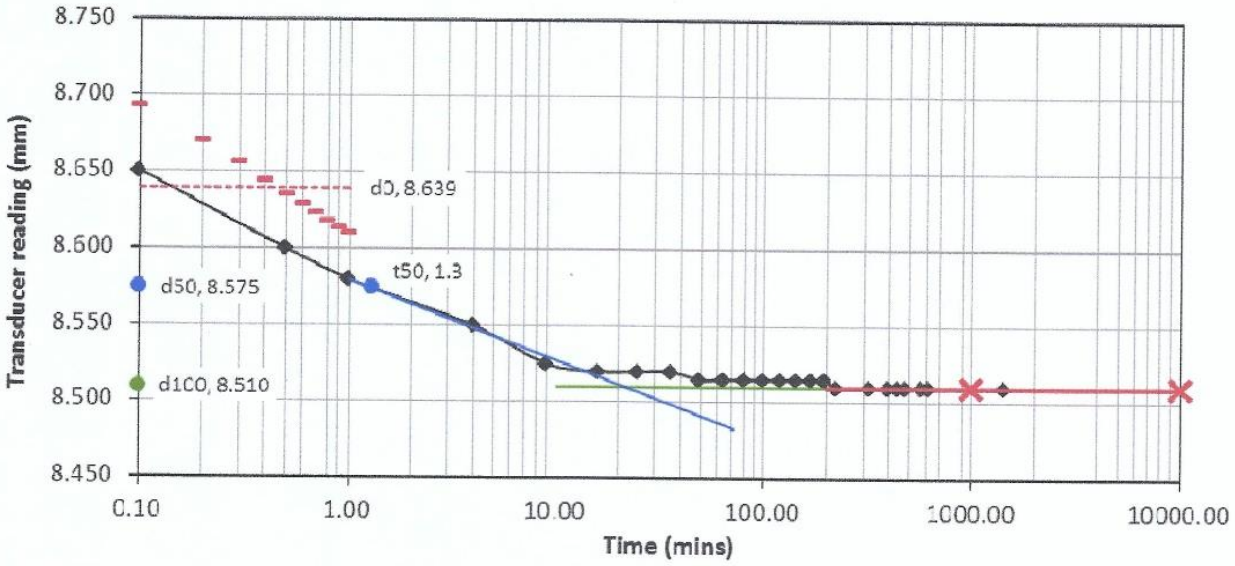
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 13+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4574	**Date:**	20-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 13+500
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.200 mm
From the plot, t_{50} = 1.3 mins
H_1 = 19.30 mm
H_2 = 19.10 mm
H = (19.30+19.10)/2
= 19.20 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}} =$ **7.373 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.104 m²/MN**

Specimen information (cumulative)
Compression (mm) = 0.900
Net compression (mm) = 0.828
Height mm (H_2) = 19.10
Equivalent height of solids Hs = 11.38
Voids Ratio = (H_2 – Hs)/Hs = **0.678**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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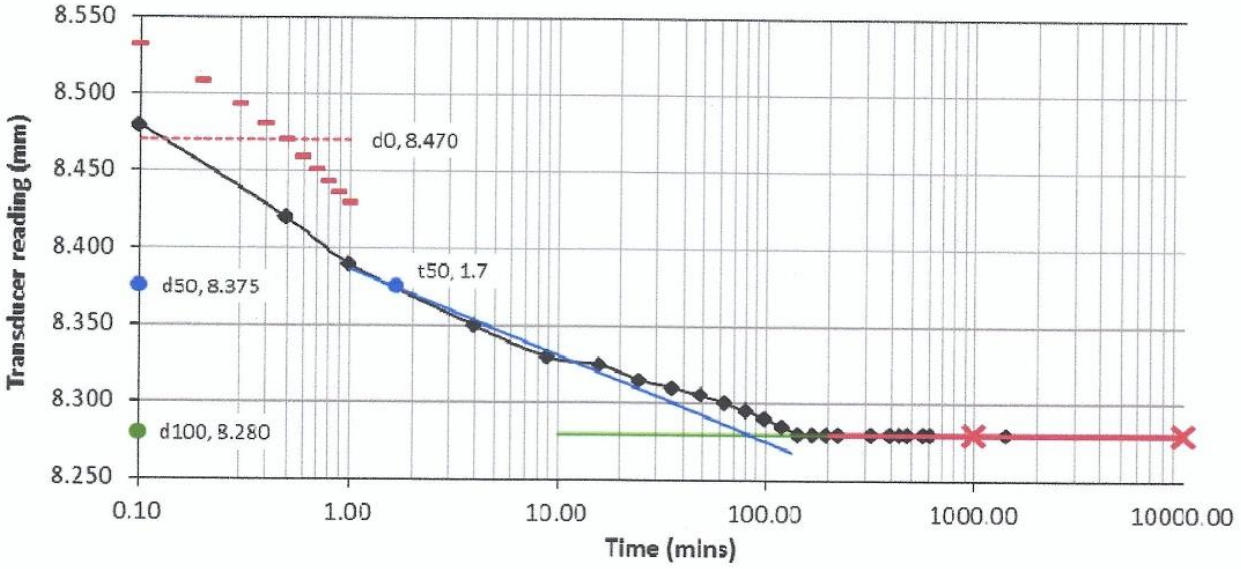
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 13+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4574	**Date:**	21-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 13+500
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.230 mm
From the plot, t_{50} = 1.7 mins
H_1 = 19.10 mm
H_2 = 18.87 mm
H = (18.87+19.10)/2
= 18.99 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.515 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.060 m²/MN**

Specimen information (cumulative)
Compression (mm) = 1.130
Net compression (mm) = 1.025
Height mm (H_2) = 18.87
Equivalent height of solids Hs = 11.38
Voids Ratio = (H_2 – Hs)/Hs = **0.658**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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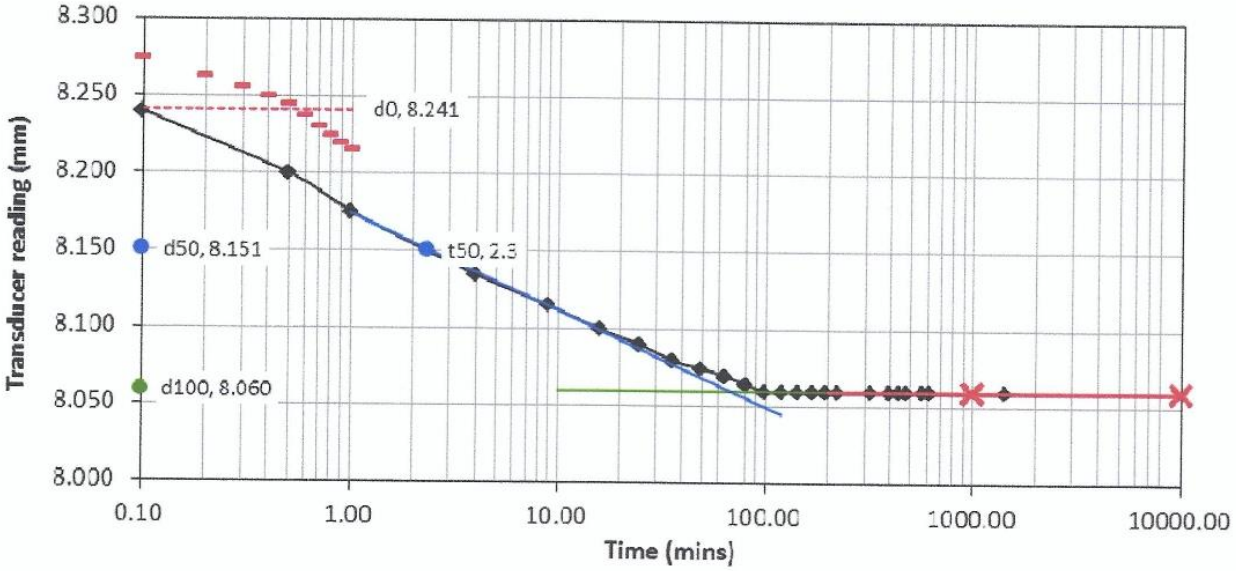
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 13+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4574	**Date:**	22-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 13+500
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.220 mm
From the plot, t_{50} = 2.3 mins
H_1 = 18.87 mm
H_2 = 18.65 mm
H = (18.87+18.65)/2
= 18.76 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}} = 3.978\ m^2/year$

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

$= 0.029\ m^2/MN$

Specimen information (cumulative)
Compression (mm) = 1.350
Net compression (mm) = 1.199
Height mm (H_2) = 18.65
Equivalent height of solids Hs = 11.38
Voids Ratio = (H_2 – Hs)/Hs = 0.639

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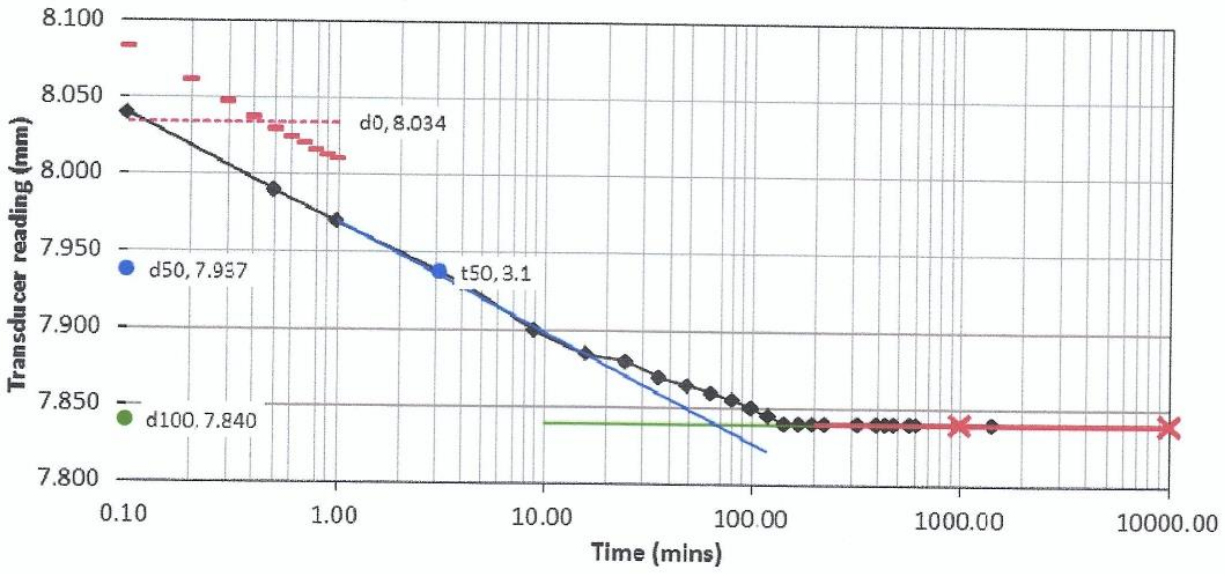
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 13+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4574	**Date:**	23-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 13+500
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.220 mm
From the plot, t_{50} = 3.1 mins
H_1 = 18.65 mm
H_2 = 18.43 mm
H = (18.43+18.65)/2
= 18.54 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.883 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.015 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.570
Net compression (mm) = 1.363
Height mm (H_2) = 18.43
Equivalent height of solids Hs = 11.38
Voids Ratio = (H_2 – Hs)/Hs = **0.620**

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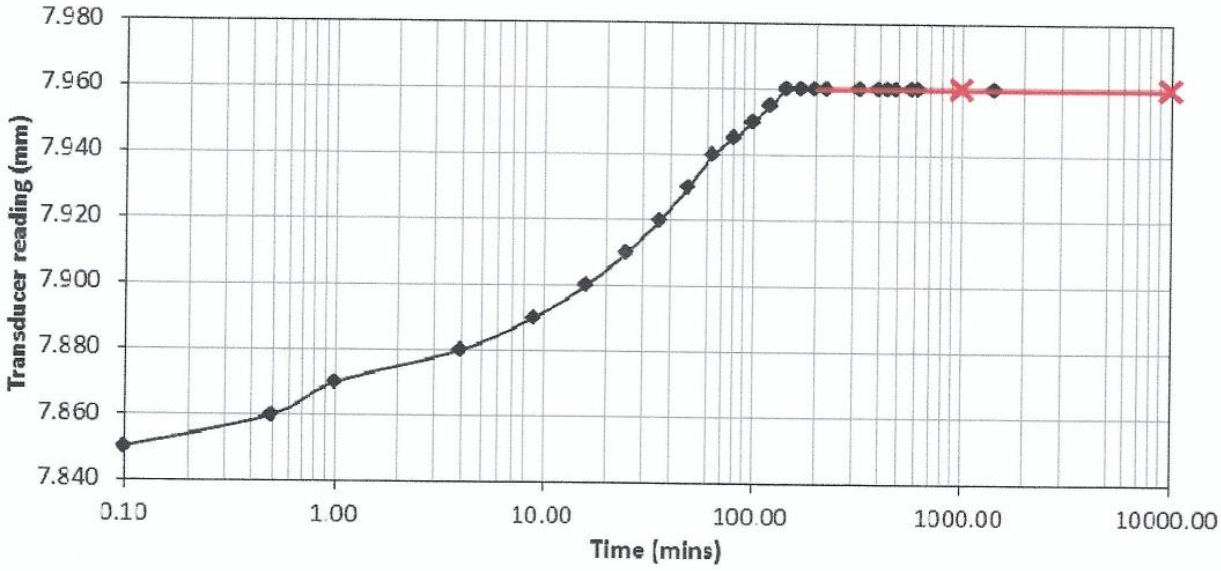
TP KM 13+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4574	**Date:**	24-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 13+500
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.120 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 1.450
Net compression (mm)	= 1.292
Height mm (H_2)	= 18.71
Equivalent height of solids Hs	= 11.38
Voids Ratio = (H_2 – Hs)/Hs	= 0.644

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

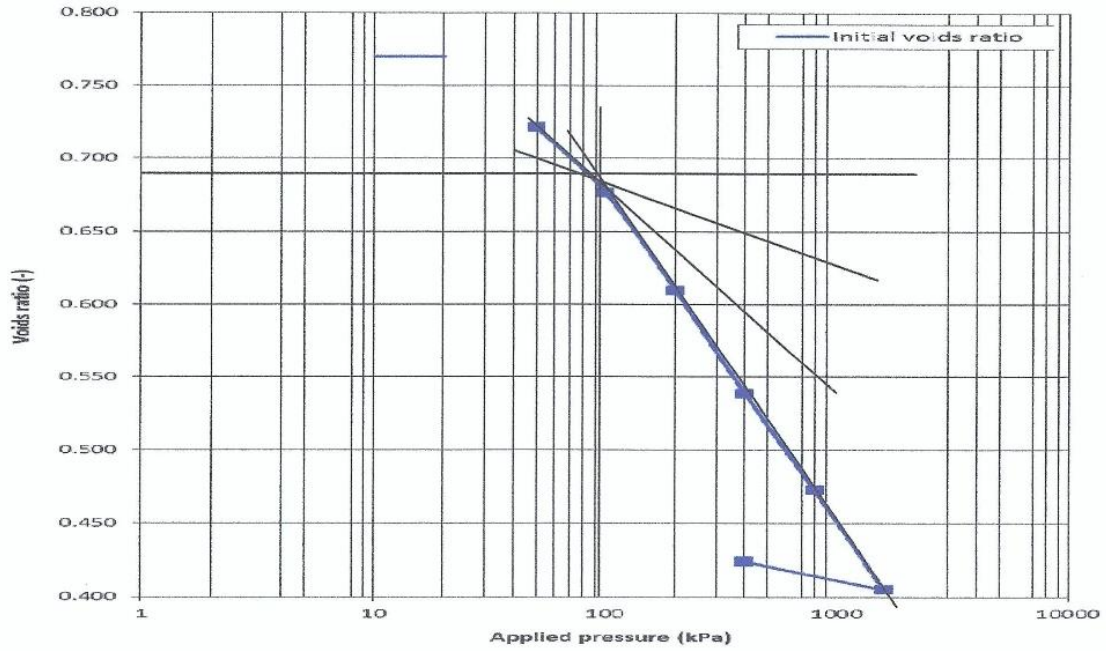
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 15+000

Site: KAYABOMBO
Location: KWALE
Depth: -
Classification Group Name: -
Lab Ref: TM/RGS-KAYABOMBO/4578
Sample No. 4578
Ring Diameter: 62.0 mm
Height of soil particles: 11.30mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 21.5%
Bulk Density: 1789kg/m^3
Initial voids ratio: 0.766
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1472kg/m^3
Pre-consolidation stress: 095 Kn/m^2
Coefficient of Compression Index: 0.237
Coefficient of Re-Compression Index: 0.061

Voids Ratio against Applied Pressure



Tested By: KEVIN
Date Reported: 30-11-21
Checked By:

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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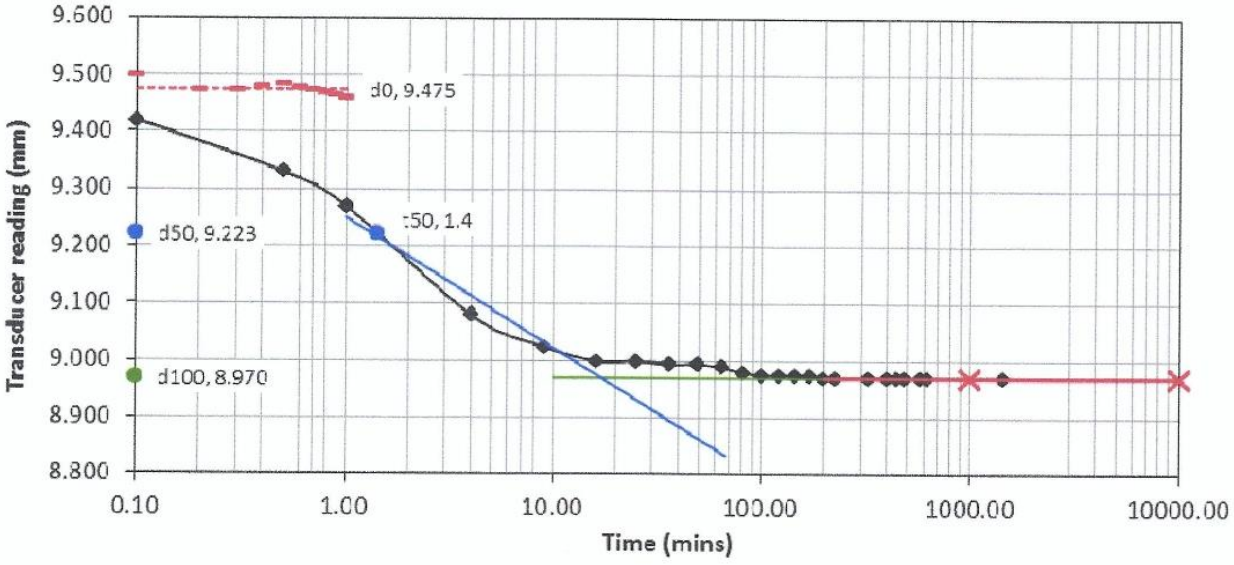
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 15+000

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4578	**Date:**	18-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 15+000
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.580 mm
From the plot, t_{50} = 1.4 mins
H_1 = 20.00 mm
H_2 = 19.42 mm
H = (20.00+19.42)/2
= 19.71 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.215 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.580 m²/MN**

Specimen information (cumulative)
Compression (mm) = 0.580
Net compression (mm) = 0.548
Height mm (H_2) = 19.42
Equivalent height of solids Hs = 11.30
Voids Ratio = $(H_2 - Hs)/Hs$ = **0.719**

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info@danellilab.com
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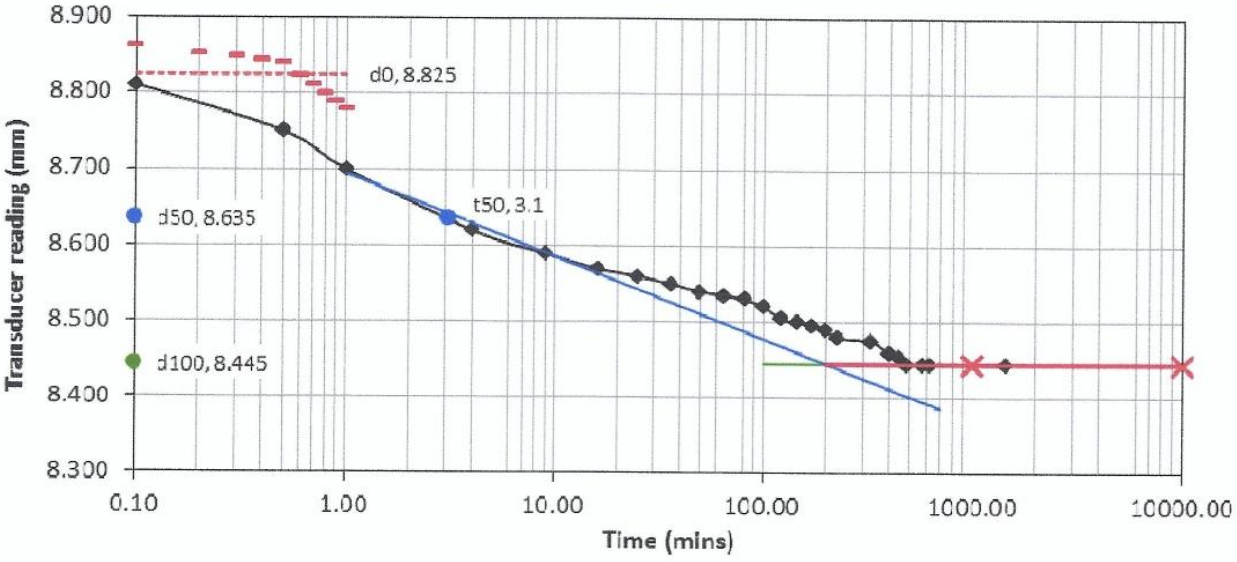
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 15+000

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4578	**Date:**	19-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 15+000
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.525 mm
From the plot, t_{50} = 3.1 mins
H_1 = 19.42 mm
H_2 = 18.90 mm
H = (18.90+19.42)/2
= 19.16 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.079 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.541 m²/MN**

Specimen information (cumulative)

Compression (mm)	= 1.105
Net compression (mm)	= 1.055
Height mm (H_2)	= 18.90
Equivalent height of solids Hs	= 11.30
Voids Ratio = (H_2 – Hs)/Hs	= **0.673**

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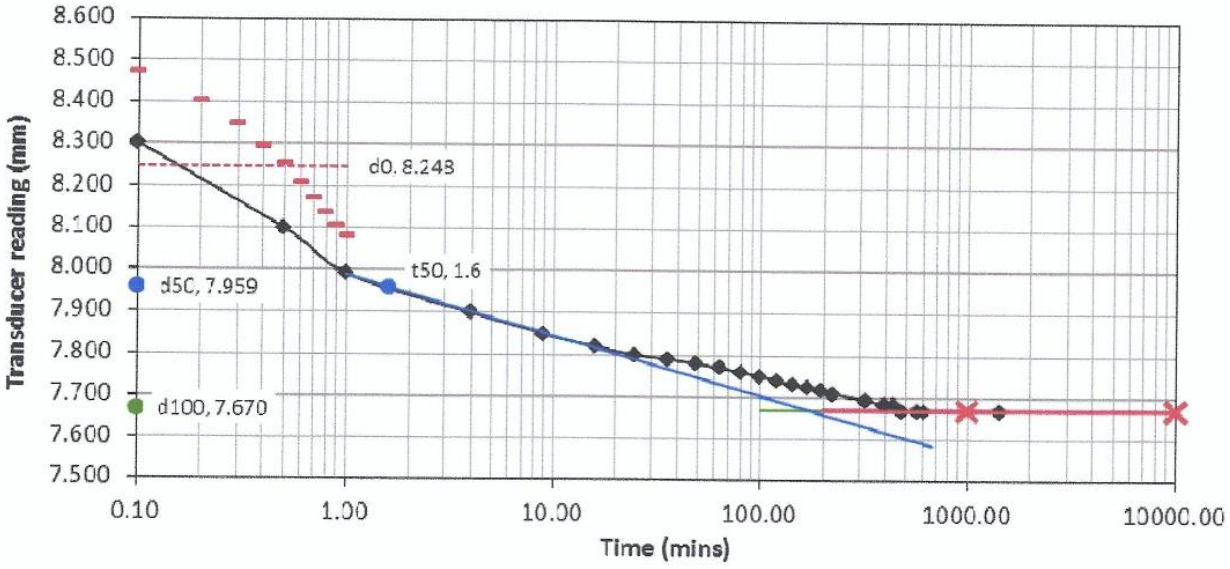
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 15+000

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4578	**Date:**	20-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 15+000
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.775 mm
From the plot, t_{50} = 1.6 mins
H_1 = 18.90 mm
H_2 = 18.13 mm
H = (18.90+18.13)/2
= 18.52 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.574 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.410 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 1.880
Net compression (mm)	= 1.808
Height mm (H_2)	= 18.13
Equivalent height of solids Hs	= 11.30
Voids Ratio = (H_2 – Hs)/Hs	= **0.604**

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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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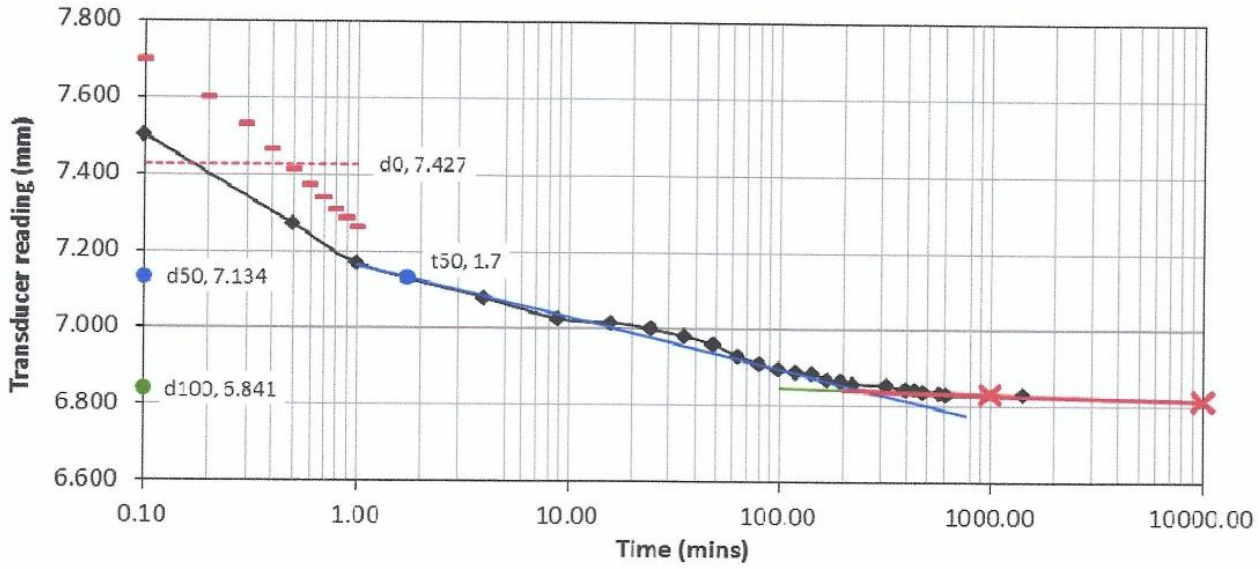
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 15+000

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4578	**Date:**	21-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 15+000
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.840 mm
From the plot, t_{50} = 1.7 mins
H_1 = 18.13 mm
H_2 = 17.29 mm
H = (17.29+18.13)/2
= 17.71 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.797 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.232 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.720
Net compression (mm) = 2.615
Height mm (H_2) = 17.29
Equivalent height of solids Hs = 11.30
Voids Ratio = (H_2 – Hs)/Hs = **0.530**

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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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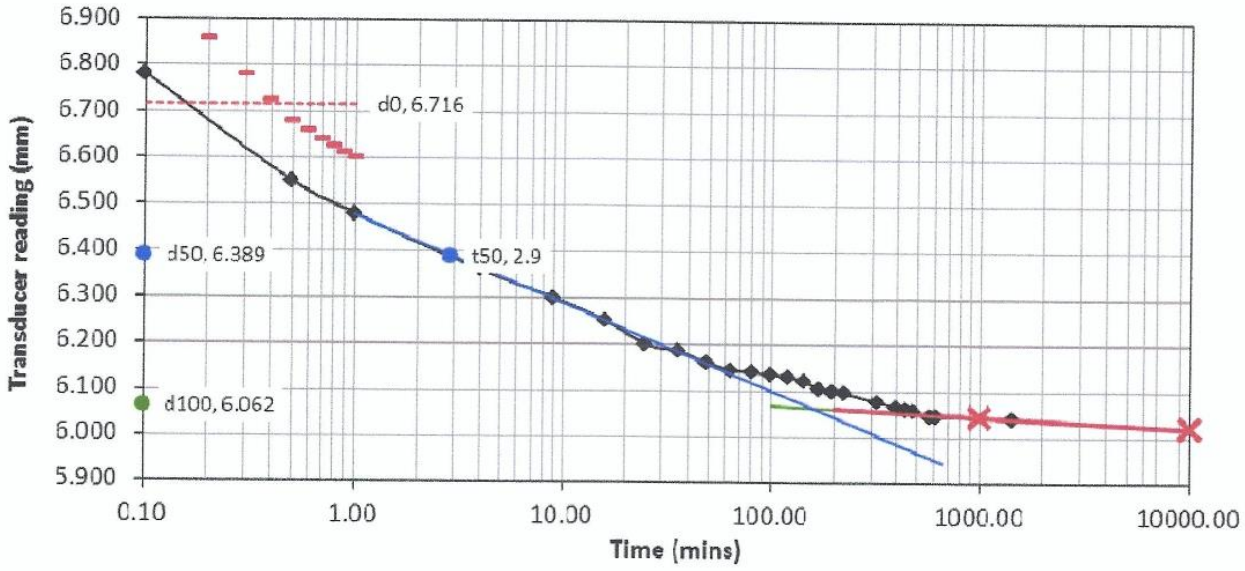
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 15+000

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4578	**Date:**	22-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 15+000
LOADING STAGE:	**No. 5**	**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.790 mm
From the plot, t_{50} = 2.9 mins
H_1 = 17.29 mm
H_2 = 16.50 mm
H = (17.29+16.50)/2
= 16.90 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.561 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.114 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.510
Net compression (mm) = 3.359
Height mm (H_2) = 16.50
Equivalent height of solids Hs = 11.30
Voids Ratio = (H_2 – Hs)/Hs = **0.460**

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info@danellilab.com
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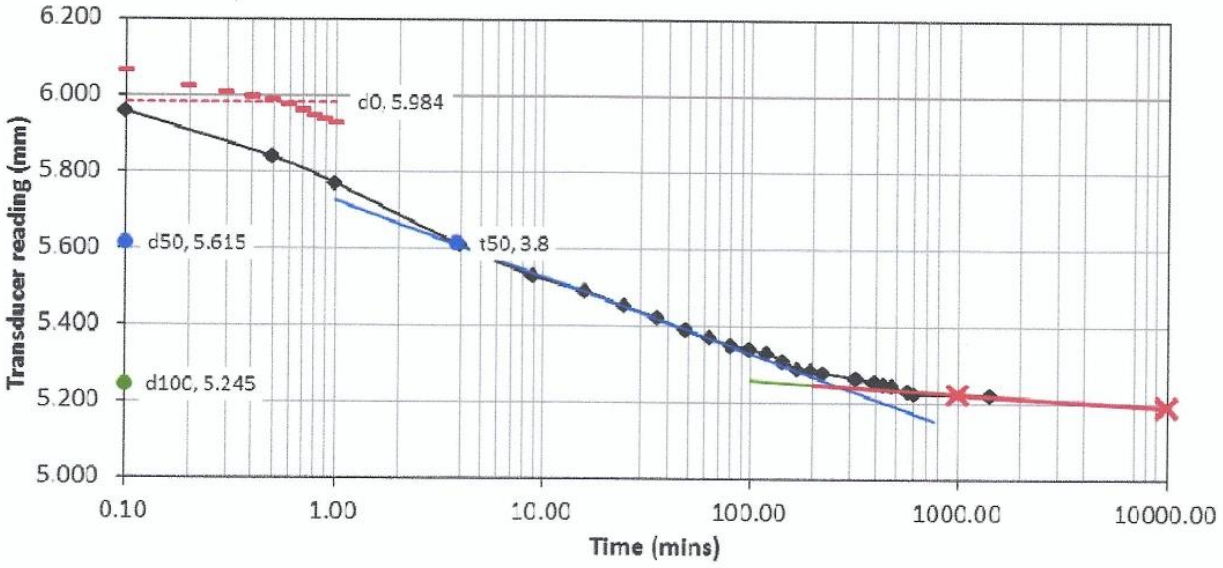
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 15+000

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4578	**Date:**	23-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 15+000
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.818 mm
From the plot, t_{50} = 3.8 mins
H_1 = 16.50 mm
H_2 = 15.68 mm
H = (15.68+16.50)/2
= 16.09 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **1.771 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.062 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 4.328
Net compression (mm) = 4.121
Height mm (H_2) = 15.68
Equivalent height of solids Hs = 11.30
Voids Ratio = (H_2 – Hs)/Hs = **0.388**

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info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
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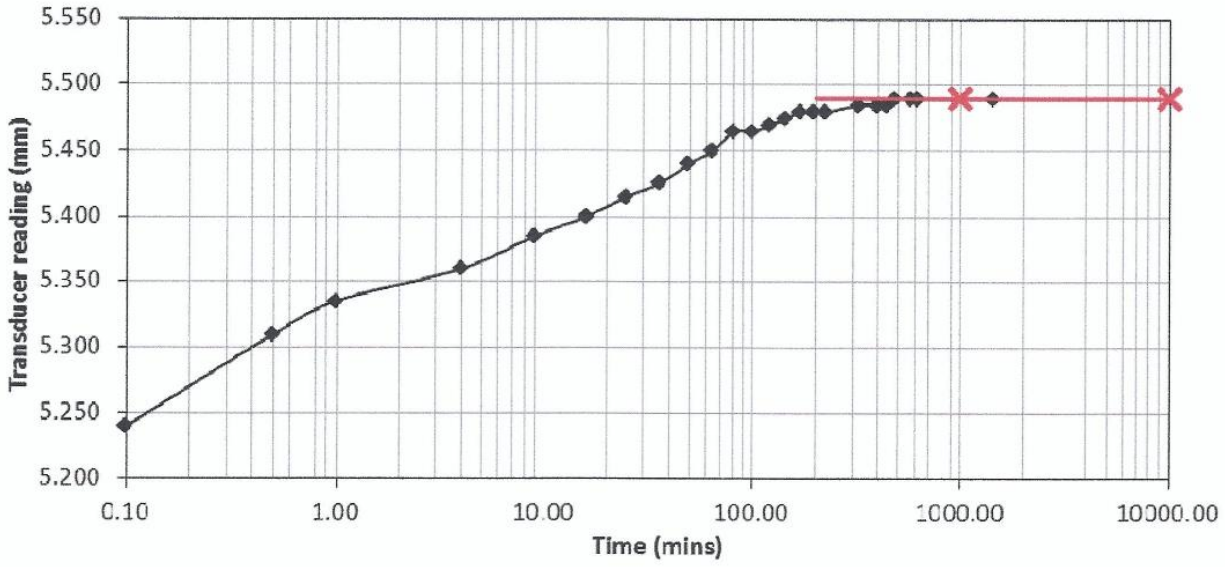
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 15+000

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4578	**Date:**	24-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 15+000
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.268 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 4.060
Net compression (mm)	= 3.902
Height mm (H_2)	= 16.10
Equivalent height of solids Hs	= 11.30
Voids Ratio = (H_2 – Hs)/Hs	= 0.425

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info@danellilab.com
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Nairobi
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

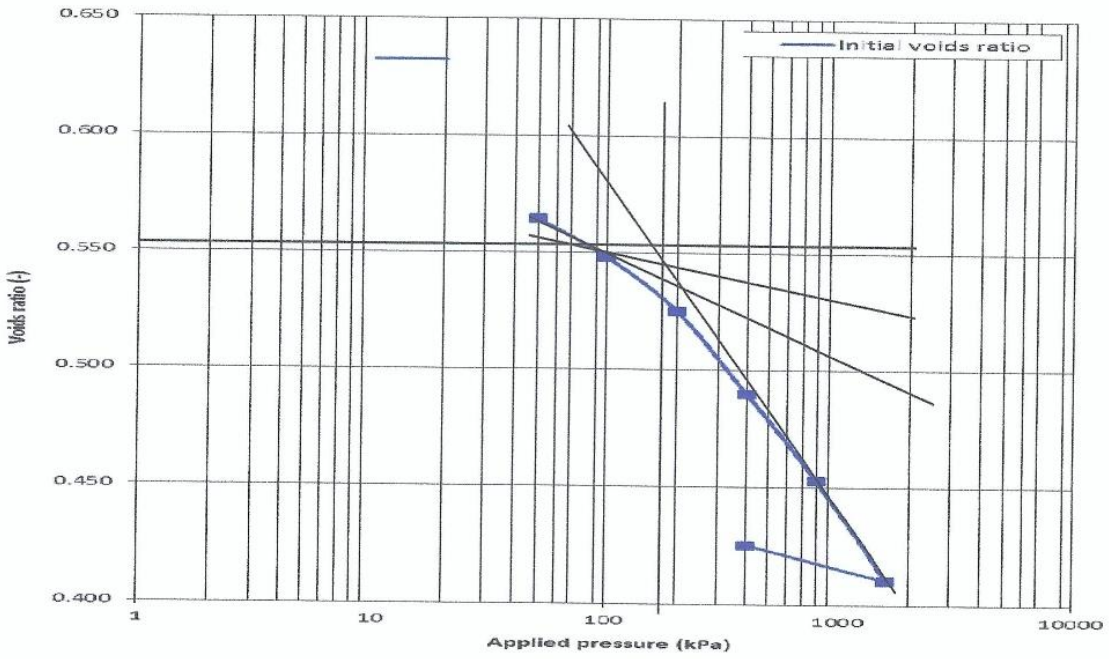
TP KM 19+000 (Depth: 1.3-2.0m)

Site: KAYABOMBO
Classification Group Name: -
Ring Diameter: 62.0 mm
Area (A): 3019.1mm^2
Initial voids ratio: 0.639
Pre-consolidation stress: 255 Kn/m^2
Coefficient of Re-Compression Index: 0.048

Location: KWALE
Lab Ref: TM/RGS-KAYABOMBO/4582
Height of soil particles: 12.25mm
Moisture Content after Test: 20.9%
Assumed Soil Density: 2600 kg/m^3

Depth: 1.3-2.0M
Sample No. 4582
Height of Ring: 20 mm
Bulk Density: 1918kg/m^3
Dry Density: 1586kg/m^3
Coefficient of Compression Index: 0.137

Voids Ratio against Applied Pressure



Tested By: KEVIN

Date Reported: 30-11-21

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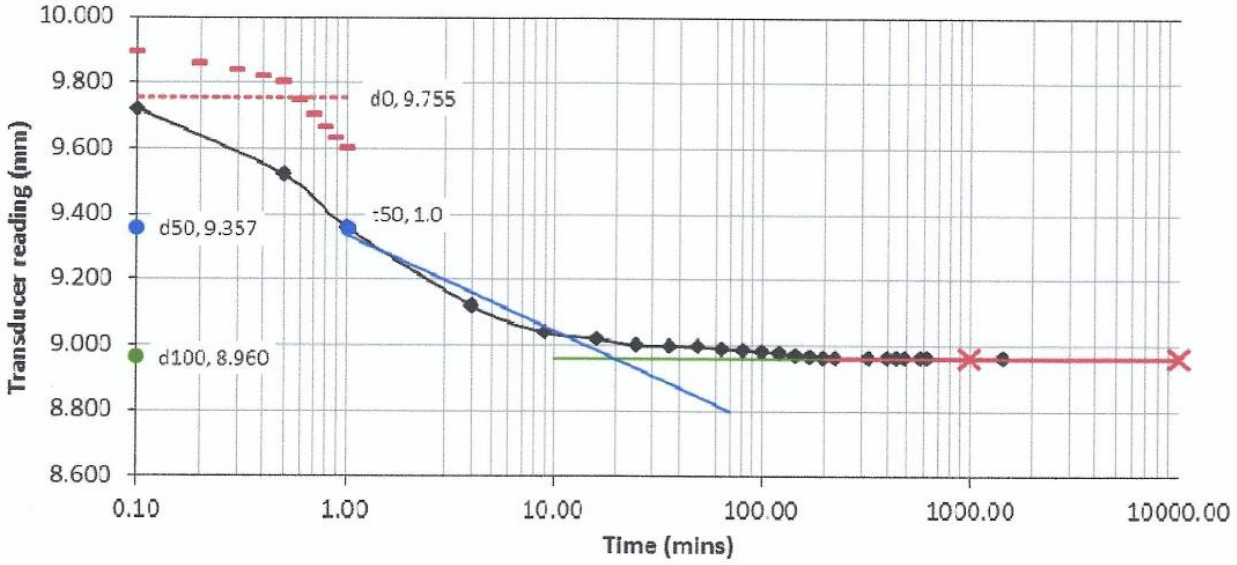
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 19+000 (Depth: 1.3-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4582	**Date:**	18-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 19+000 1.3-2.0
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.865 mm
From the plot, t_{50} = 1.0 mins
H_1 = 20.00 mm
H_2 = 19.14 mm
H = (20.00+19.14)/2
= 19.57 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **9.958 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.865 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.865
Net compression (mm)	= 0.833
Height mm (H_2)	= 19.14
Equivalent height of solids Hs	= 12.25
Voids Ratio = (H_2 – Hs)/Hs	= **0.562**

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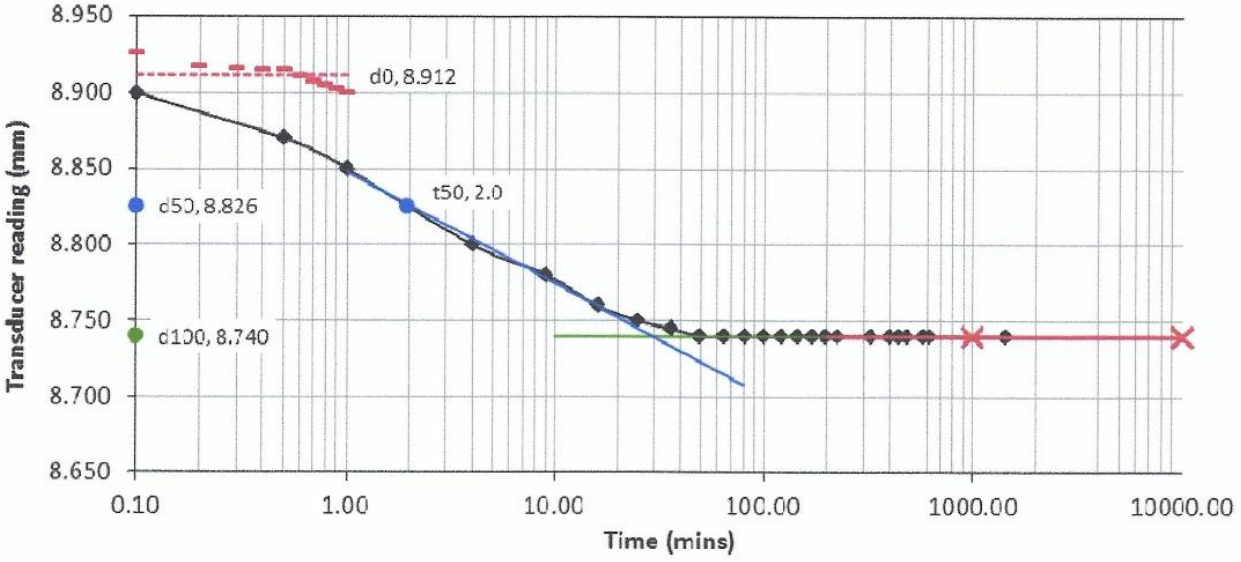
TP KM 19+000 (Depth: 1.3-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4582	**Date:**	19-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 19+000 1.3-2.0
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.220 mm
From the plot, t_{50} = 2.0 mins
H_1 = 19.14 mm
H_2 = 18.92 mm
H = (18.92+19.14)/2
= 19.03 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.708 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.230 m²/MN**

Specimen information (cumulative)
Compression (mm) = 1.085
Net compression (mm) = 1.035
Height mm (H_2) = 18.92
Equivalent height of solids Hs = 12.25
Voids Ratio = (H_2 – Hs)/Hs = **0.544**

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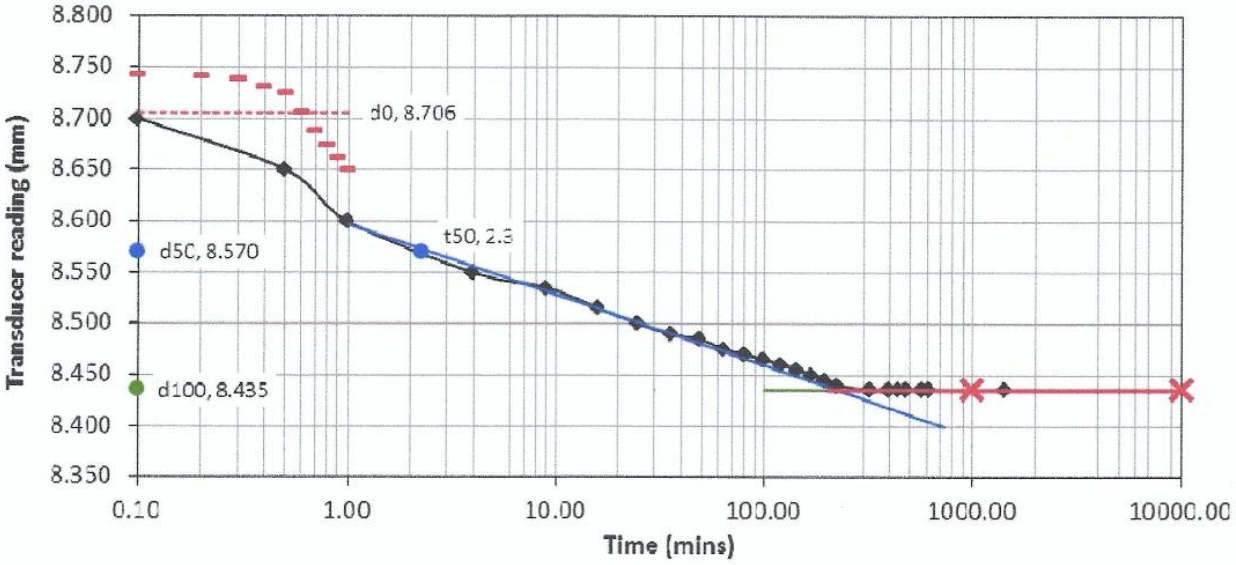
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 19+000 (Depth: 1.3-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4582	**Date:**	20-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 19+000 1.3-2.0
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.305 mm
From the plot, t_{50} = 2.3 mins
H_1 = 18.92 mm
H_2 = 18.62 mm
H = (18.92+18.62)/2
= 18.77 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.983 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.161 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 1.390
Net compression (mm)	= 1.318
Height mm (H_2)	= 18.62
Equivalent height of solids Hs	= 12.25
Voids Ratio = (H_2 – Hs)/Hs	= **0.520**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

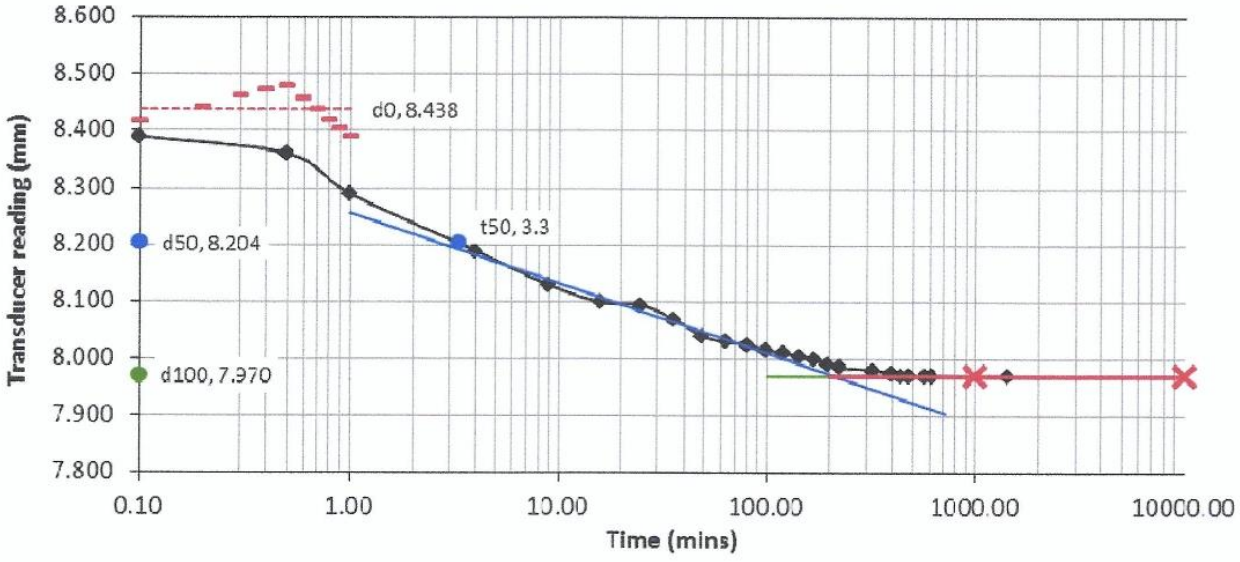
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 19+000 (Depth: 1.3-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4582	**Date:**	21-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 19+000 1.3-2.0
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.465 mm
From the plot, t_{50} = 3.3 mins
H_1 = 18.62 mm
H_2 = 18.16 mm
H = (18.16+18.62)/2
= 18.39 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.665 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.125 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.855
Net compression (mm) = 1.750
Height mm (H_2) = 18.16
Equivalent height of solids Hs = 12.25
Voids Ratio = (H_2 – Hs)/Hs = **0.482**

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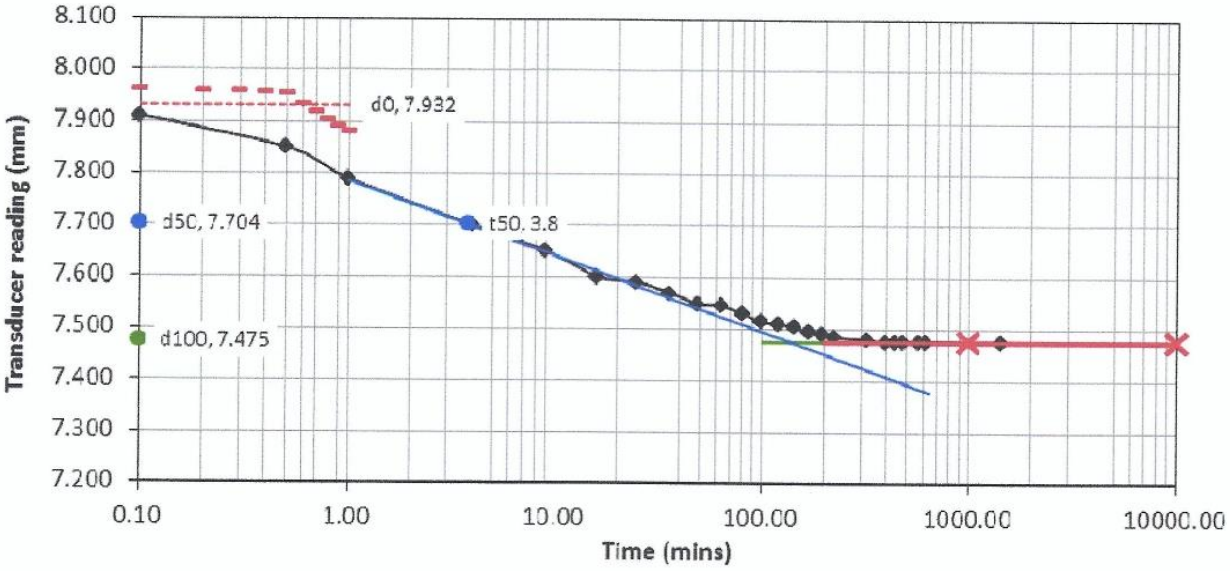
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 19+000 (Depth: 1.3-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4582	**Date:**	22-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 19+000 1.3-2.0
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.495 mm
From the plot, t_{50} = 3.8 mins
H_1 = 18.16 mm
H_2 = 17.67 mm
H = (18.16+17.92)/2
= 18.04 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.227 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.068 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.350
Net compression (mm) = 2.199
Height mm (H_2) = 17.67
Equivalent height of solids Hs = 12.25
Voids Ratio = (H_2 – Hs)/Hs = **0.442**

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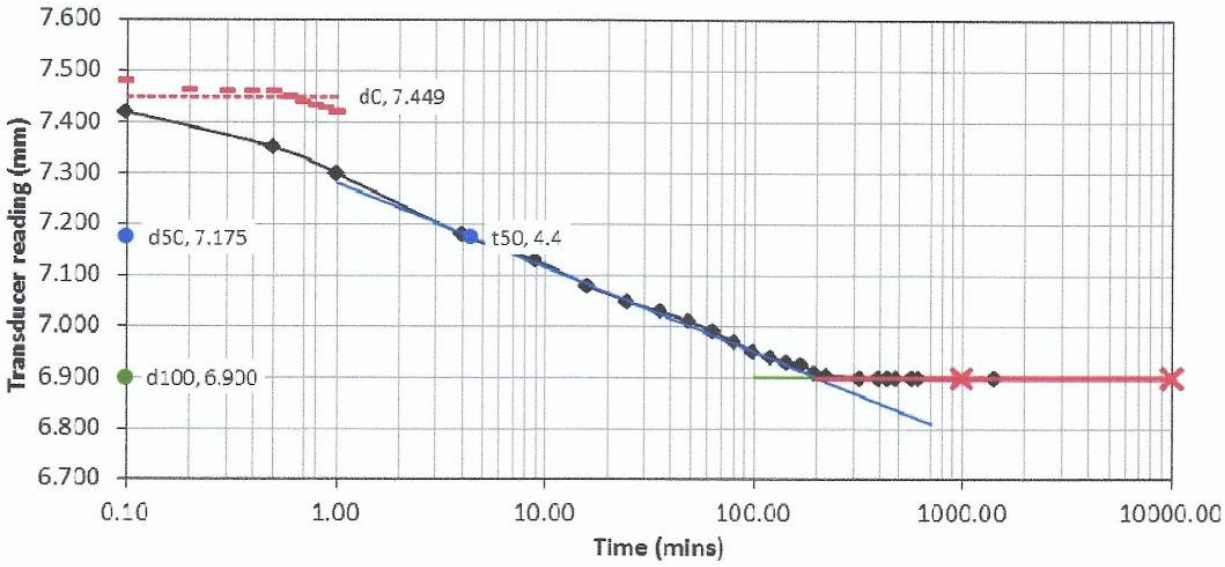
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 19+000 (Depth: 1.3-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4582	**Date:**	23-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 19+000 1.3-2.0
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.575 mm
From the plot, t_{50} = 4.4 mins
H_1 = 17.67 mm
H_2 = 17.10 mm
H = (17.10+17.92)/2
= 17.51 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **1.812 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.041 m²/MN**

Specimen information (cumulative)
Compression (mm) = 2.925
Net compression (mm) = 2.718
Height mm (H_2) = 17.10
Equivalent height of solids Hs = 12.25
Voids Ratio = (H_2 – Hs)/Hs = **0.396**

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Nairobi
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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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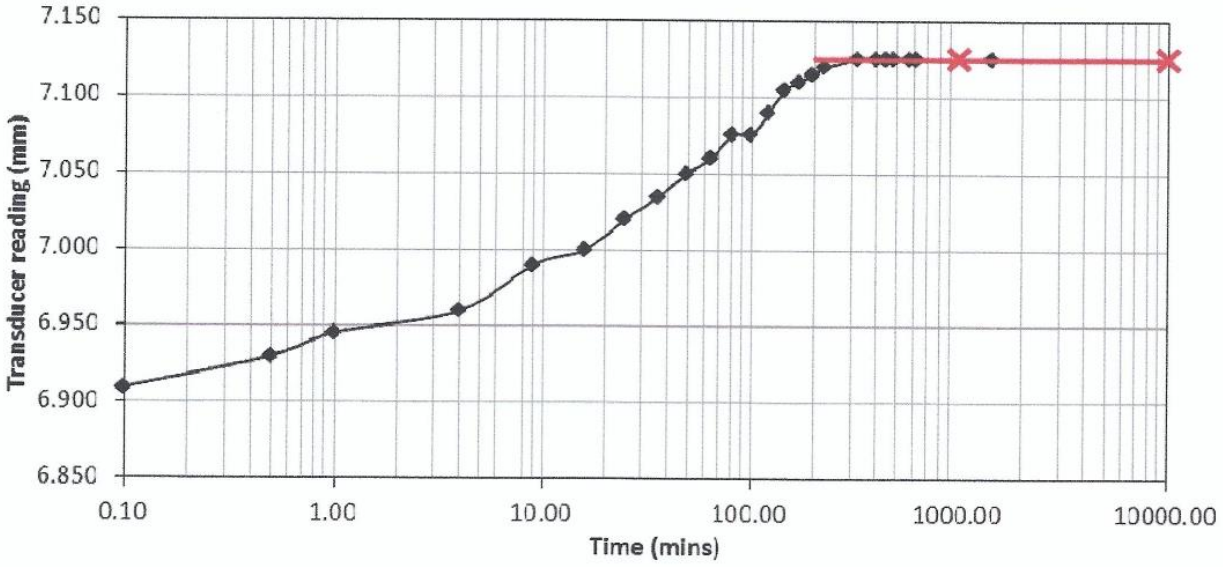
TP KM 19+000 (Depth: 1.3-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4582	**Date:**	24-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 19+000 1.3-2.0
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.225 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 2.700
Net compression (mm)	= 2.542
Height mm (H_2)	= 17.46
Equivalent height of solids Hs	= 12.25
Voids Ratio = (H_2 – Hs)/Hs	= 0.425

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

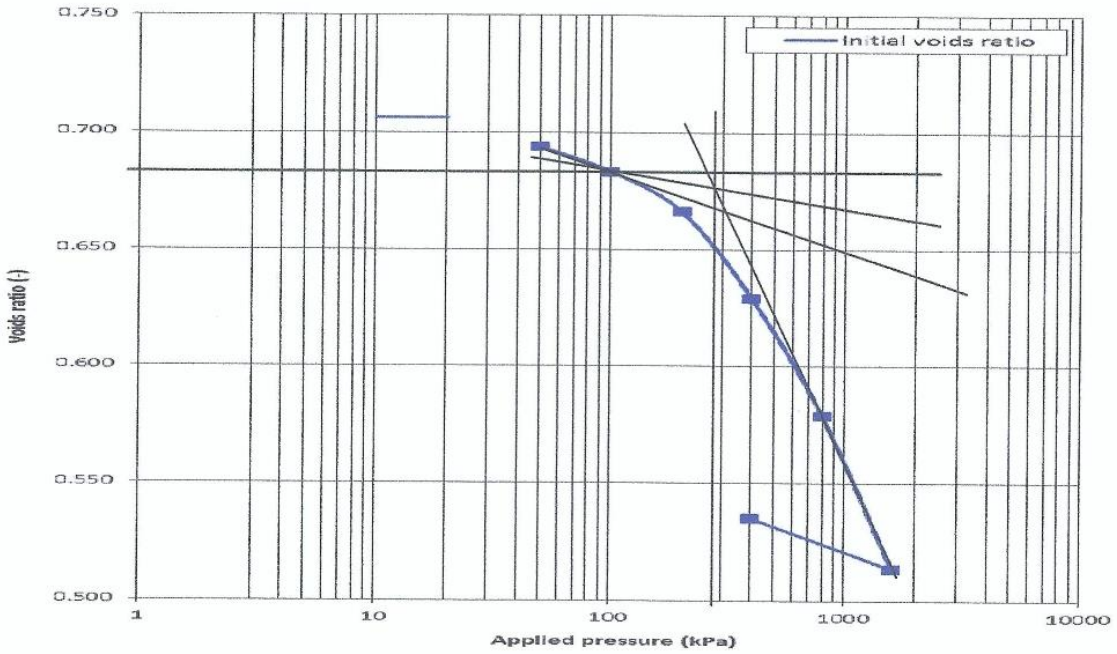
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 20+500 (Depth: 1.5-2.0m)

Site: KAYABOMBO
Location: KWALE
Depth: 1.5-2.0M
Classification Group Name: -
Lab Ref: TM/RGS-KAYABOMBO/4587
Sample No. 4587
Ring Diameter: 62.0 mm
Height of soil particles: 11.72mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 22.5%
Bulk Density: 1874kg/m^3
Initial voids ratio: 0.699
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1530kg/m^3
Pre-consolidation stress: 280 Kn/m^2
Coefficient of Compression Index: 0.180
Coefficient of Re-Compression Index: 0.063

Voids Ratio against Applied Pressure



Tested By: KEVIN
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Nairobi
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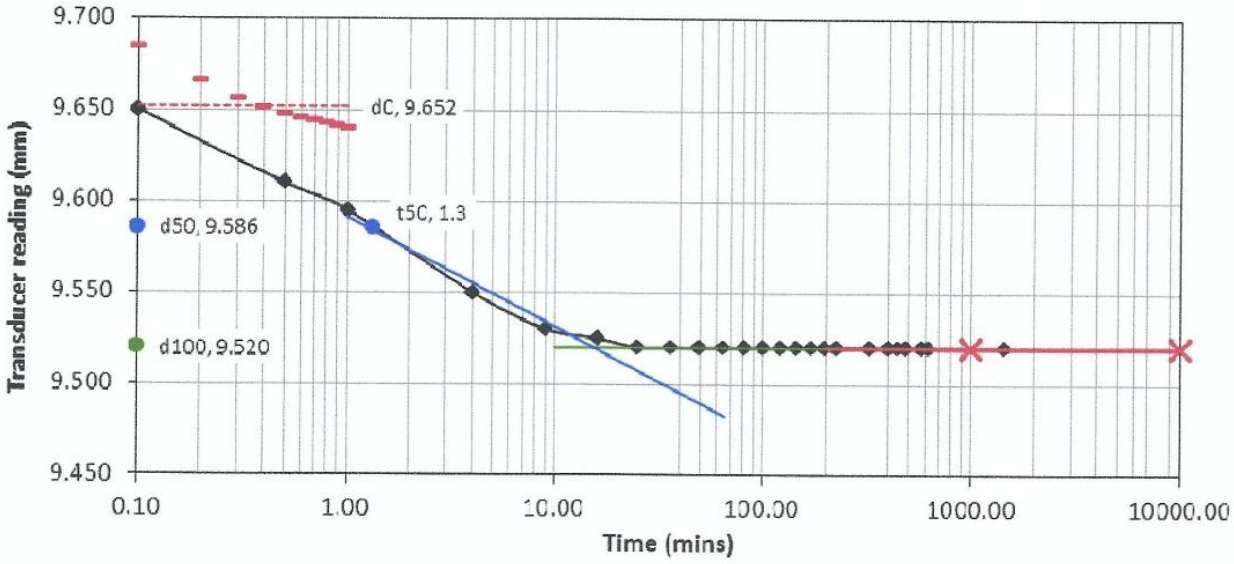
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 20+500 (Depth: 1.5-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4587	**Date:**	18-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 20+500 1.5-2.0
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.180 mm
From the plot, t_{50} = 1.3 mins
H_1 = 20.00 mm
H_2 = 19.82 mm
H = (20.00+19.82)/2
= 19.91 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.928 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.180 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.180
Net compression (mm)	= 0.148
Height mm (H_2)	= 19.82
Equivalent height of solids Hs	= 11.72
Voids Ratio = (H_2 – Hs)/Hs	= **0.691**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Email: danellilab3@gmail.com
info@danellilab.com
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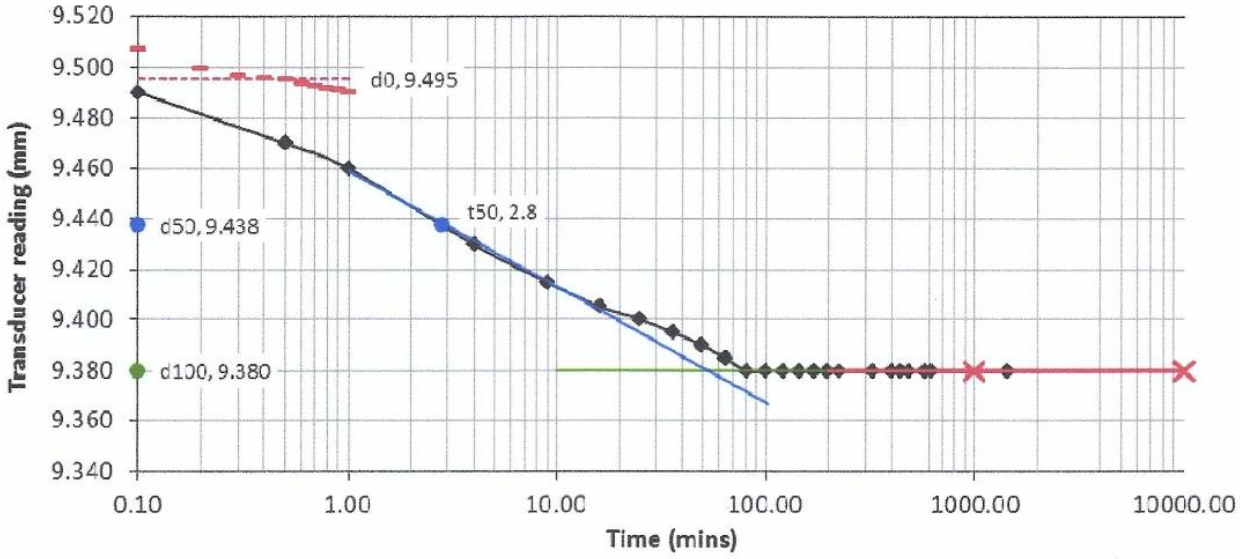
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 20+500 (Depth: 1.5-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4587	**Date:**	19-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 20+500 1.5-2.0
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.140 mm
From the plot, t_{50} = 2.8 mins
H_1 = 19.82 mm
H_2 = 19.68 mm
H = (19.68+19.82)/2
= 19.75 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.622 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.141 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.320
Net compression (mm) = 0.270
Height mm (H_2) = 19.68
Equivalent height of solids Hs = 11.72
Voids Ratio = (H_2 – Hs)/Hs = **0.679**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Nairobi
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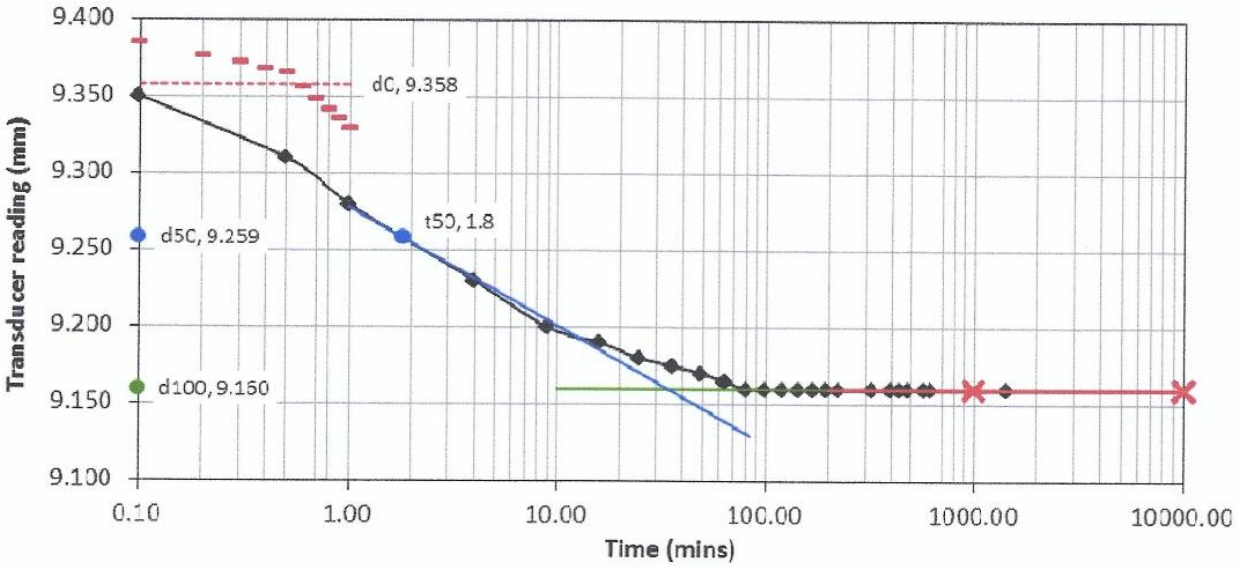
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 20+500 (Depth: 1.5-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4587	**Date:**	20-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 20+500 1.5-2.0
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.220 mm
From the plot, t_{50} = 1.8 mins
H_1 = 19.68 mm
H_2 = 19.46 mm
H = (19.68+19.46)/2
= 19.57 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.532 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.112 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.540
Net compression (mm) = 0.468
Height mm (H_2) = 19.46
Equivalent height of solids Hs = 11.72
Voids Ratio = (H_2 – Hs)/Hs = **0.660**

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Nairobi
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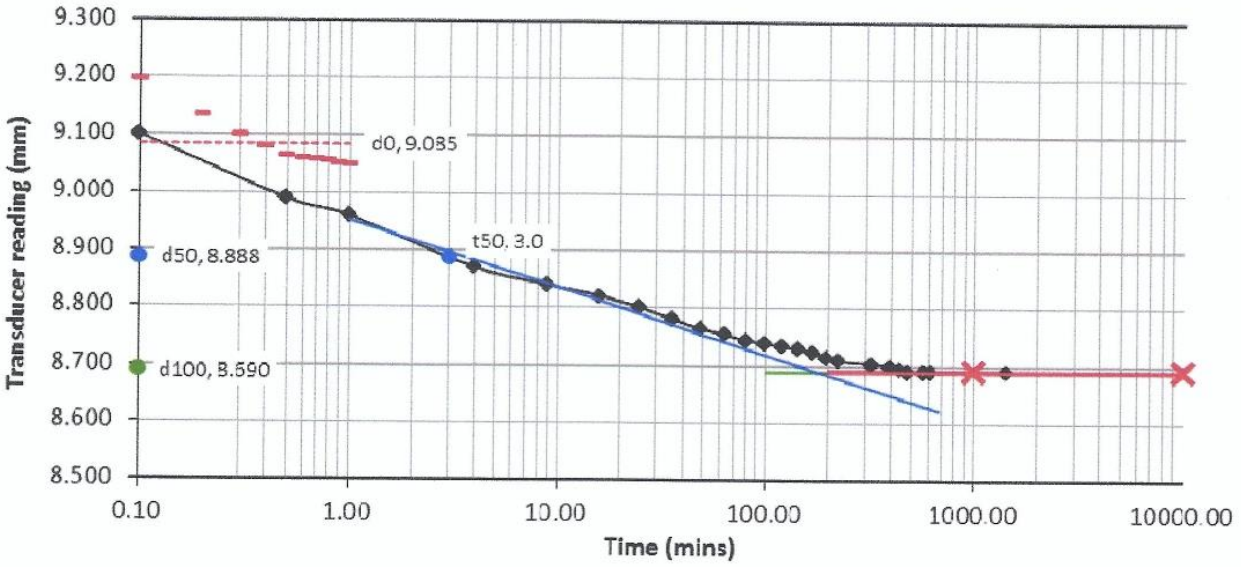
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 20+500 (Depth: 1.5-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4587	**Date:**	21-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 20+500 1.5-2.0
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.470 mm
From the plot, t_{50} = 3.0 mins
H_1 = 19.46 mm
H_2 = 18.99 mm
H = (18.99+19.46)/2
= 19.23 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.205 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.121 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.010
Net compression (mm) = 0.905
Height mm (H_2) = 18.99
Equivalent height of solids Hs = 11.72
Voids Ratio = (H_2 – Hs)/Hs = **0.620**

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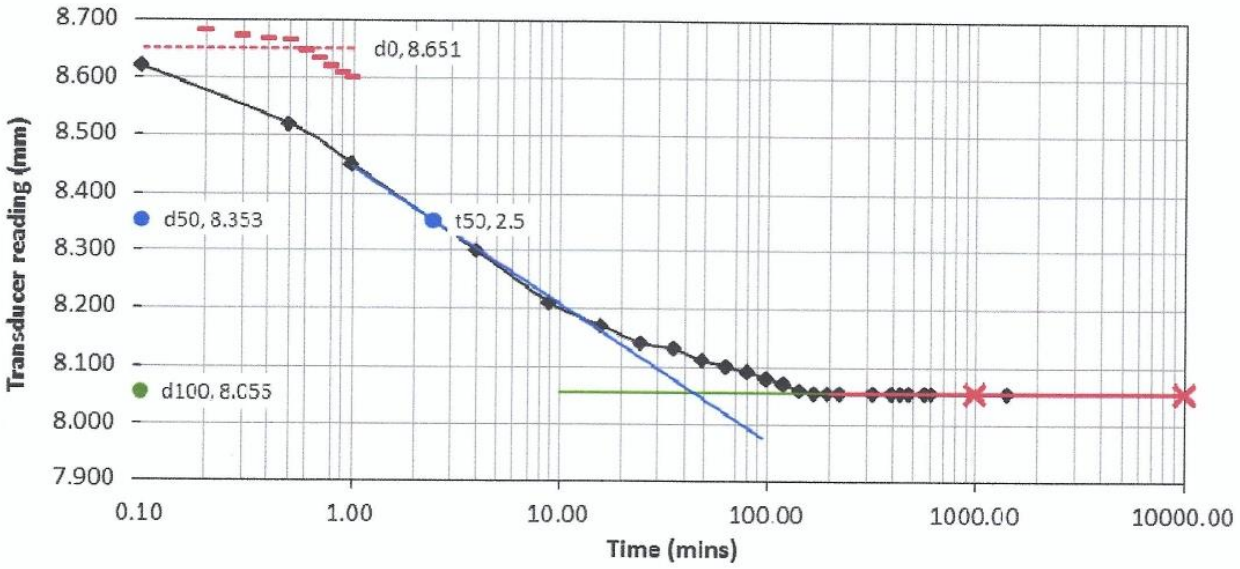
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 20+500 (Depth: 1.5-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4587	**Date:**	22-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 20+500 1.5-2.0
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.635 mm
From the plot, t_{50} = 2.5 mins
H_1 = 18.99 mm
H_2 = 18.36 mm
H = (18.99+18.36)/2
= 18.68 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.629 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.084 m²/MN**

Specimen information (cumulative)
Compression (mm) = 1.645
Net compression (mm) = 1.494
Height mm (H_2) = 18.36
Equivalent height of solids Hs = 11.72
Voids Ratio = (H_2 – Hs)/Hs = **0.567**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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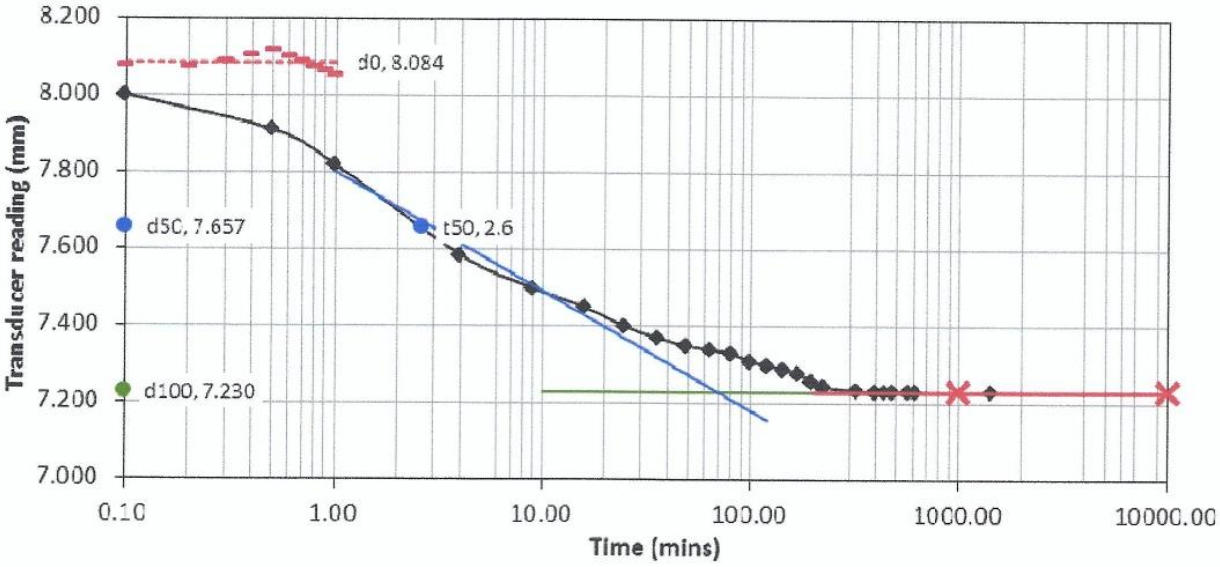
TP KM 20+500 (Depth: 1.5-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4587	**Date:**	23-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 20+500 1.5-2.0
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.825 mm
From the plot, t_{50} = 2.6 mins
H_1 = 18.36 mm
H_2 = 17.54 mm
H = (17.54+18.36)/2
= 17.95 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.222 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.056 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 2.470
Net compression (mm)	= 2.263
Height mm (H_2)	= 17.54
Equivalent height of solids Hs	= 11.72
Voids Ratio = (H_2 – Hs)/Hs	= **0.497**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

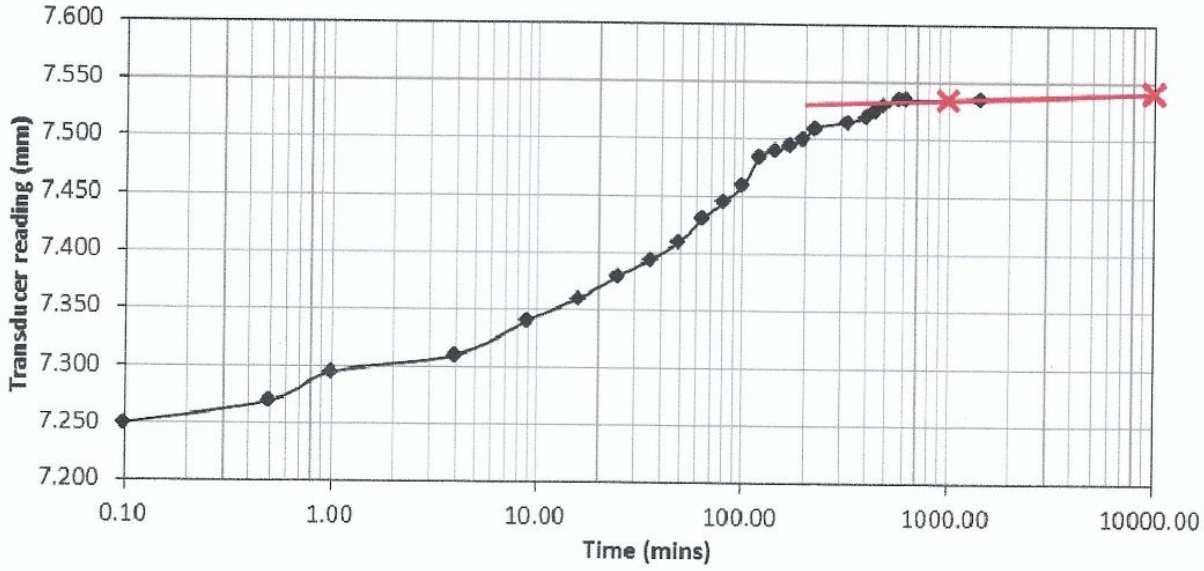
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 20+500 (Depth: 1.5-2.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4587	**Date:**	24-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 20+500 1.5-2.0
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.305 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 2.165
Net compression (mm)	= 2.007
Height mm (H_2)	= 17.99
Equivalent height of solids Hs	= 11.72
Voids Ratio = (H_2 – Hs)/Hs	= 0.535

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

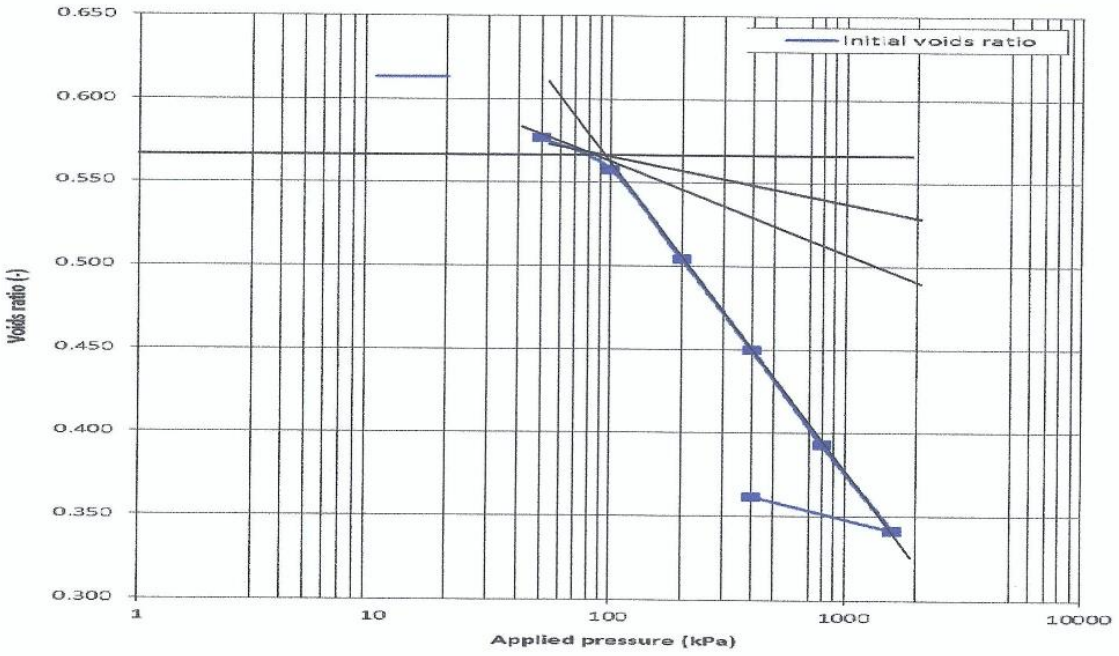
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 22+500 (Depth: 1.4m)

Site: KAYABOMBO
Location: KWALE
Depth: 1.4M
Classification Group Name: -
Lab Ref: TM/RGS-KAYABOMBO/4590
Sample No. 4590
Ring Diameter: 62.0 mm
Height of soil particles: 12.40mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 18.4%
Bulk Density: 1910kg/m^3
Initial voids ratio: 0.612
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1613kg/m^3
Pre-consolidation stress: 095 Kn/m^2
Coefficient of Compression Index: 0.189
Coefficient of Re-Compression Index: 0.056

Voids Ratio against Applied Pressure



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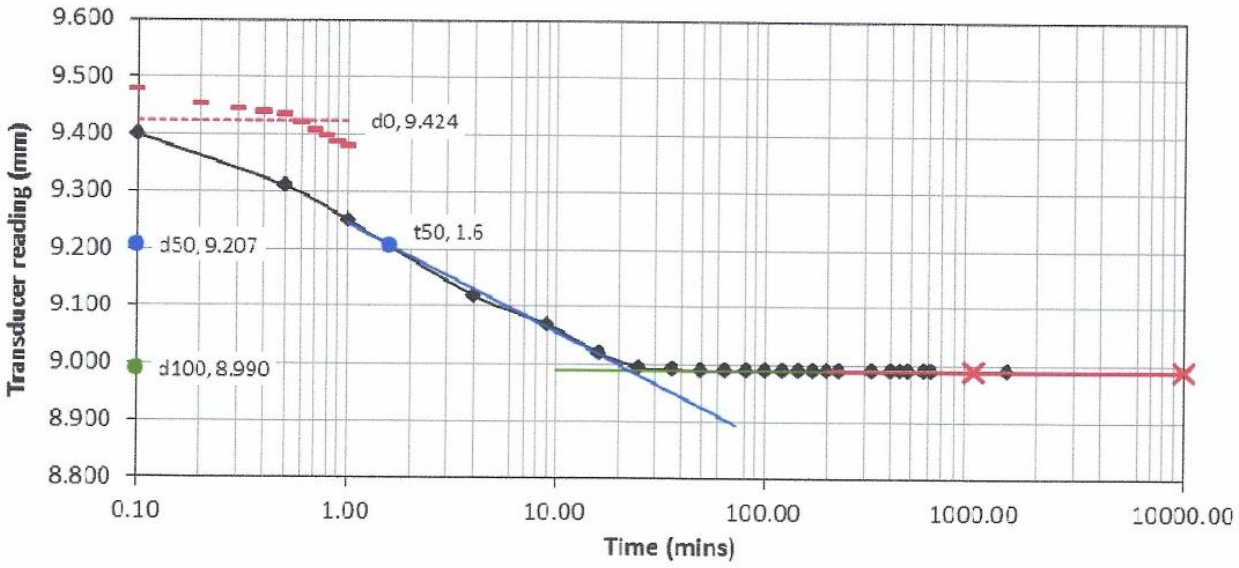
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 22+500 (Depth: 1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4590	**Date:**	18-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 22+500 1.4
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.485 mm
From the plot, t_{50} = 1.6 mins
H_1 = 20.00 mm
H_2 = 19.52 mm
H = (20.00+19.52)/2
= 19.76 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.345 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.485 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.485
Net compression (mm)	= 0.453
Height mm (H_2)	= 19.52
Equivalent height of solids Hs	= 12.40
Voids Ratio = (H_2 – Hs)/Hs	= **0.574**

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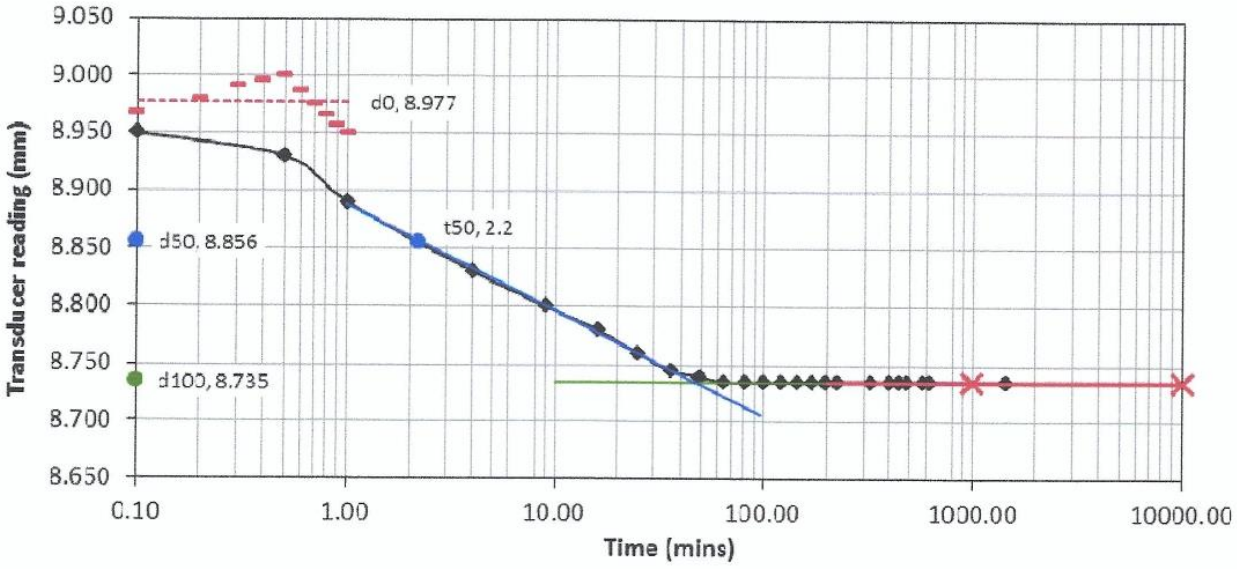
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 22+500 (Depth: 1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4590	**Date:**	19-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 22+500 1.4
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.255 mm
From the plot, t_{50} = 2.2 mins
H_1 = 19.52 mm
H_2 = 19.27 mm
H = (19.27+19.52)/2
= 19.40 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.448 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.261 m²/MN**

Specimen information (cumulative)
Compression (mm) = 0.740
Net compression (mm) = 0.690
Height mm (H_2) = 19.27
Equivalent height of solids Hs = 12.40
Voids Ratio = (H_2 – Hs)/Hs = **0.554**

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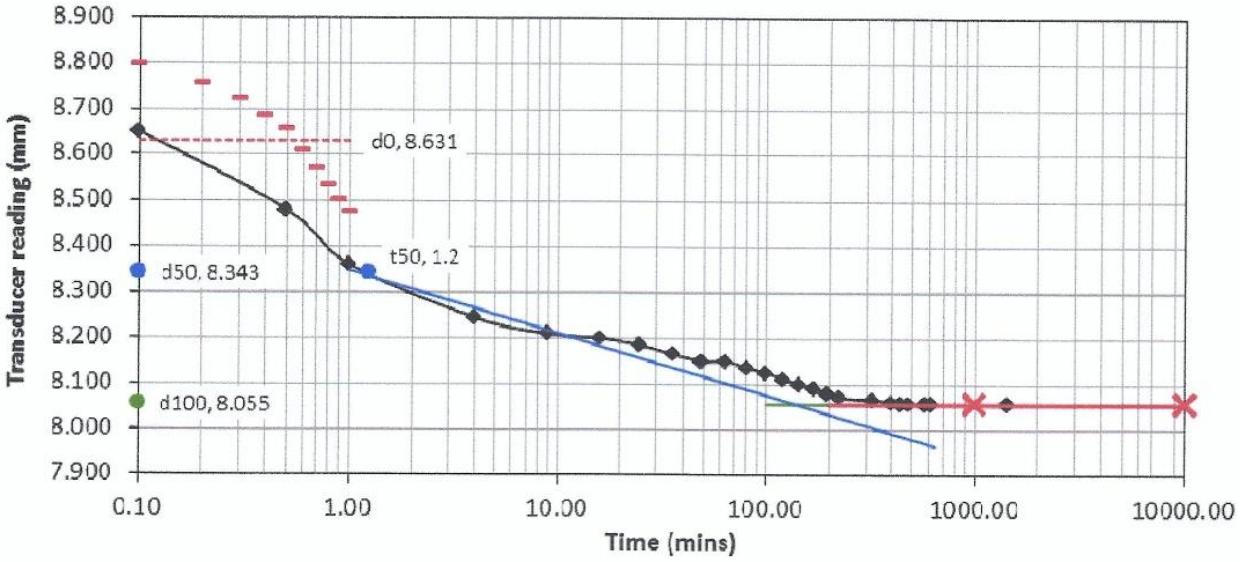
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 22+500 (Depth: 1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4590	**Date:**	20-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 22+500 1.4
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.680 mm
From the plot, t_{50} = 1.2 mins
H_1 = 19.27 mm
H_2 = 18.59 mm
H = (19.27+18.59)/2
= 18.93 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.764 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.353 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.420
Net compression (mm) = 1.348
Height mm (H_2) = 18.59
Equivalent height of solids Hs = 12.40
Voids Ratio = (H_2 – Hs)/Hs = **0.499**

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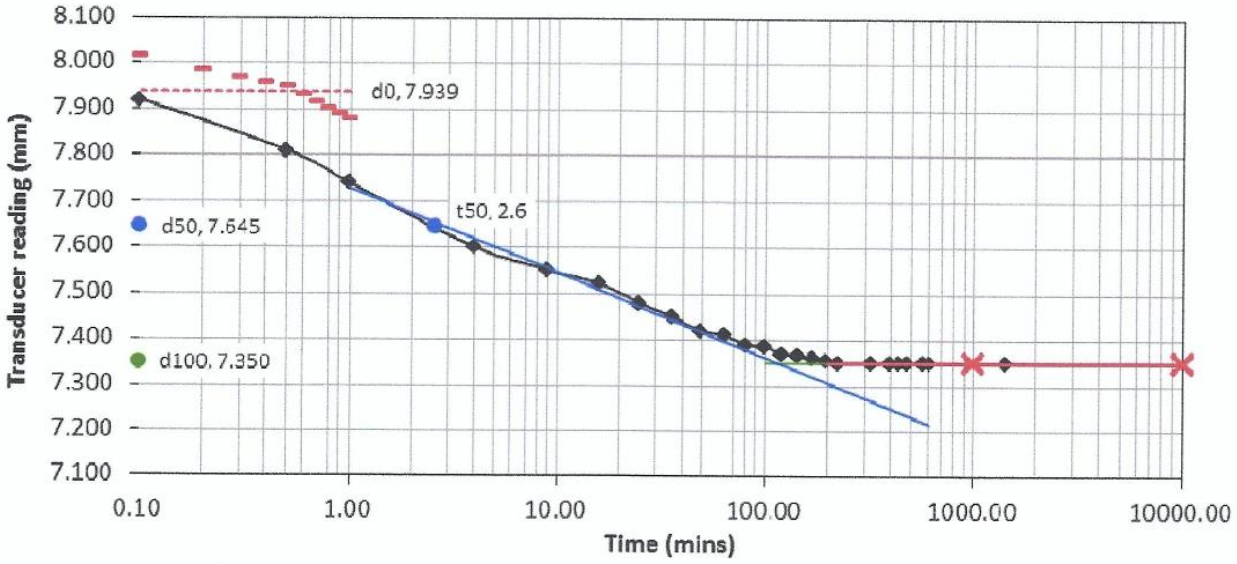
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 22+500 (Depth: 1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4590	**Date:**	21-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 22+500 1.4
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.705 mm
From the plot, t_{50} = 2.6 mins
H_1 = 18.59 mm
H_2 = 17.89 mm
H = (17.89+18.59)/2
= 18.24 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.327 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.190 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.125
Net compression (mm) = 2.020
Height mm (H_2) = 17.89
Equivalent height of solids Hs = 12.40
Voids Ratio = (H_2 – Hs)/Hs = **0.443**

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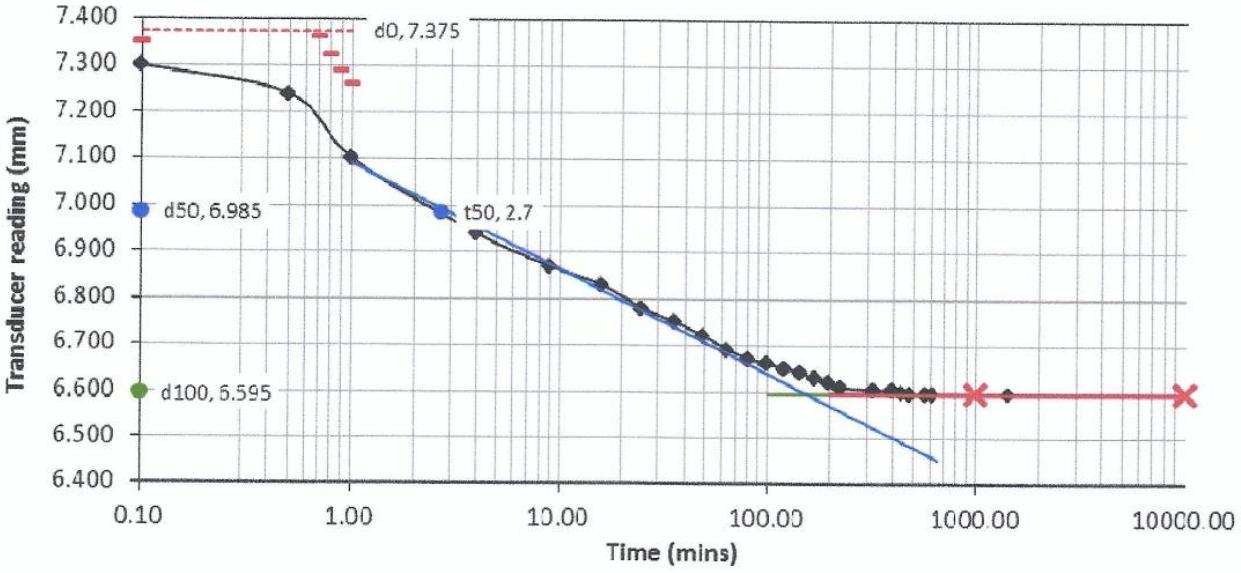
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 22+500 (Depth: 1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4590	**Date:**	22-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 22+500 1.4
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.755 mm
From the plot, t_{50} = 2.7 mins
H_1 = 17.89 mm
H_2 = 17.14 mm
H = (17.89+17.14)/2
= 17.52 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.956 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.106 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 2.880
Net compression (mm)	= 2.729
Height mm (H_2)	= 17.14
Equivalent height of solids Hs	= 12.40
Voids Ratio = (H_2 – Hs)/Hs	= **0.382**

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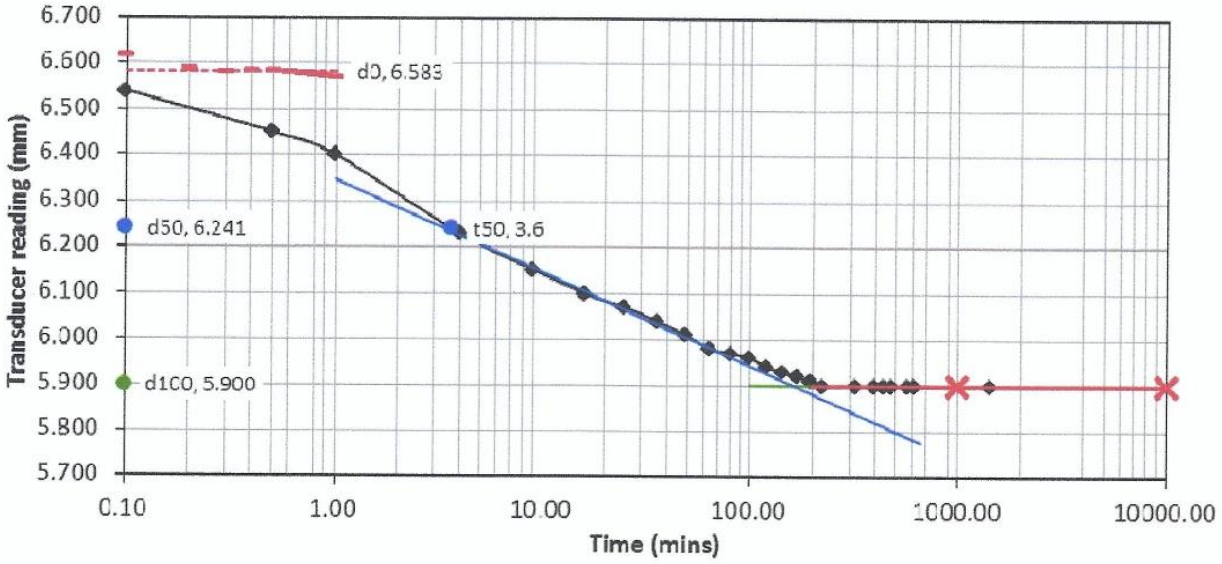
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 22+500 (Depth: 1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4590	**Date:**	23-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 22+500 1.4
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.695 mm
From the plot, t_{50} = 3.6 mins
H_1 = 17.14 mm
H_2 = 16.45 mm
H = (16.45+17.14)/2
= 16.80 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.038 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.051 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.575
Net compression (mm) = 3.368
Height mm (H_2) = 16.45
Equivalent height of solids Hs = 12.40
Voids Ratio = (H_2 – Hs)/Hs = **0.327**

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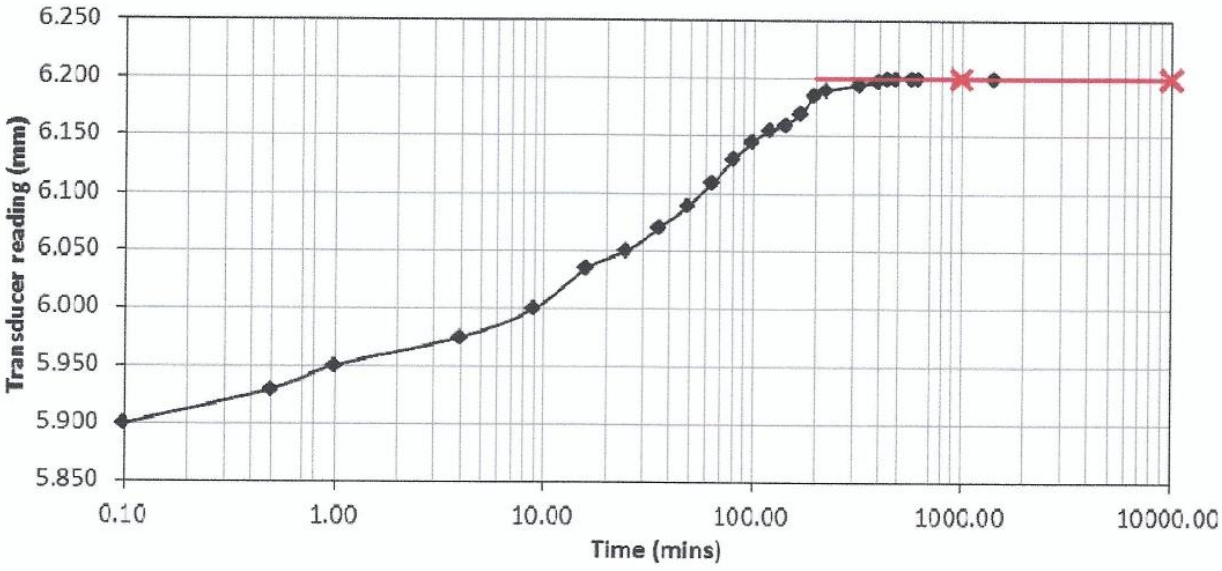
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 22+500 (Depth: 1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4590	**Date:**	24-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 22+500 1.4
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.300 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 3.275
Net compression (mm)	= 3.117
Height mm (H_2)	= 16.88
Equivalent height of solids Hs	= 12.40
Voids Ratio = (H_2 – Hs)/Hs	= 0.361

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REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

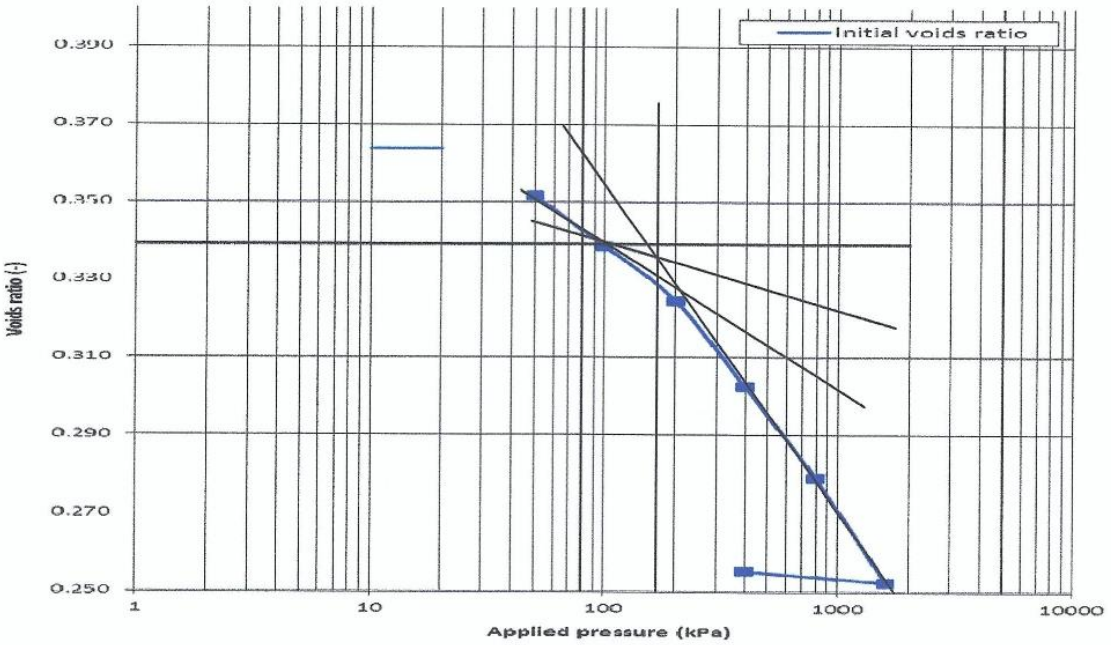
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 24+500

Site: KAYABOMBO
Location: KWALE
Depth: -
Classification Group Name: -
Lab Ref: TM/RGS-KAYABOMBO/4593
Sample No. 4593
Ring Diameter: 62.0 mm
Height of soil particles: 14.67mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 9.6%
Bulk Density: 2093kg/m^3
Initial voids ratio: 0.361
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1910kg/m^3
Pre-consolidation stress: 170 Kn/m^2
Coefficient of Compression Index: 0.090
Coefficient of Re-Compression Index: 0.027

Voids Ratio against Applied Pressure



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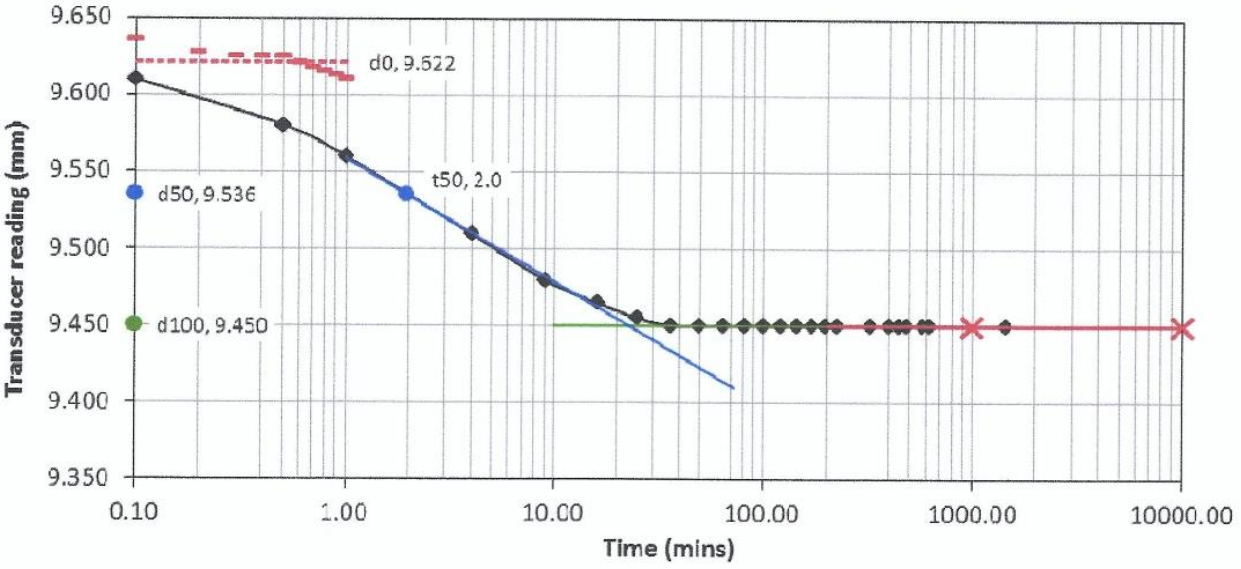
TP KM 24+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4593	**Date:**	18-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 24+500
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.210 mm
From the plot, t_{50} = 2.0 mins
H_1 = 20.00 mm
H_2 = 19.79 mm
H = (20.00+19.79)/2
= 19.90 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.148 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.210 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.210
Net compression (mm)	= 0.178
Height mm (H_2)	= 19.79
Equivalent height of solids Hs	= 14.67
Voids Ratio = (H_2 – Hs)/Hs	= **0.349**

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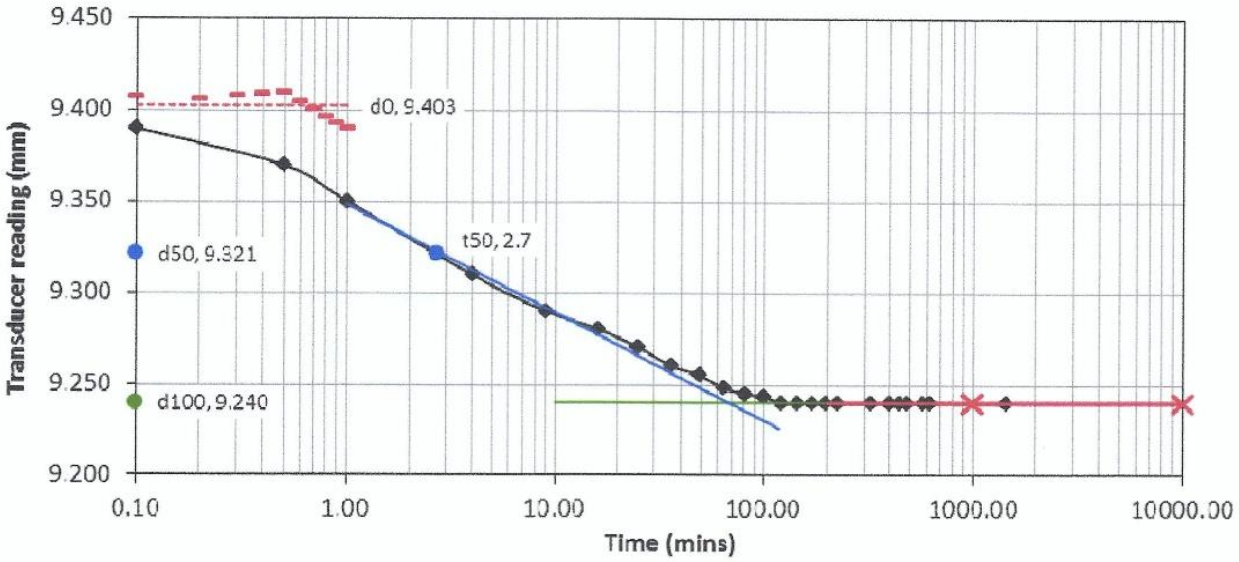
TP KM 24+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4593	**Date:**	19-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 24+500
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.210 mm
From the plot, t_{50} = 2.0 mins
H_1 = 19.79 mm
H_2 = 19.58 mm
H = (19.58+19.79)/2
= 19.69 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.733 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.212 m²/MN**

Specimen information (cumulative)
Compression (mm) = 0.420
Net compression (mm) = 0.370
Height mm (H_2) = 19.58
Equivalent height of solids Hs = 14.67
Voids Ratio = (H_2 – Hs)/Hs = **0.335**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

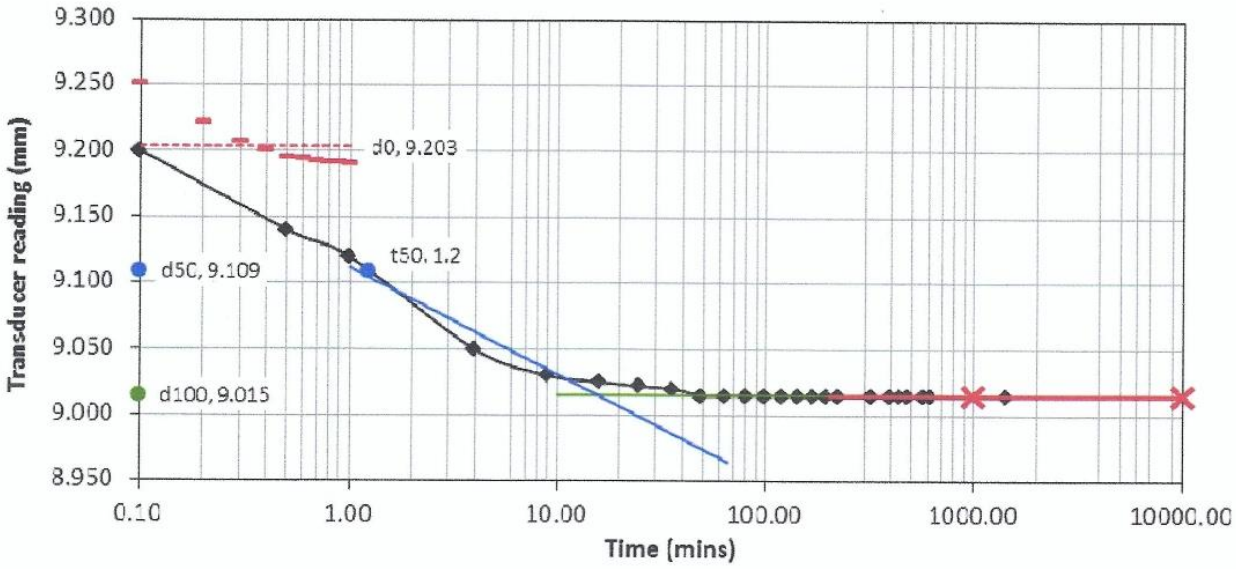
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 24+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4593	**Date:**	20-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 24+500
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.225 mm
From the plot, t_{50} = 1.2 mins
H_1 = 19.58 mm
H_2 = 19.36 mm
H = (19.58+19.36)/2
= 19.47 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **8.213 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.115 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.645
Net compression (mm)	= 0.573
Height mm (H_2)	= 19.36
Equivalent height of solids Hs	= 14.67
Voids Ratio = (H_2 – Hs)/Hs	= **0.320**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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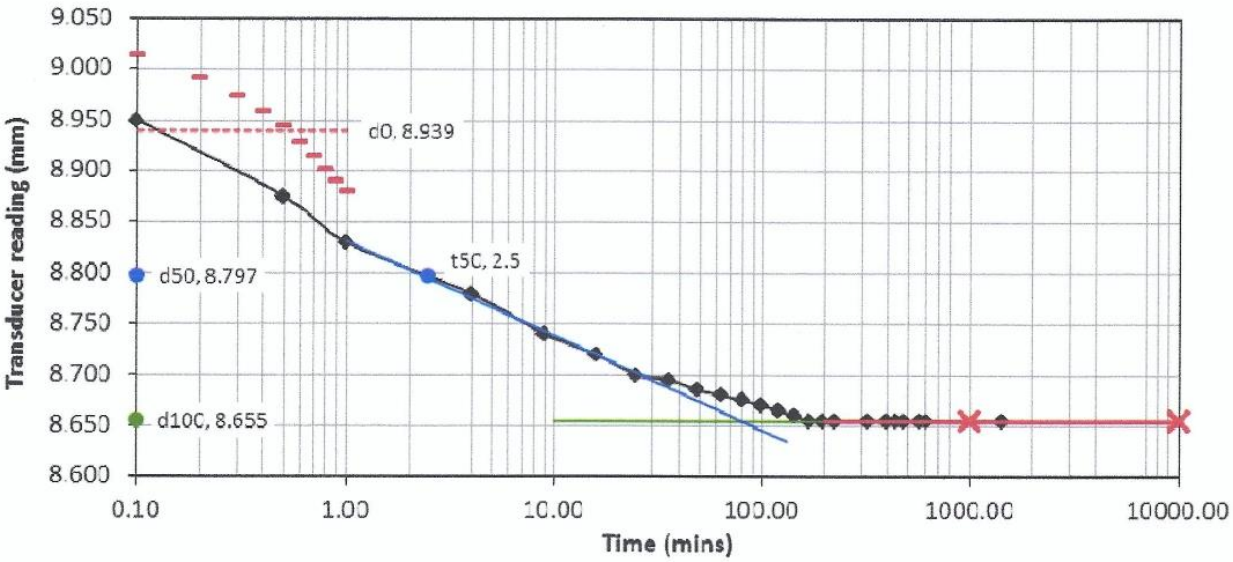
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 24+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4593	**Date:**	21-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 24+500
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.360 mm
From the plot, t_{50} = 2.5 mins
H_1 = 19.36 mm
H_2 = 19.00 mm
H = (19.00+19.36)/2
= 19.18 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.826 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.093 m²/MN**

Specimen information (cumulative)

Compression (mm)	= 1.005
Net compression (mm)	= 0.900
Height mm (H_2)	= 19.00
Equivalent height of solids Hs	= 14.67
Voids Ratio = (H_2 – Hs)/Hs	= **0.295**

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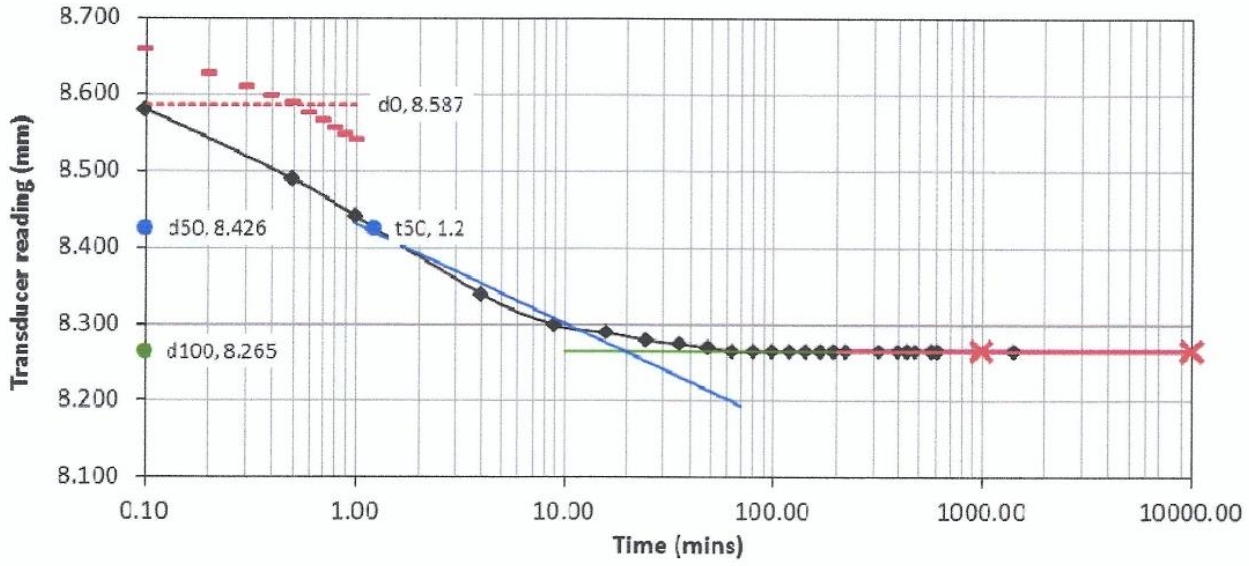
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 24+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4593	**Date:**	22-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 24+500
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.390 mm
From the plot, t_{50} = 1.2 mins
H_1 = 19.00 mm
H_2 = 18.61 mm
H = (19.00+18.61)/2
= 18.81 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.666 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.051 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.395
Net compression (mm) = 1.244
Height mm (H_2) = 18.61
Equivalent height of solids Hs = 14.67
Voids Ratio = (H_2 – Hs)/Hs = **0.269**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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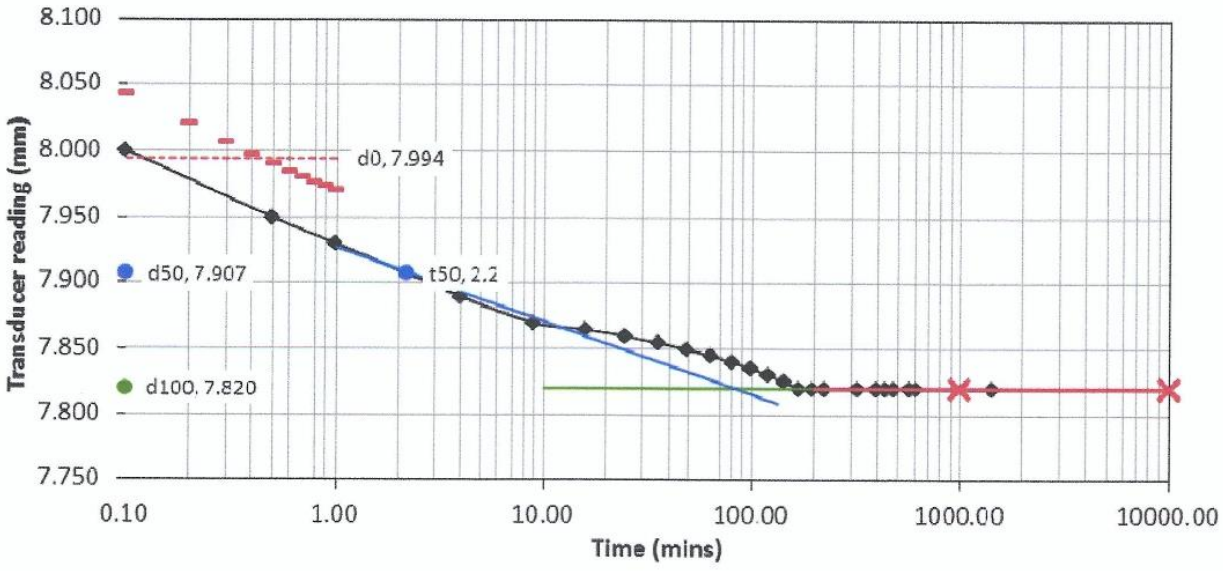
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 24+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4593	**Date:**	23-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 24+500
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.445 mm
From the plot, t_{50} = 2.2 mins
H_1 = 18.61 mm
H_2 = 18.17 mm
H = (18.17+18.61)/2
= 18.39 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.997 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.030 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.840
Net compression (mm) = 1.633
Height mm (H_2) = 18.17
Equivalent height of solids Hs = 14.67
Voids Ratio = (H_2 – Hs)/Hs = **0.239**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Email: danellilab3@gmail.com
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Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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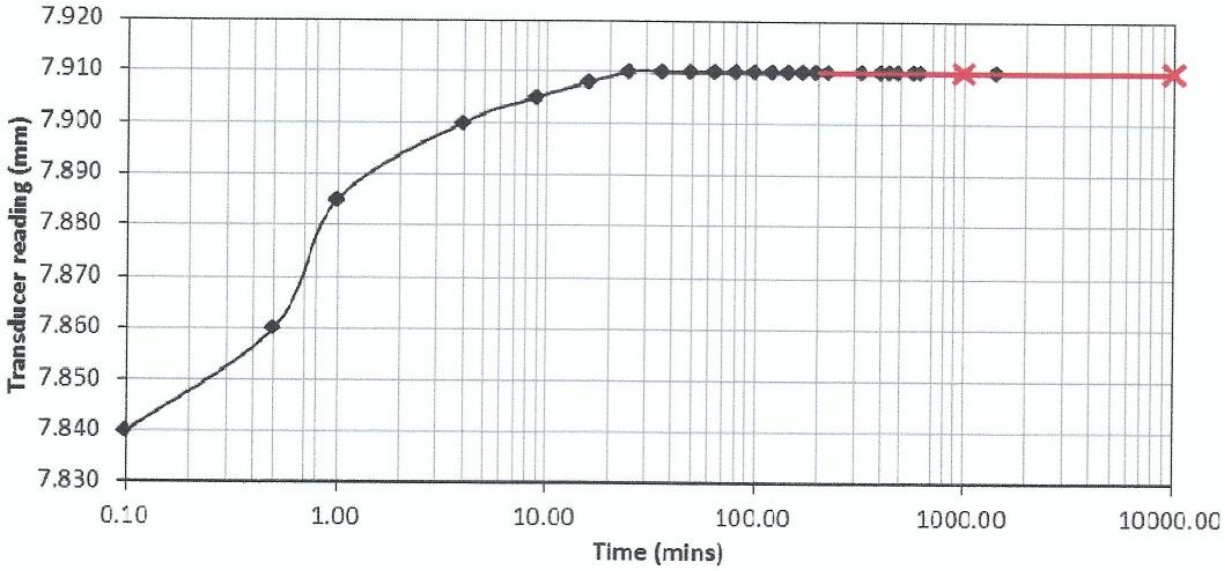
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 24+500

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4593	**Date:**	24-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 24+500
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.090 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= -m^2/MN

Specimen information (cumulative)

Compression (mm)	= 1.750
Net compression (mm)	= 1.592
Height mm (H_2)	= 18.41
Equivalent height of solids Hs	= 14.67
Voids Ratio = (H_2 – Hs)/Hs	= 0.255

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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Mombasa Road
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Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

KAYABOMBO SITE

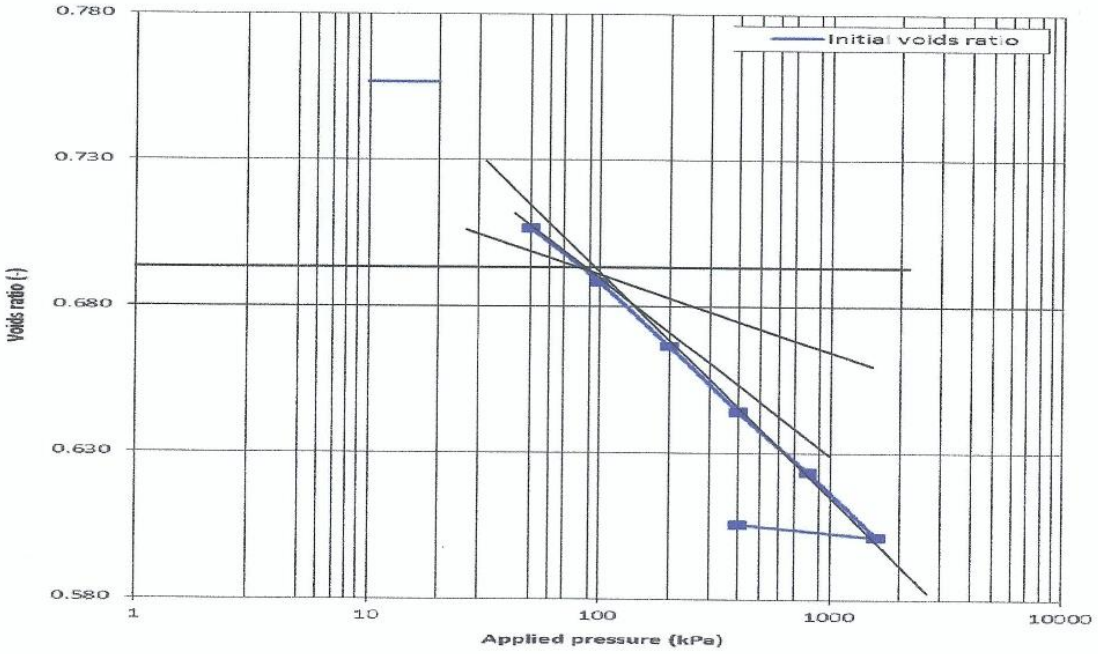
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 26+000

Site: KAYABOMBO
Location: KWALE
Depth: -
Classification Group Name: -
Lab Ref: TM/RGS-KAYABOMBO/4596
Sample No. 4596
Ring Diameter: 62.0 mm
Height of soil particles: 11.38mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 10.0%
Bulk Density: 1625kg/m^3
Initial voids ratio: 0.760
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1477kg/m^3
Pre-consolidation stress: 100 Kn/m^2
Coefficient of Compression Index: 0.085
Coefficient of Re-Compression Index: 0.038

Voids Ratio against Applied Pressure



Tested By: KEVIN
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Checked By:

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
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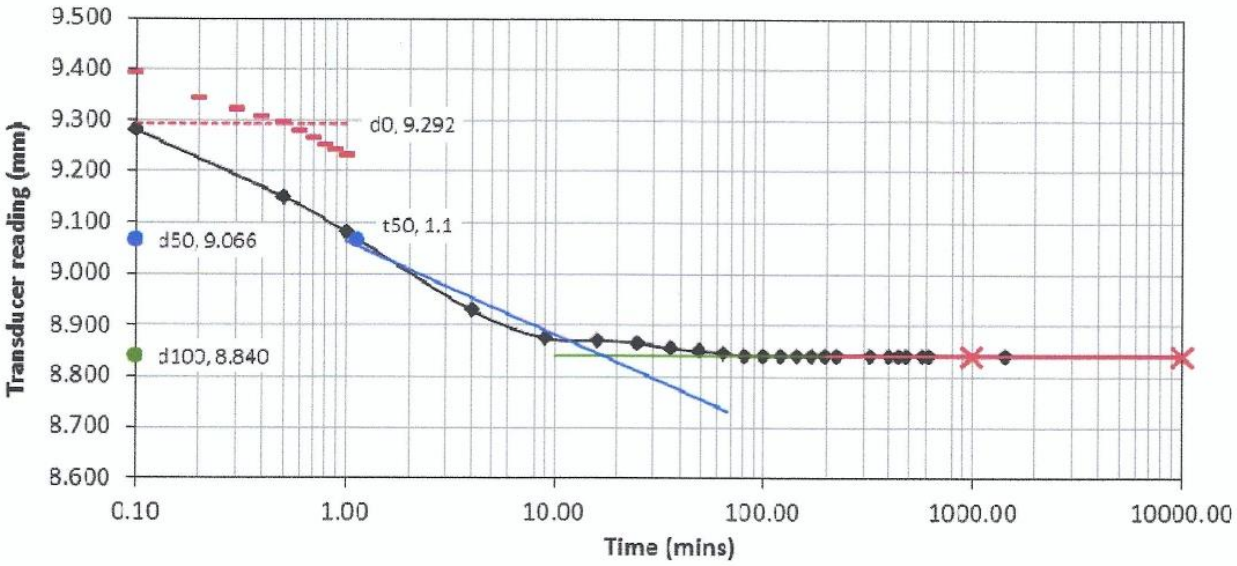
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 26+000

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4596	**Date:**	18-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 26+000
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.600 mm
From the plot, t_{50} = 1.1 mins
H_1 = 20.00 mm
H_2 = 19.40 mm
H = (20.00+19.40)/2
= 19.70 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **9.173 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.600 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.600
Net compression (mm) = 0.568
Height mm (H_2) = 19.40
Equivalent height of solids Hs = 11.38
Voids Ratio = (H_2 – Hs)/Hs = **0.705**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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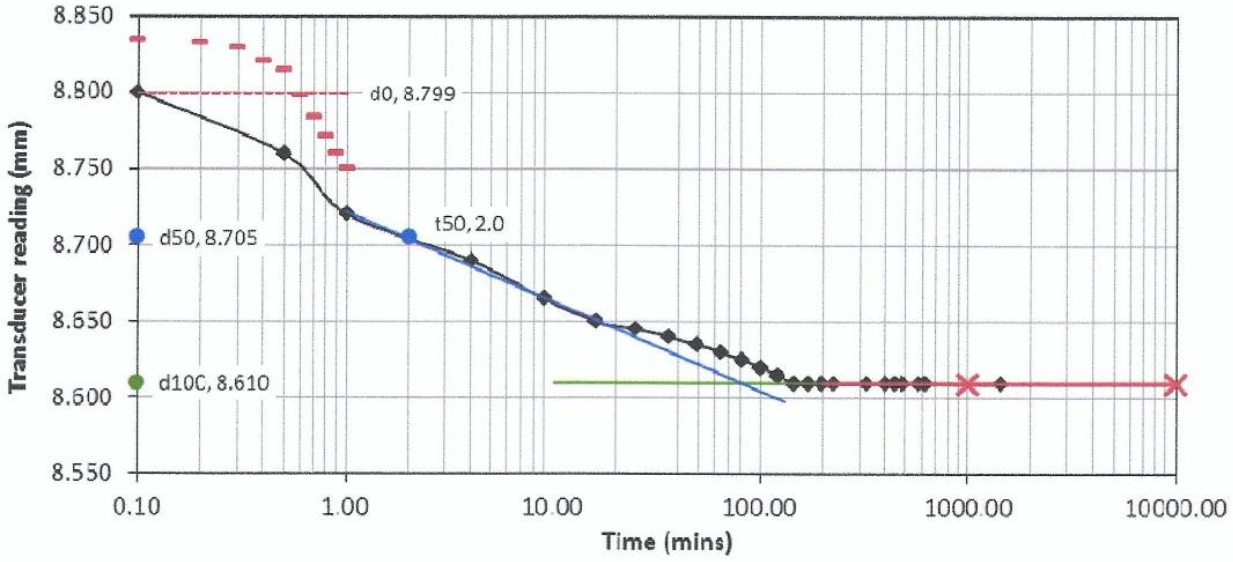
TP KM 26+000

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4596	**Date:**	19-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 26+000
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.230 mm
From the plot, t_{50} = 2.0 mins
H_1 = 19.40 mm
H_2 = 19.17 mm
H = (19.17+19.40)/2
= 19.29 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.837 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.237 m²/MN**

Specimen information (cumulative)
Compression (mm) = 0.830
Net compression (mm) = 0.780
Height mm (H_2) = 19.17
Equivalent height of solids Hs = 11.38
Voids Ratio = (H_2 – Hs)/Hs = **0.685**

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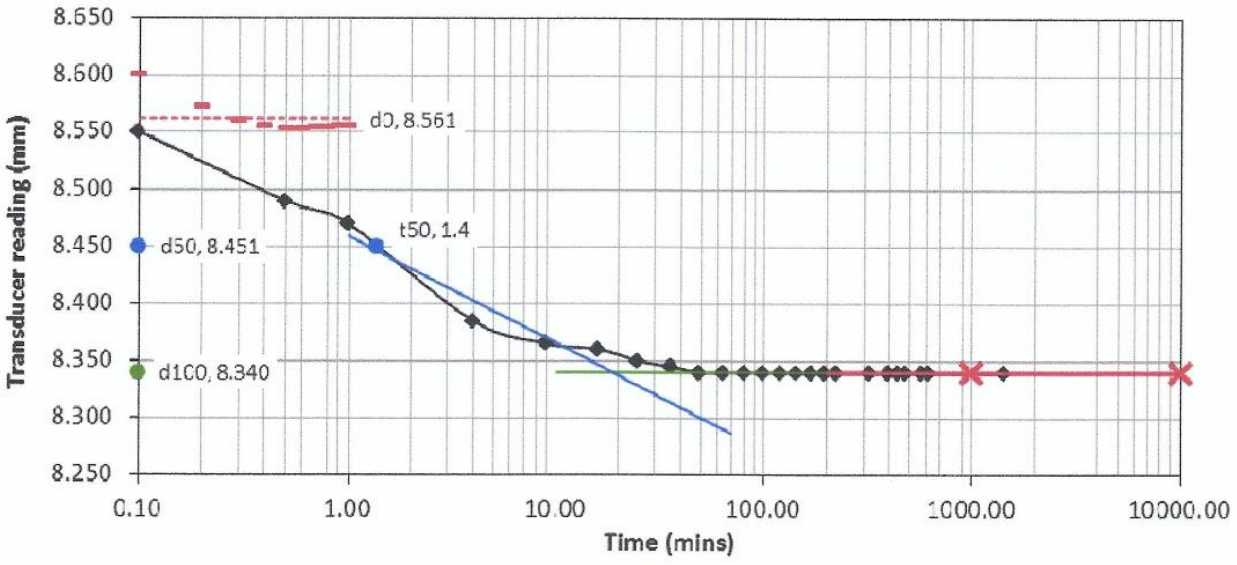
TP KM 26+000

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4596	**Date:**	20-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 26+000
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.270 mm
From the plot, t_{50} = 1.4 mins
H_1 = 19.17 mm
H_2 = 18.90 mm
H = (19.17+18.90)/2
= 19.04 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.733 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.141 m²/MN**

Specimen information (cumulative)
Compression (mm) = 1.100
Net compression (mm) = 1.028
Height mm (H_2) = 18.90
Equivalent height of solids Hs = 11.38
Voids Ratio = (H_2 – Hs)/Hs = **0.661**

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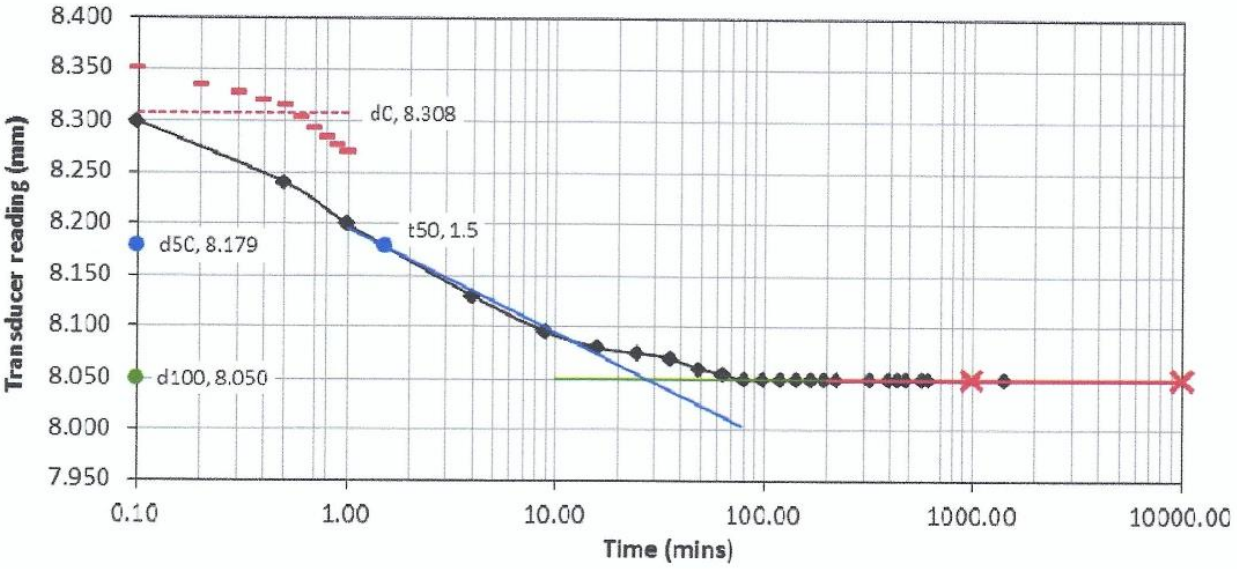
TP KM 26+000

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4596	**Date:**	21-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 26+000
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.290 mm
From the plot, t_{50} = 1.5 mins
H_1 = 18.90 mm
H_2 = 18.61 mm
H = (18.61+18.90)/2
= 18.76 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.100 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.077 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 1.390
Net compression (mm)	= 1.285
Height mm (H_2)	= 18.61
Equivalent height of solids Hs	= 11.38
Voids Ratio = (H_2 – Hs)/Hs	= **0.635**

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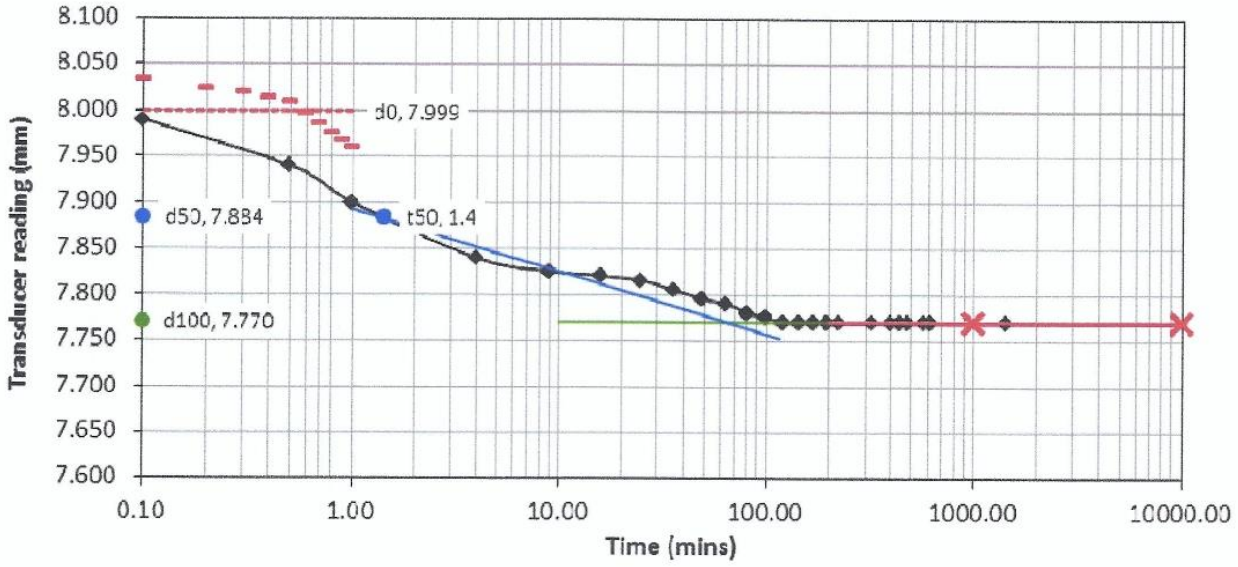
Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4596	**Date:**	22-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 26+000
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.280 mm
From the plot, t_{50} = 1.4 mins
H_1 = 18.61 mm
H_2 = 18.33 mm
H = (18.61+18.33)/2
= 18.47 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.335 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.038 m²/MN**

Specimen information (cumulative)

Compression (mm)	= 1.670
Net compression (mm)	= 1.519
Height mm (H_2)	= 18.33
Equivalent height of solids Hs	= 11.38
Voids Ratio = (H_2 – Hs)/Hs	= **0.611**

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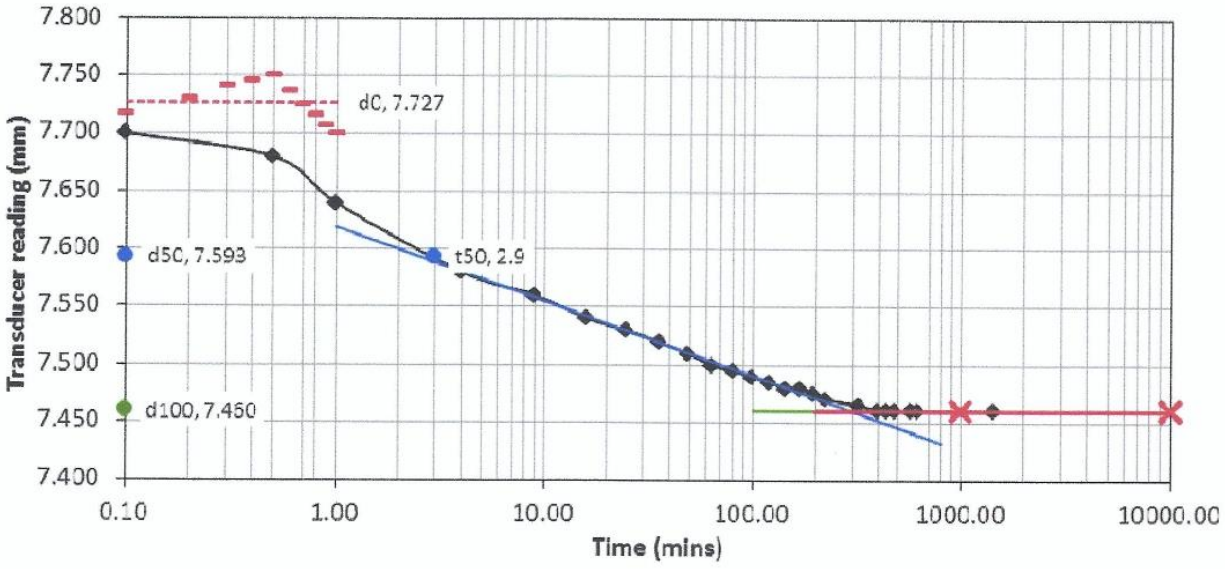
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 26+000

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4596	**Date:**	23-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 26+000
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.310 mm
From the plot, t_{50} = 2.9 mins
H_1 = 18.33 mm
H_2 = 18.02 mm
H = (18.33+18.02)/2
= 18.18 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.963 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.021 m²/MN**

Specimen information (cumulative)
Compression (mm) = 1.980
Net compression (mm) = 1.773
Height mm (H_2) = 18.02
Equivalent height of solids Hs = 11.38
Voids Ratio = (H_2 – Hs)/Hs = **0.583**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

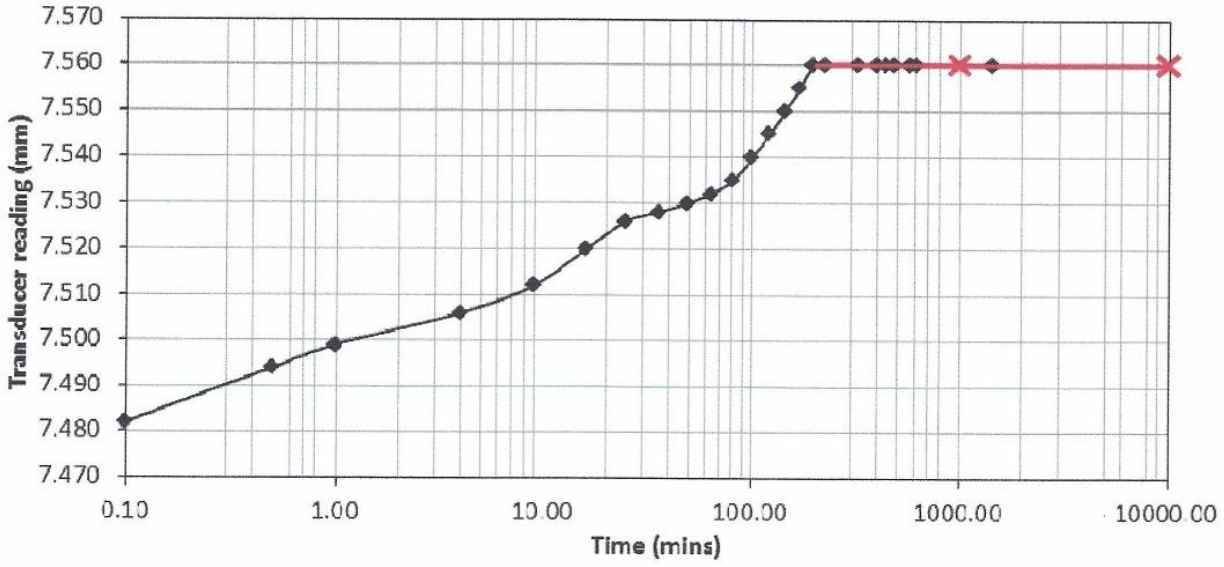
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 26+000

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-KAYABOMBO/4596	**Date:**	24-11-21
Project	KAYABOMBO SITE	**Location:**	KWALE	**Sample**	TP KM 26+000
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.100 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 1.880
Net compression (mm)	= 1.722
Height mm (H_2)	= 18.28
Equivalent height of solids Hs	= 11.38
Voids Ratio = (H_2 – Hs)/Hs	= 0.606

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

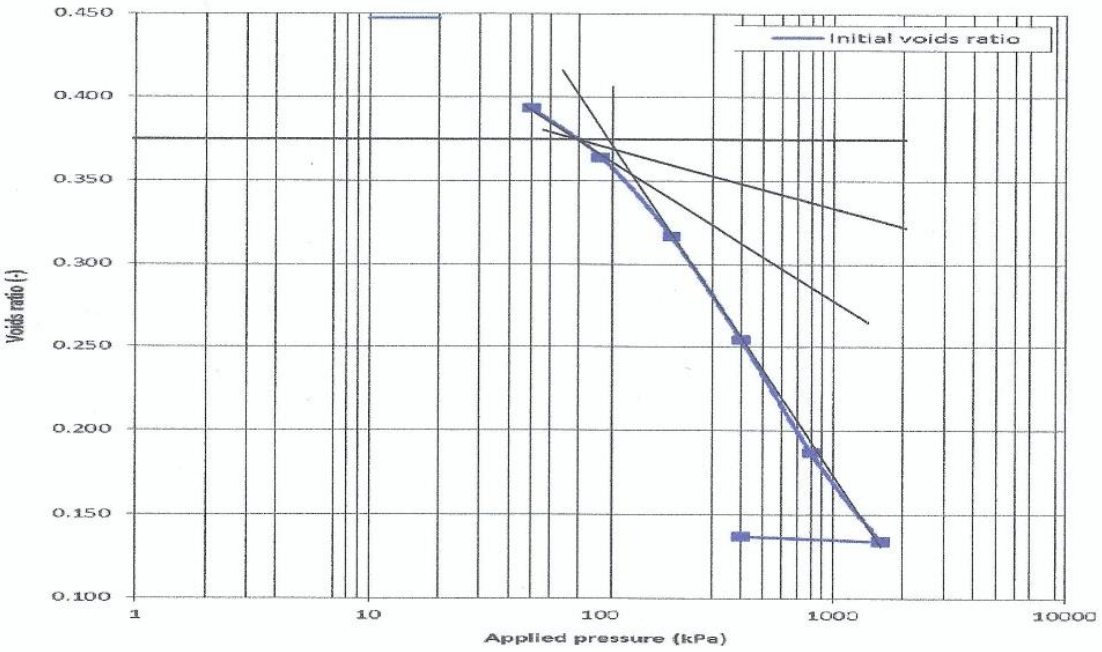
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 2+000 (Depth: 0.4-1.6m)

Site: CHANGAMWE
Location: MOMBASA
Depth: 0.4-1.6M
Classification Group Name: -
Lab Ref: TM/RGS-CHANGAMWE/5689
Sample No. 5689
Ring Diameter: 62.0 mm
Height of soil particles: 13.82mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 12.0%
Bulk Density: 1995kg/m^3
Initial voids ratio: 0.460
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1781kg/m^3
Pre-consolidation stress: 120 Kn/m^2
Coefficient of Compression Index: 0.200
Coefficient of Re-Compression Index: 0.030

Voids Ratio against Applied Pressure



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info@danellilab.com
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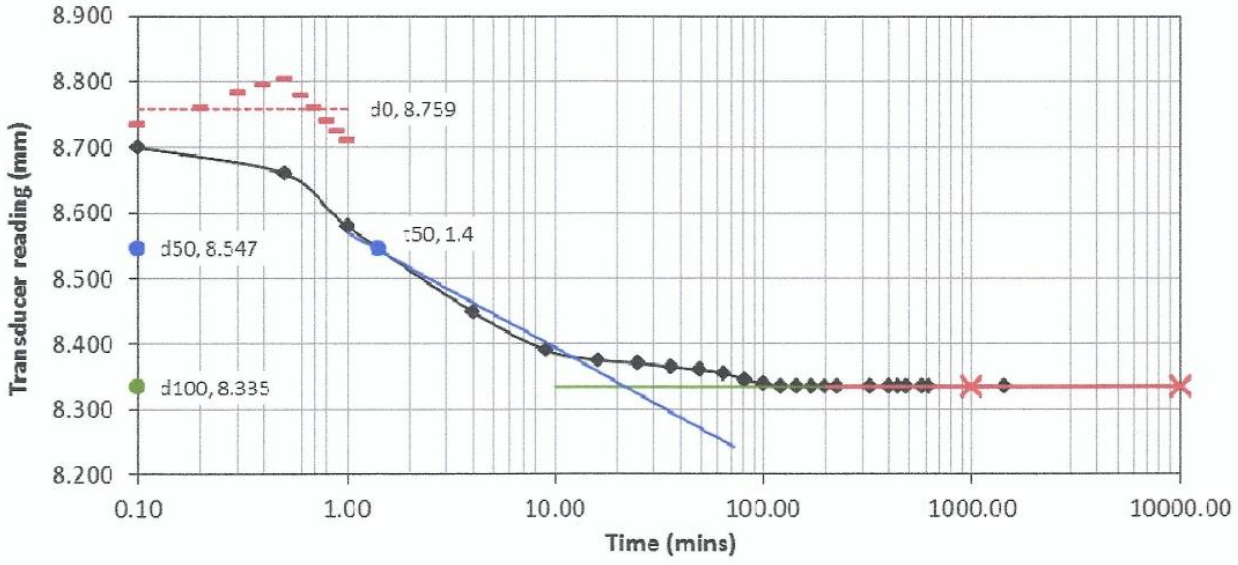
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 2+000(Depth: 0.4-1.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5689	**Date:**	18-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 2+000 0.4-1.6m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.785 mm
From the plot, t_{50} = 1.4 mins
H_1 = 20.00 mm
H_2 = 19.22 mm
H = (20.00+19.22)/2
= 19.61 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}} = 7.142\ m^2/year$

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

$= 0.785\ m^2/MN$

Specimen information (cumulative)
Compression (mm) = 0.785
Net compression (mm) = 0.753
Height mm (H_2) = 19.22
Equivalent height of solids Hs = 13.82
Voids Ratio = $(H_2 - Hs)/Hs$ = 0.391

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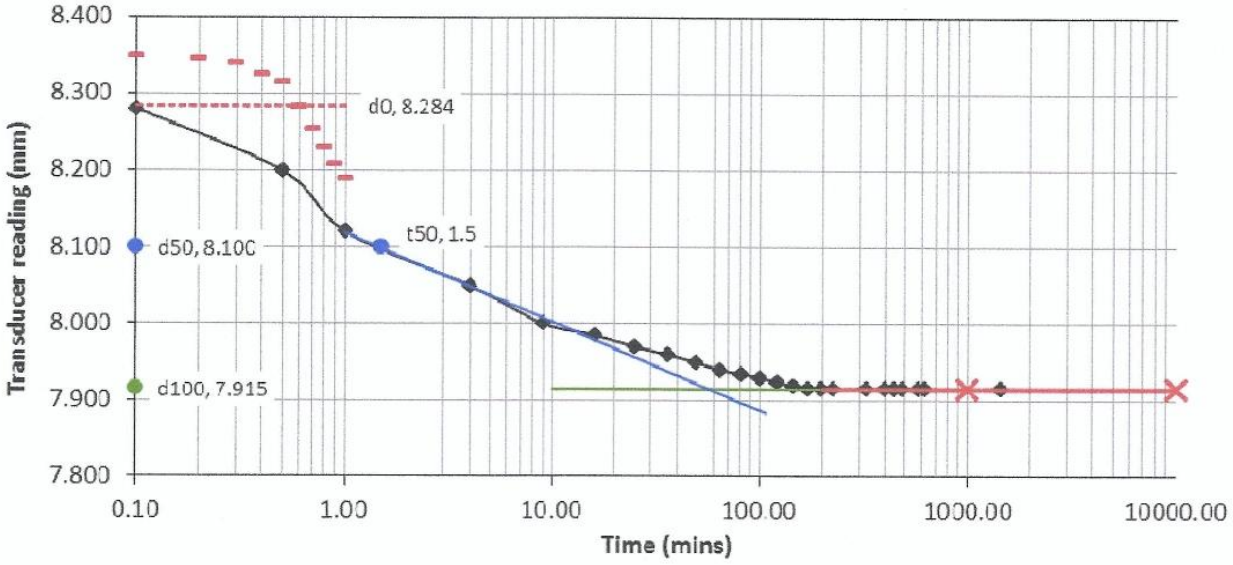
TP KM 2+000(Depth: 0.4-1.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5689	**Date:**	19-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 2+000 0.4-1.6m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.420 mm
From the plot, t_{50} = 1.5 mins
H_1 = 19.22 mm
H_2 = 18.80 mm
H = (18.80+19.22)/2
= 19.01 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.264 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.437 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.205
Net compression (mm) = 1.155
Height mm (H_2) = 18.80
Equivalent height of solids Hs = 13.82
Voids Ratio = (H_2 – Hs)/Hs = **0.360**

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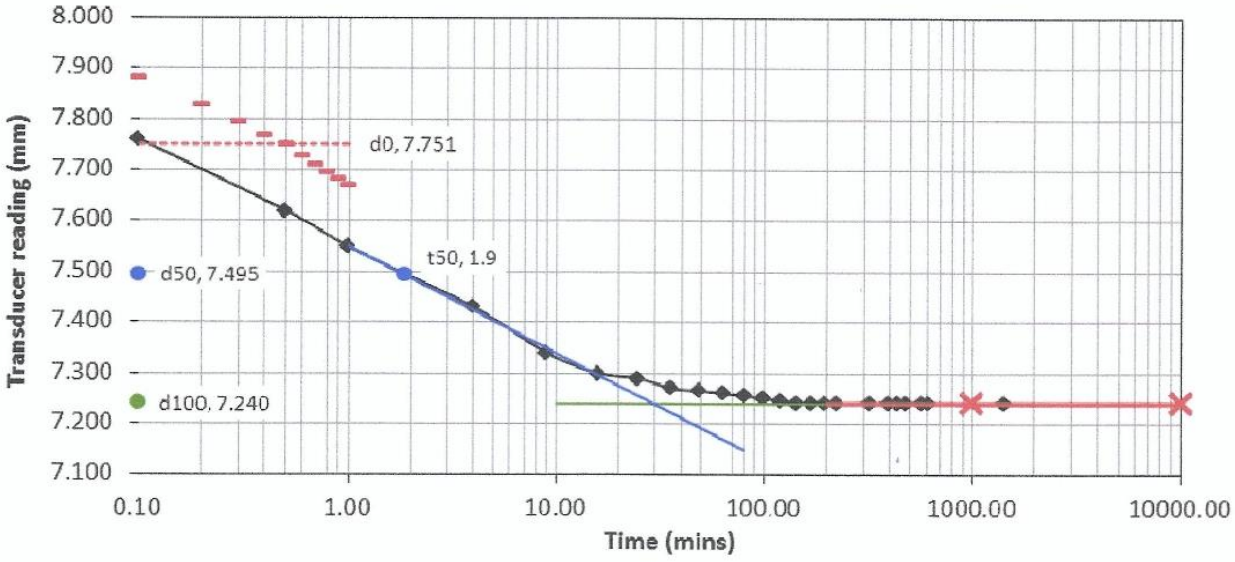
TP KM 2+000(Depth: 0.4-1.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5689	**Date:**	20-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 2+000 0.4-1.6m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.675 mm
From the plot, t_{50} = 1.9 mins
H_1 = 18.80 mm
H_2 = 18.13 mm
H = (18.80+18.13)/2
= 18.47 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.468 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.359 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 1.880
Net compression (mm)	= 1.808
Height mm (H_2)	= 18.13
Equivalent height of solids Hs	= 13.82
Voids Ratio = (H_2 – Hs)/Hs	= **0.312**

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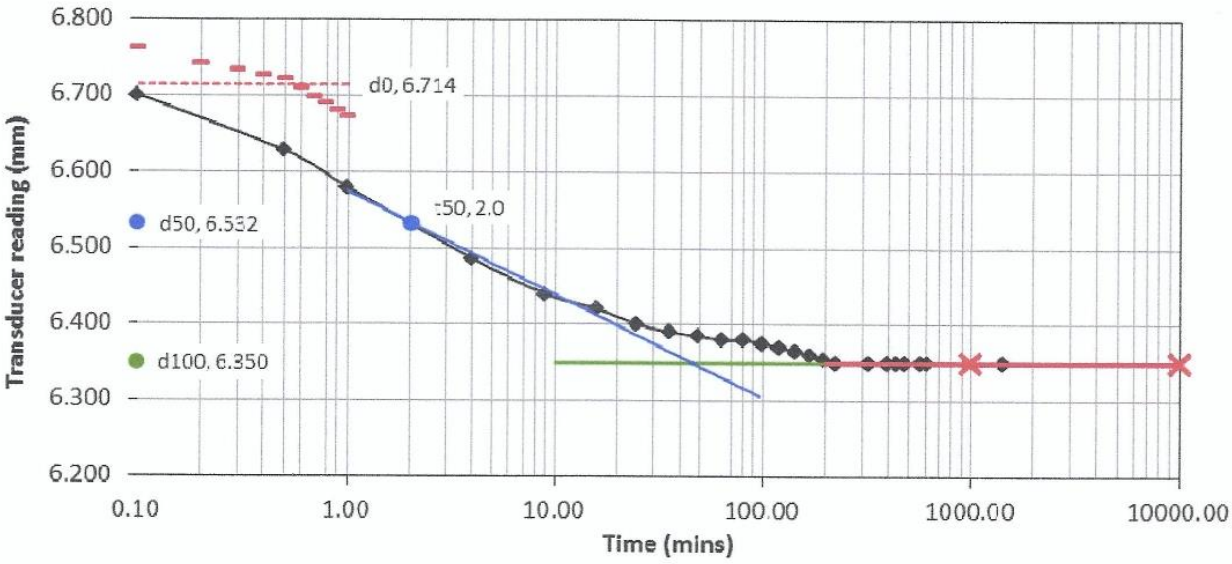
TP KM 2+000(Depth: 0.4-1.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5689	**Date:**	21-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 2+000 0.4-1.6m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.890 mm
From the plot, t_{50} = 2.0 mins
H_1 = 18.13 mm
H_2 = 17.24 mm
H = (17.24+18.13)/2
= 17.69 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.068 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.245 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.770
Net compression (mm) = 2.665
Height mm (H_2) = 17.24
Equivalent height of solids Hs = 13.82
Voids Ratio = (H_2 – Hs)/Hs = **0.247**

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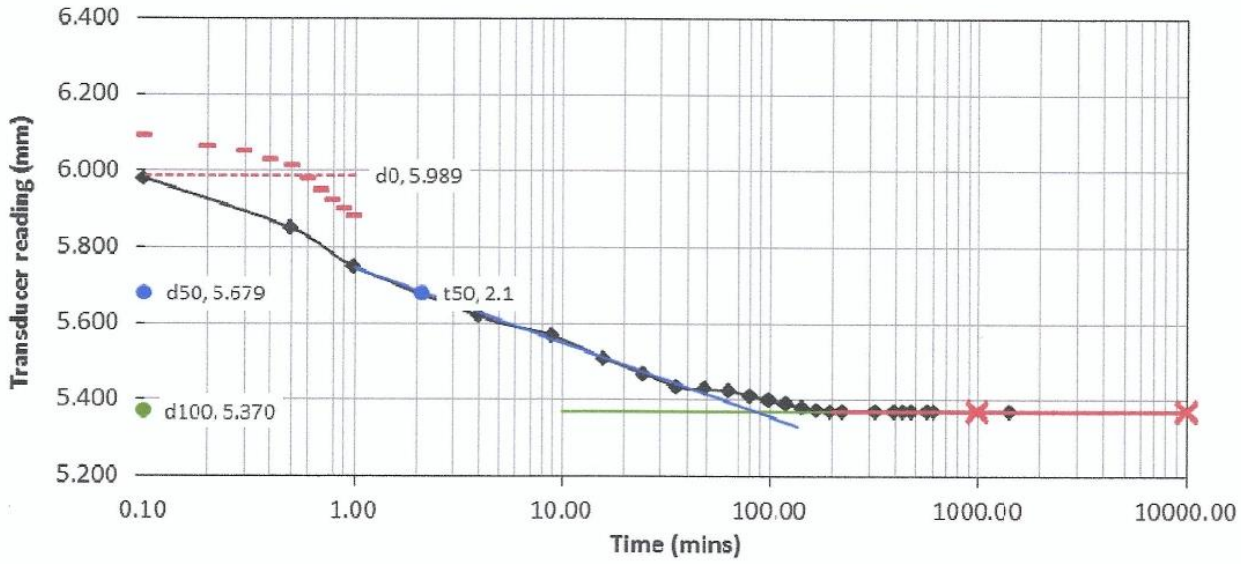
TP KM 2+000(Depth: 0.4-1.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5689	**Date:**	22-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 2+000 0.4-1.6m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.980 mm
From the plot, t_{50} = 2.1 mins
H_1 = 17.24 mm
H_2 = 16.26 mm
H = (17.24+16.26)/2
= 16.75 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.474 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.142 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.750
Net compression (mm) = 3.599
Height mm (H_2) = 16.26
Equivalent height of solids Hs = 13.82
Voids Ratio = (H_2 – Hs)/Hs = **0.177**

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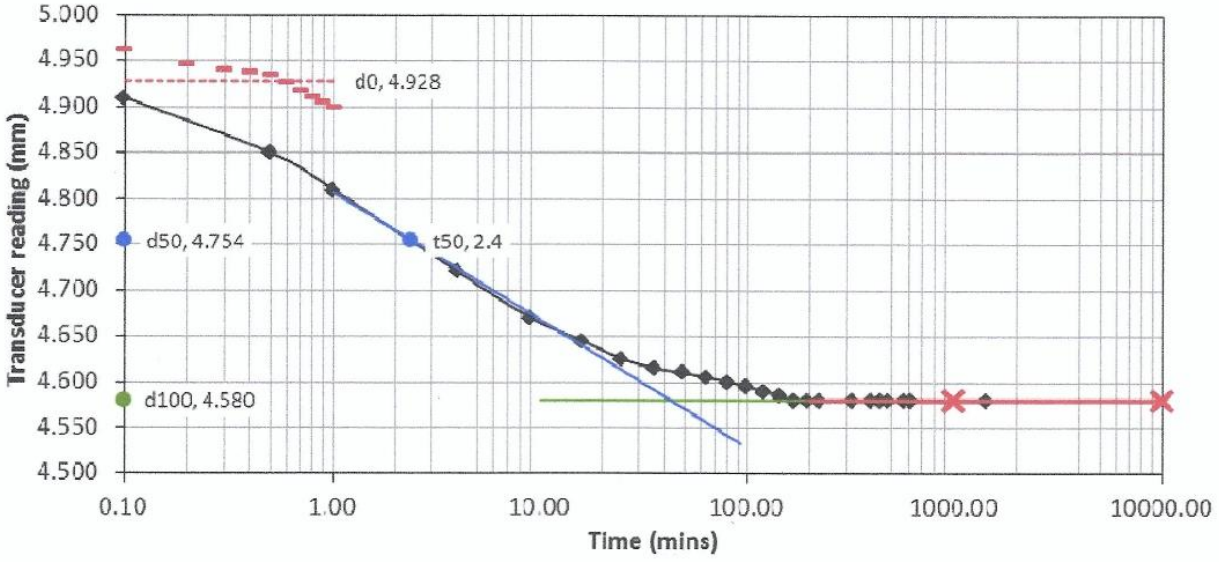
TP KM 2+000(Depth: 0.4-1.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5689	**Date:**	23-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 2+000 0.4-1.6m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.790 mm
From the plot, t_{50} = 2.4 mins
H_1 = 16.26 mm
H_2 = 15.47 mm
H = (15.47+16.26)/2
= 15.87 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.728 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.061 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 4.540
Net compression (mm) = 4.333
Height mm (H_2) = 15.47
Equivalent height of solids Hs = 13.82
Voids Ratio = (H_2 – Hs)/Hs = **0.119**

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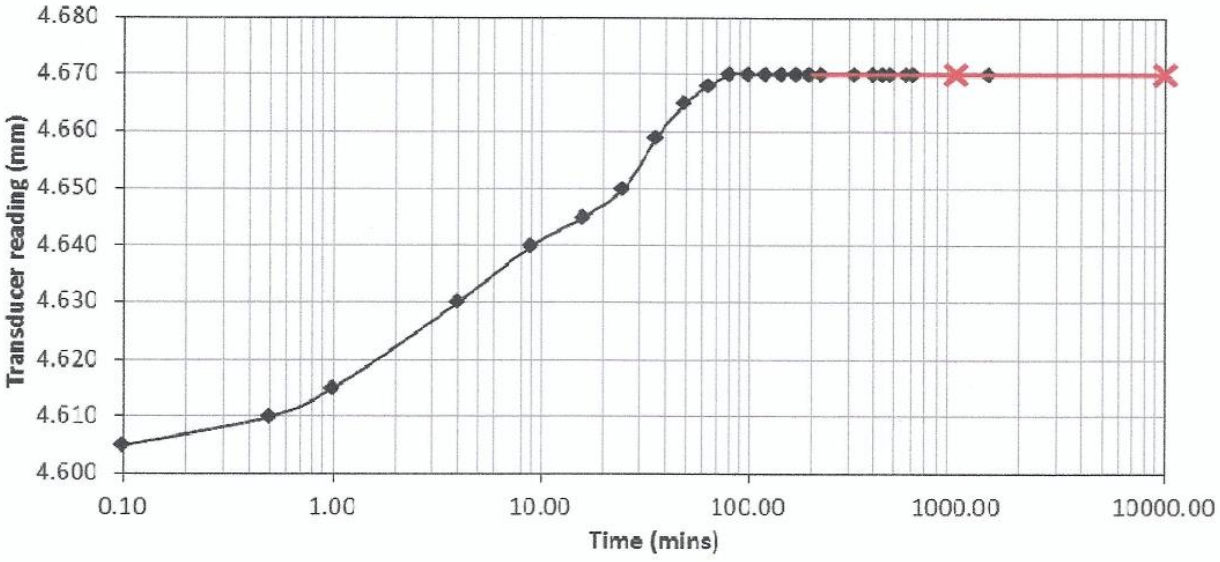
TP KM 2+000(Depth: 0.4-1.6m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5689	**Date:**	24-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 2+000 0.4-1.6m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.090 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 4.450
Net compression (mm)	= 4.292
Height mm (H_2)	= 15.71
Equivalent height of solids Hs	= 13.82
Voids Ratio = (H_2 – Hs)/Hs	= 0.137

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

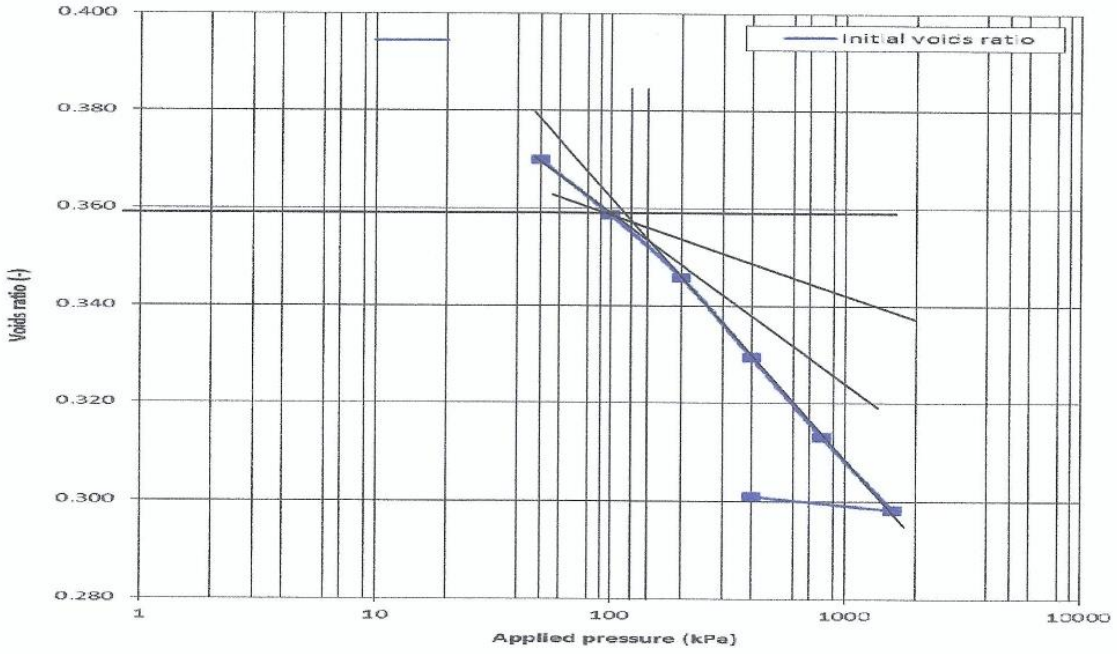
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 4+500 (Depth: 0.2-1.7m)

Site: CHANGAMWE
Location: MOMBASA
Depth: 0.2-1.7M
Classification Group Name: -
Lab Ref: TM/RGS-CHANGAMWE/5693
Sample No. 5693
Ring Diameter: 62.0 mm
Height of soil particles: 14.34mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 10.1%
Bulk Density: 2045kg/m^3
Initial voids ratio: 0.400
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1857kg/m^3
Pre-consolidation stress: 135 Kn/m^2
Coefficient of Compression Index: 0.066
Coefficient of Re-Compression Index: 0.027

Voids Ratio against Applied Pressure



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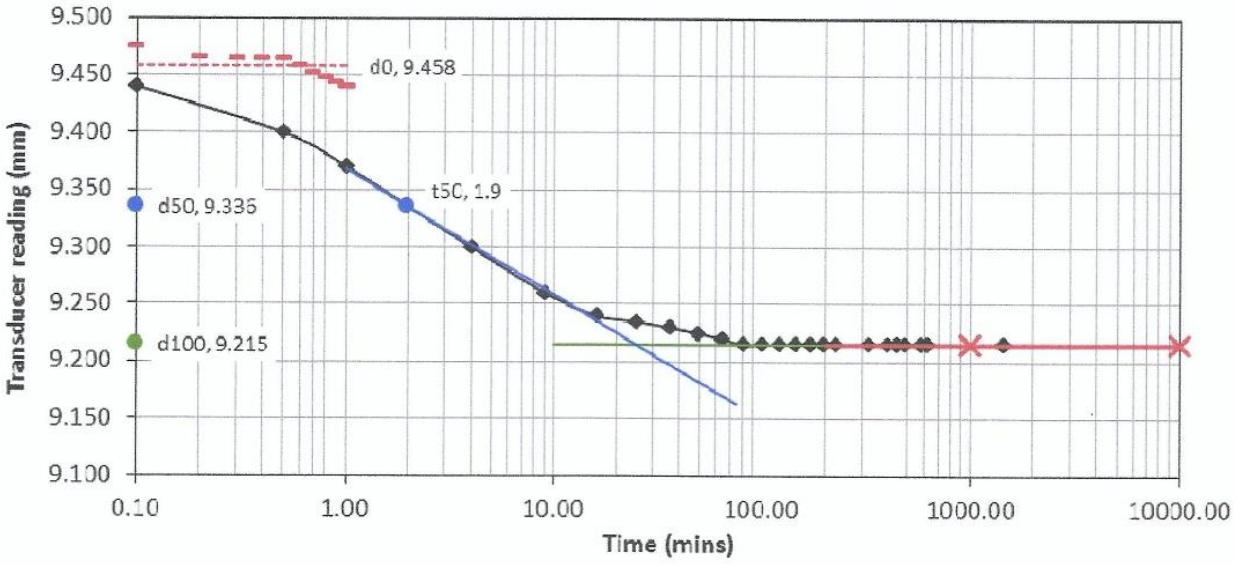
TP KM 4+500(Depth: 0.2-1.7m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5693	**Date:**	18-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 4+500 0.2-1.7m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.385 mm
From the plot, t_{50} = 1.9 mins
H_1 = 20.00 mm
H_2 = 19.62 mm
H = (20.00+19.62)/2
= 19.81 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.370 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.385 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.385
Net compression (mm) = 0.353
Height mm (H_2) = 19.62
Equivalent height of solids Hs = 14.34
Voids Ratio = (H_2 – Hs)/Hs = **0.368**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

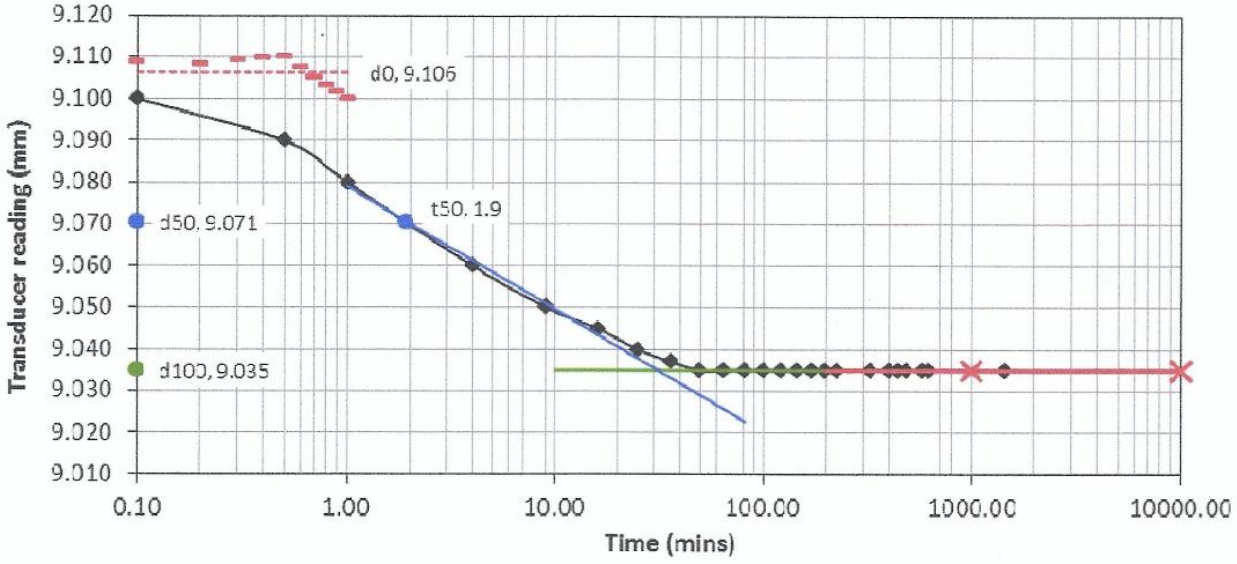
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 4+500(Depth: 0.2-1.7m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5693	**Date:**	19-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 4+500 0.2-1.7m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.180 mm
From the plot, t_{50} = 1.9 mins
H_1 = 19.62 mm
H_2 = 19.44 mm
H = (19.44+19.62)/2
= 19.53 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.219 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.183 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.565
Net compression (mm)	= 0.515
Height mm (H_2)	= 19.44
Equivalent height of solids Hs	= 14.34
Voids Ratio = (H_2 – Hs)/Hs	= **0.356**

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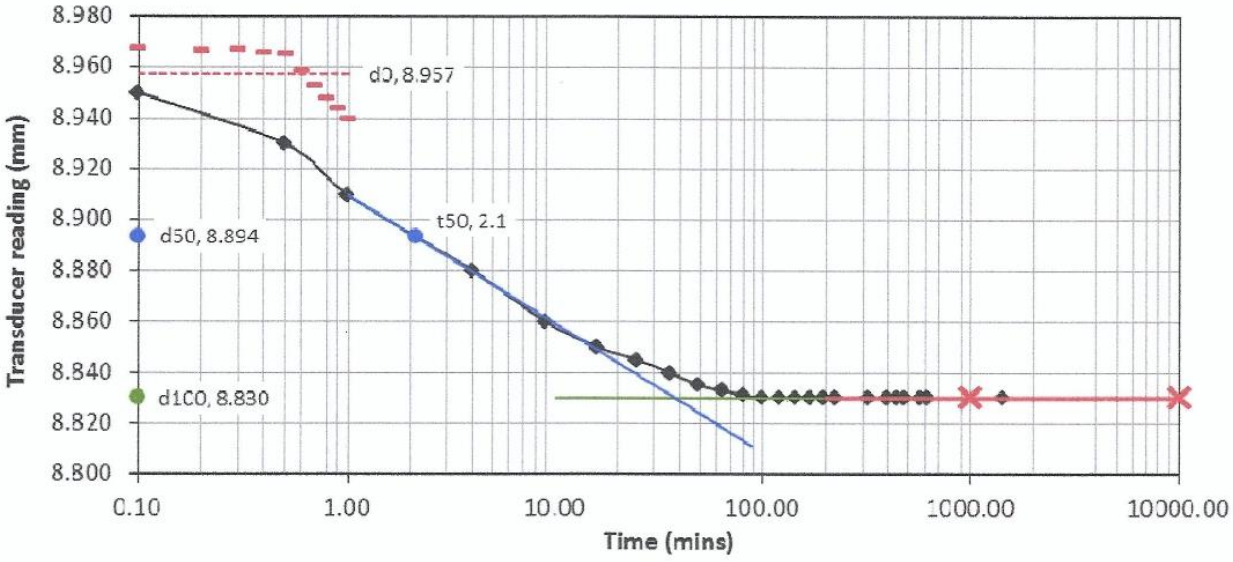
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 4+500(Depth: 0.2-1.7m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5693	**Date:**	20-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 4+500 0.2-1.7m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.205 mm
From the plot, t_{50} = 2.1 mins
H_1 = 19.44 mm
H_2 = 19.24 mm
H = (19.44+19.24)/2
= 19.34 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.631 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.105 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.770
Net compression (mm) = 0.698
Height mm (H_2) = 19.24
Equivalent height of solids Hs = 14.34
Voids Ratio = (H_2 – Hs)/Hs = **0.342**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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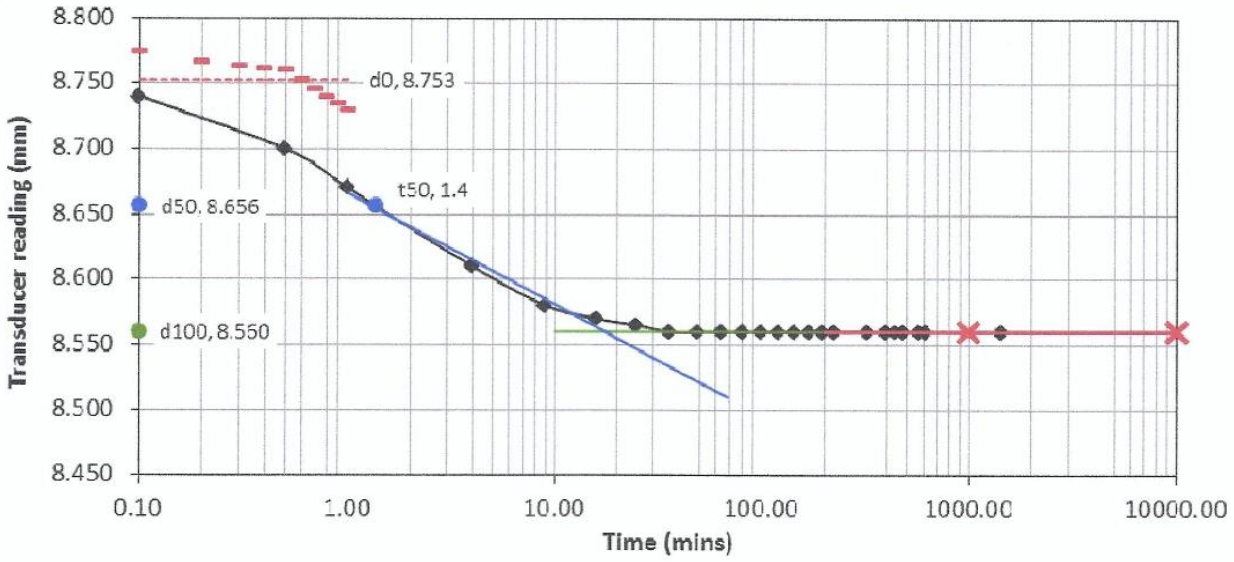
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 4+500(Depth: 0.2-1.7m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5693	**Date:**	21-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 4+500 0.2-1.7m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.270 mm
From the plot, t_{50} = 1.4 mins
H_1 = 19.24 mm
H_2 = 18.97 mm
H = (18.97+19.24)/2
= 19.11 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.782 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.070 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.040
Net compression (mm) = 0.935
Height mm (H_2) = 18.97
Equivalent height of solids Hs = 14.34
Voids Ratio = (H_2 – Hs)/Hs = **0.323**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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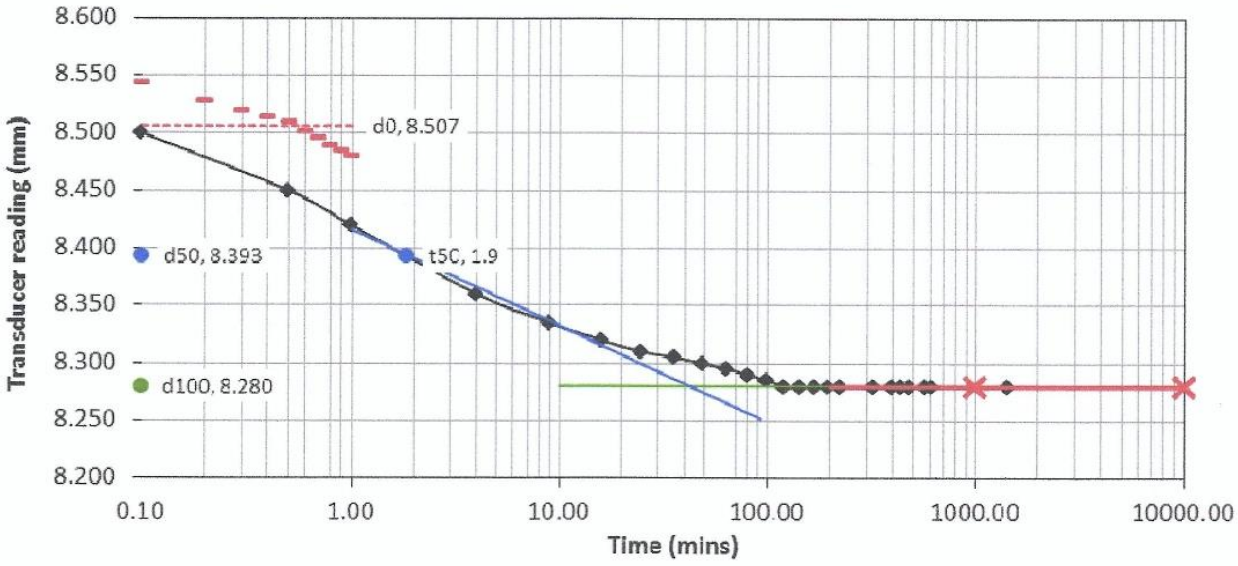
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 4+500(Depth: 0.2-1.7m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5693	**Date:**	22-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 4+500 0.2-1.7m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.280 mm
From the plot, t_{50} = 1.9 mins
H_1 = 18.97 mm
H_2 = 18.69 mm
H = (18.97+18.69)/2
= 18.83 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.852 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.037 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.320
Net compression (mm) = 1.169
Height mm (H_2) = 18.69
Equivalent height of solids Hs = 14.34
Voids Ratio = (H_2 – Hs)/Hs = **0.303**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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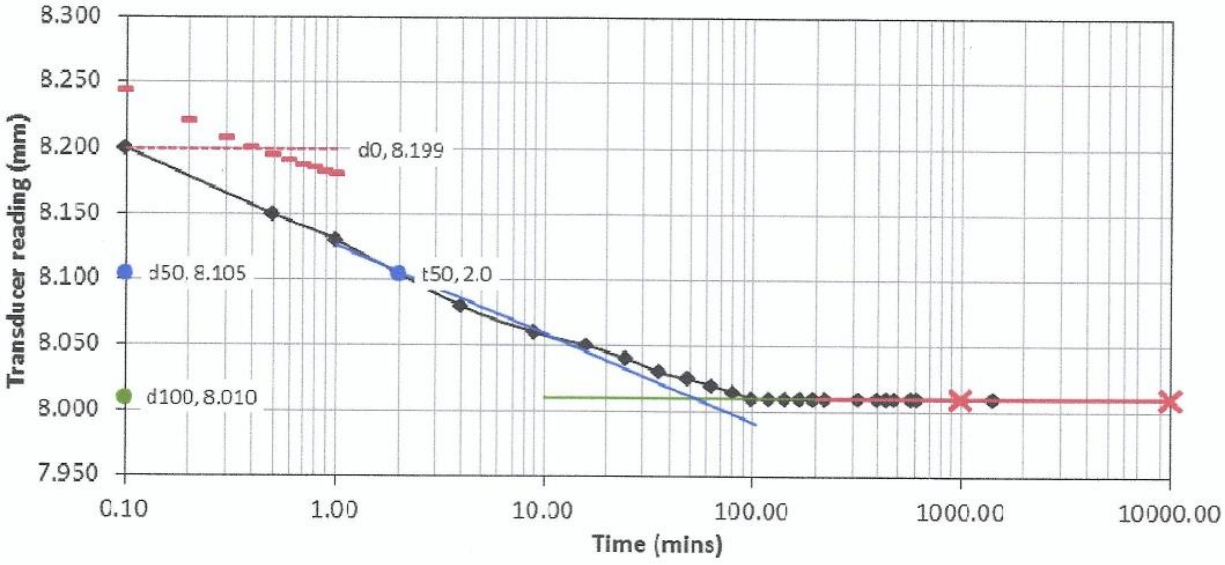
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 4+500(Depth: 0.2-1.7m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5693	**Date:**	23-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 4+500 0.2-1.7m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.270 mm
From the plot, t_{50} = 2.0 mins
H_1 = 18.69 mm
H_2 = 18.42 mm
H = (18.42+18.69)/2
= 18.56 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.478 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.018 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.590
Net compression (mm) = 1.383
Height mm (H_2) = 18.42
Equivalent height of solids Hs = 14.34
Voids Ratio = (H_2 – Hs)/Hs = **0.285**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
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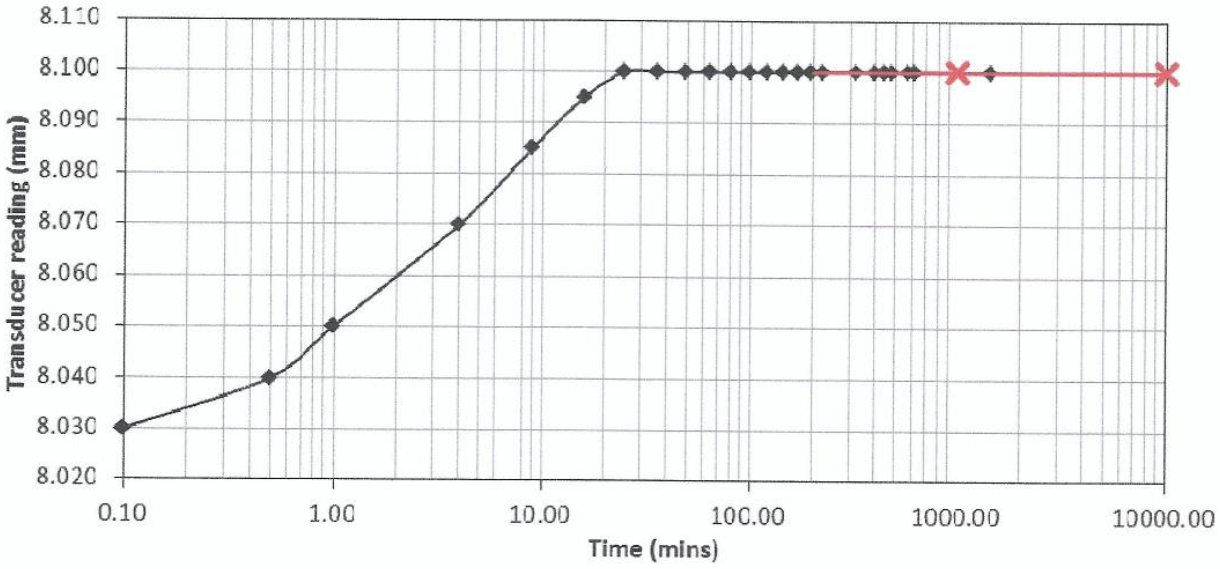
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 4+500(Depth: 0.2-1.7m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5693	**Date:**	24-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 4+500 0.2-1.7m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.090 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 1.500
Net compression (mm)	= 1.342
Height mm (H_2)	= 18.66
Equivalent height of solids Hs	= 14.34
Voids Ratio = (H_2 – Hs)/Hs	= 0.301

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

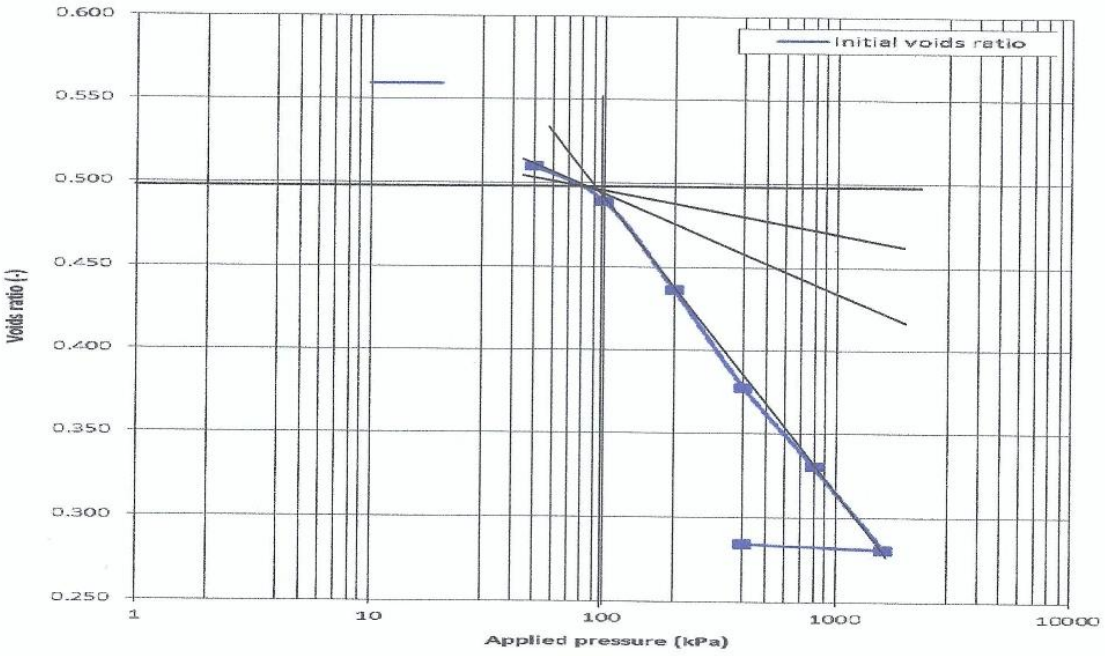
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 7+500 (Depth: 0.2-0.9m)

Site: CHANGAMWE
Location: MOMBASA
Depth: 0.2-0.9M
Classification Group Name: -
Lab Ref: TM/RGS-CHANGAMWE/5696
Sample No. 5696
Ring Diameter: 62.0 mm
Height of soil particles: 12.83mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 10.1%
Bulk Density: 1946kg/m^3
Initial voids ratio: 0.557
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1670kg/m^3
Pre-consolidation stress: 100 Kn/m^2
Coefficient of Compression Index: 0.183
Coefficient of Re-Compression Index: 0.032

Voids Ratio against Applied Pressure



Tested By: KEVIN
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Nairobi
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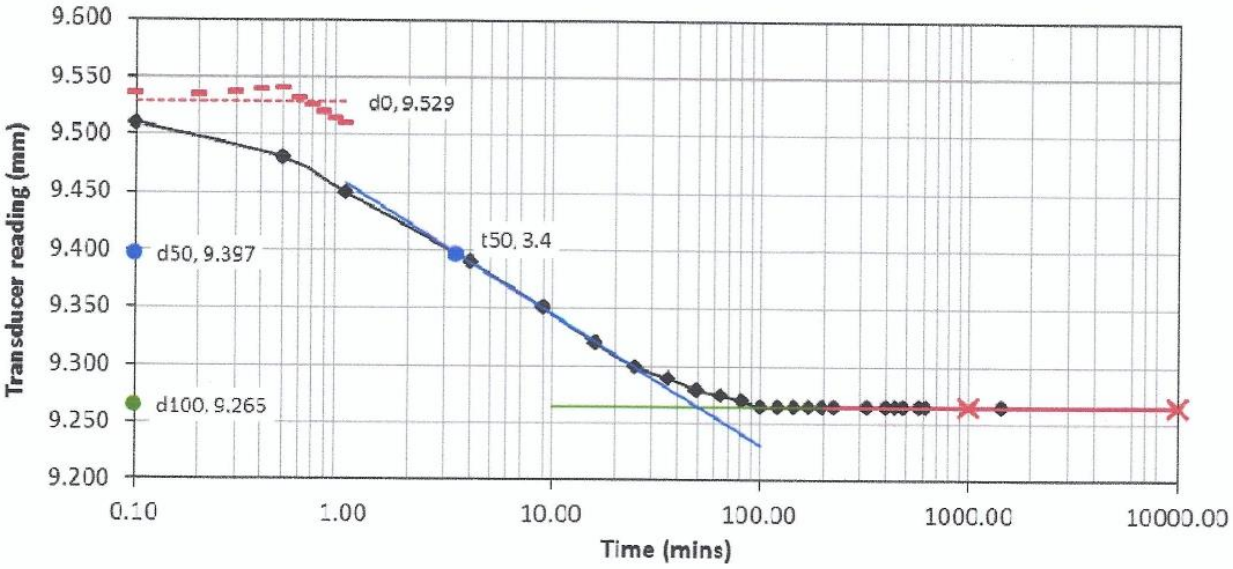
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 7+500(Depth: 0.2-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5696	**Date:**	18-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 7+500 0.2-0.9m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.665 mm
From the plot, t_{50} = 3.4 mins
H_1 = 20.00 mm
H_2 = 19.34 mm
H = (20.00+19.34)/2
= 19.67 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.958 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.665 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.665
Net compression (mm) = 0.633
Height mm (H_2) = 19.34
Equivalent height of solids Hs = 12.83
Voids Ratio = $(H_2 - Hs)/Hs$ = **0.607**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Nairobi
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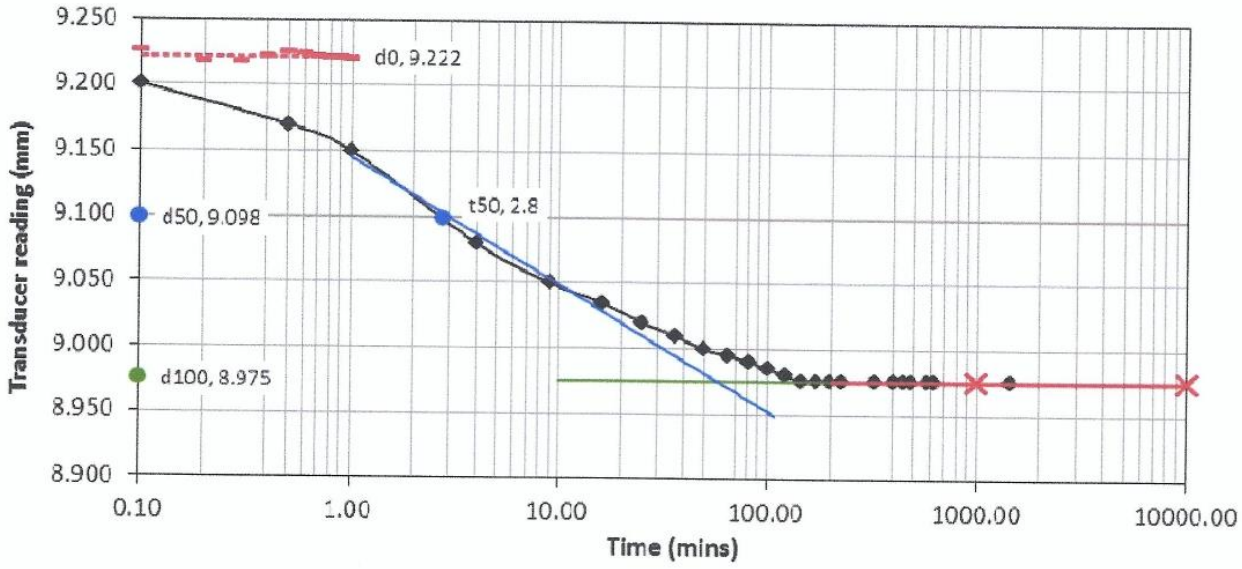
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 7+500(Depth: 0.2-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5696	**Date:**	19-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 7+500 0.2-0.9m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.290 mm
From the plot, t_{50} = 2.8 mins
H_1 = 19.34 mm
H_2 = 19.05 mm
H = (19.05+19.34)/2
= 19.20 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.423 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.300 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.955
Net compression (mm) = 0.905
Height mm (H_2) = 19.05
Equivalent height of solids Hs = 12.83
Voids Ratio = $(H_2 - Hs)/Hs$ = **0.485**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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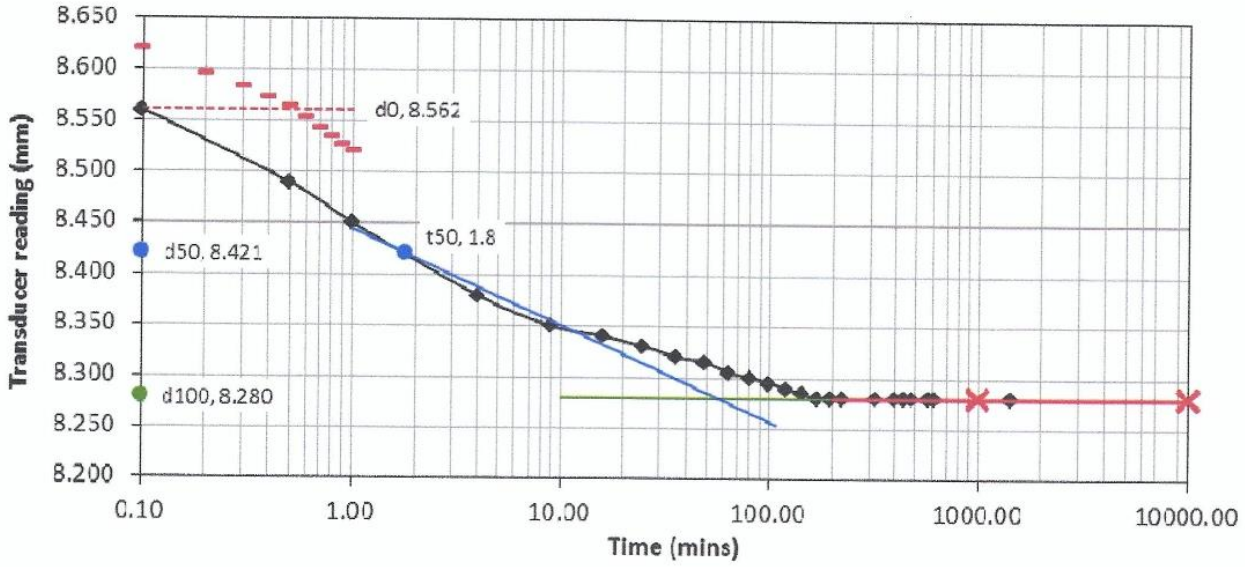
TP KM 7+500(Depth: 0.2-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5696	**Date:**	20-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 7+500 0.2-0.9m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.695 mm
From the plot, t_{50} = 1.8 mins
H_1 = 19.05 mm
H_2 = 18.36 mm
H = (19.05+18.36)/2
= 18.71 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.056 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.365 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 1.650
Net compression (mm)	= 1.578
Height mm (H_2)	= 18.36
Equivalent height of solids Hs	= 12.83
Voids Ratio = (H_2 – Hs)/Hs	= **0.431**

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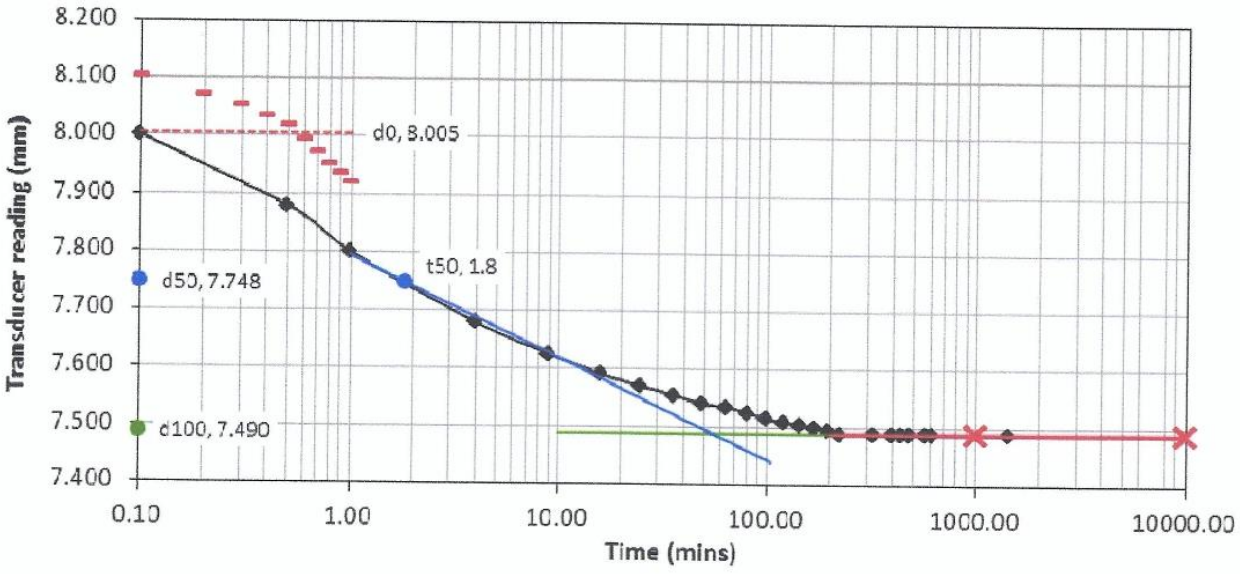
TP KM 7+500(Depth: 0.2-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5696	**Date:**	21-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 7+500 0.2-0.9m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.790 mm
From the plot, t_{50} = 1.8 mins
H_1 = 18.36 mm
H_2 = 17.57 mm
H = (17.57+18.36)/2
= 17.97 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.664 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.215 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 2.440
Net compression (mm)	= 2.335
Height mm (H_2)	= 17.57
Equivalent height of solids Hs	= 12.83
Voids Ratio = (H_2 – Hs)/Hs	= **0.369**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

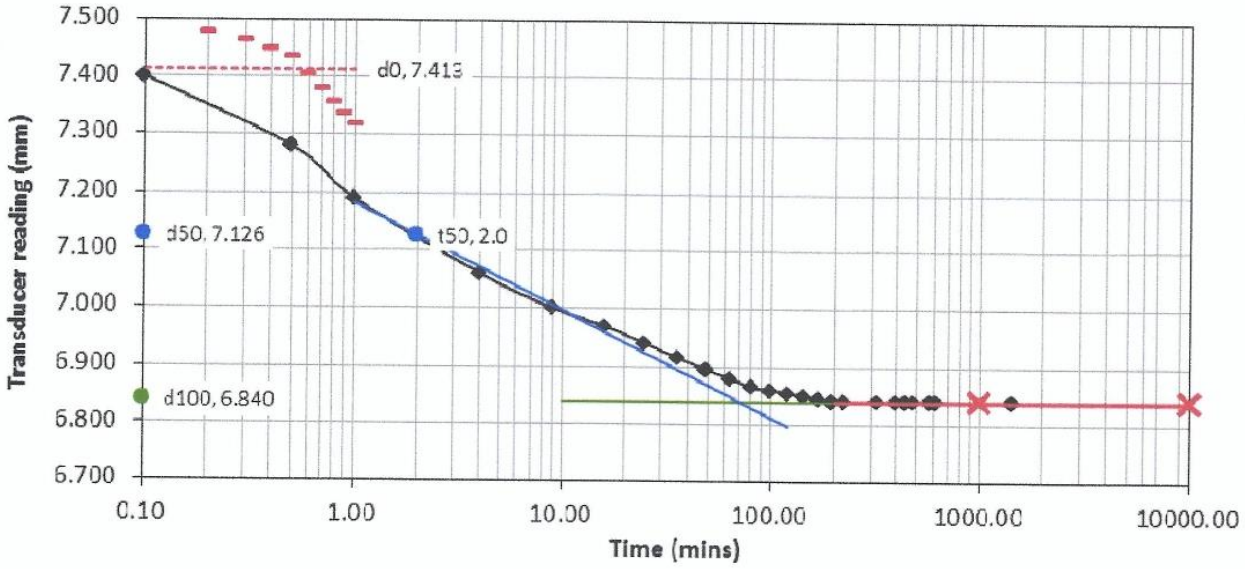
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 7+500(Depth: 0.2-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5696	**Date:**	22-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 7+500 0.2-0.9m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.650 mm
From the plot, t_{50} = 2.0 mins
H_1 = 17.57 mm
H_2 = 16.92 mm
H = (17.57+16.92)/2
= 17.25 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.868 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.092 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.090
Net compression (mm) = 2.939
Height mm (H_2) = 16.92
Equivalent height of solids Hs = 12.83
Voids Ratio = (H_2 – Hs)/Hs = **0.319**

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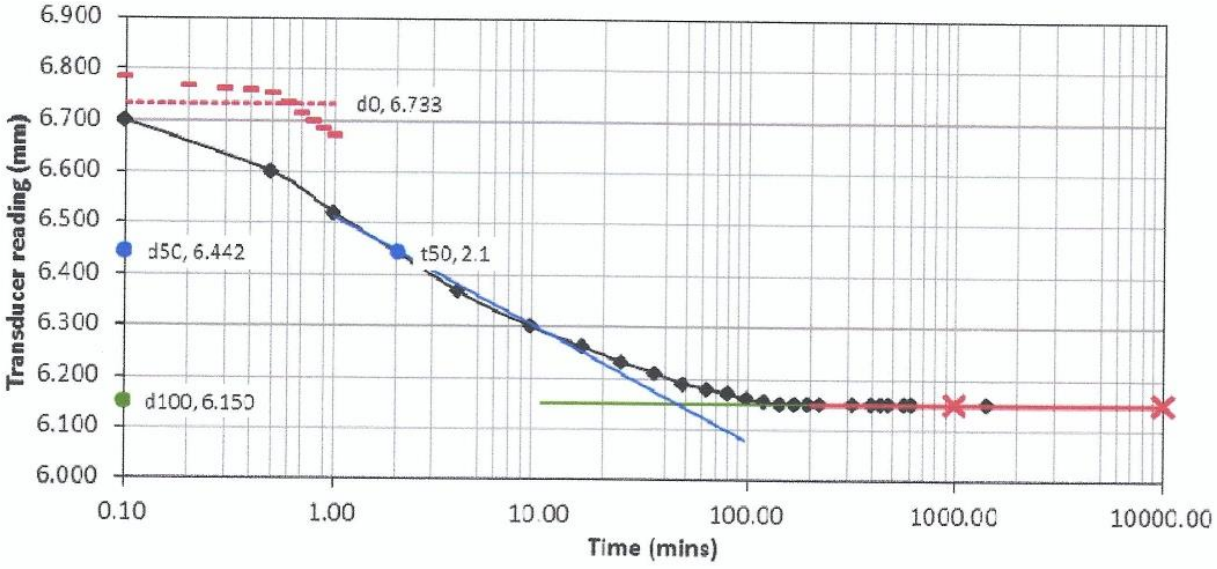
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 7+500(Depth: 0.2-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5696	**Date:**	23-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 7+500 0.2-0.9m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.690 mm
From the plot, t_{50} = 2.1 mins
H_1 = 16.92 mm
H_2 = 16.23 mm
H = (16.23+16.92)/2
= 16.58 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.403 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.051 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.780
Net compression (mm) = 3.573
Height mm (H_2) = 16.23
Equivalent height of solids Hs = 12.83
Voids Ratio = (H_2 – Hs)/Hs = **0.265**

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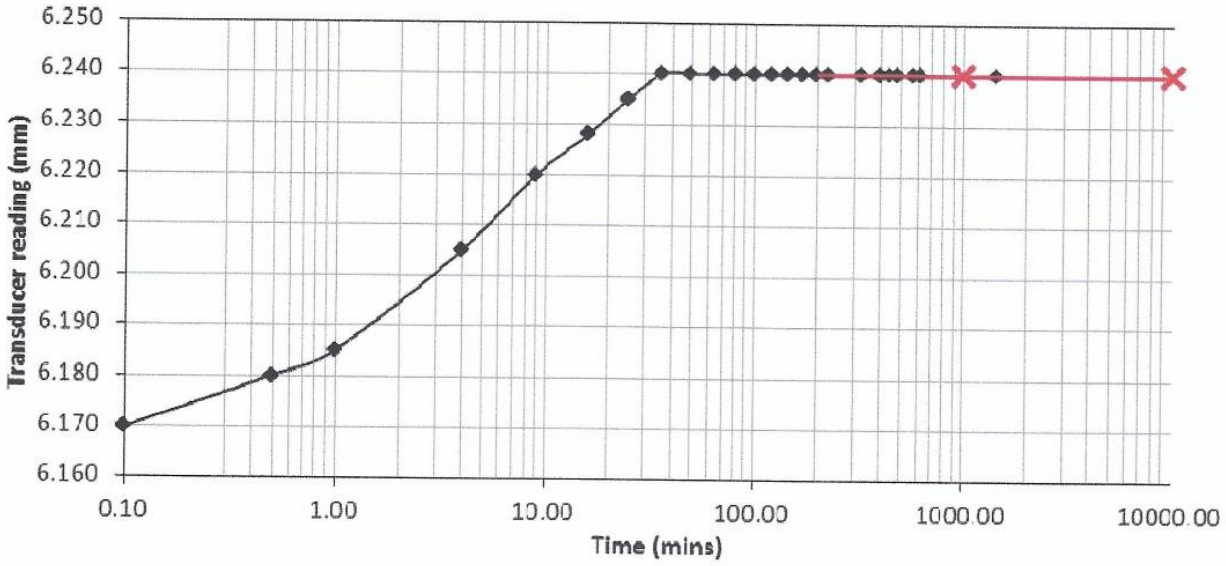
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 7+500(Depth: 0.2-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5696	**Date:**	24-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 7+500 0.2-0.9m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.090 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 3.690
Net compression (mm)	= 3.532
Height mm (H_2)	= 16.47
Equivalent height of solids Hs	= 12.83
Voids Ratio = (H_2 – Hs)/Hs	= 0.284

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

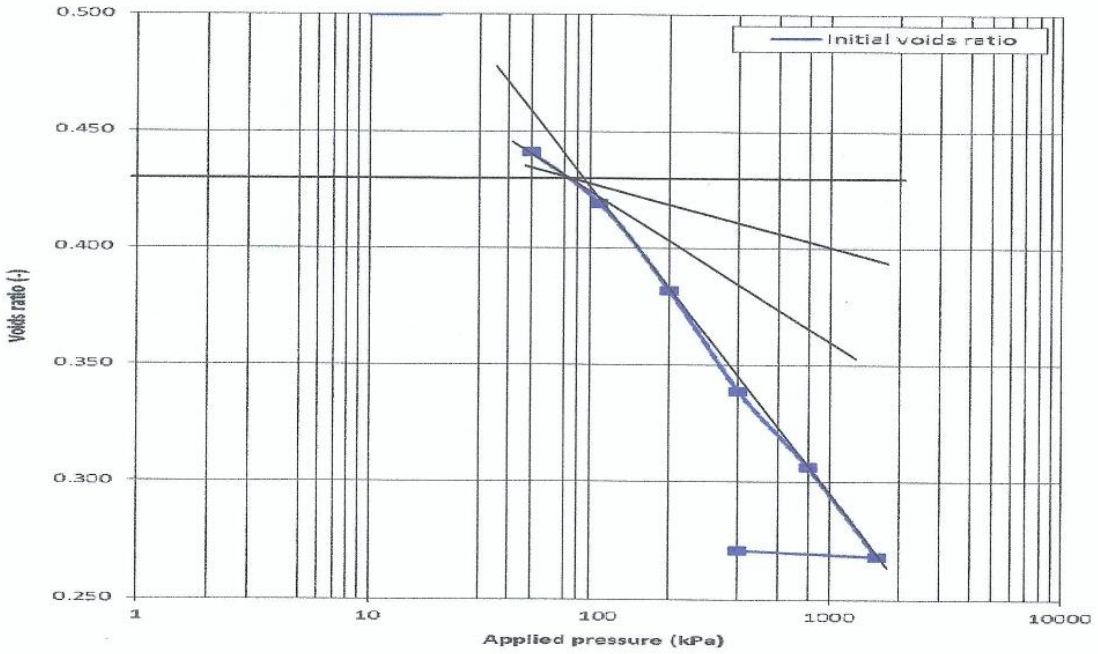
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 8+000 (Depth: 0.0-1.0m)

Site: CHANGAMWE
Location: MOMBASA
Depth: 0.0-1.0M
Classification Group Name: -
Lab Ref: TM/RGS-CHANGAMWE/5698
Sample No. 5698
Ring Diameter: 62.0 mm
Height of soil particles: 13.33mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 13.4%
Bulk Density: 1961kg/m^3
Initial voids ratio: 0.504
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1729kg/m^3
Pre-consolidation stress: 090 Kn/m^2
Coefficient of Compression Index: 0.135
Coefficient of Re-Compression Index: 0.030

Voids Ratio against Applied Pressure



Tested By: KEVIN
Date Reported: 30-11-21
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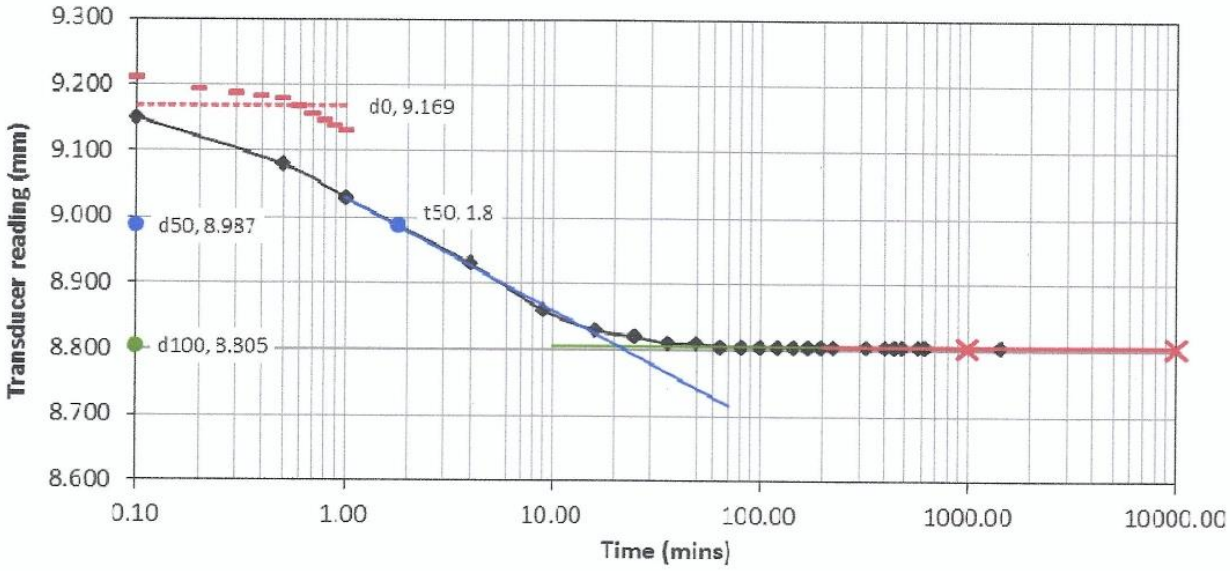
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 8+000(Depth: 0.0-1.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5698	**Date:**	18-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 8+000 0.0-1.0m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.815 mm
From the plot, t_{50} = 1.8 mins
H_1 = 20.00 mm
H_2 = 19.19 mm
H = (20.00+19.19)/2
= 19.60 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.549 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.815 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.815
Net compression (mm) = 0.783
Height mm (H_2) = 19.19
Equivalent height of solids Hs = 13.33
Voids Ratio = (H_2 – Hs)/Hs = **0.440**

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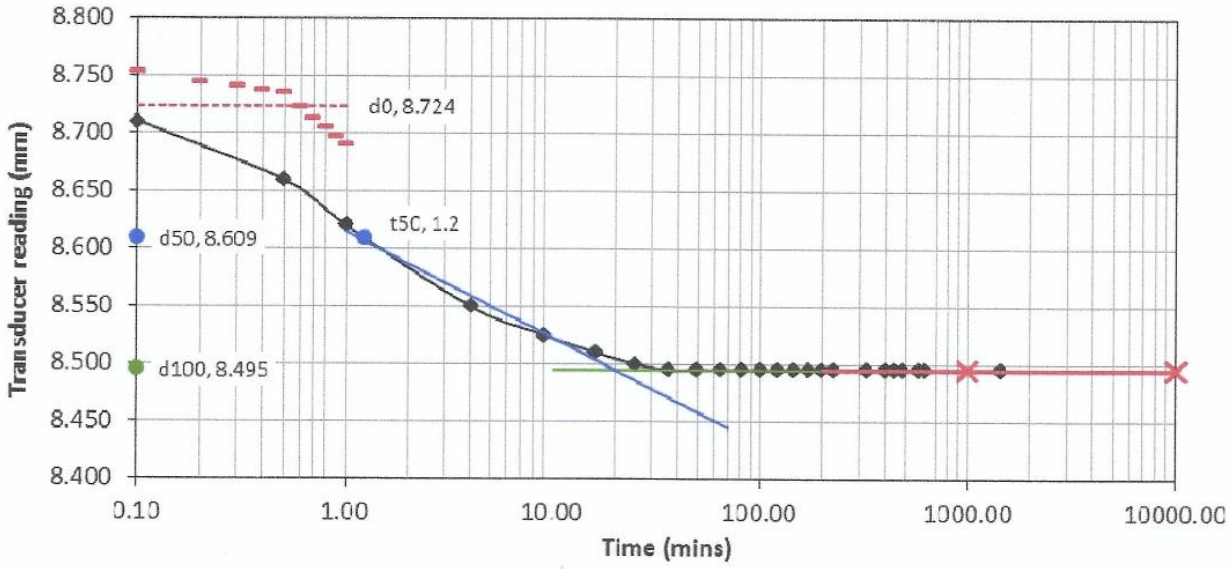
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 8+000(Depth: 0.0-1.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5698	**Date:**	19-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 8+000 0.0-1.0m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.310 mm
From the plot, t_{50} = 1.2 mins
H_1 = 19.19 mm
H_2 = 18.88 mm
H = (18.88+19.19)/2
= 19.04 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.855 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.323 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.125
Net compression (mm) = 1.075
Height mm (H_2) = 18.88
Equivalent height of solids Hs = 13.33
Voids Ratio = (H_2 – Hs)/Hs = **0.416**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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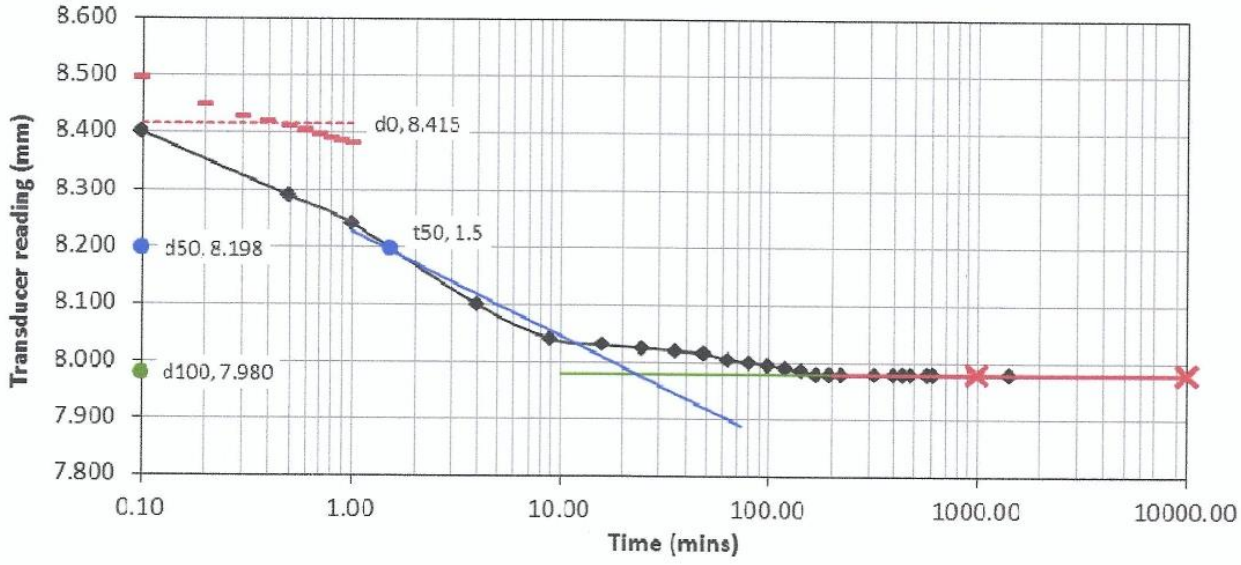
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 8+000(Depth: 0.0-1.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5698	**Date:**	20-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 8+000 0.0-1.0m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.515 mm
From the plot, t_{50} = 1.5 mins
H_1 = 18.88 mm
H_2 = 18.37 mm
H = (18.88+18.37)/2
= 18.63 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.016 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.273 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.640
Net compression (mm) = 1.568
Height mm (H_2) = 18.37
Equivalent height of solids Hs = 13.33
Voids Ratio = (H_2 – Hs)/Hs = **0.378**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Mob: +254(0) 726 721 935

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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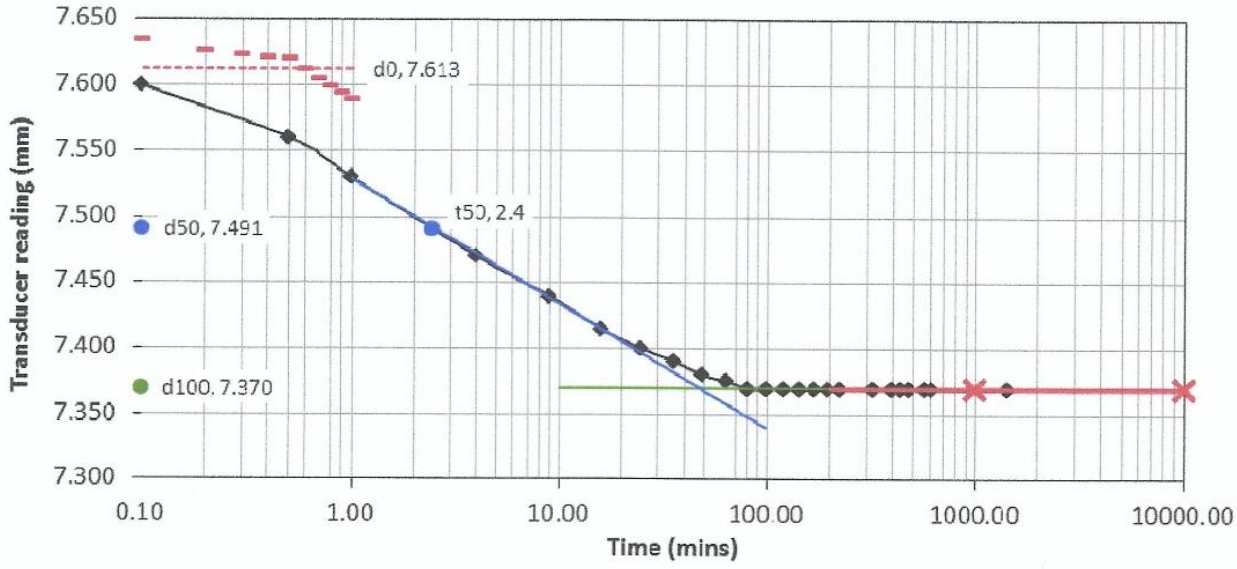
TP KM 8+000(Depth: 0.0-1.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5698	**Date:**	21-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 8+000 0.0-1.0m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.610 mm
From the plot, t_{50} = 2.4 mins
H_1 = 18.37 mm
H_2 = 17.76 mm
H = (17.76+18.37)/2
= 18.07 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.537 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.166 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.250
Net compression (mm) = 2.145
Height mm (H_2) = 17.76
Equivalent height of solids Hs = 13.33
Voids Ratio = (H_2 – Hs)/Hs = **0.332**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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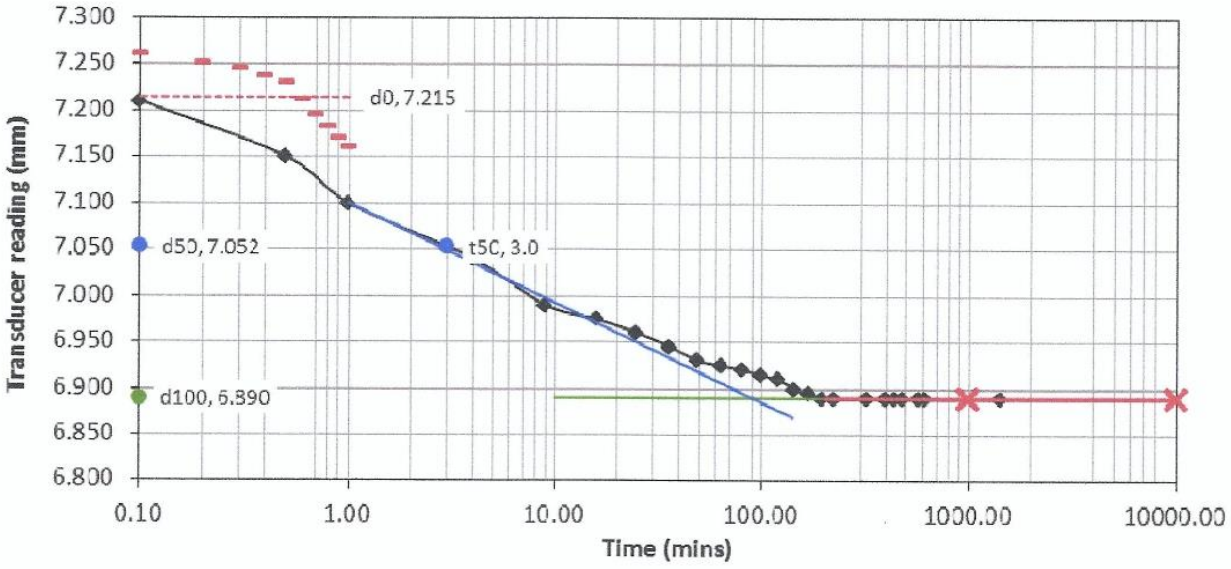
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 8+000(Depth: 0.0-1.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5698	**Date:**	22-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 8+000 0.0-1.0m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.480 mm
From the plot, t_{50} = 3.0 mins
H_1 = 17.76 mm
H_2 = 17.28 mm
H = (17.76+17.28)/2
= 17.52 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.660 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.068 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.730
Net compression (mm) = 2.579
Height mm (H_2) = 17.28
Equivalent height of solids Hs = 13.33
Voids Ratio = (H_2 – Hs)/Hs = **0.296**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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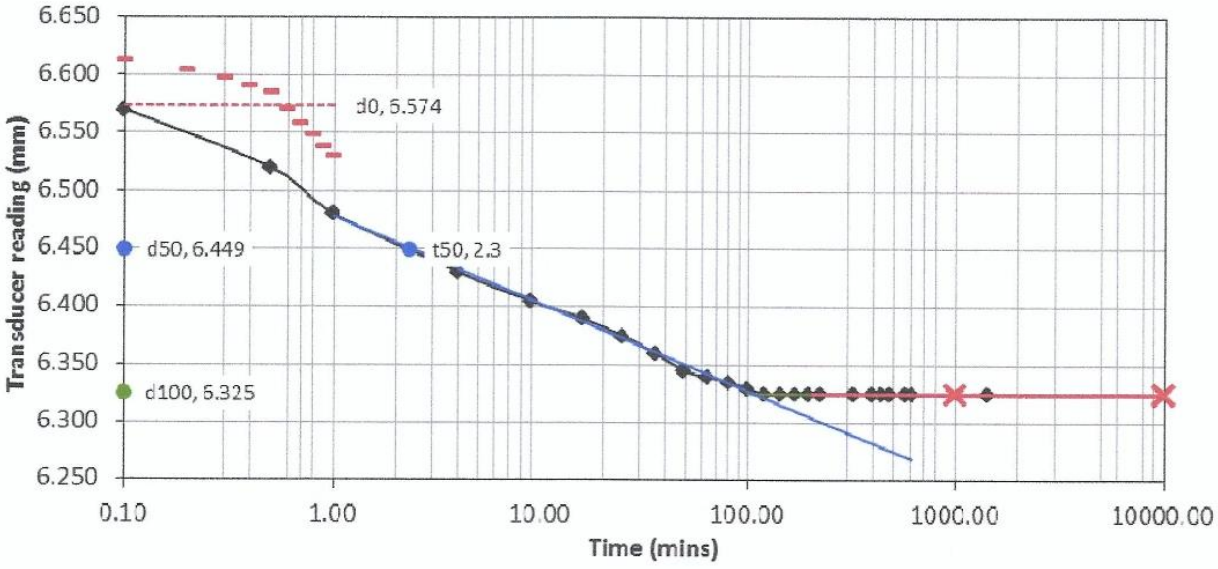
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 8+000(Depth: 0.0-1.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5698	**Date:**	23-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 8+000 0.0-1.0m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.565 mm
From the plot, t_{50} = 2.3 mins
H_1 = 17.28 mm
H_2 = 16.72 mm
H = (16.72+17.28)/2
= 17.00 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.267 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.041 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.295
Net compression (mm) = 3.088
Height mm (H_2) = 16.72
Equivalent height of solids Hs = 13.33
Voids Ratio = (H_2 – Hs)/Hs = **0.254**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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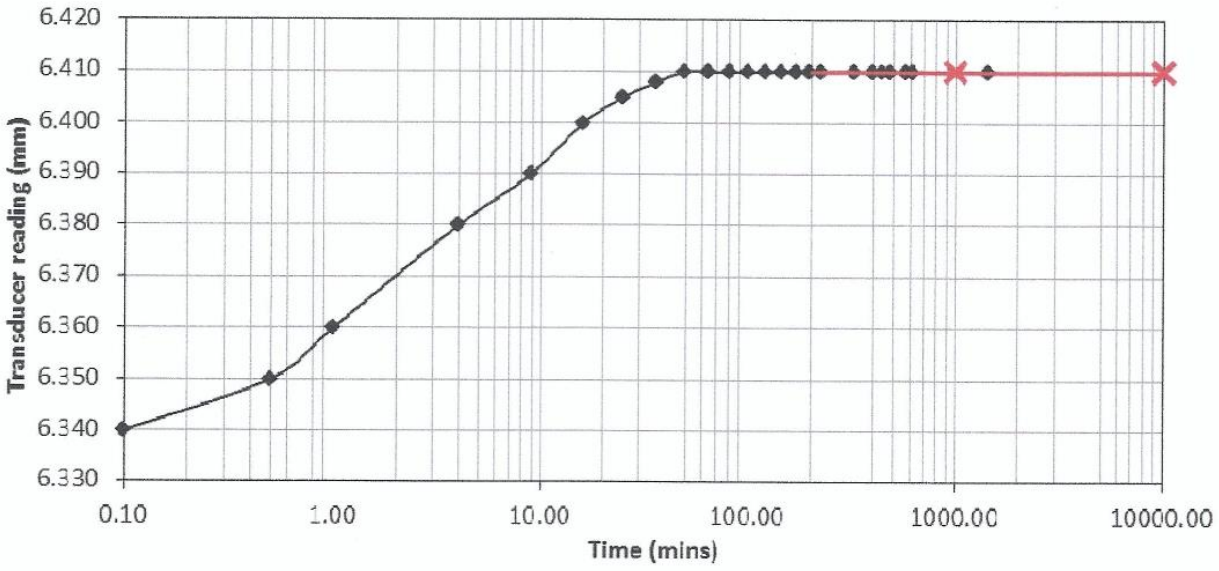
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 8+000(Depth: 0.0-1.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5698	**Date:**	24-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 8+000 0.0-1.0m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.085 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 3.210
Net compression (mm)	= 3.052
Height mm (H_2)	= 16.95
Equivalent height of solids Hs	= 13.33
Voids Ratio = (H_2 – Hs)/Hs	= 0.272

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE SITE

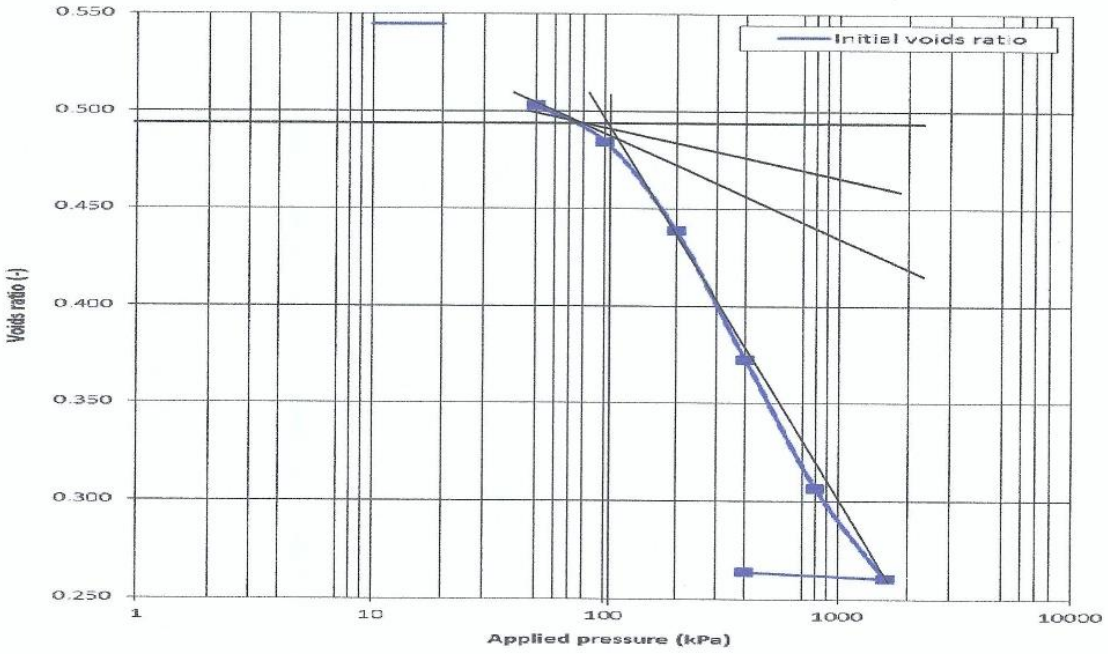
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM11+618 (Depth: 0.3-1.2m)

Site: CHANGAMWE
Location: MOMBASA
Depth: 0.3-1.2M
Classification Group Name: -
Lab Ref: TM/RGS-CHANGAMWE/5703
Sample No. 5703
Ring Diameter: 62.0 mm
Height of soil particles: 12.95mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 13.4%
Bulk Density: 1919kg/m^3
Initial voids ratio: 0.545
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1683kg/m^3
Pre-consolidation stress: 105 Kn/m^2
Coefficient of Compression Index: 0.195
Coefficient of Re-Compression Index: 0.032

Voids Ratio against Applied Pressure



Tested By: KEVIN
Date Reported: 30-11-21
Checked By:

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

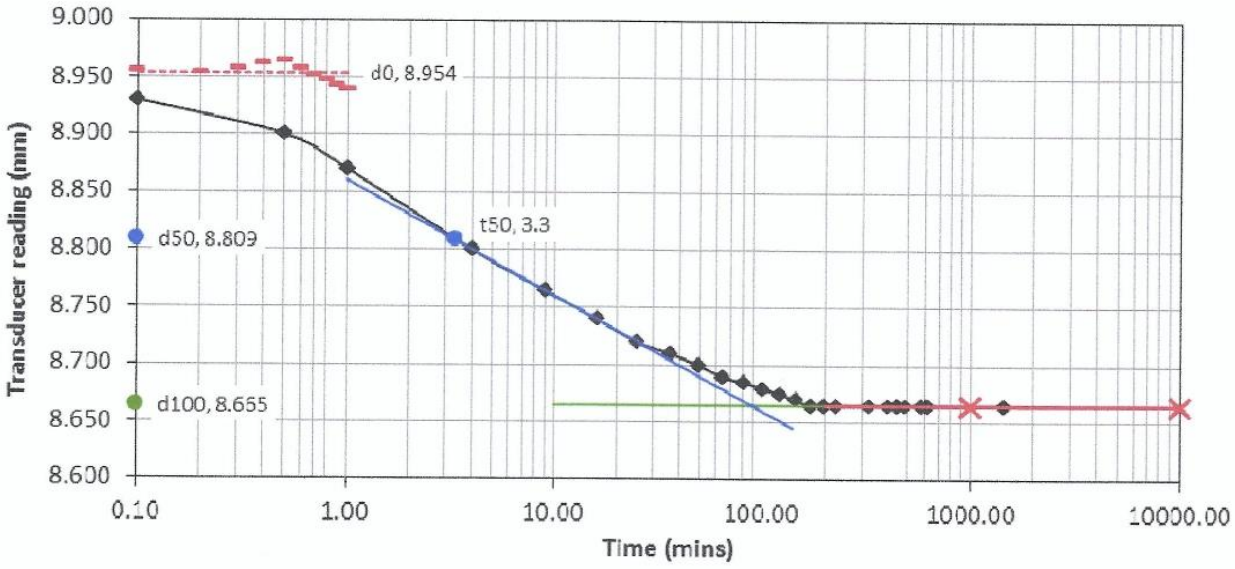
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 11+618(Depth: 0.3-1.2m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5703	**Date:**	18-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 11+618 0.3-1.2m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.570 mm
From the plot, t_{50} = 3.3 mins
H_1 = 20.00 mm
H_2 = 19.43 mm
H = (20.00+19.43)/2
= 19.72 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.064 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.570 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.570
Net compression (mm)	= 0.538
Height mm (H_2)	= 19.43
Equivalent height of solids Hs	= 12.95
Voids Ratio = (H_2 – Hs)/Hs	= **0.500**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Email: danellilab3@gmail.com
info@danellilab.com
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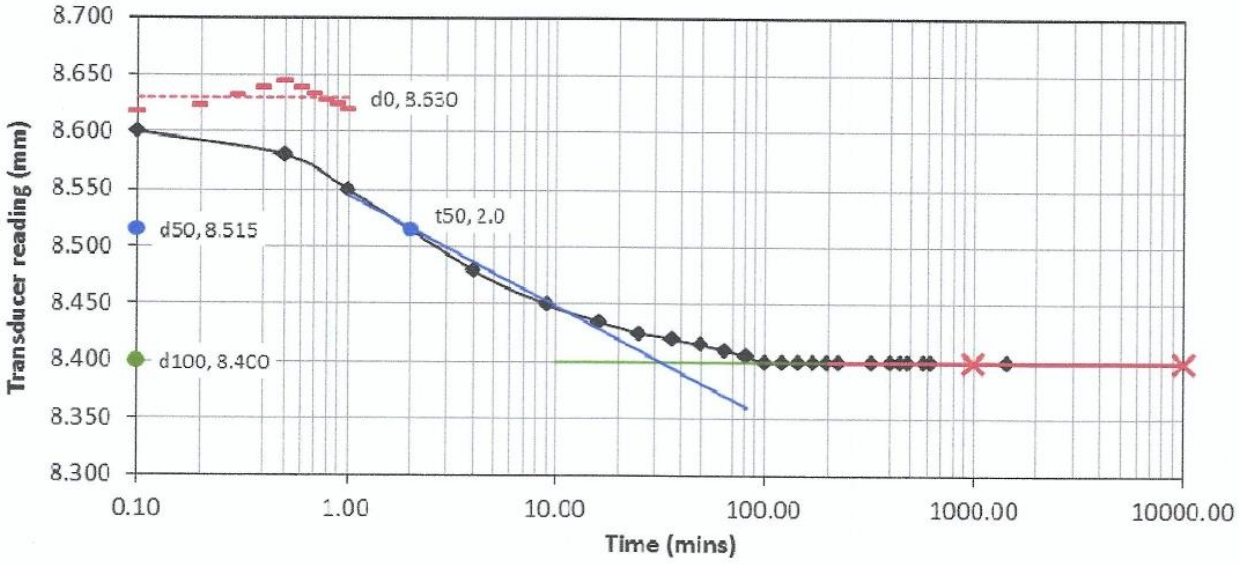
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 11+618(Depth: 0.3-1.2m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5703	**Date:**	19-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 11+618 0.3-1.2m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.265 mm
From the plot, t_{50} = 2.0 mins
H_1 = 19.43 mm
H_2 = 19.17 mm
H = (19.17+19.43)/2
= 19.30 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.842 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.273 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.835
Net compression (mm)	= 0.785
Height mm (H_2)	= 19.17
Equivalent height of solids Hs	= 12.95
Voids Ratio = (H_2 – Hs)/Hs	= **0.480**

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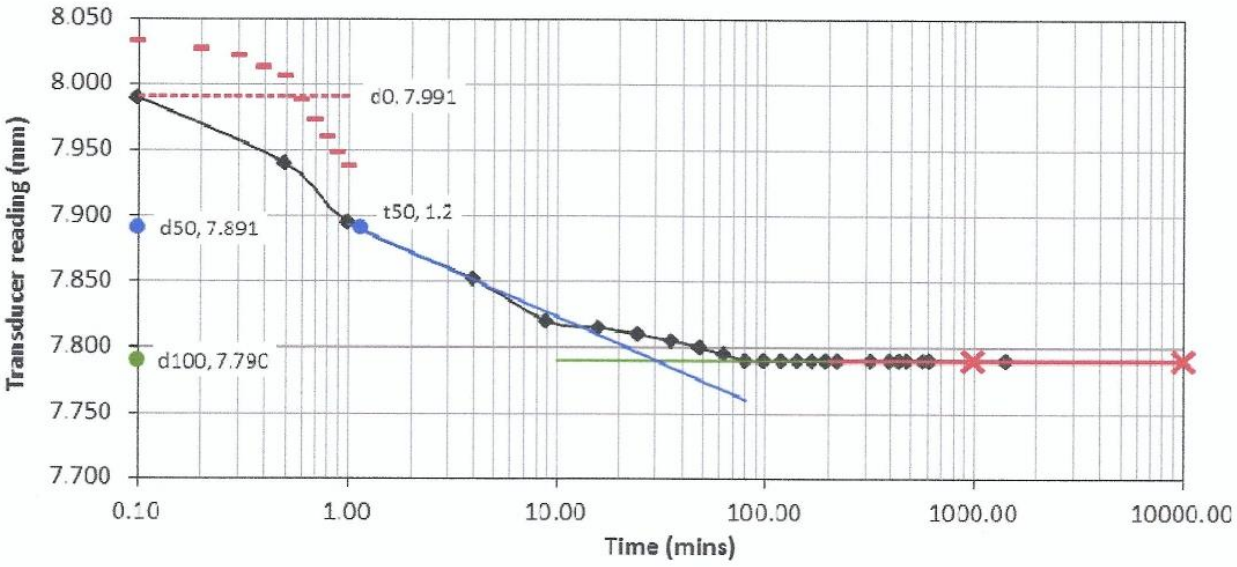
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 11+618(Depth: 0.3-1.2m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5703	**Date:**	20-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 11+618 0.3-1.2m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.610 mm
From the plot, t_{50} = 1.2 mins
H_1 = 19.17 mm
H_2 = 18.56 mm
H = (19.17+18.56)/2
= 18.87 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.715 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.318 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.445
Net compression (mm) = 1.373
Height mm (H_2) = 18.56
Equivalent height of solids Hs = 12.95
Voids Ratio = (H_2 – Hs)/Hs = **0.433**

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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
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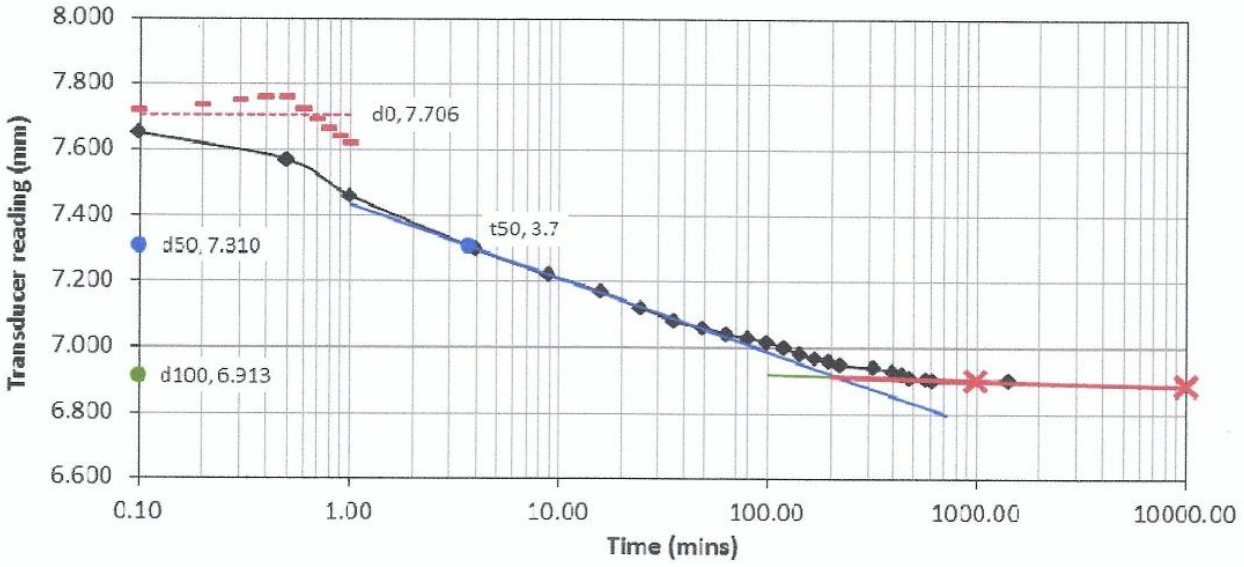
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 11+618(Depth: 0.3-1.2m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5703	**Date:**	21-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 11+618 0.3-1.2m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.890 mm
From the plot, t_{50} = 3.7 mins
H_1 = 18.56 mm
H_2 = 17.67 mm
H = (17.67+18.56)/2
= 18.12 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.307 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.240 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 2.335
Net compression (mm)	= 2.230
Height mm (H_2)	= 17.67
Equivalent height of solids Hs	= 12.95
Voids Ratio = (H_2 – Hs)/Hs	= **0.364**

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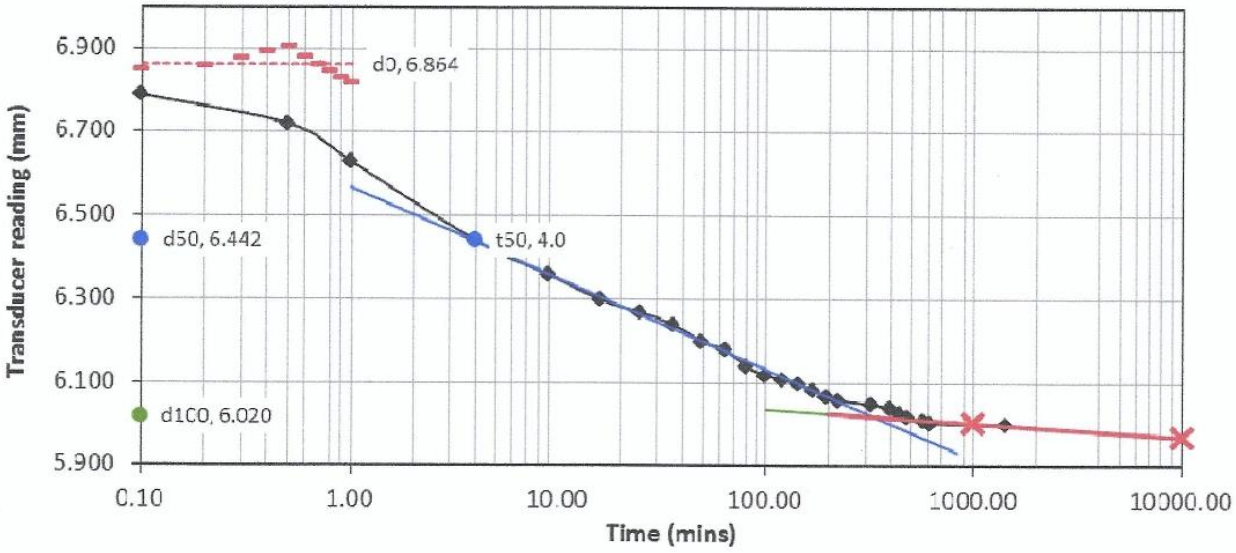
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 11+618(Depth: 0.3-1.2m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5703	**Date:**	22-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 11+618 0.3-1.2m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.900 mm
From the plot, t_{50} = 4.0 mins
H_1 = 17.67 mm
H_2 = 16.77 mm
H = (17.67+16.77)/2
= 17.22 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **1.927 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.127 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.235
Net compression (mm) = 3.084
Height mm (H_2) = 16.77
Equivalent height of solids Hs = 12.95
Voids Ratio = (H_2 – Hs)/Hs = **0.295**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
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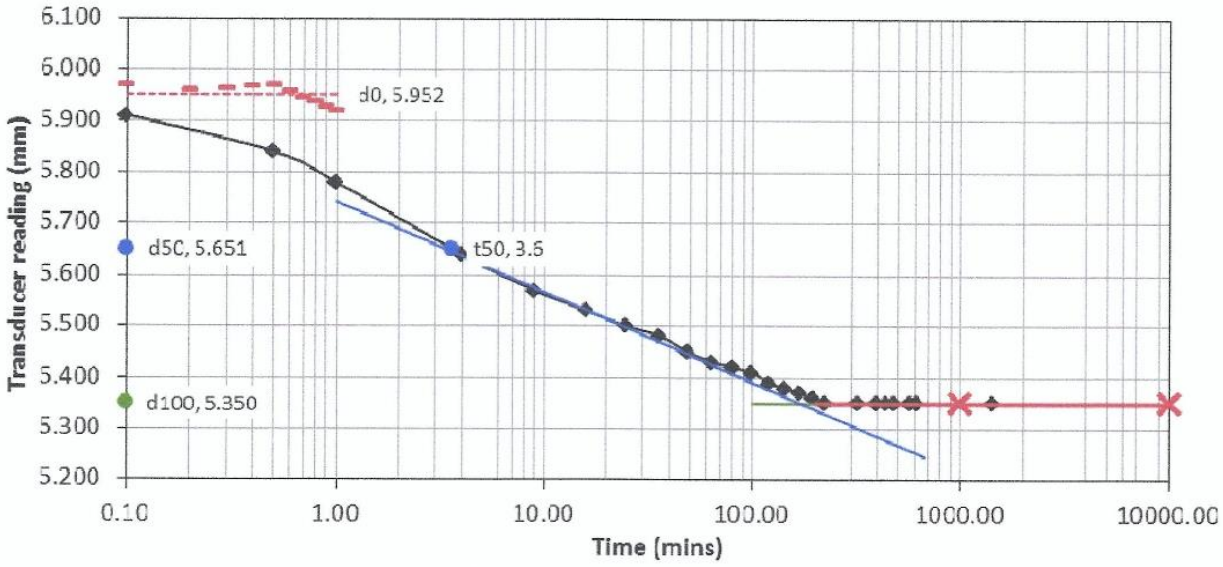
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 11+618(Depth: 0.3-1.2m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5703	**Date:**	23-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 11+618 0.3-1.2m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.650 mm
From the plot, t_{50} = 3.6 mins
H_1 = 16.77 mm
H_2 = 16.12 mm
H = (16.12+16.77)/2
= 16.45 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **1.954m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.048 m²/MN**

Specimen information (cumulative)
Compression (mm) = 3.885
Net compression (mm) = 3.678
Height mm (H_2) = 16.12
Equivalent height of solids Hs = 12.95
Voids Ratio = (H_2 – Hs)/Hs = **0.245**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Email: danellilab3@gmail.com
info@danellilab.com
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Mob: +254(0) 726 721 935

Head Office & Laboratories:
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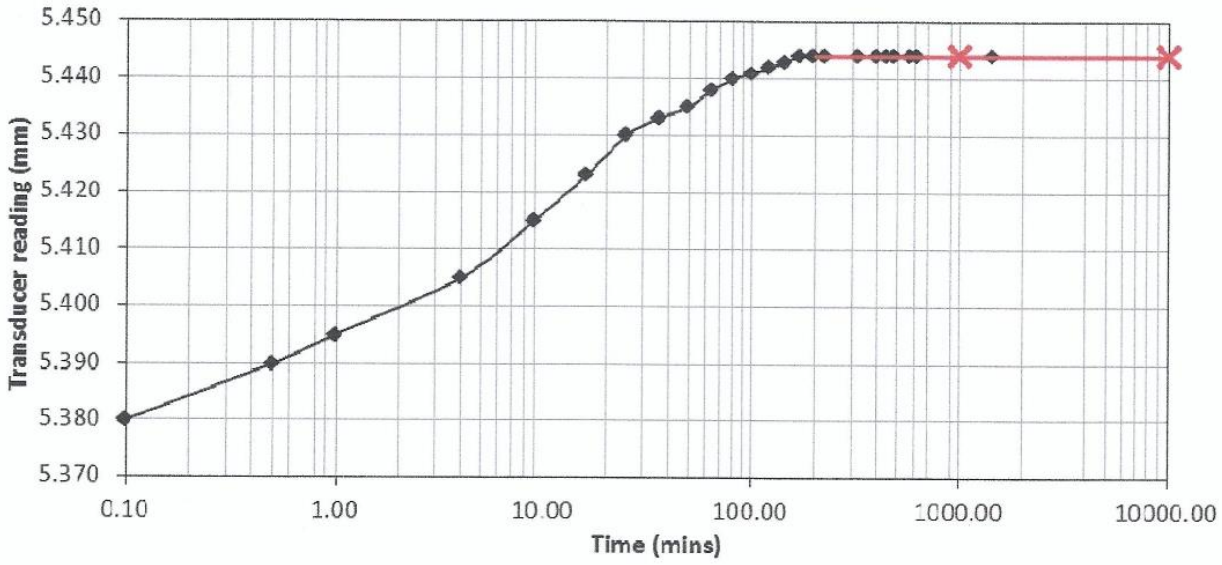
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 11+618(Depth: 0.3-1.2m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-CHANGAMWE/5703	**Date:**	24-11-21
Project	CHANGAMWE SITE	**Location:**	MOMBASA	**Sample**	TP KM 11+618 0.3-1.2m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.094 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = -m²/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m²/MN

Specimen information (cumulative)

Compression (mm)	= 3.791
Net compression (mm)	= 3.633
Height mm (H_2)	= 16.37
Equivalent height of solids Hs	= 12.95
Voids Ratio = (H_2 – Hs)/Hs	= 0.264

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Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

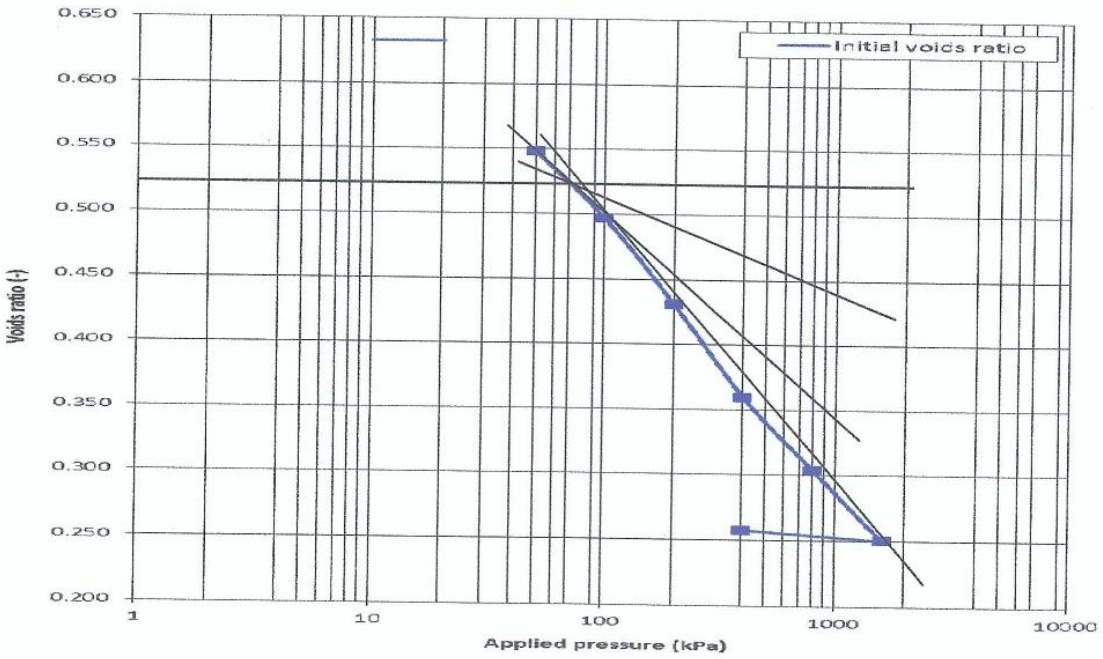
TP KM 1+740 (Depth: 1.0-1.4m)

Site: TRUNK MAIN
Classification Group Name: -
Ring Diameter: 62.0 mm
Area (A): 3019.1mm^2
Initial voids ratio: 0.640
Pre-consolidation stress: 080 Kn/m^2
Coefficient of Re-Compression Index: 0.038

Location: KWALE
Lab Ref: TM/RGS-TRUNKMAIN/5742
Height of soil particles: 12.25mm
Moisture Content after Test: 20.0%
Assumed Soil Density: 2600 kg/m^3

Depth: 1.0-1.4M
Sample No. 5742
Height of Ring: 20 mm
Bulk Density: 1902kg/m^3
Dry Density: 1585kg/m^3
Coefficient of Compression Index: 0.215

Voids Ratio against Applied Pressure



Tested By: KEVIN

Date Reported: 30-11-21

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DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
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Email: danellilab3@gmail.com
info@danellilab.com
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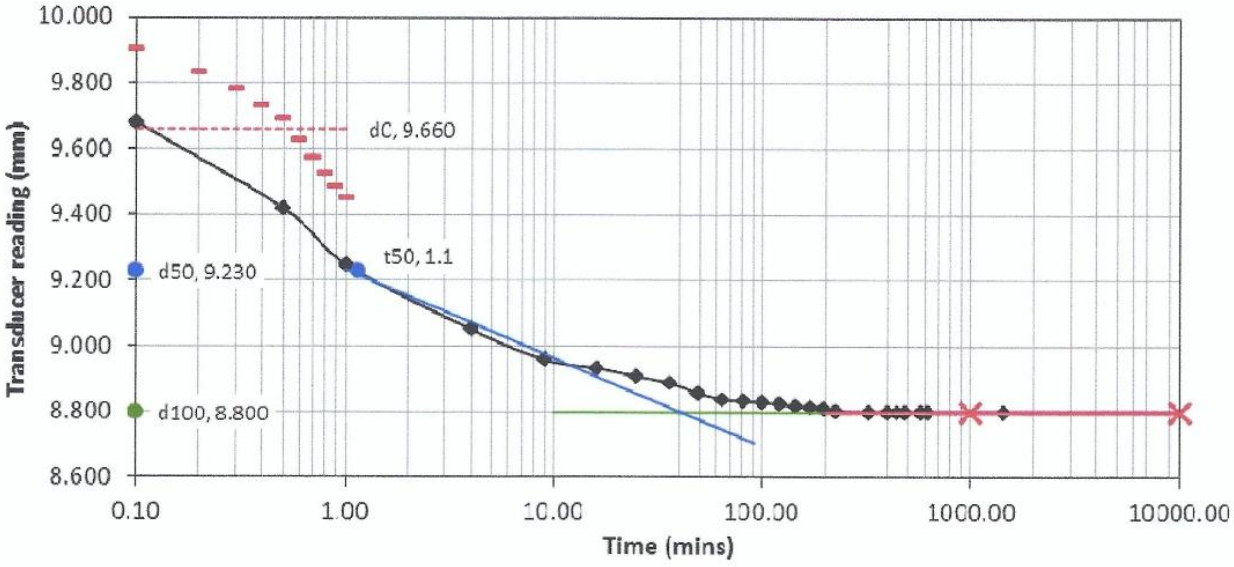
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 1+740(Depth: 1.0-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5742	**Date:**	18-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 1+740 1.0-1.4m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 1.060 mm
From the plot, t_{50} = 1.1 mins
H_1 = 20.00 mm
H_2 = 18.94 mm
H = (20.00+18.94)/2
= 19.47 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **8.960 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **1.060 m²/MN**

Specimen information (cumulative)
Compression (mm) = 1.060
Net compression (mm) = 1.033
Height mm (H_2) = 18.94
Equivalent height of solids Hs = 12.25
Voids Ratio = (H_2 – Hs)/Hs = **0.546**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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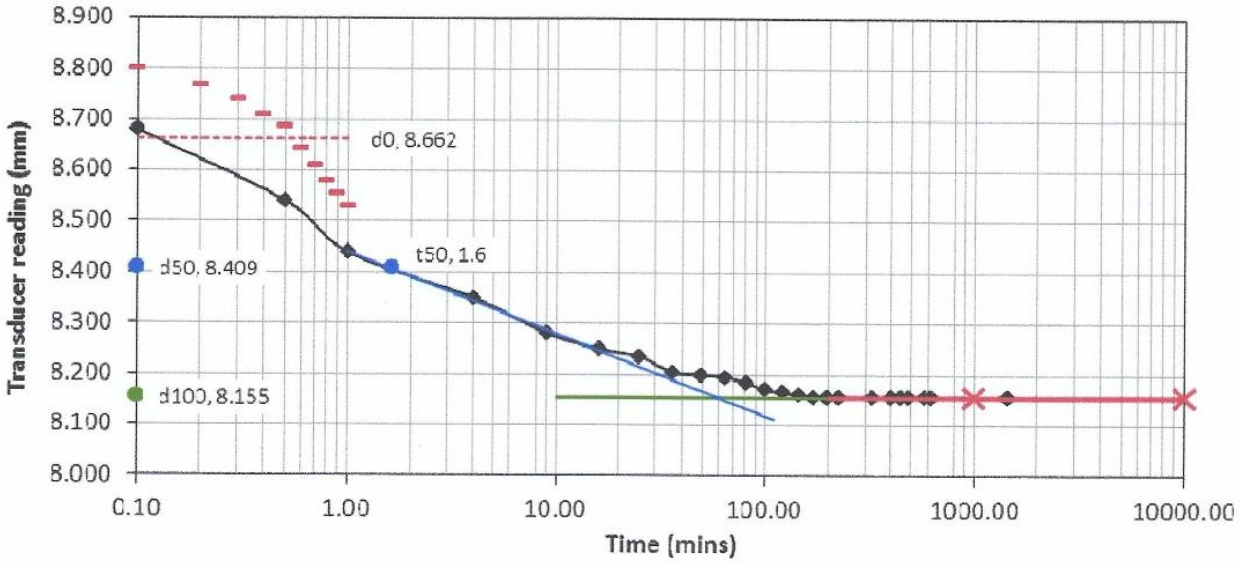
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 1+740(Depth: 1.0-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5742	**Date:**	19-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 1+740 1.0-1.4m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.645 mm
From the plot, t_{50} = 1.6 mins
H_1 = 18.94 mm
H_2 = 18.30 mm
H = (18.30+18.94)/2
= 18.62 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.634 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.681 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 1.710
Net compression (mm)	= 1.660
Height mm (H_2)	= 18.30
Equivalent height of solids Hs	= 12.25
Voids Ratio = (H_2 – Hs)/Hs	= **0.494**

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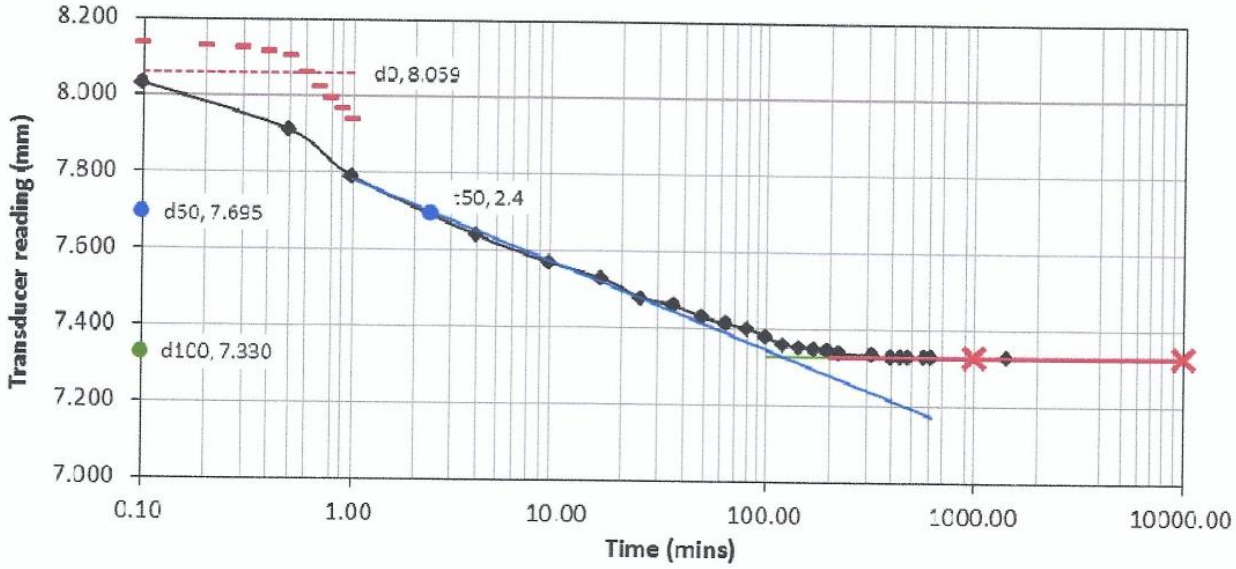
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 1+740(Depth: 1.0-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5742	**Date:**	20-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 1+740 1.0-1.4m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.825 mm
From the plot, t_{50} = 2.4 mins
H_1 = 18.30 mm
H_2 = 17.48 mm
H = (18.30+17.48)/2
= 17.89 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.467 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.451 m²/MN**

Specimen information (cumulative)
Compression (mm) = 2.535
Net compression (mm) = 2.463
Height mm (H_2) = 17.48
Equivalent height of solids Hs = 12.25
Voids Ratio = (H_2 – Hs)/Hs = **0.427**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

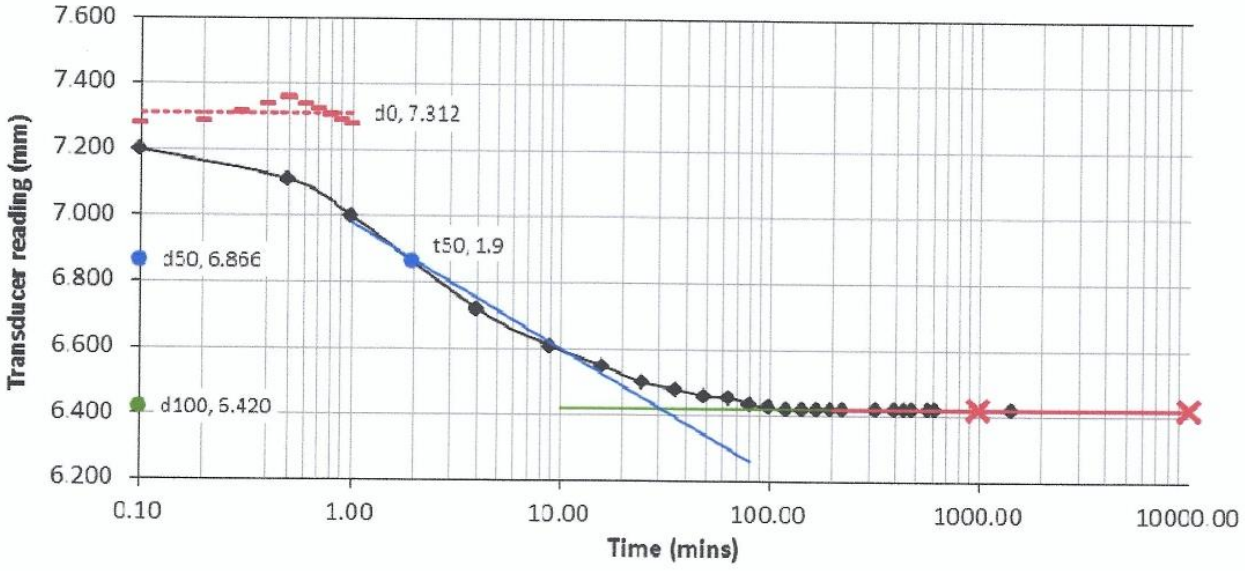
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 1+740(Depth: 1.0-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5742	**Date:**	21-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 1+740 1.0-1.4m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.910 mm
From the plot, t_{50} = 1.9 mins
H_1 = 17.48 mm
H_2 = 16.57 mm
H = (16.57+17.48)/2
= 17.03 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.969 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.260 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 3.445
Net compression (mm) = 3.340
Height mm (H_2) = 16.57
Equivalent height of solids Hs = 12.25
Voids Ratio = (H_2 – Hs)/Hs = **0.353**

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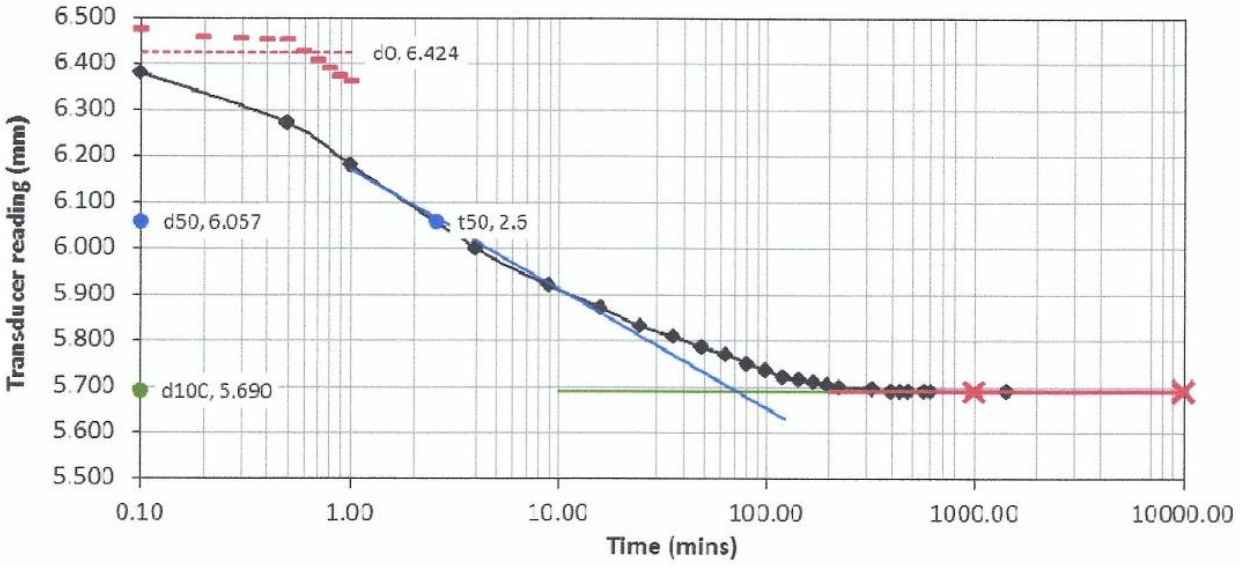
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 1+740(Depth: 1.0-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5742	**Date:**	22-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 1+740 1.0-1.4m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.730 mm
From the plot, t_{50} = 2.6 mins
H_1 = 16.57 mm
H_2 = 15.84 mm
H = (16.57+15.84)/2
= 16.21 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.628 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.110 m²/MN**

Specimen information (cumulative)
Compression (mm) = 4.175
Net compression (mm) = 4.024
Height mm (H_2) = 15.84
Equivalent height of solids Hs = 12.25
Voids Ratio = (H_2 – Hs)/Hs = **0.293**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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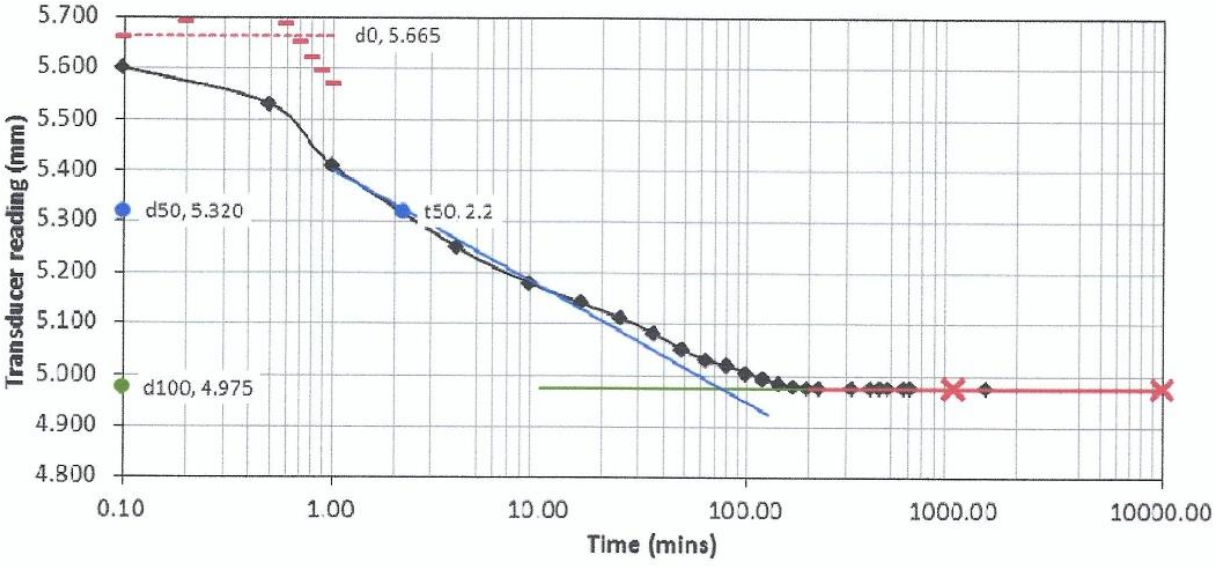
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 1+740(Depth: 1.0-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5742	**Date:**	23-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 1+740 1.0-1.4m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.715 mm
From the plot, t_{50} = 2.2 mins
H_1 = 15.84 mm
H_2 = 15.13 mm
H = (15.13+15.84)/2
= 15.49 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **2.836 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.056 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 4.890
Net compression (mm) = 4.683
Height mm (H_2) = 15.13
Equivalent height of solids Hs = 12.25
Voids Ratio = (H_2 – Hs)/Hs = **0.235**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Email: danellilab3@gmail.com
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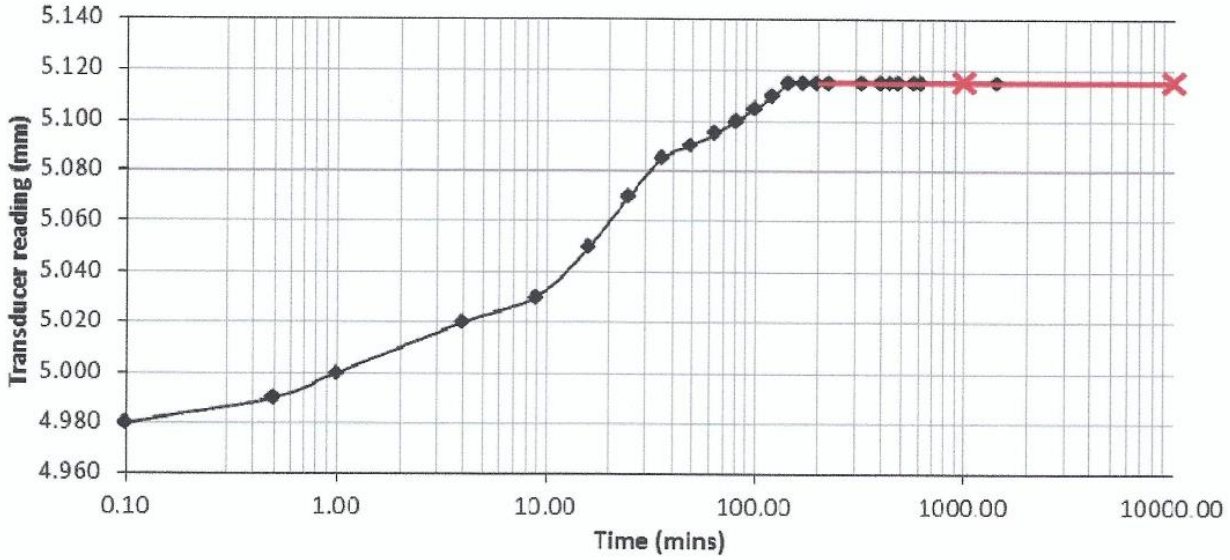
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 1+740(Depth: 1.0-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5742	**Date:**	24-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 1+740 1.0-1.4m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.140 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 4.750
Net compression (mm)	= 4.592
Height mm (H_2)	= 15.41
Equivalent height of solids Hs	= 12.25
Voids Ratio = (H_2 – Hs)/Hs	= 0.258

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Email: danellilab3@gmail.com
info@danellilab.com
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Mob: +254(0) 726 721 935

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Mombasa Road
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

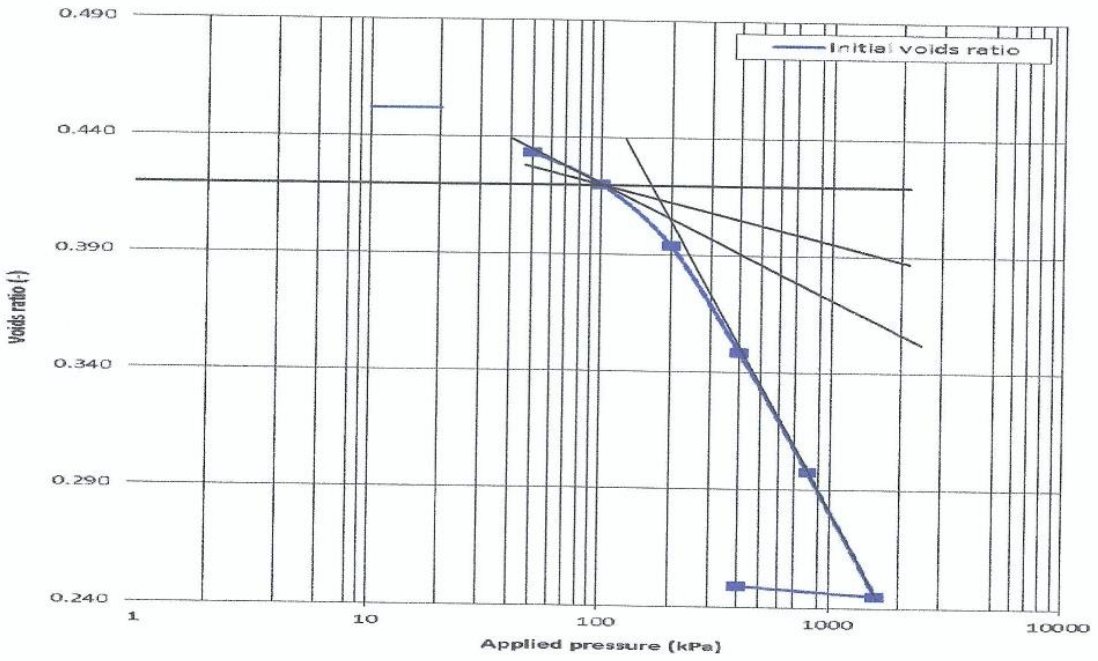
TP KM 3+500 (Depth: 0.0-1.4m)

Site: TRUNK MAIN
Classification Group Name: -
Ring Diameter: 62.0 mm
Area (A): 3019.1mm^2
Initial voids ratio: 0.452
Pre-consolidation stress: 200 Kn/m^2
Coefficient of Re-Compression Index: 0.030

Location: KWALE
Lab Ref: TM/RGS-TRUNKMAIN/5746
Height of soil particles: 13.77mm
Moisture Content after Test: 10.8%
Assumed Soil Density: 2600 kg/m^3

Depth: 0.0-1.4M
Sample No. 5746
Height of Ring: 20 mm
Bulk Density: 1984kg/m^3
Dry Density: 1791kg/m^3
Coefficient of Compression Index: 0.175

Voids Ratio against Applied Pressure



Tested By: KEVIN

Date Reported: 30-11-21

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Email: danellilab3@gmail.com
info@danellilab.com
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Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
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Nairobi
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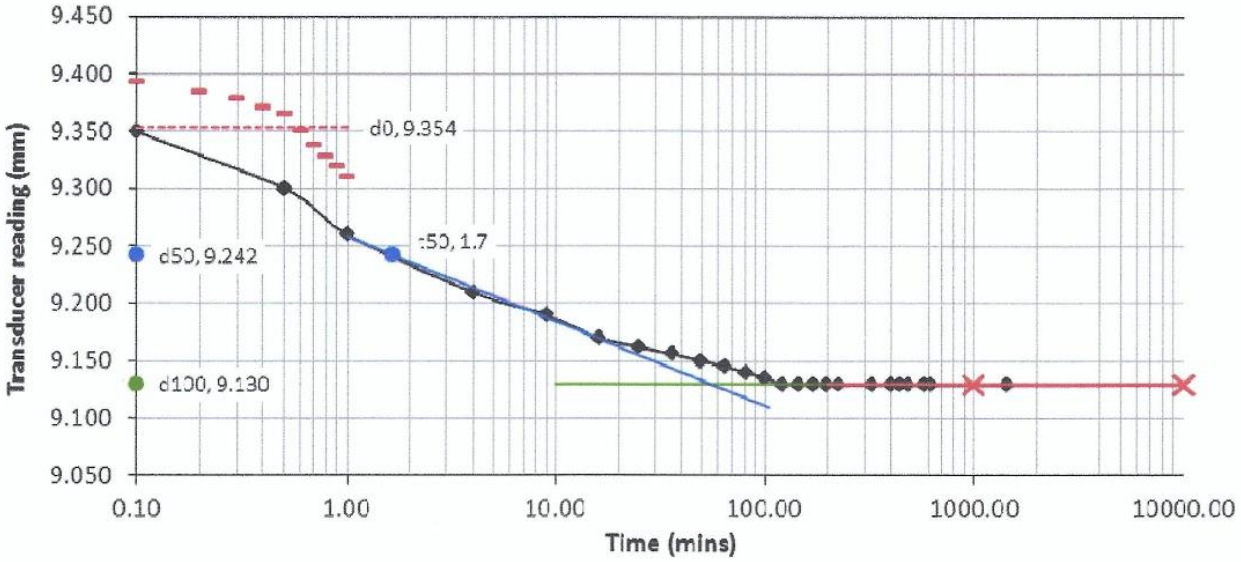
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 3+500(Depth: 0.0-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5746	**Date:**	18-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 3+500 0.0-1.4m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.290 mm
From the plot, t_{50} = 1.7 mins
H_1 = 20.00 mm
H_2 = 19.71 mm
H = (20.00+19.71)/2
= 19.86 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.032 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.290 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.290
Net compression (mm)	= 0.258
Height mm (H_2)	= 19.71
Equivalent height of solids Hs	= 13.77
Voids Ratio = (H_2 – Hs)/Hs	= **0.431**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

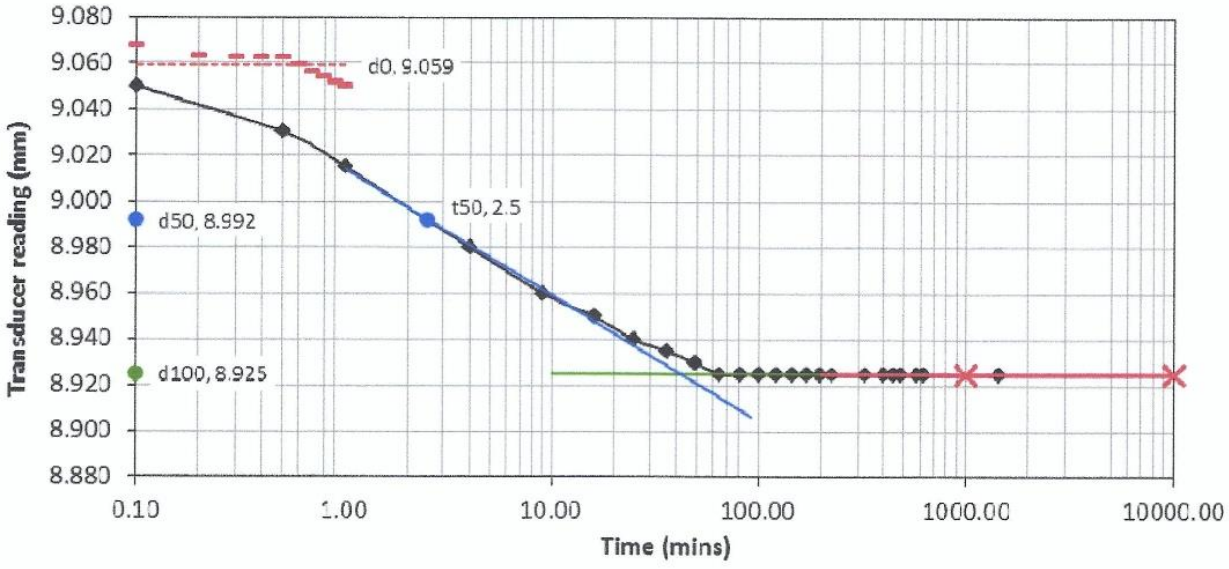
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 3+500(Depth: 0.0-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5746	**Date:**	19-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 3+500 0.0-1.4m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.205 mm
From the plot, t_{50} = 2.5 mins
H_1 = 19.71 mm
H_2 = 19.51 mm
H = (19.51+19.71)/2
= 19.61 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.999 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.208 m²/MN**

Specimen information (cumulative)
Compression (mm) = 0.495
Net compression (mm) = 0.445
Height mm (H_2) = 19.51
Equivalent height of solids Hs = 13.77
Voids Ratio = (H_2 – Hs)/Hs = **0.417**

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Nairobi
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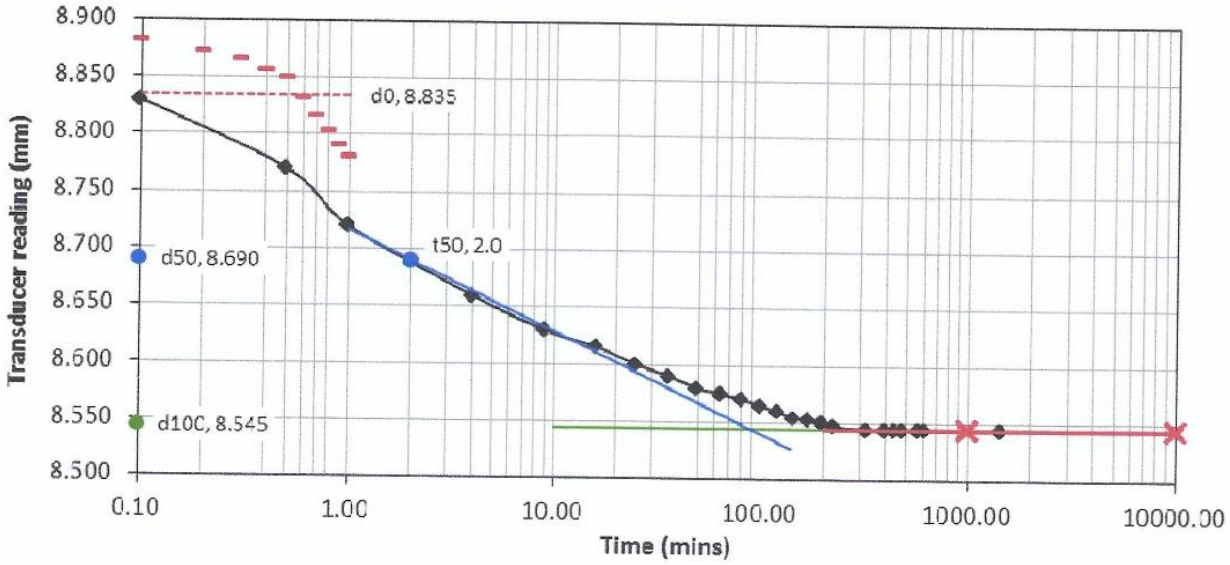
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 3+500(Depth: 0.0-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5746	**Date:**	20-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 3+500 0.0-1.4m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.380 mm
From the plot, t_{50} = 2.0 mins
H_1 = 19.51 mm
H_2 = 19.13 mm
H = (19.51+19.13)/2
= 19.32 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.852 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.195 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.875
Net compression (mm)	= 0.803
Height mm (H_2)	= 19.13
Equivalent height of solids Hs	= 13.77
Voids Ratio = (H_2 – Hs)/Hs	= **0.389**

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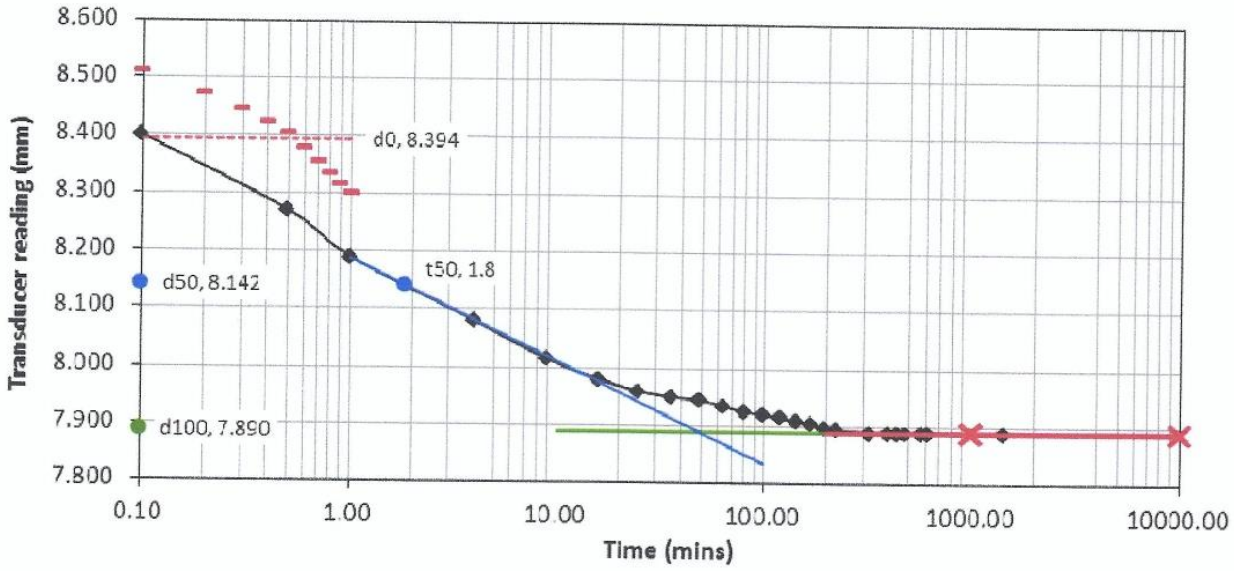
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 3+500(Depth: 0.0-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5746	**Date:**	21-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 3+500 0.0-1.4m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.655 mm
From the plot, t_{50} = 1.8 mins
H_1 = 19.13 mm
H_2 = 18.48 mm
H = (18.48+19.13)/2
= 18.81 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.111 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.171 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.530
Net compression (mm) = 1.425
Height mm (H_2) = 18.48
Equivalent height of solids Hs = 13.77
Voids Ratio = (H_2 – Hs)/Hs = **0.342**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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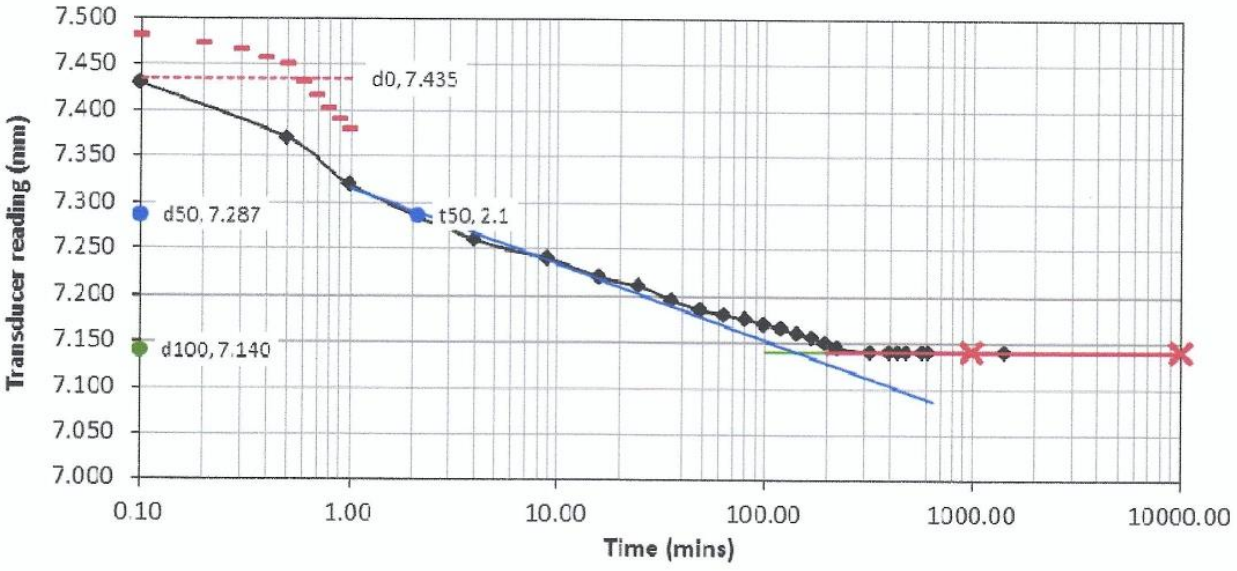
TP KM 3+500(Depth: 0.0-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5746	**Date:**	22-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 3+500 0.0-1.4m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.750 mm
From the plot, t_{50} = 2.1 mins
H_1 = 18.48 mm
H_2 = 17.73 mm
H = (18.48+17.73)/2
= 18.11 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.061 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.101 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 2.280
Net compression (mm) = 2.129
Height mm (H_2) = 17.73
Equivalent height of solids Hs = 13.77
Voids Ratio = (H_2 – Hs)/Hs = **0.288**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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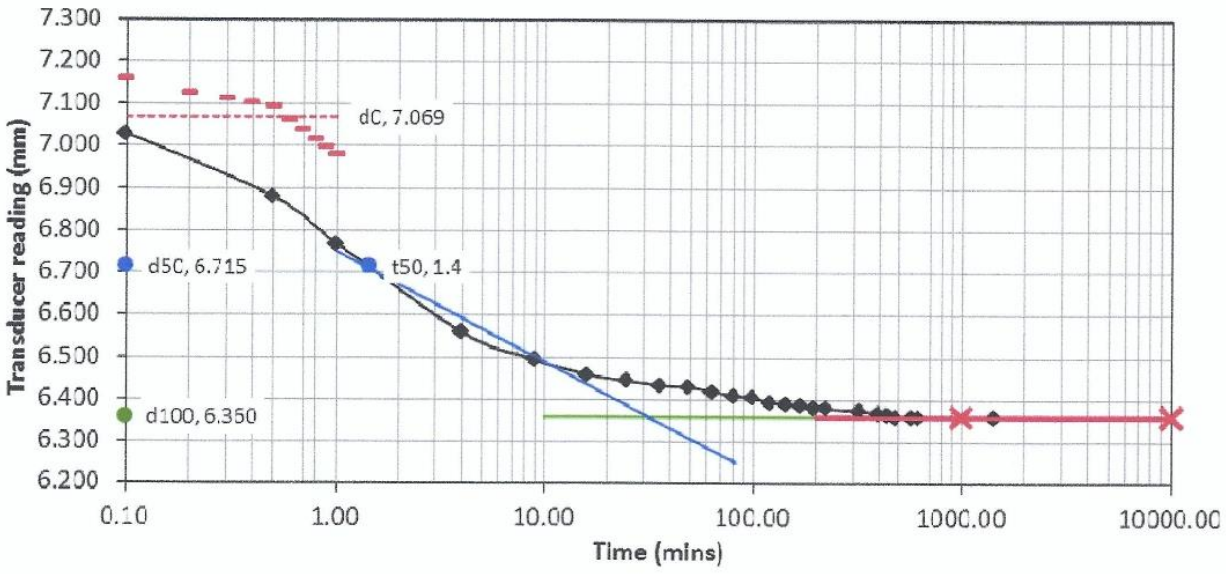
TP KM 3+500(Depth: 0.0-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5746	**Date:**	23-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 3+500 0.0-1.4m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.780 mm
From the plot, t_{50} = 1.4 mins
H_1 = 17.73 mm
H_2 = 16.95 mm
H = (16.95+17.73)/2
= 17.34 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.584 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.055 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 3.060
Net compression (mm)	= 2.853
Height mm (H_2)	= 16.95
Equivalent height of solids Hs	= 13.77
Voids Ratio = (H_2 – Hs)/Hs	= **0.231**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

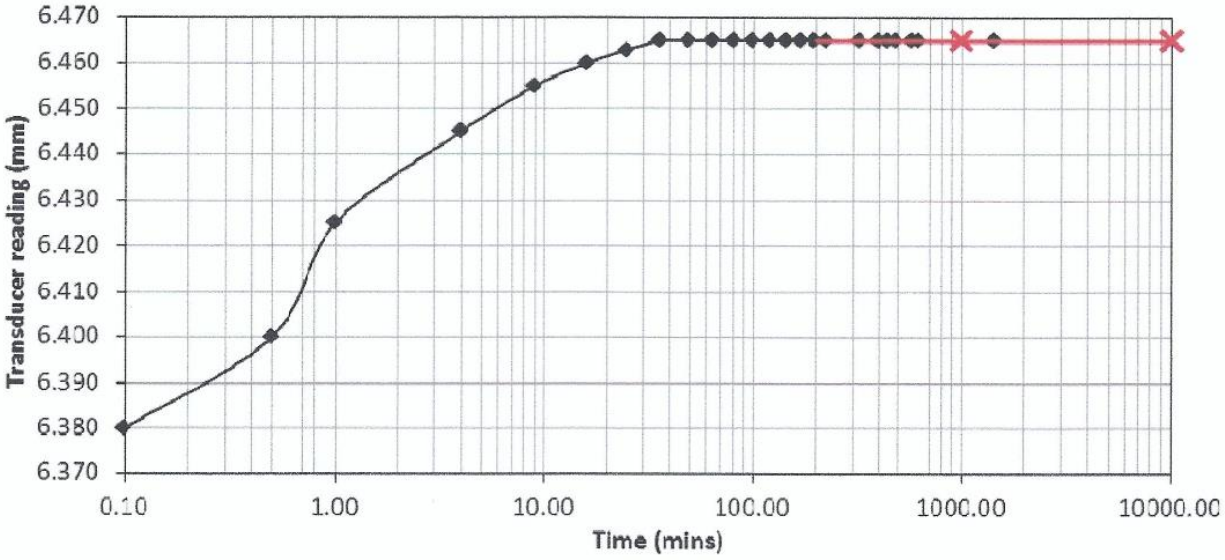
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 3+500(Depth: 0.0-1.4m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5746	**Date:**	24-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 3+500 0.0-1.4m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.105 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 2.955
Net compression (mm)	= 2.797
Height mm (H_2)	= 17.20
Equivalent height of solids Hs	= 13.77
Voids Ratio = (H_2 – Hs)/Hs	= 0.249

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

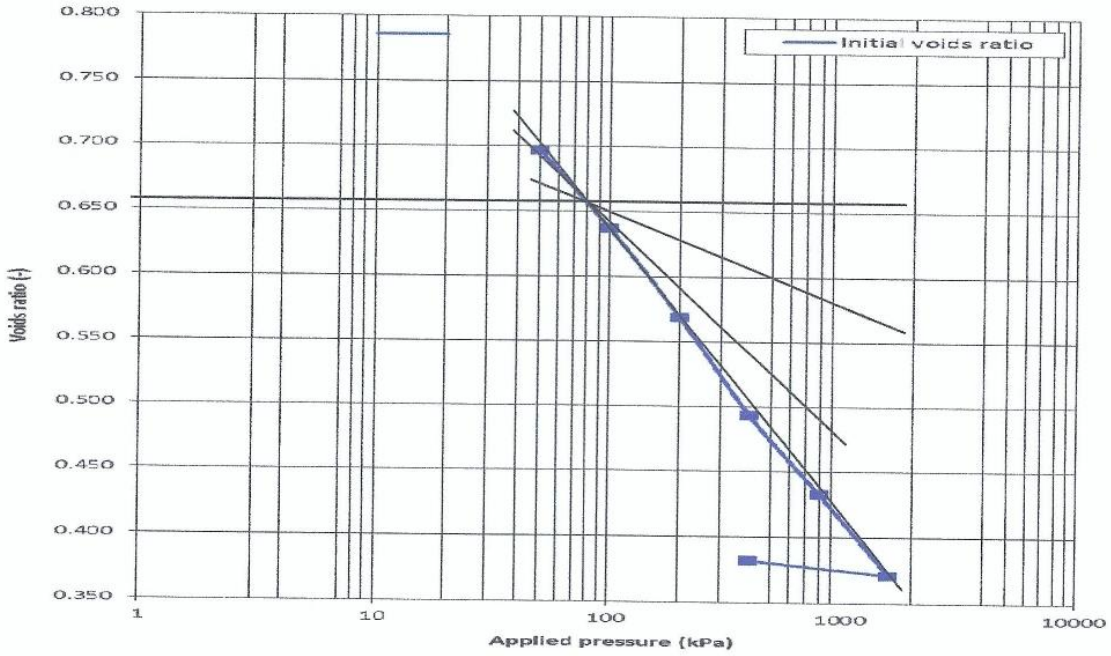
TP KM 4+000 (Depth: 0.45-0.9m)

Site: TRUNK MAIN
Classification Group Name: -
Ring Diameter: 62.0 mm
Area (A): 3019.1mm^2
Initial voids ratio: 0.783
Pre-consolidation stress: 080 Kn/m^2
Coefficient of Re-Compression Index: 0.047

Location: KWALE
Lab Ref: TM/RGS-TRUNKMAIN/5747
Height of soil particles: 11.20mm
Moisture Content after Test: 22.8%
Assumed Soil Density: 2600 kg/m^3

Depth: 0.45-0.90M
Sample No. 5747
Height of Ring: 20 mm
Bulk Density: 1790kg/m^3
Dry Density: 1458kg/m^3
Coefficient of Compression Index: 0.232

Voids Ratio against Applied Pressure



Tested By: KEVIN

Date Reported: 30-11-21

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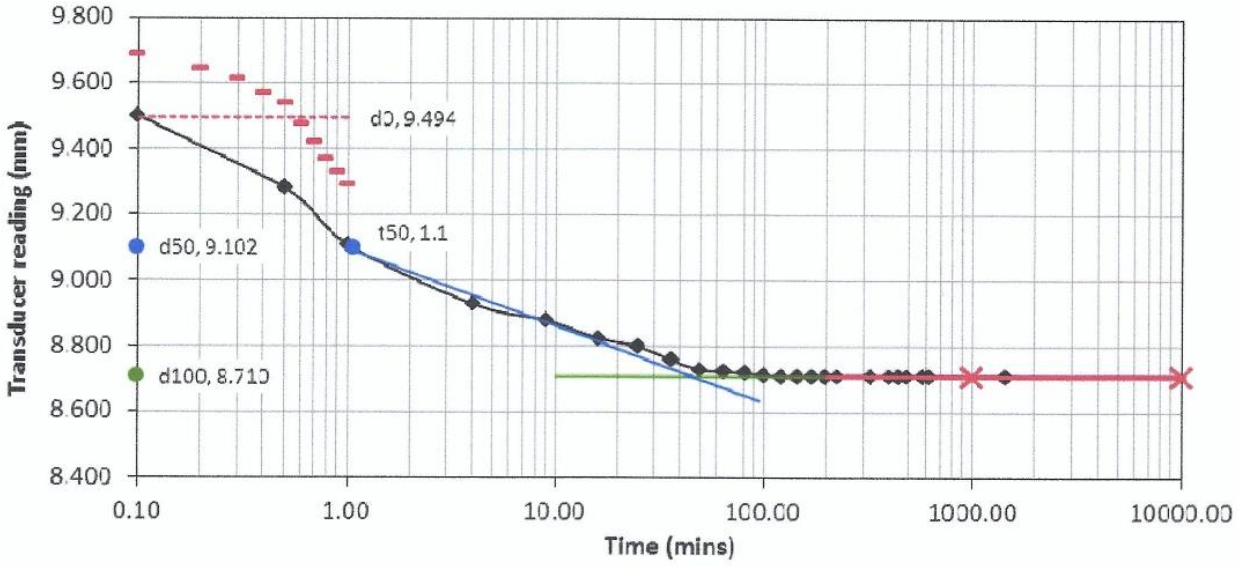
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 4+000(Depth: 0.45-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5747	**Date:**	18-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 4+000 0.45-0.9m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 1.030 mm
From the plot, t_{50} = 1.1 mins
H_1 = 20.00 mm
H_2 = 18.97 mm
H = (20.00+18.97)/2
= 19.49 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}} =$ **8.979 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **1.030 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 1.030
Net compression (mm) = 0.998
Height mm (H_2) = 18.97
Equivalent height of solids Hs = 11.20
Voids Ratio = (H_2 – Hs)/Hs = **0.694**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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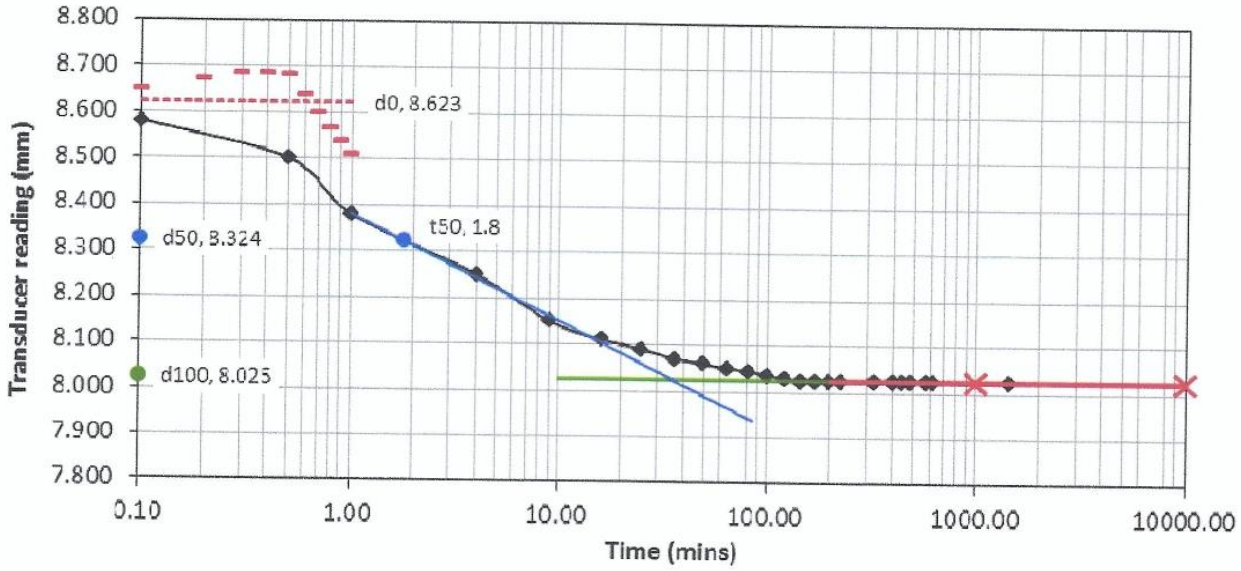
TP KM 4+000(Depth: 0.45-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5747	**Date:**	19-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 4+000 0.45-0.9m
LOADING STAGE:	**No. 2**	**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.685 mm
From the plot, t_{50} = 1.8 mins
H_1 = 18.97 mm
H_2 = 18.29 mm
H = (18.29+18.97)/2
= 18.63 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.013 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.722 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 1.715
Net compression (mm)	= 1.665
Height mm (H_2)	= 18.29
Equivalent height of solids Hs	= 11.20
Voids Ratio = (H_2 – Hs)/Hs	= **0.633**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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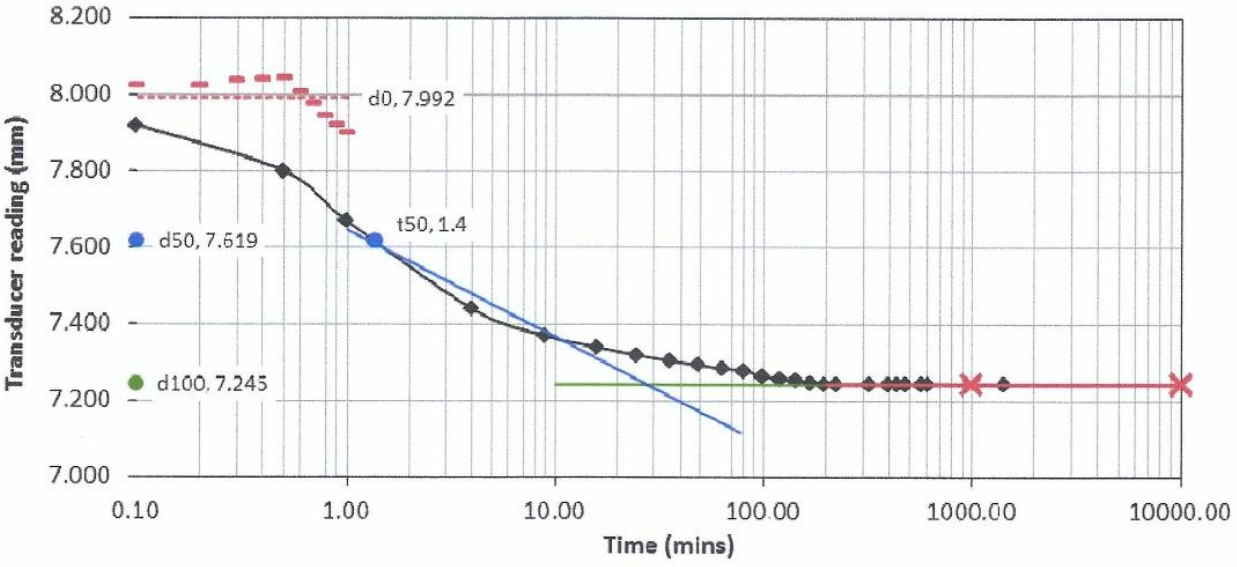
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 4+000(Depth: 0.45-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5747	**Date:**	20-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 4+000 0.45-0.9m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.780 mm
From the plot, t_{50} = 1.4 mins
H_1 = 18.29 mm
H_2 = 17.51 mm
H = (18.29+17.51)/2
= 17.90 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **5.950 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.426 m²/MN**

Specimen information (cumulative)
Compression (mm) = 2.495
Net compression (mm) = 2.423
Height mm (H_2) = 17.51
Equivalent height of solids Hs = 11.20
Voids Ratio = (H_2 – Hs)/Hs = **0.563**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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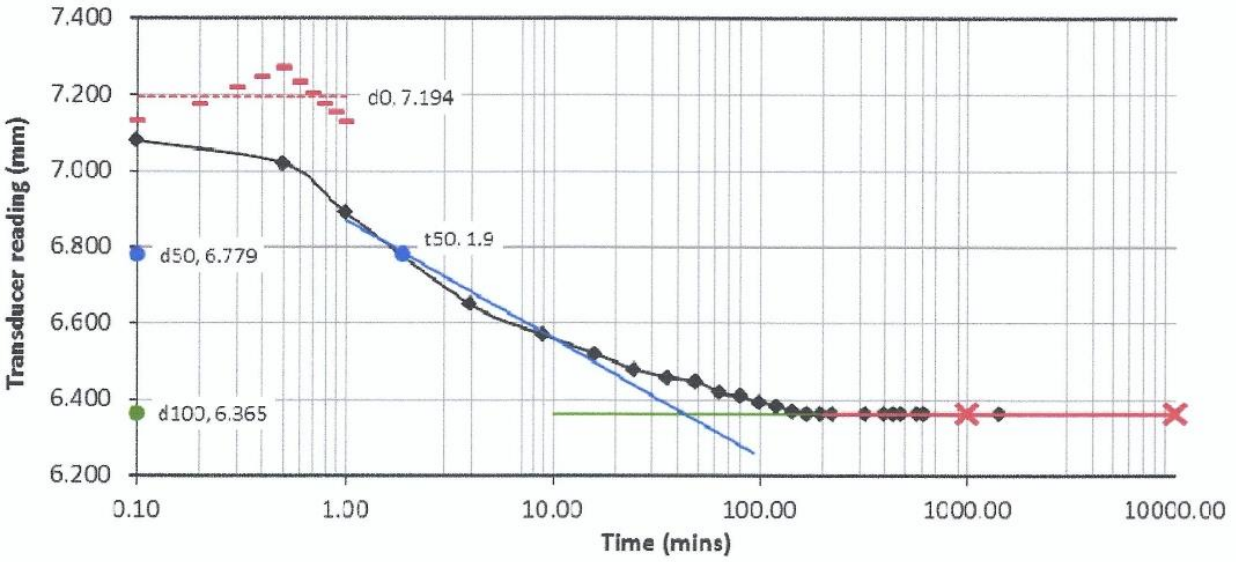
TP KM 4+000(Depth: 0.45-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5747	**Date:**	21-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 4+000 0.45-0.9m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.880 mm
From the plot, t_{50} = 1.9 mins
H_1 = 17.51 mm
H_2 = 16.63 mm
H = (16.63+17.51)/2
= 17.07 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.987 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.251 m²/MN**

Specimen information (cumulative)

Compression (mm)	= 3.375
Net compression (mm)	= 3.270
Height mm (H_2)	= 16.63
Equivalent height of solids Hs	= 11.20
Voids Ratio = (H_2 – Hs)/Hs	= **0.485**

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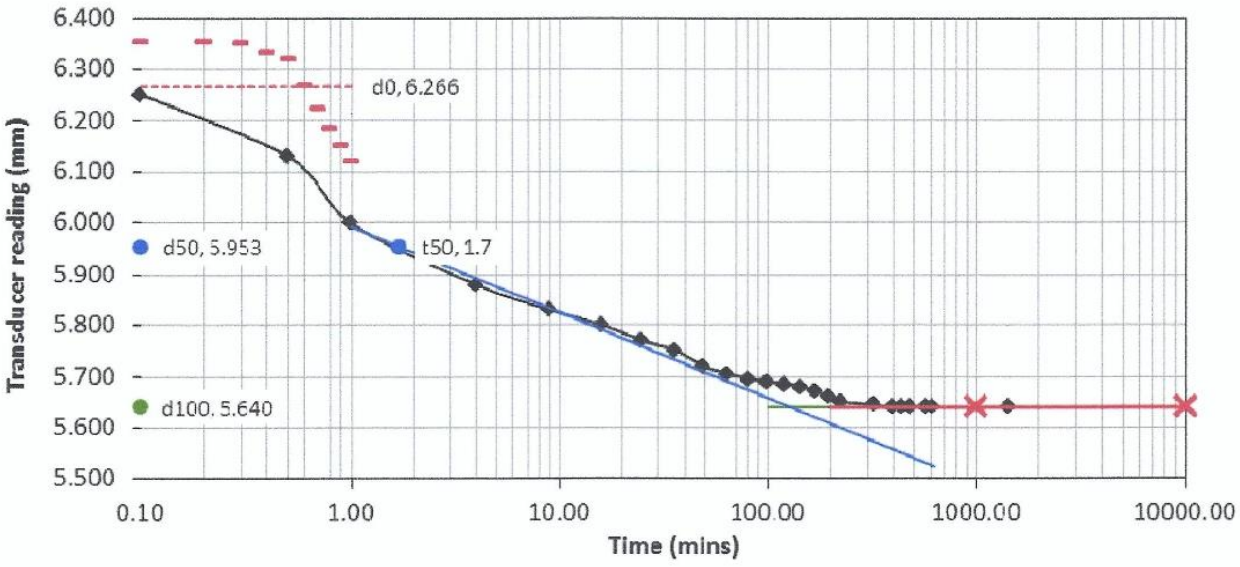
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 4+000(Depth: 0.45-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5747	**Date:**	22-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 4+000 0.45-0.9m
LOADING STAGE: No. 5		**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.725 mm
From the plot, t_{50} = 1.7 mins
H_1 = 16.63 mm
H_2 = 15.91 mm
H = (16.63+15.91)/2
= 16.27 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **4.049 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.109 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 4.100
Net compression (mm) = 3.949
Height mm (H_2) = 15.91
Equivalent height of solids Hs = 11.20
Voids Ratio = (H_2 – Hs)/Hs = **0.421**

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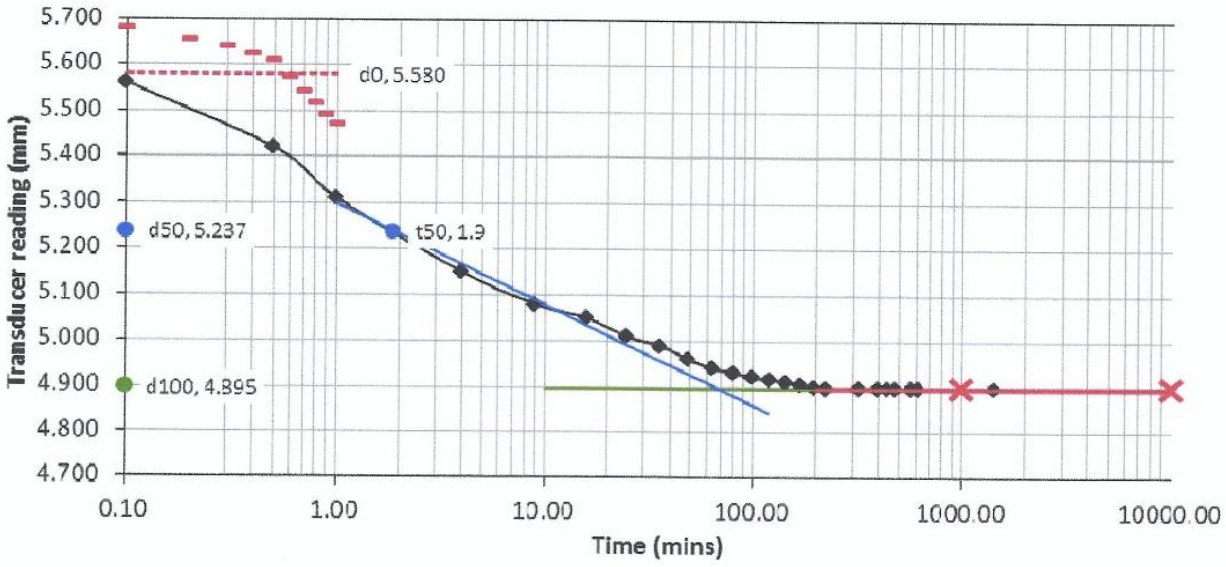
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 4+000(Depth: 0.45-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5747	**Date:**	23-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 4+000 0.45-0.9m
LOADING STAGE: No. 6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.745 mm
From the plot, t_{50} = 1.9 mins
H_1 = 15.91 mm
H_2 = 15.17 mm
H = (15.17+15.91)/2
= 15.54 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **3.305 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.059 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 4.845
Net compression (mm) = 4.638
Height mm (H_2) = 15.17
Equivalent height of solids Hs = 11.20
Voids Ratio = (H_2 – Hs)/Hs = **0.354**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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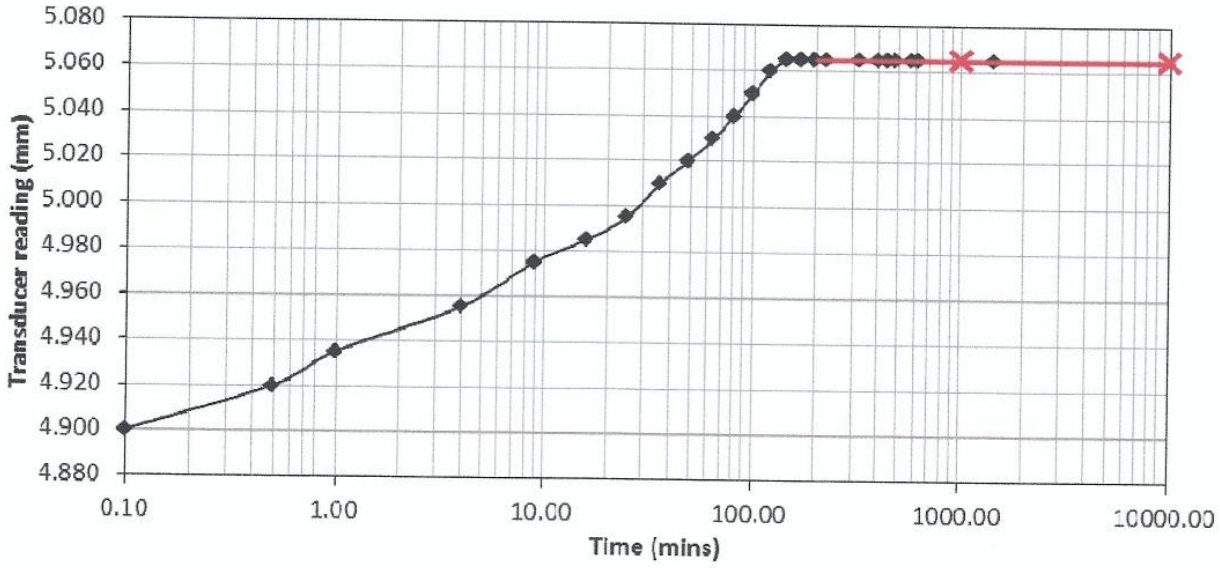
TP KM 4+000(Depth: 0.45-0.9m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5747	**Date:**	24-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 4+000 0.45-0.9m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.170 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 4.675
Net compression (mm)	= 4.517
Height mm (H_2)	= 15.48
Equivalent height of solids Hs	= 11.20
Voids Ratio = $(H_2 - Hs)/Hs$	= 0.382

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REGIONAL GEOPHYSICAL SURVEY

TRUNK MAIN SITE

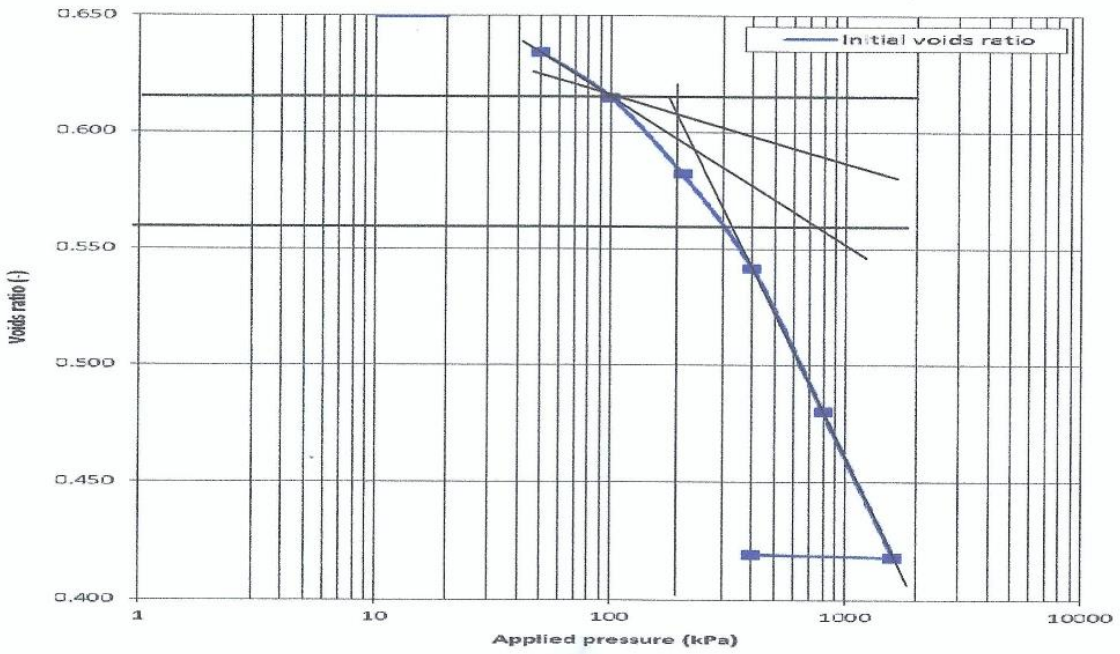
DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES.

Tested in Accordance with BS 1377: 1990: Part 5: Clause 3.

TP KM 5+500 (Depth: 0.8-1.0m)

Site: TRUNK MAIN
Location: KWALE
Depth: 0.8-1.0M
Classification Group Name: -
Lab Ref: TM/RGS-TRUNKMAIN/5750
Sample No. 5750
Ring Diameter: 62.0 mm
Height of soil particles: 12.12mm
Height of Ring: 20 mm
Area (A): 3019.1mm^2
Moisture Content after Test: 20.6%
Bulk Density: 1912kg/m^3
Initial voids ratio: 0.640
Assumed Soil Density: 2600 kg/m^3
Dry Density: 1585kg/m^3
Pre-consolidation stress: 195 Kn/m^2
Coefficient of Compression Index: 0.218
Coefficient of Re-Compression Index: 0.028

Voids Ratio against Applied Pressure



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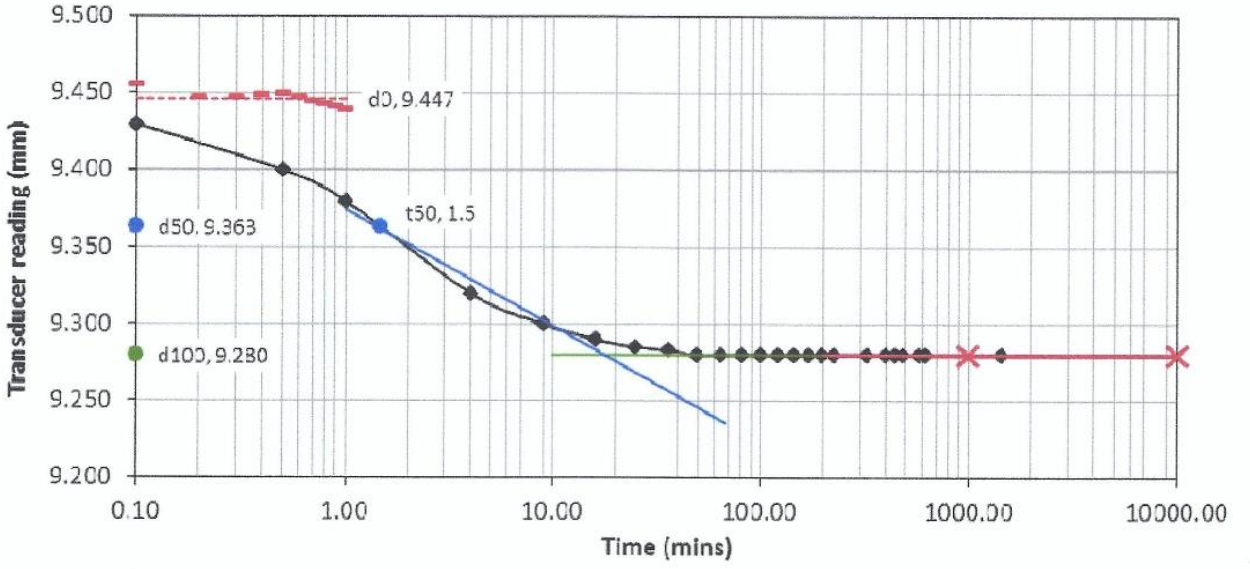
TP KM 5+500(Depth: 0.8-1.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5750	**Date:**	18-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 5+500 0.8-1.0m
LOADING STAGE: No. 1		**PRESSURE** (kpa)	50	**MASS** (kg)	1.54



CALCULATIONS

Change in Height = 0.220 mm
From the plot, t_{50} = 1.5 mins
H_1 = 20.00 mm
H_2 = 19.78 mm
H = (20.00+19.78)/2
= 19.89 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.857 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.220 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.220
Net compression (mm) = 0.188
Height mm (H_2) = 19.78
Equivalent height of solids Hs = 12.12
Voids Ratio = (H_2 – Hs)/Hs = **0.632**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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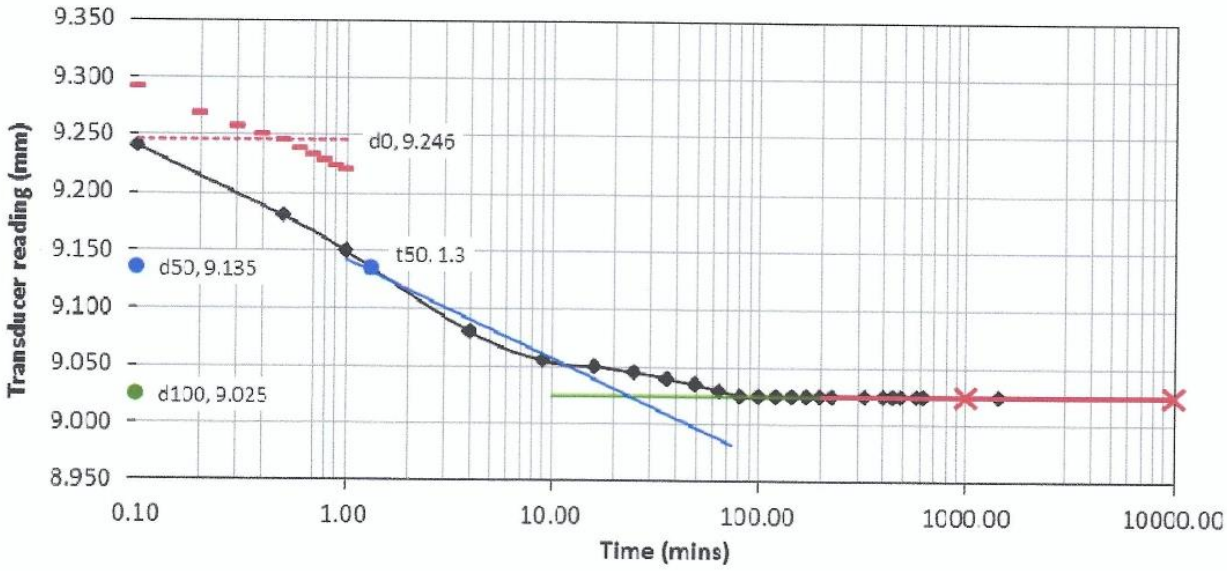
TP KM 5+500(Depth: 0.8-1.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5750	**Date:**	19-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 5+500 0.8-1.0m
LOADING STAGE: No. 2		**PRESSURE** (kpa)	100	**MASS** (kg)	3.08



CALCULATIONS

Change in Height = 0.255 mm
From the plot, t_{50} = 1.3 mins
H_1 = 19.78 mm
H_2 = 19.53 mm
H = (19.53+19.78)/2
= 19.66 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.730 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.258 m^2/MN**

Specimen information (cumulative)
Compression (mm) = 0.475
Net compression (mm) = 0.425
Height mm (H_2) = 19.53
Equivalent height of solids Hs = 12.12
Voids Ratio = (H_2 – Hs)/Hs = **0.611**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

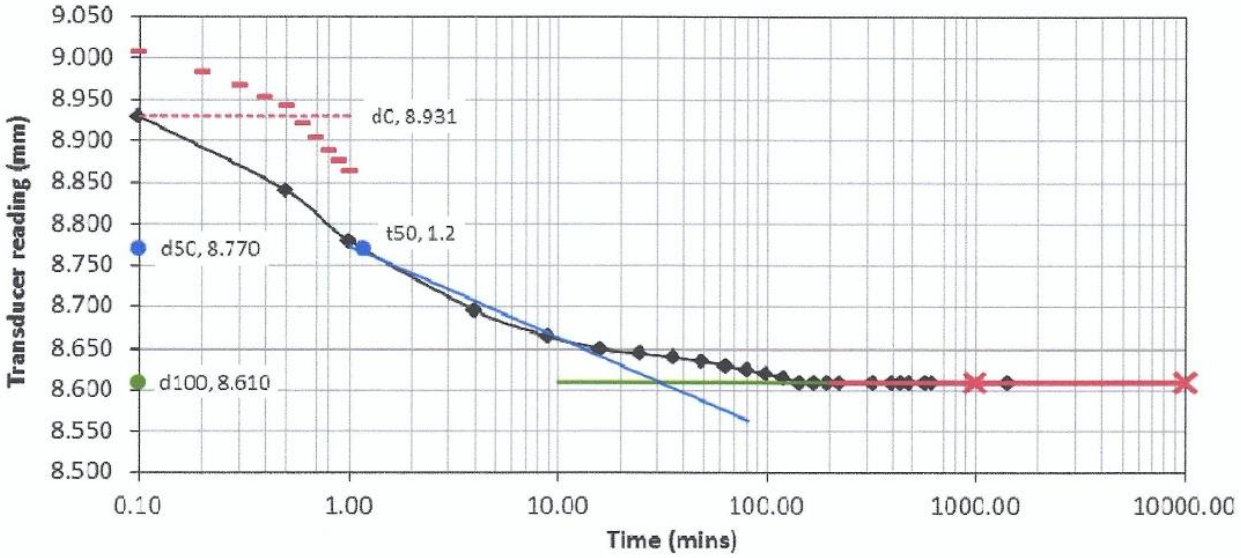
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 5+500(Depth: 0.8-1.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5750	**Date:**	20-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 5+500 0.8-1.0m
LOADING STAGE: No. 3		**PRESSURE** (kpa)	200	**MASS** (kg)	6.16



CALCULATIONS

Change in Height = 0.415 mm
From the plot, t_{50} = 1.2 mins
H_1 = 19.53 mm
H_2 = 19.12 mm
H = (19.53+19.12)/2
= 19.33 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **8.096 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.212 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 0.890
Net compression (mm)	= 0.818
Height mm (H_2)	= 19.12
Equivalent height of solids Hs	= 12.12
Voids Ratio = (H_2 – Hs)/Hs	= **0.578**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

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Mombasa Road
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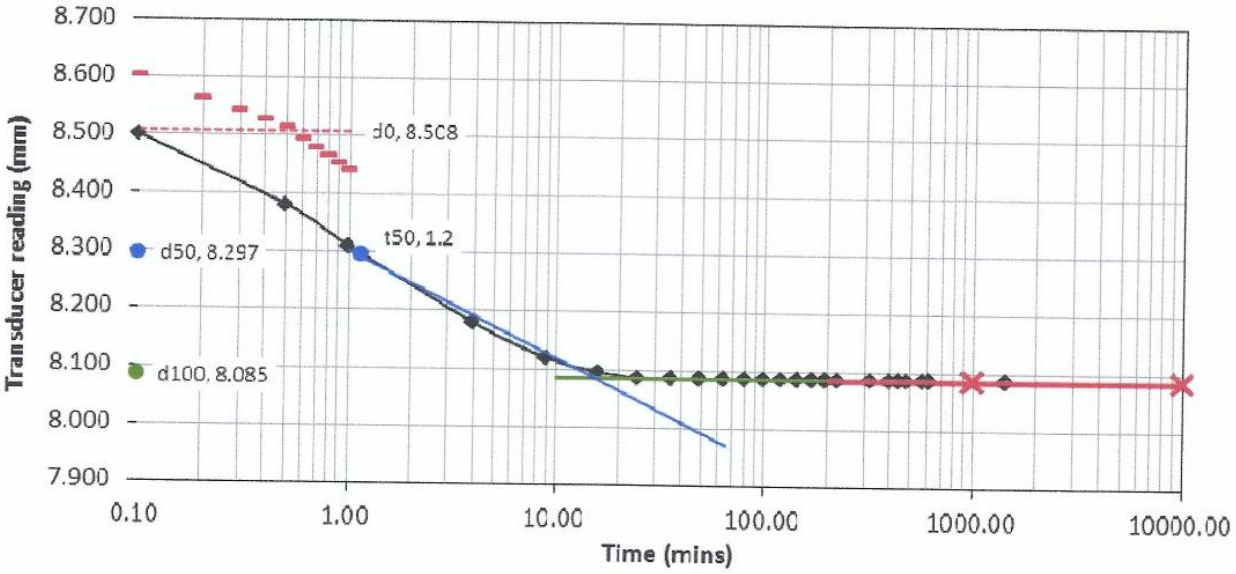
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 5+500(Depth: 0.8-1.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5750	**Date:**	21-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 5+500 0.8-1.0m
LOADING STAGE: No. 4		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = 0.525 mm
From the plot, t_{50} = 1.2 mins
H_1 = 19.12 mm
H_2 = 18.60 mm
H = (18.60+19.12)/2
= 18.86 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **7.707 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.137 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 1.415
Net compression (mm)	= 1.310
Height mm (H_2)	= 18.60
Equivalent height of solids Hs	= 12.12
Voids Ratio = (H_2 – Hs)/Hs	= **0.535**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
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Web site: www.danellilab.com
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Nairobi
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DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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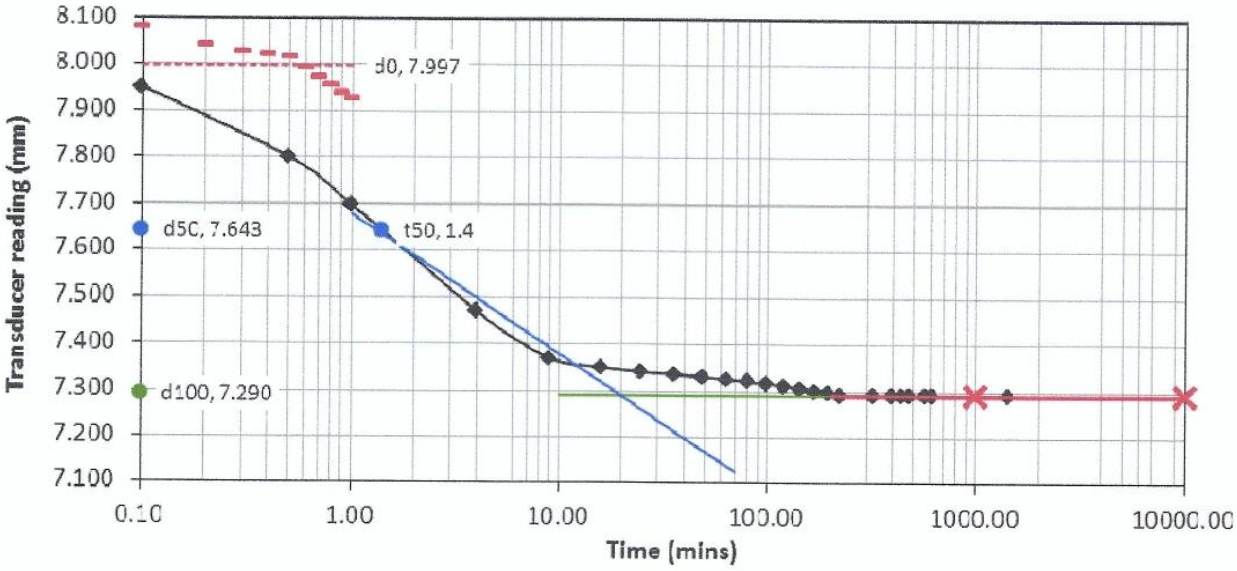
TP KM 5+500(Depth: 0.8-1.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5750	**Date:**	22-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 5+500 0.8-1.0m
LOADING STAGE:	**No. 5**	**PRESSURE** (kpa)	800	**MASS** (kg)	24.62



CALCULATIONS

Change in Height = 0.795 mm
From the plot, t_{50} = 1.4 mins
H_1 = 18.60 mm
H_2 = 17.81 mm
H = (18.60+17.81)/2
= 18.21 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.158 m²/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.107 m²/MN**

Specimen information (cumulative)
Compression (mm) = 2.210
Net compression (mm) = 2.059
Height mm (H_2) = 17.81
Equivalent height of solids Hs = 12.12
Voids Ratio = (H_2 – Hs)/Hs = **0.469**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

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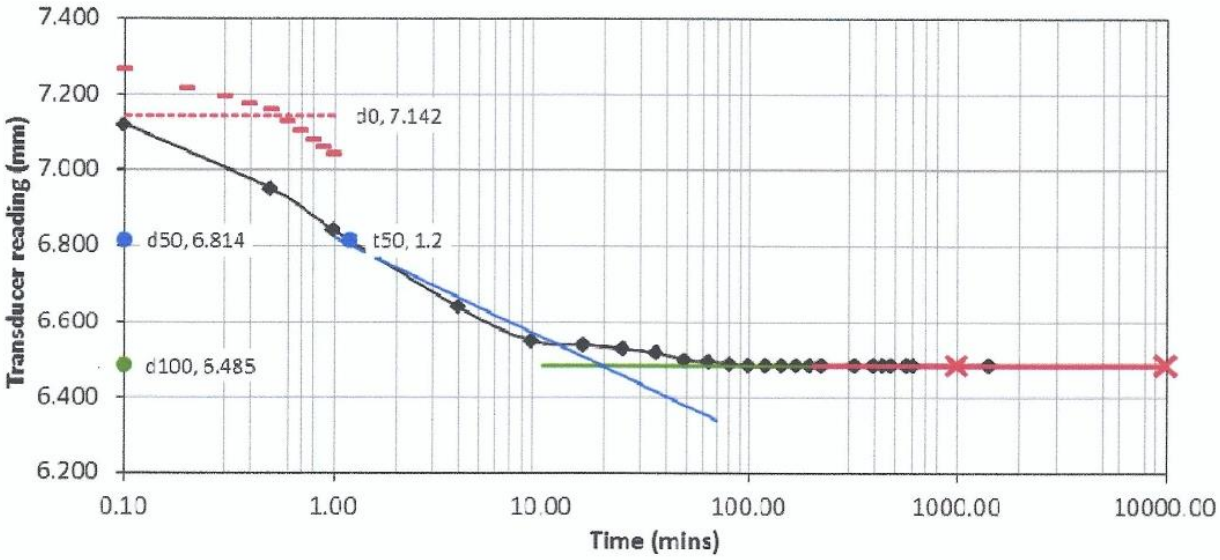
TP KM 5+500(Depth: 0.8-1.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5750	**Date:**	23-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 5+500 0.8-1.0m
LOADING STAGE: No.6		**PRESSURE** (kpa)	1600	**MASS** (kg)	49.24



CALCULATIONS

Change in Height = 0.805 mm
From the plot, t_{50} = 1.2 mins
H_1 = 17.81 mm
H_2 = 17.01 mm
H = (17.01+17.81)/2
= 17.41 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = **6.567 m^2/year**

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= **0.056 m^2/MN**

Specimen information (cumulative)

Compression (mm)	= 3.015
Net compression (mm)	= 2.808
Height mm (H_2)	= 17.01
Equivalent height of solids Hs	= 12.12
Voids Ratio = (H_2 – Hs)/Hs	= **0.403**

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

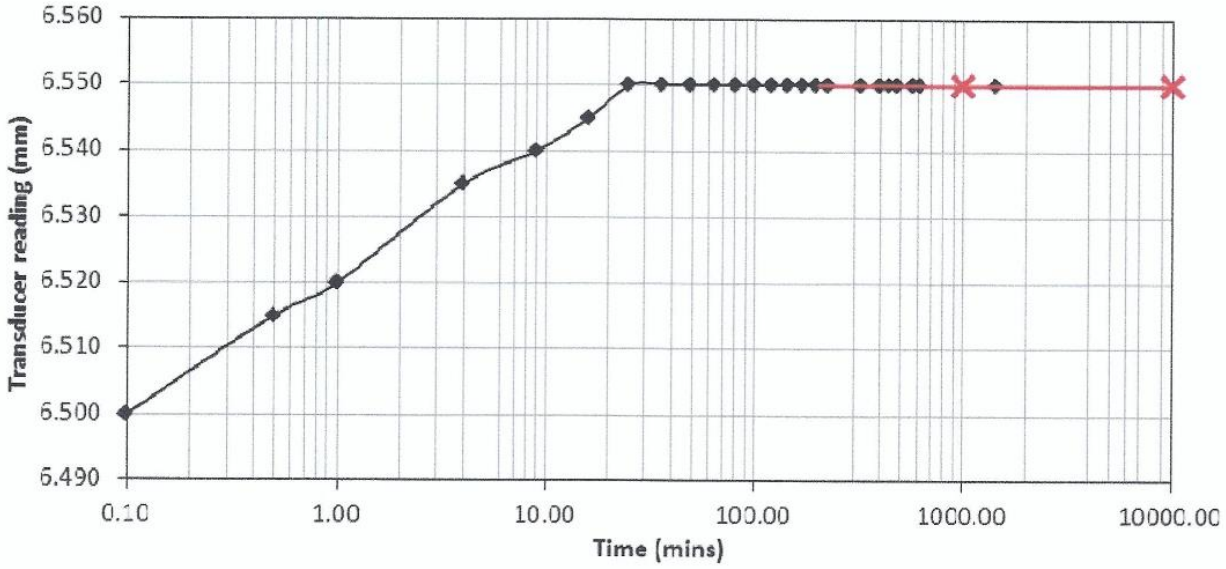
Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with BS 1377:1990:Part 5: Clause 3

TP KM 5+500(Depth: 0.8-1.0m)

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM /RGS-TRUNKMAIN/5750	**Date:**	24-11-21
Project	TRUNK MAIN SITE	**Location:**	KWALE	**Sample**	TP KM 5+500 0.8-1.0m
UNLOADING STAGE:		**PRESSURE** (kpa)	400	**MASS** (kg)	12.31



CALCULATIONS

Change in Height = -0.065 mm

Co-efficient of Consolidation, $C_v = \frac{0.026\ H^2}{t_{50}}$ = - m^2/year

Co-efficient of volume compressibility, $M_v = \frac{H_1 - H_2}{H_1} \times \frac{1000}{P_2 - P_1}$

= - m^2/MN

Specimen information (cumulative)

Compression (mm)	= 2.950
Net compression (mm)	= 2.792
Height mm (H_2)	= 17.21
Equivalent height of solids Hs	= 12.12
Voids Ratio = (H_2 – Hs)/Hs	= 0.420

Tested By: KEVIN **Date Reported:** 30-11-21 **Checked By:**

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Chemical Test

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

CHEMICAL ANALYSIS
BS : 1377 : Part 3: 1990

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS –BONJE CREEK/S.No	**Date Received:**	06-09-21
Project:	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Date Tested:**	13-09-21
Material Description	CRUSHED ROCK CORES				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
BH 01(3.0-4.0M)	4447	0.03013	-	0.24210	6.7
BH 01(7.0-8.0M)	4448	0.02012	-	0.00542	8.3
BH 01(12.0-13.0M)	4450	0.03501	-	0.16013	6.9
BH 01(19.0-20.0M)	4451	0.02503	-	0.06703	8.4
BH 02(1.0-2.0M)	4452	0.00203	-	0.00273	7.6
BH 02(2.0-3.0M)	4453	0.03505	-	0.06504	7.9
BH 02(8.0-9.0M)	4454	0.05010	-	0.19302	6.5

Tested by: KEVIN

Date Reported: 15-09-21

Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

CHEMICAL ANALYSIS
BS : 1377 : Part 3: 1990

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS –BONJE CREEK/S.No	**Date Received:**	06-09-21
Project:	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Date Tested:**	13-09-21
Material Description	CRUSHED ROCK CORES				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
BH 02(14.0-15.0M)	4455	0.21502	-	0.34001	6.5
BH 02(18.0-19.0M)	4456	0.03030	-	0.32213	6.2
BH 02(24.0-25.0M)	4457	0.21510	-	0.32012	6.1
BH 02(28.0-29.0M)	4458	0.05002	-	0.14101	6.6
BH 03(2.0-3.0M)	4459	0.03212	-	0.07003	7.6
BH 03(11.0-12.0M)	4460	0.00265	-	0.00735	8.2

Tested by: KEVIN

Date Reported: 15-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

CHEMICAL ANALYSIS
BS : 1377 : Part 3: 1990

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS –NGUU TATU/S.No	**Date Received:**	06-09-21
Project:	NGUU TATU WATER TANK	**Location:**	MOMBASA	**Date Tested:**	13-09-21
Material Description	CRUSHED ROCK CORES				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
BH 02(1.0-2.0M)	4464	0.00734	-	0.01602	8.1
BH 02(19.0-20.0M)	4467	0.00342	-	0.00623	8.3

Tested by: KEVIN

Date Reported: 15-09-21

Checked by: _____

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

CHEMICAL ANALYSIS
BS : 1377 : Part 3: 1990

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS –CHANGAMWE/S.No	**Date Received:**	06-09-21
Project:	CHANGAMWE WATER TANK	**Location:**	MOMBASA	**Date Tested:**	13-09-21
Material Description	CRUSHED ROCK CORES				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
BH 01(1.0-2.0M)	4468	0.00225	-	0.00434	7.8
BH 01(7.0-8.0M)	4469	0.00230	-	0.00781	7.9
BH 01(16.0-17.0M)	4470	0.00550	-	0.00824	8.4
BH 02(7.0-8.0M)	4471	0.00631	-	0.00821	7.5
BH 02(17.0-18.0M)	4473	0.00315	-	0.00662	8.1

Tested by: KEVIN

Date Reported: 15-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
Kenya

CHEMICAL ANALYSIS
BS : 1377 : Part 3: 1990

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-NGUU TATU/S.No	**Date Received:**	18-10-21
Project:	NGUU TATU SITE	**Location:**	MOMBASA	**Date Tested:**	24-11-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM2+500 (0.0-0.3M)	5709	0.00119	-	0.00519	7.5
TP KM3+000 (0.8-1.4M)	5710	0.00104	-	0.00148	7.7
TP KM4+000 (0.0-0.9M)	5711	0.00130	-	0.00716	7.6
TP KM4+000 (1.3-1.5M)	5712	0.01801	-	0.04201	6.9
TP KM4+500 (0.0-0.9M)	5713	0.00176	-	0.00485	7.9
TP KM6+500 (0.0-0.8M)	5714	0.00124	-	0.00371	7.2
TP KM7+500 (0.5-1.3M)	5715	0.00136	-	0.00263	7.1

Tested by: MICHAEL

Date Reported: 26-11-21

Checked by: _____

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

CHEMICAL ANALYSIS
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Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-NGUU TATU/S.No	**Date Received:**	18-10-21
Project:	NGUU TATU SITE	**Location:**	MOMBASA	**Date Tested:**	24-11-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM8+000 (0.3-0.8M)	5716	0.00111	-	0.00916	6.9
TP KM8+500 (0.7-1.7M)	5717	0.00118	-	0.00114	7.1
TP KM9+500 (0.4-1.4M)	5718	0.00275	-	0.00319	7.3
TP KM10+000 (0.3-1.3M)	5719	0.00215	-	0.00446	7.5
TP KM10+500 (0.25-1.3M)	5720	0.00118	-	0.00512	7.2
TP KM11+000 (0.0-0.5M)	5721	0.00107	-	0.00217	7.4
TP KM11+500 (0.0-0.6M)	5722	0.00203	-	0.00662	7.2

Tested by: MICHAEL

Date Reported: 26-11-21

Checked by:

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
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Head Office & Laboratories:
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Project:	NGUU TATU SITE	**Location:**	MOMBASA	**Date Tested:**	24-11-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM12+000 (0.2-1.0M)	5723	0.00902	-	0.00112	6.9
TP KM13+000 (0.3-1.5M)	5724	0.00289	-	0.00225	7.2
TP KM13+500 (0.0-2.1M)	5725	0.00313	-	0.00105	7.3
TP KM14+000 (0.3-0.9M)	5726	0.00121	-	0.00114	7.5
TP KM14+500 (0.4-1.0M)	5727	0.00185	-	0.00246	7.4
TP KM15+000 (0.5-1.0M)	5728	0.00112	-	0.00174	7.2
TP KM15+500 (0.25-0.6M)	5729	0.00104	-	0.00116	7.3

Tested by: MICHAEL

Date Reported: 26-11-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
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Project:	NGUU TATU SITE	**Location:**	MOMBASA	**Date Tested:**	24-11-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM16+000 (0.0-0.75M)	5730	0.01410	-	0.01204	7.7
TP KM16+500 (0.5-1.4M)	5731	0.01502	-	0.01201	7.8
TP KM17+000 (0.0-1.5M)	5732	0.00416	-	0.00273	7.2
TP KM17+500 (0.0-1.3M)	5733	0.00501	-	0.00201	7.3
TP KM18+000 (0.4-1.2M)	5734	0.00514	-	0.00243	7.6
TP KM18+500 (0.0-0.8M)	5735	0.00402	-	0.01021	6.9
TP KM19+000 (0.0-1.1M)	5736	0.00120	-	0.00202	7.9

Tested by: MICHAEL

Date Reported: 26-11-21

Checked by:

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

CHEMICAL ANALYSIS
BS : 1377 : Part 3: 1990

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-NGUU TATU/S.No	**Date Received:**	18-10-21
Project:	NGUU TATU SITE	**Location:**	MOMBASA	**Date Tested:**	24-11-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM19+500 (0.5-1.1M)	5737	0.00314	-	0.00105	7.2
TP KM20+000 (0.5-1.5M)	5738	0.00222	-	0.00215	7.6
TP KM20+500 (0.2-1.0M)	5739	0.00122	-	0.00218	7.9

Tested by: MICHAEL

Date Reported: 26-11-21

Checked by: DANELLI ENGINEERING LABORATORIES LIMITED

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Email: danellilab3@gmail.com
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Web site: www.danellilab.com
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Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

CHEMICAL ANALYSIS
BS : 1377 : Part 3: 1990

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-KAYABOMBO/S.No	**Date Received:**	18-10-21
Project:	KAYABOMBO SITE	**Location:**	KWALE	**Date Tested:**	24-11-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM0+000 (0.4-1.0M)	5751	0.00356	-	0.00301	7.6
TP KM0+500 (0.4-1.1M)	5752	0.00391	-	0.00307	7.7
TP KM1+000 (0.0-1.4M)	5753	0.00129	-	0.00116	7.6
TP KM1+500 (0.0-1.3M)	5754	0.00147	-	0.01710	7.5
TP KM2+000 (0.0-0.5M)	5755	0.00190	-	0.00186	7.7
TP KM2+500 (0.0-2.0M)	5756	0.00518	-	0.06401	7.4

Tested by: MICHAEL

Date Reported: 26-11-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

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Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-KAYABOMBO/S.No	**Date Received:**	20-09-21
Project:	KAYABOMBO SITE	**Location:**	KWALE	**Date Tested:**	21-09-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM3+000 (0.32-0.95M)	4559	0.01520	-	0.04520	7.9
TP KM3+500	4560	0.00928	-	0.00109	7.8
TP KM4+500 (0.0-1.4M)	4561	0.00421	-	0.00121	7.0
TP KM5+000 (0.32-1.0M)	4562	0.00306	-	0.00201	7.5
TP KM5+500	4563	0.00201	-	0.00321	7.6
TP KM6+000 (0.80-0.90M)	4564	0.00309	-	0.00207	7.7
TP KM6+500 (0.0-1.0M)	4565	0.00412	-	0.06201	7.9

Tested by: MICHAEL

Date Reported: 22-09-21

Checked by:

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

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Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-KAYABOMBO/S.No	**Date Received:**	20-09-21
Project:	KAYABOMBO SITE	**Location:**	KWALE	**Date Tested:**	21-09-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM6+500 (1.0-1.7M)	4566	0.02111	-	0.03121	7.4
TP KM7+000 (0.0-0.8M)	4567	0.00412	-	0.05211	7.4
TP KM7+000 (0.8-1.7M)	4568	0.00522	-	0.04311	7.3
TP KM8+000 (0.3-0.6M)	4569	0.00301	-	0.00201	7.2
TP KM8+500 (0.3-0.55M)	4570	0.00421	-	0.00101	7.5
TP KM10+000	4571	0.00316	-	0.00101	7.6
TP KM10+500	4572	0.00322	-	0.00103	7.5

Tested by: MICHAEL

Date Reported: 22-09-21

Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

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BS : 1377 : Part 3: 1990

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-KAYABOMBO/S.No	**Date Received:**	20-09-21
Project:	KAYABOMBO SITE	**Location:**	KWALE	**Date Tested:**	21-09-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM11+500	4573	0.00307	-	0.00209	6.9
TP KM13+000	4574	0.00301	-	0.00113	7.9
TP KM13+500	4575	0.00531	-	0.00252	7.3
TP KM14+000	4576	0.00112	-	0.01721	7.7
TP KM14+500	4577	0.00421	-	0.02561	7.8
TP KM15+000	4578	0.00317	-	0.00215	7.3
TP KM15+500	4579	0.00323	-	0.00218	7.2

Tested by: MICHAEL

Date Reported: 22-09-21

Checked by: _____

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

CHEMICAL ANALYSIS
BS : 1377 : Part 3: 1990

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-KAYABOMBO/S.No	**Date Received:**	20-09-21
Project:	KAYABOMBO SITE	**Location:**	KWALE	**Date Tested:**	21-09-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM17+000	4580	0.01021	-	0.02001	7.4
TP KM18+500	4581	0.08501	-	0.00782	7.5
TP KM19+000 (1.3-2.0M)	4582	0.00323	-	0.03520	7.7
TP KM19+500	4583	0.01820	-	0.01815	7.5
TP KM20+000	4584	0.01421	-	0.04111	7.4
TP KM20+500	4585	0.00722	-	0.04521	7.8
TP KM20+500 (0.45-1.50M)	4586	0.00721	-	0.02511	7.9

Tested by: MICHAEL

Date Reported: 22-09-21

Checked by:

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
Kenya

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Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-KAYABOMBO/S.No	**Date Received:**	20-09-21
Project:	KAYABOMBO SITE	**Location:**	KWALE	**Date Tested:**	21-09-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM20+500 (1.5-2.0M)	4587	0.00601	-	0.03211	6.5
TP KM21+000	4588	0.00421	-	0.00143	7.9
TP KM21+500	4589	0.00301	-	0.00122	7.1
TP KM22+500 (1.4M)	4590	0.00502	-	0.01502	7.5
TP KM23+500 (1.5M)	4591	0.00421	-	0.00101	7.5
TP KM24+000	4592	0.00612	-	0.00301	7.5
TP KM24+500	4593	0.00315	-	0.00127	7.6

Tested by: MICHAEL

Date Reported: 22-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
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Nairobi
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Project:	KAYABOMBO SITE	**Location:**	KWALE	**Date Tested:**	21-09-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM25+000	4594	0.00214	-	0.00114	7.4
TP KM25+500	4595	0.00122	-	0.00115	7.1
TP KM26+000	4596	0.00314	-	0.00112	7.2
TP KM26+500	4597	0.00213	-	0.00111	7.4

Tested by: MICHAEL

Date Reported: 22-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

CHEMICAL ANALYSIS
BS : 1377 : Part 3: 1990

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-CHANGAMWE/S.No	**Date Received:**	18-10-21
Project:	CHANGAMWE SITE	**Location:**	MOMBASA	**Date Tested:**	24-11-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM0+000 (0.0-0.3M)	5688	0.00101	-	0.00219	7.4
TP KM2+000 (0.4-1.6M)	5689	0.00902	-	0.00202	7.8
TP KM2+500 (0.6-1.6M)	5690	0.00618	-	0.00216	7.6
TP KM3+000 (0.5-1.6M)	5691	0.00118	-	0.00112	6.9
TP KM3+500 (0.5-0.9M)	5692	0.00114	-	0.00111	7.0
TP KM4+500 (0.2-1.7M)	5693	0.00110	-	0.00219	7.4
TP KM5+000 (0.0-0.8M)	5694	0.00110	-	0.00224	7.3

Tested by: MICHAEL

Date Reported: 26-11-21

Checked by: DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

CHEMICAL ANALYSIS
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Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-CHANGAMWE/S.No	**Date Received:**	18-10-21
Project:	CHANGAMWE SITE	**Location:**	MOMBASA	**Date Tested:**	24-11-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM6+000 (0.5-1.2M)	5695	0.00201	-	0.00221	7.7
TP KM7+000 (1.0-1.2M)	5696	0.00821	-	0.00202	7.4
TP KM7+500 (0.2-0.9M)	5697	0.00543	-	0.00309	7.2
TP KM8+000 (0.5-0.9M)	5698	0.00602	-	0.00231	7.3
TP KM8+500 (0.8-1.0M)	5699	0.12305	-	0.00423	6.9
TP KM9+000 (0.9-1.5M)	5700	0.00302	-	0.00121	7.6
TP KM11+000 (1.4-1.6M)	5701	0.00312	-	0.00107	7.5

Tested by: MICHAEL

Date Reported: 26-11-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

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Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-CHANGAMWE/S.No	**Date Received:**	18-10-21
Project:	CHANGAMWE SITE	**Location:**	MOMBASA	**Date Tested:**	24-11-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM11+500 (0.3-1.6M)	5702	0.00415	-	0.00331	7.6
TP KM11+618 (0.3-1.2M)	5703	0.00349	-	0.00217	7.8

Tested by: MICHAEL

Date Reported: 26-11-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

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Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-MZIMA/S.No	**Date Received:**	18-10-21
Project:	MZIMA SITE	**Location:**	KWALE	**Date Tested:**	24-11-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM0+500 (0.0-0.8M)	5707	0.00521	-	0.00221	7.3
TP KM1+000 (0.0-0.1M)	5708	0.00414	-	0.00273	7.4

Tested by: MICHAEL

Date Reported: 26-11-21

Checked by: _____

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

CHEMICAL ANALYSIS
BS : 1377 : Part 3: 1990

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-TRUNK MAIN/S.No	**Date Received:**	18-10-21
Project:	TRUNK MAIN SITE	**Location:**	KWALE	**Date Tested:**	24-11-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM0+500 (0.0-0.4M)	5740	0.00529	-	0.00209	7.3
TP KM1+500 (0.0-0.5M)	5741	0.00319	-	0.00295	7.4
TP KM1+740 (1.0-1.4M)	5742	0.00427	-	0.00327	7.2
TP KM2+000 (0.0-0.8M)	5743	0.00348	-	0.00486	7.1
TP KM2+500 (0.0-0.1M)	5744	0.00272	-	0.00304	7.2
TP KM3+000 (0.0-1.4M)	5745	0.00211	-	0.01428	7.7
TP KM3+500 (0.0-1.4M)	5746	0.00157		0.00116	7.3

Tested by: MICHAEL

Date Reported: 26-11-21

Checked by: DANELLI ENGINEERING LABORATORIES LIMITED

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

CHEMICAL ANALYSIS
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Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS-TRUNK MAIN/S.No	**Date Received:**	18-10-21
Project:	TRUNK MAIN SITE	**Location:**	KWALE	**Date Tested:**	24-11-21
Material Description	SOIL SAMPLE				

Sample Identification	Sample No.	Sulphates as SO_4 (%)	Sulphates as SO_3 (%)	Chlorides (%)	pH Value
TP KM4+000 (0.45-0.9M)	5747	0.00199	-	0.00552	6.9
TP KM4+500 (0.2-0.6M)	5748	0.01521	-	0.00921	7.5
TP KM5+000 (0.3-0.8M)	5749	0.00526	-	0.00322	7.3
TP KM5+005 (0.8-1.0M)	5750	0.00376	-	0.00421	7.2

Tested by: MICHAEL

Date Reported: 26-11-21

Checked by:

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF POROSITY OF ROCK MATERIALS

Tested in accordance with ISRM /ASTM C97-83

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS–BONJE CREEK/4467	**Date of Test:**	15-09-21		
Project:	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Site:**	BONJE CREEK		
Material Description	ROCK CORE	**Sampled By:**	REGIONAL GEOPHYSICAL SURVEY	**Height: (mm)**	38	**Diameter: (mm)**	70

Rock Sample Reference No.	**BH 01 (Depth: 3.0-4.0m)**	
TEST No.	1	
Saturated surface Dry Mass M_{sat}, (g)	298.0	
Dry Specimen Mass M_s, (g)	290.0	
Specimen Bulk Volume V (cm^3)	146.2	
Pore Volume V_v =(M_{sat} - M_s /Density of Water)	8.0	
Porosity n = V_v/ V x100 (%)	5.5	

Tested by: KEVIN

Date Reported: 19-09-21

Checked by:

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Porosity (Aggregates)

902

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
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Nairobi
Kenya

DETERMINATION OF POROSITY OF ROCK MATERIALS

Tested in accordance with ISRM /ASTM C97-83

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS–BONJE CREEK/4468	**Date of Test:**	15-09-21		
Project:	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Site:**	BONJE CREEK		
Material Description	ROCK CORE	**Sampled By:**	REGIONAL GEOPHYSICAL SURVEY	**Height: (mm)**	28	**Diameter: (mm)**	70

Rock Sample Reference No.	**BH 01 (Depth: 7.0-8.0m)**	
TEST No.	**1**	
Saturated surface Dry Mass M_{sat} (g)	300.0	
Dry Specimen Mass M_s, (g)	298.0	
Specimen Bulk Volume V (cm^3)	107.8	
Pore Volume V_v =(M_{sat} - M_s /Density of Water)	2.0	
Porosity n = V_v/ V x100 (%)	1.9	

Tested by: KEVIN

Date Reported: 19-09-21

Checked by: _____

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF POROSITY OF ROCK MATERIALS

Tested in accordance with ISRM /ASTM C97-83

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS–BONJE CREEK/4469	**Date of Test:**	15-09-21		
Project:	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Site:**	BONJE CREEK		
Material Description	ROCK CORE	**Sampled By:**	REGIONAL GEOPHYSICAL SURVEY	**Height: (mm)**	40	**Diameter: (mm)**	70

Rock Sample Reference No.	**BH 01 (Depth: 9.0-10.0m)**	
TEST No.	1	
Saturated surface Dry Mass M_{sat} (g)	388.0	
Dry Specimen Mass M_s (g)	380.0	
Specimen Bulk Volume V (cm^3)	153.9	
Pore Volume V_v =(M_{sat} - M_s /Density of Water)	8.0	
Porosity n = V_v/ V x100 (%)	5.2	

Tested by: KEVIN

Date Reported: 19-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF POROSITY OF ROCK MATERIALS

Tested in accordance with ISRM /ASTM C97-83

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS–BONJE CREEK/4470	**Date of Test:**	15-09-21		
Project:	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Site:**	BONJE CREEK		
Material Description	ROCK CORE	**Sampled By:**	REGIONAL GEOPHYSICAL SURVEY	**Height: (mm)**	29	**Diameter: (mm)**	70

Rock Sample Reference No. BH 01 (Depth: 12.0-13.0m)

TEST No.	1	
Saturated surface Dry Mass M_{sat}, (g)	242.0	
Dry Specimen Mass M_s, (g)	235.0	
Specimen Bulk Volume V (cm^3)	111.6	
Pore Volume V_v =(M_{sat} - M_s /Density of Water)	7.0	
Porosity n = V_v/ V x100 (%)	6.3	

Tested by: KEVIN

Date Reported: 19-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF POROSITY OF ROCK MATERIALS

Tested in accordance with ISRM /ASTM C97-83

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS–BONJE CREEK/4471	**Date of Test:**	15-09-21		
Project:	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Site:**	BONJE CREEK		
Material Description	ROCK CORE	**Sampled By:**	REGIONAL GEOPHYSICAL SURVEY	**Height: (mm)**	60	**Diameter: (mm)**	70

Rock Sample Reference No.	**BH 01 (Depth: 17.5-18.5m)**	
TEST No.	1	
Saturated surface Dry Mass M_{sat} (g)	496.0	
Dry Specimen Mass M_s (g)	487.0	
Specimen Bulk Volume V (cm^3)	230.9	
Pore Volume V_v =(M_{sat} - M_s /Density of Water)	9.0	
Porosity n = V_v/ V x100 (%)	3.9	

Tested by: KEVIN

Date Reported: 19-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF POROSITY OF ROCK MATERIALS

Tested in accordance with ISRM /ASTM C97-83

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS–BONJE CREEK/4472	**Date of Test:**	15-09-21		
Project:	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Site:**	BONJE CREEK		
Material Description	ROCK CORE	**Sampled By:**	REGIONAL GEOPHYSICAL SURVEY	**Height: (mm)**	43	**Diameter: (mm)**	70

Rock Sample Reference No.	**BH 02 (Depth: 15.0-16.0m)**	
TEST No.	**1**	
Saturated surface Dry Mass M_{sat} (g)	427.0	
Dry Specimen Mass M_s (g)	421.0	
Specimen Bulk Volume V (cm^3)	165.5	
Pore Volume V_v =(M_{sat} - M_s /Density of Water)	6.0	
Porosity n = V_v/ V x100 (%)	3.6	

Tested by: KEVIN

Date Reported: 19-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF POROSITY OF ROCK MATERIALS

Tested in accordance with ISRM /ASTM C97-83

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS–BONJE CREEK/4473	**Date of Test:**	15-09-21		
Project:	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Site:**	BONJE CREEK		
Material Description	ROCK CORE	**Sampled By:**	REGIONAL GEOPHYSICAL SURVEY	**Height: (mm)**	33	**Diameter: (mm)**	70

Rock Sample Reference No.	**BH 03 (Depth: 7.0-8.0m)**	
TEST No.	1	
Saturated surface Dry Mass M_{sat} (g)	263.0	
Dry Specimen Mass M_s (g)	255.0	
Specimen Bulk Volume V (cm^3)	127.0	
Pore Volume V_v =(M_{sat} - M_s /Density of Water)	8.0	
Porosity n = V_v/ V x100 (%)	6.2	

Tested by: KEVIN

Date Reported: 19-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF POROSITY OF ROCK MATERIALS

Tested in accordance with ISRM /ASTM C97-83

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS–BONJE CREEK/4474	**Date of Test:**	15-09-21		
Project:	BONJE CREEK WATER TANK	**Location:**	MOMBASA	**Site:**	BONJE CREEK		
Material Description	ROCK CORE	**Sampled By:**	REGIONAL GEOPHYSICAL SURVEY	**Height: (mm)**	80	**Diameter: (mm)**	70

Rock Sample Reference No.	**BH 03 (Depth: 19.0-20.0m)**	
TEST No.	1	
Saturated surface Dry Mass M_{sat} (g)	837.0	
Dry Specimen Mass M_s (g)	835.0	
Specimen Bulk Volume V (cm^3)	307.9	
Pore Volume V_v =(M_{sat} - M_s /Density of Water)	2.0	
Porosity n = V_v/ V x100 (%)	0.6	

Tested by: KEVIN

Date Reported: 19-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF POROSITY OF ROCK MATERIALS

Tested in accordance with ISRM /ASTM C97-83

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS–NGUU TATU/4475	**Date of Test:**	15-09-21		
Project:	NGUU TATU WATER TANK	**Location:**	MOMBASA	**Site:**	NGUU TATU		
Material Description	ROCK CORE	**Sampled By:**	REGIONAL GEOPHYSICAL SURVEY	**Height: (mm)**	46	**Diameter: (mm)**	70

Rock Sample Reference No.	**BH 01 (Depth: 4.0-5.0m)**	
TEST No.	**1**	
Saturated surface Dry Mass M_{sat} (g)	335.0	
Dry Specimen Mass M_s, (g)	330.0	
Specimen Bulk Volume V (cm^3)	177.0	
Pore Volume V_v =(M_{sat} - M_s /Density of Water)	5.0	
Porosity n = V_v/ V x100 (%)	2.8	

Tested by: KEVIN

Date Reported: 19-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF POROSITY OF ROCK MATERIALS

Tested in accordance with ISRM /ASTM C97-83

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS–NGUU TATU/4476	**Date of Test:**	15-09-21		
Project:	NGUU TATU WATER TANK	**Location:**	MOMBASA	**Site:**	NGUU TATU		
Material Description	ROCK CORE	**Sampled By:**	REGIONAL GEOPHYSICAL SURVEY	**Height: (mm)**	42	**Diameter: (mm)**	70

Rock Sample Reference No.	**BH 01 (Depth: 14.0-15.0m)**	
TEST No.	1	
Saturated surface Dry Mass M_{sat}, (g)	325.0	
Dry Specimen Mass M_s, (g)	318.0	
Specimen Bulk Volume V (cm^3)	161.6	
Pore Volume V_v =(M_{sat} - M_s /Density of Water)	7.0	
Porosity n = V_v/ V x100 (%)	4.3	

Tested by: KEVIN

Date Reported: 19-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF POROSITY OF ROCK MATERIALS

Tested in accordance with ISRM /ASTM C97-83

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS–NGUU TATU/4477	**Date of Test:**	15-09-21		
Project:	NGUU TATU WATER TANK	**Location:**	MOMBASA	**Site:**	NGUU TATU		
Material Description	ROCK CORE	**Sampled By:**	REGIONAL GEOPHYSICAL SURVEY	**Height: (mm)**	53	**Diameter: (mm)**	82

Rock Sample Reference No.	**BH 01 (Depth: 17.0-18.0m)**	
TEST No.	1	
Saturated surface Dry Mass M_{sat} (g)	396.0	
Dry Specimen Mass M_s, (g)	380.0	
Specimen Bulk Volume V (cm^3)	279.9	
Pore Volume V_v =(M_{sat} - M_s /Density of Water)	16.0	
Porosity n = V_v/ V x100 (%)	5.7	

Tested by: KEVIN

Date Reported: 19-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

DETERMINATION OF POROSITY OF ROCK MATERIALS

Tested in accordance with ISRM /ASTM C97-83

Client:	REGIONAL GEOPHYSICAL SURVEY	**Job Reference:**	TM/RGS–NGUU TATU/4479	**Date of Test:**	15-09-21		
Project:	NGUU TATU WATER TANK	**Location:**	MOMBASA	**Site:**	NGUU TATU		
Material Description	ROCK CORE	**Sampled By:**	REGIONAL GEOPHYSICAL SURVEY	**Height: (mm)**	79	**Diameter: (mm)**	82

Rock Sample Reference No.	**BH 02 (Depth: 14.0-15.0m)**	
TEST No.	1	
Saturated surface Dry Mass M_{sat} (g)	435.0	
Dry Specimen Mass M_s (g)	415.0	
Specimen Bulk Volume V (cm^3)	258.8	
Pore Volume V_v =(M_{sat} - M_s /Density of Water)	20.0	
Porosity n = V_v/ V x100 (%)	7.7	

Tested by: KEVIN

Date Reported: 19-09-21

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Specific Gravity and Water Absorption (Aggregates)

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000
BH 01(3.0-4.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-BONJE CREEK/4467 **Sample No:** 4467

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	289.3	275.2	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	285.0	271.9	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		1.5	1.2	1.4

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000
BH 01(7.0-8.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-BONJE CREEK/4468 **Sample No:** 4468

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	286.9	291.3	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	280.9	286.0	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		2.1	1.9	2.0

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000
BH 01(9.0-10.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-BONJE CREEK/4469 **Sample No:** 4469

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	290.3	285.2	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	288.9	283.2	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		0.5	0.7	0.6

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:** _____

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000

BH 01(12.0-13.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-BONJE CREEK/4470 **Sample No:** 4470

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	568.4	550.8	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	560.9	545.2	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		1.3	1.0	1.2

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000
BH 01(17.5-18.5M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-BONJE CREEK/4471 **Sample No:** 4471

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	383.5	395.8	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	379.9	393.1	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		0.9	0.7	0.8

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
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Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000
BH 02(15.0-16.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-BONJE CREEK/4472 **Sample No:** 4472

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	450.2	445.0	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	445.6	441.2	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		1.0	0.9	1.0

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000

BH 03(7.0-8.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-BONJE CREEK/4473 **Sample No:** 4473

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	522.0	518.5	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	515.5	512.0	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		1.3	1.3	1.3

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000

BH 03(19.0-20.0M)

Site: BONJE CREEK **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-BONJE CREEK/4474 **Sample No:** 4474

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	485.3	471.2	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	479.5	465.2	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		1.2	1.3	1.3

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
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Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000

BH 01(4.0-5.0M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-NGUU TATU/4475 **Sample No:** 4475

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	369.2	350.8	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	362.4	343.8	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		1.9	2.0	2.0

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

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P.O.Box 64932
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000

BH 01(14.0-15.0M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-NGUU TATU/4476 **Sample No:** 4476

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	398.6	385.7	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	392.2	379.2	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		1.6	1.7	1.7

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

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info@danellilab.com
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Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000

BH 01(17.0-18.0M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-NGUU TATU/4477 **Sample No:** 4477

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	390.8	380.6	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	385.6	375.2	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		1.3	1.4	1.4

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

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Independent Materials testing & Inspection Centre
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Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000
BH 02(6.5-7.5M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-NGUU TATU/4478 **Sample No:** 4478

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	329.7	338.4	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	322.2	331.5	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		2.3	2.1	2.2

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

NGUU TATU WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000

BH 02(14.0-15.0M)

Site: NGUU TATU **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-NGUU TATU/4479 **Sample No:** 4479

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	460.0	453.2	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	452.3	445.1	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		1.7	1.8	1.8

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

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DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000
BH 01(4.0-5.0M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-CHANGAMWE/4480 **Sample No:** 4480

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	468.5	460.0	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	420.0	413.7	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		11.5	11.2	11.4

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000

BH 01(11.0-12.0M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-CHANGAMWE/4481 **Sample No:** 4481

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	410.5	465.4	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	370.0	419.3	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		10.9	11.0	11.0

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

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Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O.Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

Specific Gravity & Water Absorption Test
BS EN 1097: Part 6:2000

BH 02(14.0-15.0M)

Site: CHANGAMWE **Location:** MOMBASA **Date Received:** 08-09-21

Material Description: CRUSHED ROCK CORES **Lab Ref:** AGG/RGS-CHANGAMWE/4482 **Sample No:** 4482

Sampled by: REGIONAL GEOPHYSICAL SURVEY **Source:** SITE **Date Tested:** 14-09-21

TEST NO.		1	2	
M1	The mass of saturated surface dry in (g)	355.7	330.6	
M2	The mass in water containing of saturated sample (g)	-	-	
M3	The mass in water of the empty basket (g)	-	-	
M4	The mass of oven-dried sample in (g)	347.2	323.9	
Relative Density on an oven-dried basis $= M_4/(M_1-[M_2- M_3])$		-	-	
Relative Density on a saturated & surface-dried basis $= M_1/(M_1-[M_2- M_3])$		-	-	
Apparent Relative Density $= M_4/(M_4-[M_2- M_3])$		-	-	
Water Absorption (% of dry mass) $=100(M_1- M_4)/ M_4$		2.4	2.1	2.3

Tested by: KEVIN **Date Reported:** 23-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

Unconfined Compressive Strength of Rock Cores

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

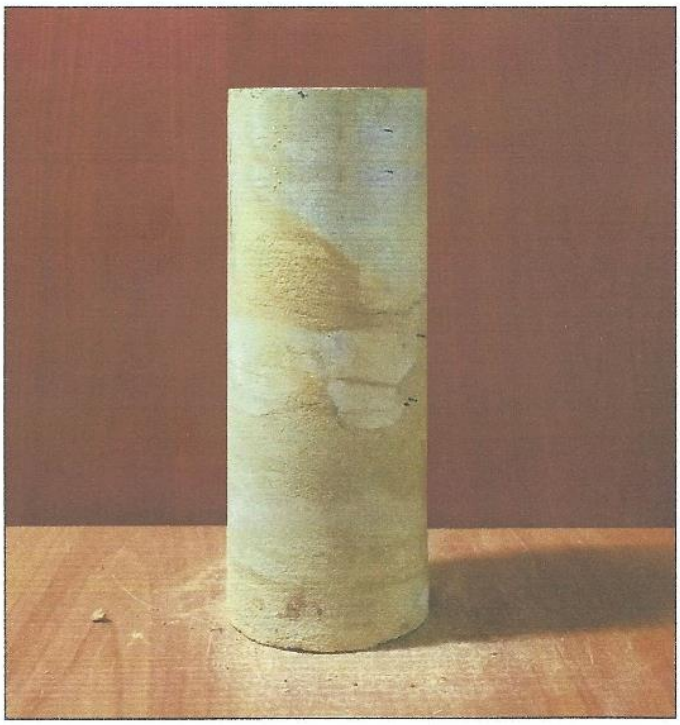
BONJE CREEK

UNCONFINED COMPRESSIVE STRENGTH OF NATURAL ROCK CORES

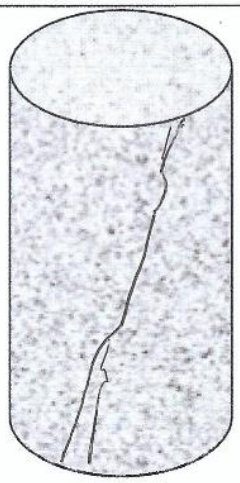
ASTM D 7012 - 04

Site:	BONJE CREEK	**Location:**	MOMBASA	**Date Received:**	08-09-21
Client:	REGIONAL GEOPHYSICAL SURVEY	**County:**	MOMBASA	**Lab Ref:**	CORE/RGS–BONJE/4469
Sampled By:	REGIONAL GEOPHYSICAL SURVEY			**Date Tested:**	13-09-21

Sample Ref. No.	BH01	**Weight in Air (g):**	1588	**Density (kg/m^3):**	2456
Load at Failure (KN) :	71.8	**Compressive Strength N/mm^2:**	18.7	**Remarks:**	-
Depth(M):	12.0- 13.0m	**Core Diameter (mm) :**	70	**Core Height (mm) :**	168



CORE DESCRIPTION:
S/Ref. No. BH01 (Depth: 12.0- 13.0)m
FAILURE MODE



Tested by: KEVIN

Date Reported: 15-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED

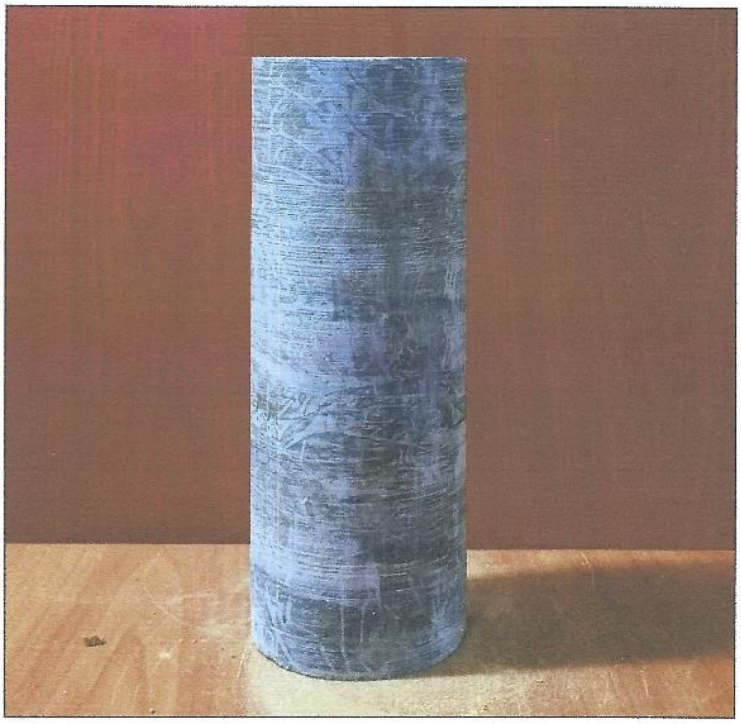
DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

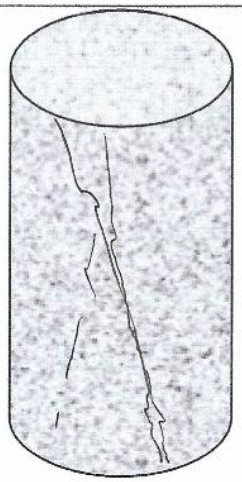
REGIONAL GEOPHYSICAL SURVEY
BONJE CREEK
UNCONFINED COMPRESSIVE STRENGTH OF NATURAL ROCK CORES
ASTM D 7012 - 04

Site:	BONJE CREEK	**Location:**	MOMBASA	**Date Received:**	08-09-21
Client:	REGIONAL GEOPHYSICAL SURVEY	**County:**	MOMBASA	**Lab Ref:**	CORE/RGS–BONJE/4473
Sampled By:	REGIONAL GEOPHYSICAL SURVEY			**Date Tested:**	13-09-21

Sample Ref. No.	BH03	**Weight in Air (g):**	1867	**Density (kg/m^3):**	2772
Load at Failure (KN) :	478.0	**Compressive Strength N/mm^2:**	124.2	**Remarks:**	-
Depth(M):	19.0- 20.0m	**Core Diameter (mm) :**	70	**Core Height (mm) :**	175



CORE DESCRIPTION:
S/Ref. No. BH03 (Depth: 19.0- 20.0)m
FAILURE MODE



Tested by: KEVIN

Date Reported: 15-09-21

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DANELLI ENGINEERING LABORATORIES LIMITED
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Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

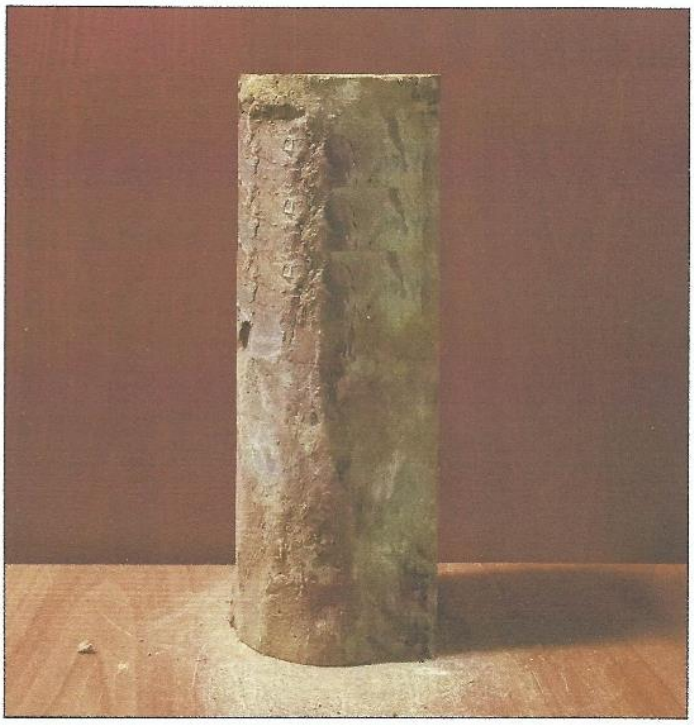
CHANGAMWE

UNCONFINED COMPRESSIVE STRENGTH OF NATURAL ROCK CORES

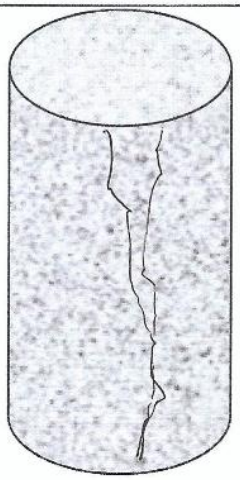
ASTM D 7012 - 04

Site:	CHANGAMWE	**Location:**	MOMBASA	**Date Received:**	08-09-21
Client:	REGIONAL GEOPHYSICAL SURVEY	**County:**	MOMBASA	**Lab Ref:**	CORE/RGS–CHANGAMWE/4480
Sampled By:	REGIONAL GEOPHYSICAL SURVEY			**Date Tested:**	13-09-21

Sample Ref. No.	BH01	**Weight in Air (g):**	1505	**Density (kg/m^3):**	2429
Load at Failure (KN) :	18.5	**Compressive Strength N/mm^2:**	4.8	**Remarks:**	-
Depth(M):	4.0- 5.0m	**Core Diameter (mm) :**	70	**Core Height (mm) :**	161



CORE DESCRIPTION:
S/Ref. No. BH01 (Depth: 4.0- 5.0)m
FAILURE MODE



Tested by: KEVIN

Date Reported: 15-09-21

Checked by:

DANELLI ENGINEERING LABORATORIES LIMITED

DANELLI ENGINEERING LABORATORIES LIMITED
Independent Materials testing & Inspection Centre
Email: danellilab3@gmail.com
info@danellilab.com
Web site: www.danellilab.com
Mob: +254(0) 726 721 935

Head Office & Laboratories:
Mombasa Road
Pili Trade Centre, Opposite Hilton Garden Inn Hotel
P.O. Box 64932
Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

BONJE CREEK WATER TANK

POINT LOAD TEST OF NATURAL ROCK CORES

ASTM D 5731 - 02

Location: MOMBASA

Site: BONJE CREEK

Date Received: 08-09-21

Sample Description: NATURAL ROCK CORES

Sampled by: REGIONAL GEOPHYSICAL SURVEY

Date Tested: 13-09-21

Sample Identity	Sample Ref. No.	Sample Depth (m)	Specimen Height H (mm)	Width W (mm)	Weight (g)	Density (kg/m^3)	Load at Failure (kN)	Is (kN/m^2)	Is (50) (KN/m^2)
BH 01	4447	3.0-4.0	55	78	468	1781	15.4	2819	3361
BH 01	4468	9.0-10.0	41	70	369	2339	12.7	3475	3785
BH 01	4470	17.5-18.5	64	70	506	2054	7.2	1262	1520
BH 02	4471	15.0-16.0	69	70	680	2561	30.5	4960	6073
BH 03	4472	7.0-8.0	45	68	384	2350	1.8	462	511

Tested by: KEVIN

Date Reported: 15-09-21

Checked by: _____

DANELLI ENGINEERING LABORATORIES LIMITED

Point Load Strength Index of Rock Cores

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REGIONAL GEOPHYSICAL SURVEY

NGUU TATU WATER TANK

POINT LOAD TEST OF NATURAL ROCK CORES

ASTM D 5731 - 02

Location: MOMBASA **Site:** NGUU TATU **Date Received:** 08-09-21

Sample Description: NATURAL ROCK CORES **Sampled by:** REGIONAL GEOPHYSICAL SURVEY **Date Tested:** 13-09-21

Sample Identity	Sample Ref. No.	Sample Depth (m)	Specimen Height H (mm)	Width W (mm)	Weight (g)	Density (kg/m^3)	Load at Failure (kN)	I_s (kN/m^2)	I_s (50) (KN/m^2)
BH 02	4476	6.5-7.5	37	70	372	2612	6.1	1850	1969
BH 02	4477	14.0-15.0	36	70	333	2404	1.1	343	363
BH 02	4478	17.0-18.0	38	70	348	2380	3.1	915	980

Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

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Mobil Plaza 00620
Nairobi
Kenya

REGIONAL GEOPHYSICAL SURVEY

CHANGAMWE WATER TANK

POINT LOAD TEST OF NATURAL ROCK CORES

ASTM D 5731 - 02

Location: MOMBASA **Site:** CHANGAMWE **Date Received:** 08-09-21

Sample Description: NATURAL ROCK CORES **Sampled by:** REGIONAL GEOPHYSICAL SURVEY **Date Tested:** 13-09-21

Sample Identity	Sample Ref. No.	Sample Depth (m)	Specimen Height H (mm)	Width W (mm)	Weight (g)	Density (kg/m^3)	Load at Failure (kN)	*Is* (kN/m^2)	*Is* (50) (KN/m^2)
BH 01	4481	11.0-12.0	79	82	756	1812	0.7	85	111

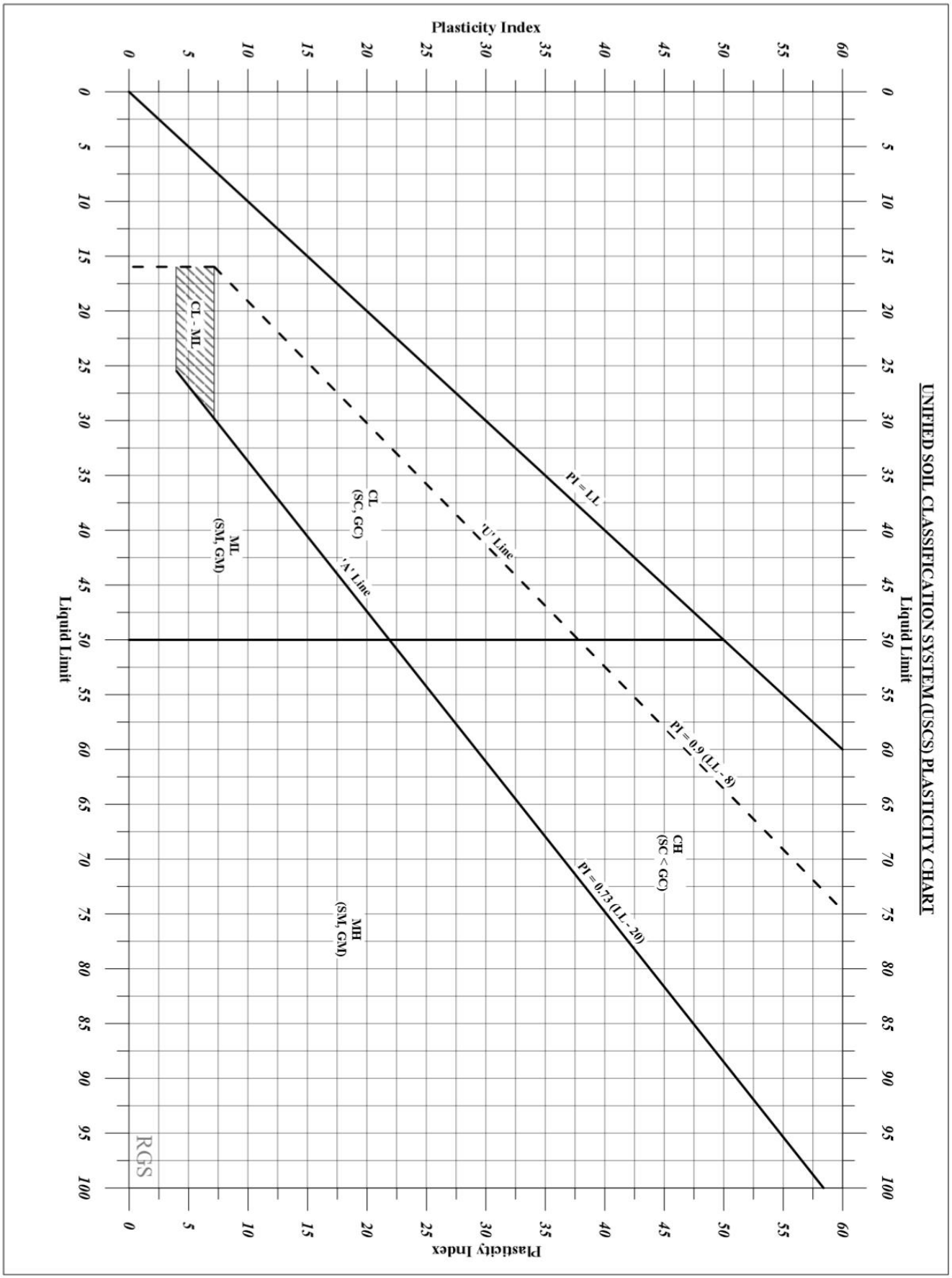
Tested by: KEVIN **Date Reported:** 15-09-21 **Checked by:**

DANELLI ENGINEERING LABORATORIES LIMITED

936

APPENDIX D

USCS Plasticity Chart



Unified Soil Classification Chart (after ASTM, 2011) (Based on ASTM D2487-10: Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification).

Criteria for assigning group symbols and group names using laboratory tests[a]				Soil classification	
				Group symbol	Group name[b]
Coarse-grained soils More than 50% retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines[c]	$C_u \geq 4$ and $1 \leq C_c \leq 3$[e]	GW	Well-graded gravel[f]
			$C_u < 4$ and/or $1 > C_c > 3$[e]	GP	Poorly graded gravel[f]
		Gravels with Fines More than 12% fines[c]	Fines classify as ML or MH	GM	Silty gravel[f,g,h]
			Fines classify as CL or CH	GC	Clayey gravel[f,g,h]
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines[d]	$C_u \geq 6$ and $1 \leq C_c \leq 3$[e]	SW	Well-graded sand[i]
			$C_u < 6$ and/or $1 > C_c > 3$[e]	SP	Poorly graded sand[i]
		Sand with Fines More than 12% fines[d]	Fines classify as ML or MH	SM	Silty sand[g,h,i]
			Fines classify as CL or CH	SC	Clayey sand[g,h,i]
Fine-grained soils 50% or more passes the No. 200 sieve	Silts and Clays Liquid limit less than 50	Inorganic	PI > 7 and plots on or above "A" line[j]	CL	Lean clay[k,l,m]
			PI < 4 or plots below "A" line[j]	ML	Silt[k,l,m]
		Organic	$\frac{\text{Liquid limit—oven dried}}{\text{Liquid limit—not dried}} < 0.75$	OL	Organic clay[k,l,m,n] / Organic silt[k,l,m,o]
	Silts and Clays Liquid limit 50 or more	Inorganic	PI plots on or above "A" line	CH	Fat clay[k,l,m]
			PI plots below "A" line	MH	Elastic silt[k,l,m]
		Organic	$\frac{\text{Liquid limit—oven dried}}{\text{Liquid limit—not dried}} < 0.75$	OH	Organic clay[k,l,m,p] / Organic silt[k,l,m,q]
Highly organic soils	Primarily organic matter, dark in color, and organic odor			PT	Peat

[a]Based on the material passing the 75-mm. (3-in) sieve.

[b]If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[c]Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt; GW-GC well-graded gravel with clay; GP-GM poorly graded gravel with silt; GP-GC poorly graded gravel with clay.

[d]Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt; SW-SC well-graded sand with clay; SP-SM poorly graded sand with silt; SP-SC poorly graded sand with clay.

[e]$C_u = D_{60}/D_{10} \quad C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

[f]If soil contains ≥15% sand, add "with sand" to group name.

[g]If fines classify as CL-ML, use dual symbol GC-GM or SC-SM.

[h]If fines are organic, add "with organic fines" to group name.

[i]If soil contains ≥15% gravel, add "with gravel" to group name.

[j]If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.

[k]If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[l]If soil contains ≥30% plus No. 200, predominantly sand, add "sandy" to group name.

[m]If soil contains ≥30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[n]PI ≥ 4 and plots on or above "A" line.

[o]PI < 4 or plots below "A" line.

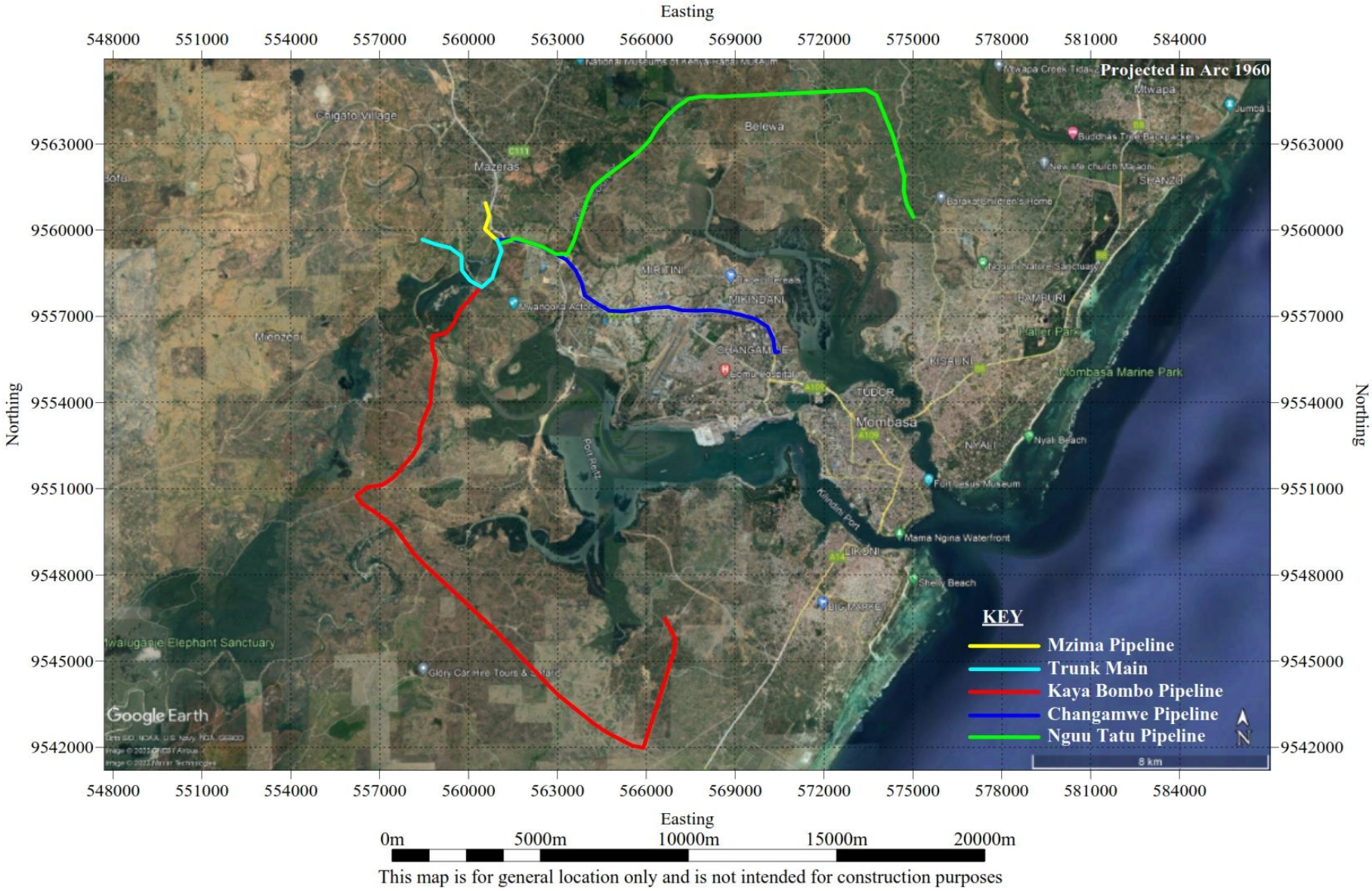
[p]PI plots on or above "A" line.

[q]PI plots below "A" line.

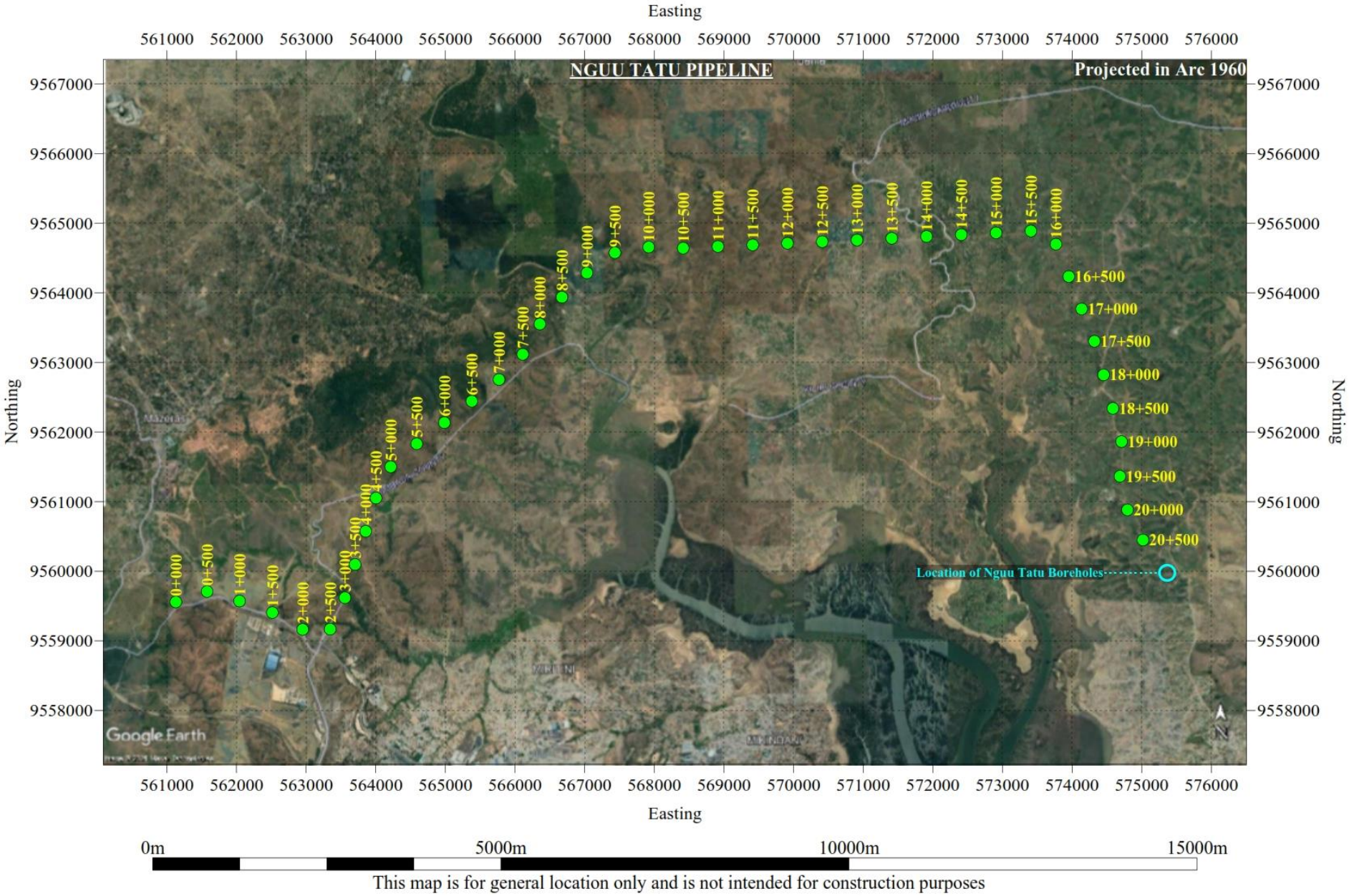
References

1. Bell F. G. (1978). *Foundation Engineering in Difficult Ground.* Butterworths, London.
2. Braja M. D (2005). *Fundamentals of Geotechnical Engineering, 3rd Ed*. Chris Carson.
3. Braja M. D (2014). *Principles of Geotechnical Engineering, 8th Ed*. Cengage Learning.
4. Braja M. D (2011). *Geotechnical Engineering Handbook*. J. Ross Publishing, U.S.A
5. British Standards Institution (2015). *BS 8004-2015 Code of Practice for Foundations.* London: British Standard Institution.
6. British Standards Institution (1999). *BS 5930-1999 Code of Practice for Site Investigations.* London: British Standard Institution.
7. Chen F. H. (1975). *Foundations on Expansive Soils*. Elsevier Scientific Publishing Company, Amsterdam.
8. Craig R. F. (2012), *Craig's Soil Mechanics* 8th Ed. Spon Press, London and New York.
9. Carter M. and Bentley S. P. (1991). *Correlation of Soil Properties*. Pentech Press, London.
10. McElroy C. H. and David A. L. (1993). *Rock for Erosion Control*. ASTM, Philadelphia, PA.
11. Ministry of Transport and Communication (1987), *Road Design Manual Part III – Materials and Pavement Design for New Roads*.
12. Murthy V. N. S. (2001). *Geotechnical Engineering: Principles and Practices of Soil Mechanics and Foundation Engineering*. CRC Press.
13. Peck, R. B.; Hanson, W. E.; and Thornburn, T. H., (1953), *Foundation Engineering.* John Wiley & Sons, New York, 410 p.
14. Robert W. D. (2009). *Foundation Engineering Handbook – Design and Construction with the 2009 International Building Code, 2nd Ed*. McGraw Hill, U.S.A.
15. Robin F.; Patrick M.; David S.; Graeme B. and Mark F. (2015). *Geotechnical Engineering of Embankment Dams*. Balkema Publishers, Rotterdam.
16. Robin F.; Patrick M.; David S.; Graeme B. and Mark F. (2015). *Geotechnical Engineering of Dams*, 2nd Ed. CRC Press, London.
17. U.S. Army Corps of Engineers. 1994. *Earth and Rock-Fill Dams - General Design and Construction Considerations*. Washington, DC.

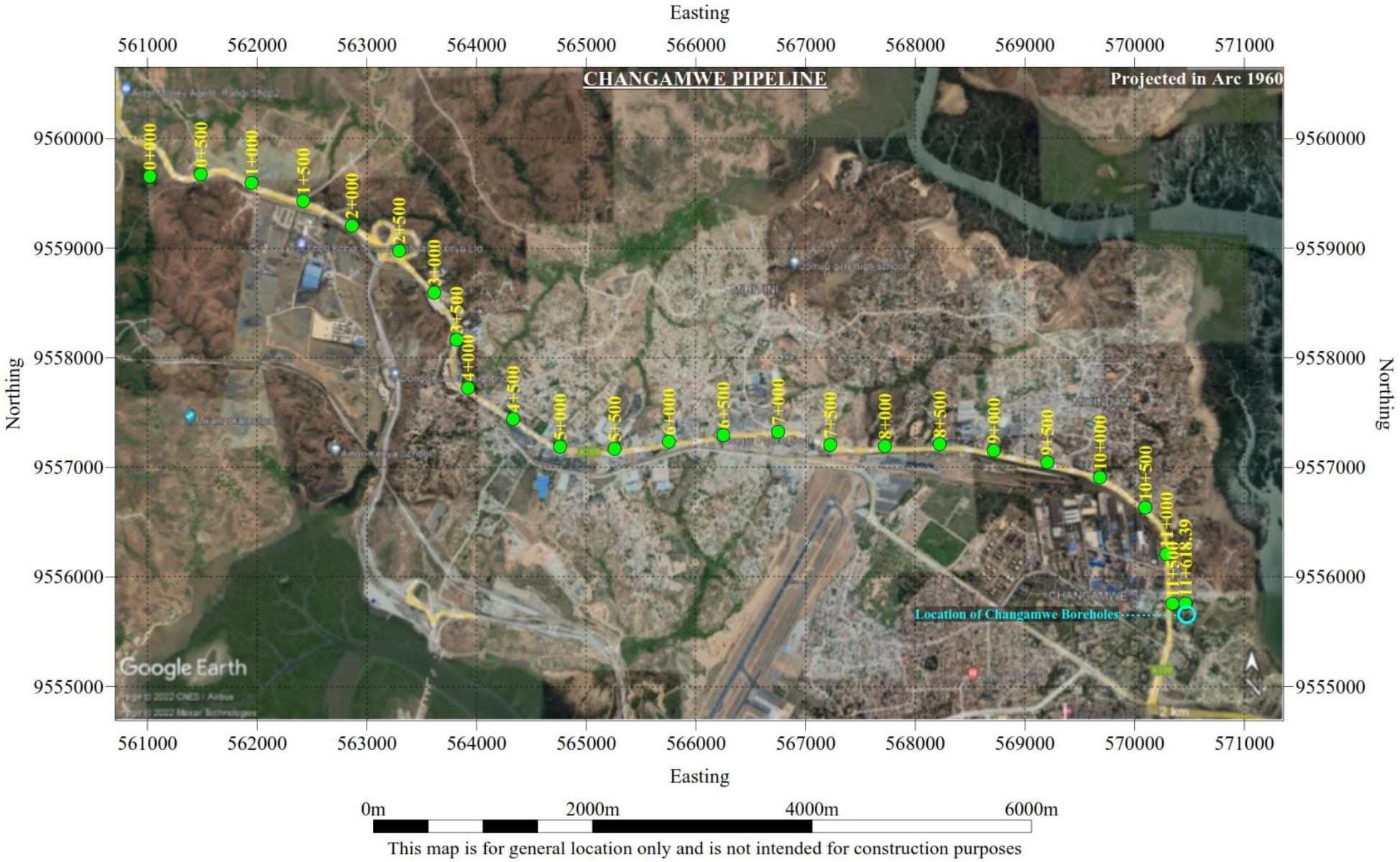
Satellite Maps of the Pipeline Routes



This map is for general location only and is not intended for construction purposes


NGUU TATU PIPELINE
Projected in Arc 1960
Easting
Northing
561000 562000 563000 564000 565000 566000 567000 568000 569000 570000 571000 572000 573000 574000 575000 576000
9567000 9566000 9565000 9564000 9563000 9562000 9561000 9560000 9559000 9558000
0+000 0+500 1+000 1+500 2+000 2+500 3+000 3+500 4+000 4+500 5+000 5+500 6+000 6+500 7+000 7+500 8+000 8+500 9+000 9+500 10+000 10+500 11+000 11+500 12+000 12+500 13+000 13+500 14+000 14+500 15+000 15+500 16+000 16+500 17+000 17+500 18+000 18+500 19+000 19+500 20+000 20+500
Location of Nguu Tatu Boreholes
Google Earth
N
0m 5000m 10000m 15000m
This map is for general location only and is not intended for construction purposes

This map is for general location only and is not intended for construction purposes



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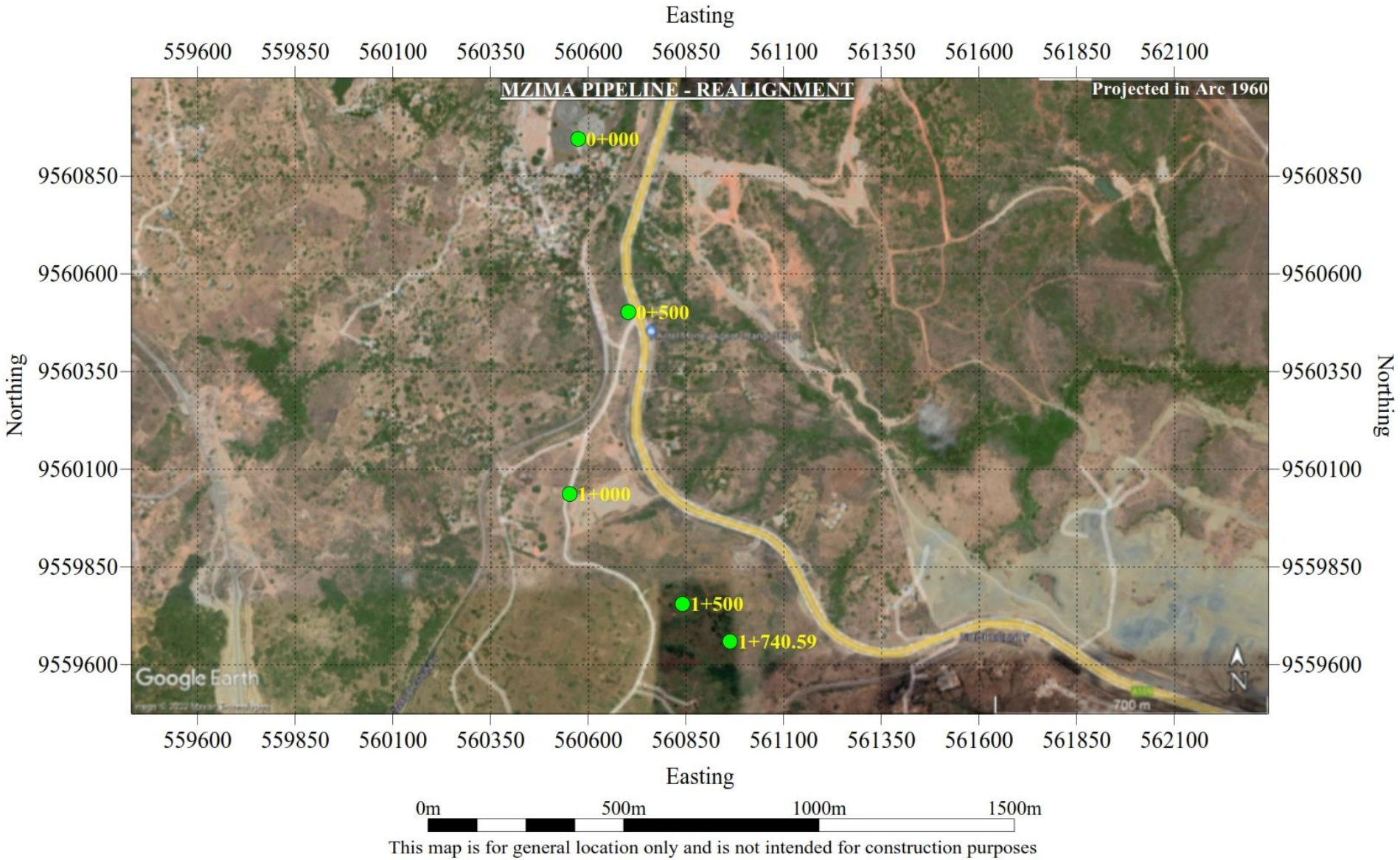
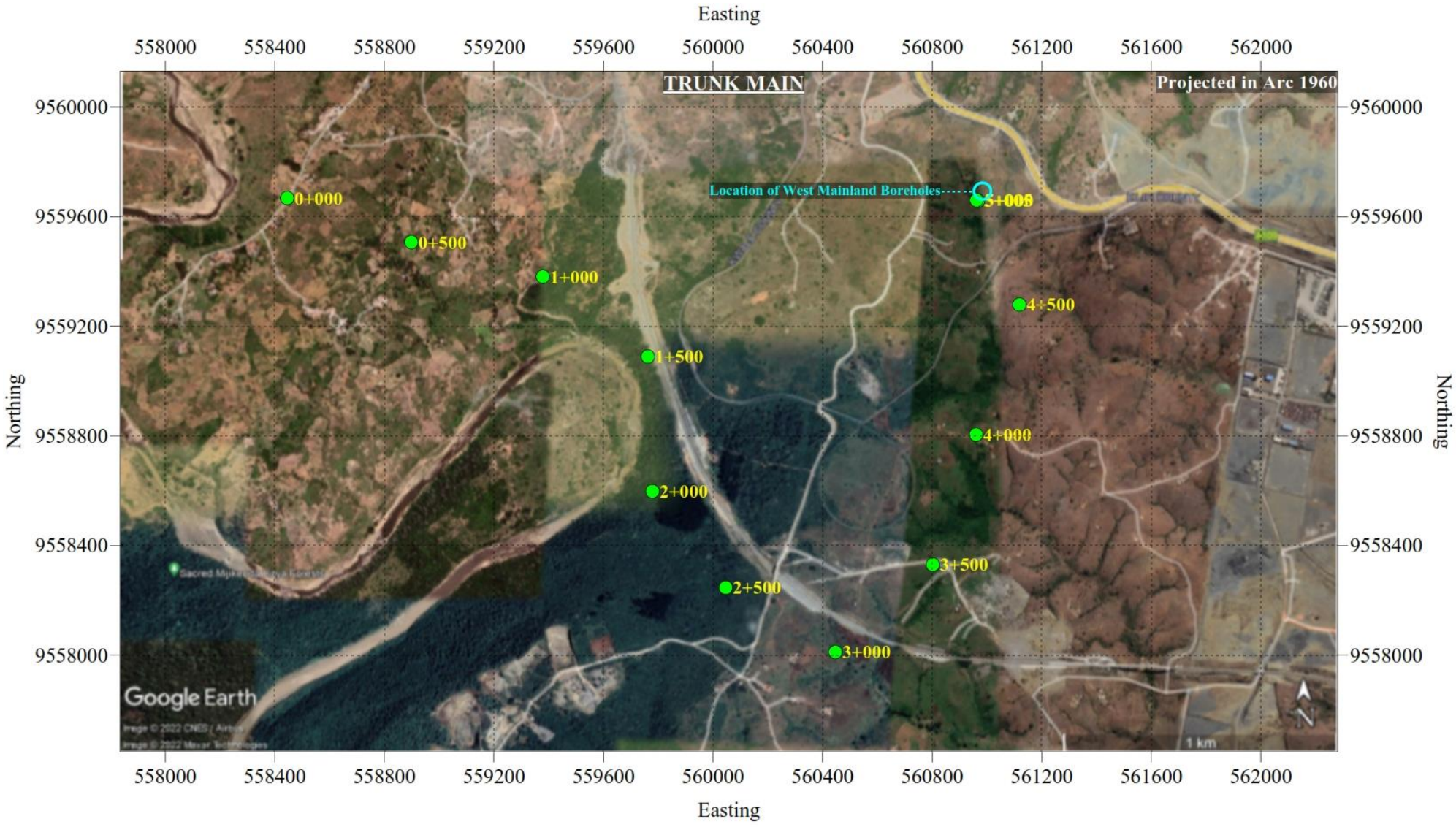


This map is for general location only and is not intended for construction purposes



This map is for general location only and is not intended for construction purposes

APPENDIX E

SOIL RESISTIVITY TEST RESULTS: WENNER MEASUREMENTS

KAYA BOMBO PIPELINE

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 000**			
E560381.0745					N9557980.28			Elev.76.302m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	786	4.19	7.86	3,307.17	
1.0	1.5	1.5	100	458	6.26	4.58	2,876.24	
2.0	1.0	3.0	100	187	12.52	1.87	2,348.72	
4.0	2.0	6.0	100	103	25.04	1.03	2,587.36	
8.0	4.0	12	100	58.8	50.08	0.588	2,954.11	
16	8.0	24	100	34.1	100.16	0.341	3,426.37	
Soil quality: Clayey sand								
Soil condition: Dry and loose								
Soil colour: Light brown								
Weather: Sunny								
Time								
Date: 19/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								
Earth Resistivity Test								

Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report N0.			Contract No:
Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 0+500**			
E560057.6442					N9557598.976			Elev.77.144m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	100	1280	4.2076	12.8	5,385.73	
1.0	0.5	1.5	100	461	6.28	4.61	2,895.08	
2.0	1.0	3.0	100	290	12.56	2.9	3,642.40	
3.0	1.5	4.5	100	192	18.84	1.92	3,617.28	
4.0	2.0	6.0	100	166	25.12	1.66	4,169.92	
5.0	2.5	7.5	100	144	31.4	1.43	4,490.20	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Sunny								
						Time		
						Date: 16/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No: 3			Contract No:
Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 1+000**			
E560057.6442					N9557598.976			Elev. 77.144m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	100	2240	4.19	22.4	9,385.60	
1.0	1.5	1.5	100	1870	6.26	18.7	11,706.20	
2.0	1.0	3.0	87.9	634	12.52	7.21	9,026.92	
4.0	2.0	6.0	100	323	25.04	3.23	8,087.92	
8.0	4.0	12	100	109	50.08	1.09	5,458.72	
16	8.0	24	100	74.5	100.16	0.745	7,461.92	
Soil quality: Clay								
Soil condition: Slightly moist								
Soil colour: Brown								
Weather: Sunny								
Time								
Date: 19/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 1+500**			
E559518.7329					N9556780.365			Elev. 29.388m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	100	425	4.2076	4.25	1,788.23	
1.0	0.5	1.5	100	421	6.28	4.21	2,643.88	
2.0	1.0	3.0	100	302	12.56	3.02	3,793.12	
3.0	1.5	4.5	100	199	18.84	2.13	4,012.92	
4.0	2.0	6.0	100	143	25.12	1.43	3,592.16	
5.0	2.5	7.5	100	110	31.4	1.1	3,454.00	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 16/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 2+000**			
E559252.7843					N9556424.651			Elev. 45.657m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	100	1970	4.19	19.7	8,254.30	
1.0	1.5	1.5	100	1660	6.26	16.6	10,391.60	
2.0	1.0	3.0	100	843	12.52	8.43	10,554.36	
4.0	2.0	6.0	100	303	25.04	3.03	7,587.12	
8.0	4.0	12	100	102	50.08	1.02	5,108.16	
16	8.0	24	100	47.8	100.16	0.477	4,777.63	
Soil quality: Sandy clay								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
Time								
Date: 23/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 3+000**			
E558772.4128					N9555900.643			Elev. 21.153m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	165	4.19	1.65	691.35	
1.0	1.5	1.5	100	102	6.26	1.02	638.52	
2.0	1.0	3.0	100	78.5	12.52	.785	982.82	
4.0	2.0	6.0	100	59.7	25.04	.597	1,494.89	
8.0	4.0	12	100	41.8	50.08	.418	2,093.34	
16	8.0	24	100	26.3	100.16	.263	2,634.21	
Soil quality: Silty clay								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Cloudy								
							Time	
							Date: 20/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 3+500**			
E558902.3158					N9555443.34			Elev. 32.013m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1490	4.2076	14.9	6,269.32	
1.0	0.5	1.5	87.1	893	6.28	7.95	4,992.60	
2.0	1.0	3.0	100	73.5	12.56	0.735	923.16	
3.0	1.5	4.5	97.6	42.4	18.84	0.434	817.66	
4.0	2.0	6.0	95.2	34.5	25.12	0.363	911.86	
5.0	2.5	7.5	100	32.8	31.4	0.328	1,029.92	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Sunny								
						Time		
						Date: 11/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 4+000**			
E558816.0633					N9554951.481			Elev. 27.832m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1010	4.19	10.1	4,231.90	
1.0	1.5	1.5	100	859	6.26	8.59	5,377.34	
2.0	1.0	3.0	100	340	12.52	3.4	4,256.80	
4.0	2.0	6.0	100	116	25.04	1.16	2,904.64	
8.0	4.0	12	100	48.3	50.08	0.482	2,413.86	
16	8.0	24	100	23.9	100.16	0.239	2,393.82	
Soil quality: Sands								
Soil condition: Moist								
Soil colour: Reddish brown								
Weather: Cloudy								
							Time	
							Date: 20/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 4+500**			
E558733.5406					N9554458.79			Elev. 25.457m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	100	823	4.2076	8.23	3,462.85	
1.0	0.5	1.5	100	448	6.28	4.48	2,813.44	
2.0	1.0	3.0	100	150	12.56	1.5	1,884.00	
3.0	1.5	4.5	100	102	18.84	1.02	1,921.68	
4.0	2.0	6.0	100	68.3	25.12	0.683	1,715.70	
5.0	2.5	7.5	100	57.4	31.4	0.573	1,799.22	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Reddish brown								
Weather: Sunny								
						Time		
						Date: 11/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No: PVI 5			
Project: KAYA BOMBO PIPELINE					**Location: km 5+000**			
E558719.0069					N9553959.655			Elev. 42.014m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1740	4.19	17.4	7,290.60	
1.0	1.5	1.5	100	1040	6.26	10.4	6,510.40	
2.0	1.0	3.0	100	422	12.52	4.22	5,283.44	
4.0	2.0	6.0	100	173	25.04	1.73	4,331.92	
8.0	4.0	12	100	103	50.08	1.03	5,158.24	
16	8.0	24	100	31.3	100.16	0.312	3,124.99	
Soil quality: Clayey sand								
Soil condition: Slightly moist								
Soil colour: Yellowish brown								
Weather: Cloudy								
Time								
Date: 20/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 5+500**			
E558523.5287					N9553523.325			Elev. 35.322m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	100	1060	4.2076	10.6	4,460.06	
1.0	0.5	1.5	100	719	6.28	7.19	4,515.32	
2.0	1.0	3.0	100	326	12.56	3.26	4,094.56	
3.0	1.5	4.5	100	199	18.84	1.99	3,749.16	
4.0	2.0	6.0	100	144	25.12	1.44	3,617.28	
5.0	2.5	7.5	100	115	31.4	1.15	3,611.00	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Red brown								
Weather: Sunny								
						Time		
						Date: 11/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 6+000**			
E558356.7988					N9553051.943			Elev. 35.780m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	891	4.19	8.91	37.333	
1.0	1.5	1.5	100	582	6.26	5.82	36.433	
2.0	1.0	3.0	100	269	12.52	2.69	33.679	
4.0	2.0	6.0	100	139	25.04	1.39	34.806	
8.0	4.0	12	100	85.7	50.08	0.856	42.868	
16	8.0	24	100	57	100.16	0.57	57.091	
Soil quality: Sandy silt								
Soil condition: Slightly moist								
Soil colour: Yellowish brown								
Weather: Cloudy								
Time								
Date: 20/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 6+500**			
E558337.0483					N9552560.65			Elev. 24.901m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	100	99.2	4.2076	0.992	417.39	
1.0	0.5	1.5	100	43.1	6.28	0.431	270.67	
2.0	1.0	3.0	100	21.1	12.56	0.211	265.02	
3.0	1.5	4.5	100	11.6	18.84	0.116	218.54	
4.0	2.0	6.0	100	8.01	25.12	0.0801	201.21	
5.0	2.5	7.5	100	5.21	31.4	0.04005	125.76	
Soil quality: Sandy clay								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
						Time		
						Date: 11/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 7+000**			
E558113.9467					N9552151.468			Elev. 21.386m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	434	4.19	4.34	1,818.46	
1.0	1.5	1.5	100	149	6.26	1.48	926.48	
2.0	1.0	3.0	100	48.7	12.52	.487	609.72	
4.0	2.0	6.0	100	31.8	25.04	.318	796.27	
8.0	4.0	12	100	25.1	50.08	.215	1,076.72	
16	8.0	24	100	15.4	100.16	.154	1,542.46	
Soil quality: Clay sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Cloudy								
Time								
Date: 20/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 7+500**			
E557787.6776					N9551775.666			Elev. 20.029m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	715	4.2076	7.15	3,008.43	
1.0	0.5	1.5	100	802	6.28	8.01	5,030.28	
2.0	1.0	3.0	100	447	12.56	4.46	5,601.76	
3.0	1.5	4.5	100	306	18.84	3.06	5,765.04	
4.0	2.0	6.0	100	231	25.12	2.31	5,802.72	
5.0	2.5	7.5	100	189	31.4	1.89	5,934.60	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Sunny								
						Time		
						Date: 11/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 8+000**			
E557472.6422					N9551393.282			Elev. 36.677m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	2050	4.19	20.5	8,589.50	
1.0	1.5	1.5	100	908	6.26	9.07	5,677.82	
2.0	1.0	3.0	100	337	12.52	3.36	4,206.72	
4.0	2.0	6.0	100	154	25.04	1.53	3,831.12	
8.0	4.0	12	100	74.5	50.08	0.741	3,710.93	
16	8.0	24	100	30.1	100.16	0.301	3,014.82	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Yellowish brown								
Weather: Cloudy								
Time								
Date: 20/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 8+500**			
E557076.849					N9551121.259			Elev. 53.941m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1270	4.2076	12.7	5,343.65	
1.0	0.5	1.5	100	819	6.28	8.18	5,137.04	
2.0	1.0	3.0	100	234	12.56	2.34	2,939.04	
3.0	1.5	4.5	100	127	18.84	1.26	2,373.84	
4.0	2.0	6.0	100	93.6	25.12	0.935	2,348.72	
5.0	2.5	7.5	100	74.2	31.4	0.742	2,329.88	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Dark brown								
Weather: Sunny								
							Time	
							Date: 11/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 9+000**			
E556583.6633					N9551053.702			Elev. 60.228m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	927	4.19	9.26	3,879.94	
1.0	1.5	1.5	100	711	6.26	7.11	4,450.86	
2.0	1.0	3.0	100	364	12.52	3.64	4,557.28	
4.0	2.0	6.0	100	153	25.04	1.53	3,831.12	
8.0	4.0	12	100	72.7	50.08	0.727	3,640.82	
16	8.0	24	100	33.2	100.16	0.322	3,225.15	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Cloudy								
							Time	
							Date: 20/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 9+500**			
E556220.3485					N9550753.651			Elev. 74.335m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	546	4.2076	5.46	2,297.35	
1.0	0.5	1.5	100	457	6.28	4.56	2,863.68	
2.0	1.0	3.0	100	217	12.56	2.16	2,712.96	
3.0	1.5	4.5	100	143	18.84	1.43	2,694.12	
4.0	2.0	6.0	100	108	25.12	1.08	2,712.96	
5.0	2.5	7.5	100	90.3	31.4	0.902	2,832.28	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 11/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 10+000**			
E556404.0632					N9550469.292			Elev. 55.511m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	947	4.19	9.46	3,963.74	
1.0	1.5	1.5	100	547	6.26	5.73	3,586.98	
2.0	1.0	3.0	100	215	12.52	2.15	2,691.80	
4.0	2.0	6.0	100	114	25.04	1.14	2,854.56	
8.0	4.0	12	100	65.4	50.08	0.653	3,270.22	
16	8.0	24	100	28.3	100.16	0.283	2,834.53	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Cloudy								
Time								
Date: 20/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 10+500**			
E556820.7524					N9550193.173			Elev. 52.863m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	730	4.2076	7.3	3,071.55	
1.0	0.5	1.5	100	486	6.28	4.86	3,052.08	
2.0	1.0	3.0	100	233	12.56	2.32	2,913.92	
3.0	1.5	4.5	100	118	18.84	1.18	2,223.12	
4.0	2.0	6.0	100	79.3	25.12	0.792	1,989.50	
5.0	2.5	7.5	100	56.2	31.4	0.421	1,321.94	
Soil quality: Sandy clay								
Soil condition: Dry								
Soil colour: Red brown								
Weather: Sunny								
						Time		
						Date: 11/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 11+000**			
E557222.0965					N9549894.997			Elev. 33.692m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	781	4.19	7.8	3,268.20	
1.0	1.5	1.5	100	495	6.26	4.94	3,092.44	
2.0	1.0	3.0	100	227	12.52	2.27	2,842.04	
4.0	2.0	6.0	100	136	25.04	1.36	3,405.44	
8.0	4.0	12	100	75.2	50.08	0.752	3,766.02	
16	8.0	24	100	40.4	100.16	0.404	4,046.46	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Yellowish brown								
Weather: Cloudy								
Time								
Date: 21/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 11+500**			
E557579.7096					N9549553.061			Elev. 8.544m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	975	4.2076	9.75	4,102.41	
1.0	0.5	1.5	100	701	6.28	7.01	4,402.28	
2.0	1.0	3.0	100	127	12.56	1.26	1,582.56	
3.0	1.5	4.5	100	46	18.84	0.46	866.64	
4.0	2.0	6.0	100	30	25.12	0.3	753.60	
5.0	2.5	7.5	100	23.1	31.4	0.231	725.34	
Soil quality: Sandy clay								
Soil condition: Loose and dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 15/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 12+000**			
E557867.5791					N9549144.244			Elev. 22.697m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	2030		20.3	8,505.70	
1.0	1.5	1.5	100	1590		15.9	9,953.40	
2.0	1.0	3.0	100	567		5.67	7,098.84	
4.0	2.0	6.0	100	276		2.76	6,911.04	
8.0	4.0	12	100	159		1.59	7,962.72	
16	8.0	24	100	116		1.16	11,618.56	
Soil quality: Sandy clay								
Soil condition: Loose and dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 15/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 12+500**			
E558155.4486					N9548735.428			Elev. 41.076m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	811	4.2076	8.1	3,408.16	
1.0	0.5	1.5	100	915	6.28	9.14	5,739.92	
2.0	1.0	3.0	100	365	12.56	3.64	4,571.84	
3.0	1.5	4.5	100	186	18.84	1.86	3,504.24	
4.0	2.0	6.0	100	130	25.12	1.3	3,265.60	
5.0	2.5	7.5	100	92.4	31.4	0.923	2,898.22	
Soil quality: Highly weathered and fractured shales								
Soil condition: Dry								
Soil colour: Light brown to grey								
Weather: Sunny								
						Time		
						Date: 10/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 13+000**			
E558498.4853					N9548374.088			Elev. 52.177m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	681	4.19	6.81	2,853.39	
1.0	1.5	1.5	100	461	6.26	4.61	2,885.86	
2.0	1.0	3.0	100	540	12.52	5.4	6,760.80	
4.0	2.0	6.0	100	368	25.04	3.68	9,214.72	
8.0	4.0	12	100	90.5	50.08	0.905	4,532.24	
16	8.0	24	100	35.3	100.16	0.353	3,535.65	
Soil quality: Sandy clay								
Soil condition: Loose dry soil								
Soil colour: Dark brown								
Weather: Cloudy								
Time								
Date: 21/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 13+500**			
E558859.8436					N9548028.516			Elev. 32.606m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	303	4.2076	3.03	1,274.90	
1.0	0.5	1.5	100	128	6.28	1.28	803.84	
2.0	1.0	3.0	100	41.8	12.56	0.417	523.75	
3.0	1.5	4.5	100	27.2	18.84	0.272	512.45	
4.0	2.0	6.0	100	24.2	25.12	0.242	607.90	
5.0	2.5	7.5	100	23.2	31.4	0.231	725.34	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 10/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 14+000**			
E559221.2019					N9547682.943			Elev. 21.429m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	344	4.19	3.44	1,441.36	
1.0	1.5	1.5	100	199	6.26	1.99	1,245.74	
2.0	1.0	3.0	100	102	12.52	1.02	1,277.04	
4.0	2.0	6.0	100	47.5	25.04	0.475	1,189.40	
8.0	4.0	12	100	27.5	50.08	0.275	1,377.20	
16	8.0	24	70.5	13.1	100.16	0.156	1,562.50	
Soil quality: Clay with minor sandy particles								
Soil condition: Moist and sticky								
Soil colour: Light brown								
Weather: Cloudy								
Time								
Date: 22/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 14+500**			
E559582.5602					N9547337.371			Elev. 34.360m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	256	4.2076	2.56	1,077.15	
1.0	0.5	1.5	100	158	6.28	1.58	992.24	
2.0	1.0	3.0	100	86	12.56	0.86	1,080.16	
3.0	1.5	4.5	100	73.7	18.84	0.737	1,388.51	
4.0	2.0	6.0	100	61.4	25.12	0.614	1,542.37	
5.0	2.5	7.5	100	58.9	31.4	0.588	1,846.32	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
						Time		
						Date: 10/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 15+000**			
E559943.9185					N9546991.799			Elev. 33.461m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1040	4.19	10.4	4,357.60	
1.0	1.5	1.5	100	403	6.26	4.03	2,522.78	
2.0	1.0	3.0	100	108	12.52	1.08	1,352.16	
4.0	2.0	6.0	100	66.4	25.04	0.664	1,662.66	
8.0	4.0	12	100	44.6	50.08	0.446	2,233.57	
16	8.0	24	100	28.8	100.16	0.286	2,864.58	
Soil quality: Clay with minor sandy particles								
Soil condition: Moist and sticky								
Soil colour: Brown								
Weather: Cloudy/ with light showers								
Time								
Date: 22/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 15+500**			
E560305.2767					N9546646.226			Elev. 39.754m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1880	4.2076	18.8	7,910.29	
1.0	0.5	1.5	100	1190	6.28	11.9	7,473.20	
2.0	1.0	3.0	100	601	12.56	6.01	7,548.56	
3.0	1.5	4.5	100	333	18.84	3.33	6,273.72	
4.0	2.0	6.0	100	194	25.12	1.94	4,873.28	
5.0	2.5	7.5	100	141	31.4	1.41	4,427.40	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
						Time		
						Date: 10/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 16+000**			
E560666.635					N9546300.654			Elev. 64.824m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1320	4.19	13.2	5,530.80	
1.0	1.5	1.5	100	1190	6.26	11.9	7,449.40	
2.0	1.0	3.0	100	644	12.52	6.44	8,062.88	
4.0	2.0	6.0	100	308	25.04	3.08	7,712.32	
8.0	4.0	12	100	141	50.08	1.4	7,011.20	
16	8.0	24	100	48.7	100.16	0.486	4,867.78	
Soil quality: Sandy clay								
Soil condition: Moist								
Soil colour: Brown								
Weather: Cloudy								
Time								
Date: 22/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 16+500**			
E561018.7698					N9545945.903			Elev. 62.221m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	830	4.2076	8.30	3,492.31	
1.0	0.5	1.5	100	666	6.28	6.66	4,182.48	
2.0	1.0	3.0	100	256	12.56	2.56	3,215.36	
3.0	1.5	4.5	100	117	18.84	1.17	2,204.28	
4.0	2.0	6.0	100	77.8	25.12	0.778	1,954.34	
5.0	2.5	7.5	100	65.7	31.4	0.657	2,062.98	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
						Time		
						Date: 10/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 17+000**			
E561362.5883					N9545582.876			Elev. 44.953m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	100	1050	4.19	10.5	4,399.50	
1.0	1.5	1.5	100	877	6.26	8.77	5,490.02	
2.0	1.0	3.0	100	315	12.52	3.15	3,943.80	
4.0	2.0	6.0	100	115	25.04	1.15	2,879.60	
8.0	4.0	12	100	46.5	50.08	0.465	2,328.72	
16	8.0	24	100	18.7	100.16	0.187	1,872.99	
Soil quality: Sandy clay								
Soil condition: Loose and dry								
Soil colour: Dark brown								
Weather: Cloudy								
Time								
Date: 21/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 17+500**			
E561706.4068					N9545219.848			Elev. 52.016m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	392	4.2076	3.92	1,649.38	
1.0	0.5	1.5	100	395	6.28	3.95	2,480.60	
2.0	1.0	3.0	100	164	12.56	1.64	2,059.84	
3.0	1.5	4.5	100	96	18.84	0.96	1,808.64	
4.0	2.0	6.0	100	70.6	25.12	0.706	1,773.47	
5.0	2.5	7.5	100	99.5	31.4	0.995	3,124.30	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 10/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 18+000**			
E562050.2253					N9544856.821			Elev. 35.205m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	913	4.19	9.12	3,821.28	
1.0	1.5	1.5	100	677	6.26	6.77	4,238.02	
2.0	1.0	3.0	100	298	12.52	2.98	3,730.96	
4.0	2.0	6.0	100	98.6	25.04	0.986	2,468.94	
8.0	4.0	12	100	51.4	50.08	0.514	2,574.11	
16	8.0	24	100	19.8	100.16	0.198	1,983.17	
Soil quality: Clayey sand								
Soil condition: Slightly moist								
Soil colour: Brown								
Weather: Sunny								
Time								
Date: 21/08/2021								
Supervisor: Sign: Date:								
Customer/Consultant: Dr Kuria Sign: Date:								

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 18+500**			
E562394.0438					N9544493.794			Elev. 16.381m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	528	4.2076	5.28	2,221.61	
1.0	0.5	1.5	100	377	6.28	3.77	2,367.56	
2.0	1.0	3.0	100	106	12.56	1.06	1,331.36	
3.0	1.5	4.5	100	56.3	18.84	0.563	1,060.69	
4.0	2.0	6.0	100	41.7	25.12	0.417	1,047.50	
5.0	2.5	7.5	100	34.7	31.4	0.347	1,089.58	
Soil quality: Clayey sand								
Soil condition: Loose and dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 10/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 19+000**			
E562730.3048					N9544124.08			Elev. 20.456m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	215	4.19	2.15	900.85	
1.0	1.5	1.5	100	141	6.26	1.41	882.66	
2.0	1.0	3.0	100	49.8	12.52	0.497	622.24	
4.0	2.0	6.0	100	25.3	25.04	0.253	633.51	
8.0	4.0	12	100	18.5	50.08	0.185	926.48	
16	8.0	24	100	9.18	100.16	0.0917	918.47	
Soil quality: Sandy clay								
Soil condition: Dry								
Soil colour: Brown								
Weather: Cloudy								
							Time	
							Date: 21/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 19+500**			
E563084.3491					N9543774.108			Elev. 10.029m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	193	4.2076	1.93	812.07	
1.0	0.5	1.5	100	231	6.28	2.31	1,450.68	
2.0	1.0	3.0	100	93.1	12.56	0.93	1,168.08	
3.0	1.5	4.5	100	50.3	18.84	0.502	945.77	
4.0	2.0	6.0	100	34.8	25.12	0.348	874.18	
5.0	2.5	7.5	100	27.8	31.4	0.278	872.92	
Soil quality: Sandy clay								
Soil condition: Slightly moist								
Soil colour: Dark brown								
Weather: Sunny								
							Time	
							Date: 09/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 20+000**			
E563468.9429					N9543454.596			Elev. 12.526m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	888	4.19	8.87	3,716.53	
1.0	1.5	1.5	100	253	6.26	2.53	1,583.78	
2.0	1.0	3.0	100	51.1	12.52	0.511	639.77	
4.0	2.0	6.0	100	22	25.04	0.22	550.88	
8.0	4.0	12	100	8.26	50.08	0.0826	413.66	
16	8.0	24	100	4.56	100.16	0.0456	456.73	
Soil quality: Sandy clay								
Soil condition: Dry								
Soil colour: Dark brown								
Weather: Cloudy								
							Time	
							Date: 21/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 20+500**			
E563853.5368					N9543135.085			Elev. 20.584m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	459	4.2076	4.58	1,927.08	
1.0	0.5	1.5	100	325	6.28	3.25	2,041.00	
2.0	1.0	3.0	100	51.9	12.56	0.519	651.86	
3.0	1.5	4.5	100	33.8	18.84	0.338	636.79	
4.0	2.0	6.0	100	30.5	25.12	0.305	766.16	
5.0	2.5	7.5	100	26.9	31.4	0.269	844.66	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Dark brown								
Weather: Sunny								
						Time		
						Date: 09/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 21+000**			
E564238.1306					N9542815.574			Elev. 33.144m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	403	4.19	4.03	1,688.57	
1.0	1.5	1.5	100	326	6.26	3.26	2,040.76	
2.0	1.0	3.0	100	228	12.52	2.28	2,854.56	
4.0	2.0	6.0	100	75.3	25.04	0.753	1,885.51	
8.0	4.0	12	100	38.2	50.08	0.312	1,562.50	
16	8.0	24	100	14	100.16	0.14	1,402.24	
Soil quality: Silty clay								
Soil condition: Moist								
Soil colour: Brown								
Weather: Cloudy/light showers								
							Time	
							Date: 22/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 21+500**			
E564649.3777					N9542533.303			Elev. 43.791m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1240	4.2076	12.4	5,217.42	
1.0	0.5	1.5	100	940	6.28	9.4	5,903.20	
2.0	1.0	3.0	100	368	12.56	3.68	4,622.08	
3.0	1.5	4.5	100	173	18.84	1.73	3,259.32	
4.0	2.0	6.0	100	124	25.12	1.24	3,114.88	
5.0	2.5	7.5	100	104	31.4	1.04	3,265.60	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Dark brown								
Weather: Sunny								
							Time	
							Date: 09/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 22+000**			
E565085.1558					N9542294.764			Elev. 67.529m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	323	4.19	3.23	1,353.37	
1.0	1.5	1.5	100	198	6.26	1.98	1,239.48	
2.0	1.0	3.0	100	68.8	12.52	0.687	860.12	
4.0	2.0	6.0	100	29.9	25.04	0.299	748.70	
8.0	4.0	12	100	15.3	50.08	0.153	766.22	
16	8.0	24	100	59.5	100.16	0.595	5,959.52	
Soil quality: Sandy clay								
Soil condition: Dry								
Soil colour: Dark brown								
Weather: Cloudy								
							Time	
							Date: 22/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 22+500**			
E565526.5857					N9542059.946			Elev. 58.005m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	455	4.2076	4.55	1,914.46	
1.0	0.5	1.5	100	293	6.28	2.92	1,833.76	
2.0	1.0	3.0	100	86.4	12.56	0.864	1,085.18	
3.0	1.5	4.5	100	47.7	18.84	0.477	898.67	
4.0	2.0	6.0	100	33.8	25.12	0.338	849.06	
5.0	2.5	7.5	100	26.5	31.4	0.265	832.10	
Soil quality: Sandy clay								
Soil condition: Slightly moist								
Soil colour: Dark brown								
Weather: Sunny								
							Time	
							Date: 09/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 23+000**			
E565902.6794					N9541983.87			Elev. 43.105m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1180	4.19	11.8	4,944.20	
1.0	1.5	1.5	100	592	6.26	5.92	3,705.92	
2.0	1.0	3.0	100	95.2	12.52	0.951	1,190.65	
4.0	2.0	6.0	100	26.1	25.04	0.261	653.54	
8.0	4.0	12	100	10.2	50.08	0.102	510.82	
16	8.0	24	100	6.3	100.16	0.063	631.01	
Soil quality: Sandy clay								
Soil condition: Dry								
Soil colour: Dark brown								
Weather: Cloudy								
							Time	
							Date: 21/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 23+500**			
E566050.9208					N9542461.389			Elev. 42.573m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	2200	4.2076	22	9,256.72	
1.0	0.5	1.5	100	2080	6.28	20.8	13,062.40	
2.0	1.0	3.0	100	347	12.56	3.47	4,358.32	
3.0	1.5	4.5	100	97.3	18.84	0.973	1,833.13	
4.0	2.0	6.0	100	35.3	25.12	0.353	886.74	
5.0	2.5	7.5	100	21.9	31.4	0.219	687.66	
Soil quality: Clay sand								
Soil condition: Dry								
Soil colour: Dark brown								
Weather: Sunny								
							Time	
							Date: 09/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 24+000**			
E566199.1623					N9542938.908			Elev. 42.782m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	6310	4.19	63.1	26,438.90	
1.0	1.5	1.5	100	1490	6.26	14.9	9,327.40	
2.0	1.0	3.0	100	329	12.52	3.41	4,269.32	
4.0	2.0	6.0	78.6	70	25.04	0.89	2,228.56	
8.0	4.0	12	64	22.2	50.08	0.347	1,737.78	
16	8.0	24	73.9	9.73	100.16	0.132	1,322.11	
Soil quality: Sandy clay								
Soil condition: Loose and dry								
Soil colour: Light brown								
Weather: Cloudy								
							Time	
							Date: 21/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 24+500**			
E566347.4037					N9543416.427			Elev. 46.447m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	36.7	2440	4.2076	229	96,354.04	
1.0	0.5	1.5	35.0	5230	6.28	149	93,572.00	
2.0	1.0	3.0	36.4	2210	12.56	60.6	76,113.60	
3.0	1.5	4.5	35.3	1110	18.84	31.6	59,534.40	
4.0	2.0	6.0	37.1	735	25.12	19.8	49,737.60	
5.0	2.5	7.5	18.2	260	31.4	14.3	44,902.00	
Soil quality: Sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 09/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 25+000**			
E566495.6451					N9543893.946			Elev. 47.259m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	17.3	9070	4.19	559	234,221.00	
1.0	1.5	1.5	15.4	1820	6.26	118	73,868.00	
2.0	1.0	3.0	17.2	3620	12.52	221	276,692.00	
4.0	2.0	6.0	16.4	1180	25.04	72.1	180,538.40	
8.0	4.0	12	9.98	192	50.08	19.3	96,654.40	
16	8.0	24	9.57	63.3	100.16	6.35	63,601.60	
Soil quality: Sand								
Soil condition: Slightly moist								
Soil colour: Brown								
Weather: Cloudy/light showers								
							Time	
							Date: 21/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 25+500**			
E566643.8865					N9544371.465			Elev. 47.991m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	29.3	7780	4.2076	265	111,501.40	
1.0	0.5	1.5	21.5	5110	6.28	238	149,464.00	
2.0	1.0	3.0	38.6	4270	12.56	111	139,416.00	
3.0	1.5	4.5	28.3	1470	18.84	52	97,968.00	
4.0	2.0	6.0	39.3	1350	25.12	34.4	86,412.80	
5.0	2.5	7.5	39.8	426	31.4	10.7	33,598.00	
Soil quality: Sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 09/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 26+000**			
E566784.6535					N9544850.974			Elev. 46.459m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	27.4	2110	4.19	77.1	32,304.90	
1.0	1.5	1.5	17.6	1150	6.26	65.2	40,815.20	
2.0	1.0	3.0	16.0	547	12.52	32.5	40,690.00	
4.0	2.0	6.0	22.7	161	25.04	7.07	17,703.28	
8.0	4.0	12	19.2	67	50.08	3.49	17,477.92	
16	8.0	24	27.4	48.4	100.16	1.58	15,825.28	
Soil quality: Sand								
Soil condition: Slightly moist								
Soil colour: Dark brown								
Weather: Cloudy/light showers								
							Time	
							Date: 21/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 26+500**			
E566940.213					N9545321.15			Elev. 48.329m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	29.4	8240	4.2076	280	117,812.80	
1.0	0.5	1.5	29.4	5490	6.28	216	135,648.00	
2.0	1.0	3.0	31.9	3060	12.56	95.9	120,450.40	
3.0	1.5	4.5	28.3	1500	18.84	53.2	100,228.80	
4.0	2.0	6.0	29.6	897	25.12	30.3	76,113.60	
5.0	2.5	7.5	39.1	709	31.4	18.1	56,834.00	
Soil quality: Sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 09/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: km 27+000**			
E566976.0256					N9545792.259			Elev. 52.575m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	22.5	976	4.19	43.4	18,184.60	
1.0	1.5	1.5	22.9	713	6.26	31.1	19,468.60	
2.0	1.0	3.0	47	631	12.52	13.4	16,776.80	
4.0	2.0	6.0	26	133	25.04	5.12	12,820.48	
8.0	4.0	12	63	145	50.08	2.13	10,667.04	
16	8.0	24	60.6	35.9	100.16	0.592	5,929.47	
Soil quality: Clayey sand								
Soil condition: Loose and dry								
Soil colour: Reddish brown								
Weather: Cloudy/light showers								
							Time	
							Date: 23/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: Creek 1**			
E558663.711					N9556159.395			
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	83.4	4.19	0.834	349.45	
1.0	1.5	1.5	100	53.6	6.26	0.536	335.54	
2.0	1.0	3.0	100	24.8	12.52	0.248	310.50	
4.0	2.0	6.0	100	6.3	25.04	0.063	157.75	
8.0	4.0	12	100	2.21	50.08	0.0221	110.68	
16	8.0	24	100	0.797	100.16	.00797	79.83	
Soil quality: Clay								
Soil condition: Wet								
Soil colour: Dark brown								
Weather: Sunny								
						Time		
						Date: 23/08/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: KAYA BOMBO PIPELINE					**Location: Creek 2**			
E557389.126					N9549773.969			
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1790	4.19	17.9	7,500.10	
1.0	1.5	1.5	100	756	6.26	7.56	4,732.56	
2.0	1.0	3.0	100	117	12.52	1.17	1,464.84	
4.0	2.0	6.0	100	40.8	25.04	0.408	1,021.63	
8.0	4.0	12	100	21.9	50.08	0.219	1,096.75	
16	8.0	24	100	13.2	100.16	0.132	1,322.11	
Soil quality: Clay								
Soil condition: Moist and sticky								
Soil colour: Red brown								
Weather: Cloudy								
							Time	
							Date: 22/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

NGUU TATU PIPELINE

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 0+500**			
E561576.8417					N9559709.187			Elev. 77.527m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	720	4.2076	7.2	3,029.47	
1.0	0.5	1.5	100	662	6.28	6.62	4,157.36	
2.0	1.0	3.0	100	316	12.56	3.16	3,968.96	
3.0	1.5	4.5	100	201	18.84	2.01	3,786.84	
4.0	2.0	6.0	100	149	25.12	1.49	3,742.88	
5.0	2.5	7.5	100	116	31.4	1.16	3,642.40	
Soil quality: Sand clay								
Soil condition: Slightly moist								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 16/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 1+000**			
E562042.9778					N9559571.988			Elev. 71.998m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	100	374	4.19	3.74	1,567.06	
1.0	1.5	1.5	100	298	6.26	2.97	1,859.22	
2.0	1.0	3.0	100	201	12.52	2.01	2,516.52	
4.0	2.0	6.0	100	119	25.04	1.19	2,979.76	
8.0	4.0	12	100	59.9	50.08	0.599	2,999.79	
16	8.0	24	100	25	100.16	0.25	2,504.00	
Soil quality: Sand								
Soil condition: Dry								
Soil colour: Yellowish brown								
Weather: Cloudy								
							Time	
							Date: 17/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 1+500**			
E562514.7183					N9559406.373			Elev. 65.414m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	471	4.2076	4.71	1,981.78	
1.0	0.5	1.5	100	420	6.28	4.2	2,637.60	
2.0	1.0	3.0	100	170	12.56	1.7	2,135.20	
3.0	1.5	4.5	100	117	18.84	1.17	2,204.28	
4.0	2.0	6.0	100	81.8	25.12	0.817	2,052.30	
5.0	2.5	7.5	100	50	31.4	0.608	1,909.12	
Soil quality: Sand clay								
Soil condition: Loose and dry								
Soil colour: Brown								
Weather: Sunny								
						Time		
						Date: 16/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 2+000**			
E562949.6327					N9559164.007			Elev. 60.571m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	80.7	4.19	21.1	8,840.90	
1.0	1.5	1.5	100	83.1	6.26	8.31	5,202.06	
2.0	1.0	3.0	100	38.6	12.52	1.8	2,253.60	
4.0	2.0	6.0	100	83.7	25.04	0.837	2,095.85	
8.0	4.0	12	100	37	50.08	0.37	1,852.96	
16	8.0	24	100	22.1	100.16	0.22	2,203.52	
Soil quality: Silty sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Cloudy								
							Time	
							Date: 17/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 2+500**			
E563344.4157					N9559167.883			Elev. 51.687m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	645	4.2076	6.45	2,713.90	
1.0	0.5	1.5	100	397	6.28	3.97	2,493.16	
2.0	1.0	3.0	100	214	12.56	2.14	2,687.84	
3.0	1.5	4.5	100	147	18.84	1.47	2,769.48	
4.0	2.0	6.0	100	102	25.12	1.02	2,562.24	
5.0	2.5	7.5	100	82.4	31.4	0.824	2,587.36	
Soil quality: Sand clay								
Soil condition: Moist								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 16/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 3+000**			
E563556.7835					N9559619.2			Elev. 26.523m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	959	4.19	9.59	4,018.21	
1.0	1.5	1.5	100	597	6.26	5.97	3,737.22	
2.0	1.0	3.0	100	284	12.52	2.84	3,555.68	
4.0	2.0	6.0	100	81.2	25.04	0.812	2,033.25	
8.0	4.0	12	100	30.2	50.08	0.302	1,512.42	
16	8.0	24	100	15.5	100.16	0.155	1,552.48	
Soil quality: Silty sand								
Soil condition: Dry								
Soil colour: Light brown to yellowish								
Weather: Cloudy								
							Time	
							Date: 17/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 3+500**			
E563702.5199					N9560097.396			Elev. 49.394m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	869	4.2076	8.69	3,656.40	
1.0	0.5	1.5	100	610	6.28	6.1	3,830.80	
2.0	1.0	3.0	100	359	12.56	3.59	4,509.04	
3.0	1.5	4.5	100	215	18.84	2.15	4,050.60	
4.0	2.0	6.0	100	152	25.12	1.52	3,818.24	
5.0	2.5	7.5	100	112	31.4	1.12	3,516.80	
Soil quality: Sand clay								
Soil condition: Moist								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 16/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 4+000**			
E563854.9742					N9560573.582			Elev. 59.032m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	227	4.19	2.27	951.13	
1.0	1.5	1.5	100	91.2	6.26	0.912	570.91	
2.0	1.0	3.0	100	49	12.52	0.49	613.48	
4.0	2.0	6.0	100	26.7	25.04	0.267	668.57	
8.0	4.0	12	100	16.6	50.08	0.166	831.33	
16	8.0	24	100	12.3	100.16	0.123	1,231.97	
Soil quality: Silty sand								
Soil condition: Dry								
Soil colour: Dark brown								
Weather: Cloudy								
							Time	
							Date: 17/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 4+500**			
E564003.0891					N9561051.073			Elev. 55.940m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	855	4.2076	8.55	3,597.50	
1.0	0.5	1.5	100	379	6.28	3.79	2,380.12	
2.0	1.0	3.0	100	210	12.56	2.1	2,637.60	
3.0	1.5	4.5	100	165	18.84	1.65	3,108.60	
4.0	2.0	6.0	100	114	25.12	1.14	2,863.68	
5.0	2.5	7.5	100	93.8	31.4	0.938	2,945.32	
Soil quality: Sand clay								
Soil condition: Moist								
Soil colour: Brown								
Weather: Cloudy								
							Time	
							Date: 16/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 5+000**			
E564214.1589					N9561500.368			Elev. 63.773m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1350	4.2076	13.5	5,680.26	
1.0	0.5	1.5	100	754	6.28	7.54	4,735.12	
2.0	1.0	3.0	100	265	12.56	2.65	3,328.40	
3.0	1.5	4.5	100	156	18.84	1.56	2,939.04	
4.0	2.0	6.0	100	114	25.12	1.14	2,863.68	
5.0	2.5	7.5	100	94.8	31.4	0.948	2,976.72	
Soil quality: Sand clay								
Soil condition: Loose and dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 14/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 5+500**			
E564587.7595					N9561830			Elev. 69.650m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1840	4.2076	18.4	7,741.98	
1.0	0.5	1.5	100	1360	6.28	13.6	8,540.80	
2.0	1.0	3.0	100	648	12.56	6.48	8,138.88	
3.0	1.5	4.5	100	363	18.84	3.62	6,820.08	
4.0	2.0	6.0	100	256	25.12	2.56	6,430.72	
5.0	2.5	7.5	100	203	31.4	2.03	6,374.20	
Soil quality: Sand clay								
Soil condition: Loose and dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 14/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 6+000**			
E564984.8472					N9562133.829			Elev. 59.707m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	816	4.2076	8.16	3,433.40	
1.0	0.5	1.5	100	534	6.28	5.43	3,410.04	
2.0	1.0	3.0	100	244	12.56	2.44	3,064.64	
3.0	1.5	4.5	100	125	18.84	1.25	2,355.00	
4.0	2.0	6.0	100	97	25.12	0.97	2,436.64	
5.0	2.5	7.5	100	98.2	31.4	0.981	3,080.34	
Soil quality: Clayey sand								
Soil condition: Loose and dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 14/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 6+500**			
E565378.4945					N9562442.105			Elev. 43.478m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	936	4.2076	8.36	3,517.55	
1.0	0.5	1.5	100	422	6.28	4.22	2,650.16	
2.0	1.0	3.0	100	224	12.56	2.24	2,813.44	
3.0	1.5	4.5	100	137	18.84	1.37	2,581.08	
4.0	2.0	6.0	100	98.2	25.12	0.982	2,466.78	
5.0	2.5	7.5	100	75	31.4	0.75	2,355.00	
Soil quality: Clayey sand								
Soil condition: Loose and dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 14/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 7+000**			
E565769.7004					N9562753.478			Elev. 61.190m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	765	4.2076	7.65	3,218.81	
1.0	0.5	1.5	100	519	6.28	5.19	3,259.32	
2.0	1.0	3.0	100	184	12.56	1.84	2,311.04	
3.0	1.5	4.5	100	125	18.84	1.25	2,355.00	
4.0	2.0	6.0	100	98.6	25.12	0.986	2,476.83	
5.0	2.5	7.5	100	82.2	31.4	0.822	2,581.08	
Soil quality: Clayey sand								
Soil condition: Loose dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 14/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 7+500**			
E566110.5354					N9563115.52			Elev. 49.173m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	754	4.2076	7.53	3,168.32	
1.0	0.5	1.5	100	759	6.28	7.59	4,766.52	
2.0	1.0	3.0	100	327	12.56	3.27	4,107.12	
3.0	1.5	4.5	100	240	18.84	2.4	4,521.60	
4.0	2.0	6.0	100	174	25.12	1.74	4,370.88	
5.0	2.5	7.5	100	141	31.4	1.41	4,427.40	
Soil quality: Clayey sand								
Soil condition: Loose dry								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 14/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 8+000**			
E566356.2134					N9563550.084			Elev. 29.194m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	960	4.2076	9.6	4,039.30	
1.0	0.5	1.5	80.3	338	6.28	4.21	2,643.88	
2.0	1.0	3.0	91.9	111	12.56	1.21	1,519.76	
3.0	1.5	4.5	91.8	86	18.84	0.936	1,763.42	
4.0	2.0	6.0	100	70	25.12	0.7	1,758.40	
5.0	2.5	7.5	100	56.3	31.4	0.563	1,767.82	
Soil quality: Clayey sand								
Soil condition: Medium dense and dry								
Soil colour: Brown								
Weather: Sunny								
						Time		
						Date: 14/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 8+500**			
E566673.668					N9563935.869			Elev. 39.746m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	7.42	4280	4.2076	57.6	24,235.78	
1.0	0.5	1.5	7.28	2720	6.28	37.4	23,487.20	
2.0	1.0	3.0	9.96	823	12.56	82.7	103,871.20	
3.0	1.5	4.5	6.65	95.5	18.84	14.3	26,941.20	
4.0	2.0	6.0	5.97	17.7	25.12	2.96	7,435.52	
5.0	2.5	7.5	9.96	11.2	31.4	1.13	3,548.20	
Soil quality: Sand								
Soil condition: Loose and dry								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 14/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 9+000**			
E567032.4275					N9564284.135			Elev. 24.472m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	931	4.2076	9.31	3,917.28	
1.0	0.5	1.5	100	679	6.28	6.79	4,264.12	
2.0	1.0	3.0	100	312	12.56	3.12	3,918.72	
3.0	1.5	4.5	86.9	176	18.84	2.02	3,805.68	
4.0	2.0	6.0	100	135	25.12	1.35	3,391.20	
5.0	2.5	7.5	100	95.1	31.4	0.951	2,986.14	
Soil quality: Fine sand								
Soil condition: Loose and dry								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 14/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 9+500**			
E567434.6931					N9564574.585			Elev. 17.266m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	8920	4.2076	8.92	3,753.18	
1.0	0.5	1.5	100	1010	6.28	10.1	6,342.80	
2.0	1.0	3.0	100	894	12.56	0.839	1,053.78	
3.0	1.5	4.5	100	47	18.84	0.469	883.60	
4.0	2.0	6.0	100	35	25.12	0.35	879.20	
5.0	2.5	7.5	100	32.3	31.4	0.323	1,014.22	
Soil quality: Sandy clay								
Soil condition: Dense and dry								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 17/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 10+000**			
E567919.518					N9564655.431			Elev. 21.521m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	9190	4.2076	91.9	38,667.84	
1.0	0.5	1.5	100	2970	6.28	29.7	18,651.60	
2.0	1.0	3.0	56.3	225	12.56	4	5,024.00	
3.0	1.5	4.5	69.7	117	18.84	1.68	3,165.12	
4.0	2.0	6.0	70.7	83.3	25.12	1.18	2,964.16	
5.0	2.5	7.5	100	90.2	31.4	0.902	2,832.28	
Soil quality: Sandy clay								
Soil condition: Dense and dry								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 17/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 10+500**			
E568414.3318					N9564640.361			Elev. 55.544m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	55.1	1620	4.2076	29.3	12,328.27	
1.0	0.5	1.5	51.8	579	6.28	11.2	7,033.60	
2.0	1.0	3.0	49.4	95.9	12.56	1.94	2,436.64	
3.0	1.5	4.5	78.9	68.2	18.84	0.864	1,627.78	
4.0	2.0	6.0	53.9	32	25.12	0.595	1,494.64	
5.0	2.5	7.5	49.2	26	31.4	0.529	1,661.06	
Soil quality: Fine sand								
Soil condition: Loose and dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 17/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 11+000**			
E568913.7946					N9564663.532			Elev. 59.219m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	709	4.2076	7.09	2,983.19	
1.0	0.5	1.5	100	478	6.28	4.78	3,001.84	
2.0	1.0	3.0	100	205	12.56	2.05	2,574.80	
3.0	1.5	4.5	100	133	18.84	1.33	2,505.72	
4.0	2.0	6.0	100	95.8	25.12	0.958	2,406.50	
5.0	2.5	7.5	100	73.7	31.4	0.737	2,314.18	
Soil quality: Sand with minor clay								
Soil condition: Moist								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 17/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 11+500**			
E569413.2574					N9564686.703			Elev. 52.862m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	403	4.2076	4.03	1,695.66	
1.0	0.5	1.5	100	330	6.28	3.3	2,072.40	
2.0	1.0	3.0	100	175	12.56	1.75	2,198.00	
3.0	1.5	4.5	100	87.3	18.84	0.873	1,644.73	
4.0	2.0	6.0	100	55.8	25.12	0.558	1,401.70	
5.0	2.5	7.5	100	55.5	31.4	0.555	1,742.70	
Soil quality: Sand with minor clay								
Soil condition: Moist								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 17/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 12+000**			
E569912.7202					N9564709.874			Elev. 52.478m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	503	4.2076	5.03	2,116.42	
1.0	0.5	1.5	100	368	6.28	3.68	2,311.04	
2.0	1.0	3.0	100	361	12.56	3.61	4,534.16	
3.0	1.5	4.5	100	151	18.84	1.51	2,844.84	
4.0	2.0	6.0	100	108	25.12	1.08	2,712.96	
5.0	2.5	7.5	100	73.1	31.4	0.731	2,295.34	
Soil quality: Sandy clay								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 17/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 12+500**			
E570412.183					N9564733.045			Elev. 63.443m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	83.3	1400	4.2076	16.8	7,068.77	
1.0	0.5	1.5	99.7	1250	6.28	12.5	7,850.00	
2.0	1.0	3.0	100	243	12.56	2.43	3,052.08	
3.0	1.5	4.5	100	87.4	18.84	0.874	1,646.62	
4.0	2.0	6.0	100	55.8	25.12	0.558	1,401.70	
5.0	2.5	7.5	100	38.7	31.4	0.387	1,215.18	
Soil quality: Sand with minor clay								
Soil condition: Moist								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 12/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 13+000**			
E570911.6459					N9564756.216			Elev. 60.326m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1520	4.2076	15.2	6,395.55	
1.0	0.5	1.5	100	1450	6.28	14.5	9,106.00	
2.0	1.0	3.0	100	458	12.56	4.58	5,752.48	
3.0	1.5	4.5	100	153	18.84	1.53	2,882.52	
4.0	2.0	6.0	100	58.4	25.12	0.584	1,467.01	
5.0	2.5	7.5	100	30	31.4	0.300	942.00	
Soil quality: Sand								
Soil condition: Moist								
Soil colour: Light brown								
Weather: Cloudy								
						Time		
						Date: 12/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 13+500**			
E571411.0058					N9564781.473			Elev. 56.061m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	87.1	1380	4.2076	159	66,900.84	
1.0	0.5	1.5	84.8	1100	6.28	130	81,640.00	
2.0	1.0	3.0	65.7	3430	12.56	52.1	65,437.60	
3.0	1.5	4.5	52.5	1390	18.84	26.5	49,926.00	
4.0	2.0	6.0	73.9	944	25.12	12.8	32,153.60	
5.0	2.5	7.5	59.1	499	31.4	8.45	26,533.00	
Soil quality: Silty sand								
Soil condition: Slightly moist								
Soil colour: Light brown								
Weather: Cloudy								
							Time	
							Date: 12/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 14+000**			
E571910.3237					N9564807.579			Elev. 23.000m
571910.3237					9564807.579			23.000m
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1470	4.19	14.7	6,159.30	
1.0	1.5	1.5	100	925	6.26	9.26	5,796.76	
2.0	1.0	3.0	100	322	12.52	3.22	4,031.44	
4.0	2.0	6.0	100	65.8	25.04	0.659	1,650.14	
8.0	4.0	12	100	18.4	50.08	0.184	921.47	
16	8.0	24	100	6.78	100.16	0.0678	679.08	
Soil quality: Silty sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Sunny								
						Time		
						Date: 18/08/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 14+500**			
E572409.6417					N9564833.686			Elev. 35.041m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	92.2	7780	4.2076	84.4	35,512.14	
1.0	0.5	1.5	82.7	4670	6.28	56.5	35,482.00	
2.0	1.0	3.0	71.3	1430	12.56	20.1	25,245.60	
3.0	1.5	4.5	49.6	526	18.84	10.6	19,970.40	
4.0	2.0	6.0	30.2	172	25.12	5.71	14,343.52	
5.0	2.5	7.5	70.3	217	31.4	3.04	9,545.60	
Soil quality: Sand								
Soil condition: Moist								
Soil colour: Light brown								
Weather: Cloudy								
							Time	
							Date: 12/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 15+000**			
E572908.9597					N9564859.793			Elev. 30.110m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	96.7	2970	4.19	30.8	12,905.20	
1.0	1.5	1.5	44.2	996	6.26	22.5	14,085.00	
2.0	1.0	3.0	42.9	561	12.52	13.1	16,401.20	
4.0	2.0	6.0	88.5	500	25.04	5.6	14,022.40	
8.0	4.0	12	41.9	44	50.08	1.05	5,258.40	
16	8.0	24	17.9	5.3	100.16	0.0441	441.71	
Soil quality: Silty clay								
Soil condition: Dry								
Soil colour: Yellowish brown								
Weather: Sunny								
							Time	
							Date: 18/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 15+500**			
E573408.2777					N9564885.899			E21.988m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	94.1	509	4.2076	5.14	2,162.71	
1.0	0.5	1.5	91.7	326	6.28	3.55	2,229.40	
2.0	1.0	3.0	92.8	27.2	12.56	0.293	368.01	
3.0	1.5	4.5	92.3	14	18.84	0.152	286.37	
4.0	2.0	6.0	92.6	9.43	25.12	0.102	256.22	
5.0	2.5	7.5	57.1	4.54	31.4	0.0795	249.63	
Soil quality: Sandy clay								
Soil condition: Slightly moist								
Soil colour: Brown								
Weather: Cloudy								
						Time		
						Date: 12/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 16+000**			
E573768.7707					N9564697.089			Elev. 23.559m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	159	4.19	1.59	666.21	
1.0	1.5	1.5	100	150	6.26	1.5	939.00	
2.0	1.0	3.0	100	88.8	12.52	0.888	1,111.78	
4.0	2.0	6.0	100	42.1	25.04	0.421	1,054.18	
8.0	4.0	12	100	15.5	50.08	0.155	776.24	
16	8.0	24	100	6.43	100.16	0.0643	644.03	
Soil quality: Clay with minor sand particles								
Soil condition: Dry								
Soil colour: Red brown								
Weather: Sunny								
							Time	
							Date: 19/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 16+500**			
E573953.0285					N9564232.278			Elev. 25.664m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	93	603	4.2076	6.48	2,726.52	
1.0	0.5	1.5	92.5	150	6.28	1.62	1,017.36	
2.0	1.0	3.0	94.4	24.5	12.56	0.26	326.56	
3.0	1.5	4.5	91.7	13.6	18.84	0.148	278.83	
4.0	2.0	6.0	51.6	5.78	25.12	0.112	281.34	
5.0	2.5	7.5	92.5	8.43	31.4	0.0911	286.05	
Soil quality: Sandy clay								
Soil condition: Slightly moist and loose								
Soil colour: Dark brown								
Weather: Cloudy								
						Time		
						Date: 12/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 17+000**			
E574137.2863					N9563767.468			Elev. 20.967m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	246	4.19	2.46	1,030.74	
1.0	1.5	1.5	100	211	6.26	2.1	1,314.60	
2.0	1.0	3.0	100	85.7	12.52	0.857	1,072.96	
4.0	2.0	6.0	100	37.8	25.04	0.378	946.51	
8.0	4.0	12	100	15.5	50.08	0.155	776.24	
16	8.0	24	100	8.94	100.16	0.0894	895.43	
Soil quality: Clay								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 19/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 17+500**			
E574321.5441					N9563302.657			Elev. 35.306m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	89.3	240	4.2076	2.69	1,131.84	
1.0	0.5	1.5	91.0	326	6.28	3.58	2,248.24	
2.0	1.0	3.0	94.7	109	12.56	1.16	1,456.96	
3.0	1.5	4.5	93.9	67.6	18.84	0.722	1,360.25	
4.0	2.0	6.0	93.0	48.1	25.12	0.517	1,298.70	
5.0	2.5	7.5	93.1	34.8	31.4	0.374	1,174.36	
Soil quality: Sandy clay								
Soil condition: Slightly moist and loose								
Soil colour: Dark brown								
Weather: Cloudy								
							Time	
							Date: 12/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 18+000**			
E574453.7002					N9562820.588			Elev. 51.448m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	558	4.19	5.58	2,338.02	
1.0	1.5	1.5	100	394	6.26	3.94	2,466.44	
2.0	1.0	3.0	100	129	12.52	1.29	1,615.08	
4.0	2.0	6.0	100	36.4	25.04	0.364	911.46	
8.0	4.0	12	100	20.5	50.08	0.205	1,026.64	
16	8.0	24	100	10.6	100.16	0.1767	1,769.83	
Soil quality: Sandy clay								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Sunny								
						Time		
						Date: 19/08/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 18+500**			
E574587.3135					N9562338.771			Elev. 50.043m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	93.7	365	4.2076	3.9	1,640.96	
1.0	0.5	1.5	48.5	120	6.28	2.49	1,563.72	
2.0	1.0	3.0	95.5	86.1	12.56	0.902	1,132.91	
3.0	1.5	4.5	94.7	60.2	18.84	0.636	1,198.22	
4.0	2.0	6.0	96.2	47.5	25.12	0.494	1,240.93	
5.0	2.5	7.5	92.5	35.9	31.4	0.388	1,218.32	
Soil quality: Sandy clay								
Soil condition: Slightly moist								
Soil colour: Brown								
Weather: Cloudy								
							Time	
							Date: 12/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 19+000**			
E574710.6599					N9561862.273			Elev. 44.123m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	390	4.19	3.9	1,634.10	
1.0	1.5	1.5	100	297	6.26	2.97	1,859.22	
2.0	1.0	3.0	100	74.1	12.52	0.741	927.73	
4.0	2.0	6.0	100	37.2	25.04	0.371	928.98	
8.0	4.0	12	100	21.7	50.08	0.216	1,081.73	
16	8.0	24	100	10.9	100.16	0.109	1,091.74	
Soil quality: Clay sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Sunny								
						Time		
						Date: 19/08/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 19+500**			
E574687.84					N9561363.349			Elev. 20.562m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	92.6	219	4.2076	2.36	992.99	
1.0	0.5	1.5	98.9	139	6.28	1.4	879.20	
2.0	1.0	3.0	92.2	21.1	12.56	0.228	286.37	
3.0	1.5	4.5	92.4	10.8	18.84	0.117	220.43	
4.0	2.0	6.0	93.3	8.22	25.12	.0881	221.31	
5.0	2.5	7.5	97.6	7.44	31.4	0.0762	239.27	
Soil quality: Sand clay								
Soil condition: Slightly moist								
Soil colour: Dark grey								
Weather: Sunny								
							Time	
							Date: 12/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 20+000**			
E574796.4788					N9560881.795			Elev. 28.627m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	531	4.19	5.31	2,224.89	
1.0	1.5	1.5	100	423	6.26	4.22	2,641.72	
2.0	1.0	3.0	100	120	12.52	1.2	1,502.40	
4.0	2.0	6.0	100	61.3	25.04	0.613	1,534.95	
8.0	4.0	12	100	32.3	50.08	0.323	1,617.58	
16	8.0	24	100	16.5	100.16	0.164	1,642.62	
Soil quality: Clay sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 19/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: km 20+500**			
E575018.8497					N9560449.102			Elev. 39.138m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	99	480	4.2076	4.85	20.41	
1.0	0.5	1.5	94.4	295	6.28	3.13	19.66	
2.0	1.0	3.0	92.7	156	12.56	1.68	21.10	
3.0	1.5	4.5	39.1	52	18.84	1.33	25.06	
4.0	2.0	6.0	83.8	77.7	25.12	0.928	23.31	
5.0	2.5	7.5	37.2	30	31.4	0.808	25.37	
Soil quality: Clayey sand								
Soil condition: Dense and moist								
Soil colour: Brown								
Weather: Cloudy								
							Time	
							Date: 12/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: Creek 1**			
E566831.935					N9564070.537			
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	87.3	4900	4.2076	56.1	23,604.64	
1.0	0.5	1.5	95.5	2240	6.28	23.5	14,758.00	
2.0	1.0	3.0	47	312	12.56	6.63	8,327.28	
3.0	1.5	4.5	100	291	18.84	2.91	5,482.44	
4.0	2.0	6.0	100	182	25.12	1.82	4,571.84	
5.0	2.5	7.5	100	121	31.4	1.21	3,799.40	
Soil quality: Gravelly sand								
Soil condition: Loose and dry								
Soil colour: Brown								
Weather: Cloudy								
						Time		
						Date: 17/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: NGUU TATU PIPELINE					**Location: Creek 2**			
E572180.188					N9564850.374			
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	4450	4.19	44.5	18,645.50	
1.0	1.5	1.5	100	2720	6.26	27.2	17,027.20	
2.0	1.0	3.0	82.1	808	12.52	9.8	12,269.60	
4.0	2.0	6.0	82.2	266	25.04	3.23	8,087.92	
8.0	4.0	12	100	63.2	50.08	0.632	3,165.06	
16	8.0	24	100	7.8	100.16	0.078	781.25	
Soil quality: Silty sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 19/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

CHANGAMWE PIPELINE

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: KM 0+500**			
E561485.8731					N9559673.546			Elev. 77.439m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	99.9	1060	4.2076	10.6	4,460.06	
1.0	0.5	1.5	100	564	6.28	5.64	3,541.92	
2.0	1.0	3.0	99.9	240	12.56	2.4	3,014.40	
3.0	1.5	4.5	100	137	18.84	1.37	2,581.08	
4.0	2.0	6.0	100	101	25.12	1.01	2,537.12	
5.0	2.5	7.5	100	68.8	31.4	0.688	2,160.32	
Soil quality: Sand								
Soil condition: Moist and dense								
Soil colour: Brown								
Weather: Cloudy								
						Time		
						Date: 12/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: KM1+000**			
E561948.7901					N9559596.426			Elev. 80.546m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	412	4.2076	4.12	1,733.53	
1.0	0.5	1.5	100	330	6.28	3.3	2,072.40	
2.0	1.0	3.0	100	198	12.56	1.98	2,486.88	
3.0	1.5	4.5	100	150	18.84	1.5	2,826.00	
4.0	2.0	6.0	100	107	25.12	1.07	2,687.84	
5.0	2.5	7.5	100	95.9	31.4	0.957	3,004.98	
Soil quality: Gravelly sand								
Soil condition: Moist								
Soil colour: Brown								
Weather: Sunny								
						Time		
						Date: 12/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 1+500**			
E562420.26					N9559430.846			Elev. 63.912m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	97.3	7140	4.19	73.3	30,712.70	
1.0	1.5	1.5	68.5	4130	6.26	60.3	37,747.80	
2.0	1.0	3.0	86.2	1310	12.52	15.2	19,030.40	
4.0	2.0	6.0	87.9	171	25.04	1.95	4,882.80	
8.0	4.0	12	70.7	17.4	50.08	0.245	1,226.96	
16	8.0	24	100	8.92	100.16	0.0892	893.43	
Soil quality: Silty sand								
Soil condition: Dry								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 23/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 2+000**			
E562863.3017					N9559204.599			Elev. 62.486m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	385	4.2076	3.85	1,619.93	
1.0	0.5	1.5	100	326	6.28	3.26	2,047.28	
2.0	1.0	3.0	100	146	12.56	1.46	1,833.76	
3.0	1.5	4.5	100	97	18.84	0.97	1,827.48	
4.0	2.0	6.0	100	9.59	25.12	0.0959	240.90	
5.0	2.5	7.5	100	57.3	31.4	0.527	1,654.78	
Soil quality: Clay sand								
Soil condition: Moist								
Soil colour: Dark brown								
Weather: Sunny								
							Time	
							Date: 12/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 2+500**			
E563293.8003					N9558975.812			Elev. 41.000m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	32.4	514	4.2076	15.9	6,690.08	
1.0	1.5	1.5	29.1	393	6.28	13.5	8,478.00	
2.0	1.0	3.0	26.9	205	12.56	7.63	9,583.28	
4.0	2.0	6.0	9.98	22.4	18.84	2.24	4,220.16	
8.0	4.0	12	100	35.6	25.12	0.356	894.27	
16	8.0	24	100	14.2	31.4	0.142	445.88	
Soil quality: Gravelly sand								
Soil condition: Dry and compacted								
Soil colour: Light brown								
Weather: Sunny								
						Time		
						Date: 23/08/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 3+000**			
E563614.6484					N9558594.567			Elev. 67.951m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	93.6	1400	4.2076	14.9	6,269.32	
1.0	0.5	1.5	92.3	848	6.28	9.19	5,771.32	
2.0	1.0	3.0	90.8	216	12.56	2.38	2,989.28	
3.0	1.5	4.5	88.5	113	18.84	1.28	2,411.52	
4.0	2.0	6.0	93	71.2	25.12	0.766	1,924.19	
5.0	2.5	7.5	90.8	44.6	31.4	0.491	1,541.74	
Soil quality: Clayey sand								
Soil condition: Moist								
Soil colour: Dark brown								
Weather: Sunny								
							Time	
							Date: 12/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 3+500**			
E563817.8339					N9558165.118			Elev. 69.690m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	273	4.19	2.73	1,143.87	
1.0	1.5	1.5	100	178	6.26	1.78	1,114.28	
2.0	1.0	3.0	100	70	12.52	0.7	876.40	
4.0	2.0	6.0	100	29.9	25.04	0.299	748.70	
8.0	4.0	12	100	8	50.08	0.8	4,006.40	
16	8.0	24	100	2.75	100.16	0.275	2,754.40	
Soil quality: Clayey sand								
Soil condition: Dry and loose								
Soil colour: Yellowish brown								
Weather: Sunny								
						Time		
						Date: 23/08/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 4+000**			
E563921.5935					N9557724.701			Elev. 63.538m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	97.8	444	4.2076	4.54	1,910.25	
1.0	0.5	1.5	99	395	6.28	3.99	2,505.72	
2.0	1.0	3.0	98.9	198	12.56	2.00	2,512.00	
3.0	1.5	4.5	100	117	18.84	1.17	2,204.28	
4.0	2.0	6.0	93.4	85.9	25.12	0.92	2,311.04	
5.0	2.5	7.5	97.7	74.4	31.4	0.762	2,392.68	
Soil quality: Clayey sand								
Soil condition: Moist and dense								
Soil colour: Dark brown								
Weather: Cloudy								
							Time	
							Date: 12/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 4+500**			
E564333.7122					N9557441.908			Elev. 67.911m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	2760	4.19	27.6	115.64	
1.0	1.5	1.5	100	1480	6.26	14.8	92.65	
2.0	1.0	3.0	100	455	12.52	4.55	56.97	
4.0	2.0	6.0	100	159	25.04	1.59	39.81	
8.0	4.0	12	79.5	16	50.08	0.202	10.12	
16	8.0	24	100	2.47	100.16	0.0247	2.47	
Soil quality: Silt sand								
Soil condition: Dry and loose								
Soil colour: Light brown								
Weather: Sunny								
						Time		
						Date: 23/08/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 5+000**			
E564761.9757					N9557188.436			Elev. 60.756m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	747	4.2076	7.48	3,147.28	
1.0	0.5	1.5	100	547	6.28	5.47	3,435.16	
2.0	1.0	3.0	100	178	12.56	1.78	2,235.68	
3.0	1.5	4.5	100	86.6	18.84	0.866	1,631.54	
4.0	2.0	6.0	100	40.3	25.12	0.403	1,012.34	
5.0	2.5	7.5	100	45.9	31.4	0.459	1,441.26	
Soil quality: Clayey sand								
Soil condition: Moist								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 12/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 5+500**			
E565258.0361					N9557168.892			Elev. 62.144m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	546	4.19	5.45	2,283.55	
1.0	1.5	1.5	100	453	6.26	4.53	2,835.78	
2.0	1.0	3.0	100	190	12.52	1.9	2,378.80	
4.0	2.0	6.0	100	37.4	25.04	0.374	936.50	
8.0	4.0	12	100	6.8	50.08	0.068	340.54	
16	8.0	24	100	2.12	100.16	0.0242	242.39	
Soil quality: Silty sand								
Soil condition: Dry and loose								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 23/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 6+000**			
E565753.6538					N9557234.946			Elev. 65.174m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1080	4.2076	10.8	4,544.21	
1.0	0.5	1.5	100	752	6.28	7.52	4,722.56	
2.0	1.0	3.0	100	322	12.56	3.22	4,044.32	
3.0	1.5	4.5	100	180	18.84	1.8	3,391.20	
4.0	2.0	6.0	100	107	25.12	1.07	2,687.84	
5.0	2.5	7.5	100	60.7	31.4	0.607	1,905.98	
Soil quality: Clayey sand								
Soil condition: Moist								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 11/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 6+500**			
E566249.9061					N9557294.573			Elev. 64.334m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	554	4.19	5.54	2,321.26	
1.0	1.5	1.5	100	361	6.26	3.61	2,259.86	
2.0	1.0	3.0	100	181	12.52	1.81	2,266.12	
4.0	2.0	6.0	100	43.9	25.04	0.439	1,099.26	
8.0	4.0	12	100	8.67	50.08	0.0866	433.69	
16	8.0	24	100	4.28	100.16	0.0428	428.68	
Soil quality: Silty clay								
Soil condition: Slightly moist								
Soil colour: Red brown								
Weather: Sunny								
						Time		
						Date: 23/08/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 7+000**			
E566748.9899					N9557324.64			Elev. 65.031m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1570	4.2076	15.7	6,605.93	
1.0	0.5	1.5	98.5	1090	6.28	11	6,908.00	
2.0	1.0	3.0	100	221	12.56	2.21	2,775.76	
3.0	1.5	4.5	100	106	18.84	1.06	1,997.04	
4.0	2.0	6.0	100	57.1	25.12	0.571	1,434.35	
5.0	2.5	7.5	100	36.7	31.4	0.367	1,152.38	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 11/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 7+500**			
E567224.4932					N9557205.019			Elev. 62.001m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	368	4.19	3.68	1,541.92	
1.0	1.5	1.5	100	263	6.26	2.63	1,646.38	
2.0	1.0	3.0	100	119	12.52	1.19	1,489.88	
4.0	2.0	6.0	100	45.1	25.04	0.45	1,126.80	
8.0	4.0	12	100	17.9	50.08	0.179	896.43	
16	8.0	24	100	7.19	100.16	0.0719	720.15	
Soil quality: Sandy clay								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 23/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 8+000**			
E567722.5021					N9557193.29			Elev. 60.000m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	689	4.2076	6.69	2,814.88	
1.0	0.5	1.5	100	534	6.28	5.34	3,353.52	
2.0	1.0	3.0	100	201	12.56	2.01	2,524.56	
3.0	1.5	4.5	100	98.5	18.84	0.984	1,853.86	
4.0	2.0	6.0	100	58	25.12	0.58	1,456.96	
5.0	2.5	7.5	100	30.4	31.4	0.304	954.56	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 11/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 8+500**			
E568222.1614					N9557211.743			Elev. 62.037m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	677	4.19	6.76	2,832.44	
1.0	1.5	1.5	100	670	6.26	6.69	4,187.94	
2.0	1.0	3.0	100	429	12.52	4.29	5,371.08	
4.0	2.0	6.0	100	114	25.04	1.13	2,829.52	
8.0	4.0	12	100	24.9	50.08	0.249	1,246.99	
16	8.0	24	100	8.06	100.16	0.1198	1,199.92	
Soil quality: Sandy clay								
Soil condition: Dry and loose								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 23/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 9+000**			
E568714.8853					N9557152.827			Elev. 60.929m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	672	4.2076	6.72	2,827.51	
1.0	0.5	1.5	83.7	560	6.28	6.69	4,201.32	
2.0	1.0	3.0	100	362	12.56	3.62	4,546.72	
3.0	1.5	4.5	100	178	18.84	1.78	3,353.52	
4.0	2.0	6.0	100	124	25.12	1.12	2,813.44	
5.0	2.5	7.5	100	85.9	31.4	0.859	2,697.26	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 11/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 9+500**			
E569203.2967					N9557045.802			Elev, 54.997m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	608	4.19	6.07	2,543.33	
1.0	1.5	1.5	100	469	6.26	4.69	2,935.94	
2.0	1.0	3.0	100	222	12.52	2.22	2,779.44	
4.0	2.0	6.0	26	25	25.04	0.96	2,403.84	
8.0	4.0	12	100	31.7	50.08	0.317	1,587.54	
16	8.0	24	100	9.58	100.16	0.0958	959.53	
Soil quality: Sandy clay								
Soil condition: Slightly moist								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 23/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 10+000**			
E569682.9967					N9556907.82			Elev. 47.543m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	363	4.2076	3.62	1,523.15	
1.0	0.5	1.5	100	279	6.28	2.79	1,752.12	
2.0	1.0	3.0	100	133	12.56	1.33	1,670.48	
3.0	1.5	4.5	100	79	18.84	0.789	1,486.48	
4.0	2.0	6.0	100	51.8	25.12	0.518	1,301.22	
5.0	2.5	7.5	100	37.3	31.4	0.372	1,168.08	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 11/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 10+500**			
E570096.3162					N9556632.796			Elev. 61.136m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1720	4.19	17.2	7,206.80	
1.0	1.5	1.5	100	1370	6.26	13.7	8,576.20	
2.0	1.0	3.0	100	404	12.52	4.04	5,058.08	
4.0	2.0	6.0	26	92.8	25.04	0.928	2,323.71	
8.0	4.0	12	100	17.7	50.08	0.177	886.42	
16	8.0	24	67.8	5.32	100.16	0.0785	786.26	
Soil quality: Sand								
Soil condition: Slightly moist								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 23/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 11+000**			
E570289.0638					N9556206.973			Elev. 60.858m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1370	4.2076	13.7	5,764.41	
1.0	0.5	1.5	100	736	6.28	7.36	4,622.08	
2.0	1.0	3.0	100	253	12.56	2.53	3,177.68	
3.0	1.5	4.5	100	187	18.84	1.87	3,523.08	
4.0	2.0	6.0	100	113	25.12	1.03	2,587.36	
5.0	2.5	7.5	100	80.8	31.4	0.808	2,537.12	
Soil quality: Sandy gravel								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 11/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: CHANGAMWE PIPELINE					**Location: km 11+500**			
570344.581					9555755.09			64.336m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1020	4.2076	10.2	4,291.75	
1.0	0.5	1.5	100	549	6.28	5.49	3,447.72	
2.0	1.0	3.0	100	212	12.56	2.12	2,662.72	
3.0	1.5	4.5	100	180	18.84	1.8	3,391.20	
4.0	2.0	6.0	100	37.6	25.12	0.376	944.51	
5.0	2.5	7.5	100	26.5	31.4	0.265	832.10	
Soil quality: Clayey sand								
Soil condition: Dry								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 11/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

TRUNK PIPELINE

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: TRUNK PIPELINE					**Location: km 0+000**			
E558445.3523					N9559667.758			Elev. 115.407m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	2500	4.2076	25	10,519.00	
1.0	0.5	1.5	100	2150	6.28	21.5	13,502.00	
2.0	1.0	3.0	100	814	12.56	8.15	10,236.40	
3.0	1.5	4.5	100	404	18.84	4.04	7,611.36	
4.0	2.0	6.0	100	223	25.12	2.23	5,601.76	
5.0	2.5	7.5	100	152	31.4	1.52	4,772.80	
Soil quality: Clayey sand								
Soil condition: Loose and slightly moist								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 24/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: TRUNK PIPELINE					**Location: km 0+500**			
E558898.6631					N9559506.673			Elev. 62.764m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	38.8	3730	4.2076	96.3	40,519.19	
1.0	0.5	1.5	29.4	1550	6.28	52.6	33,032.80	
2.0	1.0	3.0	21.3	277	12.56	13	16,328.00	
3.0	1.5	4.5	27.8	127	18.84	4.27	8,044.68	
4.0	2.0	6.0	49.1	197	25.12	4.01	10,073.12	
5.0	2.5	7.5	24.6	62.8	31.4	2.56	8,038.40	
Soil quality: Clayey sand								
Soil condition: Dry and Medium dense								
Soil colour: Brown								
Weather: Sunny								
						Time		
						Date: 17/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: TRUNK PIPELINE					**Location: km 1+000**			
E559378.7462					E9559380.926			Elev. 49.502m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	44.4	4080	4.2076	91.8	38,625.77	
1.0	0.5	1.5	62.2	4150	6.28	66.7	41,887.60	
2.0	1.0	3.0	65.3	703	12.56	10.8	13,564.80	
3.0	1.5	4.5	80.9	283	18.84	3.5	6,594.00	
4.0	2.0	6.0	100	227	25.12	2.27	5,702.24	
5.0	2.5	7.5	100	135	31.4	1.35	4,239.00	
Soil quality: Clayey sand								
Soil condition: Dry and loose								
Soil colour: Brown								
Weather: Sunny								
						Time		
						Date: 17/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: TRUNK PIPELINE					**Location: km 1+500**			
E559761.9302					N9559089.029			Elev. 72.802m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	49.2	7190	4.2076	146	61,430.96	
1.0	0.5	1.5	60.8	2550	6.28	41.9	26,313.20	
2.0	1.0	3.0	85.5	1410	12.56	16.4	20,598.40	
3.0	1.5	4.5	47.8	239	18.84	5.01	9,438.84	
4.0	2.0	6.0	48.3	117	25.12	2.43	6,104.16	
5.0	2.5	7.5	23.9	33.5	31.4	1.4	4,396.00	
Soil quality: Clayey sand								
Soil condition: Dry and medium dense								
Soil colour: Brown								
Weather: Sunny								
							Time	
							Date: 17/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: TRUNK PIPELINE					**Location: km 2+000**			
E559778.6948					N9558597.605			Elev. 84.874m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	*ρs* (Ohm.cm)	
0.67	0.3	1.005	9.97	3180	4.2076	319	134,222.44	
1.0	0.5	1.5	9.97	2550	6.28	256	160,768.00	
2.0	1.0	3.0	9.9	816	12.56	82.4	103,494.40	
3.0	1.5	4.5	8.5	352	18.84	54.2	102,112.80	
4.0	2.0	6.0	7.01	148	25.12	21.1	53,003.20	
5.0	2.5	7.5	7.13	224	31.4	31.4	98,596.00	
Soil quality: Clayey sand								
Soil condition: Loose								
Soil colour: Brown								
Weather: Sunny								
						Time		
						Date: 17/09/2021		
Supervisor:						Sign:		Date:
Customer/Consultant: Dr Kuria						Sign:		Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: TRUNK PIPELINE					**Location: km 2+500**			
E560046.3293					N9558246.064			Elev. 84.441m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1330	4.2076	13.3	5,596.11	
1.0	0.5	1.5	100	542	6.28	5.42	3,403.76	
2.0	1.0	3.0	100	213	12.56	2.13	2,675.28	
3.0	1.5	4.5	100	136	18.84	1.36	2,562.24	
4.0	2.0	6.0	100	116	25.12	1.16	2,913.92	
5.0	2.5	7.5	100	89.6	31.4	0.896	2,813.44	
Soil quality: Sandy clay								
Soil condition: Moist								
Soil colour: Dark brown								
Weather: Sunny								
							Time	
							Date: 17/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: TRUNK PIPELINE					**Location: km 3+000**			
E560446.6238					N9558010.895			Elev. 65.331m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1460	4.19	14.6	6,117.40	
1.0	1.5	1.5	100	933	6.26	9.33	5,840.58	
2.0	1.0	3.0	100	464	12.52	4.64	5,809.28	
4.0	2.0	6.0	100	173	25.04	1.73	4,331.92	
8.0	4.0	12	100	76.3	50.08	0.763	3,821.10	
16	8.0	24	100	37.8	100.16	0.378	3,786.05	
Soil quality: Clay sand								
Soil condition: Loose and dry								
Soil colour: Light brown								
Weather: Sunny								
							Time	
							Date: 24/08/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: TRUNK PIPELINE					**Location: km 3+500**			
E560802.5061					N9558329.97			Elev. 95.201m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	1400	4.2076	14.0	5,890.64	
1.0	0.5	1.5	100	843	6.28	8.42	5,287.76	
2.0	1.0	3.0	100	312	12.56	3.12	3,918.72	
3.0	1.5	4.5	100	182	18.84	1.82	3,428.88	
4.0	2.0	6.0	100	129	25.12	1.29	3,240.48	
5.0	2.5	7.5	100	90.9	31.4	0.908	2,851.12	
Soil quality: Sandy clay								
Soil condition: Dry and dense								
Soil colour: Dark brown								
Weather: Sunny								
							Time	
							Date: 17/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

MZIMA SPRINGS PIPELINE

(Mazeras to West Mainland)

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: TRUNK PIPELINE					**Location: km 0+000**			
E560574.6719					N9560945.153			Elev. 169.643m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	68.8	5290	4.2076	77	32,398.52	
1.0	0.5	1.5	73.8	3110	6.28	42.1	26,438.80	
2.0	1.0	3.0	87.9	1260	12.56	14.3	17,960.80	
3.0	1.5	4.5	67.9	475	18.84	6.99	13,169.16	
4.0	2.0	6.0	70.8	311	25.12	4.4	11,052.80	
5.0	2.5	7.5	63.3	241	31.4	3.8	11,932.00	
Soil quality: Sandy clay								
Soil condition: Dry and dense								
Soil colour: Dark brown								
Weather: Sunny								
							Time	
							Date: 17/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date:

Earth Resistivity Test								
Measurement of earth resistivity Four-terminal method (WENNER METHOD)					Test Report No:			Contract No:
Customer: MIBP					Wenner Test No:			
Project: TRUNK PIPELINE					**Location: km 0+500**			
E560703.0158					N9560502.148			Elev. 129.880m
Measuring section					Calculated			Remarks
a (m)	0.5 a (m)	1.5 a (m)	I (mA)	V (mV)	2 a π (m)	R (Ohm)	ρs (Ohm.cm)	
0.67	0.3	1.005	100	4900	4.2076	49.0	20,617.24	
1.0	0.5	1.5	100	2450	6.28	24.5	15,386.00	
2.0	1.0	3.0	100	710	12.56	7.1	8,917.60	
3.0	1.5	4.5	100	453	18.84	4.53	8,534.52	
4.0	2.0	6.0	100	298	25.12	2.96	7,435.52	
5.0	2.5	7.5	100	208	31.4	2.08	6,531.20	
Soil quality: Sandy clay								
Soil condition: Dry and dense								
Soil colour: Dark brown								
Weather: Sunny								
							Time	
							Date: 17/09/2021	
Supervisor:							Sign:	Date:
Customer/Consultant: Dr Kuria							Sign:	Date: