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PROJECT No: M20/3870 17th December 2020

DERICK PEACOCK ASSOCIATES Resort and Leisure Planners P.O. Box 11352 SILVER LAKES 0054

Attention: Mr. Derick Peacock

Dear Sir.

FACTUAL REPORT ON A PHASE 1 GEOTECHNICAL INVESTIGATION CARRIED OUT FOR THE PROPOSED RESORTT AND RESIDENTIAL DEVELOPMENT ON: PORTIONS 2 AND 3 OF TENBOSCH 661-JU, NKOMAZI LOCAL MUNICIPALITY, MPUMALANGA PROVINCE

1. INTRODUCTION

This factual report supersedes our preliminary report dated 13th December 2020 and presents results and observations on a foundation investigation carried out during November 2020 for a proposed resort and residential development that is to be situated on Portions 2 and 3 of the farm Tenbosch 661-JU. The investigation was carried out at the request of Mr. Derick Peacock who is acting on behalf of his client, Bluegrass Trading 1028, the registered owner of the property who proposes to establish a resort and residential development on the property.

The development will comprise of a number of waterfront stands overlooking the Crocodile River to the north and east as well as a number of bush lodges. The investigation consisted of a detailed geotechnical investigation during which time a number of test pits were excavated across the site, combined with soil sampling and testing.

2. TERMS OF REFERENCE

The objectives of the desk study were to: -

- Determine the engineering properties of the site soils and bedrock including potentially expansive material, low bearing capacity soils and areas difficult to excavate.
- Present appropriate recommendations for residential township design and precautionary measures in accordance with the requirements of the National Home Builders Registration Council's guidelines.

The investigation was carried out in terms of written instructions received from Mr. Derick Peacock during October 2020.

3. INFORMATION CONSULTED

The following information was available and was consulted: -

- The 1: 50 000 Topographical Map 2531BD & 2532AC Komatipoort.
- The 1: 250 000 scale Geological Series Map Sheet Number 2530 Barberton.
- A site contour plan prepared to a scale of 1: 2 000 by Van Staden Land Surveyors showing existing roads and structures, the boundaries of the proposed development and surface contours at 0,5m intervals.
- A site layout plan prepared to a scale of 1: 10 000 by Derick Peacock Associates showing the proposed layout of the development.
- A colour aerial photograph of the property was obtained from Google Earth via the Internet.
- "Veld Types of South Africa" by J.P.H. Acocks. Third Edition 1988. Memoirs of the Botanical Survey of South Africa, No. 57.
- The publication "National Home Builders Registration Council's Home Building Manual, Part 1 & 2, February 1999.

4. SITE DESCRIPTION

The site for the proposed resort and residential development is located due north of Komatipoort, the study area is of irregular shape and covers a surface area of some 230 hectares. The study area is a nature estate containing several species of game, it contains a few private lodges located in the northern part of the estate where it overlooks the Crocodile River to the north. The study area is located on the southern limb of a broad valley that is flanked by the Crocodile River to the north and east and by agricultural activities to the south and west. Several non-perennial drainage features criss-cross the site and terminates in small earth dams of which some are supplied with water from the Crocodile River. Large portions of the site is densely covered by indigenous bush and the ground surface drains via sheetwash via the aforementioned drainage features towards the east and north in the direction of the Crocodile River at an average gradient ranging of some 5%.

5. SITE INVESTIGATION

Forty-five test pits were excavated across the site for the new development using a New Holland B90B backactor supplied by Corbi Construction from Malelane. The test pits were entered and inspected by the undersigned, a registered professional engineering geologist, who described the soil and bedrock formations in terms of the methods advocated by Jennings <u>et al</u> (1973) namely, moisture condition, colour, soil consistency, soil structure, soil type and origin (MCCSSO). During the test pit profiling, disturbed an undisturbed representative soil and a water sample were recovered from the test pits and submitted to Roadlab's commercial soils laboratory in Centurion for testing and identification. Detailed descriptions of the test pit profiles are provided on the Soil Profile Sheets in Appendix 1 of the report whilst the laboratory test results appear in Appendix 2. The location of the test pits is shown on the "Geotechnical Map", Drawing Number M20/3870 at the back of the report.

6. OBSERVATIONS

The study area is underlain by transported sandy, clayey and gravelly soils overlying granophyre and gabbro bedrock belonging to the Komatipoort Suite and by basalt bedrock belonging to the Letaba Formation, Lebombo Group, Karoo Supergroup. Most of the study area is characterised by an abundance of rock outcrops and has been apportioned into three prominent geotechnical soil zones, Soil Zones "A" to "C" as shown on the "Geotechnical Map", Drawing Number M20/3870 in the pocket at the back of the report.

Soil Zone "A" materials cover the *major portion* of the site and a generalized and simplified description of the typical soil profile that may be encountered here is as follows: -

- 0,0-0,3: Abundant small (50mm in diameter) rounded and sub-rounded QUARTZITE GRAVELS and PEBBLES, clast supported in a matrix of dry, dark brown, clayey SAND; pebble marker. Overall consistency is <u>loose</u>. Often covered by a veneer of clayey SAND up to 0,5m in thickness. The surface area in this soil zone contains numerous small and medium-sized corestones and abundant hard rock outcrops.
- 0,3 0,5: Dry, dark brown speckled yellow, loose, clayey GRAVELS; residual basalt.
- 0,5 1,0: Dry, dark olive green speckled white and orange, very dense, coarse SAND; residual basalt.
 - 1,0+: Dark olive speckled orange, highly weathered, closely jointed, <u>soft rock</u> BASALT or occasionally GABBRO in western part of this soil zone.

Soil Zone "B" materials occupy the *northern portion* of the site and a generalized and simplified description of the typical soil profile that may be encountered here is as follows: -

- 0,0 1,5: **Eastern part of zone**: Dry, dark red becoming dark orange red, <u>very stiff</u>, voided and slightly shattered, clayey sandy SILT containing tree roots and termite activity; colluvium.
- 0,0 1,6: **Western part of zone**: Dry, dark brown, yellowish brown and greyish brown, <u>loose</u> becoming <u>dense</u>, voided, clayey fine SAND containing tree roots; colluvium/alluvium.

Soil Zone "C" occupies an area in the *south-western portion* of the site and a generalized and simplified description of the typical soil profile that may be encountered here is as follows: -

- 0,0 0,8: Dry, dark greyish brown, stiff becoming very stiff, shattered, sandy CLAY containing tree roots; colluvium. Thickness of this horizon ranges from 0,1m to 0,9m. The surface area around test pits in this soil zone contains numerous to abundant small and medium-sized corestones (small boulders) of mixed origin, abundant hard rock outcrops characterises this soil zone as well.
- 0.8-0.9: As above and containing numerous rounded GRAVELS and PEBBLES of assorted origin; pebble marker.
- 0,9 1,2: Dry, olive blotched orange and black, <u>very dense</u>, relict jointed, clayey coarse SAND; residual granophyre.

Slow excavation to abrupt refusal of the backactor was experienced from below an avergae depth of about 1,0m below surface in hard rock basalt and granophyre across Soil Zones "A" and "C", no refusal was experienced across Soil Zone "B" down to a depth of at least 1,6m below surface. The water table, whether perched or permanent, was not encountered in any pit during the investigation which was carried out during the latter part of the dry season.

7. GEOTECHNICAL CONSIDERATIONS

7.1 Compressible and Collapsible Soils

A number of undisturbed soil samples, representative of the colluvial soils that blanket Soil Zone "B", were tested to determine the collapse potential of the material according to the method advocated by Jennings (1974). A summary of the results of the laboratory tests appears below in Table 7.1.

HOLE NO	DEPTH (m)	DRY DENSITY (kg/m³)	COLLAPSE POTENTIAL (%)	COMPRESSI- BILITY (%)	TROUBLE RATING
TB/17	0,50	1 593	9,64	1,93	Trouble
TB/20	0,50	1 301	18,20	3,77	Severe Trouble
TB/20	1,20	1 529	12,50	0,28	Severe Trouble
TB/28	1.00	1 359	12.63	2,80	Severe Trouble

TABLE 7.1: COLLAPSE POTENTIAL TEST RESULTS

An analysis of the above results indicates that the colluvial sandy and silty soils which blanket Soil Zone "B", potentially moderately to highly collapsible and compressible with a collapse rating of "trouble" to "severe trouble" in terms of collapse settlement, according to Jennings. The upper sandy and gravelly horizons that extend down to some 0,1m to 0,8m below surface across Soil Zone "A" are considered to be potentially collapsible compressible, based on a visual appraisal of the soil structure i.e. a loose consistency and a voided texture. The gravelly soils were unfortunately too friable to take undisturbed soil samples, lab results will confirm the compressibility of the sandy and silty soils.

7.2 Expansive Soils

The site soils blanketing portions of Soil Zone "C" are generally clayey and are potentially "medium" in the degree of expansiveness, based on the results of the laboratory tests and according to the Van der Merwe (1964) method. A total surface heave value ranging from 7,5mm to possibly up to 20mm is predicted here, should the moisture condition of the soils change from a desiccated to saturated condition. Soil Zone "A" is occupied by soils that are potentially "low" in the degree of expansiveness and where total surface heave values of less than 7,5mm is predicted although pockets of Soil Zone "C" are present where heave values may exceed 15mm.

7.3 Excavation Characteristics

Very hard machine excavation, the use of jackhammers and probably "pop" blasting will be required to remove the hard rock basalt and granophyre that occupies large portions of the study area. Gradual to abrupt refusal of the backactor was generally experienced at a depth of about 1,0m below surface across Soil Zones "A" and "C" in either very dense residual soils or in bedrock where the test pits were excavated between rocky outcrops. No problems should be experienced in excavating the site soils down to a depth of at least 1,5m below surface using conventional earthmoving machines across Soil Zone "B". The sidewalls of deep excavations should remain stable during construction in the dry season, unstable sidewall conditions may occur in the upper portions of excavations during construction in the wet season.

7.4 Foundations

Soil Zone "A"

The major portion of the proposed development classifies as a NHBRC Site Class "C/S-S1/R" according to the guidelines of the NHBRC Standards and Guidelines of October 2014 and in view of the moderate horizon of potentially compressible soils which blanket this soil zone, one of the following foundation systems may be considered for rigid, residential masonry structures:-

Deep Strip Foundations

- Normal construction with drainage precautions and with mesh reinforced floor slabs.
- Founding on the dense residual basalt or granophyre or onto bedrock at depths ranging from 0,2m to 0,8m below surface and adopting a safe allowable bearing pressure ranging from 300 kPa to 1MPa, depending on the quality of the material exposed in the foundation trench and taking cognizance of an undulating foundation horizon.

Soil Raft

- Remove in situ material to 1m beyond perimeter of building to a depth of 1,5 times the widest foundation or to a competent horizon and replace with material compacted to 93% Mod AASHTO density at -1% to +2% of optimum moisture content.
- Normal construction with lightly reinforced strip footings.
- Light reinforcement in masonry.
- Site drainage and plumbing/service precautions to be taken.

Modified Normal Construction

- Reinforced strip footings
- Articulation joints at some internal and all external doors
- Light reinforcement in masonry
- Site drainage and plumbing precautions to be taken
- Foundation pressure not to exceed 50 kPa.

Soil Zone "B"

The central portion of the proposed development classifies as a NHBRC Site Class "C1-C2/S1/H1" according to the guidelines of the NHBRC Standards and Guidelines of October 2014 and in view of the moderate horizon of potentially collapsible, compressible and moderately expansive soils which blanket this soil zone, one of the following foundation systems may be considered for rigid, residential masonry structures: -

Soil Raft

- Remove in situ material to 1m beyond perimeter of building to a depth of 1,5 times the widest foundation or to a competent horizon and replace with material compacted to 93% Mod AASHTO density at -1% to +2% of optimum moisture content.
- Normal construction with lightly reinforced strip footings.
- Light reinforcement in masonry.
- Site drainage and plumbing/service precautions to be taken.

Stiffened or Cellular Raft

- Stiffened or cellular raft with articulation joints or solid lightly reinforced masonry
- Site drainage and plumbing/service precautions to be taken.
- Foundation Pressure not to exceed 50 kPa.

Piled or Pier Foundation

- Reinforced concrete ground beams or solid slabs on piled or pier foundations.
- Ground slabs with fabric reinforcement
- Site drainage and plumbing/service precautions to be taken.

Soil Zone "C"

The south-western portion of the proposed development classifies as a NHBRC Site Class "H1-H2/R" according to the guidelines of the NHBRC Standards and Guidelines of October 2014 and in view of the moderate horizon of potentially moderately expansive soils which blanket this soil zone, one of the following foundation systems may be considered for rigid, residential masonry structures: -

Soil Raft

- Remove all or part of the expansive horizon to 1m beyond the perimeter of the structure and replace with inert backfill compacted to 93% Mod AASHTO density at -1% to +2% of optimum moisture content.
- Normal construction with lightly reinforced strip footings and light reinforcement in masonry if residual movements are <7,5mm or construction type appropriate to residual movement.
- Site drainage and plumbing/service precautions to be taken.

Split construction

- Combination of reinforced brickwork/ blockwork and full movement joints;
- Suspended floors or fabric reinforced ground slabs acting independently from the structure;
- Site drainage and plumbing/service precautions to be taken.

Piled construction

- Piled foundations with suspended floor slabs with or without ground beams.
- Site drainage and plumbing/service precautions to be taken.

Stiffened or cellular raft

- Stiffened or cellular raft of articulated lightly reinforced masonry.
- Site drainage and plumbing/service precautions to be taken.

The design and construction of raft foundations (whether soil or concrete) should be carried out in accordance with and under supervision of a civil or structural engineer and the NHBRC a competent person should verify classification given here. The design of multi-storey structures should take cognizance of the potentially problematic conditions that prevail across the site. Areas of disturbed ground conditions may be encountered during construction and where present, these should be carefully reinstated.

7.5 Earthworks

Soil Zone "A" is covered by sandy and gravelly soils overlying gravelly and sany residual soils and these materials should be suitable for use as backfill underneath surface beds and in the construction of roads and paved areas after removal of the coarser than 60mm fraction (G6/G7 Quality). The blanketing sandy and silty soils covering Soil Zone "B" will probably qualify as G7/G8 quality material in terms of TRH14 and should likewise be suitable for use as backfill underneath surface beds as well as for use as pipe bedding material. The blanketing clayey soils occurring in Soil Zone "C" and in isolated pockets elsewhere are considered unsuitable for any use as a construction material and should be discarded during construction.

7.6 Ground Water and Soil Chemistry

No water seepages were encountered in the test pits during the investigation, however, the necessary damp-proofing precautions should therefore be taken underneath structures. The site soils are expected to be potentially chemically aggressive with regards to underground ferrous metal pipes (pH values ranging from 5,6 to 7,8 and electrical conductivity values ranging from 33 to 67 mS/m) and the use of non-ferrous metal pipes or plastic pipes are recommended for wet services, the foundation soils should be treated with an environmentally friendly insecticide to combat termites.

8. GENERAL

While every effort has been made to ensure that representative test pitting and sampling has been undertaken to probe the soils on-site, guaranteeing that isolated zones of either poor foundation material or hard rock excavation have not been identified, is impossible under the constraints of an investigation of this nature. The investigation has sought to highlight general areas of potential foundation and excavation problems, and to provide early warning to the design engineers and town planners. In view of the variability inherent in soils, a competent person must inspect all foundation excavations.

The placement of the engineered fills must be controlled with suitable field tests to ensure that the required densities are achieved during compaction, and that the quality of fill material is within specification.

Based on the results of the investigation, *Portions 2 and 3 of the farm Tenbosch 661-JU* is considered suitable for the proposed resort and residential development taking cognizance of the geotechnical factors mentioned in paragraph 7 above.

We trust that the above information will meet with your immediate requirements, please do not hesitate to call for any further information.

Yours faithfully,

JOHANN VAN DER MERWE (Pr. Sci. Nat.)

Archrewe

Engineering Geologist

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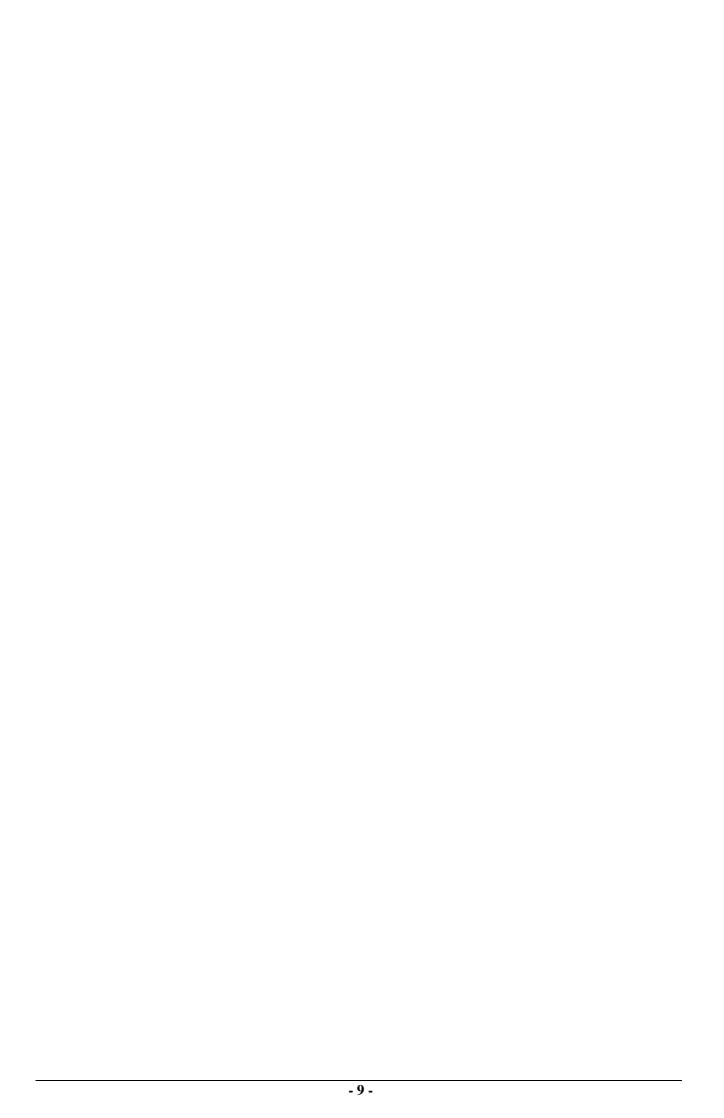
EOTECHNICAL INVESTIGATION FOR RESORT & RESIDENTIAL DEVELOPMENT
PORTIONS 2 & 3 OF THE FARM TENBOSCH 661-JU, MPUMALANGA PROVINCE
13 December 2020

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7.	AFFINI	MICES

Test Pit Profiles

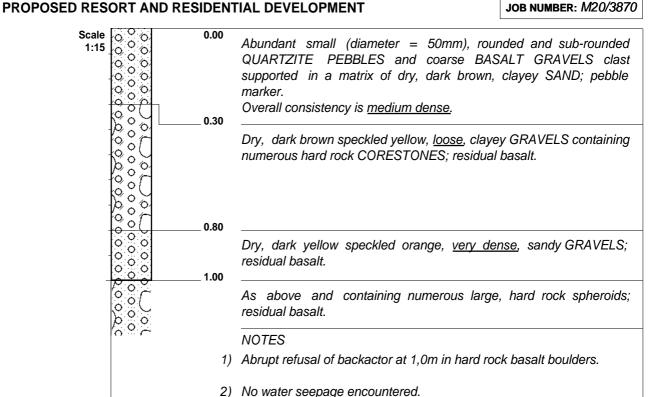
Laboratory Soil Test Results

Geotechnical Map



HOLE No: TB/10 Sheet 1 of 1

JOB NUMBER: M20/3870



CONTRACTOR: Corbi Construction **INCLINATION:**

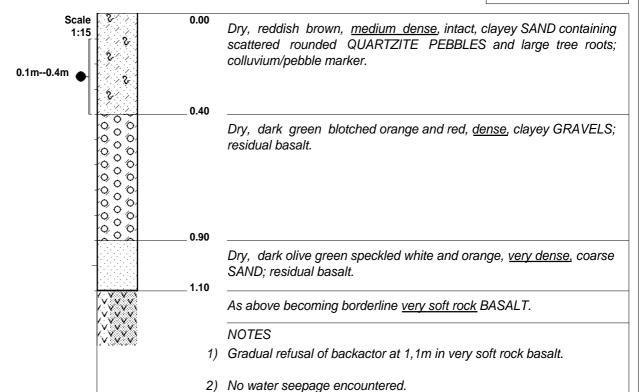
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HOLE No: TB/11 Sheet 1 of 1

JOB NUMBER: *M20/3870*



3) Disturbed indicator sample takn from 0,1m--0,4m.

CONTRACTOR: Corbi Construction INCLINATION:

DIAM: Trench

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PROFILED BY: jovdm

DATE: DATE: 11-12/11/2020

TYPE SET BY: Bernhard Crafford DATE: 18/12/2020 13:32

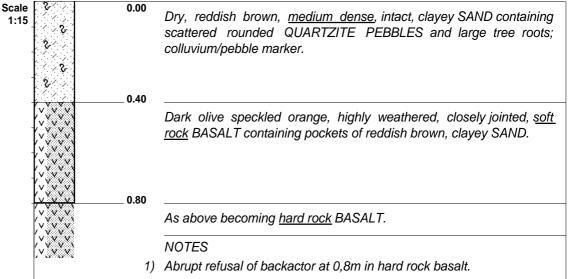
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ELEVATION: X-COORD: S25 24 14.8 Y-COORD: E31 58 16.5

HOLE No: TB/11

HOLE No: TB/12 Sheet 1 of 1

JOB NUMBER: M20/3870



2) No water seepage encountered.

3) Rock excavates as coarse angular fragments (diameter up to 60mm) and also contains rounded spheroids up to 400mm diameter.

CONTRACTOR: Corbi Construction **INCLINATION:**

MACHINE: New Holland B90B Backactor DIAM: Trench **DRILLED BY:** DATE:

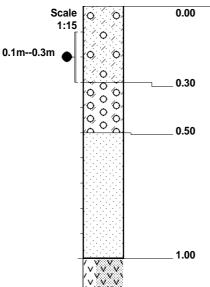
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X-COORD: S25 24 09.5 Y-COORD: E31 58 20.5

HOLE No: TB/13 Sheet 1 of 1

JOB NUMBER: *M20/3870*



Abundant small (diameter = 50mm), rounded and sub-rounded QUARTZITE PEBBLES, clast supported in a matrix of dry, dark brown, clayey SAND; pebble marker.

Overall consistency is loose.

Dry, dark brown speckled yellow, loose, clayey GRAVELS; residual basalt.

Dry, dark olive green speckled white and orange, <u>very dense</u>, coarse SAND: residual basalt.

Dark olive speckled orange, highly weathered, closely jointed, <u>soft</u> <u>rock</u> BASALT containing pockets of reddish brown, clayey SAND.

NOTES

- 1) Gradual refusal of backactor at 1,0m in soft rock basalt.
- 2) No water seepage encountered.
- 3) Disturbed indicator sample taken from 0,1m--0,3m.

CONTRACTOR: Corbi Construction

MACHINE: New Holland B90B Backactor

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DIAM: Trench

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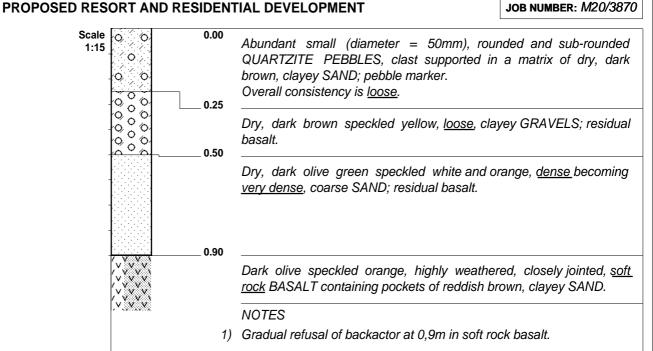
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ELEVATION:

X-COORD: S25 24 03.1 Y-COORD: E31 58 23.4

HOLE No: TB/14 Sheet 1 of 1

JOB NUMBER: M20/3870



2) No water seepage encountered.

CONTRACTOR: Corbi Construction **INCLINATION: ELEVATION:**

DIAM: Trench

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TYPE SET BY: Bernhard Crafford DATE: 18/12/2020 13:32

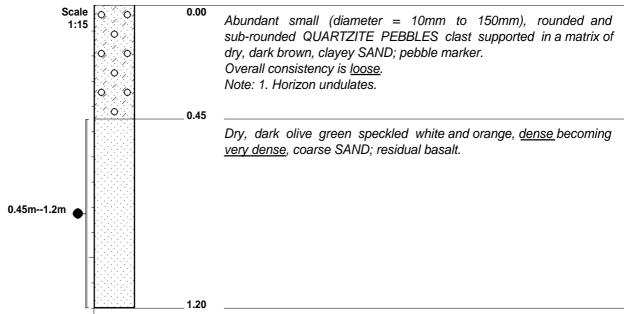
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X-COORD: S25 23 58.6 Y-COORD: E31 58 27.7

HOLE No: TB/14

HOLE No: TB/15 Sheet 1 of 1

JOB NUMBER: M20/3870



NOTES

- 1) Gradual refusal of backactor at 1,2m in very dense residual basalt.
- 2) No water seepage encountered.
- 3) Disturbed foundation indicator sample taken from 0,45m--1,2m.
- 4) Numerous small and medium-sized cobbles at surface.

CONTRACTOR: Corbi Construction INCLINATION: ELEVA

MACHINE: New Holland B90B Backactor DIAM: Trench
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PROFILED BY: jovdm

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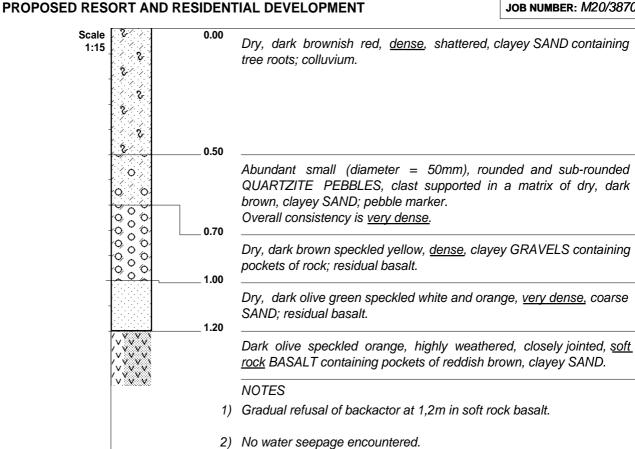
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ELEVATION:

X-COORD: S25 23 52.5 Y-COORD: E31 58 31.7

HOLE No: TB/16 Sheet 1 of 1

JOB NUMBER: *M20/3870*



CONTRACTOR: Corbi Construction **INCLINATION:**

DIAM: Trench

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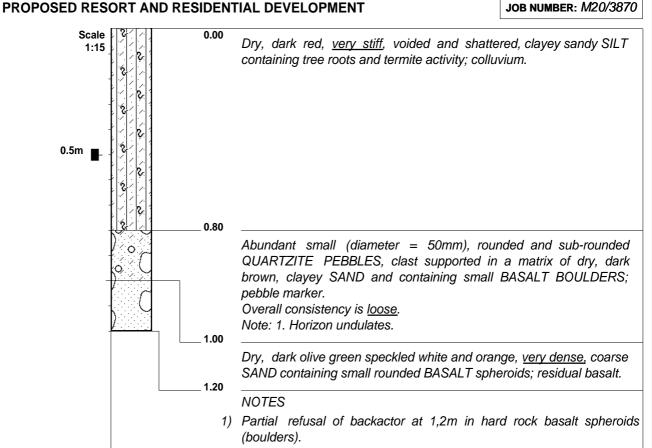
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HOLE No: TB/16

HOLE No: TB/17 Sheet 1 of 1

JOB NUMBER: M20/3870



2) No water seepage encountered.

3) Undisturbed block sample taken at 0,5m.

CONTRACTOR: Corbi Construction

MACHINE: New Holland B90B Backactor

DRILLED BY:

PROFILED BY: jovdm

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DIAM: Trench

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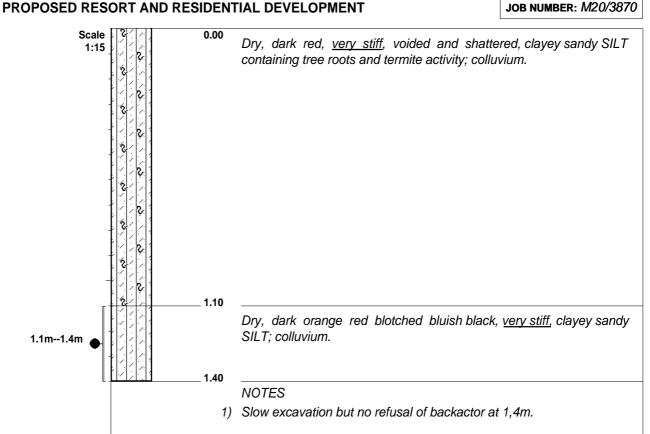
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ELEVATION:

X-COORD: S25 23 40.7 Y-COORD: E31 58 32.4

HOLE No: *TB/18* Sheet 1 of 1

JOB NUMBER: M20/3870



- 2) No water seepage encountered.
- 3) Disturbed foundation indicator sample taken from 1,1m--1,4m.

CONTRACTOR: Corbi Construction **INCLINATION: ELEVATION:**

MACHINE: New Holland B90B Backactor DIAM: Trench **DRILLED BY:** DATE: **PROFILED BY**: jovdm DATE: 11-12/11/2020

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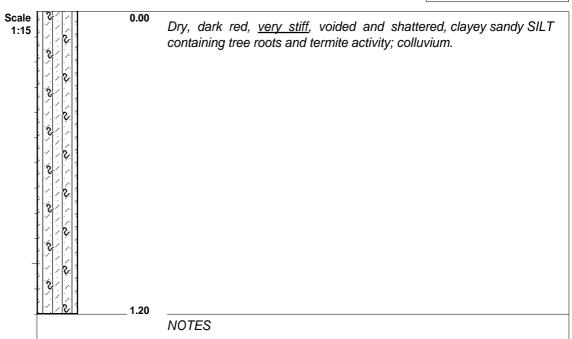
HOLE No: TB/18

X-COORD: S25 23 33.1

Y-COORD: E31 58 14.8

HOLE No: TB/19
Sheet 1 of 1

JOB NUMBER: *M20/3870*



- 1) Slow excavation to gradual refusal of backactor at 1,2m.
- 2) No water seepage encountered.

CONTRACTOR: Corbi Construction INCLINATION: ELEVATION:

MACHINE: New Holland B90B Backactor

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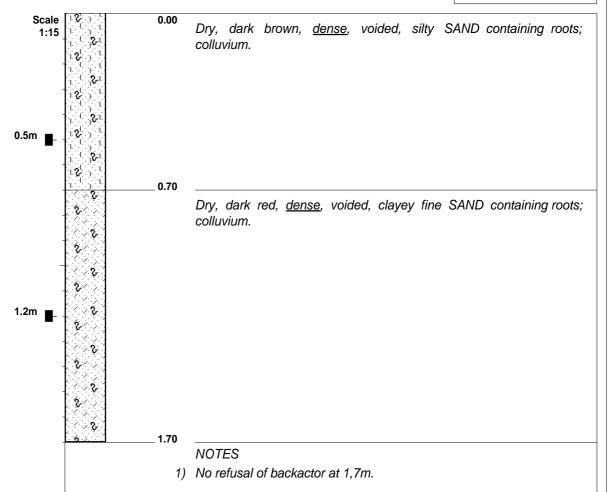
DATE: 18/12/2020 13:32 HOLE No: TB/19

X-COORD: S25 23 34.8

Y-COORD: E31 58 07.1

HOLE No: TB/20 Sheet 1 of 1

JOB NUMBER: *M20/3870*



- 2) No water seepage encountered.
- 3) Undisturbed block samples taken at 0,5m and 1,2m.

CONTRACTOR: Corbi Construction

MACHINE: New Holland B90B Backactor

DRILLED BY :

PROFILED BY : jovdm

TYPE SET BY : Bernhard Crafford

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INCLINATION:

DIAM: Trench

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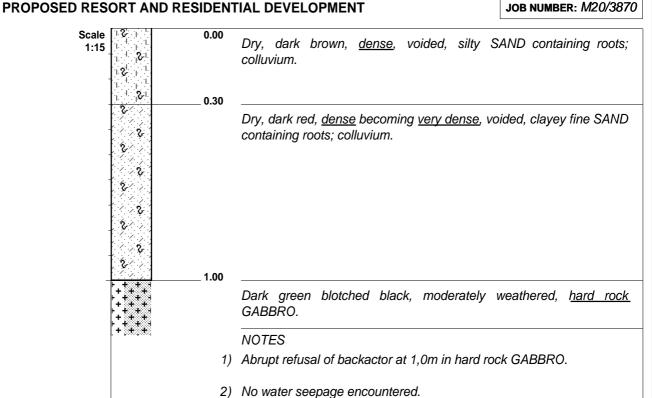
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ELEVATION:

X-COORD: S25 23 38.3 Y-COORD: E31 58 00.8

HOLE No: TB/21 Sheet 1 of 1

JOB NUMBER: M20/3870



CONTRACTOR: Corbi Construction **INCLINATION: ELEVATION:**

MACHINE: New Holland B90B Backactor DIAM: Trench **DRILLED BY:** DATE: **PROFILED BY**: jovdm DATE: 11-12/11/2020

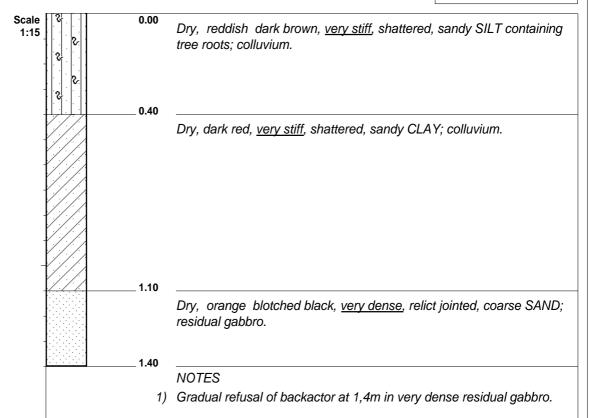
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X-COORD: S25 23 42.5

HOLE No: *TB/22* Sheet 1 of 1

JOB NUMBER: *M20/3870*



2) No water seepage encountered.

CONTRACTOR: Corbi Construction INCLINATION: ELEVATION:

DIAM: Trench

 DRILLED BY :
 DATE :

 PROFILED BY : jovdm
 DATE : 11-12/11/2020

TYPE SET BY: Bernhard Crafford DATE: 18/12/2020 13:32

SETUP FILE : STANDARD.SET TEXT : ..top\ARCHIVE\TENBOSCH.txt

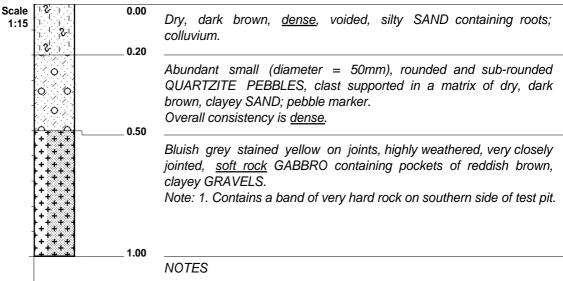
X-COORD: S25 23 48.0 Y-COORD: E31 57 58.9

HOLE No: TB/22

PROPOSED RESORT AND RESIDENTIAL DEVELOPMENT

HOLE No: TB/23 Sheet 1 of 1

JOB NUMBER: *M20/3870*



- 1) Abrupt refusal of backactor at 1,0m in soft rock gabbro.
- 2) No water seepage encountered.

CONTRACTOR: Corbi Construction

MACHINE: New Holland B90B Backactor

DRILLED BY :

PROFILED BY : *jovdm*

TYPE SET BY: Bernhard Crafford SETUP FILE: STANDARD.SET

INCLINATION:

DIAM: Trench

DATE:

DATE: 11-12/11/2020

DATE: 18/12/2020 13:32

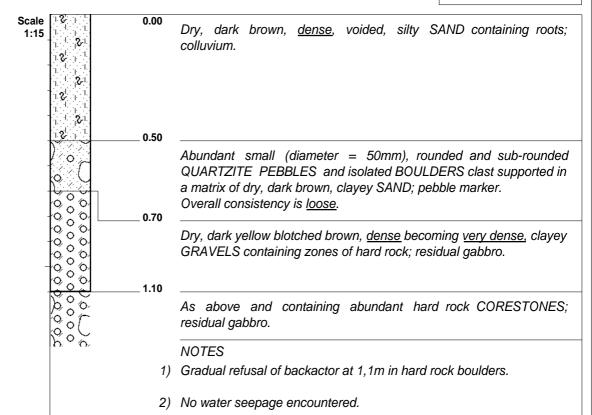
TEXT: ..top\ARCHIVE\TENBOSCH.txt

ELEVATION:

X-COORD: S25 23 51.5 Y-COORD: E31 57 59.8

HOLE No: TB/24 Sheet 1 of 1

JOB NUMBER: *M20/3870*



CONTRACTOR: Corbi Construction INCLINATION:

MACHINE: New Holland B90B Backactor DIAM: Trench DRILLED BY: DATE:

PROFILED BY : *jovdm*TYPE SET BY : Bernhard Crafford

DATE : 11-12/11/2020

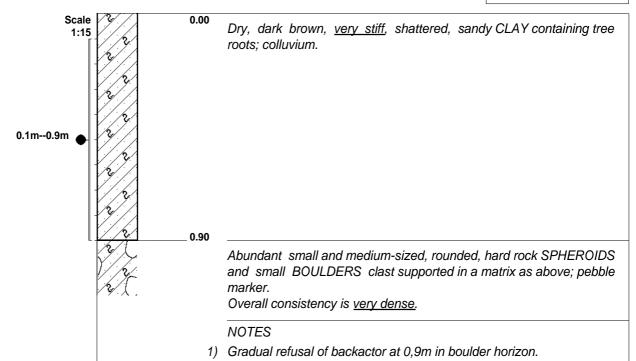
DATE : 18/12/2020 13:32

SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt

ELEVATION: X-COORD: S25 23 57.2 Y-COORD: E31 58 00.9

HOLE No: TB/25 Sheet 1 of 1

JOB NUMBER: M20/3870



2) No water seepage encountered.

3) Disturbed indicator sample taken from 0,1m--0,9m.

CONTRACTOR: Corbi Construction **INCLINATION: ELEVATION:**

DIAM: Trench

DRILLED BY: DATE: **PROFILED BY**: jovdm DATE: 11-12/11/2020 **TYPE SET BY: Bernhard Crafford** DATE: 18/12/2020 13:32

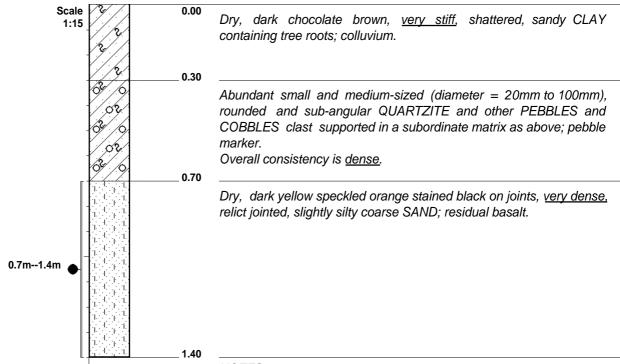
SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt HOLE No: TB/25

X-COORD: S25 24 03.2

Y-COORD: E31 57 58.4

HOLE No: TB/26 Sheet 1 of 1

JOB NUMBER: *M20/3870*



NOTES

- 1) Gradual refusal of backactor at 1,4m in very dense residual basalt.
- 2) No water seepage encountered.
- 3) Disturbed foundation indicator sample taken from 0,7m--1,4m.
- 4) Massive outcrop south of test pit, numerous small boulders at surface.

CONTRACTOR: Corbi Construction

MACHINE: New Holland B90B Backactor

DRILLED BY :

PROFILED BY: *jovdm*

TYPE SET BY: Bernhard Crafford SETUP FILE: STANDARD.SET

INCLINATION:

DIAM: Trench

DATE:

DATE: 11-12/11/2020

DATE: 18/12/2020 13:32

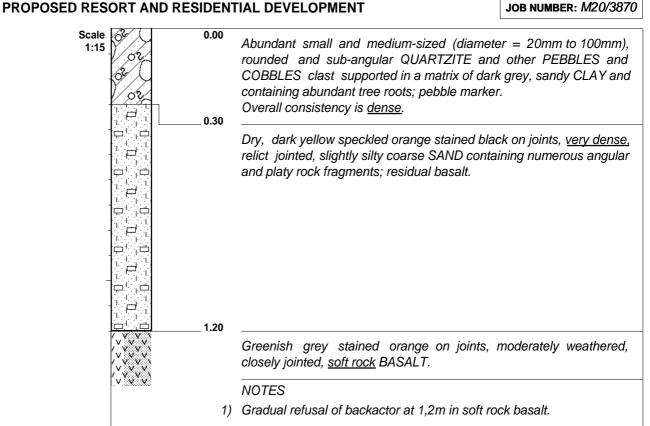
TEXT: ..top\ARCHIVE\TENBOSCH.txt

ELEVATION:

X-COORD: S25 23 53.6 **Y-COORD**: E31 57 45.8

HOLE No: TB/27 Sheet 1 of 1

JOB NUMBER: M20/3870



2) No water seepage encountered.

INCLINATION:

MACHINE: New Holland B90B Backactor DIAM: Trench

DRILLED BY: DATE: **PROFILED BY**: jovdm DATE: 11-12/11/2020

TYPE SET BY: Bernhard Crafford DATE: 18/12/2020 13:32

SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt **ELEVATION:**

X-COORD: S25 24 00.4 Y-COORD: E31 57 43.4

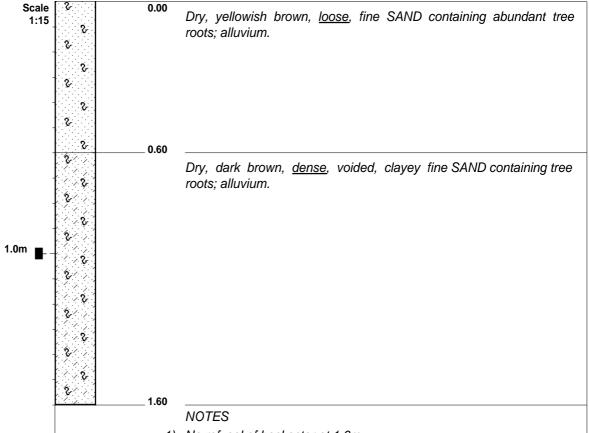
HOLE No: TB/27

CONTRACTOR: Corbi Construction

PROPOSED RESORT AND RESIDENTIAL DEVELOPMENT

HOLE No: TB/28 Sheet 1 of 1

JOB NUMBER: *M20/3870*



- 1) No refusal of backactor at 1,6m.
- 2) No water seepage encountered.
- 3) Undisturbed block sample taken at 1,0m.

CONTRACTOR: Corbi Construction

MACHINE: New Holland B90B Backactor

DRILLED BY :

PROFILED BY: *jovdm*

TYPE SET BY : Bernhard Crafford

SETUP FILE: STANDARD.SET

INCLINATION:

DIAM: Trench

DATE:

DATE: 11-12/11/2020

DATE: 18/12/2020 13:32

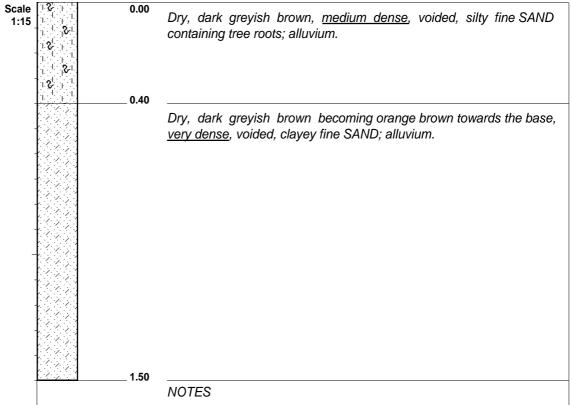
TEXT: ..top\ARCHIVE\TENBOSCH.txt

ELEVATION:

X-COORD: S25 24 01.3 **Y-COORD**: E31 57 36.1

HOLE No: TB/29 Sheet 1 of 1

JOB NUMBER: M20/3870



1) Slow excavation but no refusal of backactor at 1,5m.

2) No water seepage encountered.

CONTRACTOR: Corbi Construction **INCLINATION:**

MACHINE: New Holland B90B Backactor DIAM: Trench DATE:

DRILLED BY: **PROFILED BY**: jovdm DATE: 11-12/11/2020

TYPE SET BY: Bernhard Crafford DATE: 18/12/2020 13:32

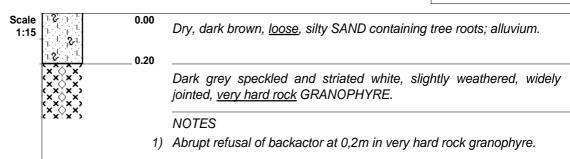
SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt **ELEVATION:**

X-COORD: S25 24 00.7 Y-COORD: E31 57 28.4

PROPOSED RESORT AND RESIDENTIAL DEVELOPMENT

HOLE No: TB/30 Sheet 1 of 1

JOB NUMBER: M20/3870



3) Scattered hard rock outcrops at surface.

2) No water seepage encountered.

CONTRACTOR: Corbi Construction **INCLINATION: ELEVATION:**

DIAM: Trench

DRILLED BY: DATE: **PROFILED BY**: jovdm DATE: 11-12/11/2020

TYPE SET BY: Bernhard Crafford DATE: 18/12/2020 13:32

SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt

dotPLOT 7022 PBpH7

X-COORD: S25 24 09.9

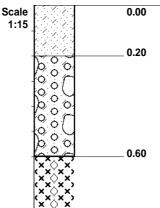
Y-COORD: E31 57 32.8

HOLE No: TB/30

PROPOSED RESORT AND RESIDENTIAL DEVELOPMENT

HOLE No: TB/31 Sheet 1 of 1

JOB NUMBER: M20/3870



clayey SAND containing scattered Dry, dark brown, loose, sub-angular QUARTZITE PEBBLES; colluvium/pebble marker.

Dry, dark brown speckled orange, loose, clayey sandy GRAVELS containing numerous, small and medium-sized BOULDERS (diameter up to 0,2m); residual granophyre.

Dark yellow speckled orange and green, highly weathered, closely jointed, soft rock GRANOPHYRE.

NOTES

- 1) Abrupt refusal of backactor at 0,6m.
- 2) No water seepage encountered.
- 3) Scattered hard rock outcrops in vicinity of test pit.
- 4) Abundant small, sub-rounded boulders at surface.

CONTRACTOR: Corbi Construction

MACHINE: New Holland B90B Backactor

DRILLED BY:

PROFILED BY: jovdm

TYPE SET BY: Bernhard Crafford

SETUP FILE: STANDARD.SET

INCLINATION:

DIAM: Trench

DATE:

DATE: 11-12/11/2020

DATE: 18/12/2020 13:32

TEXT: ..top\ARCHIVE\TENBOSCH.txt

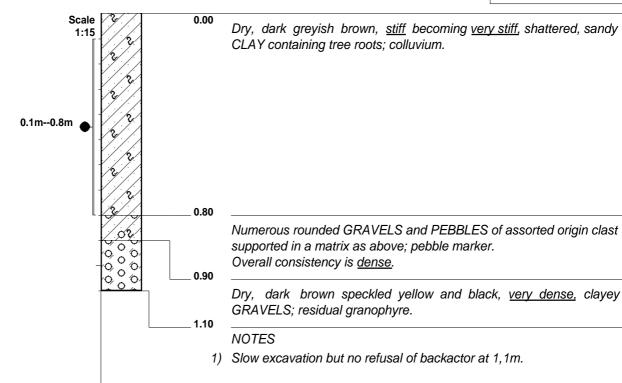
ELEVATION:

X-COORD: S25 24 15.2 Y-COORD: E31 57 34.9

PROPOSED RESORT AND RESIDENTIAL DEVELOPMENT

HOLE No: TB/32 Sheet 1 of 1

JOB NUMBER: M20/3870



2) No water seepage encountered.

3) Disturbed foundation indicater sample taken from 0,1m--0,8m.

CONTRACTOR: Corbi Construction

MACHINE: New Holland B90B Backactor

DRILLED BY:

PROFILED BY: jovdm

TYPE SET BY: Bernhard Crafford SETUP FILE: STANDARD.SET

INCLINATION:

DIAM: Trench

DATE:

DATE: 11-12/11/2020

DATE: 18/12/2020 13:32

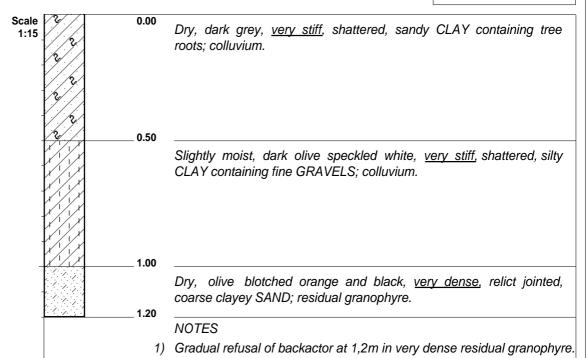
TEXT: ..top\ARCHIVE\TENBOSCH.txt

ELEVATION:

X-COORD: S25 24 18.9 Y-COORD: E31 57 39.5

HOLE No: TB/33 Sheet 1 of 1

JOB NUMBER: *M20/3870*



No water seepage encountered.

3) Massive outcrops on either side of test pit.

4) Numerous small boulders at surface.

CONTRACTOR: Corbi Construction INCLINATION: ELEVATION:

MACHINE: New Holland B90B Backactor
DRILLED BY:
DATE:
DATE:

PROFILED BY : *jovdm*TYPE SET BY : Bernhard Crafford

DATE : 11-12/11/2020

DATE : 18/12/2020 13:32

SETUP FILE : STANDARD.SET TEXT : ..top\ARCHIVE\TENBOSCH.txt

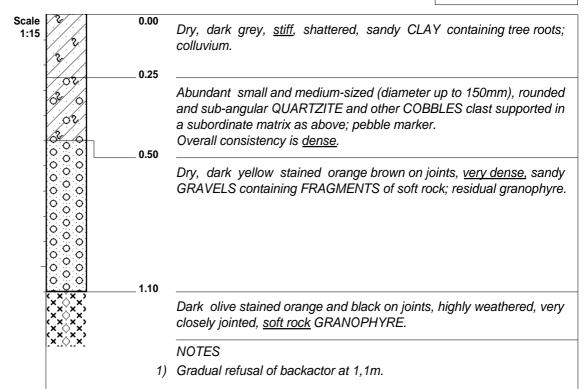
HOLE No: *TB/33*DATE: 18/12/2020 13:32

X-COORD: S25 24 25.7

Y-COORD: E31 57 39.4

HOLE No: TB/34 Sheet 1 of 1

JOB NUMBER: *M20/3870*



2) No water seepage encountered.

3) Massive hard rock outcrops south-east of test pit.

MACHINE: New Holland B90B Backactor DIAM: Trench

DATE:

DATE: 11-12/11/2020

DATE: 18/12/2020 13:32

TEXT: ..top\ARCHIVE\TENBOSCH.txt

CONTRACTOR: Corbi Construction INCLINATION: ELEVATION:

X-COORD : S25 24 32.2 Y-COORD : E31 57 39.6

HOLE No: TB/34

TYPE SET BY: Bernhard Crafford

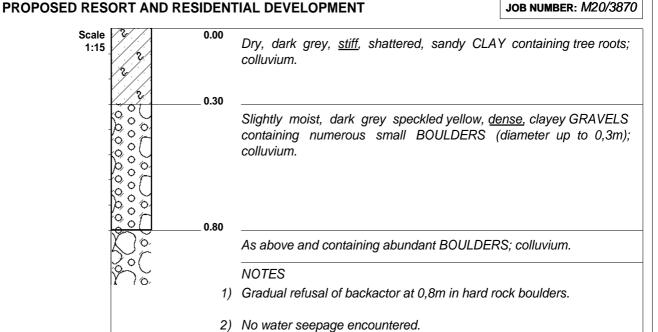
SETUP FILE: STANDARD.SET

DRILLED BY:

PROFILED BY: jovdm

HOLE No: TB/35 Sheet 1 of 1

JOB NUMBER: M20/3870



CONTRACTOR: Corbi Construction **INCLINATION: ELEVATION:**

DIAM: Trench

DRILLED BY: DATE: **PROFILED BY**: jovdm DATE: 11-12/11/2020

TYPE SET BY: Bernhard Crafford DATE: 18/12/2020 13:32

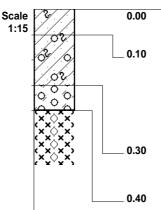
SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt **X-COORD**: S25 24 38.8 Y-COORD: E31 57 40.9

HOLE No: TB/35

PROPOSED RESORT AND RESIDENTIAL DEVELOPMENT

HOLE No: TB/36 Sheet 1 of 1

JOB NUMBER: *M20/3870*



Dry, dark grey, <u>stiff</u>, shattered, sandy CLAY containing tree roots; colluvium.

Abundant small and medium-sized (diameter = 20mm to 100mm), rounded and sub-angular QUARTZITE and other PEBBLES and COBBLES clast supported in a subordinate matrix as above; pebble marker.

Overall consistency is dense.

Slightly moist, dark brown speckled yellow, dense, clayey fine GRAVELS; colluvium.

Dark greenish grey speckled off white, unweathered, widely jointed, <u>very hard rock</u> GRANOPHYRE.

NOTES

- 1) Abrupt refusal of backactor at 0,4m in very hard rock granophyre.
- 2) No water seepage encountered.
- 3) Massive outcrop close to test pit.

CONTRACTOR: Corbi Construction

MACHINE: New Holland B90B Backactor

DRILLED BY :

PROFILED BY: *jovdm*

TYPE SET BY: Bernhard Crafford SETUP FILE: STANDARD.SET

INCLINATION:

DIAM: Trench

DATE:

DATE: 11-12/11/2020

DATE: 18/12/2020 13:32

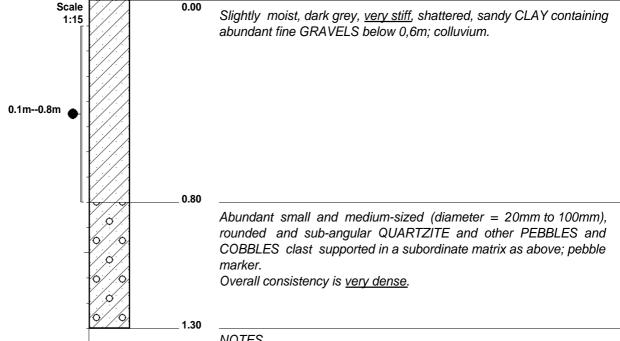
TEXT: ..top\ARCHIVE\TENBOSCH.txt

ELEVATION:

X-COORD: S25 24 42.6 Y-COORD: E31 57 31.9

HOLE No: TB/37 Sheet 1 of 1

JOB NUMBER: M20/3870



NOTES

- 1) Gradual refusal of backactor at 1,3m in very dense pebble marker horizon.
- 2) No water seepage encountered.
- 3) Disturbed foundation indicater sample taken from 0,1m--0,8m.

CONTRACTOR: Corbi Construction **INCLINATION: ELEVATION:**

DIAM: Trench

DRILLED BY: DATE: **PROFILED BY**: jovdm DATE: 11-12/11/2020

TYPE SET BY: Bernhard Crafford DATE: 18/12/2020 13:32

SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt HOLE No: TB/37

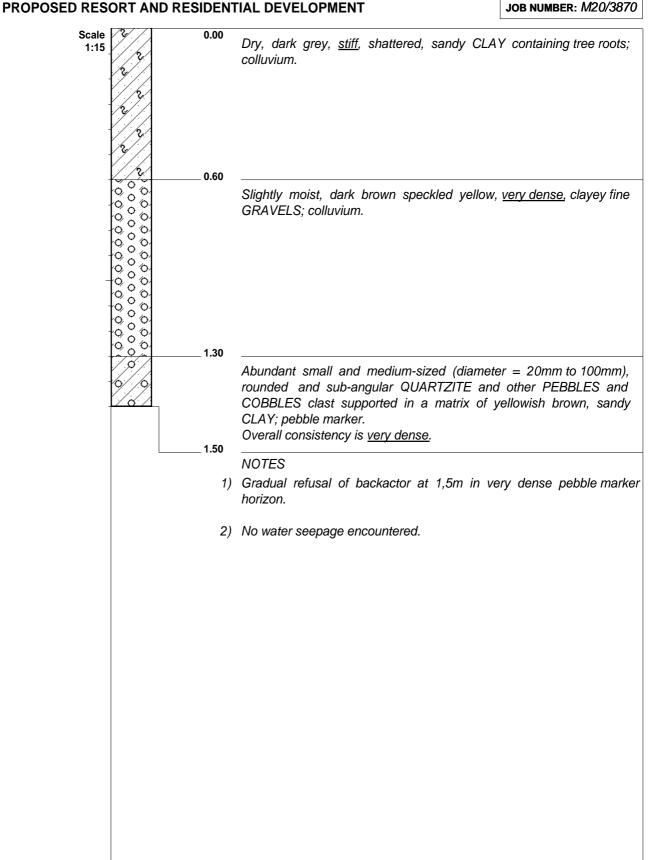
X-COORD: S25 24 37.0

Y-COORD: E31 57 34.3

MACHINE: New Holland B90B Backactor

HOLE No: TB/38 Sheet 1 of 1

JOB NUMBER: M20/3870



INCLINATION:

DATE:

DIAM: Trench

DATE: 11-12/11/2020

DATE: 18/12/2020 13:32

TEXT: ..top\ARCHIVE\TENBOSCH.txt

SETUP FILE: STANDARD.SET C00B Johann van der Merwe (Pty) Ltd

CONTRACTOR: Corbi Construction

TYPE SET BY: Bernhard Crafford

DRILLED BY:

PROFILED BY: jovdm

MACHINE: New Holland B90B Backactor

dotPLOT 7022 PBpH7

X-COORD: S25 24 30.8

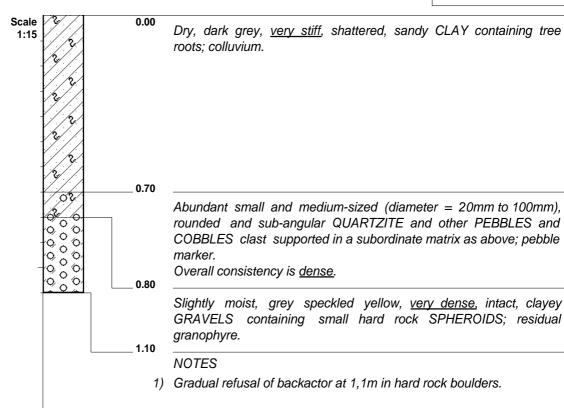
Y-COORD: E31 57 33.8

HOLE No: TB/38

ELEVATION:

HOLE No: *TB*/39 Sheet 1 of 1

JOB NUMBER: M20/3870



No water seepage encountered.

3) Massive outcrop adjacent and to the east and to the north of test pit.

CONTRACTOR: Corbi Construction

MACHINE: New Holland B90B Backactor

DRILLED BY : PROFILED BY : jovdm

TYPE SET BY: Bernhard Crafford SETUP FILE: STANDARD.SET

INCLINATION:

DIAM: Trench

DATE:

DATE: 11-12/11/2020

DATE: 18/12/2020 13:32

TEXT: ..top\ARCHIVE\TENBOSCH.txt

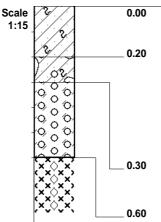
ELEVATION:

X-COORD : S25 24 24.0 Y-COORD : E31 57 33.0

PROPOSED RESORT AND RESIDENTIAL DEVELOPMENT

HOLE No: TB/40 Sheet 1 of 1

JOB NUMBER: M20/3870



Dry, dark grey, <u>stiff</u>, shattered, sandy CLAY containing tree roots; colluvium.

Abundant small and medium-sized (diameter = 20mm to 100mm), rounded and sub-angular QUARTZITE and other PEBBLES and COBBLES clast supported in a subordinate matrix as above and with small angular and sub-rounded BOULDERS of GRANOPHYRE; pebble marker.

Overall consistency is dense.

Dry, dark yellow speckled brown, <u>dense</u>, intact, clayey GRAVELS containing isolated small CORESTONES; residual granophyre.

Unweathered, widely bedded, very hard rock GRANOPHYRE.

NOTES

- 1) Abrupt refusal of backactor at 0,6m in very hard rock granophyre.
- 2) No water seepage encountered.
- 3) Scattered outcrops in vicinity of test pit.

CONTRACTOR: Corbi Construction

MACHINE: New Holland B90B Backactor

DRILLED BY :

PROFILED BY : *jovdm*

TYPE SET BY : Bernhard Crafford

SETUP FILE : STANDARD.SET

INCLINATION:

DIAM: Trench

DATE:

DATE: 11-12/11/2020

DATE: 18/12/2020 13:32

TEXT: ..top\ARCHIVE\TENBOSCH.txt

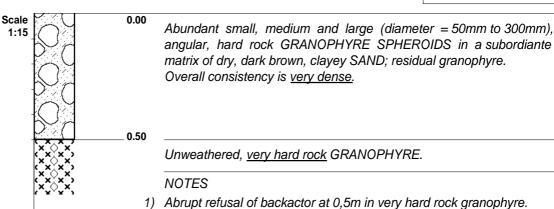
ELEVATION:

X-COORD: S25 24 19.8 Y-COORD: E31 57 32.0

PROPOSED RESORT AND RESIDENTIAL DEVELOPMENT

HOLE No: TB/41 Sheet 1 of 1

JOB NUMBER: *M20/3870*



2) No water seepage encountered.

3) Numerous hard rock outcrops in vicinity of test pit.

4) Small and medium-sized boulders at surface.

CONTRACTOR: Corbi Construction INCLINATION: ELEVATION:

MACHINE: New Holland B90B Backactor
DRILLED BY:
PROFILED BY: jovdm

DIAM: Trench
DATE:
DATE:
DATE: 11-12/11/2020

PROFILED BY : *JOVAM* DATE : 11-12/11/2020

TYPE SET BY : Bernhard Crafford DATE : 18/12/2020 13:32

SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt

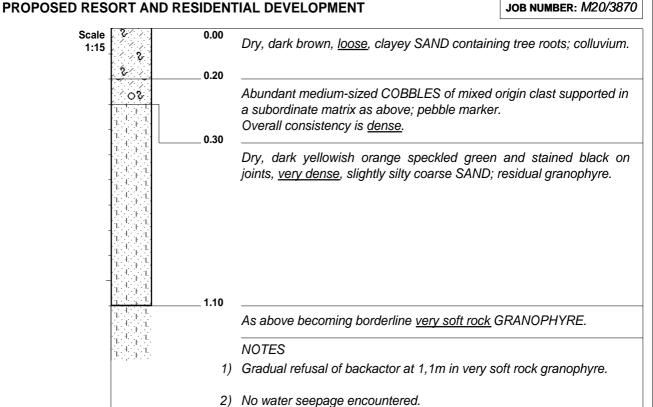
HOLE No: TB/41

X-COORD: S25 24 16.8

Y-COORD: E31 57 30.2

HOLE No: TB/42 Sheet 1 of 1

JOB NUMBER: M20/3870



3) Massive outcrop in road near to test pit.

CONTRACTOR: Corbi Construction **INCLINATION: ELEVATION:**

MACHINE: New Holland B90B Backactor DIAM: Trench **DRILLED BY:** DATE: **PROFILED BY**: jovdm DATE: 11-12/11/2020 **TYPE SET BY: Bernhard Crafford** DATE: 18/12/2020 13:32

SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt

C00B Johann van der Merwe (Pty) Ltd

HOLE No: TB/42

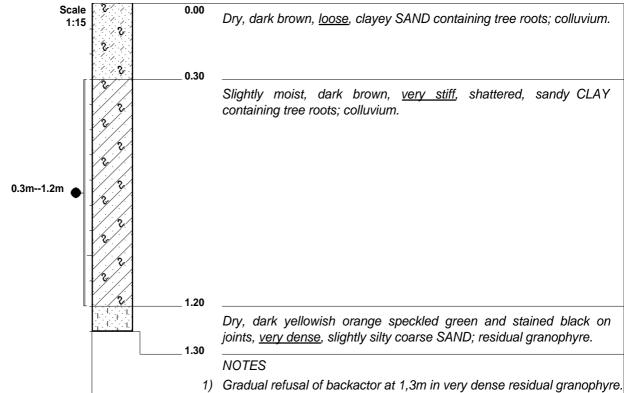
dotPLOT 7022 PBpH7

X-COORD: S25 24 46.4

Y-COORD: E31 57 26.2

HOLE No: TB/43 Sheet 1 of 1

JOB NUMBER: *M20/3870*



1) Gradual relusar of backactor at 1,511 in very derise residual granophyr

2) No water seepage encountered.

3) Disturbed foundation indicator sample taken from 0,3m--1,2m.

CONTRACTOR: Corbi Construction INCLINATION: ELEVATION:

MACHINE: New Holland B90B Backactor
DRILLED BY:
DATE:

PROFILED BY : *jovdm*TYPE SET BY : Bernhard Crafford

DATE : 11-12/11/2020

DATE : 18/12/2020 13:32

SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt

DATE: 18/12/2020 13:32 HOLE No: TB/43

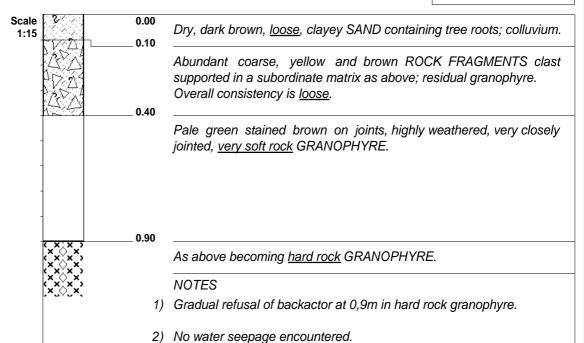
X-COORD: S25 24 52.5

Y-COORD: E31 57 26.3

PROPOSED RESORT AND RESIDENTIAL DEVELOPMENT

HOLE No: TB/44 Sheet 1 of 1

JOB NUMBER: *M20/3870*



CONTRACTOR: Corbi Construction INCLINATION: ELEVATION:

MACHINE: New Holland B90B BackactorDIAM: TrenchDRILLED BY:DATE:PROFILED BY: jovdmDATE: 11-12/11/2020

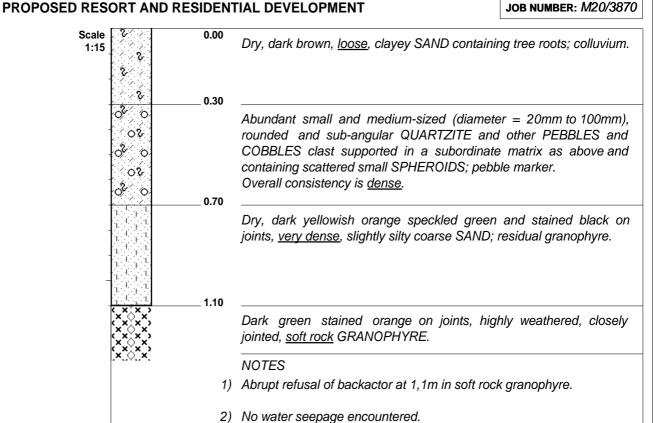
TYPE SET BY: Bernhard Crafford DATE: 18/12/2020 13:32

SETUP FILE : STANDARD.SET TEXT : ..top\ARCHIVE\TENBOSCH.txt

h X-coord : S25 24 57.0 Y-coord : E31 57 33.0

HOLE No: TB/45 Sheet 1 of 1

JOB NUMBER: M20/3870



3) Scattered hard rock outcrops in vicinity of test pit.

CONTRACTOR: Corbi Construction

MACHINE: New Holland B90B Backactor

DRILLED BY: PROFILED BY: jovdm

TYPE SET BY: Bernhard Crafford

SETUP FILE: STANDARD.SET

INCLINATION:

DIAM: Trench

DATE:

DATE: 11-12/11/2020

DATE: 18/12/2020 13:32

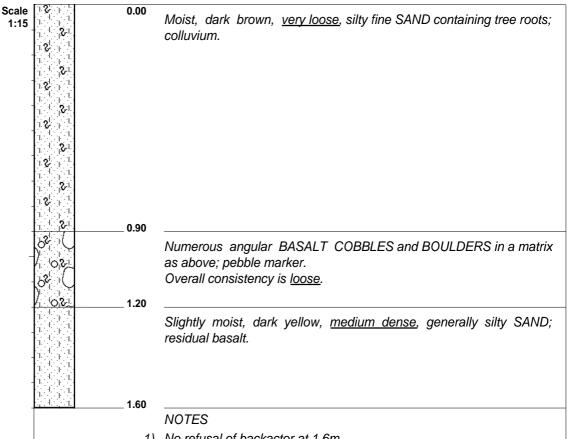
TEXT: ..top\ARCHIVE\TENBOSCH.txt

ELEVATION:

X-COORD: S25 25 01.2 Y-COORD: E31 57 34.1

HOLE No: TB/1 Sheet 1 of 1

JOB NUMBER: M20/3870



- 1) No refusal of backactor at 1,6m.
- 2) No water seepage encountered.
- 3) Rocky outcrops in vicinity of test pit.

CONTRACTOR: Corbi Construction **INCLINATION**: Vertical **ELEVATION:**

MACHINE: New Holland B90B Backactor DIAM: Trench **DRILLED BY:** DATE: **PROFILED BY**: jovdm DATE: 11-12/11/2020

TYPE SET BY: Bernhard Crafford DATE: 18/12/2020 13:32

SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt

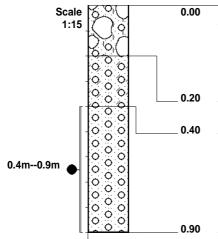
X-COORD: S25 25 09.9

Y-COORD: E31 57 36.7

PROPOSED RESORT AND RESIDENTIAL DEVELOPMENT

HOLE No: TB/2 Sheet 1 of 1

JOB NUMBER: M20/3870



Abundant small, medium and large (diameter up to 0,5m), rounded and sub-rounded GRAVELS, COBBLES and BOULDERS of mixed origin clast supported in a subordinate matrix of dark brown, silty SAND; pebble marker.

Overall consistency is loose.

Dry, dark brown, loose, clayey sandy GRAVELS; residual basalt.

Dry, dark yellow speckled orange, <u>dense</u> becoming <u>very dense</u>, sandy GRAVELS; residual basalt.

NOTES

- 1) Slow excavation to gradual refusal of backactor at 0,9m in very dense residual basalt.
- 2) No water seepage encountered.
- 3) Disturbed foundation indicator sample taken from 0,4m--0,9m.

CONTRACTOR: Corbi Construction

MACHINE: New Holland B90B Backactor

DRILLED BY:

PROFILED BY: jovdm

TYPE SET BY : Bernhard Crafford SETUP FILE : STANDARD.SET

INCLINATION:

DIAM: Trench

DATE:

DATE: 11-12/11/2020

DATE: 18/12/2020 13:32

TEXT: ..top\ARCHIVE\TENBOSCH.txt

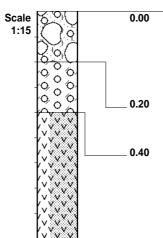
ELEVATION:

X-COORD: S25 25 02.5 Y-COORD: E31 57 36.7

PROPOSED RESORT AND RESIDENTIAL DEVELOPMENT

HOLE No: TB/3 Sheet 1 of 1

JOB NUMBER: *M20/3870*



Abundant small, medium and large (diameter up to 0,25m), rounded and sub-rounded GRAVELS, COBBLES and BOULDERS of mixed origin clast supported in a subordinate matrix of dark brown, silty SAND; pebble marker.

Overall consistency is loose.

Dry, dark bown, <u>dense</u>, clayey GRAVELS containing small, rounded BASALT spheroids; residual basalt.

Dark yellow blotched orange, highly weathered, <u>soft rock</u> BASALT containing infill of dark brown, sandy CLAY on joints.

Note: 1. Material breaks out as small, rounded spheroids (average diameter = 50mm).

As above becoming <u>hard rock</u>.

NOTES

1.10

- 1) Gradual refusal of backactor at 1,1m in hard rock basalt.
- 2) No water seepage encountered.
- 3) Surface area covered by small, medium and large (diameter up to 0,4m) boulders of mixed origin.

CONTRACTOR: Corbi Construction

MACHINE: New Holland B90B Backactor

DRILLED BY :

PROFILED BY: *jovdm*

TYPE SET BY: Bernhard Crafford SETUP FILE: STANDARD.SET

INCLINATION:

DIAM: Trench

DATE:

DATE: 11-12/11/2020

DATE: 18/12/2020 13:32

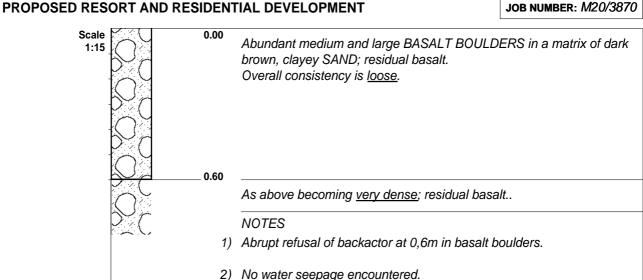
TEXT: ..top\ARCHIVE\TENBOSCH.txt

ELEVATION:

X-COORD: S25 24 56.1 **Y-COORD**: E31 57 39.3

HOLE No: TB/4 Sheet 1 of 1

JOB NUMBER: M20/3870



3) Scattered outcrops of very hard rock basalt in vicinity of test pit.

CONTRACTOR: Corbi Construction **INCLINATION:**

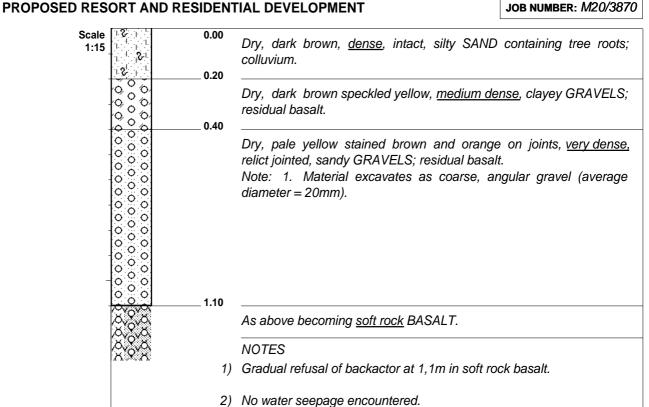
MACHINE: New Holland B90B Backactor DIAM: Trench DRILLED BY: DATE:

PROFILED BY: jovdm DATE: 11-12/11/2020 TYPE SET BY: Bernhard Crafford DATE: 18/12/2020 13:32

SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt **ELEVATION: X-COORD**: S25 24 55.9 Y-COORD: E31 57 41.6

HOLE No: TB/5 Sheet 1 of 1

JOB NUMBER: M20/3870



CONTRACTOR: Corbi Construction **INCLINATION: ELEVATION:**

MACHINE: New Holland B90B Backactor DIAM: Trench **DRILLED BY:** DATE: **PROFILED BY**: jovdm DATE: 11-12/11/2020

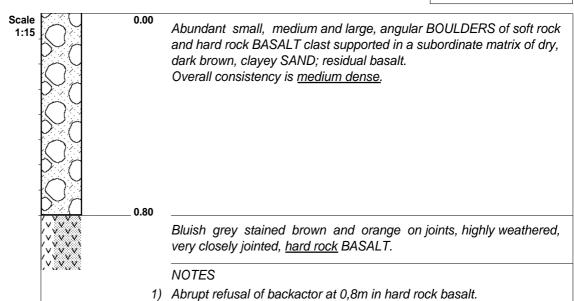
TYPE SET BY: Bernhard Crafford DATE: 18/12/2020 13:32

SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt **X-COORD**: S25 24 46.9 Y-COORD: E31 57 46.0

PROPOSED RESORT AND RESIDENTIAL DEVELOPMENT

HOLE No: TB/6 Sheet 1 of 1

JOB NUMBER: *M20/3870*



2) No water seepage encountered.

3) Surface area covered by scattered small and medium-sized boulders of mixed origin.

CONTRACTOR: Corbi Construction INCLINATION: ELEVATION:

DIAM: Trench

 DRILLED BY :
 DATE :

 PROFILED BY : jovdm
 DATE : 11-12/11/2020

TYPE SET BY : Bernhard Crafford DATE : 18/12/2020 13:32

SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt

Y-COORD : E31 57 51.1

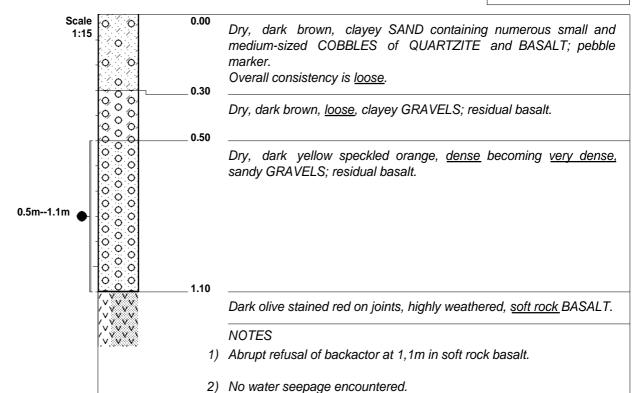
HOLE No: TB/6

X-COORD: S25 24 41.3

MACHINE: New Holland B90B Backactor

HOLE No: TB/7 Sheet 1 of 1

JOB NUMBER: M20/3870



3) Disturbed foundation indicator sample taken from 0,5m--1,1m.

CONTRACTOR: Corbi Construction **INCLINATION: ELEVATION:**

DIAM: Trench

DRILLED BY: DATE: **PROFILED BY**: jovdm DATE: 11-12/11/2020

TYPE SET BY: Bernhard Crafford DATE: 18/12/2020 13:32 **SETUP FILE: STANDARD.SET** TEXT: ..top\ARCHIVE\TENBOSCH.txt

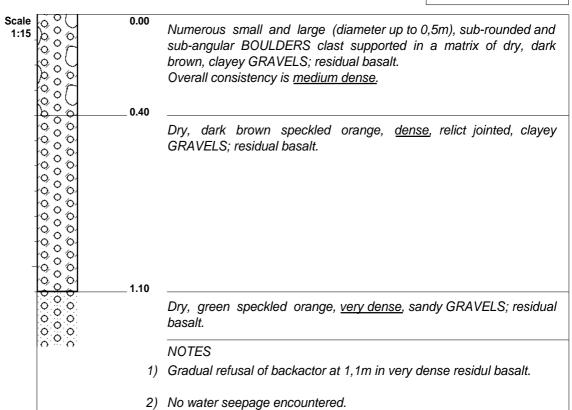
Y-COORD: E31 57 55.1 HOLE No: TB/7

X-COORD: S25 24 35.5

MACHINE: New Holland B90B Backactor

HOLE No: TB/8
Sheet 1 of 1

JOB NUMBER: *M20/3870*



- 3) Surface area covered by scattered small boulders of mixed origin.
- 4) Large hard rock boulders outcropping in road.

CONTRACTOR: Corbi Construction INCLINATION: ELEVATION:

MACHINE: New Holland B90B Backactor
DRILLED BY:
PROFILED BY: jovdm

DIAM: Trench
DATE:
DATE:
DATE: 11-12/11/2020

TYPE SET BY: Bernhard Crafford DATE: 18/12/2020 13:32

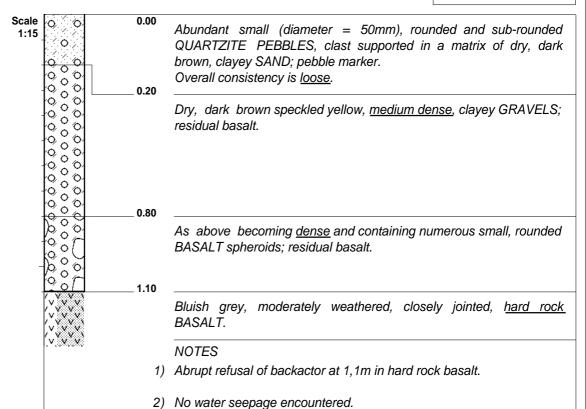
SETUP FILE : STANDARD.SET TEXT : ..top\ARCHIVE\TENBOSCH.txt

Y-COORD : E31 58 00.3 HOLE No: TB/8

X-COORD: S25 24 31.7

HOLE No: TB/9 Sheet 1 of 1

JOB NUMBER: M20/3870



3) Prominent hard rock outcrops next to road and in road.

CONTRACTOR: Corbi Construction **INCLINATION: ELEVATION:**

MACHINE: New Holland B90B Backactor DIAM: Trench **DRILLED BY:** DATE: **PROFILED BY**: jovdm DATE: 11-12/11/2020

TYPE SET BY: Bernhard Crafford SETUP FILE: STANDARD.SET TEXT: ..top\ARCHIVE\TENBOSCH.txt

HOLE No: TB/9 DATE: 18/12/2020 13:32

X-COORD: S25 24 25.6

Y-COORD: E31 58 05.0



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ROADLAB

OUR REF: 91823 CLIENT: Johann vd Merwe

PROJECT: Materials Investigation Portion 2 of Tenbosch 661-JU

M20/3870

DATE RECEIVED: 25/11/2020

POSITION: TB/2 LAYER: 400-900mm

SAMPLE No.: 10718

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CLAY (%) (0.001-0.002)	SILT (%) (0.002-0.060)	SAND (%) (0.060-2.00)	GRAVEL (%) (2.00-60.0)
4.3	8.0	20.4	67.3

SIEVE STZE (BY LOG SCALE)



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OUR REF: 91823

CLIENT: Johann vd Merwe

PROJECT: Materials Investigation Portion 2 of Tenbosch 661-JU

M20/3870

DATE RECEIVED: 25/11/2020

POSITION: TB/7

LAYER: 500-1100mm

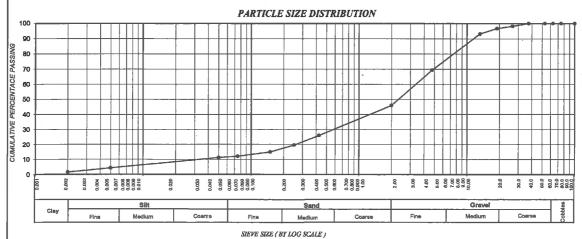
SAMPLE No.: 10719

SAMPLE DESCRIPTION: Dark Red Brown

Sandy Gravel

FOUNDATION INDICATOR -	(SANS 3001-GR1, SANS 3001-GR10)	& (ASTM Method D422)

We	eighted PI	3,6	<i>D.</i> (4)	12.02	i (DZIIID	3001	GR1, 52115 5001	I-dk10) & (ASTM	MELHOU	UTLL			
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	2 μm	1.5	1										
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Soil Mortar Analysis % < 2.00mm	0.425 - 0.250	14		550			PERFOR	RMANCE AS WEAR	UNG COU	RSE			
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Soil V	0.150 - 0.075	6	1	500	1								
•	< 0.075	26	1	450	1			Slipper					
Effective size		0.042	1	400									
Uniformity Co	oefficient	90.1	5	350						1			\dashv
Curvature Co	pefficient	3.4	l ĝ					Good - dusty					
Oversize Inde	ex	0.0	SHRINKIGE PRODUCT	300	1	Erodible		•					
Shrinkage Pro	oduct	182.3	195	250	1	Materials	\vdash			_	Ravels		
Grading Coef	ficient	36.2	l Š	200	1			- Cand					
Grading mod	ulus	2.16	\$	150	-			Good		"			
70	Liquid Limit	36		100									
<u> </u>	Plasticity Index	14	1										
Atter-berg Limits	Linear Shrinkage	7.0	1	50	1			Ravels and Corn	igates				
₹.	PI < 0.075		1	0		5	10 15	20 25	30	35	40	45	50
Unified Soil C	lassification	SC	1			-		GRADING COEFFICIEN					-
U.S. Highway	Classification	A-2-6 (0)											



CLAY (%) (0.001-0.002)	SILT (%) (0.002-0.060)	SAND (%) (0.060-2.00)	GRAVEL (%) (2.00-60.0)
1.5	9.9	34.6	54.0



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ROADLAB

OUR REF: 91823

CLIENT: Johann vd Merwe

PROJECT: Materials Investigation Portion 2 of Tenbosch 661-JU

M20/3870

DATE RECEIVED: 25/11/2020

POSITION: TB/11

LAYER: 100-400mm SAMPLE No.: 10720

SAMPLE DESCRIPTION: Dark Brown

Gravelly Silty Sand

			FOUNDATION I	NDICATOR -	(SANS 3001-	GR1. SANS 3	001-GR10) & (ASTM Method	D422)		
W	eight	ed PI	6.3	T TOTAL	(2011/0 2001	0111, 021110 01	or anio, a l	ASTM MEGICA	JTLL)		
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Ans < 2		150 - 0.075	17	500 -							
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	•	Fine	Medlum	Coarse	Fine	Medium	Coarce	Fine	Medium	Coarse	Lä

CLAY (%) (0.001-0.002)	SILT (%) (0.002-0.060)	SAND (%) (0.060-2.00)	GRAVEL (%) (2.00-60.0)
5.9	26.2	49.4	18.6

SIEVE SIZE (BY LOG SCALE)



PROJECT: Materials Investigation Portion 2 of Tenbosch 661-JU

OUR REF: 91823

CLIENT: Johann vd Merwe

M20/3870

Roadlab Centurion

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DATE RECEIVED: 25/11/2020

POSITION: TB/13 LAYER: 100-300mm **SAMPLE No.:** 10721

SAMPLE DESCRIPTION: Dark Brown

																	5	and	y Gr	avel	l							
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CLAY (%) (0.001-0.002)	SILT (%) (0.002-0.060)	SAND (%) (0.060-2.00)	GRAVEL (%) (2.00-60.0)
3.5	7.2	10.9	78.4



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OUR REF: 91823

CLIENT: Johann vd Merwe
PROJECT: Materials Investigation Portion 2 of Tenbosch 661-JU

M20/3870

DATE RECEIVED: 25/11/2020

POSITION: TB/15 LAYER: 450-1200mm **SAMPLE No.:** 10722

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CLAY (%) (0.001-0.002)	SILT (%) (0.002-0.060)	SAND (%) (0.060-2.00)	GRAVEL (%) (2.00-60.0)
. 2.2	14.4	50.2	33.1



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PROJECT: Materials Investigation Portion 2 of Tenbosch 661-JU

M20/3870

DATE RECEIVED: 25/11/2020

POSITION: TB/18

LAYER: 1100-1400mm

SAMPLE No.: 10723 SAMPLE DESCRIPTION: Dark Red

			IDICATOR	- (SANS 30	01-GR1, SANS 30	01-GR10) & (A	STM Method L)422)			
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ified Soil (Linear Shrinkage PI < 0.075 Classification	2.5 - CL & ML				20 2: GRADING COEF	5 30	35	40	45	
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CLAY (%) (0.001-0.002)	SILT (%) (0.002-0.060)	SAND (%) (0.060-2.00)	GRAVEL (%) (2.00-60.0)
7.7	36.0	56.2	0.1



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OUR REF: 91823 CLIENT: Johann vd Merwe
PROJECT: Materials Investigation Portion 2 of Tenbosch 661-JU

M20/3870

DATE RECEIVED: 25/11/2020

POSITION: TB/25 LAYER: 100-900mm SAMPLE No.: 10724

				SA	AMPLE DI	ESCRIPTION:	Dark Brown Silty Clayey Sa	and		
	F	OUNDATION IN	DICATOR	- (SANS 3001-GR1	, SANS 3	001-GR10) & ((ASTM Metho	d D422)		
Weighted	PI	19.9								
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7	5.0	100	1	POTENTIAL EXPAN	SIVENES		PLA	STICITY CHA	RT	
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호를 Plasticit	y Index	25	50 -			Pave	ls and Corrugate.			
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60	+++	 			+++	 	 	 	+++	
50		 	-		+++	 	++++	 		+++
40					$\downarrow \downarrow \downarrow \downarrow$				\perp	\coprod
<u> </u>		<u> </u>								
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20	+++	 	++1		+++	++++	+	++++	-+	++++
10	+++		+	 	+ + +	 - - -	+++	+H	+	╁╁┼┼
٠,										Ш
	0.003	0.008	0.030	0.000 0.000 0.000 0.000 0.100	0.300	0.000 0.700 0.800 0.800 1.00	3.00	6.00 7.00 8.00 9.00 10.00	30.0	0.00
Clay		Silt			Sand	1		Grave		Cobbles
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	8
				SIEVE SIZE (PY LO	G SCALE)					

CLAY (%) (0.00	1-0.002)	SILT (%) (0.002-0.060)	SAND (%) (0.060-2.00)	GRAVEL (%) (2.00-60.0)
24.8		22.0	46.8	6.4



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CLIENT: Johann vd Merwe

PROJECT: Materials Investigation Portion 2 of Tenbosch 661-JU

M20/3870

DATE RECEIVED: 25/11/2020

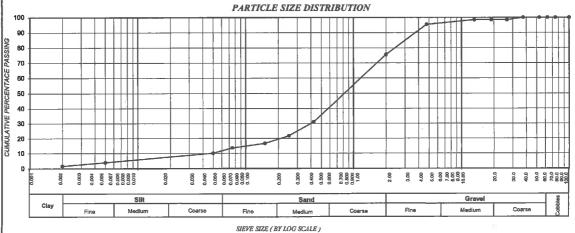
POSITION: TB/26 LAYER: 700-1400mm

SAMPLE DESCRIPTION: Dark Yellow

SAMPLE No.: 10725

Gravelly Sand

	F	OUNDATION IN	DICATO	OR - (SANS 300	1-GR	t, SANS 3	001-GR10) & (ASTM N	lethod i	D422)			
We	ighted PI	3.1						_						
	100.0	100												
	75.0	100	1	P	OTENTIAL	EXPAN	ISIVENES			PLAST	TICITY CH	ART		
	63.0	100	70		11 11	Li	1 1		70					_
p	50.0	100	1	L	M H									
SSir	37.5	100	- 60	1 0	d q		Very High		60					1
20	28.0	98	1 2 50	W	d g	1	a		Ď 50 ⋅			CASGRANDE	"A" LINE	/
litysk Trang	20.0	98] ¥8 40		u				₹ 20					
Sieve analysis Cumulative percentage passing (mm)	14.0	98	PI OF WHOLE SAMPLE		m		/		PLASTICITY INDEX			a /		
eve -)	5.00	95	₹ 30	-	-11-11-	-			AS 30 ⋅			\\\		
is and	2.000	76	JO 20		44	-			ار 20		GL /	OH at	nd MH	
m m	0.425	31] = 20						20]					
3	0.250	22	10	-	1	-		-	10	CL - ML	9 ML an	OL		
	0.150	17	١.	G	1			110	⋼⊨	/				
	0.075	14	ľ	D	10 20	30	40 50	60 70	0 1	0 20	30 40	50 60 7	0 80 1	00 100
	50 μm	10	_											
	5 μm	4	1		CLAYF	ERCENT	4 <i>GE</i>				LIQUID LI	VIT (LL)		
	2 μm	1.5												
	2.000 - 0.425	59	1				nen	EODIE AND	CO AC DUCADA	NC COL	mer			
Soll Mortar Analysis % < 2.00mm	0.425 - 0.250	12	55	50		_	PER	FURMANC	E AS WEARI	NG CUU	KOL			
III M	0.250 - 0.150	7	50	,,]										
% × %	0.150 - 0.075	4							ar.					
	< 0.075	18	45	**					Slippery					
Effective size		0.049	40	10 -										
Uniformity C		29.4) S 35	50							\neg			
Curvature Co		2.3	- 0 30	₁₀					Good - dust		1			
Oversize Ind		0.0	ij 25		Erodi							Ra-	nlo	
Shrinkage Pr		155.2	- ₹		Mate:	als			<u>-</u>			Nav	-15	
Grading Coef		21.8	∯ 20	- 1					Good		1			
Grading mod		1.79 31	o ∂ 15	50					0					
P	Liquid Limit		10	10 -										
2 =	Plasticity Index	10	- 5	50 -					Ravels and Corruga	ile.				
Atter-berg Limits	Linear Shrinkage	5.0	4	ہ لـــا								-		
	PI < 0.075	-	4	Ö	5	10	15		25	30	35	40	45	50
Unified Soil (SC	4					GRAL	ING COEFFIC!ENT					
U.S. Highway	Classification	A-2-4 (0)												
					PARTIC	LE SI	ZE DIST	RIBUTIO	V					



CLAY (%) (0.001-0.002)	SILT (%) (0.002-0.060)	SAND (%) (0.060-2.00)	GRAVEL (%) (2.00-60.0)
1.5	10.0	64.1	24.4



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OUR REF: 91823 CLIENT: Johann vd Merwe

PROJECT: Materials Investigation Portion 2 of Tenbosch 661-JU

M20/3870

DATE RECEIVED: 25/11/2020

POSITION: TB/32

LAYER: 100--800mm **SAMPLE No.:** 10726

SAMPLE DESCRIPTION: Dark Brown

				(611)6 2001 621		D40) 0 (40001414.1	ID (00)	
w	eighted PI	12.4	IDICATOR -	(SANS 3001-GR1,	SANS 3001-G	R10) & (ASTM Metho	a D422j	
			-					
	100.0	100	-	POTENTIAL EXPANS	IVENES	PLA	STICITY CHAR	T
	75,0	100	70 —					
_	63.0 50.0	100	4 "	. М н		70		
Sleve analysis Cumulative percentage passing (mm)	37.5	100	60	le i V	ery	60 -		
bas	28.0	100	₩ 50		igh	₩ 50	240	GRANDE "A" LINE
/sis age	20.0	100	- AW	i h		PLASTICITY INDEX	uno.	GRANDE A LINE
m (m	14.0	100	- 1 mg 40	m		1 § 40 ·		
E E	5.00	99	9 30 -			1 1 1 30	C	'/
Sie	2.000	94	1 1/2			5		
iolar	0.425	78	ā 20			20 -	a o	OH and MH
5	0.250	69	10		- 11	10 CL-ML	ML and OL	
•	0.150	59	1		il a		7	
	0.075	52	1 0 5	10 20 30 4	0 50 60	70 0 10 20	30 40 50	80 70 80 90 1º
	50 μm	48	1 ĭ	.2 20 00 5	- 00 00	71		
	5 μm	27	1	CLAY PERCENTAG	E		LIQUID LIMIT	(LL)
	2 μm	16.2	1					
	2.000 - 0.425	17						
rfar Fire	0.425 - 0.250	9	550 -		PERFORM/	ANCE AS WEARING CO	DURSE	
Soil Mortar Analysis % < 2.00mm	0.250 - 0.150	10						
Sel × ×	0.150 - 0.075	8	500 -					
	< 0.075	56	450 -			Slippe_;		
fective siz	e	0.002	400					
iformity	Coefficient	78.0] 5 350 F	-				
rvature (Coefficient	0.4	Q 300 .			Good - dusty		
ersize In	lex	0.0	1 1 300	Ecodible				
rinkage P	roduct	660.3	S 250	Muterial			\dashv	Ravels
ading Co		6.3	250 - 250 -			Good		
rading mo		0.77	නි ₁₅₀ .				-	
p	Liquid Limit	38	100					
후끝	Plasticity Index	16	50			Ravels and Corrugates		
Atter-berg Limits	Linear Shrinkage	8.5	J. "L			Author man Octobaries		
	PI < 0.075	-	_ ``~	5 10		20 25 30	35	4D 45
	Classification	CL	4			GRADING COEFFICIENT		
S. Highwa	y Classification	A-6 (5)						
100 90 80 70 60 50 40 20				PARTICLE SIZ	E DISTRIBUT	TION		
-								
70								
60		++++			 	 		
50						 		+ + + + + + + + + + + + + + + + + + + +
- 1								
40								
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10					0 0 0 0 0	88 8 8 8	99999	20.0 20.0 40.0 50.0 60.0 80.0
	0.002 0.003 0.004 0.006	0.000	0.030	0.090 0.070 0.080 0.080 0.100	0.300 0.400 0.500 0.600 0.700 0.800	2.00 2.00 3.00 4.00 6.00	6.00 7.00 8.00 10.00 10.00	8 8 8 8 8 8
0 10		98.00000 000000 000000000000000000000000	0.030	0.090	Sand	2 8 8 8	ਰੂ ਵਿੱਚ ਬੰਦੂ Gravel	
10	000 000 00 00 00 00 00 00 00 00 00 00 0		00 00 00 00 00 00 00 00 00 00 00 00 00		Sand	Coarse Fine	<u> </u>	Coarse G

CLAY (%) (0.001-0.002)	SILT (%) (0.002-0.060)	SAND (%) (0.060-2.00)	GRAVEL (%) (2.00-60.0)
16.2	31.4	46.1	6.3



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Gravel

Coarse

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OUR REF: 91823 CLIENT: Johann vd Merwe

PROJECT: Materials Investigation Portion 2 of Tenbosch 661-JU

Sllt

M20/3870

DATE RECEIVED: 25/11/2020

POSITION: TB/37 LAYER: 100-800mm

SAMPLE No.: 10727

				SAMPLE DESCRIPTION:	Dark Brown Silty Gravelly Clayey Sand
	F	OUNDATION IN	DICATOR	R - (SANS 3001-GR1, SANS 3001-GR10) & ((ASTM Method D422)
W	eighted PI	17.6			
	100.0	100			CLASTICITY CHAST
	75.0	100]	POTENTIAL EXPANSIVENES	PLASTICITY CHART
	63.0	100	70		70
guja	50.0	100	60	L M H	60
Sieve analysis Cumulative percentage passing (mm)	37.5	100	¥ 50	Lal a Milah	50 - CASGRANDE "A" LINE
age age	28.0	100 100	1 M	u h	50 - CASGRANDE "A" LINE
m (m	14.0	100	□ 40	im E	40
Sieve analysis ve percentage (mm)	5.00	99	PI OF WHOLE SAMPLE	M I I I I I I I I I I I I I I I I I I I	30 CH
Sie Eve	2,000	85	١٩	3	
দ	0.425	65	a 20	9	
à	0.250	55	10 -		10 CL-ML ML and OL
	0.150	46] "Լ		0
	0.075	42	. "	10 20 30 40 50 60 70	0 10 20 30 40 50 60 70 80 90 100
	50 μm	39	-	CLAY PERCENTAGE	(Indian) was a co
	5 μm	38	-	CLAT PERCENTAGE	LIQUID LIMIT (LL)
	2 μm 2.000 - 0.425	23			
TE SE	0.425 - 0.250	12	1	PERFORMANCE AS	S WEARING COURSE
Soil Morter Analysis % < 2,00mm	0.250 - 0.150	11	550		
Ans 2	0.150 - 0.075	4	500 -		
%	< 0.075	50	450 -	Sili	tippery -
Effective siz		0.002	400	1.41	
Uniformity (Coefficient	170.3	5 350	1	
Curvature C	Coefficient	0.0	SHRINKA GE PRODUCT	Good	d - dusty
Oversize Ind		0.0	₩ 250	Erodible	Post.
Shrinkage P		942.7	\$ 250	Materials	Ravels
Grading Coe		15.2 1.08	₹ 200		Good
Grading mod	Liquid Limit	57	1		
e g	Plasticity Index	27	100 -		
Atter-berg Limits	Linear Shrinkage	14.5	50 -	Pare	els and Corrugates
¥ -	PI < 0.075	-	0 -	1 1 1 1	
Unified Soil	Classification	SM	1 '	0 5 10 15 20 GPADING CO	25 30 35 40 45 50 DEFFICIENT
	y Classification	A-7-5 (7)			
				PARTICLE SIZE DISTRIBUTION	
100			$\overline{}$		
. 90	-+			++++	
§ 80 ↓			\perp		7
70 L					
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\$ 80 H	- 		- - - 	 	
CUMULATIVE PERCENTACE PASSING 00 00 00 00 00 00 00 00 00 00 00 00 00		 	+		
₩ 40 —					
, E					
₹ 30 					
§ 20 −				 	'
ਹੈ 10 📙			-		
۰,					
1000	0.002 0.003 0.004 0.005	0.008 0.009 0.009 0.010	0.030	0.0300 0.0300 0.0300 0.1000 0.1000 0.400 0.600 0.600 0.600 1.00	2.00 3.00 4.00 6.00 7.00 7.00 7.00 7.00 7.00 7.00 7

CLAY (%) (0.001-0.002)	SILT (%) (0.002-0.060)	SAND (%) (0.060-2.00)	GRAVEL (%) (2.00-60.0)
30.4	10.1	44.2	15.3

SIEVE SIZE (BY LOG SCALE)

Sand



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ROADLAB

OUR REF: 91823 CLIENT: Johann vd Merwe

CUMULATIVE PERCENTACE

0.002

0.005 0.005 0.008 0.008 0.008 0.020

Silt

0.030 0.040 0.050 0.060 0.080 0.080 0.080 0.080

Coarse

PROJECT: Materials Investigation Portion 2 of Tenbosch 661-JU

M20/3870

DATE RECEIVED: 25/11/2020

POSITION: TB/43 LAYER: 300-1200mm SAMPLE No.: 10728

SAMPLE DESCRIPTION: Dark Red

Silty Clayey Sand

	F	OUNDATION IN	<i>IDICATOR</i>	- (SANS	3001-	GR1, SANS	3001-GR1	0) & (ASTM	Method .	D422)			
We	eighted PI	15.0											
	100.0	100											
	75.0	100	1	POTEN	TIAL EX	PANSIVENE:	S		PLAST	TICITY CH	ART		
	63.0	100	70 T	- 11	11 11	- 1		70					
p	50.0	100	60	L M	H								
issi	37.5	100	1	o e		Very High		60 -					1
10 B	28.0	100	<u>2</u> 50	w d	g h	- Ingil		∯ so-			CASGRANDE	"A" LINE	
allysi (20.0	100	¥ 40 €	u				₹ 40					
Sieve analysis Cumulative percentage passing (mm)	14.0	100	50 40 HOTE SAMPLE	m		1		PLASTICITY INDEX			CH /		
eye	5.00	100	₹ 30 +		1			§ 30 ·			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		- 1
ativ S	2.000	96	Ö 20		4			20 -		CL 2	OH as	nd MH	
Ī	0.425	75			0				CL - ML	/			
ರ	0.250	67	10					10	OL-ML	MLan	OL		ı
1	0.150	62	-			1 1		. □					
1	0.075	58		10	20 30	40 50	60 70	0	10 20	30 40 5	iO 60 7	0 80 9	0 100
1	50 μm	46				=1=10=							
1	5 μm	35	-	Č	CLAYPERO	ENTAGE				LIQUID LII	VIIT (LL)		
	2 μm	25.6	-										
<u> </u>	2.000 - 0.425	22	-			PF	PEOPMAN	CE AS WEAR	ING COL	DCF			
Soil Mortar Analysis % < 2.00mm	0.425 - 0.250	8	550				ILI OZDZZZIV	CL AD WLAIR	1110 000	RDL			
S le la la la la la la la la la la la la la	0.250 - 0.150	6	500										
0 8	0.150 - 0.075 < 0.075	61	450 -					Slippery					
D65 - 11 - 1 - 1		0.002	-					nafilan)					
Effective size		58.6	400 -										
Curvature C		0,0	350										- 1
Oversize Ind		0.0	∯ 300 ·					Good - dusty					
Shrinkage Pi		860.5	병 250 -		Erodible Materials			•		_	Rain	als	
Grading Coe		4.1	≥ 200										
Grading mod		0.71	250 - 200 -					Good		1			
	Liquid Limit	44	1										
Lis fis	Plasticity Index	20	100 -										
Atter-berg Limits	Linear Shrinkage	11.5	50					Ravels and Corru	gates				
\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \	PI < 0.075	-	0-		5	10 1	15 20	25	30	35	40	45	50
Unified Soil	Classification	CL	1 '	,	5	10		25 DING COEFFICIEN		30	40	40	90
	y Classification	A-7-6 (9)	1										
100	,			PAR	RTICLE	SIZE DIS	TRIBUTIO	N			•, •,	•,	
90 -				+									
									\top				
80 H		 		++++					++++				
₩ 70 L				$\perp \downarrow \downarrow \downarrow \downarrow \downarrow$					\perp	$\bot \bot \bot$		\perp	
10				1111						111			

CLAY (%) (0.001-0.002)	SILT (%) (0.002-0.060)	SAND (%) (0.060-2.00)	GRAVEL (%) (2.00-60.0)
25.6	24.4	46.0	4.1

SIEVE SIZE (BY LOG SCALE)

0,300

Sand

Medium

0.400 0.500 0.000 0.700 0.800 0.900 1.00

Coarse

2.00

3.00 4.00 6.00 7.00 8.00 0.00 20.0

Gravel



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OUR REF:

91823

Johann vd Men

CLIENT: PROJECT:

Materials Investigation Portion 2 of Tenbosch 661-JU (M20/3870)

ATTENTION:

Johann vd Merwe

pH & CONDUCTIVITY TEST RESULTS (TMH 1 A20 & A21T)

Sample Number	Layer / Road	Temperature (°C): Conductivity	Conductivity (mS/m)	Temperature (°C) : pH	pH Value
10718	TB/2 (400-900mm)	24.4	48	24.4	6.6
10719	TB/7 (500-1100mm)	24.4	37	24.4	6.5
10721	TB/13 (100-300mm)	24.4	38	24.4	5.9
10722	TB/15 (450-1200mm)	24.4	67	24.4	5.7
10724	TB/25 (100-900mm)	24.5	34	24.5	5.6
10726	TB/32 (100-800mm)	24.4	33	24.4	5.8
10727	TB/37 (100-800mm)	24.4	65	24.4	7.8

Remarks:

The samples were subjected to analysis according to TMH 1
The results reported relate only to the sample tested
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CONSOLIDATION TESTS: COLLAPSE POTENTIAL

BS 1377 Part 5

Client: JOHAN VD MERWE

Project: MATERIALS INVESTIGATION PORTION 2 OF TENBOSCH 661-JU

Job no: 22554

Sample no: TB/17

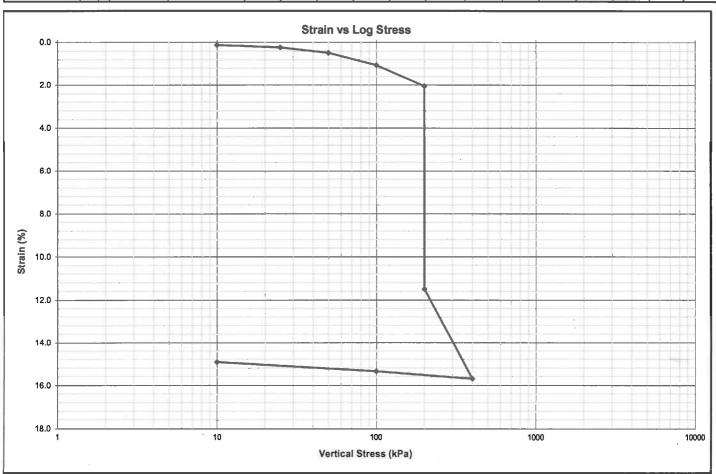
Date: 17/12/2020

Lab no: G20-0474

Depth (m): 0.5

Sample Para	ameters	Unit	Value	Remarks	Test Remarks
Moisture Content	Before Test	%	6.5	Complete test specimen	Undisturbed sample
	After Test	%	21.0	Complete test specimen	Collapse Potential: 9.64%
Dry Den	sity	Kg/m³	1593		
Void Ra	atio	-	0.707		
Degree of Sa	aturation	%	25.1		
Initial Specime	en Height	mm	20.0		
Relative Den	sity (SG)	-	2.719	Determined	Soaked @200kPa

	Test Parameters													
Vertical Stress	kPa	10	25	50	100	200	200	400	100	10				
Time Elapsed	hr	1	1	1	1	1	24	1	1	1				
H ₁₀₀	mm	19.975	19.952	19.902	19.786	19.590	17.701	16.862	16.931	17.018				
Strain	%	0.124	0.239	0.492	1.068	2.052	11.497	15.689	15.343	14.912				
Void Ratio	-	0.705	0.703	0.698	0.689	0.672	0.511	0.439	0.445	0.452				
Mv (1/Mpa)	-	-	0.0769	0.1013	0.1157	0.0995	-	0.2368	0.0137	0.0566				



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CONSOLIDATION TESTS: COLLAPSE POTENTIAL

BS 1377 Part 5

Client: JOHAN VD MERWE

Project: MATERIALS INVESTIGATION PORTION 2 OF TENBOSCH 661-JU

Job no: 22554

Sample no : TB/17

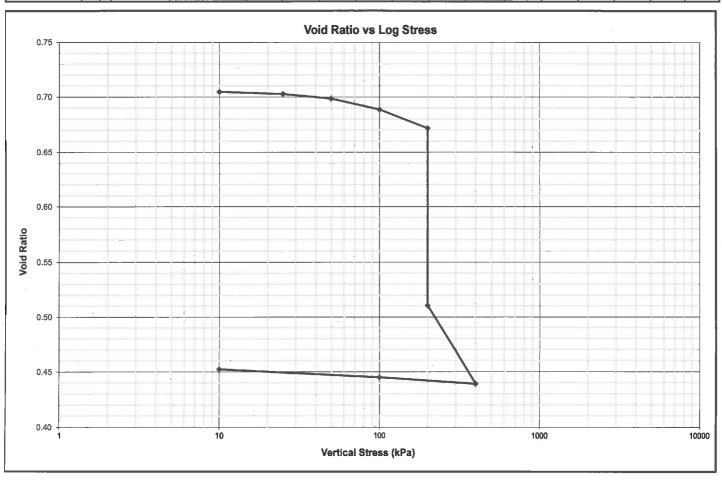
Lab no: G20-0474

Depth (m): 0.5

Date: 17/12/2020

Sample Para	ameters	Unit	Value	Remarks	Test Remarks
Moisture Content	Before Test	%	6.5	Complete test specimen	Undisturbed sample
WOODCO'O COMOTIC	After Test	%	21.0	Complete test specimen	Collapse Potential: 9.64%
Dry Den	sity	Kg/m³	1593		·
Void Ra	atio	-	0.707		
Degree of Sa	aturation	%	25.1		
Initial Specime	en Height	mm	20.0		
Relative Den	sity (SG)	-	2.719	Determined	Soaked @200kPa

				Test P	aramete	rs						
Vertical Stress	kPa	10	25	50	100	200	200	400	100	10		
Time Elapsed	hr	1	1	1	1	1	24	1	1	1		
H ₁₀₀	mm	19.975	19.952	19.902	19.786	19.590	17.701	16.862	16.931	17.018		
Strain	%	0.124	0.239	0.492	1.068	2.052	11.497	15.689	15.343	14.912		
Void Ratio	-	0.705	0.703	0.698	0.689	0.672	0.511	0.439	0.445	0.452		
Mv (1/Mpa)	_		0.0769	0.1013	0.1157	0.0995	_	0.2368	0.0137	0.0566		Γ



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Lab no: G20-0475

MATROLAB

CONSOLIDATION TESTS: COLLAPSE POTENTIAL

BS 1377 Part 5

Client: JOHAN VD MERWE

Project: MATERIALS INVESTIGATION PORTION 2 OF TENBOSCH 661-JU

Job no: 22554

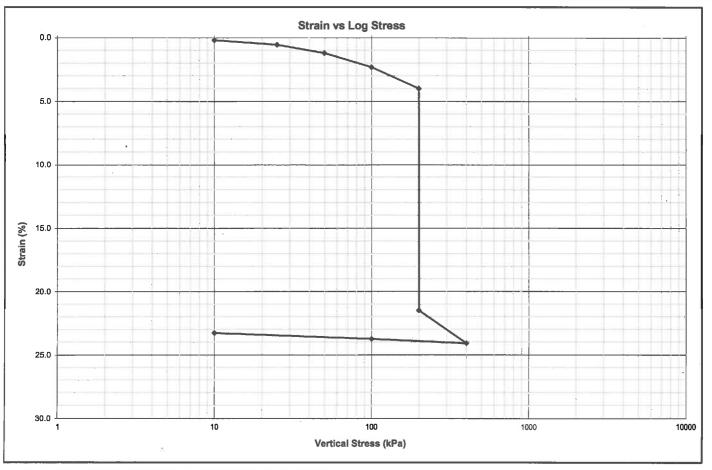
Sample no: TB/20

Depth (m): 0.5

Date: 17/12/2020

Sample Par	ameters	Unit	Value	Remarks	Test Rema	ırks
Moisture Content	Before Test	%	3.8	Complete test specimen	Undisturbed sample	
moistaro comorn	After Test	%	22.0	Complete test specimen	Collapse Potential :	18.2%
Dry Der	sity	Kg/m³	1301			
Void Ra	atio	-	1.069			
Degree of Sa	aturation	%	9.5			
Initial Specime	en Height	mm	20.0			
Relative Den	sity (SG)	-	2.692	Determined	Soaked @200kPa	

	Test Parameters													
Vertical Stress	kPa	10	25	_ 50	100	200	200	400	100	10				
Time Elapsed	hr	1	1	1	1	1	24	1	1	_1_				
H ₁₀₀	mm	19.961	19.886	19.757	19.536	19.202	15.702	15.182	15.252	15.347				
Strain	%	0.195	0.570	1.217	2.319	3.989	21.488	24.090	23.740	23.264				
Void Ratio	-	1.065	1.057	1.044	1.021	0.987	0.625	0.571	0.578	0.588				
Mv (1/Mpa)	-	-	0.2503	0.2604	0.223	0.171	-	0.1657	0.0153	0.0694				



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CONSOLIDATION TESTS: COLLAPSE POTENTIAL

BS 1377 Part 5

Client: JOHAN VD MERWE

Project: MATERIALS INVESTIGATION PORTION 2 OF TENBOSCH 661-JU

Job no: 22554

Sample no: TB/20

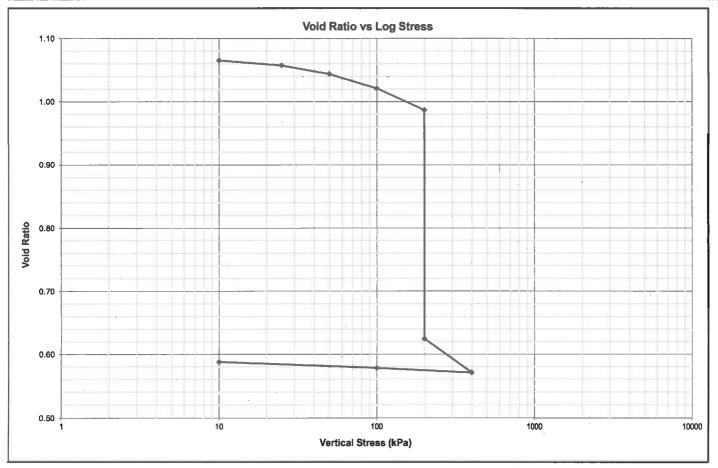
Lab no: G20-0475

Depth (m): 0.5

Date: 17/12/2020

Sample Par	ameters	Unit	Value	Remarks	Test Remark	S
Moisture Content	Before Test	%	3.8	Complete test specimen	Undisturbed sample	
Woldtard Goritoni	After Test	%	22.0	Complete test specimen	pecimen Undisturbed sample	
Dry Der	nsity	Kg/m³	1301			
Void Ra	atio	-	1.069			
Degree of Sa	aturation	%	9.5			
Initial Specim	en Height	mm	20.0			
Relative Den	sity (SG)	-	2.692	Determined	Soaked @200kPa	

	Test Parameters													
Vertical Stress	kPa	10	25	50	100	200	200	400	100	10				
Time Elapsed	hr	1	1	1	1	1	24	1	1	1				
H ₁₀₀	mm	19.961	19.886	19.757	19.536	19.202	15.702	15.182	15.252	15.347				
Strain	%	0.195	0.570	1.217	2:319	3.989	21.488	24.090	23.740	23.264				
Void Ratio	-	1.065	1.057	1.044	1.021	0.987	0.625	0.571	0.578	0.588				
Mv (1/Mpa)	-	_	0.2503	0.2604	0.223	0.171	-	0.1657	0.0153	0.0694				



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MATROLAB

CONSOLIDATION TESTS: COLLAPSE POTENTIAL

BS 1377 Part 5

Client: JOHAN VD MERWE

Project: MATERIALS INVESTIGATION PORTION 2 OF TENBOSCH 661-JU

Job no: 22554

Sample no : TB/20

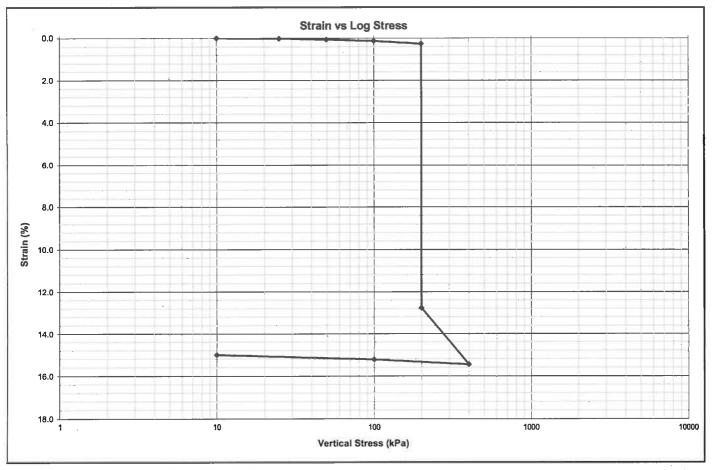
Lab no: G20-0476

Depth (m): 1.2

Date: 17/12/2020

Sample Par	ameters	Unit	Value	Remarks	Test Remarks
Moisture Content	Before Test	%	3.3	Complete test specimen	Undisturbed sample
Wolstare Content	After Test	%	19.8	Complete test specimen	Collapse Potential : 12.5%
Dry Der	nsity	Kg/m³	1529		
Void Ra	atio	-	0.767		
Degree of Sa	aturation	%	11.7		
Initial Specim	en Height	mm	20.0		
Relative Den	sity (SG)	-	2.702	Determined	Soaked @200kPa

	Test Parameters													
Vertical Stress	kPa	10	25	50	100	200	200	400	100	10				
Time Elapsed	hr	1 .	1	1	1	1	24	1	1	1				<u></u>
H ₁₀₀	mm	20.000	19.995	19.986	19.972	19.947	17.448	16.909	16.956	17.000				
Strain	%	0.001	0.025	0.068_	0.139	0.266	12.760	15.456	15.219	15.002				
Void Ratio	_	0.767	0.766	0.765	0.764	0.762	0.541	0.494	0.498	0.502				
Mv (1/Mpa)	-	T -	0.0161	0.0172	0.0142	0.0127	-	0.1545	0.0093	0.0284				



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CONSOLIDATION TESTS: COLLAPSE POTENTIAL

BS 1377 Part 5

Client: JOHAN VD MERWE

Project: MATERIALS INVESTIGATION PORTION 2 OF TENBOSCH 661-JU

Job no: 22554

Date: 17/12/2020

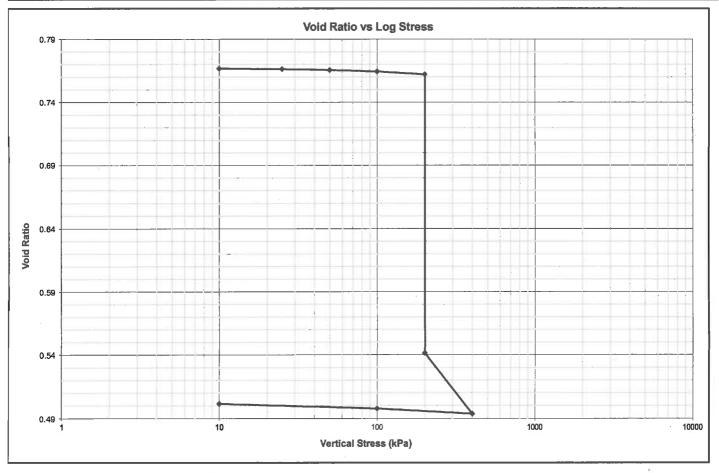
Sample no: TB/20

Lab no : G20-0476

Depth (m): 1.2

Sample Par	ameters	Unit	Value	Remarks	Test Remarks
Moisture Content	Before Test	%	3.3	Complete test specimen	Undisturbed sample
THOUSEN'S CONTROLL	After Test	. %	19.8	Complete test specimen	Collapse Potential: 12.5%
Dry Der	nsity	Kg/m³	1529		
Void Ra	atio	-	0.767		
Degree of Sa	aturation	%	11.7		
Initial Specim	en Height	mm	20.0		
Relative Den	sity (SG)	- 1	2.702	Determined	Soaked @200kPa

	Test Parameters													,
Vertical Stress	kPa	10	25	50	100	200	200	400	100	10				
Time Elapsed	hr	1	1	1	1	1	24	1	1	11				
H ₁₀₀	mm	20.000	19.995	19.986	19.972	19.947	17.448	16.909	16.956	17.000				
Strain	%	0.001	0.025	0.068	0.139	0.266	12.760	15.456	15.219	15.002				
Void Ratio	_	0.767	0.766	0.765	0.764	0.762	0.541	0.494	0.498	0.502				
Mv (1/Mpa)	-	-	0.0161	0.0172	0.0142	0.0127	-	0.1545	0.0093	0.0284				



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CONSOLIDATION TESTS: COLLAPSE POTENTIAL

BS 1377 Part 5

Client JOHAN VD MERWE

Project: MATERIALS INVESTIGATION PORTION 2 OF TENBOSCH 661-JU

Job no: 22554

Date 17/12/2020

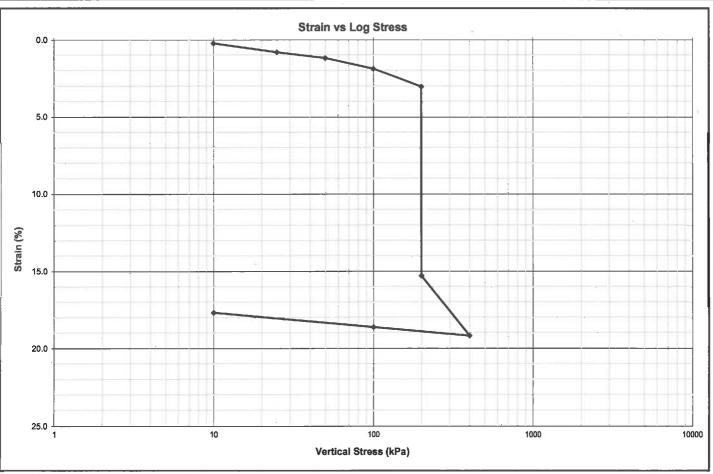
Sample no TB/28

Lab no G20-0478

Depth (m): 1

Sample Par	ameters	Unit	Value	Remarks	Test Remarks
Moisture Content	Before Test	%	2.8	Complete test specimen	Undisturbed sample
	After Test	%	2.7	Complete test specimen	Collapse Potential: 12.63%
Dry Der	sity	Kg/m³	1359		
Void Ra	atio	-	0.965		
Degree of S	aturation	%	7.7		
Initial Specim	en Height	mm	25.4		
Relative Den	sitv (SG)	- "	2.670	Determined	Soaked @200kPa

				Test	Paramet	ers						
Vertical Stress	kPa	10	25	50	100	200	200	400	100	10		
Time Elapsed	hr	1	1	1_	11	1	24	1	1	1		
H ₁₀₀	mm	25.342	25.194	25.097	24.921	24.628	21.517	20.528	20.671	20.909		
Strain	%	0.229	0.810	1.194	1.887	3.041	15.289	19.181	18.620	17.680		
Void Ratio		0.960	0.949	0.941	0.928	0.905	0.664	0.588	0.599	0.617		
Mv (1/Mpa)	-	-	0.3883	0.1551	0.1401	0.1177	_	0.2297	0.0231	0.1284		I



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CONSOLIDATION TESTS: COLLAPSE POTENTIAL

BS 1377 Part 5

Client JOHAN VD MERWE

Project: MATERIALS INVESTIGATION PORTION 2 OF TENBOSCH 661-JU

Job no: 22554

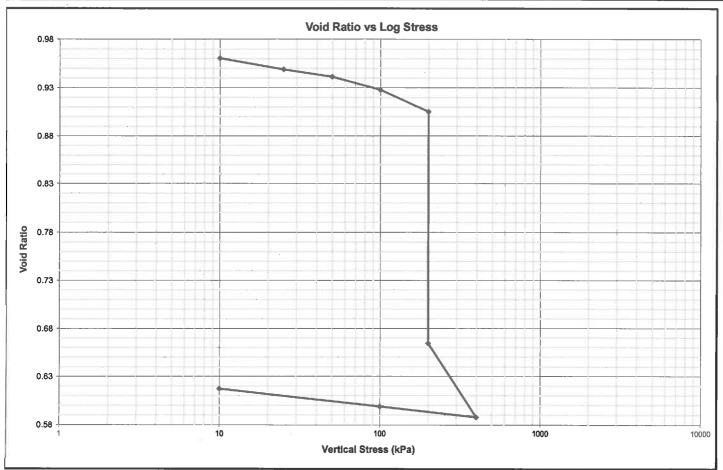
Sample no TB/28

Date 17/12/2020

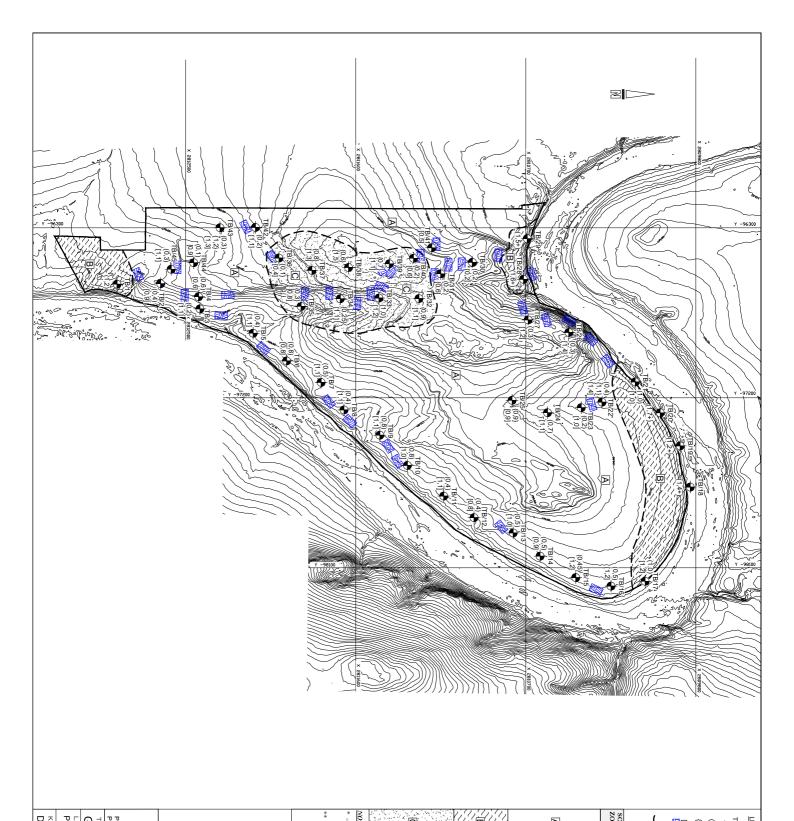
Lab no G20-0478 Depth (m): 1

Sample Par	ameters	Unit	Value	Remarks	Test Remarks
Moisture Content	Before Test	%	2.8	Complete test specimen	Undisturbed sample
	After Test	%	2.7	Complete test specimen	Collapse Potential: 12.63%
Dry Der	nsity	Kg/m³	1359		
Void R	atio	-	0.965		
Degree of S	aturation	%	7.7		
Initial Specim	en Height	mm	25.4		
Relative Der	sity (SG)	-	2.670	Determined	Soaked @200kPa

				Test F	aramet	ers						Ш
Vertical Stress	kPa	10	25.	50	100	200	200	400	100	10		
Time Elapsed	hr	1	1	1	1	1	24	1	1	1		
H ₁₀₀	mm	25.342	25.194	25.097	24.921	24.628	21.517	20.528	20.671	20.909		
Strain	%	0.229	0.810	1.194	1.887	3.041	15.289	19.181	18.620	17.680		
Void Ratio	•	0.960	0.949	0.941	0.928	0.905	0.664	0.588	0.599	0.617		
Mv (1/Mpa)	-	-	0.3883	0.1551	0.1401	0.1177	-	0.2297	0.0231	0.1284		



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TEST PIT BY BACKACTOR, POSITION AND NUMBER SHOWING

TB/22 (0,4) {1,1}

THICKNESS OF POTENTIALLY COLLAPSIBLE AND COMPRESSIBLE HORIZON IN METIRES
DEPTH OF BASE OF CLAY HORIZON

OUTGROP AND SUB-OUTGROP OF VERY HARD ROCK BASALT AND GRANOPHYRE OBSERVED IN AND AROUND GRAVEL ROADS AND NEAR TEST PITS



MATERIAL BOUNDARY **

SOIL	MATERIAL DESCRIPTION & GEOTECHNICAL CONSIDERATIONS	NHBRC* SITE CLASS
A	Thin to moderate horizon (0,1m to 0,8m thick) of <u>loose</u> to <u>meedium dense</u> , smally, gravelly and bouldery COLLIVIIM overlying a <u>dense</u> to <u>very-dense</u> gravelly PHBHL MARKER overlying <u>dense</u> to <u>very-dense</u> gravelly PHBHL MARKER overlying <u>dense</u> to <u>very-dense</u> sestulat soils and basult and gennophyre bednock. Scultered to numerous outcrop and sub-outcrop of <u>hard rock</u> BASALT and GRANOPHYRE occur throughout this soil zone. Contains solidate pokests of Soil Zone-C'e material. © Very hard excavation and possibly blasting will be required for the installation of service and foundation torizon can be expected to Upper collinial thorizon is potentially compressible.	C/S-S1/R
	Thin to prominent horizon (1,0m to 1,6m+ thick) of <u>dense</u> voided, silty sand clayery fine SANID and <u>sear stiff</u> , voided and shatered sandy SILT of collovial and alluvial origin overlying Soil Zone "A" materials: —: Upper soil horizon is potentially collapsible and compressible —: Occasional hand hand tool excavation can be expected in shale hedrock	C1- C2/S1/H
Ō	Thin to moderate (0,1m to 1,0m) of very stiff shattered, sandy CLAY of collivation origin overlying a dense, gravelly PBBBLE MARKER horizon over very dense residual soils and very hand rock GRANOPHYRE. Seattered to numerous outcrop and sub-outcrop of very hard rock GRANOPHYRE occur throughout this soil zone. 4: Upper soil thorizon is potentially expansive can be expected to United the processing of the control of service and foundation trenches across large areas.	H1-H2/R
NOTE:		

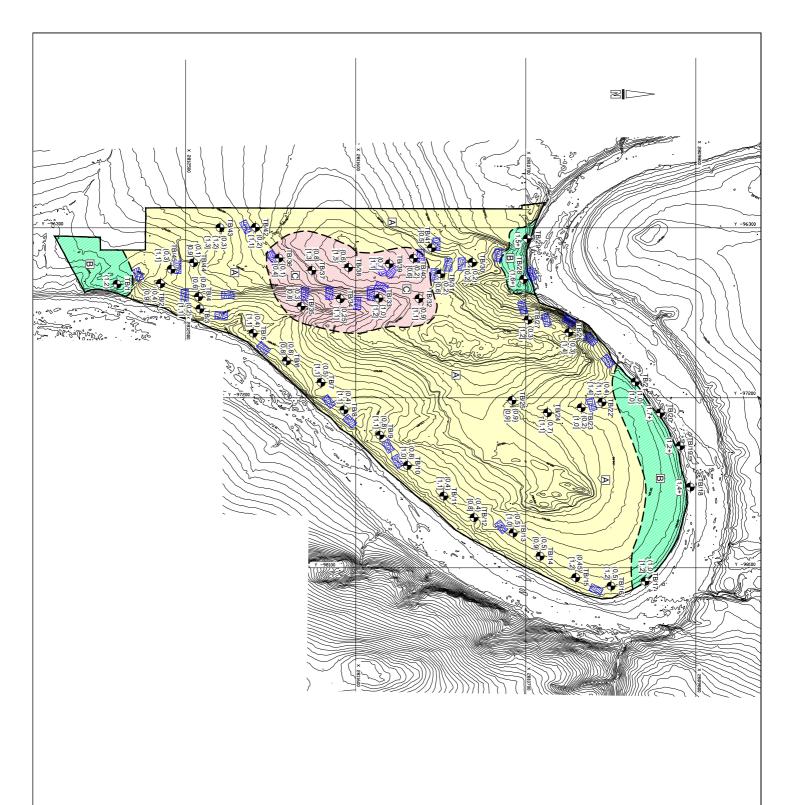
- National Home Buildner Registration Council. NHBRC site classes to be verified during installation of indergenound services by a competent person since variations to the site classes shown may be present.

 Soil boundaries are inferred and next not to be scaled and should econsidered as gradual change from one soil zone to the next, to be determined more accurately during installation of service trenches. Drainage features and earth dams are not shown on the map, cognitance should be taken of areas than may possibly be affected by a flood line.

JOHANN VAN DER MERWE (PTY) LTD INGENIEURSGEOLOOG / ENGINEERING GEOLOGIST

Adapted from Project: Proposed Wildlife Estate, Portion 2 Tenbosch 681 JU, dated November 2020. The Copyright of NuLeaf Planning & Enviromental is recognised

DERICK PEACOCK ASSOCIATES POSBUS 95562 WATERKLOOF 0145 POBOX 95562 WATERKLOOF 0145 PORTION 2 AND 3 OF THE FARM TENBOSCH 661-JU GEOTECHNICAL MAP TITLE / TITLE TEL: 082 570 2222 FAX: 086 685 8369 DATUM / DATE DECEMBER 2020 ~1: 10 000 ON A2 M20/3870 TEK / DRG NO



TB/22 (0,4) {1,1}

TEST PIT BY BACKACTOR, POSITION AND NUMBER SHOWING

THICKNESS OF POTENTIALLY COLLAPSIBLE AND COMPRESSIBLE HORIZON IN METRES
DEPTH OF BASE OF CLAY HORIZON
OUTCROP AND SUB-OUTCROP OF VERY HARD ROCK BASALT AND
GRANOPHYRE OBSERVED IN AND AROUND GRAVEL ROADS AND NEAR
TEST PITS



MATERIAL BOUNDARY **

SOIL	MATERIAL DESCRIPTION & GEOTECHNICAL CONSIDERATIONS	NHBRC* SITE CLASS
Þ	Thin to moderate horizon (0,1m to 0,8m thick) of <i>laose</i> to <i>medium dense</i> , sands, gravelly and bouldery COLLIVIIM overlying a <i>dense</i> to very-dense gravelly PEBBLE MARKEE overlying dense to very-dense gravelly PEBBLE MARKEE overlying dense to very-dense residual soils and basalt and gramophyre bedrock. Scultered to numerous outcrop and sub-outcrop of <i>lazed rose</i> BASALT and GRANOPHYRE occur throughout this soil zone. Contains soluted pockets of Soil Zone "C" material.	C/S-S1/R
	c: Very hard execution and possibly blasting will be required for the installation of service and foundation trenches across large areas c: Unitating behaves and fundation horizon can be expected c: Upper colluvial horizon is potentially compressible	
B	Thin to prominent horizon (1,0m to 1,6m+ thick) of <u>dense</u> voided, silty sand clayer, fine SANI) and <u>sear_seff</u> , voided and shattered sandy SILT of collavial and alluvial origin overlying Soil Zone "A," materials e-C. Upper soil horizon is potentially collapsible and compressible C. Occasional hand hand tool excavation can be expected in shade hedrock	C1- C2/S1/H
0	Thin to moderate (0.1m to 1.0m) of <u>very stiff</u> shattered, sandy CLAY of collivati origin overlying a <u>dense</u> , gravelly PBBLE MARKIER horizon over <u>very dense</u> residual soils and <u>very hard rosk</u> GRANOPHYRE. Scattered to numerous outcrep and sub-outcrep of <u>very hard rock</u> GRANOPHYRE coem throughout this soil zone. © Upper soil horizon is potentially expansive © Undulating hedrock and familiation horizon can be expected to trey hard excontion and possibly helating will be required for the installation of service and foundation trenches across large areas	H1-H2/R
NOTE:		

- National Home Buildner Registration Council. NHBRC site classes to be verified during installation of indergenound services by a competent person since variations to the site classes shown may be present.

 Soil boundaries are inferred and next not to be scaled and should econsidered as gradual change from one soil zone to the next, to be determined more accurately during installation of service trenches. Drainage features and earth dams are not shown on the map, cognitance should be taken of areas than may possibly be affected by a flood line.

JOHANN VAN DER MERWE (PTY) LTD INGENIEURSGEOLOOG / ENGINEERING GEOLOGIST

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DERICK PEACOCK ASSOCIATES GEOTECHNICAL MAP POSBUS 95562 WATERKLOOF 0145 POBOX 95562 WATERKLOOF 0145 PORTION 2 AND 3 OF THE FARM TENBOSCH 661-JU TITLE / TITLE TEL: 082 570 2222 FAX: 086 685 8369 DATUM / DATE DECEMBER 2020 ~1: 10 000 ON A2 M20/3870 TEK / DRG NO