APPENDIX D4.1

GEOTECHNICAL INVESTIGATION FOR TOWNSHIP ESTABLISHMENT ACORN CITY URBAN MIXED-USE DEVELOPMENT.

DAVEL & VAN HUYSSTEEN
CONSULTING ENGINEERING GEOLOGISTS

REPORT DVH-20-28 REV.2

GEOTECHNICAL INVESTIGATION FOR TOWNSHIP REZONING, ACORN CITY URBAN MIXED-USE DEVELOPMENT

GEOTECHNICAL REPORT

February 2022

Prepared for:
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Fourways
2055

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EXECUTIVE SUMMARY

The following key points are considered pertinent to the current report.

- The site is underlain by medium to coarse grained quartz-feldspar-biotite gneiss of the Swazian Erathem.
- Two geotechnical soils zones, Zone S and Zone C2 have been identified across the area of investigation.
- No perched water table or zones of seepage were intersected in any of the test pits excavated across the site at the time of the fieldwork.
- Conventional and / or deeper than normal strip / spread foundations could be employed for the structures across Zone S.
- Special foundation procedures such as reinforced concrete raft foundations or suitably designed piled foundations would be required for the structures across Zone C2.
- The area of investigation (Zone S and Zone C2) classifies as soft excavation material to depths in excess of 3,0m.
- The upper in situ soils (hillwash, pebble marker and reworked / residual granite) are considered suitable for use as poor quality general fill only.

DZANA INVESTMENTS (PTY) LTD

GEOTECHNICAL INVESTIGATION FOR TOWNSHIP REZONING
ACORN CITY URBAN MIXED-USE DEVELOPMENT

GEOTECHNICAL REPORT

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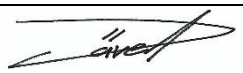
DVH CONSULTING QUALITY VERIFICATION		DAVEL & VAN HUYSSTEEN CONSULTING ENGINEERING GEOLOGISTS
	PREPARED BY	***REVIEWED BY***
ORIGINAL	Mr J Davel	Mr J van Huyssteen
DATE	February 2022	February 2022
SIGNATURE		

1 INTRODUCTION

1.1 General

DVH Consulting was appointed by Dzana Investments (Pty) Ltd in May 2020 to undertake a geotechnical investigation for the township rezoning for the proposed Acorn City Urban Mixed-Use Development, Acornhoek. This after DVH Consulting had on 1 March 2020 provided Mr J Oosthuizen of L&S Consulting Engineers with a cost proposal (Q050-2020) for the geotechnical investigation.

The Acorn City Urban Mixed-use development will comprise retail, commercial and residential components as well as the associated internal road infrastructure. Exact earthworks details are unknown at this stage.

1.2 Terms of Reference

The terms of reference for the investigation are as follow:

i) to establish in broad terms the nature and relevant engineering properties of the upper soil and rock strata underlying the site.

ii) to comment on suitable excavation procedures for the installation of services.

iii) to provided preliminary recommendations related to the suitability of the on-site soils for used as construction materials for bulk fill terraces and as layerworks for access roads and parking areas.

iv) to present general foundation recommendations for the proposed development.

v) to comment on any other geotechnical aspects as these may affect the development.

2 SITE LOCALITY AND DESCRIPTION

The area of investigation covers approximately 52 hectares and is situated on a large portion of open land immediately east of the R40 road, approximately 3km south of the existing Acornhoek Mall. The topography of the site is variable with the eastern portions of the site sloping generally towards the south east while the western portions of the site contain two shallow valleys which act as areas of preferential drainage and slope towards the west. The site is covered by veld grass and areas of thick bush. The site locality is presented in Figure 1 below.

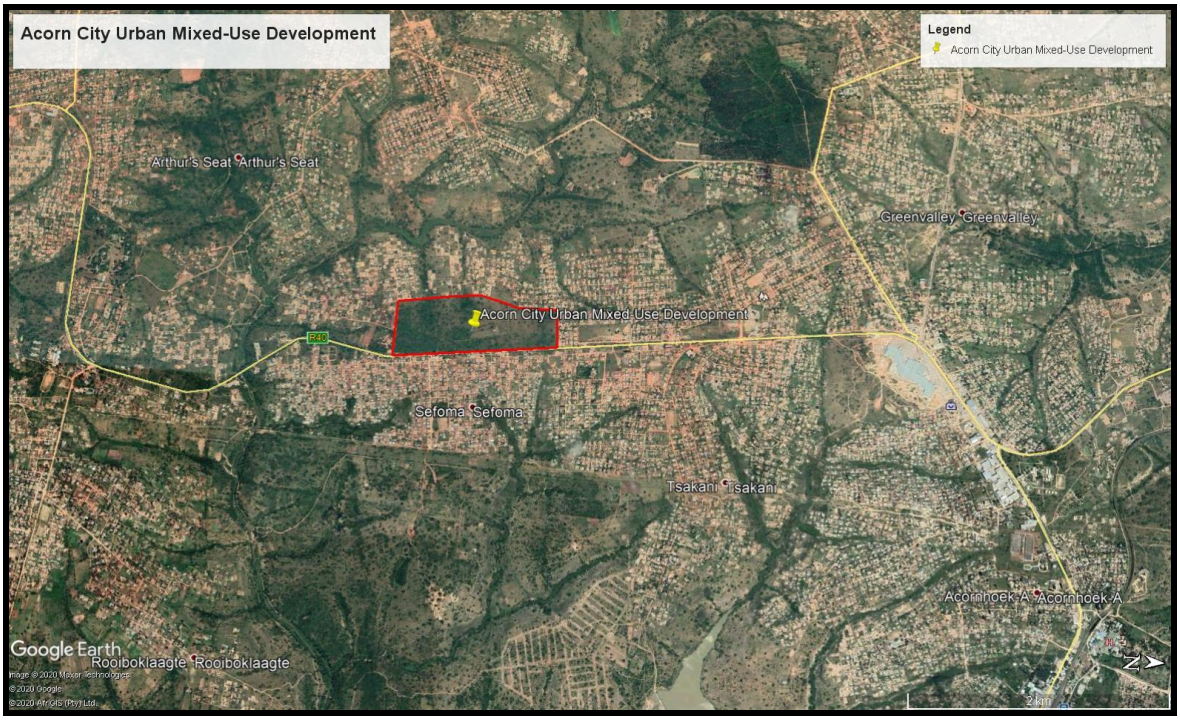


Figure 1. Site Locality, Acorn City Urban Mixed-use Development.

3 METHOD OF INVESTIGATION

3.1 Fieldwork

The fieldwork operation was carried out on 1 and 2 June 2020 utilising a JCB 3CX tractor-loader-backhoe (backactor). The backactor excavated thirty-two test pits (TP1, TP3 to TP8, TP10, TP12 to TP27 and TP29 to TP36) across the area of investigation where access to the machine was possible. Test pits TP2, TP9, TP11 and TP28 were not excavated owing to thick bush preventing access to the test pit positions. The test pits were excavated to refusal of the backactor or until the excavation limit of the machine was obtained at 3,0m. A qualified engineering geologist profiled all the test pit excavations in situ and where necessary took

disturbed and undisturbed soil samples. The soil samples were submitted to Civilab (SANAS Accredited) for the required laboratory testing. The positions of the test pits are shown on the site plan enclosed in Appendix A. The recorded test pit soil profiles are presented in Appendix B. The test pit coordinates are included in Appendix B.

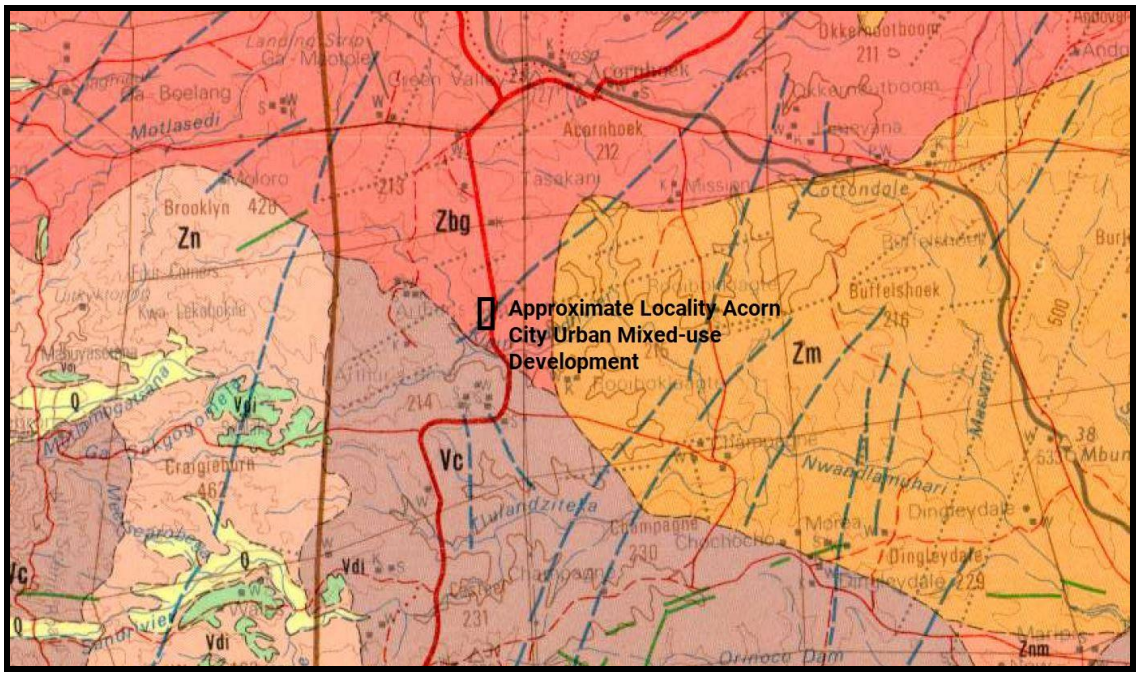
3.2 Laboratory Testing

The following laboratory testing has been carried out on the soil samples recovered during the fieldwork operation. The laboratory test results have been used to confirm the suitability of the on-site soils for use as construction materials and to identify any problematic soil parameters related to the in-situ soils.

Test Description	Test Methods
Atterberg limits and particle size distribution	SANS 3001 GR1, SANS 3001 GR3, SANS 3001 GR10
Moisture/Density and California Bearing Ratio (CBR) tests to evaluate compaction and strength characteristics	SANS 3001 GR30, SANS 3001 GR40
pH of Soil	TMH1 A20
Conductivity of Saturated Soil Paste	TMH1 A21T
Collapse Potential Consolidometer	BS 1377 Part 5

The laboratory test results are summarised in Table 1, Section 7. The full set of laboratory test results is presented in Appendix C.

4 REGIONAL & SITE-SPECIFIC GEOLOGY



Key:

Zbg – Grey to pale brown, medium to coarse grained quartz-feldspar-biotite gneiss

Figure 2. Regional Geology Acorn City Urban Mixed-use Development.

According to the available geological maps (1:250 000, 2430 Pilgrims Rest) the area of investigation is underlain by **medium to coarse grained quartz-feldspar-biotite gneiss** of the Swazian Erathem. This was confirmed during the fieldwork operation. Owing to weathering of the gneiss bedrock residual gneiss soils occur across the area of investigation. The upper soil layer comprises a layer of transported hillwash.

Based on the recorded soil profiles, and considering the foundation recommendations presented in Section 6, the site has been subdivided into two geotechnical soil zones.

Geotechnical Soil Zone	General Soil Profile Description
Zone S	Transported Hillwash overlying localised Transported Pebble Marker overlying Reworked Residual Gneiss overlying competent Residual Gneiss.
Zone C2	Transported Hillwash overlying localised Transported Pebble Marker overlying thick potentially collapsible Reworked Residual Gneiss overlying Residual Gneiss.

These geotechnical soil zones are based on the classification systems as provided by the NHBRC Home Builders Manual (2015) and SANS 10400-H Foundations (2012).

The approximate areal extent of each soil zone is shown on the site plan enclosed in Appendix A. The recorded soil profile within each soil zone is described in the following subsections.

4.1 Zone S

Zone S covers the northernmost and western portions of the site, test pits TP1, TP20, TP21, TP22 and TP24 to TP36 refer.

The upper soil horizon within Zone S comprises 0,2m to 0,8m of medium dense intact silty sand of **transported hillwash** origin. The hillwash is locally underlain by medium dense intact silty sand with scattered to abundant quartz gravel. This gravel layer represents the **transported pebble marker** and occurs to depths varying between 0,3m and 0,9m. No pebble marker was noted in test pits TP21, TP25, TP29, TP30 and TP32.

The hillwash and pebble marker are underlain by medium dense / medium dense to dense and locally loose weakly ferruginised silty sand varying to micaceous slightly silty clayey sand representing **reworked residual gneiss**. The reworked residual gneiss extends to depths varying between 0,7m and 2,2m (average depth 1,1m). The reworked residual gneiss is underlain by medium dense / medium dense to dense jointed silty sand / micaceous silty sand **residual gneiss**. The excavation limit of the machine was obtained at 3,0m within the residual gneiss in all of the test pits excavated across Zone S.

4.2 Zone C2

Zone C2 occurs across the eastern and central-northern portions of the site. Test pits TP3 to TP19, TP22 and TP23 refer.

The upper soil layer across Zone C2 comprises medium dense and locally firm intact silty sand / slightly silty clayey sand of **transported hillwash** origin. The hillwash extends to depths of the order of 0,3m to 1,7m (average depth 0,8m) across Zone C2. The hillwash is locally underlain by a medium dense **transported pebble marker**. The pebble marker extends to depths varying between 0,4m and 1,9m in test pits TP3, TP4, TP12 to TP16, TP18, TP19 and TP23. No pebble marker was noted in the remaining test pits across Zone C2.

The hillwash and pebble marker horizons within Zone C2 are underlain by loose to medium dense / medium dense intact micaceous slightly silty clayey sand / micaceous silty sand **reworked residual gneiss**. The reworked residual gneiss generally extends to depths varying between 1,6m and 2,3m but locally extends to depths in excess of 3,0m, the excavation limit of the machine, in test pits TP3, TP17, TP19 and TP22. The reworked residual gneiss is underlain by loose / loose to medium dense jointed micaceous slightly clayey silty sand / silty sand **residual**

gneiss to depths in excess of 3,0m, the excavation limit of the backactor, in those test pits where it occurs across Zone C2.

An exception to the general soil profile within Zone C2 was noted in test pit TP8 where refusal of the backactor was obtained at 1,3m depth upon an apparent gneiss corestone / boulder.

4.3 Groundwater

No perched water table or zones of seepage were noted in any of the test pits excavated across the site (Zone S and Zone C2) at the time of the fieldwork.

5 FOUNDATION RECOMMENDATIONS

5.1 Zone S

Owing to the poor consistency and in-situ soil structure of the hillwash and pebble marker horizons, we are of the opinion that these soil strata would potentially be highly compressible and / or collapsible. These soil layers are thus unsuitable for use as founding horizons for conventional foundations.

Dependant on final earthworks levels **conventional and/ or deeper than normal strip / spread foundations** could be utilised should the foundations be placed upon the underlying medium dense or better reworked residual gneiss. These founding horizons occur at depths varying between 0,2m and 0,9m (average depth 0,5m) below present ground level across Zone S. An allowable bearing pressure of 200kPa could be applied to the above founding horizons.

An allowable bearing pressure of 300kPa could be utilised for the medium dense or better residual gneiss soils occurring across Zone S. This founding horizon occurs at depths varying between 0,4m to 2,2m (average depth 1,2m) below present ground level. Dependant on final earthworks levels **conventional and/ or deeper than normal strip / spread foundations** could be utilised as suitable foundation types.

Settlement analyses have been carried out using the method proposed by Mayne and Poulos, 1999. A Youngs Modulus of 25MPa / 30MPa was assumed for the medium dense reworked / residual gneiss respectively. The settlement analyses indicate that total settlements of the order of 5mm to 10mm could occur for conventional strip / spread foundations under the foundation loads provided above. Differential settlements should be taken as 50% of the total settlements.

5.2 Zone C2

Owing to the poor consistency and in-situ soil structure of the hillwash and pebble marker as well as the thick underlying reworked residual gneiss across Zone C2, we are of the opinion that these soil strata would be potentially highly compressible and / or collapsible. This was confirmed via collapse potential tests carried out on undisturbed samples of the hillwash and reworked residual gneiss. A collapse potential of 2,81% was recorded in the hillwash while collapse potential of between 11,75% and 13,41% were recorded in the reworked residual gneiss under and applied load of 200kPa. According to Schwartz, 1985, these collapse potentials can be classified as moderate to sever trouble.

Furthermore, the underlying residual gneiss across Zone C2 has a poor in situ consistency, loose / loose to medium dense, and is thus regarded as being potentially highly compressible under foundation loading. These soil layers are thus unsuitable for use founding horizons for conventional foundations.

Considering the test pit soil profiles as recorded across Zone C2 it is apparent that special foundation procedures would need to be adopted for the structures within Zone C2.

One of the following foundation solutions could be employed.

i) The structures could be placed upon suitably designed **reinforced concrete raft foundations**. The rafts could be placed at shallow depth within the upper in situ soils. A Modulus of Subgrade Reaction (k) value of 40kPa/mm could be applied to the in-situ soils to facilitate the design of the raft foundations.

ii) The structures could be founded upon suitably designed **piled foundations**. Further geotechnical works in the form of dynamic probe super heavy (DPSH) testing or the in-situ profiling of large diameter augered trial holes would be required to determine suitable pile types and pile founding depths.

6 EXCAVATION PROCEDURES

The site has been evaluated in terms of excavation procedures as defined in the SANS documents (SANS 1200D, DA and DB). Based on the criteria in the SANS documents the area of investigation (Zone S and Zone C2) classifies as **soft excavation** material to depths in excess of 3,0m.

7 MATERIALS USAGE

Laboratory testing has been carried out on the soil samples obtained during the fieldwork in order to evaluate the suitability of the on-site soils for use as construction material in bulk fill operations and as layerworks for access roads and parking areas.

Based on analyses of the laboratory test results as well as a visual assessment from the fieldwork, the following recommendations are considered appropriate to the in-situ soils encountered across the site with regards to the above.

- The upper 150mm of in situ soils across the vegetated portions of the site contains abundant organic matter and is thus unsuitable for use as construction material. This material should be removed to spoil prior to construction commencing. It is envisaged that in the vicinity of large trees, that at least the upper 0,5m of in situ soils, would have to be removed owing to the presence of abundant tree roots. This depth would have to be verified upon commencement of site clearing.

- The in-situ soils across the area of investigation (hillwash, pebble marker and reworked / residual gneiss) are considered suitable for use poor quality bulk fill material only. Owing to the high plasticity indexes of the in-situ soils as well as the high liner shrinkage results, it is envisaged that shrinkage cracks would be observed in the bulk fill platforms should the in-situ soils be utilised as bulk fill material. A cover layer of good quality bulk fill would therefore be required to form the upper portions of the bulk fill platforms.

Based on the above it is anticipated that it would be necessary to import material onto site for use in the construction of bulk fill platforms and as layerworks for surface beds, access roads and parking areas. This material should be of minimum G7 quality.

Table 1. Summary of Laboratory Test Results

Test Pit	Depth (m)	Soil Horizon	Grading Modulus	Atterberg Limits			Max. Dry Density (kg/m³)	Optimum Moisture Content (%)	Swell (%)	California Bearing Ratio (CBR) (%)			Materials Classification	
				Liquid Limit (LL)	Plasticity Index (PI)	Linear Shrinkage (%)				90	93	95	TRH-14	COLTO
TP4	0,1 – 1,5	Hillwash / Reworked Residual Gneiss	1,5	46	22	10	1745	17,3	0,6	9	12	14	G9	NONE
TP7	0,1 – 1,5	Hillwash / Reworked Residual Gneiss	1,4	47	23	10,5	1697	18,1	0,9	5	6	7	G10	NONE
TP30	1,1 – 3,0	Residual Gneiss	2,5	46	23	8,5	2000	9,4	0,3	26	33	37	G8	NONE
TP16	0,1 – 1,5	Hillwash / Reworked Residual Gneiss	1,5	49	24	10,5	1728	17,4	1,2	7	8	9	G9	NONE
TP32	0,1 – 1,0	Hillwash / Residual Gneiss	1,9	38	18	8	1941	10,4	0,1	22	24	26	G8	NONE
TP5	1,1 – 1,5	Reworked Residual Gneiss	1,25	45	21	9,5	NA	NA	NA	NA	NA	NA	NA	NA
TP8	0,1 – 1,3	Hillwash	0,85	45	22	10	NA	NA	NA	NA	NA	NA	NA	NA
TP12	0,4 – 2,1	Reworked Residual Gneiss	0,86	54	28	11,5	NA	NA	NA	NA	NA	NA	NA	NA
TP13	0,1 – 0,9	Hillwash	0,85	47	23	10,5	NA	NA	NA	NA	NA	NA	NA	NA
TP15	0,4 – 2,1	Reworked Residual Gneiss	0,84	47	23	10	NA	NA	NA	NA	NA	NA	NA	NA
TP18	2,3 – 3,0	Residual Gneiss	1,05	43	20	8	NA	NA	NA	NA	NA	NA	NA	NA
TP19	0,5 – 1,6	Hillwash	0,95	50	23	10	NA	NA	NA	NA	NA	NA	NA	NA
TP21	0,9 – 3,0	Residual Gneiss	1,06	45	23	10	NA	NA	NA	NA	NA	NA	NA	NA
TP22	0,1 – 0,9	Hillwash	0,94	45	21	10	NA	NA	NA	NA	NA	NA	NA	NA
TP23	0,5 – 1,6	Reworked Residual Gneiss	0,96	54	27	12	NA	NA	NA	NA	NA	NA	NA	NA
TP26	0,9 – 2,2	Reworked Residual Gneiss	0,84	50	21	9,5	NA	NA	NA	NA	NA	NA	NA	NA
TP27	0,8 – 3,0	Residual Gneiss	1,06	46	19	9	NA	NA	NA	NA	NA	NA	NA	NA
TP31	0,7 – 3,0	Residual Gneiss	1,27	42	24	9,5	NA	NA	NA	NA	NA	NA	NA	NA
TP35	0,7 – 3,0	Residual Gneiss	1,58	40	18	7	NA	NA	NA	NA	NA	NA	NA	NA

7.1 Soil Chemistry

Table 2. Relationship Between Soils Resistivity and Corrosivity of Soils to buried Metals.

Soil Resistivity (ohm.cm)	Corrosivity	Conductivity (mSm^{-1})
0 – 2000	Very Corrosive	>50
2000 – 5000	Corrosive	50 – 20
5000 – 10000	Mildly Corrosive	20 – 10
Over 10000	Generally Not	<10

Table 3. Results of Soil Chemistry Tests

Test Pit	Depth (m)	Soil Horizon	pH	Soil Resistivity (ohm.cm)	Conductivity (mSm^{-1})
TP8	0,1 – 1,3	Hillwash	6,2	25000	4
TP12	0,4 – 2,1	Reworked Residual Gneiss	5,7	33333	3
TP13	0,1 – 0,9	Hillwash	5,6	33333	3
TP15	0,4 – 2,1	Reworked Residual Gneiss	5,9	33333	3
TP18	2,3 – 3,0	Residual Gneiss	6,1	25000	4
TP21	0,9 – 3,0	Residual Gneiss	6,2	20000	5
TP22	0,1 - 0,9	Hillwash	5,7	33333	3
TP23	0,5 – 1,6	Reworked Residual Gneiss	5,9	39370	1
TP26	0,9 – 2,2	Reworked Residual Gneiss	6,1	20000	5
TP27	0,8 – 3,0	Residual Gneiss	6,3	20000	5
TP31	0,7 – 3,0	Residual Gneiss	6,4	25000	4
TP35	0,7 – 3,0	Residual Gneiss	6,6	25000	4

Based on Table 2 and Table 3 we can see that the in-situ soils across the area of investigation are considered to non-corrosive to buried concrete and steel. As such no protective measures would be required for the foundations and buried services associated with the future development of the site.

8 GENERAL

The following comments are considered relevant to the current investigation.

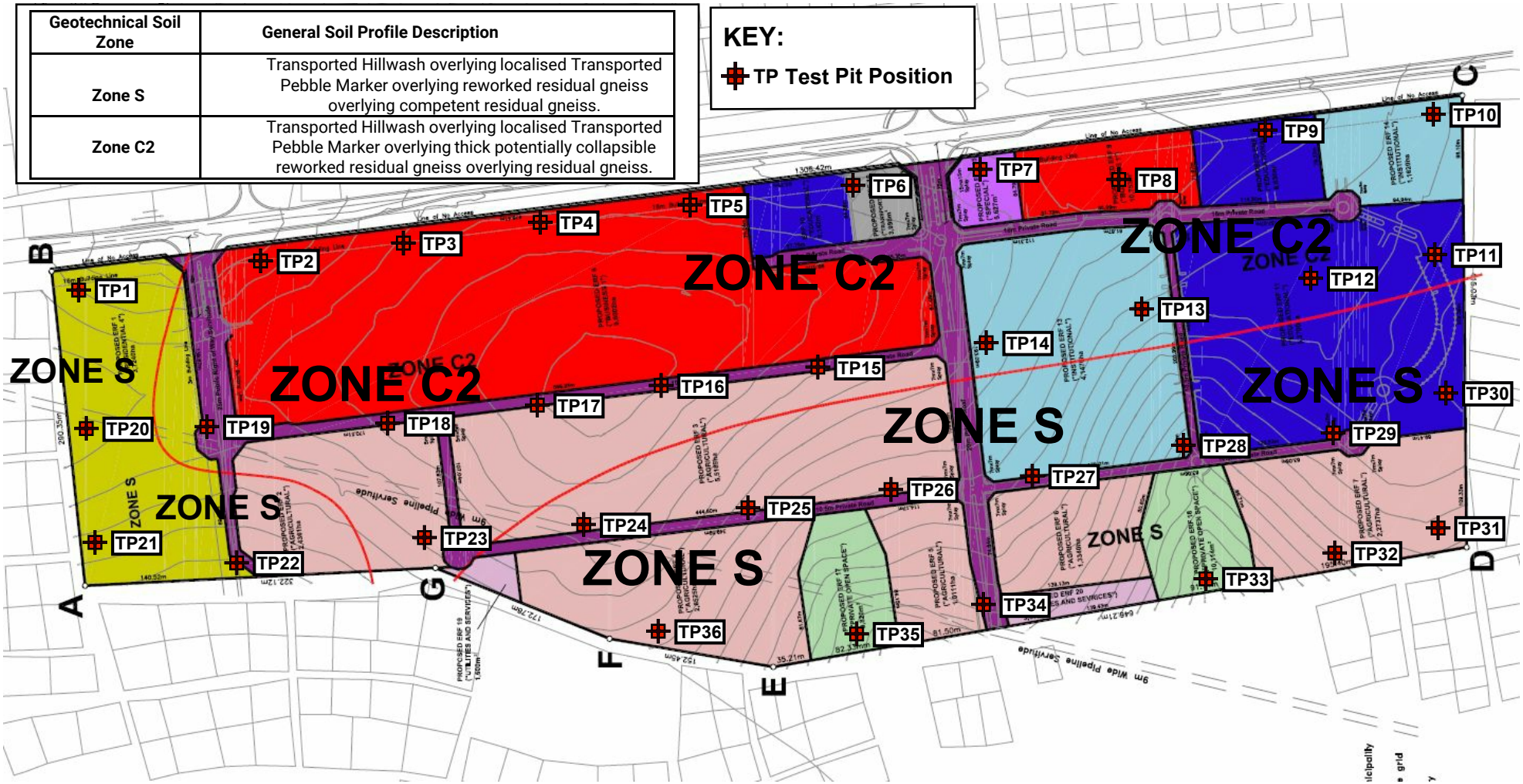
- The current investigation and report are of a general nature, as such they should not be utilised for design purposes. A further detailed design-level geotechnical investigation would need to be undertaken in order to accurately define the geotechnical zonal boundaries and to determine the depths to the recommended founding layers for individual stands. In addition, further laboratory testing would need to be carried out on the in-situ soils across the site in order to determine their suitability for use as construction materials.

- A sperate letter report (Report DVH-21-108 Evaluation Of Founding Conditions & Excavatibility for Proposed Fuel Station, Acorn City) has been compiled specifically for the propose fuel station development at Acorn City. This is presented in Appendix D of the current report and should be read in conjunction with the current report.

Geotechnical Soil Zone	General Soil Profile Description
Zone S	Transported Hillwash overlying localised Transported Pebble Marker overlying reworked residual gneiss overlying competent residual gneiss.
Zone C2	Transported Hillwash overlying localised Transported Pebble Marker overlying thick potentially collapsible reworked residual gneiss overlying residual gneiss.

KEY:

TP Test Pit Position



PROJECT: DVH-20-28
ACORN CITY URBAN MIXED USE DEVELOPMENT

JUNE 2020

SITE PLAN INDICATING LOCATIONS OF TEST PIT EXCAVATIONS

DAVEL & VAN HUYSSTEEN
CONSULTING ENGINEERING GEOLOGISTS

DVH

L&S Consulting
Acorn City

HOLE No: TP01
Sheet 1 of 1

JOB NUMBER: 20-28TP

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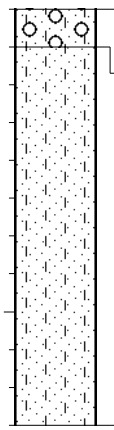

0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.20 As above but contains abundant quartz gravel. Pebble Marker.

0.30 Moist blotched orange red brown medium dense to dense ferruginised silty sand. Reworked residual gneiss with zones of residual gneiss.

1.30 Moist orange brown speckled off white flecked gold medium dense jointed micaceous slightly clayey silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP01

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L&S Consulting
Acorn City

HOLE No: TP03
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20

0.00 Moist dark brown medium dense to dense intact silty sand. Hillwash.

0.60 As above but contains abundant quartz gravel. Pebble Marker.

0.70 Moist dark red brown flecked gold medium dense intact micaceous slightly silty clayey sand. Reworked residual gneiss.

2.60 As above but contains abundant zones of residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP03

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L&S Consulting
Acorn City

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Sheet 1 of 1

JOB NUMBER: 20-28TP

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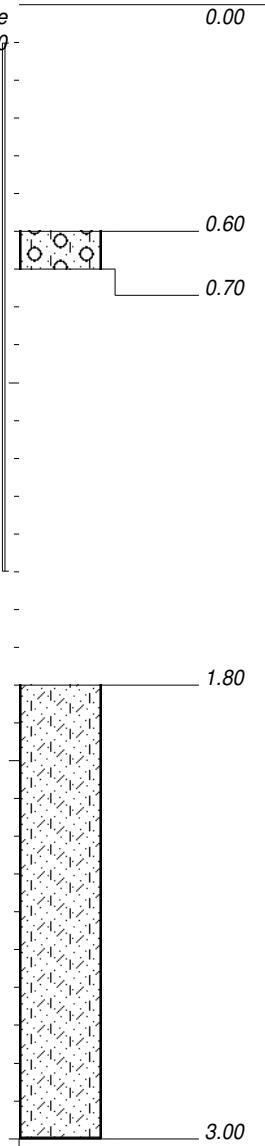
0.1--1.5m



0.00 Moist dark red brown medium dense to dense intact silty sand. Hillwash.

0.60 As above but contains abundant quartz gravel. Pebble Marker.

0.70 Moist red brown medium dense to dense ferruginised slightly silty clayey sand. Reworked residual gneiss.

1.80 Moist light brown speckled off white orange loose jointed micaceous slightly clayey silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.
2) No evidence of water.
3) Disturbed sample taken at 0,1--1,5m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

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L&S Consulting
Acorn City

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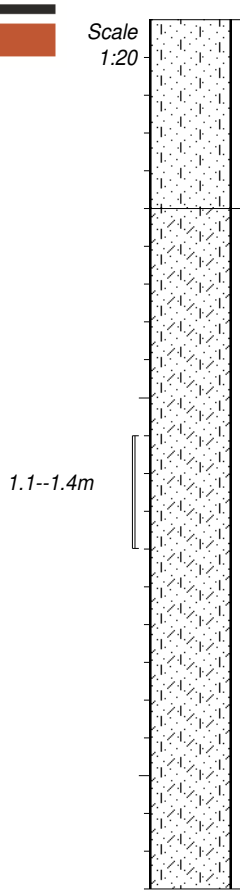

0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.50 Moist dark red brown flecked gold loose intact micaceous slightly silty clayey sand. Reworked residual gneiss.

2.30 Moist light brown speckled off white loose jointed micaceous slightly clayey silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

3) Undisturbed and disturbed samples taken at 1,1--1,4m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP05

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Acorn City

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Sheet 1 of 1

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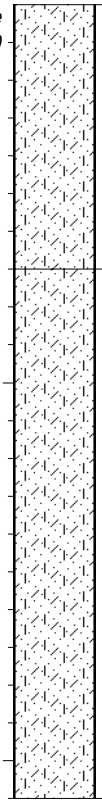
Scale 1:20



0.00 Moist dark brown medium dense intact slightly clayey silty sand. Hillwash.

0.70 Moist dark red brown loose to medium dense intact micaceous slightly silty clayey sand. Reworked residual gneiss.

2.10 Moist orange brown speckled off white brown loose jointed micaceous slightly clayey silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP06

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

L&S Consulting
Acorn City

HOLE No: TP07
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20

0.1--1.5m

0.00 Moist dark red brown firm intact & pinholed slightly silty clayey sand. Hillwash.

1.10 Moist red brown loose to medium dense intact & pinholed slightly silty clayey sand. Reworked residual gneiss with scattered zones of residual gneiss.

2.30 Moist orange brown speckled off white brown flecked gold loose jointed micaceous slightly clayey silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

3) Disturbed sample taken at 0,1--1,5m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP07

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

DVH

L&S Consulting
Acorn City

HOLE No: TP08
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20

0.00 Moist dark red brown medium dense to dense intact slightly silty clayey sand. Hillwash.

0.1--1.2m

1.30

NOTES

1) Refusal at 1,3m on apparent large granite corestone?

2) No evidence of water.

3) Disturbed sample taken at 0,1--1,2m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP08

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

DVH

L&S Consulting
Acorn City

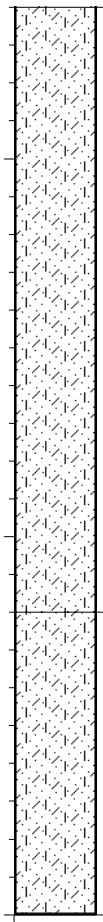
HOLE No: TP10
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20

0.00 Moist dark brown medium dense intact slightly silty clayey sand. Hillwash.

0.60 Moist dark red brown loose to medium dense intact micaceous slightly silty clayey sand. Reworked residual gneiss.



2.20 Moist orange brown speckled off white brown loose jointed micaceous slightly clayey silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP10

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

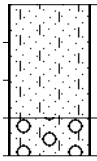
DVH

L&S Consulting
Acorn City

HOLE No: TP12
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.30 As above but contains scattered quartz gravel. Pebble Marker.

0.40 Moist dark red brown flecked gold medium dense intact micaceous slightly silty clayey sand. Reworked residual gneiss.

0.4--2.1m

2.10 Moist orange brown speckled off white flecked gold loose jointed micaceous silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

3) Disturbed sample taken at 0,4--2,1m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP12

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

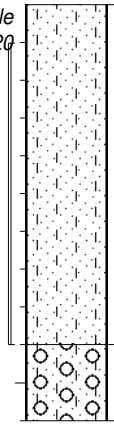
DVH

L&S Consulting
Acorn City

HOLE No: TP13
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.1--0.9m

0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.90 As above but contains abundant quartz gravel. Pebble Marker.

1.10 Moist dark red brown medium dense intact silty sand. Reworked residual gneiss.

2.10 Moist light brown speckled off white dark brown loose / loose to medium dense jointed silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.
2) No evidence of water.
3) Disturbed sample taken at 0,1--0,9m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP13

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

DVH

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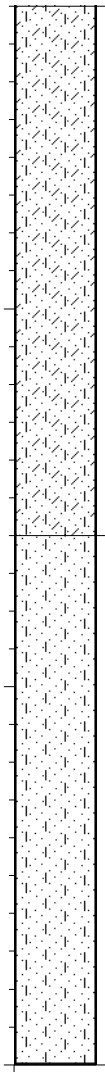
Acorn City

HOLE No: TP14
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark red brown firm intact & pinholed clayey silty sand. Hillwash.

0.20 Moist red orange brown flecked gold medium dense intact / weakly ferruginised micaceous slightly silty clayey sand. Reworked residual gneiss.

1.60 Moist light brown speckled off white dark brown flecked gold loose jointed micaceous silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP14

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

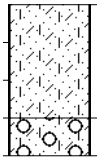
DVH

L&S Consulting
Acorn City

HOLE No: TP15
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark brown medium dense to dense intact slightly silty clayey sand. Hillwash.

0.30 As above but contains abundant quartz gravel. Pebble Marker.

0.40 Moist dark red brown flecked gold loose to medium dense intact micaceous slightly silty clayey sand. Reworked residual gneiss.

0.4--2.1m

2.10 Moist light brown speckled off white flecked gold medium dense jointed micaceous slightly clayey silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

3) Disturbed sample taken at 0,4--2,1m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP15

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

DVH

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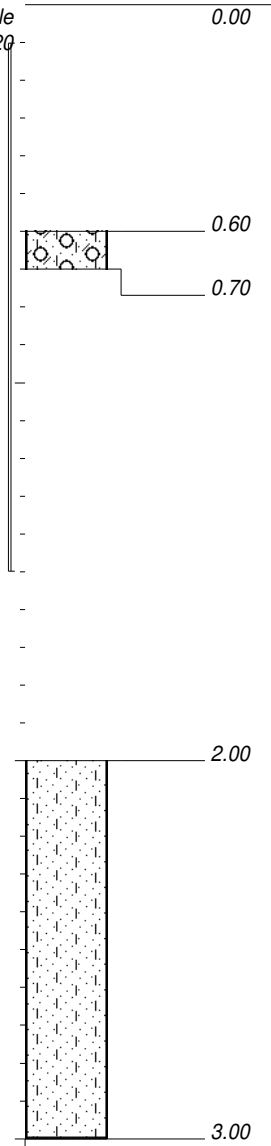
Acorn City

HOLE No: TP16
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20

0.1--1.5m



0.00 Moist dark brown medium dense intact slightly silty clayey sand. Hillwash.

0.60 As above but contains scattered quartz gravel. Pebble Marker.

0.70 Moist dark red brown loose to medium dense intact slightly silty clayey sand. Reworked residual gneiss.

2.00 Moist light brown speckled orange off white loose jointed silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.
2) No evidence of water.
3) Disturbed sample taken at 0,1--1,5m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP16

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

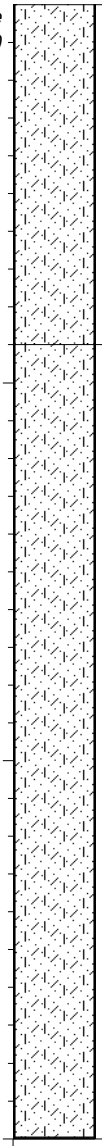
DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

L&S Consulting
Acorn City

HOLE No: TP17
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark red brown firm intact clayey silty sand. Hillwash.

0.90 Moist dark red brown with zones of orange brown loose to medium dense and medium dense in places intact slightly silty clayey sand. Reworked residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP17

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

L&S Consulting
Acorn City

HOLE No: TP18
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20

0.00 Moist dark brown medium dense intact slightly clayey silty sand. Hillwash.

0.80 As above but contains scattered quartz gravel. Pebble Marker.

0.90 Very moist dark red brown loose intact micaceous slightly silty clayey sand. Reworked residual gneiss.

2.30 Moist olive brown speckled off white orange flecked gold loose jointed micaceous silty sand. Residual gneiss.

2.3--3.0m

3.00

NOTES

1) No refusal at 3,0m.
2) No evidence of water.
3) Disturbed sample taken at 2,3--3,0m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel
TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020
DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP18

DVH

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Acorn City

HOLE No: TP19
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20

0.00 Moist dark red brown medium dense intact slightly silty clayey sand. Hillwash.

1.0--1.2m

1.70 As above but contains scattered fine to coarse quartz gravel. Pebble Marker.

1.90 Moist dark red brown loose to medium dense intact & pinholed slightly silty clayey sand. Reworked residual gneiss with zones of residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

3) Undisturbed and disturbed samples taken at 1,0--1,2m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP19

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

DVH

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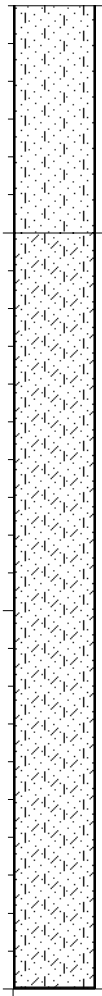
Acorn City

HOLE No: TP20
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.20 As above but contains abundant quartz gravel. Pebble Marker.

0.40 Moist red brown medium dense weakly ferruginised silty sand. Reworked residual gneiss.

1.00 Moist orange brown speckled off white medium dense jointed micaceous slightly clayey silty sand. Residual gneiss.

3.00

NOTES

1) N refusal at 3,0m.

2) No evidence of water.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP20

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

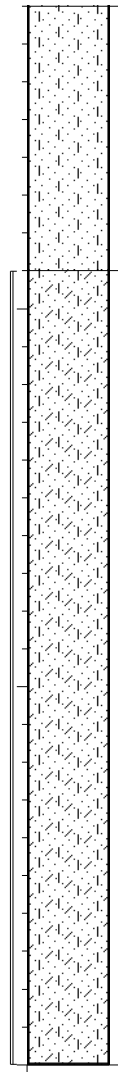
DVH

L&S Consulting
Acorn City

HOLE No: TP21
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.20 Moist blotched red orange brown medium dense to dense ferruginised silty sand. Reworked residual gneiss.

0.90 Moist orange brown speckled off white flecked gold medium dense to dense jointed micaceous slightly clayey silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.
2) No evidence of water.
3) Disturbed sample taken at 0,9--3,0m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel
TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020
DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP21

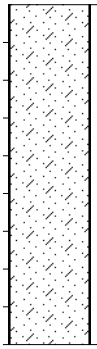
DVH

L&S Consulting
Acorn City

HOLE No: TP22
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark red brown firm intact clayey sand. Hillwash.

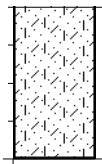
0.90

0.1--1.9m

1.2--1.5m

Moist dark red brown loose intact and pinholed slightly silty clayey sand. Reworked residual gneiss.

2.60



As above but contains zones of residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.
2) No evidence of water.
3) Disturbed sample taken at 0,1--1,9m.
4) Undisturbed sample taken at 1,2--1,5m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP22

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

DVH

L&S Consulting
Acorn City

HOLE No: TP23
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20

0.5--1.6m

0.00	Moist dark brown medium dense intact silty sand. Hillwash.
0.40	As above but contains scattered quartz gravel. Pebble Marker.
0.50	Moist blotched red orange brown medium dense intact / weakly ferruginised micaceous slightly silty sandy clay. Reworked residual gneiss.
1.60	Moist light brown speckled off white flecked gold medium dense jointed micaceous slightly clayey silty sand. Residual gneiss.
1.90	As above but loose.
3.00	

NOTES

1) No refusal at 3,0m.
2) No evidence of water.
3) Disturbed sample taken at 0,5--1,6m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP23

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

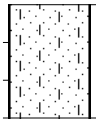
DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

L&S Consulting
Acorn City

HOLE No: TP24
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.30 As above but contains abundant fine to coarse quartz gravel. Pebble Marker.

0.50 Moist dark brown mottled and blotched orange brown medium dense intact / weakly ferruginised slightly silty clayey sand. Reworked residual gneiss with scattered zones of residual gneiss.

1.00 Moist orange brown speckled off white flecked gold medium dense jointed micaceous slightly clayey silty sand. Residual gneiss.

2.50

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP24

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

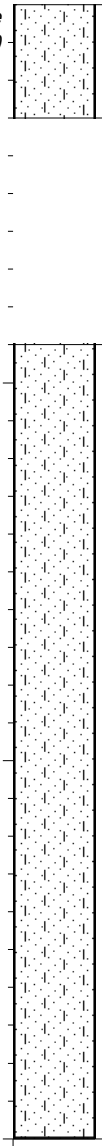
DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

L&S Consulting
Acorn City

HOLE No: TP25
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.30 Moist blotched dark brown orange medium dense intact / weakly ferruginised slightly silty clayey sand. Reworked residual gneiss.

0.90 Moist orange brown speckled off white flecked gold medium dense jointed micaceous silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP25

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

DVH

L&S Consulting
Acorn City

HOLE No: TP26
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20

0.00 Moist dark brown medium dense to dense intact silty sand. Hillwash.

0.80 As above but contains abundant quartz gravel. Pebble Marker.

0.90 Moist red orange brown medium dense to dense weakly ferruginised slightly silty clayey sand. Reworked residual gneiss.

0.9--2.2m

2.20 Moist light brown speckled off white medium dense jointed micaceous slightly clayey silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.
2) No evidence of water.
3) Disturbed sample taken at 0,9--2,2m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel
TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020
DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP26

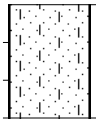
DVH

L&S Consulting
Acorn City

HOLE No: TP27
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.30 As above but contains abundant fine to coarse quartz gravel. Pebble Marker.

0.50 Moist dark brown red orange brown medium dense ferruginised silty sand. Reworked residual gneiss with zones of residual gneiss.

0.80 Moist light brown speckled off white medium dense jointed micaceous slightly clayey silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP27

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

DVH

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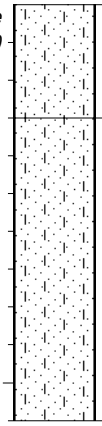
Acorn City

HOLE No: TP29
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.30 Moist dark red brown blotched orange brown medium dense to dense ferruginised micaceous silty sand. Reworked residual gneiss with zones of residual gneiss.

1.10 Moist orange brown speckled off white brown flecked gold medium dense to dense jointed micaceous silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP29

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

DVH

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Acorn City

HOLE No: TP30
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20

0.00 Moist red brown medium dense intact silty sand. Hillwash.

0.20 Moist red brown medium dense intact silty sand. Reworked residual gneiss.

1.10 Moist orange brown speckled off white medium dense jointed micaceous silty sand. Residual gneiss.

1.1--3.0m

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

3) Disturbed sample taken at 1,1--3,0m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP30

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

DVH

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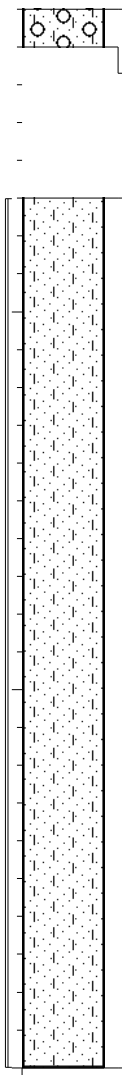
Acorn City

HOLE No: TP31
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark brown loose to medium dense intact silty sand. Hillwash.

0.20 As above but contains abundant quartz gravel. Pebble Marker.

0.30 Moist dark brown blotched red orange medium dense intact micaceous silty sand. Reworked residual gneiss with zones of residual gneiss.

0.70 Moist red orange brown flecked gold medium dense jointed micaceous silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.
2) No evidence of water.
3) Disturbed sample taken at 0,7--3,0m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP31

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

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Acorn City

HOLE No: TP32
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20

0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.40 Moist red orange brown speckled off white flecked gold medium dense jointed micaceous silty sand. Residual gneiss with zones of reworked residual gneiss.

0.1--1.0m

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

3) Disturbed sample taken at 0,1--1,0m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP32

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

DVH

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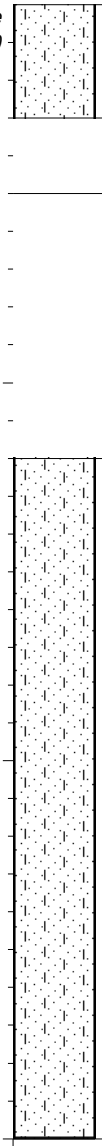
Acorn City

HOLE No: TP33
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.30 As above but contains scattered fine to coarse quartz gravel. Pebble Marker.

0.50 Moist red orange brown medium dense intact silty sand. Reworked residual gneiss.

1.20 Moist orange brown speckled off white dark brown medium dense jointed micaceous silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP33

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

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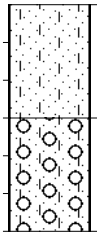
HOLE No: TP34
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.30 As above but contains abundant fine to coarse quartz gravel. Pebble Marker.

0.60 Moist dark brown loose to medium dense intact silty sand. Reworked residual gneiss.

1.10 Moist orange brown speckled off white flecked gold medium dense jointed micaceous silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP34

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

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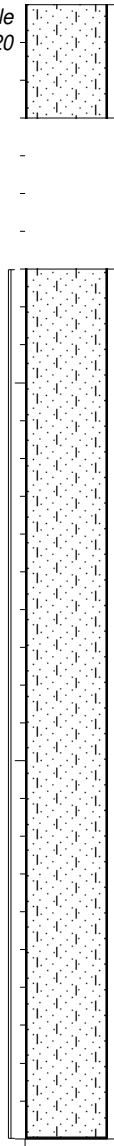
Acorn City

HOLE No: TP35
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.7--3.0m

0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.30 Moist dark brown blotched orange brown medium dense to dense intact / ferruginised slightly silty clayey sand. Reworked residual gneiss.

0.70 Moist orange brown speckled off white red medium dense jointed silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.
2) No evidence of water.
3) Disturbed sample taken at 0,7--3,0m.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP35

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

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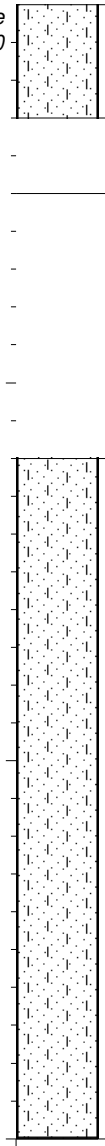
HOLE No: TP36
Sheet 1 of 1

JOB NUMBER: 20-28TP

Scale 1:20



0.00 Moist dark brown medium dense intact silty sand. Hillwash.

0.30 As above but contains abundant fine to coarse quartz gravel. Pebble Marker.

0.50 Very moist dark brown blotched orange red medium dense ferruginised slightly silty clayey sand. Reworked residual gneiss.

1.20 Moist orange brown speckled off white flecked gold medium dense to dense jointed micaceous silty sand. Residual gneiss.

3.00

NOTES

1) No refusal at 3,0m.

2) No evidence of water.

CONTRACTOR :
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : J Davel

INCLINATION :
DIAM :
DATE :
DATE : 01/06/2020

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: TP36

TYPE SET BY : JvH
SETUP FILE : STANDARD.SET

DATE : 01/07/2020 12:03
TEXT : ..iles\2028TPAcornCity.txt

DVH-20-28 Acorn City Mixed Use Development – Test Pit Coordinates (WGS84 Lo. 31)

Test Pit Number	Y Coordinate	X Coordinate
TP01	Y-004148	X2725287
TP02	Y-004167	X2725428
TP03	Y-004186	X2725571
TP04	Y-004206	X2725718
TP05	Y-004220	X2725855
TP06	Y-004238	X2725989
TP07	Y-004255	X2726127
TP08	Y-004228	X2726267
TP09	Y-004289	X2726411
TP10	Y-004293	X2726531
TP11	Y-004167	X2726535
TP12	Y-004146	X2726390
TP13	Y-004125	X2726249
TP14	Y-004104	X2726101
TP15	Y-004081	X2725958
TP16	Y-004065	X2725817
TP17	Y-004049	X2725673
TP18	Y-004033	X2725533
TP19	Y-004018	X2725398
TP20	Y-004010	X2725299
TP21	Y-003923	X2725297
TP22	Y-003880	X2725456
TP23	Y-003895	X2725593
TP24	Y-003919	X2725733
TP25	Y-003940	X2725866
TP26	Y-003961	X2726002
TP27	Y-003981	X2726144
TP28	Y-003997	X2726282
TP29	Y-004011	X2726406
TP30	Y-004024	X2726539
TP31	Y-003903	X2726546
TP32	Y-003884	X2726408
TP33	Y-003859	X2726264
TP34	Y-003839	X2726104
TP35	Y-003822	X2725950
TP36	Y-003837	X2725784

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Civil Engineering Testing Laboratories

Client	:	DAVEL & VAN HUYSSTEEN CONSULTING (PTY)			
Address	:	9 LANGWA STREET	**Client Reference**	:	
	:	STRIJDOMPARK	**Order No.**	:	Justin
	:	RANDBURG			
Attention	:		**Date Received**	:	03/06/2020
Facsimile	:		**Date Tested**	:	03/06/2020 - 26/06/2020
E-mail	:	justin.davel@dvhgeotech.co.za; justin.vanhuy	**Date Reported**	:	26/06/2020
Project	:	Acorn City			
Project No.	:	2020-B-553	**Report Status**	:	Final
			Page	:	1 of 28

Herewith please find the test report(s) pertaining to the above project. All tests were conducted in accordance with prescribed test method(s). Information herein consists of the following:

Test(s) conducted / Item(s) measured	Qty.	Test Method(s)	Authorized By**	Page(s)
Moisture Density Relationship	5.000	SANS 3001 GR30	S Pullen/B Mvubu	21-25
pH of Soil *	12.000	TMH1 A20	B Mvubu	2-13
Conductivity of saturated soil paste *	12.000	TMH1 A21T	B Mvubu	2-13
Atterberg Limits <0.425mm	19.000	SANS 3001 GR10	S Pullen/J Marques/ B Mvubu	14-20, 26-28
Sieve Analysis 0.075mm	19.000	SANS 3001 GR1	S Pullen/J Marques/ B Mvubu	14-20, 26-28
California Bearing Ratio (CBR)	5.000	SANS 3001 GR40	B Mvubu	26-28
Oedometer: Collapse Potential	3.000	BS 1377 Part5	C Pertesen	3Files; 9Pages

Any test results contained in this report and marked with * in the table above are "not SANAS accredited" and are not included in the schedule of accreditation for this laboratory.

Any information contained in this test report pertain only to the areas and/or samples tested. Documents may only be reproduced or published in their full context.

While every care is taken to ensure that all tests are carried out in accordance with recognised standards, neither Civilab (Proprietary) Limited nor its employess shall be liable in any way whatsoever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequences thereof.

All interpretations, Interpolations, Opinions and/or Classifications contained in this report falls outside our scope of accreditation.

The following parameters, where applicable, were excluded from the classification procedure: Chemical modifications, Additional fines, Fractured Faces, Soluble Salts, pH, Conductivity, Coarse Sand Ratio, Durability (COLTO: G4-G9).

The following parameters, where applicable, were assumed: Rock types were assumed to be of an Arenaceous nature with Siliceous cementing material.

Unless otherwise requested or stated, all samples will be discarded after a period of 3 months.

This report is completely confidential between the parties (Civilab and Civilab`s client) and shall not be disclosed to anybody else, unless agreed upon in writing or made publicly available by the client or required to make available by law.

Deviations in Test Methods:

Technical Signatory:	
Signature:	

**All results are authorized electronically by approved managers and/or technical signatories.

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Civil Engineering Testing Laboratories

Client	:	DAVEL & VAN HUYSSTEEN CONSULTING (PTY)	Date Received:	03/06/2020
Project	:	Acorn City	Date Reported:	26/06/2020
Project No	:	2020-B-553	Page No. :	2 of 28

AGGREGATE TEST REPORT

Laboratory Number		4
Field Number		TP8
Client Reference		
Depth (m)		0.1-1.3
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete/Crushed		
Stabilizing Agent		

	% Passing			mm		Finess Modulus			
				mm		Clay Content	SANS 3001 GR3	%	37
				mm		Organic Impurities		Ref.	
				mm		Flakiness Index	Total		
				mm				%	
				mm					
				mm		Average Least Dimension	Manual		
				mm			Machine	mm	
				mm			Computation		
				mm		Aggregate Crushing Value	Dry		
				mm			Wet	%	
				mm			Eth. Glycol		
				mm		10% Fines Aggregate Crushing Test (FACT)	Dry		
				mm			Wet	kN	
				mm			Eth. Glycol		
				mm			Wet/Dry Ratio	%	
				mm		Bulk Density	Loose		
				mm			Compacted	kg/m^3	
				mm		Water Absorption			
								%	
Sand Equivalent, Se									
pH					6.2				
Relative Density of Soils						Bulk Particle Density		kg/m^3	
Durability Mill Index							Aggregate		
Moisture Content				%		Apparent Particle Density			
Compactibility Factor								kg/m^3	
Conductivity				S.m^{-1}	0.004				
Total Water Soluble	Salts			%			Adjusted		
	Sulphates						Relative		
Soluble	Salts			%		LA Abrasion	1000 Revs	%	
	Sulphates						500 Revs		
Soundness	Fine			%		Riedel & Weber			
	Coarse					Akali Silica Reaction		%	
	Fractions			No.		Drying Shrinkage		%	
Methylene Blue Absorption						Wetting Expansion		%	
Soluble Deleterious Impurities				%		Fractured Faces		%	
Chloride Content				%		Coarse Sand Ratio		%	
Low Density Material				%		Shape: Voids		%	
Presence of Sugar						Shell Content		%	
Mill Abrasion						Durability	Ballast		
Treton Value						Eth. Glycol Durability on _ Stone	Concrete		
Vialit Adhesion @	5°C			%			Crushed		
	25°C			%			Seal		

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Client	:	DAVEL & VAN HUYSSTEEN CONSULTING (PTY)	Date Received:	03/06/2020
Project	:	Acorn City	Date Reported:	26/06/2020
Project No	:	2020-B-553	Page No. :	3 of 28

AGGREGATE TEST REPORT

Laboratory Number		6
Field Number		TP12
Client Reference		
Depth (m)		0.4-2.1
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete/Crushed		
Stabilizing Agent		

	% Passing		mm		Finess Modulus				
			mm		Clay Content		SANS 3001 GR3	%	42
			mm		Organic Impurities			Ref.	
			mm		Flakiness Index	Total		%	
			mm						
			mm						
			mm		Average Least Dimension	Manual		mm	
			mm			Machine			
			mm			Computation			
			mm		Aggregate Crushing Value	Dry		%	
			mm			Wet			
			mm			Eth. Glycol			
			mm		10% Fines Aggregate Crushing Test (FACT)	Dry		kN	
			mm			Wet			
			mm			Eth. Glycol			
			mm			Wet/Dry Ratio		%	
			mm		Bulk Density	Loose		kg/m^3	
			mm			Compacted			
			mm		Water Absorption			%	
Sand Equivalent, Se									
pH				5.7					
Relative Density of Soils					Bulk Particle Density			kg/m^3	
Durability Mill Index						Aggregate			
Moisture Content			%		Apparent Particle Density			kg/m^3	
Compactibility Factor									
Conductivity			$S.m^{-1}$	0.003					
Total Water Soluble	Salts		%			Adjusted			
	Sulphates					Relative			
Soluble	Salts		%		LA Abrasion	1000 Revs		%	
	Sulphates					500 Revs			
Soundness	Fine		%		Riedel & Weber				
	Coarse				Akali Silica Reaction			%	
	Fractions		No.		Drying Shrinkage			%	
Methylene Blue Absorption					Wetting Expansion			%	
Soluble Deleterious Impurities			%		Fractured Faces			%	
Chloride Content			%		Coarse Sand Ratio			%	
Low Density Material			%		Shape: Voids			%	
Presence of Sugar					Shell Content			%	
Mill Abrasion					Durability	Ballast			
Treton Value					Eth. Glycol Durability on _ Stone	Concrete			
Vialit Adhesion @	5°C		%			Crushed			
	25°C		%			Seal			

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Client	:	DAVEL & VAN HUYSSTEEN CONSULTING (PTY)	Date Received:	03/06/2020
Project	:	Acorn City	Date Reported:	26/06/2020
Project No	:	2020-B-553	Page No. :	4 of 28

AGGREGATE TEST REPORT

Laboratory Number		7
Field Number		TP13
Client Reference		
Depth (m)		0.1-0.9
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete/Crushed		
Stabilizing Agent		

	% Passing		mm		Finess Modulus				
			mm		Clay Content		SANS 3001 GR3	%	47
			mm		Organic Impurities			Ref.	
			mm		Flakiness Index	Total		%	
			mm						
			mm						
			mm		Average Least Dimension	Manual		mm	
			mm			Machine			
			mm			Computation			
			mm		Aggregate Crushing Value	Dry		%	
			mm			Wet			
			mm			Eth. Glycol			
			mm		10% Fines Aggregate Crushing Test (FACT)	Dry		kN	
			mm			Wet			
			mm			Eth. Glycol			
			mm			Wet/Dry Ratio		%	
			mm		Bulk Density	Loose		kg/m^3	
			mm			Compacted			
			mm		Water Absorption			%	
Sand Equivalent, Se									
pH				5.6					
Relative Density of Soils					Bulk Particle Density			kg/m^3	
Durability Mill Index						Aggregate			
Moisture Content			%		Apparent Particle Density			kg/m^3	
Compactibility Factor									
Conductivity			S.m^{-1}	0.003					
Total Water Soluble	Salts		%			Adjusted			
	Sulphates					Relative			
Soluble	Salts		%		LA Abrasion	1000 Revs		%	
	Sulphates					500 Revs			
Soundness	Fine		%		Riedel & Weber				
	Coarse				Akali Silica Reaction			%	
	Fractions		No.		Drying Shrinkage			%	
Methylene Blue Absorption					Wetting Expansion			%	
Soluble Deleterious Impurities			%		Fractured Faces			%	
Chloride Content			%		Coarse Sand Ratio			%	
Low Density Material			%		Shape: Voids			%	
Presence of Sugar					Shell Content			%	
Mill Abrasion					Durability	Ballast			
Treton Value					Eth. Glycol Durability on _ Stone	Concrete			
Vialit Adhesion @	5°C		%			Crushed			
	25°C		%			Seal			

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Client	:	DAVEL & VAN HUYSSTEEN CONSULTING (PTY)	Date Received:	03/06/2020
Project	:	Acorn City	Date Reported:	26/06/2020
Project No	:	2020-B-553	Page No. :	5 of 28

AGGREGATE TEST REPORT

Laboratory Number		8
Field Number		TP15
Client Reference		
Depth (m)		0.4-2.1
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete/Crushed		
Stabilizing Agent		

	% Passing		mm		Finess Modulus				
			mm		Clay Content		SANS 3001 GR3	%	35
			mm		Organic Impurities			Ref.	
			mm		Flakiness Index	Total		%	
			mm						
			mm						
			mm		Average Least Dimension	Manual		mm	
			mm			Machine			
			mm			Computation			
			mm		Aggregate Crushing Value	Dry		%	
			mm			Wet			
			mm			Eth. Glycol			
			mm		10% Fines Aggregate Crushing Test (FACT)	Dry		kN	
			mm			Wet			
			mm			Eth. Glycol			
			mm			Wet/Dry Ratio		%	
			mm		Bulk Density	Loose		kg/m^3	
			mm			Compacted			
			mm		Water Absorption			%	
Sand Equivalent, Se									
pH				5.9					
Relative Density of Soils					Bulk Particle Density			kg/m^3	
Durability Mill Index						Aggregate			
Moisture Content			%		Apparent Particle Density			kg/m^3	
Compactibility Factor									
Conductivity			S.m^{-1}	0.003					
Total Water Soluble	Salts		%			Adjusted			
	Sulphates					Relative			
Soluble	Salts		%		LA Abrasion	1000 Revs		%	
	Sulphates					500 Revs			
Soundness	Fine		%		Riedel & Weber				
	Coarse				Akali Silica Reaction			%	
	Fractions		No.		Drying Shrinkage			%	
Methylene Blue Absorption					Wetting Expansion			%	
Soluble Deleterious Impurities			%		Fractured Faces			%	
Chloride Content			%		Coarse Sand Ratio			%	
Low Density Material			%		Shape: Voids			%	
Presence of Sugar					Shell Content			%	
Mill Abrasion					Durability	Ballast			
Treton Value					Eth. Glycol Durability on _ Stone	Concrete			
Vialit Adhesion @	5°C		%			Crushed			
	25°C		%			Seal			

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AGGREGATE TEST REPORT

Laboratory Number		10
Field Number		TP18
Client Reference		
Depth (m)		2.3-3.0
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete/Crushed		
Stabilizing Agent		

	% Passing		mm		Finess Modulus				
			mm		Clay Content		SANS 3001 GR3	%	5
			mm		Organic Impurities			Ref.	
			mm		Flakiness Index	Total		%	
			mm						
			mm						
			mm		Average Least Dimension	Manual		mm	
			mm			Machine			
			mm			Computation			
			mm		Aggregate Crushing Value	Dry		%	
			mm			Wet			
			mm			Eth. Glycol			
			mm		10% Fines Aggregate Crushing Test (FACT)	Dry		kN	
			mm			Wet			
			mm			Eth. Glycol			
			mm			Wet/Dry Ratio		%	
			mm		Bulk Density	Loose		kg/m^3	
			mm			Compacted			
			mm		Water Absorption			%	
Sand Equivalent, Se									
pH				6.1					
Relative Density of Soils					Bulk Particle Density			kg/m^3	
Durability Mill Index						Aggregate			
Moisture Content			%		Apparent Particle Density			kg/m^3	
Compactibility Factor									
Conductivity			S.m^{-1}	0.004					
Total Water Soluble	Salts		%			Adjusted			
	Sulphates					Relative			
Soluble	Salts		%		LA Abrasion	1000 Revs		%	
	Sulphates					500 Revs			
Soundness	Fine		%		Riedel & Weber				
	Coarse				Akali Silica Reaction			%	
	Fractions		No.		Drying Shrinkage			%	
Methylene Blue Absorption					Wetting Expansion			%	
Soluble Deleterious Impurities			%		Fractured Faces			%	
Chloride Content			%		Coarse Sand Ratio			%	
Low Density Material			%		Shape: Voids			%	
Presence of Sugar					Shell Content			%	
Mill Abrasion					Durability	Ballast			
Treton Value					Eth. Glycol Durability on _ Stone	Concrete			
Vialit Adhesion @	5°C		%			Crushed			
	25°C		%			Seal			

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AGGREGATE TEST REPORT

Laboratory Number		12
Field Number		TP21
Client Reference		
Depth (m)		0.9-3.0
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete/Crushed		
Stabilizing Agent		

	% Passing		mm		Finess Modulus				
			mm		Clay Content		SANS 3001 GR3	%	20
			mm		Organic Impurities			Ref.	
			mm		Flakiness Index	Total		%	
			mm						
			mm						
			mm		Average Least Dimension	Manual		mm	
			mm			Machine			
			mm			Computation			
			mm		Aggregate Crushing Value	Dry		%	
			mm			Wet			
			mm			Eth. Glycol			
			mm		10% Fines Aggregate Crushing Test (FACT)	Dry		kN	
			mm			Wet			
			mm			Eth. Glycol			
			mm			Wet/Dry Ratio		%	
			mm		Bulk Density	Loose		kg/m^3	
			mm			Compacted			
			mm		Water Absorption			%	
Sand Equivalent, Se									
pH				6.2					
Relative Density of Soils					Bulk Particle Density			kg/m^3	
Durability Mill Index						Aggregate			
Moisture Content			%		Apparent Particle Density			kg/m^3	
Compactibility Factor									
Conductivity			S.m^{-1}	0.005					
Total Water Soluble	Salts		%			Adjusted			
	Sulphates					Relative			
Soluble	Salts		%		LA Abrasion	1000 Revs		%	
	Sulphates					500 Revs			
Soundness	Fine		%		Riedel & Weber				
	Coarse				Akali Silica Reaction			%	
	Fractions		No.		Drying Shrinkage			%	
Methylene Blue Absorption					Wetting Expansion			%	
Soluble Deleterious Impurities			%		Fractured Faces			%	
Chloride Content			%		Coarse Sand Ratio			%	
Low Density Material			%		Shape: Voids			%	
Presence of Sugar					Shell Content			%	
Mill Abrasion					Durability	Ballast			
Treton Value					Eth. Glycol Durability on _ Stone	Concrete			
Vialit Adhesion @	5°C		%			Crushed			
	25°C		%			Seal			

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AGGREGATE TEST REPORT

Laboratory Number		13
Field Number		TP22
Client Reference		
Depth (m)		0.1-0.9
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete/Crushed		
Stabilizing Agent		

	% Passing		mm		Finess Modulus				
			mm		Clay Content		SANS 3001 GR3	%	42
			mm		Organic Impurities			Ref.	
			mm		Flakiness Index	Total		%	
			mm						
			mm						
			mm		Average Least Dimension	Manual		mm	
			mm			Machine			
			mm			Computation			
			mm		Aggregate Crushing Value	Dry		%	
			mm			Wet			
			mm			Eth. Glycol			
			mm		10% Fines Aggregate Crushing Test (FACT)	Dry		kN	
			mm			Wet			
			mm			Eth. Glycol			
			mm			Wet/Dry Ratio		%	
			mm		Bulk Density	Loose		kg/m^3	
			mm			Compacted			
			mm		Water Absorption			%	
Sand Equivalent, Se									
pH				5.7					
Relative Density of Soils					Bulk Particle Density			kg/m^3	
Durability Mill Index						Aggregate			
Moisture Content			%		Apparent Particle Density			kg/m^3	
Compactibility Factor									
Conductivity			S.m^{-1}	0.003					
Total Water Soluble	Salts		%			Adjusted			
	Sulphates					Relative			
Soluble	Salts		%		LA Abrasion	1000 Revs		%	
	Sulphates					500 Revs			
Soundness	Fine		%		Riedel & Weber				
	Coarse				Akali Silica Reaction			%	
	Fractions		No.		Drying Shrinkage			%	
Methylene Blue Absorption					Wetting Expansion			%	
Soluble Deleterious Impurities			%		Fractured Faces			%	
Chloride Content			%		Coarse Sand Ratio			%	
Low Density Material			%		Shape: Voids			%	
Presence of Sugar					Shell Content			%	
Mill Abrasion					Durability	Ballast			
Treton Value					Eth. Glycol Durability on _ Stone	Concrete			
Vialit Adhesion @	5°C		%			Crushed			
	25°C		%			Seal			

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AGGREGATE TEST REPORT

Laboratory Number		15
Field Number		TP23
Client Reference		
Depth (m)		0.5-1.6
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete/Crushed		
Stabilizing Agent		

	% Passing		mm		Finess Modulus				
			mm		Clay Content		SANS 3001 GR3	%	42
			mm		Organic Impurities			Ref.	
			mm		Flakiness Index	Total		%	
			mm						
			mm						
			mm		Average Least Dimension	Manual		mm	
			mm			Machine			
			mm			Computation			
			mm		Aggregate Crushing Value	Dry		%	
			mm			Wet			
			mm			Eth. Glycol			
			mm		10% Fines Aggregate Crushing Test (FACT)	Dry		kN	
			mm			Wet			
			mm			Eth. Glycol			
			mm			Wet/Dry Ratio		%	
			mm		Bulk Density	Loose		kg/m^3	
			mm			Compacted			
			mm		Water Absorption			%	
Sand Equivalent, Se									
pH				5.9					
Relative Density of Soils					Bulk Particle Density			kg/m^3	
Durability Mill Index						Aggregate			
Moisture Content			%		Apparent Particle Density			kg/m^3	
Compactibility Factor									
Conductivity			S.m^{-1}	0.001					
Total Water Soluble	Salts		%			Adjusted			
	Sulphates					Relative			
Soluble	Salts		%		LA Abrasion	1000 Revs		%	
	Sulphates					500 Revs			
Soundness	Fine		%		Riedel & Weber				
	Coarse				Akali Silica Reaction			%	
	Fractions		No.		Drying Shrinkage			%	
Methylene Blue Absorption					Wetting Expansion			%	
Soluble Deleterious Impurities			%		Fractured Faces			%	
Chloride Content			%		Coarse Sand Ratio			%	
Low Density Material			%		Shape: Voids			%	
Presence of Sugar					Shell Content			%	
Mill Abrasion					Durability	Ballast			
Treton Value					Eth. Glycol Durability on _ Stone	Concrete			
Vialit Adhesion @	5°C		%			Crushed			
	25°C		%			Seal			

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AGGREGATE TEST REPORT

Laboratory Number		16
Field Number		TP26
Client Reference		
Depth (m)		0.9-2.2
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete/Crushed		
Stabilizing Agent		

	% Passing		mm		Finess Modulus				
			mm		Clay Content		SANS 3001 GR3	%	39
			mm		Organic Impurities			Ref.	
			mm		Flakiness Index	Total		%	
			mm						
			mm						
			mm		Average Least Dimension	Manual		mm	
			mm			Machine			
			mm			Computation			
			mm		Aggregate Crushing Value	Dry		%	
			mm			Wet			
			mm			Eth. Glycol			
			mm		10% Fines Aggregate Crushing Test (FACT)	Dry		kN	
			mm			Wet			
			mm			Eth. Glycol			
			mm			Wet/Dry Ratio		%	
			mm		Bulk Density	Loose		kg/m^3	
			mm			Compacted			
			mm		Water Absorption			%	
Sand Equivalent, Se									
pH				6.1					
Relative Density of Soils					Bulk Particle Density			kg/m^3	
Durability Mill Index						Aggregate			
Moisture Content			%		Apparent Particle Density			kg/m^3	
Compactibility Factor									
Conductivity			S.m^{-1}	0.005					
Total Water Soluble	Salts		%			Adjusted			
	Sulphates					Relative			
Soluble	Salts		%		LA Abrasion	1000 Revs		%	
	Sulphates					500 Revs			
Soundness	Fine		%		Riedel & Weber				
	Coarse				Akali Silica Reaction			%	
	Fractions		No.		Drying Shrinkage			%	
Methylene Blue Absorption					Wetting Expansion			%	
Soluble Deleterious Impurities			%		Fractured Faces			%	
Chloride Content			%		Coarse Sand Ratio			%	
Low Density Material			%		Shape: Voids			%	
Presence of Sugar					Shell Content			%	
Mill Abrasion					Durability	Ballast			
Treton Value					Eth. Glycol Durability on _ Stone	Concrete			
Vialit Adhesion @	5°C		%			Crushed			
	25°C		%			Seal			

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AGGREGATE TEST REPORT

Laboratory Number		17
Field Number		TP27
Client Reference		
Depth (m)		0.8-3.0
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete/Crushed		
Stabilizing Agent		

	% Passing		mm		Finess Modulus				
			mm		Clay Content		SANS 3001 GR3	%	17
			mm		Organic Impurities			Ref.	
			mm		Flakiness Index	Total		%	
			mm						
			mm						
			mm		Average Least Dimension	Manual		mm	
			mm			Machine			
			mm			Computation			
			mm		Aggregate Crushing Value	Dry		%	
			mm			Wet			
			mm			Eth. Glycol			
			mm		10% Fines Aggregate Crushing Test (FACT)	Dry		kN	
			mm			Wet			
			mm			Eth. Glycol			
			mm			Wet/Dry Ratio		%	
			mm		Bulk Density	Loose		kg/m^3	
			mm			Compacted			
			mm		Water Absorption			%	
Sand Equivalent, Se									
pH				6.3					
Relative Density of Soils					Bulk Particle Density			kg/m^3	
Durability Mill Index						Aggregate			
Moisture Content			%		Apparent Particle Density			kg/m^3	
Compactibility Factor									
Conductivity			S.m^{-1}	0.005					
Total Water Soluble	Salts		%			Adjusted			
	Sulphates					Relative			
Soluble	Salts		%		LA Abrasion	1000 Revs		%	
	Sulphates					500 Revs			
Soundness	Fine		%		Riedel & Weber				
	Coarse				Akali Silica Reaction			%	
	Fractions		No.		Drying Shrinkage			%	
Methylene Blue Absorption					Wetting Expansion			%	
Soluble Deleterious Impurities			%		Fractured Faces			%	
Chloride Content			%		Coarse Sand Ratio			%	
Low Density Material			%		Shape: Voids			%	
Presence of Sugar					Shell Content			%	
Mill Abrasion					Durability	Ballast			
Treton Value					Eth. Glycol Durability on _ Stone	Concrete			
Vialit Adhesion @	5°C		%			Crushed			
	25°C		%			Seal			

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AGGREGATE TEST REPORT

Laboratory Number		18
Field Number		TP31
Client Reference		
Depth (m)		0.7-3.0
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete/Crushed		
Stabilizing Agent		

	% Passing		mm		Finess Modulus				
			mm		Clay Content		SANS 3001 GR3	%	15
			mm		Organic Impurities			Ref.	
			mm		Flakiness Index	Total		%	
			mm						
			mm						
			mm		Average Least Dimension	Manual		mm	
			mm			Machine			
			mm			Computation			
			mm		Aggregate Crushing Value	Dry		%	
			mm			Wet			
			mm			Eth. Glycol			
			mm		10% Fines Aggregate Crushing Test (FACT)	Dry		kN	
			mm			Wet			
			mm			Eth. Glycol			
			mm			Wet/Dry Ratio		%	
			mm		Bulk Density	Loose		kg/m^3	
			mm			Compacted			
			mm		Water Absorption			%	
Sand Equivalent, Se									
pH				6.4					
Relative Density of Soils					Bulk Particle Density			kg/m^3	
Durability Mill Index						Aggregate			
Moisture Content			%		Apparent Particle Density			kg/m^3	
Compactibility Factor									
Conductivity			S.m^{-1}	0.004					
Total Water Soluble	Salts		%			Adjusted			
	Sulphates					Relative			
Soluble	Salts		%		LA Abrasion	1000 Revs		%	
	Sulphates					500 Revs			
Soundness	Fine		%		Riedel & Weber				
	Coarse				Akali Silica Reaction			%	
	Fractions		No.		Drying Shrinkage			%	
Methylene Blue Absorption					Wetting Expansion			%	
Soluble Deleterious Impurities			%		Fractured Faces			%	
Chloride Content			%		Coarse Sand Ratio			%	
Low Density Material			%		Shape: Voids			%	
Presence of Sugar					Shell Content			%	
Mill Abrasion					Durability	Ballast			
Treton Value					Eth. Glycol Durability on _ Stone	Concrete			
Vialit Adhesion @	5°C		%			Crushed			
	25°C		%			Seal			

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AGGREGATE TEST REPORT

Laboratory Number		20
Field Number		TP35
Client Reference		
Depth (m)		0.7-3.0
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete/Crushed		
Stabilizing Agent		

	% Passing		mm		Finess Modulus				
			mm		Clay Content		SANS 3001 GR3	%	6
			mm		Organic Impurities			Ref.	
			mm		Flakiness Index	Total		%	
			mm						
			mm						
			mm		Average Least Dimension	Manual		mm	
			mm			Machine			
			mm			Computation			
			mm		Aggregate Crushing Value	Dry		%	
			mm			Wet			
			mm			Eth. Glycol			
			mm		10% Fines Aggregate Crushing Test (FACT)	Dry		kN	
			mm			Wet			
			mm			Eth. Glycol			
			mm			Wet/Dry Ratio		%	
			mm		Bulk Density	Loose		kg/m^3	
			mm			Compacted			
			mm		Water Absorption			%	
Sand Equivalent, Se									
pH				6.6					
Relative Density of Soils					Bulk Particle Density			kg/m^3	
Durability Mill Index						Aggregate			
Moisture Content			%		Apparent Particle Density			kg/m^3	
Compactibility Factor									
Conductivity			S.m^{-1}	0.004					
Total Water Soluble	Salts		%			Adjusted			
	Sulphates					Relative			
Soluble	Salts		%		LA Abrasion	1000 Revs		%	
	Sulphates					500 Revs			
Soundness	Fine		%		Riedel & Weber				
	Coarse				Akali Silica Reaction			%	
	Fractions		No.		Drying Shrinkage			%	
Methylene Blue Absorption					Wetting Expansion			%	
Soluble Deleterious Impurities			%		Fractured Faces			%	
Chloride Content			%		Coarse Sand Ratio			%	
Low Density Material			%		Shape: Voids			%	
Presence of Sugar					Shell Content			%	
Mill Abrasion					Durability	Ballast			
Treton Value					Eth. Glycol Durability on _ Stone	Concrete			
Vialit Adhesion @	5°C		%			Crushed			
	25°C		%			Seal			

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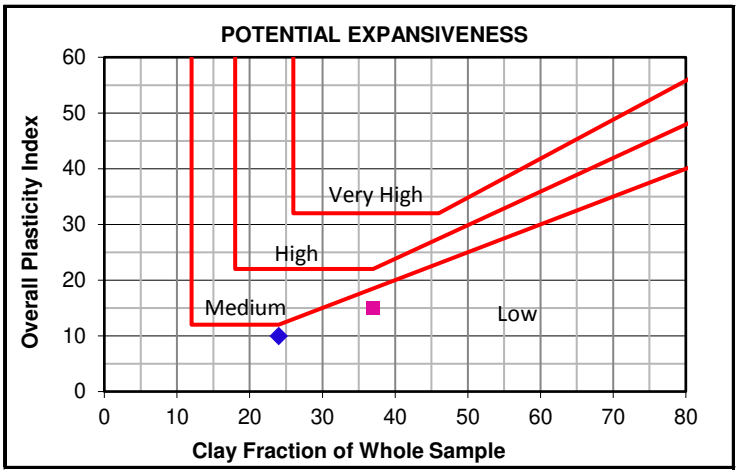
FOUNDATION INDICATOR

Laboratory Number		2 ◆	4 ■
Field Number		TP5	TP8
Client Reference			
Depth (m)		1.1-1.5	0.1-1.3
Position			
Coordinates	X		
	Y		
Description			
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

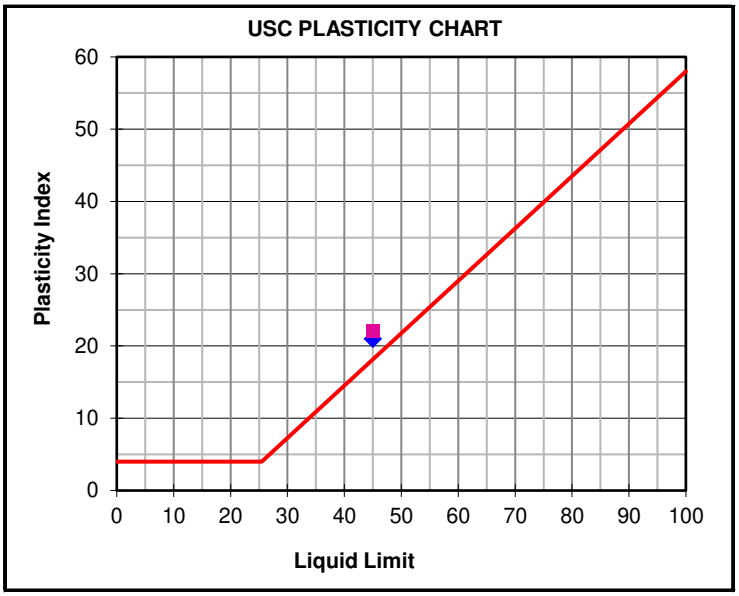


Moisture Content & Relative Density

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Prep) — **SANS 3001 GR1**

Percentage Passing	100 mm	100	100
	75 mm	100	100
	63 mm	100	100
	50 mm	100	100
	37.5 mm	100	100
	28 mm	100	100
	20 mm	100	100
	14 mm	100	100
	5 mm	100	100
	2 mm	85	98
	1 mm	64	86
	0.425 mm	49	68
	0.250 mm	45	59
	0.150 mm	42	53
	0.075 mm	41	49
Grading Modulus		1.25	0.85



Hydrometer Analysis — **SANS 3001 GR3**

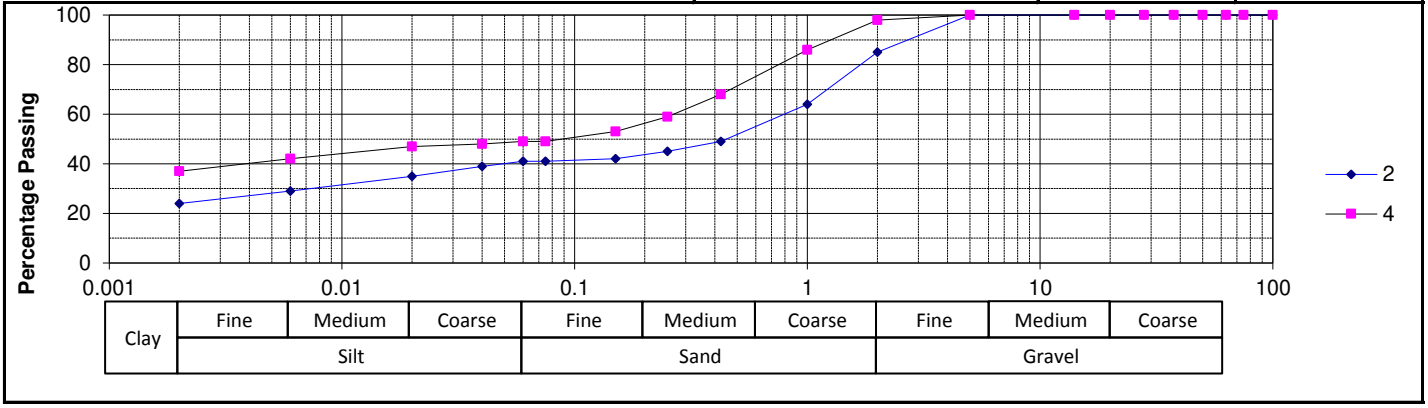
Percentage Passing	0.060 mm	41	49
	0.040 mm	39	48
	0.020 mm	35	47
	0.006 mm	29	42
	0.002 mm	24	37
Gravel	%	15	2
Sand	%	44	49
Silt	%	17	12
Clay	%	24	37

Note: An assumed S.G. may be used in Hydrometer Analysis calculations

Laboratory Number		2 ◆	4 ■
Atterberg Limits -425µ		**SANS 3001 GR10**	
Liquid Limit	%	45	45
Plasticity Index	%	21	22
Linear Shrinkage	%	9.5	10.0
Overall PI	%	10	15

Classifications

HRB (AASHTO)	A-7-6(4)	A-7-6(7)
Unified (ASTM D2487)	SC	SC
Weston Swell @ 1 kPa		



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Project	:	Acorn City	Date Reported:	26/06/2020
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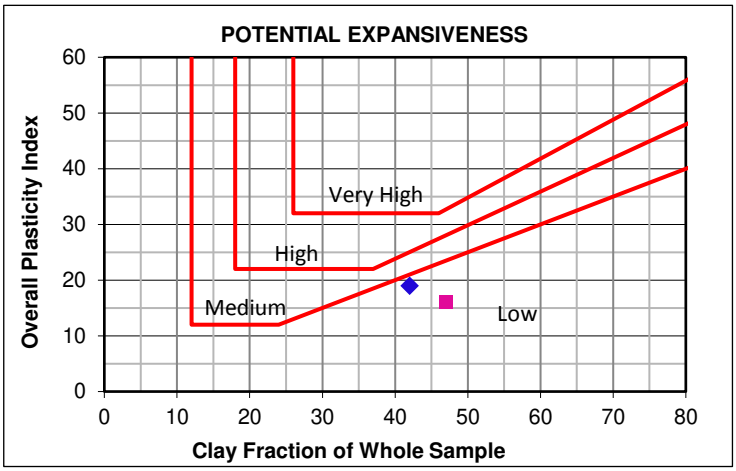
FOUNDATION INDICATOR

Laboratory Number		6 ◆	7 ■
Field Number		TP12	TP13
Client Reference			
Depth (m)		0.4-2.1	0.1-0.9
Position			
Coordinates	X		
	Y		
Description			
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

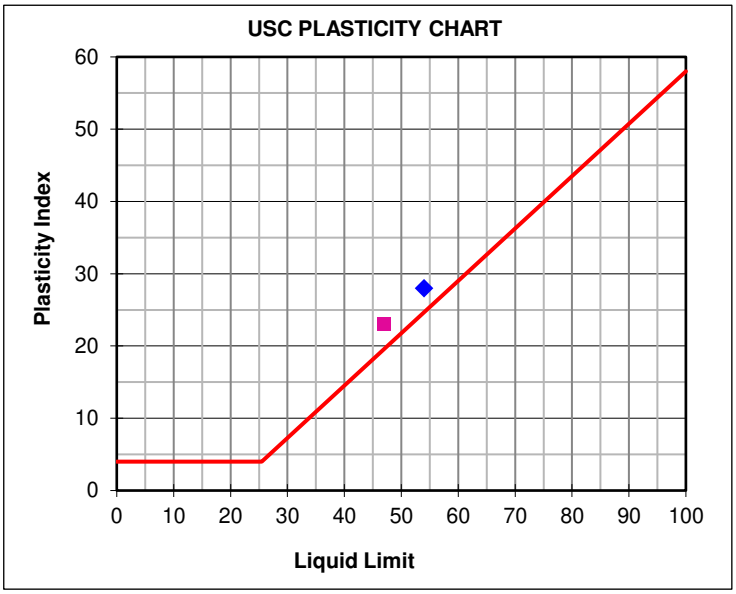


Moisture Content & Relative Density

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Prep) — **SANS 3001 GR1**

Percentage Passing	100 mm	100	100
	75 mm	100	100
	63 mm	100	100
	50 mm	100	100
	37.5 mm	100	100
	28 mm	100	100
	20 mm	100	100
	14 mm	100	100
	5 mm	100	100
	2 mm	94	95
	1 mm	79	83
	0.425 mm	68	69
	0.250 mm	63	62
	0.150 mm	57	55
	0.075 mm	52	51
Grading Modulus		0.86	0.85



Hydrometer Analysis — **SANS 3001 GR3**

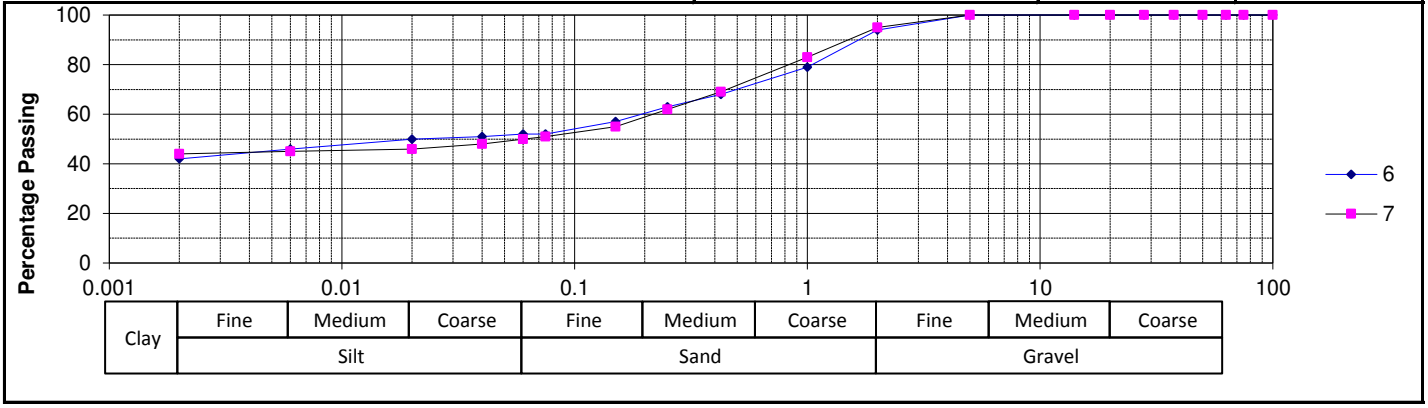
Percentage Passing	0.060 mm	52	50
	0.040 mm	51	48
	0.020 mm	50	46
	0.006 mm	46	45
	0.002 mm	42	44
Gravel	%	6	5
Sand	%	42	38
Silt	%	10	10
Clay	%	42	47

Note: An assumed S.G. may be used in Hydrometer Analysis calculations

Laboratory Number		6 ◆	7 ■
Atterberg Limits -425µ		**SANS 3001 GR10**	
Liquid Limit	%	54	47
Plasticity Index	%	28	23
Linear Shrinkage	%	11.5	10.5
Overall PI	%	19	16

Classifications

HRB (AASHTO)	A-7-6(11)	A-7-6(8)
Unified (ASTM D2487)	CH	CL
Weston Swell @ 1 kPa		



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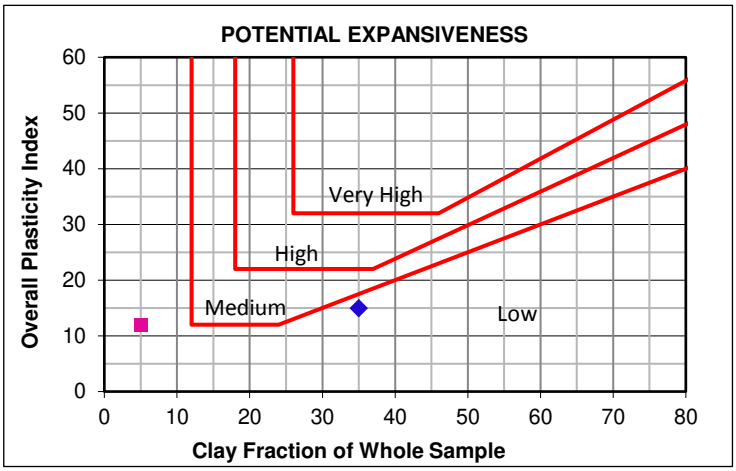
FOUNDATION INDICATOR

Laboratory Number		8 ◆	10 ■
Field Number		TP15	TP18
Client Reference			
Depth (m)		0.4-2.1	2.3-3.0
Position			
Coordinates	X		
	Y		
Description			
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

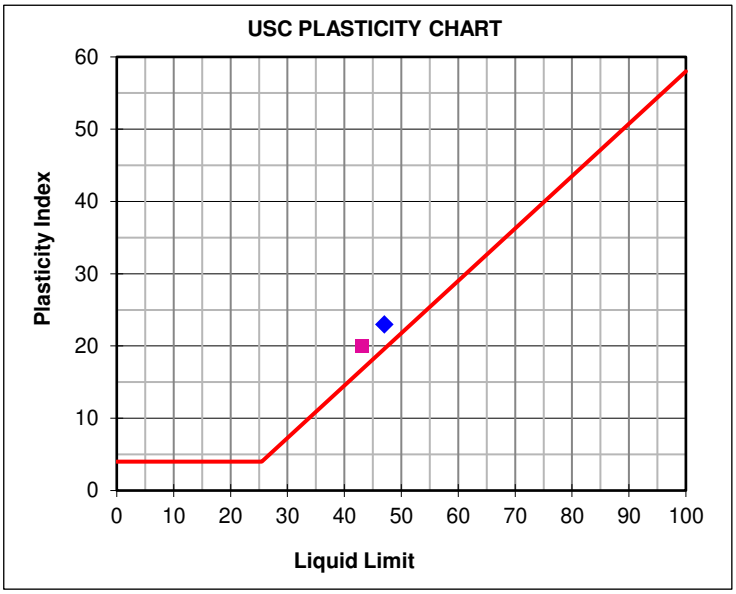


Moisture Content & Relative Density

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Prep) — **SANS 3001 GR1**

Percentage Passing	100 mm	100	100
	75 mm	100	100
	63 mm	100	100
	50 mm	100	100
	37.5 mm	100	100
	28 mm	100	100
	20 mm	100	100
	14 mm	100	100
	5 mm	100	100
	2 mm	96	92
	1 mm	80	75
	0.425 mm	67	61
	0.250 mm	62	51
	0.150 mm	57	46
	0.075 mm	53	42
Grading Modulus		0.84	1.05



Hydrometer Analysis — **SANS 3001 GR3**

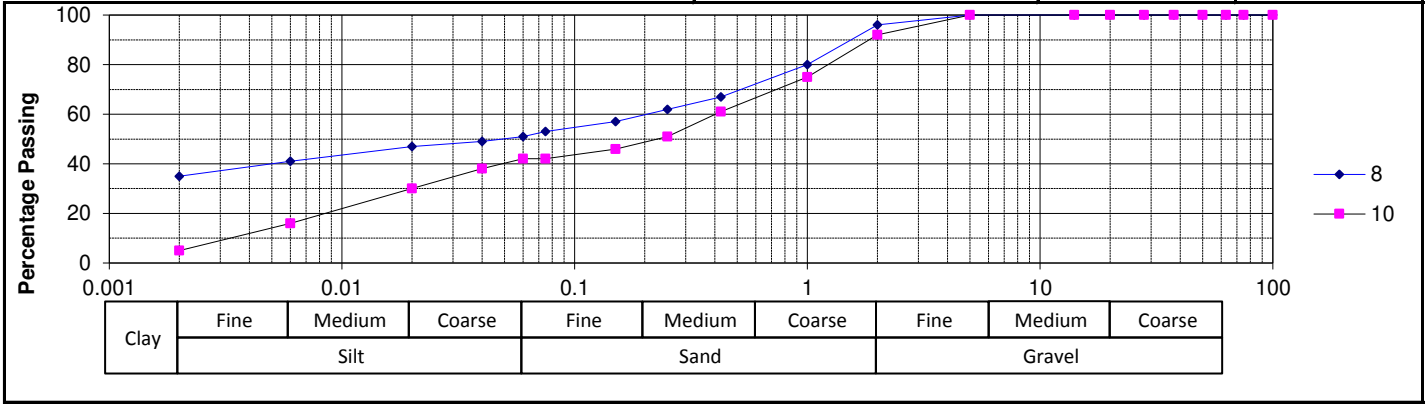
Percentage Passing	0.060 mm	51	42
	0.040 mm	49	38
	0.020 mm	47	30
	0.006 mm	41	16
	0.002 mm	35	5
Gravel	%	4	8
Sand	%	45	50
Silt	%	16	37
Clay	%	35	5

Note: An assumed S.G. may be used in Hydrometer Analysis calculations

Laboratory Number		8 ◆	10 ■
Atterberg Limits -425µ		**SANS 3001 GR10**	
Liquid Limit	%	47	43
Plasticity Index	%	23	20
Linear Shrinkage	%	10.0	8.0
Overall PI	%	15	12

Classifications

HRB (AASHTO)	A-7-6(9)	A-7-6(4)
Unified (ASTM D2487)	CL	SC
Weston Swell @ 1 kPa		



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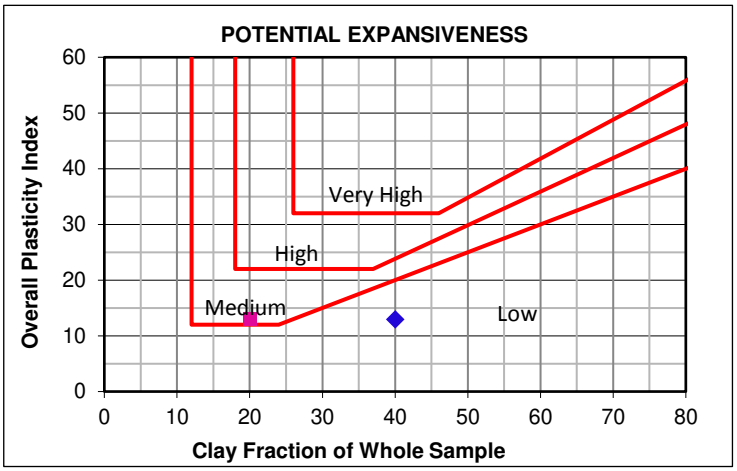
FOUNDATION INDICATOR

Laboratory Number		11 ◆	12 ■
Field Number		TP19	TP21
Client Reference			
Depth (m)		0.5-1.6	0.9-3.0
Position			
Coordinates	X		
	Y		
Description			
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

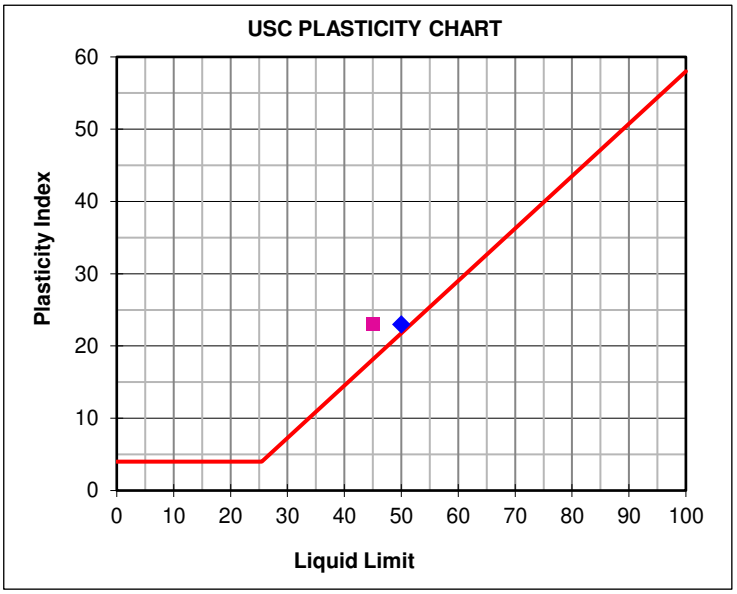


Moisture Content & Relative Density

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Prep) — **SANS 3001 GR1**

Percentage Passing	100 mm	100	100
	75 mm	100	100
	63 mm	100	100
	50 mm	100	100
	37.5 mm	100	100
	28 mm	100	100
	20 mm	100	100
	14 mm	100	100
	5 mm	100	100
	2 mm	97	92
	1 mm	75	73
	0.425 mm	57	58
	0.250 mm	54	55
	0.150 mm	52	49
	0.075 mm	51	44
Grading Modulus		0.95	1.06



Hydrometer Analysis — **SANS 3001 GR3**

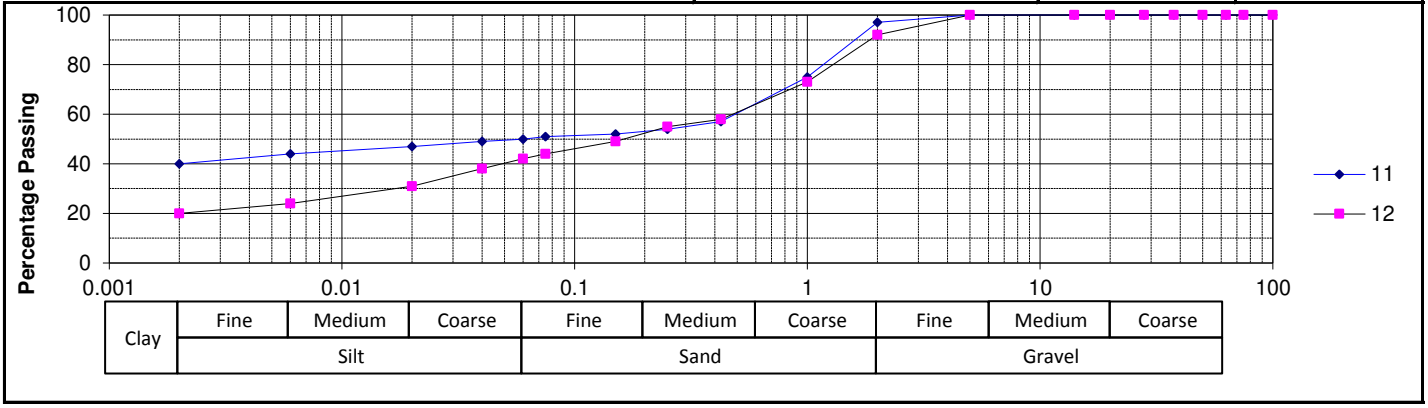
Percentage Passing	0.060 mm	50	42
	0.040 mm	49	38
	0.020 mm	47	31
	0.006 mm	44	24
	0.002 mm	40	20
Gravel	%	3	8
Sand	%	47	50
Silt	%	10	22
Clay	%	40	20

Note: An assumed S.G. may be used in Hydrometer Analysis calculations

Laboratory Number		11 ◆	12 ■
Atterberg Limits -425µ		**SANS 3001 GR10**	
Liquid Limit	%	50	45
Plasticity Index	%	23	23
Linear Shrinkage	%	10.0	10.0
Overall PI	%	13	13

Classifications

HRB (AASHTO)	A-7-6(9)	A-7-6(6)
Unified (ASTM D2487)	CH	SC
Weston Swell @ 1 kPa		



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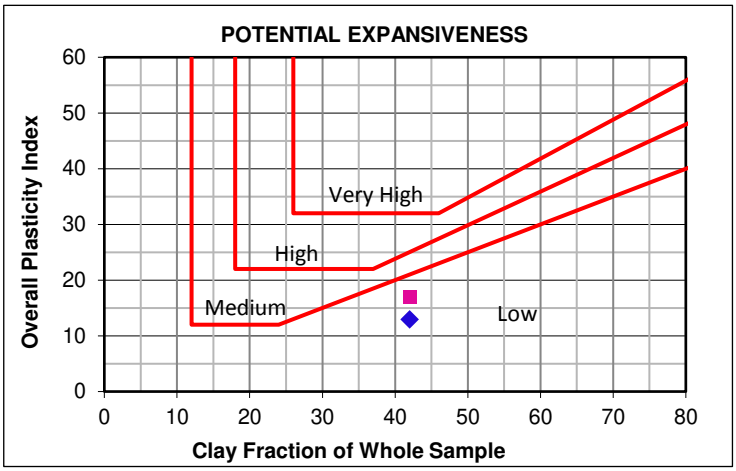
FOUNDATION INDICATOR

Laboratory Number		13 ◆	15 ■
Field Number		TP22	TP23
Client Reference			
Depth (m)		0.1-0.9	0.5-1.6
Position			
Coordinates	X		
	Y		
Description			
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

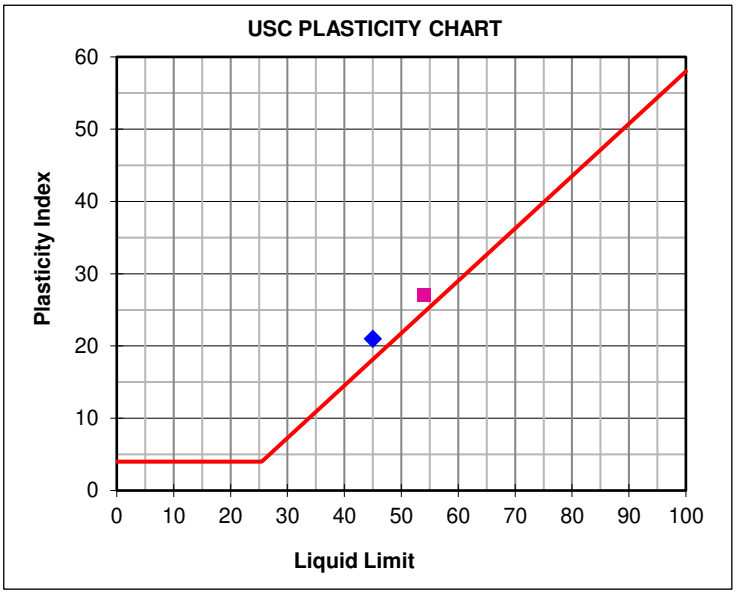


Moisture Content & Relative Density

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Prep) — **SANS 3001 GR1**

Percentage Passing	100 mm	100	100
	75 mm	100	100
	63 mm	100	100
	50 mm	100	100
	37.5 mm	100	100
	28 mm	100	100
	20 mm	100	100
	14 mm	100	100
	5 mm	100	100
	2 mm	96	90
	1 mm	79	74
	0.425 mm	63	64
	0.250 mm	55	58
	0.150 mm	49	54
	0.075 mm	47	50
Grading Modulus		0.94	0.96



Hydrometer Analysis — **SANS 3001 GR3**

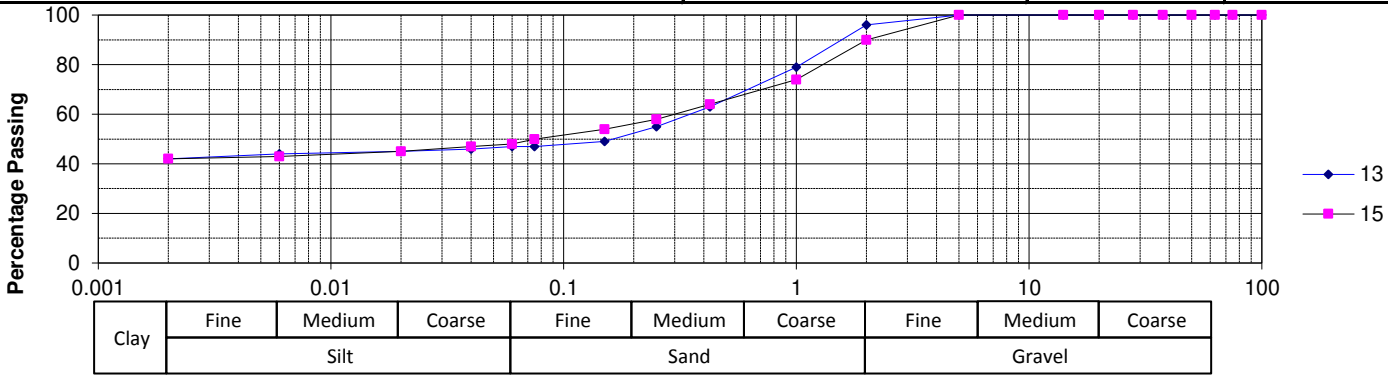
Percentage Passing	0.060 mm	47	48
	0.040 mm	46	47
	0.020 mm	45	45
	0.006 mm	44	43
	0.002 mm	42	42
Gravel	%	4	10
Sand	%	49	35
Silt	%	5	13
Clay	%	42	42

Note: An assumed S.G. may be used in Hydrometer Analysis calculations

Laboratory Number		13 ◆	15 ■
Atterberg Limits -425µ		**SANS 3001 GR10**	
Liquid Limit	%	45	54
Plasticity Index	%	21	27
Linear Shrinkage	%	10.0	12.0
Overall PI	%	13	17

Classifications

HRB (AASHTO)	A-7-6(6)	A-7-6(10)
Unified (ASTM D2487)	SC	CH
Weston Swell @ 1 kPa		



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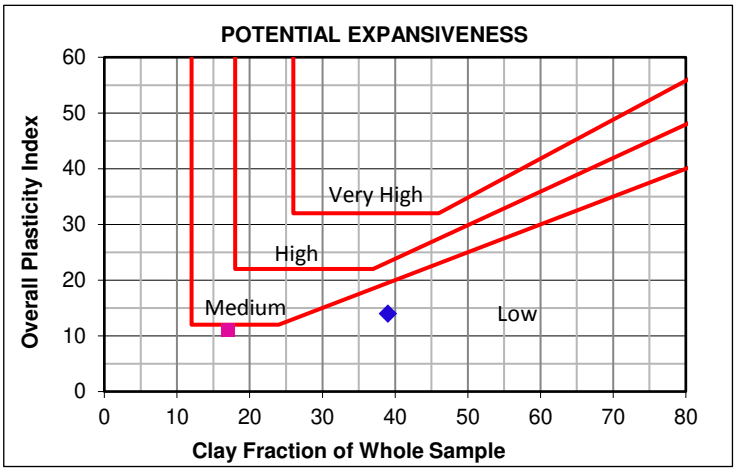
FOUNDATION INDICATOR

Laboratory Number		16 ◆	17 ■
Field Number		TP26	TP27
Client Reference			
Depth (m)		0.9-2.2	0.8-3.0
Position			
Coordinates	X		
	Y		
Description			
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

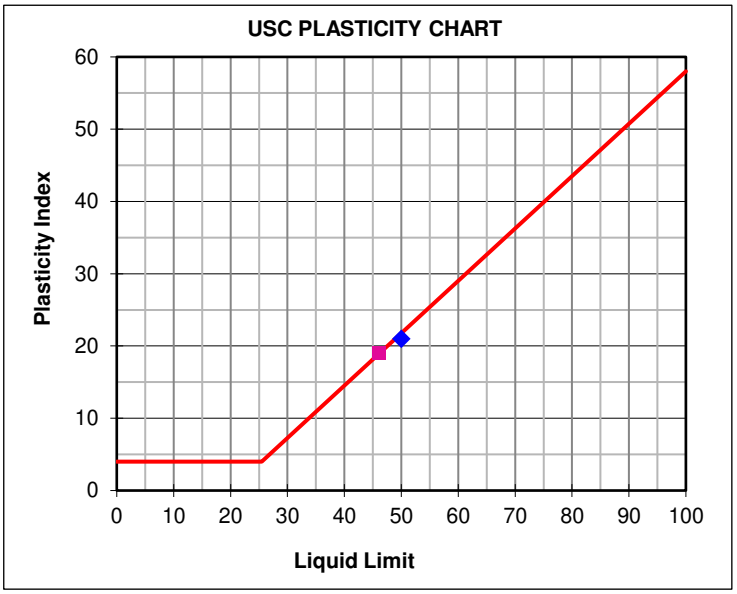


Moisture Content & Relative Density

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Prep) — **SANS 3001 GR1**

Percentage Passing	100 mm	100	100
	75 mm	100	100
	63 mm	100	100
	50 mm	100	100
	37.5 mm	100	100
	28 mm	100	100
	20 mm	100	100
	14 mm	100	100
	5 mm	100	99
	2 mm	93	89
	1 mm	79	72
	0.425 mm	67	60
	0.250 mm	64	56
	0.150 mm	59	49
	0.075 mm	56	45
Grading Modulus		0.84	1.06



Hydrometer Analysis — **SANS 3001 GR3**

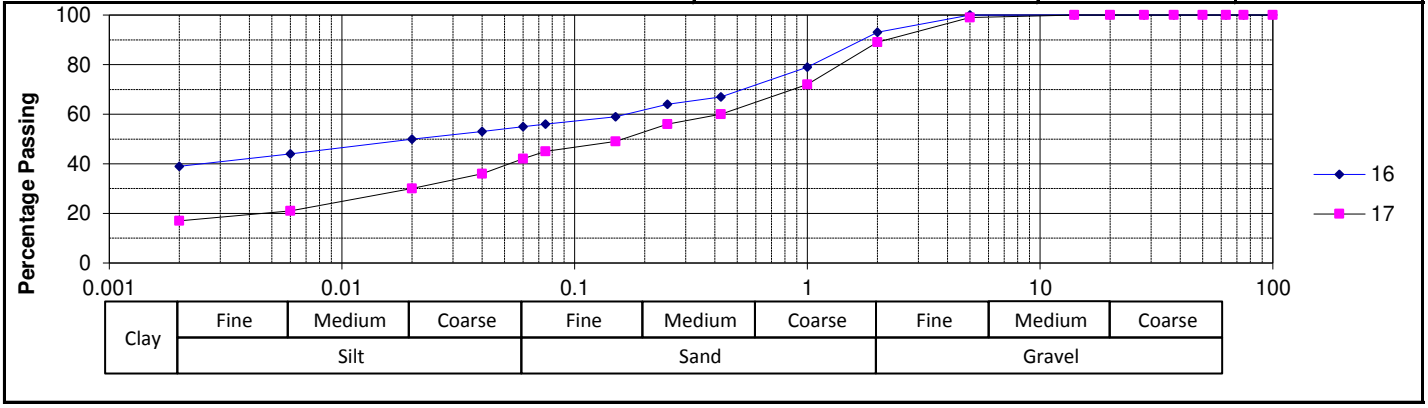
Percentage Passing	0.060 mm	55	42
	0.040 mm	53	36
	0.020 mm	50	30
	0.006 mm	44	21
	0.002 mm	39	17
Gravel	%	7	11
Sand	%	38	47
Silt	%	16	25
Clay	%	39	17

Note: An assumed S.G. may be used in Hydrometer Analysis calculations

Laboratory Number		16 ◆	17 ■
Atterberg Limits -425µ		**SANS 3001 GR10**	
Liquid Limit	%	50	46
Plasticity Index	%	21	19
Linear Shrinkage	%	9.5	9.0
Overall PI	%	14	11

Classifications

HRB (AASHTO)	A-7-6(10)	A-7-6(5)
Unified (ASTM D2487)	MH	SC
Weston Swell @ 1 kPa		



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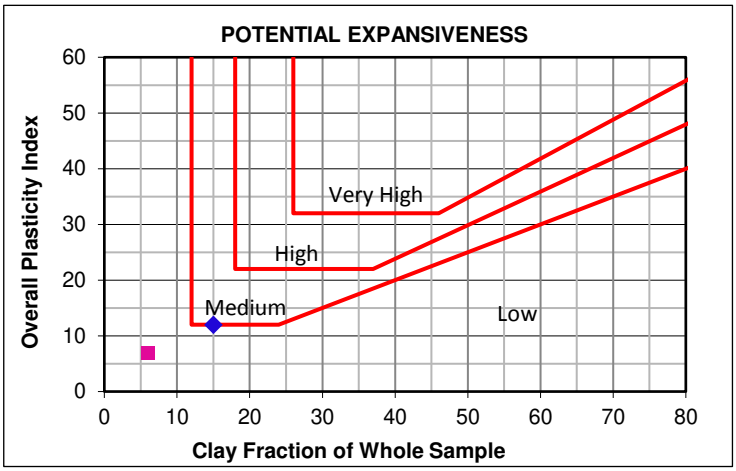
FOUNDATION INDICATOR

Laboratory Number		18 ◆	20 ■
Field Number		TP31	TP35
Client Reference			
Depth (m)		0.7-3.0	0.7-3.0
Position			
Coordinates	X		
	Y		
Description			
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

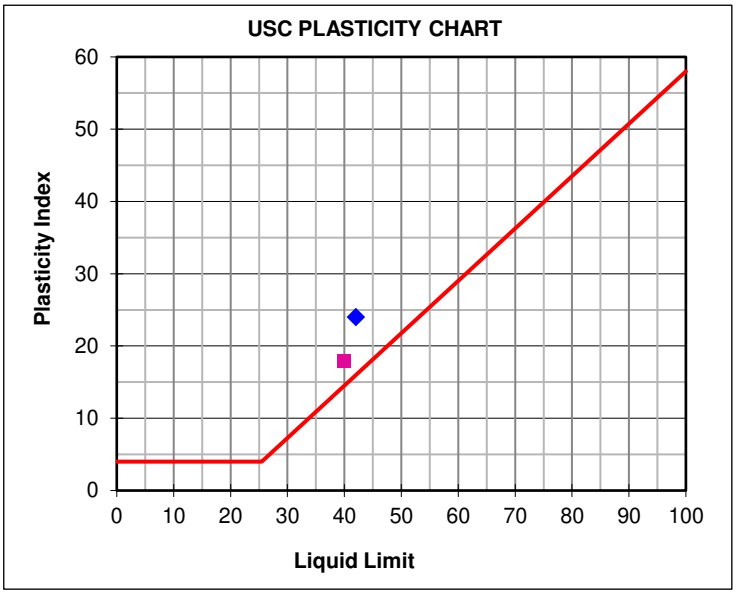


Moisture Content & Relative Density

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Prep) — **SANS 3001 GR1**

Percentage Passing	100 mm	100	100
	75 mm	100	100
	63 mm	100	100
	50 mm	100	100
	37.5 mm	100	100
	28 mm	100	100
	20 mm	100	100
	14 mm	100	99
	5 mm	99	96
	2 mm	91	80
	1 mm	74	56
	0.425 mm	52	39
	0.250 mm	43	33
	0.150 mm	36	28
	0.075 mm	30	23
Grading Modulus		1.27	1.58

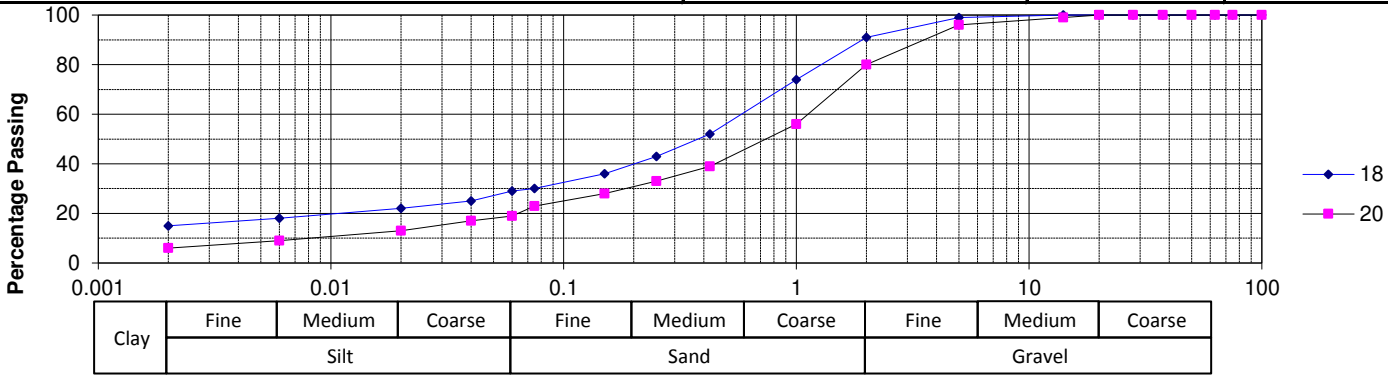


Hydrometer Analysis — **SANS 3001 GR3**

Percentage Passing	0.060 mm	29	19
	0.040 mm	25	17
	0.020 mm	22	13
	0.006 mm	18	9
	0.002 mm	15	6
Gravel	%	9	20
Sand	%	62	61
Silt	%	14	13
Clay	%	15	6

Note: An assumed S.G. may be used in Hydrometer Analysis calculations

Laboratory Number		18 ◆	20 ■
Atterberg Limits -425µ		**SANS 3001 GR10**	
Liquid Limit	%	42	40
Plasticity Index	%	24	18
Linear Shrinkage	%	9.5	7.0
Overall PI	%	12	7
Classifications			
HRB (AASHTO)		A-2-7(2)	A-2-6(1)
Unified (ASTM D2487)		SC	SC
Weston Swell @ 1 kPa			



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MOISTURE DENSITY RELATIONSHIP

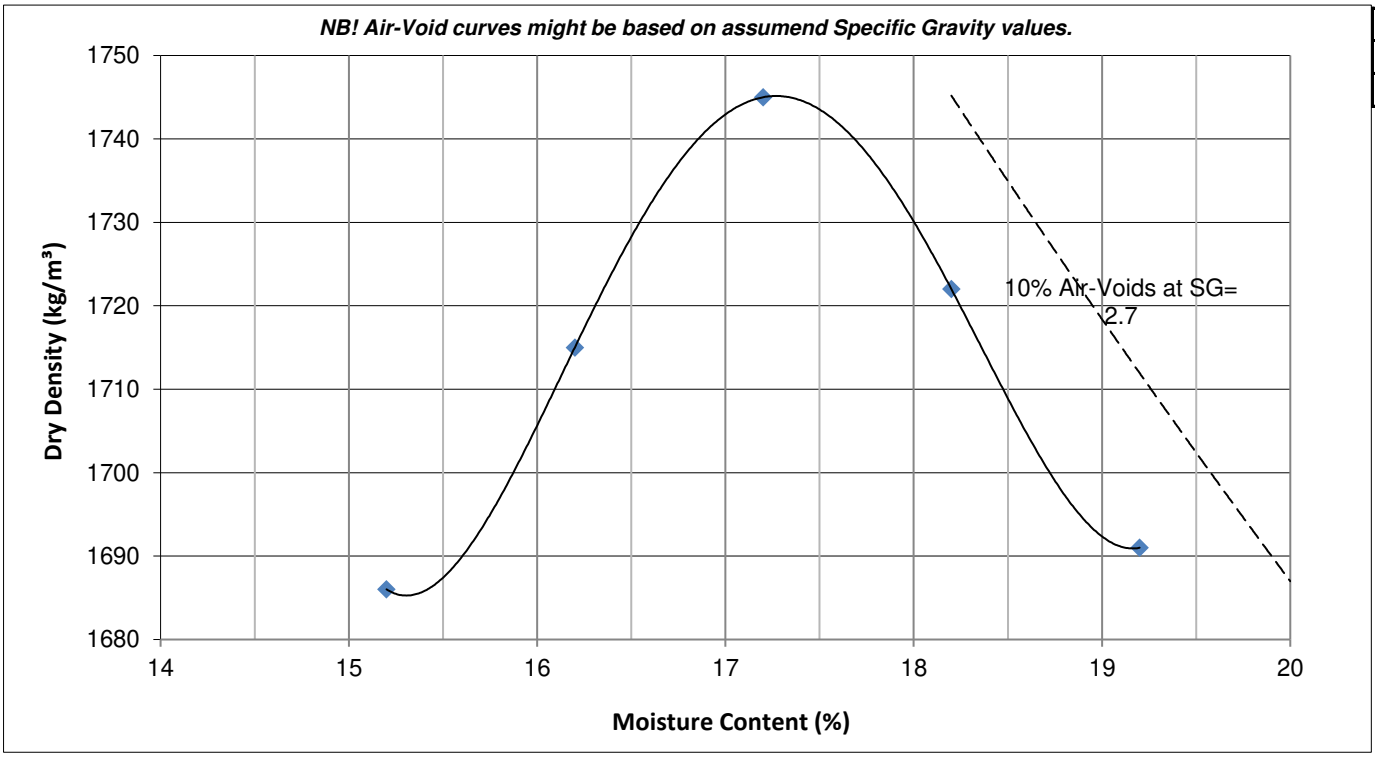
Laboratory Number		1
Field Number		TP4
Client Reference		
Depth (m)		0.1-1.5
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete / Crushed Stabilizing Agent		

Maximum Dry Density & Optimum Moisture Content - SANS 3001 GR30

Compactive Effort:	Modified AASHTO

Dry Density	kg/m³	1686	1715	1745	1722	1691	
Moisture Content	%	15.2	16.2	17.2	18.2	19.2	

Max. Dry Density	kg/m³	1745
Optimum Moisture	%	17.3



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Client	: DAVEL & VAN HUYSSTEEN CONSULTING (PTY)	Date Received:	03/06/2020
Project	: Acorn City	Date Reported:	26/06/2020
Project No:	2020-B-553	Page No. :	22 of 28

MOISTURE DENSITY RELATIONSHIP

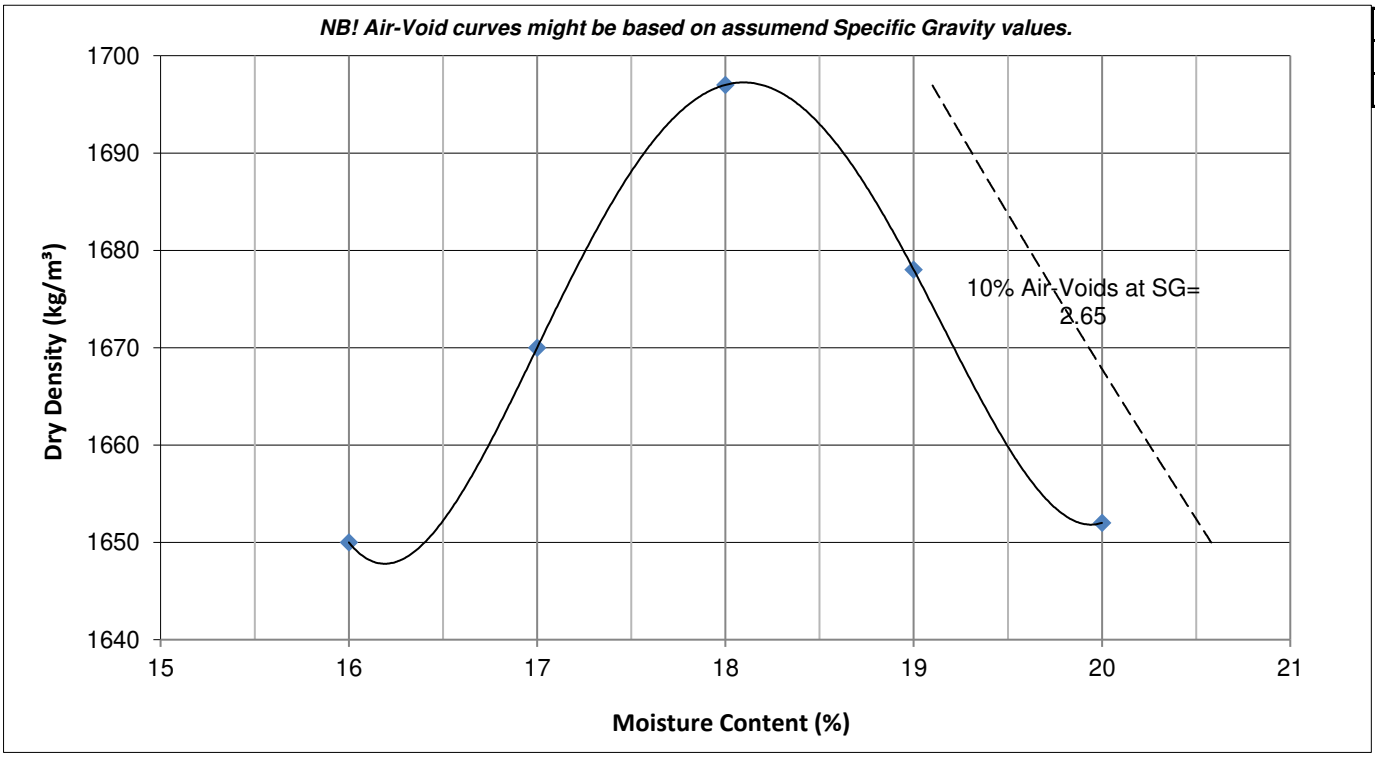
Laboratory Number		3
Field Number		TP7
Client Reference		
Depth (m)		0.1-2.5
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete / Crushed		
Stabilizing Agent		

Maximum Dry Density & Optimum Moisture Content - SANS 3001 GR30

Compactive Effort:	Modified AASHTO

Dry Density	kg/m³	1650	1670	1697	1678	1652	
Moisture Content	%	16	17	18	19	20	

Max. Dry Density	kg/m³	1697
Optimum Moisture	%	18.1



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MOISTURE DENSITY RELATIONSHIP

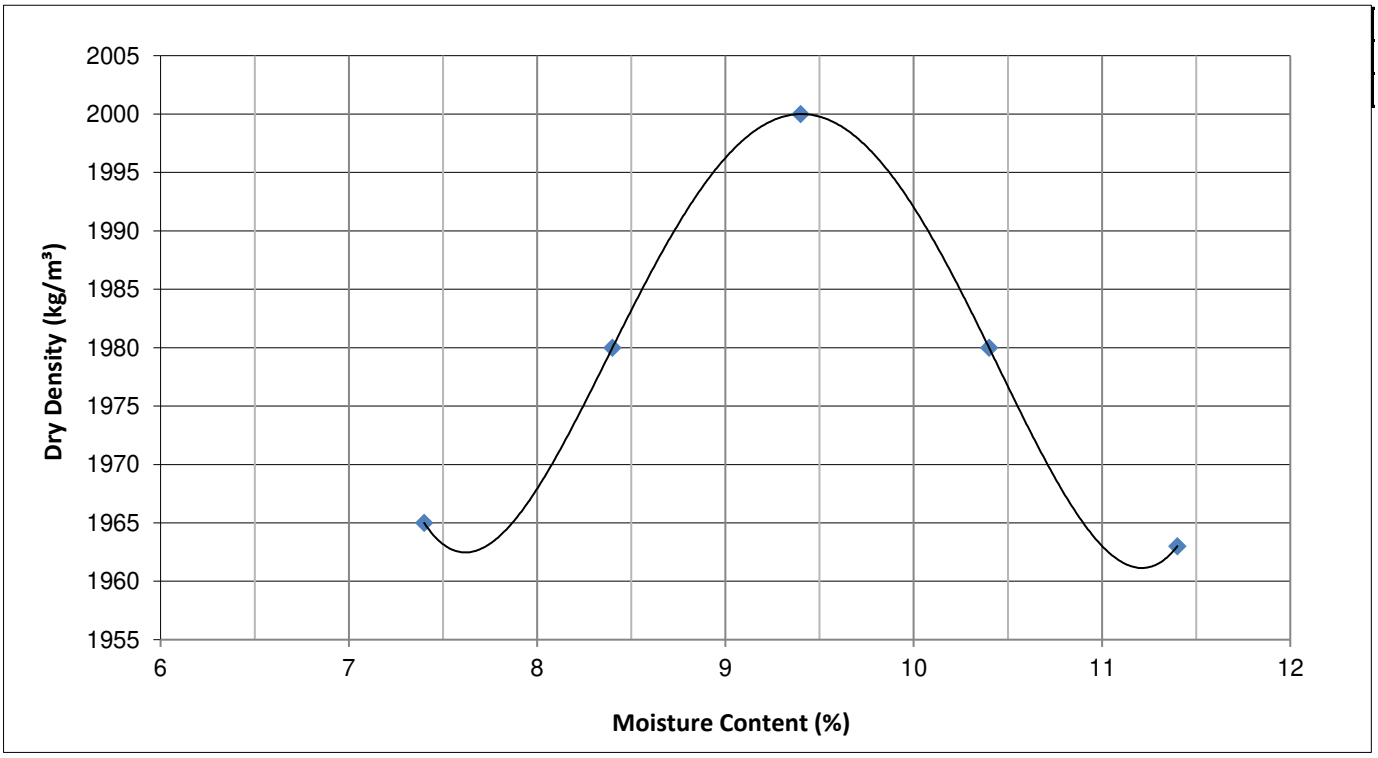
Laboratory Number		5
Field Number		TP11
Client Reference		
Depth (m)		1.1-3.0
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete / Crushed		
Stabilizing Agent		

Maximum Dry Density & Optimum Moisture Content - SANS 3001 GR30

Compactive Effort:	Modified AASHTO

Dry Density	kg/m³	1965	1980	2000	1980	1963	
Moisture Content	%	7.4	8.4	9.4	10.4	11.4	

Max. Dry Density	kg/m³	2000
Optimum Moisture	%	9.4



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Project	: Acorn City	Date Reported:	26/06/2020
Project No:	2020-B-553	Page No. :	24 of 28

MOISTURE DENSITY RELATIONSHIP

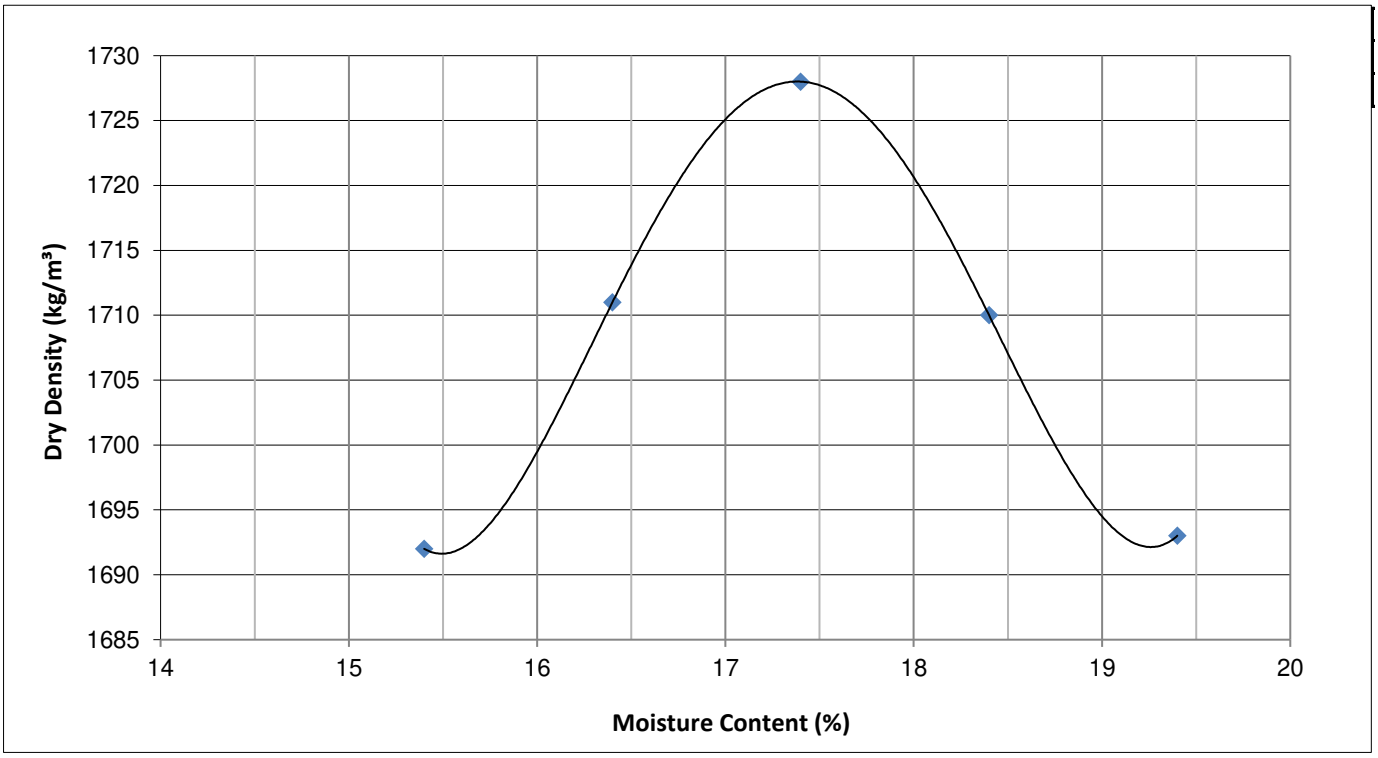
Laboratory Number		9
Field Number		TP16
Client Reference		
Depth (m)		0.1-1.5
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete / Crushed		
Stabilizing Agent		

Maximum Dry Density & Optimum Moisture Content - SANS 3001 GR30

Compactive Effort:	Modified AASHTO

Dry Density	kg/m³	1692	1711	1728	1710	1693	
Moisture Content	%	15.4	16.4	17.4	18.4	19.4	

Max. Dry Density	kg/m³	1728
Optimum Moisture	%	17.4



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Project	: Acorn City	Date Reported:	26/06/2020
Project No:	2020-B-553	Page No. :	25 of 28

MOISTURE DENSITY RELATIONSHIP

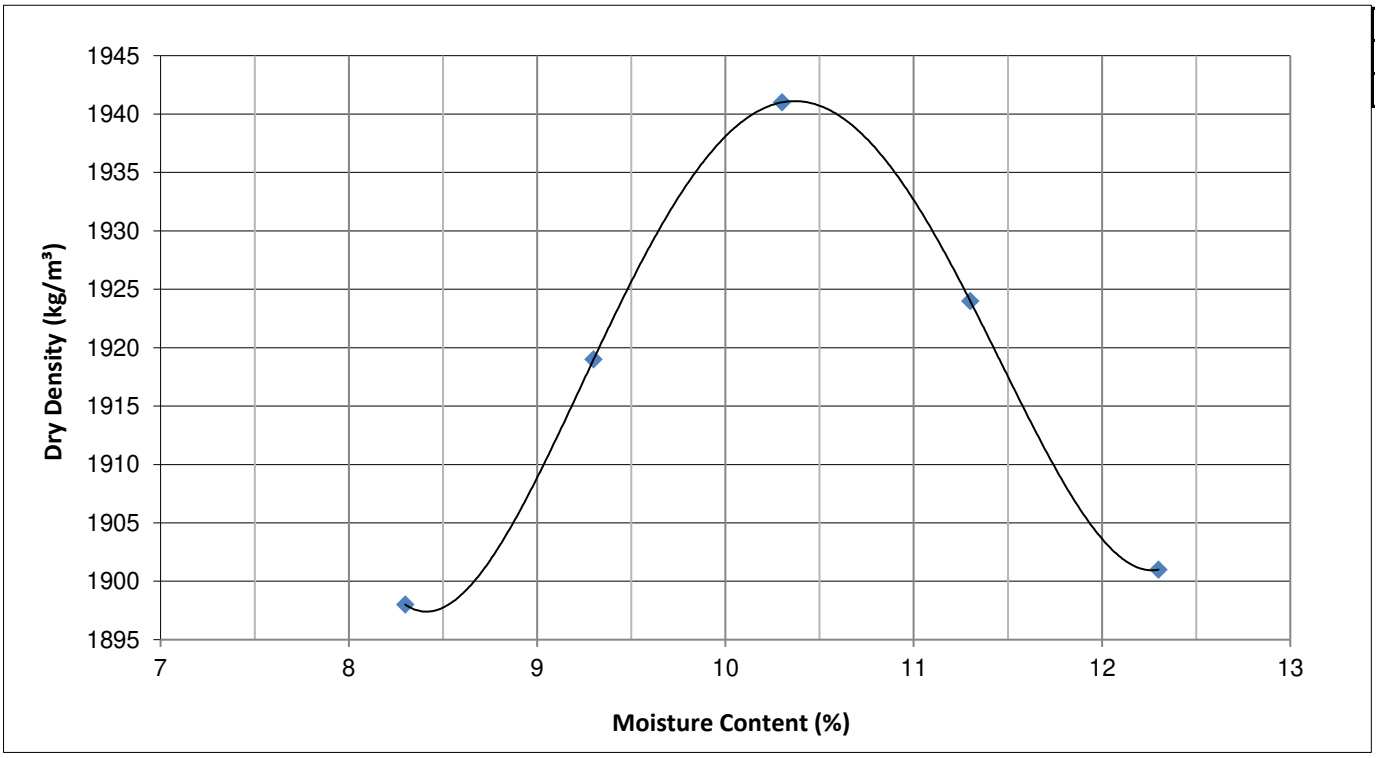
Laboratory Number		19
Field Number		TP32
Client Reference		
Depth (m)		0.1-1.0
Position		
Coordinates	X	
	Y	
Description		
Additional Information		
Calcrete / Crushed		
Stabilizing Agent		

Maximum Dry Density & Optimum Moisture Content - SANS 3001 GR30

Compactive Effort:	Modified AASHTO

Dry Density	kg/m³	1898	1919	1941	1924	1901	
Moisture Content	%	8.3	9.3	10.3	11.3	12.3	

Max. Dry Density	kg/m³	1941
Optimum Moisture	%	10.4



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Project	:	Acorn City	Date Reported	:	26/06/2020
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CALIFORNIA BEARING RATIO (CBR) & ROAD INDICATOR REPORT

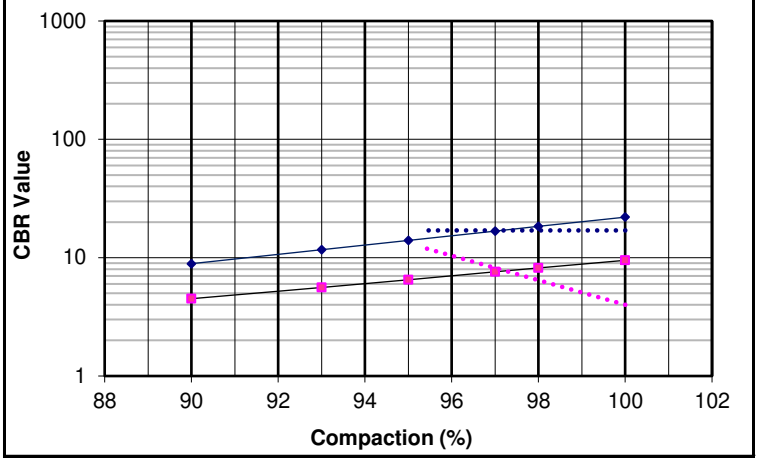
Laboratory No.		1 ◆	3 ■
Field Number		TP4	TP7
Client Reference			
Depth (m)		0.1-1.5	0.1-2.5
Position			
Coordinates	X		
	Y		
Description			
Additional information			
Calcrete/Crushed			
Stabilizing Agent			

Sieve Analysis (Wet preparation)			SANS 3001 GR1
Percentage Passing	100 mm	100	100
	75 mm	100	100
	63 mm	100	100
	50 mm	100	100
	37.5 mm	100	100
	28 mm	100	100
	20 mm	100	100
	14 mm	99	100
	5 mm	98	99
	2 mm	86	93
	1 mm	59	70
	0.425 mm	34	41
	0.250 mm	31	37
	0.150 mm	28	34
	0.075 mm	26	31
Grading Modulus		1.5	1.4

Soil Mortar Analysis		
Coarse Sand	60	56
Coarse Fine Sand	4	4
Medium Fine Sand	3	4
Fine Fine Sand	3	3
Silt and Clay	30	34

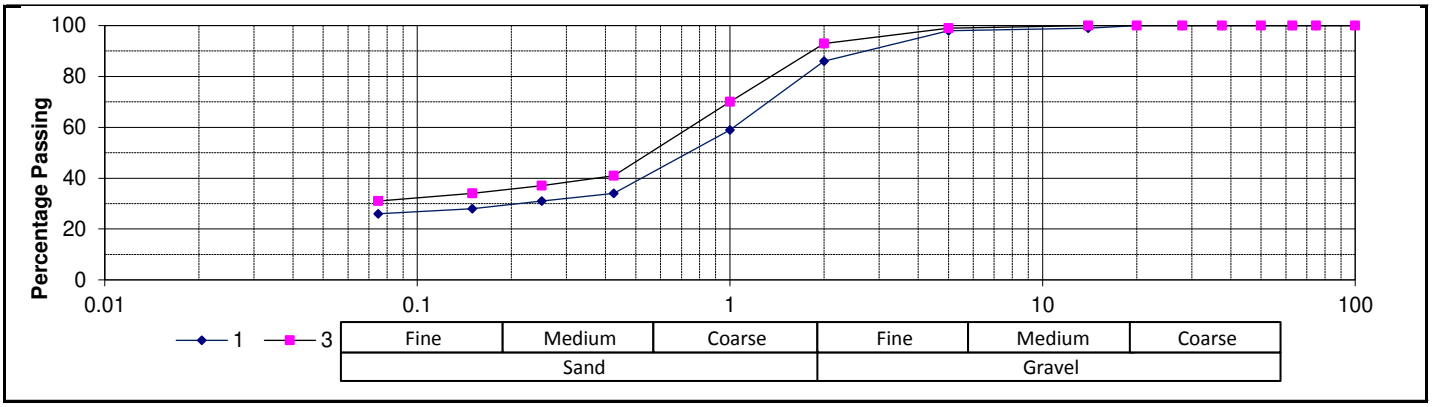
Atterberg Limits	SANS 3001 GR10	
Liquid Limit (%)	46	47
Plasticity Index (%)	22	23
Linear Shrinkage (%)	10.0	10.5

Laboratory No.		1 ◆			3 ■		
Maximum Dry Density & Optimum Moisture Content					**SANS 3001 GR30**		
MDD	kg/m^3	1745			1697		
OMC	%	17.3			18.1		
California Bearing Ratio					**SANS 3001 GR40**		
Compaction Data							
Moisture	%	17.2			18.2		
Dry Density	kg/m^3	1764	1683	1596	1703	1625	1539
Compaction	%	100.0	95.4	90.5	100.0	95.4	90.4
Penetration Data							
CBR at	2.50 mm	17	17	9	7	9	5
	5.00 mm	15	13	7	8	8	6
	7.50 mm	14	11	6	8	7	6
Swell	%	0.6	1.2	1.5	0.9	1.3	1.6
Final Moisture (%)		21.3	21.7	23.6	23.7	24.4	26.3



Interpolated CBR Data				
CBR	@ 100%	Mod. AASHTO	22	10
	@ 98%		18	8
	@ 97%		17	8
	@ 95%		14	7
	@ 93%		12	6
	@ 90%		9	5
	@ SANS3001 Midpoint		18	8

Classifications		
HRB (AASHTO)	A-2-7(1)	A-2-7(2)
COLTO		
TRH14	G9	G10



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Project	:	Acorn City	Date Reported	:	26/06/2020
Project No.	:	2020-B-553	Page No.	:	27 of 28

CALIFORNIA BEARING RATIO (CBR) & ROAD INDICATOR REPORT

Laboratory No.		5 ◆	9 ■
Field Number		TP11	TP16
Client Reference			
Depth (m)		1.1-3.0	0.1-1.5
Position			
Coordinates	X		
	Y		
Description			
Additional information			
Calcrete/Crushed			
Stabilizing Agent			

Sieve Analysis (Wet preparation) — **SANS 3001 GR1**

Percentage Passing	100 mm	100	100
	75 mm	100	100
	63 mm	100	100
	50 mm	100	100
	37.5 mm	100	100
	28 mm	100	100
	20 mm	100	100
	14 mm	93	100
	5 mm	60	98
	2 mm	34	86
	1 mm	20	62
	0.425 mm	11	34
	0.250 mm	10	31
	0.150 mm	9	29
	0.075 mm	8	28
Grading Modulus		2.5	1.5

Soil Mortar Analysis

Coarse Sand	68	60
Coarse Fine Sand	2	4
Medium Fine Sand	3	2
Fine Fine Sand	3	1
Silt and Clay	24	33

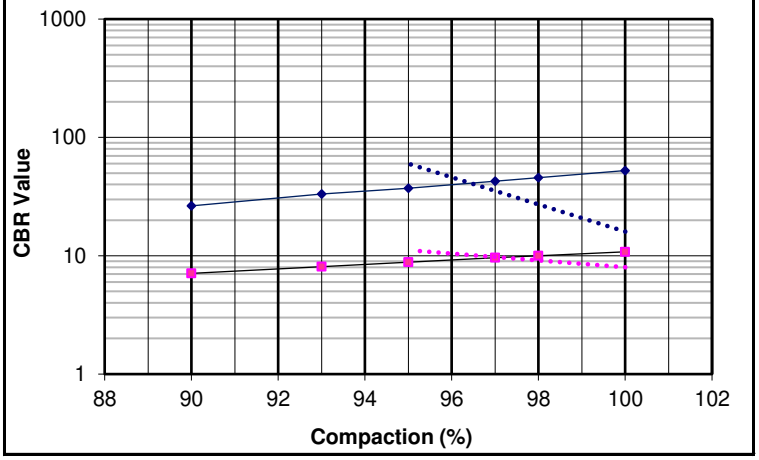
Atterberg Limits — SANS 3001 GR10

Liquid Limit (%)	46	49
Plasticity Index (%)	23	24
Linear Shrinkage (%)	8.5	10.5

Laboratory No.		5 ◆	9 ■
Maximum Dry Density & Optimum Moisture Content			**SANS 3001 GR30**
MDD	kg/m³	2000	1728
OMC	%	9.4	17.4

California Bearing Ratio — **SANS 3001 GR40**

Compaction Data							
Moisture	%	9.4			17.5		
Dry Density	kg/m³	2027	1925	1824	1724	1642	1556
Compaction	%	100.0	95.0	90.0	100.0	95.2	90.3
Penetration Data							
CBR at	2.50 mm	55	35	26	8	11	7
	5.00 mm	67	41	28	18	9	6
	7.50 mm	69	42	28	16	7	5
Swell	%	0.3	0.2	0.5	1.2	1.5	0.9
Final Moisture (%)		11.8	14	18.7	21.5	23.1	25.9

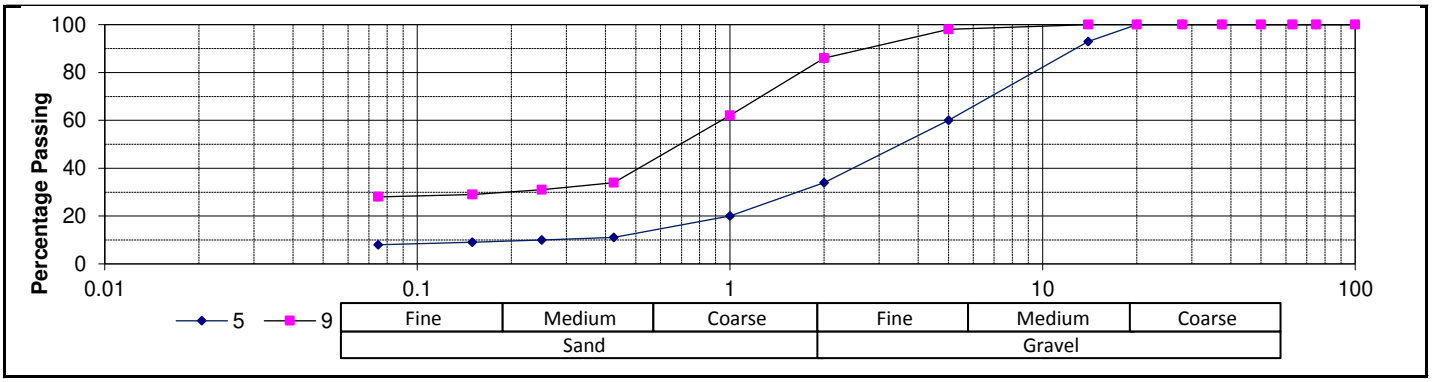


Interpolated CBR Data

CBR	@ 100%	Mod. AASHTO	53	11
	@ 98%		46	10
	@ 97%		43	10
	@ 95%		37	9
	@ 93%		33	8
	@ 90%		26	7
	@ SANS3001 Midpoint		31	10

Classifications

HRB (AASHTO)	A-2-7(0)	A-2-7(2)
COLTO		
TRH14	G8	G9



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Project	:	Acorn City	Date Reported	:	26/06/2020
Project No.	:	2020-B-553	Page No.	:	28 of 28

CALIFORNIA BEARING RATIO (CBR) & ROAD INDICATOR REPORT

Laboratory No.		19 ◆	■
Field Number		TP32	
Client Reference			
Depth (m)		0.1-1.0	
Position			
Coordinates	X		
	Y		
Description			
Additional information			
Calcrete/Crushed			
Stabilizing Agent			

Sieve Analysis (Wet preparation) — SANS 3001 GR1

Percentage Passing	100 mm	100	
	75 mm	100	
	63 mm	100	
	50 mm	100	
	37.5 mm	100	
	28 mm	100	
	20 mm	100	
	14 mm	99	
	5 mm	88	
	2 mm	69	
	1 mm	45	
	0.425 mm	22	
	0.250 mm	20	
	0.150 mm	17	
	0.075 mm	15	
Grading Modulus		1.9	

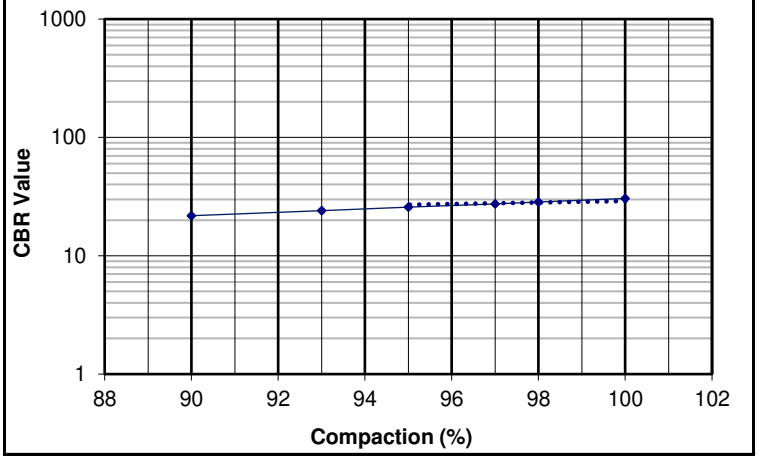
Soil Mortar Analysis

Coarse Sand	68	
Coarse Fine Sand	3	
Medium Fine Sand	4	
Fine Fine Sand	3	
Silt and Clay	22	

Atterberg Limits — SANS 3001 GR10

Liquid Limit (%)	38	
Plasticity Index (%)	18	
Linear Shrinkage (%)	8.0	

Laboratory No.		19 ◆			■
Maximum Dry Density & Optimum Moisture Content					**SANS 3001 GR30**
MDD	kg/m³	1941			
OMC	%	10.4			
California Bearing Ratio					**SANS 3001 GR40**
Compaction Data					
Moisture	%	10.5			
Dry Density	kg/m³	1965	1866	1759	
Compaction	%	100.0	95.0	89.5	
Penetration Data					
CBR at	2.50 mm	29	27	21	
	5.00 mm	34	28	21	
	7.50 mm	34	27	21	
Swell	%	0.1	0.2	0.5	
Final Moisture (%)		13.3	14.4	19.8	

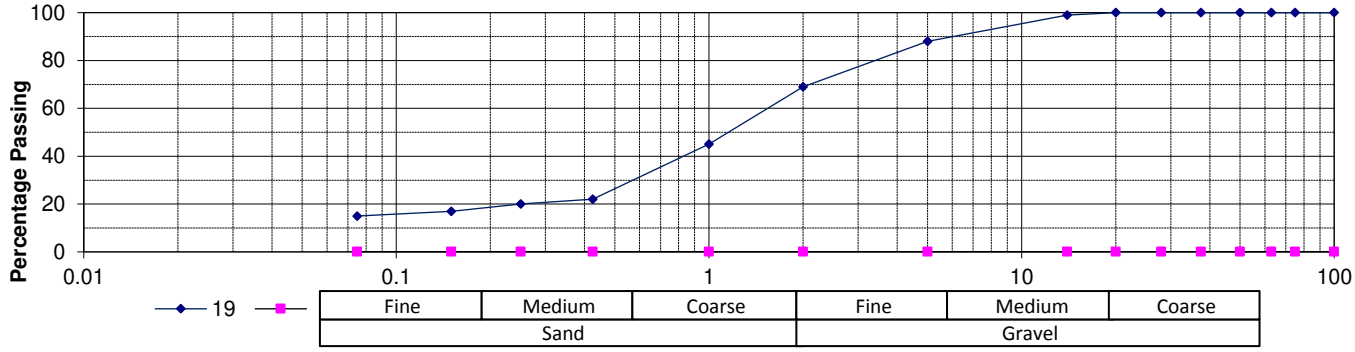


Interpolated CBR Data

CBR @ 100%	Mod. AASHTO	31	
@ 98%		29	
@ 97%		28	
@ 95%		26	
@ 93%		24	
@ 90%		22	
@ SANS3001 Midpoint		28	

Classifications

HRB (AASHTO)	A-2-6(0)	
COLTO		
TRH14	G8	



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CONSOLIDATION TEST RESULTS - BS 1377: Part 5

Project	Acorn City	Date Tested:	4/6/2020
Project No.	2020-B-553	Laboratory Number:	2
Field Sample Reference	TP5	Depth (m):	1.1-1.5

Test No.	1	
Test Type	Collapse Potential	
Remarks	Collapse Potential: 11.75%	

Specimen-, Preparation- & Test Conditions

Specimen Type	Undisturbed	
Moulding Dry Density		
Moulding Moisture		
Testing Moisture	Soaked @ 200kPa	

Equipment Detail

Machiene No.		OED13	
Ring	No.	H	
	Mass (g)	81.6	
	Height (mm)	18.94	
	Diameter (mm)	70.05	

Specimen Parameters

Stage	Initial	Final (Unloaded)	Initial	Final (Unloaded)
Relative density (S.G.)	2.650			
Moisture Content (%)	19.7	25.2		
Dry Density (kg/m^3)	1263	1574		
Void Ratio, e	1.098	0.684		
Degree of Saturation (%)	48	98		

Test Data

Test 1

Cycle	No.	1	2	3	4	5	6	7	8								
Total time	min	1067	4408	1584	1467	1069	1789	3982	2905								
Stress	kPa	10	52	102	202	202	402	102	10								
Strain	%	0.62	3.52	4.37	5.04	16.79	21.80	21.39	19.76								
Void Ratio	e	1.085	1.024	1.006	0.993	0.746	0.641	0.649	0.684								
Mv (1/MPa)		0.000	0.690	0.170	0.067		0.251	0.014	0.178								
t90	min																
Cv	m^2/year																

Test 2

Cycle	No.																
Total time	min																
Stress	kPa																
Strain	%																
Void Ratio	e																
Mv (1/MPa)																	
t90	min																
Cv	m^2/year																

The t90 values reported, if any, which are used to calculate the coefficient of consolidation at different loads are selected by the operator conducting the test and checked by the appropriate technical signatories. They may however not reflect an engineer's interpretation of the time settlement graphs and are by no means final.

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CONSOLIDATION TEST RESULTS - BS 1377: Part 5

Project	Acorn City	Date Tested	4/6/2020
Project No.	2020-B-553	Laboratory Number	2
Field Sample Reference	TP5	Depth (m)	1.1-1.5

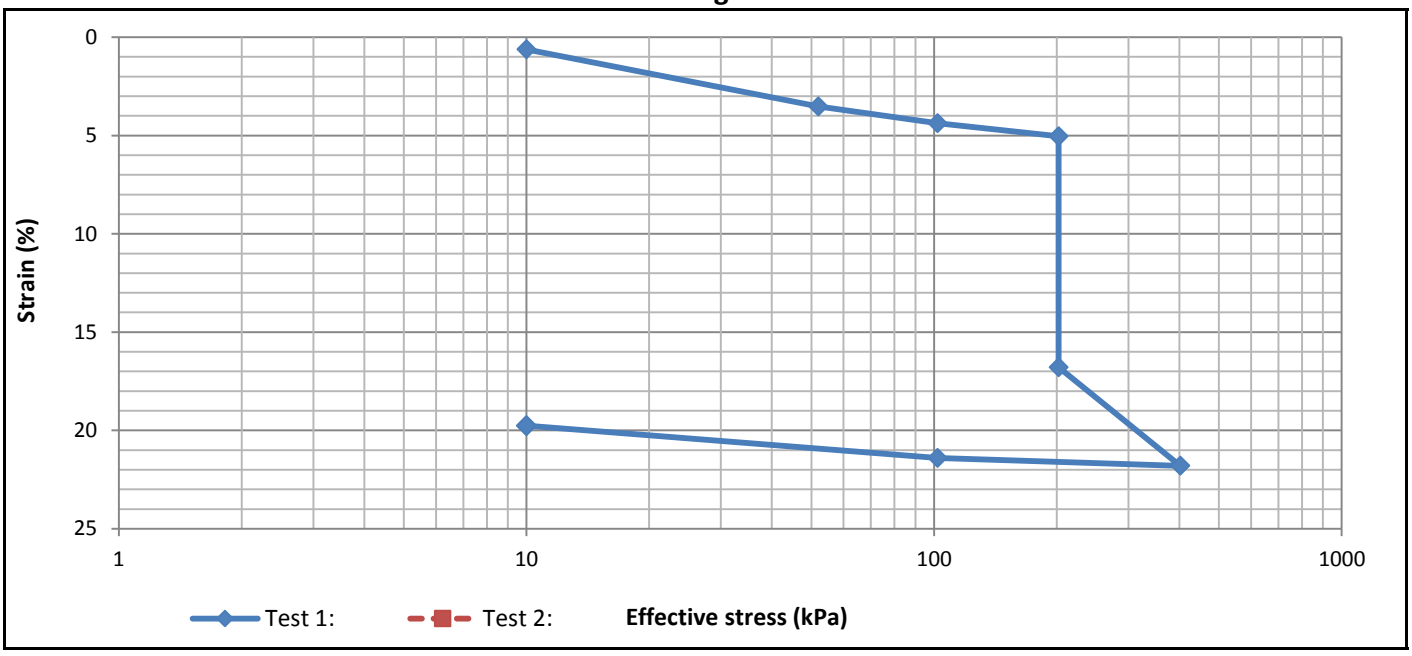
Test 1: **Specimen: Undisturbed , Testing Moisture: Soaked @ 200kPa**

Cycle	1	2	3	4	5	6	7	8								
Stress (kPa)	10	52	102	202	202	402	102	10								
Strain (%)	0.62	3.52	4.37	5.04	16.79	21.80	21.39	19.76								
Void Ratio, e	1.085	1.024	1.006	0.993	0.746	0.641	0.649	0.684								

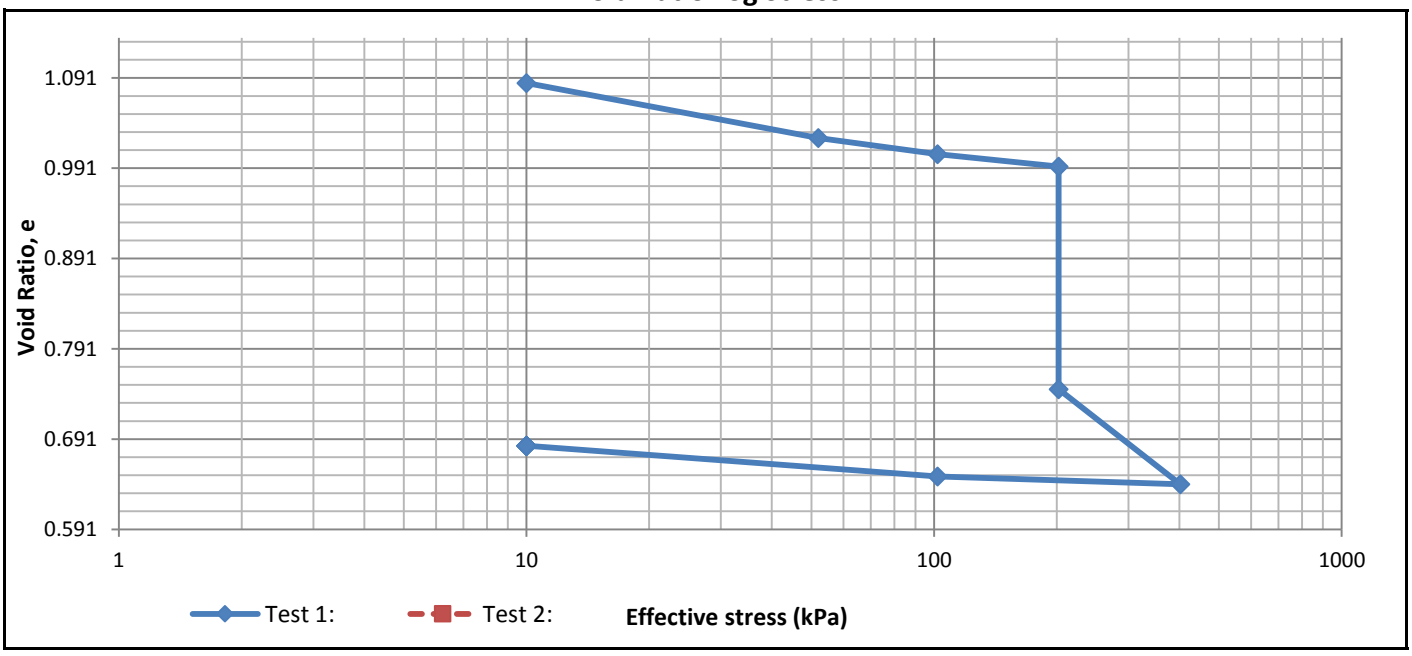
Test 2:

Cycle																
Stress (kPa)																
Strain (%)																
Void Ratio, e																

Strain Log Stress



Void Ratio Log Stress



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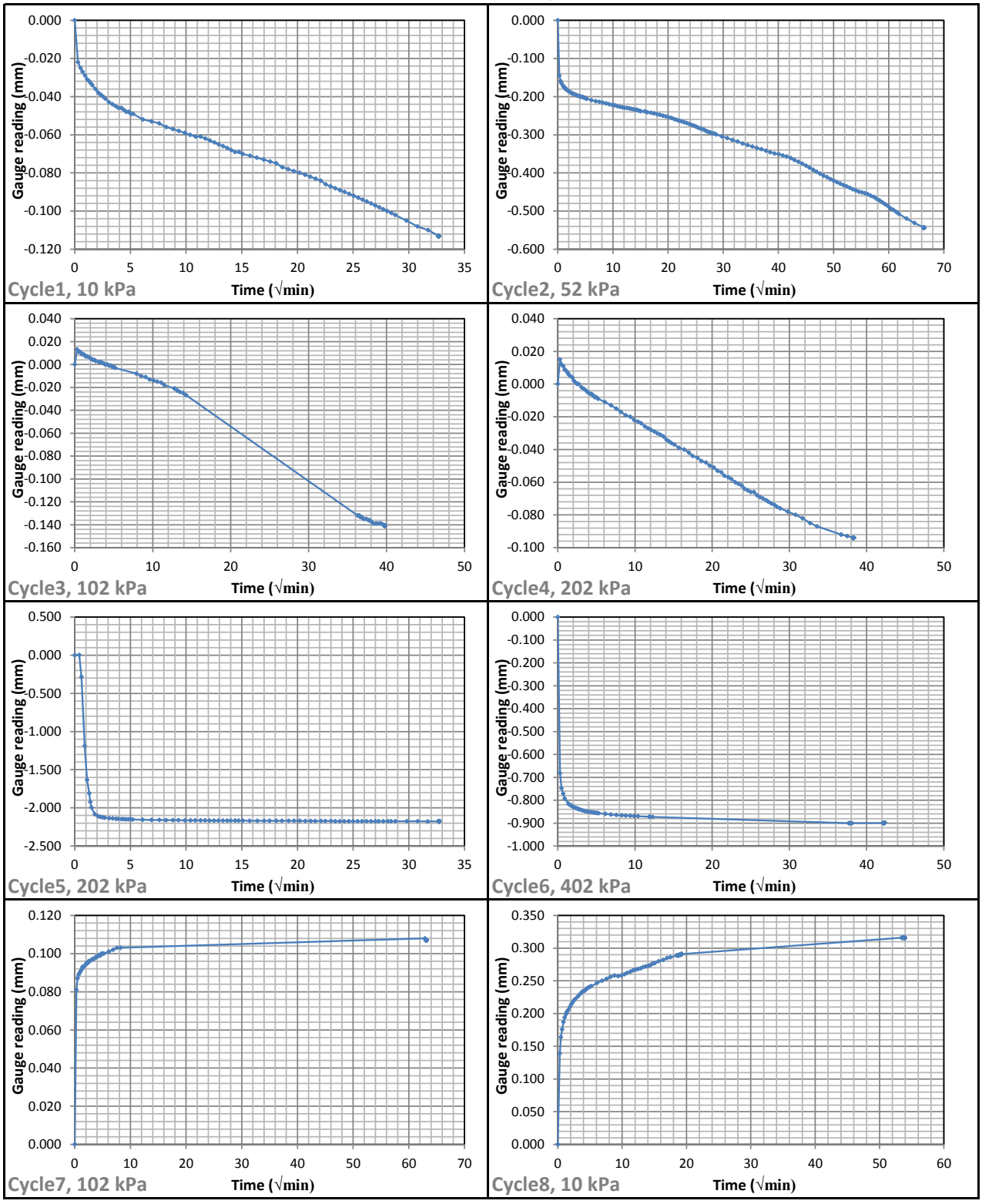
CONSOLIDATION TEST RESULTS - BS 1377: Part 5

Project	Acorn City	Date Tested:	4/6/2020
Project No.	2020-B-553	Laboratory Number:	2
Field Sample Reference	TP5	Depth (m):	1.1-1.5

Test 1 - Consolidation vs Square Root Time



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CONSOLIDATION TEST RESULTS - BS 1377: Part 5

Project	Acron City	Date Tested:	4/6/2020
Project No.	2020-B-553	Laboratory Number:	11
Field Sample Reference	TP19	Depth (m):	0.5-1.6

Test No.	1	
Test Type	Collapse Potential	
Remarks	Collapse Potential: 2.81%	

Specimen-, Preparation- & Test Conditions

Specimen Type	Undisturbed	
Moulding Dry Density		
Moulding Moisture		
Testing Moisture	Soaked @ 200kPa	

Equipment Detail

Machiene No.		OED14	
Ring	No.	F	
	Mass (g)	75.8	
	Height (mm)	19.02	
	Diameter (mm)	69.82	

Specimen Parameters

Stage	Initial	Final (Unloaded)	Initial	Final (Unloaded)
Relative density (S.G.)	2.650			
Moisture Content (%)	21.9	26.4		
Dry Density (kg/m^3)	1390	1522		
Void Ratio, e	0.906	0.741		
Degree of Saturation (%)	64	94		

Test Data

Test 1

Cycle	No.	1	2	3	4	5	6	7	8								
Total time	min	1078	4184	3058	6856	246.5	2652	1347	299.3								
Stress	kPa	10	52	102	202	202	402	102	10								
Strain	%	0.32	2.13	3.20	3.71	6.51	10.03	9.72	8.68								
Void Ratio	e	0.900	0.866	0.845	0.835	0.782	0.715	0.721	0.741								
Mv (1/MPa)		0.000	0.431	0.215	0.050		0.176	0.010	0.113								
t90	min																
Cv	m^2/year																

Test 2

Cycle	No.																
Total time	min																
Stress	kPa																
Strain	%																
Void Ratio	e																
Mv (1/MPa)																	
t90	min																
Cv	m^2/year																

The t90 values reported, if any, which are used to calculate the coefficient of consolidation at different loads are selected by the operator conducting the test and checked by the appropriate technical signatories. They may however not reflect an engineer's interpretation of the time settlement graphs and are by no means final.

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CONSOLIDATION TEST RESULTS - BS 1377: Part 5

Project	Acron City	Date Tested	4/6/2020
Project No.	2020-B-553	Laboratory Number	11
Field Sample Reference	TP19	Depth (m)	0.5-1.6

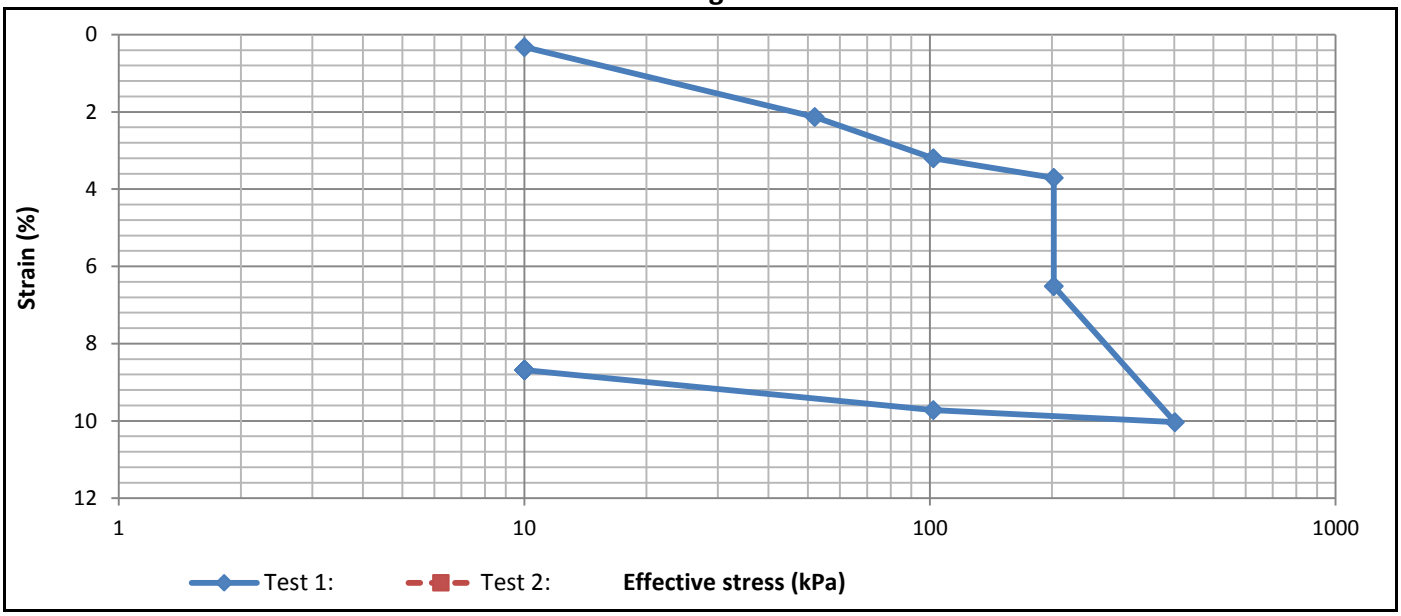
Test 1: **Specimen: Undisturbed , Testing Moisture: Soaked @ 200kPa**

Cycle	1	2	3	4	5	6	7	8								
Stress (kPa)	10	52	102	202	202	402	102	10								
Strain (%)	0.32	2.13	3.20	3.71	6.51	10.03	9.72	8.68								
Void Ratio, e	0.900	0.866	0.845	0.835	0.782	0.715	0.721	0.741								

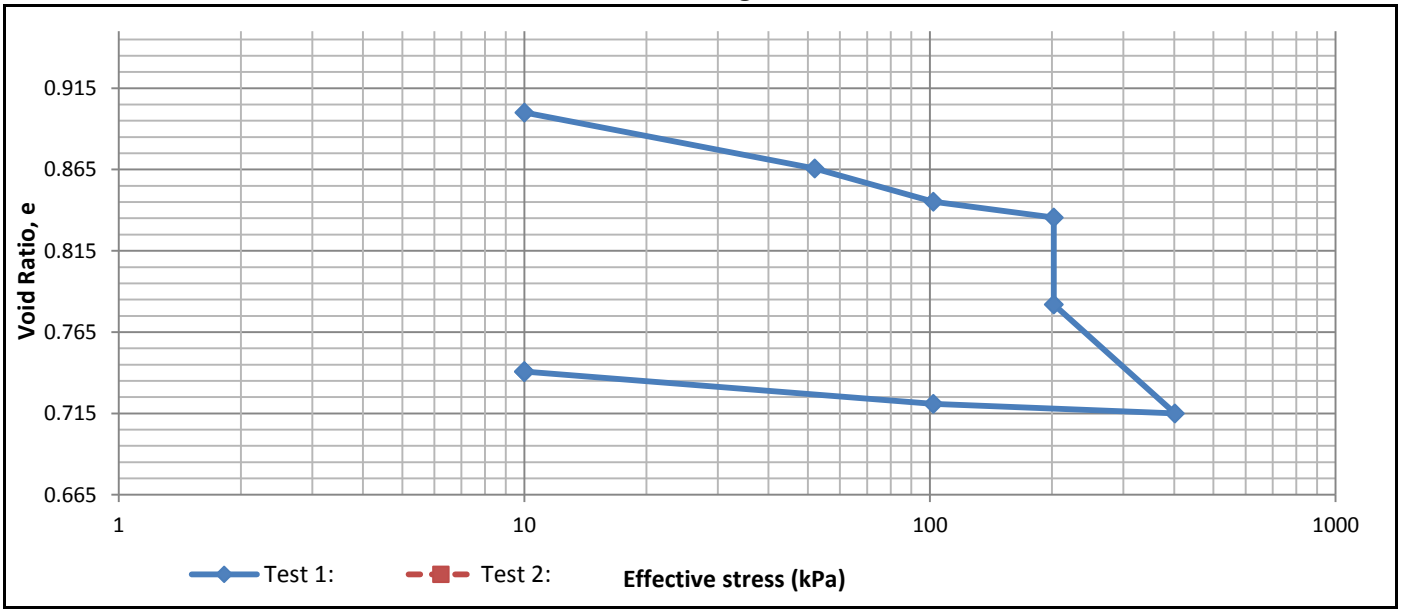
Test 2:

Cycle																
Stress (kPa)																
Strain (%)																
Void Ratio, e																

Strain Log Stress



Void Ratio Log Stress



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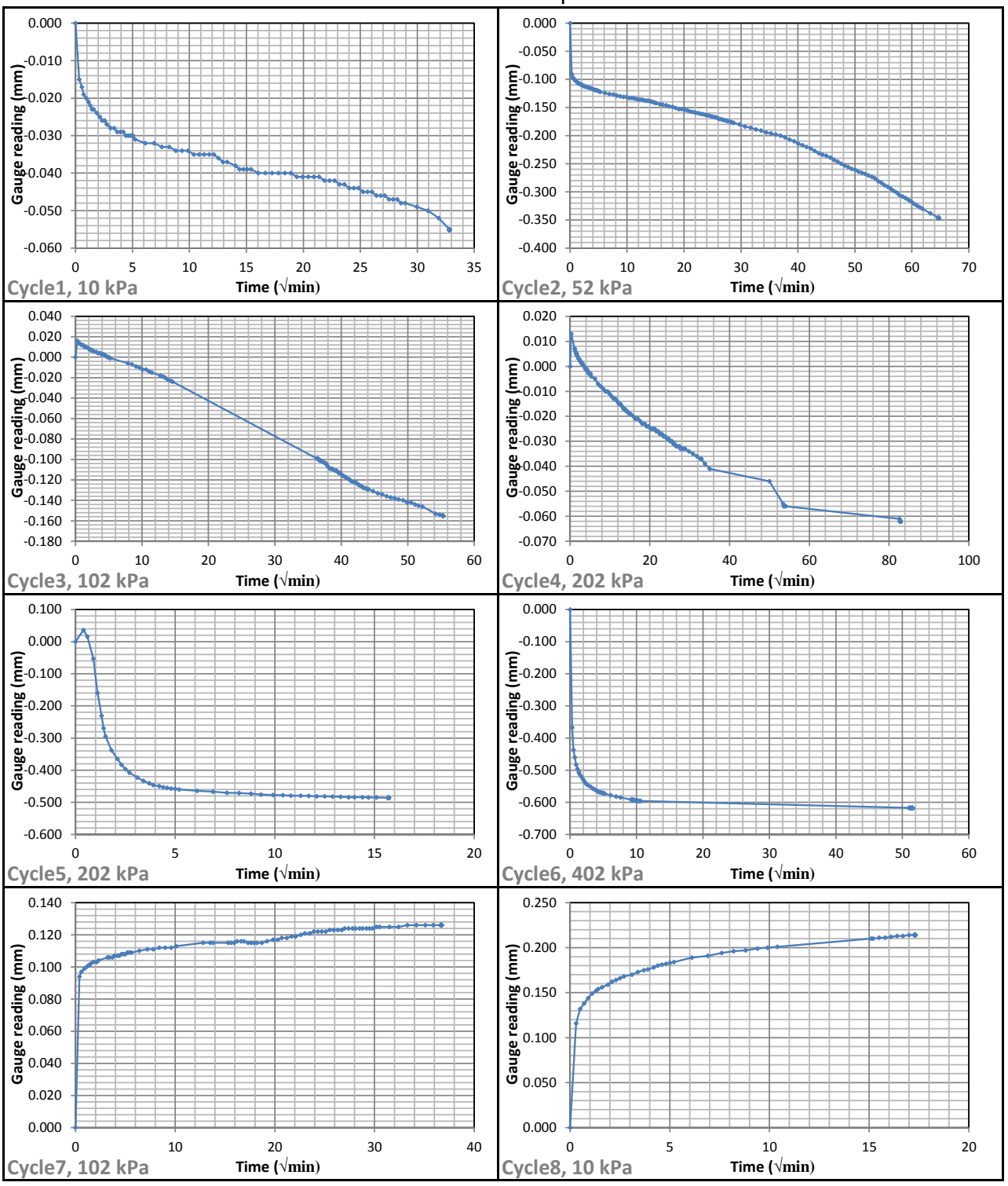
CONSOLIDATION TEST RESULTS - BS 1377: Part 5

Project	Acron City	Date Tested:	4/6/2020
Project No.	2020-B-553	Laboratory Number:	11
Field Sample Reference	TP19	Depth (m):	0.5-1.6

Test 1 - Consolidation vs Square Root Time



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CONSOLIDATION TEST RESULTS - BS 1377: Part 5

Project	Acorn City	Date Tested:	4/6/2020
Project No.	2020-B-553	Laboratory Number:	14
Field Sample Reference	TP23	Depth (m):	0.5-1.6

Test No.	1	
Test Type	Collapse Potential	
Remarks	Collapse Potential: 13.41%	

Specimen-, Preparation- & Test Conditions

Specimen Type	Undisturbed	
Moulding Dry Density		
Moulding Moisture		
Testing Moisture	Soaked @ 200kPa	

Equipment Detail

Machiene No.		OED15	
Ring	No.	15	
	Mass (g)	84.5	
	Height (mm)	19.15	
	Diameter (mm)	69.84	

Specimen Parameters

Stage	Initial	Final (Unloaded)	Initial	Final (Unloaded)
Relative density (S.G.)	2.650			
Moisture Content (%)	13.5	21.8		
Dry Density (kg/m^3)	1305	1652		
Void Ratio, e	1.030	0.604		
Degree of Saturation (%)	35	96		

Test Data

Test 1

Cycle	No.	1	2	3	4	5	6	7	8								
Total time	min	1067	4184	1444	1600	1069	1781	2916	1325								
Stress	kPa	10	52	102	202	202	402	102	10								
Strain	%	0.68	2.03	2.43	3.46	16.87	22.03	21.82	21.00								
Void Ratio	e	1.016	0.989	0.981	0.960	0.688	0.583	0.587	0.604								
Mv (1/MPa)		0.000	0.322	0.080	0.103		0.258	0.007	0.089								
t90	min																
Cv	m^2/year																

Test 2

Cycle	No.																
Total time	min																
Stress	kPa																
Strain	%																
Void Ratio	e																
Mv (1/MPa)																	
t90	min																
Cv	m^2/year																

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Project	Acorn City	Date Tested	4/6/2020
Project No.	2020-B-553	Laboratory Number	14
Field Sample Reference	TP23	Depth (m)	0.5-1.6

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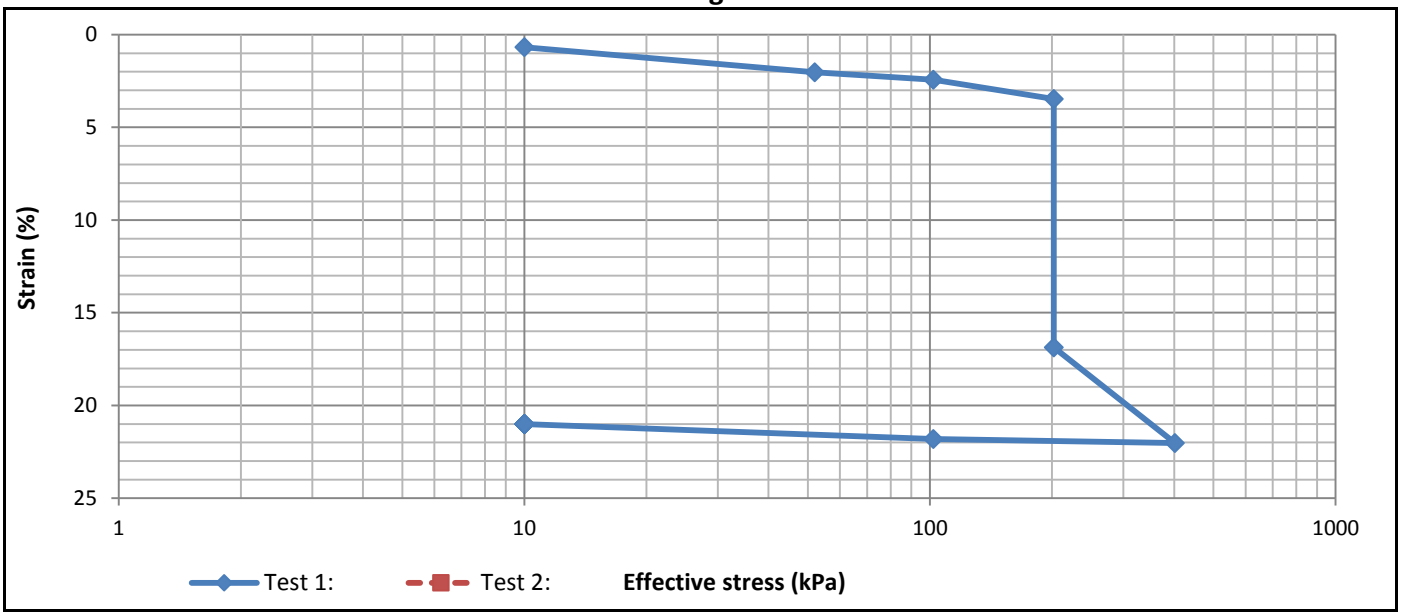
Void Ratio, e	1.016	0.989	0.981	0.960	0.688	0.583	0.587	0.604								

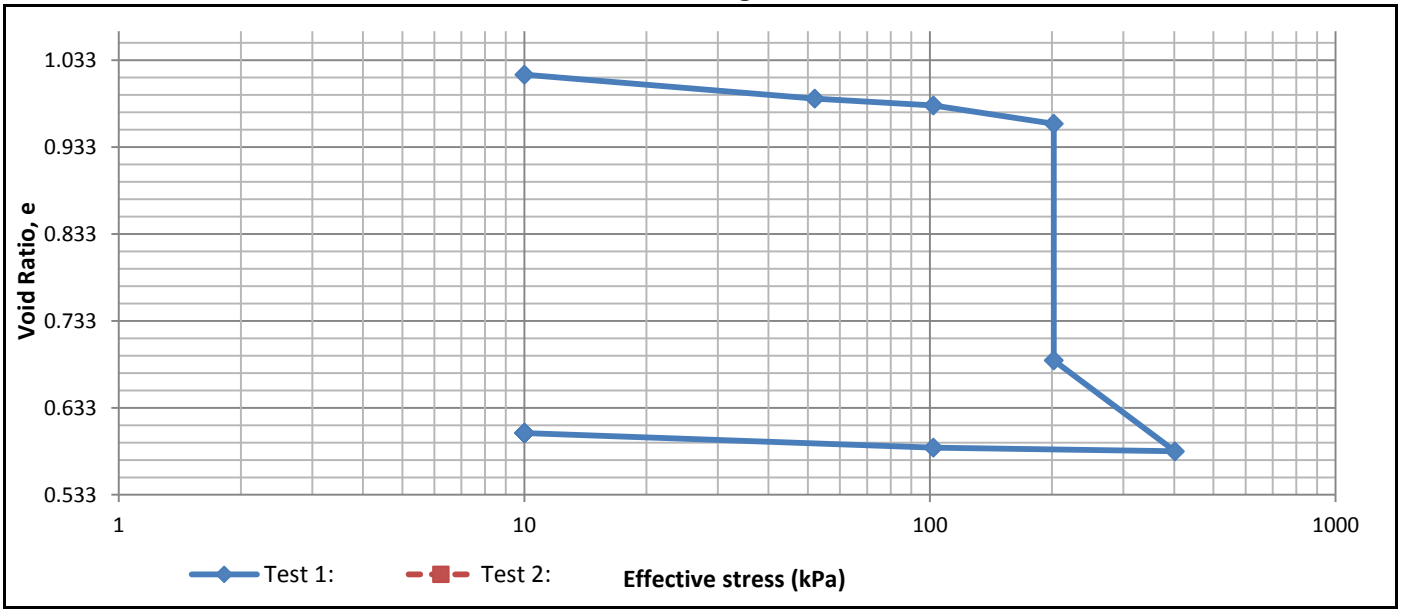
Test 2:

Cycle																
Stress (kPa)																
Strain (%)																
Void Ratio, e																

Strain Log Stress



Void Ratio Log Stress



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Project	Acorn City	Date Tested:	4/6/2020
Project No.	2020-B-553	Laboratory Number:	14
Field Sample Reference	TP23	Depth (m):	0.5-1.6

Test 1 - Consolidation vs Square Root Time