



V3 CONSULTING
ENGINEERS



**DEPARTMENT OF CO-OPERATIVE
GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN
CAPE (COGHSTA)**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF
20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10
IN SOEBATSFONTEIN**

FEBRUARY 2023

EMPLOYER:

**THE HEAD OF DEPARTMENT
CoGHSTA
PRIVATE BAG X5005
KIMBERLEY
8300**

CONSULTING ENGINEERS:

**V3 CONSULTING ENGINEERS (PTY) LTD.
P O BOX 1178
KIMBERLEY
8300**

TENDERER:

DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE

TENDER NO. NC/20/2022

KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN

CLOSING DATE: FRIDAY, 03 MARCH 2023	CLOSING TIME: 11H00
-------------------------------------	---------------------

NAME OF TENDERER*

CONTACT PERSON*

ADDRESS*

.....

.....

.....

TEL NO*

FAX NO*

E-MAIL ADDRESS*

CIDB GRADING*

CIDB REGISTRATION NO*

NHBRC REGISTRATION NO*

B-BBEE LEVEL*

CSD REGISTRATION NO

TENDER AMOUNT, EXCL. VAT* R

TENDER PERIOD* weeks

(* TO BE COMPLETED BY TENDERER)

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
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GENERAL TENDER INFORMATION:

INVITATION DATE	FRIDAY, 10 FEBRUARY 2023
REQUIRED GRADING	4GB or higher CIDB Grading and NHBRC registration
CLARIFICATION MEETING (COMPULSORY)	THURSDAY, 22 FEBRUARY 2023 at 09H00 at the SOEBATSFONTEIN MUNICIPAL OFFICES
CLOSING DATE	FRIDAY, 03 MARCH 2023
CLOSING TIME	11H00
CLOSING VENUE	Tender Box at COGHSTA HEAD OFFICE, LARRY MOLEKO LOUW BUILDING, 9 CECIL SUSSMAN ROAD, KIMBERLEY, 8301.

The Tender Documents (which include the Form of Offer and Acceptance) completed in all respects, plus any additional supporting documentation required, must be submitted in a sealed envelope with the name and address of the Tenderer, the Tender No. and title and the closing date indicated on the envelope. The sealed envelope must be handed in at the Tender Box at the **CoGHSTA KIMBERLEY** Offices. Tenders will be opened directly after closing. Due to a two-stage evaluation process tender prices will **NOT** be read out.

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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V3 CONSULTING
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COGHSTA

Co-operative Governance
Human Settlement & Traditional Affairs

VOLUME 1



V3 CONSULTING
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Co-operative Governance
Human Settlement & Traditional Affairs

THE TENDER



**V3 CONSULTING
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Co-operative Governance
Human Settlement & Traditional Affairs

PART T 1:

TENDER PROCEDURES

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T 1.1:

TENDER NOTICE AND INVITATION TO TENDER

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENT AND TRADITIONAL
AFFAIRS NORTHERN CAPE INVITES TENDERERS FOR KAMIESBERG 20: THE CONSTRUCTION OF
20 BNG HOUSES IN THE KAMIESBERG MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN
SOEBATSFONTEIN .**

1. CoGHSTA hereby invites tenders for KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN .
2. Only NHBRC and CSD registered tenderers with a CIDB grading of 4GB or HIGHER are eligible to submit tenders.
3. A COMPULSORY site briefing will be held on THURSDAY, 22 FEBRUARY 2023 at 09H00. Tenderers are requested to meet in SOEBATSFONTEIN MUNICIPAL OFFICES .
4. Tender documents are available FROM THE COGHSTA WEBSITE
5. The tender requires tenderers to submit a proposal for KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN .
6. General enquiries relating to this tender should be addressed to Tebogo Monoametsi of CoGHSTA, Tel: (053) 807-9713, e-mail: TMonoametsi@ncpg.gov.za and technical enquiries to Philip Loots of V3 Consulting Engineers, Tel: (053) 004 0430, e-mail: philip.loots@v3consulting.co.za.

7. Please note:

- Preference will be given to construction companies who are owned by Women, Youth & Persons with Disabilities.
- Functionality and 80/20 principle evaluation criteria will apply. Based on functionality the tenderer should score 70 or more on the following criteria to be further evaluated:

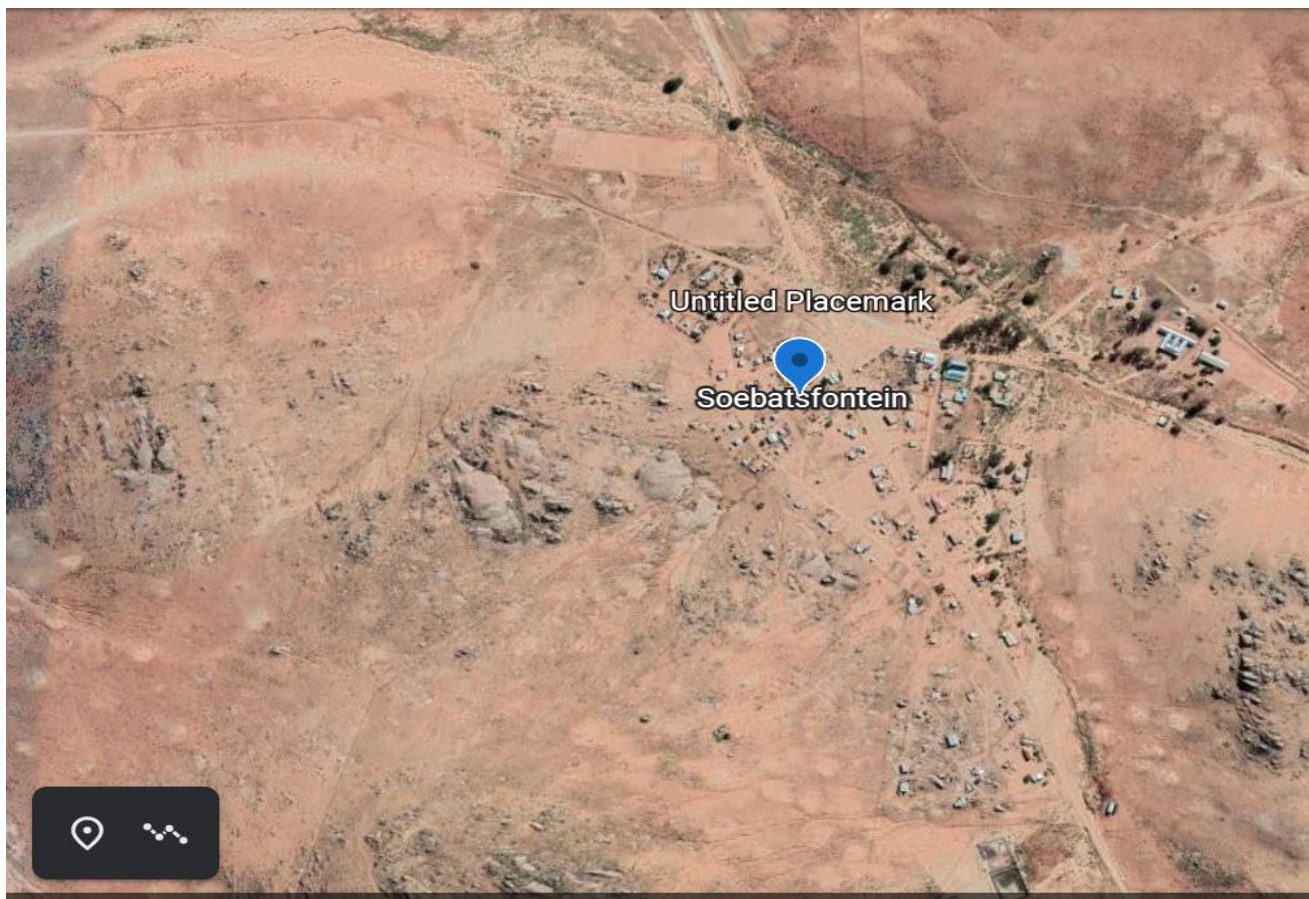
Functionality	Criteria	Weight
1.	Experience of Tenderer	40
2.	NHBRC Registered Engineer	10
3.	Project Staff Experience	40
4.	Plant and Equipment	10
TOTAL		100

- The requirements of the Preferential Procurement Regulations, 2022 (Government Gazette No. 2721) shall also apply, together with all other requirements as set out in the Tender Data.
- Failure to comply with above requirements will result in automatic disqualification of the bidder.
- CoGHSTA reserves the right to withdraw any invitation to tender and/or re-advertise or to reject any tender or to accept a part of it. CoGHSTA does not bind itself to accepting the lowest tender or award a contract to the bidder scoring the highest number of points.
- Tenders will be opened directly after closing. Due to a two-stage evaluation process tender prices will **NOT** be read out.

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
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LOCALITY PLAN

CLARIFICATION MEETING VENUE: SOEBATSFONTEIN MUNICIPAL OFFICES



**V3 CONSULTING
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COGHSTA

Co-operative Governance
Human Settlement & Traditional Affairs

T 1.2: TENDER DATA

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
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T 1.2: TENDER DATA

The conditions of tender are the Standard Conditions of Tender as contained in Annex F of Board Notice 86 of 2010 in government Gazette No. 33239 of 28 May 2010, Construction Industry Development Board (CIDB) Standard for Uniformity in Construction Procurement. (See www.cidb.org.za) which are reproduced without amendment or alteration for the convenience of Tenderers as an Annex to this tender Data.

The Standard Conditions of Tender make several references to the Tender Data for details that apply specifically to this tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender. Each item of data given below is cross-referenced to the clause in the Standard Conditions of Tender to which it mainly applies.

The following variations, amendments and additions to the Standard Conditions of Tender as set out in the Tender Data below shall apply to this tender:

Clause Number	Tender Data
--------------------------	--------------------

F.1	General
------------	----------------

F.1.1	Actions
--------------	----------------

Add the following to F.1.1:

The Employer is CoGHSTA.

F.1.2	Tender Documents
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Add the following to F.1.2:

“The following documents form part of this contract:

- (i) The General Conditions of Contract (GCC) for Construction Works (3rd Edition) 2015, as published by the South African Institution of Civil Engineering. This publication is available and Tenderers must obtain copies at their own cost from the South African Institution of Civil Engineering (SAICE), Private Bag X200, Halfway House 1685, Tel.: (011) 805 5947, Fax: (011) 805 5971, e-mail: civilinfo@saice.org.za.
- (ii) The SANS Standardised Specifications for Civil Engineering Construction prepared by the South African Bureau of Standards. These publications are available and Tenderers must obtain copies at their own cost from the South African Bureau of Standards, Private Bag X191, Pretoria, 0001.

The above may also be inspected, by appointment, at the offices of the Employer's Agent during normal office hours.

The Tender Documents issued by the Employer comprise:

Volume 1: The Tender Document (this document), in which is bound:

The Tender

Part T 1: Tendering Procedure

T 1.1 Tender notice and invitation to tender
T 1.2 Tender data

Part T 2: Returnable Documents

T 2.1 List of returnable documents
T 2.2 Returnable Schedules

The Contract

Part C 1: Agreement and Contract Data

C 1.1 Form of Offer and Acceptance
C 1.2 Contract Data
C 1.3 Form of Guarantee
C 1.4 Occupational Health and Safety Agreement
C 1.5 Contract of Temporary Employment as Community Liaison Officer

Part C 2: Pricing Data

C 2.1 Pricing Instructions
C 2.2 Calculation of Fixed Price

Part C 3: Scope of Work

C 3.1 Description of the Works
C 3.2 Engineering Drawings
C 3.3 Construction Work Specifications: Project Specifications
C 3.4 Management
C 3.5 Annexures

Part C 4: Site Information

C 4.1 Site Information

Volume 2: Drawings (listed in C 3.2: Engineering Drawings)

Volume 1 is deemed the “**Returnable Document**” which must be returned to the Employer in terms of submitting a tender offer.

F.1.4 Communication and Employer’s Agent

Add the following to F.1.4:

Attention is drawn to the fact that verbal information, given by the Employer’s Agent during site visits / clarification meetings or at any other time prior to the award of the Contract, will not be regarded as binding on the Employer. Only information issued formally by the Employer’s Agent in writing to Tenderers will be regarded as amending the Tender Document.

The Employer’s Agent is:

Name: MR PORSCH SEKHUKHUNE
V3 CONSULTING ENGINEERS (PTY) LTD.
P O BOX 1178
KIMBERLEY, 8300
Tel.: (053) 004 0430
Fax: (053) 831 2460
E-mail: porsch.sekhukhune@v3consulting.co.za

F.1.6.2 **Competitive Negotiation Procedures**

Add the following to F.1.6.2:

A competitive negotiation procedure will **not** be followed.

F.1.6.3 **Proposal Procedure using the Two-Stage System**

Add the following to F.1.6.3:

A two-stage system will be followed.

F.2 **Tenderer's Obligations**

F.2.1 **Eligibility**

Add the following to F.2.1:

Only those Tenderers who satisfy the following criteria are eligible to submit tenders:

Construction Industry Development Board (CIDB) Contractor Registration

Only Tenderers who are registered with the CIDB, in a Contractor grading designation equal to or higher than a Contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations, for a **4GB** Class of construction work, are eligible to have their tenders evaluated.

Joint Ventures are eligible to submit tenders provided that:

1. The Joint Venture is registered as a joint venture on the CoGHSTA database;
2. Every member of the Joint Venture is registered with the CIDB;
3. The lead partner has a Contractor grading designation in the **4GB** Class of construction work;
4. The combined Contractor grading designation calculated in accordance with the CIDB Regulations is equal to or higher than a Contractor grading designation determined in accordance with the sum tendered for a **4GB** Class of construction work or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations.

Notwithstanding the above, Tenderers who are capable of being so registered prior to the evaluation of submissions may be evaluated at the sole discretion of the Employer (the evaluation of tenders shall be deemed to take place when the Employer's Bid Evaluation Committee meets to make a recommendation to the Bid Adjudication Committee).

For alpha-numerics associated with the Contractor Grading Designations see **Annex G** attached.

F.2.7 **Clarification Meeting**

Add the following to F.2.7:

Clarification site or information meetings are **Compulsory**. Tenders will not be accepted from Tenderers who have not attended the compulsory site or information meetings. Tenderers who arrive 15 (fifteen) minutes or more after the advertised time the meeting starts will not be allowed to attend the meeting or to sign the attendance register. If the Tenderer is delayed, he must inform the Contact Person before the meeting commences and will only be allowed to attend the meeting if the Chairperson of the meeting, as well as all the other Tenderers attending the meeting, give permission to do so.

All partners or the leading partner of a Joint Venture must attend the compulsory clarification site or information meeting.

Tenderers should be represented at the compulsory clarification meeting by a person who is suitably qualified and experienced to comprehend the implications of the work involved.

F.2.9 Insurance

Add the following to F.2.9:

The Employer will provide **no** insurance.

The Tenderer should provide proof of Professional Indemnity Insurance.

F.2.10 Pricing the Tender Offer

F.2.10.3 Add the following to F.2.10.3:

The tendered Fixed Price will **not** be subject to escalation.

See C 1.2: Contract Data: Part 1: Data Provided by the Engineer: Clause 6.8.2.

F.2.13 Submitting of a Tender Offer

Add the following to F.2.13.1:

Where the tendering entity is a joint venture it is recommended that the standard CIDB Joint Venture Agreement be used.

Replace sub-clause F.2.13.2 with the following:

Return all returnable documents to the Employer after completing them in their entirety by writing in **non-erasable black ink**.

Add the following to F.2.13.3:

Parts of each Tender offer communicated on paper shall be submitted as an original **plus 1 (ONE) electronic scanned copy on a flash/dvd drive**.

Add the following after the first sentence of F.2.13.4:

The tender shall be signed by a person duly authorised to do so. Tenders submitted by Joint Ventures of 2 (two) or more firms shall be accompanied by the document of formation of the Joint Venture, authenticated by a public notary or other official deputed to witness sworn statements, in which is defined precisely the conditions under which the Joint Venture will function, its period of duration, the persons authorised to represent and obligate it, the participation of the several firms forming the Joint Venture, and any other information necessary to permit a full appraisal of its functioning.

Add the following to F.2.13.5:

The Employer's Agent's address for delivery of Tender Offers and identification details to be shown on each tender offer package are:

Location of tender closure: Tender Box, COGHSTA HEAD OFFICE, LARRY MOLEKO LOUW BUILDING, 9 CECIL SUSSMAN ROAD, KIMBERLEY, 8301.

Identification details:

TENDER NUMBER: **NC/20/2022**
TITLE OF TENDER: **KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

endorsement: Sealed tenders with (with a soft copy in a memory) the Tenderer's name and address and the

"TENDER NUMBER: **NC/20/2022: KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**" on the envelope, must be placed in the appropriate official Tender Box at the abovementioned address.

Add the following to F.2.13.6:

A two-envelope procedure will **not** be followed.

Add the following to F.2.13.9:

Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will **not** be accepted.

Add the following to F.2.13.10:

By signing the offer part of C 1.1: Form of Offer and Acceptance, the Tenderer declares that all information provided in the Tender submission is true and correct.

F.2.15 Closing Time

Add the following to F.2.15.1:

The closing time for submission of Tender Offers is as stated in the Tender Notice and Invitation to Tender.

F.2.16 Tender Offer Validity

Add the following to F. 2.16.1:

The tender offer validity period is **90 (ninety)** days from the closing date.

F.2.17 Clarification of Tender Offer after Submission

Add the following to F.2.17:

A tender will be rejected as non-responsive if the Tenderer fails to provide any clarification requested by the Employer within the time for submission stated in the Employer's written request for such clarification. A tender will also be rejected as non-responsive if the Tenderer fails, within the time stated in writing by the Employer, to comply with the requirements of F.4.4.

F.2.18 Provide Other Material

F.2.18.1 Delete the word "notarised"

Add the following to F.2.18.1:

Provide, on written request by the Employer, where the tendered amount exclusive of VAT **exceeds R 8, 695, 652.17 (Eight Million, Six Hundred Nighty-Five Thousand Six Hundred Fifty-Two Rand and seventeen Cents):**

i) audited annual financial statement for 3 (three) years, or for the period since

establishment if established during the last 3 (three) years, if required by law to prepare annual financial statements for auditing;

- ii) a statement indicating whether any portion of the goods or services are expected to be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality or municipal entity is expected to be transferred out of the Republic.

Each party to a Consortium/Joint Venture shall submit separate certificates/statements in the above regard.

F.2.19 Inspection, Tests and Analysis

Add the following to F.2.19:

Access shall be provided for the following inspections, tests and analysis: **Site investigation.**

F.2.20 Submit Securities, Bonds, Policies, etc.

Add the following to F.2.20:

The successful Tenderer will have to provide a guarantee as security and documentary proof that the necessary insurance policies required in terms of the Contract have been taken out and provide proof of premium payments to the satisfaction of the Employer.

F.2.22 Return of Other Tender Documents

Add the following to F.2.22:

Return all retained tender documents and drawings within 28 (twenty-eight) days of the expiry date of the validity period.

F. 2.23 Certificates

Add the following to F.2.23:

The Tenderer is required to submit with his tender:

F.2.23.1 Tax Clearance Certificate

Tenderers shall be registered and in good standing with the South African Revenue Service (SARS) on CSD, if none compliant, the tenderer must submit evidence from SARS informing the department of why it is none compliant and when is the estimated resolution.

Each party to a Consortium/Joint Venture shall submit a separate Tax Clearance Certificate, or proof that he or she has made the necessary arrangements with SARS.

Each party to a Consortium/Joint Venture shall submit separate certificates in the above regard.

F.2.23.3 **Broad-Based Black Economic Empowerment Status Level Certificates**

The B-BBEE certificate will only be used for your for identifying your level of B-BBEE but will not be used for scoring on the 80:20, Specific goals will be used for scoring.

F.2.23.4 **NHBRC Registration**

A NHBRC Registration is **compulsory** for this contract.

F.3 The Employer's Undertakings

F.3.2 **Issue Addenda**

Add the following to F.3.2:

Notwithstanding any requests for confirmation of receipt of Addenda issued, the Tenderer shall be deemed to have received such addenda if the Employer can show proof of transmission thereof (or a notice in respect thereof) via electronic mail, facsimile or registered post.

F.3.4 **Opening of Tender Submissions**

Add the following to F.3.4.1:

The time and location for opening of Tender Offers is as follows:

Time: Tenders will be opened immediately after the closing time for receipt of tenders as stated in the Tender Notice and Invitation to Tender, or as stated in any Addendum extending the closing date.

Location: COGHSTA HEAD OFFICE, LARRY MOLEKO LOUW BUILDING, 9 CECIL SUSSMAN ROAD, KIMBERLEY, 8301.

F.3.5 **Two-envelope System**

Add the following to F.3.5:

The 2 (two) - envelope procedure will **not** be followed.

F. 3.8 **Test for Responsiveness**

Add the following Sub-Clause F.3.8.3:

Tenders will be considered non-responsive if, inter alia:

- a) the tender is not in compliance with the Scope of Work;
- b) the Tenderer does not comply with the CIDB contractor grading designation specified in F.2.1 **above**.
- c) the Tenderer has failed to clarify or submit any supporting documentation within the time for submission stated in the employers written request.
- d) the Tenderer is not registered with the NHBRC.
- e) The tenderer does not submit proof of CSD database registration
- f) the tenderer does not provide 3 Year Audited Financial statements

Arithmetical Errors, Omissions and Discrepancies

Amend Sub-Clauses F.3.9.1 & F.3.9.2 to read as follows:

“F.3.9.1 Check the highest ranked Tender or Tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with F.3.11 and check only the Summary: Calculation of Tender Sum for:

- a) The gross misplacement of the decimal point in any rate; or
- b) Arithmetical errors in:
 - i) line item totals resulting from the product of a unit rate and a quantity or
 - ii) the summation of the amounts.

F.3.9.2 The Employer must correct the arithmetical errors in the following manner:

- a) Where there is a discrepancy between the amount in words and the amounts in figures, the amount in words shall govern;
- b) If, in the Summary: Calculation of tendered Fixed Price there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern and the unit rate shall be corrected.
- c) Where there is an error in the total of the amounts either as a result of other corrections required by this checking process or in the Tenderer's addition of prices, the total of the prices shall govern and the Tenderer will be asked to revise selected unit rates to achieve the Tendered total of the amounts.

Consider the rejection of a tender offer if the Tenderer does not correct or accept the correction of the arithmetical error in the manner described above.”

Evaluation of Tender Offers

F.3.11.1 General

Add the following to F.3.11.1:

Functionality will be scored and a minimum of 70 out of the possible 100 is required to be evaluated any further.

Table F3.11.1.1 – Functionality Evaluation Criteria

Functionality	Criteria	Weight
1.	Experience of Tenderer	40
2.	NHBRC Registered Engineer	10
3.	Project Staff Experience	40
4.	Plant and Equipment	10
TOTAL		100

Table F3.11.1.2 – Criteria 1: Experience of Tenderer

Sub-Criteria:	Points Awarded
Completion of at least 5 projects of similar scope, with project values of R1.0 million or greater, in the last 5 years, supported by contactable references.	40
Completion of at least 4 projects of similar scope, with project values of R1.0 million or greater, in the last 5 years, supported by contactable references.	30
Completion of at least 3 projects of similar scope, with project values of R1.0 million or greater, in the last 5 years, supported by contactable references.	20
Completion of at least 2 projects of similar scope, with project values of R1.0 million or greater, in the last 5 years, supported by contactable references.	10
Completion of at least 1 projects of similar scope, with project values of R1.0 million or greater, in the last 5 years, supported by contactable references.	5
1.Total possible points for Experience of Tenderer	40

Table F3.11.1.3 – Criteria 2: NHBRC Registered Engineer:

Sub-Criteria:	Points Awarded
More than 10 years of experience in the built environment.	10
At least 7 years of experience in the built environment.	6
At least 5 years of experience in the built environment.	3
2.Total possible points for NHBRC Registered Engineer:	10

Table F3.11.1.4 – Criteria 3: Project Staff Experience

Sub-Criteria:	Points Awarded
3.1 Project Manager:	
More than 10 years of experience in project management.	10
At least 7 years of experience in project management.	6
At least 5 years of experience in project management.	3
Total possible points for Project Manager	10
3.2 Site Agent:	
More than 7 years of experience in the built environment, with particular experience in the required discipline.	10
At least 5 years of experience in the built environment, with particular experience in the required discipline.	6
At least 3 years of experience in the built environment, with particular experience in the required discipline.	3
Total possible points for Site Agent	10
3.3: Safety Officer	
NQF level 5 certificate with at least 2 years' experience in the required discipline.	3
Total possible points for Safety Officer	3
3.4 SHE representative:	
NQF level 2 certificate with at least 6 months' experience in the required discipline.	2
Total possible points for Site Agent	2
3.5 Artisans/Specialists (CVs to be attached to claim points):	
Bricklayers – 5 or more years of experience in the required discipline.	5
Plumbers – 5 or more years of experience in the required discipline.	5
Carpenters – 5 or more years of experience in the required discipline.	5
Electricians – 5 or more years of experience in the required discipline.	5
Total possible points for any 3 will amount to 15 points	15
3.Total possible points for Project Staff Experience	40

Should the person identified for a specific position not be in the employment of the tenderer, a signed letter providing availability and/or memorandum of understanding should be attached.

Table F3.11.1.5 – Criteria 4: Plant and Equipment

Sub-Criteria:	Points Awarded
The tenderer owns all plant and equipment required for the scope and size of the project, supported by proof of ownership.	10
The tenderer owns more than 50% of plant and equipment required for the scope and size of the project, supported by proof of ownership.	8
The tenderer owns less than 50% of plant and equipment required for the scope and size of the project, supported by proof of ownership.	7
The tenderer indicated that all plant and equipment required for the scope and size of the project will be hired.	5
The tenderer provided no specification on plant and equipment.	0
4.Total possible points for Plant and Equipment	10

The procedure for the evaluation of responsive tenders is **Method 2: Financial Offer and Preference** in accordance with F.3.11.8.

F.3.11.7 **Scoring Financial Offers**

Add the following to F.3.11.7:

The financial offer will be scored using **Formula 2 (Option 1)** where the value of W_1 is **80 (eighty)** points.

A maximum of **80 (eighty)** tender evaluation points (W_1) will be scored for Financial Offers from responsive tenders under consideration scoring points according to the formula:

$$N_{FO} = W_1 \times \left[1 - \frac{(P - P_m)}{P_m} \right] \text{ where,}$$

N_{FO} = Number of tender evaluation points awarded for Financial Offer

W_1 = Maximum tender evaluation points awarded for Financial Offer = **80 (eighty)** points

P = Financial Offer = Tender Sum (including VAT, contingencies, provisional sums and escalation) = the comparative offer of the tender offer under construction

P_m = Lowest Tender Sum (including VAT, contingencies, provisional sums and escalation) = the comparative offer of the most favourable comparative offer.

F.3.11.8 **Scoring Preference (Specific Goals)**

Add the following to F.3.11.8:

Points will be awarded to Tenderers who are eligible for preferences (Specific Goals) in terms of the CoGHSTA NC Supply Chain Policy 2023.

Points for Specific Goals

A maximum of 20 (twenty) tender evaluation points will be awarded for Specific Goals to Tenderers with responsive tenders, who are eligible for such preference, in accordance with the criteria listed below.

Subject to section 2(1)(f) of the Preferential Procurement Policy Framework Act, 2000, the contract must be awarded to the tenderer scoring the highest points.

The following table must be used to calculate the score out of 20 for specific goals:

Specific Goal	Number of Points
100% or more Women or Youth owned company	10
Less than 100% Women or Youth owned company	5
100% Black owned Company	10
Less than 100% Black owned Company	5
100% People living with disability	10
Locally owned companies	5
Maximum obtainable points	20

The following must be noted for the allocation of 20 points:

- A tenderer might be requested to submit proof of its B-BBEE status level of contributor.
- A share certificate and or CIPC information of the company might be requested to be able to verify ownership
- Any other relevant evidence can be requested from the tenderer to substantiate the claim for the 20 points from any of the above specific goals on the table.
- CSD printout must accompany all submission documents
- The above points can be increased, reduced and split to more than one specific goal, depending on the requirements of the bid and specifications, however when such is increased or reduced, the information must be published correctly to the bidder at the time of advert of tender, but total points must not exceed 20 points.
- Locality points will be allocated to any company with a valid and verifiable address in the Northern Cape, e.g. CIPC, SARS etc. A lease agreement must have substantiating legitimate evidence relating to the Northern Cape the address claimed, such as proof of rental payment and receipt of rentals by both the lessee and lessor.
- If the price offered by the tenderer scoring the highest points is not reasonable, COGHSTA must not award the contract to the tenderer
- COGHSTA may negotiate a reasonable price with the tenderer scoring the highest points or cancel the tender
- If the tenderer does not agree to a reasonable price, negotiate a reasonable price with the tenderer scoring the second highest points or cancel the tender
- If the tenderer scoring the second highest points does not agree a reasonable price, negotiate a reasonable price with the tenderer scoring the third highest points or cancel the tender.
- If a reasonable price is not agreed as envisaged, COGHSTA must cancel the tender.

F.3.12 Risk Analysis

Notwithstanding compliance with regard to CIDB registration or any other requirements of the tender, the employer will perform a risk analysis in respect of the following:

- a) reasonableness of the financial offer
- b) reasonableness of unit rates and prices
- c) the Tenderer's ability to fulfil its obligations in terms of the tender document, that is, that the Tenderer can demonstrate that he/she possesses the necessary professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience, reputation, personnel to perform the contract, etc.

No Tenderer will be recommended for an award unless the Tenderer has demonstrated that he/she has the resources and skills required.

F.3.13 Acceptance of Tender Offer

Add the following to F.3.13:

The Employer reserves the right to withdraw any invitation to tender and/or to re-advertise or to reject any tender or to accept a part of it. The Employer does not bind itself to accepting the lowest or only tender.

Tender offers will only be accepted if:

- (a) the Tenderer is registered and in good standing with the South African Revenue Service (SARS) and has submitted evidence in the form of an original valid Tax Clearance Certificate (for tender) issued by SARS or proof that he or she has made arrangements with SARS to meet his or her outstanding tax obligations;

- (b) the Tenderer or any of its Directors is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector;
- (c) the Tenderer has not:
 - (i) abused the Employer's Supply Chain Management System; or
- (d) the Tenderer has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the Tenderer's ability to perform the contract in the best interests of the Employer or potentially compromise the tender process.

F.3.14 Notice to unsuccessful Tenderers

Replace the heading above with:

Notice to successful and unsuccessful Tenderers

Replace sub-clause F.3.14.2 with the following:

The Employer shall, at the same time as notifying the successful Tenderer of the Bid Adjudication Committee's decision to award the tender to the successful Tenderer, also give written notice to the other Tenderers informing them that they have been unsuccessful.

F.3.15 Provide copies of the contract

Add the following to F.3.15:

The number of paper copies of the signed contract to be provided by the Employer is **1 (One)**.

F.4 ADDITIONAL CONDITIONS OF TENDER

The additional conditions of tender are:

F.4.1 Compliance with Occupational Health and Safety Act (Act 85 Of 1993)

Tenderers are to note the requirements of the Occupational Health and Safety Act No. 85 of 1993 and the Construction Regulations 2014 where applicable, issued in terms of Section 43 of the Act. The Tenderer shall be deemed to have read and fully understood the requirements of the above Act and Regulations and to have allowed for all costs in compliance therewith.

The Contractor will not be allowed to start with any construction works until his Health and Safety Plan is approved by the Health and Safety Agent.

Tenderers are to note that the Contractor is required to ensure that all Sub-Contractors or others engaged in the performance of the contract also comply with the above requirements.

The Contractor shall prepare and maintain a Health and Safety File in respect of the project, which shall be available for inspection on Site at all times and handed over to the Employer on Final Completion of the project.

The Contractor is required to submit to the Employer the Occupational Health and Safety Agreement (included in C 1.4 of the Contract document) and a letter of good standing from the Compensation Commissioner, or a licensed Compensation Insurer, within 14 (fourteen) days after the Commencement Date of the Contract.

F.4.2 Eligibility with respect to Expanded Public Works Programme

This Contract does not qualify for consideration as an Expanded Public Works Program project, but the Contractor shall make use of local labour as far as possible. Where manual labour is required, remuneration must be paid according to the minimum wages for the region and in accordance with the latest published "Guidelines for the Implementation of Labour-

Intensive Infrastructure Projects under the Expanded Public Works Programme (Epwp)". Monthly project reporting will be done on all the EPWP reporting documentation attached in Annexure A of Part 3: Scope of Works of this Tender Document.

F.4.3 Claims arising after submission of tender

No claim for any extras arising out of any doubt or obscurity as to the true intent and meaning of anything shown on the Contract Drawings or contained in the Conditions of Contract, Scope of Work and Pricing Data, will be admitted by the Employer after the submission of any tender and the Tenderer shall be deemed to have:

- (a) Inspected the Contract Drawings and read and fully understood the Conditions of Contract;
- (b) Read and fully understood the whole text of the Scope of Work and Pricing Data and thoroughly acquainted himself with the nature of the works proposed and generally of all matters which may influence the Contract;
- (c) Visited the site of the proposed works, carefully examined existing conditions, the means of access to the Site, the conditions under which the work is to be done, and acquainted himself with the limitations or restrictions that may be imposed by the Municipality or other Authorities in regard to access and transport of materials, plant and equipment to and from the site and made the necessary provisions for any additional costs involved thereby.
- (d) Requested the Employer or his duly authorized agent to make clear the actual requirements of anything shown on the Contract Drawings or anything contained in the Scope of Work and Pricing Data, the exact meaning or interpretation of which is not clearly intelligible to the Tenderer.
- (e) Received any Addenda to the tender documents which have been issued in accordance with the Employer's supply Chain Management Policy.

Before submission of any tender, the Tenderer should check the number of pages, and if any are found to be missing or duplicated, or the figures or writing indistinct, or if the Pricing Data contain any obvious errors, the Tenderer must apply to the Employer's agent at once to have the same rectified, as no liability will be admitted by the Employer in respect of errors in any tender due to the foregoing.

F.4.4 Community Liaison Officer

It is a requirement of the Contract that a Community Liaison Officer (CLO) for the project shall be appointed by the Contractor. The primary functions of the CLO shall be to assist the Contractor with the selection and recruitment of labour, to represent the local community in matters concerning the use of labour on the works, and to assist with and facilitate communication between the Contractor, the Principal Agent and the local communities.

The method of identifying suitable candidates for the position of CLO will be through advertisement throughout the community and local Municipality, interviews will be held with candidates and the representative of the Department will be present.

F.4.5 Invalid tenders

Tenders shall be considered invalid and shall be endorsed and recorded as such in the tender opening record, by the responsible official who opened the tender, in the following circumstances:

- (a) If the tender offer (the tender price/amount) is not submitted on the Form of Offer and Acceptance bound into this tender document (Form C 1.1: Part C 1: Agreement and Contract Data);
- (b) If the tender is not completed in non-erasable black ink;

- (c) If the Form of Offer and Acceptance is signed, but the name of the Tenderer is not stated or is indecipherable.

F.4.6 **Negotiations with preferred Tenderers**

The Employer may negotiate the final terms of a contract with Tenderers identified through a competitive tendering process as preferred Tenderers, provided that such negotiation:

- (a) does not allow any preferred Tenderer a second or unfair opportunity;
- (b) is not to the detriment of any other Tenderer; and
- (c) does not lead to a higher price than the quotation as submitted.

Minutes of any such negotiations shall be kept for record purposes.

F.4.7 **General Supply Chain Management Conditions applicable to tenders**

In terms of its Supply Chain Management Policy, the Employer may not consider a tender unless the provider who submitted the tender:

- a) has furnished the Employer with that provider's:
 - full name;
 - **identification number or company or other registration number; and**
 - **tax reference number and VAT registration number, if any;**
 - Certificate of attendance at a compulsory site inspection, where applicable
- b) has indicated whether:
 - the provider is in the service of the state, or has been in the service of the state in the previous twelve months;
 - the provider is not a natural person, whether any of the directors, managers, principal shareholders or stakeholders is in the service of the state, or has been in the service of the state in the previous twelve months; or
 - whether a spouse, child or parent of the provider or of a director, manager, shareholder or stakeholder referred to above is in the service of the state, or has been in the service of the state in the previous twelve months.

Irrespective of the procurement process followed, the Employer is prohibited from making an award to:

 - a person who is in the service of the state;
 - a juristic entity of which any director, manager, principal shareholder or stakeholder is in the service of the state;
 - an advisor or consultant contracted with the Employer; or
 - a person, advisor or corporate entity involved with the bid specification committee, or a director of such corporate entity.

In this regard, Tenderers shall complete Schedule 2, Part T2.2: Returnable Schedules: Compulsory Enterprise Questionnaire. Failure to complete this schedule may result in the tender not being considered.

F.4.8 **Combating abuse of the Supply Chain Management Policy**

In terms of the Its Supply Chain Management Policy, the Employer may reject the tender of any Tenderer if that Tenderer or any of its Directors has:

- (a) failed, during the last five years, to perform satisfactorily on a previous contract with the Employer or any other organ of state after written notice was given to that Tenderer that performance was unsatisfactory;

- (b) abused the supply chain management system of the Employer or has committed any improper conduct in relation to this system;
- (c) been convicted of fraud or corruption during the past five years;
- (d) willfully neglected, reneged on or failed to comply with any government, municipal or other public-sector contract during the past five years; or
- (e) been listed with the Register of Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004) or has been listed on National Treasury's database as a person or juristic entity prohibited from doing business with the public sector.

F.4.9 UIF payments

The Tenderer shall submit to the Employer a letter from the Industrial Council indicating his or her good standing with regard to UIF payments upon being requested to do so.

F.4.10 Registration with Bargaining Council

Tenderers must be registered with a relevant Bargaining Council (if such be in place) and provide the applicable Certificate of Compliance in terms of the relevant Government Gazette.

F.4.11 Price Variations

The tendered Fixed Price shall **not** be subject to contract price adjustment in accordance with the General Conditions of Contract. If special materials are specified in the Contract Data, then the provision of the General Conditions of Contract shall apply to such special materials.

F.4.12 Requests for contract documents, or parts thereof, in electronic format

The Employer shall not formally issue tender documents in electronic format as contemplated in F.2.13.2 and F.2.13.3 and shall only issue tender documents in hard-copy. The following must be noted:

- (a) the Employer shall not accept tenders submitted in electronic format. Tenderers may not complete and submit a printed copy of the electronic version of the tender document or part thereof. Only those tenders that have been completed on the issued hard copy tender document shall be considered;
- (b) any non-compliance with these provisions, including effecting any unauthorized alterations to the tender document as contemplated in F. 2.11, shall render the tender invalid. The Employer reserves the right to take any action against such Tenderer allowed in law including, in circumstances where the tender had already been awarded, the right to cancel the contract.
- (c) In requesting the electronic version of the tender document or parts thereof, the Tenderer is deemed to have read, understood and accepted all of the above conditions.

F.4.13 Minimum Wages

The Tenderer is drawn to the fact that minimum wages must be paid in terms of the relevant legislation.

ANNEX F
(Normative)

STANDARD CONDITIONS OF TENDER

(As contained in Annex F of Board Notice 86 of 2010 in Government Gazette No. 33239 of 28 May 2010, Construction Industry Development Board (CIDB): Standard for Uniformity in Construction Procurement) (See www.cidb.org.za)

F.1 GENERAL

F1.1 Actions

F.1.1.1 The Employer and each Tenderer submitting an offer shall comply with these conditions of tender. In their dealings with each other, they shall discharge their duties and obligations as set out in F.2 and F.3, timeously and with integrity, and behave equitably, honestly and transparently, comply with all legal obligations and not engage in anticompetitive practices.

F.1.1.2 The Employer and the Tenderer and all their agents and employees involved in the tender process shall avoid conflicts of interest and where a conflict of interest is perceived or known, declare any such conflict of interest, indicating the nature of such conflict. Tenderers shall declare any potential conflict of interest in their tender submissions. Employees, agents and advisors of the Employer shall declare any conflict of interest to whoever is responsible for overseeing the procurement process at the start of any deliberations relating to the procurement process or as soon as they become aware of such conflict and abstain from any decisions where such conflict exists or recuse themselves from the procurement process, as appropriate.

- Note:
- 1) A conflict of interest may arise due to a conflict of roles which might provide an incentive for improper acts in some circumstances. A conflict of interest can create an appearance of impropriety that can undermine confidence in the ability of that person to act properly in his or her position even if no improper acts result.
 - 2) Conflicts of interest in respect of those engaged in the procurement process include direct, indirect or family interests in the tender or outcome of the procurement process and any personal bias, inclination, obligation, allegiance or loyalty, which would in any way affect any decisions taken.

F.1.1.3 The Employer shall not seek and a Tenderer shall not submit a tender without having a firm intention and the capacity to proceed with the contract.

F1.2 Tender Documents

The documents issued by the Employer for the purpose of a tender offer are listed in the Tender Data.

F.1 .3 Interpretation

F.1.3.1 The Tender Data and additional requirements contained in the tender schedules that are included in the returnable documents are deemed to be part of these conditions of tender.

F.1.3.2 These conditions of tender, the Tender Data and Tender Schedules which are only required for tender evaluation purposes, shall not form part of any contract arising from the invitation to tender.

F.1.3.3 For the purposes of these conditions of tender, the following definitions apply:

- a) **conflict of interest** means any situation in which:
 - i) someone in a position of trust has competing professional or personal interests which make it difficult to fulfil his or her duties impartially;
 - ii) an individual or organisation is in a position to exploit a professional or official capacity in some way for their personal or corporate benefit; or
 - iii) incompatibility or contradictory interests exist between an Employee and the organisation which employs that Employee.
- b) **comparative offer** means the Tenderer's financial offer after all tendered parameters that will affect the value of the financial offer have been taken into consideration in order to enable comparisons to be made between offers on a comparative basis
- c) **corrupt practice** means the offering, giving, receiving or soliciting of anything of value to influence the action of the Employer or his staff or agents in the tender process; and
- d) **fraudulent practice** means the misrepresentation of the facts in order to influence the tender process or the award of a contract arising from a tender offer to the detriment of the Employer, including collusive practices intended to establish prices at artificial levels
- e) **organization** means a company, firm, enterprise, association or other legal entity, whether incorporated or not, or a public body

F.1.4 **Communication and Employer's Agent**

Each communication between the Employer and a Tenderer shall be to or from the Employer's Agent only, and in a form, that can be readily read, copied and recorded. Communications shall be in the English language. The Employer shall not take any responsibility for non-receipt of communications from or by a Tenderer. The name and contact details of the Employer's Agent are stated in the Tender Data.

F.1.5 **The Employer's right to accept or reject any tender offer**

F.1.5.1 The Employer may accept or reject any variation, deviation, tender offer, or alternative tender offer, and may cancel the tender process and reject all tender offers at any time before the formation of a contract. The Employer shall not accept or incur any liability to a Tenderer for such cancellation and rejection but will give written reasons for such action upon written request to do so.

F.1.5.2 The Employer may not subsequent to the cancellation or abandonment of a tender process or the rejection of all responsive tender offers re-issue a tender covering substantially the same scope of work within a period of 6 (six) months unless only one tender was received, and such tender was returned unopened to the Tenderer.

F.1.6 **Procurement procedures**

F.1.6.1 **General**

Unless otherwise stated in the Tender Data, a contract will, subject to F.3.13, be concluded with the Tenderer who in terms of F.3.11 is the highest ranked or the Tenderer scoring the highest number of tender evaluation points, as relevant, based on the tender submissions that are received at the closing time for tenders.

F.1.6.2 Competitive negotiation procedure

F.1.6.2.1 Where the Tender Data require that the competitive negotiation procedure is to be followed, Tenderers shall submit tender offers in response to the proposed contract in the first round of submissions. Notwithstanding the requirements of F.3.4, the Employer shall announce only the names of the Tenderers who make a submission. The requirements of F.3.8 relating to the material deviations or qualifications which affect the competitive position of Tenderers shall not apply.

F.1.6.2.2 All responsive Tenderers, or not less than three responsive Tenderers that are highest ranked in terms of the evaluation method and evaluation criteria stated in the tender data, shall be invited in each round to enter into competitive negotiations, based on the principle of equal treatment and keeping confidential the proposed solutions, and associated information. Notwithstanding the provisions of F.2.17, the Employer may request that tenders be clarified, specified and fine-tuned in order to improve a Tenderer's competitive position provided that such clarification, specification, fine tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect.

F.1.6.2.3 At the conclusion of each round of negotiations, Tenderers shall be invited by the Employer to make a fresh tender offer, based on the same evaluation criteria, with or without adjusted weightings. Tenderers shall be advised when they are to submit their best and final offer.

F.1.6.2.4 The contract shall be awarded in accordance with the provisions of F.3.11 and F.3.13 after Tenderers have been requested to submit their best and final offer.

F.1.6.3 Proposal procedure using the two stage-system

F.1.6.3.1 Option 1

Tenderers shall in the first stage submit technical proposals and, if required, cost parameters around which a contract may be negotiated. The Employer shall evaluate each responsive submission in terms of the method of evaluation stated in the Tender Data, and in the second stage negotiate a contract with the Tenderer scoring the highest number of evaluation points and award the contract in terms of these conditions of tender.

F.1.6.3.2 Option 2

F.1.6.3.2.1 Tenderers shall submit in the first stage only technical proposals. The Employer shall invite all responsive Tenderers to submit tender offers in the second stage, following the issuing of procurement documents.

F.1.6.3.2.2 The Employer shall evaluate tenders received during the second stage in terms of the method of evaluation stated in the Tender Data and award the contract in terms of these conditions of tender.

F.2 TENDERER'S OBLIGATIONS

F.2.1 Eligibility

F.2.1.1 Submit a tender offer only if the Tenderer satisfies the criteria stated in the Tender Data and the Tenderer, or any of his principals, is not under any restriction to do business with the Employer.

F.2.1.2 Notify the Employer of any proposed material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used by the Employer as the basis in a prior process to invite the Tenderer to submit a tender offer and obtain the Employer's written approval to do so prior to the closing time for tenders.

F.2.2 Cost of tendering

Accept that, unless otherwise stated in the Tender Data, the Employer will not compensate the Tenderer for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer comply with requirements.

F.2.3 Check documents

Check the tender documents on receipt for completeness and notify the Employer of any discrepancy or omission.

F.2.4 Confidentiality and copyright of documents

Treat as confidential all matters arising in connection with the tender. Use and copy the documents issued by the Employer only for the purpose of preparing and submitting a tender offer in response to the invitation.

F.2.5 Reference documents

Obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, Conditions of Contract and other publications, which are not attached but which are incorporated into the tender documents by reference.

F.2.6 Acknowledge addenda

Acknowledge receipt of addenda to the tender documents, which the Employer may issue, and if necessary apply for an extension to the closing time stated in the Tender Data, in order to take the addenda into account.

F.2.7 Clarification meeting

Attend, where required, a clarification meeting at which Tenderers may familiarize themselves with aspects of the proposed work, services or supply and raise questions. Details of the meeting(s) are stated in the Tender Data.

F.2.8 Seek clarification

Request clarification of the tender documents, if necessary, by notifying the Employer **at least 5 (five) working days** before the closing time stated in the Tender Data.

F.2.9 Insurance

Be aware that the extent of insurance to be provided by the Employer (if any) might not be for the full cover required in terms of the Conditions of Contract identified in the Contract Data. The Tenderer is advised to seek qualified advice regarding insurance.

F.2.10 Pricing the tender offer

F.2.10.1 Include in the rates, prices, and the tendered total of the prices (if any) all duties, taxes (except Value Added Tax (VAT), and other levies payable by the successful Tenderer, such duties, taxes and levies being those applicable 14 (fourteen) days before the closing time stated in the Tender Data.

F.2.10.2 Show VAT payable by the Employer separately as an addition to the tendered total of the prices.

F.2.10.3 Provide rates and prices that are fixed for the duration of the contract and not subject to adjustment except as provided for in the Conditions of Contract identified in the Contract Data.

- F.2.10.4 State the rates and prices in Rand unless instructed otherwise in the Tender Data. The Conditions of Contract identified in the Contract Data may provide for part payment in other currencies.
- F.2.11 **Alterations to documents**
- Do not make any alterations or additions to the tender documents, except to comply with instructions issued by the Employer, or necessary to correct errors made by the Tenderer. All signatories to the tender offer shall initial all such alterations. Erasures and the use of masking fluid are prohibited.
- F.2.12 **Alternative tender offers**
- F.2.12.1 Unless otherwise stated in the Tender Data, submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted. The alternative tender offer is to be submitted with the main tender offer together with a schedule that compares the requirements of the tender documents with the alternative requirements the Tenderer proposes.
- F.2.12.2 Accept that an alternative tender offer may be based only on the criteria stated in the Tender Data or criteria otherwise acceptable to the Employer.
- F.2.13 **Submitting a tender offer**
- F.2.13.1 Submit one tender offer only, either as a single tendering entity or as a member in a joint venture to provide the whole of the works, services or supply identified in the Contract Data and described in the scope of works, unless stated otherwise in the Tender Data.
- F.2.13.2 Return all returnable documents to the Employer after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing legibly in non-erasable ink.
- F.2.13.3 Submit the parts of the tender offer communicated on paper as an original plus the number of copies stated in the Tender Data, with an English translation of any documentation in a language other than English, and the parts communicated electronically in the same format as they were issued by the Employer.
- F.2.13.4 Sign the original and all copies of the tender offer where required in terms of the tender data. The Employer will hold all authorized signatories liable on behalf of the Tenderer. Signatories for Tenderers proposing to contract as joint ventures shall state whom of the signatories is the lead partner whom the Employer shall hold liable for the purpose of the tender offer.
- F.2.13.7 Seal the original tender offer in an envelope that states on the outside only the Employer's address and identification details as stated in the Tender Data.
- F.2.13.8 Accept that the Employer will not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.
- F.2.13.9 Accept that tender offers submitted by facsimile or e-mail will be rejected by the Employer, unless stated otherwise in the Tender Data.
- F.2.14 **Information and data to be completed in all respects**
- Accept that tender offers, which do not provide all the data or information requested completely and, in the form, required, may be regarded by the Employer as non-responsive.

F.2.15 Closing time

- F.2.15.1 Ensure that the Employer receives the tender offer at the address specified in the Tender Data not later than the closing time stated in the Tender Data. Accept that proof of posting shall not be accepted as proof of delivery.
- F.2.15.2 Accept that, if the Employer extends the closing time stated in the Tender Data for any reason, the requirements of these conditions of tender apply equally to the extended deadline.

F.2.16 Tender offer validity

- F.2.16.1 Hold the tender offer(s) valid for acceptance by the Employer at any time during the validity period stated in the Tender Data after the closing time stated in the Tender Data.
- F.2.16.2 If requested by the Employer, consider extending the validity period stated in the tender data for an agreed additional period with or without any conditions attached to such extension.
- F.2.16.3 Accept that a tender submission that has been submitted to the Employer may only be withdrawn or substituted by giving the Employer's Agent written notice before the closing time for tenders that a tender is to be withdrawn or substituted.
- F.2.16.4 Where a tender submission is to be substituted, submit a substitute tender in accordance with the requirements of F.2.13 with the packages clearly marked as "SUBSTITUTE".

F.2.17 Clarification of tender offer after submission

Provide clarification of a tender offer in response to a request to do so from the Employer during the evaluation of tender offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the competitive position of Tenderers or substance of the tender offer is sought, offered, or permitted.

Note: Sub-clause F.2.17 does not preclude the negotiation of the final terms of the contract with a preferred Tenderer following a competitive selection process, should the Employer elect to do so.

F.2.18 Provide other material

- F.2.18.1 Provide, on request by the Employer, any other material that has a bearing on the tender offer. The Tenderer's commercial position (including notarized joint venture agreements), referencing arrangements, or samples of materials, considered necessary by the Employer for the purpose of a full and fair risk assessment. Should the Tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the Employer's request, the Employer may regard the tender offer as non-responsive.
- F.2.18.2 Dispose of samples of materials provided for evaluation by the Employer, where required.

F.2.19 Inspections, tests and analysis

Provide access during working hours to premises for inspections, tests and analysis as provided for in the Tender Data.

- F.2.20 Submit securities, bonds, policies, etc.**
- If requested, submit for the Employer's acceptance before formation of the contract, all securities, bonds, guarantees, policies and certificates of insurance required in terms of the Conditions of Contract identified in the Contract Data.
- F.2.21 Check final draft**
- Check the final draft of the contract provided by the Employer within the time available for the Employer to issue the contract.
- F.2.22 Return of other tender documents**
- If so instructed by the Employer, return all retained tender documents within 28 (twenty-eight) days after the expiry of the validity period stated in the Tender Data.
- F.2.23 Certificates**
- Include in the tender submission or provide the Employer with any certificates as stated in the Tender Data.
- F.3 THE EMPLOYER'S UNDERTAKINGS**
- F.3.1 Respond to requests from the Tenderer**
- F.3.1.1** Unless otherwise stated in the Tender Data, respond to a request for clarification received up to 5 (five) working days before the tender closing time stated in the Tender Data and notify all Tenderers who drew procurement documents.
- F.3.1.2** Consider any request to make a material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used to pre-qualify a Tenderer to submit a tender offer in terms of a previous procurement process and deny any such request if as a consequence:
- a) an individual firm, or a joint venture as a whole, or any individual member of the joint venture fails to meet any of the collective or individual qualifying requirements;
 - b) the new partners to a joint venture were not pre-qualified in the first instance, either as individual firms or as another joint venture; or
 - c) in the opinion of the Employer, acceptance of the material change would compromise the outcome of the prequalification process.
- F.3.2 Issue Addenda**
- If necessary, issue addenda that may amend or amplify the tender documents to each Tenderer during the period from the date that tender documents are available until **3 (three) days** before the tender closing time stated in the Tender Data. If, as a result a Tenderer applies for an extension to the closing time stated in the Tender Data, the Employer may grant such extension and, shall then notify all Tenderers who drew documents.
- F.3.3 Return late tender offers**
- Return tender offers received after the closing time stated in the Tender Data, unopened, (unless it is necessary to open a tender submission to obtain a forwarding address), to the Tenderer concerned.

F.3.4 Opening of tender submissions

F.3.4.1 Unless the two-envelope system is to be followed, open valid tender submissions in the presence of Tenderers' Agents who choose to attend at the time and place stated in the Tender Data. Tender submissions for which acceptable reasons for withdrawal have been submitted will not be opened.

F.3.4.2 Announce at the meeting held immediately after the opening of tender submissions, at a venue indicated in the Tender Data, the name of each Tenderer whose tender offer is opened and, where applicable, the total of his prices, preferences claimed and time for completion for the main tender offer only.

F.3.4.3 Make available the record outlined in F.3.4.2 to all interested persons upon request.

F.3.5 Two-envelope system

F.3.5.1 Where stated in the Tender Data that a two-envelope system is to be followed, open only the technical proposal of valid tenders in the presence of Tenderers' Agents who choose to attend at the time and place stated in the Tender Data and announce the name of each Tenderer whose technical proposal is opened.

F.3.5.2 Evaluate the quality of the technical proposals offered by Tenderers, then advise Tenderers who remain in contention for the award of the contract of the time and place when the financial proposals will be opened. Open only the financial proposals of Tenderers, who score in the quality evaluation more than the minimum number of points for quality stated in the Tender Data, and announce the score obtained for the technical proposals and the total price and any preferences claimed. Return unopened financial proposals to Tenderers whose technical proposals failed to achieve the minimum number of points for quality.

F.3.6 Non-disclosure

Not disclose to Tenderers, or to any other person not officially concerned with such processes, information relating to the evaluation and comparison of tender offers, the final evaluation price and recommendations for the award of a contract, until after the award of the contract to the successful Tenderer.

F.3.7 Grounds for rejection and disqualification

Determine whether there has been any effort by a Tenderer to influence the processing of tender offers and instantly disqualify a Tenderer (and his tender offer) if it is established that he engaged in corrupt or fraudulent practices.

F.3.9 Arithmetical errors, omissions and discrepancies

F.3.9.1 Check responsive tenders for discrepancies between amounts in words and amounts in figures. Where there is a discrepancy between the amounts in figures and the amount in words, the amount in words shall govern.

F.3.9.2 Check the highest ranked tender or Tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with F.3.11 for:

- a) the gross misplacement of the decimal point in any unit rate;
- b) omissions made in completing the Pricing Schedule or Bills of Quantities; or
- c) arithmetic errors in:
 - i) line item totals resulting from the product of a unit rate and a quantity in Bills of Quantities or Schedules of Prices; or
 - ii) the summation of the prices.

F.3.9.3 Notify the Tenderer of all errors or omissions that are identified in the tender offer and either confirm the tender offer as tendered or accept the corrected total of prices.

F.3.9.4 Where the Tenderer elects to confirm the tender offer as tendered, correct the errors as follows:

- a) If Bills of Quantities or Pricing Schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern, and the unit rate shall be corrected.
- b) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the Tenderer's addition of prices, the total of the prices shall govern, and the Tenderer will be asked to revise selected unit prices (and their rates if Bills of Quantities apply) to achieve the tendered total of the prices.

F.3.10 **Clarification of a tender offer**

Obtain clarification from a Tenderer on any matter that could give rise to ambiguity in a contract arising from the tender offer.

F.3.11.6 **Decimal places**

Score financial offers, preferences and quality, as relevant. To 2 (two) decimal places.

F.3.11.7 **Scoring Financial Offers**

Score the financial offers of remaining responsive tender offers using the following formula:

$$N_{FO} = W_1 \times A$$

where: N_{FO} is the number of tender evaluation points awarded for the financial offer.

W_1 is the maximum possible number of tender evaluation points awarded for the financial offer as stated in the Tender Data.

A is a number calculated using the formula and option described in Table F.1 as stated in the Tender Data.

Formula	Comparison aimed at achieving	Option 1 ^a	Option 2 ^a
1	Highest price or discount	$A = (1 + \frac{(P - P_m)}{P_m})$	$A = P / P_m$
2	Lowest price or percentage commission / fee	$A = (1 - \frac{(P - P_m)}{P_m})$	$A = P_m / P$
^a P _m is the comparative offer of the most favourable comparative offer. P is the comparative offer of the tender offer under consideration			

Table F.1: Formulae for calculating the value of A

F.3.11.8 Scoring preferences

Confirm that Tenderers are eligible for the preferences claimed in accordance with the provisions of the Tender Data and reject all claims for preferences where Tenderers are not eligible for such preferences. Calculate the total number of tender evaluation points for preferences claimed in accordance with the provisions of the Tender Data.

F.3.11.9 Scoring quality

Score each of the criteria and sub criteria for quality in accordance with the provisions of the Tender Data.

Calculate the total number of tender evaluation points for quality using the following formula:

$$N_Q = W_2 \times S_O / M_S$$

where: **S_O** is the score for quality allocated to the submission under consideration;

M_S is the maximum possible score for quality in respect of a submission; and

W₂ is the maximum possible number of tender evaluation points awarded for the quality as stated in the Tender Data;

F.3.12 Insurance provided by the Employer

If requested by the proposed successful Tenderer, submit for the Tenderer's information the policies and / or certificates of insurance which the Conditions of Contract identified in the Contract Data, require the Employer to provide.

F.3.13 Acceptance of Tender Offer

Accept the Tender Offer if, in the opinion of the Employer, it does not present any unacceptable commercial risk and only if the Tenderer:

- is not under restrictions, or has principals who are under restrictions, preventing participating in the Employer's procurement,
- can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract,

- c) has the legal capacity to enter into the contract,
- d) is not insolvent, in receivership, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of any of the foregoing,
- e) complies with the legal requirements, if any, stated in the Tender Data, and
- f) is able, in the opinion of the Employer, to perform the contract free of conflicts of interest.

F.3.14. Prepare contract documents

F.3.14.1 If necessary, revise documents that shall form part of the contract and that were issued by the Employer as part of the tender documents to take account of:

- a) addenda issued during the tender period,
- b) inclusion of some of the returnable documents, and
- c) other revisions agreed between the Employer and the successful Tenderer.

F.3.14.2 Complete the Schedule of Deviations attached to the Form of Offer and Acceptance, if any.

F.3.15 Complete adjudicator's contract

Unless alternative arrangements have been agreed or otherwise provided for in the contract, arrange for both parties to complete formalities for appointing the selected adjudicator at the same time as the main contract is signed.

F.3.16 Notice to unsuccessful Tenderers

F.3.16.1 Notify the successful Tenderer of the Employer's acceptance of his tender offer by completing and returning one copy of the form of offer and acceptance before the expiry of the validity period stated in the Tender Data or agreed additional period.

F.3.16.2 After the successful Tenderer has been notified of the Employer's acceptance of the tender, notify other Tenderers that their tender offers have not been accepted.

F.3.17 Provide copies of the contracts

Provide to the successful Tenderer the number of copies stated in the Tender Data of the signed copy of the contract as soon as possible after completion and signing of the form of offer and acceptance.

F.3.18 Provide written reasons for actions taken

Provide upon request written reasons to Tenderers for any action that is taken in applying these conditions of tender but withhold information which is not in the public interest to be divulged, which is considered to prejudice the legitimate commercial interests of Tenderers or might prejudice fair competition between Tenderers.

ANNEX G

Alpha-numerics associated with the Contract Grading Designations

CONTRACTOR GRADING DESIGNATION	TENDER VALUE RANGE DESIGNATION	MAXIMUM VALUE OF CONTRACT THAT A CONTRACTOR IS CONSIDERED CAPABLE OF PERFORMING (R)
1 (Class of Construction works)	1	500,000
2 (Class of Construction works)	2	1,000,000
3 (Class of Construction works)	3	3,000,000
4 (Class of Construction works)	4	6,000,000
5 (Class of Construction works)	5	10,000,000
6 (Class of Construction works)	6	20,000,000
7 (Class of Construction works)	7	60,000,000
8 (Class of Construction works)	8	200,000,000
9 (Class of Construction works)	9	No Limit

TABLE G1: CONTRACTOR GRADING DESIGNATIONS AND ASSOCIATED PARAMETERS

DESCRIPTION	DESIGNATION	DEFINITION	WORKS TYPES	EXAMPLES
Civil Engineering Works	CE	Construction works that are primarily concerned with materials such as steel, concrete, earth and rock and their application in the development, extension, installation, maintenance, removal, renovation, alteration, or dismantling of building and engineering infrastructure.	Water, sewerage, roads, railways, harbours and transport, Urban Development and Municipal services	Structures such as a cooling tower, bridge, culvert, dam, grand stand, road, railway, reservoir, runway, swimming pool, silo or tunnel. The results of operations such as dredging, earthworks and geotechnical processes. Township services, water treatment and supply, sewerage works, sanitation, soil conservation works, irrigation works, storm-water and drainage works, coastal works, ports, harbours, airports and pipelines.
Electrical Engineering Works (Infrastructure)	EP	Construction works that are primarily concerned with development, extension, installation, removal, renovation, alteration or dismantling of engineering infrastructure: a) relating to the generation, transmission and distribution of electricity; or b) which cannot be classified as EB.	Electrical power generation , transmission , control and distribution equipment and systems.	Power generation Street and area lighting Substations and protection systems Township reticulations Transmission Lines Supervisory control and data acquisition systems
Electrical Engineering Works (Buildings)	EB	Construction works that are primarily concerned with the installation, extension, modification or repair of electrical installations in or on any premises used for the transmission of electricity from a point of control to a point of consumption, including any article forming part of such an installation.	All electrical equipment forming an integral and permanent part of buildings and/or structures, including any wiring, cable jointing and laying and electrical overhead line construction.	Electrical installations in buildings Electrical reticulation within a plot of land (erf) or building site Standby plant and uninterrupted power supply Verification and certification of electrical installations on premises
General Building Works	GB	Construction works that: a) are primarily concerned with the development, extension, installation, renewal, renovation, alteration or dismantling of a permanent shelter for its occupants or contents; b) cannot be categorised in terms of the definitions provided for civil engineering works, electrical engineering works or specialist works.	Buildings and ancillary works other than those categorised as being: a) civil engineering works; b) electrical engineering works; c) mechanical engineering works; or d) specialist works	Buildings for domestic, industrial, institutional or commercial occupancies; Car ports; Fences other than classified as SS (SQ); Stores; Walls

DESCRIPTION	DESIGNATION	DEFINITION	WORKS TYPES	EXAMPLES
Mechanical Engineering Works	ME	Construction works that are primarily concerned with the development, extension, installation, removal, alteration, renewal of engineering infrastructure for gas transmission and distribution, solid waste disposal, heating, ventilation and cooling, chemical works, metallurgical works, manufacturing, food processing and materials handling	<p>Machine systems including those relating to the environment of building interiors:</p> <ul style="list-style-type: none"> • gas transmission and distributing systems; • pipelines; • solid waste disposal; • materials handling, lifting, machinery, heating, ventilation and cooling pumps; • continuous process systems; • chemical works, metallurgical works, manufacturing, food processing such as that in concentrator machinery and apparatus, oil and gas wells, smelters, cyanide plants, acid plants, metallurgical machinery, equipment and apparatus and works necessary for the beneficiation of metals, minerals, rocks, petroleum and organic substances or other chemical processes. 	<p>Air-conditioning and mechanical ventilation Boiler installations and steam distribution; Central heating; Centralised hot water generation Cranes and hoists; Dust and sawdust extraction; Compressed air, gas and vacuum installations; Conveyor and materials handling installations; Continuous process systems involving chemical works, metallurgical works, oil and gas wells, acid plants, metallurgical machinery, equipment and apparatus and works necessary for the beneficiation of metals, minerals, rocks, petroleum and organic substances and other chemical processes; Kitchen equipment; Laundry equipment; Lift installations and escalators; Refrigeration and cold rooms; Waste handling systems (including compactors).</p>

DESCRIPTION	DESIGNATION	DEFINITION	WORKS TYPES	EXAMPLES
Specialist Works	SB	A subset of construction works identified and defined by the Board that involves specialist capabilities for its execution.	The extension, installation, repair, maintenance or renewal, or removal, of asphalt	
	SC		The development, extension, installation, removal and dismantling, as relevant, associated with building excavations, shaft sinking and lateral earth support.	
	SD		The development, extension, installation, repair, removal or alteration of corrosion protection systems (cathodic, anodic and electrolytic).	
	SE		Demolition of buildings and engineering infrastructure and blasting	
	SF		The development, extension, installation, renewal, removal, renovation, alteration or dismantling of fire prevention and protection infrastructure (drencher and sprinkler systems and fire installation)	
	SG		The development, extension, installation, renewal, removal, renovation, alteration or dismantling of glazing, curtain walls and shop fronts	
	SH		The development, extension, installation, maintenance, renewal, removal, alteration or dismantling, as relevant, of landscaping, irrigation and horticultural works	
	SI		The development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or dismantling, of lifts, escalators, travellers and hoisting machinery.	
	SJ		The development, installation, removal or dismantling, as relevant, of piles and other specialized foundations for buildings and structures	
	SK		The installation, renewal, removal, alteration or dismantling, as relevant, road markings and signage	
	SL		The development, extension, installation, renewal, removal renovation, alteration or dismantling of structural steelwork and scaffolding	
	SM		Timber buildings and structures	
	SN		The extension, installation, repair, maintenance, renewal, removal, renovation or alteration, as relevant, of the waterproofing of basements, roofs and walls using specialist systems	
	SO		The development, extension, installation, renewal, removal, alteration or dismantling or demolition of water installations and soil and waste water drainage associated with buildings (wet services, plumbing)	
	SQ		The development, extension, installation, repair, removal, alteration, dismantling or demolition of precast concrete or steel fencing	

PART T 2:

RETURNABLE DOCUMENTS

T 2.1	List of Returnable Documents	T 2 – 2
T 2.2	Returnable Schedules	T 2 - 4



V3 CONSULTING
ENGINEERS



COGHSTA

Co-operative Governance
Human Settlement & Traditional Affairs

T 2.1:

LIST OF RETURNABLE DOCUMENTS

T 2.1: LIST OF RETURNABLE DOCUMENTS:

NB: TENDERERS MUST COMPLETE THESE SCHEDULES / DATA SHEETS / FORMS IN BLACK INK

1. Returnable Schedules required for Tender Evaluation Purposes:

- Schedule 1: Method Statement; Project Program and Projected Cashflow
- Schedule 2: Compulsory Enterprise Questionnaire
- Schedule 3: Certificate of Independent Tender Determination
- Schedule 4: Certificate of Authority for Joint Ventures
- Schedule 5: Certificate for Municipal Services and Payments to Service Provider
- Schedule 6: Declaration in terms of the Public Finance Management Act.
- Schedule 8: Schedule of Work Experience
- Schedule 9: Schedule of Sub-Contractors
- Schedule 10: Proposed Amendments and Qualifications by Tenderer
- Schedule 11: Details of Management Team
- Schedule 12: Schedule of Construction Equipment
- Schedule 13: Confirmation of Construction Industry Development Board (CIDB) Registration
- Schedule 14: Confirmation of National Home Builders Registration Council (NHBRC) Contractor Registration
- Schedule 16: Compensation for Occupational Injuries & Diseases (COID)
- Schedule 17: Declaration concerning fulfilment of the Construction Regulations 2014, where applicable
- Schedule 18: Day works Schedule
- Schedule 19: Audited Financial Statements for the last 3 years

2. Other documents required for Tender Evaluation Purposes:

- 2.1. Joint Venture Agreement (if applicable) - append to Schedule 4.
- 2.2. A certified copy of the Bargaining Council Certificate (where applicable) - append to Schedule 7.
- 2.3. A certified copy of the certificate of Contractor Registration issued by the CIDB - append to Schedule 13.
- 2.4. A certified copy of the NHBRC registration certificate - appended to Schedule 14.
- 2.5. An original valid Tax Clearance Certificate issued by the South African Revenue Services - append to Schedule 15.
- 2.6. A certified copy of the COID - appended to Schedule 16

3. Returnable Schedules that will be incorporated into the Contract:

- Schedule 20: Record of Addenda to Tender Documents
- Schedule 21: NCP Schedules as required by COGHSTA: NCP 1; NCP 2; NCP 4; NCP 7.1;

- 4. C 1.1 The offer portion of the C1.1 Form of Offer and Acceptance
- 5. C 1.2 Contract Data (Part 2)

T 2.2:

RETURNABLE SCHEDULES

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

SCHEDULE 1

METHOD STATEMENT; PROJECT PROGRAM AND DETAILED CASHFLOW

Attach to this schedule a Detailed project Method Statement, Project Program and Projected Cashflow

Anticipated Timeframes from the Client:

Contract Award 1 day

Contract Acceptance: 5 days

Inception Meeting: 5 days

Detailed Designs and NHBRC Enrolment: 4 weeks

Site Handover Meeting: 5 days

Anticipated Construction Period from Client: 32 weeks

Retention Period: 3 Months

Cashflow:

The Cashflow must be linked to the project program and Milestone Payment Measurements

Start-up capability

The Contractor will provide proof that he/she has the start-up capital, supplier accounts or cashflow

SIGNED ON BEHALF OF THE TENDERER:

DATE:

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
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SCHEDULE 2

COMPULSORY ENTERPRISE QUESTIONNAIRE

The following particulars must be furnished. In the case of a Joint Venture, SEPARATE questionnaires in respect of each partner must be completed and submitted.

SECTION 1:

Name of Enterprise:

Address of Enterprise:

.....

.....

SECTION 2:

VAT Registration Number, if any:

SECTION 3:

CIDB Registration Number, if any:

SECTION 4:

Particulars of Sole Proprietors and Partners in partnerships:

NAME*	IDENTITY NUMBER *	PERSONAL INCOME TAX NUMBER*

* Complete only if Sole Proprietors or Partnership and attach separate page if more than 5 (five) partners.

SECTION 5: Particulars of Companies and Close Corporations:

Company Registration Number:

Close Corporation Number:

Tax Reference Number:

SECTION 6: Record of service of the State:

Indicate by marking the relevant boxes with a cross, if any Sole Proprietor, partner in partnership or Director, Manager, Principal shareholder or stakeholder in a company or close corporation is currently or has been within the last 12 (twelve) months in the service of any of the following:

- ☐ A member of any Municipal Council;
- ☐ A member of any Provincial Legislature;
- ☐ A member of the National Assembly or the National Council for Provinces;
- ☐ A member of the Board of Directors of any Municipal entity;
- ☐ An official of any Municipality or Municipal entity;
- ☐ An employee of any Provincial Department, National or Provincial public entity or Constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999);
- ☐ A member of the accounting authority of any National or Provincial public entity; or
- ☐ An employee of Parliament or a provincial legislature.

If any of the above boxes are marked, disclose the following:

Name of Sole Proprietor, Partner, Director, Manager, Principal shareholder or Stakeholder	Identity Number	Name of Institution, Public Office, Board or Organ of State and position held	Status of service (tick appropriate column)	
			Current	Within last 12 months

* Insert separate page if necessary.

SECTION 7: Record of spouses, children and parents in the service of the State:

Indicate by marking the relevant boxes with a cross, if any spouse, child or parent of a Sole Proprietor, Partner in a partnership or Director, Manager, Principal shareholder or Stakeholder in a company or close corporation is currently or has been within the last 12 (twelve) months been in the service of any of the following:

- ☐ A member of any Municipal Council;
- ☐ A member of any Provincial Legislature;
- ☐ A member of the National Assembly or the National Council for Provinces;
- ☐ A member of the Board of Directors of any Municipal entity;
- ☐ An official of any Municipality or Municipal entity;
- ☐ An employee of any Provincial Department, National or Provincial public entity or Constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999);
- ☐ A member of the accounting authority of any National or Provincial public entity; or
- ☐ An employee of Parliament or a provincial legislature.

Name of Sole Proprietor, Partner, Director, Manager, Principal shareholder or Stakeholder	Identity Number	Name of Institution, Public Office, Board or Organ of State and position held	Status of service (tick appropriate column)	
			Current	Within last 12 months

* **Insert** separate page if necessary.

The undersigned, who warrants that he/she is duly authorised to do so on behalf of the enterprise:

- i) Authorizes the Employer to obtain a Tax Clearance Certificate from the South African Revenue Service that my/our tax matters are in order;
- ii) Confirms that neither the name of the enterprise or the name of any Partner, Manager, Director or other person, who, wholly or partly exercises, or may exercise, control over the enterprise appears on the Register of Tender Defaulter established in terms of the Prevention and Combating of Corrupt Activities Act of 2004;
- iii) Confirms that no Partner, Member, Director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears, has within the last 5 (five) years been convicted of fraud or corruption;
- iv) Confirms that I/we are not associated, linked or involved with any other tendering entities submitting tender offers and have no other relationship with any of the Tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest;
- v) Confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

SIGNED ON BEHALF OF THE TENDERER:

DATE:

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

SCHEDULE 3

CERTIFICATE OF INDEPENDENT TENDER DETERMINATION

I, the undersigned, in submitting this tender for TENDER NO. NC/20/2022: KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN in response to the invitation to tender made by the DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND TRADITIONAL AFFAIRS OF THE NORTHERN CAPE, do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of (Name of Tenderer) that

1. I have read and understand the contents of this Certificate;
2. I understand that this tender will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorised by the Tenderer to sign this Certificate, and to submit this tender on behalf of the Tenderer;
4. Each person whose signature appears on this tender has been authorised by the Tenderer to determine terms of, and to sign, the tender on behalf of the Tenderer;
5. For the purposes of this Certificate and this tender, I understand that the word “competitor” shall include any individual or organization, other than the Tenderer whether or not affiliated with the Tenderer;
 - (a) has been requested to submit a tender in response to this invitation to tender;
 - (b) could potentially submit a tender in response to this invitation to tender, based on their qualifications, abilities or experience; and
 - (c) provides the same goods and services as the Tenderer and/or is in the same line of business as the Tenderer;
6. The Tenderer has arrived at this tender independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communicating between partners in a Joint Venture or Consortium¹ will not be construed as collusive tendering;
7. In particular, without limiting the generality of Paragraph 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
 - (a) prices;
 - (b) geographical area where product or service will be rendered (market allocation);
 - (c) methods, factors or formulas used to calculate prices;
 - (d) the intention or decision to submit or not to submit a tender;
 - (e) the submission of a tender which does not meet the specifications and conditions of the tender; or
 - (f) tendering with the intention not to win the tender.

¹ Joint Venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this invitation to tender relates.
9. The terms of this tender have not been, and will not be, disclosed by the Tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening or of the awarding of the contract.
10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to tenders and contracts, tenders that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of Section 59 of the Competition Act No. 89 of 1989 and/or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and/or may be restricted from conducting business with the Public Sector for a period not exceeding 10 (ten) years in terms of the Prevention and Combating of Corrupt Activities Act No. 12 of 2004 or another applicable legislation.

.....
SIGNATURE

.....
DATE

.....
POSITION

.....
NAME OF TENDERER

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

SCHEDULE 4

CERTIFICATE OF AUTHORITY FOR JOINT VENTURES

This returnable schedule is to be completed by Joint Ventures.

YES NO (PLEASE INDICATE IF THIS IS A JV OR NOT. IF YES, FILL IN THE DETAILS BELOW.
ALSO ATTACH A SIGNED COPY OF AGREEMENT BETWEEN PARTIES)

We, the undersigned, are submitting this tender offer in Joint Venture and hereby authorize

Mr/Mrs, authorised signatory of the

Company, Close Corporation or Partnership,
acting in the capacity of Lead Partner, to sign all documents in connection with the tender offer and any
contract resulting from it on our behalf.

NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
Lead Partner:		Signature: Name: Designation:
		Signature: Name: Designation:
		Signature: Name: Designation:

Note: A copy of the Joint Venture Agreement shall be appended to this Schedule.

SIGNED ON BEHALF OF THE TENDERER:

DATE:

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

SCHEDULE 5

CERTIFICATE FOR MUNICIPAL SERVICES AND PAYMENT TO SERVICE PROVIDER

The Tenderer must attach to this page a **certified copy** of the Tenderer's latest Municipal Services Account, invoiced not more than **30 (thirty) days** prior to tender closure.

To: THE HEAD OF THE DEPARTMENT

TENDER NO. NC/20/2022:
**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG MUNICIPALITY, 10
IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

NAME OF THE TENDERER:

FURTHER DETAILS OF THE TENDERER/S; PROPRIETOR / DIRECTOR/S / PARTNERS, ETC.

PHYSICAL BUSINESS ADDRESS OF THE TENDERER	MUNICIPAL ACCOUNT NUMBER/S

If there is not enough space for all the names, please attach the additional details to the Contract document.

NAME OF DIRECTOR/ MEMBER/PARTNER	IDENTITY NUMBER	PHYSICAL RESIDENTIAL ADDRESS OF DIRECTOR/ MEMBER/ PARTNER	MUNICIPAL ACCOUNT NUMBER/S

CERTIFICATION:

I,, the undersigned,
(Full name in block letters)

certify that the information furnished on this declaration form is correct and that I/we have no undisputed commitments for Municipal Services towards a Municipality or other Service Provider in respect of which payment is overdue for more than 30 (thirty) days.

.....
SIGNATURE

THUS DONE AND SIGNED for and on behalf of the Tenderer / Contractor

at(Place) on the day of(Month) 20(Year)

Please note:

Even if the requested information is not applicable to the Tenderer, the table above should be endorsed NOT APPLICABLE and THIS DECLARATION MUST STILL BE SIGNED.

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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TENDER NO. NC/20/2022

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SCHEDULE 6

**DECLARATION IN TERMS OF THE PUBLIC FINANCE MANAGEMENT ACT
(No. 29 of 1999)**

ITEM	QUESTION	YES	NO
1.1	Is the Tenderer or any of its Directors listed on the National Treasury's database as a company or person prohibited from doing business with the Public Sector? (Companies or persons who are listed on this database were informed in writing of this restriction by the National Treasury after the <i>audi alteram partem</i> rule was applied)		
1.1.1	If so, furnish particulars:		
1.2	Is the Tenderer or any of its Directors listed on the Register for Tender Defaulters in terms of Section 29 of the Prevention and Combatting of Corrupt Activities Act (No. 12 of 2004)? (To access this Register, enter the National Treasury's website, www.treasury.gov.za, click on the icon "Register for Tender Defaulters" or submit your written request for a hard copy of the Register to Facsimile Number 012-326 5445).		
1.2.1	If so, furnish particulars:		
1.3	Was the Tenderer or any of its Directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past 5 (five) years?		
1.3.1	If so, furnish particulars:		
1.4	Does the Tenderer or any of its Directors owe any Municipal rates and taxes or Municipal charges to the Municipality/Municipal entity, or to any other Municipality/Municipal entity, that is in arrears for more than 3 (three) months?		
1.4.1	If so, furnish particulars:		
1.5	Was any contract between the Tenderer and the Department / entity or any other Organ of State terminated during the past 5 (five) years on account of failure to perform on or comply with the contract?		
1.5.1	If so, furnish particulars:		

CERTIFICATION:

I, THE UNDERSIGNED
(Full Name)

CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM TRUE AND CORRECT.

I ACCEPT THAT, IN ADDITION TO CANCELLATION OF A CONTRACT, ACTION MAY BE TAKEN AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

.....
SIGNATURE

.....
DATE

.....
POSITION

.....
NAME OF TENDERER

*** Where the entity tendering is a Joint Venture, each party to the Joint Venture must sign a declaration in terms of the Public Finance Management Act and attach it to this Schedule.**

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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TENDER NO. NC/20/2022

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SCHEDULE 7

**BARGAINING COUNCIL CERTIFICATE AND DECLARATION IN RESPECT OF
MINIMUM WAGE**

Tenderers must be registered with a relevant Bargaining Council (if such be in place) and must attach to this Schedule the applicable Certificate of Compliance (Letter of Good Standing in terms of the relevant Government Gazette).

Each party to a Consortium / Joint Venture shall attach separate certificates in the above regard.

DECLARATION IN RESPECT OF MINIMUM WAGE:

The Tenderer, by signing this Schedule, declares that not less than the statutory minimum wage shall be paid to Employees, as applicable.

SIGNED ON BEHALF OF THE TENDERER:

DATE:

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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TENDER NO. NC/20/2022

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SCHEDULE 8

SCHEDULE OF WORK EXPERIENCE

The Tenderer shall insert in the spaces provided below a list of similar completed contracts awarded to him and those currently being undertaken.

EMPLOYER (NAME, TEL. NO. AND FAX NO.)	PRINCIPAL AGENT (NAME, TEL. NO. AND FAX NO.)	NATURE OF WORK	VALUE OF WORK R (m)	COMPLETION DATE
COMPLETED CONTRACTS (Not older than 7 years)				
CURRENT CONTRACTS				

Number of sheets appended by the Tenderer to this Schedule: (If nil, enter NIL)

SIGNED ON BEHALF OF THE TENDERER:

DATE:

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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SCHEDULE 9

SCHEDULE OF SUB-CONTRACTORS

We notify you that it is our intention to employ the following Sub-Contractors for work (excluding work covered by provisional sums and contingencies) in this contract.

Acceptance of this tender shall not be construed as approval of all or any of the listed Sub-Contractors. Should any of the Sub-Contractors not be approved subsequent to acceptance of the tender, this shall in no way invalidate this contract and the tendered unit rates for the various items of work shall remain final and binding.

SUB-CONTRACTORS		
SUB-CONTRACTOR'S NAME	WORK ACTIVITIES TO BE UNDERTAKEN BY THE SUB-CONTRACTOR	ESTIMATED VALUE OF WORK (RAND)

Number of sheets appended by the Tenderer to this Schedule: (If nil, enter NIL)

SIGNED ON BEHALF OF THE TENDERER:

DATE:

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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SCHEDULE 10

PROPOSED AMENDMENTS AND QUALIFICATIONS BY TENDERER

The Tenderer should record any proposed deviations or qualifications he may wish to make to the tender documents in this Returnable Schedule. Alternatively, a Tenderer may state such proposed deviations and qualifications in a covering letter attached to his tender and reference such letter in this Schedule.

The Tenderer's attention is drawn to Clause F.3.8 of the Standard Conditions of Tender referenced in the Tender Data regarding the employer's handling of material deviations and qualifications.

If no deviations or modifications are desired, the Schedule hereunder is to be marked **NIL** and signed by the Tenderer.

PAGE	CLAUSE OR ITEM	PROPOSAL

Number of sheets, appended by the Tenderer to this Schedule: (If nil, enter NIL)

SIGNED ON BEHALF OF THE TENDERER:

DATE:

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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SCHEDULE 11

DETAILS OF MANAGEMENT TEAM

Tenderers shall set out in the Schedule hereunder details of the Project Staff experience in work of a similar nature to that for which their tender is submitted.

The Tenderer must attach to this page a **detailed organogram** of the Proposed project team. Should the person identified for a specific position not be in the employment of the tenderer, a signed letter providing availability and/or memorandum of understanding should be attached

Failure to complete this Schedule may result in the Tenderer not being considered.

- 1) NHBRC Registered Engineer Name:
Years' Experience:
- 2) Project Manager Name:
Years' Experience: In housing delivery field as Project/Contract Manager:
In housing delivery field as Site Agent:
- 3) Site Agent's Name:
Years' Experience: In housing delivery field as Site Agent:
In housing delivery field as Foreman:
- 4) Safety Officer's Name:
Years' Experience:
- 5) SHE Representative's Name:
Years' Experience:

Trade:	Name	Date Certified	Years' Experience
Bricklayer			
Plumber			
Carpenter			
Electrician			

NOTE: PLEASE APPEND CV'S AND CERTIFICATES OF ALL TEAM MEMBERS

Number of sheets, appended by the Tenderer to this Schedule: (If nil, enter NIL)

SIGNED ON BEHALF OF THE TENDERER:

DATE:

**OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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SCHEDULE 12

SCHEDULE OF CONSTRUCTION EQUIPMENT

F 1: CONSTRUCTION EQUIPMENT IMMEDIATELY AVAILABLE:

[illegible]

F 2: CONSTRUCTION EQUIPMENT ON ORDER:

(State details of arrangements made, with delivery dates)

DESCRIPTION, SIZE, CAPACITY	NUMBER
.....
.....
.....
.....
.....
.....
.....
.....

F 3: CONSTRUCTION EQUIPMENT THAT WILL BE ACQUIRED OR HIRED:

(State details of delivery arrangements)

DESCRIPTION, SIZE, CAPACITY	NUMBER
.....
.....
.....
.....
.....
.....
.....
.....

Number of sheets appended by the Tenderer to this Schedule: (If nil, enter NIL)

SIGNED ON BEHALF OF THE TENDERER:

DATE:

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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SCHEDULE 13

CONFIRMATION OF CIDB CONTRACTOR REGISTRATION

I/We understand that only Tenderers who are registered with the Construction Industry Development Board (CIDB) in a Contractor grading designation equal to or higher than a Construction grading designation determined in accordance with the sum tendered for, are eligible to submit tenders.

Joint Ventures are eligible to submit Tenders provided that:

1. Every member of the Joint Venture is registered with the CIDB;
2. The lead partner has a Contractor grading of not more than one lower than the designation determined in accordance with the sum tendered.
3. The combined Contractor grading designation calculated in accordance with the CIDB Regulations is equal to or higher than a Contractor grading designation determined in accordance with the sum tendered; and
4. The contract participation of each member in a Joint Venture is in accordance with the individual member's CIDB contractor grading designation.

I/We understand that the Employer may only enter into a formal contract with a Tenderer who is registered with the Construction Industry Development board (CIDB) as a CIDB Designation **GB** (of the correct Class in accordance with the tendered sum) and has been issued with such a CIDB Contractor registration grading designation.

Contractor Industry Development Board (CIDB) Contractor Registration

I/We wish to confirm the following:

Yes I/We are registered with the CIDB as a GB (Class General Building Works) Contractor:

Registration No.:

CIDB Contractor's Grading:

Tender amount, VAT excluded: R.....

I/We understand that:

Tenderers must be registered prior to the closing date/time for tender submissions in a CIDB Contractor grading designation equal to or higher than a grading corresponding to the amount tendered.

DESIGNATION	UPPER LIMIT, (R) OF TENDER VALUE RANGE, VAT INCLUDED
1	500,000
2	1,000,000
3	3,000,000
4	6,000,000
5	10,000,000
6	20,000,000
7	60,000,000
8	200,000,000
9	No Limit

TABLE: The value required to determine the financial capability of a Contractor is as indicated.

SIGNED ON BEHALF OF THE TENDERER:

DATE:

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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SCHEDULE 14

CONFIRMATION OF NHBRC CONTRACTOR REGISTRATION

I/We understand that only Tenderers who are registered with the National Home Builders Registration Council (NHBRC) are eligible to submit tenders.

Joint Ventures are eligible to submit Tenders provided that every member of the Joint Venture is registered with the NHBRC.

I/We understand that the Employer may only enter into a formal contract with a Tenderer who is registered with the NHBRC.

National Home Builders Registration Council (NHBRC) Contractor Registration

I/We wish to confirm the following:

Registration No.:

The Certificate must be valid for a period of 1 (one) year.

Date Issued:

Expiry Date:

I/We understand that Tenderers must be registered with the NHBRC prior to the closing date/time for tender.

SIGNED ON BEHALF OF THE TENDERER:

DATE:

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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SCHEDULE 15

TAX CLEARANCE CERTIFICATE

An original valid Tax Clearance Certificate from the South African Revenue Service (SARS) shall be attached to this Schedule, or proof that the Tenderer has made arrangements with SARS to meet his or her outstanding tax obligations.

Each party to a Consortium / Joint Venture shall submit a separate Tax Clearance Certificate, or proof that he or she has made the necessary arrangements with SARS.

SIGNED ON BEHALF OF THE TENDERER:

DATE:

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SCHEDULE 16

COMPENSATION FOR OCCUPATIONAL INJURIES & DISEASES (COID)

The Tenderer must attach to this page a **certified copy** of the Tenderer's COID Number from the Department of Labour.

GOOD STANDING FROM THE COMPENSATION COMMISSIONER

1. A valid Letter of Good Standing from the Compensation Commissioner or a certified copy thereof must accompany the Tender Document.
2. In the case of a Consortium/Joint Venture every member must submit a separate valid Letter of Good Standing from the Compensation Commissioner or a certified copy thereof with the Tender Documents.
3. If a Tender Document is not supported by a valid Letter of Good Standing from the Compensation Commissioner or a certified copy thereof, the Employer reserves the right to obtain such document after the closing date. If no such document can be obtained within a period as specified by the Employer, the Tender will be disqualified.
4. Should a Tenderer's Letter of Good Standing from the Compensation Commissioner expire during the contract period, a valid certificate must be submitted within an agreed upon time.
5. The right is reserved to not award a Tender if a valid Letter of Good Standing from the Compensation Commissioner or a certified copy thereof is not submitted within the requested time.

SIGNED ON BEHALF OF THE TENDERER:

DATE:

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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SCHEDULE 17

**DECLARATION CONCERNING FULFILMENT OF THE CONSTRUCTION
REGULATIONS 2014, WHERE APPLICABLE**

In terms of regulations 5.1 (g) & (h) of the Construction Regulations, 2014 (hereinafter referred to as the Regulations), promulgated on 07 February 2014 in terms of Section 43 of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) the Employer shall not appoint a Contractor to perform construction work unless the Contractor can satisfy the Employer that his/her firm has the necessary competencies and resources to carry out the work safely and has allowed adequately in his/her tender for the due fulfilment of all the applicable requirements of the Act and the Regulations.

Tenderers shall answer the questions below:

1. I confirm that I am fully conversant with the Regulations and that my Company has (or will acquire/procure) the necessary competencies and resources to timeously, safely and successfully comply with all of the requirements of the Regulations.

(Tick)

YES ☐ NO ☐

2. Indicate which approach shall be employed to achieve compliance with the Regulations.
(Tick)

Own resources, competent in terms of the Regulations (refer to 3 below)	
Own resources, still to be hired and/or trained (until competency is achieved)	
Specialist subcontract resources (competent) – Specify:	

3. Provide details of proposed key persons, competent in terms of the Regulations, who will form part of the Contract team as specified in the Regulations (CV's to be attached):

.....
.....
.....

4. Provide details of proposed training (if any) that will be undergone:

.....
.....
.....
.....

5. List potential key risks identified and measures for addressing risks:

.....
.....
.....
.....
.....

6. I have fully included in my tendered Fixed Price for resources, actions, training and any other costs required for the due fulfilment of the Regulations for the duration of the construction and defects repair period. (Tick)

YES ☐ NO ☐

SIGNATURE OF PERSON(S) AUTHORISED TO SIGN THIS TENDER:

SIGNED ON BEHALF OF THE TENDERER:

(Name in print): **ID NO.:**

WITNESS:

(Name in print): **ID NO.:**

DATE:

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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SCHEDULE 18

DAY WORKS SCHEDULE

This day work statement shall be used according to the opinion of the Engineer for the assessment of value of additional work which cannot be assessed easily according to the tendered Fixed Price.

The rates for labour and material should not include overhead costs and profit, Site Supervision of personnel, insurance, paid vacation, the use and maintenance of small hand equipment and non-mechanical equipment, travel allowance, other payments and allowance. Provision is being made for this by including the percentages covering all these items with the item "Up costs". The rate which should be used for the assessment of value of additional work is the basic rate plus the percentage "UP costs".

The item "Up costs" is left out in the case of equipment. The rate then has to include all of the above "Up costs" mentioned as well as Operator's costs, user's goods, maintenance, etc.

The Tenderer has to fill in all of the items listed underneath, otherwise his tender can be considered as incomplete.

A. LABOUR

1)	Workers	per hour plus % "Up cost"
2)	Supervisors	per hour plus % "Up cost"
3)	Artisans	per hour plus % "Up cost"

B. EQUIPMENT

DESCRIPTION	RATE PER HOUR	
	In Work	Standing
Excavator
Front-end Loader
Tipper Truck cubic meters
Compressor (capacity)
..... (Specify)
..... (Specify)
..... (Specify)

Note: The rate for an air pressure machine has to include rubber pipes and pneumatic equipment.

C. **MATERIAL**

Here, the Tenderer has to provide the “Up Costs” which ought to be added to the basic price:

..... %

SIGNED ON BEHALF OF THE TENDERER:

DATE:

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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SCHEDULE 19

**AUDITED FINANCIAL STATEMENTS FOR THE PAST 3 FINANCIAL YEARS TO BE
ATTACHED TO THIS PAGE**

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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SCHEDULE 20

RECORD OF ADDENDA TO TENDER DOCUMENTS

We confirm that the following communications received from the Employer before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer:		
	DATE	TITLE OR DETAILS
1		Minutes of the Compulsory Site Meeting (Clarification Meeting) of THURSDAY, 22 FEBRUARY 2023
2		
3		
4		
5		
6		
7		
8		
9		
10		

Attach additional pages if more space is required.

.....
SIGNATURE

.....
DATE

.....
POSITION

.....
NAME OF TENDERER

DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE

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SCHEDULE 21

NCP SCHEDULES AS REQUIRED BY COGHSTA

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INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF CoGHSTA

TENDER NO. NC/20/2022 CLOSING DATE: FRIDAY, 03 MARCH 2023 CLOSING TIME: 11H00

DESCRIPTION: BIDS ARE INVITED BY DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND TRADITIONAL AFFAIRS OF THE NORTHERN CAPE FOR KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN . The successful Bidder will be required to fill in and sign a written contract Form (NCP 7)

BID DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT: **LARRY M LOUW BUILDING
9 CECIL SUSSMAN ROAD
KIMBERLEY
8301**

A NON-COMPULSORY SITE MEETING WILL BE HELD ON THURSDAY, 22 FEBRUARY 2023 AT 09H00 AT SOEBATSFONTEIN MUNICIPAL OFFICES .

Bidders should ensure that bids are delivered timeously to the correct address. If the bid is late, it will not be accepted for consideration.

The bid box is generally open 24 (twenty-four) hours a day, 7 (seven) days a week.

ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS (NOT TO BE RE-TYPED)

THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE Preferential Procurement Regulations, 2022 (Government Gazette No. 2721), THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.

THE FOLLOWING PARTICULARS MUST BE FURNISHED.
(FAILURE TO DO SO MAY RESULT IN YOUR BID BEING DISQUALIFIED)

NAME OF BIDDER:

POSTAL ADDRESS:

STREET ADDRESS:

TELEPHONE NUMBER:

CELLPHONE NUMBER:

FACIMILE NUMBER:

E-MAIL ADDRESS:

VAT REGISTRATION NUMBER:

HAS AN ORIGINAL AND VALID TAX CLEARANCE CERTIFICATE BEEN SUBMITTED?
(NCP 2)

YES NO

YES NO

IF YES, WHO WAS THE CERTIFICATE ISSUED BY?

AN ACCOUNTING OFFICER AS CONTEMPLATED IN THE CLOSE CORPORATION ACT (CCA) ☐

A VERIFICATION AGENCY ACCREDITED BY THE SOUTH AFRICAN ACCREDITATION SYSTEM

(SANAS); ☐
OR

A REGISTERED AUDITOR ☐
(Tick the applicable box)

A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE)

ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS / SERVICES / WORKS OFFERED? YES NO

IF YES, ENCLOSE PROOF

.....
SIGNATURE OF BIDDER

.....
DATE

.....
CAPACITY UNDER WHICH THIS BID IS SIGNED

.....
TOTAL BID PRICE

.....
TOTAL NUMBER OF ITEMS OFFERED

ANY ENQUIRIES REGARDING THE BIDDING PROCEDURE MAY BE DIRECTED TO:

Contact Person: Tebogo Monoametsi of CoGHSTA, Tel: (053) 807-9713, e-mail: TMonoametsi@ncpg.gov.za

ANY ENQUIRIES REGARDING TECHNICAL INFORMATION MAY BE DIRECTED TO:

Contact Person: Philip Loots of V3 Consulting Engineers, Tel: (053) 004 0430, e-mail: philip.loots@v3consulting.co.za.

TAX CLEARANCE REQUIREMENTS

IT IS A CONDITION OF BIDDING THAT:

1. The taxes of the successful Bidder **must** be in order, or that satisfactory arrangements have been made with the Receiver of Revenue to meet his/her tax obligations.
2. The form "Application for Tax Clearance Certificate (in respect of Bidders)", must be completed in all respects and submitted to the Receiver of Revenue where the Bidder is registered for tax purposes. The Receiver of Revenue will then furnish the Bidder with a Tax Clearance Certificate that will be valid for a period of 6 (six) months from the date of issue. This Tax Clearance Certificate must be submitted in the original, together with the bid and attached to Schedule 15. Failure to submit the **original** and valid Tax Clearance Certificate **will** invalidate the bid.
3. In bids where Consortia / Joint Ventures / Sub-Contractors are involved, each party must submit a separate Tax Clearance Certificate. Copies of the "Application for Tax Clearance Certificates" are available at any Receiver's Office.

BIDDER'S DISCLOSURE

1. PURPOSE OF THE FORM

Any person (natural or juristic) may make an offer or offers in terms of this invitation to bid. In line with the principles of transparency, accountability, impartiality, and ethics as enshrined in the Constitution of the Republic of South Africa and further expressed in various pieces of legislation, it is required for the bidder to make this declaration in respect of the details required hereunder.

Where a person/s are listed in the Register for Tender Defaulters and / or the List of Restricted Suppliers, that person will automatically be disqualified from the bid process.

2. Bidder's declaration

2.1 Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest¹ in the enterprise, employed by the state? **YES/NO**

2.1.1 If so, furnish particulars of the names, individual identity numbers, and, if applicable, state employee numbers of sole proprietor/ directors / trustees / shareholders / members/ partners or any person having a controlling interest in the enterprise, in table below.

Full Name	Identity Number	Name of State institution

2.2 Do you, or any person connected with the bidder, have a relationship with any person who is employed by the procuring institution? **YES/NO**

2.2.1 If so, furnish particulars:

.....

2.3 Does the bidder or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest in the enterprise have any interest in any other related enterprise whether or not they are bidding for this contract? **YES/NO**

2.3.1 If so, furnish particulars:

.....

¹ the power, by one person or a group of persons holding the majority of the equity of an enterprise, alternatively, the person/s having the deciding vote or power to influence or to direct the course and decisions of the enterprise.

3 DECLARATION

I, the undersigned, (name)..... in submitting the accompanying bid, do hereby make the following statements that I certify to be true and complete in every respect:

- 3.1 I have read and I understand the contents of this disclosure;
- 3.2 I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;
- 3.3 The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium² will not be construed as collusive bidding.
- 3.4 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.
- 3.4 The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.
- 3.5 There have been no consultations, communications, agreements or arrangements made by the bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the bidder was not involved in the drafting of the specifications or terms of reference for this bid.
- 3.6 I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

I CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 1, 2 and 3 ABOVE IS CORRECT.

I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME IN TERMS OF

PARAGRAPH 6 OF PFMA SCM INSTRUCTION 03 OF 2021/22 ON PREVENTING AND

COMBATING ABUSE IN THE SUPPLY CHAIN MANAGEMENT SYSTEM SHOULD THIS

DECLARATION PROVE TO BE FALSE.

.....
SIGNATURE

.....
DATE

.....
POSITION

.....
NAME OF TENDERER

² Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

CONTRACT FORM – PURCHASE OF GOODS / WORKS

THIS FORM MUST BE COMPLETED IN DUPLICATE BY BOTH THE SUCCESSFUL BIDDER (PART 1) AND THE PURCHASER (PART 2). BOTH FORMS MUST BE SIGNED IN THE ORIGINAL SO THAT THE SUCCESSFUL BIDDER AND THE PURCHASER WOULD BE IN POSSESSION OF ORIGINALLY SIGNED CONTRACTS FOR THEIR RESPECTIVE RECORDS

PART 1 (TO BE COMPLETED BY THE BIDDER)

1. I hereby undertake to supply all or any of the goods and/or works described in the attached bidding documents to (name of institution) in accordance with the requirements and specifications stipulated in bid number at the price/s quoted. My offer/s remain binding upon me and open for acceptance by the purchaser during the validity period indicated and calculated from the closing time of bid.
2. The following documents shall be deemed to form and be read and construed as part of this agreement:
 - (i) bidding documents, viz
 - Invitation to bid;
 - Tax Clearance Certificate
 - Pricing Schedule(s);
 - Technical Specification(s);
 - Preference claims for Broad Based Black
 - Economic Empowerment Status Level of Contribution in terms of the Preferential Procurement Regulations 2022;
 - Declaration of interest;
 - Declaration of Bidder's past SCM practices;
 - Certificate of Independent Bid Determination;
 - Special Conditions of Contract;
 - (ii) General Conditions of Contract; and
 - (iii) Other (specify)
3. I confirm that I have satisfied myself as to the correctness and validity of my bid; that the tendered Fixed Price quoted cover all the goods and/or works specified in the bidding documents; that the tendered Fixed Price cover all my obligations and I accept that any mistakes regarding the tendered Fixed Price and calculations will be at my own risk.
4. I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this agreement as the principal liable for the due fulfilment of this contract.
5. I declare that I have no participation in any collusive practices with any Bidder or any other person regarding this or any other bid.
6. I confirm that I am duly authorised to sign this contract.

NAME (PRINT)

CAPACITY

SIGNATURE

NAME OF FIRM

DATE

WITNESSES

1.

2.

DATE:

CONTRACT FORM – PURCHASE OF GOODS / WORKS**PART 2 (TO BE COMPLETED BY THE PURCHASER)**

1. I, in my capacity as
accept your bid under Reference Number dated
for the supply of goods / works indicated hereunder and/or further specified in the annexure(s).
2. An official order indicating delivery instructions is forthcoming.
3. I undertake to make payment for the goods/works delivered in accordance with the terms and conditions of the contract, within 30 (thirty) days after receipt of an invoice accompanied by the delivery note.

ITEM NO.	PRICE (ALL APPLICABLE TAXES INCLUDED), EXCL VAT	BRAND	DELIVERY PERIOD	B-BBEE STATUS LEVEL OF CONTRIBUTION	MINIMUM THRESHOLD FOR LOCAL PRODUCTION AND CONTENT (if applicable)

4. I confirm that I am duly authorised to sign this contract.

SIGNED AT ON

NAME (PRINT)

SIGNATURE

OFFICIAL STAMP

WITNESSES

1.

2.

DATE:



V3 CONSULTING
ENGINEERS



COGHSTA

Co-operative Governance
Human Settlement & Traditional Affairs

THE CONTRACT



V3 CONSULTING
ENGINEERS



COGHSTA

Co-operative Governance
Human Settlement & Traditional Affairs

PART C 1:

AGREEMENT AND CONTRACT DATA

C 1.1	Form of Offer and Acceptance	C 1 – 2
C 1.2	Contract Data	C 1 - 8
C 1.3	Form of Guarantee	C 1 - 21
C 1.4	Occupational Health & Safety Agreement	C 1 - 25
C 1.5	Contract of Temporary Employment as Community Liaison Officer	C 1 – 28



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Human Settlement & Traditional Affairs

C 1.1: FORM OF OFFER AND ACCEPTANCE (AGREEMENT)

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

**FORM OF OFFER AND ACCEPTANCE
(AGREEMENT)**

OFFER

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract in respect of the following works:

**TENDER NO. NC/20/2022:KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE
KAMIESBERG MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

The Tenderer, identified in the Offer signature block below, has examined the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the Tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance, the Tenderer offers to perform all of the obligations and liabilities of the Contractor under the Contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the Conditions of Contract identified in the Contract Data.

THE OFFERED TOTAL OF THE TENDERED FIXED PRICE EXCLUSIVE OF VALUE ADDED TAX IS:

R..... (in figures);

.....

..... (in words).

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document to the Tenderer before the end of the period of validity stated in the Tender Data, whereupon the Tenderer becomes the party named as the Contractor in the Conditions of Contract identified in the Contract Data.

Signature(s)

Name(s)

Capacity

**For the
Tenderer**

(Name and address of Organisation/Tenderer)

**Name & signature
of Witness**

Date

ACCEPTANCE

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the Tenderer's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the Conditions of Contract identified in the Contract Data. Acceptance of the Tenderer's offer shall form an agreement between the Employer and the Tenderer upon the terms and conditions contained in this Agreement and in the contract that is the subject of this Agreement.

The terms of the Contract are contained in:

Part C 1: Agreement and Contract Data, which includes this agreement
Part C 2: Pricing Data (Tendered Fixed Price)
Part C 3: Scope of Work
Part C 4: Site Information

and drawings and documents or parts thereof, which may be incorporated by reference into Parts C1 to C 3 above.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules as well as any changes to the terms of the Offer agreed by the Tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Agreement. No amendments to or deviations from said documents are valid unless contained in this Schedule, which must be duly signed by the authorised representative(s) of both parties.

The Tenderer shall within 2 (two) weeks after receiving a completed copy of this Agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the conditions of Contract identified in the Contract Data at, or just after, the date this Agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Tenderer receives 1 (one) fully completed original copy of this document, including the Schedule of Deviations (if any). Unless the Tenderer (now Contractor) within 5 (five) days of the date of such receipt, notifies the Employer in writing of any reason why he cannot accept the contents of this Agreement, this Agreement shall constitute a binding contract between the parties.

Signature(s)

Name(s)

Capacity

For the Employer DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE
PRIVATE BAG X5005
KIMBERLEY, 8300

Name & signature of Witness **Date**

SCHEDULE OF DEVIATIONS

Notes:

1. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.
2. A Tenderer's covering letter shall not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid, become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties becomes an obligation of the Contract shall also be recorded here.
4. Any change or addition to the tender documents arising from the above agreements and recorded here shall also be incorporated into the final draft of the Contract.

1. **Subject**

Details

2. **Subject**

Details

3. **Subject**

Details

4. **Subject**

Details

5. **Subject**

Details

6. **Subject**

Details

By the duly authorised representatives signing this Schedule of Deviations, the Employer and the Tenderer agree to and accept the foregoing Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and addenda thereto as listed in the tender Schedules, as well as any confirmation, clarification or change to the terms of the offer agreed by the Tenderer and the Employer during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the Tenderer of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this Agreement.

AGREEMENT

The Employer identified below has accepted a Tender Offer by the Contractor for the construction, completion and remedying of defects of the specified Works. Acceptance of the Contractor's Offer shall form an agreement between the Employer and the Contractor upon the terms and conditions contained in the Agreement and in the Contract that is the subject of the Agreement.

THIS AGREEMENT WITNESSES THAT:

1. The following documents shall be deemed to form and be read and construed as part of this Agreement:
 - (a) Form of Offer and Acceptance, including Schedule of Deviations
 - (b) Addenda, Schedules
 - (c) Contract Data
 - (d) Tendered Fixed Price
 - (e) Scope of Work (Specifications, drawings)
 - (f) Site Information
 - (g) Annexures (as applicable)
2. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor covenants with the Employer to execute and complete the Works and remedy any defects therein, in conformity with the provisions of the Contract.
3. The Employer hereby covenants to pay the Contractor, in consideration of the execution and completion of the Works and the remedying of defects therein, the tendered Fixed Price at the times and in the manner prescribed by the Contract.

FOR THE CONTRACTOR (SUCCESSFUL TENDERER):

Signature(s)

Name(s)

Capacity

For the
Contractor
(Name and address of organisation)

Name & signature
of Witness
Date

FOR THE EMPLOYER:

Signature(s)

Name(s)

Capacity

For the
Employer DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE
PRIVATE BAG X5005
KIMBERLEY, 8300

Name & signature
of Witness

CONFIRMATION OF RECEIPT

The Tenderer, (now Contractor), identified in the Offer part of this Agreement hereby confirms receipt from the Employer, identified in the Acceptance part of this Agreement, of one fully completed original copy of this Agreement, including the Schedule of Deviations (if any) today:

At (Place) on the day of (Month) 20 (Year)

FOR THE CONTRACTOR (SUCCESSFUL TENDERER):

Signature(s)

Name(s)

Capacity

For the
Contractor
(Name and address of organisation)

Name & signature
of Witness
Date



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C 1.2: CONTRACT DATA



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PART 1: DATA PROVIDED BY THE EMPLOYER

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

CONTRACT DATA

PART 1: DATA PROVIDED BY THE EMPLOYER

CONDITIONS OF CONTRACT

Variations, amendments and additions to the General Conditions of Contract as Special Conditions of Contract prescribed by the Employer are set out below. Each item of the Special Conditions of Contract given below is cross-referenced to the clause in the General Conditions of Contract to which it mainly applies.

The General Conditions of Contract (GCC) for Construction Works, Third Edition, 2015, as published by the South African Institution of Civil engineering (SAICE), Private Bag X200, Halfway House, 1685, is applicable to this Contract and is obtainable from www.saice.org.za.

The Pro Formas bound with the General Conditions of Contract 2015, shall not apply to this Contract and shall be replaced with the documentation bound into this Contract Document.

CONTRACT SPECIFIC DATA

The following contract specific data, referring to the GCC for Construction Works, Third Edition, 2015, are applicable to this Contract:

Compulsory Data

Clause 1.1.1.13:

The Defects Liability Period is *3 (Three) months, measured from the date of the Certificate of Completion.*

Clause 1.1.1.15:

The name of the Employer is CoGHSTA.

Clause 1.1.1.16:

The name of the Employer's Agent is V3 CONSULTING ENGINEERS (PTY) LTD.

Clause 1.1.1.26:

The Pricing Strategy is a Fixed Price Contract. See also Clause 1.1.1.19

.

Clause 1.2.1.2:

The address of the Employer is:

Physical address: LARRY M LOUW BUILDING
 9 CECIL SUSSMAN ROAD
 KIMBERLEY
 8301

Postal Address: PRIVATE BAG X5005
KIMBERLEY
8300

E-mail address: bslenkoe@ncpg.gov.za

The address of the Employer's Agent is:

Physical address: C/O Quinn & Villiers
KIMBERLEY, 8300

Postal address: P O BOX 1178
KIMBERLEY, 8300

E-mail address: porsch.sekhukhune@v3consulting.co.za

Clause 1.3.3:

The language of the Contract and of written communication shall be Afrikaans and/or English as determined by the Employer and the Employer's Agent at the onset of the Contract.

Clause 1.3.6:

The Employer's Agent shall retain copyright and property rights on his documentation, etc.

Clause 3.2.3:

The Employer's Agent is required to obtain the specific approval of the Employer before executing any of the following functions or duties:

1. Nominating the Employer's Agent's Representative in terms of Clause 3.3.1.
2. Delegation of Employer's Agent's authority in terms of Clause 3.3.4.
3. Granting permission to work during non-working times in terms of Clause 5.8.1.
4. Suspend the progress of the works in terms of Clause 5.11.
5. The issuing of an instruction to accelerate progress in terms of Clause 5.7.3.
6. The Term Engineer will be the Project's Professional Services provider

Clause 4.1.2:

Amend the first three lines to read:

"Where any part of the Works, whether permanent or temporary is designed by the Contractor, he shall, notwithstanding any approval of the Employer's Agent be liable for any error or deficiency in and design, drawing or document and any loss or damage arising out of such error or deficiency."

Clause 4.2:

Add the following new sub-clause:

Clause 4.2.3:

- "4.2.3.1 The Employer's Agent shall establish the basic reference pegs and benchmarks on the Site and give to the Contractor the particulars thereof in sufficient time to enable the Contractor to meet his approved programme.
- 4.2.3.2 After compliance by the Employer's Agent with the provisions of Sub-Clause 5.4.1, the Contractor shall be responsible for the true and proper setting out of the Works and for the correctness of the position, levels, dimensions and alignment of all parts of the Works and for the provision of all necessary instruments, appliances and labour in connection therewith.

4.2.3.3 If at any time during the progress of the Works, any error shall appear or arise in the position, levels dimensions or alignment of any part of the Works, the Contractor, on being required to do so by the Employer's Agent, shall at his own expense rectify such error to the satisfaction of the Employer's Agent, but if such error is based on incorrect data supplied in writing by the Employer's Agent or if there is any delay in providing the particulars required in terms of Sub-Clause 5.4.1, the Contractor shall, in respect of that delay and the Cost of such rectification, be entitled to make a claim in accordance with Clause 10.1.

The Contractor shall carefully protect and preserve all benchmarks, sight-rails, pegs and other things used in setting out the Works. The checking of any setting-out or of any line or level by the Employer's Agent shall not relieve the Contractor of his responsibility for the correctness thereof."

Clause 4.3:

Add the following new sub-clause:

"4.3.3 The Employer and the Contractor shall enter into an agreement to complete the work required for construction of the works in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act (Act 85 of 1993) and the Construction Regulations promulgated thereunder.

An agreement is concluded in the Contract Document (C 1.4 of Contract Data) and shall be completed and submitted to the Employer, together with a letter of Good Standing from the Compensation Commissioner (if not insured with a Licensed Compensation Insurer) within 14 (fourteen) days after the Commencement Date. The Contractor shall ensure that any letter of Good Standing shall be timeously **renewed in order that it remains in full force for the duration of the Contract**".

Clause 4.4.4:

Add the Employer's Agent to the consultation between the Employer and the Contractor.

Clause 4.9

Add the following new sub-clauses:

"4.9.2: In order to preclude seizure by the owner of any construction equipment being held by the Contractor on a hire-purchase agreement for the purposes of the contract, the Employer shall be entitled to pay any such owner the amount of any outstanding instalment or other sum owing under any hire or hire-purchase agreement and in the event of his doing so, any amount thus paid by him shall be a debt payable to the Employer by the Contractor and may be deducted by the Employer from any monies owing or that may become owing the Contractor in terms of the Contract, or be recovered at law from the Contractor by the Employer.

4.9.3: When entering into any subcontract for the execution of any part of the works, the Contractor shall incorporate in such subcontract, by reference or otherwise, the provisions of this clause in respect of construction equipment brought to the site by the Subcontractor."

Clause 5.3.1:

The Commencement Date will be the date that the site is handed over to the Contractor by the Employer's Agent/Employer.

The Contractor shall commence executing the Works **within 7 (seven) days from the Commencement Date**.

The documentation required before commencement with Works execution is:

- 1) Approved Health and Safety Plan (Refer to Clause 4.3)
- 2) Initial programme (Refer to Clause 5.6)
- 3) Security or performance guarantee (Refer to Clause 6.2)
- 4) Insurance (Refer to Clause 8.6)
- 5) Occupational Health and Safety Agreement (C 1.4 of the Contract Document)
- 6) Letter of Good Standing from the Compensation Commissioner (if not insured with a Licensed Compensation Insurer)

Clause 5.3.2:

The Works programme is to be delivered within **7 (seven) days** of the Commencement Date
The time to deliver the Performance Guarantee; within **28 (twenty-eight) days** of Acceptance
The liability for the guarantee shall be for **10 (ten) %** of the Contract Price
The Works are to be commenced within **14 (fourteen) days** of the Commencement Date
The other documentation required before commencement with Works execution is **28 (twenty-eight) days**

Clause 5.3.3:

Add the following clause after Clause 5.3.3:

“5.3.4: The Contractor shall commence executing the Works within **7 (seven) days** from the Commencement Date.

The Commencement Date will be the date when all of the following takes place:

- 1) Site Handover to the Contractor
- 2) The Completion of the Form of Offer and Acceptance
- 3) The above will take place within **7 (seven) days** of the issue of the Letter of Acceptance”.

Clause 5.4:

Clause 5.4.2:

Access to and possession of Site shall not be exclusive to the Contractor insofar as the provisions of Clause 4.8 apply, and where on-going use by the general public is required.

Add the following sub-clause:

“5.4.4 The Contractor shall bear all costs and charges for special and temporary rights of way required by him in connection with access to the Site. The Contractor shall also provide at his own cost any additional facilities outside the Site required by him for purposes of the Works.”

Clause 5.8.1:

The non-working days are *usually Sundays*.

The special non-working days are:

- 1) *Public holidays and the official Builder's Holiday (Year End Break).*
- 2) *The year-end break commencing on 15 December 2023 and ending on 08 January 2024 and similar dates in the following year end break.*

Clause 5.9.1:

Add the following paragraph:

“All additional copies, whether provided by the Employer's Agent or reproduced by the Contractor, shall be to the Contractor's account.”

Clause 5.11.4:

Add the following after “Contractor,” and before “the Contractor: in the third line:

“5.11.4 “or by reason of any Contractor executing construction work, which is not in accordance with the Contractor's Health and Safety Plan for the site or which poses a threat to the health and safety of persons”

Clause 5.12.2.2:

No extension of time will be granted in respect of any delays attributed to normal climatic conditions. Normal climatic conditions shall be deemed to include normal rainfall and associated wet conditions and materials, strong winds and extremes of temperature. However, in the event that delays to critical activities exceed the number of working days listed in the Project Specifications for each month, then abnormal climatic conditions shall be deemed to exist, and an extension of time may be claimed in accordance with the provisions of Clause 5.12.

The number of days quoted under the Project Specifications shall be regarded as a fair estimate of the delays to be anticipated and allowed for under normal climatic conditions where inclement weather prevents or disrupts critical work.

Claims for delays for abnormal climatic conditions shall be accompanied by substantiating facts and evidence, which shall be submitted timeously as each day or half-day is experienced.

Should an extension of time be granted by the Employer's Agent, such extension of time will be added to the time for completion or set against any over-provision that may have occurred in the abovementioned Schedule.

It shall further be noted that where the critical path is not affected, no extension of time for **abnormal** climatic conditions or for any other reason will be entertained.

See also C 3.3.3.5.10.

Clause 5.13.1:

The following penalties will be applicable on this contract:

- a) The penalty for failing to complete a house within 8 weeks of casting foundation is **R 500-00 (Five Hundred Rand)** per house per calendar day of delay.
- b) The penalty for failing to complete the total Works is **R 1000-00 (One Thousand Rand)** per outstanding house per calendar day of delay.

Clause 5.14.4:

Add the following at the end of this sub-clause:

"However, a Certificate of Completion will not be issued before the Contractor hands over a consolidated Health and Safety file that shall include all the specified information, as well as all "Record" information as required by the Employer's Agent."

Clause 5.16.3:

The latent defect period is *10 (ten) years*.

Clause 6.2.1:

The security to be provided by the Contractor shall be a performance guarantee of 10 (ten) % of the Contract Sum. The performance guarantee shall contain the wording of the document included in C 1.3.

Clause 6.2.2:

Delete Clause 6.2.2 in its entirety.

Clause 6.2.3:

Delete Clause 6.2.3 in its entirety and replace with the following:

"The Contractor shall ensure that the performance guarantee remains valid and enforceable until the Certificate of Completion of the Works is issued."

Clause 6.3:

Add the following sub-clause:

“6.3.3.1: The Fixed Price will be fixed as tendered, irrespective of the percentage variation.”

Clause 6.6:

In the second line of sub-clause 6.6.1.2, after the words “sum or sums” insert the words “excluding VAT.”

In the first line of sub-clause 6.6.1.2.1, after the words “sum or sums” insert the words “excluding VAT.”

In the second line of sub-clause 6.6.1.2.2, after the word “sum” insert the words “excluding VAT.”

In the fourth line of sub-clause 6.6.2, after the word “price” insert the words “excluding VAT.”

Clause 6.7.1:

Refer to sub-clause 1.1.1.26 and C 3.3.6.13.

Clause 6.8.2:

Add the following to Clause 6.8.2:

“The tendered Fixed Price shall **not be** subject to contract price adjustments in accordance with Clause 6.8 of the General Conditions of Contract.

If special materials are specified in Part 2 of the Contract Data then the provisions of Clause 6.8.3 of the General Conditions of Contract shall apply to such special materials.”

Clause 6.8.4:

Add the following to Clause 6.8.4:

“Notwithstanding the above, in the event that a public holiday is proclaimed after 28 (twenty-eight) days before the closing date for tenders, no cost other than those that can be claimed under Clause 5.12.3 shall be added to the contract price.”

Clause 6.10.1.5:

The percentage advance on materials not yet built into the Permanent Works is *0 (nil) %*.

Clause 6.10.3:

Interim payments to the Contractors shall be subject to retention by the Employer of an amount of **5 (five) %** of the said amounts due to the Contractor. The limit of retention money is **5 (five) %** of the Contract Price, including allowances for contingencies and Contract Price Adjustment. A guarantee in lieu of retention is **not** permitted for the latent defects period.

Clause 6.10.4:

Add the following to Clause 6.10.4:

“Furthermore, payment shall be subject to the Employer being in possession of an original valid Tax Clearance Certificate at the time payment is due (it is the responsibility of the Contractor to submit an updated original Tax Clearance Certificate to the Employer) should any current certificate expire during the contract period.

The Employer shall withhold any payments should EPWP reporting not be submitted monthly or with each claim, whichever comes first.

Notwithstanding anything above, the Employer’s Agent shall be empowered to withhold the delivery of the payment certificate until the Contractor has complied with his obligations to report in terms of Clause 4.10.2 and as described in the Scope of Work.”

Clause 7.2.1:

Add the following to this sub-clause:

"The onus rests with the Contractor to produce work which conforms in quality and accuracy of detail to all the requirements of the specifications and drawings, and the Contractor shall, at his own expense, institute a quality-control system and provide experienced personnel, together with all transport, instruments and equipment, to ensure adequate supervision and positive control of the works at all times."

Clause 7.4.1

Add the following to this sub-clause:

"The Contractor shall conduct tests or have them conducted continually on a regular basis, to check the properties of natural materials and processed natural materials and of products manufactured on site, such as concrete and asphalt. Although not a requirement for the Contractor to conduct regular tests on any commercially produced products such as cement, bitumen, steel and pipes, the Contractor shall remain fully responsible for any defective material or equipment provided by him.

Similarly, the quality of all elements of the works shall be checked on a regular basis so as to ensure compliance with the specified requirements.

The intensity of control and of tests to be conducted by the Contractor in terms of these obligations is not specified but shall be adequate to ensure that proper control is being exercised to the satisfaction of the Employer's Agent.

Where any natural materials or products made from natural materials are supplied, upon completion of each element of the construction works, the Contractor shall test and check such materials, products and or elements for compliance with the specified requirements and shall submit his results to the Employer's Agent for approval. Such submission shall include all his measurements and test results and shall furnish adequate proof of compliance with the specified requirements."

Clause 7.6.3.3

Add the following new sub-clause:

"To stop any Contractor from executing construction work, which is not in accordance with, the Contractor's Health and Safety Plan for the site or which poses a threat to the health and safety of persons and to implement the required health and safety measures before continuing."

Clause 8.4.1.1:

Delete and replace with the following:

"... hereby indemnifies the Employer, the Employer's Agent and all consultants against any liability in respect of damage to or physical loss of the property of any person, including any Employee of the Contractor, or injury to or death of any person, including any employee of the Contractor and"

Clause 8.6:**Clause 8.6.1.1.2:**

The value of Plant and Materials supplied by the Employer to be included in the insurance sum is *R0-00 (Nil Rand)*.

Clause 8.6.1.1.3:

The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is *R10 000-00 (Ten Thousand Rand) per house*.

Clause 8.6.1.3:

The limit of indemnity for liability insurance is *R 10 000 000-00 (Ten Million Rand)*.

Clause 8.6.1.5:

In addition to the insurances required in terms of the General Conditions of Contract Clauses 8.6.1.1 to 8.6.1.4, the following insurance is also required:

- a) Insurance of Construction Equipment (including tools, offices and other temporary structures and contents) and other things (except those intended for incorporation into the Works) brought onto the site for a sum sufficient for their replacement.
- b) Insurance in terms of the provisions of the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993.
- c) Motor Vehicle Liability Insurance comprising (as a minimum) "Balance of Third Party" Risks including Passenger Liability indemnity.
- d) Where the contract involves manufacturing and/or fabrication of the works or part thereof at premises other than the Site, the Contractor shall satisfy the Employer that all materials and equipment for incorporation in the works are adequately insured during manufacture and/or fabrication. In the event of the Employer having an insurable interest in such works during manufacture or fabrication then such interest shall be noted by endorsement to the Contractor's Policies of Insurance.

Clause 8.6.6:

The evidence that the insurances have been effected in terms of Clause 8.6.1, shall be in the form of an Insurance Broker's Warranty, worded precisely as given in Part C 1.6 "Insurance Broker's Warranty".

Clause 8.6.8:

Add the following new sub-clause 8.6.8:

"Where the contract involves manufacturing and/or fabrication of the works or part thereof at premises other than the Site, the Contractor shall satisfy the Employer that all materials and equipment for incorporation in the works are adequately insured during manufacture and/or fabrication. In the event of the Employer having an insurable interest in such works during manufacture or fabrication then such interest shall be noted by endorsement to the Contractor's Policies of insurance."

Clause 9.2.1:

Add the following new sub-clause 9.2.1.3.9, 9.2.1.3.10, 9.2.1.3.11 and 9.2.1.3.12:

- "9.2.1.3.9: The Contractor committed a corrupt or fraudulent act during the procurement process or execution of the contract. "
- "9.2.1.3.10 An official or other role player committed any corrupt or fraudulent act during the procurement Process or in the execution of the contract that benefitted the Contractor."
- "9.2.1.3.11 The Contractor fails to provide the required Guarantee and insurances within the prescribed time."
- "9.2.1.3.12 Has failed to execute construction work in accordance with the Contractor's Health and Safety Plan or with a threat to the health and safety of persons within 14 (fourteen) days after receiving from the Employer's Agent written notice of the same."

Clause 10.1.6

Add the following sub-clause:

“Early warning – A Party shall notify the other as soon as he is aware of any circumstance which may delay or disrupt the Works, or which may give rise to a claim for additional payment. The Contractor shall take all reasonable steps to minimise these effects.

The Contractor’s entitlement to extension of the Time for Completion or additional payment shall be limited to the time and payment which would have been due if he had given prompt notice and had taken all reasonable steps.”

ADDITIONAL CONDITIONS OF CONTRACT

Add the following new clause after Clause 10:

Clause 11: Details to be confidential

The Contractor shall treat the details of the Works comprised in this Contract as private and confidential (save in so far as may be necessary for the purposes hereof) and shall not publish or disclose the same or any particulars thereof in any trade or technical paper elsewhere without prior written consent from the Engineer.



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PART 2: DATA PROVIDED BY THE TENDERER

PART 2: DATA PROVIDED BY THE TENDERER

Clause 1.1.1.9:

The name of the Contractor is

Clause 1.2.1.2:

The address of the Contractor is:

Physical address:
.....
.....

Postal address:

E-mail address:

Fax number:

Contact person:

Cell No.:

Clause 1.1.1.14:

The time for achieving Practical Completion is: weeks from the Commencement Date.

In determining their Tender Period, Tenderers must take cognisance of Construction Regulations, 2014, Clause 3 (1), as applicable.

SIGNED ON BEHALF OF THE TENDERER:

DATE:



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C 1.3: FORM OF GUARANTEE

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

**C 1.3: PERFORMANCE GUARANTEE FROM AN APPROVED
FINANCIAL INSTITUTION**

For use with the General Conditions of Contract for Construction Works, Second Edition, 2010.

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means:

Physical address:

"Employer" means: CoGHSTA

"Contractor" means:

"Engineer" means: V3 CONSULTING ENGINEERS (PTY) LTD.

"Works" means: TENDER NO. NC/20/2022: **KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG
HOUSES IN THE KAMIESBERG MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

"Site" means: The site as defined in Clause 1.1.1.29 of the General Conditions of Contract.....

"Contract" means: The agreement made in terms of the Form of Offer and Acceptance and such
amendments or additions to the Contract as may be agreed in writing between the parties.

"Contract Sum" means: The accepted amount exclusive of tax of R

Amount in words:

"Guaranteed Sum" means: The maximum aggregate amount of R

Amount in words:

"Expiry Date" means: The date of issue by the Engineer of the Certificate of Completion of the Works

CONTRACT DETAILS

Engineer issues: Interim Payment Certificates, Final Payment Certificates and the Certificate of Completion of
the Works as defined in the Contract.

PERFORMANCE GUARANTEE

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Sum.
2. The Guarantor's period of liability shall be from and including the date of issue of this Performance Guarantee and up to and including the Expiry Date or the date of issue by the Engineer of the Certificate of Completion of the Works or the date of payment in full of the Guaranteed Sum, whichever comes first. The Engineer and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.
3. The Guarantor hereby acknowledges that:
 - 3.1 any reference in this Performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a surety ship;
 - 3.2 its obligation under this Performance Guarantee is restricted to the payment of money.
4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 4.1 to 4.3:
 - 4.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Engineer in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;
 - 4.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 4.1 and the sum certified has still not been paid;
 - 4.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 4.
5. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the Employer the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:
 - 5.1 the Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 5; or
 - 5.2 a provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 5; or
 - 5.3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.
6. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.
7. Where the Guarantor has made payments in terms of 5, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor, showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.
8. Payment by the Guarantor in terms of 4 or 5 shall be made within 7 (seven) calendar days upon receipt of the first written demand to the Guarantor.

9. Payment by the Guarantor in terms of 5 will only be made against the return of the original Performance Guarantee by the Employer.
10. The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim his release from this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.
11. The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.
12. This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.
13. This Performance Guarantee, with the required demand notices in terms of 4 and 5, shall be regarded as a liquid document for the purposes of obtaining a court order.
14. Where this Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No. 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

SIGNED AT:

DATE:

GUARANTOR'S SIGNATORY (1):

CAPACITY:

GUARANTOR'S SIGNATORY (2):

CAPACITY:

WITNESS SIGNATORY (1):

WITNESS SIGNATORY (2):



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C 1.4: OCCUPATIONAL HEALTH AND SAFETY AGREEMENT

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

C 1.4: OCCUPATIONAL HEALTH AND SAFETY AGREEMENT

**AGREEMENT MADE AND ENTERED INTO BETWEEN CoGHSTA (HEREINAFTER CALLED THE
"EMPLOYER") AND**

.....
(Contractor / Mandatary / Company / CC Name)

**IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, ACT NO. 85 OF
1993 AS AMENDED**

I,, representing

....., as an employer
in its own right, do hereby undertake to ensure, as far as is reasonably practicable, that all work will be
performed, and all equipment, machinery or plant used in such a manner as to comply with the provisions of
the Occupational Health and Safety Act (OHSA) and the Regulations promulgated there under.

I furthermore confirm that I am/we are registered with the Compensation Commissioner and that all
registration and assessment monies due to the Compensation Commissioner have been fully paid or that
I/we are insured with an approved licensed Compensation Insurer.

COID Act Registration Number:

OR Compensation Insurer: Policy No.:

I undertake to appoint, where required, suitable competent persons, in writing, in terms of the requirements
of OHSA and the Regulations and to charge him/them with the duty of ensuring that the provisions of OHSA
and Regulations as well as the Council's Special Conditions of Contract, Way Leave, Lock-Out and Work
Permit Procedures are adhered to as far as reasonably practicable.

I further undertake to ensure that any Sub-Contractors employed by me will enter into an occupational health
and safety agreement separately, and that such Sub-Contractors comply with the conditions set.

I hereby declare that I have read and understand the appended Occupational Health and Safety Conditions
undertake to comply therewith at all times.

I hereby also undertake to comply with the Occupational Health and Safety Specifications and Plan.

Signed at on the day of 2018.

WITNESS:

MANDATARY:

Signed at on the day of 2018.

WITNESS:

For and on behalf of COGHSTA:

OCCUPATIONAL HEALTH AND SAFETY CONDITIONS

1. The Chief Executive Officer of the Contractor shall assume the responsibility in terms of Section 16(1) of the Occupational Health and Safety Act (as amended). Should the Contractor assign any duty in terms of Section 16(2), a copy of such assignment shall immediately be provided to the representative of the Employer as defined in the Contract.
2. All work performed on the Employer's premises shall be performed under the supervision of the Construction Supervisor who understands the hazards associated with any work that the Contractor performs on the site in terms of Construction Regulations 2014.
3. The Contractor shall appoint a Competent Person who shall be trained on any occupational health and safety aspect pertaining to them or to the work that is to be performed.
4. The Contractor shall ensure that he familiarizes himself with the requirements of the Occupational Health and Safety Act and that he, his employees, and any Sub-Contractors, comply with them.
5. Discipline in the interests of occupational health and safety shall be strictly enforced.
6. Personal protective equipment shall be issued by the Contractor as required and shall be worn at all times where necessary.
7. Written safe work procedures and appropriate precautionary measures shall be available and enforced, and all employees shall be made conversant with the contents of these practices.
8. No substandard equipment / machinery / articles or substances shall be used on the site.
9. All incidents referred to in terms of Section 24 of the Occupational Health and Safety Act shall be reported by the Contractor to the Department of Labour and the Employer.
10. The Employer hereby obtains an interest in the issue of any formal inquiry conducted in terms of Section 32 of the Occupational Health and Safety Act and into any incident involving a Contractor and /or his employees and/or his Sub-Contractors.
11. No use shall be made of any of the Employer's machinery / plant/ equipment /substance/ personal protective equipment or any other article without prior arrangement and written approval.
12. No alcohol or any other intoxicating substance shall be allowed on the site. Any person suspected of being under the influence of alcohol or any other intoxicating substance shall not be permitted access to or allowed to remain on the site.
13. Prior to commencement of any work, verified copies of all documents mentioned in the agreement, must be presented to the Employer.



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C 1.5: CONTRACT OF TEMPORARY EMPLOYMENT AS COMMUNITY LIAISON OFFICER

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

**C 1.5: CONTRACT OF TEMPORARY EMPLOYMENT AS
COMMUNITY LIAISON OFFICER**

Construction Contract No.:

PROJECT:

AGREEMENT made between the CONTRACTOR

and the Community Liaison Officer. hereafter
referred to as the CLO, for the appointment and employment of a CLO for the duration of the work in
respect of the above-named construction contract.

1. THE PARTIES HAVE AGREED THAT

The CLO will be employed by the CONTRACTOR on a temporary basis for the duration of the contract to the date of practical completion as defined in the Contract, subject to all the conditions set out below.

2. THE DUTIES OF THE CLO SHALL BE:

- (a) to keep the community informed on the progress of the project;
- (b) to keep the Contractor informed on relevant Community affairs and possible grievances;
- (c) to manage the recruitment of workers from the Sub-Council Job-Seekers Database;
- (d) to assist the Contractor's supervisory staff in the management of the workers.

3. THE FOLLOWING CONDITIONS OF EMPLOYMENT SHALL APPLY:

The Conditions of Temporary Employment as applicable on this Contract for the workers recruited from the Community shall apply equally to the CLO, except that the rate of remuneration shall be a not less than R200.00 per working day or as stated in the Bill of Quantities. All costs pertaining to the CLO must be included in the tendered rates for contractual requirements in Preliminary & General in the Bill of Quantities. These conditions that apply are listed below as they appear in the Contract of Temporary Employment:

- 3.1** If required to work on a statutory public holiday or Sunday the payment will be double the amount stated in the previous paragraph.

3.2 Maximum hours of work:

- (a) 9¼ hours per day
- (b) 45 hours per week;
- (c) 5 days per week;
- (d) 5 hours without an interval, whereupon there shall be an interval of at least minutes;
- (e) A spread-over period of 12 hours.

- 3.3 The CLO shall be entitled to payment where the CLO is prevented from working by reasons which are within the control of the Contractor.
- 3.4 On days when it is raining the Contractor may, before 9 a.m., decide not to open the site and there will be no pay.
- If the Contractor closes the site between 9 a.m. and 1 p.m., the CLO will be paid half the daily wage.
- If the site works later than 1 p.m., the CLO will be paid the full daily wage.
- 3.5 Workers and the CLO will not be permitted to work under conditions of:
- (a) abuse of intoxicating substances;
 - (b) criminal actions by the employee;
 - (c) strike action or political stayaways.
- 3.6 Workers, including the CLO, may be dismissed after 2 official written warnings for the following behavior:
- (a) undisciplined or unruly behavior;
 - (b) insubordination to Team Leader, Supervisors or Management;
 - (c) abuse of intoxicating substances;
 - (d) willful or negligent damage to or loss of machines or equipment.
- The Contractor shall ensure that he has statements from at least 2 witnesses' concerning any of the above situations.
- The Contractor shall inform the CLO within 24 hours of any warning issued to workers employed from the Job-Seekers Database.
- 3.7 The CLO will be paid on a Friday afternoon every 2 weeks, 1 week in arrears.
- 3.8 The CLO shall be given a statement with each payment on which is recorded:
- (i) the name of the Contractor;
 - (ii) the CLO's name;
 - (iii) the number of days worked by the CLO;
 - (iv) the rate per day;
 - (v) the details of any deductions made;
 - (vi) the actual amount paid to the CLO.
- 3.9 No deduction shall be made from the remuneration except where the CLO consents in writing or unless the Contractor is permitted or required to do so by law or the order of any competent court.
- 3.10 The CLO shall be supplied free of charge with all health and safety equipment required by the Occupation Health and Safety Act. The equipment shall remain the property of the Contractor.
- 3.11 The Contractor must give the CLO at least 1 weeks' notice of the termination of the Contract of Temporary Employment. If this is not done, the CLO must be paid earnings for 5 days. This condition does not apply if the CLO is dismissed.
- 3.12 At the end of the period of temporary employment, the Contractor shall provide a Certificate of Service recording the Contractor's name, the CLO's name and address, the period of service, the type of work on which the CLO was engaged and the rate of remuneration on termination.

4. TERMINATION OF AGREEMENT

- 4.1 If the CLO can no longer perform and execute his/her duties as detailed in this agreement, this agreement will be terminated without prejudice to any rights under this agreement.

5. THE CONDITIONS OF THIS AGREEMENT

- 5.1 The parties expressly declare that this agreement contains all the conditions negotiated between them, and no condition or stipulation not contained herein shall be binding upon the parties.

3. THUS AGREED AND SIGNED BY THE PARTIES:

CONTRACTOR:

COMMUNITY LIAISON OFFICER:

DATE:

PART C 2: PRICING DATA

C 2.1	Pricing Instructions	C 2 - 1
C 2.2	Calculation of Fixed Price	C 2 - 3



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C 2.1: PRICING INSTRUCTIONS

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

C 2.1 PRICING INSTRUCTIONS

1. Pricing Instructions means the criteria as set out below, read together with all parts of this Contract document, which will be assumed in the contract that the Tenderer has taken into account when developing his prices.
2. The work scheduled below is described in more detail in the specifications and drawings. Where certain items are referred to the General Conditions of Contract or Specification or a certain drawing number for more information, the Tenderer is referred to the complete General Conditions of Contract, Specification and Drawings and it must not be presumed that the references are complete.
3. Arithmetical errors will be corrected by assuming the amount per Item as correct. The tendered Fixed Price will be corrected accordingly if there are arithmetical errors.
4. The price quoted shall be assumed **the all-inclusive price** for the work to be executed.
5. The prices as tendered in the Calculation of Tender Sum (Fixed Price) shall be taken as being valid for the full duration of the Tender, unless otherwise stated in C 1.2: Contract Data: Part 1: Clause 6.8.2 of this Tender Document.
6. No deviation that may be requested by the Tenderer from the above, or from the General Conditions of Contract, Specification, Calculation of Tender Sum (Fixed Price), Tender form and Conditions, shall be considered, unless clearly indicated in Part 2: Returnable Documents: Schedule 10 of this Tender Document when the Tender Document is submitted.
7. The costs to comply with all the conditions, obligations and liabilities and as described in the General Conditions of Contract and Specifications, shall be assumed as being all inclusive in this Calculation of Tender Sum (Fixed Price), except if indicated differently in Part 2: Returnable Documents: Schedule 10 of this Tender Document.
8. The Calculation of Tender Sum (Fixed Price) must be completed in **BLACK INK** and must not be removed from the bound set of documents. Only the Calculation of Tender Sum (Fixed Price) as bound into this document may be used. **Nothing else** will be accepted. Deviation from this will render the Tender as invalid.
9. **No** correction fluid may be used.
10. The price quoted in the Calculation of Tender Sum (Fixed Price) shall be in Rand and whole cents. Fractions of a cent shall be discarded.
11. In this document SABS will mean SANS and vice versa.
12. Measurements for Certificates of Payment will be in accordance to C 3.3.3.6.



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C 2.2: CALCULATION OF TENDER SUM (FIXED PRICE)



COGHSTA
PAULSHOEK 10- THE CONSTRUCTION OF 9 BNG HOUSES IN PAULSHOEK: 9 x 40m² FOR THE KAMIESBERG MUNICIPALITY
SECTION A : New Houses – 40 m² BNG

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	RATE	QTY	AMOUNT
Supply, delivery and installation of all material and tools to construct complete standard 40 m² BNG houses inclusive of ancillary works as per the breakdown for the minimum specifications C.3.1.10 from page C3.26:						
1		All contractual requirements/ Site establishment	No.		1	
2		Site clearance and access	No.		1	
3		Submit Building plans to LM for approval	Sum		1	
4		Excavations (Foundations and services connections)	No.		9	
5		Engineering Design of foundation, Inspections and Engineering Certification (Foundation, Superstructure & Roof)	No.		9	
6		NHBRC Enrolment	No.		9	
8		Reinforcing and Casting of Strip Foundations	No.		9	
9		Building of Foundation Brickwork	No.		9	
10		Cast Surface Bed / Raft Foundation	No.		9	
11		Building of Superstructure Brickwork	No.		9	
12		Plaster and Paint - Internal Walls	No.		9	
13		Complete Supply, Deliver and Installation of Roof	No.		9	
14		Complete gable and beamfilling	No.		9	
15		Apply approved brick sealant to all external walls, as per manufacturers specifications	No.		9	
16		Supply and Install Ceiling complete with Cornish installation according to SANS 10400 and two Coats of PVA (Approx 40m²squares)	No.		9	
17		Supply and Install Plumbing inclusive of all sanitary fittings and pipe work	No.		9	
18		Supply, deliver and install TWO (2) external doors inclusive of 3 lever lock and 70 mm weather board (Well sanded and cleaned, apply 1 coat wood stain and 2 coats external polyurethane varnish) per unit	No.		9	
19		Supply, deliver and install THREE (3) internal doors inclusive of a 2-lever lock. (Well sanded and cleaned, apply 1 x coat timber primer and 1 x universal undercoat and 2 coats Enamel paint) per unit	No.		9	
20		Supply, Deliver and Install 1xC1 Window, inclusive of all Fittings and Glazing as per specifications per unit	No.		9	
21		Supply, Deliver and Install 3xC7 Windows inclusive of all Fittings and Glazing as per specifications per unit	No.		9	
22		Supply, Deliver and Install 1xD57 Window inclusive of all Fittings and Glazing as per specifications per unit	No.		9	
23		Construct Concrete apron as per specifications (25mpa concrete, 1m wide, 85mm thick all round	No.		9	
24		Construction of complete 6m³ conservancy tank (Constructed as per SANS 10400 Drainage Manual)	No.		9	
25		Supply, Deliver and Install All Electrical components inclusive of 7 Light Switches, 2 External Lights, 5 Indoor Lights, DB board, 4 electrical sockets and a stove plug	No.		9	
26		Electrical Connection Application with the Local Municipality on behalf of beneficiary	Sum		1	
27		Supply, Deliver and Install Connection to Water Service	No.		9	
28		Supply, Deliver and Install Connection to Sewer Service	No.		9	
29		House numbers to be printed black on silver Perspex plank	No.		9	
30		Quality Completion Pack	No.		9	
31		OHS Compliance	Sum		1	
SECTION A TOTAL CARRIED FORWARD TO SUMMARY						

COGHSTA PAULSHOEK 10- THE CONSTRUCTION OF 1 BNG HOUSES IN PAULSHOEK: 1 x 45m² FOR THE KAMIESBERG MUNICIPALITY SECTION B : New Houses – 45 m² BNG						
ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	RATE	QTY	AMOUNT
Supply, delivery and installation of all material and tools to construct complete standard 45 m² BNG houses inclusive of ancillary works as per the breakdown for the minimum specifications C.3.1.10 from page C3.26:						
1		All contractual requirements/ Site establishment	No.		1	
2		Site clearance and access	No.		1	
3		Submit Building plans to LM for approval	Sum		1	
4		Excavations (Foundations and services connections)	No.		1	
5		Engineering Design of foundation, Inspections and Engineering Certification (Foundation, Superstructure & Roof)	No.		1	
6		NHBRC Enrolment	No.		1	
7		Reinforcing and Casting of Strip Foundations	No.		1	
8		Building of Foundation Brickwork	No.		1	
9		Cast Surface Bed / Raft Foundation	No.		1	
10		Building of Superstructure Brickwork	No.		1	
11		Plaster and Paint - Internal Walls	No.		1	
12		Complete Supply, Deliver and Installation of Roof	No.		1	
13		Complete gable and beamfilling	No.		1	
14		Apply approved brick sealant to all external walls, as per manufacturers specifications	No.		1	
15		Supply and Install Ceiling complete with Cornish installation according to SANS 10400 and two Coats of PVA (Approx 40m²squares)	No.		1	
16		Supply and Install Plumbing inclusive of all sanitary fittings and pipe work	No.		1	
17		Supply, deliver and install TWO (2) external doors inclusive of 3 lever lock and 70 mm weather board (Well sanded and cleaned, apply 1 coat wood stain and 2 coats external polyurethane varnish) per unit	No.		1	
18		Supply, deliver and install THREE (3) internal doors inclusive of a 2-lever lock. (Well sanded and cleaned, apply 1 x coat timber primer and 1 x universal undercoat and 2 coats Enamel paint) per unit	No.		1	
19		Supply, Deliver and Install 1xC1 Window, inclusive of all Fittings and Glazing as per specifications per unit	No.		1	
20		Supply, Deliver and Install 3xC7 Windows inclusive of all Fittings and Glazing as per specifications per unit	No.		1	
21		Supply, Deliver and Install 1xD57 Window inclusive of all Fittings and Glazing as per specifications per unit	No.		1	
22		Construct Concrete apron as per specifications (25mpa concrete, 1m wide, 85mm thick all round	No.		1	
23		Construction of complete 6m³ conservancy tank (Constructed as per SANS 10400 Drainage Manual)	Sum		1	
24		Access to house(12m² paving, and ramp at doorway)	Sum		1	
25		Kick plates to doors	Sum		1	
26		Hand and Grab rails	Sum		1	
27		Lever action taps	Sum		1	
28		1 m vinyl folding door in bathroom	Sum		1	
29		Supply, Deliver and Install All Electrical components inclusive of 7 Light Switches, 2 External Lights, 5 Indoor Lights, DB board, 4 electrical sockets and a stove plug	No.		1	
30		Electrical Connection Application with the Local Municipality on behalf of beneficiary	Sum		1	
31		Supply, Deliver and Install Connection to Water Service	No.		1	
32		Supply, Deliver and Install Connection to Sewer Service	No.		1	
33		House numbers to be printed black on silver Perspex plack	No.		1	
34		Quality Completion Pack	No.		1	
35		OHS Compliance	Sum		1	
SECTION B TOTAL CARRIED FORWARD TO SUMMARY						

COGHSTA SOEBATSFONTEIN 10- THE CONSTRUCTION OF 9 BNG HOUSES IN SOEBATSFONTEIN: 9 x 40m² FOR THE KAMIESBERG MUNICIPALITY SECTION C : New Houses – 40 m² BNG						
ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	RATE	QTY	AMOUNT
Supply, delivery and installation of all material and tools to construct complete standard 40 m² BNG houses inclusive of ancillary works as per the breakdown for the minimum specifications C.3.1.10 from page C3.26:						
1		All contractual requirements/ Site establishment	No.		1	
2		Site clearance and access	No.		1	
3		Submit Building plans to LM for approval	Sum		1	
4		Excavations (Foundations and services connections)	No.		9	
5		Engineering Design of foundation, Inspections and Engineering Certification (Foundation, Superstructure & Roof)	No.		9	
6		NHBRC Enrolment	No.		9	
8		Reinforcing and Casting of Strip Foundations	No.		9	
9		Building of Foundation Brickwork	No.		9	
10		Cast Surface Bed / Raft Foundation	No.		9	
11		Building of Superstructure Brickwork	No.		9	
12		Plaster and Paint - Internal Walls	No.		9	
13		Complete Supply, Deliver and Installation of Roof	No.		9	
14		Complete gable and beamfilling	No.		9	
15		Apply approved brick sealant to all external walls, as per manufacturers specifications	No.		9	
16		Supply and Install Ceiling complete with Cornish installation according to SANS 10400 and two Coats of PVA (Approx 40m²squares)	No.		9	
17		Supply and Install Plumbing inclusive of all sanitary fittings and pipe work	No.		9	
18		Supply, deliver and install TWO (2) external doors inclusive of 3 lever lock and 70 mm weather board (Well sanded and cleaned, apply 1 coat wood stain and 2 coats external polyurethane varnish) per unit	No.		9	
19		Supply, deliver and install THREE (3) internal doors inclusive of a 2-lever lock. (Well sanded and cleaned, apply 1 x coat timber primer and 1 x universal undercoat and 2 coats Enamel paint) per unit	No.		9	
20		Supply, Deliver and Install 1xC1 Window, inclusive of all Fittings and Glazing as per specifications per unit	No.		9	
21		Supply, Deliver and Install 3xC7 Windows inclusive of all Fittings and Glazing as per specifications per unit	No.		9	
22		Supply, Deliver and Install 1xD57 Window inclusive of all Fittings and Glazing as per specifications per unit	No.		9	
23		Construct Concrete apron as per specifications (25mpa concrete, 1m wide, 85mm thick all round	No.		9	
24		Construction of complete 6m³ conservancy tank (Constructed as per SANS 10400 Drainage Manual)	No.		9	
25		Supply, Deliver and Install All Electrical components inclusive of 7 Light Switches, 2 External Lights, 5 Indoor Lights, DB board, 4 electrical sockets and a stove plug	No.		9	
26		Electrical Connection Application with the Local Municipality on behalf of beneficiary	Sum		1	
27		Supply, Deliver and Install Connection to Water Service	No.		9	
28		Supply, Deliver and Install Connection to Sewer Service	No.		9	
29		House numbers to be printed black on silver Perspex plack	No.		9	
30		Quality Completion Pack	No.		9	
31		OHS Compliance	Sum		1	
SECTION C TOTAL CARRIED FORWARD TO SUMMARY						

COGHSTA SOEBATSFONTEIN 10- THE CONSTRUCTION OF 1 BNG HOUSES SOEBATSFONTEIN: 1 x 45m ² FOR THE KAMIESBERG MUNICIPALITY SECTION D : New Houses – 45 m ² BNG						
ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	RATE	QTY	AMOUNT
Supply, delivery and installation of all material and tools to construct complete standard 45 m² BNG houses inclusive of ancillary works as per the breakdown for the minimum specifications C.3.1.10 from page C3.26:						
1		All contractual requirements/ Site establishment	No.		1	
2		Site clearance and access	No.		1	
3		Submit Building plans to LM for approval	Sum		1	
4		Excavations (Foundations and services connections)	No.		1	
5		Engineering Design of foundation, Inspections and Engineering Certification (Foundation, Superstructure & Roof)	No.		1	
6		NHBRC Enrolment	No.		1	
7		Reinforcing and Casting of Strip Foundations	No.		1	
8		Building of Foundation Brickwork	No.		1	
9		Cast Surface Bed / Raft Foundation	No.		1	
10		Building of Superstructure Brickwork	No.		1	
11		Plaster and Paint - Internal Walls	No.		1	
12		Complete Supply, Deliver and Installation of Roof	No.		1	
13		Complete gable and beamfilling	No.		1	
14		Apply approved brick sealant to all external walls, as per manufacturers specifications	No.		1	
15		Supply and Install Ceiling complete with Cornish installation according to SANS 10400 and two Coats of PVA (Approx 40m ² squares)	No.		1	
16		Supply and Install Plumbing inclusive of all sanitary fittings and pipe work	No.		1	
17		Supply, deliver and install TWO (2) external doors inclusive of 3 lever lock and 70 mm weather board (Well sanded and cleaned, apply 1 coat wood stain and 2 coats external polyurethane varnish) per unit	No.		1	
18		Supply, deliver and install THREE (3) internal doors inclusive of a 2-lever lock. (Well sanded and cleaned, apply 1 x coat timber primer and 1 x universal undercoat and 2 coats Enamel paint) per unit	No.		1	
19		Supply, Deliver and Install 1xC1 Window, inclusive of all Fittings and Glazing as per specifications per unit	No.		1	
20		Supply, Deliver and Install 3xC7 Windows inclusive of all Fittings and Glazing as per specifications per unit	No.		1	
21		Supply, Deliver and Install 1xD57 Window inclusive of all Fittings and Glazing as per specifications per unit	No.		1	
22		Construct Concrete apron as per specifications (25mpa concrete, 1m wide, 85mm thick all round	No.		1	
23		Construction of complete 6m ³ conservancy tank (Constructed as per SANS 10400 Drainage Manual)	Sum		1	
24		Access to house(12m ² paving, and ramp at doorway	Sum		1	
25		Kick plates to doors	Sum		1	
26		Hand and Grab rails	Sum		1	
27		Lever action taps	Sum		1	
28		1 m vinyl folding door in bathroom	Sum		1	
29		Supply, Deliver and Install All Electrical components inclusive of 7 Light Switches, 2 External Lights, 5 Indoor Lights, DB board, 4 electrical sockets and a stove plug	No.		1	
30		Electrical Connection Application with the Local Municipality on behalf of beneficiary	Sum		1	
31		Supply, Deliver and Install Connection to Water Service	No.		1	
32		Supply, Deliver and Install Connection to Sewer Service	No.		1	
33		House numbers to be printed black on silver Perspex plack	No.		1	
34		Quality Completion Pack	No.		1	
35		OHS Compliance	Sum		1	
SECTION D TOTAL CARRIED FORWARD TO SUMMARY						

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

C 2.2 CALCULATION OF TENDER SUM (FIXED PRICE)

DESCRIPTION	AMOUNT
SECTION A: PAULSHOEK Fixed price per 40m² BNG House: x9 BNG house, inclusive of connection to sewer, water and electrical network x 9	
SECTION B: PAULSHOEK Fixed price per 40m² BNG House: x1 BNG house, inclusive of connection to sewer, water and electrical network x 9	
SECTION C: SOEBATSFONTEIN Fixed price per 40m² BNG House: x9 BNG house, inclusive of connection to sewer, water and electrical network x 10	
SECTION D: SOEBATSFONTEIN Fixed price per 40m² BNG House: x1 BNG house, inclusive of connection to sewer, water and electrical network x 10	
SUB TOTAL 1	
PLUS : 15% CONTINGENCIES (calculated on SUB TOTAL 1)	
SUB TOTAL 2	
PLUS : 0% VAT (calculated on SUB TOTAL 2)	
TOTAL (CARRIED OVER TO FORM OF OFFER & FRONT PAGE)	

CONTRACT PERIOD: WEEKS

DECLARATION IN RESPECT OF COMPLETENESS OF TENDER:

DEPT. OF COGHSTA
Private Bag X5005
KIMBERLEY
8300

I/We, the undersigned, do hereby declare that these are the properly priced Calculation of Tender Sum (Fixed Price) forming Part 2.2 of this Contract Document upon which my/our tender for the TENDER NO. NC/20/2022: KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN has been based.

NAME OF FIRM:

SIGNATURE OF TENDERER/S:

DATE:

PART C 3: SCOPE OF WORK

C 3.1	Scope of Work: Part 1	C 3 – 1
C 3.2	Part 2: Project Specifications	C 3 - 16
C 3.3	Engineering Drawings	C 3 - 41
C 3.4	Management	C 3 - 44
C 3.5	Annexures	C 3 - 52

STATUS:

Should any requirement or provision in the parts of the Scope of Works conflict with any requirement of any Standardised Specification, or any drawings, the order of precedence, unless otherwise specified, is:

Drawings

Scope of Work (Part C 3.1, C 3.3, C 3.4 and C 3.5)
SABS / SANS Standardised Specifications



V3 CONSULTING
ENGINEERS



COGHSTA

Co-operative Governance
Human Settlement & Traditional Affairs

C 3.1: SCOPE OF THE WORKS: PART 1

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

C 3.1: SCOPE OF WORKS: PART 1

C 3.1.1 GENERAL DESCRIPTION OF THE CONTRACT

The project involves the construction of 20 BNG houses. The work to be carried out under this Contract entails KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN . Preferences afforded to construction companies owned by women, youth or disabled persons.

C 3.1.1.1 PRINCIPAL CONTRACT

The scope of this principle Contract includes the following activities:

1. Appointment of NHBRC accredited Structural Design Engineer, to inspect and approve super structure and roof and sign off on NHBRC D1 documents.
2. NHBRC Enrolment (Enrolment paid by COGHSTA)
3. Municipal Approval of Building plans (Per stand)
4. Site establishment.
5. Site clearance and access.
6. Demolishing works of existing Mud house/Informal Settlement
7. Construction of 20 x complete top-structures and ancillary works:
 - a) Engineering Design, of foundation and Inspection and Engineering Certification
 - b) Demolishing where applicable and discarding
 - c) G5 fill and compaction (if and when required)
 - d) Excavations (Foundations and services connections)
 - e) Casting of Foundations (strips)
 - f) Building of Brickwork
 - g) Cast Surface Bed / Raft Foundation
 - h) Plaster and Paint
 - i) Windows and Doors
 - j) Roof and Ceiling
 - k) All plumbing
 - l) Aprons all round
 - m) Electrical Installation
 - n) Construction of complete 6m3 conservancy tank/s
 - o) All disabled house/s amenities
 - p) OHS Compliance
 - q) Connection to existing Water and Sewer Services
 - r) Completion of snags
 - s) House numbers to be printed black on silver Perspex plack
 - t) Signing of "happy letters"
 - u) Submission of Completion Quality Pack (per stand)

Contractors are required to provide under their tendered Fixed Price for the appointment of an NHBRC registered Engineer to design and sign off on foundations, superstructures and roofs.

To supply of all necessary materials, the supply and use of tools, the provision, operation and maintenance of all Contractor's plant and equipment, the supply and supervision of all labour and workmanship and everything and every service for the construction, completion and upholding of the Works in a manner required by the Contract and to the entire satisfaction of the Engineer.

The Contract is to extend to and comprise all such minor operations, matters and details as if they had been expressly shown and described, the intention being that the Contractor is to execute, as part of this Contract, every requisite for the full and perfect completion of the whole of the Works comprised therein and essential to their stability and completeness for the purposes intended by them, whether Drawings or Specifications are sufficient or not.

C 3.1.1.2 OTHER SIMULTANEOUS CONTRACTS

During the construction period Contracts may be awarded to other Contractors.

The Contractor's attention is drawn to Clause 4.8 of the General Conditions of Contract that all reasonable access must be given to other Contractors. The Building Contractor must co-ordinate his program with the other Contractors to accommodate the overlap of construction activities. No additional payments will be made or the above arrangements.

C 3.1.2 DESCRIPTION OF THE SITE AND ACCESS

The site of the Works is in the residential area of SPRINGBOK in the KAMIESBERG Municipality area and is accessible by means of tar and gravel roads. Vehicles may only use **existing** roads and accesses to and on the site. Where no entrance to the construction site exists, there may only be moved within the areas as indicated by the Engineer.

Where existing roads and accesses are not sufficient for construction purposes, the Contractor will have to construct his own accesses to meet his needs and repair it, to the satisfaction of the Engineer, after completion of the Contract.

Due to the fact that the works will be executed in residential areas, the Contractor will ensure that his work does not inconvenience the residents. Work will only be executed during normal working hours from Monday to Friday.

Where the construction takes place within existing road reserves, the Contractor will at all times ensure safe passage to vehicles and/or pedestrians.

Where only half of the carriageway is accessible to vehicular traffic, sufficient flagmen, signs, etc. will be provided to safely regulate the traffic. Site traffic management must comply with SA Road Traffic Signs Manual, Chapter 13.

C 3.1.3 NATURE OF SOIL AND UNDERGROUND SOIL CONDITIONS

The Geotechnical Report is attached as Annexure C of this tender document.

The Contractor is responsible to obtain and supply all material that must comply with the minimum requirements for the specific material, as well as the construction and maintenance of all access roads to the work on site, to spoil sites and sources of material on site that may be required by the Contractor. No payment will be made for the above and payment will be deemed to be included in the tendered Fixed Price.

It is the responsibility of the Tenderers to dig additional trial holes if deemed necessary.

The Contractor will be responsible for the obtaining of all materials needed in the construction process.

Where there is not sufficient material available on site, material will have to be obtained from commercial sources.

The information, where applicable, given in this document with regards to the underground conditions on site is given in good faith for the convenience of the Tenderer, but must not be accepted as representative. The provision of this information does not exempt the Tenderer of his primary responsibility of ascertaining the conditions on site for himself.

It is the responsibility of the Contractor to provide foundation designs by a Professional Engineer of his choice, to be approved by the Client's Engineer and the NHBRC. The cost to adhere to the above must be included in the tendered Fixed Price.

C 3.1.4 **DRAWINGS**

The drawings attached in this document are only for tender purposes. Final construction drawings will be issued to the successful contractor at commencement of the project.

C 3.1.5 **CONSTRUCTION PROGRAMME**

C 3.1.5.1 **GENERAL**

The Contractor's programme to be submitted in terms of Clause 5.6 of the General Conditions of Contract shall take full account of all matters as may impact on the sequence of executing the various components of the Works and the requisite rate of progress of the Works, as are specified in or reasonably to be inferred from the Contract.

C 3.1.5.2 **FORMAT**

The Construction Programme to be submitted by the Contractor in accordance with the provisions of Clause 5.6 of the General Conditions of Contract shall:

- a) Be in the form of a bar chart;
- b) Clearly indicate the start and end dates and duration of all construction activities and identify the critical path; and
- c) Take full cognizance of all the Contractor's risks and obligations in terms of the Contract.
- d) A resource histogram is required in0line with the submitted program of the works.

C 3.1.5.3 **FAILURE TO MAINTAIN CONSTRUCTION PROGRAMME**

C 3.1.5.3.1 If the Construction Programme has to be revised in terms of Clause 5.6 of the General Conditions of Contract, because the Contractor is falling behind on his programme, the Contractor shall submit a revised programme of how he intends to regain lost time to ensure completion of the Works before the Due Completion Date. Any proposals by the Contractor to increase the tempo of work must incorporate positive steps to increase production either by the provision of more labour and plant on the Site, or by using the available labour and plant in a more efficient manner.

C 3.1.5.3.2 Failure on the part of the Contractor to submit or to work according to the programme or revised programmes shall be sufficient reason for the Engineer to take steps to remedy the situation.

C 3.1.5.3.3 A written request from the Contractor must be obtained for the following inspections: Floor, Brickwork, Roof, Practical Completion and Final Completion. Failure to comply with requested inspections will result in an R 700-00 (Seven hundred rand) fine and a re-inspection.

C 3.1.5.4 **SPECIFIC PROGRAMME REQUIREMENTS**

The Contractor's programme shall also take full account of matters described in the Sub-Clauses hereunder. **No** additional payments will be made to the Contractor in respect of any additional costs as it may incur in consequence of arranging or adjusting its programme to accommodate the said matters and the Contractor's various tendered rates and prices shall be deemed to be fully inclusive of such costs.

C 3.1.6 **SITE ESTABLISHMENT**

C 3.1.6.1 SITE FACILITIES AVAILABLE

C 3.1.6.1.1 WATER SUPPLY

The Contractor shall make his own arrangements with the relevant authorities or any other organisation or source for obtaining water for construction and domestic purposes as well as toilet facilities as required by the Health and Safety Regulations. The Contractor shall pay for the water at the rates and tariffs as determined by the source, including the cost of supplying a temporary standpipe as required. The contractor shall also be responsible for all testing of water by an accredited laboratory, as required.

C 3.1.6.1.2 ELECTRICITY SUPPLY

The Contractor shall make his own arrangements for obtaining power and be responsible for all costs involved.

C 3.1.6.1.3 LOCATION OF CAMP AND DEPOTS

The contractor must arrange with the Local Authority for an appropriate site that can be used for the Contractor's site office and camp.

C 3.1.6.1.4 HEALTH & SAFETY

The contractor must make the necessary arrangements to comply with the Occupational Health and Safety Act. This includes all the registrations required and the appointment of a qualified safety officer on site.

C 3.1.6.1.5 LOCATION OF CAMP AND DEPOTS

The Contractor must make his own arrangements for a Camp Site at the location of the Works. The location of the Contractor's camp, including the material storage areas, will be subject to the Engineer's approval.

C 3.1.6.1.6 HOUSING FOR THE CONTRACTOR'S EMPLOYEES

No housing is available for the Contractor's employees, and the Contractor shall make his own arrangements for housing his employees or transporting them to and from the site.

The Contractor is in all respects responsible for the housing and transporting of his employees and for the arrangements thereof and no extension of time due to any delays resulting from this, will be granted.

No housing on site will be allowed.

C 3.1.6.2 SITE FACILITIES REQUIRED

C 3.1.6.2.1 ENGINEERS OFFICE

A separate office will not be required for the Engineer's representative.

The Contractor will, however, need to furnish an office with a desk, drawing table, a lockable cupboard and two chairs for the exclusive use by the Engineer. No telephones need be provided for the Engineer or his staff.

The Engineer and his representative shall be allowed free use of all the Contractor's site facilities.

The Engineer and the Engineer's representative shall be allowed free use of survey equipment and assistants to carry out control work as and when required and the Contractor shall provide all pegs, concrete, tools and other necessary items as well as all necessary labour for excavation, bush cleaning, mixing and placing of concrete, as and when required for the control of the setting out of the Works.

C 3.1.6.2.2 SANITATION AND FIRST AID

The Contractor shall provide and maintain adequate sanitation and first aid for his work force. These facilities shall comply with the requirements of the Local Authority and must be accessible from all points of construction.

C 3.1.6.2.3 TELEPHONE

A site telephone will not be required by the engineer but the contractor must be available 24/7 on his cell phone for the duration of the contract. The time related tender rate for the contractor's telephone shall include for official calls made by/to the Engineer.

C 3.1.6.2.4 HOUSING FOR THE CONTRACTOR'S EMPLOYEES

The contractor shall make his own arrangements with regards to the housing of his employees since no housing is available. The transporting of the contractor's employees to the site is his own responsibility. No extension of time because of mismanagement of afore mentioned will be granted.

C 3.1.6.2.5 OFFICES FOR THE CONTRACTOR

The Contractor must provide for such temporary offices as he may require for his own use. No conference facility is required.

C 3.1.6.2.6 SITE INSTRUCTION BOOK

The Contractor shall provide an A4-size carbon triplicate site instruction book and maintain it permanently in the site office. All site instructions to Sub-Contractors will also be recorded in this site instruction book.

C 3.1.6.2.6 REFUSE

The Contractor shall provide suitable refuse containers at his site offices and stores yard. He should ensure that his employees make use of the containers for the disposal of refuse so that the site of the Work as well as the existing production facility will not become polluted. The Contractor shall dispose of the refuse in the containers at regular intervals in an acceptable manner.

C 3.1.6.3 FEATURES REQUIRING SPECIAL ATTENTION

C 3.1.6.3.1 EXISTING SERVICES

The Contractor shall take all necessary steps to ascertain the location of existing services before commencing with any section of the works and shall exercise the greatest care when working near such services.

The Contractor shall check the position and level of every existing service before starting any construction that has to connect with such a service. The Contractor shall give written confirmation of the accuracy or inaccuracy of the positions and levels of existing services.

The Contractor shall request the latest available drawings showing the location of services already installed, no more than 3 (three) weeks and not less than 1 (one) week before commencing his operations in any particular area.

The Contractor shall take all the necessary steps to protect any existing services and/or structures whatsoever against damages which may arise as a result of his operations on site. The Contractor shall bear the cost of the repair of damage to any service the possible existence of which could reasonably have been ascertained by him in good time and the Contractor shall bear the cost of the repair of damage to any structure caused by his operations on site.

Where the Contractor is responsible for damage for which repairs have to be carried out by the Employer or an outside authority, the costs of these repairs will be covered by means of a deduction from the Contractor's Monthly Payment Certificate.

It will be accepted that the Tenderer made provision in his tendered Fixed Price for the cost of the above. No additional payment will be made by the Client.

C 3.1.6.3.2 CONTRACTOR'S CONSTRUCTION PLANT

If, during the course of the Contract, the Engineer considers that any item or items of construction plant are in any way inefficient, unsafe or inadequate to complete the Works within the Contract period, he shall have the right to call on the Contractor to either:

- a) Put the construction plant in order;
- b) Remove such construction plant and replace it with other efficient plant; or
- c) Provide additional similar plant or plant of greater capacity.

No additional payment shall be made to the Contractor for expenses incurred in complying with any or all of the above, the cost being deemed to be included in the Contractor's tendered Fixed Price.

C 3.1.6.3.3 KEY PERSONNEL

The Contractor shall furnish the Employer and the Engineer with a list of addresses and telephone numbers of key personnel in the Contractor's organization who may be contacted in an emergency both during and outside office working hours in connection with the Works.

C 3.1.6.3.4 PUBLICATION AND ADVERTISING

The Contractor shall not publish, or cause to be published in any papers, articles or information relating to the Works nor permit any advertising mentioning the subject of his Contract and he shall not display or allow his Sub-Contractors to display any advertisement on the site or elsewhere in connection with the Works without the prior written permission of the Employer.

C 3.1.6.3.5 ORDERS AND INDENTS

On acceptance of this tender the Contractor is to ascertain if all materials to be supplied by him can be obtained in South Africa and if not, steps will be taken to import the same so that the Works are not delayed. Delay in the Works owing to non-delivery of materials will not be considered a cause for delay in completing the Works.

C 3.1.6.3.6 SECURITY AND SAFETY REGULATIONS

The Contractor is to familiarize himself and comply with all safety regulations, statutes and regulations governing construction activities. The safety of all personnel on site shall be the Contractor's sole responsibility.

C 3.1.6.3.7 ACCESS TO PROPERTIES

The Contractor shall organize the work to cause the least possible inconvenience to the municipal operating staff. The Contractor will be responsible for the necessary traffic control where required. Works over private property will be done in close co-operation with the specific Landowners.

The Contractor shall ensure that all streets, roads and footpaths adjacent to or crossing the site and which are affected by the works and/or temporary works are kept in a safe condition for pedestrians and vehicular traffic. The Contractor shall organise his work so as to reduce the inconvenience to traffic and the private Landowners to a minimum, and no public road track or footpath shall be completely closed without prior approval.

If so ordered, the Contractor shall provide suitable bridges at street and driveway crossings where traffic must cross open trenches.

All signs shall be in English and Afrikaans.

C 3.1.6.3.8 SITE MAINTENANCE

During progress of the work and upon completion, the site of the Works shall be kept and left in a clean and orderly condition. The Contractor shall store materials and equipment for which he is responsible in an orderly manner and shall keep the site free from debris and obstruction.

C 3.1.6.3.9 TESTING AND QUALITY CONTROL

C 3.1.6.3.9.1 CONTRACTOR TO ENGAGE SERVICES OF A SUITABLE LABORATORY

Notwithstanding the requirements of the Specifications pertaining to testing and quality control, the Contractor shall engage the services of a suitable laboratory to undertake all testing of materials, the results of which tests are specified in, or reasonably to be inferred from the Contract, as to be taken into consideration by the Engineer in deciding on whether the quality of materials utilized and workmanship achieved by the Contractor complies with the requirements of the Specifications. The afore going shall apply irrespective of whether the said testing is indicated in the Specifications as to be carried out by the Engineer or by the Contractor.

The Contractor shall be responsible for arranging with the testing laboratory for the timeous carrying out of all such testing specified in the Contract, at not less than the frequencies and in the manner specified. The Contractor shall promptly provide the Engineer with copies of the results of all such testing carried out by the laboratory.

For the purposes of this Clause, a "suitable laboratory" shall mean a laboratory which is not under the management or control of the Contractor and in which the Contractor has no financial interest, nor which has any control of financial interest in the Contractor.

C 3.1.6.3.9.2 ADDITIONAL TESTING REQUIRED BY THE ENGINEER

In addition to the provisions of Sub-Clauses 7.4.2 and 7.4.3 of the General Conditions of Contract, the Engineer shall be entitled at times during the Contract, to require that the Contractor arrange with the laboratory to carry out any such tests, additional to those described, at such times and at such locations in the Works as the Engineer shall prescribe. The Contractor shall promptly and without delay, arrange with the laboratory for carrying out of all such additional testing as required by the Engineer and copies of the test results shall be promptly provided to the Engineer.

C 3.1.6.3.9.3 COSTS OF TESTING

(a) Tests in terms of Sub-Clause 7.4.4.1 of the General Conditions of Contract:

The costs of all testing carried out by the laboratory in accordance with the requirements of Sub-Clause 7.4.4.1 of the General Conditions of Contract above shall be borne by the Contractor and shall be deemed to be included in the tendered Fixed Price. No separate payments will be made by the Employer to the Contractor in respect of any testing carried out in terms of Sub-Clause 7.4.4.1 of the General Conditions of Contract.

Where, as a result of the consistency of the materials carrying or as a result of failure to meet the required Specifications for the work, it becomes necessary to carry out additional tests (e.g. Re-test on rectified work and/or replacement material), the costs of such additional testing shall be for the Contractor's account.

(b) Additional tests required by the Engineer

The cost of any additional tests required by the Engineer in terms of Sub-Clause 7.4.4.1 of the General Conditions of Contract shall be reimbursed to the Contractor, provided always that the costs of any such additional tests ordered by the Engineer, the results of which indicate that the quality of the materials utilized and/or the standard of workmanship achieved is not in accordance with the Specifications, shall not be reimbursable to the Contractor.

No separate payment will be made for such testing, the cost of which will be deemed to be included in the Contractor's tendered Fixed Price for the items of work that require testing in accordance with the Specifications.

C 3.1.6.3.10 EXTENSION OF TIME DUE TO ABNORMAL CLIMATIC CONDITIONS

Extension of time will not be granted for what is considered normal adverse climatic conditions. Extension of time will only be granted in case of abnormal rainfall or saturated conditions in accordance with the method described as follows:

The Contractor must make allowance in his programme for the expected number of working days for which possible delays due to weather conditions may occur as scheduled in the table below.

Extension of time for each calendar month or part thereof for the full period required for the completion of the works, plus any approved extensions thereof will be calculated as follows:

Delays caused by abnormal climatic conditions will only be considered for extension of time if, in the opinion of the Engineer, critical path items as indicated on the Contractor's programme are influenced negatively. Only delays occurring on working days will be considered.

Extension of time will be granted for the number of days on which accepted adverse climatic conditions occurred, minus the number of days for the specific month in the schedule below.

The nett extension of time determined for every month, which may be negative, will be algebraically accumulated to determine the total nett number of days of extended time due to adverse climatic conditions. A negative balance at the time of completion will not be taken into consideration.

Where a portion of a month is involved, a pro rata number of days will be calculated.

SCHEDULE:

Expected number of working days which work may be delayed due to adverse weather conditions:

MONTH	DAYS	MONTH	DAYS
January	2	July	1
February	2	August	1
March	2	September	1
April	2	October	1
May	1	November	2
June	1	December	1

TOTAL: 12 Days

- C 3.1.6.3.9.10.1 The Engineer shall, simultaneously on granting any extension of time in terms of this Clause, revise the Due Completion Date of the Contract to reflect an extension of time having been granted in respect of wet climatic conditions, to the extent of the above calculation provided that where such period is negative, the Due Completion Period shall not be revised.
- C 3.1.6.3.10.2 Any extension of time in respect of wet climatic conditions granted in terms of this Clause shall not be deemed to take into account delays experienced by the Contractor in repairing or reinstating damage to or physical loss of the Works arising from the occurrence of abnormal climatic conditions. Extension of time in respect of any such repairs or reinstatement of damage shall be the subject of a separate application for extension of time in accordance with the provisions of the General Conditions of Contract.
- C 3.1.6.3.11 SUB-CONTRACTORS (NOMINATED OR APPROVED)
- The Contractor shall be responsible for work carried out by both nominated and approved Sub-Contractors on his behalf.
- The Engineer will not liaise directly with such Sub-Contractors. Problems related to payments, programming, workmanship, etc. shall be the concern of the Contractor and the Sub-Contractor, and the Engineer will not become involved.
- C 3.1.6.3.12 STANDING TIME
- Standing time will only be considered when work is suspended by the written order of the Engineer. The Contractor shall not be entitled to recover any standing costs unless he provides full details in writing to the Engineer within 48 (forty-eight) hours of the Engineers order.
- Standing time will not be considered when work is suspended as a result of inclement weather or default on the part of the Contractor.
- C 3.1.6.3.13 LABOUR RETURNS
- The Contractor shall provide the Engineer with monthly returns showing the number and grade of employers and the number and type of construction plant on site.
- C 3.1.6.3.14 SITE MEETINGS
- The Engineer shall hold monthly site meetings and keep and circulate minutes. The Contractor will attend and will ensure that all Sub-Contractors are represented.
- C 3.1.6.3.15 RESTRICTED AREAS
- The Contractor and his workers shall remain within the demarcated area of the construction site. No persons will in particular be allowed in adjacent areas actively used by the Landowners for agricultural operations.
- C 3.1.6.3.16 INTERFACE WITH OTHER CONTRACTORS (OPERATING / EMERGING CONTRACTORS)

Other Contractors may be operating on the Site in close proximity to the Works during the construction period. The Contractor is to take cognizance of this and specify what restrictions (if any) are to apply.

C 3.1.6.3.17 MINIMUM NUISANCES TO PERSONS FROM THE SURROUNDING AREA

The Contractor is to ensure that he causes an absolute minimum nuisance to persons from the surrounding area by complying strictly with the following:

- a) Work to be executed only between the hours of 07:00 and 18:00.
- b) The works to be continuously and adequately watered as a means of dust suppression.

C 3.1.6.3.18 BORROW PITS

No borrow pits or sand quarries have been specifically allocated for this Contract. The Contractor is advised to liaise with the Municipality and/or Commercial Quarries on the availability of material.

C 3.1.6.3.19 DEALING WITH WATER

The Contractor is responsible for the control of storm water from adjoining areas, the site and groundwater. **No** additional payment will be made and it will be deemed to be included in the rates of the relevant items.

C 3.1.6.3.20 SURVEY BEACONS

NB: Only if available to the Department of CoGHSTA NC, The Engineer will provide benchmarks with levels and co-ordinates as and when necessary. The Contractor's attention is drawn to Clause 5.1.2 of SABS 1200 A.

It is the exclusive responsibility of the Contractor to ensure that land surveyor's beacons, erf pegs and benchmarks are not covered, disturbed or damaged.

The Contractor's attention is drawn to the stipulations of Article 35 and 36 of the Land Survey Act, 1927 (Act 9 of 1927), in which he is held responsible for the safety of all survey beacons and benchmarks and of any plot boundary pegs that are found on the site, as well as for the cost involved in the replacement of displaced and/or damaged survey beacons and benchmarks or plot boundary pegs by a registered Land Surveyor.

After completion of the contract and before the final take-over certificate is issued, the Contractor will have to hand in a certificate from a registered land surveyor certifying that all survey beacons, benchmarks and erf pegs are in position.

Erf pegs and trigonometrical land surveyor's beacons that are either misplaced or destroyed during the contract must be replaced and installed by a registered land surveyor at the Contractor's expense.

The Contractor must point out to the Engineer, in writing, any erf pegs that are not in position within 14 (fourteen) days after commencement of the project. Should the Contractor fail to point out to the Engineer, in writing, any pegs not in position, it will be accepted that **all** pegs are in position.

It will be accepted that the Contractor has made provision under Preliminary and General to comply with the above. **No additional** payments will be made to comply with this.

The Contractor's attention is specifically drawn to the stipulation of Sub-Clause 5.1.2 of the Standardised Specifications SANS 1200 A.

C 3.1.6.3.21 RECORD DRAWINGS

As the Works proceed the Contractor must keep detailed records of all changes to plans. The actual position of all new and existing services must be indicated on the set of drawings supplied free of charge for this purpose.

The Certificate of Completion will only be issued once the Engineer has received the record drawings. **No** separate payment will be made for this and it will be deemed to be included in the rates for the relevant items.

C 3.1.6.3.22

SAFETY

The Contractor must take the safety of the residents and their property into account during the planning and execution of the Works. All open trenches, services, material and machines must be protected and clearly marked.

Unless otherwise permitted by the Engineer in writing, no more trench in any one place shall be opened in advance of the pipe laying operation than can be backfilled before the end of the normal working day. Open trenches and/or excavations shall be clearly barricaded with rigid orange nylon netting, "Netlon", or similar approved. Minimum height **1,0 m** (safety netting) as instructed by the Engineer and/or Safety Agent. **No** trenches and/or excavations will be left open outside normal working hours. See Clause 5.8 of the General Conditions of Contract. The cost to provide the above will be taken as included with the tendered rates for the excavations. The Employer will make **no** additional payment to comply with the above.

Where applicable, no trenches may be left open during the Contractor's holiday during December and January. All trenches which have been excavated but which have not been finally backfilled and compacted at the commencement of the said holiday period shall be temporarily fully backfilled and compacted to a standard which will:

- a) Prevent damage occurring to the trenches or any other part of the Works;
- b) Prevent damage to or physical loss of the property of any person;
- c) Eliminate the risk of injury to any person during the said period.

All costs involved in the temporary backfilling and compaction of such trenches and the subsequent re-opening of the trenches after the holiday period shall be for the Contractor's account.

The Contractor shall comply with all the safety regulations of the Employer, Other Authorities and/or as demanded by the Engineer.

It will be accepted that the Contractor has made provision in his tender to comply with abovementioned requirements and **no** additional payment shall be made to comply with these requirements.

The Contractor must ensure that works are properly safeguarded with the necessary road signs, chevron safety bands, lights, etc. at all times, especially at night. The Engineer reserves the right to instruct the Contractor to supply additional safety measures, **without additional payment**. Remuneration to comply with these requirements must be included in the tendered amounts in Section: Preliminary & General of the Bill of Quantities.

The possible cost of shoring of excavation sides must be included in the cost of excavations. The Engineer reserves the right to request shoring or to strengthen any shoring **without additional remuneration** to the Contractor.

The "Factories, Machinery and Building Work Act (Act 22 of 1941)" as well as the "Machinery and Occupational Safety Act (Act 6 of 1983)" must, where it may appear in the SANS 1200 Standardised Specifications, be replaced by the "Occupational Health and Safety Act (Act 85 of 1993).

C 3.1.6.4 CERTIFICATES OF PAYMENT

The statement to be submitted by the Contractor in terms of Clause 6.10 of the General Conditions of Contract shall be prepared in accordance with the standard payment certificate prescribed by the Engineer and shall consist of at least 2 (two) sets of A-4 sized paper copies.

All costs resulting from the preparation and submission of the statements shall be borne by the Contractor.

The value certified in each payment certificate shall only be based on houses where specific interim payment stage has been reached and a Certificate of Compliance for that part of the work has been issued and signed by the Engineer, considering the information submitted by the Contractor.

No interim payments will be made for site establishment, demolishing and discarding of materials. First payment will be made only after milestone 1 (Foundation) has been reached.

The interim payment stages shall be based on the following progress achieved per house:

INTERIM STAGE	PROGRESS COMPLETED	% PAYMENT	CUMULATIVE %
1	Completion of raft foundation &/or foundation & floor slab construction, completely inspected and approved by Engineer.	20	20
2	Completion of all brickwork up to wall plate height including all door and window frames built in complete, inspected and approved by the Engineer.	20	40
3	Completion of roof trusses and roof sheeting complete, inspected and approved by the Engineer.	20	60
4	Completion of all plastering, inspected and approved by the Engineer.	10	70
5	Complete plumbing, installation of all doors and glazing, disposal and all finishes, inspected and approved by the Engineer.	5	75
6	Complete installation of ceiling with prescribed air gap inclusive of above-ceiling insulation, inspected and approved by the Engineer.	5	80
7	Complete electrical installation, inspected and approved by the Engineer.	5	85
8	Complete casting of aprons as per specifications, inspected and approved by the Engineer.	5	90
9	Practical Completion – Completion of house in totality, inspected and approved by the Engineer	10	100

No re-measuring of quantities will be applicable. See also C 3.1.9.14.

C 3.1.6.5 CONSTRUCTION IN LIMITED AREAS

Although not very often, working space may sometimes be restricted. The construction method used in these restricted areas largely depends on the Contractor's plant. However, the Contractor must note that measurement and payment will be according to the specified cross-sections and dimensions irrespective of the method used and that the rates and prices tendered will be deemed to include full compensation for difficulties encountered while working in restricted areas. **No** extra payment or any claim for payment due to these difficulties will be considered. Where, in the Engineer's opinion, the use of hand excavation has been deemed necessary, it has been allowed for in a separate item of the Schedule of Quantities.

C 3.1.6.6 SPOIL MATERIAL

No indiscriminate spoiling of material will be allowed. All surplus or unsuitable material shall be spoiled at a site to be indicated by the Employer. Such site shall meet with the approval of the Local Authority within whose area it falls and the spoiling shall comply with all the statutory and municipal regulations.

C 3.1.6.7 SAMPLES

The Contractor shall at his own cost, supply all samples that may be required. Material or work not conforming to the approved samples shall be rejected. The Engineer reserves to himself the right to submit samples to any tests to ensure that the material represented by the sample conforms to the requirements of the Specifications.

C 3.1.6.8 MANUFACTURER'S INSTRUCTIONS

The recommendations of the Manufacturers of patented materials must be strictly adhered to regarding the use, mixing, application, fastening, etc. thereof except when otherwise instructed by the Engineer in writing.

C 3.1.6.9 PROPRIETARY MATERIALS

Where proprietary materials are specified it is to indicate the quality or type of materials or articles required and where the terms "or similar approved" are used in connection with proprietary materials or articles, it is to be understood that the approval shall be at the sole discretion of the Engineer.

C 3.1.6.10 NOTICES, SIGNS, BARRICADES AND ADVERTISEMENTS

The Contractor shall erect the necessary signs, notices and barricades for the duration of the Contract in order to safeguard both the Works and the Public.

Notices: The Contractor may use signs and barricades as well as advertisements only upon approval, and the Contractor shall be responsible for their supply, erection, maintenance and ultimate removal and shall make provision for this in his tendered rates.

The Engineer shall have the right to have any sign, notice or advertisement moved to another position or to have it removed from the site of the Works, should it in any way prove to be unsatisfactory, inconvenient or dangerous to the general public.

Such notices, signs and barricades shall be provided and erected at the Contractor's own expense.

C 3.1.6.11 SETTING OUT OF WORK

Benchmarks and reference line data shall be provided to the Contractor at commencement of the Contract. The Contractor shall be responsible for the proper and accurate setting out of the Works.

The Contractor shall be responsible for the correctness of the position, levels, dimensions and alignment of all parts of the Works.

The checking of any setting-out of any line or level by the Engineer shall not relieve the Contractor of his responsibility for the correctness thereof. The Contractor shall be responsible for the provision of all necessary instruments, appliances and labour in connection with his responsibility for setting out of the works.

If at any time during the progress of the Works, any error shall appear or arise in the position, level, dimension or alignment on any part of the Works, the Contractor, on being required to do so by the Engineer, shall rectify such error.

C 3.1.6.12 WORKMANSHIP AND QUALITY CONTROL

The onus to produce work which conforms in quality and accuracy of detail to the requirements of the Specifications and drawings rest on the Contractor and the Contractor shall, at his own expense, institute a quality control system and provide experienced Engineers, foremen, surveyors, materials technicians, other technicians and staff, together with the transport, instruments and equipment, to ensure adequate supervision and positive control of the Works at all times.

The cost of all supervision and process control, including testing thus carried out by the Contractor shall be deemed to be included in the rates tendered for the related items of work.

The Contractor's attention is drawn to the provisions of the various standardized Specifications regarding the minimum frequency of testing that will be required for process control. The Contractor shall, at his own discretion, increase this frequency where necessary to ensure adequate control.

On completion of every part of the work and submission thereof to the Engineer for examination, the Contractor shall furnish the Engineer with results of all relevant tests, measurements and levels to indicate compliance with the Specifications.

C 3.1.6.13 TRANSPORT OF MATERIAL

All costs of transporting material, including overhaul, shall be included in the applicable tendered rates. All references in the Specifications to transport, overhaul and haul distances shall be deleted irrespective of whether or not the deletion is included in these Specification Data.

The tendered unit prices for the provision of all imported construction materials from feudal quarries or commercial sources and for the removal of spoil material and unfit material, shall be deemed as including the loading and transportation of material from the source to the final unloading point, as well as the unloading thereof.

No additional payments shall be made for **any** imported construction materials.

All haul distances, unless otherwise specified in the Bill of Quantities, shall be deemed as free haul, including the dumping of excess material.

C 3.1.6.14 EMPLOYMENT OF PREVIOUSLY DISADVANTAGED LOCAL LABOUR

Where possible the Contractor must make use of unemployed local labour.

C 3.1.6.15 LIAISON WITH LOCAL AUTHORITIES

The Contractor will have to liaise with the Local Authorities regarding the following matters:

- a) Dealing with traffic;
- b) Locating of existing underground services;
- c) Protection of existing services during construction.

All relevant authorities will be notified of above operations. It is then the Contractor's onus to immediately contact all these Authorities and to accommodate their involvement in his programme of work. The Contractor should also warn the Authorities at least 48 (forty-eight) hours before the actual work commence. Compensation for delays, losses or accidents will not be considered should the Contractor at any time have failed to keep the Local Authorities informed. The Engineer and/or Employer must immediately be notified, should the Contractor experience any problem regarding work, which involves a Local Authority.

C 3.1.6.16 LOCAL MATERIAL

Where possible the Contractor must make use of local suppliers for materials. It shall be **compulsory** for the contractor to source the required internal plaster bricks from the local brickworks.

C 3.1.7 **WAY LEAVES, PERMISSIONS AND PERMITS**

The Contractor shall be responsible for obtaining all the necessary way leaves, permissions or permits applicable to working near any existing services or other infrastructure on site, and shall ensure that any way leaves, permissions or permits obtained by the Employer's Agent prior to the award of the Contract are transferred into the Contractor's name.

The Contractor shall abide by any conditions imposed by such way leaves, permissions or permits.

The Contractor shall ensure that all way leaves, permissions and permits are kept on site and are available for inspection by the relevant service authorities on demand.

The Contractor shall also ensure that any way leaves in respect of electricity services are renewed timeously every 3 (three) months.

C 3.1.8 **ALTERNATIVE TENDERS**

In the case of an Alternative Tender submitted by the Contractor having been accepted by the Employer, the provisions as set out hereunder shall, in addition to the other requirements of the Contract, apply in the Contract.

C 3.1.8.1 **COMPLETION AND SUBMISSION OF FINAL DESIGNS AND DRAWINGS**

C 3.1.8.1.1 The Contractor shall, not later than **1 (one)** month prior to the date on which it intends to commence work on the Works or any part thereof which is the subject the Contractor's alternative technical proposals in respect of the design or Specifications of the Works contained in an alternative Tender accepted by the Employer, submit to the Engineer for his approval, the complete set of final working drawings, including general layout drawings and bending schedules, final design calculations, Specifications, the design assumptions and parameters on which the designs are based and all other documentation and details as may be required by the Engineer for the purposes of evaluating and approving the final design, Specifications and drawings.

C 3.1.8.1.2 The information and details to be submitted by the Contractor shall comply in all respects with the following:

a) **Calculations**

- (i) Calculations shall include calculations of stresses in the structure as relevant, including calculations of reinforcing or pre-stressing steel.
- (ii) The calculations shall be set out in a clear and logical manner to facilitate checking.
- (iii) A full description of the design assumptions shall accompany the calculations.

b) **Drawings**

- (i) Drawings shall show the whole structure in elevation, sectional elevation and in plan to a suitable scale.
- (ii) Sufficient large-scale sections and other details shall be submitted to show the concrete and other dimensions clearly.
- (iii) Foundation levels and foundation sizes as well as the steel reinforcement at critical sections shall be indicated on the drawings.

- (iv) The standard of detailing and the quality of the prints shall be the same as that of the Contract drawings supplied to the Contractor, or in the absence of any such contract drawings having been provided, of the same standard as that which was provided in the Tender Documents.
- (v) The drawings shall be compiled in the official language of the Contract.

c) **Further details**

Should the Engineer conclude that the calculations, drawings, Specifications or any other data submitted by the Contractor in accordance with the provisions of this Clause are insufficient or inadequate for proper evaluation, the Engineer reserves the right to require the Contractor to submit such further calculations, drawings, Specifications and any other such data as the Engineer may require. If such further details are not submitted within the time required by the Engineer, the Tenderer will be deemed in default of the provisions of this Clause.

C 3.1.8.1.3 The Contractor shall submit only drawings and other data, which are complete in all respects and in accordance with Sub-Clause C 3.3.5.1.2. If the final calculations, drawings and details do not comply with the specified requirements, the alternative designs will be rejected unless suitably amended by the Contractor.

C 3.1.8.1.4 The Contractor will not be entitled to any claim for delays experienced as a result of the submission of incomplete drawings or other documents and data, which is not strictly in accordance with the requirements of this Specification.

C 3.1.8.1.5 The Contractor shall not commence executing the Works or any portion thereof which is the subject of alternative technical proposals in respect of the design or Specifications of the Works contained in an Alternative Tender accepted by the Employer, until the Engineer's approval of the designs and calculations has been given in writing and the Drawings signed by the Employer, or the Engineer on the Employer's behalf.

C 3.1.8.2 **STATUS OF ACCEPTED DRAWINGS**

C 3.1.8.2.1 The accepted Drawings shall form an integral part of the Contract Documents and drawings not accepted and signed by or on behalf of the Employer will not be permitted for construction or manufacturing purposes.

C 3.1.8.2.2 Notwithstanding the approval and/or acceptance and signing of the drawings, the Contractor shall remain fully responsible for the details, discrepancies, omissions, errors and consequences in respect of the said drawings and the approval of a design by the Engineer shall not in any way relieve the Contractor of its responsibility to produce a design that complies with all the specified requirements.

C 3.1.8.3 **MEASUREMENT AND PAYMENT**

C 3.1.8.3.1 **DESIGN, CONSTRUCTION AND REMEDYING OF DEFECTS**

a) **Amount**

No payment will be made to the Contractor in respect of its costs incurred in the design, preparation and submission of drawings and other documents pertaining to an accepted Alternative Tender.

b) **Re-measurement**

Notwithstanding anything to the contrary as may be contained in the Contract, the said Works or portions thereof (as applicable) which are the subject of the works shall not be subject to re-measurement and the quantities listed by the Contractor in the Schedule of Quantities forming part of its Alternative Tender shall be fixed and not subject to any variation whatever during the Contract.

c) **Interim Payments**

The amounts which shall become due and payable to the Contractor in the monthly Payment Certificates, in respect of the portions of the Works which are the subject of the Contractor's alternative technical proposals, shall be determined on the basis of the quantities of work certified as having been completed in the period for which the payment applies as inspected in floor; brick work to roof; roof; Practical Completion and Final Completion; provided always that no payment will be made in respect of quantities exceeding those listed by the Contractor in the said Schedule. When payments on the abovementioned stages have been made per house the next payment must be Practical Completion or payment might be stopped until such time that said houses are practical complete.

C 3.1.8.3.2 **ENGINEER'S COSTS IN REVIEWING THE CONTRACTOR'S DESIGN**

The Engineer's costs incurred in reviewing, checking and approving the designs, drawings, calculations and other documents pertaining to the Contractor's accepted Alternative Tender (and which designs, drawings, calculations and other documents were submitted by the Contractor in accordance with the provisions of both the Tender Documents and the Contract) shall, on presentation of an account to the Contractor and certified in writing by the Employer, be paid by the Contractor to the Engineer.

The Contractor shall be reimbursed in the actual amounts of all such payments made in the next subsequent Payment Certificate, in substitution of the Provisional Sum provided by the Contractor in the Schedule of Quantities forming part of its Alternative Tender in accordance with the requirements of the Tender Documents.

C 3.1.8.4 **VARIATIONS TO THE ACCEPTED ALTERNATIVE PROPOSALS**

C 3.1.8.4.1 **VARIATIONS BY THE ENGINEER**

- a) When the Engineer requires design modifications for reasons other than:
 - (i) The Contractor's failure to comply with the design requirements; or
 - (ii) Errors in the Contractor's designs (e.g. foundation conditions that differ materially from those indicated by the test holes); the Contractor shall make such modifications.
- b) When such design modifications result in a variation on the quantities of work to be executed, such variations will be valued by the Engineer in accordance with the rates and prices in the Schedule of Quantities and the tendered Lump Sum for the alternative will be adjusted up or down, depending on whether the modifications entail an increase or a decrease in the quantity of work.

C 3.1.8.4.2 **VARIATIONS BY THE CONTRACTOR**

The Contractor shall not, subsequent to the approval of its alternative designs, specifications and drawings, amend without the prior written permission of the Engineer.

C 3.1.8.5 DEFAULT OF THE CONTRACTOR

C 3.1.8.5.1 Should it become apparent at any time during construction or during the Defects Liability Period that the Contractor's alternative design and/or Specifications do not comply with the specified requirements, the Contractor shall be liable for all consequential damage and shall, at its own expense, do all the work required to ensure that the structure complies with the design requirements and the Contractor shall not be entitled to any additional payment.

C 3.1.8.5.2 When circumstances that are within the control of the Contractor arise after the acceptance of the Alternative Tender and when these circumstances, in the opinion of the Engineer, render construction of the alternative unacceptable, the Contractor shall construct the Works strictly in accordance with the original designs specified in the Tender Documents. In such circumstances, the Contractor shall not be entitled to any additional payment.

C 3.1.9 **GENERAL**

C 3.1.9.1 CONNECTION TO EXISTING WORKS

Where construction has to be connected to existing works, the Contractor must negotiate a suitable time for the connecting with the Employer. It may be necessary to connect after hours and/or over weekends. Tendered prices for connection must provide for the above and/or control of all flows and **no** additional payments will be made by the Employer to comply with this.

C 3.1.9.2 CLEANING OF PIPES AND STRUCTURES

The Contractor shall ensure that pipes and structures shall be clear of all planks, stones, concrete, etc. which may be found in them, before commissioning. Any damage caused to equipment, structures, etc. as a result of the presence of above objects, shall be repaired at the Contractor's cost.

C 3.1.9.3 BLASTING

Where the Contractor is going to make use of blasting in excavations, the Contractor must notify all residents in the vicinity of the works in writing at least 14 (fourteen) days before commencement of the works of the proposed blasting.

The Contractor must also inspect **all** buildings in the vicinity at least 14 (fourteen) days before commencement of the blasting and any existing damage to buildings must be noted. Owners must sign the noted inspection within 7 (seven) days. After completion of **all** blasting in the vicinity, the buildings must once again be inspected, and damage noted. The Owners must again sign the noted inspection.

The Employer shall not be held accountable for **any** damages caused due to the use of explosives.

C 3.1.9.4 BEDDING AND BACKFILL

Placing and compacting of bedding and filling around pipes, as well as the main backfill over pipes, shall be done **strictly** according to the requirements of SANS 1200, the Project Specifications, Details on Drawings and the Specifications of the pipe manufacturers. **No** deviation of the above will be allowed. Tenderers shall make adequate provision in their tendered unit prices to comply with the above **in full**. The Employer shall make **no** additional payments to comply with the above.

Backfill density shall be done **strictly** in accordance with SANS 1200 DB, Sub-Clauses 5.7.1 and 5.7.2. The Contractor shall execute control tests as and when so requested by the Engineer, to verify densities, as prescribed in SANS 1200. Cost of the test will be deemed as included in bedding and backfill tendered rates.

C 3.1.9.5

CONTRADICTIONS AND OBSCURITIES IN THE TENDER DOCUMENT

Should there be any contradictions, obscurities or doubt in the text of the Tender Document or drawings, or if any obvious errors or illegible figures are found, the Contractor must, before submitting the tender, get a written, signed declaration of the correct meaning of such descriptions, figures, Clauses, etc. from the Engineer.

The Contractor shall not be permitted to submit **any** claims against the Employer and/or Engineer after closing of tender due to the abovementioned reasons.

The Contractor must examine the Tender Documents to ensure that it contains all the applicable pages and that a complete set of drawings has been issued. The Contractor must notify the Engineer accordingly should there be any pages and/or drawings missing. The Engineer shall then immediately supply a complete set of Tender Documents and/or drawings in exchange for the incomplete set of Tender Documents and/or drawings.

The Contractor will be forced to, at own cost, repair all work caused by the incorrect interpretation of the drawings and /or Specifications and as a result not complying with the requirements of this contract document and/or drawings.

C 3.1.9.6

CONTRACTOR TO BE COMPENSATED
(CLAUSE 4.5.4 OF THE GENERAL CONDITIONS OF CONTRACT)

The Employer shall NOT refund to the contractor any such sums.

C 3.1.9.7

VESTING OF MATERIAL

All material on site is to remain the contractor's responsibility throughout the duration of the contract. The contractor is to ensure that all material is to be stored in a safe and secure location until completion of the works at hand.

C 3.1.9.8

SPECIFICATIONS

Where referred to SANS Specifications or any other specification, it shall mean the latest published edition of abovementioned specification.

C 3.1.9.9

COSTS INCURRED WITH THE PREPARATION AND SUBMISSION OF TENDERS

The Employer shall not be held responsible for **any** expenses or losses incurred by the Tenderer with regards to the preparation and/or submission of tender documents.

C 3.1.9.10

STATUTORY LAWS AND REGULATIONS

The Contractor must supply all notices and pay all fees, as required by an Act of the Parliament, Ordinance or any Regulations or By-Laws or any Local or other Statutory Power with regards to the executing of the Contract Works or any other Temporary Works and according to the Employer and all Public Authorities and Companies whose property or rights may at any time be influenced by the Contract Works or any temporary Works.

The Contractor shall under all circumstances comply with the regulations of any Act of Parliament, Ordinance or any Regulations or By-Laws or any Local or other Statutory Power that may be applicable to the Contract Works or any Temporary Works and according to rules and regulations of the Employer and all Public Authorities and Companies, as already mentioned, and shall indemnify the Employer against all fines and responsibilities of any kind for breach of contract of such an Act, Ordinance, Regulation or By-Laws.

The Employer shall compensate the Contractor, or reimburse the Contractor for all amounts payable, as specified by the Engineer, that is payable and already paid for by the Contractor on such fees, and also all taxes paid by the Contractor for the Site or any part thereof or

anything constructed or erected on site, or any part thereof, or any temporary structure, placed elsewhere, but exclusively for the use of the Contract Works, with the understanding that the Employer, and not the Contractor, shall be responsible for the obtaining any planning permissions that may be required for the Contract Works.

C 3.1.9.11 LAWS THAT SHALL APPLY

The contract shall at all times be executed in accordance with the Laws of the Republic of South Africa, and any discrepancies that may occur between the Employer and the Contractor as far as the contract is concerned, shall be settled in the Republic of South Africa, unless the Law on the contract applicable on this Clause is from another country, the Employer is entitled to adopt the Law from another country in the case of any disagreement and/or the case may be settled in such a country.

All Laws and/or Regulations referred to in the Tender Document will be, where applicable, "as amended".

C 3.1.9.12 LABOUR

C 3.1.9.12.1 CONTRACTS WITH LABOURERS

The contractor will enter into employment contracts with all labourers to be employed during the construction period of this project.

C 3.1.9.12.2 WAGE RATES

Wage rates for labourers will be paid in accordance with the latest Government Gazette for the Northern Cape Province. The current rate is R29.37/hour for a normal 9 hours working day.

C 3.1.9.12.3 PROJECT LIAISON OFFICER (PLO)

A project liaison officer (PLO) will be appointed on a full-time basis for the duration of the project in order to facilitate, inter alia, the smooth proceeding of the employment of local labour. The PLO will be the link between contractor and labourers. The PLO will be identified by the KAMIESBERG Municipality but will be paid out of the project. The wages for the PLO shall be R4 850.00/month for an average 9 hour working day.

C 3.1.9.12.4 LABOUR INTENSIVE CONSTRUCTION ACTIVITIES

The following activities where applicable shall be carried out using Labour Intensive Construction (LIC) methods:

1. Preparation of bedding and blanket
2. Laying of all pipes with a diameter of less than 355mm
3. Installation of all fittings and accessories (valves etc.) to pipes
4. Mixing and placing of concrete for small concrete works (i.e. thrust blocks)
5. Building of manholes and benching
6. Finishing and cleaning of site
7. Other activities that by their nature are usually done by labour intensive construction methods.

The Contractor is encouraged to add activities to the above list but he shall ensure that the specified standards of construction will be achieved.

Although it is the intention that the above activities be carried out by labour intensive construction methods the Contractor may propose to the Engineer alternative ways in which the work is to be executed. The Engineer's approval of these alternative methods will not be unreasonably withheld from the Contractor.

C 3.1.9.12.5 EMPLOYMENT OF LOCAL LABOUR

C 3.1.9.12.5.1 QUANTUM OF KEY PERSONNEL

The Contractor must submit the description and numbers of his key-personnel that he will bring onto Site in a Key Personnel Schedule. Key personnel will include Foremen, Artisans, Clerks, skilled Supervisors and Operators.

C 3.1.9.12.5.2 QUANTUM OF LABOUR EMPLOYED

The Contractor shall submit detailed daily labour records, weekly, to the Engineer indicating respectively the numbers of permanent and temporary local employees employed on the Works, and the activities on which they were engaged.

The number of labourers stated by the Contractor in the Key Personnel Schedule shall be used by the PLO (if appointed), Engineer and Employer, in collaboration with the Contractor in the planning and programming of the Contractor's local labour requirements.

C 3.1.9.12.5.3 PAYMENT AND PRODUCTIVITY

Payment to the local labour force shall be made on a forth nightly basis in respect of Tasks completed during that period. Formal up to date records must be kept of all payments made to subcontractors and labourers.

In order that the project is economically viable and the employment of labour is not merely a "hand-out" to the local community, is important that payment of the labour force is linked to productivity. Increased productivity can be achieved by utilising the "Task Work" principle (see Clause PS 9.7), in terms of which the Contractor will be required to reward the labour force on the basis of Tasks completed.

C 3.1.9.12.6 CONDITIONS OF TEMPORARY EMPLOYMENT

It is envisaged that there may not be sufficient experienced local subcontractors available to warrant tenders or quotations on the base of competitive labour rates. Equally it may prove confusing to the local labourers and therefore counterproductive for possible tenderers to bargain for lower labour rates. A rate agreed upon at tender stage, may no longer be accepted as valid by the time the Tender is awarded. For the purpose of this tender therefore, tenders are to price labour at the approved local minimum daily rate as prescribed by the Department of Labour.

The rate of payment to local labour will be based on the accepted contractual productivity levels. The Engineers Representative will monitor productivity to ensure that this principle is carried out. For labour intensive construction (LIC) activities where no production rate is applicable, the minimum rate of payment per working day specified above shall apply.

The following conditions of work shall complement the conditions of employment:

- (1) The Contractor shall give to a temporary employee, at the earliest possible opportunity, notice of the termination of the project and/or the requirements of that employee's participation in the project; provided that such notice.
- (2) The temporary employee shall, upon termination of his services, be entitled to a certificate of service showing the full names of the employer and the employee, the date of commencement, a record of training received and the date of termination of the contract.

- (3) Skilled labour e.g. Brick layers and carpenters will be paid normal hourly rates as commonly used in the industry.
- (4) The Contractor must provide unemployment insurance for the local labourers.

C 3.1.9.12.7 TASK WORK RELATED ACTIVITIES

A task shall be determined on the basis of what an average person from the local Community could complete in a day. A Task shall be defined on the said basis with regard to the prevailing physical conditions and other regulatory conditions as specified in Clause PS 9.6.

A task is a quantified activity or operation to be performed by a person/labourer in one ordinary working day. The quantification of tasks shall be based on individual employees or a group of employees. The supply and control of hand tools and other equipment necessary to do the work, will be the responsibility of the Contractor.

	DESCRIPTION	UNIT	QUANTITY
1.	Excavation in: - Soft (sandy) material 0 to 1,0 m deep 0 to 1,5 m deep	m ³ m ³	3,0 2,2
2.	Backfilling: 0 to 1,5 m deep	m ³	6
3.	Brickwork to Manholes and similar (220 mm thick)	m ²	5
4.	Pipe laying, including bedding and blanket		
4.1	Sewer Pipes	m	48m/team of 8
4.2	Water Pipes	m	60m/team of 8

The activity and production rates ranges given in the schedule above, must be used only as a guideline.

C 3.1.9.12.8 TRAINING OF LOCAL LABOUR

C 3.1.9.12.8.1 IN SERVICE TRAINING OF LOCAL LABOUR

Through the core of artisans, skilled and semi-skilled personnel are required to construct, supervise and adequately control the Contract; the Contractor shall provide the necessary in-service (on-the-job) training in basic construction skills.

C 3.1.9.13 INTERCHANGEABLE TERMS

Throughout this document the terms "Bid/Bidder" and "Tender/Tenderer" has the same meaning.

"Bill of Quantities" and "Schedule of Quantities" will also have the same meaning.

C 3.1.9.14 BILL OF QUANTITIES: LUMP SUM CONTRACT

The Tender is a **Lump Sum** per Bill of Quantities Sections and **no** re-measuring of quantities will be applicable.

The Bill of Quantities is included in the document to assist Tenderers to price the Works. Quantities are provided in good faith, but Tenderers must ensure that their tendered prices for the works are **all inclusive** for the works as indicated on the drawings and as per the Specifications.

The Client will not pay any additional amounts not included in the Tendered amounts.

Due to the fact that the Bill of Quantities is not re-measurable, monthly payments will be calculated in accordance to C 3.1.6.4.

The Bill of Quantities were compiled as per "Model Preambles for Trades: 2008". A copy can be viewed at the Offices of the Consulting Engineer.

C 3.1.9.15 VALUE ADDED TAX

The Contractor must be registered as a vendor in terms of the Law on Value Added Tax of 1991. **NOTE THAT COGHSTA DOES NOT PAY VALUE ADDED TAX.**

C 3.1.10 **MINIMUM SPECIFICATIONS FOR THE HOUSES**

C 3.1.10.1 INTRODUCTION

Tenderers must determine their independent tendered Fixed Rate per house, but the pricing structure of the houses must be in line with the National Human Settlement Guidelines.

House type and /or sizes are as listed below per area:

SPRINGBOK Standard 40m² House = 18 units

SPRINGBOK 45m² Disabled House – Category C = 2 units

C 3.1.10.2 DESIGN

Foundation, Superstructure and Roof Structures designed and certified by a Professional Engineer, accredited at the NHBRC, is the responsibility of the Tenderer. The designs must be submitted to the Engineer (Employer's Agent) for approval before **any** construction commences.

C 3.1.10.3 MINIMUM SPECIFICATIONS

C 3.1.10.3.1 Listed below are some abstracts from the SANS 10400 and also the specifications from National Housing Code, the specifications and code will be judged as the minimum requirements for these houses:

C 3.1.10.3.1.1 The minimum standard is a 40m² house, consisting of a lounge/kitchen, 2 bedrooms and a bathroom;

C 3.1.10.3.1.2 The installation of a ceiling with the prescribed air gap for the entire dwelling;

C 3.1.10.3.1.3 The installation of above-ceiling insulation comprising a 130 mm mineral fibreglass blanket for the entire house;

C 3.1.10.3.1.4 Internal walls to be plastered and painted (1 coat universal pva primer and 2 coats matt durable- Plascon or Dulux)

C 3.1.10.3.1.5 A standard basic electric installation comprising a pre-paid meter-ready board with a recessed distribution board with lid and lights and double plugs to all living areas of the house, water-tight outside lights above the front and back doors, and stove point in the kitchen area. Inclusive of Earthing and earthing peg.

The Electrical Installation must be done by a person registered as an Electrical Contractor in terms of the Occupational Health and Safety Act of 1993 - "Electrical Installation Regulations", as well as be registered with the Local Council / Authorities;

C 3.1.10.3.1.6 Must comply with the latest NHBRC specifications; SANS 10400 and SANS 1200.

C 3.1.10.3.1.7 Special low E clear and opaque safety glass of all windows.

C 3.1.10.3.2 Construction Specifications:

C 3.1.10.3.2.1 Walls:

- (i) "Brickforce" of internal walls to fully overlap that of the external walls. Masonry walls to have suitable "Brickforce" every third course and in every course above window height and in foundation walls.
- (ii) Internal walls: plastered and painted.
- (iii) External walls: semi-face bricks. (Corojem Facebricks) To be sealed with approved facebrick sealant.
- (iv) Jointing to be done on the external doors
- (v) All bricks of the houses must be a minimum of 14MPA

C 3.1.10.3.2.2 Doors:

- (i) 2.0 mm Steel cottage section windows and 1.2 mm thick steel doorframes with fixed lugs neatly built into brickwork. Windows to have standard fittings.
- (ii) Install precast lintels over all window- and door openings.
- (iii) Exterior 2032 x 813 x 44 mm FL&B door complete with 70 mm weather board and 3-lever lock set. Internal 2032 x 813 x 44 mm hollow core doors (commercial veneer) to be fitted with 2-lever lock set. Doors to have standard fittings.
- (iv) Meranti weather strip on external doors

C 3.1.10.3.2.3 Windows:

- (i) Kitchen Windows: C2 with 4 mm glass (No. = 1)
- (ii) Bedroom Windows: D2 with 4 mm glass (No. = 2)
- (iii) Lounge Windows: D4 with 4 mm glass (No. = 1)
- (iv) Bathroom Windows: E1 with 4 mm obscure glass (No. 1)
- (v) All glazing to comply with SABS 0137

C 3.1.10.3.2.4 Plumbing:

- (i) All plumbing to be carried out by a Plumber registered with the Local Council/Authorities.
- (ii) Build-in 1700 mm bath side wall and sand bed complete with 15 mm chromium plated hot and cold taps, 40 mm bath outlet and removable fibre cement inspection panel. Neatly silicone along wall surfaces;
- (iii) Fit one basin complete with 2 x pillar taps, plug with chain chromed outlet and PVC trap. Neatly silicone along wall surfaces.
- (iv) Fit one WC complete with 6 l cistern, fitments, toilet seat and flush pipe.
- (v) Provide and fit a 1200 x 535 mm single bowl sink unit with one chromium plated bib tap, 38 mm chromed waste outlet and 40 mm PVC trap, on one pair of brackets. Neatly silicone along wall surfaces.
- (vi) Hot and cold water polycop lines to be neatly chased into walls to all sanitary fittings. Hot water to be blanked off in roof for future geyser.
- (vii) Install angle valves and a stop cocks where applicable.
- (viii) A 16 mm HDPE water connection to the Municipal network, inclusive of a stopcock.

C 3.1.10.3.2.5 Drainage:

- (i) Provide 1 x 15 mm bibtap over a gully at the kitchen.
- (ii) Provide a 110 mm vent valve at the head of the 110 mm soil line.
- (iii) Waste water pipe system to have 50 mm vent valve at highest point.
- (iv) Provide a marked rodding eye at the head of the soil drain and at all change of direction. All pipe connections on soil drain to have inspection eyes.

C 3.1.10.3.2.6 Finishes:

- (i) Floors to be power-floated to a smooth and level finish and kept damp for a period, as per Engineer's requirements, before any brickwork commences.
- (ii) Steel window- and door frames to have a 1 x coat red oxide factory coated primer, 1 x universal undercoat and 2 x finishing coats.

- (iii) External timber doors: well sanded and cleaned, apply 1 coat wood stain and 2 coats external polyurethane varnish.
- (iv) Internal doors: well sanded and cleaned, apply 1 x coat timber primer and 1 x universal undercoat and 2 coats Enamel paint.
- (v) Window panes to be fitted with correctly prepared putty and only painted when surface is firm and dry - not to be left unpainted for too long, paint as per window frames.
- (vi) House numbers on Perspex plack 150mm High Black on Silver

C 3.1.10.3.2.7 Roof:

- (i) Engineer's designed and certified pre-fabricated nail plate roof trusses;
- (ii) Minimum roof slope of 17.5 degrees.
- (iii) Roof covering to be 0.5 mm corrugated chromadek roof cladding, color sandstone beige, installed according to manufacturer's specification
- (iv) 30x1.2mm Galvanised hoop iron roof anchors at 1500mm centres on the eaves and on the centre wall including on each rafter to the gable walls. (or 4mm Wire built into brickwork for a minimum of 600mm)
- (v) 220x12mm fibre cement tiles to truss end with 50x5mm counter sunk steel wood screw heads and apply paint as for exterior walls.
- (vi) All sprockets to be treated with carbolineum or similar approved product.

C 3.1.10.3.2.8 Ceiling:

- (i) Ceiling to be installed in accordance to SANS 10400 and include the regional approved isolation.

C 3.1.10.3.2.9 Aprons:

- (i) Concrete strength of 20MPa
- (ii) Maximum slump of 75mm
- (iii) 85mm thick, 1000mm wide
- (iv) Maximum length of panels: 2500mm with 10mm expansion joints

C 3.1.10.3.2.10 CATEGORY C: Full-time usage of wheel chair

- i. Access to house(12m² paving, and ramp at doorway
- ii. Kick plates to doors
- iii. Hand and Grab rails
- iv. Lever action taps
- v. 1 m vinyl folding door in bathroom
- vi. Increase size of bathroom(reduce other rooms)

C 3.1.10.4 COMPLETION QUALITY PACK:

The contractor will be required to submit a Completion Quality Pack for each stand number in the scope of works as part of completion of the project.

Each pack will consist of the following documentation:

- (i) Signed Happy Letter
- (ii) As-built drawing of house indicating orientation on stand and services connections.
- (iii) SANS 10400 – A: Form 4 (Structure) – Signed by the NHBRC Registered Engineer
- (iv) Test Cube results
- (v) Roof Certificate
- (vi) COC – Electrical Installation

Retention payments will be retained should the above documents not be submitted per stand.

Section A: New House: PAULSHOEK 10

Refer to clause 3.1.10.3 for minimum specifications.

9	<p>BNG house 40m²</p> <ul style="list-style-type: none"> • ALL CONTRACTUAL REQUIREMENTS • Breaking down and discard of informal structure • Site clearance and access • Submit Building plans to LM for approval • Engineering Design of foundation, Inspections and Engineering Certification (Foundation, Superstructure & Roof) • NHBRC Enrolment • Temporary accommodation • "Excavations • (Foundations and services connections)" • Reinforcing and Casting of Strip Foundations • Building of Foundation Brickwork • Cast Surface Bed • G5 Fill Compacted to 93% MOD AASTHO & 25Mpa Re-inforced Raft Foundation • Building of Superstructure Brickwork • Complete Supply, Deliver and Installation of Roof • Complete gable and beamfilling • Apply approved brick sealant to all external walls, as per manufacturers specifications • Supply and Install Ceiling complete with Cornish installation according to SANS 10400 and two Coats of PVA • Supply and Install Plumbing inclusive of all sanitary fittings and pipe work • Supply, deliver and install 2 external doors inclusive of 3 lever lock and 70 mm weather board (Well sanded and cleaned, apply 1 coat wood stain and 2 coats external polyurethane varnish) • Supply, deliver and install 3 internal doors inclusive of a 2-lever lock. (Well sanded and cleaned, apply 1 x coat timber primer and 1 x universal undercoat and 2 coats Enamel paint) • Supply, Deliver and Install 1xC1 Window, inclusive of all Fittings and Glazing as per specifications • Supply, Deliver and Install 3xC7 Window inclusive of all Fittings and Glazing as per specifications • Supply, Deliver and Install 1xD57 Window inclusive of all Fittings and Glazing as per specifications • Construct Concrete apron as per specifications (25mpa concrete, 1m wide, 85mm thick all round • Construction of complete 6m³ conservancy tank (Constructed as per SANS 10400 Drainage Manual) • Supply, Deliver and Install All Electrical components inclusive of 7 Light Switches, 2 External Lights, 5 Indoor Lights, DB board, 4 electrical sockets and a stove plug • Electrical Connection Application with the Local Municipality on behalf of beneficiary • Disconnect electrical connection from old structure, move of electrical box and install other electrical components and then do electrical connection on newly built structure • Supply, Deliver and Install Connection to Water Service • Supply, Deliver and Install Connection to Sewer Service • Quality Completion Pack • CLO appointment • OHS Regulation
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Section B: New House: PAULSHOEK 10 (DISABLED)

Refer to clause 3.1.10.3 for minimum specifications.

1	<p>BNG house 45m²</p> <ul style="list-style-type: none">• ALL CONTRACTUAL REQUIREMENTS• Breaking down and discard of informal structure• Site clearance and access• Submit Building plans to LM for approval• Engineering Design of foundation, Inspections and Engineering Certification (Foundation, Superstructure & Roof)• NHBRC Enrolment• Temporary accommodation• "Excavations• (Foundations and services connections)"• Reinforcing and Casting of Strip Foundations• Building of Foundation Brickwork• Cast Surface Bed• G5 Fill Compacted to 93% MOD AASTHO & 25Mpa Re-inforced Raft Foundation• Building of Superstructure Brickwork• Complete Supply, Deliver and Installation of Roof• Complete gable and beamfilling• Apply approved brick sealant to all external walls, as per manufacturers specifications• Supply and Install Ceiling complete with Cornish installation according to SANS 10400 and two Coats of PVA• Supply and Install Plumbing inclusive of all sanitary fittings and pipe work• Supply, deliver and install 2 external doors inclusive of 3 lever lock and 70 mm weather board (Well sanded and cleaned, apply 1 coat wood stain and 2 coats external polyurethane varnish)• Supply, deliver and install 3 internal doors inclusive of a 2-lever lock. (Well sanded and cleaned, apply 1 x coat timber primer and 1 x universal undercoat and 2 coats Enamel paint)• Supply, Deliver and Install 1xC1 Window, inclusive of all Fittings and Glazing as per specifications• Supply, Deliver and Install 3xC7 Window inclusive of all Fittings and Glazing as per specifications• Supply, Deliver and Install 1xD57 Window inclusive of all Fittings and Glazing as per specifications• Construct Concrete apron as per specifications (25mpa concrete, 1m wide, 85mm thick all round• Construction of complete 6m³ conservancy tank (Constructed as per SANS 10400 Drainage Manual)• Access to house (12m² paving, and ramp at doorway)• Kick plates to doors• Hand and Grab rails• Lever action taps• 1 m vinyl folding door in bathroom• Supply, Deliver and Install All Electrical components inclusive of 7 Light Switches, 2 External Lights, 5 Indoor Lights, DB board, 4 electrical sockets and a stove plug• Electrical Connection Application with the Local Municipality on behalf of beneficiary• Disconnect electrical connection from old structure, move of electrical box and install other electrical components and then do electrical connection on newly built structure• Supply, Deliver and Install Connection to Water Service• Supply, Deliver and Install Connection to Sewer Service• Quality Completion Pack• CLO appointment• OHS Regulation
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Section C: New House: SOEBATSFONTEIN 10

Refer to clause 3.1.10.3 for minimum specifications.

9	<p>BNG house 40m²</p> <ul style="list-style-type: none"> • ALL CONTRACTUAL REQUIREMENTS • Breaking down and discard of informal structure • Site clearance and access • Submit Building plans to LM for approval • Engineering Design of foundation, Inspections and Engineering Certification (Foundation, Superstructure & Roof) • NHBRC Enrolment • Temporary accommodation • "Excavations • (Foundations and services connections)" • Reinforcing and Casting of Strip Foundations • Building of Foundation Brickwork • Cast Surface Bed • G5 Fill Compacted to 93% MOD AASTHO & 25Mpa Re-inforced Raft Foundation • Building of Superstructure Brickwork • Complete Supply, Deliver and Installation of Roof • Complete gable and beamfilling • Apply approved brick sealant to all external walls, as per manufacturers specifications • Supply and Install Ceiling complete with Cornish installation according to SANS 10400 and two Coats of PVA • Supply and Install Plumbing inclusive of all sanitary fittings and pipe work • Supply, deliver and install 2 external doors inclusive of 3 lever lock and 70 mm weather board (Well sanded and cleaned, apply 1 coat wood stain and 2 coats external polyurethane varnish) • Supply, deliver and install 3 internal doors inclusive of a 2-lever lock. (Well sanded and cleaned, apply 1 x coat timber primer and 1 x universal undercoat and 2 coats Enamel paint) • Supply, Deliver and Install 1xC1 Window, inclusive of all Fittings and Glazing as per specifications • Supply, Deliver and Install 3xC7 Window inclusive of all Fittings and Glazing as per specifications • Supply, Deliver and Install 1xD57 Window inclusive of all Fittings and Glazing as per specifications • Construct Concrete apron as per specifications (25mpa concrete, 1m wide, 85mm thick all round • Construction of complete 6m³ conservancy tank (Constructed as per SANS 10400 Drainage Manual) • Supply, Deliver and Install All Electrical components inclusive of 7 Light Switches, 2 External Lights, 5 Indoor Lights, DB board, 4 electrical sockets and a stove plug • Electrical Connection Application with the Local Municipality on behalf of beneficiary • Disconnect electrical connection from old structure, move of electrical box and install other electrical components and then do electrical connection on newly built structure • Supply, Deliver and Install Connection to Water Service • Supply, Deliver and Install Connection to Sewer Service • Quality Completion Pack • CLO appointment • OHS Regulation
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Section D: New House: SOEBATSFONTEIN 10

Refer to clause 3.1.10.3 for minimum specifications.

1	<p>BNG house 45m²</p> <ul style="list-style-type: none">• ALL CONTRACTUAL REQUIREMENTS• Breaking down and discard of informal structure• Site clearance and access• Submit Building plans to LM for approval• Engineering Design of foundation, Inspections and Engineering Certification (Foundation, Superstructure & Roof)• NHBRC Enrolment• Temporary accommodation• "Excavations• (Foundations and services connections)"• Reinforcing and Casting of Strip Foundations• Building of Foundation Brickwork• Cast Surface Bed• G5 Fill Compacted to 93% MOD AASTHO & 25Mpa Re-inforced Raft Foundation• Building of Superstructure Brickwork• Complete Supply, Deliver and Installation of Roof• Complete gable and beamfilling• Apply approved brick sealant to all external walls, as per manufacturers specifications• Supply and Install Ceiling complete with Cornish installation according to SANS 10400 and two Coats of PVA• Supply and Install Plumbing inclusive of all sanitary fittings and pipe work• Supply, deliver and install 2 external doors inclusive of 3 lever lock and 70 mm weather board (Well sanded and cleaned, apply 1 coat wood stain and 2 coats external polyurethane varnish)• Supply, deliver and install 3 internal doors inclusive of a 2-lever lock. (Well sanded and cleaned, apply 1 x coat timber primer and 1 x universal undercoat and 2 coats Enamel paint)• Supply, Deliver and Install 1xC1 Window, inclusive of all Fittings and Glazing as per specifications• Supply, Deliver and Install 3xC7 Window inclusive of all Fittings and Glazing as per specifications• Supply, Deliver and Install 1xD57 Window inclusive of all Fittings and Glazing as per specifications• Construct Concrete apron as per specifications (25mpa concrete, 1m wide, 85mm thick all round• Construction of complete 6m³ conservancy tank (Constructed as per SANS 10400 Drainage Manual)• Access to house (12m² paving, and ramp at doorway)• Kick plates to doors• Hand and Grab rails• Lever action taps• 1 m vinyl folding door in bathroom• Supply, Deliver and Install All Electrical components inclusive of 7 Light Switches, 2 External Lights, 5 Indoor Lights, DB board, 4 electrical sockets and a stove plug• Electrical Connection Application with the Local Municipality on behalf of beneficiary• Disconnect electrical connection from old structure, move of electrical box and install other electrical components and then do electrical connection on newly built structure• Supply, Deliver and Install Connection to Water Service• Supply, Deliver and Install Connection to Sewer Service• Quality Completion Pack• CLO appointment• OHS Regulation
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C 3.2:

PART 2:

PROJECT SPECIFICATIONS

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

**C 3.2: PART 2: VARIATIONS AND ADDITIONS TO SABS 1200 STANDARDIZED
SPECIFICATIONS**

The following variation and additions to the SABS 1200 Standardized Specifications referred to will be valid for this contract. The prefix "PS A" indicated an amendment to SABS 1200 A; "PS C" to SABS 1200 C; etc. The numbers following these prefixes are the relevant Clause numbers in SABS 1200.

SANS 1200 A	: GENERAL
SANS 1200 DB	: EARTHWORKS (PIPE TRENCHES)
SANS 1200 G	: CONCRETE (STRUCTURAL
SANS 1200 I	: MEDIUM-PRESSURE PIPES
SANS 1200 LB	: BEDDING (PIPES)
SANS 1200 LD	: SEWERS
SANS 1200 LF	: ERF CONNECTIONS (WATER)

SANS 1200 A : GENERAL

A 1 SCOPE

PS A 1.1 *REPLACE THE CONTENTS OF SUB-CLAUSE 1.1, INCLUDING THE NOTES, WITH THE FOLLOWING:*

"This specification covers requirements, principles and responsibilities of a general nature which are generally applicable to civil Engineering construction and building works contracts, as well as the requirements for the Contractor's establishment on the Site."

A 2 INTERPRETATION

PS A 2.2 **APPLICABLE ISSUE OF STANDARDS**

ADD TO THE BEGINNING OF SUB-CLAUSE A 2.2:

"Unless another issue is specified,"

PS A 2.3 **DEFINITIONS**

IN THE OPENING PHRASE, INSERT THE WORDS: "the definitions given in the Conditions of Contract and" *BETWEEN THE WORDS* "Specification" *AND* "the following".

a) General

ADD THE FOLLOWING DEFINITIONS:

"'General Conditions' and 'Conditions of Contract': The General Conditions of Contract specified for use with this contract, together with the Special Conditions of Contract as applicable.

'Specified': As specified in the Standardized Specifications, the Drawings or the Project Specifications. "Specifications" shall have the corresponding meaning.

ADD THE FOLLOWING NEW CLAUSE:

"PS A 2.3.1 **DELAY DUE TO SUPPLY OF MATERIALS AND ORDERING**

The Contractor shall ensure that the work is not delayed, due to the lack of materials on the site of the works, by placing orders with Suppliers for the material required under his contract as soon as possible after acceptance of this tender.

The Contractor shall, by producing copies of written enquiries for Suppliers, prove to the satisfaction of the Engineer that any delay occasioned by non-availability of materials has been caused by the inability of Suppliers to supply and not by his own lack of timely ordering or lack of exhaustive enquiry for Suppliers, before any extension of contract time will be allowed due to such delays.

The quantities set out in the Schedule of Quantities have been clearly determined calculations based on data available at the time and should therefore be considered to be approximate quantities only. Before ordering materials of any kind, the Contractor shall check with the Engineer whether or not the Scope of Work for which the materials are required is likely to change substantially. No liability or responsibility whatsoever shall be attached to the Employer for materials ordered by the Contractor except when ordered in accordance with the written confirmation issued by the Engineer."

ABBREVIATIONS

- a) Abbreviations relating to standard documents:

ADD THE FOLLOWING ABBREVIATIONS:

“CKS: SABS Co-ordinating Specification.”

A 3**MATERIALS****QUALITY OF MATERIALS**

ADD THE FOLLOWING:

“All materials are to be the best of their respective kinds, new, undamaged, sound and free from defects and shall comply with the relevant Clauses of the Specifications.

All references to Standard Specifications are to the latest amendment to such Specifications.

Materials bearing the SABS or BS mark will not be subjected to tests to determine whether they comply with the relevant Specifications. The Engineer may in his discretion require any material not bearing such mark to be tested in accordance with the relevant Specifications; should he do so, the Contractor shall arrange for such tests to be carried out, to the Contractor's cost, by the South African Bureau of Standards or other approved body.

Whether or not the material bears the mark or is tested, any material found not to be in accordance with the Specifications shall be rejected and replaced by the Contractor at his own cost.

The Contractor may be required, at his own expense, to submit samples of the material offered to the Engineer for his approval and the material supplied under his contract shall be of the standard equal to that of the samples so submitted and approved. Samples will remain the property of the Contractors, who shall remove them when called upon to do so by the Engineer.”

ADD THE FOLLOWING AT THE END OF SUB-CLAUSE 3.1:

“All manufactured materials supplied shall be new materials unless the contrary is specified. All materials specified to be in accordance with SABS Specifications shall bear the SABS mark.”

ADD THE FOLLOWING NEW SUB-CLAUSE:

ORDERING OF MATERIALS:

ADD THE FOLLOWING:

The quantities set out in the Schedule of Quantities have been clearly determined calculations based on data available at the time and should therefore be considered to be approximate quantities only. Before ordering materials of any kind, the Contractor shall be solely responsible for determining, from the drawings issued or approved by the Engineer for construction purposes, the actual quantities of materials required for the execution of the Works. No liability or responsibility whatsoever shall be attached to the Employer or the Engineer in respect of materials ordered by the Contractor except when ordered in accordance with the drawings issued or approved by the Engineer for construction purposes.”

A 4 PLANT

PS A 4.1 SILENCING OF PLANT

REPLACE THE CONTENTS OF SUB-CLAUSE 4.1 WITH THE FOLLOWING:

“The Contractor’s attention is drawn to the applicable regulations pertaining to noise and hearing conservation, framed under the Occupational Health and Safety Act (Act No. 85 of 1993) as amended.

The Contractor shall at all times and at its own cost, be responsible for implementing all necessary steps to ensure full compliance with such regulations, including but not restricted to the provision and use of suitable and effective silencing devices for pneumatic tools and other Plant which would otherwise cause a noise level in excess of that specified in the said regulations.

Where appropriate, the Contractor shall further, by means of temporary barriers, effectively isolate the source of such noise in order to comply with the said regulations.”

PS A 4.2 CONTRACTOR’S OFFICES, STORES AND SERVICES

ADD THE FOLLOWING PARAGRAPH BEFORE THE EXISTING FIRST PARAGRAPH IN SUB-CLAUSE 4.2:

“The Contractor’s buildings, sheds and other facilities erected or utilized on the Site for the purposes of the Contract shall be fenced off and shall contain all offices, stores, workshops, testing laboratories, toilet facilities, etc. as may be required by the Contractor. The facilities shall always be kept in a neat and orderly condition.

A Night-watchman may be on Site after hours.”

DELETE “and first-aid services” IN THE SECOND PARAGRAPH OF SUB-CLAUSE 4.2 AND ADD THE FOLLOWING:

“The Contractor shall provide on the Site and in close proximity to the actual locations where the work is being executed, one toilet per 10 workmen, which toilets shall be effectively screened from public view and their use enforced. Such toilets shall be relocated from time to time as the location of the work being executed changes, so as to ensure that easy access to the toilets is maintained.

The Contractor shall, where applicable, make all necessary arrangements and pay for the removal of night soil.”

ADD THE FOLLOWING NEW SUB-CLAUSE:

“PS A 4.3 CONSTRUCTION PLANT

Construction plant, where the use thereof is permitted, shall be of a suitable type for carrying out the work for which it is required. Its capacity shall be sufficient to meet the requirements of the work within the contract time. It shall be kept in full working order and repair at all times.”

A 5 CONSTRUCTION

A 5.1 SURVEY

PS A 5.1.1 SETTING OUT OF THE WORKS

ADD THE FOLLOWING TO SUB-CLAUSE 5.1.1:

“Setting out of works shall not be measured and paid directly and any costs involved herein shall be deemed as included in the tendered Fixed Price of work that is included in the Contract.

Further to the above, the Contractor shall timeously, before commencement of construction, check all levels in a specific area to provide for both the accurate measurement of quantities for payment purposes and should any discrepancies occur, to give the Engineer ample time to check levels and to make adjustments, if necessary.

Should the Contractor neglect to do so, the levels as shown on the Engineers drawings will be used for measurement and payment purposes.

Setting out details of all the works are defined by offsets from pegs and benchmarks established by the Engineer. The Contractor shall be responsible for the setting out of the works with reference to these pegs and benchmarks. The Contractor will survey the area after completion of the works and supply the data to the Engineer.”

PS A 5.1.2 PRESERVATION AND REPLACEMENT OF SURVEY BEACONS AND PEGS SUBJECT TO THE LAND SURVEY ACT

DELETE THE WORDS “in the vicinity of boundaries” IN THE SECOND SENTENCE OF SUB-CLAUSE 5.1.2 AND REPLACE THE WORDS: “under the direction of” IN THE SAME SENTENCE WITH “in consultation and liaison with.”

ADD THE FOLLOWING AFTER THE SECOND SENTENCE OF SUB-CLAUSE 5.1.2:

“The Contractor and the Engineer shall record on the said list, their concurrence or disagreement, as the case may be, regarding the completeness and accuracy of the details recorded therein.”

REPLACE THE THIRD SENTENCE OF SUB-CLAUSE 5.1.2 WITH THE FOLLOWING:

“At the completion of the Contract, the Contractor shall expose all pegs that were listed at the commencement of the construction as being in order and the Contractor shall arrange with a registered Land Surveyor for the checking of the positions of all such pegs and the replacement of any thereof which the Land Surveyor’s check reveals have become disturbed or damaged. The Contractor shall, as a precedent to the issue of the Certificate of Completion, provide to the Engineer, a certificate from the registered Land Surveyor, certifying that all the pegs listed at the commencement of construction in accordance with the provisions of this Clause, have been checked and that those found to have been disturbed, damaged or destroyed have been replaced in their correct positions, all on accordance with the provisions of the said Act.

The costs of all checking, replacement and certification as aforesaid shall be entirely for the Contractor’s account; provided always that the Contractor shall not be held liable for the cost of preplacement of pegs which:

- a) Cannot reasonably be re-established in their original positions by reason of the finished dimensions of the permanent works; and
- b) The Contractor can prove beyond reasonable doubt to the satisfaction of the Engineer, were disturbed, damaged or destroyed by others beyond his control.”

PS A 5.3 **PROTECTION OF EXISTING STRUCTURES**

REPLACE: "Machinery and Occupational Safety Act, 1983, (Act No. 6 of 1983)" WITH: "Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), as amended" AND INSERT THE FOLLOWING AFTER "(Act No. 27 of 1956)": "as amended."

PS A 5.4 **PROTECTION OF OVERHEAD AND UNDERGROUND SERVICES**

REPLACE THE HEADING AND THE CONTENTS OF THIS SUB-CLAUSE WITH THE FOLLOWING:

PS A 5.4 **LOCATION AND PROTECTION OF EXISTING SERVICES**

PS A 5.4.1 **LOCATION OF EXISTING SERVICES**

Before commencing with any work in an area, the Contractor shall ascertain the presence and actual position of all services which can reasonably be expected by and experienced and competent Contractor to be present on, under, over or within the Site.

Without in any way limiting its liability in terms of the Conditions of Contract in relation to damage to property and interference with services, the Contractor shall, in collaboration with the Engineer, obtain the most up-to-date plans as are available, showing the positions of services existing in the area where it intends to work. Neither the Employer nor the Engineer offer any warranty as to the accuracy or completeness of such plans and because services can often not be reliably located from plans, the Contractor shall ascertain the actual location of services depicted on such plans by means of careful inspection of the Site and the provision and utilization of suitable detecting and testing equipment.

Thereafter, the Contractor shall, by the use of appropriate methodologies carefully expose the services at such positions as are agreed to by the Engineer, for the purposes of verifying the exact location and position of the services. Where the exposure of existing services involves excavation to expose underground services, the further requirements of Sub-Clauses 4.4 and 5.1.2.2 of SABS 1200 D, as amended, shall apply.

The aforesaid procedure shall also be followed in respect of services not shown on the plans, but which may reasonably be anticipated by an experienced Contractor to be present or potentially present on the site.

All services, the positions of which have been determined as aforesaid at the critical points, shall henceforth be designated as 'Known Services' and their positions shall be indicated by the Contractor on a separate set of drawings, a copy of which shall be furnished to the Engineer without delay.

As soon as any service which has not been identified and located as described above is encountered on, under, over or within the Site, it shall henceforth be deemed to be 'Known Service' and the aforesaid provisions pertaining to locating, verifying and recording its position on the balance of the site shall apply. The Contractor shall notify the Engineer immediately any such service is encountered or discovered on the site.

Whilst it is in possession of the site, the Contractor shall be liable for all loss of or damage as may occur to:

- a) 'Known Services' anywhere along the entire lengths of their routes, as may reasonably be deducted from the actual locations at which their positions were verified as aforesaid, due cognizance being taken of such deviations in line and level which may reasonably be anticipated; and
- b) Any other service which ought reasonably to have been a 'Known Service' in accordance with the provisions of this Clause; as well as for consequential damage, whether caused directly by the Contractor's operations or by the lack of proper protection;

Provided always that the Contractor will not be held liable in respect of damages occurring to services not being 'Known Services'.

No separate payment will be made to the Contractor in respect of its costs of providing, holding available on the site and utilizing the said detecting and testing equipment, nor for any costs incurred in preparing and submitting to the Engineer the drawings as aforesaid and these costs shall be deemed included in the tendered Fixed Price.

It will be accepted that the Tenderer made provision in his tendered Fixed Price for the cost of the above. No additional payment will be made by the Client.

PS A 5.4.2 PROTECTION DURING CONSTRUCTION

The Contractor shall take all reasonable precautions and arrange its operations in such a manner as to prevent damage occurring to all 'Known Services' during the period which the Contractor has occupation and/or possession of the site.

Services left exposed shall be suitably protected from damage and in such a manner as will eliminate any danger arising there from for the public and/or workmen, all in accordance with the requirements of the prevailing legislation and related regulations.

PS A 5.4.3 ALTERATIONS AND REPAIRS TO EXISTING SERVICES

Unless the contrary is clearly specified or ordered, the Contractor shall not carry out alterations to existing services. When this is necessary, the Contractor shall inform the Engineer, who will either make arrangements for such work to be executed by the owner of the service, or instruct the Contractor to make such arrangements himself.

When the Contractor damages existing services, he shall immediately inform the Engineer or the relevant authority and obtain instructions as to who should carry out repairs. In urgent cases the Contractor shall take the necessary steps to minimize damage to and interruption of the service. No repairs of telecommunication cables or electric power lines and cables shall be attempted.

The Employer will accept no liability for damages due to a delay in having such alterations or repairs affected. The Contractor shall provide all reasonable opportunity, access and assistance to persons carrying out alterations or repairs of existing services.

PS A 5.7 SAFETY

ADD THE FOLLOWING:

"Before acceptance of the Contract, an Occupational Health and Safety Management File must be handed over to the Engineer, acceptable to Department of Labour and maintained for the duration of the project.

Pursuant to the provisions of the Conditions of Contract and without it in any way limiting the Contractor's obligations there under, the Contractor shall at its own expense, except only where specific provisions, if any, is made in the Contract for reimbursement to the Contractor in respect of particular items.

- a) Provide to its Employees on the site of the Works, all safety materials, clothing and equipment necessary to ensure full compliance with the provisions of the Occupational Health and Safety Act (Act No, 85 of 1993) as amended, hereinafter referred to as the Act, at all times and shall institute appropriate and effective measures to ensure the proper usage of such safety materials, clothing and equipment, at all times; and
- b) Provide, install and maintain on all barricades, safety signage and other measures to ensure the safety of workmen and all persons in, on and around the site, as well as the general public; and

- c) Implement on the Site of Works, such procedures and systems and keep all records as may be required to ensure compliance with the requirements of the Act at all times; and
- d) Implement all necessary measures as to ensure compliance of the Act by all Sub-Contractors engaged by the Contractor and their employees engaged on the Works; and
- e) Comply fully with all other requirements pertaining with safety as may be specified in the Contract.

The Employer and the Engineer shall be entitled, although not obliged, to make such inspections on the /site as they shall deem appropriate, for the purpose of verifying the Contractor's compliance with the requirements of the Act. For this purpose, the Contractor shall grant full access to the Site of all parts of the Site and shall co-operate fully in such inspections and shall make available for inspection all such documents and records as the Employer's and/or Engineer's representative may reasonably require.

Where any such investigations reveal or where it comes to the Engineer's attention that the Contractor is in any way in breach of the requirements of the Act or is failing to comply with the provisions of this Clause, the Engineer shall, in accordance with the provisions of Clause 5.11 of the General Conditions of Contract, be entitled to suspend progress on the Works or any part thereof until such time as the Contractor has demonstrated to the satisfaction of the Engineer, that such breach has been rectified.

The Contractor shall have no grounds for a claim against the Employer for extension of time and/or additional costs if the progress of the Works or any part thereof is suspended by the Engineer in terms of this Clause and the Contractor shall remain fully liable in respect of the payment of penalties for late completion in accordance with the provisions of Clause 5.13.1 of the General Conditions of Contract should the Contractor fail to complete the Works on or before the specified Due Date for Completion in consequence of the suspensions.

Persistent and repeated breach by the Contractor of the requirements of the Act and/or this Clause shall constitute grounds for the Engineer to act in terms of Clause 9.2 of the General Conditions of Contract and for the Employer to cancel the Contract in accordance with the further provisions of the said Clause 9.

All work and particularly work carried out in the proximity of buildings, bridges, tanks or other structures shall be carried out in conformance with the regulations framed under the Occupational Health and Safety Act, 1993 and the Minerals Act (Act 50 of 1991), including shoring where necessary, to ensure the safety of structures that are at risk.

The Contractor shall make available for the duration of the contract safety helmets, gumboots and any other necessary safety equipment for sole use by the Engineer and his representative(s)."

ADD THE FOLLOWING NEW SUB-CLAUSES TO CLAUSE 5:

"PS A 5.9

CONTRACTUAL INSPECTION

Written inspections must be obtained for each house in the following phases:

- a) Floor
- b) Brick work to roof
- c) Roof
- d) Practical completion
- e) Final completion

Failing to comply with the written request on such house might stop until satisfactory inspection was done. Failing any inspection more than 5 (five) items on a list of defaults will result in a re-inspection and an **R 700-00** fine."

PS A 5.10 **SECURITY**

PS A 5.10.1 **SECURITY OF CONTRACTOR'S PLANT AND PERSONNEL**

"The Contractor shall note that, notwithstanding any insurance which may be by the Employer, the Contractor shall be responsible for the effecting of safety and security of plant and personnel on and around the site of the works and that no claims in this regard will be entertained by the Employer.

Provision must be made by the Contractor in the Schedule of Quantities for effecting of safety and security of plant and personnel on and around the site of the Works and shall be deemed to include full compensation for all necessary to effect the safety and security, including, where necessary, the employment of the services of a security organization."

PS A 5.11 **SITE MEETINGS**

"The Contractor or its authorized agent will be required to attend regular site meetings, which shall normally be held twice a month on dates and at times determined by the Engineer, but in any case whenever reasonably required by the Engineer. Unless otherwise indicated in the Contract or instructed by the Engineer, such meetings shall be held at the Contractor's offices on the Site. At such monthly meetings, matters such as general progress on the Work, quality of work, problems, claims, payments and safety, etc. shall be discussed but no matters concerning the day-to-day running of the Contract."

A 6 TOLERANCES

ADD THE FOLLOWING SUB-CLAUSE TO CLAUSE 6:

"PS A 6.1 **USE OF TOLERANCES**

No guarantee is given that the full specified tolerances will be available independently of each other and the Contractor is cautioned that the liberal or full use of any one or more of the tolerances may deprive him of the full or any use of tolerances relating to other aspects of the work.

Except where the contrary is specified, or when clearly not applicable, all quantities for measurement and payment shall be determined from the 'authorized' dimensions. These specified dimensions or those shown on the Drawings or, if changed, as finally prescribed by the Engineer, without any allowance for the specified tolerances. Except if otherwise specified, all measurements for determining quantities for payment will be based on the 'authorized' dimensions.

If the work is constructed in accordance with the 'authorized' dimensions plus or minus the tolerances allowed, the calculation of quantities will be based on the 'authorized' dimensions, regardless of the actual dimensions to which the work has been constructed.

When the work is not constructed in accordance with the 'authorized' dimensions plus or minus the tolerances allowed, the Engineer may nevertheless, at his sole discretion, accept the work for payment. In such cases no payment shall be made for quantities of work or material in excess of those calculated for the 'authorized' dimensions and where the actual dimensions are less than the 'authorized' dimensions minus the tolerance allowed, quantities for payment shall be calculated based on the actual dimensions as constructed."

A 7 TESTING

PS A 7.1 PRINCIPLES

PS A 7.1.2 STANDARD OF FINISHED WORK NOT TO SPECIFICATION

INSERT THE WORDS “or checks by an approved laboratory...” AFTER THE WORDS “Where the Engineer’s checks ...” IN THE FIRST LINE OF SUB-CLAUSE 7.1.2.

PS A 7.2 APPROVED LABORATORIES

REPLACE THE CONTENTS OF SUB-CLAUSE 7.2 WITH THE FOLLOWING:

“Unless otherwise specified in the relevant Specification or elsewhere in the Project Specifications, the following shall be deemed to be approved laboratories in which design work, or testing required in terms of a Specification for the purposes of acceptance by the Engineer of the quality of materials used and/or workmanship achieved, may be carried out:

- a) Any testing laboratory certified by the South African National Accreditation System (SANAS) in respect of the nature and type of testing to be undertaken for the purposes of the Contract;
- b) Any testing laboratory owned, managed or operated by the Employer or the Engineer;
- c) Any testing laboratory established and operated on the site by or on behalf of the Employer or the Engineer.

SANS 1200 AB: ENGINEER'S OFFICE

AB 3 MATERIALS

PS AB 3.2 OFFICE BUILDINGS

The contractor shall provide one board room with a table and chairs to accommodate at least 10 people for site meeting purposes.

AB 4 PLANT

PS AB 4.1 TELEPHONE

The Contractor's contract manager and site agent must have a cellular phone available as contact between him and the engineer. The site agent must always be available on his cellular phone except during long weekends and the Christmas break where special arrangements will be required.

AB 5 CONSTRUCTION

PS AB 5.5 SURVEY ASSISTANTS

Two semi-skilled labourers with relevant experience will be required to assist the engineer if required.

PS AB 5.6 SURVEY EQUIPMENT

The Contractor shall provide the following tested and approved survey equipment (a certificate will be required) on site for the duration of the contract and for the use of the Engineer whenever needed:

- a) one automatic level plus tripod and level staff.
- b) one 5m and one 50m measuring tape
- c) Diverse surveyor's necessities like paint, pegs, etc.

The above-mentioned equipment may by arrangement be shared between the Contractor and the Engineer's representative. It must be maintained and kept in good working order for the duration of the contract.

SANS 1200 C: SITE CLEARANCE

PS C 5 CONSTRUCTION

PS C 5.2 CUTTING OF TREES

PS C 5.2.3 PRESERVATION OF TREES

PS C 5.2.3.2 Individual Trees

The Contractor shall pay a penalty of R5,000 for each Kameeldoring (Acacia Erioloba) tree damaged or removed by him without the written permission of the Engineer and permit issued to do so.

PS C 5.4 GRUBBING

Grubbing shall consist of the grubbing out of roots and stumps to a depth of at least 600 mm below cleared surface level.

SABS 1200 D: EARTHWORKS

PS D 5 CONSTRUCTION

PS D 5.1.2 EXISTING SERVICES

PS D 5.1.2.4 DETECTION, LOCATION AND EXPOSURE

ADD THE FOLLOWING SUB-CLAUSE TO D 5.1.2.2

If existing services are not shown on the drawings but the existence thereof can be reasonably expected, the Contractor shall, in conjunction with all relevant authorities, determine the exact depth and location of such services before the commencement of construction.

After locating the exact position of services, whether indicated on the drawing or not, such services shall be deemed to be known services and the contractor shall be liable for all costs and subsequently costs arising from the damage thereof as a result of the Contractor's activities. These services must also be indicated on the "As-built" drawings.

PS D 5.2 METHODS AND PROCEDURES

PS D 5.2.3 PLACING AND COMPACTION

PS D 5.2.3.1 DETECTION, LOCATION AND EXPOSURE

SUBSTITUTE THE FOLLOWING SUB-CLAUSE TO D 5.2.3.1

The material of each embankment shall, unless otherwise approved, be deposited in layers of thickness, before compaction, not exceeding 300mm.

With

The material of each embankment shall, unless otherwise approved, be deposited in layers of thickness, before compaction, not exceed **150mm**.

SABS 1200 DB: EARTHWORKS (PIPE TRENCHES)

DB 3 MATERIALS

PS DB 3.1 CLASSES OF EXCAVATION

ADD THE FOLLOWING:

“In case of hand excavation, the following classification method will be used:

PS DB 3.1.1 SOFT EXCAVATION

Soft excavation is classified as material that can be removed with a shovel and pick. Should this material be subjected to a DCP test, the density will be such that penetration will not be less than 10 mm per impact for a layer of 150 mm thick.

PS DB 3.1.2 INTERMEDIATE EXCAVATION

Intermediate excavation is classified as material that can be removed with a pick and shovel where penetration of a DCP apparatus is less than 10 mm per impact.

PS DB 3.1.3 HARD EXCAVATION

Hard excavation is classified as material that can only be removed with pneumatic equipment, edges, splitting or explosives.”

PS DB 3.7 SELECTION

ADD THE FOLLOWING:

“Where suitable backfill material occurs in layers of 150 mm or more, this material should be separated during excavation from unsuitable material and used for backfilling. Should this material not be utilized in this manner, an estimate will be made of the available quantities and deducted from the imported backfill material.”

DB 5 CONSTRUCTION

PS DB 5.6 BACKFILLING

PS DB 5.6.4 REMOVAL OF INTERMEDIATE AND HARD ROCK MATERIAL

ADD THE FOLLOWING:

“It is the responsibility of the Contractor to flatten out any spoil heaps and to dump subsequent loads on top. The Contractor will not be allowed to just dump spoil material on the horizontal surface.”

SABS 1200 G: CONCRETE (STRUCTURAL)

G 3 MATERIALS

PS G 3.2 CEMENT

PS G 3.2.2 ALTERNATIVE TYPES OF CEMENT

REPLACE THE CONTENTS OF THIS SUB-CLAUSE WITH THE FOLLOWING:

“Only ordinary Portland cement shall be used.

If the Contractor wishes to use any other type of cement, he shall obtain the Engineer’s prior written approval.”

PS G 3.2.3 STORAGE OF CEMENT

ADD THE FOLLOWING:

“Cement shall not be stored for longer than 12 (twelve) weeks without the Engineer’s permission.”

PS G 3.4 AGGREGATES

ADD THE FOLLOWING:

“All aggregates used must comply with SABS 1083. No aggregates with a shrinkage exceeding 130% will be allowed.”

PS G 3.4.1 ADD THE FOLLOWING TO SUB-CLAUSE G 3.4.1:

“PS G 3.4.1.1 COURSE AGGREGATES

PS G 3.4.1.1.1 Coarse aggregates must comply with the 10% FACT requirement for durability.”

PS G 3.4.1.1.2 The nominal aggregate size is the smaller of the 37,5 mm maximum particle size and 25% of slab thickness.

PS G 3.4.1.1.3 Should the nominal aggregate size exceed 26,5 mm, the coarse aggregate shall be a mixture of *b*-aggregate greater than 26,5 mm and an *a*-aggregate smaller than 26,5 mm.”

PS G 3.4.1.2 FINE AGGREGATES

PS G 3.4.1.2.1 Fine aggregate may not contain silicone particles in excess of 40%.

PS G 3.4.1.2.2 Should the FM of the fine aggregate vary by more than $\pm 0,2$ during construction, modifications to the mix design should be done.

PS G 3.4.1.3 MIX DESIGN

Special consideration should be given to the minimizing of bleeding during the mix design. If bleeding is foreseen, special attention should be given to the fine aggregate.

PS G 3.4.1.4 ADMIXTURES

The use of admixtures should be limited. Should admixtures be utilized, special attention should be given to possible shrinkage. The uses of any admixtures are to be approved by the Engineer. See also G 3.5.

G 4 PLANT

PS G 4.1 GENERAL

ADD THE FOLLOWING NEW SUB-CLAUSE:

“PS G 4.1.1 MINIMUM PLANT

The Contractor shall have the following minimum plant available and in sound working order:

- a) 2 (Two) concrete mixers, each of sufficient capacity to complete a section of floor slabs between construction joints within 4 (four) hours without interruption.

If the plant used for placing concrete for the structure is electrically or mechanically powered, the Contractor shall also provide some other approved non-electrical powered standby means for placing concrete at an adequate rate in the event of a power or mechanical failure of the main plant.

When the Contractor elects to utilize a crane during the construction period, he shall communicate with the Engineer in good time to allow for such positioning of the crane.”

PS G 4.5 FORMWORK

PS G 4.5.1 DESIGN

ADD THE FOLLOWING:

“All formwork or scaffolding required for any part of the Works shall be designed by the Contractor and before commencing with the erection of any formwork or scaffolding, the Contractor shall submit the methods he proposes to use to the Engineer for approval. The Engineer has the authority to order alterations to the design or the sizes of any part of the formwork or scaffolding. The Contractor shall check the safety and suitability of all such alterations. The fact that the Engineer has approved or altered any part of the formwork or scaffolding shall not be construed as relieving the Contractor of his responsibility with regard to the strength and stability of the formwork or scaffolding.”

PS G 4.5.3 TIES

ADD THE FOLLOWING:

“No plugs, bolts, ties or clamps of any description used to hold the formwork will be allowed to project into or through the concrete unless expressly approved by the Engineer.

Only approved tie-rods consisting of solid rods (that remain embedded in the concrete) and with removable ends shall be used to hold the formwork of the walls. The removable tie-rod ends shall facilitate removal without damage to the concrete and no permanently embedded parts of such tie-rods shall have less than 50 mm of cover to the finished concrete surface.

The cavities left in the concrete when the tie-rod end cones are removed shall be soundly caulked with a cement mortar to which an approved shrinkage-reducing agent has been added and shall be neatly finished to a smooth surface uniform with that of the surrounding concrete.

The cost of supplying special tie-rods as well as the filling of cavities left by the tie-rod cones shall be included in the tendered Fixed Price.

On no account shall formwork be secured to reinforcing bars.”

G 5 CONSTRUCTION

PS G 5.1 REINFORCEMENT

PS G 5.1.2 FIXING

ADD THE FOLLOWING:

“The Engineer will inspect the reinforcing after it has been fixed in place, the formwork has been cleaned, cover blocks have been positioned and before concreting commences.

Welding of reinforcing steel will not be permitted.”

PS G 5.1.3 COVER

ADD THE FOLLOWING:

“The distance between pipes in the concrete and the reinforcing steel shall nowhere be less than:

- a) 40 mm or
- b) 5 mm plus the maximum size of the coarse aggregate, whichever is the largest.”

PS G 5.2 FORMWORK

PS G 5.2.1 CLASSIFICATION OF FINISHES

- c) SPECIAL

ADD THE FOLLOWING:

“This finish is obtained by first giving the surface a smooth finish with the joints between formwork panels forming an approved regular pattern suitable for the appearance of the structure. All projections shall then be removed, irregularities repaired and the surface rubbed or otherwise treated until it is smooth with an even texture, appearance and colour.

If the finish of exposed surfaces does not comply with the requirements for uniformity of the texture and appearance, the Contractor shall, when instructed to do so by the Engineer, rub down the exposed surfaces of the entire structure or any part thereof as specified below, entirely at his own cost. All repairs must be completed before the rubbing commences.

The surface shall be saturated with water for at least 1 (one) hour. The initial rubbing of the face shall be carried out with a medium coarse carborundum stone, together with a small amount of mortar of the same cement/sand ratio as the concrete being repaired. Rubbing shall continue until all form marks, projections and irregularities have been removed and a uniform surface has been obtained. The paste produced by the rubbing shall be kept in place. The final rubbing shall be carried out with a fine carborundum stone and water. This rubbing shall continue until the entire surface has a smooth, even texture and is uniform in colour. The surface shall subsequently be washed with a brush to remove surplus paste and powder.”

PS G 5.3 HOLES, CHASE AND FIXING BLOCKS

ADD THE FOLLOWING:

“Cover blocks for reinforcing and fixtures may be placed into the concrete provided that neither the strength nor any other desirable characteristic (such as the appearance) of the concrete section is affected or impaired in the opinion of the Engineer.”

PS G 5.5 **CONCRETE**

PS G 5.5.1 QUALITY

PS G 5.5.1.5 DURABILITY

ADD THE FOLLOWING:

“The exposure conditions of the concrete are classified as ‘severe’.”

PS G 5.5.1.7 STRENGTH CONCRETE

ADD THE FOLLOWING:

“The concrete mixes for the works shall be designed by the Portland Cement Institute or a similar approved laboratory.”

PS G 5.5.3 MIXING

PS G 5.5.3.2 READY-MIX CONCRETE

ADD THE FOLLOWING:

“Ready-mixed concrete may be used on the site. The Contractor shall take samples for testing from every load delivered to the Site.”

G 6 TOLERANCES

PS G 6.2 **PERMISSIBLE DEVIATIONS**

PS G 6.2.3 SPECIFIED PERMISSIBLE DEVIATIONS (PDs)

ADD THE FOLLOWING:

“Degree-of-accuracy 1 is applicable.

Every specified permissible deviation is binding in itself. The cumulative effect of permissible deviations will not be considered. The maximum permissible vertical deviation is subject to the other permissible deviations.”

REPLACE SUB-CLAUSE 6.2.3(d)(5) WITH THE FOLLOWING:

Vertically, subject to a maximum of:

Permissible Deviation		
Degree of Accuracy		
III	II	1
mm	mm	mm
5	3	2
50	30	10

G 7 TESTS

PS G 7.1 FACILITIES AND FREQUENCY OF SAMPLING

PS G 7.1.1 FACILITIES

ADD THE FOLLOWING:

“The Contractor shall provide sufficient storage capacity for the concrete cubes and shall test the cubes by means of an approved, calibrated cube testing press in a manner approved by the Engineer or shall arrange to have them tested by an approved laboratory.

The cost of testing, including the cost of sampling, storage and transport of samples shall be included in the tendered Fixed Price.”

PS G 7.3 ACCEPTANCE CRITERIA FOR STRENGTH CONCRETE

ADD THE FOLLOWING:

“Test results obtained from the Supplier of ready-mixed concrete will not be acceptable for evaluation on terms of Sub-Clause 7.3 but samples for testing shall be taken of such concrete at the point of placing.”

SABS 1200 L: MEDIUM PRESSURE PIPES

L 2 INTERPRETATION

PS L 2.4 ABBREVIATIONS

ADD THE FOLLOWING TO SUB-CLAUSE L 2.4:

“FC: Fibre Cement

HDPE: High density Polyethylene pipes”

PS L 3.8.4 LOOSE FLANGES

ADD THE FOLLOWING:

“Bolts shall be to SANS 135.”

L 3 MATERIALS

PS L 3.10 VALVES

ADD THE FOLLOWING NEW SUB-CLAUSE:

“PS L 3.10.1 GATE VALVES

All gate valves are to comply with SABS 1200 LK; must be of the “waterworks” type and be suitable for a working pressure of 16 Bar. All valves to be clockwise (right hand) closing and the direction of opening and closing should be permanently displayed on the valve casing. Valves should be of the non-rising spindle type and be equipped with a square cap-top suitable for use with a valve spanner. All valves will be tested for water tightness. One valve spanner is to be provided for every 10 (ten) valves or less.”

PS L 5.1.4 DEPTH AND COVER

ADD THE FOLLOWING NEW SUB-CLAUSE:

“PS L 5.1.4.6 A minimum cover of 500 mm is required over the top of pipes inside erven; 800 mm in street reserves, underneath roads or as specified by levels on long sections and plans. Where instructed, pipes are to be encased in concrete.”

L 7 TESTING

PS L 7.3 STANDARD HYDRAULIC PIPE TEST

PS L 7.3.1 TEST PRESSURE AND TIME OF TEST

PS L 7.3.1.1 TEST PRESSURE

ADD THE FOLLOWING:

“Before any connections are made, pipes are to be tested to 1.5 times the working pressure of the specific class of pipe. After connected to existing pipelines or fittings, all costs associated with the excavation, removal of fittings, cutting in, joining, labour and complete finishing are deemed to be included in the tendered price.”

SABS 1200 LB: BEDDING PIPES

LB 3 MATERIAL

PS LB 3.1 SELECTED GRANULAR MATERIAL

ADD THE FOLLOWING:

“Notwithstanding the provisions in Sub Clause LB 3.1, the selected granular material shall be singularly graded between 0,6 mm and 13 mm.”

PS LB 3.2 SELECTED FILL MATERIAL

ADD THE FOLLOWING:

“Notwithstanding the requirements of Sub Clause LB 3.2, the selected fill material for storm water pipelines in all areas, excluding roadways, shall have a PI not exceeding 18. This amendment is not applicable to sewers and water mains.”

PS LB 3.3 BEDDING

ADD THE FOLLOWING:

“Class C bedding as applicable to rigid pipes is required. Material for the Class C bedding will only be imported where insufficient suitable material is obtainable from the excavated material.

Where large diameter UPVC pipes (> 300 mm diameter) are utilized, compaction on either side of the pipe should be carefully done in layers not exceeding 100 mm in thickness to ensure that the bedding and pipe act as a “pipe-soil system” to prevent ovality of the pipes occurring during backfilling.

The Contractor shall be responsible for finding a source of suitable bedding material.”

LB 3.4 SELECTION

PS LB 3.4.2 SUITABLE MATERIAL NOT AVAILABLE FROM THE TRENCH EXCAVATION

ADD THE FOLLOWING:

“Should there, during selective excavation methods with the correct tools, still be insufficient suitable material available for the bedding, material must be imported. The Contractor will find a suitable source of bedding material and submit it to the Engineer for approval.

The finding of a suitable source/quarry/ borrow pit, loading, placement and compaction of the imported material is deemed to be included in the rate tendered by the Contractor.”

LB 5 CONSTRUCTION

PS LB 5.1.4 COMPACTION

ADD THE FOLLOWING:

“After excavation of the trench, the trench bottom will be levelled by means of a rake and compacted. Compaction may be conducted by hand tools. The required compaction to be achieved must exceed or equal 90% MAASHTO density.

After installation of the pipes, similar compaction must be applied to the blanket material. Now the final backfilling to 50 mm above the adjacent soil levels may be carried out. The total working area shall then be finished off. Only when specified by the Engineer will sidewalks be finished to specific standards and levels.

Where streets and roads are crossed, compaction of the bedding and backfill must be conducted by mechanical means to achieve a density of 98% MAASHTO density.”

PS LB 5.2.1(c) CLASS A BEDDING

AMEND THE SUB-CLAUSE WITH THE FOLLOWING:

“The main fill shall not be placed in any section until the bedding cradle in that section has achieved a compressive strength of at least 15 MPa or a period of 5 days has elapsed after the placing of the concrete in that section, whichever occurs first.”

SANS 1200 LD: SEWER

LD 3 MATERIALS

PS LD 3.5 MANHOLES, CHAMBERS, ETC.

PS LD 3.5.2 PRE-CAST CONCRETE SECTIONS

ADD THE FOLLOWING TO SUB-CLAUSE LD 3.5.2:

“The joint between the manhole and the cement cover must be effectively sealed with a sealant so that no ground water or storm water can filter in. The lifting holes in the manholes must be sealed with epoxy after installation but before back filling.

Benching must be made from concrete fabricated from dolomitic aggregate.”

PS LD 3.5.3 PRE-FABRICATED FC MANHOLES

REPLACE SUB-CLAUSE LD 3.5.3 WITH THE FOLLOWING:

“Pre-fabricated FC-manholes must comply with the requirements of fibre strengthened cement sewer pipes according to SANS 819 with inside diameter of 1 000 mm. All manholes must be dipped in bitumen.

The joint between the manhole and the cement cover must be effectively sealed with a sealant so that no ground water or storm water can filter in. The lifting holes in the manholes must be sealed with epoxy after installation but before back filling.

Benching must be made from concrete fabricated from dolomitic aggregate.”

PS LD 3.5.7 STEP IRONS

REPLACE SUB-CLAUSE LD 3.5.7 WITH THE FOLLOWING:

“Step irons shall be manufactured of at least 12 mm tensile strength armour-plated steel with a polypropylene casing. Attaching of step irons in manholes must be done according to the instructions and requirements of the Manufacturers.”

PS LD 3.6 MARKER POSTS

ADD THE FOLLOWING TO SUB-CLAUSE LD 3.6:

“Marker posts consisting of a 1 m length kerbing that is planted vertically above the end cap of the erf connection. The end of the kerbing must be 400 mm above natural ground level and painted red, while the bottom is connected to the end cap with a 3 mm wire.”

LD 5 CONSTRUCTION

PS LD 5.4 CONNECTIONS TO MANHOLES

ADD THE FOLLOWING TO SUB-CLAUSE LD 5.4:

“Where a pipe lies at a gradient of 1:10 (that is 5,71°) an 11¼° bend cannot be used as a bend with an angle greater than the gradient of the pipe will produce a low point. It is the Contractor’s responsibility to shorten the bend to form the desirable angle.

For pipes with a gradient of 1:10 the angle can be taken up by a coupling in the manhole and, where necessary, also by a coupling between the short length and first full pipe.”

LD 5.6 MANHOLES, INSPECTION CHAMBERS, ETC.

PS LD 5.6.1 GENERAL

REPLACE SUB-CLAUSE LD 5.6.1(A) WITH THE FOLLOWING:

“Manholes on new pipes shall be of FC, brick or concrete and built as indicated on the drawings.

Final cover levels of manholes must be as follows:

1. In roads and on pavements : level with the road or pavement
2. All other areas : 50 mm above final level

If the position of a manhole is such that it is situated in a low or a hole where there is a danger of storm water filtering into the cover, the final level of the manhole must be elevated to such a level where storm water infiltration is no longer a danger, or to a level previously approved by the Engineer.

If the manhole cover for FC or concrete manholes must be elevated with more than 300 mm, FC or concrete rings with the same diameter as the manhole, and attached to the fibre cement or concrete manhole with epoxy, must be used.”

PS LD 5.6.2 BENCHING

ADD THE FOLLOWING TO SUB-CLAUSE LD 5.6.2.3:

“Benching will be constructed and finished off as indicated on the drawings.”

PS LD 5.9 CONNECTING SEWERS

ADD THE FOLLOWING TO SUB-CLAUSE LD 5.9.1:

“Plot connections must be installed in the exact position as indicated on the drawings. Where mains go through plots the erf connection must end 1 m from where the manifold and 45° bend ends on the erf. Where mains are outside the plot the erf connection must be 1 m inside the plot border, and sealed with an end cap.

Unless stipulated differently on the drawings or specified by the Engineer, all connecting sewers must be laid with a gradient of 1:60.”

LD 7 TESTING

PS LD 7.1 GENERAL

ADD THE FOLLOWING TO SUB-CLAUSE LD 7.1.5:

“All tests shall be repeated after back filling of pipe trenches has been completed.”

PS LD 7.2.6 WATERTIGHTNESS OF MANHOLES

ADD THE FOLLOWING TO SUB-CLAUSE LD 7.2.6:

“On completion of a manhole, the Engineer might call for a water tightness test, at the Contractor’s expense, as follows:

Manholes must be filled to the brim with water and left to stand for 60 minutes. After the water loss has been filled up again, the water measured over 60 minutes may not be more than the volume given in the comparison below. The water level must be filled up every 20 minutes. Filling up volume must be measured. Loss must be determined with comparison 1, also see Table below.

$$I = 0,6.D - (1)$$

I = Water loss in l/hour/metre depth

D = manhole diameter in m.

Should the manhole leak more water than given in comparison 1, the manhole must be water proofed and re-tested. The Contractor cannot claim any additional compensation.

Manhole must be tested for water proofing **prior** to starting back filling.

Manhole diameter (mm)	Water loss over 60 minutes/m depth (l)
750	0,405
1 000	0,630
1 200	0,720

SANS 1200 LF: ERF CONNECTIONS (WATER)

PS LF 3 MATERIAL

LF 3.1 PIPES, FITTINGS AND COUPLINGS

PS LF 3.1.1 COPPER PIPE

SCRAP SUB-CLAUSE LF 3.1.1 AND REPLACE WITH THE FOLLOWING:

“Copper pipe shall be “Maksel” or similar approved Class O according to SANS 460 with coupling of capillary silver flux.”

PS LF 3.1.3 GALVANIZED SOFT STEEL PIPES (GSS)

SCRAP SUB-CLAUSE LF 3.1.3 AND REPLACE WITH THE FOLLOWING:

“All wrought iron pipe sleeves shall comply with SANS 509 and the hot dip galvanizing process to SANS 763. All screw-threads shall be supplied in accordance with BS 21.1973/ISO-R7”.

PS LF 3.1.4 HIGH-DENSITY POLYETHYLENE PIPES (HDPE)

SCRAP SUB-CLAUSE LF 3.1.4 AND REPLACE WITH THE FOLLOWING:

“High-density polyethylene pipe (HDPE) Type IV (Class 10) with compression accessories for HDPE pipe shall be used for water distribution on plots. The HDPE pipes must comply with SANS 533 and accessories to ISO/DIS 3458 (Class 16)”.

PS LF 3.1.5 OPVC OR MPVC PIPES

SCRAP SUB-CLAUSE LF 3.1.5 AND REPLACE WITH THE FOLLOWING:

“PVC pipes and accessories shall comply with the applicable requirements of SANS 966 for, in the case of pipes, the class specified or mentioned in the Bill of Quantities and shall have applicable approved welded or PVC compression type couplings. Cast-iron accessories shall comply with SANS 664. There will be specified in the Bill of Quantities if OPVC or MPVC pipes must be used”.

PS LF 3.1.7 SADDLES

ADD THE FOLLOWING TO SUB-CLAUSE LF 3.1.7:

“Saddles shall be of polypropylene or similar approved alternatives for pipes not smaller than 63 mm in diameter. Compression T-pieces shall be used for erf connections from HDPE pipes”.

PS LF 3.1.8 FIBRE CEMENT (FC) PRESSURE PIPES

ADD NEW SUB-CLAUSE LF 3.1.8:

“C.I.D and C.O.D. fibre cement (FC) pressure pipes shall be supplied according to SANS 1223”.

PS LF 3.1.9 LIGHT-WEIGHT HDPE PIPES

ADD NEW SUB-CLAUSE LF 3.1.9:

“Light-weight low pressure HDPE pipe shall comply with ISO 9002, ISO DP 9969, ISO / DIS 6259 and SANS 533 and supplied to the minimum stiffness as specified.

The laying of pipes must be **strictly** according to the Manufacturer’s specifications. “Waterproof” or similar approved sockets must be used up to 800 mm diameter pipe in-situ welded pipes must be used for larger than 800 mm”.

PS LF 5 CONSTRUCTION

PS LF 5.2 LAYING OF MAIN LINE TO ERF

PS LF 5.2.2 PIPE LAYING

“Erf connections shall be bedded on Class B bedding, with the thickness of the bedding cradle 100 mm.

Erf connections must not be laid shallower than 450 mm and deeper than 600 mm under the final road level or kerb height.

Under roads trenches shall be backfilled according to PS DB 3.6.”

C 3.3:
ENGINEERING DRAWINGS

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

C 3.3: ENGINEERING DRAWINGS

C 3.3.1 DRAWINGS ISSUED WITH THIS DOCUMENT

The drawing list on the next page are applicable to the Contract and are issued with this tender document and will form part of the Contract Documents as **Volume 2**.

C 3.3.1.1 DESIGN BY ENGINEER

The Engineer, on behalf of the Employer, has designed the permanent works to be executed under this Contract. **Where specifications on the drawings deviate from the minimum housing specifications as stated in clause C 3.1.10 of the Scope of works, the contractor shall adhere to the specifications as per clause C3 3.1.10.**

C 3.3.1.2 DESIGN BY THE CONTRACTOR

It is the responsibility of the Contractor to provide designs by a Professional Engineer of his choice, to be approved by the Client's Engineer and the NHBRC. The appointed engineer will enrol the houses with the NHBRC and he will also certify the foundation, superstructure and roof of the houses, and he will act as the responsible person for the buildings. The cost to adhere to the above must be included in the tendered Fixed Price.

The Contractor shall supply the Engineer of CoGHSTA with all relevant drawings for his approval **before any works are executed.**

C 3.3.1.3 "RECORD" DRAWINGS

The Contractor shall record all amendments and deviations from the drawings. This shall be done on a set of drawings specially allocated for this purpose. These drawings shall be handed to the Engineer on completion of the Works. The Completion Certificate **will not be issued** without this information having been submitted to the Engineer.

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

LIST OF DRAWINGS

C40	40m ² BNG House: Plans, Sections and Elevations
D45	45m ² BNG House: Plans, Sections and Elevations
MV-SD-100:	Sewer Details
MV-WD-100:	Water Details
SANS10400 Drainage Manual - Conservancy tank	



V3 CONSULTING
ENGINEERS



COGHSTA

Co-operative Governance
Human Settlement & Traditional Affairs

C 3.4:

MANAGEMENT

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
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C 3.4 MANAGEMENT

C 3.4.1 CONSTRUCTION PROGRAMME

C 3.4.1.1 FORMAT

In addition to the requirements of the General Conditions of Contract, the Contractor's programme shall:

- a) Be in a bar chart form;
- b) Show the various activities related to a time-chart indicating the sequence of performing the works comprising the contract;
- c) Indicate critical path activities.

C 3.4.1.2 ALLOWANCES

The Contractor's programme shall take the following into consideration:

- a) Expected weather conditions;
- b) Special non-working days as stipulated in the Tender;
- c) The accommodation and safeguarding of traffic.

C 3.4.2 PROCEDURES DURING CONSTRUCTION

The Contractor to supply, keep up to date and keep the following documents on site:

C 3.4.2.1 A full set of the latest construction drawings to be on site permanently for use by the Engineer and others.

C 3.4.2.2 The Contractor to supply and keep on site an A4 triplicate Site Instruction Book.

C 3.4.2.3 The Contractor to supply an A4 duplicate diary on Site. The Contractor to keep daily diary, with at least the following information:

- (i) Weather conditions;
- (ii) Record of any accidents and details;
- (iii) Record of construction activities of the day;
- (iv) Information of any strikes;
- (v) Any other relevant information.

C 3.4.3 SITE FACILITIES AVAILABLE

C 3.4.3.1 SOURCE OF WATER SUPPLY

The Contractor shall make his own arrangements with the relevant Authorities for obtaining water for construction and domestic purposes as well as toilet facilities as required by the Health and Safety Regulations. The Contractor shall pay for the water at the rates and tariffs as determined by the Local Authority, including the cost of supplying a temporary standpipe as required.

C 3.4.3.2 SOURCE OF POWER SUPPLY

The Contractor shall make his own arrangements for obtaining power and be responsible for all costs involved.

C 3.4.3.3 LOCATION OF CAMP AND DEPOT

The Contractor must make his own arrangements for a Camp Site at the location of the Works. The location of the Contractor's camp, including the material storage areas, will be subject to the Engineer's approval.

The Contractor shall make his own arrangements for the accommodation of labour.

C 3.4.3.4 SPOIL SITES

No indiscriminate spoiling of material will be allowed.

All unsuitable surplus material shall be removed from the Site and the Contractor shall make his own arrangements with regard to a suitable spoil site.

C 3.4.4 ABNORMAL RAINFALL

Refer to C 3.1.6.3.10

C 3.4.5 TIME RELATED ITEMS

An approved extension of time (other than an extension of time granted in terms of the Special Conditions of Contract) will entitle the Contractor to submit a claim for additional payment. Any such approved additional payment will be made for proven additional costs for each relevant time related item.

C 3.4.6 NAMEBOARD

No name board will be provided.

C 3.4.7 PROTECTION FROM STORMS AND FLOODS

The tendered Fixed Price shall be deemed to be full compensation for any damage to the Works due to storms, rain, floods, storm water or subsurface water.

Under no circumstances shall the Contractor be entitled to any additional payment in this regard. The Contractor shall accept full responsibility and costs to handle water from any source on his Site.

C 3.4.8 EXISTING SERVICES

The Engineer will provide information regarding the location of existing utility services, but the Engineer does not accept responsibility for the accuracy of this information. The Contract shall make further investigations to determine the exact locality, size and depth of existing services before commencing construction to ensure that no damage is done to any service.

The Contractor shall take all reasonable precautions to protect existing services during construction and during relocation of such services.

Any pipe, cable, conduit or other services of any nature whatsoever indicated to the Contractor and subsequently damaged as a result of the Contractor's operations shall be repaired and reinstated forthwith by the Contractor or by the authority concerned, all at the expense of the Contractor and to the satisfaction of the Engineer.

Whenever services are encountered which interfere with the execution of the works and which require to be moved and relocated, the Contractor shall advise the Engineer, who will determine the extent of the work, if any, to be undertaken by the Contractor in removing, relocating and reinstating such services.

The Contractor shall work in close co-operation with private owners or public authorities controlling services, which have to be protected, removed or relocated. No undertaking can be given as to the exact time of commencement or of completion of the relocation, removal or protection of services, which have to be carried out by the owners or controlling authorities themselves. The Contractor is to make allowance in his programme for this contingency.

Where services have to be removed or relocated or protected, the Engineer will at the request of the Contractor, notify or negotiate with the owners or Authorities controlling those services, but the Engineer does not accept liability for any costs resulting from delays in the relocation, removal or protection of any service, or delays as a result of delays in negotiations.

It will be accepted that the Tenderer made provision in his tendered Fixed Price for the cost of the above. No additional payment will be made by the Client.

C 3.4.9 ACCOMMODATION OF TRAFFIC AND PUBLIC ACCESS

During all his operations and when using his machinery, plant and equipment, the Contractor shall at all times take the necessary care to protect the public and to facilitate the traffic flow.

C 3.4.10 SETTING OUT OF WORKS

All setting out required to carry out the work shall be undertaken by the Contractor. Setting out of the Works to be included in the tendered Fixed Price.

It will be accepted that the Tenderer made provision in his tendered Fixed Price for the cost of the above. No additional payment will be made by the Client.

C 3.4.11 SANITARY CONDITIONS

The Contractor shall ensure that, during the period of construction, sanitary conditions prevail on the site and surrounding areas. Unhygienic behaviour that may cause contamination of the works or the surrounding area is strictly prohibited.

It will be accepted that the Tenderer made provision in his tendered Fixed Price for the cost of the above. No additional payment will be made by the Client.

C 3.4.12 CONSTRUCTION IN CONFINED AREAS

It may be necessary for the Contractor to work within confined areas and no additional payment will be made for work done in restricted areas. The method of construction in these confined areas will depend largely on the Contractor's construction plant.

It will be accepted that the Tenderer made provision in his tendered Fixed Price for the cost of the above. No additional payment will be made by the Client.

C 3.4.13 DENSITY TESTS / CONCRETE CUBES

The Contractor shall carry out his own density tests on each compacted layer and these tests shall be submitted to the Engineer for scrutiny and approval before commencing with the construction of the following layer.

The Contractor also needs to do his own concrete cube tests, which is to be handed to the Engineer for scrutiny and approval. The Engineer may order that further, control tests are to be taken.

The Engineer may order that control tests be taken by his own or another independent laboratory. Cube/density tests carried out by the Contractor in the normal course of his work shall be carried out at his own expense.

It will be accepted that the Tenderer made provision in his tendered Fixed Price for the cost of the above. No additional payment will be made by the Client.

C 3.4.14 HEALTH AND SAFETY SPECIFICATION

C 3.4.14.1 PURPOSE

In terms of the Occupational Health and Safety Act (Act 85 of 1993) (OHSA) or as amended, and the Construction Regulations 2014 or as amended, the Employer must provide the Contractor with a Health and Safety Specification to which the Contractor must respond with a Health and Safety Plan for approval by the Employer.

The purpose of this Specification is to ensure that the Principal Contractors entering into a contract with the Employer maintain an acceptable level of performance with regard to health and safety issues during the performance of the contract. In this regard the OHSA Specification form an integral part of the Contract and the Principal Contractor shall ensure that their Contractors and/or Suppliers comply with the requirements of this Specification.

C 3.4.14.2 SCOPE

This Contract comprises of KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN.

The Contractor, in complying with the OHS Act and the Construction Regulations, shall consider all aspects of the Works described and take into account the construction methods and materials to be used.

C 3.4.14.3 GENERAL

The Contractor is referred to and shall comply with the full text of the Occupational Health and Safety Act (Act 85 of 1993) (OHSA) or as amended and to the Construction Regulations 2014 or as amended, promulgated there under.

In this regard refer also to the Health and Safety Agreement and Conditions attached to these Contract documents (See Part C 1.4)

The following Specification covers health and safety matters applicable during construction.

All the work included in this Contract shall, for the purpose of complying with OHSA and the Construction Regulations, be deemed to be “construction work”.

It should be noted that, with a few exceptions, the Model Preambles and the Project Specifications are “end product specifications” and not “method Specifications”. As the

methods of construction to be used are generally determined by the Contractor, detailed safety requirements applicable to all the operations to be carried out on Site are not provided in the project documentation. The Contractor shall apply all the relevant regulations and requirements to the work methods and materials used.

The Principal Contractor shall give the required notice to the Provincial Department of Labour before commencement of any work on Site. This notice shall include the information as required by the Construction Regulations and shall be signed by the Contractor and the Employer.

The Principal Contractor shall ensure current registration and good standing with the Compensation Commissioner and shall provide evidence to this effect to the Employer.

It is the responsibility of the Principal Contractor and his Contractors to provide for all costs and expenses related to the management of and compliance with the OHSA and this Specification.

It will be accepted that the Tenderer made provision in his tendered Fixed Price for the cost of the above. No additional payment will be made by the Client.

C 3.4.14.4 EXISTING SITE CONDITIONS

The Contractor shall take into account, *inter alia*, the following existing conditions when complying with the OHSA:

- a) Existing utility services;
- b) Existing site conditions. The Contractor shall be deemed to have visited the site and examined the site conditions applicable for the Works;
- c) The traffic accommodation requirements;
- d) Surrounding land use;
- e) Anticipated weather conditions for the area; and
- f) Access to the public and the use of the facility during construction.

C 3.4.14.5 DESIGN INFORMATION

Design information provided for safety planning purposes, such as design loads for structures, foundation conditions, etc. is available from the Engineer where required.

C 3.4.14.6 CONSTRUCTION MATERIALS

The following commonly used construction materials and substances potentially pose health and safety hazards:

- a) All materials contained in pressurized containers;
- b) Bitumen and tar products;
- c) Cement;
- d) Epoxies;
- e) Lime and other stabilizing agents;
- f) Paints;
- g) Timber preservatives; and
- h) Asbestos cement products.

The materials to be used to construct the Works are described in the following:

a) The Project Specification

The Contractor shall take appropriate measures to manage the risks associated with the use of all materials required to complete the "Works, i.e. not only those listed above, and shall, *inter alia*, implement all the precautionary measures provided by Manufacturers and Suppliers for the storage, use and application of materials used.

C 3.4.14.7 SITE ACCESS AND ENVIRONMENTAL CONDITIONS

a) Site access, egress, deliveries and vehicular and pedestrian routes

The requirements regarding the control of access to and egress from the Site and vehicular and pedestrian routes are to be noted by the Contractor and provision is to be made to ensure the safety of all pedestrians and vehicular traffic at all times.

b) Environment

The Contractor shall ensure compliance with all current environmental legislation applicable to the Works and the Site. The Contractor is advised of the existing asbestos cement products and all necessary environmental precautions and requirements shall be adhered to in this regard.

C 3.4.14.8 USE OF SITE BY THE EMPLOYER

Any continues use of the Site required by the Employer to maintain traffic flows or to allow work to be done by other Contractors or Authorities is a requirement of this contract and the Contractor shall take due precaution in this regard.

C 3.4.14.9 SITE RULES

a) Way leaves, permissions and permits:

The Contractor shall be responsible for obtaining all the way leaves, permissions or permits applicable to working near any existing services or other infrastructure on Site and shall abide by the safety conditions imposed by such way leaves, permissions or permits.

b) Reporting of incidents:

All incidents shall be reported strictly in accordance with the requirements of the OHSA and the General Conditions of Contract.

C 3.4.14.10 HEALTH AND SAFETY PLAN

In compliance with the Construction Regulations the Contractor shall, after performing a risk assessment, prepare a Health and Safety Plan for approval by the Employer.

The Health and Safety Plan shall include, but not be limited to, the following:

a) The Safety Management Structure, including the names of all designated persons such as the Construction Supervisor and any other competent persons;

b) Safety Method Statements and procedures to be adopted to ensure compliance with the OHSA. Aspects to be dealt with shall include:

- (i) Public vehicular and pedestrian traffic accommodation measures;
- (ii) Control of the movement of construction vehicles;
- (iii) The storage and use of materials;
- (iv) The use of tools, vehicles and plant;

- (v) Environmental conditions and safety requirements in working hazardous materials, including asbestos cement products;
- (vi) Security, access control and the exclusion of unauthorised persons
- (vii) The provision and use of temporary services;
- (viii) Compliance with the way leaves, permissions and permits;
- (ix) Safety equipment, devices and protective clothing to be employed;
- (x) Emergency procedures;
- (xi) Provision of welfare facilities;
- (xii) Induction and training;
- (xiii) Provision and maintenance of the Health and Safety file and other documentation;
- (xiv) Arrangements for monitoring and control to ensure compliance with the safety plan.

C 3.4.14.11 AUDITS BY THE EMPLOYER

The Contractor shall permit the Employer to regularly audit, at an agreed interval, the implementation and maintenance of the approved Health and Safety Plan and shall co-operate and provide all the required documentation, as may be required, in this regard.

C 3.4.14.12 VARIATIONS

Should any variations be ordered or design amendments issued, the Engineer shall inform the Contractor of all associated potential hazards to ensure that the health and safety aspects of the work ordered are taken into account.

C 3.4.14.13 INSPECTIONS

- Setting Out
- Excavation
- Steel (footings & Raft)
- Post casting inspection
- Brickwork / Super structure
- Roof trusses and roof ties
- Plaster
- Electrical Installation and materials
- Paint
- Sanitary Fittings
- Carpentry and Ironmongery

Approval of these approvals must be done and obtained in writing

C 3.4.14.14 INSPECTION SIGN OFF LIST

The contractor shall prepare a check list to be signed off by the responsible person to verify that each of the following items has been inspected and found meeting the specifications

- Setting out
- Excavations foundations
- Excavations for services
- Backfilling on foundations
- Backfilling on services
- Plumbing pressure and leakage testing
- Certification of Foundation
- Certification of Surface bed
- Certification of Super Structure
- Certification of Roof structure
- COC for electrical installation
- Plaster work

- Paint work
- Glazing
- Carpentry and Ironmongery
- Concrete cube tests



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C 3.5

ANNEXURES

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

C 3.5 ANNEXURES

ANNEXURE A	MONTHLY FORMS TO BE COMPLETED
ANNEXURE B	OCCUPATIONAL HEALTH AND SAFETY SPECIFICATIONS
ANNEXURE C	GEOTECHNICAL REPORT



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ANNEXURE A MONTHLY FORMS TO BE COMPLETED

Participant's personal details

No	First Name	Initials	Surname	ID number	Gender (F/M)	Disability (Y/N)	Education level	Start Date	End Date	Cell Number
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[illegible]

Participant's Registration Form 2 of 2

[illegible]

Registration and Business Form

Reference No	
Profile ID	
Project Name	
PROJECT DETAILS	
Project Name	
Project Reference Number	
Project description	
Project Start Date	
Project End Date	
Estimated Budget	
Project Location	
Province	
District/Metro Municipality	
Local Municipality/Metro Region	
Latitude (in decimal format)	
Longitude (in decimal format)	
PUBLIC BODY DETAILS	
Public body sphere	
Reporting public body that is the project owner (and will report on the project)	
Implementing public body type	
Public body that will implement the project	
IDP reference number allocated to the project	
EPWP DETAILS	
EPWP Sector	
EPWP Program	
EPWP Sub programme	
Budget Amount	
April 2014/March 2015	
April 2015/March 2016	
Total Budget Amount	
Wages	
UIF	
COIDA	

Training	
Administration	
Equipment and materials	
Other	
Describe other	
OUTPUTS AND TRAINING	
Output	
Description	
Target Quantity	
Number of persons to be trained	
CONTACT PERSON	
Title	
Initials	
First Name	
Surname	
Email	
Tel (Office)	
Fax Number	
Cell Number	
Physical Address 1	
Physical Address 2	
Physical Address 3	
Physical Address 4	
Postal Address 1	
Postal Address 2	
Postal Address 3	
Postal Address 4	

Beneficiary Details	
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[illegible]

[illegible]

Payment Upload	
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[illegible]

Training	
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[illegible]



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ANNEXURE B

OCCUPATIONAL HEALTH AND SAFETY SPECIFICATIONS

HEALTH AND SAFETY SPECIFICATION

KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN

1. HEALTH AND SAFETY SPECIFICATION

1.1 Scope

This Health & Safety Specification has been developed to address all aspects of occupational health and safety, as affected by the proposed construction work in accordance with the provisions in the Construction Regulations.

The specification provides the requirements that the Principle Contractor and other Contractors shall have to comply with to reduce the risks associated with the construction work to a level as low as reasonably practicable.

1.2 Introduction

In terms of Construction Regulation 5(1) (b) and (c) of the Occupational Health and Safety Act, No. 85 of 1993, the Client, or his Health and Safety Agent, is required to compile a Site-Specific Health & Safety Specification for any intended project and provide such specification to the Designer as well as to any prospective tenderers.

The Client's further duties are stipulated in Clause 3, and in the Construction Regulations, published in Government Gazette No 37305 of 2014. This specification has an objective to ensure that Principle Contractors and other Contractors entering in to a Contract with the Client, achieve an acceptable level of Occupational Health & Safety performance. This document forms an integral part of the Contract and Principle Contractors should make it part of any Contracts that they may have with Contractors and/or Suppliers.

Compliance with this document does not absolve the Principle Contractor and other Contractors from complying with minimum legal requirements. All Contractors remain responsible for the health & safety of his employees, persons other than his employees in terms of Section 9 of the Occupational Health and Safety Act, No. 85 of 1993 and those of his Mandatory's

1.3 General Occupational Health and Safety Provisions

1.3.1 Hazard Identification & Risk Assessment

1.3.1.1 *Development of Risk Assessments*

Every Contractor shall appoint a competent person in writing to perform a Risk Assessment before the commencement of any Construction work. This Risk Assessment shall form part of the Occupational Health and Safety Plan and be implemented and maintained as contemplated in Construction regulation 5(1).

The Risk Assessment shall include at least the following:

- the identification of the risks and hazards to which persons may be exposed to
- the analysis and evaluation of the identified risks and hazards
- a documented plan of safe work procedures to mitigate, reduce or control the risks and hazards that have been identified
- a monitoring plan, and
- a review plans
- material safety data sheets

Based on the Risk Assessments, the Contractor must develop a set of site-specific Occupational Health & Safety rules that will be applied to regulate the Occupational Health & Safety aspects of the construction. The Risk Assessments, together with the site-specific Occupational Health & Safety rules shall be submitted to the Client before mobilisation on site commences.

The Contractor is required to conduct a baseline Risk Assessment of the risks he anticipates encountering during the project. The baseline Risk Assessment must include the Standard Working Procedures (SWP) and the applicable Method Statements based on the Risk Assessments.

1.3.1.2 *Review of Risk Assessments*

The Contractor is to review the Hazard Identification, Risk Assessments and Safe Work Procedure's at each Production Planning and Progress Report meeting as the Contract work develops and progresses and each time changes are made to the designs, plans and construction methods and processes [monthly].

The Contractor shall provide the Client, other Contractors and all other concerned-parties with copies of any changes, alterations or amendments brought about by the above.

1.3.2 *Legal Requirements*

All Contractors entering into a Contract with the Client, shall, as a minimum, comply with the:

- Occupational Health & Safety Act and Regulations (Act 85 of 1993). **A current, up-to-date copy of the Occupational Health Safety Act shall be available on site always.**
- Compensation for Occupational Injuries & Diseases Act (Act 130 of 1993). The principle Contractor will be required to submit a letter of Registration and "good-standing" from the Compensation Insurer before being awarded the Contract. **A current, up-to-date copy of the Compensation for Occupational Injury and Diseases Act (COIDA) shall be available on site at all times.**
- The Client must determine the competency of Contractors/persons he allows (authorise) to enter such premises.

1.3.3 *Structure and Responsibilities*

1.3.3.1 *Overall Supervision and Responsibility for Occupational Health and Safety*

- The Client is to ensure that the Contractor, appointed in terms of Construction Regulation 5(1) (k), implements and maintains the agreed and approved Occupational Health & Safety Plan.
- The Chief Executive Officer of the Contractor, in terms of Section 16(1) of the Act, is to ensure that the Employer (as defined in the Act) complies with the Act. Annexure 5. "Audit System" may be used for this purpose.
- It is a requirement that the Contractor, when he appoints Contractors in terms of Construction Regulations 7 includes an Occupational Health & Safety Act Section 37(2) agreement ("Agreement with Mandatory") in his agreement with such Contractors.
- Every project must have an Occupational Health & Safety Act (85 /1993), Section 16(2) Appointee.
- The client must ensure that the contractor appoints a Construction Supervisor and Assistant Construction Supervisor in terms of Construction Regulation 8(8).

1.3.3.2 *Further (Specific) Supervision Responsibilities for Occupational Health & Safety*

The Contractor shall appoint designated competent employees and/or other competent persons as required by the Act and Regulations. The appointments shall be in writing and the responsibilities clearly stated together with the period for which the appointment is made. This information must be communicated and agreed with the appointees.

1.3.3.3 *Designation of Occupational Health & Safety Representatives (Section 18 of the Occupational Health & Safety Act)*

The Contractors shall ensure Occupational Health & Safety Representatives are appointed for every workplace where employees (including the employees of other Contractors) are exposed to risk.

Occupational Health & Safety Representatives have to be designated in writing and the designation must include the area of responsibility of the person and term of the designation.

The Contractor shall ensure that the designated OH&S Representatives conduct an inspection of their respective areas of responsibility using a checklist and report thereon.

Occupational Health & Safety representatives shall be included in accident/incident investigations and must attend all Occupational Health & Safety committee meetings.

1.3.4 *Administrative Controls and the Occupational Health & Safety File*

1.3.4.1 *The Occupational Health & Safety File*

As required by Construction Regulation 7(1)(b), the Principal Contractor and other Contractors will each keep an updated Occupational Health & Safety File on site containing the following documents as a minimum:

- Permit to construct Notification of Construction Work (Construction Regulations 4)
- Copy of Occupational Health & Safety Act (updated) (Gen Administrative Regulation 4)
- Proof of Registration and good standing with a COID Insurer (Construction Regulation 5(1) (j))
- Occupational Health & Safety Programme/Plan agreed with the Client including the underpinning Risk Assessment/s & Method Statements (Construction Reg 5(1)(q))
- Copies of Occupational Health & Safety Committee and other relevant Minutes
- Designs/drawings
- A list of Contractors including copies of the agreements between the parties (Section 37(2) agreement in terms of the OHS act) and the type of work being done by each Contractor
- Appointment/Designation forms (For example H&S rep, first aider etc.)
- Electrical Installations, -Equipment & -Appliances including temporary certificate of compliance
- All other applicable records

1.3.5 *OH&S Goals & Objectives & Arrangements for Monitoring & Review of Occupational Health and Safety Performance*

The Contractor is required to report all incidents to the Project Manager/Client. The Project manager must also submit an up to date report regarding all incidents to the Head, OHS.

1.3.6 *Notification of Construction Work*

The Contractors shall, where the Contract meets the requirements laid down in Construction Regulation 4, notify the Department of Labour at least 7 days before the commencement of work of the intention to carry out construction work.

A copy must be held on the Occupational Health & Safety File and included into the project file.

1.3.7 Training, Awareness and Competence

1.3.7.1 General Induction Training

All persons on site are to attend a general induction session presented by the Contractor.

All persons on the site shall be in possession of documentation/proof that they have undergone General Induction training.

The Contractor will be required to develop project specific induction training based on the Risk Assessments for the Contract work and train all employees and other Contractors and their employees in this.

1.3.7.2 Other Training

All operators, drivers and users of construction vehicles, mobile plant and other equipment (for example overhead cranes) shall be in possession of documentation proving that they have undergone training to operate said vehicles, plant and equipment.

All employees in jobs requiring training in terms of the Act and Regulations shall be in possession of valid proof of training as required in the portfolio of evidence of the contractor.

1.3.7.3 Awareness & Promotion

The Contractor is required to have scheme in place to promote an Occupational Health & Safety awareness and culture in employees. The following are some of the methods that may be used:

- Toolbox Talks
- Occupational Health & Safety Posters
- Videos
- Competitions
- Suggestion schemes
- Participative activities such as Occupational Health & Safety circles.

1.3.7.4 Competence

The Contractor shall ensure that all appointed staff is competent and that all training required to do the work safely and without risk to health, has been completed before work commences.

The Contractor shall ensure that follow-up and refresher training is conducted as the contract work progresses and the work situation change. Records of all training shall be kept on the Health & Safety file for auditing purposes.

1.3.8 Consultation, Communication and Liaison

Occupational Health & Safety Liaison between the Client, Principal Contractor, other Contractors, Designer and other concerned parties will be through the Client/Project Manager. In addition to the above, communication may be directly with the Client or his appointed Agent, verbally or in writing, as and when the need arises.

The Principle Contractor will be required to do Site Safety Audits with the Client/Project Manager on a basis to be determined between the two parties.

1.3.9 Checking, Reporting and Corrective Actions

3.3.9.1 Monthly Audit by Client (Construction Regulation 4(1)(d))

The **Client or his agent** will conduct minimum monthly audits to comply with Construction Regulation 5(1) (o) to ensure that the Contractor has implemented and is maintaining the agreed and approved Occupational Health & Safety Plan.

The Contractor is to conduct his own minimum monthly internal audits to verify compliance with his own Occupational Health & Safety plan.

The Occupational Health & Safety Representative is to conduct monthly inspections of their areas of responsibility and report thereon to their supervisor

All the results of the abovementioned inspections shall be in writing, reviewed, endorsed and placed on the Occupational Health & Safety File.

1.3.10 Incident Reporting and Investigation

1.3.10.1 Reporting of Accidents and Incidents

The Contractor shall report all incidents where an employee is injured on duty to the extent that he/she:

- dies
- becomes unconscious
- loses a limb or part of a limb
- is injured or becomes ill to such a degree that he/she is likely either to die or to suffer a permanent physical defect or likely to be unable for a period of at least 14 days either to work or continue with the activity for which he/she was usually employed

OR where:

- a major incident occurred
- the health or safety of any person was endangered
- where a dangerous substance was spilled
- the uncontrolled release of any substance under pressure took place
- machinery or any part of machinery fractured or failed resulting in flying, falling or uncontrolled moving objects
- machinery ran out of control

to the **Client** and to the Provincial Director of the Department of Labour forthwith (Section 24 of the Act & General Administrative Regulation 8.)

The Contractor is required to provide the **Client** with copies of all internal and external accident/incident investigation as well as all statutory reports required in terms of the Act within 7 days of the incident occurring.

1.3.10.2 Accident and Incident Investigation

The Contractor is responsible for the investigation of all accidents/incidents where employees and non-employees were injured to the extent that he/she/they had to be referred for medical treatment by a doctor, hospital or clinic and the results of the investigation shall be entered into the Accident/Incident Register.

The Contractor is responsible for the investigation of all minor, non-injury incidents and near misses. The Client reserves the right to hold its own investigation into an incident or call for an independent external investigation.

1.3.11 Operational Control

1.3.11.1 Emergency Preparedness, Contingency Planning and Response

The Contractor shall appoint a competent person to act as Emergency Coordinator.

The Contractor shall conduct an emergency identification exercise and establish what emergencies could possibly develop. He/she must then develop detailed contingency plans and emergency procedures.

1.3.11.2 **First Aid**

The Contractor shall provide relevant First Aid equipment and have qualified First Aider/s on site as required by General Safety Regulation 3 of the Occupational Health & Safety Act.

1.3.11.3 **Security**

The Contractor shall develop, implement and maintain Security- and Site Access Control rules and procedures throughout the construction period. Access control shall include the rule that non-employees will not be allowed on site unaccompanied.

1.3.11.4 **Fall Protection (Working in Elevated Positions)**

Any work undertaken at height above ground level higher than two metres or any floor level will be classified as "Work in Elevated Positions" and a pre-emptive Risk Assessment shall be carried out.

Workers working in elevated positions shall be trained to do this safely, without risk and compliant with legislation.

Risk Assessment shall take the possibility into account of persons falling through fragile material, skylights and other openings in the roof.

1.3.11.5 **Structures**

The Contractor shall ensure that:

- Steps are taken to ensure that no structure becomes unstable or collapses due to construction work being performed on it or in the vicinity of it
- No structure is overloaded to the extent where it becomes unsafe
- He/she has received from the designer the following information:
- Information on known or anticipated hazards relating to the construction work and the relevant information required for the safe execution of the construction work.
- A geo-scientific report (where applicable)
- The loading the structure is designed to bear
- The methods and sequence of the construction process
- All drawings pertaining to the design are on site and available for inspection

1.3.11.6 **Temporary Works**

Temporary work shall be carried out under the supervision of a competent person designated in writing to do so.

All drawings pertaining to the temporary work shall be kept available on site. A competent person shall check all equipment used in the erection of temporary work before it is used.

1.3.11.7 **Access Scaffolding**

Access Scaffolding shall be erected, used and maintained safely in accordance with Construction Regulation 16 and SA Bureau of Standards Code of Practice, SANS 085 entitled, "The Design, Erection, Use & Inspection of Access Scaffolding.

Detailed consideration shall be given to all scaffolding to ensure that it is properly planned to meet the working requirements.

Scaffolding may only be erected, altered or dismantled by a person who has adequate training and experience in this type of work or under the supervision of such a person (Proof of competence to be put on the OHS File).

1.3.11.8 **Construction Vehicles & Mobile Plant (CV&MP)**

All Construction Vehicles and Mobile Plant shall be inspected by the Contractor prior to being allowed on a project site and suppliers of hired vehicles, plant and equipment will be required to comply with this specification as well as the Occupational Health & Safety Act and Regulations.

No unauthorised persons are to be allowed to drive CV&MP. Operators/drivers of CV&MP shall be competent to operate the equipment safely and be in possession of a valid medical certificate issued by an Occupational Medicine Practitioner testifying that the holder is physically and psychologically fit to operate the equipment.

1.3.11.9 Electrical Installations

Temporary electrical installations shall be carried out by competent persons, and controlled by a competent person that has been appointed to do so in writing, in accordance with Construction Regulation 24 and the Electrical Installation Regulations. Temporary electrical installations shall be inspected at least once per week by a competent person and a record of the inspections kept in the Occupational Health & Safety File.

The Contractor shall ensure that:

- existing electrical services are located and marked before construction commences and during the progress thereof. Where this is not possible, workers with jackhammers etc. are to be protected against electric shock by the use of suitable protective equipment like insulated handles, rubber mats etc.
- electrical installations and -machinery are sufficiently robust to withstand working conditions on site.
- all electrical machinery used on site are inspected before start-up on a daily basis by a competent person and that a record of the inspection is kept in the Occupational Health & Safety File.

An electrical and mechanical lock-out procedure for the construction site shall be developed by the Principle Contractor and submitted for approval by the Project Manager before construction commences. This lock-out procedure shall be adhered to by all Contractors on site.

1.3.11.10 Housekeeping

The Contractor shall ensure that good housekeeping practises are implemented so that:

- an unimpeded work space is maintained for every employee.
- the walls and roof of every indoor workplace is sound and leak-free.
- every workplace is kept clean, orderly and free of tools and materials that is not required for the work being done.
- every floor, walkway, stair, passage and gangway is kept in a good state of repair, skid-free and free of obstruction, waste and materials.
- catch platforms or -nets are erected over entry and exit ways or over places where persons are working to prevent them being struck by falling objects.
- openings in floors, hatchways, stairways and open sides of floors or buildings are barricaded, fenced, boarded over or provided with protection to prevent persons from falling through or off them.
- materials and equipment are stored properly.
- materials ready for use is placed safely and not allowed to accumulate or cause an obstruction to pedestrian and vehicular traffic.
- Scrap, waste and debris is removed regularly and in a safe manner.
- construction sites are fenced off to prevent entry by unauthorised persons.

1.3.11.11 **Eating-, Changing-, Washing- and Toilet Facilities**

Eating facilities should be provided in a location that is sheltered from the elements. Adequate changing-, washing – and toilet facilities shall be provided for both sexes. At least 1 shower per 15 workers and 1 toilet per 30 workers shall be provided. Chemical toilets may be used instead of the water borne sewerage type.

1.3.11.12 **Personal & Other Protective Equipment**

The Contractor shall identify the hazards in the workplace and endeavour to eliminate them. Where this is not possible, suitable steps shall be taken to protect workers from these hazards. Engineering- and other solutions to mitigate the hazard(s) should be attempted before the issue of **personal protective equipment (PPE)** is considered.

The Contractor is required to inform employees of health and safety hazards and issue them with suitable equipment to protect them from these hazards. It is a further requirement that the Contractor maintains the equipment and instructs and train employees in the use of the equipment. Employees do not have the right to refuse to use/wear safety equipment.

1.3.11.13 **Portable Electrical Tools & Equipment**

Portable electrical tools and equipment is defined as units taking electrical power from 220Volt 15 Amp power outlets and is moved around the workplace to perform work like drilling, sawing, grinding etc. and also include portable lights. Electrical appliances, on the other hand, include items like fridges, stoves and heaters.

1.3.11.14 **Public Health & Safety**

The Contractor is responsible for ensuring that non-employees affected by the construction work, like visitors, the surrounding community and passers-by, are made aware of the dangers likely to arise from the construction work as well as the precautionary measures to be observed to avoid or minimise these dangers. Appropriate signage must be posted to this effect and all employees on site shall be instructed to ensure that non-employees are protected at all times. All non-employees entering the site must receive induction into the hazards and risks and the control measures.

CONSTRUCTION OCCUPATIONAL HEALTH - SAFETY – RISK ASSESSMENT

Denotes items applicable to both Construction sites and Contractors Plant/Storage Yards

ELEMENT	REMARKS
1. Administrative & Legal Requirements	<ul style="list-style-type: none"> • Dept. of labour will be notified – Annexure 2 • Updated copy of OHS Act will be available on site • All legally required appointments will be made as specified in the OHS Act and Construction Regulations • Site specific health and safety specification will be drawn up and provided to all prospective tendering contractors • Site specific risk assessment will be conducted and monitored and reviewed on a regular basis • Written proof of registration and good standing of contractor with COID will be obtained • Health and safety committee will be established and meetings conducted • All contractors will be required to enter into a Section 37(2) agreement • All incidents/accidents will be reported and investigated as required • Detailed and site-specific fall protection plan will be drawn up and implemented – Employees fitness to work at heights will be determined and records kept • Cherry pickers will be load tested and valid load test certificates will be kept on file – Regular safety inspections by competent persons done and records kept • Only persons medically tested in the form of Annexure 3 of the Construction Regulations and declared medically fit for the type of construction work to be done will be allowed to work on site • All excavations will be inspected by a competent person before every shift as required, edges will be sloped to at least the angle of repose, the excavations will be substantially barricaded and egress will be provided at least every 6 metres • Demolition work will be carried out under the supervision of a competent person, detailed and site specific risk assessment will be carried out and engineering survey and method statement will be available on site

	<ul style="list-style-type: none"> • Inspections to prevent premature collapse will be carried out by competent person before each shift. Inspection register kept • Cranes/Lifting Machines & equipment will be operated under the supervision of a competent person • Valid load test certificates and 3 monthly inspection records of all lifting tackle will be kept on site • Emergency and fire protection plan will be drawn up and displayed, emergency teams trained and available • All the legally required first aid equipment will be provided and clearly located - Trained and qualified first aiders available on site • Assessment will be conducted to determine the personal protective equipment requirements, all equipment issued free of charge and the wearing of the equipment will be strictly enforced • Gas welding/cutting equipment only used by competent persons and equipment placed on register and inspected regularly to ensure its safety • Alphabetical list of all chemicals on site will be drawn up and material safety data sheets for all hazardous substances obtained – first aiders will be trained in the correct first aid measures to be taken in case of injury or illness caused by hazardous chemicals • All construction vehicles will be inspected daily before start up and only operated by operators who are competent and medically fit to do so
2. Education, Training & Promotion	<ul style="list-style-type: none"> • All employees entering the site will be required to undergo a site specific health and safety induction training programme – A copy of the site rules will also be made available to them • Relevant employees will receive specific safety training such a training in the safe work procedures for plant, equipment and substances they are required to use • All visitors to the site will be given induction training and will only be allowed on the site if they are accompanied by a member of the site staff • Specific training will include inter alia first aid training, general safety training, firefighting training, operator training

3. Public Safety & Emergency Preparedness	<ul style="list-style-type: none"> • Signage will be used to limit access to the site – “No unauthorised entry”, “Visitors to report to site office” and other relevant signage will be used • General signage warning of overhead work and other hazards on site will be deployed • Netting or other measures will be used to protect persons from falling objects • Security measures such as patrols to prevent unauthorised entry as well as an entry register will placed in use
4. Personal Protective Equipment	<ul style="list-style-type: none"> • Assessment will be conducted to determine the personal protective equipment required on site • All equipment will be issued free of charge and the wearing thereof strictly enforced – this will also count for visitors to the site
5. Housekeeping	<ul style="list-style-type: none"> • Removal of rubble will form part of the project – Rubble to be crushed and removed by truck to predetermined dump site • High standards of housekeeping will be enforced on all contractors
6. Scaffolding, Formwork & Support work	All legal requirements to be addressed and adhered to
7. Ladders	All legal requirements to be addressed and adhered to
8. Electrical Safeguarding	All legal requirements to be addressed and adhered to
9. Emergency/Fire Prevention & Protection	<ul style="list-style-type: none"> • Sufficient firefighting equipment will be provided, correctly located and clearly signposted • Emergency plan will be formulated for evacuation and published
10. Excavations & Demolition	<ul style="list-style-type: none"> • Demolition work will be carried out under the supervision of a competent person, detailed and site specific risk assessment will be carried out and engineering survey and method statement will be available on site • Inspections to prevent premature collapse will be carried out by competent person before each shift. Inspection register kept • All excavations will be inspected by a competent person before every shift as required, edges will be sloped to at least the angle of repose, the excavations will be substantially barricaded and egress will be provided at least every 6 metres

	<ul style="list-style-type: none"> All excavations will be inspected by a competent person before every shift as required, edges will be sloped to at least the angle of repose, the excavations will be substantially barricaded and egress will be provided at least every 6 metres
11. Tools	<ul style="list-style-type: none"> All hand tools will be in good condition and will be inspected regularly for safety – Findings will be entered into a register kept for this purpose
12. Cranes	<ul style="list-style-type: none"> Cranes/Lifting Machines & equipment will be operated under the supervision of a competent person Valid load test certificates and 3 monthly inspection records of all lifting tackle will be kept on site
13. Personnel & Material Hoists	<ul style="list-style-type: none"> Cherry pickers will be load tested and valid load test certificates will be kept on file – Regular safety inspections by competent persons done and records kept – Only persons medically tested for physical and psychological fitness and declared competent will be allowed to work on cherry pickers
14. Transport & Materials Handling	<ul style="list-style-type: none"> All construction vehicles will be inspected daily before start up and only operated by operators who are competent and medically fit to do so
15. Site Plant & Machinery	<ul style="list-style-type: none"> All construction vehicles will be inspected daily before start up and only operated by operators who are competent and medically fit to do so
16. Plant & Storage Yards/Site Workshops Specifics	<ul style="list-style-type: none"> Good housekeeping practices and environmental protection to be practiced as far as is reasonably practicable
17. Health & Hygiene	<ul style="list-style-type: none"> All hygiene facilities such as toilets, eating areas, change rooms and the like will be provided in line with the Facilities Regulations and the Construction Regulations and will be kept in a clean and hygienic condition

1. ADMINISTRATIVE & LEGAL REQUIREMENTS

OHS ACT SECTION / REGULATION	SUBJECT	REQUIREMENTS	YES / NO
Construction. Regulation 4	Notice of carrying out Construction work	Department of Labour notified Copy of Notice available on Site	Yes
General Admin. Regulation 4	*Copy of OH&S Act (Act 85 of 1993)	Updated copy of Act & Regulations on site. Readily available for perusal by employees.	Yes
COID Act Section 80	*Registration with Compensation Insurer	Written proof of registration/Letter of good standing available on Site	Yes
Construction. Regulation 5, 6 & 7	A.1.1 OH&S Specification & Programme	OH&S Spec received from Client OH&S programmed developed Updated regularly	Yes
Section 8(2)(d) Construction. Regulation 5, 6 & 7	A.1.2 *Hazard Identification & Risk Assessment	Hazard Identification carried out/Recorded Risk Assessment and – Plan drawn up/Updated RA Plan available on Site Employees/Sub-Contractors informed/trained	Yes
Section 16(2)	*Assigned duties (Managers)	Responsibility of complying with the OH&S Act assigned to other person/s by CEO.	Yes
Construction. Regulation 7	Designation of Person Responsible on Site	Competent persons appointed in writing as Construction Managers and Supervisors	Yes
Section 17 & 18 General Administrative Regulations 6 & 7	*Designation of Occupational Health & Safety Representatives	More than 20 employees - one OH&S Representative, one additional OH&S Rep. for each 50 employees or part thereof. Designation in writing, period and area of responsibility specified. Meaningful OH&S Rep. reports. Reports actioned by Management.	Yes
Section 19 & 20 General Administrative Regulations 5	*Occupational Health & Safety Committee/s	OH&S Committee/s established. Members appointed in writing. Meetings held monthly. Minutes kept. Actioned by Management.	Yes
Section 37(1) & (2)	*Agreement with Mandataries/ Sub-Contractors	Written agreement with(Sub- Contractors) List of (Sub-) Contractors displayed. Proof of Registration with Compensation Insurer/Letter of Good Standing Construction Supervisor designated Written arrangements re. OH&S Reps & OH&S Committee Written arrangements re. First Aid	Yes

Section 24 & General Admin. Regulation 8 COID Act Sect.38, 39 & 41	*Reporting of Incidents (Dept. of Labour)	Incident Reporting Procedure displayed. All incidents in terms of Sect. 24 reported to the Provincial Director, Department of Labour, within 3 days. (Annexure 1)(WCL 1 or 2) Cases of Occupational Disease Reported Copies of Reports available on Site Record of First Aid injuries kept	Yes
General Admin Regulation 9	*Investigation and Recording of Incidents	All injuries which resulted in the person receiving medical treatment other than first aid, recorded and investigated by investigator designated in writing. Copies of Reports (Annexure 1) available on Site Tabled at OH&S Committee meeting Action taken by Site Management.	Yes
Construction. Regulation 10	Fall Prevention & Protection	Competent person appointed to draw up and supervise the Fall Protection Plan Proof of appointees competence available on Site Risk Assessment carried out for work at heights Fall Protection Plan drawn up/updated Available on Site	Yes
Construction. Regulation 10(5)	A.1.3 Roof work	Competent person appointed to plan & supervise Roof work. Proof of appointees competence available on Site Risk Assessment carried out Roof work Plan drawn up/updated Roof work inspect before each shift. Inspection register kept Employees medically examined for physical & psychological fitness. Written proof on site	Yes
Construction. Regulation 11	Structures	Information re. the structure being erected received from the Designer including: - geo-science technical report where relevant - the design loading of the structure - the methods & sequence of construction - anticipated dangers/hazards/special measures to construct safely Risk Assessment carried out Method statement drawn up All above available on Site Structures inspected before each shift. Inspections register kept	Yes

Construction. Regulation 12	Temporary work	<p>Competent person appointed in writing to supervise erection, maintenance, use and dismantling of Support & Formwork</p> <p>Design drawings available on site</p> <p>Risk Assessment carried out</p> <p>Support & Formwork inspected:</p> <ul style="list-style-type: none"> - before use/inspection - before pouring of concrete - weekly whilst in place - before stripping/dismantling. Inspection register kept 	Yes
Construction. Regulation 16	A.1.4 Scaffolding	<p>Competent persons appointed in writing to:</p> <ul style="list-style-type: none"> - erect scaffolding (Scaffold Erector/s) - act as Scaffold Team Leaders - inspect Scaffolding weekly and after inclement weather (Scaffold Inspector/s) <p>Written Proof of Competence of above appointees available on Site</p> <p>Copy of SABS 085 available on Site</p> <p>Risk Assessment carried out</p> <p>Inspected weekly/after bad weather. Inspection register/s kept</p>	Yes
Construction. Regulation 17	A.1.5 Suspended Platforms	<p>Competent persons appointed in writing to:</p> <ul style="list-style-type: none"> - control the erection of Suspended platforms - act as Suspended platforms Team Leaders - inspect Suspended Scaffolding weekly and after inclement weather <p>Risk Assessment conducted.</p> <p>Certificate of Authorisation issued by a registered professional engineer available on Site and a copy forwarded to the Department of Labour.</p> <p>The following inspections of the whole installation carried out by a competent person</p> <ul style="list-style-type: none"> - after erection and before use - daily prior to use. <p>Inspection register kept</p> <p>The following tests to be conducted by a competent person:</p> <ul style="list-style-type: none"> - load test of whole installation and working parts every 12 months - hoisting ropes/hooks/load attaching devices quarterly. <p>Tests log book kept.</p> <p>Employees working on Suspended Platform shall be medically examined for physical & psychological fitness and written proof thereof shall be available.</p>	Yes

Construction. Regulation 13	A.1.6 Excavations	Competent person/s appointed in writing to supervise and inspect excavation work Written Proof of Competence of above appointee/s available on Site Risk Assessment carried out Inspected: - before every shift - after any blasting - after an unexpected fall of ground - after any substantial damage to the shoring - after rain. Inspections register kept Method statement developed where explosives will be/ are used	Yes
Construction. Regulation 14	A.1.7 Demolition Work	Competent person/s appointed in writing to supervise and control Demolition work Written Proof of Competence of above appointee/s available on Site Risk Assessment carried out Engineering survey and Method Statement available on Site Inspections to prevent premature collapse carried out by competent person before each shift. Inspection register kept	Yes
Construction. Regulation 19	A.1.8 Materials Hoist	Competent person appointed in writing to inspect the Material Hoist Written Proof of Competence of above appointee available on Site. Materials Hoist to be inspected weekly by a competent person. Inspections register kept.	Yes
Construction. Regulation 22/ Driven Machinery Regulations 18 & 19	A.1.9 Cranes & Lifting Machines Equipment	Competent person appointed in writing to inspect Cranes, Lifting Machines & Equipment. Written Proof of Competence of above appointee available on Site. Cranes & Lifting tackle identified/numbered Register kept for Lifting Tackle Log Book kept for each individual Crane Inspection: - All cranes - daily by operator - Tower Crane/s - after erection/6monthly - Other cranes - annually by comp. person - Lifting tackle(slings/ropes/chain slings etc.) - 3 Monthly	Yes

Construction. Regulation 24/Electrical Machinery Regulations 9 & 10/ Electrical Installation Regulations	*Inspection & Maintenance of Electrical Installation & Equipment (including portable electrical tools)	Competent person appointed in writing to inspect/test the installation and equipment. Written Proof of Competence of above appointee available on Site. Inspections: - Electrical Installation & equipment inspected after installation, after alterations and quarterly. Inspection Registers kept Portable electric tools and -lights and extension leads identified/numbered. Monthly visual inspection by User/Issuer/Storeman. Register kept.	Yes
Construction. Regulation 28/ General Safety Regulation 8(1)(a)	*Designation of Stacking & Storage Supervisor.	Competent Person/s with specific knowledge and experience designated to supervise all Stacking & Storage Written Proof of Competence of above appointee available on Site	Yes
Construction. Regulation 29/ Environmental Regulation 9	A.1.10 *Designation of a Person to Co-ordinate Emergency Planning A.1.11 And Fire Protection	Person/s with specific knowledge and experience designated to co-ordinate emergency contingency planning and execution and fire prevention measures Emergency Evacuation Plan developed: - Drilled/Practiced - Plan & Records of Drills/Practices available on Site Fire Risk Assessment carried out All Fire Extinguishing Equipment identified and on register . Inspected weekly. Inspection Register kept Serviced annually	Yes
General Safety Regulation 3	*First Aid	Every workplace provided with sufficient number of First Aid boxes. (Required where 5 persons or more are employed) First Aid freely available Equipment as per the list in the OH&S Act. One qualified First Aider appointed for every 50 employees. (Required where more than 10 persons are employed) List of First Aiders and Certificates Name of person/s in charge of First Aid box/es displayed. Location of F/Aid box/es clearly indicated. Signs instructing employees to report all Injuries/illness including first aid injuries.	Yes
General Safety Regulation 2	Personal Safety Equipment (PSE)	PSE Risk Assessment carried out Items of PSE prescribed/use enforced Records of Issue kept Undertaking by Employee to use/wear PSE	Yes

General Safety Regulation 9	*Inspection & Use of Welding/Flame Cutting Equipment	Competent Person/s with specific knowledge and experience designated to Inspect Electric Arc, Gas Welding and Flame Cutting Equipment Written Proof of Competence of above appointee available on Site Equipment identified/numbered and entered into a register Equipment inspected monthly. Inspection Register kept	Yes
Hazardous Chemical Substances (HCS) Regulations Construction Regulation 29	*Control of Storage & Usage of HCS and Flammables	Competent Person/s with specific knowledge and experience designated to Control the Storage & Usage of HCS (including Flammables) Written Proof of Competence of above appointee available on Site Risk Assessment carried out Register of HCS kept/used on Site	Yes
Vessels under Pressure Regulations	Vessels under Pressure (VUP)	Competent Person/s with specific knowledge and experience designated to supervise the use, storage, maintenance, statutory inspections & testing of VUP's Written Proof of Competence of above appointee available on Site Risk Assessment carried out Certificates of Manufacture available on Site Register of VUP's on Site Inspections & Testing by Approved Inspection Authority (AIA): <ul style="list-style-type: none"> - after installation/re-erection or repairs - every 36 months. - Register/Log kept of inspections, tests. Modifications & repair 	
Construction. Regulation 23	Construction Vehicles & Earth Moving Equipment	Operators/Drivers appointed to: <ul style="list-style-type: none"> - Carry out a daily inspection prior to use - Drive the vehicle/plant that he/she is competent to operate/drive Written Proof of Competence of above appointee available on Site Record of Daily inspections kept	Yes
General Safety Regulation 13A	*Inspection of Ladders	Competent person appointed in writing to inspect Ladders Ladders inspected at arrival on site and monthly thereafter. Inspections register kept	Yes
General Safety regulation 13B	A.1.12 Ramps	Competent person appointed in writing to Supervise the erection & inspection of Ramps. Inspection register kept.	N/A

2. EDUCATION & TRAINING

SUBJECT	REQUIREMENT	YES / NO
*Company OH&S Policy Section 7(1)	Policy signed by CEO and published/Circulated to Employees Policy displayed on Employee Notice Boards Management and employees committed.	Yes
*Company/Site OH&S Rules (Section 13(a))	Rules published Rules displayed on Employee Notice Boards Rules issued and explained to employees: written proof Follow-up to ensure employees understand/adhere to the rules.	Yes
*Induction & Task Safety Training (Section 13(a))	All new employees receive OH&S Induction Training. Training includes Task Safety Instructions. Employees acknowledge receipt of training. Follow-up to ensure employees understand/adhere to instructions.	Yes
*General OH&S Training (Section 13(a))	All employees receive basic OH&S training: written proof Operators of Plant & Equipment receive specialised training Follow-up to ensure employees understand/adhere to instructions.	Yes
*Occupational Health & Safety Promotion	<u>Incident Experience Board indicating e.g.</u> Number of hours and days worked without an Injury Star Grading - Board kept up to date. Safety Posters displayed & changed regularly Employee Notice Board for OH&S Notices. Site OH&S Competition. Company OH&S Competition. Participation in Regional OH&S Competition. Suggestion scheme.	Yes

3. PUBLIC SAFETY, SECURITY MEASURES & EMERGENCY PREPAREDNESS

SUBJECT	REQUIREMENT	YES /NO
*Notices & Signs	<p>Notices & Signs at entrances / along perimeters indicating “No Unauthorised Entry”. Notices & Signs at entrance instructing visitors and non - employees what to do, where to go and where to report on entering the site/yard with directional signs. e.g. “Visitors to report to Office” Notices & Signs posted to warn of overhead work and other hazardous activities. e.g. General Warning Signs</p>	Yes
SUBJECT	REQUIREMENT	YES /NO
Site Safeguarding	Nets, Canopies, Stulls, Fans etc. to protect members of the public passing / entering the site.	Yes
*Security Measures	<p>Access control measures/register in operation Security patrols after hours/weekends Sufficient lighting after dark Guard has access to telephone/other means of emergency communication</p>	Yes
*Emergency Preparedness	<p>Emergency contact numbers displayed near Telephone Emergency Evacuation instructions posted up on all notice boards (including employees' notice boards) Emergency contingency plan available on site/in yard Doors open outwards/unobstructed Emergency alarm audible all over (including in toilets)</p>	Yes
*Emergency Drill & Evacuation	<p>Adequate No. of employees trained to use Fire Equipment. Emergency Evacuation Plan available displayed and practised.</p>	Yes

4. PERSONAL PROTECTIVE EQUIPMENT

Subject	Requirement	Yes/No
*PPE needs analysis	Need for PPE identified and prescribed in writing.	Yes
*Head Protection	All persons on site wearing Safety Helmets including Sub-contractors and Visitors (where prescribed)	Yes
*Foot Protection	All persons on site wearing Safety Footwear including Gumboots for concrete / wet work and non-slip shoes for roof work.	Yes
*Eye and Face Protection	<u>Eye and Face Protection</u> (Goggles, Face Shields, Welding Helmets etc.) used when operating the following: * Cable jointing (lead sweating only) * Jack/ Kango Hammers * Angle / Bench Grinders * Electric Drills (Overhead work into concrete / cement / bricks * Explosive Powered tools * Concrete Vibrators / Pokers * Hammers & Chisels * Cutting / Welding Torches * Arc Welding Equipment * Skill / Bench Saws * Spray Painting Equipment etc.	Yes
*Hearing Protection	<u>Hearing Protectors</u> (Muffs, Plugs etc.) used when operating the following: * Jack / Kango Hammers * Explosive Powered Tools * Wood/Aluminium Working Machines e.g. saws, planers, routers	Yes
*Hand Protection	<u>Protective Gloves</u> worn by employees handling / using: using: * Cable jointing * Cement / Bricks / Steel / Chemicals * Welding Equipment * Hammers & Chisels * Jack / Kango Hammers etc.	Yes

*Respiratory Protection	Suitable/efficient <u>Respirators</u> worn correctly by employees handling / using: * Cable jointing (lead fumes) * Dry cement * Dusty areas * Hazardous chemicals * Angle Grinders * Spray Painting etc.	Yes
*Fall Prevention Equipment	Suitable <u>Safety Belts</u> / Fall Arrest Equipment correctly used by persons working on / in unguarded, elevated positions e.g.: * Scaffolding * Riggers * Lift shafts * Edge work * Ring beam edges etc. Other methods of fall prevention applied e.g. catch nets	Yes
*Protective Clothing	All jobs requiring protective clothing (Overalls, Rain Wear, Welding Aprons etc.) Identified and clothing worn. Fire retardant and flash proof clothing for all work inside a substation.	Yes
*PPE Issue & Control	Identified Equipment issued free of charge. All PPE maintained in good condition. (Regular checks). Workers instructed in the proper use & maintenance of PPE. Commitment obtained from wearer accepting conditions and to wear the PPE. Record of PPE issued kept on file.	Yes

5. HOUSEKEEPING

[illegible]

6. WORKING AT HEIGHTS (including Roof work)

Subject	Requirement	Yes/No
Openings	Unprotected openings adequately guarded/fenced/barricaded/catch nets installed	Yes
	Roof work discontinued when bad/hazardous weather Fall protection measures (including warning notices) when working close to edges or on fragile roofing material Covers over openings in roof of robust construction/secured against displacement	Yes

7. SCAFFOLDING / FORMWORK / SUPPORT WORK

Subject	Requirement	Yes/No
Access/System Scaffolding	Foundation firm / stable Sufficient bracing. Tied to Structure/prevented from side or cross movement Platform boards in good condition/sufficient/secured. Handrails and toe boards provided. Access ladders / stairs provided. Area/s under scaffolding tidy. Safe/unsafe for use signs Complying with OH&S Act/SABS 085	Yes
Free Standing Scaffolding	Foundation firm / stable Sufficient bracing. Platform boards in good condition/sufficient/secured. Handrails and toe boards provided. Access ladders / stairs provided. Area/s under scaffolding tidy. Safe/unsafe for use signs Height to base ratio correct Outriggers used /tied to structure where necessary Complying with OH&S Act/SABS 085	Yes

*Mobile Scaffolding	Foundation firm / stable Sufficient bracing. Platform boards in good condition/sufficient/secured. Handrails and toe boards provided. Access ladders / stairs provided. Area/s under scaffolding tidy. Safe/unsafe for use signs	Yes
*Mobile Scaffolding	Wheels / swivels in good condition Brakes working and applied. Height to base ratio correct. Outriggers used where necessary Complying with OH&S Act/SABS 085	Yes
Suspended Scaffolding	Outriggers securely supported and anchored. Correct No. of steel wire ropes used. Platform as close as possible to the structure. Handrails on all sides All winches / ropes / cables / brakes inspected regularly. Scaffolding complies with OHS Act (Act 85/93) Winches maintained by competent person	Yes
Temporary Work	All components in good condition. Foundation firm / stable. Adequate bracing / stability ensured. Good workmanship / uprights straight and plumb. Good cantilever construction. Safe access provided. Areas under support work tidy. Same standards as for system scaffolding.	Yes
Special Scaffolding	Special Scaffolding e.g. Cantilever, Jib and Truss-out scaffolds erected to an acceptable standard and inspected by specialists.	Yes
Edges & Openings	Edges barricaded to acceptable standards. Manhole openings covered / barricaded. Openings in floor / other openings covered, barricaded/fenced. Stairs provided with handrails. Lift shafts barricaded / fenced off.	Yes

8. LADDERS

Subject	Requirement	Yes/No
*Physical Condition / Use & Storage	Stepladders - hinges/stays/braces/stiles in order. Extension ladders - ropes/rungs/stiles/safety latch/hook in order. Extension / Straight ladders secured or tied at the bottom / top. No joined ladders used All ladders stored on hooks / racks and not on ground. Ladders protrude 900 mm above landings / platforms / roof. Fixed ladders higher than 5 m have cages/Fall arrest system	Yes

9. ELECTRICITY

Subject	Requirement	Yes/No
*Electrical Distribution Boards & Earth Leakage	Colour coded / numbered / symbolic sign displayed. Area in front kept clear and unobstructed. Fitted with inside cover plate / openings blanked off / no exposed "live" conductors / terminals/Door kept close Switches / circuit breakers identified. Earth leakage protection unit fitted and operating. Tested with instrument: Test results within 15 – 30 milli-amps Aperture/Opening/s provided for the plugging in and removal of extension leads without the need to open the door	Yes
*Electrical Installations & Wiring	Temporary wiring / extension leads in good condition / no bare or exposed wires. Earthing continuity / polarity correct: " Brown is live, Blue is not, Green and Yellow earth the lot" Cables protected from mechanical damage and moisture. Correct loading observed e.g. no heating appliance used from lighting circuit etc. Light fittings/lamps protected from mechanical damage/moisture.	Yes
*Physical condition of Electrical Appliances & Tools	Electrical Equipment and Tools: (includes all items plugging in to a 15 Amp supply socket) Insulation / casing in good condition. Earth wire connected/intact where not of double insulated design Double insulation mark where no earth wire. Cord in good condition/no bare wires/secured to machine & plug. Plug in good condition, connected correctly and correct polarity.	Yes

10. EMERGENCY/FIRE PREVENTION AND PROTECTION

Subject	Requirement	Yes/No
*Fire Extinguishing Equipment	Fire Risks Identified and on record <u>Fire Extinguishing Equipment available for:</u> * Offices * General Stores * Flammable Store * Fuel Storage Tank/s * Gas Welding / Cutting operations * Where flammable substances are being used / applied.	Yes
*Maintenance	Fire equipment serviced minimum annually/preferably 6 monthly	Yes
*Location & Signs	<u>Fire Extinguishing Equipment:</u> * Clearly visible * Unobstructed * Sign posted including "No Smoking" / "No Naked Lights" where required. (Flammable store, Gas store, Fuel tanks etc.)	Yes
* Storage Issue & Control of Flammables (incl. Gas cylinders)	Storage Area provided for flammables with suitable doors, ventilation, bund etc. Flammable store neat / tidy and no Class A combustibles. Decanting of flammable substances carried out in ignition free and adequately ventilated area. Container bonding principles applied Only sufficient quantities issued for one day's usage Special gas cylinder store/storage area. Gas Cylinders stored / used / transported upright and secured in trolley/cradle/structure and ventilated. Types of Gas Cylinders identified/stored separately Full cylinders stored separately from empty cylinders	Yes
*Storage, Issue & Control of Hazardous Chemical Substances (HCS)	HCS storage principles applied: products segregated Provision made for leakage/spillage containment Emergency showers/eye wash facilities provided HCS under lock & key controlled by designated person Decanted/issued in containers with information/warning labels Disposal of unwanted HCS by recognised disposal agent	Yes

11. EXCAVATIONS

Subject	Requirement	Yes/No
Excavations deeper than 1.5 m.	Shored / Braced to prevent caving / falling in. Provided with an access ladder. Excavations guarded/barricaded/lighted after dark in public areas Soil dumped at least 1 m away from edge of excavation On sloping ground soil dumped on lower side of excavation	Yes

12. TOOLS

Subject	Requirement	Yes/No
*Hand Tools	<u>Shovels / Spades / Picks:</u> * Handles free from cracks and splinters * Handles fit securely * Working end sharp and true <u>Hammers:</u> * Good quality handles, no pipe or reinforcing steel handles. * Handles free from cracks and splinters Handles fit securely <u>Chisels:</u> * No mushroomed heads / heads chamfered * Not hardened * Cutting edge sharp and square <u>Saws:</u> * Teeth sharp and set correctly * Correct saw used for the job	Yes
*Explosive Powered Tools.	Only used by trained / authorised personnel. Prescribed warning signs placed / displayed where tool is in use. Inspected at least monthly by competent person and results recorded. Issue and return recorded including cartridges / nails and unused cartridges / nails / empty shells recorded. Cleaned daily after use.	Yes

13. CRANES

Subject	Requirement	Yes/No
Tower Crane	Only operated by trained authorised operator with valid certificate of training Structure - no visible defects Electrical installation good/safe Crane hook: Throat pop marked/safety latch fitted/functional SWL/MML displayed Limit switches fitted/operational Access Ladder fitted with backrests/Fall arrest system installed Lifting tackle in good condition/inspection colour coding current	Yes
*Mobile Crane	Only operated by trained authorised operator with valid certificate of training Rear view mirrors Windscreen visibility good Windscreen wipers operating effectively Indicators operational Hooter working Tyres safe/sufficient tread/pressure visibly sufficient No missing Wheel nuts Headlights, taillights operational Grease nipples and grease on all joints No Oil leaks Hydraulic pipes visibly sound/no leaks No corrosion on Battery terminals Boom visibly in good condition/no apparent damage Cable/sheaves greased/no visible damage/split wires/corrosion Brakes working properly Crane hook: Throat pop marked/safety latch fitted/functional SWL/MML displayed By-pass valves operational Deflection chart displayed/visible to operator/driver Outriggers functional used	Yes
*Gantry Crane	Only operated by trained authorised persons Correct slinging techniques used Recognised/displayed on chart signals used Log book kept/up to date Prescribed inspections conducted on crane & lifting tackle "Crane overhead" signage, where applicable Crane hook: Throat pop marked/safety latch fitted/functional SWL/MML displayed/load limiting switches fitted/operational	Yes

14. BUILDER'S HOIST

Subject	Requirement	Yes/No
Builder's Hoist	<p>"Hoist In Operation" - sign displayed.</p> <p>General construction strong and free from patent defects.</p> <p><u>Tower:</u> * Adequately secured / braced.</p> <p>* At least 900 mm available for over travel.</p> <p>* Barricaded at least 2 100 mm high at ground level and floors.</p> <p>* Landing place provided with gate at least 1 800 high.</p> <p><u>Platform:</u> * No persons conveyed on platform</p> <p>* Steel wire ropes with breaking strain of six times max. weight.</p> <p>* Signal systems used.</p> <p>* Goods prevented from moving / falling off.</p> <p>* Effective brake capable of holding max. weight.</p>	Yes

15. TRANSPORT & MATERIALS HANDLING EQUIPMENT

Subject	Requirement	Yes/No
*Site Vehicles	<p>All Site Vehicles, Dumpers, Bobcats, Loaders etc; checked daily before used by driver / operator.</p> <p>Inventory of vehicles used/operated on site</p> <p>Inspection by means of a checklist / results recorded.</p> <p>No persons may ride on equipment not designed for passengers.</p> <p>Site speed limit posted and not exceeded.</p> <p>Drivers / Operators trained / licensed.</p> <p>No unauthorised persons allowed to drive/operate equipment.</p>	Yes
Conveyors	<p>Conveyor belt nip points and drive guarded.</p> <p>Emergency stop/lever/brake fitted, clearly marked & accessible.</p>	Yes

16. SITE PLANT AND MACHINERY

Subject	Requirement	Yes/No
Brick Cutting Machine	Operator Trained. Only authorised persons use the machine. Emergency stop switch clearly marked and accessible. Area around the machine dry and slip/trip free/clear of off cuts All moving drive parts guarded/electrical supply cable protected Operator using correct PPE - eye/face/hearing/foot/hands/body.	Yes
*Electric Arc Welder	Welder Trained. Only authorised / trained persons use welder. Adequately earthed. Electrode holder in good condition/safe Cables, clamps & lugs/connectors in good condition. Area in which welding machine is used is dry/protected from wet. Welder using correct PPE - eye/ face/foot/body/respirator. Screens & warning signs placed	Yes
*Woodworking Machines	Operators Trained. Only authorised persons use machines. Provided with guards. Guards used. Operators using correct PPE - eye/face/foot/hearing	Yes
*Compressors	Relief valves set and locked / sealed. Maximum Safe Working Pressure (MSWP) indicated on face of pressure gauge face: not on glass cover. All drives adequately guarded. Receiver/lines drained daily Hoses good condition/clamped, not wired	Yes
Concrete Mixer / Batch Plant	Top platform provided with guardrails. Dust abatement methods in use. Operators using correct PPE - eye / hands / respirators. All moving drive parts guarded. Emergency stops identified / indicated and accessible. Area kept clean/dry/and free from tripping and slipping hazards. Banksman identified and crane signals displayed and used.	Yes
*Gas Welding / Flame Cutting Equipment	Only authorised/trained persons use the equipment. Torches and gauges in good condition. Flashback arrestors fitted at cylinders and gauges. Hoses in good condition/correct type/all connections with clamps Cylinders stored, used and transported in upright position, secured in trolley / cradle / to structure. Fire prevention/control methods applied/hot work permits	Yes

17. PLANT & STORAGE YARDS/SITE WORKSHOPS SPECIFICS

Subject	Requirement	Yes/No
Section 8(2) (1)General Machinery Regulation 2(1): Supervision: Person appointed for supervision of the Use & Maintenance of Machinery	Person/s with specific knowledge and experience designated to Supervise the Use & Maintenance of Machinery Critical items of Machinery identified/numbered/placed on register/inventory Inspection/maintenance schedules for abovementioned Inspections/maintenance carried out to above schedules Results recorded	Yes
General Machinery Regulation 9(2): Notices re. Operation of Machinery	Schedule D Notice posted in Work areas	Yes
V Pressure Vessel Regulation 13(1)(b): Supervision of the Use & Maintenance of Pressure equipment (PE)	Person/s with specific knowledge and experience designated to Supervise the Use & Maintenance of VUP's VUP's identified/numbered/placed on register/Manufacturers plate intact Inspection/maintenance schedules for abovementioned Inspections/maintenance carried out to above schedules Results recorded/Test certificates available.	Yes

Lock-out Procedure	Lock-out procedure in operation	Yes
Ergonomics	Ergonomics survey conducted – results on record Survey results applied	Yes
Demarcation & Colour Coding	Demarcation principles applied All services, pipes, electrical installation, stop-start controls, emergency controls etc. colour coded to own published or SABS standard Employees trained to identify colour coding	Yes
Portable & Bench Grinders	Area around grinder clear/trip/slip free Bench grinders mounted securely/grinder generally in good condition/No excessive vibration On/Off Switch/button clearly demarcated/accessible Adequate guards in place Tool rest – secure/square/max. 2 mm gap Stone/disk - correct type and size/mounted correctly/dressed Use of Eye protection enforced	Yes
Battery Storage & Charging	Adequately ventilated, ignition free room/area/no smoking sign/s Batteries placed on rubber/wooden surface Emergency shower/eye wash provided No acid storage in area	Yes
Ancillary Lifting Equipment	Chain Blocks/Tirfors/jacks/mobile gantries etc. identified/numbered on register Chains in good condition/links no excessive wear Lifting hooks – throat pop marked/safety latch fitted SWL/MML marked/displayed	Yes
Presses/Guillotines/Shears	Only operated by trained/authorised persons Interlocks/lock-outs fitted	Yes

18. WORKPLACE ENVIRONMENT, HEALTH AND HYGIENE

Subject	Requirement	Yes/No
*Lighting	Adequate lighting in places where work is being executed e.g. stairwells and basements. Light fittings placed / installed causing no irritating/blinding glare.	Yes
*Ventilation	Adequate ventilation / extraction / exhausting in hazardous areas e.g. chemicals / adhesives / welding / petrol or diesel/ motors running and in confined spaces / basements.	Yes
*Noise	Tasks identified where noise exceeds 85 dBa. All reasonable steps taken to reduce noise levels at the source. Hearing protection used where noise levels could not be reduced to below 85 dBa.	Yes
*Heat Stress	Measures in place to prevent heat exhaustion in heat stress problem areas e.g. steel decks, when the WBGT index reaches 30. (See Environmental Regulation 4) Cold drinking water readily available when extreme temperatures are experienced.	Yes
*Ablutions	Sufficient toilets provided - 1 per 30 employees (National Building Regulations prescribe chemical toilets for Construction sites) Toilet paper available. Sufficient showers provided. Facilities for washing hands provided Soap available for washing hands Means of drying hands available Changing facilities / area provided. Ablution facilities hygienic and clean.	Yes
*Eating / Cooking Facilities	Adequate storage facilities provided. Weather protected eating area provided, separate from changing area Refuse bins with lids provided. Facilities clean and hygienic.	Yes
*Pollution of Environment	Measures in place to minimize dust generation. Accumulation of empty cement pockets, plastic wrapping / bags, packing materials etc. prevented. Spillage / discarding of oil, chemicals and diesel into storm water and other drains prevented.	Yes
*Hazardous Chemical Substances	All substances identified and list available e.g. acids, flammables, poisons etc. Material Safety Data Sheets (MSDS) indicating hazardous properties and emergency procedures in case of incident on file and readily available. Substances stored safely.	

Comments:

I, the responsible person for the principal contractor have received this health and safety specification for the project: **KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN** together with the tender document and will use this specification as a guideline from which to formulate my site specific health and safety plan and risk assessment for the above mentioned project.

SIGNATURE

DATE



V3 CONSULTING
ENGINEERS



COGHSTA

Co-operative Governance
Human Settlement & Traditional Affairs

ANNEXURE C

GEOTECHNICAL REPORT

1x Soebatsfontein
1x Paulshoek



PHASE 1 GEOTECHNICAL INVESTIGATION REPORT

SOEBATSFONTEIN TOWNSHIP

23 MAY 2019

DECLAIMER

This report is intended solely for the information of Soebatsfontein village. **Iceburg trading 751cc** is bound by the confidentiality agreement that no information will be communicated to a third party without the **COGHSTA's** written permission. Its existence may not be disclosed nor its contents published in any way without the prior written approval of COGHSTA.

DOCUMENT CONTROL

Prepared for : COGHSTA

Prepared by : Iceburg Trading 751cc

Compiled by:	Reviewed and Approved by:	Report No.	Date
Buhlebenkosi Ndebele	Nhlanhla Magigaba & Sboniso Zondi	01	23 May 2019

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EXECUTIVE SUMMARY

Iceburg Trading 751cc was appointed by **COGHSTA** to undertake a phase 1 geotechnical investigation for the Soebatsfontein Township development in Kamiesberg Local Municipality in the Northern Cape. The investigated site has an aerial extent of **23 Ha**.

To meet the requirements for a township establishment the investigation was carried out in accordance with the specifications for geotechnical site investigations for housing developments (**National Department of Housing specification GFSH2:2002**) and South African National Standard (**Geotechnical Investigation for Township Development SANS 634:2012**).

The main objective of the investigation is to allow broad assessment of the site to facilitate zoning according to NHBRC guidelines as well as the associated founding recommendations. The scope of the geotechnical investigation included test pits excavation at selected positions on the proposed township as well as laboratory testing. The geotechnical investigation revealed that the profile across the site is uniform, comprising of the following horizons:

- Fill;
- Transported horizon;
- Pedogenic horizon;
- Residual Gneiss horizon; and
- Gneiss bedrock.

No adverse conditions prohibiting the development of the site were observed and the site is zoned into three zones, which can be described as follows:

Zone C1/S: This zone is characterised by collapsible soils (fine silty sand) with a total settlement movement between 5mm to 10mm and differential movement that is 75% (**C1**) and fine-grained soils (clayey sand) with a total settlement movement less than 10mm and differential movement that is 50% (**S**).

Zone R: This zone is characterised by the occurrence of bedrock at shallow depths. The bedrock (refusal) is encountered at depths shallower than 1 m.

Zone P: (Controlled fill): This zone is characterised by the presence of controlled fill.

Recommendations regarding proposed development include the following:

- Founding alternatives are provided for each zone;

- The use of construction materials encountered at the site; and
- Drainage precautions that represent good practice and must be implemented.

1. Introduction

Iceburg Trading 751cc was appointed by **COGHSTA** to undertake a Phase 1 geotechnical investigation for the Soebatsfontein Township development in the Kamiesberg Local Municipality in the Northern Cape.

To meet the requirements for a residential development the investigation was carried out in accordance with South African National Standard (**Geotechnical Investigation for Township Development SANS 634:2012**) and the specification for geotechnical site investigations for housing developments (**National Department of Housing specification GFSH- 2:2002**).

The objectives of the geotechnical investigation is to:

- Determine whether any soil problems were present at the site that would have an effect on either founding or construction methods for structures.
- To delineate the site into appropriate geotechnical zones according to any essential differences in founding conditions encountered.
- To evaluate the founding conditions at the site and to recommend building precautions if necessary for the different geotechnical zones.
- To obtain basic data concerning the use of the in-situ materials for guideline purposes.

The geotechnical team carried out the fieldwork on the 8th of March 2019. The project team comprised of engineering geologists and geotechnical engineers.

This report presents the interpretive findings of the investigations, i.e. the geological profiles as confirmed by test pitting, laboratory analysis, geotechnical recommendations as well as geotechnical zoning of the site. The purpose of this construction report is to confirm or adapt the zoning of the site, and to provide more accurate information regarding the founding conditions.

2. Available information

At the time of the investigation the following information was available:

- 1:250 000 scale geological map of Garies 3017. Geological Survey, printed by the Government Printer (2011).
- The 1:250 000 scale soil land type map of Garies 3017 (Soil and Research Institute, 2011).
- Aerial photographs, sourced from Google Earth®.

3. Site locality and description

The site is located in Soebatsfontein village, Northern Cape, South Africa. Soebatsfontein village is located 55 km South West of Springbok Township. The investigated site has an aerial extent of **23 Ha** and the boundary is indicated in Figure 1 below.



Figure 1: Showing the investigated area in Soebatsfontein (orange border).



Figure 2: Showing a gully.

The entire site is characterized by erosion due surface runoff (running water). Erosion gullies were encountered on the site. Figure 2 above shows a typical example of a gully encountered on site.



Figure 3: Showing shacks and pit toilets.

At the time of the investigation, the site was characterised by residential houses and a few randomly scattered shacks made of corrugated iron as shown in Figure 3 above. Each household has a pit latrine toilet. Waste water disposal in the village consists of containment tanks that must be cleaned at regular intervals. Water and electricity reticulation are provided in bulk to the existing village. Electricity supply is by means of an overhead network. Water is obtained from a borehole. Streets are provided with a gravel surface, often constructed from gravel. Individual graves or a cemetery were also encountered in the area of investigation.

4. Climate

The climate in Soebatsfontein site is classified as warm and temperate. Soebatsfontein normally receives about 106mm of rain per year, with most rainfall occurring during summer. It receives the lowest rainfall (0mm) in January and the highest (22mm) in June. The average midday temperatures for Soebatsfontein range from 16.5°C in July to 28.3°C in February. The region is the coldest during July when the mercury drops to 3.8°C on average during the night (SA Explorer; 2017).

The Weinert Climatic N-number for the area (Weinert, 1980) which is >5 as shown in Figure 4, indicating that the climate is semi-arid and mechanical weathering processes are dominant.

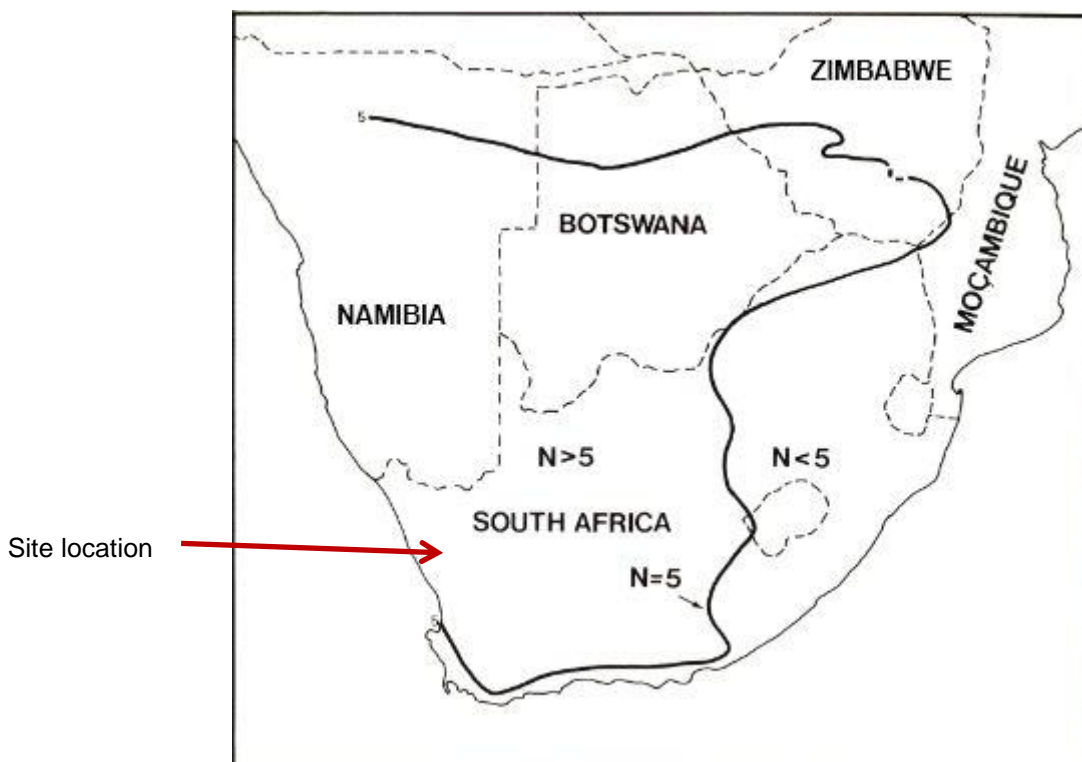


Figure 4: Uses precipitation and evaporation to derive the Weinert N-value (After Weinert, 1964)

5. Investigation Methodology

To meet the requirements for a township establishment investigation the investigation was carried out in accordance with the specification for geotechnical site investigations for housing developments **GFSH-2 (National Department of Housing specification:2002)** and –**SANS634:2012** South African National Standard (**Geotechnical Investigations for Township Development:2012**)

The investigation was conducted by **Iceburg Trading 751cc** and comprised an excavation of twenty-two (22 No) test pits. The test pits were excavated with a TLB up to a maximum depth of 3.00m or refusal on hardpan ferricrete and gneiss bedrock. Coordinates of the test pits were determined using a hand-held GPS on the South African grid with WGS84 coordinate system (Lo 30).

A two-person team carried out the test pitting in order to comply with accepted safety requirements as reflected in the South African Code of Practice (**SAICE:2010**). The test pits were set out and profiled by a team of engineering geologists/ geotechnical engineers in accordance with South African standards (**Standards South Africa. South African. National Standard. Profiling, Percussion Borehole and Core Logging in Southern Africa SANS 633:2012**) The excavations were loosely backfilled after completion of soil profiling and sampling.

Test pits details are summarised below in Table 1

Table 1: Test Pit Summary

Test Pit No.	GPS Coordinates (UTM WGS 84 Zone 35)		Depth(m)	Remarks
	Latitude (dd mm ss)	Longitude (dd mm ss)		
SB01	30° 6'57.18"S	17°35'14.03"E	0.60	Refusal on hard rock Gneiss
SB02	30° 6'59.59"S	17°35'18.81"E	2.20	Refusal on hard rock Gneiss
SB03	30°28'19.92"S	17°35'14.49"E	0.25	Refusal on Hardpan Ferricrete
SB04	30° 7'2.86"S	17°35'23.07"E	2.55	Refusal on hard rock Gneiss
SB05	30° 7'6.53"S	17°35'20.19"E	0.52	Refusal on Hardpan Ferricrete
SB06	30° 7'5.64"S	17°35'26.64"E	0.90	Refusal on Hardpan Ferricrete
SB07	30° 7'10.97"S	17°35'25.21"E	0.90	Refusal on hard rock Gneiss
SB08	30° 7'13.24"S	17°35'26.69"E	0.15	Refusal on hard rock Gneiss
SB09	30° 7'13.89"S	17°35'25.21"E	0.80	Refusal on hard rock Gneiss
SB10	30° 7'17.44"S	17°35'29.24"E	0.50	Refusal on Hardpan Ferricrete
SB11	30° 7'19.15"S	17°35'32.00"E	0.50	Refusal on Hardpan Ferricrete
SB12	30° 7'19.11"S	17°35'33.56"E	0.67	Refusal on hard rock Gneiss
SB13	30° 7'16.84"S	17°35'34.37"E	0.75	Refusal on Hardpan Ferricrete
SB14	30° 7'13.19"S	17°35'34.76"E	3.00	Refusal on hard rock Gneiss

SB15	30° 7'13.56"S	17°35'33.07"E	1.96	Refusal on hard rock Gneiss
SB16	30° 7'11.38"S	17°35'35.50"E	2.90	Refusal on hard rock Gneiss
SB17	30° 7'10.48"S	17°35'30.64"E	0.70	Refusal on Hardpan Ferricrete
SB18	30° 7'8.40"S	17°35'30.33"E	2.10	Refusal on hard rock Gneiss
SB19	30° 7'8.72"S	17°35'35.81"E	1.90	Refusal on hard rock Gneiss
SB20	30° 7'10.03"S	17°35'32.70"E	3.00	Refusal on hard rock Gneiss
SB21	30° 7'9.86"S	17°35'34.63"E	3.00	Refusal on hard rock Gneiss
SB22	30° 7'7.25"S	17°35'24.36"E	0.40	Refusal on Hardpan Ferricrete

Soil testing was conducted on disturbed soil samples, and the tests conducted were for:

- The determination of Foundation Indicators (comprising sieve and hydrometer grading analyses and Atterberg Limits),
- Determination of compaction characteristics (comprising Mods, i.e. maximum dry densities (MDD) and optimum moisture contents (OMC), as well as CBR's), and
- Determination of soil corrosiveness (comprising pH and conductivity).

The data gained via the aforementioned activities is presented in this report as follows:

- Summary of soil and rock profile descriptions - Appendix A
- Soil profile descriptions – test pitting - Appendix B
- Laboratory results Appendix C
- Geotechnical classification for urban development Appendix D
- Residential site class designations (NHBRC Home Building Manual) Appendix E
- Site Zonation Plan Appendix F
- Settlement Calculations Appendix G
- Errera Envelope Graph Appendix H

6. Seismicity Assessment

According to the published seismic hazard map of South Africa (Kijko, et. al. 2003), the value for the peak ground acceleration at the site is 0.09 m/s^2 (shown in Figure 5 below).

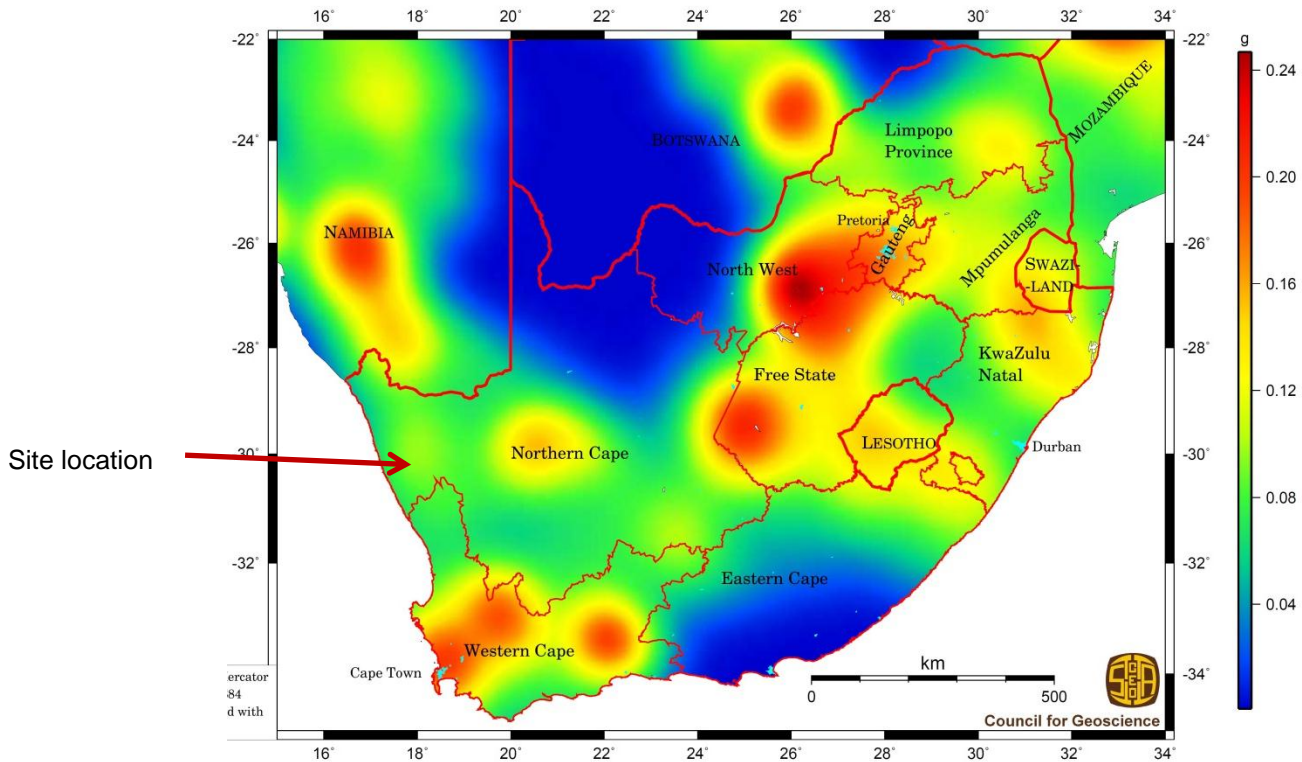


Figure 5: Peak ground acceleration (g) with 10% probability for being exceeded in a 50 year old period.

The peak ground acceleration expresses the seismic hazard and the value of 0.09 m/s^2 may be considered low to moderate. A 10% probability exists that this value will be exceeded in a 50 year period.

7. Geology

According to the published 1:250 000 Geological Map Series 3017 Garies (2011), Soebatsfontein village is underlain by Mesklip Gneiss (**Nme**) of the Kamiesburg Group, Mokolian Age as indicated in Figure 6 below.

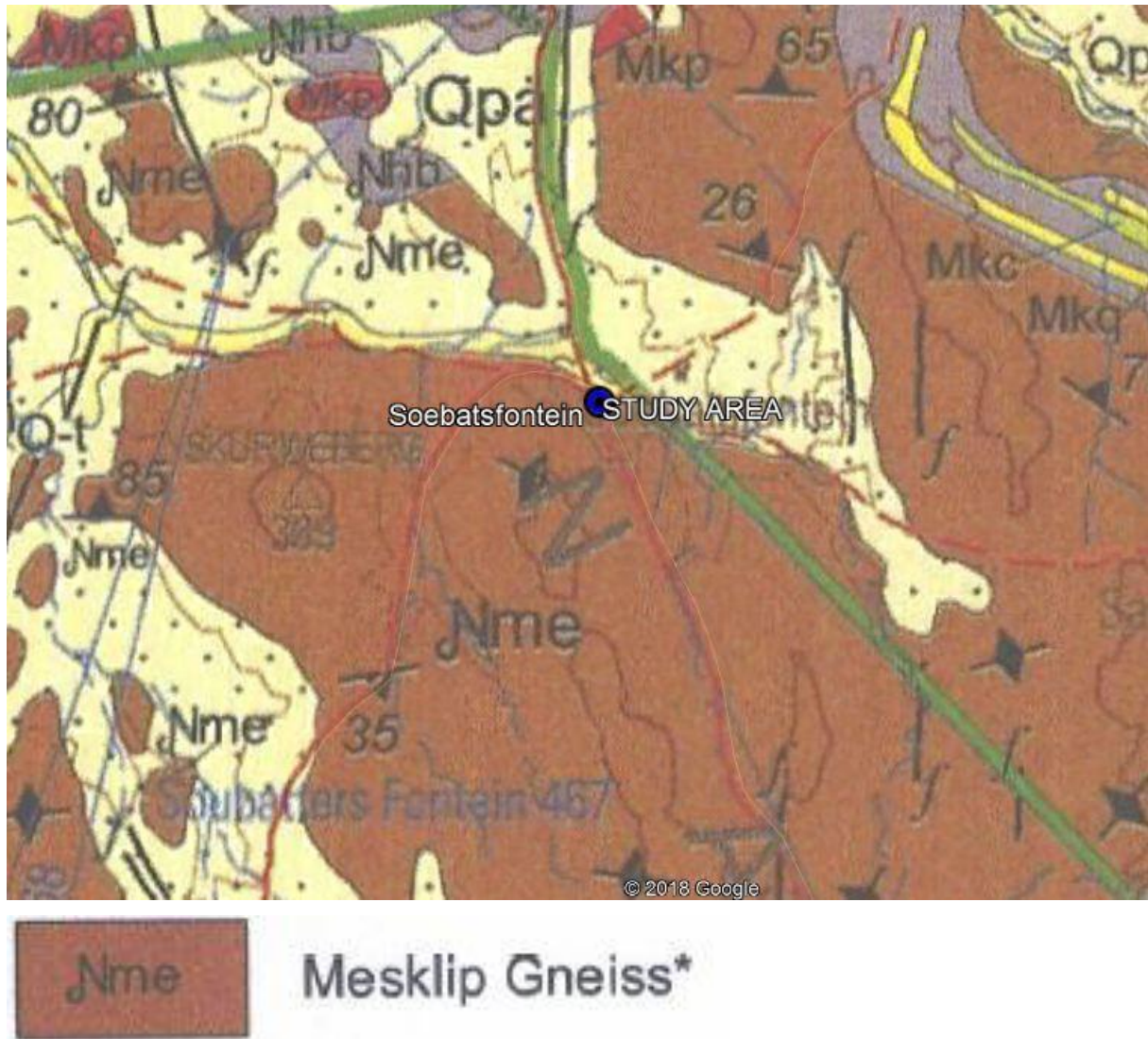


Figure 6: Showing the general geology map of the site area (**blue dot**); (Geological Survey, printed by the Government Printer, Government printer, 2011).

8. Results of Investigation

The detailed descriptions of the soil profiles encountered in the test pits are presented in Appendix B; while the geological profiles are summarised below for the whole site, based on the soil profiles. The geological profiles as recorded in test pits are summarised below.

The geotechnical investigation revealed that the profile across the site is uniform, comprising of the following horizons:

- Fill;
- Transported horizon;
- Pedogenic horizon;
- Residual Gneiss horizon; and
- Gneiss bedrock.

These horizons are described in more detail below:

Fill

The fill layer was intersected in three (3 No) of the test pits (SB14; SB18 and SB22) excavated on site, it comprises of engineering waste as shown in Figure 7. This fill layer has an average thickness of 0.35m where intersected on the test pits and is underlain by the transported horizon.



Figure 7: Showing engineering fill.

Transported Horizon

The transported horizon comprises slightly moist, light brown (reddish brown in places), intact, gravelly sand as shown in Figure 8. The consistency of this horizon was generally profiled as being very loose to loose. The average thickness of this horizon is approximately 0.5m.



Figure 8: Showing the transported material.

Pedogenic Horizon

This horizon comprises of slightly moist to moist, reddish brown to dark brown, intact, ferruginized silty sand with minor ferruginized gravel and cobbles. It was profiled as having a consistency ranging from dense to very dense.

Refusal occurred on the hardpan ferricrete which occurred as a reddish brown, very dense to very soft rock, hardpan ferricrete.

Residual Gneiss Horizon

The lower most horizon in the site profile is residual gneiss horizon which comprises of slightly moist to moist, grey, intact, silty sand with minor gravel. It was profiled as having a consistency ranging from dense to very dense. The horizon extends to depths beyond 3.00 m.

Gneiss Bedrock

The gneiss bedrock on site occurs as moderately to highly weathered, closely jointed, reddish brown and yellowish grey, medium grained, banded gneiss and the hardness of the rock was generally profiled as soft to medium hard rock. The minimum thickness of the bedrock is approximately 0.55m. Refusal was on gneiss bedrock in most of the excavated test pits, an example of one of the test pits is shown in Figure 9 below.



Figure 9: Showing a typical test pit where refusal was on gneiss bedrock.

9. Groundwater conditions

Groundwater seepage was encountered in one test pit (SB14) excavated at the site. The water table is encountered between 2.95m and 3.00m depths from the surface as shown in Figure 10. The presence of ferricrete (ferruginisation) in most of the test pits indicates that a changing water regime can be expected on site. Problems due to ground water seepage are therefore expected in places, especially during and after a very wet rainy season.



Figure 10: Showing water seepage in the test pit.

10. Flooding

It likely that the site can be subjected flooding as it is located 6km North of the Groen River and characterised by a relatively flat topography. Due to the proximity of the river and the relatively flat topography flooding may occur. Flood-lines for this area must be determined by a suitably qualified engineer to ensure that no development takes place within the flood-line. Drainage problems may also occur as this type of topography promotes the ponding of water in the project area.

11. Laboratory tests

Foundation Indicators

Representative samples were collected for laboratory testing at each test pit position and submitted for foundation indicator tests. The test results are attached in Appendix C and summarised in Table 2.

Table 2 : Foundation Indicator Results

Sample No	Depth (m)	Soil Composition				GM	Atterberg Limits			Activity	Unified Soil Classification
		Clay (%)	Silt (%)	Sand (%)	Gravel (%)		LL (%)	WPI (%)	LS (%)		
TRANSPORTED LAYER											
SB05	0 – 0.24	7	8	80	5	1.15	-	SP	0.5	Low	SC - SM
SB09	0 – 0.40	4	9	85	2	1.12	-	SP	0.5	Low	SC - SM
SP15	0 – 0.62	4	9	41	46	2.26	-	SP	0.5	Low	SC - SM
SB18	0 – 0.70	4	10	73	13	1.47	-	SP	0.5	Low	SC - SM
SP21	0 – 1.50	6	6	85	3	1.15	-	SP	0.5	Low	SC - SM
PEDOGENIC HORIZON											
SB06	0.55 – 0.90	4	6	74	16	1.52	-	SP	0.5	Low	SW - SC
SB11	0.25 – 0.50	4	8	67	21	1.60	-	SP	0.5	Low	SC - SM
SB13	0.20 – 0.75	5	9	55	31	1.75	-	SP	0.9	Low	SC - SM
SP19	0.90 – 1.50	3	24	60	13	1.17	24	6	3	Low	SC - SM
SB22	0.10 – 0.40	4	11	36	49	2.10	21	5	2.5	Low	SC - SM
RESIDUAL GNEISS HORIZON											
SB01	0.40 – 1.00	4	7	56	33	1.76	-	SP	0.5	Low	SW - SC
SB02	0.90 – 2.20	3	3	77	17	1.76	0	SP	0.5	Low	SP - SC
SB04	0.50 – 2.50	6	11	71	12	1.28	-	SP0	0.5	Low	SC - SM
SB14	0.25– 0.30	3	4	80	13	1.78	-	SP	0.5	Low	SP – SC
SP15	0.15 – 1.96	8	12	75	5	1.20	17	4	2	Low	SC - SM
SP19-B	1.50 – 1.90	5	16	58	21	1.56	18	5	2.5	Low	SC - SM
SB21	1.50 – 3.00	7	5	75	13	1.50	-	SP	0.5	Low	SC – SM

<u>Legend</u>	GM	=	Grading modulus
	LL	=	Liquid Limit
	WPI	=	Weighted Plasticity Index
	LS	=	Linear Shrinkage
	SC	=	Clayey sand
	SW	=	Well-graded sand
	SP	=	Poorly graded sand
	SM	=	Silty sand
	Activity	=	Potential expansiveness of the soil according to Van der Merwe's method (Van der Merwe, 1973)

Table 2 indicates that:

The **transported** horizon consists of clayey sands (**SC**) and silty sands (**SM**). The horizon has a high (1.12) to very high (2.26) grading moduli. The fine fractions of this material also exhibit very low liquid limits and a very low (0.5%) linear shrinkage, indicating that the material has low plasticity characteristics. The material has a low potential expansiveness, according to the method proposed by Van der Merwe (1973).

The **pedogenic** material ranging from clayey sands (**SC**) to silty sands (**SM**) with occasional well graded sands (**SW**), with a gravel fraction up to 49 %. The horizon has a high (1.17) to very high (2.10) grading moduli. The fine fractions of this material exhibit very low to low (24 %) liquid limits and a very low (0.5%) to low (3%) linear shrinkage, indicating that the material has low plasticity characteristics. The material has a low potential expansiveness, according to the method proposed by Van der Merwe (1973).

The **residual** material ranging from clayey sands (**SC**) to silty sands (**SM**) with occasional well graded sands (**SW**) and poorly graded sands, (**SP**), with a gravel fraction up to 33 %. The horizon has a high (1.20) to very high (1.78) grading moduli. The fine fractions of this material exhibit very low to low (18 %) liquid limits and a very low (0.5%) to low (2.5%) linear shrinkage, indicating that the material has low plasticity characteristics. The material has a low potential expansiveness, according to the method proposed by Van der Merwe (1973).

Chemical Tests

The chemical test results comprising pH and conductivity are listed in Table 3 as well as Appendix C. Several environmental factors have an effect on buried metals. These factors are:

- Electrical conductivity of the soil
- Chemical properties of the soil
- Ability of the soil to support sulphide reducing bacteria
- Heterogeneity of the soil (long-line currents)
- Differential aeration
- Stray currents in the soil, and
- Bacteria attack

The conductivity of the soil has a profound influence on the rate of corrosion of buried metallic objects. Based on significance of soil resistivity on corrosivity, Duligal (1996) provides the following table for evaluation of the conductivity of soil:

Table 3: Guideline values for interpretation of soil conductivity (Duligal, 1996)

Soil conductivity		
Soil conductivity (mS/m)	Soil resistivity (Ohm.cm)	Corrosively classification
More than 50	0 – 2000	Extremely corrosive
25 – 50	2000 – 4000	Very corrosive
20 – 25	4000 – 5000	Corrosive
10 – 20	5000 – 10000	Mildly corrosive
Less than 10	>10000	Not generally corrosive

Disturbed samples of the transported material were collected and subjected to chemical (pH and conductivity) tests. The test results are summarised as follows.

Based on Evans guideline (1977), a soil pH less than 6 indicates serious corrosion potential

Table 4: Summary of Chemical Tests Results

Hole no.	Depth (m)	pH	Conductivity (mS/m)
TRANSPORTED HORIZON			
SB05	0 - 0.24	5.9	2940
SB18	0 - 0.70	6.0	1030
Pedogenic Layer			
SB06	0.55 - 0.90	6.3	1620
SB11	0.25 - 0.50	6.1	1630
RESIDUAL HORIZON			
SB01	0.40 – 1.00	5.6	2740
SB02	0.90 – 2.20	6.0	602
SB14	0.25 – 0.30	5.4	930
SB21	1.50 – 3.00	5.4	3620

According to the soil conductivity guideline values in Table 3 (Dulgal, 1996) and the results in Table 4 the transported, pedogenic and residual material on this particular site is extremely corrosive due to the high conductivity values. Corrosion of buried metallic elements is therefore likely.

12. Geotechnical considerations

The purpose of the investigation is to provide a broad overview and classification of the suitability of the land for the proposed development and outline obvious constraints. The following constraints, as proposed by Partridge, Wood and Brink (1993), have to be considered for the classification of the sites for urban development:

- Collapsible / compressible soil profile;
- Shallow seepage or groundwater level;
- Expansive soil profile;
- Erodibility of the soil profile;
- Excavatibility;
- Undermined ground;
- Instability of areas of soluble rock;
- Steep slopes;
- Unstable natural slopes;
- Seismic activity; and
- Areas subject to flooding.
- Other considerations.

Each of the above-mentioned constraints and its applicability to this specific site is discussed in the sections that follow.

12.1 Collapsible / Compressible soil profile

Soil with a collapsing fabric may be defined as a soil which can withstand relatively large imposed stresses with small settlements at a low in-situ moisture content, but will exhibit a decrease in volume and increase in associated settlement with no increase in the applied stress if wetting up occurs, as is aptly described by (Schwartz; 1985). Several geotechnical tests are available to determine the collapse potential of a soil material either as a parametric or numerical value. These tests all depend on the availability of an undisturbed sample cut from the soil profile, and are relatively expensive. With the transported sands on site being of loose and very loose consistency, it was not possible to extract an undisturbed sample. However, Errerra (1977) researched the properties of the Kalahari windblown sand and defined a grading envelope for collapsing sands. According to his research it has been found that should the grading curve of a soil material fit into this envelope, the soil can be regarded as being of collapsing nature

The two samples (SB09 and SB21) of the transported materials representing the lower and upper limit of the grading results indicates that this **material is prone to collapse as a large portion of both samples fall within grading envelope for collapsible soils** as can be seen in Appendix H. It is expected that the transported sandy material will be collapsible/ compressible when the moisture conditions change from dry to moist due to the rainwater infiltration etc.

12.2 Shallow seepage / groundwater level

Ground water seepage was encountered in one test pit (SB14) at the site. The water table is encountered between 2.95m and 3.00m depths from the surface. Ferruginisation, which is the indication that a changing water regime can be expected, was also noted in most of the test pits profiled on site. Problems due to ground water seepage are therefore expected in places, especially during and after a very wet rainy season.

Not only will seepage and future wetting of the soil profile contribute to compressibility problems, but it will influence drainage conditions below structures. It may also have an effect on the stability of excavations potentially to be made in future, such as for cut and fill operations associated with platforms constructed for buildings with fairly large floor areas. Subsoil drainage should be provided to reduce permeation of water into the foundations.

12.3 Expansive soil profile

Most part of the site is underlain by sandy gravels. No evidence of expansive soil behaviour was noted in the soil profiles. Furthermore the laboratory results reveal that the materials on site are not expansive.

12.4 Erodibility of the soil profile

The surface at the site is covered by sandy material thus prone to erodibility due to the sandy nature of the covering material on site. The site is characterized by erosion gully which washes the soil along the drainage lines. Control measures can be taken to prevent further erosion like fixing the problems in the catchment and stabilising the gully itself.

12.5 Excavatability

The ease at which the soil can be excavated is an important criterion in the selection of a site. The excavation characteristics of the strata have been estimated from the performance of the TLB used for the investigation as per the terms of SABS 1200D. Refusal was encountered in all fifty-two (52 No) of the test pits excavated on site, on ferricrete bedrock. "Hard excavation" in terms of SABS 1200D can be expected where the TLB refused. **Soft Excavation** was experienced on the transported horizons with very loose, loose and/or medium dense consistencies and on some residual gneiss and pedogenic horizons with either loose and/or medium dense consistencies. The excavation was to variable depths from surface to approximately 0.38 m. **Hard Excavation** was encountered on hardpan ferricrete and gneiss bedrock anticipated from an average depth of 1.40m.

Machine excavatability for the installation of services is therefore expected to be problematic with a backhoe where "**Hard Excavation**" was encountered. Cobbles and minor boulders were encountered in some of the test pits, which could result in excavatability issues with regards to installation of services.

12.6 Undermined ground

No indication of the presence of undermined ground was found during the desk study or field investigation. There are no closed or working shafts or other signs of mining activity within a radius of 1 km of the site. Limited removal of soils for road construction has taken place on the site. Most favourable conditions thus prevail in this regard.

12.7 Instability of areas of soluble rock

No indication of the presence of soluble rock formations was found during the desk study or field investigation. According to the published 1:250 000 Geological Map Series 3017 Garies (2011), Soebatsfontein village is underlain by Mesklip Gneiss and not by soluble rocks. The site is therefore considered a “**non-dolomitic**” site.

12.8 Steep slopes

The site is characterised by a fairly flat surface. The general flat slope (less than 6 degrees) over the site will not present slope stability problems or a hazard to structures placed on this area.

12.9 Seismic activity

The peak ground acceleration expresses the seismic hazard and the value of 0.09 m/s² may be considered low to moderate. A 10% probability exists that this value will be exceeded in a 50-year period.

12.10 Areas subject to flooding

It likely that the site can be subjected flooding as it is located 6km North of the Groen River and characterised by a relatively flat topography. Due to the proximity of the river and the relatively flat topography flooding may occur. Flood-lines for this area must be determined by a suitably qualified engineer to ensure that no development takes place within the flood-line. Drainage problems may also occur as this type of topography promotes the ponding of water in the project area.

12.11 Unstable natural slopes

The site is characterised by a generally flat surface and has no unstable natural slopes. The general flat slope (less than 6 degrees) over the site will not present slope stability problems or a hazard to structures placed on this area.

13. Engineering Geological Zoning

For urban planning purposes the site is zoned according to the NHBRC classification systems. Due to the presence of potentially collapsible/ compressible transported horizon over the entire site as well as a small portion of controlled fill and shallow refusal on granite bedrock and hardpan ferricrete, the site has been delineated into three geotechnical zones. The zonation is also shown in Table 5 below and in the zonation plan in Appendix F. The description of the zones is as follows:

Zone C1/S: This zone covers a small portion of the site and is characterised by collapsible soils (fine silty sand) with a total settlement movement between 5mm to 10mm and differential movement that is 75% (**C1**) and fine-grained soils (clayey sand) with a total settlement movement less than 10mm and differential movement that is 50% (**S**).

Zone R: This zone is characterised by the occurrence of bedrock at shallow depths. The bedrock (refusal) is encountered at depths shallower than 1 m.

Zone P: (Controlled fill): This zone is characterised by the presence of controlled fill

Table 5: Geotechnical Characteristics

Geotechnical Characteristics					
TYPICAL FOUNDING MATERIAL	CHARACTER OF FOUNDING MATERIAL	EXPECTED RANGE OF TOTAL SOIL MOVEMENTS (mm)	ASSUMED DIFFERENTIAL MOVEMENT (% OF TOTAL)	SITE CLASS	
Silty sands, sands, sandy and gravelly soils	Compressible And Potentially Collapsible Soils	<5,0	75%	C	
		5,0-10	75%	C1	
		>10	75%	C2	
Clayey silts, clayey sands of low plasticity, sands, sandy and gravelly soils	Compressible soils	<10	50%	S	
		10-20	50%	S1	
		20>	50%	S2	
Rock (excluding mudrock which exhibit swelling to some depth)	Stable	Negligible		R	
Contaminated soils, Controlled fill, Dolomite areas, Landslip, Landfill, Marshy areas, Mine waste fill, mining subsidence, Reclaimed areas, Uncontrolled fill, Very soft silts/silty clays.	Variable	Variable		P	

14. Recommendations

Recommendations are provided regarding the following:

- Development in general;
- Founding of light structures;
- Construction materials;
- Drainage measures: and
- General.

14.1 Development

No adverse conditions prohibiting the construction of structures for residential development were encountered at the site.

We recommend that township development proceed subject to the following conditions:

- Special founding solutions must be implemented for all single and double storey structures.
- Detailed geotechnical investigations must be conducted for all high-rise structures, i.e. structures exceeding conventional double-storey height.

14.2 Founding of structures

Founding alternatives for lightly loaded single and double-storey structures constructed in this zone include the following:

According to the NHBRC guidelines the following founding solutions can be implemented for the zone:

Zone C1/S

The site preparation requirements identified below are aimed at preparing foundation, removal of any unsuitable materials and densification of the ground.

The following options for foundations are recommended as per NHBRC guidelines:

Option 1 Stiffened strip footings, stiffened or cellular raft

Stiffened strip footings or stiffened or cellular raft with lightly reinforced or articulated masonry. Bearing pressure not to exceed to 50 kPa. Fabric reinforcement in floor slabs. The site should be properly drained and adequate plumbing and service precautions should be taken to prevent water leaks.

Option 2 Deep strip footings

Found on competent horizon below the problem layer using normal construction which should also include fabric reinforcement in floor slabs. Adequate drainage precautions should be taken for the site.

Option 3 Piled or pier foundations

Reinforced concrete ground beams or solid slabs on piled or pier foundations. Ground slabs with fabric reinforcement. The site should be properly drained and adequate plumbing and service precautions should be taken to prevent water leaks.

Option 4 Soil raft

Remove insitu material to 1,0 m beyond perimeter of the 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 and light reinforcement in masonry may be utilised.

Extensive excavation with power tools can be expected in places to reach founding depth and to create level building platforms, resulting in most cases in founding on bedrock.

Zone R**Foundation Option Normal**

Normal construction (strip footing or slab on the ground) foundation with good site drainage.

Zone P (Controlled Fill)

Remove the fill material; conventional strip or pad footings are recommended foundation for single and double storey residential structures, which should rest on competent founding materials, gneiss bedrock or hardpan ferricrete.

14.3 Stability of Excavations

It is strongly recommended that all excavations exceeding 1.5m should have a proper sidewall protection to ensure safety of workers.

It is recommended that all deeper temporary excavations and excavations experiencing seepage will require trimming the slope and ensuring that any loose materials in upper soil layers are removed before workers are allowed into the excavations. Slope angles in excavations should not exceed 30 degrees. Shoring is required for excavations extending depths of 3 m below surface level.

14.4 Drainage measures

Water must be kept away from the foundations. The following drainage precaution must be adhered to:

- No accumulation of surface water is permitted and the entire development must be properly drained;
- A 1m apron must be constructed around each building to keep surface runoff away from foundations;
- Waterborne sewerage reticulation must be installed. All water services should be sleeved;
- All trenches and excavation works must be properly backfilled and compacted in order to prevent them from functioning as French drains. Backfilling should be done at optimum moisture content, in 150mm thick layers to at least 90% of modified AASHTO density.

15 General

It must be borne in mind that an investigation of this nature is aimed at delineating broad areas in which problems may occur. Consequently, certain generalisations have to be made to avoid the necessity of a costly investigation at each and every stand.

It may be found that soil conditions at variance with those discussed in this report do occur locally. The variant conditions should be inspected by competent personnel to ensure that these conditions do not pose a problem for a specific development. More detailed testing in certain areas may allow for a design relaxation and associated cost saving. The potential for problems due to under-design must also be considered.

The site is considered suitable for the proposed development provided that the recommendations made in this report are adhered too. Please also note that these recommendations are for single and double storey buildings. Should a need arise for development of high-rise structures (i.e. structures exceeding conventional double-storey height) on this site, a detailed geotechnical investigation should be undertaken.

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Appendix A

Summary of standard soil and rock profile
description terminology

1. MOISTURE CONDITION		2. COLOUR	
Term	Description	The Predominant colours or colour combinations are described including secondary coloration described as banded, streaked, blotched, mottled, speckled or stained.	
Dry			
Slightly moist	Requires addition of water to reach optimum moisture content for compaction		
Moist	Near optimum content		
Very Moist	Requires drying to attain optimum content		
Wet	Fully saturated and generally below water table		
3. CONSISTENCY			
3.1 Non-Cohesive Soils		3.2 Cohesive Soils	
Term	Description	Term	Description
Very Loose	Crumbles very easily when scraped with geological pick	Very soft	Easily penetrated by thumb. Sharp end of pick can be pushed in 30 - 40mm. Easily moulded by fingers.
Loose	Small resistance to penetration by sharp end of geological pick	Soft	Pick head can easily be pushed into the shaft of handle. Moulded by fingers with some pressure.
Medium Dense	Considerable resistance to penetration by sharp end of geological pick	Firm	Indented by thumb with effort. Sharp end of pick can be pushed in up to 10mm. Can just be penetrated with an ordinary spade.
Dense	Very high resistance to penetration to sharp end of geological pick. Requires many blows of hand pick for excavation.	Stiff	Penetrated by thumbnail. Slight indentation produced by pushing pick point into soil. Cannot be moulded by fingers. Requires hand pick for excavation.
Very Dense	High resistance to repeated blows of geological pick. Requires power tools for excavation	Very Stiff	Indented by thumbnail. Slight indentation produced by blow of pick point. Requires power tools for excavation.
4. STRUCTURE		5. SOIL TYPE	
		5.1 Particle Size	
Term	Description	Term	Size (mm)
Intact	Absence of fissures or joints	Boulder	>200
Fissured	Presence of closed joints	Pebbles	60 – 200
Shattered	Presence of closely spaced air filled joints giving cubical fragments	Gravel	60 – 2
Micro-shattered	Small scale shattering with shattered fragments the size of sand grains	Sand	2 – 0,06
Slickensided	Polished planar surfaces representing shear movement in soil	Silt	0,06 – 0,002
Bedded Foliated	Many residual soils show structures of parent rock.	Clay	<0,002
6. ORIGIN		5.2 Soil Classification	
6.1 Transported Soils		<p>The diagram is a ternary plot with vertices at 0, 100, and 100. The top vertex is 0% Sand, 0% Silt, 100% Clay. The bottom-left vertex is 100% Sand, 0% Silt, 0% Clay. The bottom-right vertex is 0% Sand, 100% Silt, 0% Clay. The plot is divided into several fields by lines parallel to the sides. Labels include: SAND (top), SILTY SAND (near top-left), CLAYEY SAND (middle-left), SANDY CLAY (middle-left), CLAY (top-right), SILTY CLAY (middle-right), CLAYEY SILT (middle-right), SILT (bottom-right), CLAYEY CLAY (bottom-middle), SANDY SILT (bottom-middle), and CLAYEY SANDY SILT (bottom-middle). Arrows indicate the direction of increasing percentage for each component.</p>	
Term	Agency of Transportation		
Colluvium	Gravity deposits		
Talus	Scree or coarse colluvium		
Hillwash	Fine colluvium		
Alluvial	River deposits		
Aeolian	Wind deposits		
Littoral	Beach deposits		
Estuarine	Tidal – river deposits		
Lacustrine	Lake deposits		
6.2 Residual soils			
These are products of in situ weathering of rocks and are described as e.g. Residual Shale			
6.3 Pedocretes			
Formed in transported and residual soils etc. calcrete, silcrete, manganese concrete and ferricrete.			

SUMMARY OF DESCRIPTIONS USED IN ROCK CORE LOGGING

1. WEATHERING				
Term	Symbol	Diagnostic Features		
Residual Soil	W5	Rock is discoloured and completely changed to a soil in which original rock fabric is completely destroyed. There is a large change in volume.		
Completely Weathered	W5	Rock is discoloured and changed to a soil but original fabric is mainly preserved. There may be occasional small corestones.		
Highly Weathered	W4	Rock is discoloured, discontinuities may be open and have discoloured surfaces, and the original fabric of the rock near the discontinuities may be altered; alternation penetrates deeply inwards, but corestones are still present.		
Moderately Weathered	W3	Rock is discoloured, discontinuities may be open and will have discoloured surfaces with alteration starting to penetrate inwards, intact rock is noticeably weaker than the fresh rock.		
Slightly Weathered	W2	Rock may be slightly discoloured, particularly adjacent to discontinuities, which may be open and will have slightly discoloured surfaces, the intact rock is not noticeably weaker than the fresh rock.		
Unweathered	W1	Parent rock showing no discolouration, loss of strength or any other weathering effects.		
2. HARDNESS			3. COLOUR	
Classification	Field Test	Compressive Strength Range MPa	The predominant colours or colour combination are described including secondary colouration described as banded, streaked, blotched, mottled, speckled or stained.	
Extremely Soft Rock	Easily peeled with a knife	<1		
Very Soft Rock	Can be peeled with a knife. Material crumbles under firm blows with the sharp end of a geological pick.	1 to 3		
Soft Rock	Can be scraped with a knife, indentation of 2 to 4 mm with firm blows of the pick point.	3 to 10		
Medium Hard Rock	Cannot be scraped or peeled with a knife. Hand held specimen breaks with firm blows of the pick.	10 to 25		
Hard Rock	Point load tests must be carried out in order to distinguish between these classifications	25 - 70		
Very Hard Rock	These results may be verified by uniaxial compressive strength tests on selected samples.	70 - 200		
Extremely Hard Rock		>200		
4. FABRIC				
4.1 Grain Size		4.2 Discontinuity Spacing		
Term	Size (mm)	Description for: Bedding, foliation, laminations	Spacing (mm)	Descriptions for joints, faults, etc.
Very Coarse	>2,0	Very Thickly Bedded	> 2000	Very Widely
Coarse	0,6 – 2,0	Thickly Bedded	600 – 2000	Widely
Medium	0,2 – 0,6	Medium Bedded	200 – 600	Medium
Fine	0,06 – 0,2	Thinly Bedded	60 – 200	Closely
Very Fine	< 0,06	Laminated	3 – 60	Very closely
		Thinly Laminated	<3	
5. ROCK NAME			6. STRATIGRAPHIC HORIZON	
Classified in terms of origin:			Identification of rock type in terms of stratigraphic horizons.	
IGNEOUS	Granite, Diorite, Gabbro, Syenite, , Dolerite, Trachyte, Andesite, Basalt.			
METAMORPHIC	Slate, Felsite, Gneiss, Schist, Quartzite			
SEDIMENTARY	Shale, Siltstone, Siltstone, Sandstone, Dolomite, Conglomerate, Tillite, Limestone.			

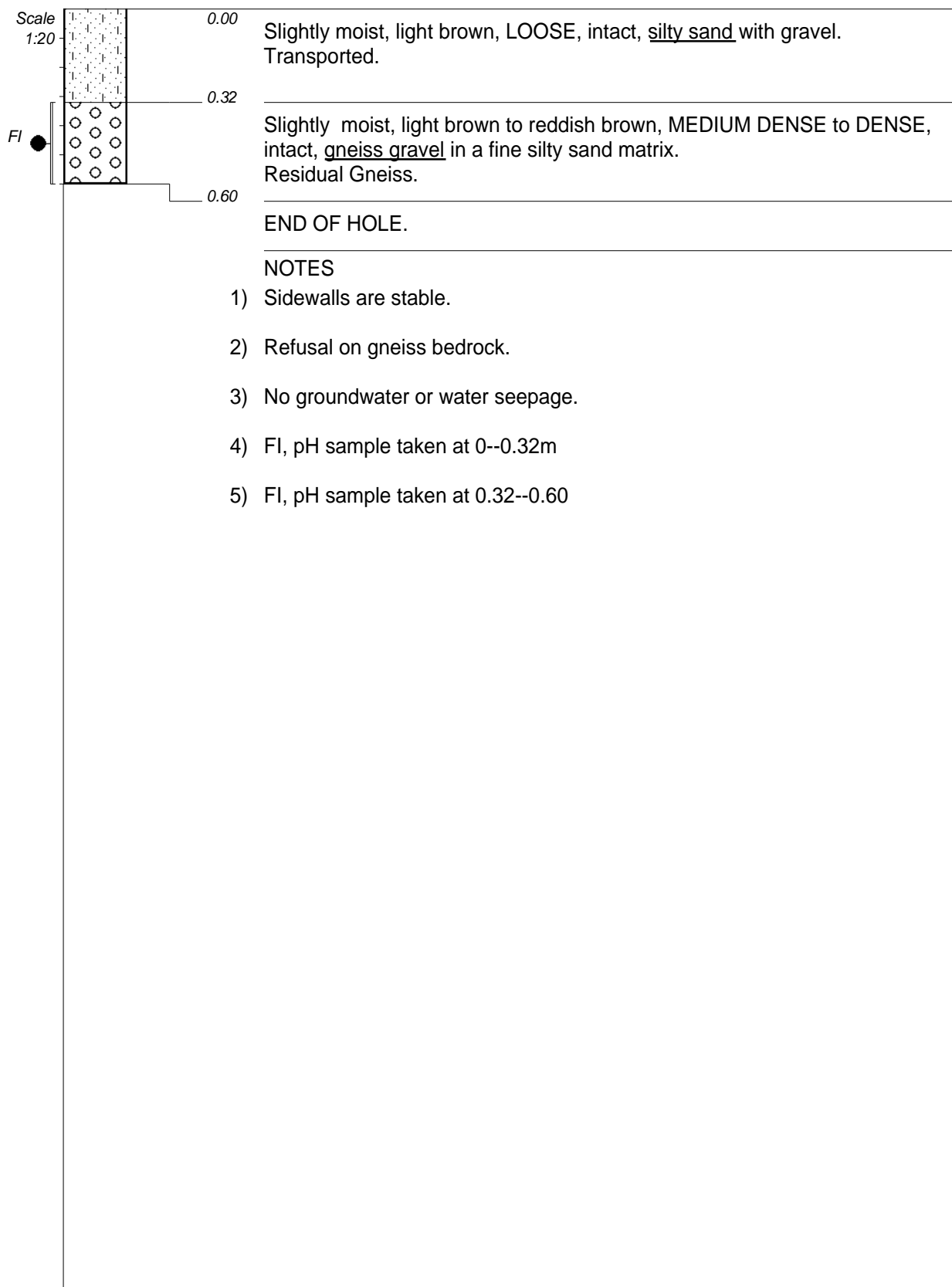
Appendix B

Soil Profile Descriptions

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB01**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFILED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

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DIAM :
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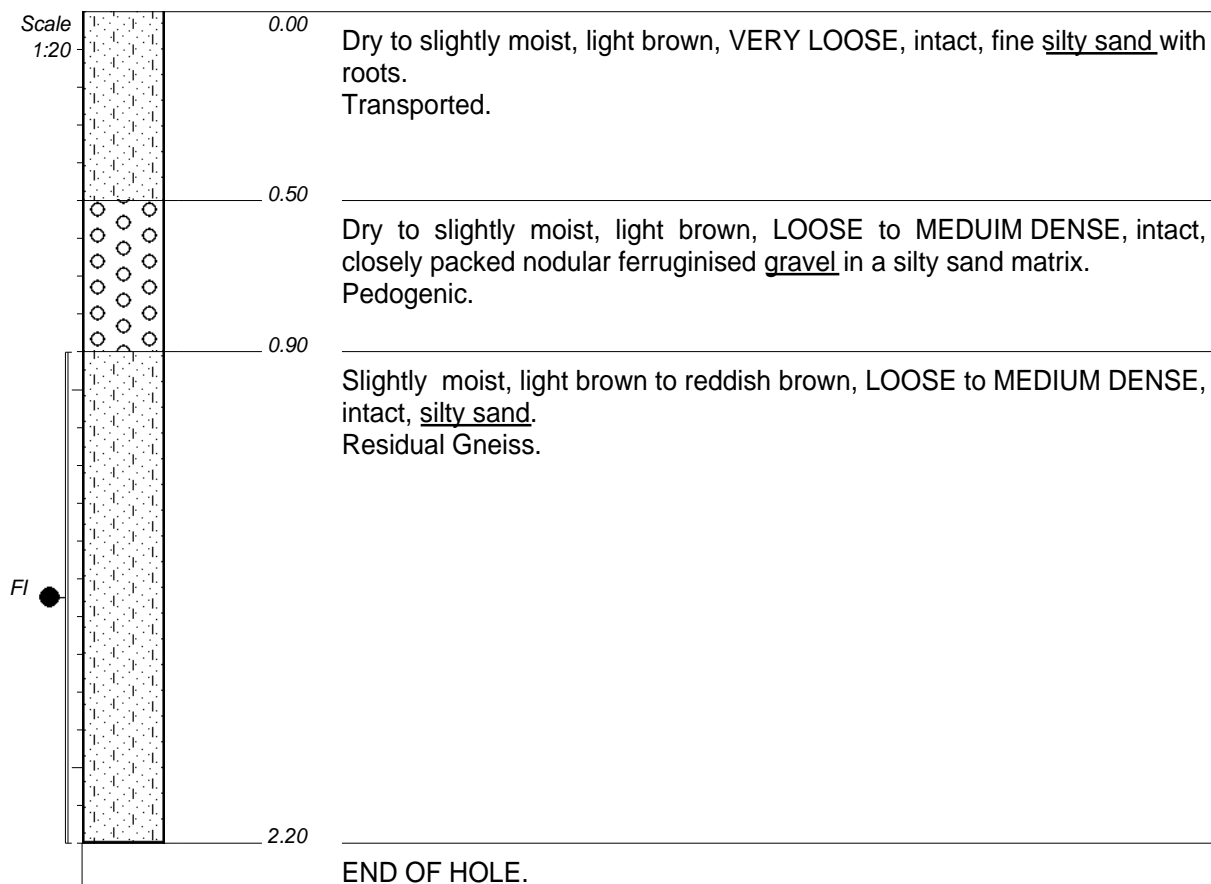
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **SB01**
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB02**
Sheet 1 of 1

JOB NUMBER: 100071



NOTES

- 1) Sidewalls are unstable.
- 2) Refusal on gneiss bedrock.
- 3) No groundwater or water seepage.
- 4) FI, pH & Cond sample taken at 0.90--2.20m.

CONTRACTOR :
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DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

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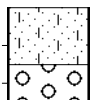
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Soebatsfontein

**COGHSTA
SOEBATSFONTEIN TOWNSHIP**

HOLE No: SB03
Sheet 1 of 1

JOB NUMBER: 100071

Scale
1:20



0.00

Dry to slightly moist, light brown, VERY LOOSE, intact, fine silty sand with roots.
Transported.

0.15

Dry to slightly moist, light brown, LOOSE, intact, slightly ferruginised gravel in a silty sand matrix.
Pedogenic.

0.25

END OF HOLE.

NOTES

- 1) Sidewalls are stable.
- 2) Refusal on hardpan ferricrete.
- 3) No groundwater or water seepage.
- 4) FI sample taken at 0--0.42

CONTRACTOR :
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DRILLED BY :
PROFILED BY : BN

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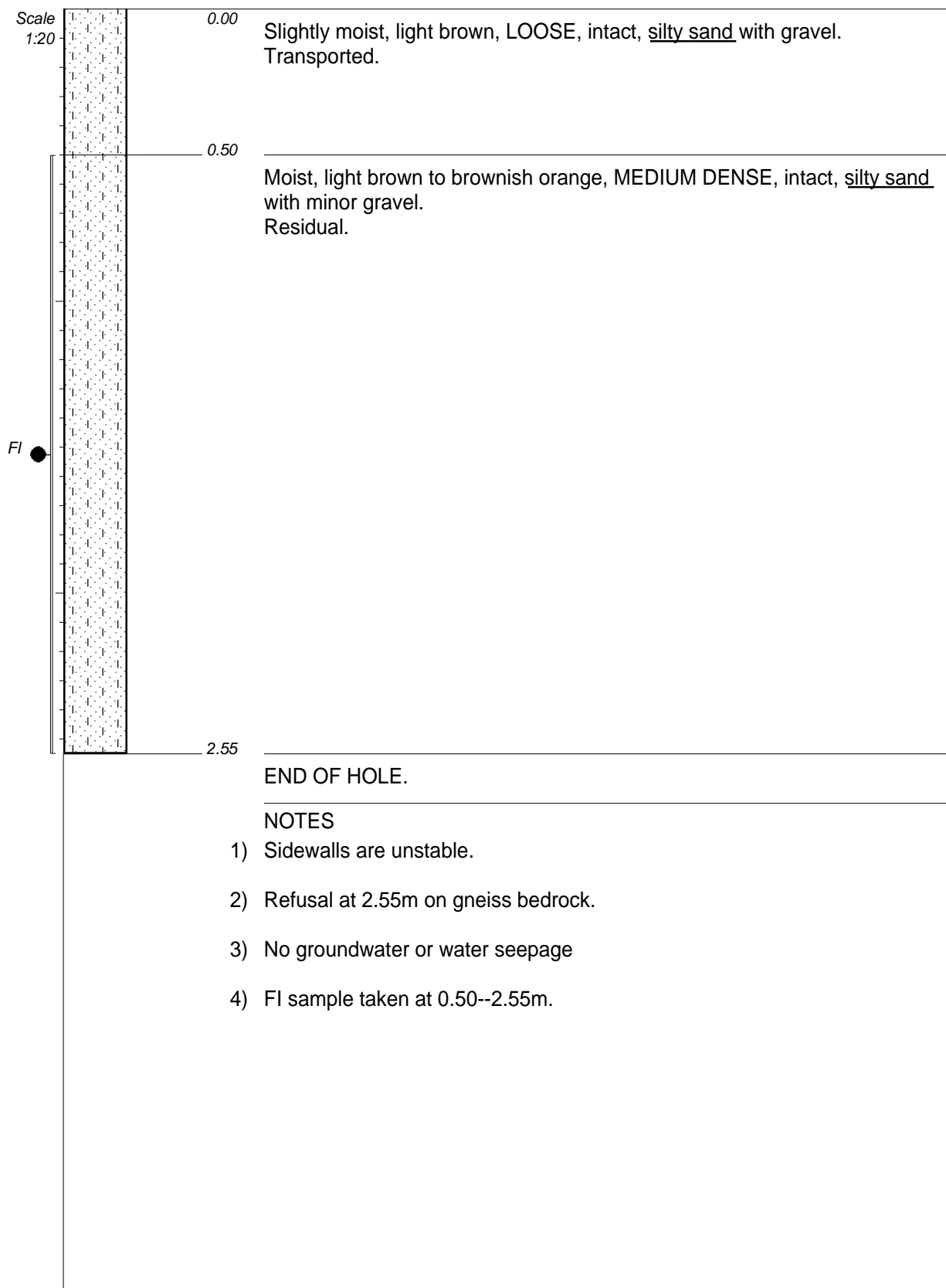
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X-COORD :
Y-COORD :

HOLE No: SB03
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB04**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
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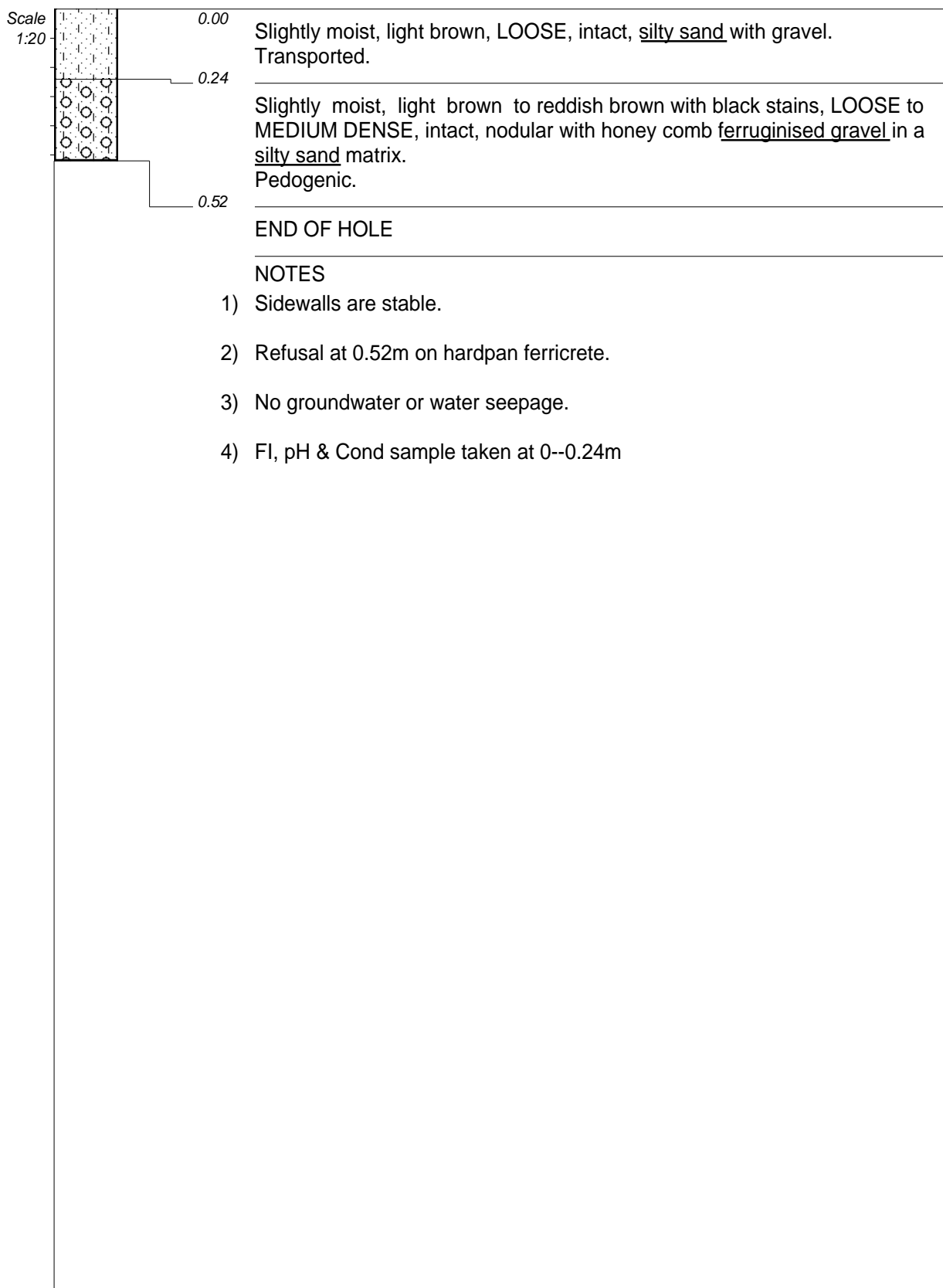
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Y-COORD :

HOLE No: **SB04**
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB05**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 22/01/2019
DATE : 23/05/2019 15:51
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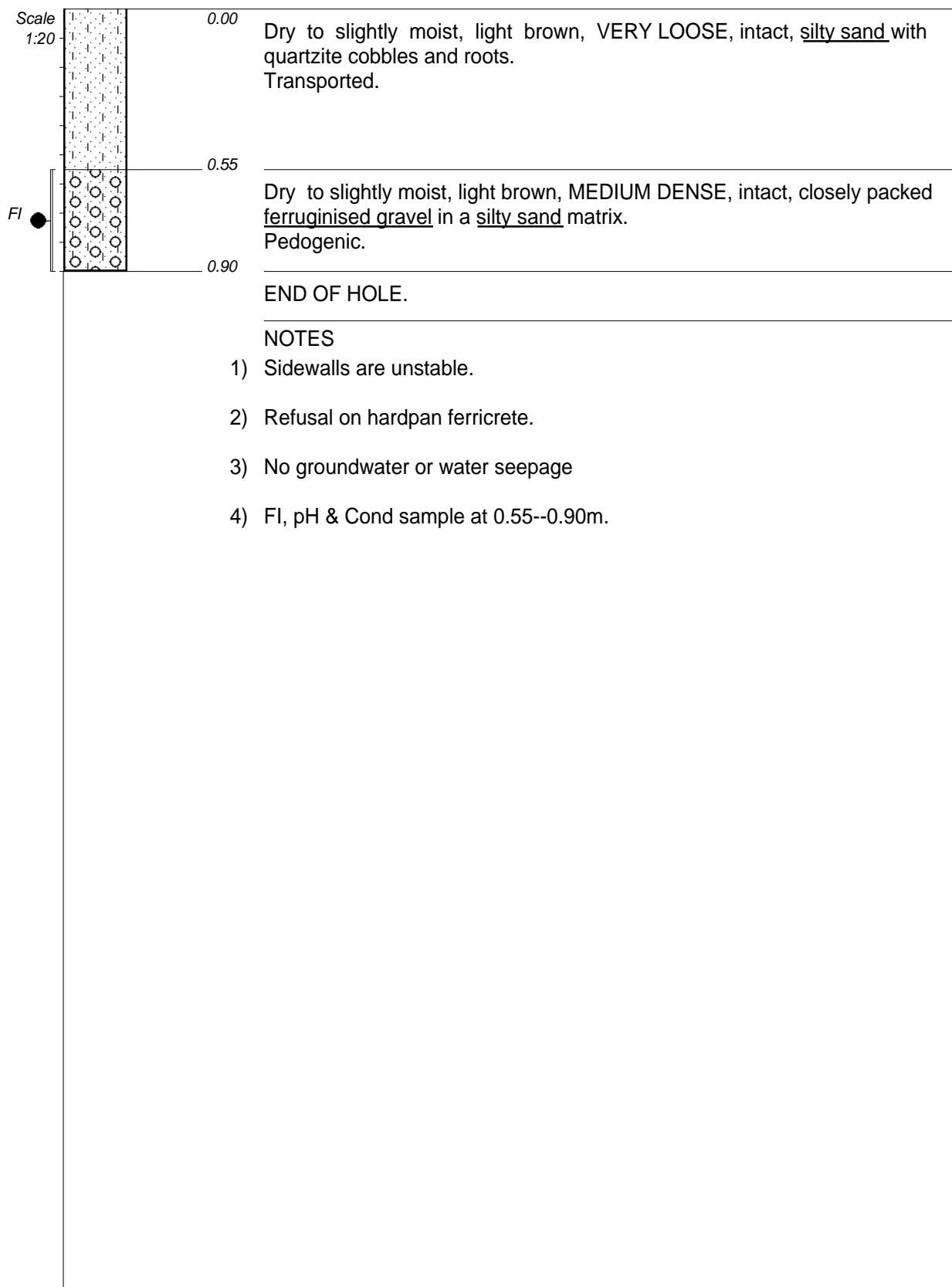
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X-COORD :
Y-COORD :

HOLE No: **SB05**
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB06**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
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DATE : 23/05/2019 15:51
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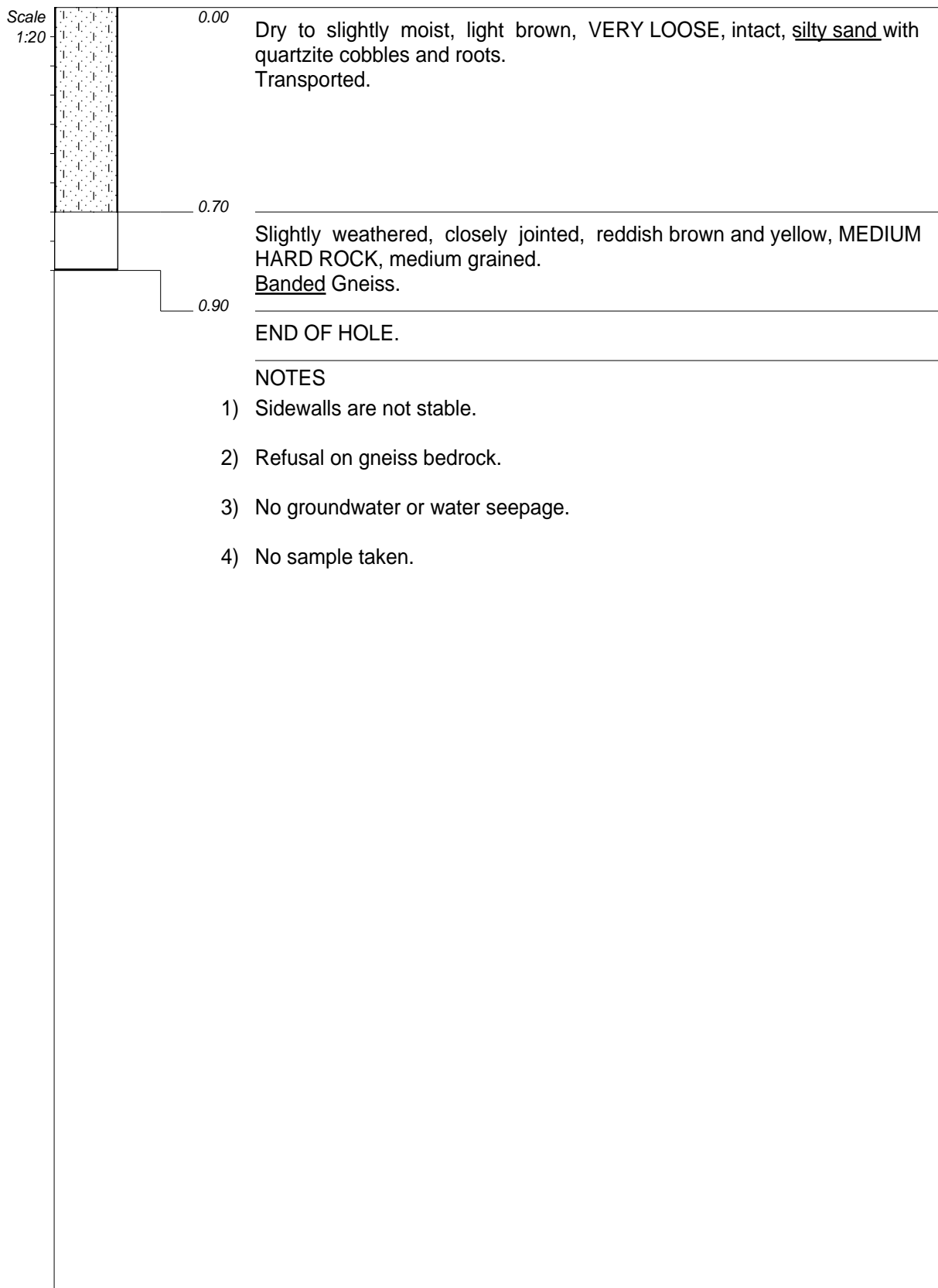
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X-COORD :
Y-COORD :

HOLE No: **SB06**
Soebatsfontein

**COGHSTA
SOEBATSFONTEIN TOWNSHIP**

HOLE No: SB07
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFILED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 08/03/2019
DATE : 23/05/2019 15:51
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ELEVATION :
X-COORD :
Y-COORD :

HOLE No: SB07
Soebatsfontein

**COGHSTA
SOEBATSFONTEIN TOWNSHIP**

HOLE No: SB08
Sheet 1 of 1

JOB NUMBER: 100071

Scale
1:20



0.00

Slightly moist, light brown to reddish brown, LOOSE, intact, gneiss gravel in a silty sand matrix.
Transported.

0.15

+ END OF HOLE.

NOTES

- 1) Sidewalls are stable.
- 2) Refusal at 0.15m on gneiss bedrock.
- 3) No groundwater or water seepage.
- 4) No sample taken.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFILED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
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DATE : 23/05/2019 15:51
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Y-COORD :

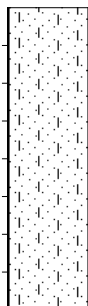
HOLE No: SB08
Soebatsfontein

**COGHSTA
SOEBATSFONTEIN TOWNSHIP**

HOLE No: SB09
Sheet 1 of 1

JOB NUMBER: 100071

Scale
1:20



0.00

Slightly moist, light brown, LOOSE, intact, silty sand with gravel.
Transported.

0.80

END OF HOLE.

NOTES

- 1) Sidewalls are stable.
- 2) Refusal at 0.80m on gneiss bedrock.
- 3) No groundwater or water seepage.
- 4) No sample taken.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 01/03/2019
DATE : 23/05/2019 15:51
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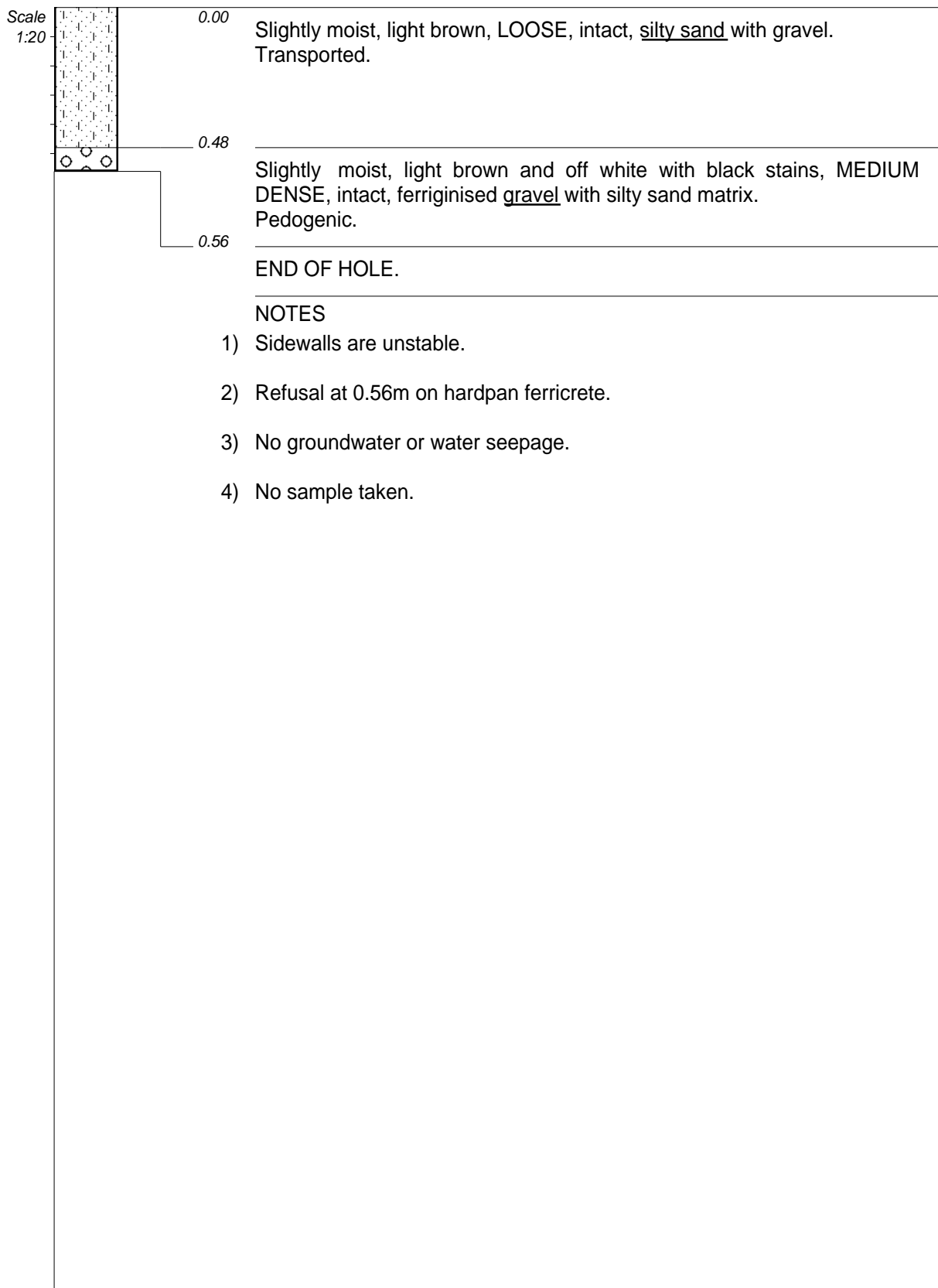
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: SB09
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB10**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFILED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
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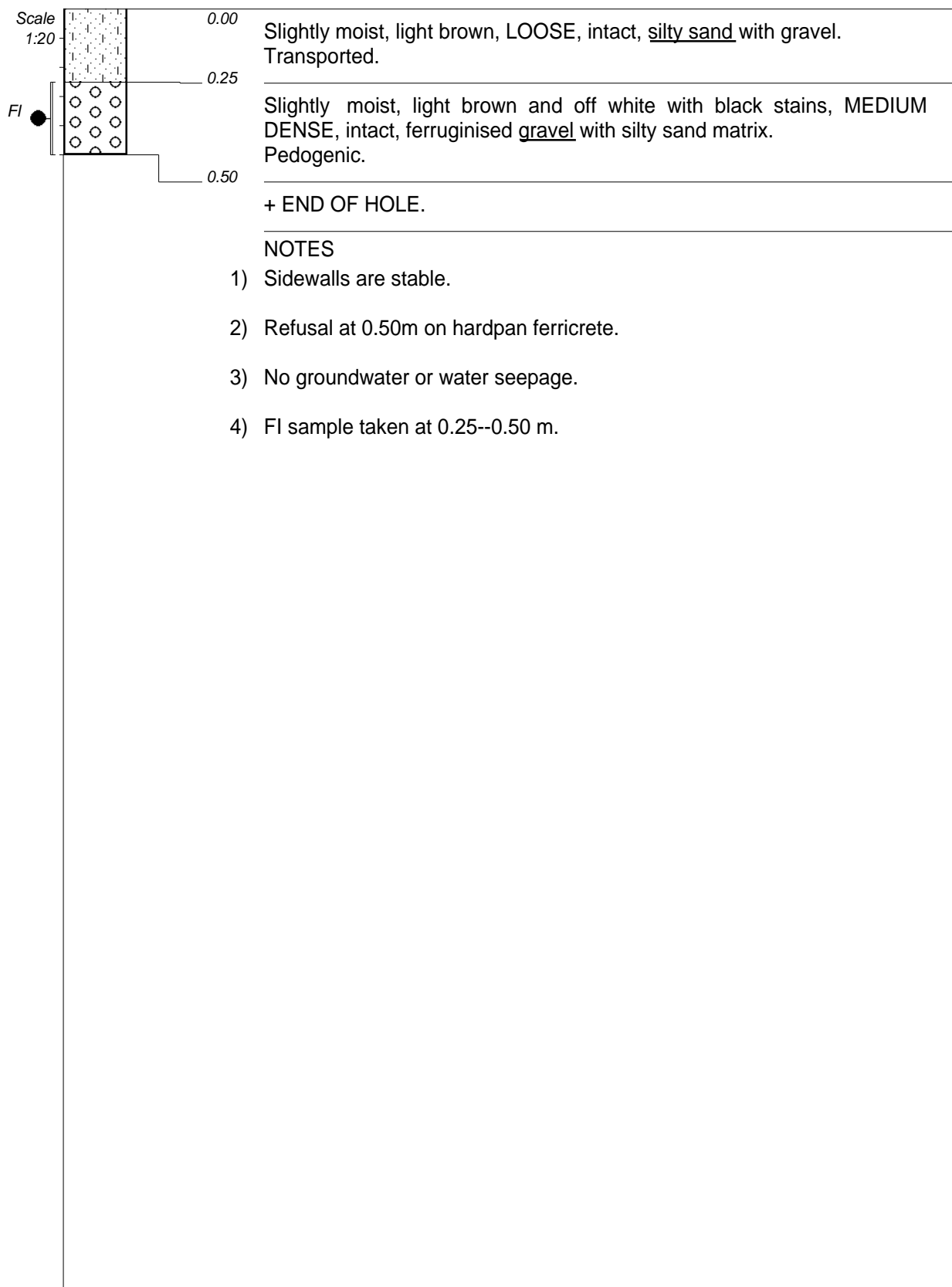
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **SB10**
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB11**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 01/03/2019
DATE : 23/05/2019 15:51
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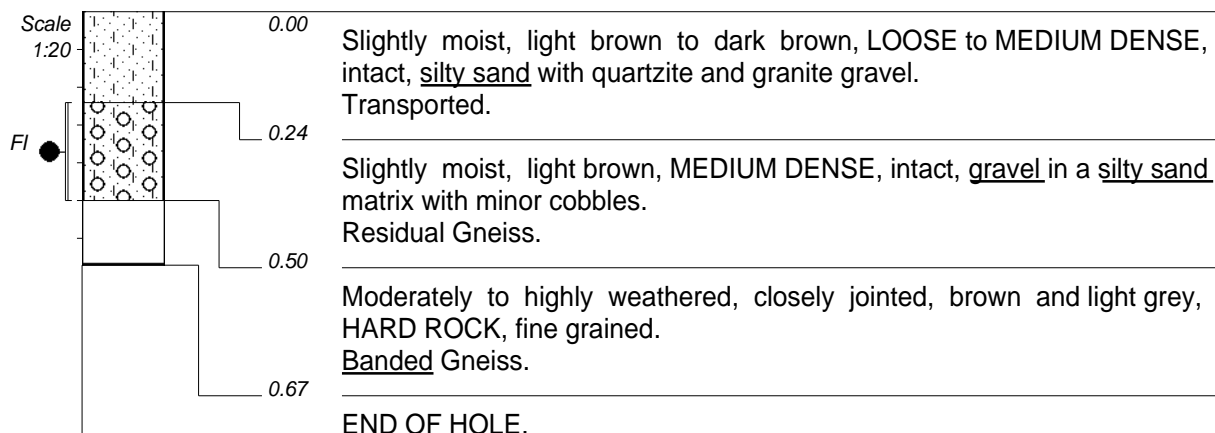
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **SB11**
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB12**
Sheet 1 of 1

JOB NUMBER: 100071



NOTES

- 1) Sidewalls are unstable.
- 2) Refusal at 0.67m on gneiss bedrock.
- 3) No groundwater or water seepage.
- 4) FI sample taken at 0.24--0.50 m.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 01/03/2019
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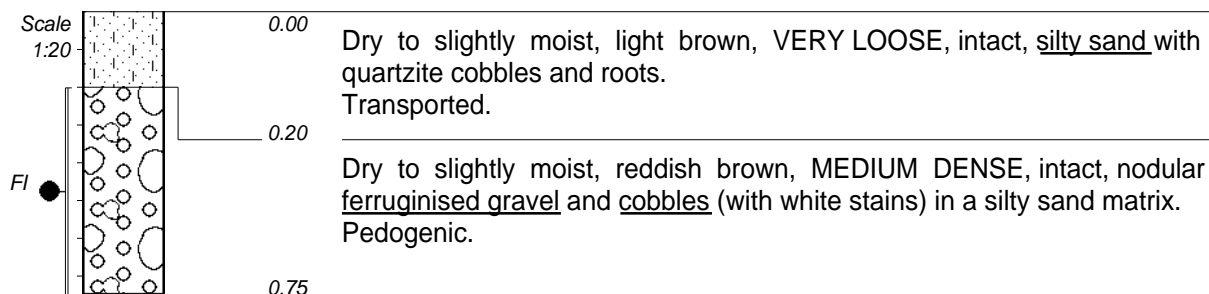
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **SB12**
Soebatsfontein

**COGHSTA
SOEBATSFONTEIN TOWNSHIP**

HOLE No: SB13
Sheet 1 of 1

JOB NUMBER: 100071



Dry to slightly moist, light brown, VERY LOOSE, intact, silty sand with quartzite cobbles and roots. Transported.

Dry to slightly moist, reddish brown, MEDIUM DENSE, intact, nodular ferruginised gravel and cobbles (with white stains) in a silty sand matrix. Pedogenic.

END OF HOLE.

NOTES

- 1) Sidewalls are unstable.
- 2) Refusal on hardpan ferricrete.
- 3) No groundwater or water seepage.
- 4) FI sample taken at 0.20--0.75m.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFILED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 08/03/2019
DATE : 23/05/2019 15:51
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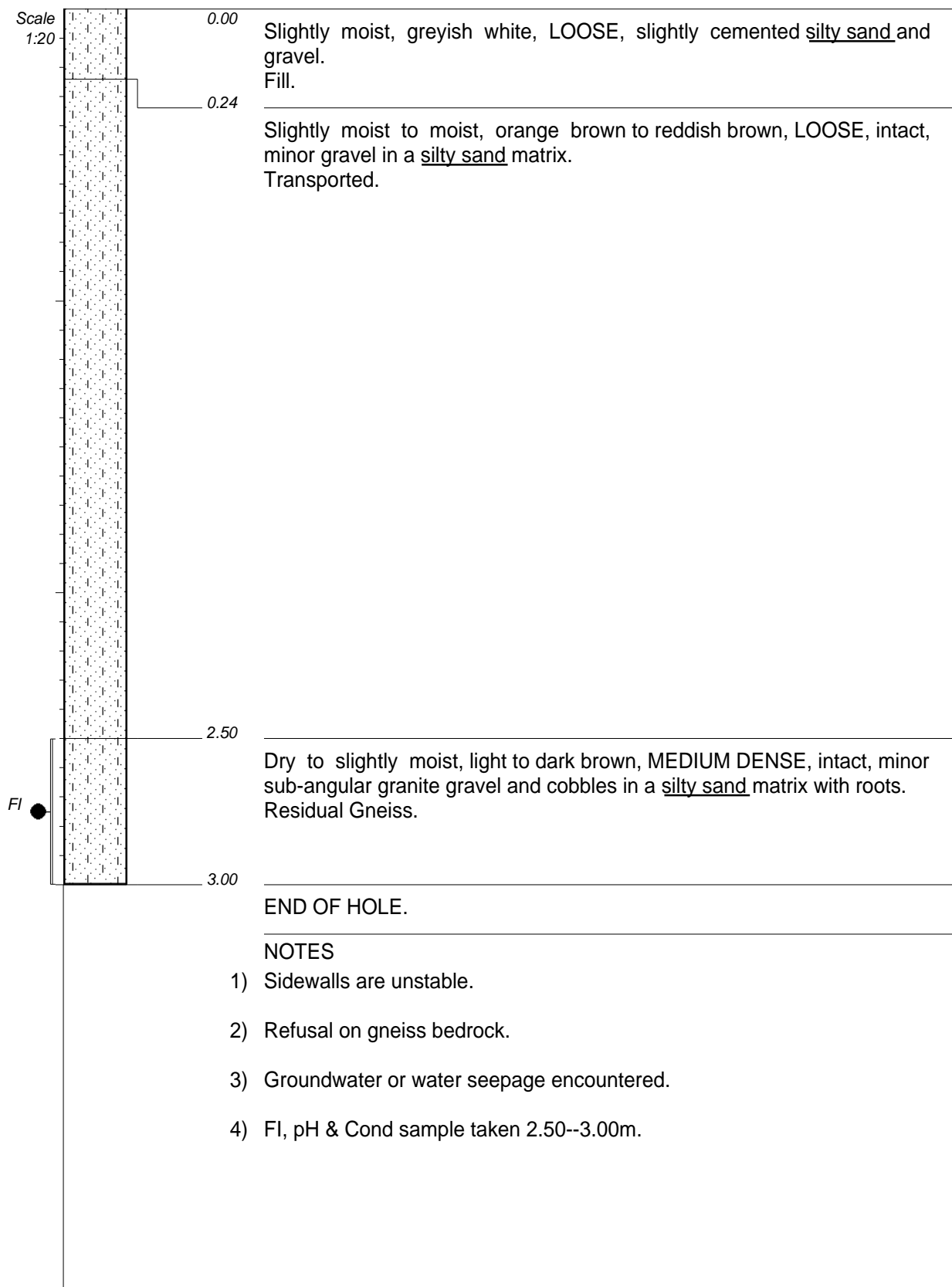
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: SB13
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB14**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
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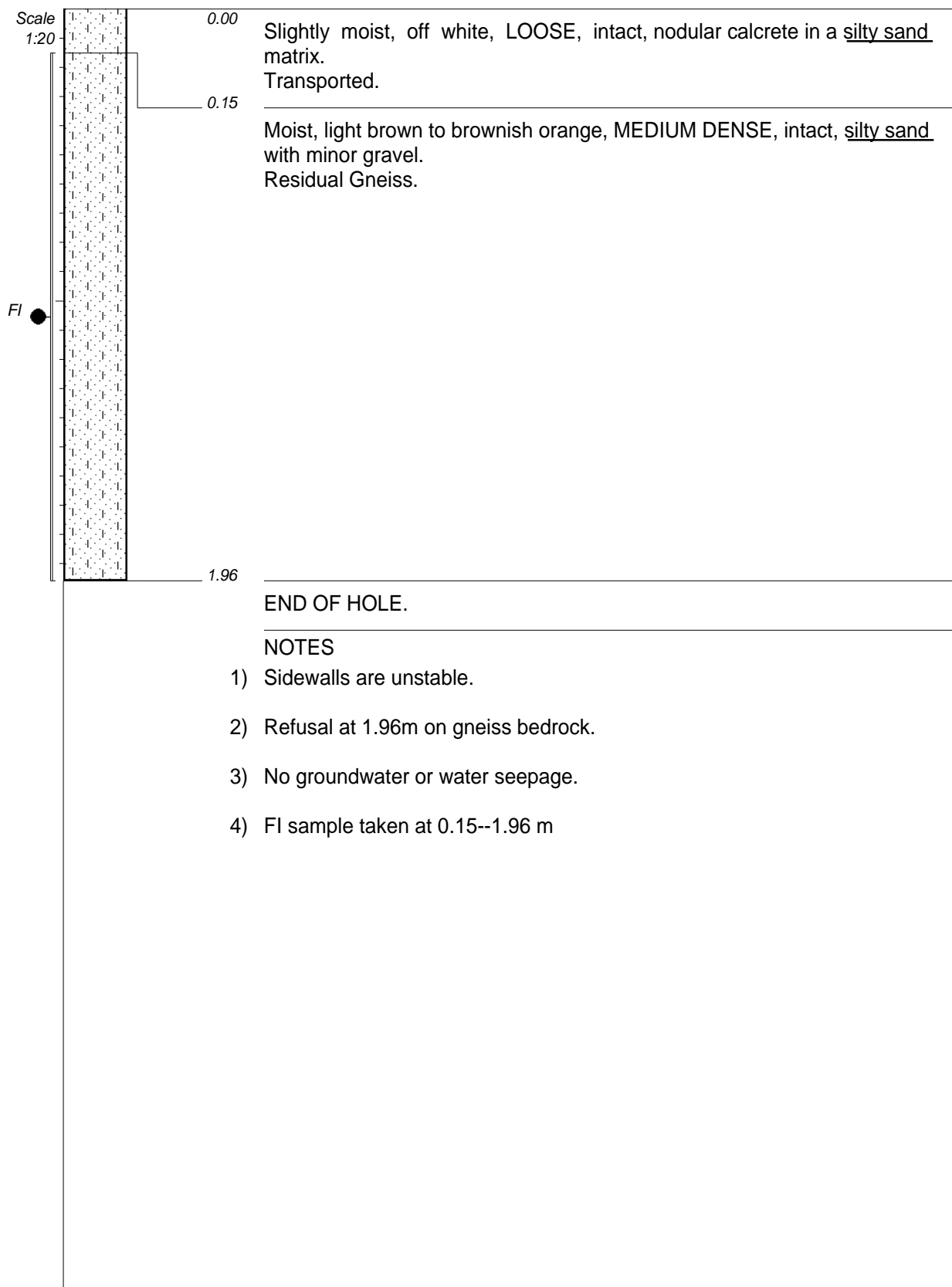
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **SB14**
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB15**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
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DATE : 23/05/2019 15:51
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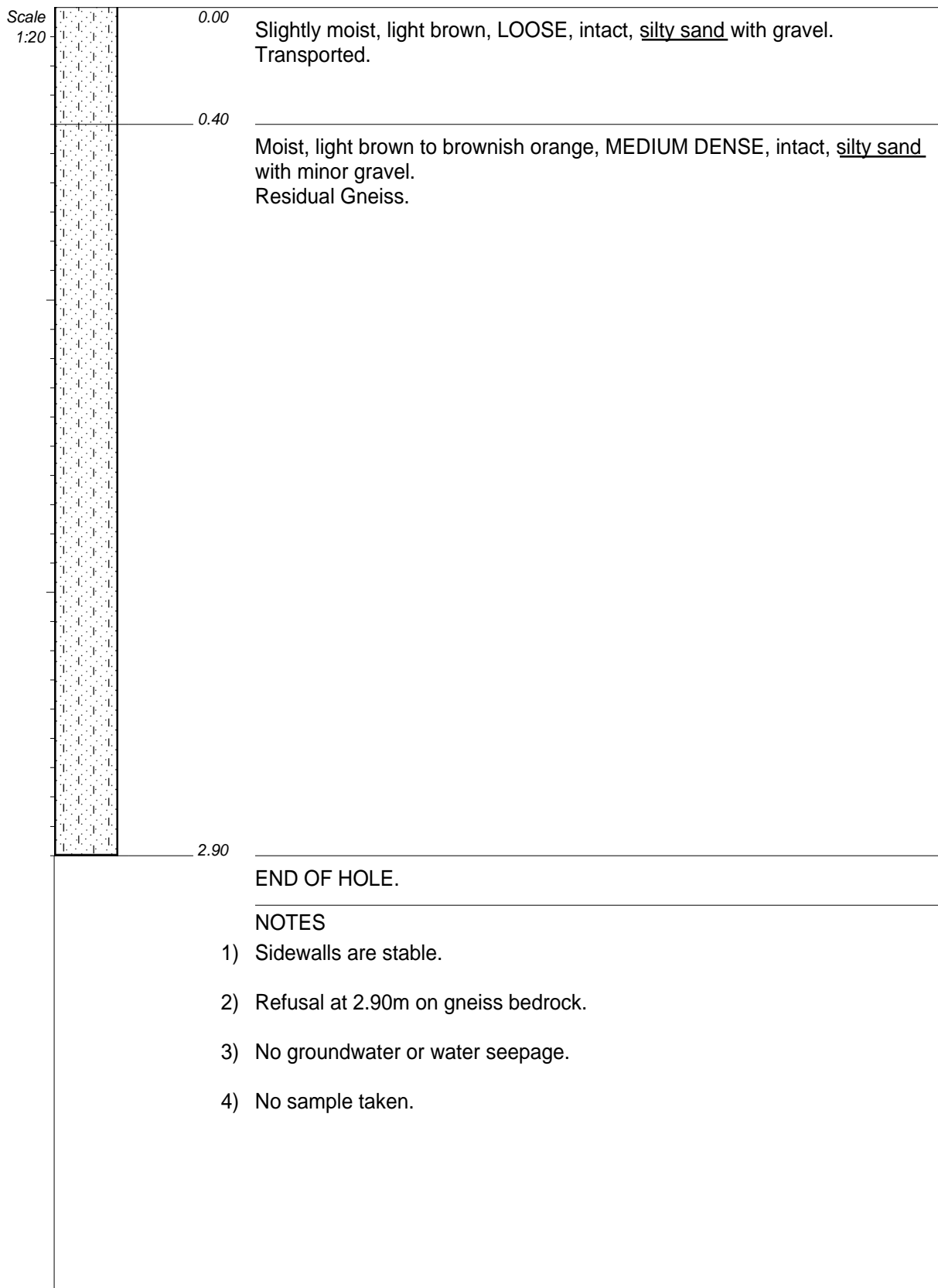
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **SB15**
Soebatsfontein

**COGHSTA
SOEBATSFONTEIN TOWNSHIP**

HOLE No: SB16
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFILED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
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DATE : 23/05/2019 15:51
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ELEVATION :
X-COORD :
Y-COORD :

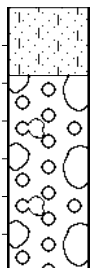
HOLE No: SB16
Soebatsfontein

**COGHSTA
SOEBATSFONTEIN TOWNSHIP**

HOLE No: SB17
Sheet 1 of 1

JOB NUMBER: 100071

Scale
1:20



0.00

Dry to slightly moist, light brown, VERY LOOSE, intact, silty sand with quartzite cobbles and roots.
Transported.

0.18

Dry to slightly moist, light brown and off white, LOOSE to MEDIUM DENSE, intact, closely packed sub-angular ferruginised gravel and cobbles.
Pedogenic.

0.70

END OF HOLE.

NOTES

- 1) Sidewalls are stable.
- 2) Refusal on hardpan ferricrete.
- 3) No groundwater or water seepage.
- 4) No sample taken.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFILED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
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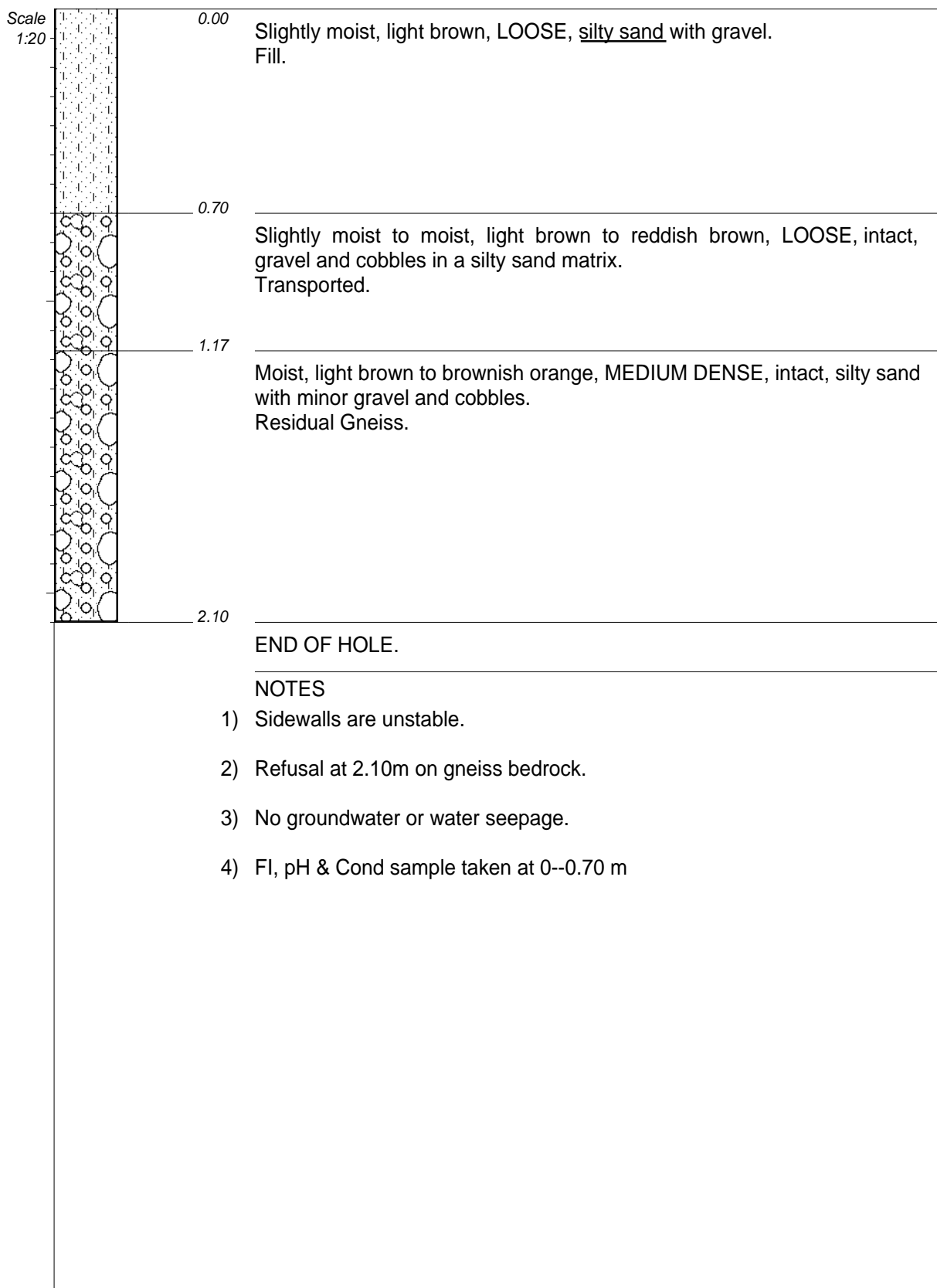
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: SB17
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB18**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
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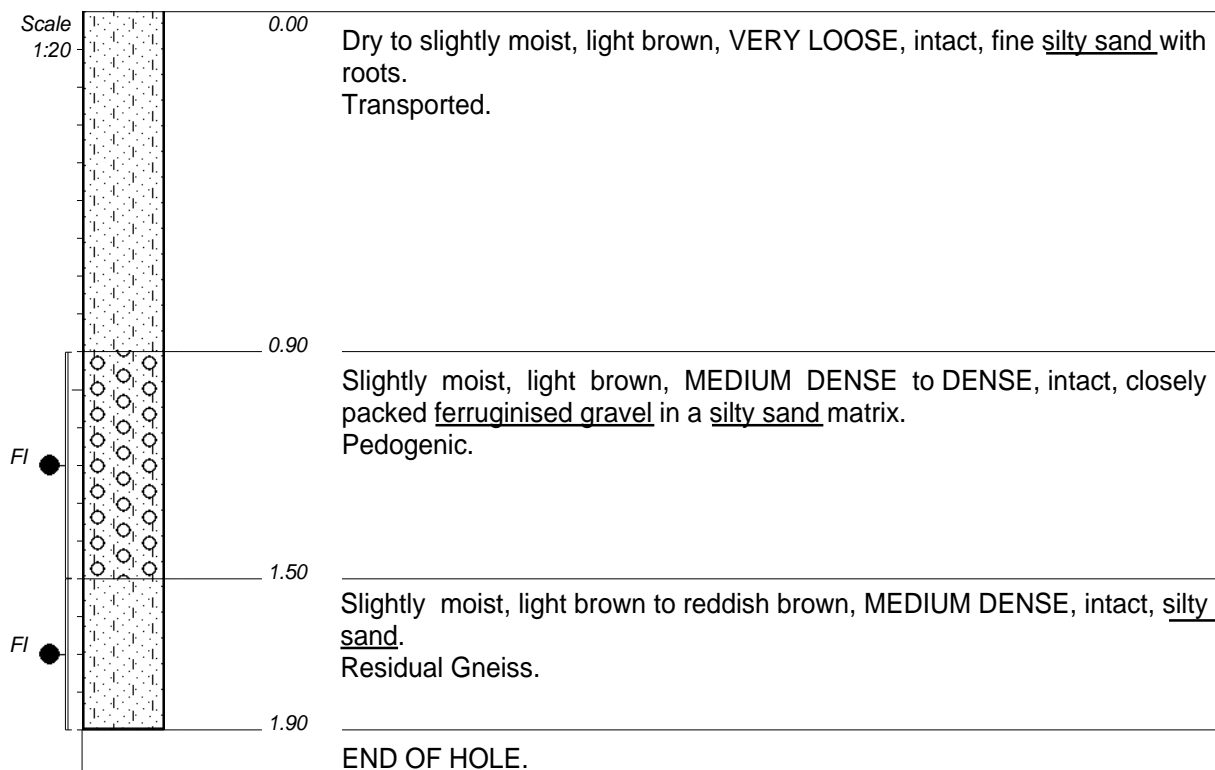
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **SB18**
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB19**
Sheet 1 of 1

JOB NUMBER: 100071



NOTES

- 1) Sidewalls are stable.
- 2) Refusal on gneiss bedrock.
- 3) No groundwater or water seepage.
- 4) FI sample taken at 0.90--1.50m.
- 5) FI sample taken at 1.50--1.90m.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 08/03/2019
DATE : 23/05/2019 15:51
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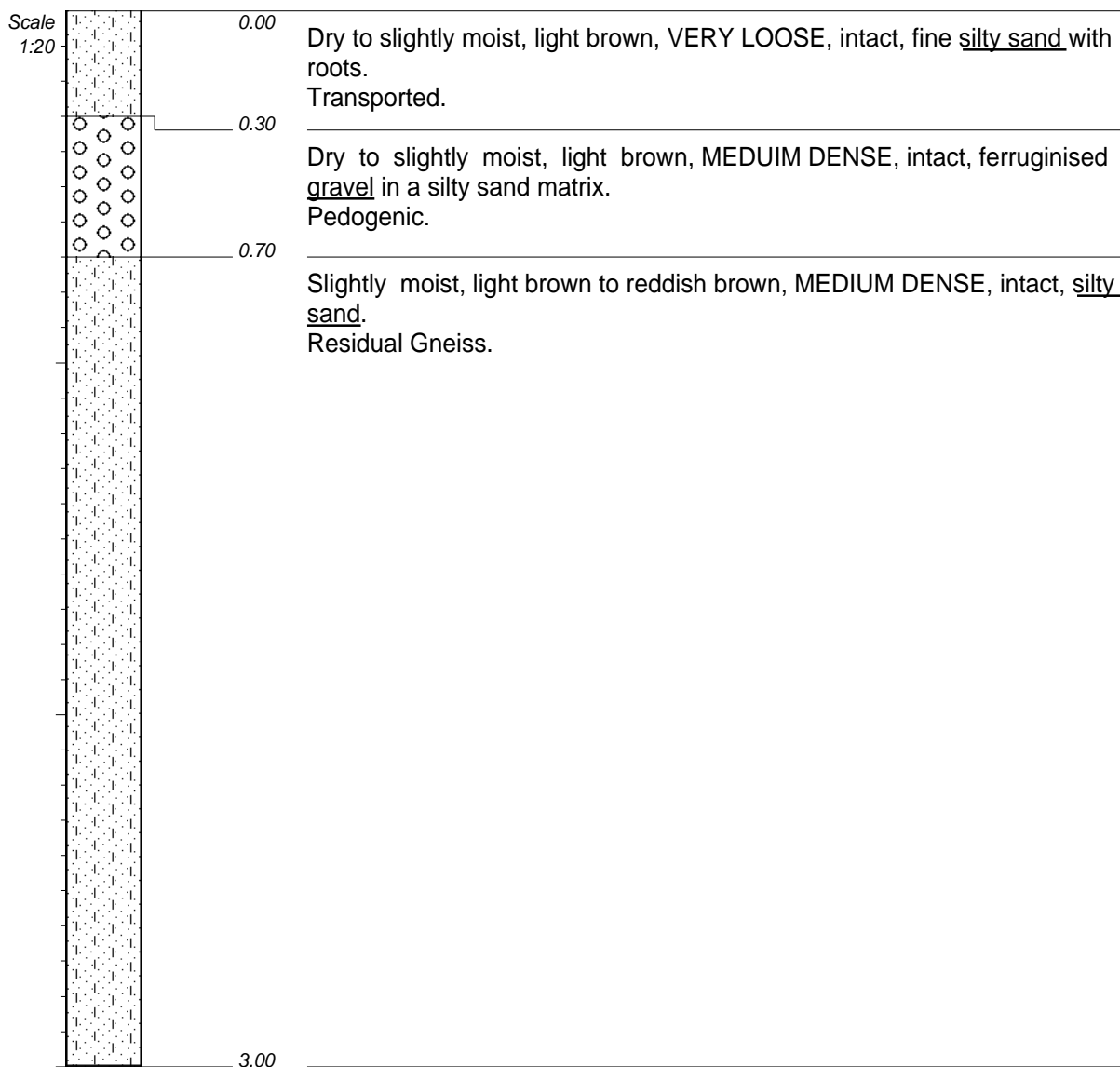
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **SB19**
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB20**
Sheet 1 of 1

JOB NUMBER: 100071



END OF HOLE.

NOTES

- 1) Sidewalls are unstable.
- 2) No refusal.
- 3) No groundwater or water seepage.
- 4) No sample taken.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFILED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 01/03/2019
DATE : 23/05/2019 15:51
TEXT : ..ofile(AutoRecovered).doc

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **SB20**
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB21**
Sheet 1 of 1

JOB NUMBER: 100071

Scale
1:20

0.00

Slightly moist, reddish brown, LOOSE, intact, silty sand with roots.
Transported.

1.50

Moist to wet, green grey, LOOSE to MEDIUM DENSE, silty sand with
minor sub-angular quartzite cobbles and gneiss gravel.
Residual Gneiss.

3.00

END OF HOLE.

NOTES

- 1) Sidewalls are unstable.
- 2) Refusal on gneiss bedrock.
- 3) No groundwater or water seepage.
- 4) FI sample taken at 0--1.50m.
- 5) Thin layer of clayey sand (one side of the test pit)

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFILED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
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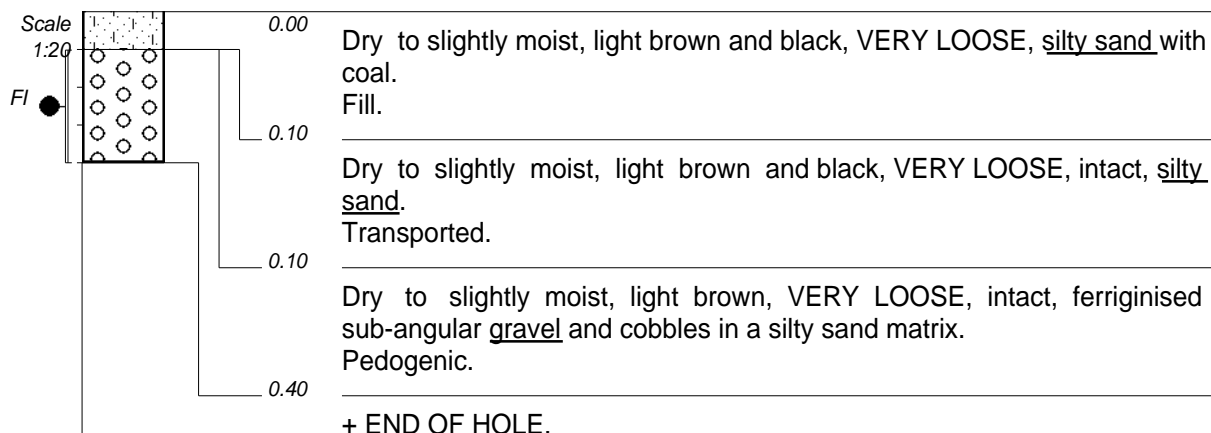
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **SB21**
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

HOLE No: **SB22**
Sheet 1 of 1

JOB NUMBER: 100071



NOTES

- 1) Sidewalls are stable.
- 2) Refusal on hardpan ferricrete.
- 3) No groundwater or water seepage.
- 4) FI, pH & Cond sample taken at 0.10--0.40m.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
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DATE : 23/05/2019 15:51
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ELEVATION :
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Y-COORD :






HOLE No: **SB22**
Soebatsfontein

COGHSTA
SOEBATSFONTEIN TOWNSHIP

LEGEND
Sheet 1 of 1

JOB NUMBER: 100071

Name ●

	GRAVEL	{SA02}
	SAND	{SA04}
	SILTY	{SA07}
	DISTURBED SAMPLE	{SA38}
	COBBLES	{SA58}

CONTRACTOR :
MACHINE :
DRILLED BY :
PROFILED BY :

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE :

DATE : 23/05/2019 17:23
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ELEVATION :
X-COORD :
Y-COORD :

LEGEND
SUMMARY OF SYMBOLS

Appendix C

Laboratory Test Results



TRIMAC SOILS LABORATORY cc

REG. NO. 2008/113124/23

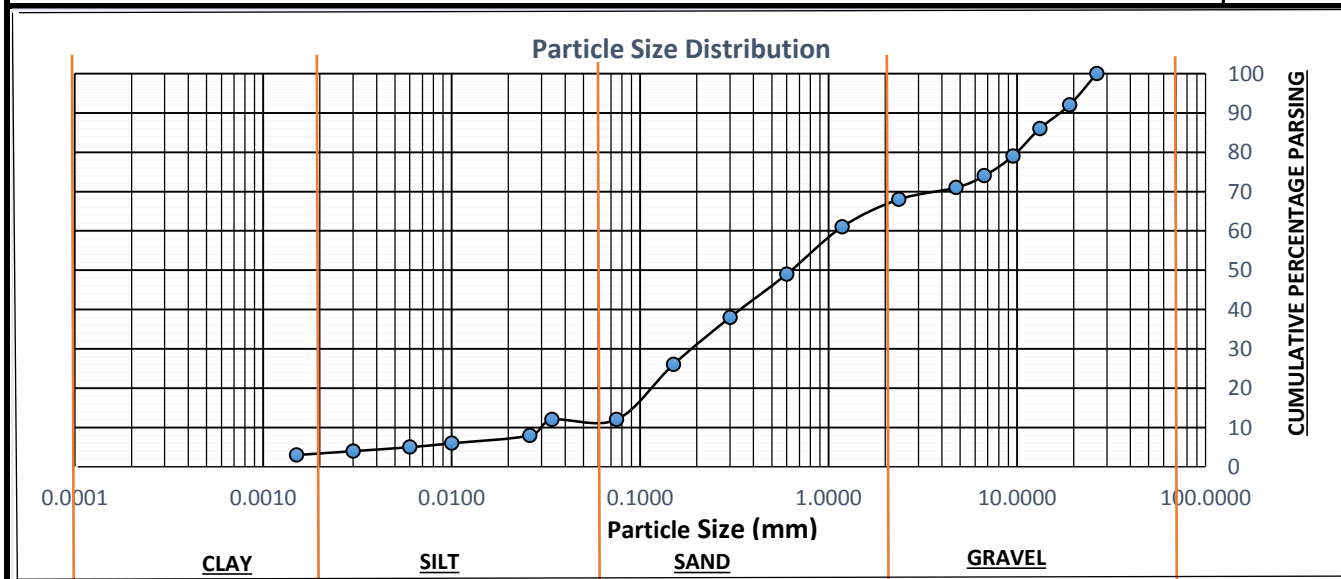
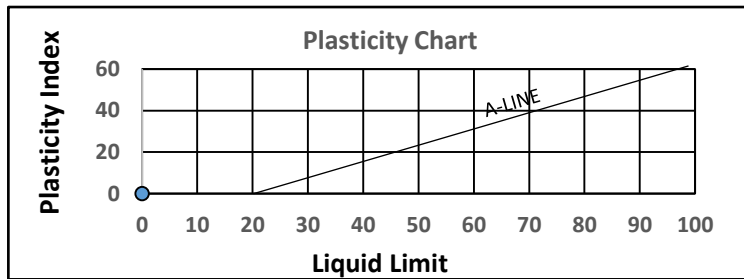
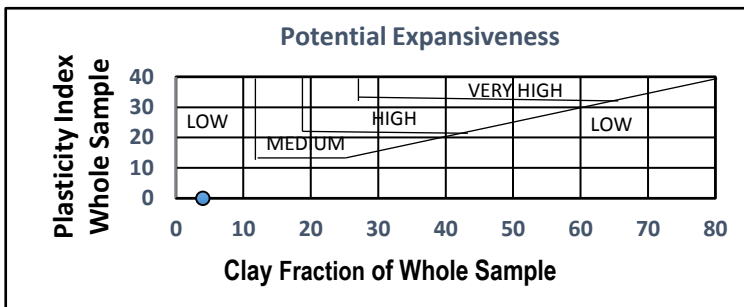
Unit 4, Zinfandel Road
Saxenburg Park 2
Blackheath
7580

Cell: 082 953 3110
Tel: 021 905 4790
Fax: 021 905 4791
e-mail: trimac@gmail.com

Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB01	Liquid Limit:		% Clay:	4
Depth (mm)	400-1000	Plasticity Index	SP	% Silt	7
Position		Linear Shrinkage	0.5	% Sand	56
		Moisture content	4.9	% Gravel	33
		GRADING MODULES	1.76	PH VALUE(PH)	5.6
				CONDUCTIVITY(S/m)	2.74
Description of Material	D/BROWN SILTY SAND + DECOMPOSED GRANITE				

Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	100
	19.0000	92
	13.2000	86
	9.5000	79
	6.7000	74
	4.7500	71
	2.3600	68
	1.1800	61
	0.6000	49
	0.3000	38
	0.1500	26
Mechanical Analysis	0.0750	12
	0.0340	12
	0.0260	8
	0.0100	6
	0.0060	5
	0.0030	4
	0.0015	3





TRIMAC SOILS LABORATORY cc REG. NO. 2008/113124/23

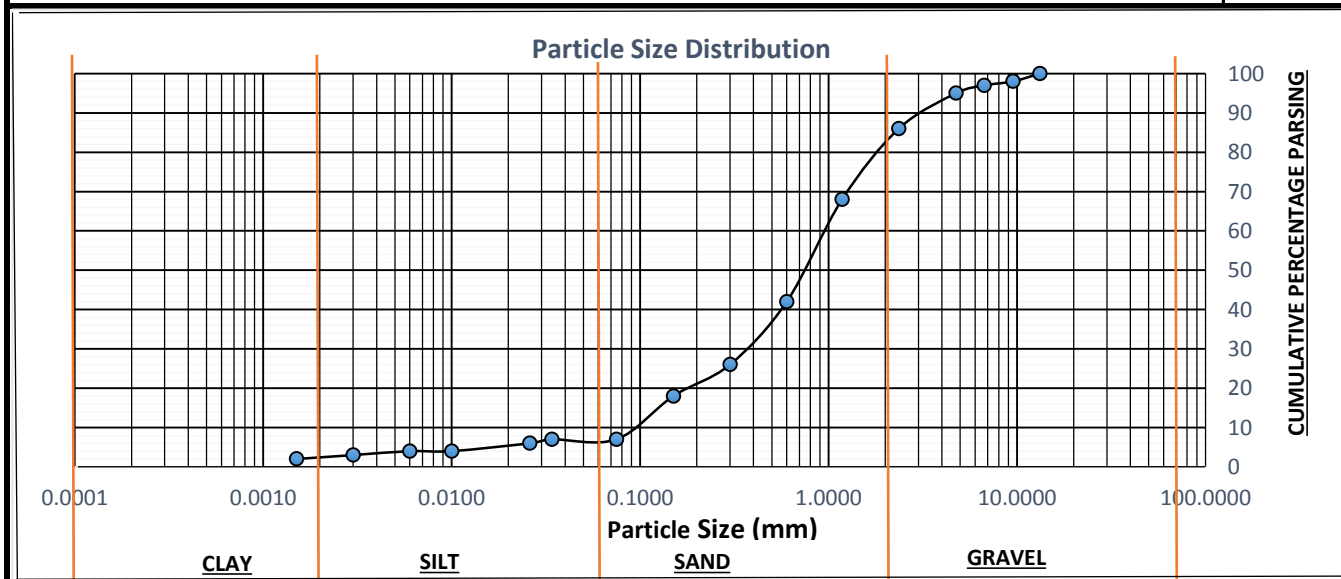
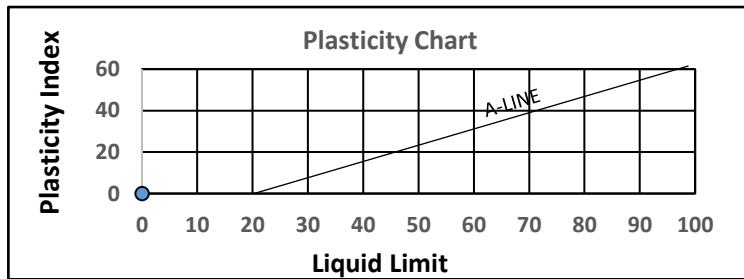
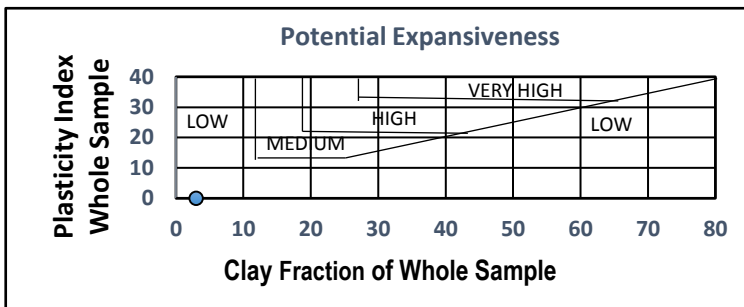
Unit 4, Zinfandel Road
Saxenburg Park 2
Blackheath
7580

Cell: 082 953 3110
Tel: 021 905 4790
Fax: 021 905 4791
e-mail: trimac@gmail.com

Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB02	Liquid Limit:		% Clay:	3
Depth (mm)	900-2200	Plasticity Index	SP	% Silt	3
Position		Linear Shrinkage	0.5	% Sand	77
		Moisture content	3.3	% Gravel	17
		GRADING MODULES	1.76	PH VALUE(PH)	6.0
				CONDUCTIVITY(S/m)	0.62

Description of Material		BROWN SILTY SAND + DECOMPOSED GRANITE
Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	
	19.0000	
	13.2000	100
	9.5000	98
	6.7000	97
	4.7500	95
	2.3600	86
	1.1800	68
	0.6000	42
	0.3000	26
	0.1500	18
Mechanical Analysis	0.0750	7
	0.0340	7
	0.0260	6
	0.0100	4
	0.0060	4
	0.0030	3
	0.0015	2





TRIMAC SOILS LABORATORY cc

REG. NO. 2008/113124/23

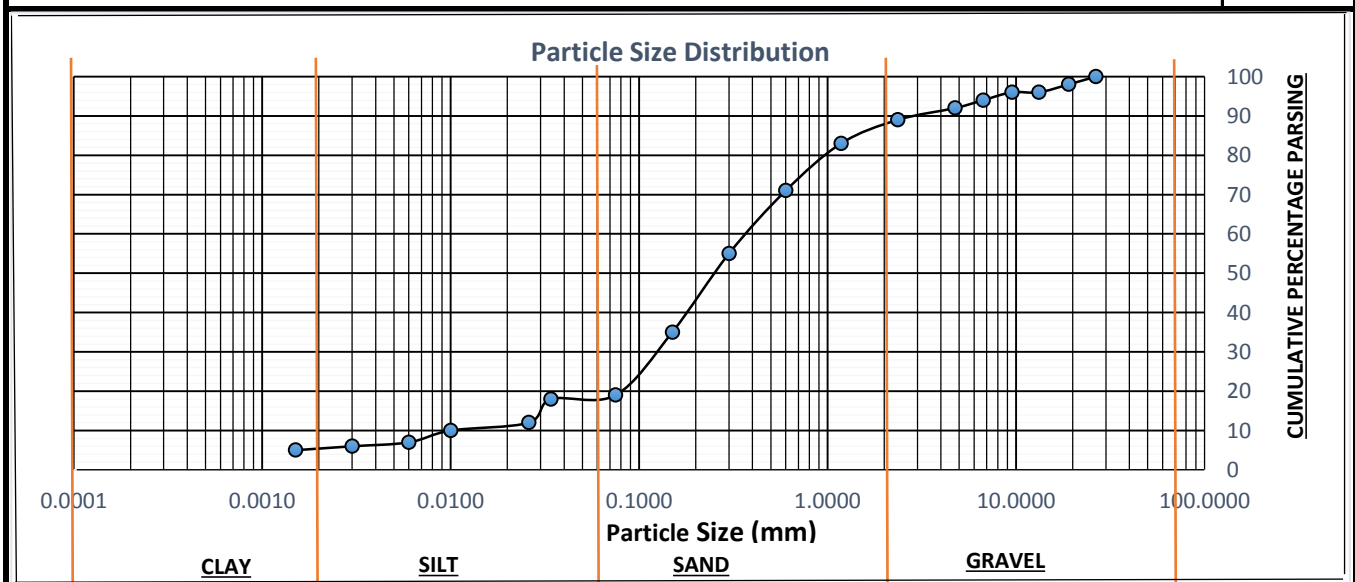
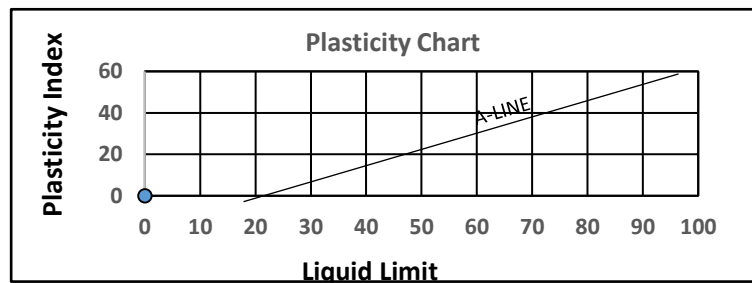
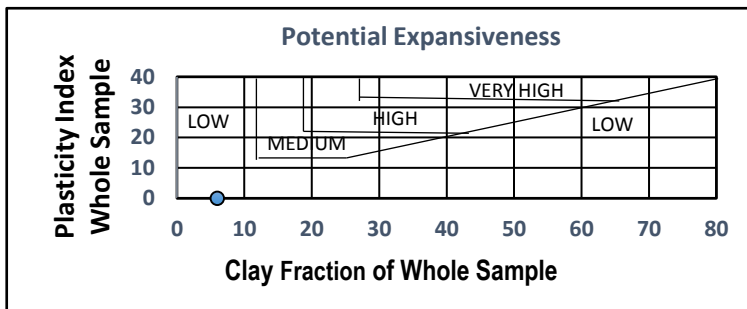
Unit 4, Zinfandel Road
Saxenburg Park 2
Blackheath
7580

Cell: 082 953 3110
Tel: 021 905 4790
Fax: 021 905 4791
e-mail: trimac@gmail.com

Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB04	Liquid Limit:		% Clay:	6
Depth (mm)	550-2500	Plasticity Index	SP	% Silt	11
Position		Linear Shrinkage	0.5	% Sand	71
		Moisture content	10.3	% Gravel	12
		GRADING MODULES	1.28		
Description of Material	BROWN SILTY SAND + DECOMP GRANITE				

Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	100
	19.0000	98
	13.2000	96
	9.5000	96
	6.7000	94
	4.7500	92
	2.3600	89
	1.1800	83
	0.6000	71
	0.3000	55
	0.1500	35
Mechanical Analysis	0.0750	19
	0.0340	18
	0.0260	12
	0.0100	10
	0.0060	7
	0.0030	6
	0.0015	5





TRIMAC SOILS LABORATORY cc

REG. NO. 2008/113124/23

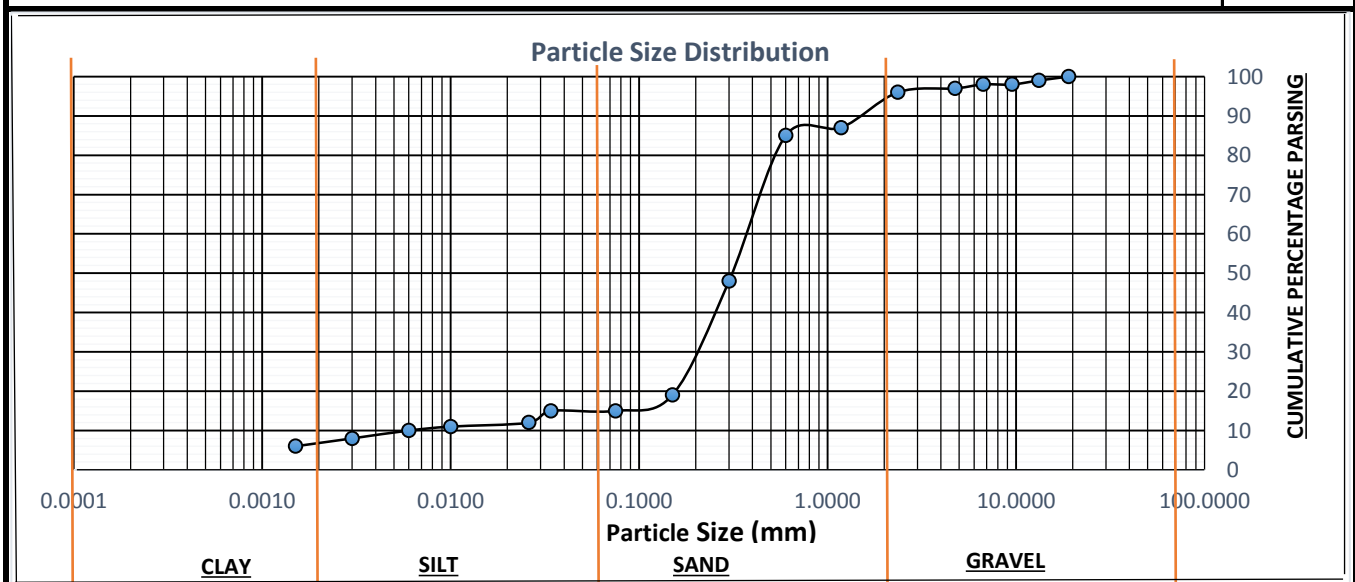
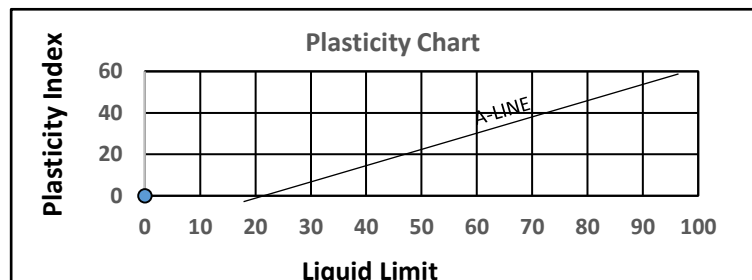
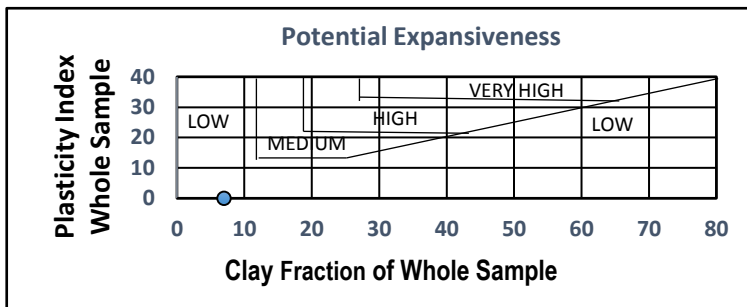
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Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB05	Liquid Limit:		% Clay:	7
Depth (mm)	0-240	Plasticity Index	SP	% Silt	8
Position		Linear Shrinkage	0.5	% Sand	80
		Moisture content	1.4	% Gravel	5
		GRADING MODULES	1.15	PH VALUE(PH)	5.9
				CONDUCTIVITY(S/m)	2.94
Description of Material	R/BROWN SILTY SAND + DECOMPOSED GRANITE				

Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	
	19.0000	100
	13.2000	99
	9.5000	98
	6.7000	98
	4.7500	97
	2.3600	96
	1.1800	87
	0.6000	85
	0.3000	48
	0.1500	19
Mechanical Analysis	0.0750	15
	0.0340	15
	0.0260	12
	0.0100	11
	0.0060	10
	0.0030	8
	0.0015	6





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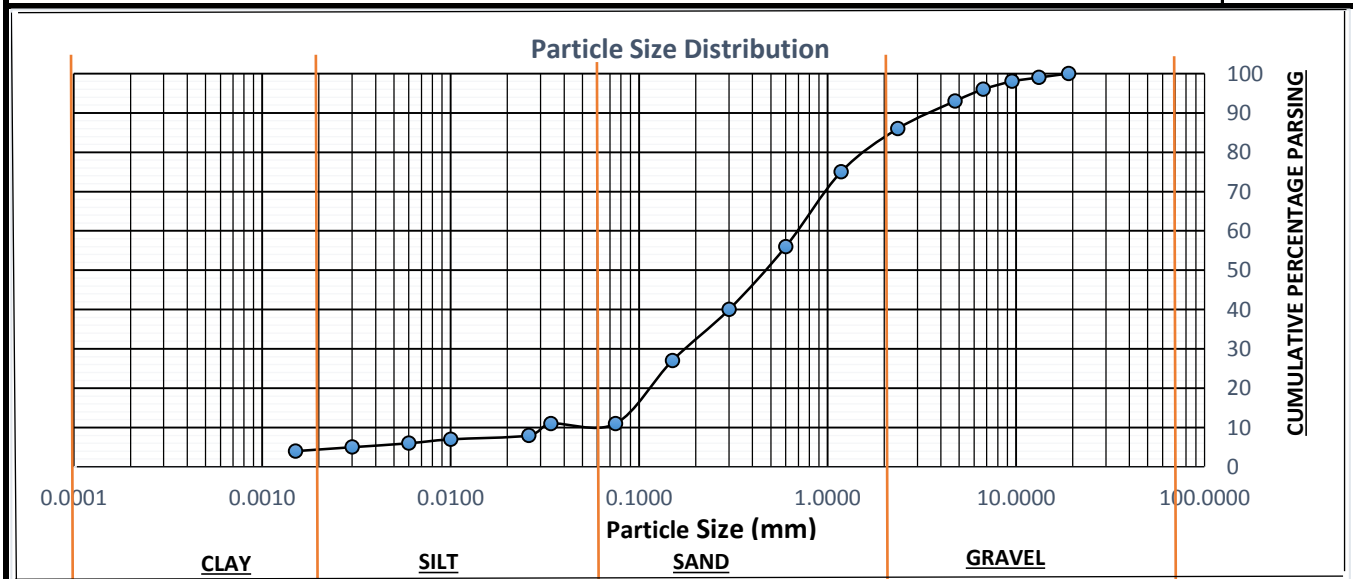
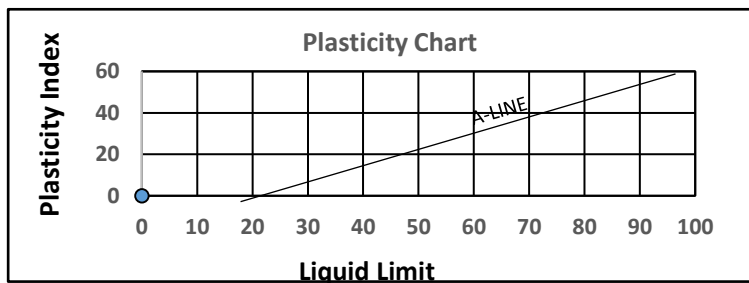
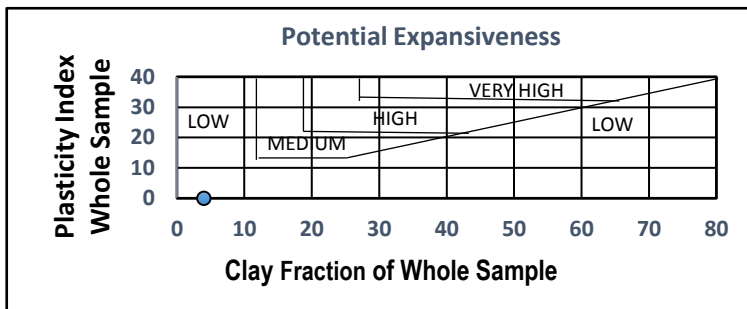
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Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB06	Liquid Limit:		% Clay:	4
Depth (mm)	550-900	Plasticity Index	SP	% Silt	6
Position		Linear Shrinkage	0.5	% Sand	74
		Moisture content	3.6	% Gravel	16
		GRADING MODULES	1.52	PH VALUE(PH)	6.3
				CONDUCTIVITY(S/m)	1.62

Description of Material		R/BROWN SILTY SAND + DECOMPOSED GRANITE
Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	
	19.0000	100
	13.2000	99
	9.5000	98
	6.7000	96
	4.7500	93
	2.3600	86
	1.1800	75
	0.6000	56
Mechanical Analysis	0.3000	40
	0.1500	27
	0.0750	11
	0.0340	11
	0.0260	8
	0.0100	7
	0.0060	6
	0.0030	5
	0.0015	4





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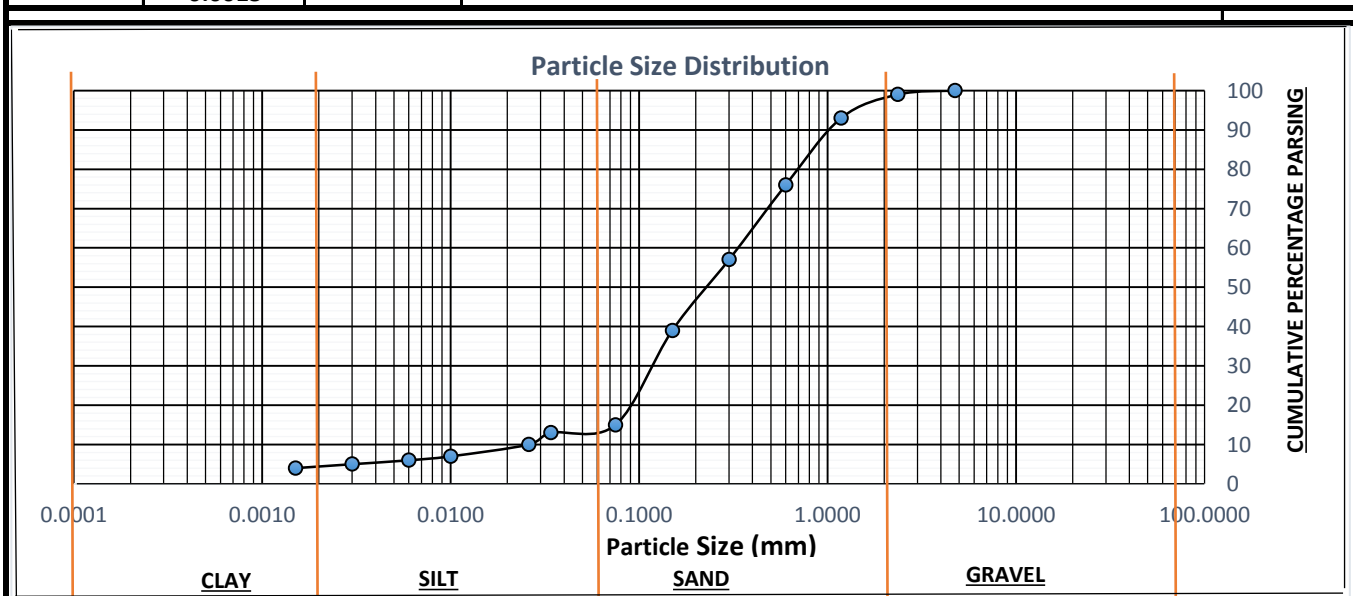
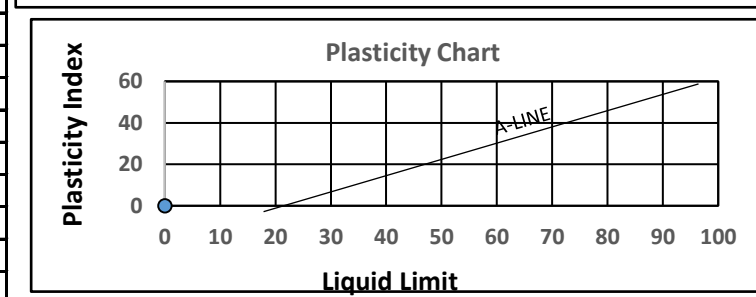
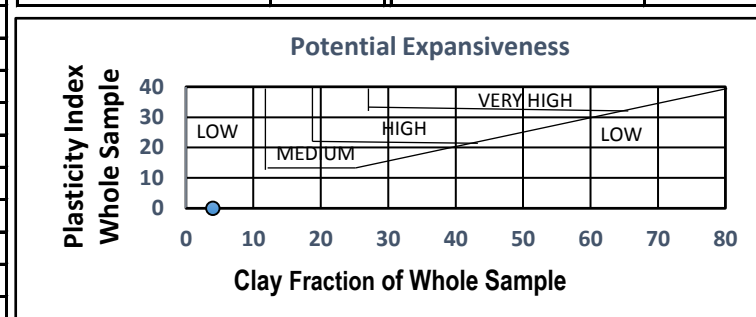
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Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB09	Liquid Limit:		% Clay:	4
Depth (mm)	0-400	Plasticity Index	SP	% Silt	9
Position		Linear Shrinkage	0.5	% Sand	85
		Moisture content	0.5	% Gravel	2
		GRADING MODULES	1.12		
Description of Material	RED BROWN SILTY SAND				

Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	
	19.0000	
	13.2000	
	9.5000	
	6.7000	
	4.7500	100
	2.3600	99
	1.1800	93
	0.6000	76
	0.3000	57
Mechanical Analysis	0.1500	39
	0.0750	15
	0.0340	13
	0.0260	10
	0.0100	7
	0.0060	6
	0.0030	5
	0.0015	4





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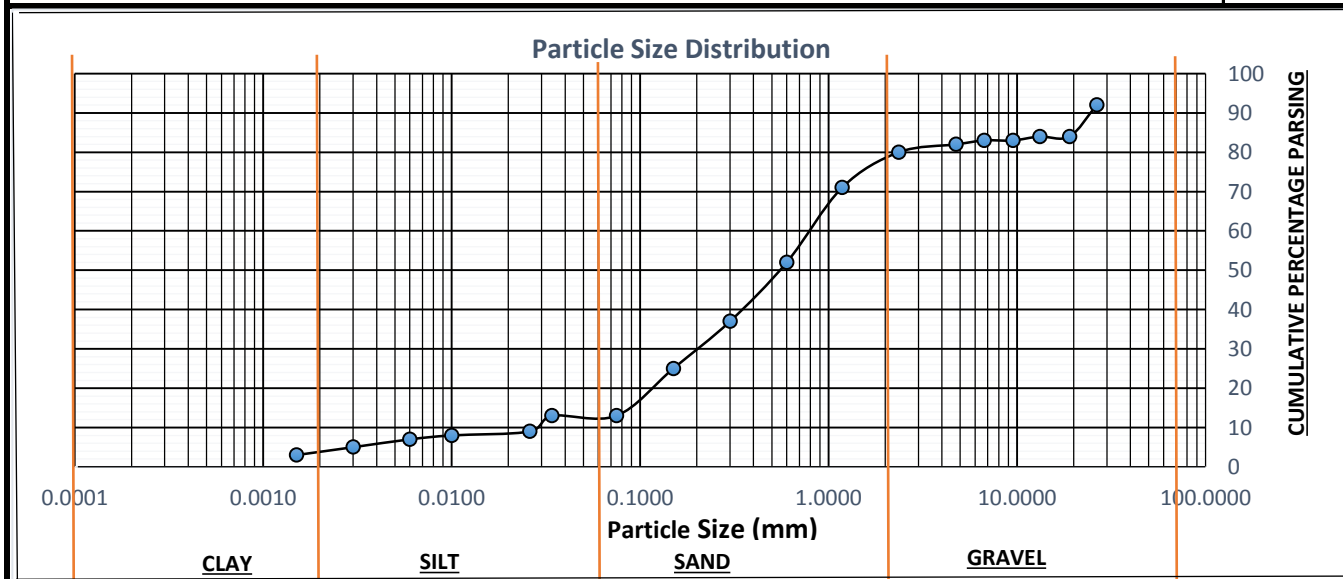
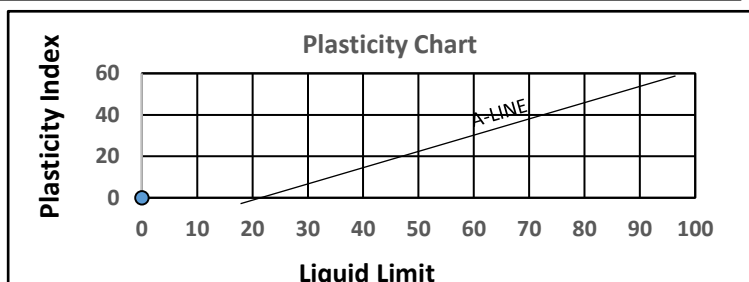
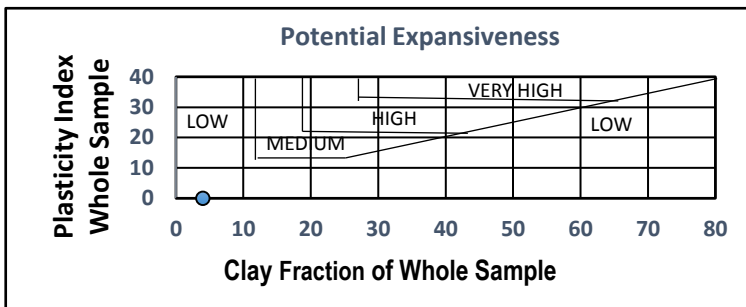
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Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB11	Liquid Limit:		% Clay:	4
Depth (mm)	250-500	Plasticity Index	SP	% Silt	8
Position		Linear Shrinkage	0.5	% Sand	67
		Moisture content	6.8	% Gravel	21
		GRADING MODULES	1.60	PH VALUE(PH)	6.1
				CONDUCTIVITY(S/m)	1.63

Description of Material		R/BROWN SILTY SAND + DECOMPOSED GRANITE
Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	92
	19.0000	84
	13.2000	84
	9.5000	83
	6.7000	83
	4.7500	82
	2.3600	80
	1.1800	71
	0.6000	52
	0.3000	37
	0.1500	25
Mechanical Analysis	0.0750	13
	0.0340	13
	0.0260	9
	0.0100	8
	0.0060	7
	0.0030	5
	0.0015	3





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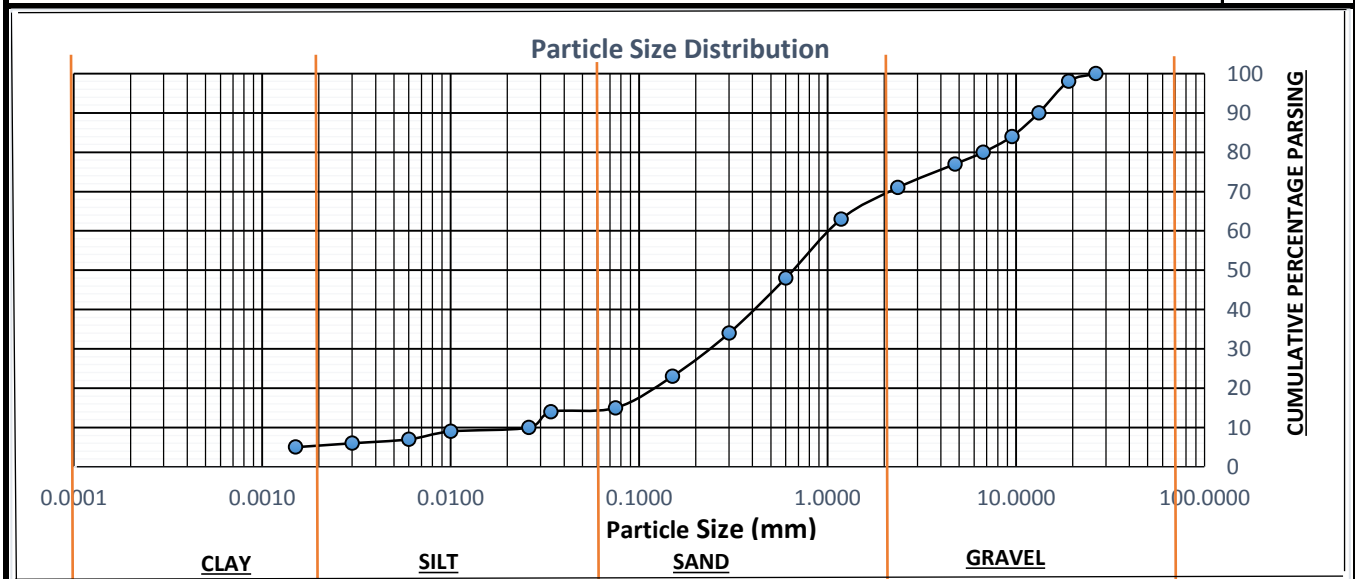
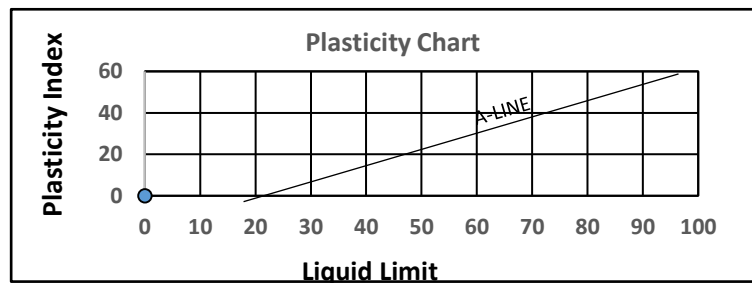
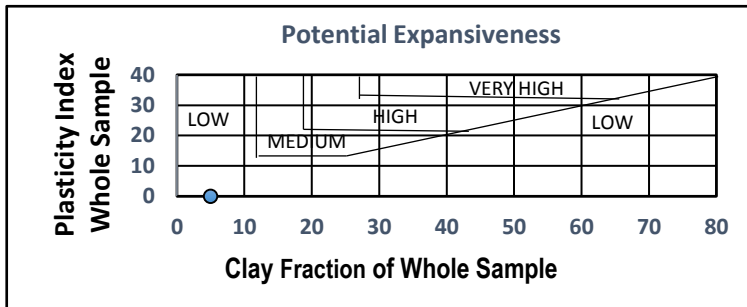
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Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB13	Liquid Limit:		% Clay:	5
Depth (mm)	200-750	Plasticity Index	SP	% Silt	9
Position		Linear Shrinkage	0.5	% Sand	55
		Moisture content	4.7	% Gravel	31
		GRADING MODULES	1.75		
Description of Material	R/BROWN SILTY SAND + DECOMPOSED GRANITE				

Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	100
	19.0000	98
	13.2000	90
	9.5000	84
	6.7000	80
	4.7500	77
	2.3600	71
	1.1800	63
	0.6000	48
	0.3000	34
	0.1500	23
Mechanical Analysis	0.0750	15
	0.0340	14
	0.0260	10
	0.0100	9
	0.0060	7
	0.0030	6
	0.0015	5





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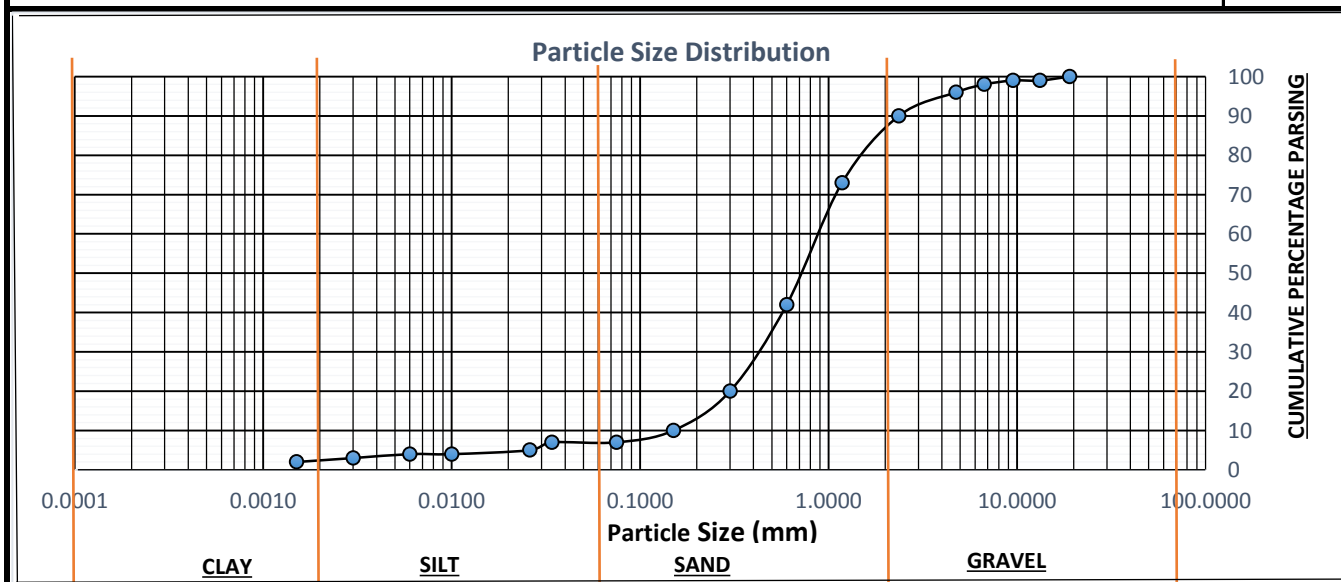
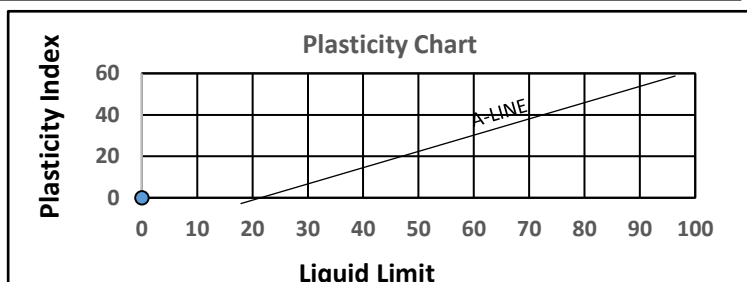
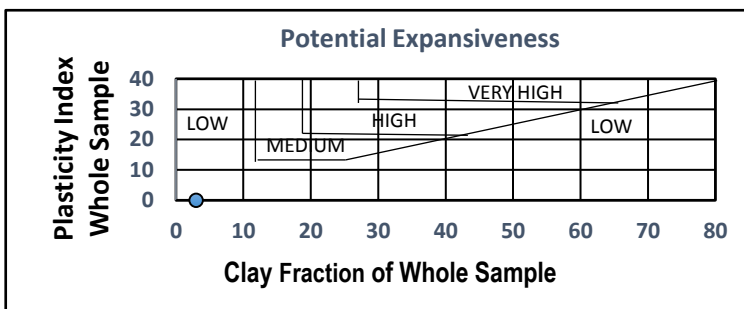
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Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB14	Liquid Limit:		% Clay:	3
Depth (mm)	250-300	Plasticity Index	SP	% Silt	4
Position		Linear Shrinkage	0.5	% Sand	80
		Moisture content	2.2	% Gravel	13
		GRADING MODULES	1.78	PH VALUE(PH)	5.4
				CONDUCTIVITY(S/m)	0.93
Description of Material	BROWN SILTY SAND + DECOMPOSED GRANITE				

Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	
	19.0000	100
	13.2000	99
	9.5000	99
	6.7000	98
	4.7500	96
	2.3600	90
	1.1800	73
	0.6000	42
	0.3000	20
	0.1500	10
Mechanical Analysis	0.0750	7
	0.0340	7
	0.0260	5
	0.0100	4
	0.0060	4
	0.0030	3
	0.0015	2





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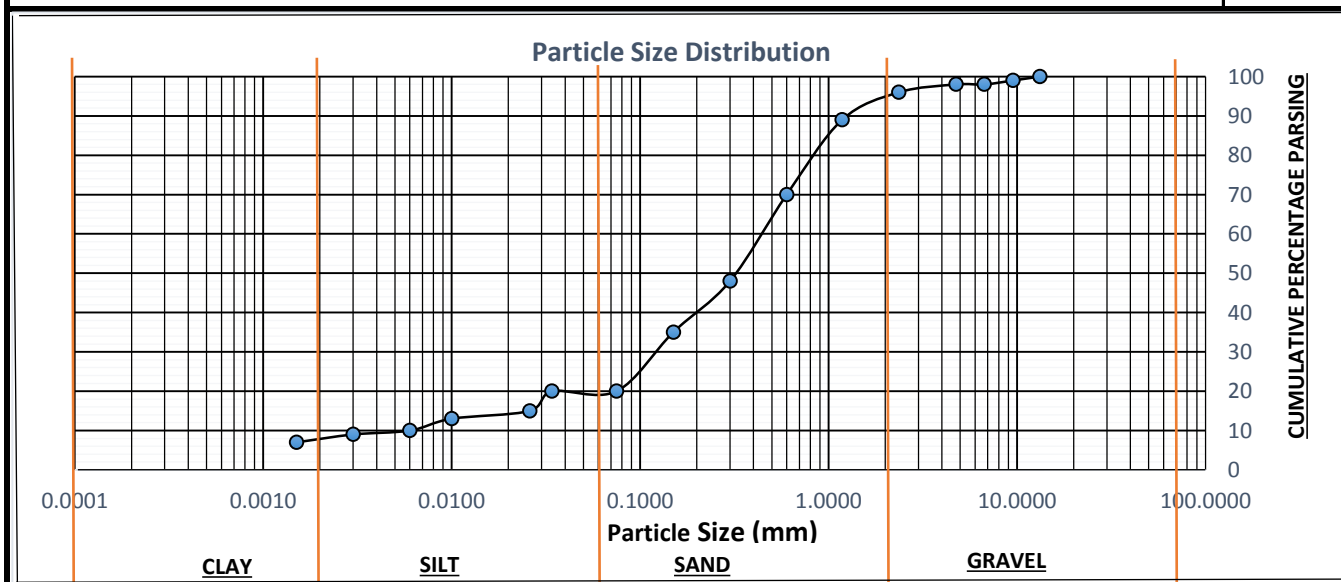
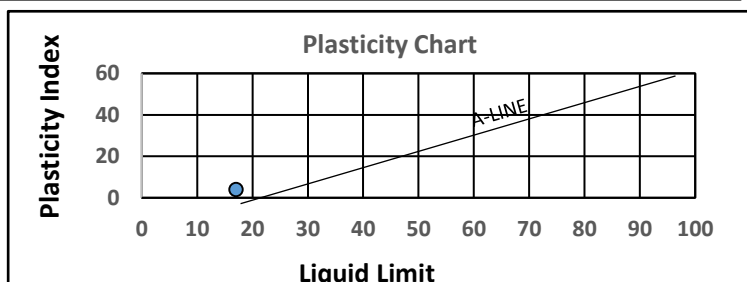
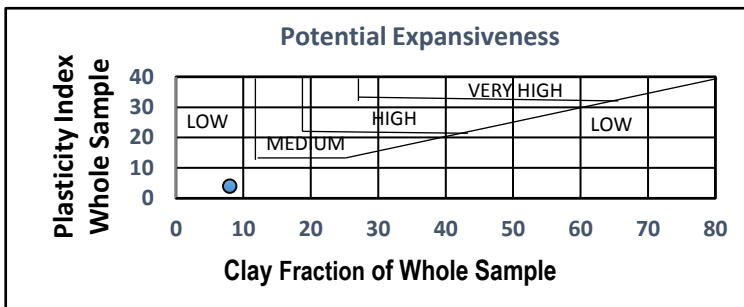
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Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB15	Liquid Limit:	17	% Clay:	8
Depth (mm)	150-1960	Plasticity Index	4	% Silt	12
Position		Linear Shrinkage	2.0	% Sand	75
		Moisture content	8.3	% Gravel	5
		GRADING MODULES	1.20		
Description of Material	BROWN SILTY SAND				

Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	
	19.0000	
	13.2000	100
	9.5000	99
	6.7000	98
	4.7500	98
	2.3600	96
	1.1800	89
	0.6000	70
	0.3000	48
	0.1500	35
Mechanical Analysis	0.0750	20
	0.0340	20
	0.0260	15
	0.0100	13
	0.0060	10
	0.0030	9
	0.0015	7





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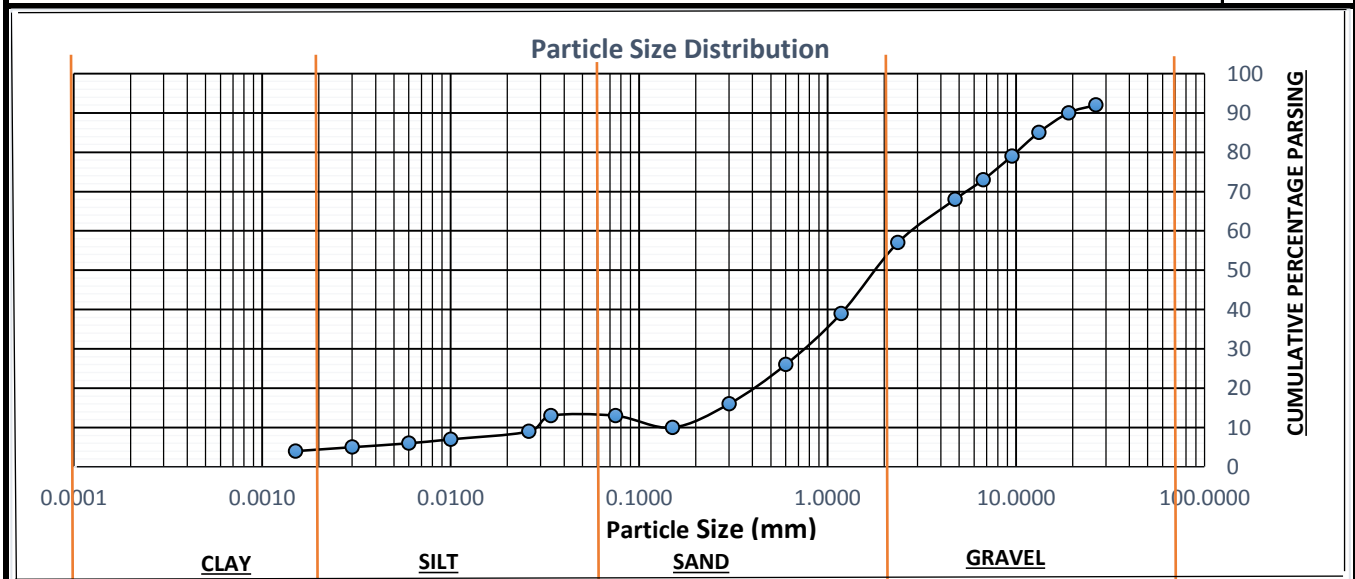
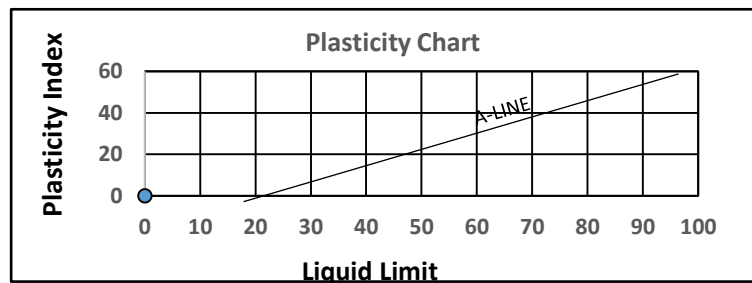
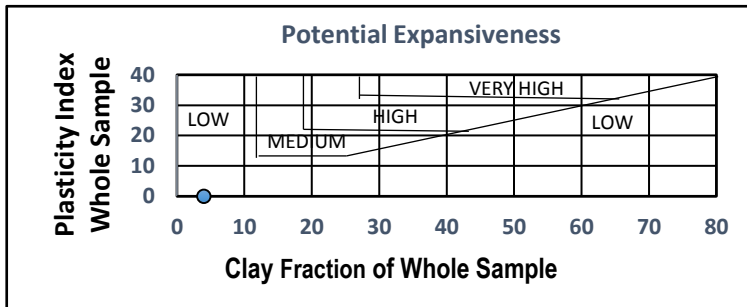
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Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB15	Liquid Limit:		% Clay:	4
Depth (mm)	0-620	Plasticity Index	SP	% Silt	9
Position		Linear Shrinkage	0.5	% Sand	41
		Moisture content	7.6	% Gravel	46
		GRADING MODULES	2.26		
Description of Material	BROWN SILTY SAND +DECOMPOSED GRANITE				

Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	92
	19.0000	90
	13.2000	85
	9.5000	79
	6.7000	73
	4.7500	68
	2.3600	57
	1.1800	39
	0.6000	26
	0.3000	16
	0.1500	10
Mechanical Analysis	0.0750	13
	0.0340	13
	0.0260	9
	0.0100	7
	0.0060	6
	0.0030	5
	0.0015	4





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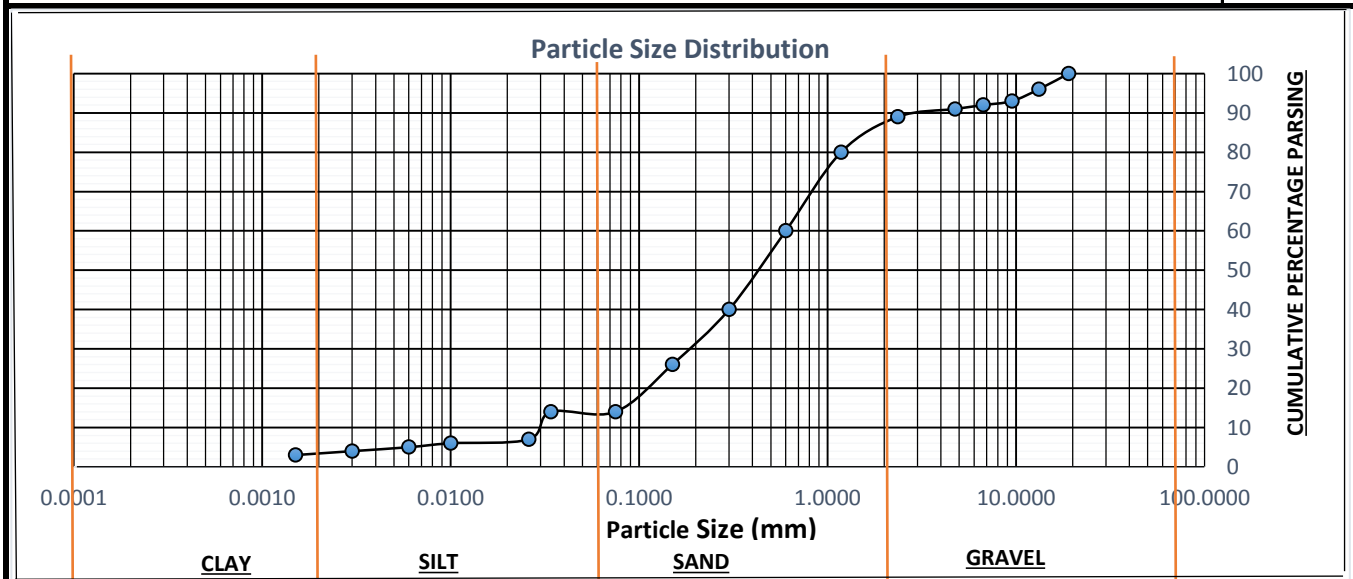
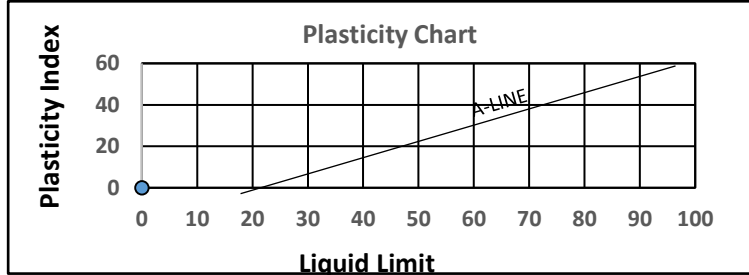
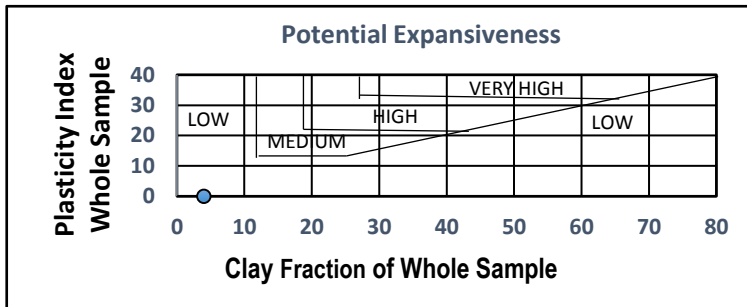
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Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB18	Liquid Limit:		% Clay:	4
Depth (mm)	0-700	Plasticity Index	SP	% Silt	10
Position		Linear Shrinkage	0.5	% Sand	73
		Moisture content	3.1	% Gravel	13
		GRADING MODULES	1.47	PH VALUE(PH)	6.0
				CONDUCTIVITY(S/m)	1.03
Description of Material	R/BROWN SILTY SAND + DECOMPOSED GRANITE				

Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	
	19.0000	100
	13.2000	96
	9.5000	93
	6.7000	92
	4.7500	91
	2.3600	89
	1.1800	80
	0.6000	60
	0.3000	40
	0.1500	26
Mechanical Analysis	0.0750	14
	0.0340	14
	0.0260	7
	0.0100	6
	0.0060	5
	0.0030	4
	0.0015	3





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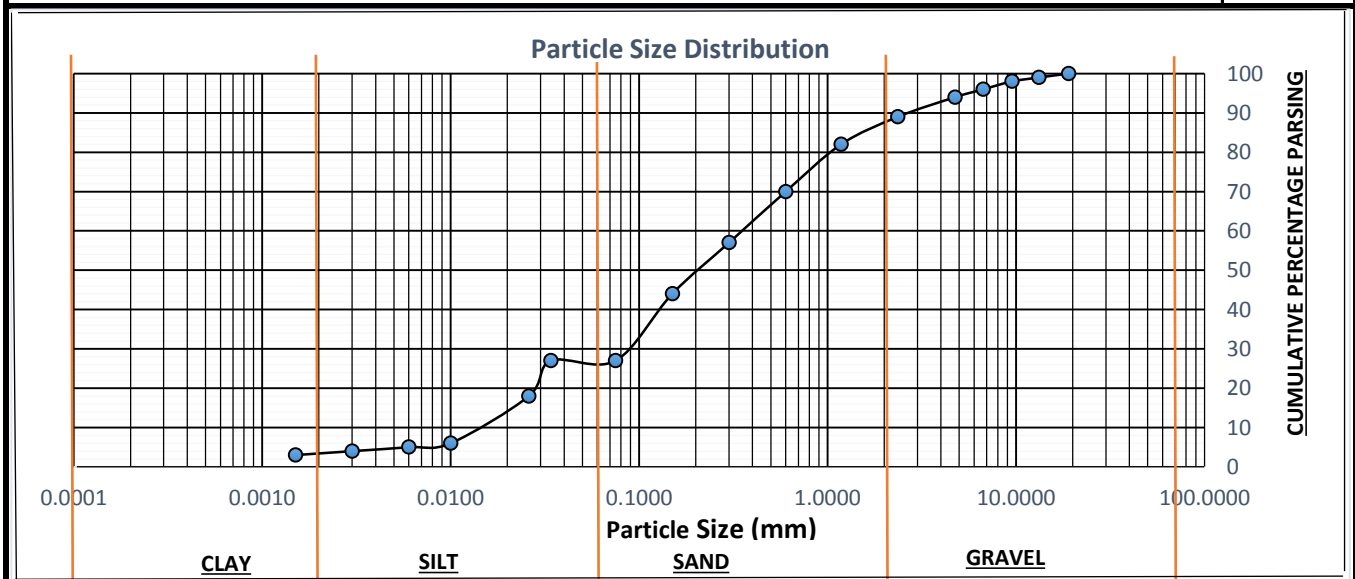
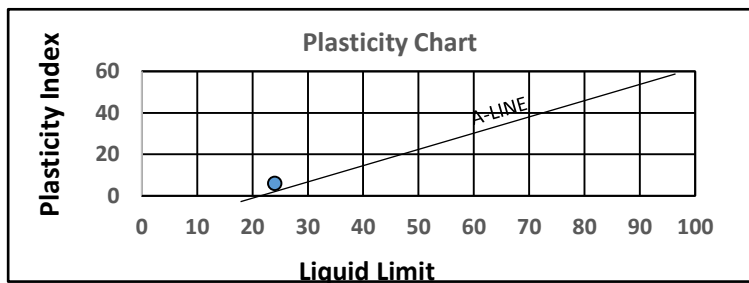
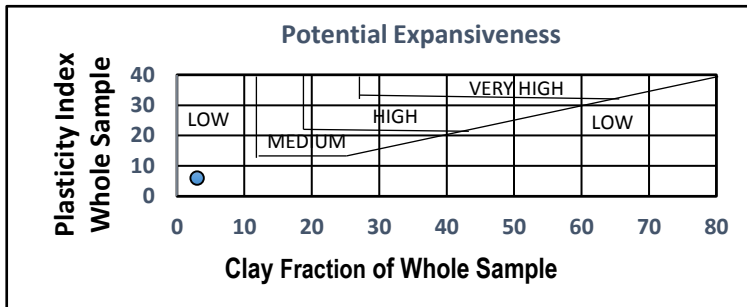
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Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB19	Liquid Limit:	24	% Clay:	3
Depth (mm)	900-1500	Plasticity Index	6	% Silt	24
Position		Linear Shrinkage	3.0	% Sand	60
		Moisture content	16.3	% Gravel	13
		GRADING MODULES	1.17		
Description of Material	R/BROWN SILTY SAND + DECOMPOSED GRANITE				

Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	
	19.0000	100
	13.2000	99
	9.5000	98
	6.7000	96
	4.7500	94
	2.3600	89
	1.1800	82
	0.6000	70
	0.3000	57
	0.1500	44
Mechanical Analysis	0.0750	27
	0.0340	27
	0.0260	18
	0.0100	6
	0.0060	5
	0.0030	4
	0.0015	3





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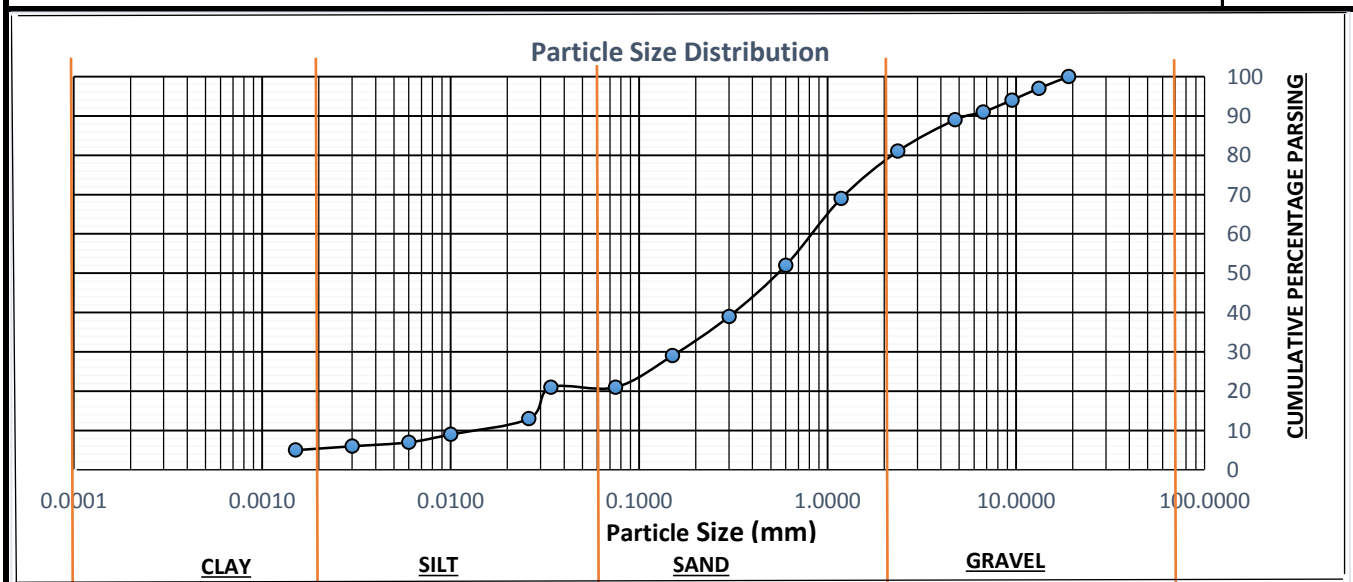
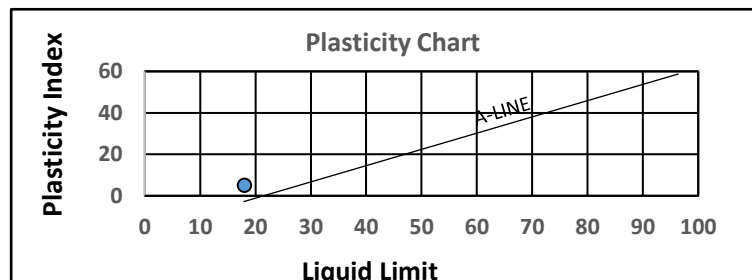
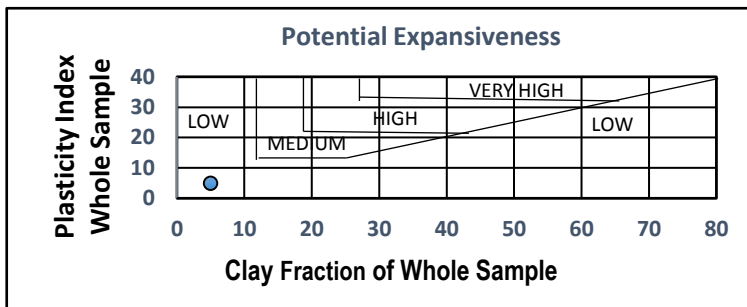
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Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB19	Liquid Limit:	18	% Clay:	5
Depth (mm)	1500-1900	Plasticity Index	5	% Silt	16
Position		Linear Shrinkage	2.5	% Sand	58
		Moisture content	13.2	% Gravel	21
		GRADING MODULES	1.56		
Description of Material	LIGHT BROWN SILTY SAND + DECOMPOSED GRANITE				

Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	
	19.0000	100
	13.2000	97
	9.5000	94
	6.7000	91
	4.7500	89
	2.3600	81
	1.1800	69
	0.6000	52
	0.3000	39
	0.1500	29
Mechanical Analysis	0.0750	21
	0.0340	21
	0.0260	13
	0.0100	9
	0.0060	7
	0.0030	6
	0.0015	5





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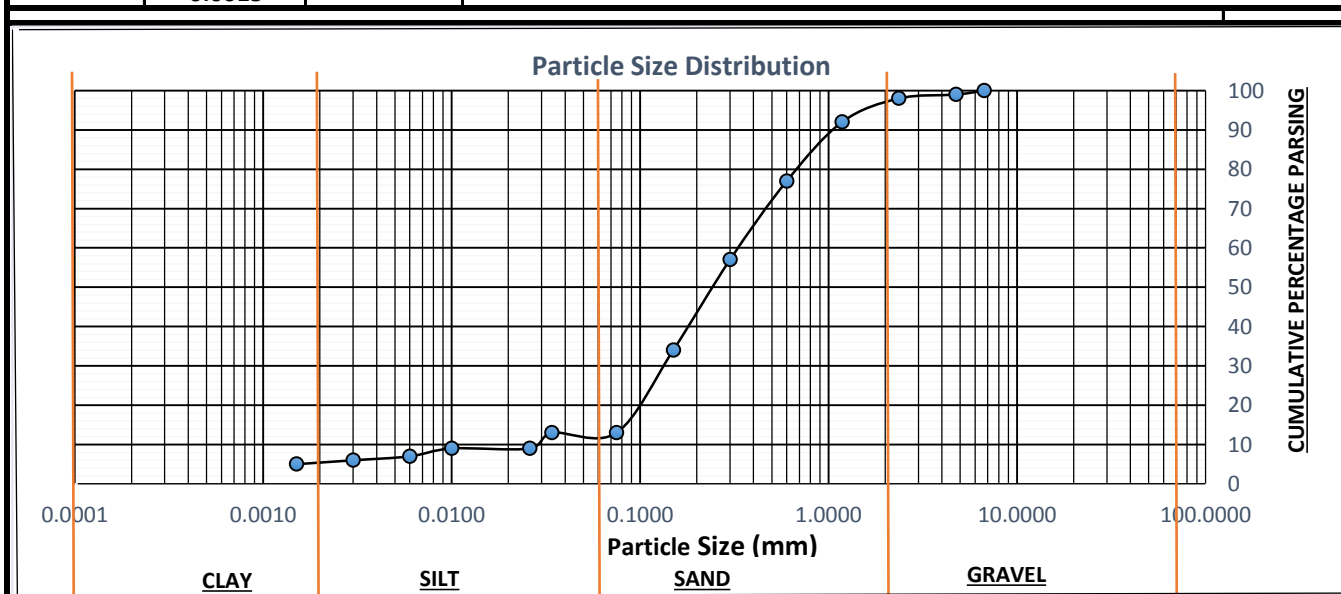
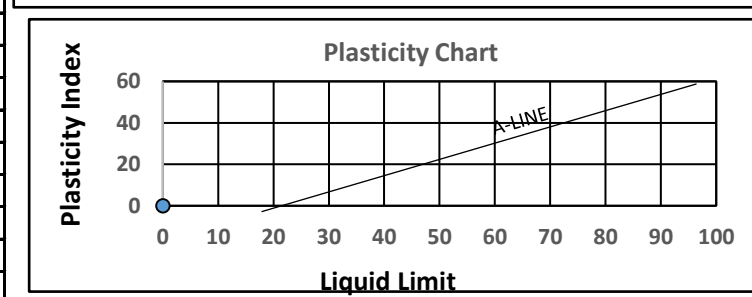
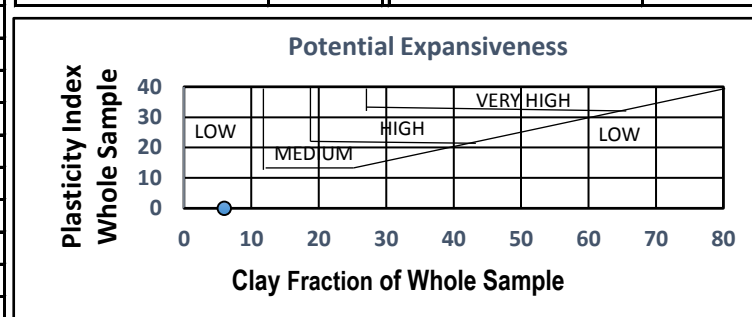
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Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB21	Liquid Limit:		% Clay:	6
Depth (mm)	0-1500	Plasticity Index	SP	% Silt	6
Position		Linear Shrinkage	0.5	% Sand	85
		Moisture content	2.2	% Gravel	3
		GRADING MODULES	1.15		
Description of Material	BROWN SILTY SAND				

Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	
	19.0000	
	13.2000	
	9.5000	
	6.7000	100
	4.7500	99
	2.3600	98
	1.1800	92
	0.6000	77
	0.3000	57
	0.1500	34
Mechanical Analysis	0.0750	13
	0.0340	13
	0.0260	9
	0.0100	9
	0.0060	7
	0.0030	6
	0.0015	5





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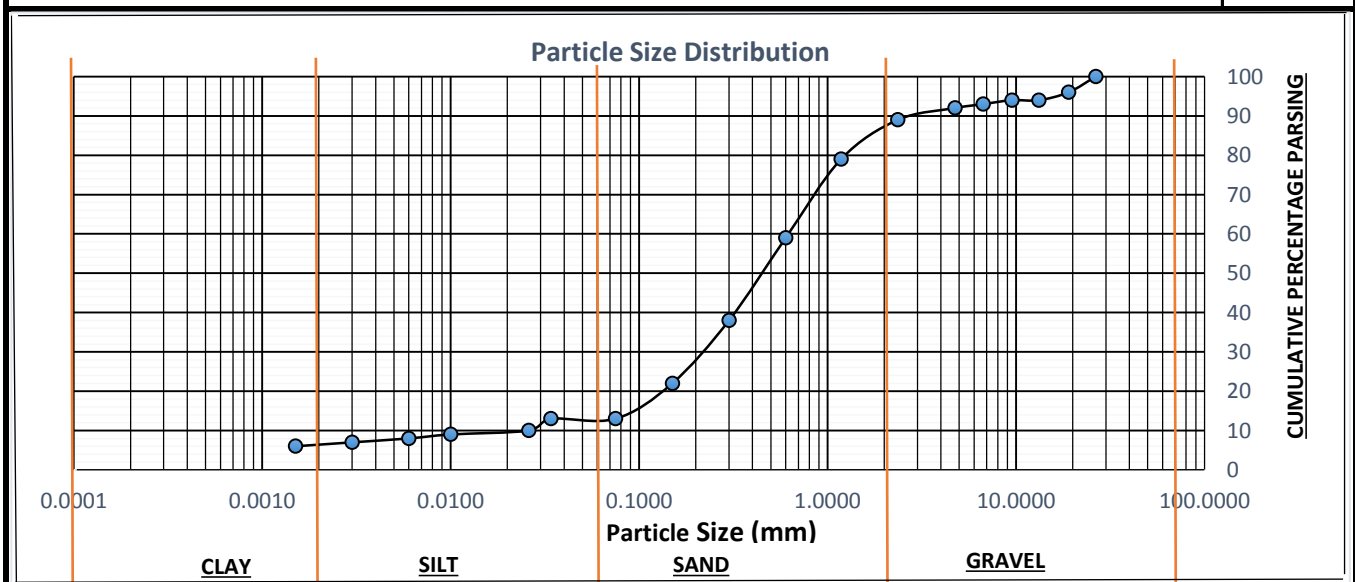
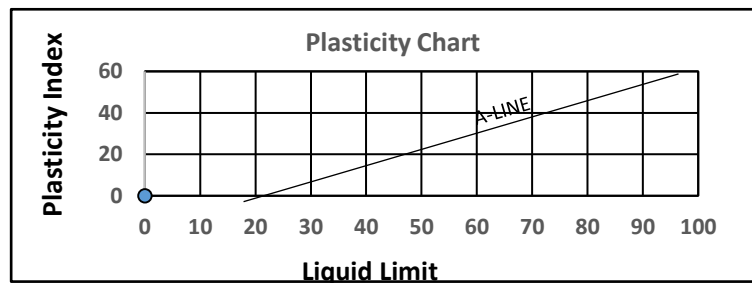
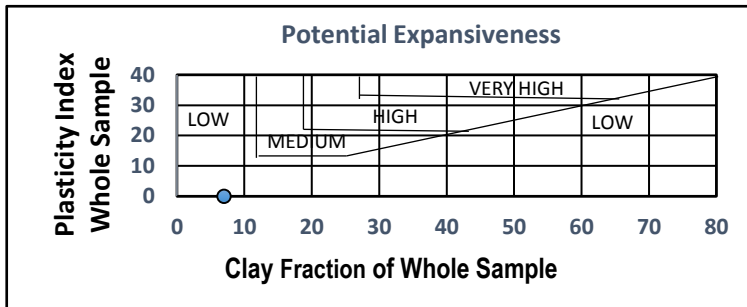
Unit 4, Zinfandel Road
Saxenburg Park 2
Blackheath
7580

Cell: 082 953 3110
Tel: 021 905 4790
Fax: 021 905 4791
e-mail: trimac@gmail.com

Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB21	Liquid Limit:		% Clay:	7
Depth (mm)	1500-3000	Plasticity Index	SP	% Silt	5
Position		Linear Shrinkage	0.5	% Sand	75
		Moisture content	12.4	% Gravel	13
		GRADING MODULES	1.50	PH VALUE(PH)	5.4
				CONDUCTIVITY(S/m)	3.62

Description of Material		BROWN SAND+DECOMPOSED GRANITE
Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	100
	19.0000	96
	13.2000	94
	9.5000	94
	6.7000	93
	4.7500	92
	2.3600	89
	1.1800	79
	0.6000	59
	0.3000	38
Mechanical Analysis	0.1500	22
	0.0750	13
	0.0340	13
	0.0260	10
	0.0100	9
	0.0060	8
	0.0030	7
	0.0015	6





TRIMAC SOILS LABORATORY cc

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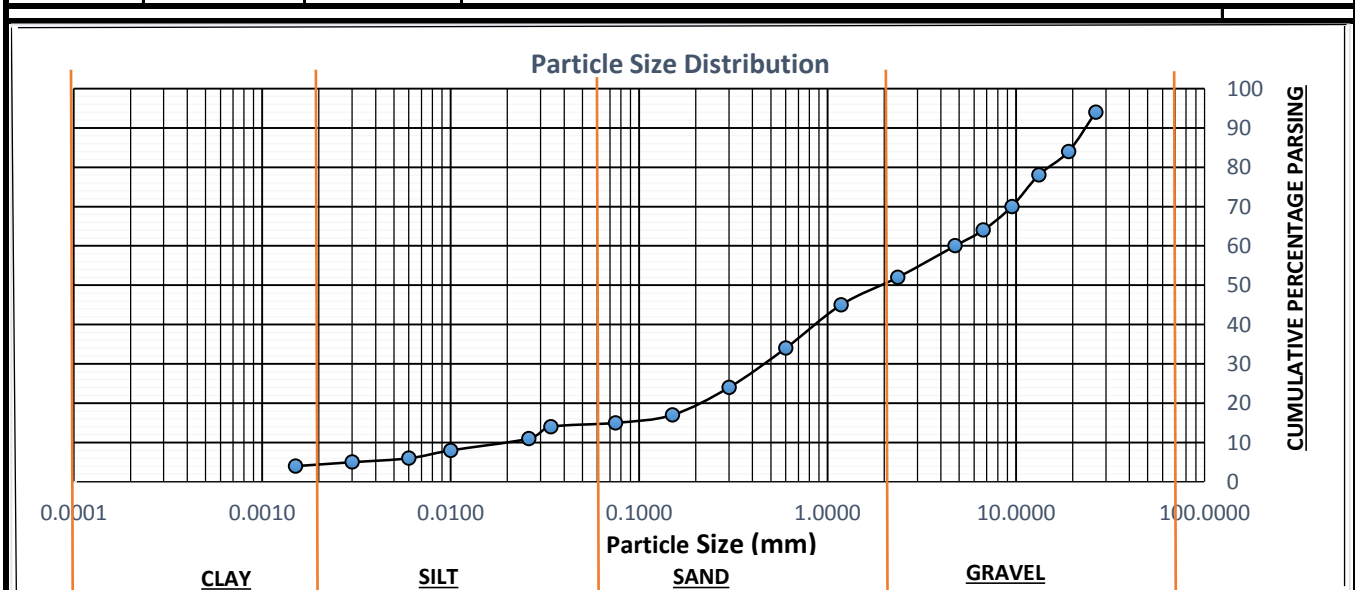
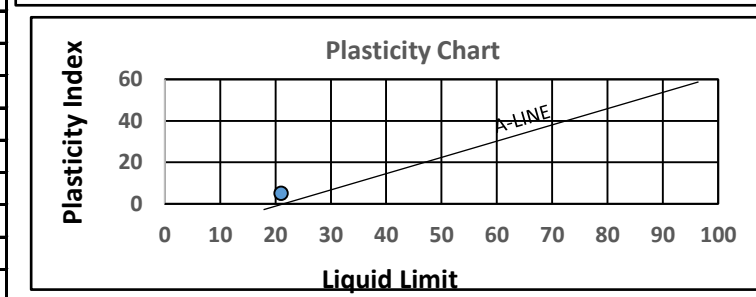
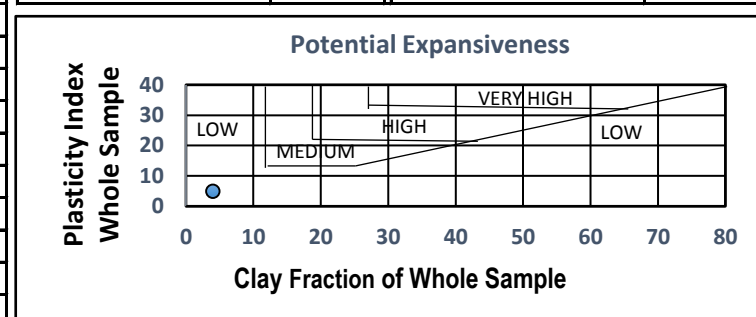
Unit 4, Zinfandel Road
Saxenburg Park 2
Blackheath
7580

Cell: 082 953 3110
Tel: 021 905 4790
Fax: 021 905 4791
e-mail: trimac@gmail.com

Project:	SOEBATSFONTEIN	Date	04,04,2019
Client:	ICEBURG TRADING		

Sample/hole No.	SB22	Liquid Limit:	21	% Clay:	4
Depth (mm)	100-400	Plasticity Index	5	% Silt	11
Position		Linear Shrinkage	2.5	% Sand	36
		Moisture content	4.8	% Gravel	49
		GRADING MODULES	2.10	PH VALUE(PH)	6.1
				CONDUCTIVITY(S/m)	1.59

Screen Analysis (% Passing)	Screen Size	% Passed
	26.5000	94
	19.0000	84
	13.2000	78
	9.5000	70
	6.7000	64
	4.7500	60
	2.3600	52
	1.1800	45
	0.6000	34
	0.3000	24
	0.1500	17
Mechanical Analysis	0.0750	15
	0.0340	14
	0.0260	11
	0.0100	8
	0.0060	6
	0.0030	5
	0.0015	4



Appendix D

GEOTECHNICAL CLASSIFICATION FOR URBAN
DEVELOPMENT (after Partridge, Wood and Brink 1993)

CONSTRAINT		Most Favourable (1)	Intermediate (2)	Least favourable (3)
A	Collapsible Soil	Any collapsible horizon or consecutive horizons totalling a depth of less than 750mm in thickness.*	Any collapsible horizon or consecutive horizons with a depth of more than 750mm in thickness.	A least favourable situation for this constraint does not occur.
B	Seepage	Permanent or perched water table more than 1,5m below ground surface	Permanent or perched water table less than 1,5m below ground surface.	Swamps and marshes
C	Active Soil	Low soil-heave potential predicted*	Moderate soil heave potential predicted.	High soil heave potential predicted.
D	Highly compressible soil	Low soil compressibility expected *	Moderate soil compressibility expected	High soil compressibility expected
E	Erodibility of soil	Low.	Intermediate	High
F	Difficulty of excavation to 1,5m depth	Scattered or occasional boulders less than 10% of the total volume	Rock or hardpan pedocretes between 10 and 40% of the total volume.	Rock or hardpan pedocretes more than 40% of the total volume.
G	Undermined ground	Undermining at a depth greater than 100m below surface (except where total extraction mining has not occurred).	Old undermined areas to a depth of 100m below surface where stope closure has ceased	Mining within less than 100m of surface or where total extraction mining has taken place.
H	Instability in areas of soluble rock	Possibly unstable	Probably unstable	Known sinkholes and dolines
I	Steep slopes	Between 2 and 6 degrees (all regions)	Slopes between 6 and 18 degrees and less than 2 degrees (Natal and Western Cape). Slopes between 6 and 12 degrees and less than 2 degrees (all other regions)	More than 18 degrees (Natal and Western Cape) More than 12 degrees (all other regions)
J	Areas of unstable natural slopes	Low risk	Intermediate risk	High risk (especially in areas subject to seismic activity)
K	Areas subject to seismic activity	10% probability of an event less than 100 cm/s ² within 50 years	Mining-induced seismic activity more than 100 cm/s ²	Natural seismic activity more than 100 cm/s ²
L	Areas subject to flooding	A “most favourable” situation for this constraint does not occur.	Areas adjacent to a known drainage channel or floodplain with slope less than 1%.	Areas within a known drainage channel or floodplain.

Appendix E

RESIDENTIAL SITE CLASS DESIGNATIONS

(NHBRC Home Building Manual, Revision 1, February
1999)

TYPICAL FOUNDATION MATERIAL	CHARACTER OF MATERIAL	EXPECTED RANGE OF TOTAL SOIL MOVEMENTS (mm)	ASSUMED DIFFERENTIAL MOVEMENT (% OF TOTAL)	SITE CLASS
Rock (excluding mud rocks which exhibit swelling to some depth)	STABLE	NEGLIGIBLE		R
Fine-grained soils with moderate to very high plasticity (clays, silty clays, clayey silts and sandy clays)	EXPANSIVE SOILS	<7,5 7,5 – 15 15 – 30 >30	50% 50% 50% 50%	H H1 H2 H3
Silty sands, sands, sandy and gravelly soils	COMPRESSIBLE AND POTENTIALLY COLLAPSIBLE SOILS	< 5 5 – 10 > 10	75% 75% 75%	C C1 C2
Fine-grained soils (clayey silts and clayey sands of low plasticity), sands, sandy and gravelly soils	COMPRESSIBLE SOIL	<10 15-20 > 20	50% 50% 50%	S S1 S2
Contaminated soils Controlled fill Dolomitic areas Land fill Marshy areas Mine waste fill Mining subsidence Reclaimed areas Very soft silty clays Uncontrolled fill	VARIABLE	VARIABLE		p

NOTES:

- The classifications C, H, R and S are not intended for dolomitic area sites unless specific investigations are carried out to assess the stability (risk of sinkholes and doline formation) of the dolomites. Where this risk is found to be acceptable, the site shall be designated as Class P (dolomitic areas).
- Site classes are based on the assumption that differential movements, experienced by single-storey residential buildings, expressed as a percentage of the total soil movements are equal to about 50% for soils that exhibit expansive or compressive characteristics and 75% for soils that exhibit both compressible and collapse characteristics. Where this assumption is incorrect or inappropriate, the total soil movements must be adjusted so that the resultant different movement implied by the table is equal to that which is expected in the field.
- In some instances, it may be more appropriate to use a composite description to describe a site more fully e.g. C1/H2 or S1 and/or H2. Composite Site Classes may lead to higher differential movements and result in design solutions appropriate to a higher range of differential movement e.g. a Class R/SI site. Alternatively, a further site investigation may be necessary since the final design solution may depend on the location of the building on a particular site.
- Where it is not possible to provide a single site designation and a composite description is inappropriate, sites may be given multiple descriptions to indicate the range of possible conditions e.g. H-H1-H2 or C1-C2.
- Soft silts and clays usually exhibit high consolidation and low bearing characteristics. Structures founded on these horizons may experience high settlements and such sites should be designated as Class S1 or S2 as relevant and appropriate.
- Sites containing contaminated soils include those associated with reclaimed mine land, land down-slope of mine tailings and old land fills.
- Where a site is designated as Class P, full particulars relating to the founding conditions on the site must be provided.
- Where sites are designated as being Class P, the reason for such classification shall be placed in brackets immediately after the suffix - i.e. P(contaminated soils). Under certain circumstances, composite description may be more appropriate - e.g. P(dolomite areas)-C1. Certain fills may contain contaminates which present a health risk. The nature of such fill should be evaluated and should be clearly demarcated as such.

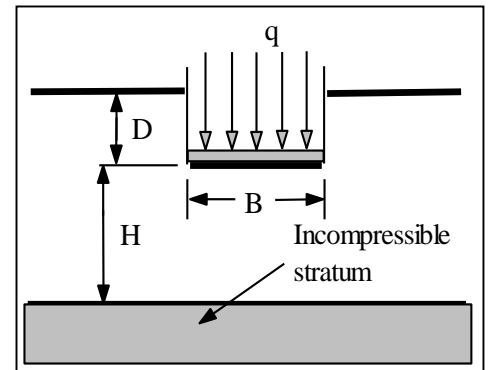
Appendix F

Site Zonation Plan

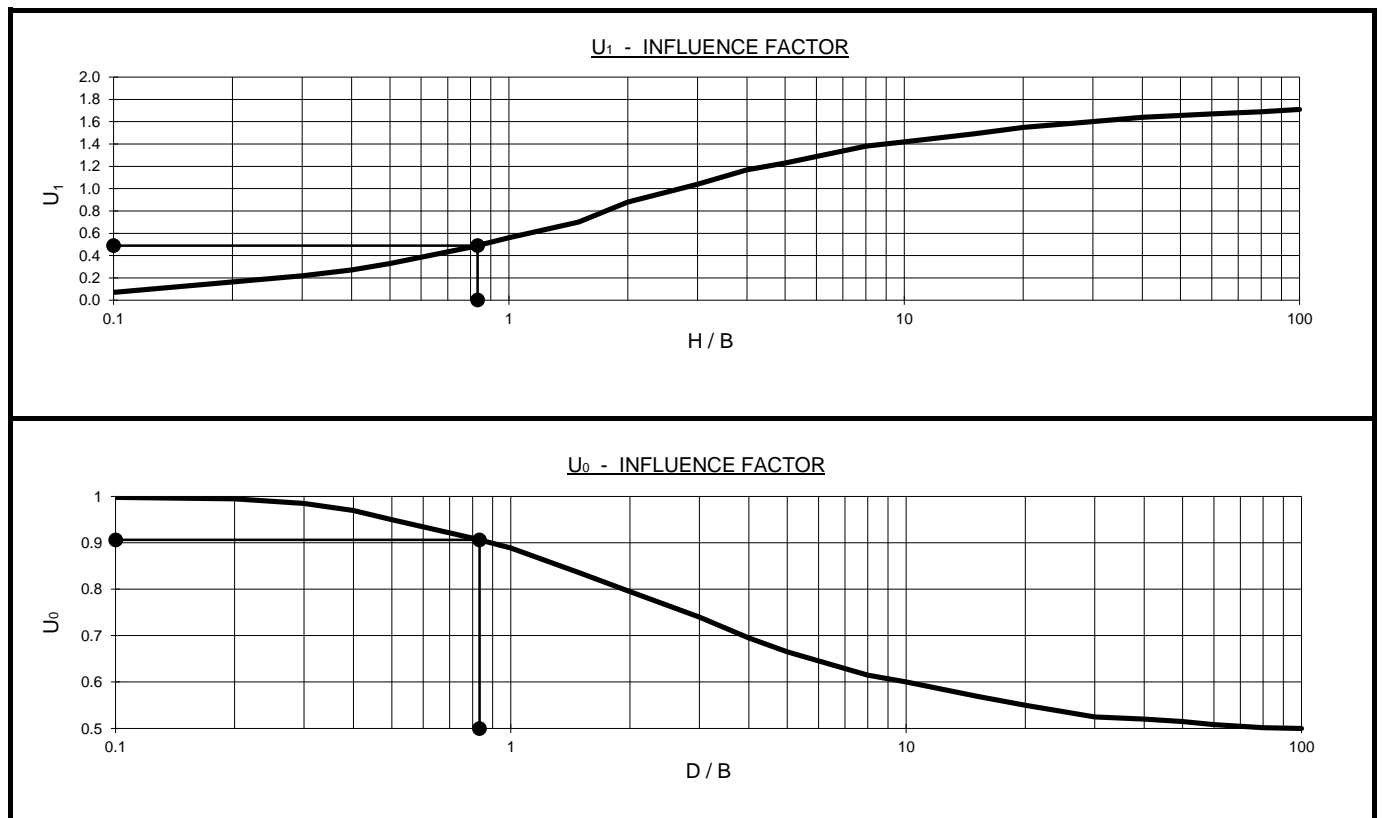
PREDICTION OF THE AVERAGE ELASTIC SETTLEMENT OF A STRIP FOOTING

PROJECT NAME	Soebatsfontein
PROJECT NUMBER	
PROBLEM DESCRIPTION	Settlement on in-situ material
LOCATION	Northern Cape

FOUNDING DEPTH (D)	0.5 m
WIDTH OF THE FOOTING (B)	0.6 m
THICKNESS OF COMPRESSIBLE STRATUM (H)	0.5 m
STIFFNESS OF COMPRESSIBLE STRATUM	7 MPa
FOUNDATION PRESSURE (q)	150 kPa
H / B	0.83
D / B	0.83
U ₁ - INFLUENCE FACTOR	0.49
U ₀ - INFLUENCE FACTOR	0.91
AVERAGE IMMEDIATE SETTLEMENT ***	6 mm

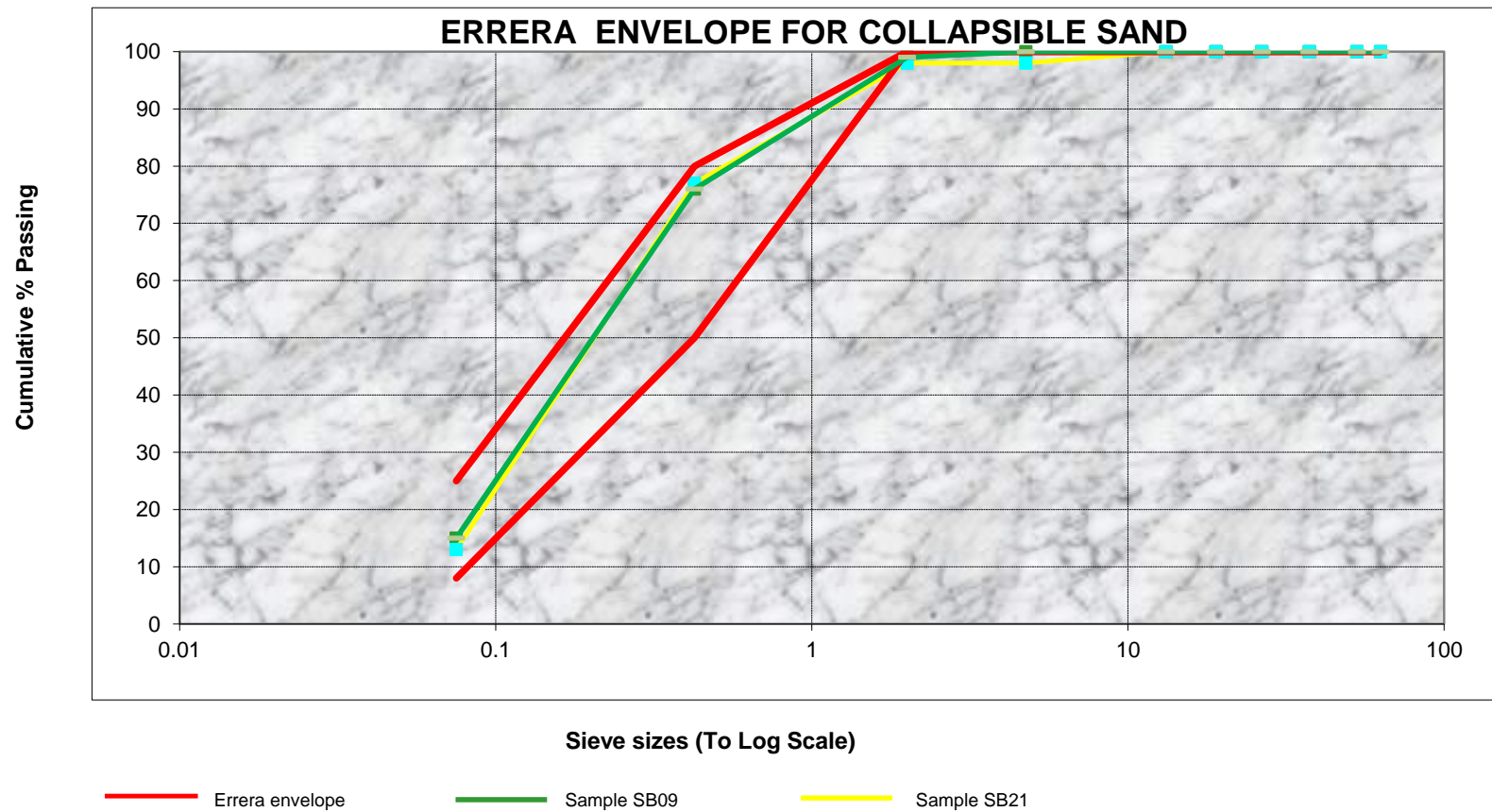


*** - After Janbu, Bjerrum and Kjaernsli for $L/D < 10$ only



Appendix H

Errera Envelope Graph





PHASE 1 GEOTECHNICAL INVESTIGATION REPORT

PAULSHOEK TOWNSHIP

22 MAY 2019

DECLAIMER

This report is intended solely for the information of Paulshoek village. **Iceburg trading 751cc** is bound by the confidentiality agreement that no information will be communicated to a third party without the **COGHSTA's** written permission. Its existence may not be disclosed nor its contents published in any way without the prior written approval of COGHSTA.

DOCUMENT CONTROL

Prepared for : COGHSTA
Prepared by : Iceburg Trading 751cc

Compiled by:	Reviewed and Approved by:	Report No.	Date
Buhlebenkosi Ndebele	Nhlanhla Magigaba & Sboniso Zondi	01	22 May 2019

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EXECUTIVE SUMMARY

Iceburg Trading 751cc was appointed by **COGHSTA** to undertake a phase 1 geotechnical investigation for the Paulshoek Township development in Kamiesberg Local Municipality in the Northern Cape. The investigated site has an aerial extent of **40 Ha**.

To meet the requirements for a township establishment the investigation was carried out in accordance with the specifications for geotechnical site investigations for housing developments (**National Department of Housing specification GFSH2:2002**) and South African National Standard (**Geotechnical Investigation for Township Development SANS 634:2012**).

The main objective of the investigation is to allow broad assessment of the site to facilitate zoning according to NHBRC guidelines as well as the associated founding recommendations. The scope of the geotechnical investigation included test pits excavation at selected positions on the proposed township as well as laboratory testing. The geotechnical investigation revealed that the profile across the site is uniform, comprising of the following horizons:

- Transported horizon;
- Pedogenic horizon;
- Residual Granodiorite horizon; and
- Granodiorite Bedrock.

No adverse conditions prohibiting the development of the site were observed and the site is zoned into two zones, which can be described as follows:

Zone C1/S This zone covers a small portion of the site and is characterised by collapsible soils (fine silty sand) with a total settlement movement between 5mm to 10mm and differential movement that is 75% (**C1**) and fine-grained soils (clayey sand) with a total settlement movement less than 10mm and differential movement that is 50% (**S**).

Zone R: This zone is characterised by the occurrence of bedrock at shallow depths. The bedrock (refusal) is encountered at depths shallower than 1 m.

Recommendations regarding proposed development include the following:

- Founding alternatives are provided for each zone;
- The use of construction materials encountered at the site; and
- Drainage precautions that represent good practice and must be implemented.

1. Introduction

Iceburg Trading 751cc was appointed by **COGHSTA** to undertake a Phase 1 geotechnical investigation for the Paulshoek Township development in the Kamiesberg Local Municipality the Northern Cape.

To meet the requirements for a residential development the investigation was carried out in accordance with South African National Standard (**Geotechnical Investigation for Township Development SANS 634:2012**) and the specification for geotechnical site investigations for housing developments (**National Department of Housing specification GFSH- 2:2002**).

The objectives of the geotechnical investigation is to:

- Determine whether any soil problems were present at the site that would have an effect on either founding or construction methods for structures.
- To delineate the site into appropriate geotechnical zones according to any essential differences in founding conditions encountered.
- To evaluate the founding conditions at the site and to recommend building precautions if necessary for the different geotechnical zones.
- To obtain basic data concerning the use of the in-situ materials for guideline purposes.

The geotechnical team carried out the fieldwork on the 8th of March 2019. The project team comprised of engineering geologists and geotechnical engineers.

This report presents the interpretive findings of the investigations, i.e. the geological profiles as confirmed by test pitting, laboratory analysis, geotechnical recommendations as well as geotechnical zoning of the site. The purpose of this construction report is to confirm or adapt the zoning of the site, and to provide more accurate information regarding the founding conditions.

2. Available information

At the time of the investigation the following information was available:

- 1:250 000 scale geological map of Loeriesfontein 3018. Geological Survey, printed by the Government Printer (2011).
- The 1:250 000 scale soil land type map of Loeriesfontein 3018 (Soil and Research Institute, 2011).
- Aerial photographs, sourced from Google Earth®.

3. Site locality and description

The site is located in Paulshoek village, Northern Cape, South Africa. Paulshoek village is located 35km West of the N7 road. The investigated site has an aerial extent of **40 Ha** and the boundary is indicated in Figure 1 below.

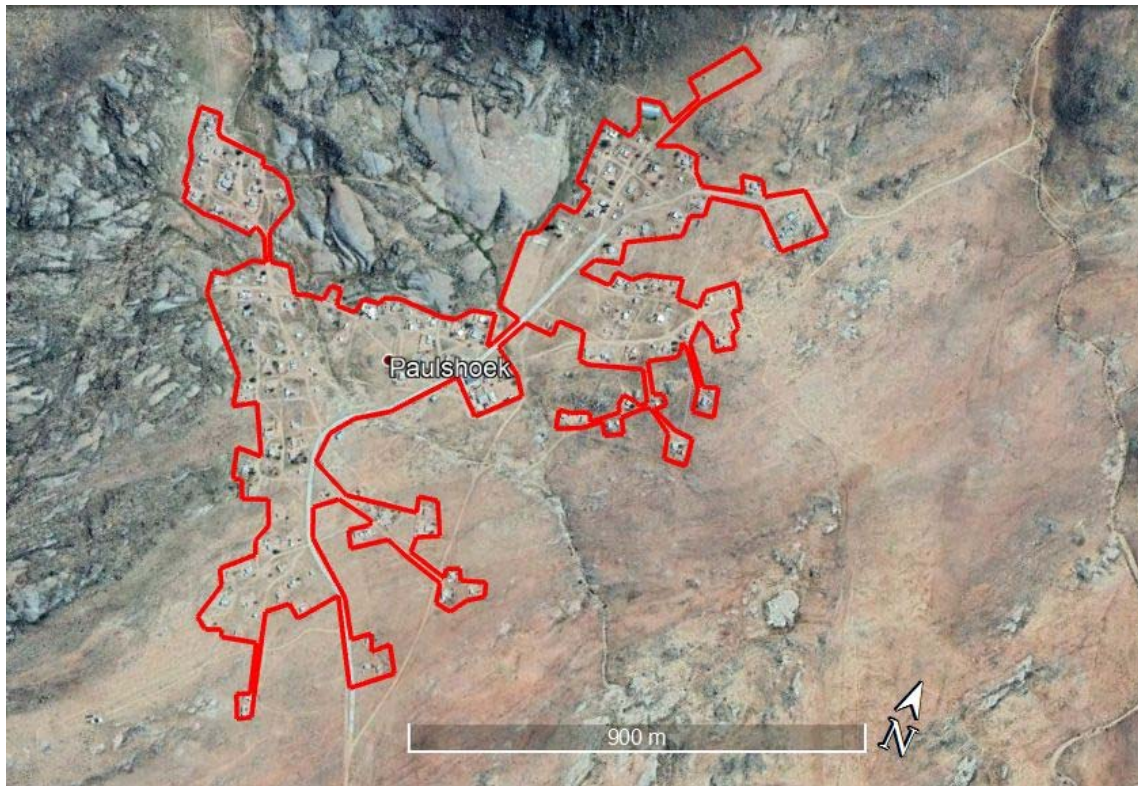


Figure 1: Showing the investigated area in Paulshoek (red border).

The entire site is characterized by erosion due to surface runoff (running water). Erosion gullies were encountered on the site.

At the time of the investigation, the site was characterised by residential houses and a few randomly scattered shacks made of corrugated iron. Each household has a pit latrine toilet. Waste water disposal in the village consists of containment tanks that must be cleaned at regular intervals.



Figure 2: Showing powerlines.

Water and electricity reticulation are provided in bulk to the existing village. Electricity supply is by means of an overhead network as shown in Figure 2 above. Water is obtained from a borehole. Streets are provided with a gravel surface, often constructed from gravelly ferricrete. Individual graves or a cemetery were also encountered in the area of investigation.

4. Climate

The climate in Paulshoek site is classified as warm and temperate. Paulshoek normally receives about 106mm of rain per year, with most rainfall occurring during summer. It receives the lowest rainfall (0mm) in January and the highest (22mm) in June. The average midday temperatures for Paulshoek range from 16.5°C in July to 28.3°C in February. The region is the coldest during July when the mercury drops to 3.8°C on average during the night (SA Explorer; 2017).

The Weinert Climatic N-number for the area (Weinert, 1980) which is >5 indicating that the climate is semi-arid and mechanical weathering processes are dominant.

5. Investigation Methodology

To meet the requirements for a township establishment investigation the investigation was carried out in accordance with the specification for geotechnical site investigations for housing developments **GFSH-2 (National Department of Housing specification:2002)** and **–SANS634:2012** South African National Standard (**Geotechnical Investigations for Township Development:2012**)

The investigation was conducted by **Iceburg Trading 751cc** and comprised an excavation of thirty-five (35 No) test pits. The test pits were excavated with a TLB up to a maximum depth of 3.00m or refusal on hardpan ferricrete and gneiss bedrock. Coordinates of the test pits were determined using a hand-held GPS on the South African grid with WGS84 coordinate system (Lo 30).

A two-person team carried out the test pitting in order to comply with accepted safety requirements as reflected in the South African Code of Practice (**SAICE:2010**). The test pits were set out and profiled by a team of engineering geologists/ geotechnical engineers in accordance with South African standards (**Standards South Africa. South African. National Standard. Profiling, Percussion Borehole and Core Logging in Southern Africa SANS 633:2012**) The excavations were loosely backfilled after completion of soil profiling and sampling.

Test pits details are summarised below in Table 1

Table 1: Test Pit Summary

Test Pit No.	GPS Coordinates (UTM WGS 84 Zone 35)		Depth(m)	Remarks
	Latitude (dd mm ss)	Longitude (dd mm ss)		
PH01	30°21'42.11"S	18°15'27.14"E	1.00	Refusal on hard Granodiorite Bedrock
PH02	30°21'43.18"S	18°15'28.14"E	0.85	Refusal on hard Granodiorite Bedrock
PH03	30°21'45.55"S	18°15'23.80"E	0.50	Refusal on hard Granodiorite Bedrock
PH04	30°21'47.30"S	18°15'27.91"E	0.89	Refusal on hard Granodiorite Bedrock
PH05	30°21'42.57"S	18°15'39.00"E	0.40	Refusal on hard Granodiorite Bedrock
PH06	30°21'50.86"S	18°15'36.28"E	0.65	Refusal on hard Granodiorite Bedrock
PH07	30°21'55.56"S	18°15'29.76"E	0.50	Refusal on hard Granodiorite Bedrock
PH08	30°22'0.50"S	18°15'30.13"E	0.50	Refusal on hard Granodiorite Bedrock
PH09	30°21'58.47"S	18°15'37.31"E	0.22	Refusal on hard Granodiorite Bedrock
PH10	30°21'52.13"S	18°15'31.42"E	0.65	Refusal on hard Granodiorite Bedrock
PH11	30°21'54.57"S	18°14'56.75"E	1.60	Refusal on hard Granodiorite Bedrock
PH12	30°21'54.94"S	18°15'2.83"E	2.00	Refusal on hard Granodiorite Bedrock
PH13	30°21'57.93"S	18°14'59.24"E	1.50	Refusal on hard Granodiorite Bedrock
PH14	30°21'52.92"S	18°15'22.64"E	1.90	Refusal on hard Granodiorite Bedrock
PH15	30°21'53.94"S	18°15'26.25"E	0.39	Refusal on hard Granodiorite Bedrock
PH16	30°22'2.21"S	18°15'18.29"E	0.66	Refusal on hard Granodiorite Bedrock
PH17	30°22'0.44"S	18°15'15.16"E	0.70	Refusal on hard Granodiorite Bedrock
PH18	30°22'3.84"S	18°15'16.30"E	0.35	Refusal on hard Granodiorite Bedrock
PH19	30°22'2.04"S	18°15'8.62"E	3.00	Refusal on hard Granodiorite Bedrock
PH20	30°22'6.13"S	18°15'6.84"E	1.10	Refusal on hard Granodiorite Bedrock
PH21	30°22'7.66"S	18°15'10.04"E	1.02	Refusal on hard Granodiorite Bedrock
PH22	30°22'2.71"S	18°15'3.43"E	1.35	Refusal on hard Granodiorite Bedrock
PH23	30°21'59.54"S	18°15'19.23"E	0.42	Refusal on hard Granodiorite Bedrock
PH24	30°22'5.88"S	18°15'13.39"E	0.40	Refusal on hard Granodiorite Bedrock
PH25	30°21'59.89"S	18°15'6.25"E	2.30	Refusal on hard Granodiorite Bedrock
PH26	30°22'8.27"S	18°15'13.28"E	0.50	Refusal on hard Granodiorite Bedrock
PH27	30°22'2.70"S	18°15'14.10"E	0.55	Refusal on hard Granodiorite Bedrock
PH28	30°22'11.24"S	18°15'22.32"E	0.80	Refusal on hard Granodiorite Bedrock
PH29	30°22'13.36"S	18°15'28.17"E	0.94	Refusal on hard Granodiorite Bedrock
PH30	30°22'19.33"S	18°15'23.38"E	0.60	Refusal on hard Granodiorite Bedrock
PH31	30°22'20.84"S	18°15'14.32"E	0.50	Refusal on hard Granodiorite Bedrock
PH32	30°22'23.45"S	18°15'16.91"E	0.47	Refusal on hard Granodiorite Bedrock
PH33	30°22'16.72"S	18°15'18.24"E	0.60	Refusal on hard Granodiorite Bedrock
PH34	30°22'14.80"S	18°15'13.63"E	0.57	Refusal on hard Granodiorite Bedrock
PH35	30°22'12.42"S	18°15'14.01"E	0.40	Refusal on hard Granodiorite Bedrock

Soil testing was conducted on disturbed soil samples, and the tests conducted were for:

- The determination of Foundation Indicators (comprising sieve and hydrometer grading analyses and Atterberg Limits),
- Determination of compaction characteristics (comprising Mods, i.e. maximum dry densities (MDD) and optimum moisture contents (OMC), as well as CBR's), and
- Determination of soil corrosiveness (comprising pH and conductivity).

The data gained via the aforementioned activities is presented in this report as follows:

- Summary of soil and rock profile descriptions - Appendix A
- Soil profile descriptions – test pitting - Appendix B
- Laboratory results Appendix C
- Geotechnical classification for urban development Appendix D
- Residential site class designations (NHBRC Home Building Manual) Appendix E
- Site Zonation Plan Appendix F
- Settlement Calculations Appendix G
- Errera Envelope Graph Appendix H

6. Seismicity Assessment

According to the published seismic hazard map of South Africa (Kijko, et. al. 2003), the value for the peak ground acceleration at the site is 0.09 m/s^2 (shown in Figure 3 below).

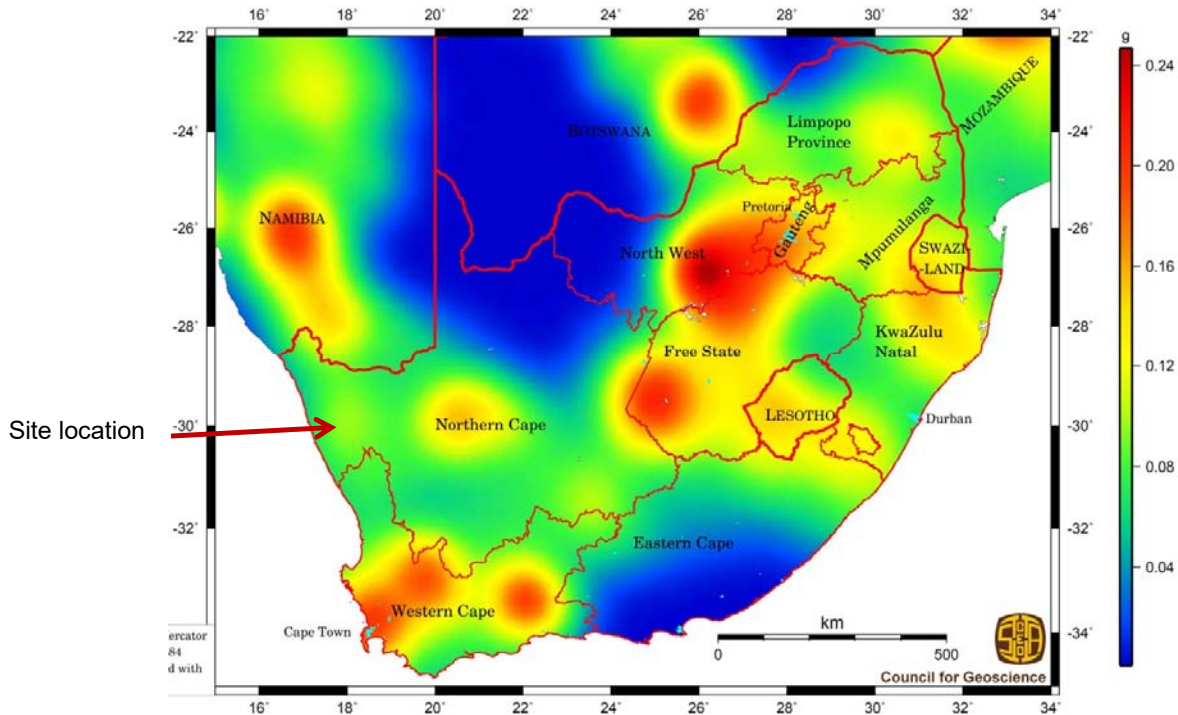


Figure 3: Peak ground acceleration (g) with 10% probability for being exceeded in a 50 year old period.

The peak ground acceleration expresses the seismic hazard and the value of 0.09 m/s^2 may be considered low to moderate. A 10% probability exists that this value will be exceeded in a 50 year period.

7. Geology

According to the published 1:250 000 Geological Map Series 3018 Loeriesfontein (2011), Paulshoek village is underlain by Banke Granodiorite (**Nban**) of the Spektakel Suite, Namaqualand Metamorphic Province as indicated in Figure 4 below.

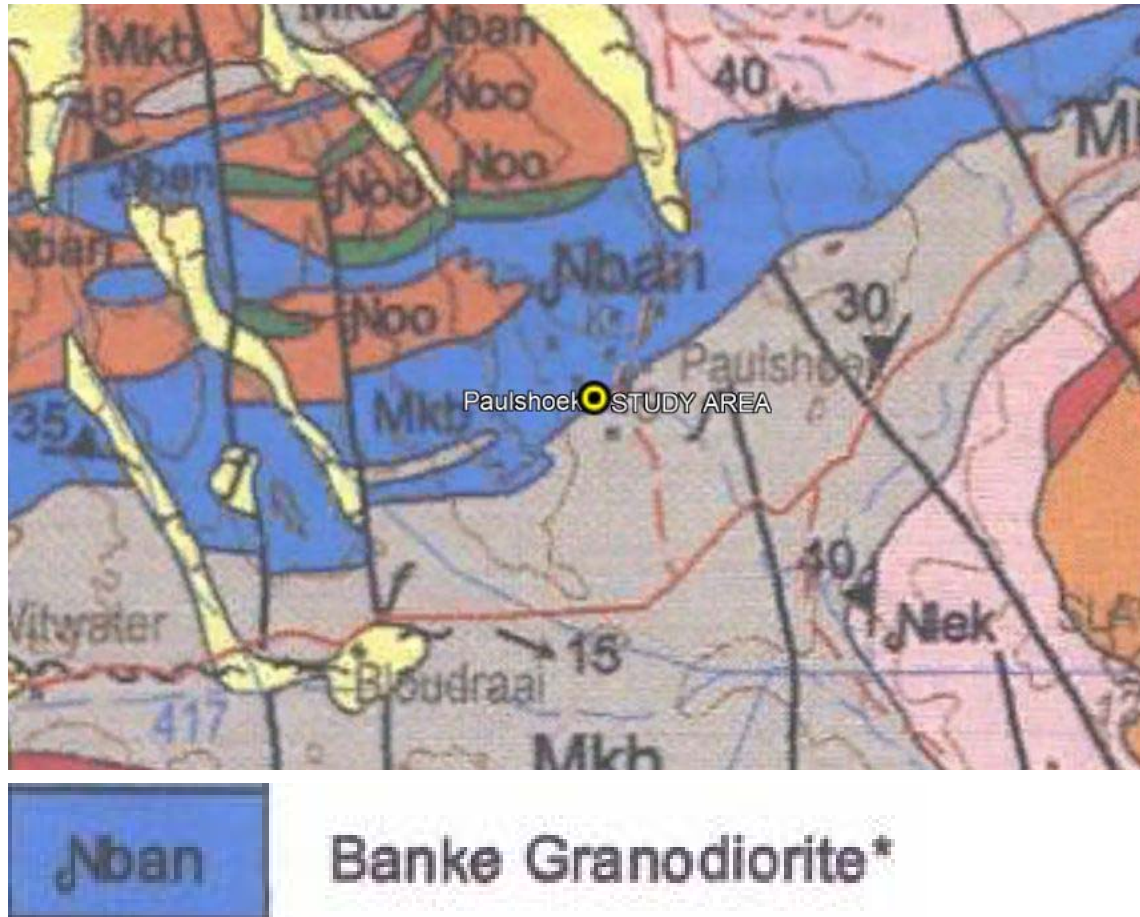


Figure 4: Showing the general geology map of the site area (*yellow dot*); (Geological Survey, printed by the Government Printer, 2011).

8. Results of Investigation

The detailed descriptions of the soil profiles encountered in the test pits are presented in Appendix B; while the geological profiles are summarised below for the whole site, based on the soil profiles. The geological profiles as recorded in test pits are summarised below.

The geotechnical investigation revealed that the profile across the site is uniform, comprising of the following horizons:

- Transported horizon;
- Pedogenic horizon;
- Residual Granodiorite horizon; and
- Granodiorite Bedrock.

These horizons are described in more detail below:

Transported Horizon

The transported horizon comprises slightly moist, light brown (reddish brown in places), intact, gravelly sand. The consistency of this horizon was generally profiled as being very loose to loose. The average thickness of this horizon is approximately 0.43m

Pedogenic Horizon

This horizon comprises of slightly moist to moist, reddish brown to dark brown, intact, ferruginized silty sand with minor ferruginized gravel and cobbles. It was profiled as having a consistency ranging from dense to very dense.

Refusal occurred on the hardpan ferricrete which occurred as a reddish brown, very soft rock, hardpan ferricrete.

Residual Granodiorite Horizon

The lower most horizon in the site profile is residual granodiorite horizon which comprises of slightly moist to moist, grey, intact, silty sand with minor gravel as shown in Figure 5 below. It was profiled as having a consistency ranging from dense to very dense. The horizon extends to depths beyond 3.00 m.



Figure 5: Showing a typical test with residual Granodiorite.

Granodiorite Bedrock

The granodiorite bedrock on site occurs as moderately to highly weathered, closely jointed, black and grey, medium grained and the hardness of the rock was generally profiled as hard rock. The minimum thickness of the bedrock is approximately 3.00m. Excavation was not possible due to the bedrock outcropping at some portions of the site as shown in Figure 6.



Figure 6: Showing a massive granodiorite outcrop.

9. Groundwater conditions

Groundwater seepage was not encountered in the test pits excavated on site. Ferruginisation, which indicates a changing water regime was noted in the majority of test pits. Problems due to ground water seepage are therefore expected in places, especially during and after a very wet rainy season.

Drainage consists predominantly of seepage, but in case of thunderstorms surface sheetwash may occur. Such sheetwash will take place towards the North as the site is generally sloping to the North direction. Furthermore, it is expected that perched water and/or surface seepage may occur shortly after precipitation events and in years of excessive rain.

10. Flooding

It likely that the site can be subjected to flooding as there are non-perennial tributaries cutting across the site in a southerly direction (4.5°) and characterised by a relatively flat topography in places. The relatively flat topography may cause drainage problems as this type of topography promotes the ponding of water in the project area. A flood line study however falls outside of our current scope of work. Flood-lines for this area must be determined by a suitably qualified engineer.

11. Laboratory tests

Foundation Indicators

Representative samples were collected for laboratory testing at each test pit position and submitted for foundation indicator tests. The test results are attached in Appendix C and summarised in Table 2

Table 2 : Foundation Indicator Results

Sample No	Depth (m)	Soil Composition				GM	Atterberg Limits			Activity	Unified Soil Classification
		Clay (%)	Silt (%)	Sand (%)	Gravel (%)		LL (%)	WPI (%)	LS (%)		
Transported Horizon											
PH05	0 – 0.30	20	8	54	18	1.46	16	4	2	Low	SC - SM
PH21	0 – 0.64	15	15	63	7	1.17	27	12	6	Low	SC - SM
PH23	0 – 0.42	6	10	67	17	1.53	-	SP	0.5	Low	SC - SM
PH30	0 – 0.50	17	19	48	16	1.24	20	5	2.5	Low	SC - SM
PH32	0 – 0.47	12	26	56	6	0.98	26	8	4	Low	SC - SM
Residual Granodiorite Horizon											
PH02	0.30 – 0.85	10	14	62	14	1.33	25	8	4	Low	SC - SM

PH04	0.35 – 0.70	6	15	41	30	1.83	18	6	3	Low	SC - SM
PH11	0.35 – 1.40	28	8	55	9	1.07	32	8	4	Low	SC - SM
PH14	0.70 – 1.90	6	7	57	30	1.84	29	6	3	Low	SC - SM
PH15	0.18 – 0.30	8	14	27	51	2.01	23	6	3	Low	SC - SM
PH19	1.10 – 2.50	9	13	59	19	1.50	22	8	4	Low	SC - SM
PH19-B	2.50 – 3.00	8	11	36	45	1.97	21	6	3	Low	SC - SM
PH20	0.40 – 1.10	8	11	64	17	1.54	18	6	3	Low	SC - SM
PH22	0.77 – 1.35	6	10	43	41	1.97	31	11	5.5	Low	SC - SM
PH24	0.22 – 0.42	28	3	36	33	1.63	20	8	4	Low	SC - SM
PH25	1.85 – 2.30	19	15	57	9	1.11	27	6	3	Low	SC - SM
PH28	0.20 – 0.50	21	20	55	4	0.88	29	10	5	Low	SC - SM
PH29	0.30 – 0.80	24	16	41	19	1.23	23	8	4	Low	SC - SM
PH31	0.32 – 0.40	22	11	31	36	1.62	20	6	3	Low	SC - SM
PH33	0.19 – 0.30	8	13	32	47	1.07	14	2	1	Low	SC - SM
PH34	0.27 – 0.44	11	55	14	20	1.07	16	4	2	Low	SC - SM

<u>Legend</u>	GM	=	Grading modulus
	LL	=	Liquid Limit
	WPI	=	Weighted Plasticity Index
	LS	=	Linear Shrinkage
	GW	=	Well graded gravel
	GP	=	Poorly graded gravel
	SW	=	Well-graded sand
	SP	=	Poorly graded sand
	SM	=	Silty sand
	Activity	=	Potential expansiveness of the soil according to Van der Merwe's method (Van der Merwe, 1973)

Table 2 indicates that:

The **transported** horizon comprises of clayey sands (**SC**) and silty sands (**SM**). The horizon has a high (0.98) to very high (1.53) grading moduli. The fine fractions of this material also exhibit very low (non-plastic) to moderate (27%) liquid limits and a very low to moderate (6%) linear shrinkage, indicating that the material has low plasticity characteristics. The material has a low potential expansiveness, according to the method proposed by Van der Merwe (1973).

The **residual** material comprises of clayey sands (**SC**) and silty sands (**SM**), with a gravel fraction up to 51 %. The horizon has a high (0.88) to very high (2.01) grading moduli. The coarse fractions of this material exhibit very low (14%) to moderate (37 %) liquid limits and a very low (1%) to moderate (5.5%) linear shrinkage, indicating that the material has low plasticity characteristics. The material has a low potential expansiveness, according to the method proposed by Van der Merwe (1973).

Compaction Test

Samples of materials identified as potential sources of construction materials were sampled for laboratory testing. The samples were subjected to compaction tests in which the moisture-density relationship was established, with Californian Bearing Ratio (CBR) tests carried out to determine the suitability of the soils for use in constructing layer works below paved area. This is summarised in Table 3 below.

Table 3: Compaction Test Results.

Hole no.	OMC (%)	MDD (kg/m ³)	Swell (%)	CBR at various densities					TRH 14
				90%	93%	95%	98%	100%	
PH04	7.8	2103	0.72	16	19	21	25	28	G7
PH22	8.9	1960	0.99	14	16	18	22	24	G7

Legend

Where: OMC = Optimum moisture content
MDD = Maximum dry density (Mod AASHTO)
Swell = Soaked at 100% Mod AASHTO compaction

The **residual horizon** has a high maximum dry density ranging from **1960 kg/m³** to **2103kg/m³**. and low (**7.8 %**) to moderate (**8.9 %**) optimum moisture content. The CBR swell values are moderate and the tests yielded moderate CBR values at densities typically specified in the field (**93 % to 95 %**).

The **residual material** is classified as **G7** which is considered to be suitable for the construction of an engineered fill of selected road layer material and in moderate stiffness of engineered fills. , according to the TRH 14 guidelines (CSIR: 1987).

Chemical Tests

The chemical test results comprising pH and conductivity are listed in Table 4as well as Appendix C. Several environmental factors have an effect on buried metals. These factors are:

- Electrical conductivity of the soil
- Chemical properties of the soil
- Ability of the soil to support sulphide reducing bacteria
- Heterogeneity of the soil (long-line currents)
- Differential aeration
- Stray currents in the soil, and
- Bacteria attack

The conductivity of the soil has a profound influence on the rate of corrosion of buried metallic objects. Based on significance of soil resistivity on corrosivity, Duligal (1996) provides the following table for evaluation of the conductivity of soil:

Table 4: Guideline values for interpretation of soil conductivity (Duligal, 1996)

Soil conductivity		
Soil conductivity (mS/m)	Soil resistivity (Ohm.cm)	Corrosively classification
More than 50	0 – 2000	Extremely corrosive
25 – 50	2000 – 4000	Very corrosive
20 – 25	4000 – 5000	Corrosive
10 – 20	5000 – 10000	Mildly corrosive
Less than 10	>10000	Not generally corrosive

Disturbed samples of the transported material were collected and subjected to chemical (pH and conductivity) tests. The test results are summarised as follows.

Based on Evans guideline (1977), a soil pH less than 6 indicates serious corrosion potential

Table 5: Summary of Chemical Tests Results

Hole no.	Depth (m)	pH	Conductivity (mS/m)
Transported Horizon			
PH05	0 - 0.30	5.00	500
PH30	0 – 0.50	5.40	780
PH32	0 - 0.47	5.70	920
Residual Granodiorite Horizon			
PH02	0.30 - 0.85	5.80	3030
PH11	0.35 - 1.40	5.00	2620
PH14	0.70 – 1.90	5.60	1800
PH22	0.70 – 1.35	5.70	8200
PH25	1.85 – 2.30	5.90	2920
PH31	0.32 – 0.40	5.40	590

According to the soil conductivity guideline values in Table 4 (Duligal, 1996) and the results in Table 5 the **transported** and **residual material** on this particular site are corrosive due to the pH values being $6 < \text{pH}$. Corrosion of buried metallic elements is therefore likely due to the high pH values measured.

12. Geotechnical considerations

The purpose of the investigation is to provide a broad overview and classification of the suitability of the land for the proposed development and outline obvious constraints. The following constraints, as proposed by Partridge, Wood and Brink (1993), have to be considered for the classification of the sites for urban development:

- Collapsible / compressible soil profile;
- Shallow seepage or groundwater level;
- Expansive soil profile;
- Erodibility of the soil profile;
- Excavatibility;
- Undermined ground;
- Instability of areas of soluble rock;
- Steep slopes;
- Unstable natural slopes;
- Seismic activity; and
- Areas subject to flooding.
- Other considerations.

Each of the above-mentioned constraints and its applicability to this specific site is discussed in the sections that follow.

12.1 Collapsible / Compressible soil profile

Soil with a collapsing fabric may be defined as a soil which can withstand relatively large imposed stresses with small settlements at a low in-situ moisture content, but will exhibit a decrease in volume and increase in associated settlement with no increase in the applied stress if wetting up occurs, as is aptly described by (Schwartz; 1985). Several geotechnical tests are available to determine the collapse potential of a soil material either as a parametric or numerical value. These tests all depend on the availability of an undisturbed sample cut from the soil profile, and are relatively expensive. With the transported sands on site being of loose and very loose consistency, it was not possible to extract an undisturbed sample. However, Errerra (1977) researched the properties of the Kalahari windblown sand and defined a grading envelope for collapsing sands. According to his research it has been found that should the grading curve of a soil material fit into this envelope, the soil can be regarded as being of collapsing nature

The two samples (PH21 and PH28) of the transported materials representing the lower and upper limit of the grading results indicates that this material is prone to collapse as a large portion of both samples fall within grading envelope for collapsible soils as can be seen in Appendix H. It is expected that the transported sandy material will be collapsible/ compressible when the moisture conditions change from dry to moist due to the rainwater infiltration etc.

12.2 Shallow seepage / groundwater level

Groundwater seepage was not encountered in the test pits excavated on site. Ferruginisation, which indicates a changing water regime was noted in the majority of test pits. Problems due to ground water seepage are therefore expected in places, especially during and after a very wet rainy season.

Drainage consists predominantly of seepage, but in case of thunderstorms surface sheetwash may occur. Such sheetwash will take place towards the North as the site is generally sloping to the North direction. Furthermore, it is expected that perched water and/or surface seepage may occur shortly after precipitation events and in years of excessive rain.

12.3 Expansive soil profile

Most part of the site is underlain by sandy gravel and cobbles. No evidence of expansive soil behaviour was noted in the soil profiles. Furthermore the laboratory results reveal that the materials on site are not expansive.

12.4 Erodibility of the soil profile

The surface at the site is covered by sandy material thus possibly prone to erodibility due to the sandy nature of the covering material on site. The site is however affected by erosion gully which washes the soil along the drainage lines. Control measures can be taken to prevent further erosion like fixing the problems in the catchment and stabilising the gully itself.

12.5 Excavatability

The ease at which the soil can be excavated is an important criterion in the selection of a site. The excavation characteristics of the strata have been estimated from the performance of the TLB used for the investigation as per the terms of SABS 1200D. Refusal was encountered in all fifty-two (52 No) of the test pits excavated on site, on ferricrete bedrock. “Hard excavation” in terms of SABS 1200D can be expected where the TLB refused. **Soft Excavation** was experienced on the transported horizons with very loose, loose and/or medium dense consistencies and on some residual granodiorite and pedogenic horizons with either loose and/or medium dense consistencies. The excavation was to variable depths from surface to approximately 0.40 m. **Hard Excavation** was encountered on hardpan ferricrete and granodiorite bedrock anticipated from an average depth of 0.75m.

Machine excavatability for the installation of services is therefore expected to be problematic with a backhoe where “**Hard Excavation**” was encountered. Cobbles and minor boulders were encountered in some of the test pits, which could result in excavatability issues with regards to installation of services.

12.6 Undermined ground

No indication of the presence of undermined ground was found during the desk study or field investigation. There are no closed or working shafts or other signs of mining activity within a radius of 1 km of the site. Limited removal of soils for road construction has taken place on the site. Most favourable conditions thus prevail in this regard.

12.7 Instability of areas of soluble rock

No indication of the presence of soluble rock formations was found during the desk study or field investigation. According to the published 1:250 000 Geological Map Series 3018 Loeriesfontein (2011), Paulshoek village is underlain by Banke Granodiorite and not by soluble rocks. The site is therefore considered a “**non-dolomitic**” site.

12.8 Steep slopes

The site is characterised by a fairly flat surface. The general flat slope (less than 6 degrees) over the site will not present slope stability problems or a hazard to structures placed on this area.

12.9 Seismic activity

The peak ground acceleration expresses the seismic hazard and the value of 0.09 m/s^2 may be considered low to moderate. A 10% probability exists that this value will be exceeded in a 50-year period.

12.10 Areas subject to flooding

It likely that the site can be subjected to flooding as there are non-perennial tributaries cutting across the site in a southerly direction (4.5°) and characterised by a relatively flat topography in places. The relatively flat topography may cause drainage problems as this type of topography promotes the ponding of water in the project area. A flood line study however falls outside of our current scope of work. Flood-lines for this area must be determined by a suitably qualified engineer.

12.11 Unstable natural slopes

The site is characterised by a generally flat surface and has no unstable natural slopes. The general flat slope (less than 6 degrees) over the site will not present slope stability problems or a hazard to structures placed on this area.

13. Engineering Geological Zoning

For urban planning purposes the site is zoned according to the NHBRC classification systems. Due to the presence of potentially collapsible/ compressible transported horizon over the entire site as well as shallow refusal on granodiorite bedrock, the site has been delineated into two geotechnical zones. The zonation is also shown in the zonation plan in Appendix F and in Table 6 below. The description of the zones is as follows:

- Zone C1/S** This zone covers a small portion of the site and is characterised by collapsible soil (silty sand) with a total settlement movement between 5mm to 10mm and differential movement that is 75% (**C1**) and fine-grained soils (clayey sand) with a total settlement movement less than 10mm and differential movement that is 50% (**S**).
- Zone R:** This zone is characterised by the occurrence of bedrock at shallow depths. The bedrock (refusal) is encountered at depths shallower than 1 m.

Table 6: Geotechnical Characteristics

Geotechnical Characteristics				
TYPICAL FOUNDING MATERIAL	CHARACTER OF FOUNDING MATERIAL	EXPECTED RANGE OF TOTAL SOIL MOVEMENTS (mm)	ASSUMED DIFFERENTIAL MOVEMENT (% OF TOTAL)	SITE CLASS
Silty sands, sands, sandy and gravelly soils	Compressible And Potentially Collapsible Soils	<5,0	75%	C
		5,0-10	75%	C1
		>10	75%	C2
Clayey silts, clayey sands of low plasticity, sands, sandy and gravelly soils	Compressible soils	<10	50%	S
		10-20	50%	S1
		20>	50%	S2
Rock (excluding mudrock which exhibit swelling to some depth)	Stable	Negligible		R

14. Recommendations

Recommendations are provided regarding the following:

- Development in general;
- Founding of light structures;
- Construction materials;
- Drainage measures: and
- General.

14.1 Development

No adverse conditions prohibiting the construction of structures for residential development were encountered at the site.

We recommend that township development proceed subject to the following conditions:

- Special founding solutions must be implemented for all single and double storey structures.
- Detailed geotechnical investigations must be conducted for all high-rise structures, i.e. structures exceeding conventional double-storey height.

14.2 Founding of structures

Founding alternatives for lightly loaded single and double-storey structures constructed in this zone include the following:

According to the NHBRC guidelines the following founding solutions can be implemented for the zone:

Zone C1/S

The site preparation requirements identified below are aimed at preparing foundation, removal of any unsuitable materials and densification of the ground.

The following options for foundations are recommended as per NHBRC guidelines:

Option 1 Stiffened strip footings, stiffened or cellular raft

Stiffened strip footings or stiffened or cellular raft with lightly reinforced or articulated masonry. Bearing pressure not to exceed to 50 kPa. Fabric reinforcement in floor slabs. The site should be properly drained and adequate plumbing and service precautions should be taken to prevent water leaks.

Option 2 Deep strip footings

Found on competent horizon below the problem layer using normal construction which should also include fabric reinforcement in floor slabs. Adequate drainage precautions should be taken for the site.

Option 3 Piled or pier foundations

Reinforced concrete ground beams or solid slabs on piled or pier foundations. Ground slabs with fabric reinforcement. The site should be properly drained and adequate plumbing and service precautions should be taken to prevent water leaks.

Option 4 Soil raft

Remove insitu material to 1,0 m beyond perimeter of the 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 and light reinforcement in masonry may be utilised.

Extensive excavation with power tools can be expected in places to reach founding depth and to create level building platforms, resulting in most cases in founding on bedrock.

Zone R

Foundation Option Modified normal

Modified normal construction with reinforced strip footings and light reinforcement in masonry may be utilised. Bearing pressure not to exceed to 50 kPa. Fabric reinforcement in floor slabs. The site should be properly drained and adequate plumbing and service precautions should be taken to prevent water leaks.

14.3 Construction Materials

The laboratory results classify that the **residual material** on site as **G7** the material is considered to be suitable for the construction of an engineered fill of selected road layer material and in moderate stiffness of engineered fills. According to the TRH 14 guidelines (CSIR: 1987).

14.4 Stability of Excavations

It is strongly recommended that all excavations exceeding 1.5m should have a proper sidewall protection to ensure safety of workers.

It is recommended that all deeper temporary excavations and excavations experiencing seepage will require trimming the slope and ensuring that any loose materials in upper soil layers are removed before workers are allowed into the excavations. Slope angles in excavations should not exceed 30 degrees. Shoring is required for excavations extending depths of 3 m below surface level.

14.5 Drainage measures

Water must be kept away from the foundations. The following drainage precaution must be adhered to:

- No accumulation of surface water is permitted and the entire development must be properly drained;
- A 1m apron must be constructed around each building to keep surface runoff away from foundations;
- Waterborne sewerage reticulation must be installed. All water services should be sleeved;
- All trenches and excavation works must be properly backfilled and compacted in order to prevent them from functioning as French drains. Backfilling should be done at optimum moisture content, in 150mm thick layers to at least 90% of modified AASHTO density.

15 General

It must be borne in mind that an investigation of this nature is aimed at delineating broad areas in which problems may occur. Consequently, certain generalisations have to be made to avoid the necessity of a costly investigation at each and every stand.

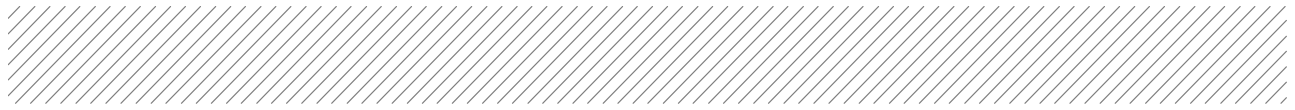
It may be found that soil conditions at variance with those discussed in this report do occur locally. The variant conditions should be inspected by competent personnel to ensure that these conditions do not pose a problem for a specific development. More detailed testing in certain areas may allow for a design relaxation and associated cost saving. The potential for problems due to under-design must also be considered.

The site is considered suitable for the proposed development provided that the recommendations made in this report are adhered to. Please also note that these recommendations are for single and double storey buildings. Should a need arise for development of high-rise structures (i.e. structures exceeding conventional double-storey height) on this site, a detailed geotechnical investigation should be undertaken.

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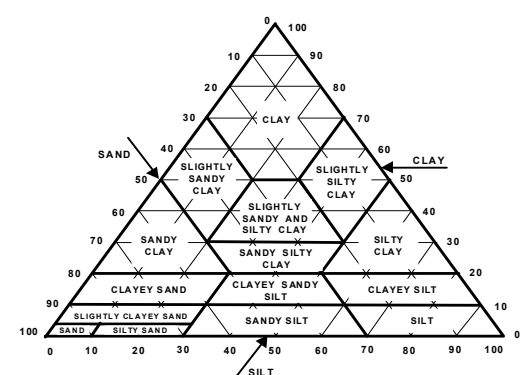
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Appendix A

Summary of standard soil and rock profile
description terminology Summary of standard
soil and rock profile description terminology

STANDARD DESCRIPTIONS USED IN SOIL PROFILING

1. MOISTURE CONDITION		2. COLOUR	
Term	Description	The Predominant colours or colour combinations are described including secondary coloration described as banded, streaked, blotched, mottled, speckled or stained.	
Dry			
Slightly moist	Requires addition of water to reach optimum moisture content for compaction		
Moist	Near optimum content		
Very Moist	Requires drying to attain optimum content		
Wet	Fully saturated and generally below water table		
3. CONSISTENCY			
3.1 Non-Cohesive Soils		3.2 Cohesive Soils	
Term	Description	Term	Description
Very Loose	Crumbles very easily when scraped with geological pick	Very soft	Easily penetrated by thumb. Sharp end of pick can be pushed in 30 - 40mm. Easily moulded by fingers.
Loose	Small resistance to penetration by sharp end of geological pick	Soft	Pick head can easily be pushed into the shaft of handle. Moulded by fingers with some pressure.
Medium Dense	Considerable resistance to penetration by sharp end of geological pick	Firm	Indented by thumb with effort. Sharp end of pick can be pushed in up to 10mm. Can just be penetrated with an ordinary spade.
Dense	Very high resistance to penetration to sharp end of geological pick. Requires many blows of hand pick for excavation.	Stiff	Penetrated by thumbnail. Slight indentation produced by pushing pick point into soil. Cannot be moulded by fingers. Requires hand pick for excavation.
Very Dense	High resistance to repeated blows of geological pick. Requires power tools for excavation	Very Stiff	Indented by thumbnail. Slight indentation produced by blow of pick point. Requires power tools for excavation.
4. STRUCTURE		5. SOIL TYPE	
		5.1 Particle Size	
Term	Description	Term	Size (mm)
Intact	Absence of fissures or joints	Boulder	>200
Fissured	Presence of closed joints	Pebbles	60 – 200
Shattered	Presence of closely spaced air filled joints giving cubical fragments	Gravel	60 – 2
Micro-shattered	Small scale shattering with shattered fragments the size of sand grains	Sand	2 – 0,06
Slickensided	Polished planar surfaces representing shear movement in soil	Silt	0,06 – 0,002
Bedded Foliated	Many residual soils show structures of parent rock.	Clay	<0,002
6. ORIGIN		5.2 Soil Classification	
6.1 Transported Soils			
Term	Agency of Transportation		
Colluvium	Gravity deposits		
Talus	Scree or coarse colluvium		
Hillwash	Fine colluvium		
Alluvial	River deposits		
Aeolian	Wind deposits		
Littoral	Beach deposits		
Estuarine	Tidal – river deposits		
Lacustrine	Lake deposits		
6.2 Residual soils			
These are products of in situ weathering of rocks and are described as e.g. Residual Shale			
6.3 Pedocretes			
Formed in transported and residual soils etc. calcrete, silcrete, manganocrete and ferricrete.			

SUMMARY OF DESCRIPTIONS USED IN ROCK CORE LOGGING

1. WEATHERING				
Term	Symbol	Diagnostic Features		
Residual Soil	W5	Rock is discoloured and completely changed to a soil in which original rock fabric is completely destroyed. There is a large change in volume.		
Completely Weathered	W5	Rock is discoloured and changed to a soil but original fabric is mainly preserved. There may be occasional small corestones.		
Highly Weathered	W4	Rock is discoloured, discontinuities may be open and have discoloured surfaces, and the original fabric of the rock near the discontinuities may be altered; alteration penetrates deeply inwards, but corestones are still present.		
Moderately Weathered	W3	Rock is discoloured, discontinuities may be open and will have discoloured surfaces with alteration starting to penetrate inwards, intact rock is noticeably weaker than the fresh rock.		
Slightly Weathered	W2	Rock may be slightly discoloured, particularly adjacent to discontinuities, which may be open and will have slightly discoloured surfaces, the intact rock is not noticeably weaker than the fresh rock.		
Unweathered	W1	Parent rock showing no discolouration, loss of strength or any other weathering effects.		
2. HARDNESS			3. COLOUR	
Classification	Field Test	Compressive Strength Range MPa	The predominant colours or colour combination are described including secondary colouration described as banded, streaked, blotched, mottled, speckled or stained.	
Extremely Soft Rock	Easily peeled with a knife	<1		
Very Soft Rock	Can be peeled with a knife. Material crumbles under firm blows with the sharp end of a geological pick.	1 to 3		
Soft Rock	Can be scraped with a knife, indentation of 2 to 4 mm with firm blows of the pick point.	3 to 10		
Medium Hard Rock	Cannot be scraped or peeled with a knife. Hand held specimen breaks with firm blows of the pick.	10 to 25		
Hard Rock	Point load tests must be carried out in order to distinguish between these classifications	25 - 70		
Very Hard Rock	These results may be verified by uniaxial compressive strength tests on selected samples.	70 - 200		
Extremely Hard Rock		>200		
4. FABRIC				
4.1 Grain Size		4.2 Discontinuity Spacing		
Term	Size (mm)	Description for: Bedding, foliation, laminations	Spacing (mm)	Descriptions for joints, faults, etc.
Very Coarse	>2,0	Very Thickly Bedded	> 2000	Very Widely
Coarse	0,6 – 2,0	Thickly Bedded	600 – 2000	Widely
Medium	0,2 – 0,6	Medium Bedded	200 – 600	Medium
Fine	0,06 – 0,2	Thinly Bedded	60 – 200	Closely
Very Fine	< 0,06	Laminated	3 – 60	Very closely
		Thinly Laminated	<3	
5. ROCK NAME			6. STRATIGRAPHIC HORIZON	
Classified in terms of origin:			Identification of rock type in terms of stratigraphic horizons.	
IGNEOUS	Granite, Diorite, Gabbro, Syenite, , Dolerite, Trachyte, Andesite, Basalt.			
METAMORPHIC	Slate, Felsite, Gneiss, Schist, Quartzite			
SEDIMENTARY	Shale, Siltstone, Siltstone, Sandstone, Dolomite, Conglomerate, Tillite, Limestone.			

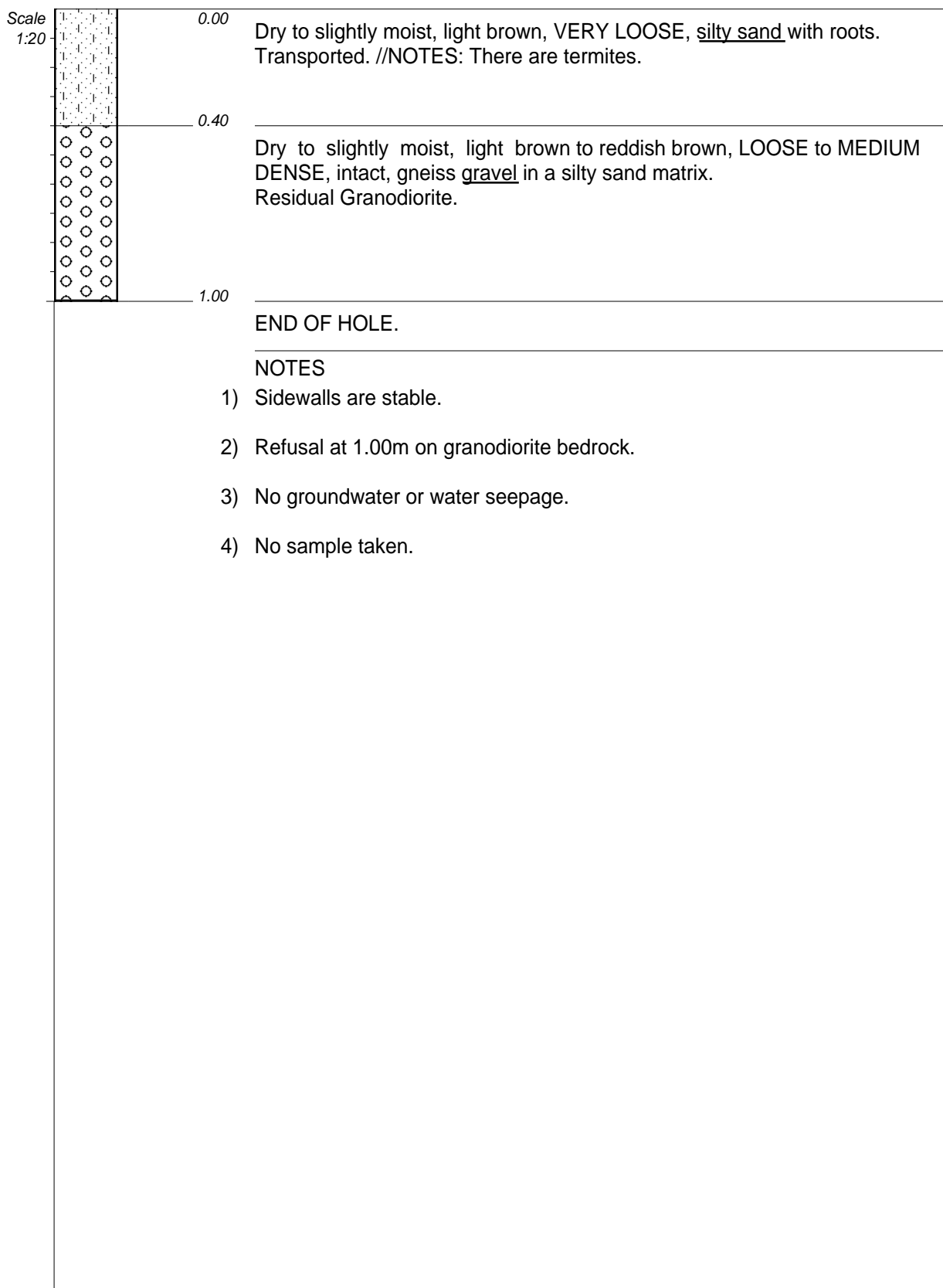
Appendix B

Soil Profile Descriptions

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH01**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

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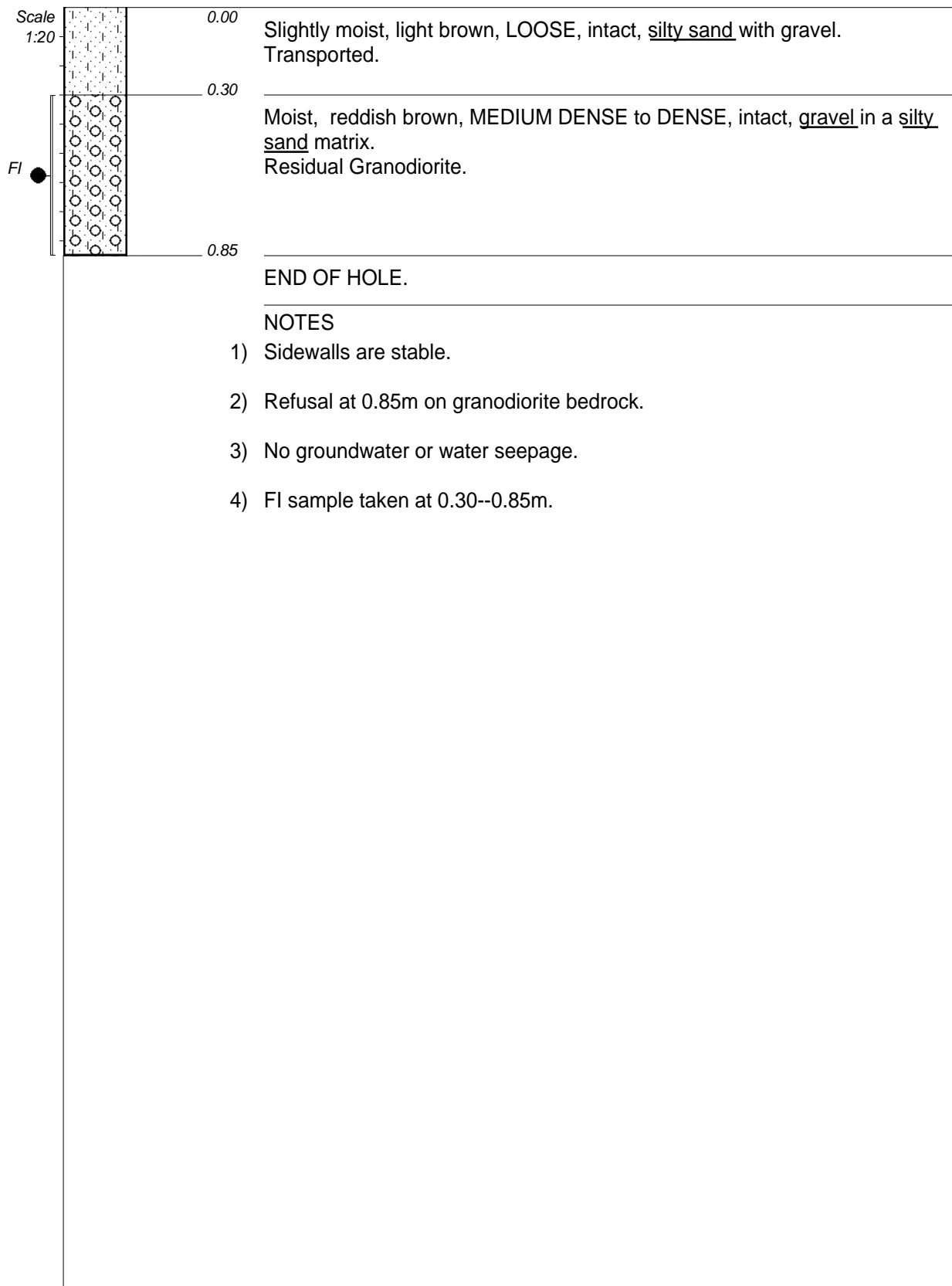
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X-COORD :
Y-COORD :

HOLE No: **PH01**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH02**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
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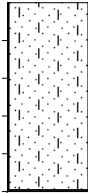
HOLE No: **PH02**
Paulsheok

**COGHSTA
PAULSHOEK TOWNSHIP**

HOLE No: PH03
Sheet 1 of 1

JOB NUMBER: 100071

Scale
1:20



0.00

Slightly moist, dark brown, VERY LOOSE to LOOSE, intact, silty sand.
Transported.

0.50

END OF HOLE.

NOTES

- 1) Sidewalls are stable.
- 2) Refusal at 0.50m on granodiorite bedrock.
- 3) No groundwater or water seepage.
- 4) No sample taken.
- 5) Consistency changes with depth at 0.40 to 0.50m.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

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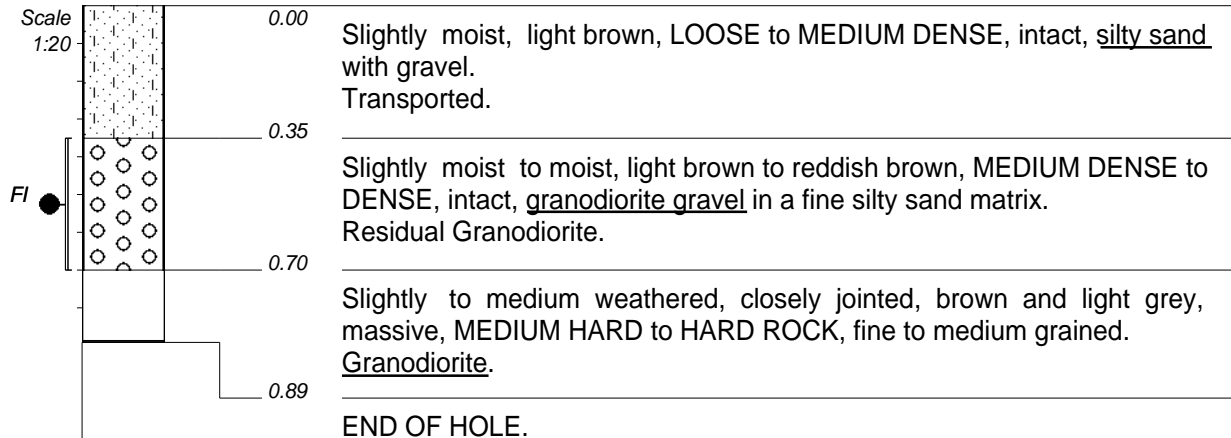
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Y-COORD :

HOLE No: PH03
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH04**
Sheet 1 of 1

JOB NUMBER: 100071



NOTES

- 1) Sidewalls are unstable.
- 2) Refusal at 0.89m on granodiorite bedrock.
- 3) No groundwater or water seepage.
- 4) FI, pH & Cond samples taken at 0.35--0.70m
- 5) FI, MOD & CBR sample taken at 0.35--0.70m.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
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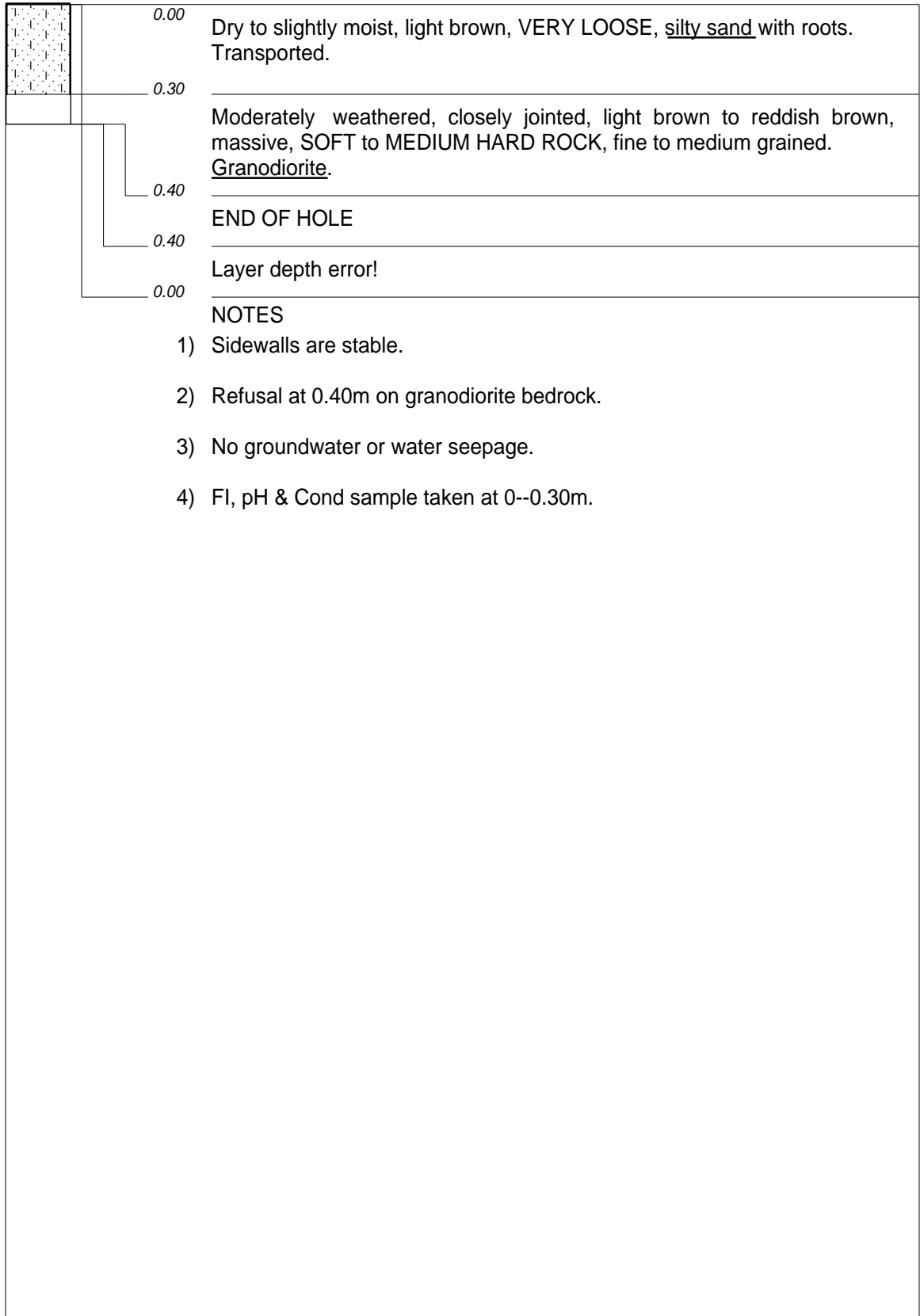
HOLE No: **PH04**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH05**
Sheet 1 of 1

JOB NUMBER: 100071

Scale
1:20



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

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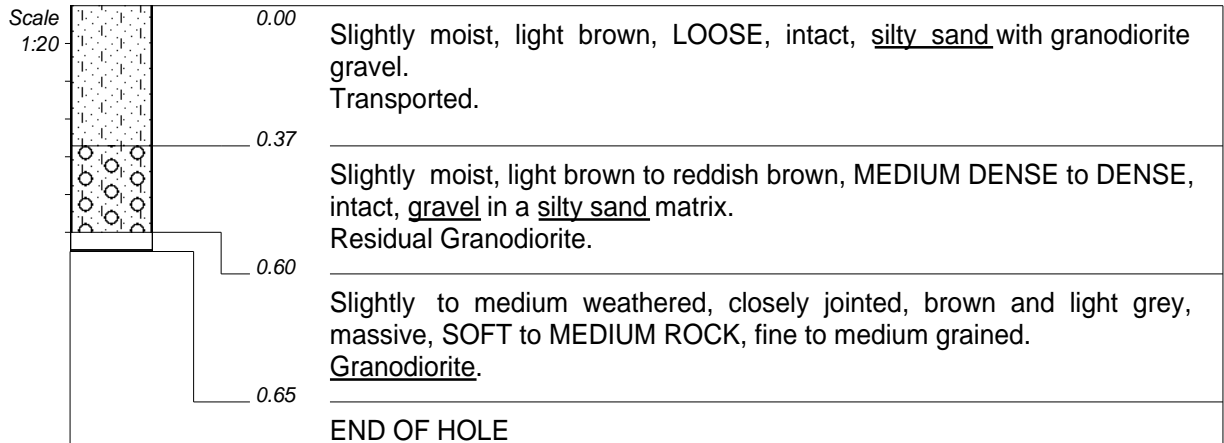
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X-COORD :
Y-COORD :

HOLE No: **PH05**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH06**
Sheet 1 of 1

JOB NUMBER: 100071



NOTES

- 1) Sidewalls are unstable.
- 2) Refusal at 0.65m on granodiorite bedrock.
- 3) No groundwater or water seepage
- 4) No sample taken.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
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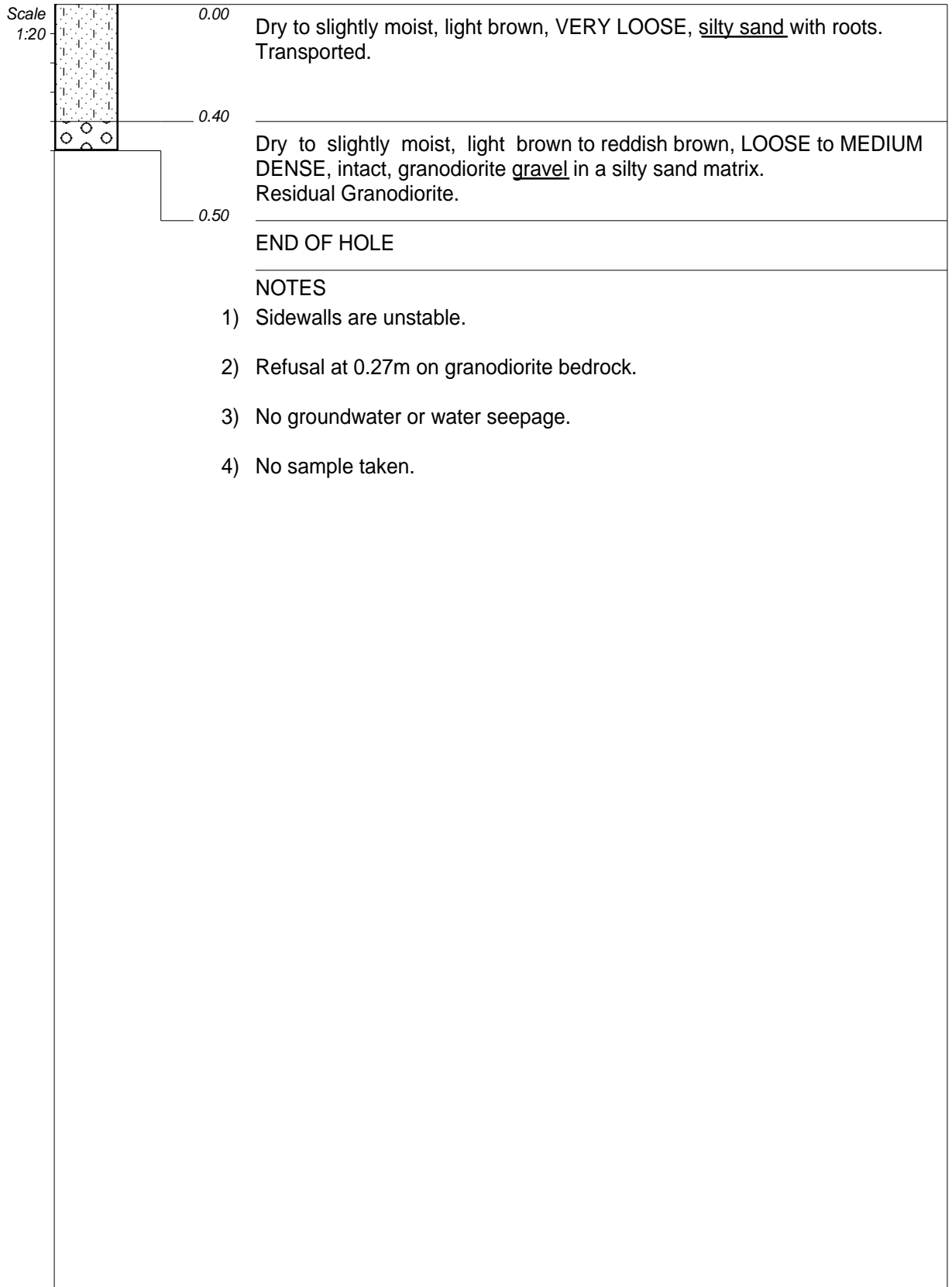
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **PH06**
Paulshoek

**COGHSTA
PAULSHOEK TOWNSHIP**

HOLE No: PH07
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
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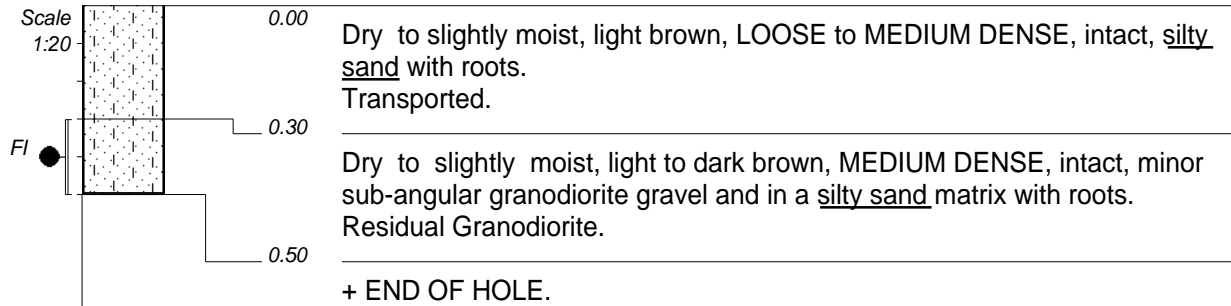
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X-COORD :
Y-COORD :

HOLE No: PH07
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH08**
Sheet 1 of 1

JOB NUMBER: 100071



NOTES

- 1) Sidewalls are stable.
- 2) Refusal at 0.50m on granodiorite bedrock.
- 3) No groundwater or water seepage.
- 4) FI sample taken at 0.30--0.50m.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
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ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **PH08**
Paulshoek

**COGHSTA
PAULSHOEK TOWNSHIP**

HOLE No: PH09
Sheet 1 of 1

JOB NUMBER: 100071

Scale
1:20



0.00

Dry to slightly moist, light brown, VERY LOOSE, intact, loosely packed sub-angular gravel in a silty sand matrix. Transported.

0.22

END OF HOLE.

NOTES

- 1) Sidewalls are stable.
- 2) Refusal at 0.22m on granodiorite bedrock.
- 3) No groundwater or water seepage.
- 4) No sample taken.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFILED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
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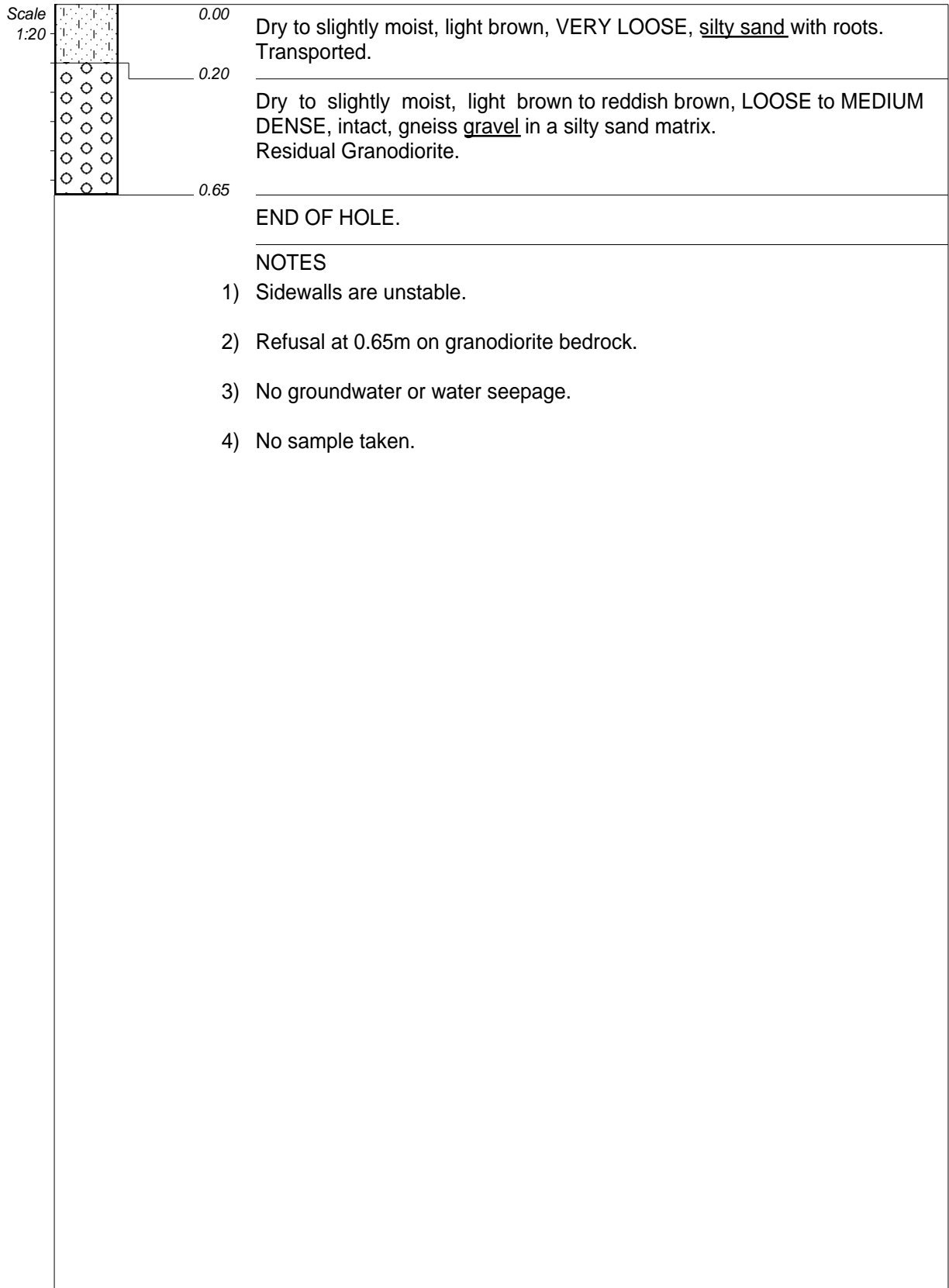
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X-COORD :
Y-COORD :

HOLE No: PH09
Paulshoek

**COGHSTA
PAULSHOEK TOWNSHIP**

HOLE No: PH10
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

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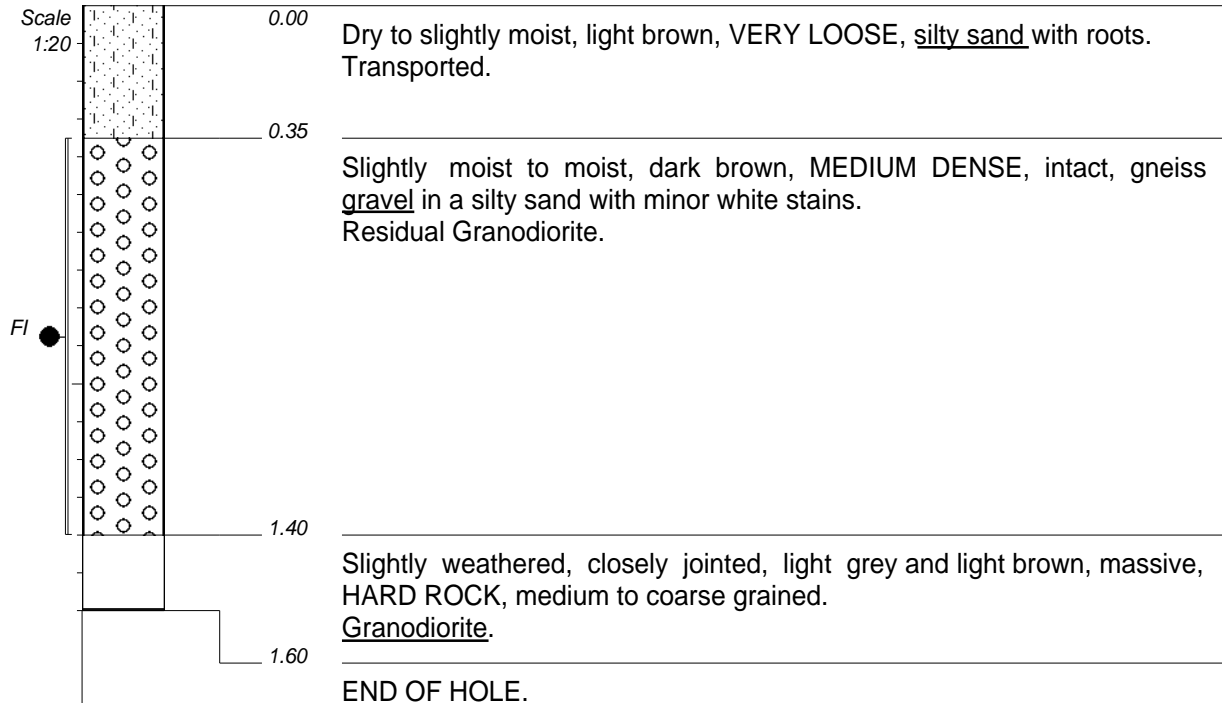
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Y-COORD :

HOLE No: PH10
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH11**
Sheet 1 of 1

JOB NUMBER: 100071



NOTES

- 1) Sidewalls are stable.
- 2) Refusal at 1.60m on granodiorite bedrock.
- 3) No groundwater or water seepage.
- 4) FI sample taken at 0.35--1.40m.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

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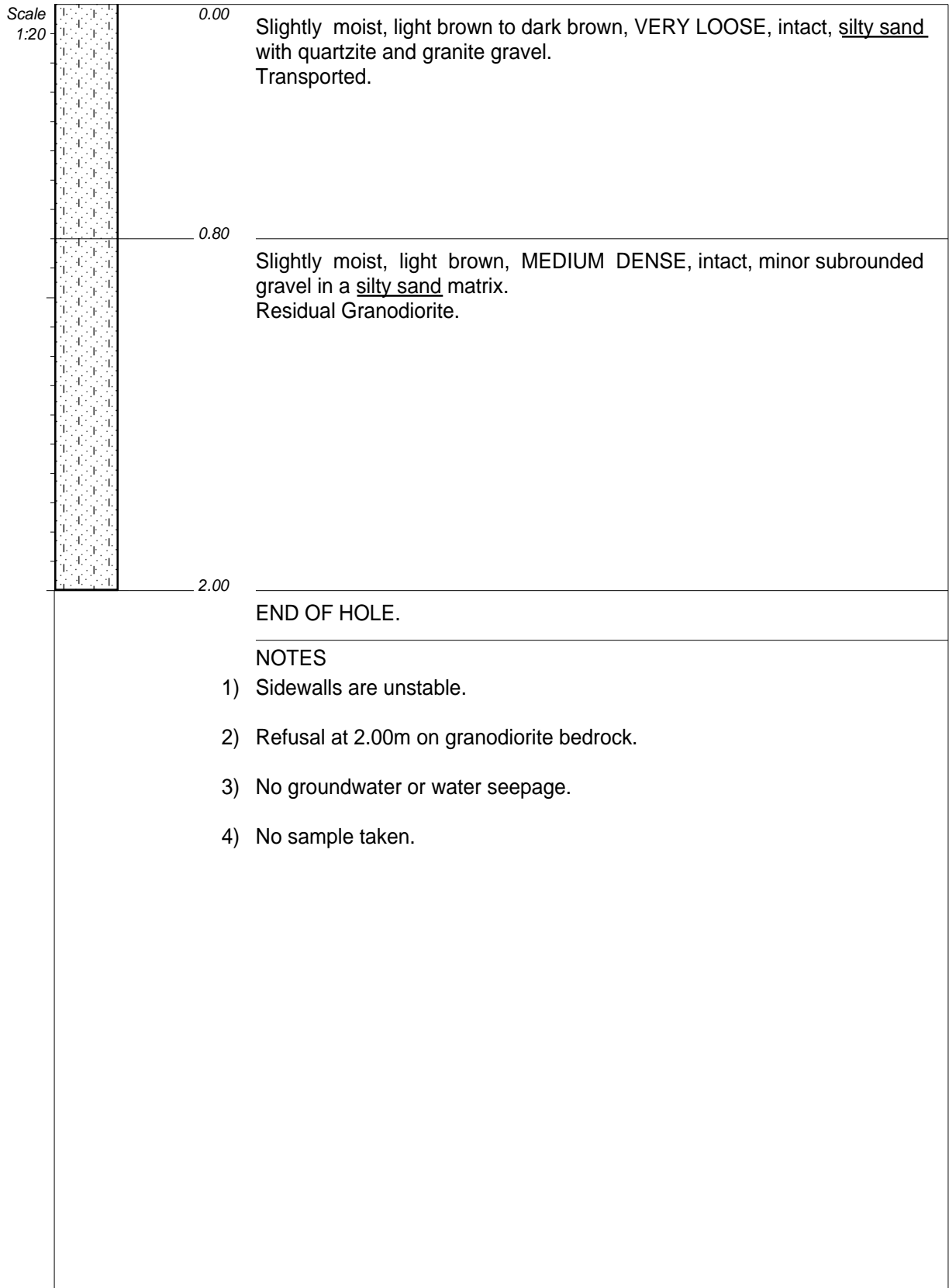
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Y-COORD :

HOLE No: **PH11**
Paulhoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH12**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
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DATE :
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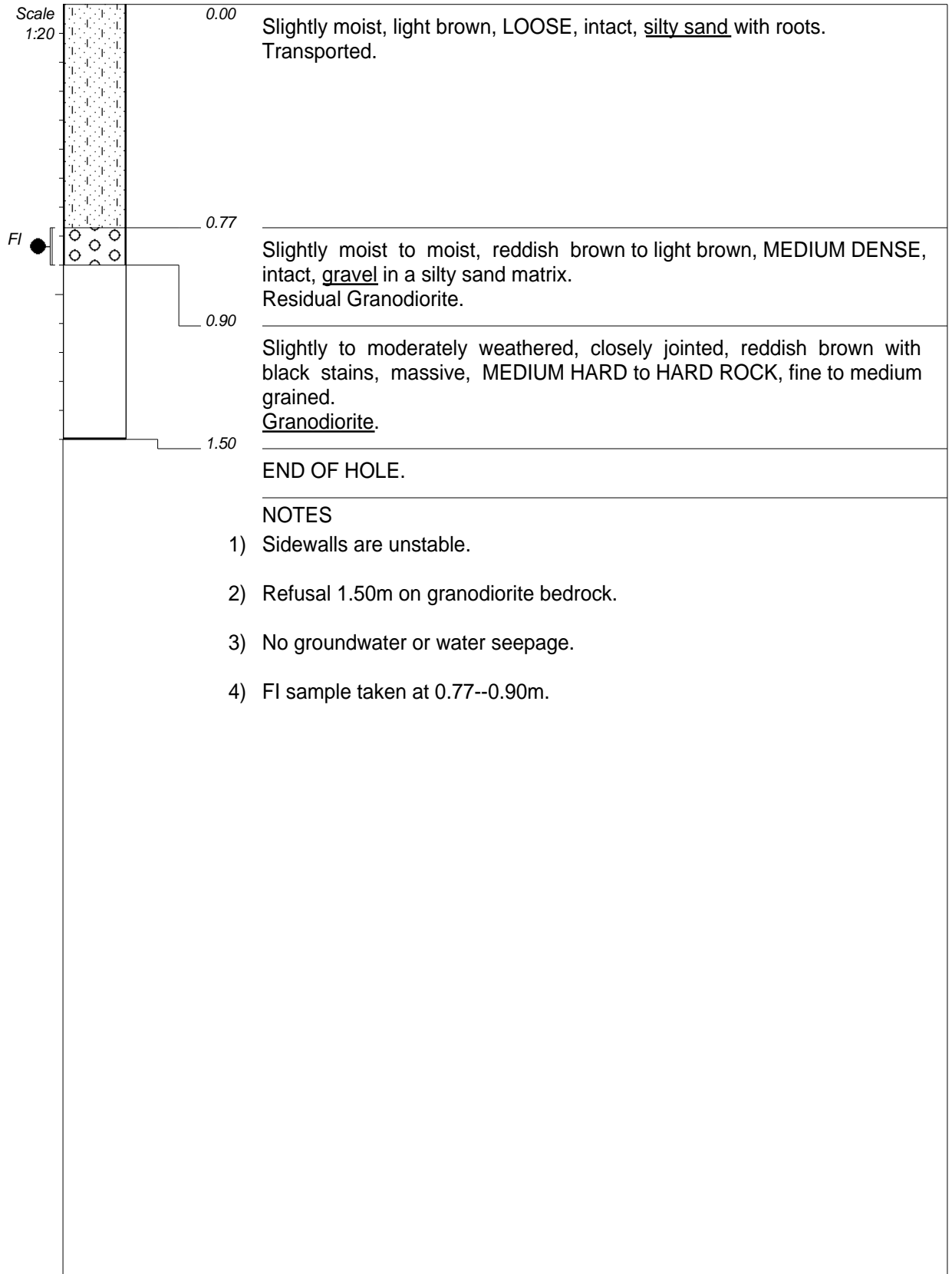
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X-COORD :
Y-COORD :

HOLE No: **PH12**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH13**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
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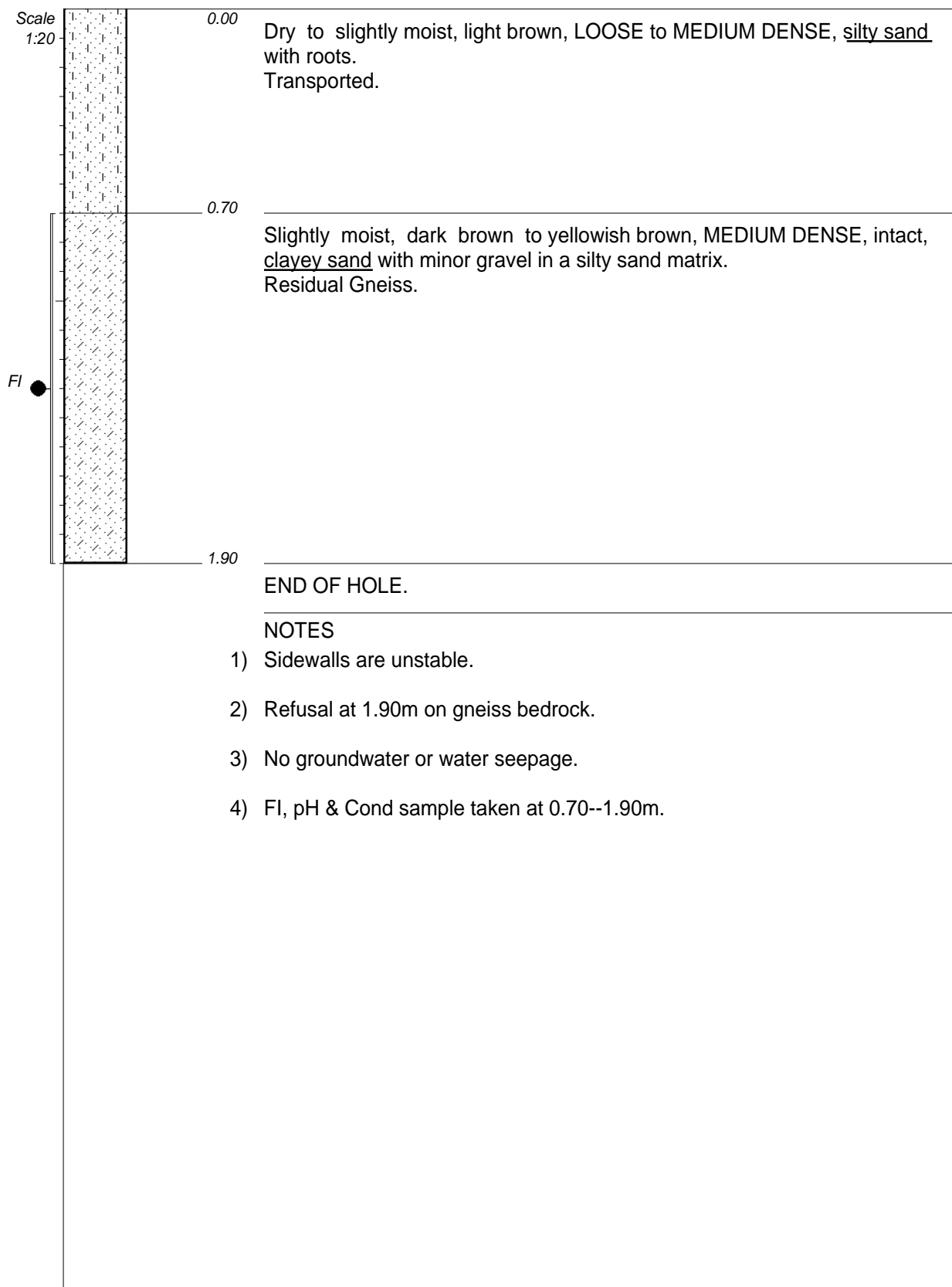
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X-COORD :
Y-COORD :

HOLE No: **PH13**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH14**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
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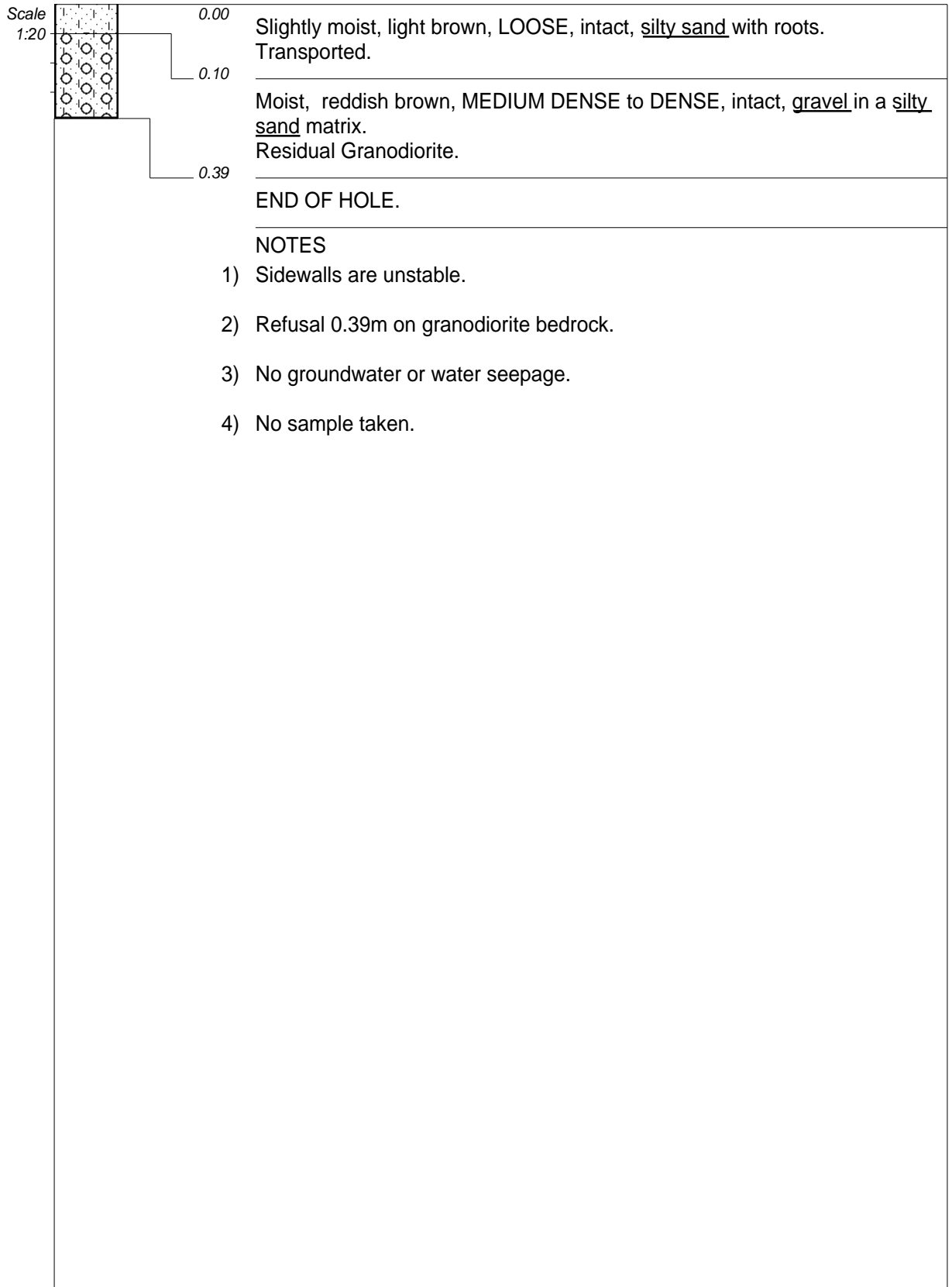
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X-COORD :
Y-COORD :

HOLE No: **PH14**
Paulshoek

**COGHSTA
PAULSHOEK TOWNSHIP**

HOLE No: PH15
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFILED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
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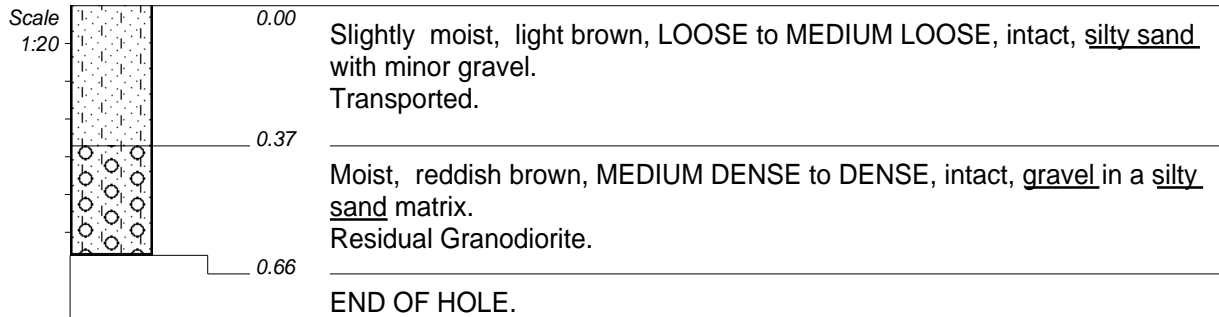
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X-COORD :
Y-COORD :

HOLE No: PH15
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH16**
Sheet 1 of 1

JOB NUMBER: 100071



NOTES

- 1) Sidewalls are stable.
- 2) Refusal at 0.66m on granodiorite bedrock.
- 3) No groundwater or water seepage.
- 4) No sample taken.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
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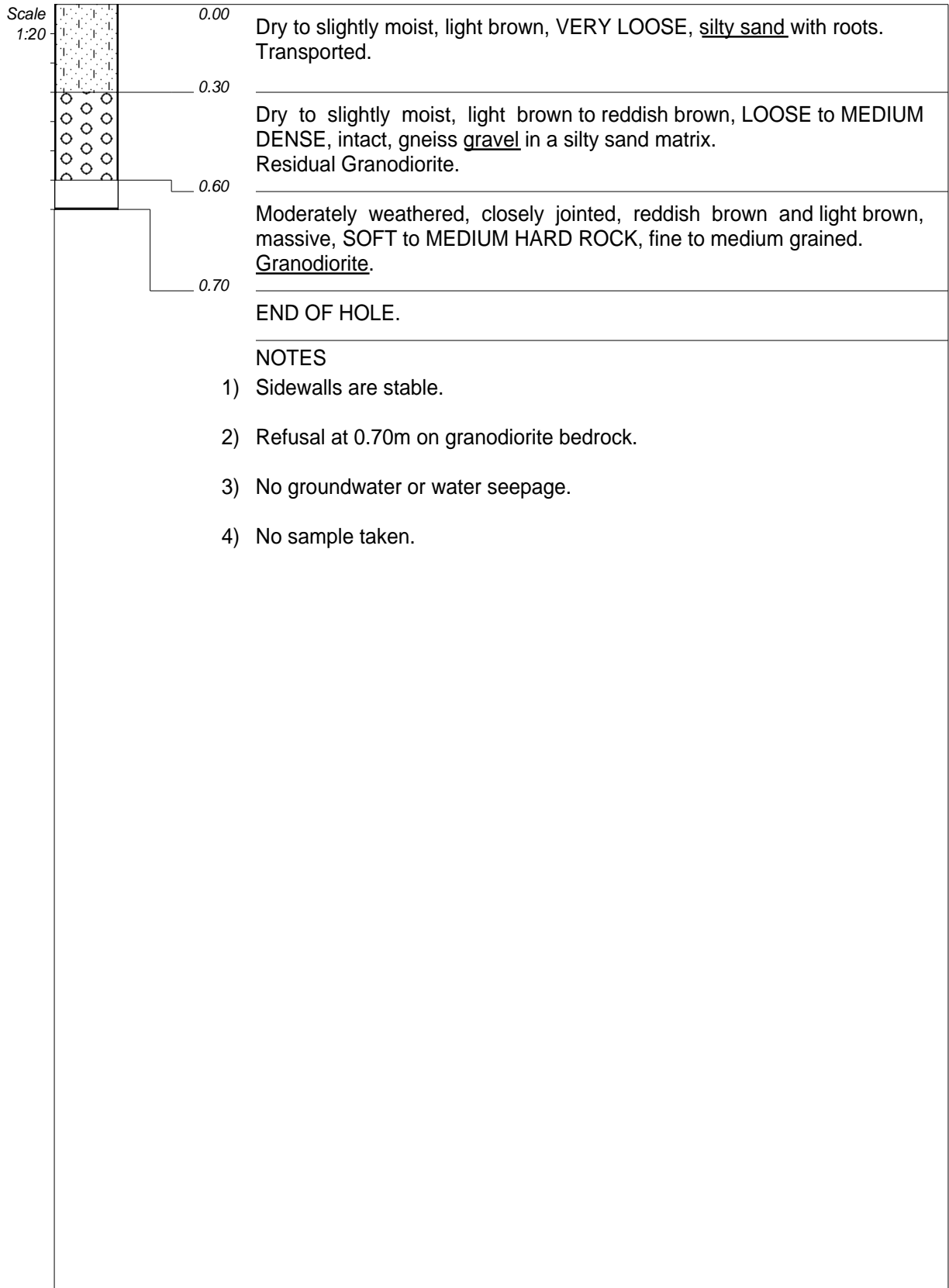
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Y-COORD :

HOLE No: **PH16**
Paulshoek

**COGHSTA
PAULSHOEK TOWNSHIP**

HOLE No: PH17
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
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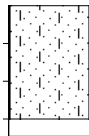
HOLE No: PH17
Paulshoek

**COGHSTA
PAULSHOEK TOWNSHIP**

HOLE No: PH18
Sheet 1 of 1

JOB NUMBER: 100071

Scale
1:20



0.00

Dry to slightly moist, light brown, VERY LOOSE, silty sand with roots.
Transported.

0.30

Moderately weathered, closely jointed, reddish brown and light brown,
massive, SOFT to MEDIUM HARD ROCK, fine to medium grained.
Granodiorite.

0.35

END OF HOLE.

NOTES

- 1) Sidewalls are unstable.
- 2) Refusal at 0.35m on granodiorite bedrock.
- 3) No groundwater or water seepage.
- 4) No sample taken.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFILED BY : BN

TYPE SET BY : BN
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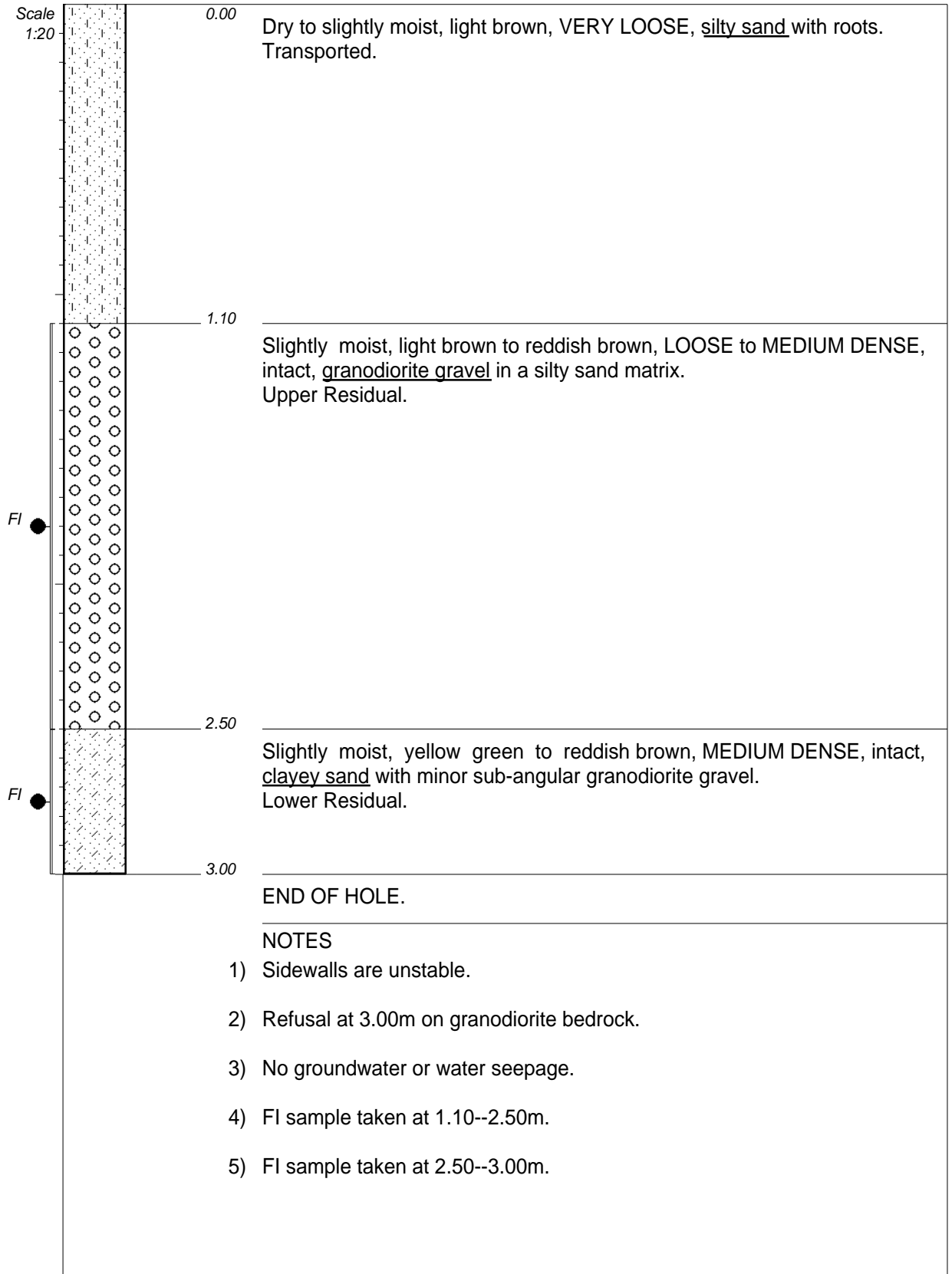
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X-COORD :
Y-COORD :

HOLE No: PH18
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH19**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN
TYPE SET BY : BN
SETUP FILE : STANDARD.SET

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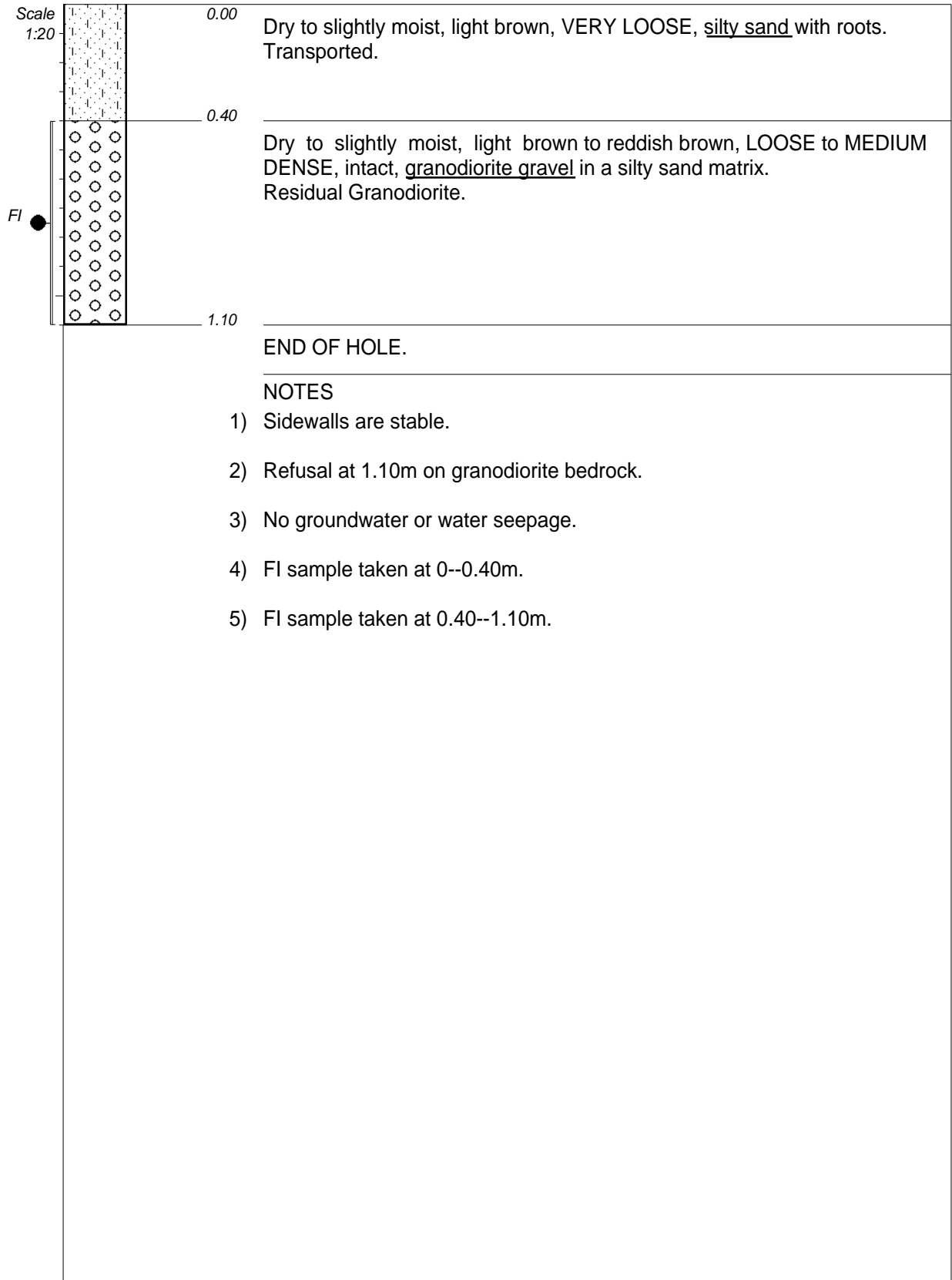
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X-COORD :
Y-COORD :

HOLE No: **PH19**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH20**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

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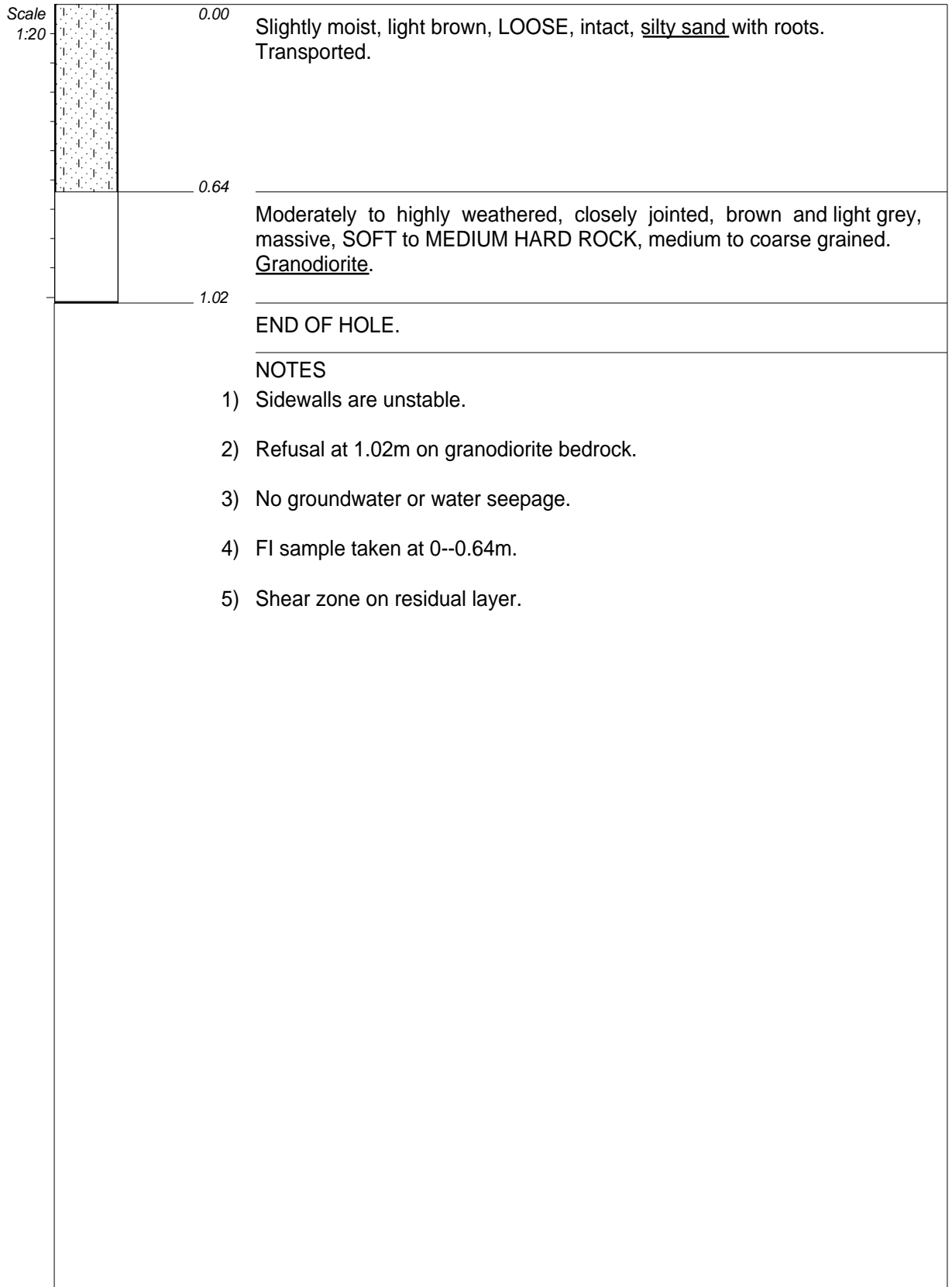
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X-COORD :
Y-COORD :

HOLE No: **PH20**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH21**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : **BELL**
DRILLED BY :
PROFIED BY : **BN**

TYPE SET BY : **BN**
SETUP FILE : **STANDARD.SET**

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DIAM :
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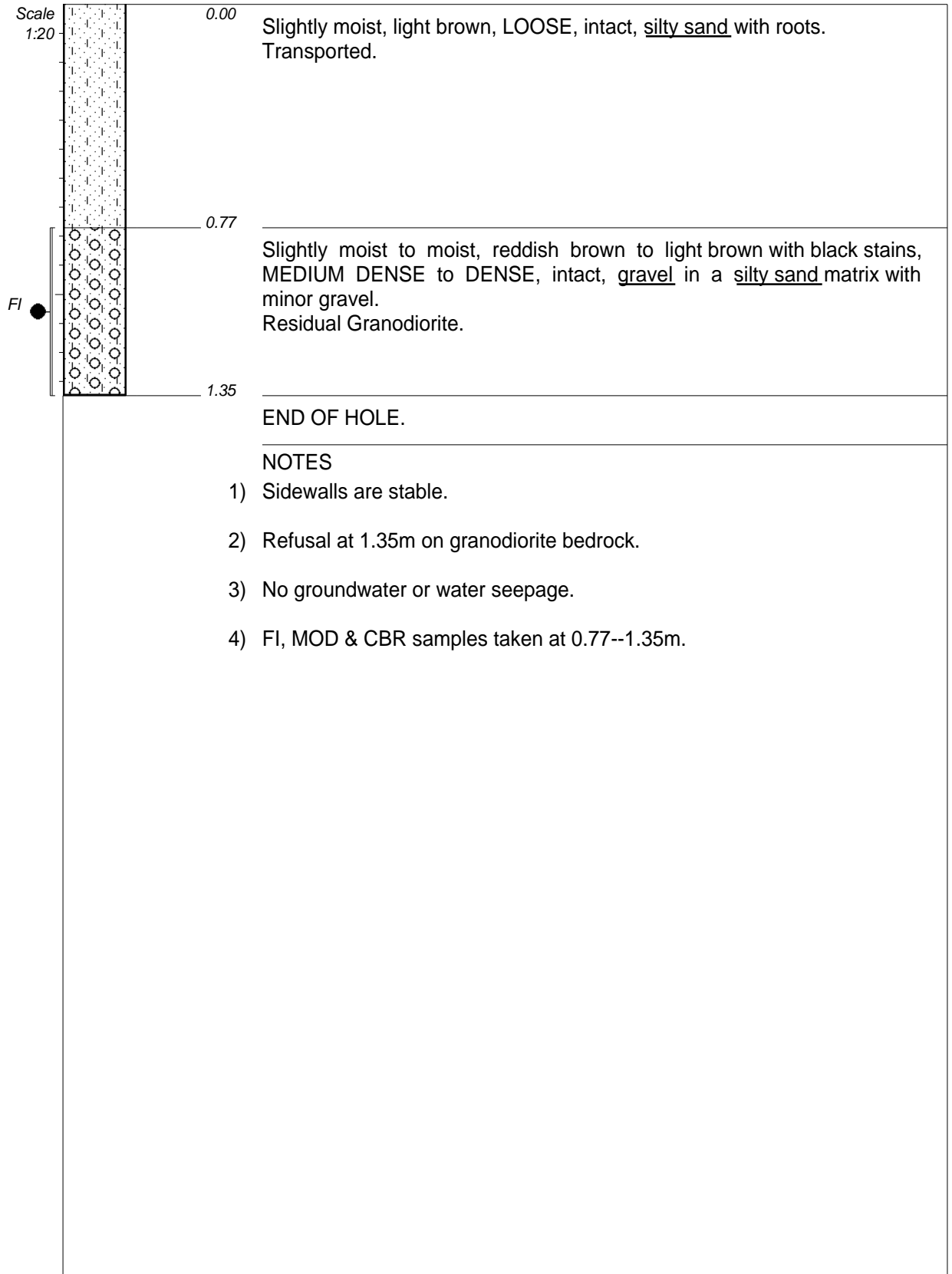
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X-COORD :
Y-COORD :

HOLE No: **PH21**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH22**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
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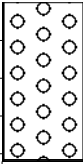
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **PH22**
Paulshoek

**COGHSTA
PAULSHOEK TOWNSHIP**

HOLE No: PH23
Sheet 1 of 1

JOB NUMBER: 100071

Scale 1:20  0.00 Slightly moist, light brown and light grey, LOOSE, intact, gravel in a silty sand matrix. Transported.

0.42

END OF HOLE.

NOTES

- 1) Sidewalls are stable.
- 2) Refusal at 0.42m on granodiorite bedrock.
- 3) No groundwater or water seepage.
- 4) FI sample taken at 0--0.42m.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFILED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

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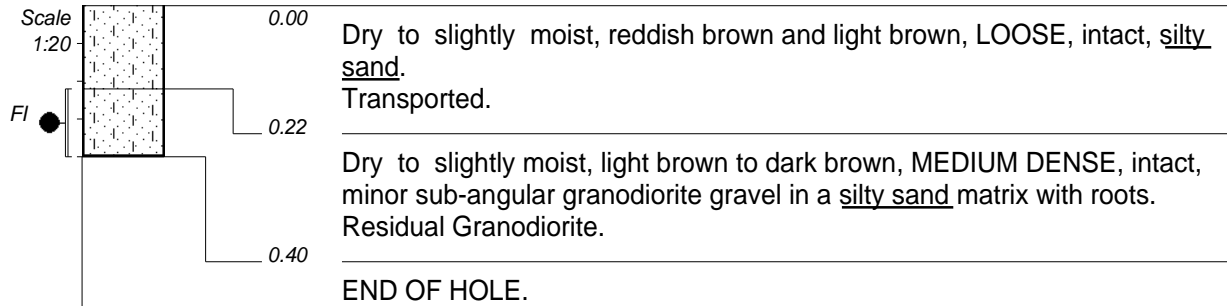
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X-COORD :
Y-COORD :

HOLE No: PH23
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH24**
Sheet 1 of 1

JOB NUMBER: 100071



NOTES

- 1) Sidewalls are unstable.
- 2) Refusal 0.40m on granodiorite bedrock.
- 3) No groundwater or water seepage.
- 4) FI sample taken at 0.22--0.40m.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

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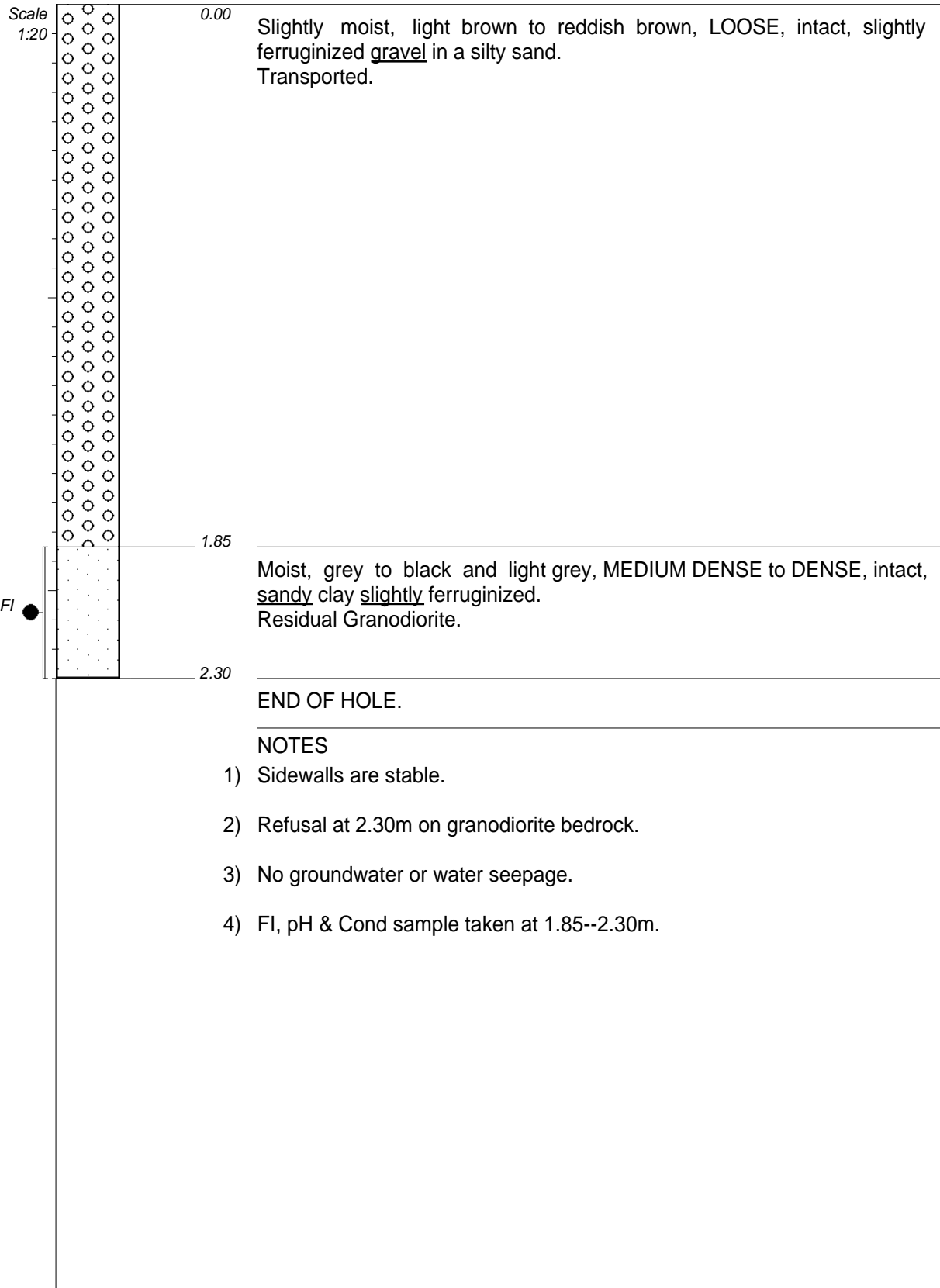
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X-COORD :
Y-COORD :

HOLE No: **PH24**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH25**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN
TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
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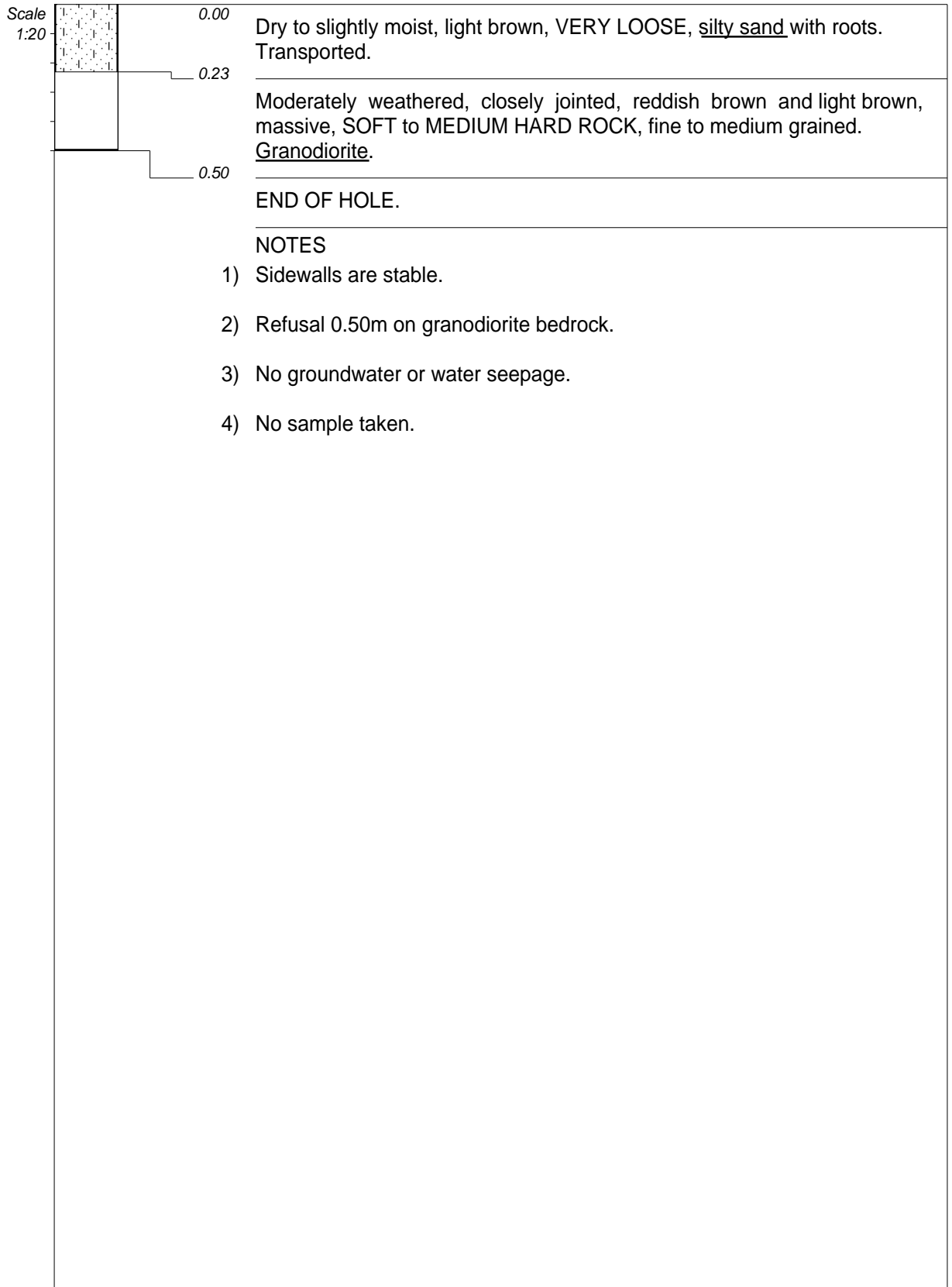
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X-COORD :
Y-COORD :

HOLE No: **PH25**
Paulshoek

**COGHSTA
PAULSHOEK TOWNSHIP**

HOLE No: PH26
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

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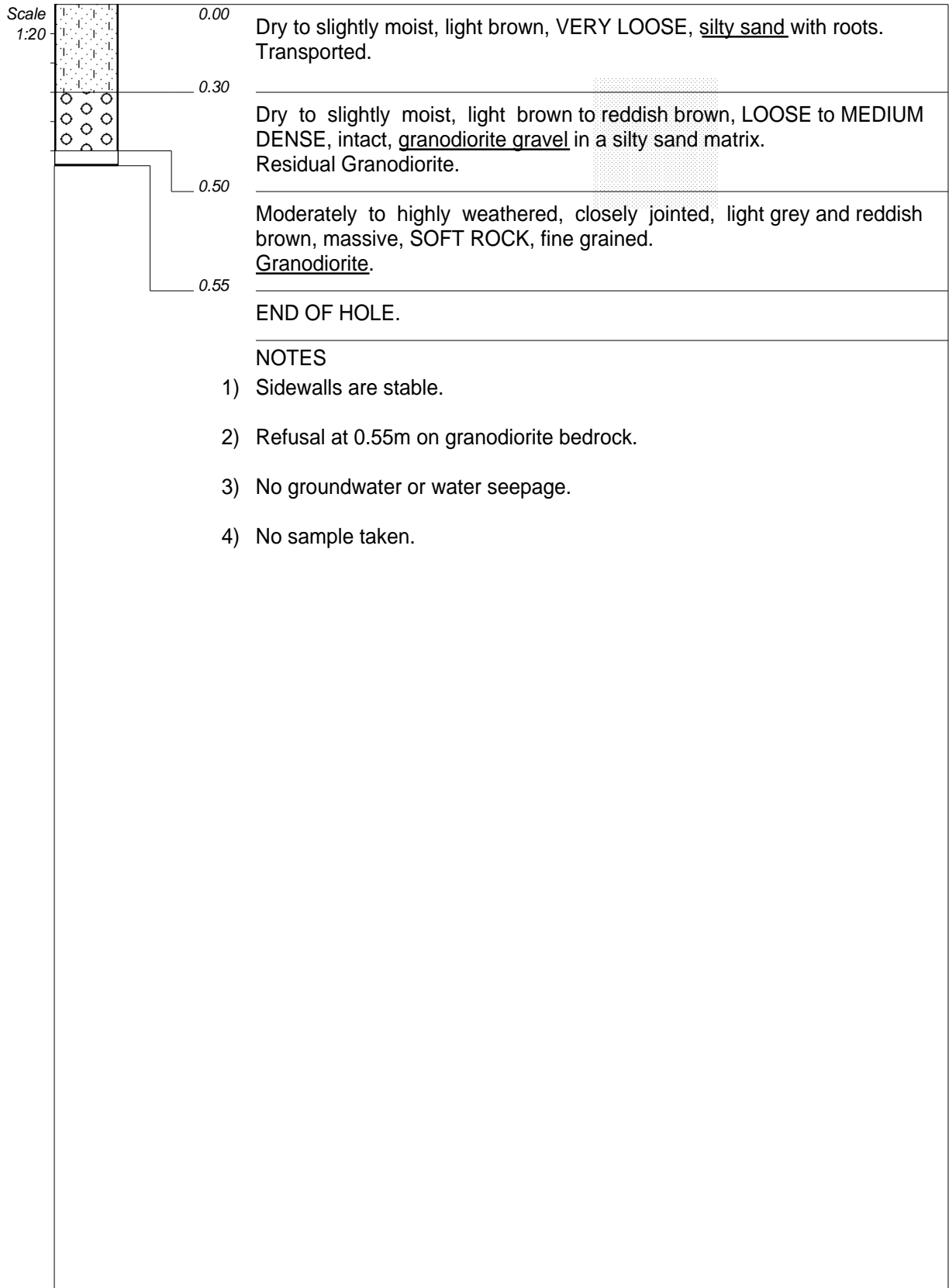
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: PH26
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH27**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 12/03/2019
DATE : 22/05/2019 15:39
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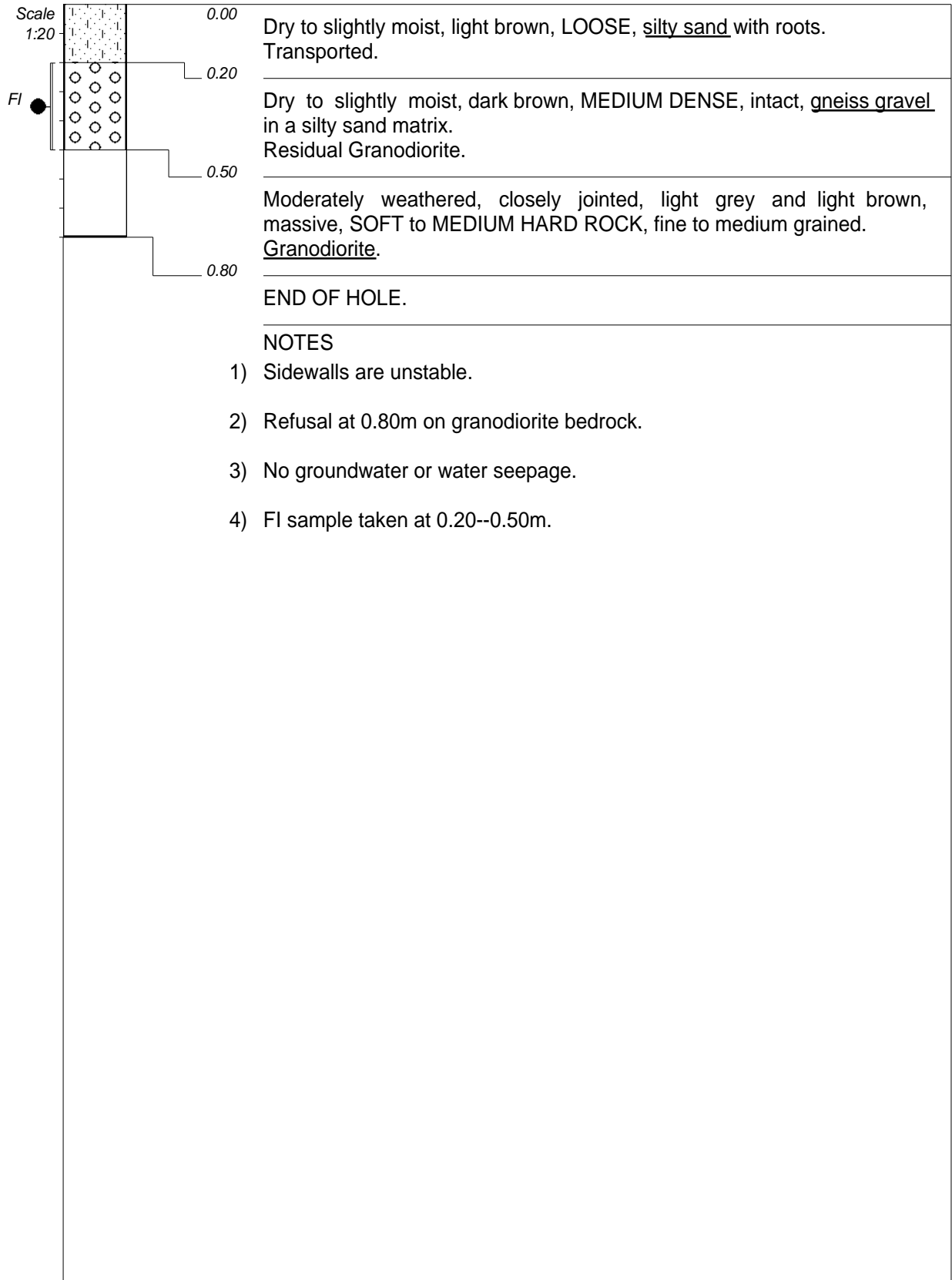
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **PH27**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH28**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 12/03/2019
DATE : 22/05/2019 15:39
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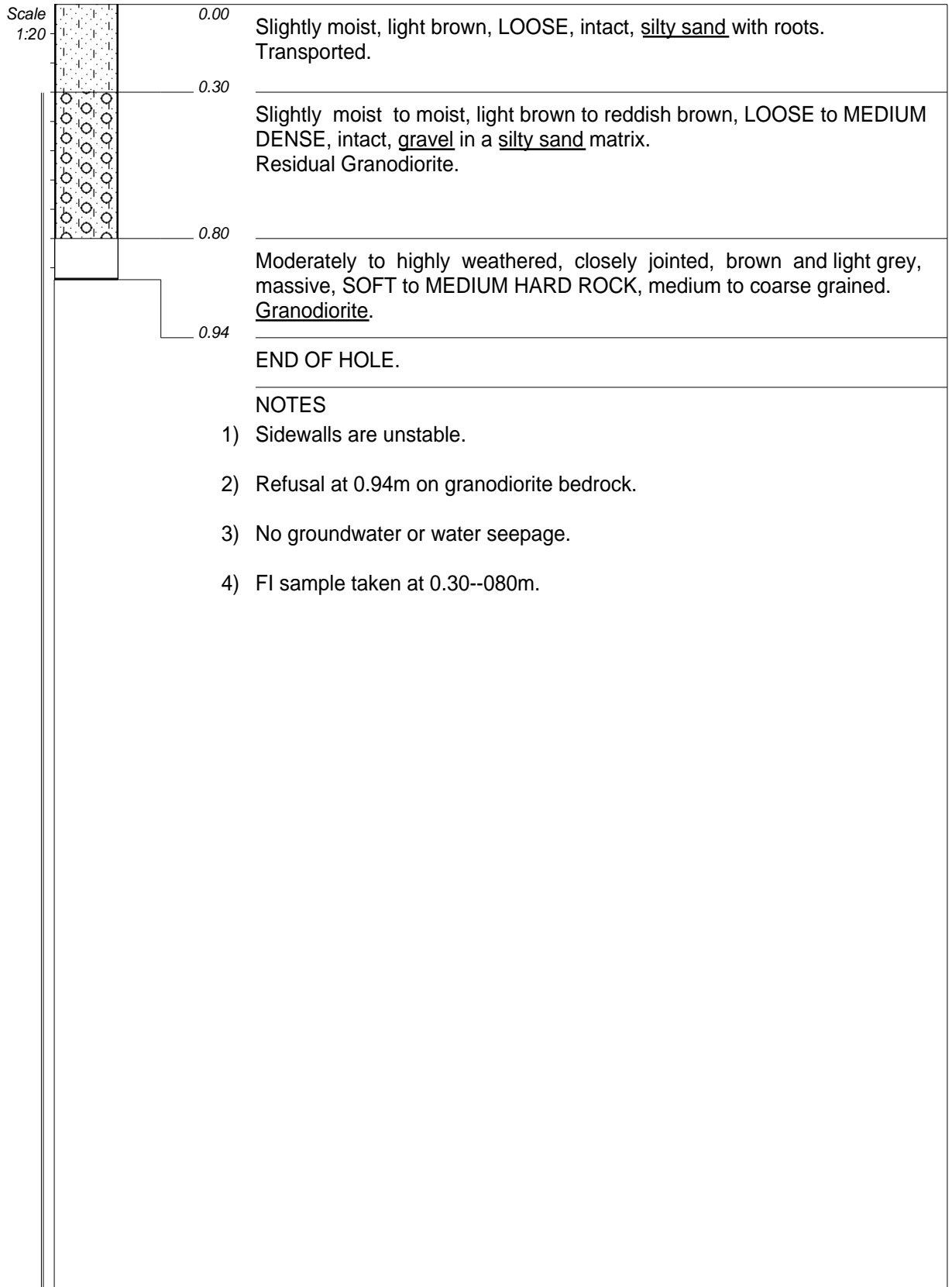
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **PH28**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH29**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 12/03/2019
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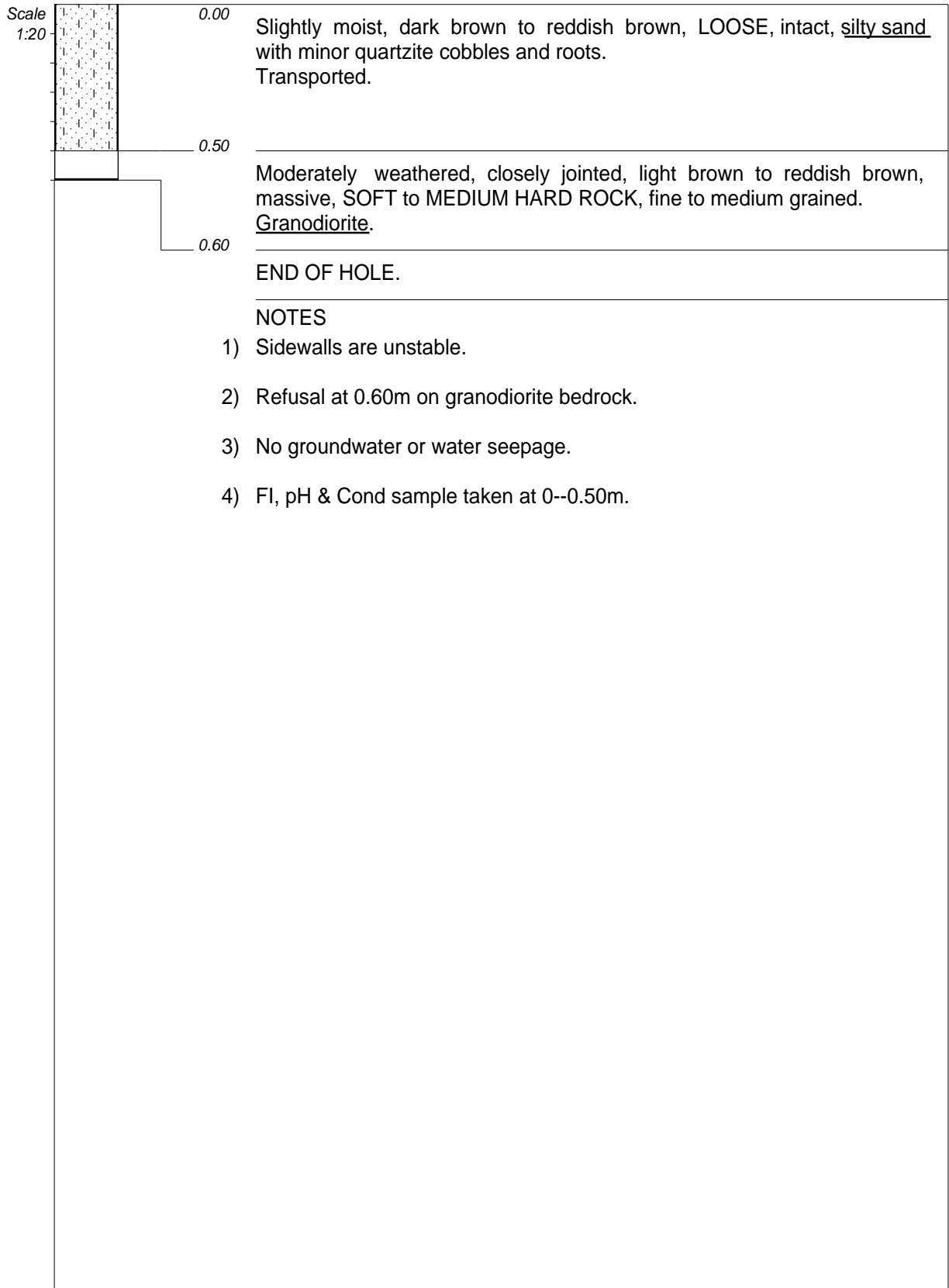
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **PH29**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH30**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 12/03/2019
DATE : 22/05/2019 15:39
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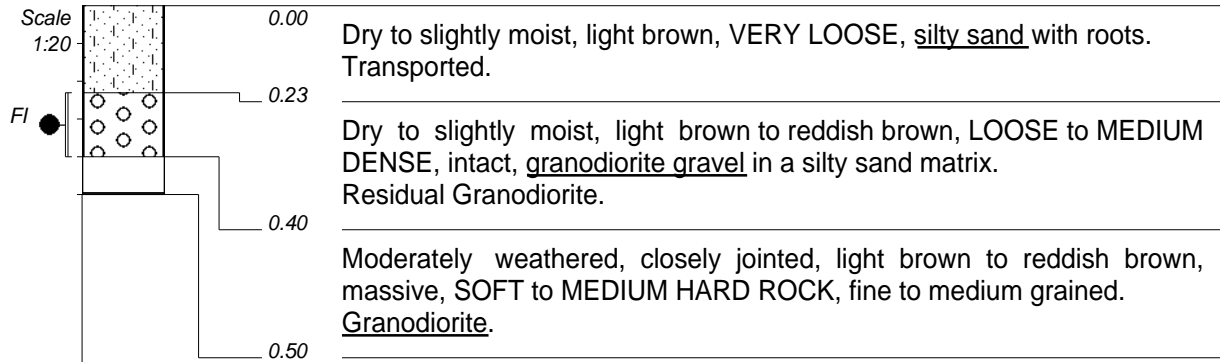
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **PH30**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH31**
Sheet 1 of 1

JOB NUMBER: 100071



END OF HOLE.

NOTES

- 1) Sidewalls are unstable.
- 2) Refusal at 0.50m on granodiorite bedrock.
- 3) No groundwater or water seepage.
- 4) FI, pH & Cond sample taken at 0.23--0.40m.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 12/03/2019
DATE : 22/05/2019 15:39
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ELEVATION :
X-COORD :
Y-COORD :

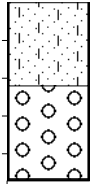
HOLE No: **PH31**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH32**
Sheet 1 of 1

JOB NUMBER: 100071

Scale
1:20



0.00

Slightly moist, light brown, LOOSE, intact, silty sand with roots.
Transported.

0.22

Slightly moist to moist, light brown to reddish brown, LOOSE to MEDIUM
DENSE, intact, gravel in a silty sand matrix.
Residual Granodiorite.

0.47

END OF HOLE.

0.47

NOTES

- 1) Sidewalls are stable.
- 2) Refusal at 0.47m on granodiorite bedrock.
- 3) No groundwater or water seepage.
- 4) FI, pH & Cond sample taken at 0--0.47m.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFILED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 12/03/2019

DATE : 22/05/2019 15:39
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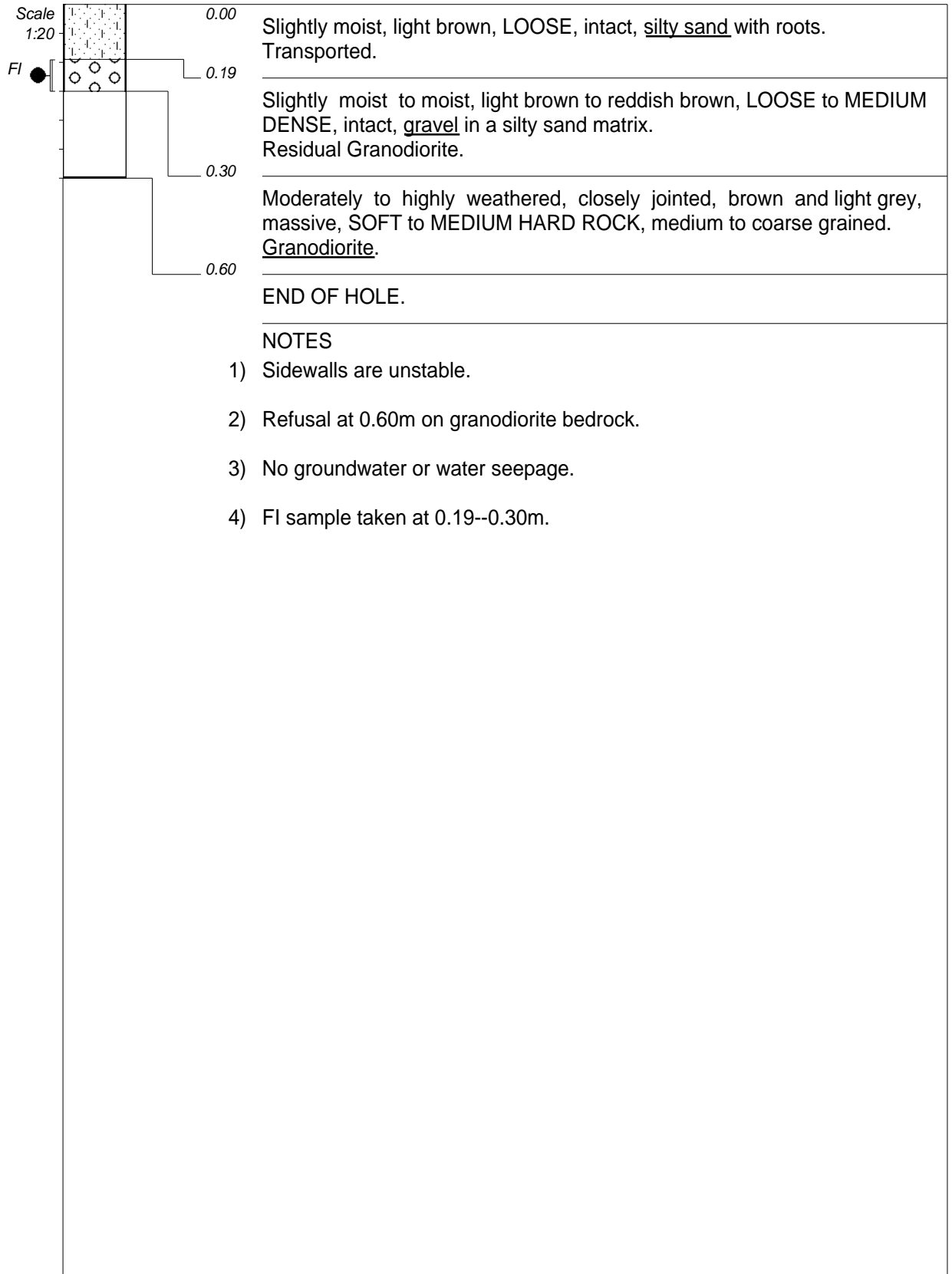
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **PH32**
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH33**
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 12/03/2019
DATE : 22/05/2019 15:39
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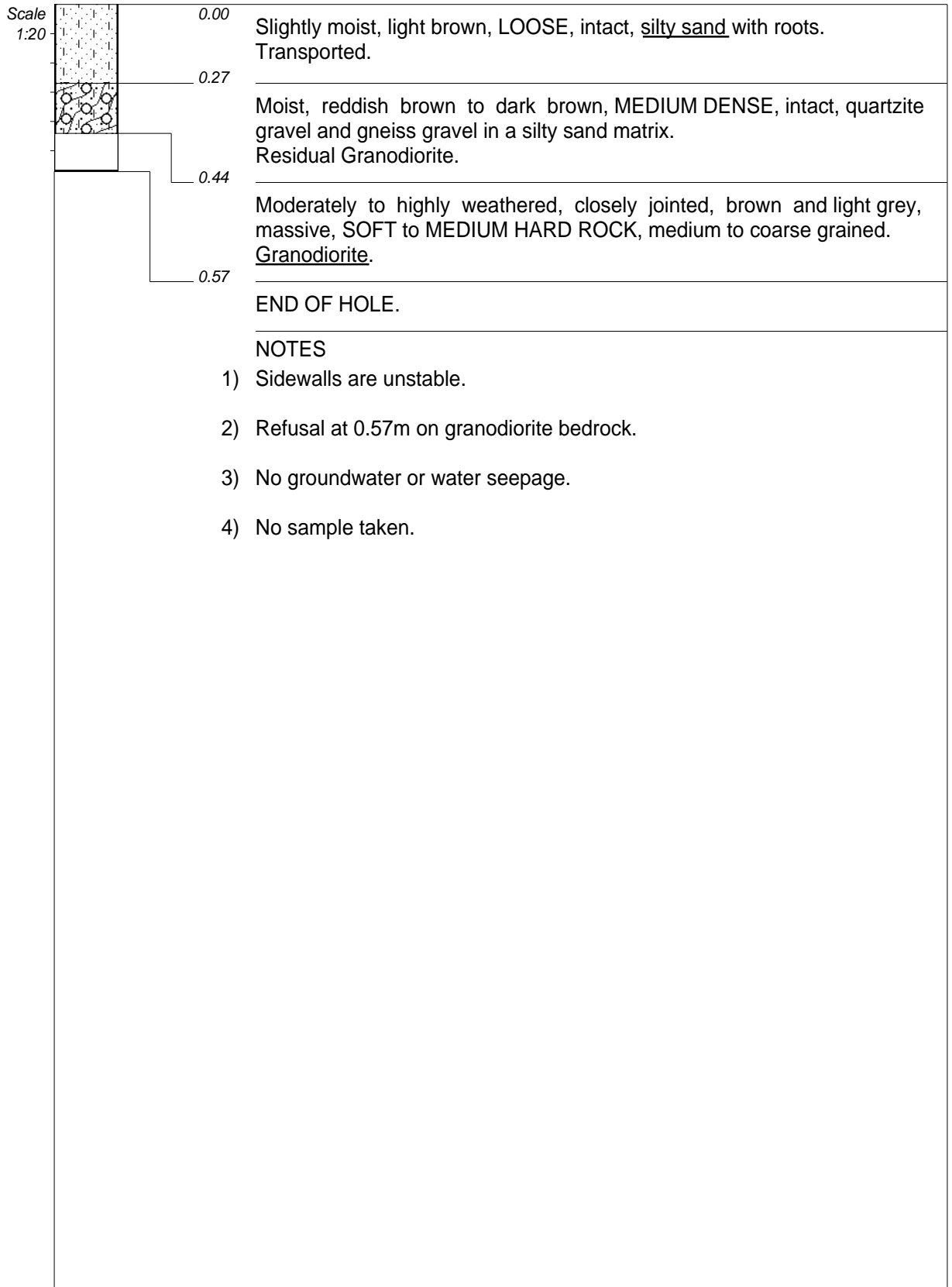
ELEVATION :
X-COORD :
Y-COORD :

HOLE No: **PH33**
Paulshoek

**COGHSTA
PAULSHOEK TOWNSHIP**

HOLE No: PH34
Sheet 1 of 1

JOB NUMBER: 100071



CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 12/03/2019
DATE : 22/05/2019 15:39
TEXT : ..PaulhoekSoilProfiles.doc

ELEVATION :
X-COORD :
Y-COORD :

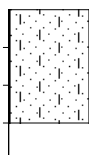
HOLE No: PH34
Paulshoek

COGHSTA
PAULSHOEK TOWNSHIP

HOLE No: **PH35**
Sheet 1 of 1

JOB NUMBER: 100071

Scale
1:20



0.00

Dry to slightly moist, light brown, VERY LOOSE, silty sand with roots.
Transported.

0.30

Moderately weathered, closely jointed, light brown to reddish brown,
massive, SOFT to MEDIUM HARD ROCK, fine to medium grained.
Granodiorite.

0.40

END OF HOLE.

NOTES

- 1) Sidewalls are stable.
- 2) Refusal at 0.40m on granodiorite bedrock.
- 3) No groundwater or water seepage.
- 4) No sample taken.

CONTRACTOR :
MACHINE : BELL
DRILLED BY :
PROFIED BY : BN

TYPE SET BY : BN
SETUP FILE : STANDARD.SET

INCLINATION :
DIAM :
DATE :
DATE : 12/03/2019
DATE : 22/05/2019 15:39
TEXT : ..PaulhoekSoilProfiles.doc

ELEVATION :
X-COORD :
Y-COORD :







HOLE No: **PH35**
Paulshoek

**COGHSTA
PAULSHOEK TOWNSHIP**

LEGEND

Sheet 1 of 1

JOB NUMBER: 100071

	GRAVEL	{SA02}
	SAND	{SA04}
	SANDY	{SA05}
	SILTY	{SA07}
	CLAYEY	{SA09}
	QUARTZITE	{SA15}
	DISTURBED SAMPLE	{SA38}

Name

CONTRACTOR :

MACHINE :

DRILLED BY :

PROFILED BY :

TYPE SET BY : BN

SETUP FILE : STANDARD.SET

INCLINATION :

DIAM :

DATE :

DATE :

DATE : 22/05/2019 15:39

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ELEVATION :

X-COORD :

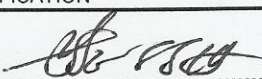
Y-COORD :

LEGEND

SUMMARY OF SYMBOLS

Appendix C

Laboratory Test Results

TRIMAC SOILS LABORATORY cc			INDICATOR & CBR DATA						
CLIENT : ICEBURG TRADING			DATE : 15,03,2019						
PROJECT : PAULSHOEK			ATT : AUBREY						
SAMPLE NUMBER LAB :			TSL2646	TSL2647					
SAMPLE NUMBER SITE :			PH04	PH22					
DEPTH(mm) :			350-700	770-1350					
DESCRIPTION OF MATERIAL			R/BR. SILTY SAND + DECOMP. GRANITE	R/BR. SILTY SAND + DECOMP. GRANITE					
SIEVE ANALYSIS	75.0 mm								
	63.0 mm								
	53.0 mm								
	37.5 mm								
	26.5 mm								
	19.0 mm	100							
	13.2 mm	99	100						
	4.75 mm	82	83						
	2.00 mm	62	58						
	0.425 mm	33	29						
SOIL MORTAR	0.075 mm	16	11						
	COARSE SAND	47	50						
	FINE SAND	27	30						
SOIL CONSTANTS	MATERIAL <0.075 mm	26	20						
	LIQUID LIMIT	18	31						
	PLASTICITY INDEX	6	11						
LINEAR SHRINKAGE		3.0	5.5						
GRADING MODULUS		1.89	2.02						
MAXIMUM DRY DENSITY (Kg/m3)		2103	1960						
% OPTIMUM MOISTURE		7.8	8.9						
C B R DATA	MOD AASHTO	COMP. MOISTURE	8.0	9.1					
		% DENSITY	100.3	100.1					
		C B R	29	24					
		% SWELL	0.72	0.99					
	N R B	% DENSITY	96.1	96.1					
		C B R	22	21					
		%SWELL	0.74	1.05					
	PROC-TOR	% DENSITY	93.1	93.2					
		C B R	20	16					
		%SWELL	0.82	1.08					
C B R	AT 100% MODIFIED AASHTO	28	24						
	AT 98% MODIFIED AASHTO	25	22						
	AT 95% MODIFIED AASHTO	21	18						
	AT 93% MODIFIED AASHTO	19	16						
	AT 90% MODIFIED AASHTO	16	14						
COLTO CLASSIFICATION		G7	G7						
SIGNED : 			DATE : 15.03.2019						

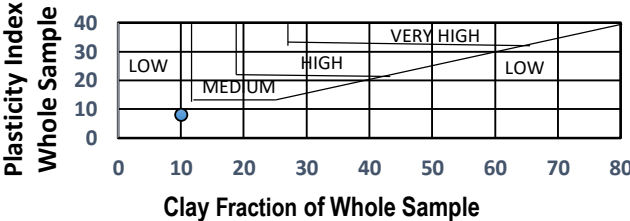
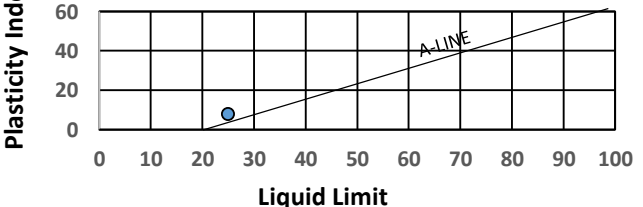


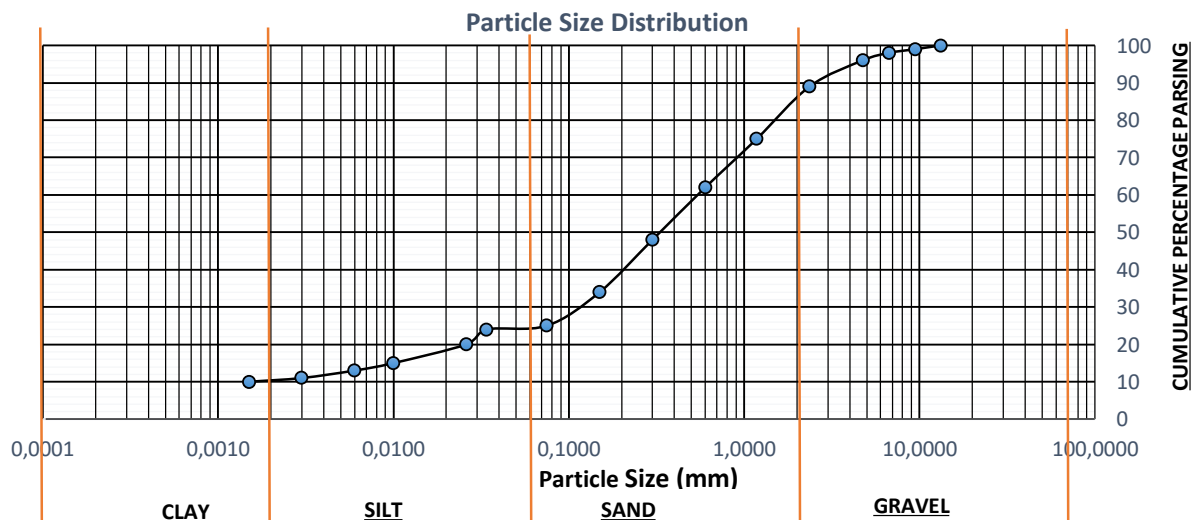
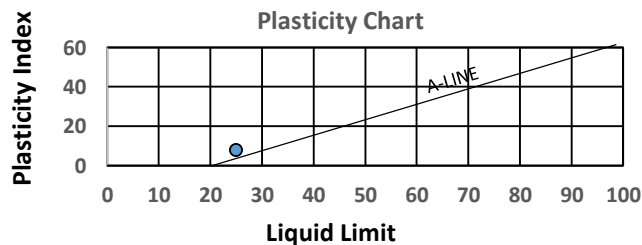
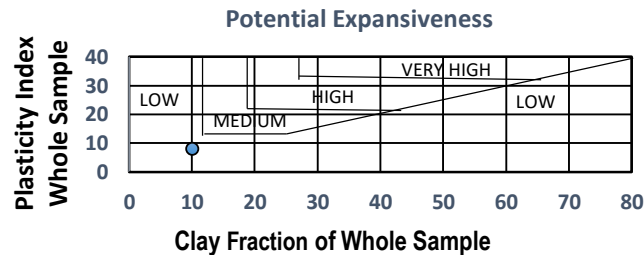
TRIMAC SOILS LABORATORY cc

REG. NO. 2008/113124/23

Unit 4, Zinfandel Road
Saxenburg Park 2
Blackheath
7580

Cell: 082 953 3110
Tel: 021 905 4790
Fax: 021 905 4791
e-mail: trimac@gmail.com

Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/hole No.		PH02		Liquid Limit:		25		% Clay:		10	
Depth (mm)		300-850		Plasticity Index		8		% Silt		14	
Position				Linear Shrinkage		4		% Sand		62	
Description of Material		R/BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt		2,2		% Gravel		14	
				GRADING MODULES		1,33		PH VALUE (Ph)		5,8	
								CONDUCTIVITY (S/m)		3,03	
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> 							
	26,5000										
	19,0000										
	13,2000	100									
	9,5000	99									
	6,7000	98									
	4,7500	96									
	2,3600	89									
	1,1800	75									
	0,6000	62									
	0,3000	48									
	0,1500	34									
Mechanical Analysis	0,0750	25		<div>Plasticity Chart</div> 							
	0,0340	24									
	0,0260	20									
	0,0100	15									
	0,0060	13									
	0,0030	11									
	0,0015	10									



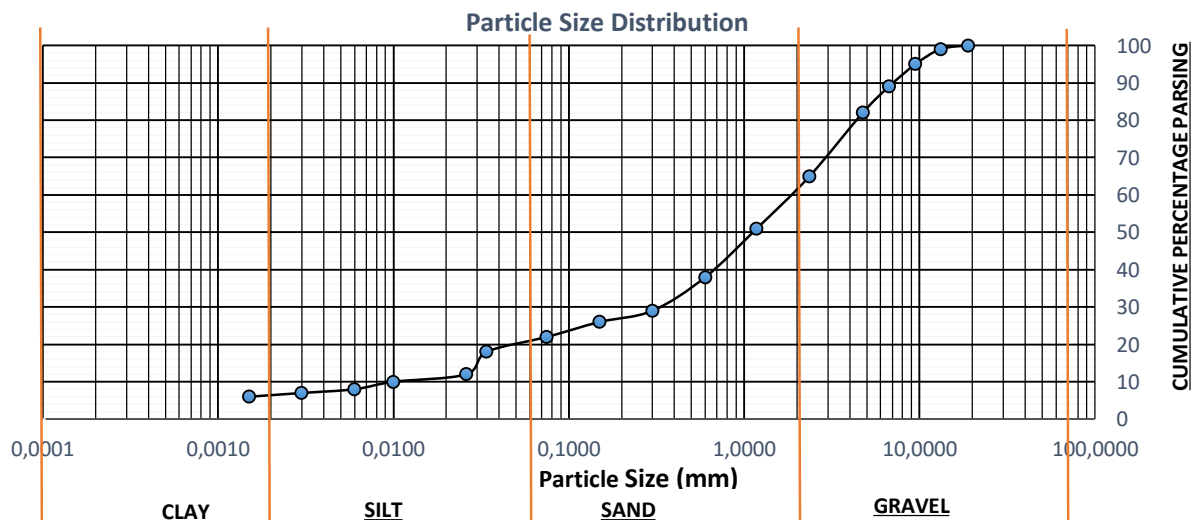
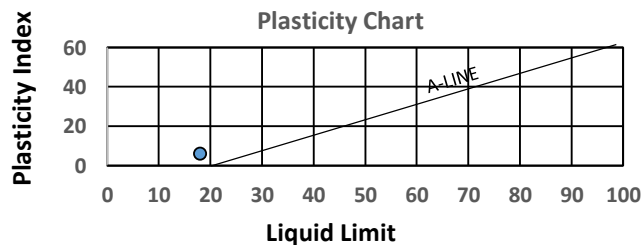
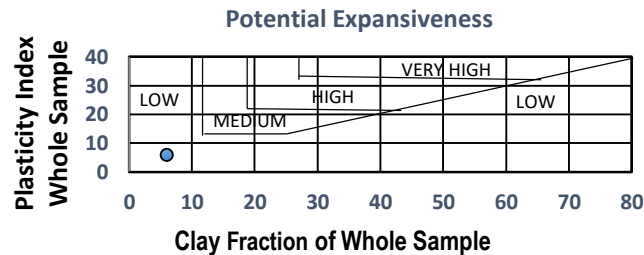


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e-mail: trimac@gmail.com

Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/hole No.		PH04		Liquid Limit:		18		% Clay:		6	
Depth (mm)		350-700		Plasticity Index		6		% Silt		15	
Position				Linear Shrinkage		3		% Sand		41	
Description of Material		R/BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt		1,1		% Gravel		38	
				GRADING MODULES		1,83					
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div>							
	26,5000										
	19,0000	100									
	13,2000	99									
	9,5000	95									
	6,7000	89									
	4,7500	82									
	2,3600	65									
	1,1800	51									
	0,6000	38									
Mechanical Analysis	0,3000	29		<div>Plasticity Chart</div>							
	0,1500	26									
	0,0750	22									
	0,0340	18									
	0,0260	12									
	0,0100	10									
	0,0060	8									
	0,0030	7									
	0,0015	6									



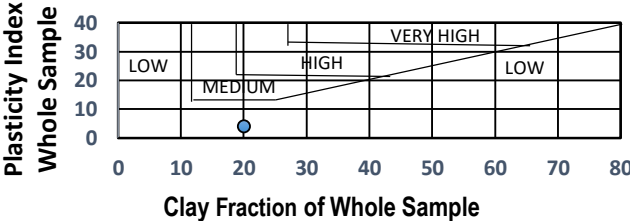
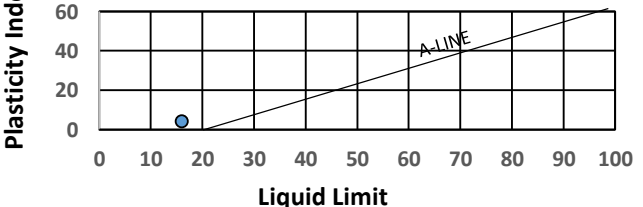


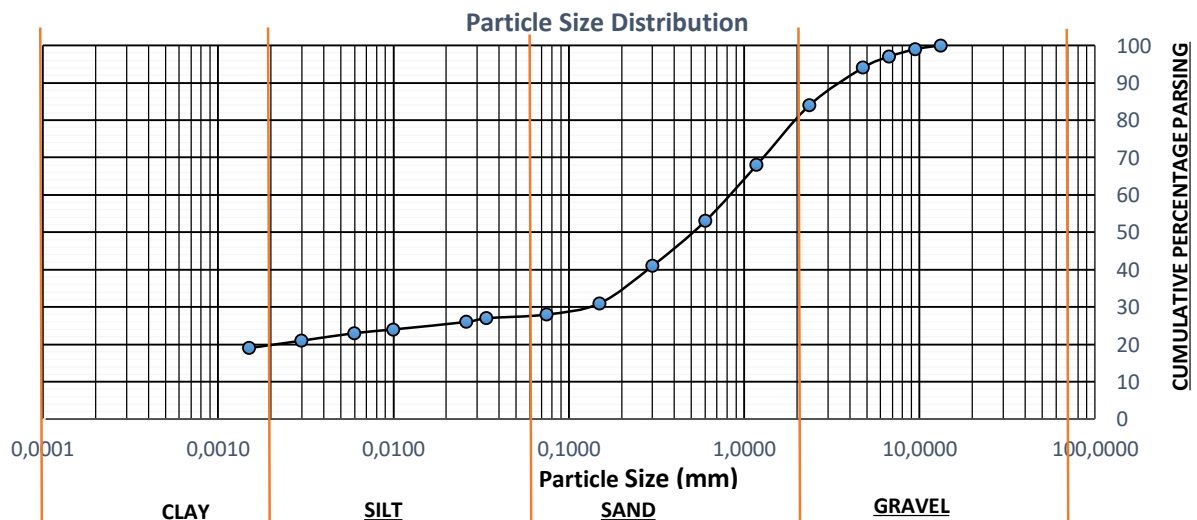
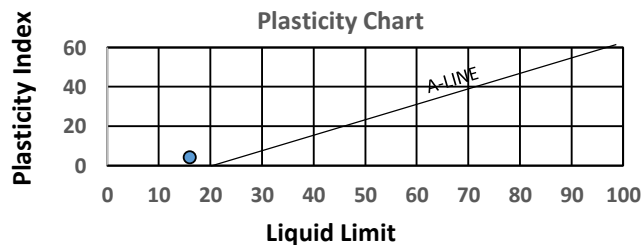
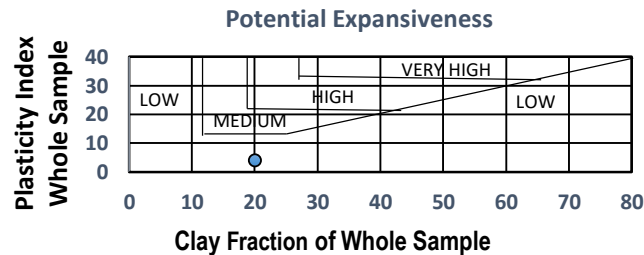
TRIMAC SOILS LABORATORY cc

REG. NO. 2008/113124/23

Unit 4, Zinfandel Road
Saxenburg Park 2
Blackheath
7580

Cell: 082 953 3110
Tel: 021 905 4790
Fax: 021 905 4791
e-mail: trimac@gmail.com

Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/hole No.		PH05		Liquid Limit:		16		% Clay:		20	
Depth (mm)		0-300		Plasticity Index		4		% Silt		8	
Position				Linear Shrinkage		2		% Sand		54	
Description of Material		BROWN CLAYEY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt		0,7		% Gravel		18	
				GRADING MODULES		1,46		PH VALUE (Ph)		5,0	
								CONDUCTIVITY (S/m)		0,15	
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> 							
	26,5000										
	19,0000										
	13,2000	100									
	9,5000	99									
	6,7000	97									
	4,7500	94									
	2,3600	84									
	1,1800	68									
	0,6000	53									
Mechanical Analysis	0,3000	41		<div>Plasticity Chart</div> 							
	0,1500	31									
	0,0750	28									
	0,0340	27									
	0,0260	26									
	0,0100	24									
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	0,0030	21									
	0,0015	19									





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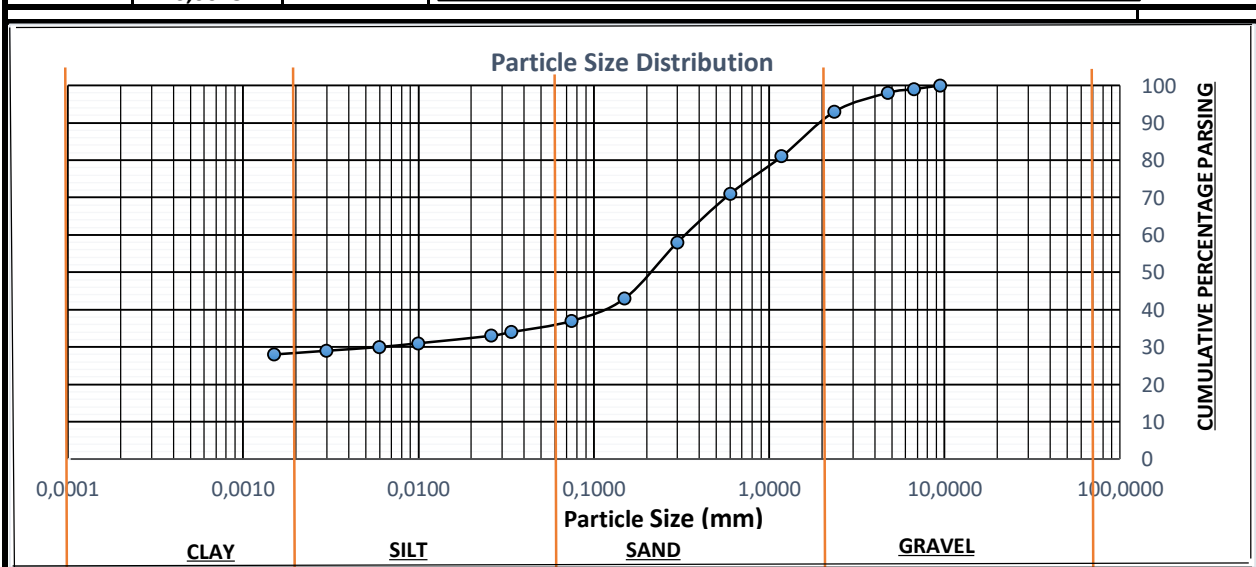
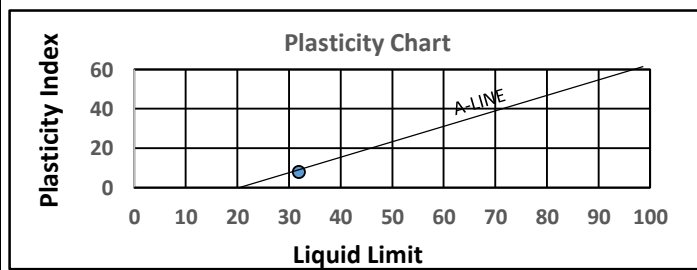
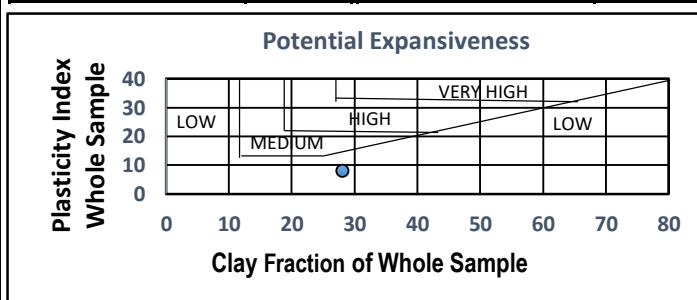
Unit 4, Zinfandel Road
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Fax: 021 905 4791
e-mail: trimac@gmail.com

Project:	PAULSHOEK	Date	
Client:	ICEBURG TRADING		

Sample/No. No.	PH11	Liquid Limit:	32	% Clay:	28
Depth (mm)	350-1400	Plasticity Index	8	% Silt	8
Position		Linear Shrinkage	4	% Sand	55
		Moisture contnt	9,9	% Gravel	9
		GRADING MODULES	1,07	PH VALUE (Ph)	5,0
Description of Material	LT/BROWN CLAYEY SAND + DECOMPOSED GRANITE + QUARTZ			CONDUCTIVITY (S/m)	2,62

Screen Analysis (% Passing)	Screen Size	% Passed
	26,5000	
	19,0000	
	13,2000	
	9,5000	100
	6,7000	99
	4,7500	98
	2,3600	93
	1,1800	81
	0,6000	71
Mechanical Analysis	0,3000	58
	0,1500	43
	0,0750	37
	0,0340	34
	0,0260	33
	0,0100	31
	0,0060	30
	0,0030	29
	0,0015	28





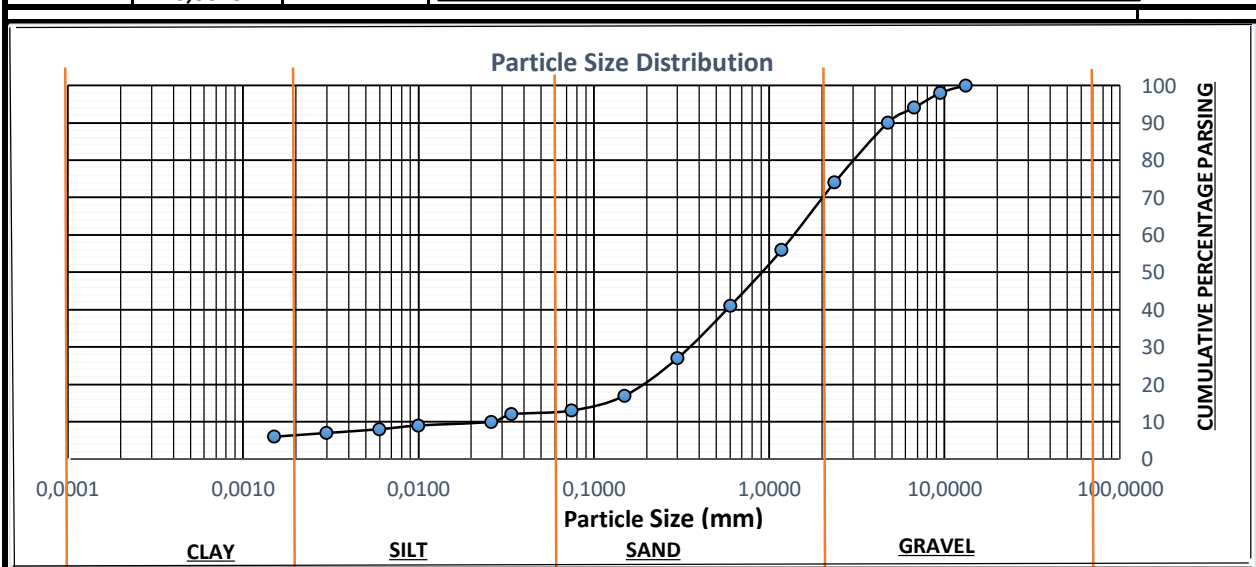
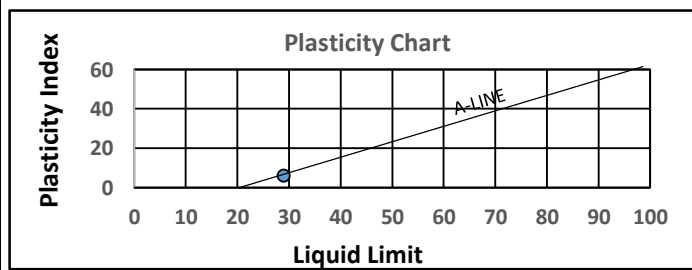
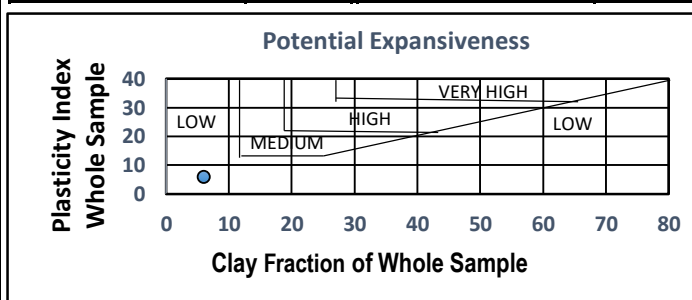
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7580

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Tel: 021 905 4790
Fax: 021 905 4791
e-mail: trimac@gmail.com

Project:	PAULSHOEK	Date			
Client:	ICEBURG TRADING				
Sample/No. No.	PH14	Liquid Limit:	29	% Clay:	6
Depth (mm)	700-1900	Plasticity Index	6	% Silt	7
Position		Linear Shrinkage	3	% Sand	57
Description of Material	BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ	Moisture contnt	7,8	% Gravel	30
		GRADING MODULES	1,84	PH VALUE (Ph)	5,6
				CONDUCTIVITY (S/m)	1,80

Screen Analysis (% Passing)	Screen Size	% Passed
	26,5000	
	19,0000	
	13,2000	100
	9,5000	98
	6,7000	94
	4,7500	90
	2,3600	74
	1,1800	56
	0,6000	41
Mechanical Analysis	0,3000	27
	0,1500	17
	0,0750	13
	0,0340	12
	0,0260	10
	0,0100	9
	0,0060	8
	0,0030	7
	0,0015	6



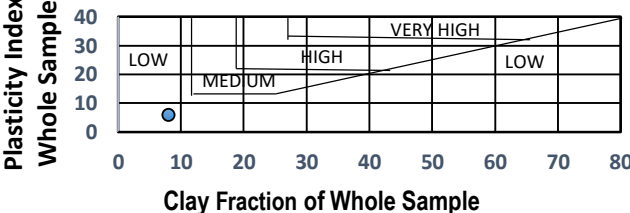
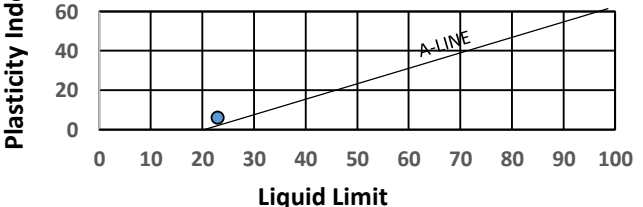


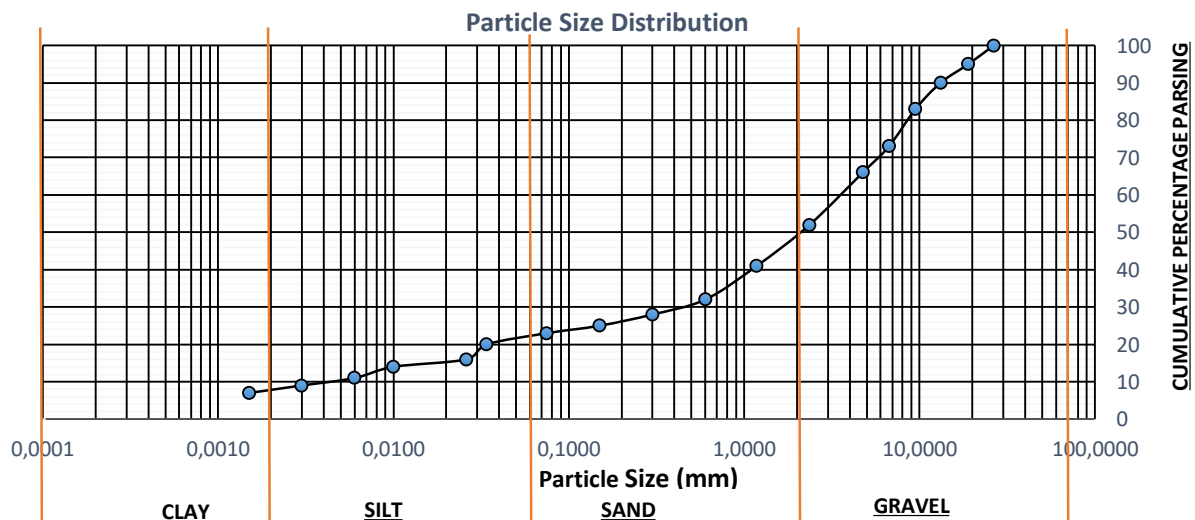
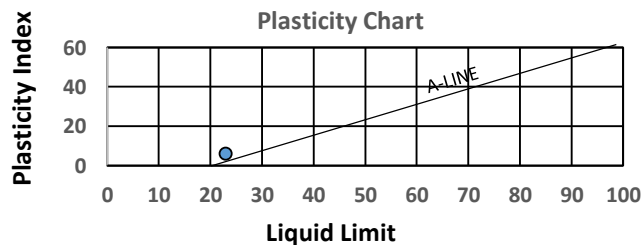
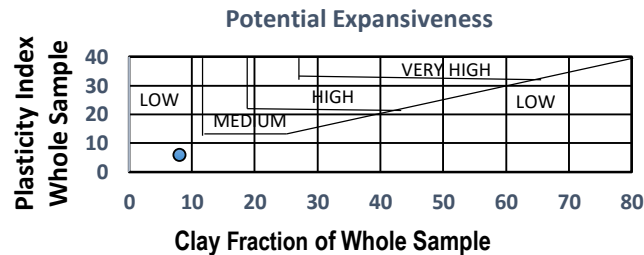
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Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/No. No.		PH15		Liquid Limit:		23		% Clay:		8	
Depth (mm)		100-390		Plasticity Index		6		% Silt		14	
Position				Linear Shrinkage		3		% Sand		27	
Description of Material		DRK/BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt		0,9		% Gravel		51	
				GRADING MODULES		2,01					
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> 							
	26,5000	100									
	19,0000	95									
	13,2000	90									
	9,5000	83									
	6,7000	73									
	4,7500	66									
	2,3600	52									
	1,1800	41									
	0,6000	32									
Mechanical Analysis	0,3000	28		<div>Plasticity Chart</div> 							
	0,1500	25									
	0,0750	23									
	0,0340	20									
	0,0260	16									
	0,0100	14									
	0,0060	11									
	0,0030	9									
	0,0015	7									



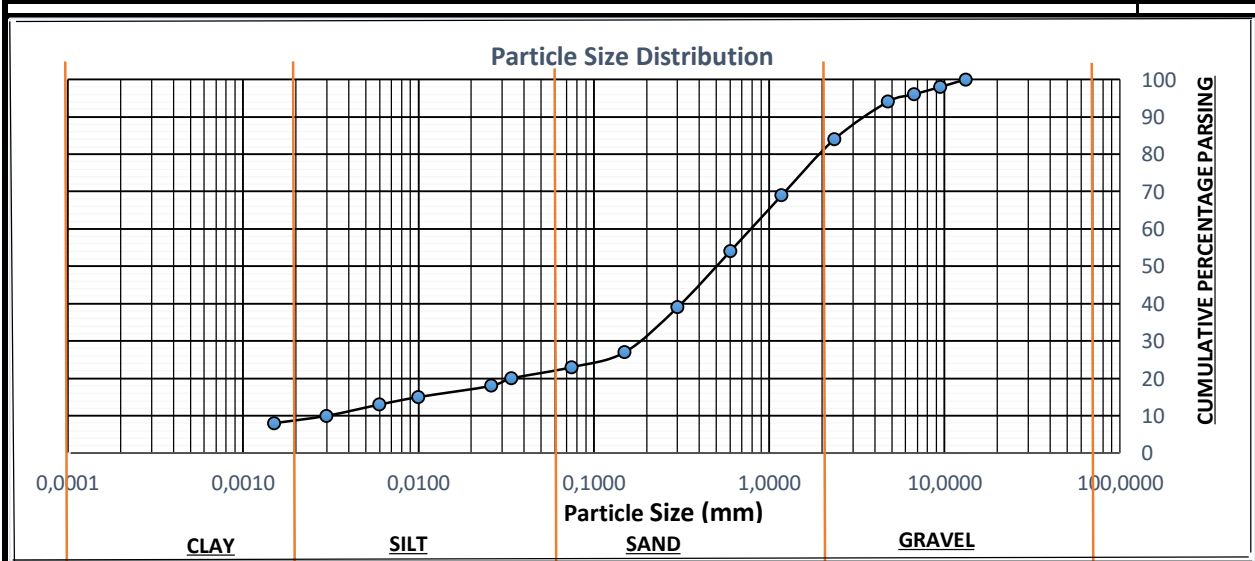


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Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/No. No.		PH19		Liquid Limit:		22		% Clay:		9	
Depth (mm)		1100-2500		Plasticity Index		8		% Silt		13	
Position				Linear Shrinkage		4		% Sand		59	
Description of Material		REDDISH BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt		9,7		% Gravel		19	
				GRADING MODULES		1,50					
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> <p>Plasticity Index Whole Sample</p> <p>Clay Fraction of Whole Sample</p>							
	26,5000										
	19,0000										
	13,2000	100									
	9,5000	98									
	6,7000	96									
	4,7500	94									
	2,3600	84									
	1,1800	69									
	0,6000	54									
	0,3000	39									
	0,1500	27									
Mechanical Analysis	0,0750	23		<div>Plasticity Chart</div> <p>Plasticity Index</p> <p>Liquid Limit</p>							
	0,0340	20									
	0,0260	18									
	0,0100	15									
	0,0060	13									
	0,0030	10									
	0,0015	8									





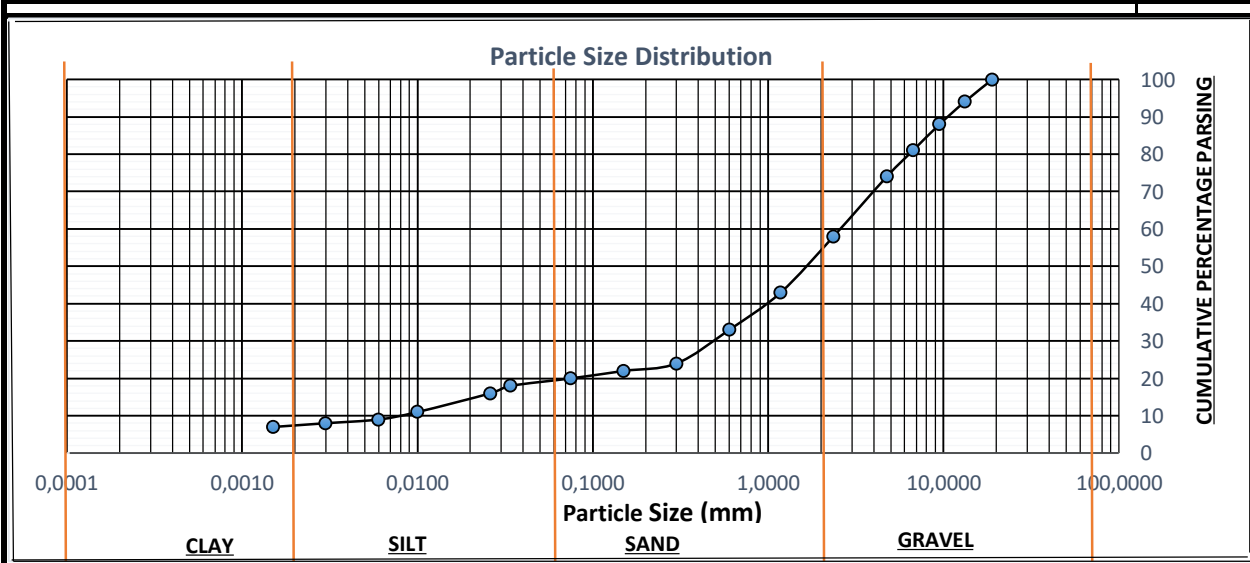
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Project:		PAULSHOEK		Date	
Client:		ICEBURG TRADING			
Sample/hole No.		PH19		Liquid Limit: 21	
Depth (mm)		2500-3000		% Clay: 8	
Position				Plasticity Index 6	
Description of Material		DRK/BROWN SILTY SAND + DECOMPOSED GRANITE		Linear Shrinkage 3	
				% Sand 36	
				Moisture contnt 4,9	
				% Gravel 45	
				GRADING MODULES 1,97	
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> <p>Plasticity Index Whole Sample</p> <p>Clay Fraction of Whole Sample</p>	
	26,5000				
	19,0000	100			
	13,2000	94			
	9,5000	88			
	6,7000	81			
	4,7500	74			
	2,3600	58			
	1,1800	43			
	0,6000	33			
	0,3000	24			
	0,1500	22			
Mechanical Analysis	0,0750	20		<div>Plasticity Chart</div> <p>Plasticity Index</p> <p>Liquid Limit</p>	
	0,0340	18			
	0,0260	16			
	0,0100	11			
	0,0060	9			
	0,0030	8			
	0,0015	7			





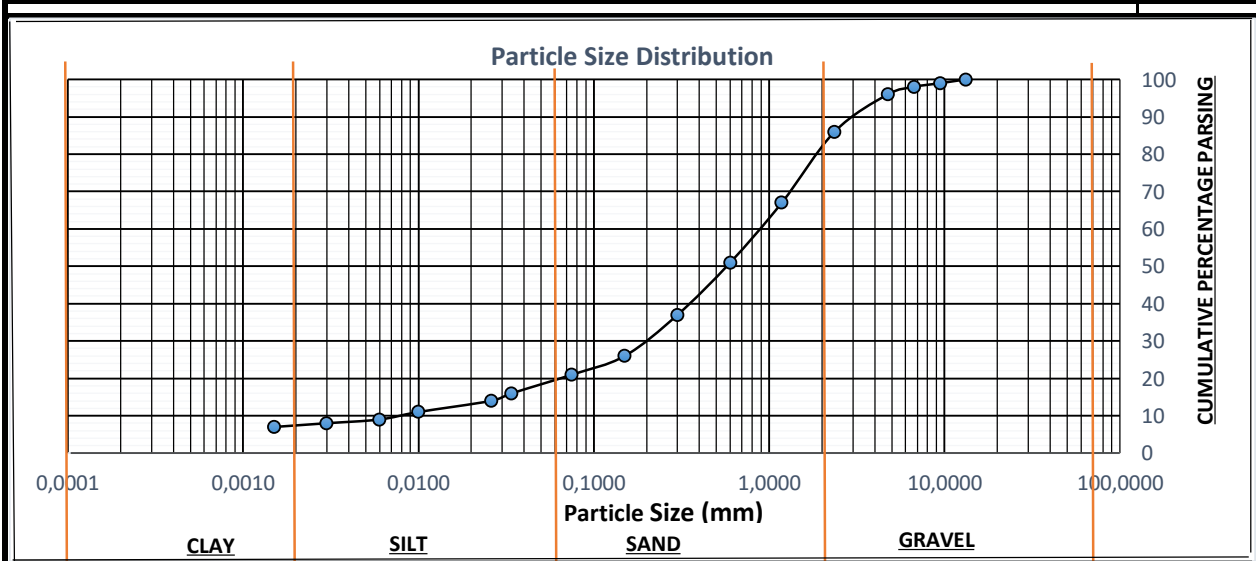
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Project:		PAULSHOEK		Date	
Client:		ICEBURG TRADING			
Sample/No. No.		PH20		Liquid Limit:	
Depth (mm)		400-1100		18	
Position				% Clay:	
Description of Material		BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ		Plasticity Index	
				6	
				Linear Shrinkage	
				3	
		Moisture contnt		2,6	
		GRADING MODULES		1,54	
				% Silt	
				11	
				% Sand	
				64	
				% Gravel	
				17	
Screen Analysis (% Passing)	Screen Size	% Passed		Potential Expansiveness	
	26,5000				
	19,0000				
	13,2000	100			
	9,5000	99			
	6,7000	98			
	4,7500	96			
	2,3600	86			
	1,1800	67			
	0,6000	51			
0,3000	37				
Mechanical Analysis	0,1500	26		Plasticity Chart	
	0,0750	21			
	0,0340	16			
	0,0260	14			
	0,0100	11			
	0,0060	9			
	0,0030	8			
	0,0015	7			



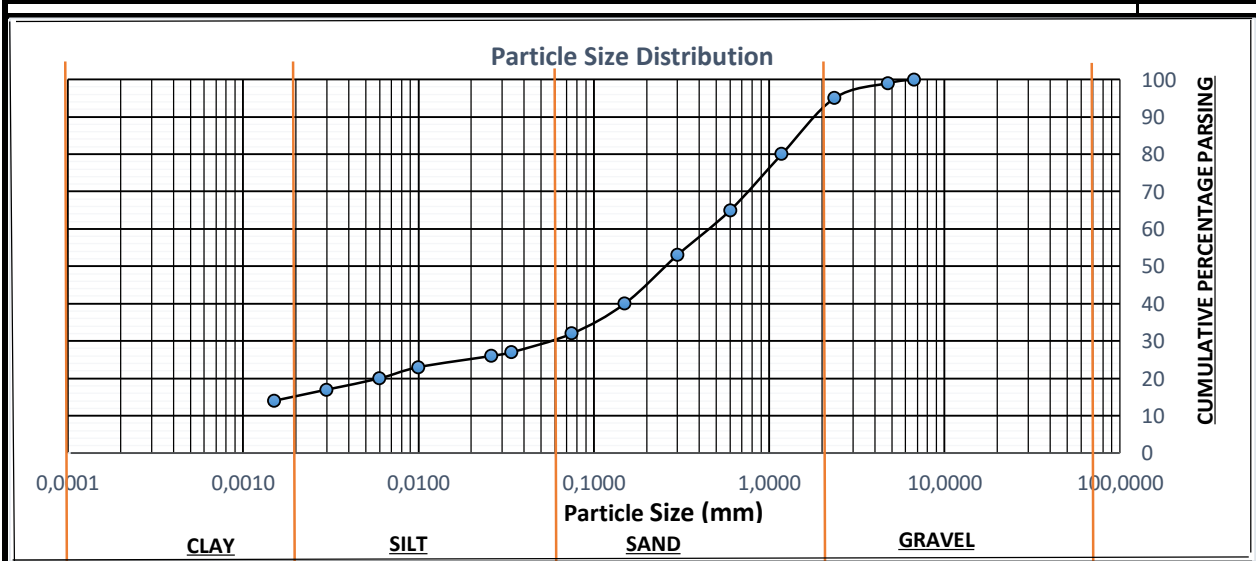


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Project:	PAULSHOEK		Date		
Client:	ICEBURG TRADING				
Sample/No. No.	PH21	Liquid Limit:	27	% Clay:	15
Depth (mm)	0-640	Plasticity Index	12	% Silt	15
Position		Linear Shrinkage	6	% Sand	63
		Moisture contnt	4	% Gravel	7
		GRADING MODULES	1,17		
Description of Material					
Screen Analysis (% Passing)		<p>BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ</p>			
Mechanical Analysis		<p>Potential Expansiveness</p> <p>Plasticity Index Whole Sample</p> <p>Clay Fraction of Whole Sample</p>			
		<p>Plasticity Chart</p> <p>Plasticity Index</p> <p>Liquid Limit</p>			



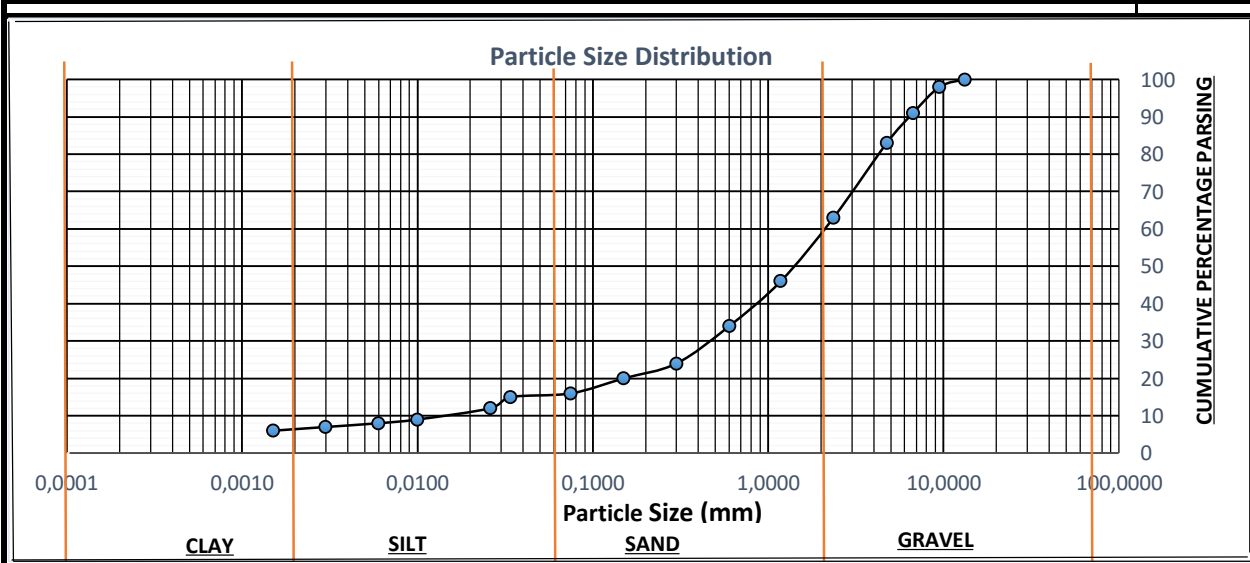


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Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/hole No.		PH22		Liquid Limit:		31		% Clay:		6	
Depth (mm)		770-1350		Plasticity Index		11		% Silt		10	
Position				Linear Shrinkage		5,5		% Sand		43	
Description of Material		R/BROWN SILTY SAND + S/STONE + FERRICRETE		Moisture contnt		9,8		% Gravel		41	
				GRADING MODULES		1,97		PH VALUE (Ph)		5,7	
								CONDUCTIVITY (S/m)		0,82	
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> <p>Plasticity Index Whole Sample</p> <p>Clay Fraction of Whole Sample</p>							
	26,5000										
	19,0000										
	13,2000	100									
	9,5000	98									
	6,7000	91									
	4,7500	83									
	2,3600	63									
	1,1800	46									
	0,6000	34									
	0,3000	24									
	0,1500	20									
Mechanical Analysis	0,0750	16		<div>Plasticity Chart</div> <p>Plasticity Index</p> <p>Liquid Limit</p>							
	0,0340	15									
	0,0260	12									
	0,0100	9									
	0,0060	8									
	0,0030	7									
	0,0015	6									



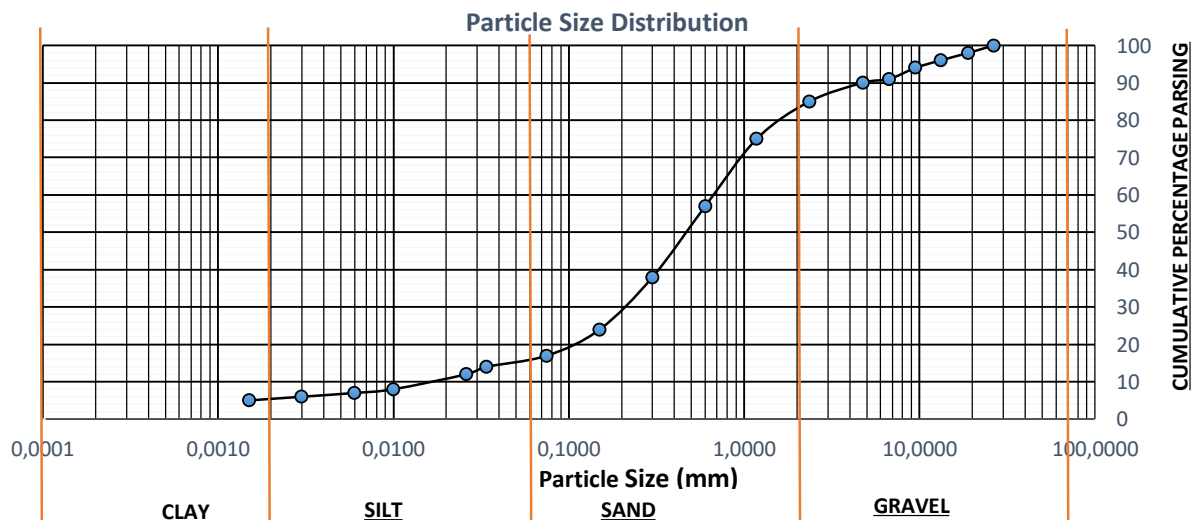
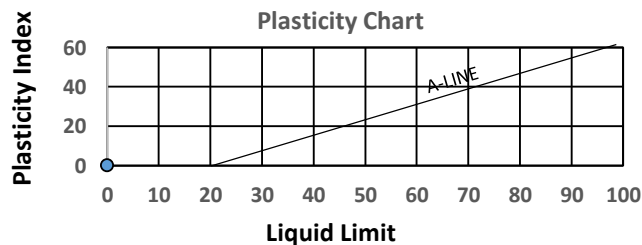
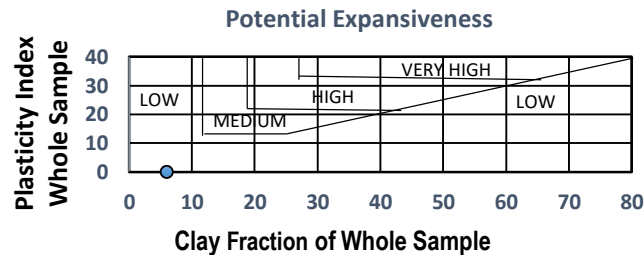


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Project:	PAULSHOEK		Date		
Client:	ICEBURG TRADING				
Sample/No. No.	PH23	Liquid Limit:		% Clay:	6
Depth (mm)	0-420	Plasticity Index	SP	% Silt	10
Position		Linear Shrinkage	0,5	% Sand	67
		Moisture contnt	0,3	% Gravel	17
		GRADING MODULES	1,53		
Description of Material					
Screen Analysis (% Passing)		BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ			
		Screen Size	% Passed		
		26,5000	100		
		19,0000	98		
		13,2000	96		
		9,5000	94		
		6,7000	91		
		4,7500	90		
		2,3600	85		
		1,1800	75		
		0,6000	57		
		0,3000	38		
		0,1500	24		
		0,0750	17		
		0,0340	14		
Mechanical Analysis		0,0260	12		
		0,0100	8		
		0,0060	7		
		0,0030	6		
		0,0015	5		



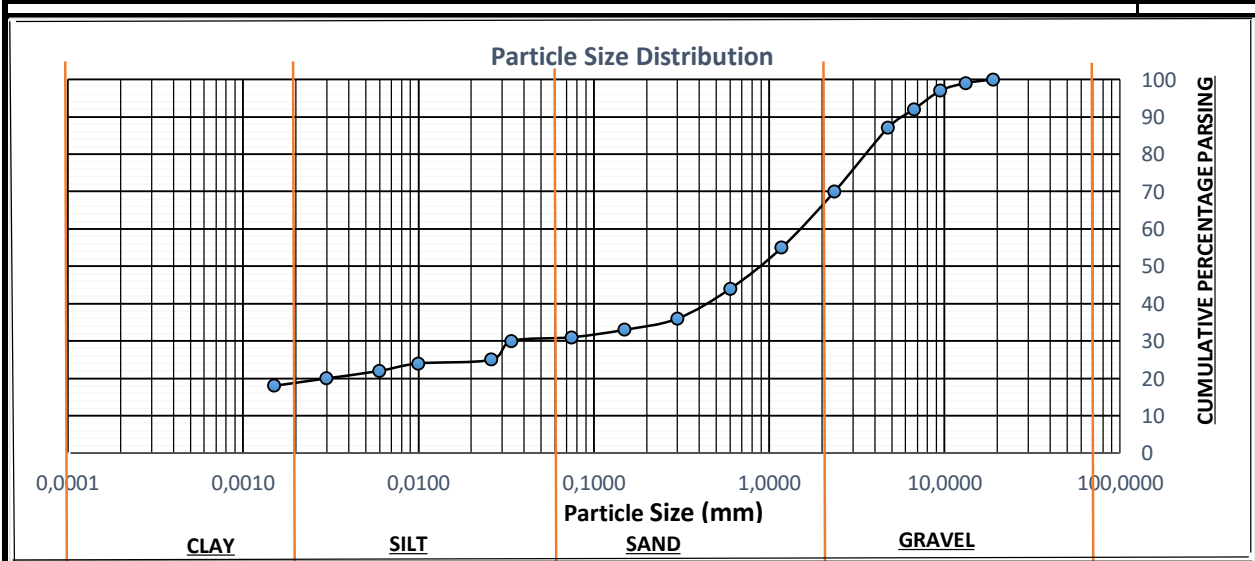


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Project:		PAULSHOEK		Date	
Client:		ICEBURG TRADING			
Sample/hole No.		PH24		Liquid Limit:	
Depth (mm)		220-420		20	
Position				Plasticity Index	
Description of Material		BROWN CLAYEY SAND + DECOMPOSED GRANITE + QUARTZ		Linear Shrinkage	
				4	
				Moisture contnt	
				2,2	
		GRADING MODULES		1,63	
				% Clay:	
				28	
				% Silt	
				3	
				% Sand	
				36	
				% Gravel	
				33	
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> <p>Plasticity Index Whole Sample</p> <p>Clay Fraction of Whole Sample</p>	
	26,5000				
	19,0000	100			
	13,2000	99			
	9,5000	97			
	6,7000	92			
	4,7500	87			
	2,3600	70			
	1,1800	55			
	0,6000	44			
	0,3000	36			
	0,1500	33			
Mechanical Analysis	0,0750	31		<div>Plasticity Chart</div> <p>Plasticity Index</p> <p>Liquid Limit</p>	
	0,0340	30			
	0,0260	25			
	0,0100	24			
	0,0060	22			
	0,0030	20			
	0,0015	18			





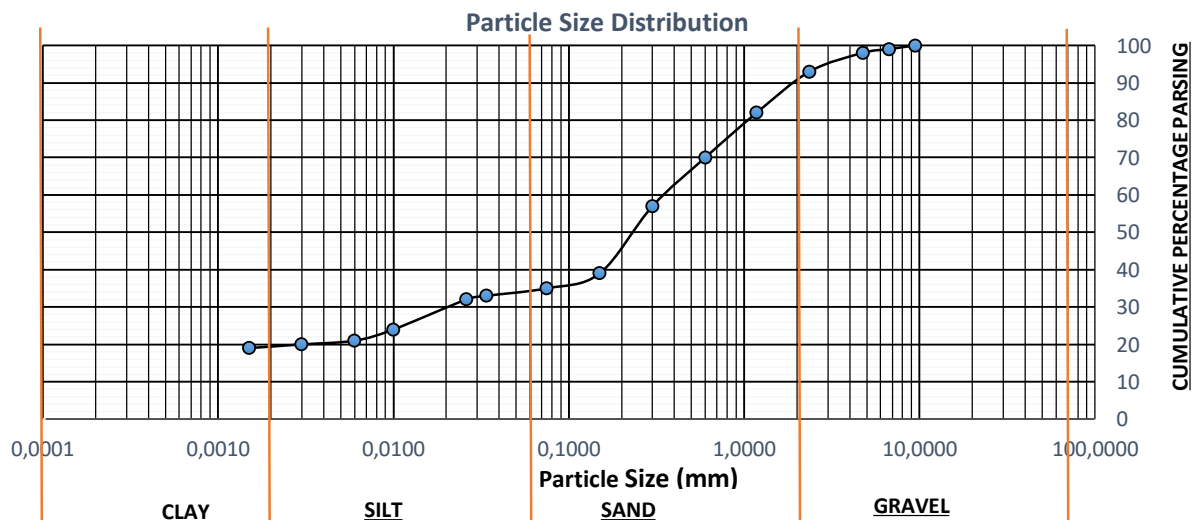
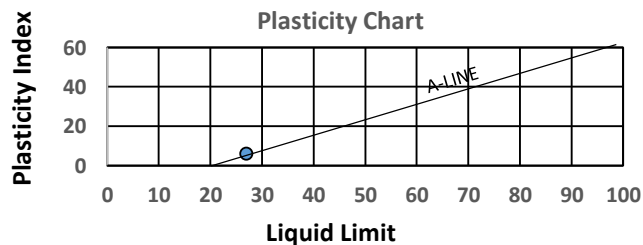
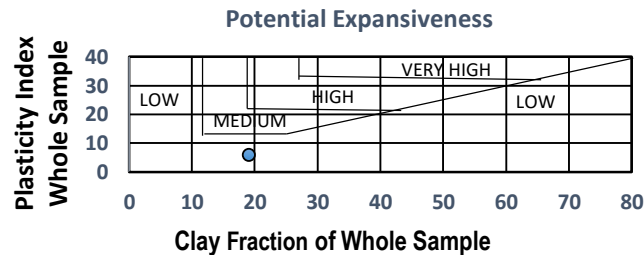
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Project:		PAULSHOEK		Date													
Client:		ICEBURG TRADING															
Sample/No. No.		PH25		Liquid Limit:		27		% Clay:		19							
Depth (mm)		1850-2300		Plasticity Index		6		% Silt		15							
Position				Linear Shrinkage		3		% Sand		57							
Description of Material		LT/BROWN CLAYEY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt		14,2		% Gravel		9							
				GRADING MODULES		1,11		PH VALUE (Ph)		5,9							
								CONDUCTIVITY (S/m)		2,92							
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> <table><caption>Potential Expansiveness Data</caption><thead><tr><th>Clay Fraction of Whole Sample</th><th>Plasticity Index</th><th>Region</th></tr></thead><tbody><tr><td>18</td><td>6</td><td>MEDIUM</td></tr></tbody></table>								Clay Fraction of Whole Sample	Plasticity Index	Region	18	6	MEDIUM
	Clay Fraction of Whole Sample	Plasticity Index	Region														
	18	6	MEDIUM														
	26,5000																
	19,0000																
	13,2000																
	9,5000	100															
	6,7000	99															
	4,7500	98															
	2,3600	93															
1,1800	82																
0,6000	70																
Mechanical Analysis	0,3000	57		<div>Plasticity Chart</div> <table><caption>Plasticity Chart Data</caption><thead><tr><th>Liquid Limit</th><th>Plasticity Index</th></tr></thead><tbody><tr><td>27</td><td>6</td></tr></tbody></table>								Liquid Limit	Plasticity Index	27	6		
	Liquid Limit	Plasticity Index															
	27	6															
	0,1500	39															
	0,0750	35															
	0,0340	33															
	0,0260	32															
	0,0100	24															
	0,0060	21															
	0,0030	20															
0,0015	19																

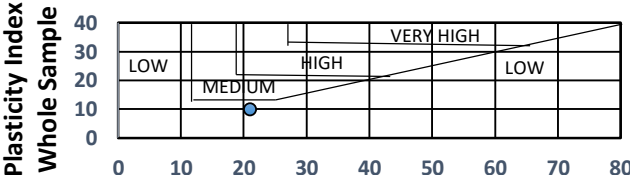
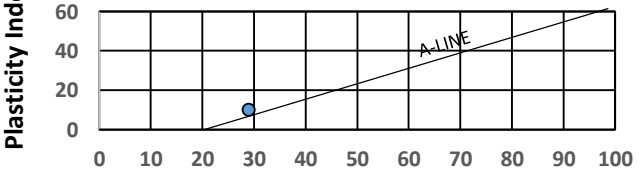


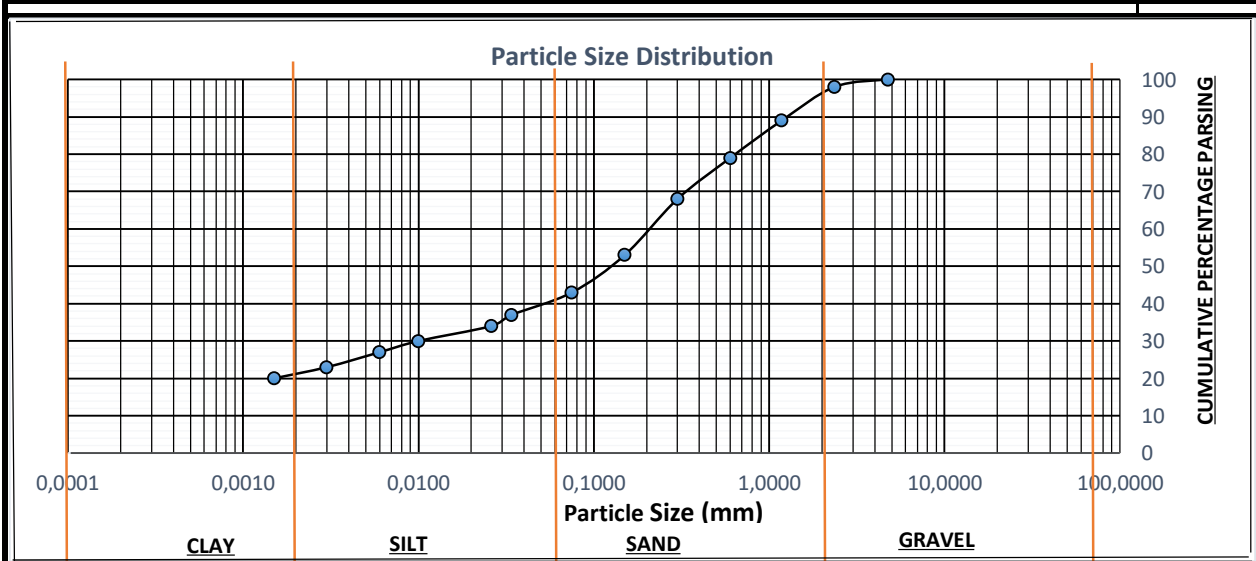


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Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/No. No.		PH28		Liquid Limit:		29		% Clay:		21	
Depth (mm)		200-500		Plasticity Index		10		% Silt		20	
Position				Linear Shrinkage		5		% Sand		55	
Description of Material		RD/BROWN CLAYEY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt		5,6		% Gravel		4	
				GRADING MODULES		0,88					
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> 							
	26,5000										
	19,0000										
	13,2000										
	9,5000										
	6,7000										
	4,7500	100									
	2,3600	98									
	1,1800	89									
	0,6000	79									
Mechanical Analysis	0,3000	68		<div>Plasticity Chart</div> 							
	0,1500	53									
	0,0750	43									
	0,0340	37									
	0,0260	34									
	0,0100	30									
	0,0060	27									
	0,0030	23									
	0,0015	20									



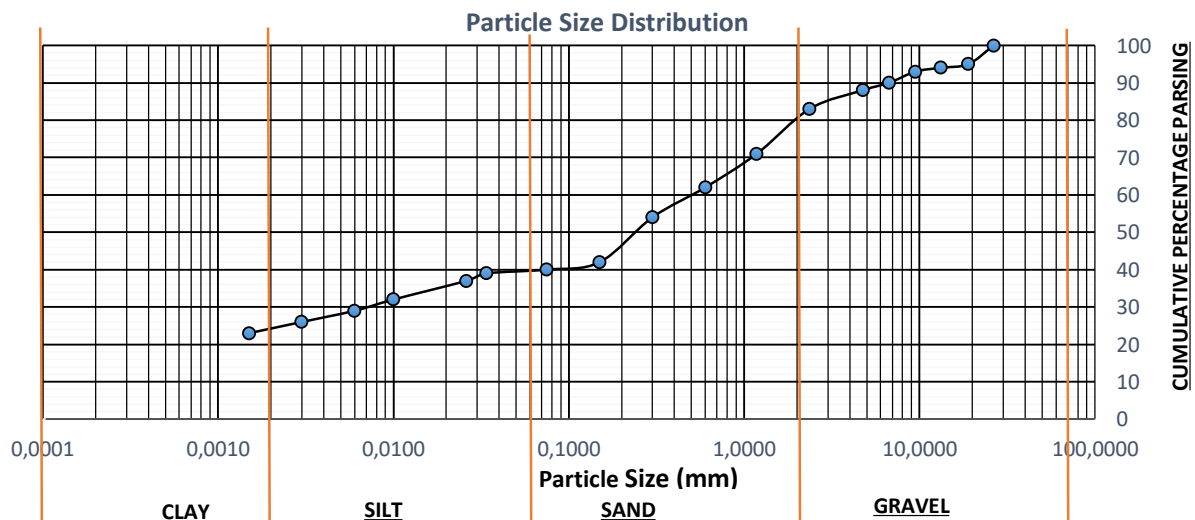
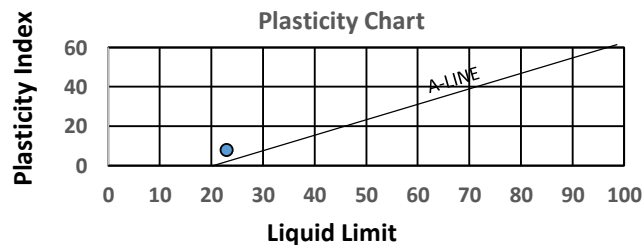
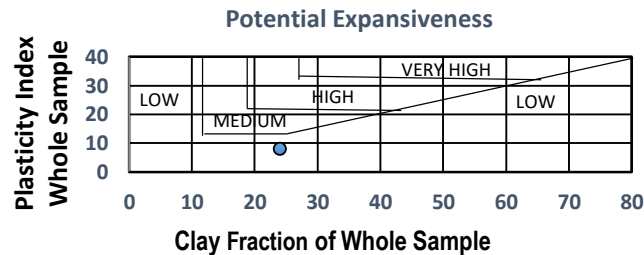


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Project:	PAULSHOEK		Date		
Client:	ICEBURG TRADING				
Sample/No. No.	PH29	Liquid Limit:	23	% Clay:	24
Depth (mm)	300-800	Plasticity Index	8	% Silt	16
Position		Linear Shrinkage	4	% Sand	41
Description of Material	BROWN CLAYEY SAND + DECOMPOSED GRANITE	Moisture contnt	4	% Gravel	19
		GRADING MODULES	1,23		
Screen Analysis (% Passing)	Screen Size	% Passed			
	26,5000	100			
	19,0000	95			
	13,2000	94			
	9,5000	93			
	6,7000	90			
	4,7500	88			
	2,3600	83			
	1,1800	71			
	0,6000	62			
	0,3000	54			
	0,1500	42			
Mechanical Analysis	0,0750	40			
	0,0340	39			
	0,0260	37			
	0,0100	32			
	0,0060	29			
	0,0030	26			
	0,0015	23			





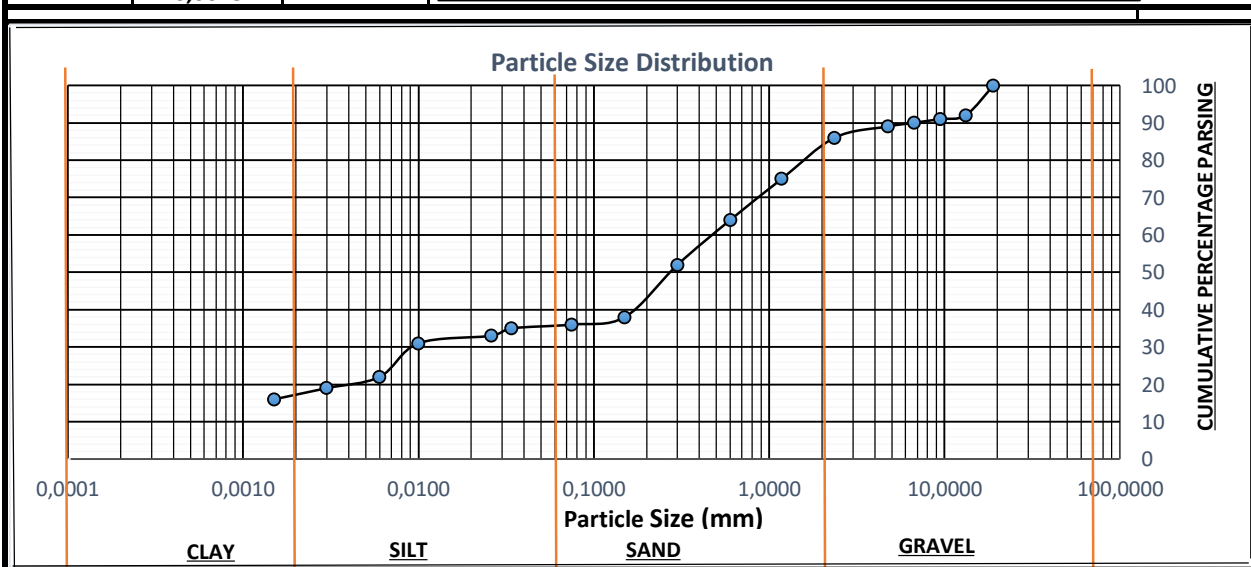
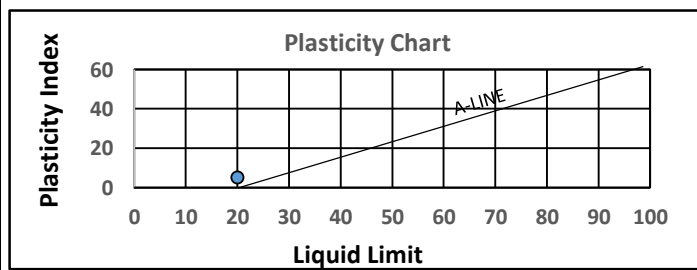
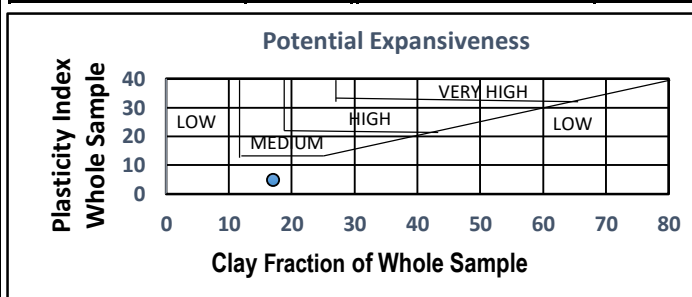
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Project:	PAULSHOEK	Date			
Client:	ICEBURG TRADING				
Sample/No. No.	PH30	Liquid Limit:	20	% Clay:	17
Depth (mm)	0-500	Plasticity Index	5	% Silt	19
Position		Linear Shrinkage	2,5	% Sand	48
Description of Material	DRK/BROWN SILTY SAND + DECOMPOSED GRANITE	Moisture contnt	7,3	% Gravel	16
		GRADING MODULES	1,24	PH VALUE (Ph)	5,4
				CONDUCTIVITY (S/m)	0,78

Screen Analysis (% Passing)	Screen Size	% Passed
	26,5000	
	19,0000	100
	13,2000	92
	9,5000	91
	6,7000	90
	4,7500	89
	2,3600	86
	1,1800	75
	0,6000	64
Mechanical Analysis	0,3000	52
	0,1500	38
	0,0750	36
	0,0340	35
	0,0260	33
	0,0100	31
	0,0060	22
	0,0030	19
	0,0015	16





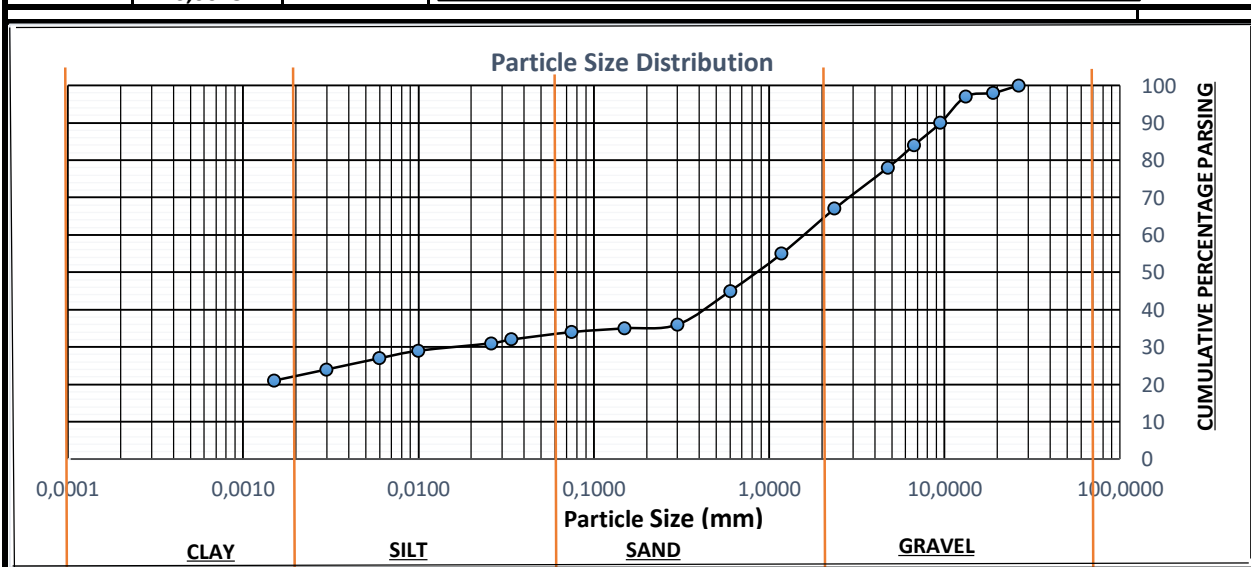
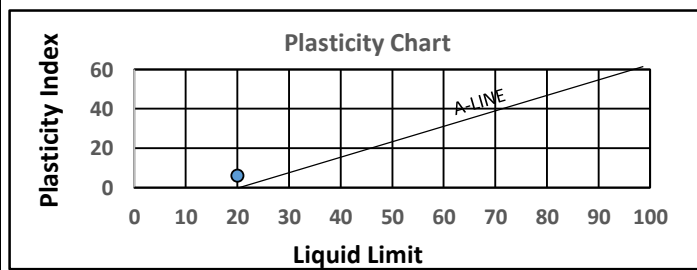
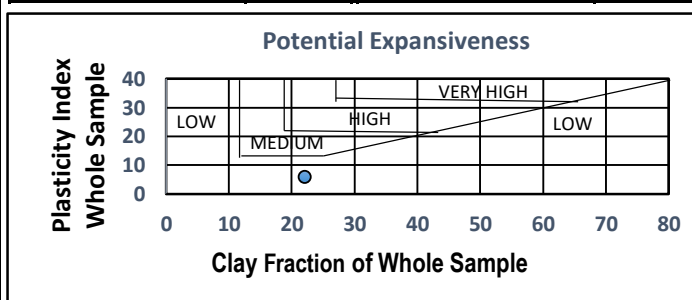
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Project:	PAULSHOEK	Date			
Client:	ICEBURG TRADING				
Sample/No. No.	PH31	Liquid Limit:	20	% Clay:	22
Depth (mm)	320-400	Plasticity Index	6	% Silt	11
Position		Linear Shrinkage	3	% Sand	31
Description of Material	Y/BROWN CLAYEY SAND + DECOMPOSED GRANITE + QUARTZ	Moisture contnt	1,7	% Gravel	36
		GRADING MODULES	1,62	PH VALUE (Ph)	5,4
				CONDUCTIVITY (S/m)	0,59

Screen Analysis (% Passing)	Screen Size	% Passed
	26,5000	100
	19,0000	98
	13,2000	97
	9,5000	90
	6,7000	84
	4,7500	78
	2,3600	67
	1,1800	55
	0,6000	45
Mechanical Analysis	0,3000	36
	0,1500	35
	0,0750	34
	0,0340	32
	0,0260	31
	0,0100	29
	0,0060	27
	0,0030	24
	0,0015	21





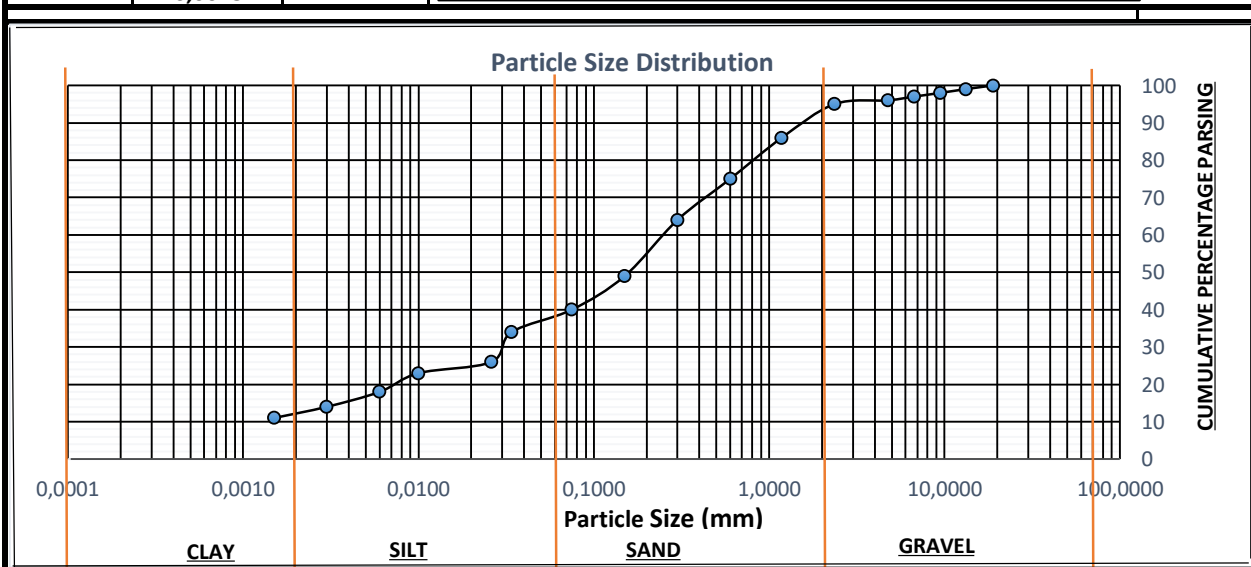
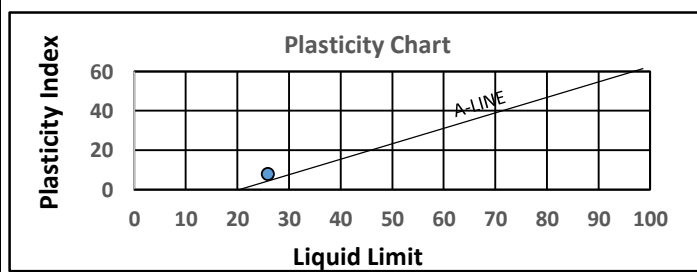
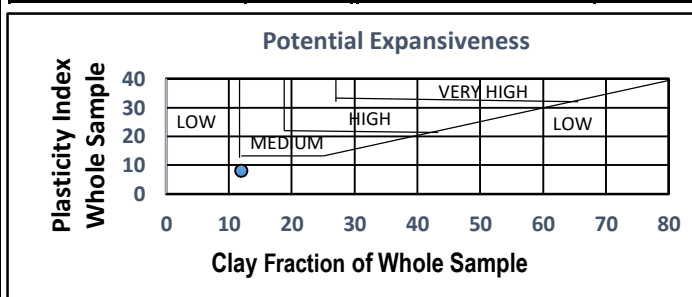
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Project:	PAULSHOEK	Date			
Client:	ICEBURG TRADING				
Sample/No. No.	PH32	Liquid Limit:	26	% Clay:	12
Depth (mm)	0-470	Plasticity Index	8	% Silt	26
Position		Linear Shrinkage	4	% Sand	56
Description of Material	LT/BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ	Moisture contnt	2,4	% Gravel	6
		GRADING MODULES	0,98	PH VALUE (Ph)	5,7
				CONDUCTIVITY (S/m)	0,92

Screen Analysis (% Passing)	Screen Size	% Passed
	26,5000	
	19,0000	100
	13,2000	99
	9,5000	98
	6,7000	97
	4,7500	96
	2,3600	95
	1,1800	86
	0,6000	75
Mechanical Analysis	0,3000	64
	0,1500	49
	0,0750	40
	0,0340	34
	0,0260	26
	0,0100	23
	0,0060	18
	0,0030	14
	0,0015	11





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Project:		PAULSHOEK		Date	
Client:		ICEBURG TRADING			
Sample/No. No.		PH33		Liquid Limit:	
Depth (mm)		190-300		14	
Position				Plasticity Index	
Description of Material		BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ		1	
				1,1	
				GRADING MODULES 1,07	
				% Clay:	
				% Silt	
				% Sand	
				% Gravel	
Screen Analysis (% Passing)	Screen Size	% Passed			
	26,5000	100			
	19,0000	89			
	13,2000	81			
	9,5000	73			
	6,7000	68			
	4,7500	63			
	2,3600	55			
	1,1800	46			
	0,6000	37			
	0,3000	27			
	0,1500	25			
	0,0750	22			
Mechanical Analysis	0,0340	20			
	0,0260	17			
	0,0100	15			
	0,0060	11			
	0,0030	9			
	0,0015	7			

Potential Expansiveness

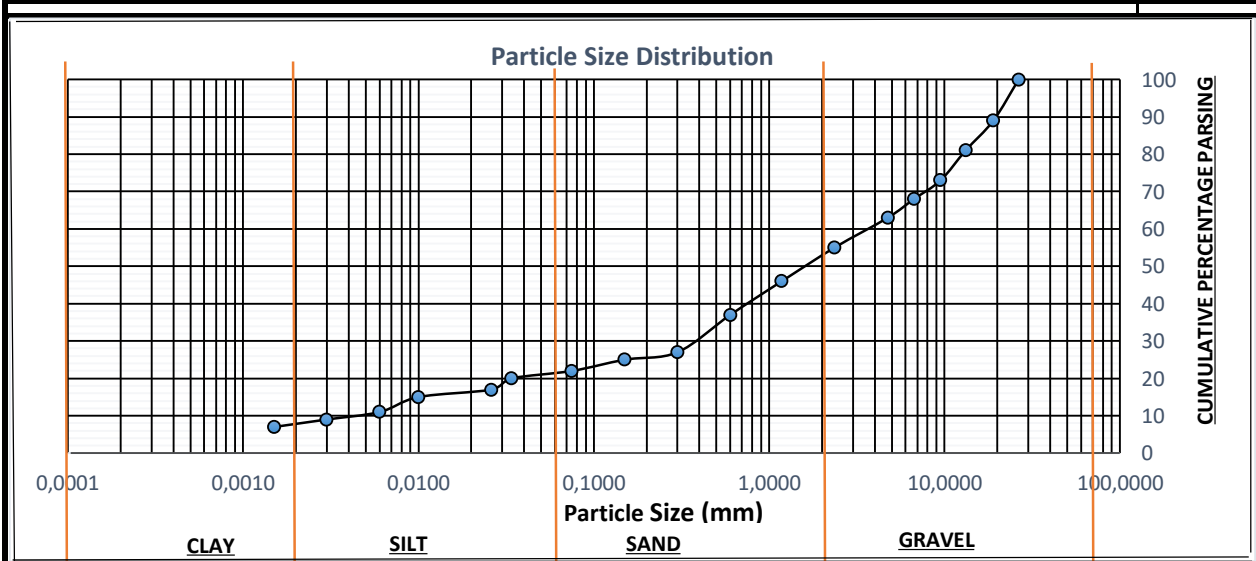
Plasticity Index Whole Sample

Clay Fraction of Whole Sample

Plasticity Chart

Plasticity Index

Liquid Limit





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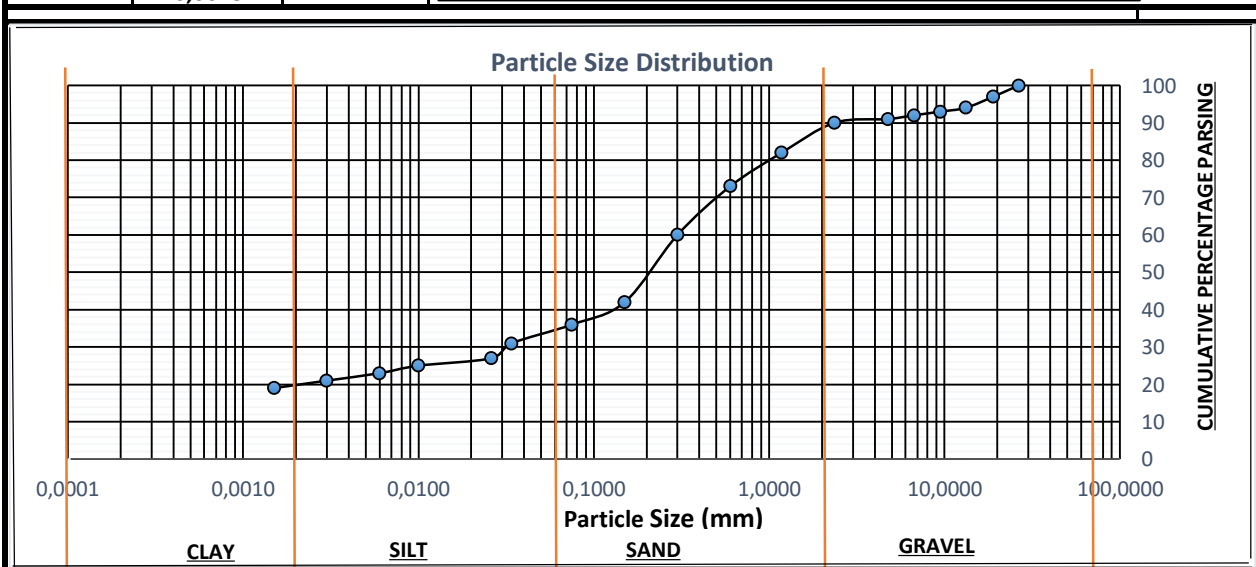
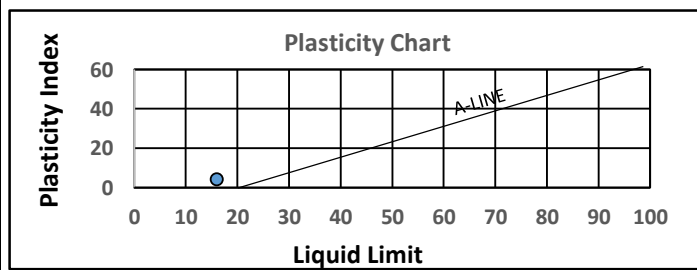
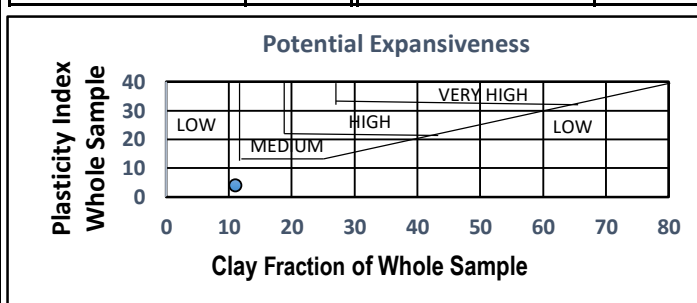
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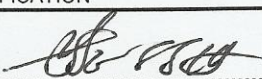
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e-mail: trimac@gmail.com

Project:	PAULSHOEK	Date	
Client:	ICEBURG TRADING		

Sample/No. No.	PH34	Liquid Limit:	16	% Clay:	11
Depth (mm)	270-440	Plasticity Index	4	% Silt	55
Position		Linear Shrinkage	2	% Sand	14
		Moisture contnt	4,2	% Gravel	20
		GRADING MODULES	1,07		
Description of Material	BROWN SANDY SILT + DECOMPOSED GRANITE				

Screen Analysis (% Passing)	Screen Size	% Passed
	26,5000	100
	19,0000	97
	13,2000	94
	9,5000	93
	6,7000	92
	4,7500	91
	2,3600	90
	1,1800	82
	0,6000	73
Mechanical Analysis	0,3000	60
	0,1500	42
	0,0750	36
	0,0340	31
	0,0260	27
	0,0100	25
	0,0060	23
	0,0030	21
	0,0015	19



TRIMAC SOILS LABORATORY cc			INDICATOR & CBR DATA						
CLIENT : ICEBURG TRADING			DATE : 15,03,2019						
PROJECT : PAULSHOEK			ATT : AUBREY						
SAMPLE NUMBER LAB :			TSL2646	TSL2647					
SAMPLE NUMBER SITE :			PH04	PH22					
DEPTH(mm) :			350-700	770-1350					
DESCRIPTION OF MATERIAL			R/BR. SILTY SAND + DECOMP. GRANITE	R/BR. SILTY SAND + DECOMP. GRANITE					
SIEVE ANA - LYSIS	75.0 mm								
	63.0 mm								
	53.0 mm								
	37.5 mm								
	26.5 mm								
	19.0 mm		100						
	13.2 mm		99	100					
	4.75 mm		82	83					
	2.00 mm		62	58					
	0.425 mm		33	29					
0.075 mm		16	11						
SOIL MORTAR	COARSE SAND		47	50					
	FINE SAND		27	30					
	MATERIAL <0.075 mm		26	20					
SOIL CONS- TANTS	LIQUID LIMIT		18	31					
	PLASTICITY INDEX		6	11					
	LINEAR SHRINKAGE		3.0	5.5					
GRADING MODULUS			1.89	2.02					
MAXIMUM DRY DENSITY (Kg/m3)			2103	1960					
% OPTIMUM MOISTURE			7.8	8.9					
C B R DATA	MOD AASHTO	COMP. MOISTURE	8.0	9.1					
		% DENSITY	100.3	100.1					
		C B R	29	24					
		% SWELL	0.72	0.99					
	N R B	% DENSITY	96.1	96.1					
		C B R	22	21					
		%SWELL	0.74	1.05					
	PROC- TOR	% DENSITY	93.1	93.2					
		C B R	20	16					
		%SWELL	0.82	1.08					
C B R	AT 100% MODIFIED AASHTO		28	24					
	AT 98% MODIFIED AASHTO		25	22					
	AT 95% MODIFIED AASHTO		21	18					
	AT 93% MODIFIED AASHTO		19	16					
	AT 90% MODIFIED AASHTO		16	14					
COLTO CLASSIFICATION			G7	G7					
SIGNED : 			DATE : 15.03.2019						



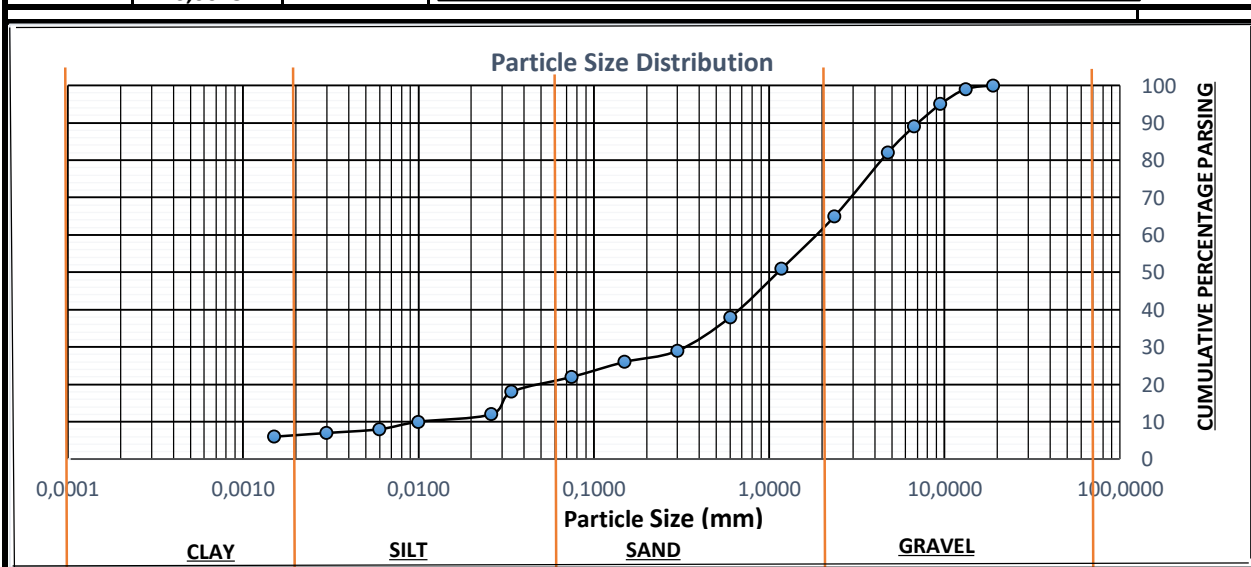
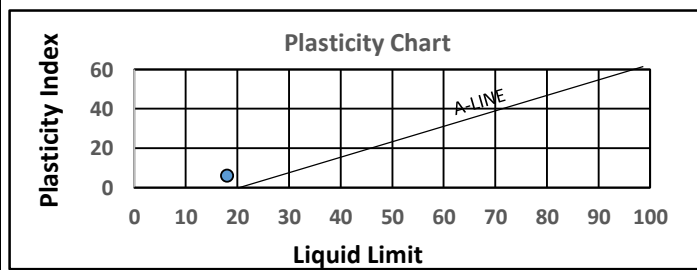
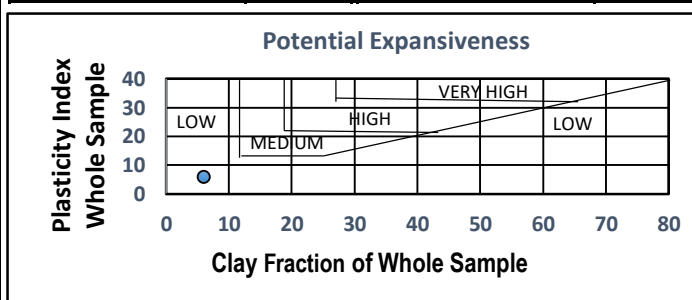
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Project:	PAULSHOEK	Date			
Client:	ICEBURG TRADING				
Sample/No. No.	PH04	Liquid Limit:	18	% Clay:	6
Depth (mm)	350-700	Plasticity Index	6	% Silt	15
Position		Linear Shrinkage	3	% Sand	41
Description of Material	R/BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ	Moisture contnt	1,1	% Gravel	38
		GRADING MODULES	1,83		

Screen Analysis (% Passing)	Screen Size	% Passed
	26,5000	
	19,0000	100
	13,2000	99
	9,5000	95
	6,7000	89
	4,7500	82
	2,3600	65
	1,1800	51
	0,6000	38
Mechanical Analysis	0,3000	29
	0,1500	26
	0,0750	22
	0,0340	18
	0,0260	12
	0,0100	10
	0,0060	8
	0,0030	7
	0,0015	6





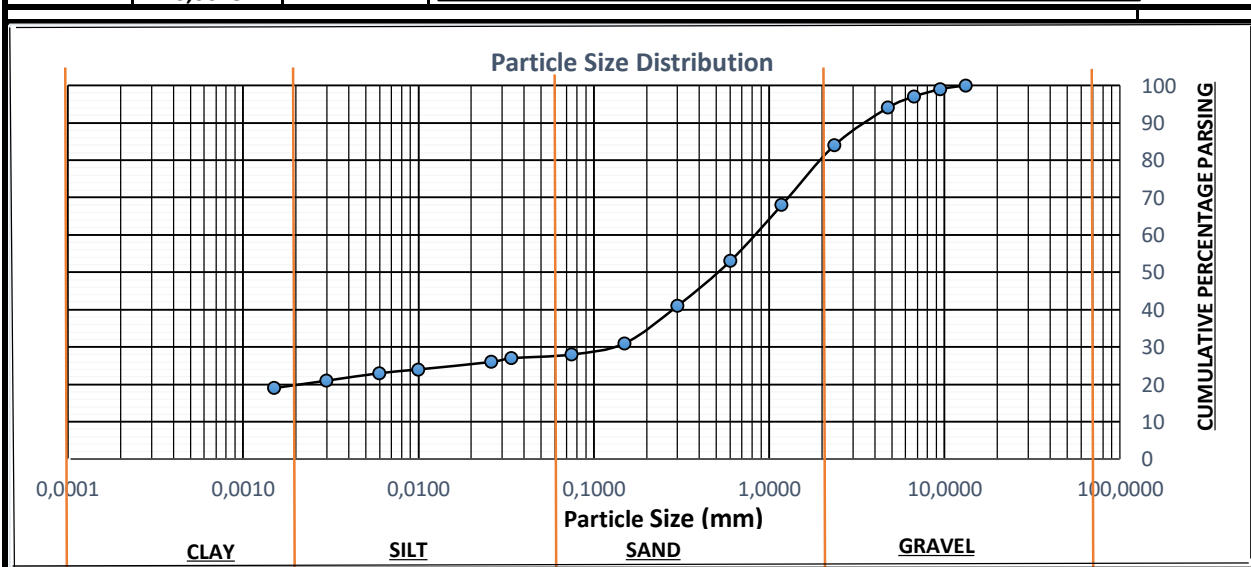
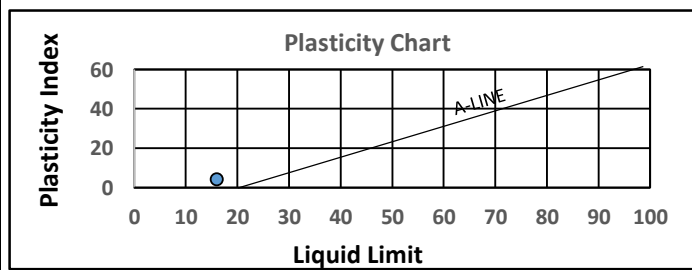
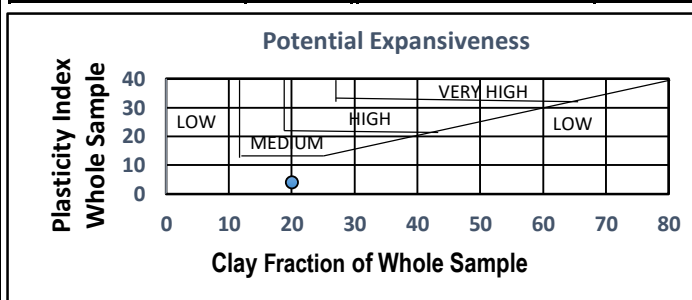
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Project:	PAULSHOEK	Date			
Client:	ICEBURG TRADING				
Sample/No. No.	PH05	Liquid Limit:	16	% Clay:	20
Depth (mm)	0-300	Plasticity Index	4	% Silt	8
Position		Linear Shrinkage	2	% Sand	54
Description of Material	BROWN CLAYEY SAND + DECOMPOSED GRANITE + QUARTZ	Moisture contnt	0,7	% Gravel	18
		GRADING MODULES	1,46	PH VALUE (Ph)	5,0
				CONDUCTIVITY (S/m)	0,15

Screen Analysis (% Passing)	Screen Size	% Passed
	26,5000	
	19,0000	
	13,2000	100
	9,5000	99
	6,7000	97
	4,7500	94
	2,3600	84
	1,1800	68
	0,6000	53
Mechanical Analysis	0,3000	41
	0,1500	31
	0,0750	28
	0,0340	27
	0,0260	26
	0,0100	24
	0,0060	23
	0,0030	21
	0,0015	19



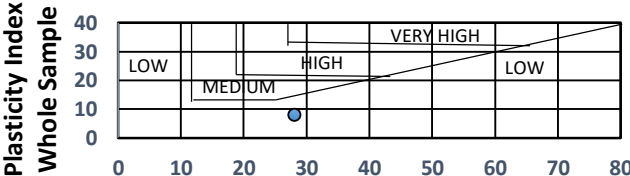
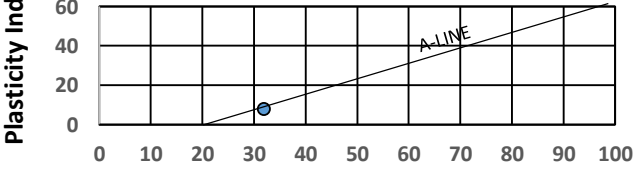


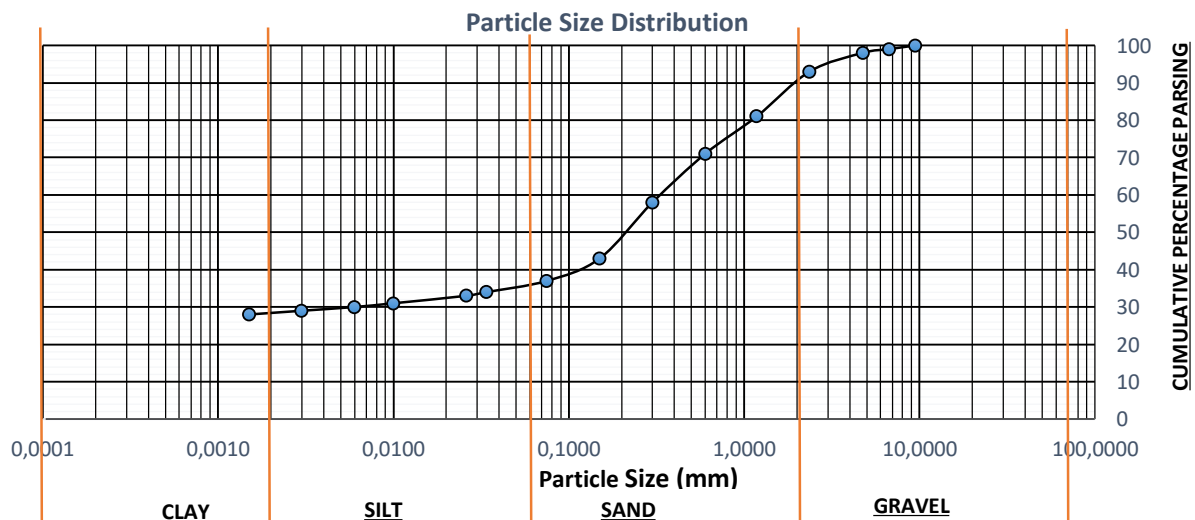
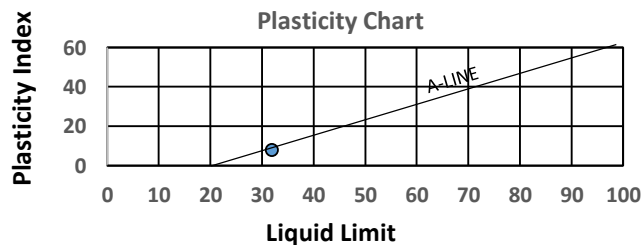
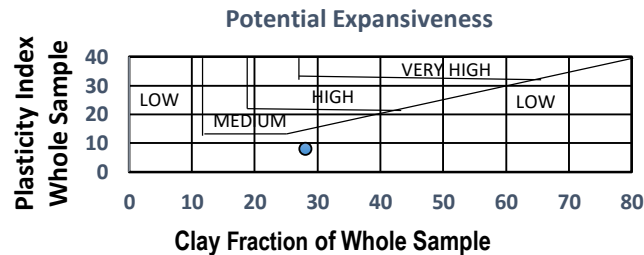
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Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/No. No.		PH11		Liquid Limit:		32		% Clay:		28	
Depth (mm)		350-1400		Plasticity Index		8		% Silt		8	
Position				Linear Shrinkage		4		% Sand		55	
Description of Material		LT/BROWN CLAYEY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt		9,9		% Gravel		9	
				GRADING MODULES		1,07		PH VALUE (Ph)		5,0	
								CONDUCTIVITY (S/m)		2,62	
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> 							
	26,5000										
	19,0000										
	13,2000										
	9,5000	100									
	6,7000	99									
	4,7500	98									
	2,3600	93									
	1,1800	81									
	0,6000	71									
	0,3000	58									
	0,1500	43									
Mechanical Analysis	0,0750	37		<div>Plasticity Chart</div> 							
	0,0340	34									
	0,0260	33									
	0,0100	31									
	0,0060	30									
	0,0030	29									
	0,0015	28									





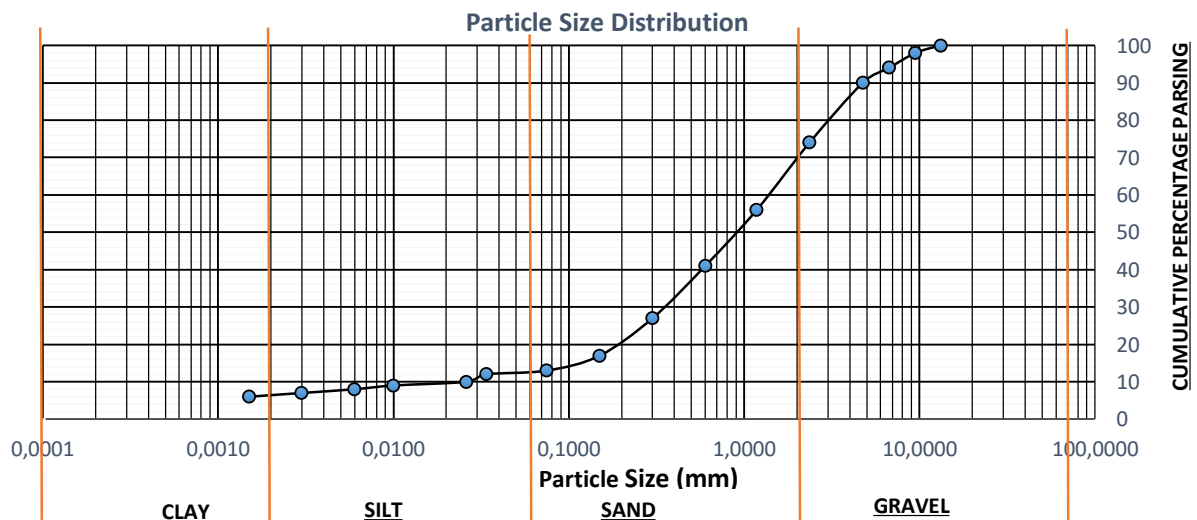
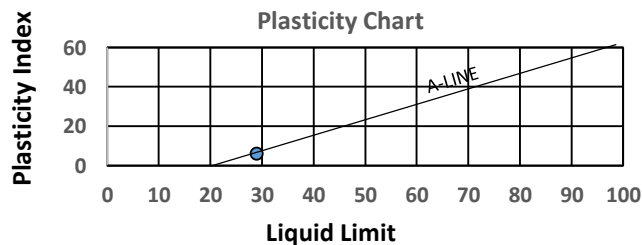
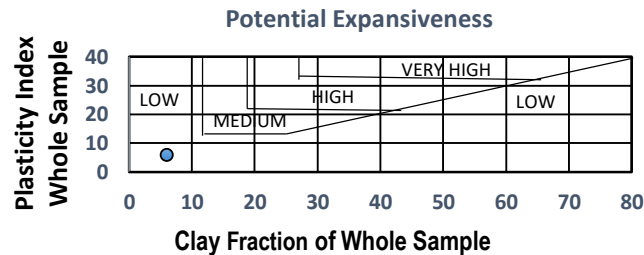
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Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/No. No.		PH14		Liquid Limit:		29		% Clay:		6	
Depth (mm)		700-1900		Plasticity Index		6		% Silt		7	
Position				Linear Shrinkage		3		% Sand		57	
Description of Material		BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt		7,8		% Gravel		30	
				GRADING MODULES		1,84		PH VALUE (Ph)		5,6	
								CONDUCTIVITY (S/m)		1,80	
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> <p>Plasticity Index</p> <p>Whole Sample</p> <p>Clay Fraction of Whole Sample</p>							
	26,5000										
	19,0000										
	13,2000	100									
	9,5000	98									
	6,7000	94									
	4,7500	90									
	2,3600	74									
	1,1800	56									
	0,6000	41									
Mechanical Analysis	0,3000	27		<div>Plasticity Chart</div> <p>Plasticity Index</p> <p>Liquid Limit</p>							
	0,1500	17									
	0,0750	13									
	0,0340	12									
	0,0260	10									
	0,0100	9									
	0,0060	8									
	0,0030	7									
	0,0015	6									

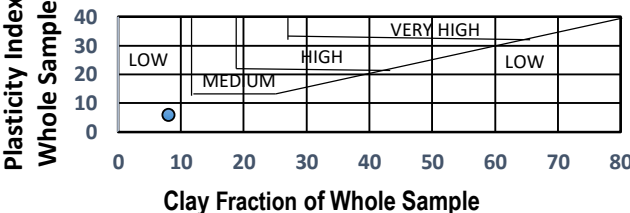
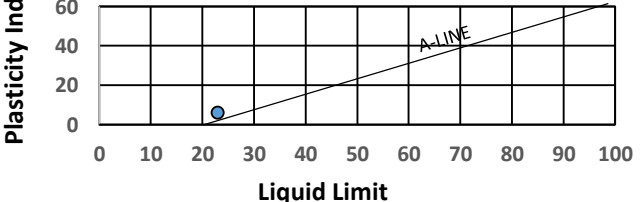


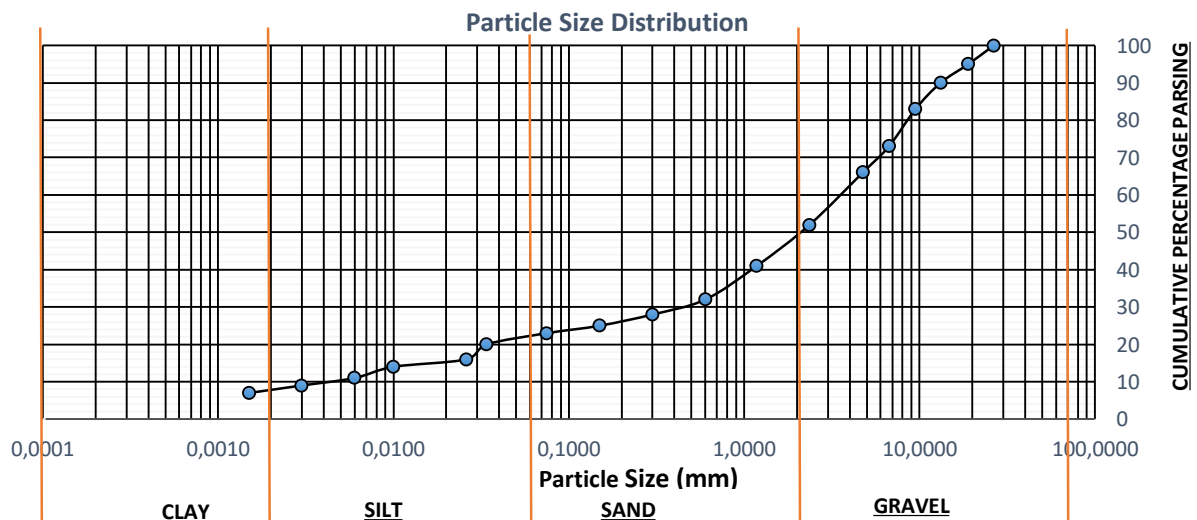
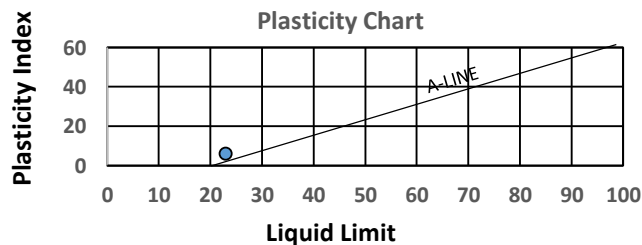
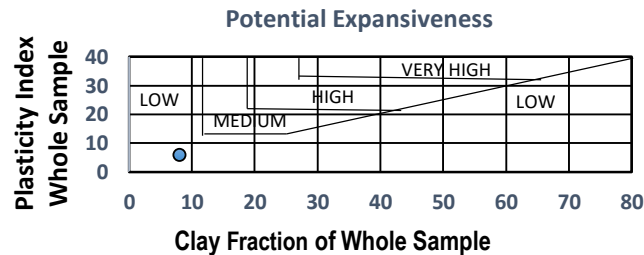


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Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/No. No.		PH15		Liquid Limit:		23		% Clay:		8	
Depth (mm)		100-390		Plasticity Index		6		% Silt		14	
Position				Linear Shrinkage		3		% Sand		27	
Description of Material		DRK/BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt		0,9		% Gravel		51	
				GRADING MODULES		2,01					
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> 							
	26,5000	100									
	19,0000	95									
	13,2000	90									
	9,5000	83									
	6,7000	73									
	4,7500	66									
	2,3600	52									
	1,1800	41									
	0,6000	32									
Mechanical Analysis	0,3000	28		<div>Plasticity Chart</div> 							
	0,1500	25									
	0,0750	23									
	0,0340	20									
	0,0260	16									
	0,0100	14									
	0,0060	11									
	0,0030	9									
	0,0015	7									



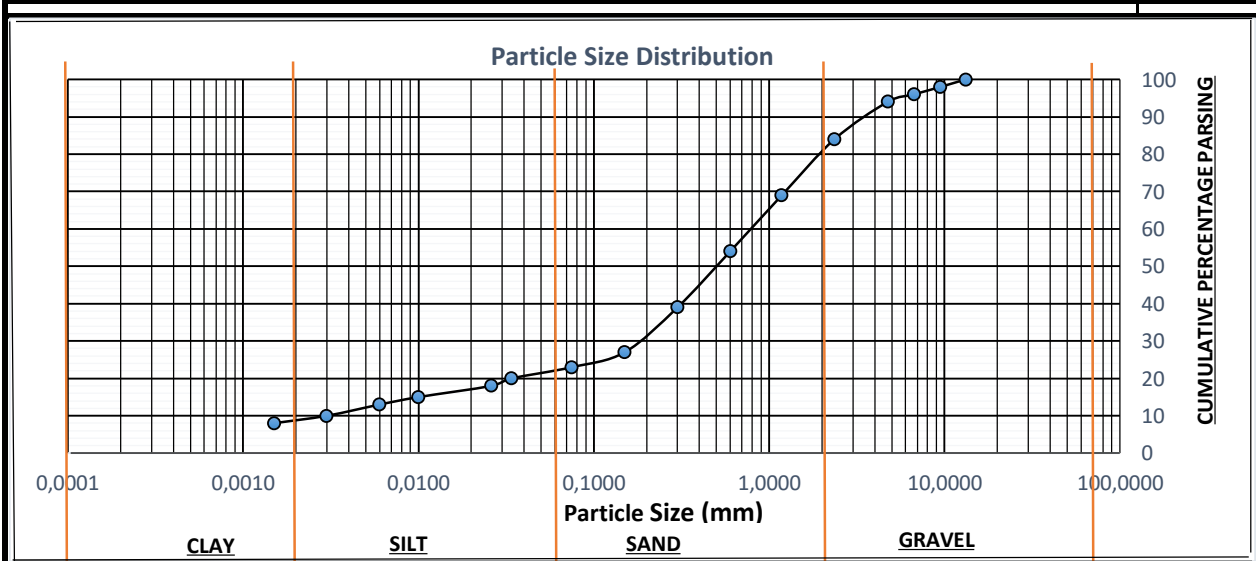


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Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/No. No.		PH19		Liquid Limit:		22		% Clay:		9	
Depth (mm)		1100-2500		Plasticity Index		8		% Silt		13	
Position				Linear Shrinkage		4		% Sand		59	
Description of Material		REDDISH BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt		9,7		% Gravel		19	
				GRADING MODULES		1,50					
Screen Analysis (% Passing)	Screen Size	% Passed		<div><h3>Potential Expansiveness</h3><p>Plasticity Index Whole Sample</p><p>Clay Fraction of Whole Sample</p></div>							
	26,5000										
	19,0000										
	13,2000	100									
	9,5000	98									
	6,7000	96									
	4,7500	94									
	2,3600	84									
	1,1800	69									
	0,6000	54									
	0,3000	39									
	0,1500	27									
Mechanical Analysis	0,0750	23		<div><h3>Plasticity Chart</h3><p>Plasticity Index</p><p>Liquid Limit</p></div>							
	0,0340	20									
	0,0260	18									
	0,0100	15									
	0,0060	13									
	0,0030	10									
	0,0015	8									





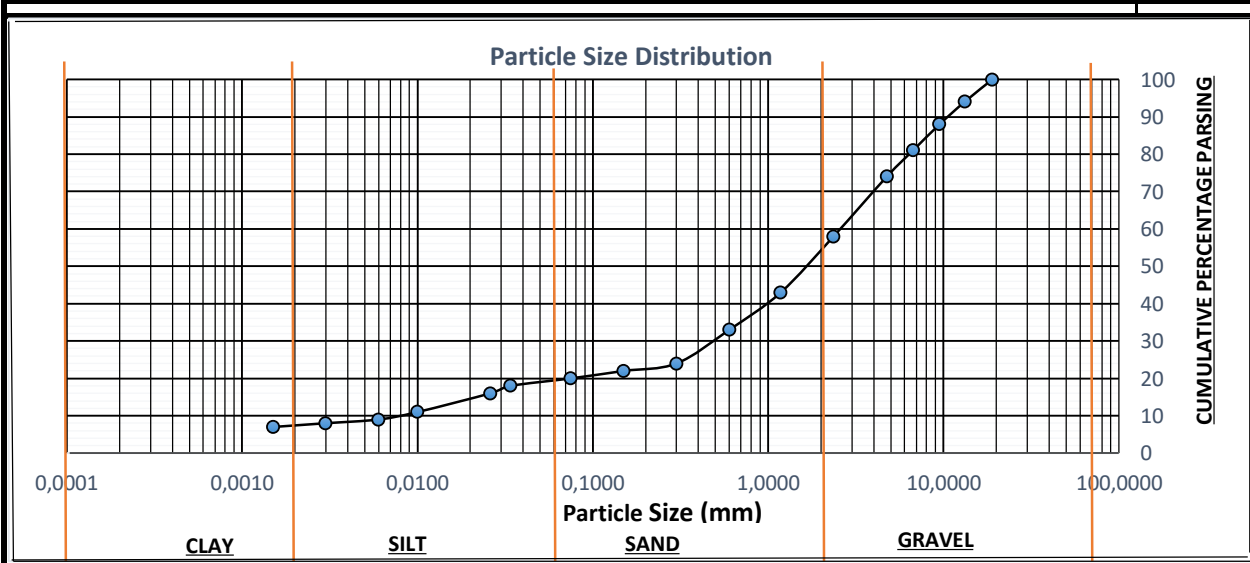
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Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/hole No.		PH19		Liquid Limit:		21		% Clay:		8	
Depth (mm)		2500-3000		Plasticity Index		6		% Silt		11	
Position				Linear Shrinkage		3		% Sand		36	
Description of Material		DRK/BROWN SILTY SAND + DECOMPOSED GRANITE		Moisture contnt		4,9		% Gravel		45	
				GRADING MODULES		1,97					
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> <p>Plasticity Index Whole Sample</p> <p>Clay Fraction of Whole Sample</p>							
	26,5000										
	19,0000	100									
	13,2000	94									
	9,5000	88									
	6,7000	81									
	4,7500	74									
	2,3600	58									
	1,1800	43									
	0,6000	33									
	0,3000	24									
	0,1500	22									
Mechanical Analysis	0,0750	20		<div>Plasticity Chart</div> <p>Plasticity Index</p> <p>Liquid Limit</p>							
	0,0340	18									
	0,0260	16									
	0,0100	11									
	0,0060	9									
	0,0030	8									
	0,0015	7									



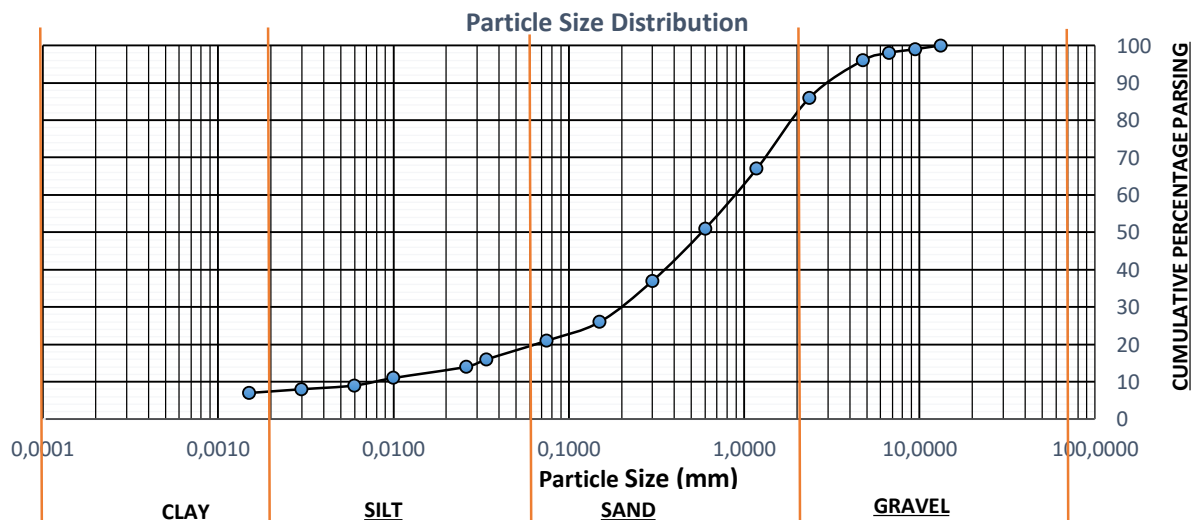
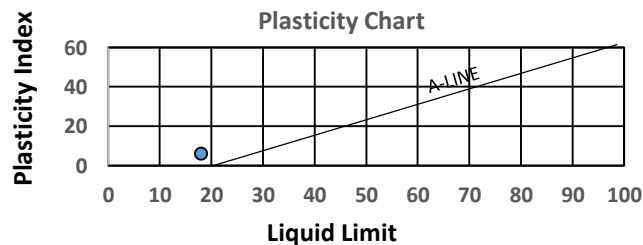
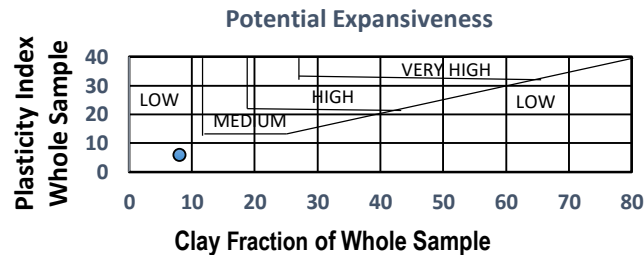


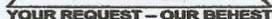
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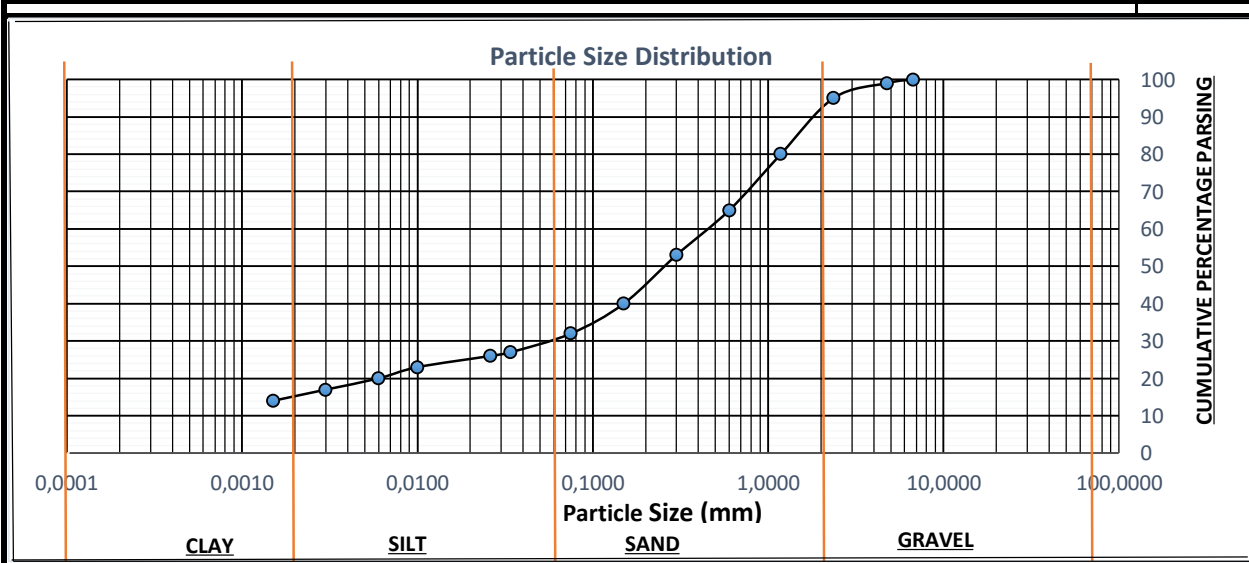
Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/No. No.		PH20		Liquid Limit:		18		% Clay:		8	
Depth (mm)		400-1100		Plasticity Index		6		% Silt		11	
Position				Linear Shrinkage		3		% Sand		64	
Description of Material		BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt		2,6		% Gravel		17	
				GRADING MODULES		1,54					
Screen Analysis (% Passing)	Screen Size		% Passed		Potential Expansiveness						
	26,5000										
	19,0000										
	13,2000		100								
	9,5000		99								
	6,7000		98								
	4,7500		96								
	2,3600		86								
	1,1800		67								
	0,6000		51								
	0,3000		37								
	0,1500		26								
Mechanical Analysis	0,0750		21								
	0,0340		16								
	0,0260		14								
	0,0100		11								
	0,0060		9								
	0,0030		8								
	0,0015		7								





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Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/hole No.		PH21		Liquid Limit:		27		% Clay:		15	
Depth (mm)		0-640		Plasticity Index		12		% Silt		15	
Position				Linear Shrinkage		6		% Sand		63	
Description of Material		BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt		4		% Gravel		7	
				GRADING MODULES		1,17					
Screen Analysis (% Passing)	Screen Size	% Passed		<div><p>Potential Expansiveness</p><p>Plasticity Index Whole Sample</p><p>Clay Fraction of Whole Sample</p></div>							
	26,5000										
	19,0000										
	13,2000										
	9,5000										
	6,7000	100									
	4,7500	99									
	2,3600	95									
	1,1800	80									
	0,6000	65									
Mechanical Analysis	0,3000	53		<div><p>Plasticity Chart</p><p>Plasticity Index</p><p>Liquid Limit</p></div>							
	0,1500	40									
	0,0750	32									
	0,0340	27									
	0,0260	26									
	0,0100	23									
	0,0060	20									
	0,0030	17									
	0,0015	14									





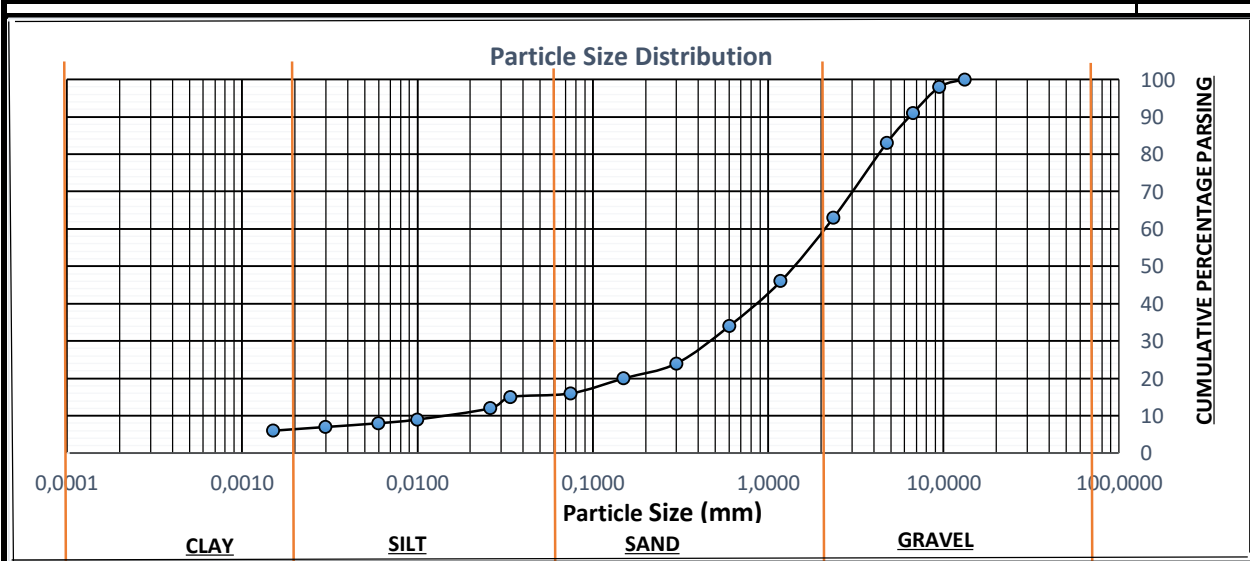
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Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/hole No.		PH22		Liquid Limit:		31		% Clay:		6	
Depth (mm)		770-1350		Plasticity Index		11		% Silt		10	
Position				Linear Shrinkage		5,5		% Sand		43	
Description of Material		R/BROWN SILTY SAND + S/STONE + FERRICRETE		Moisture contnt		9,8		% Gravel		41	
				GRADING MODULES		1,97		PH VALUE (Ph)		5,7	
								CONDUCTIVITY (S/m)		0,82	
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> <p>Plasticity Index Whole Sample</p> <p>Clay Fraction of Whole Sample</p>							
	26,5000										
	19,0000										
	13,2000	100									
	9,5000	98									
	6,7000	91									
	4,7500	83									
	2,3600	63									
	1,1800	46									
	0,6000	34									
	0,3000	24									
	0,1500	20									
Mechanical Analysis	0,0750	16		<div>Plasticity Chart</div> <p>Plasticity Index</p> <p>Liquid Limit</p>							
	0,0340	15									
	0,0260	12									
	0,0100	9									
	0,0060	8									
	0,0030	7									
	0,0015	6									



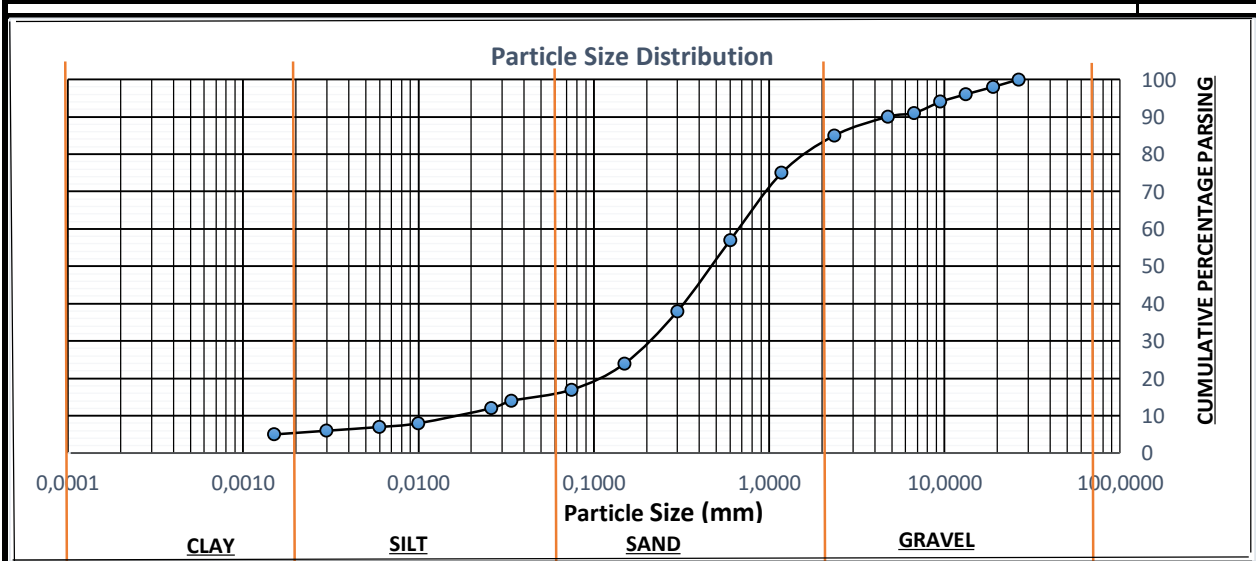


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Project:	PAULSHOEK		Date		
Client:	ICEBURG TRADING				
Sample/No. No.	PH23		Liquid Limit:		% Clay:
Depth (mm)	0-420		Plasticity Index	SP	% Silt
Position			Linear Shrinkage	0,5	% Sand
Description of Material	BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt	0,3	% Gravel
			GRADING MODULES	1,53	
Screen Analysis (% Passing)	Screen Size	% Passed	<p>Potential Expansiveness</p>		
	26,5000	100			
	19,0000	98			
	13,2000	96			
	9,5000	94			
	6,7000	91			
	4,7500	90			
	2,3600	85			
	1,1800	75			
	0,6000	57			
Mechanical Analysis	0,3000	38	<p>Plasticity Chart</p>		
	0,1500	24			
	0,0750	17			
	0,0340	14			
	0,0260	12			
	0,0100	8			
	0,0060	7			
	0,0030	6			
	0,0015	5			





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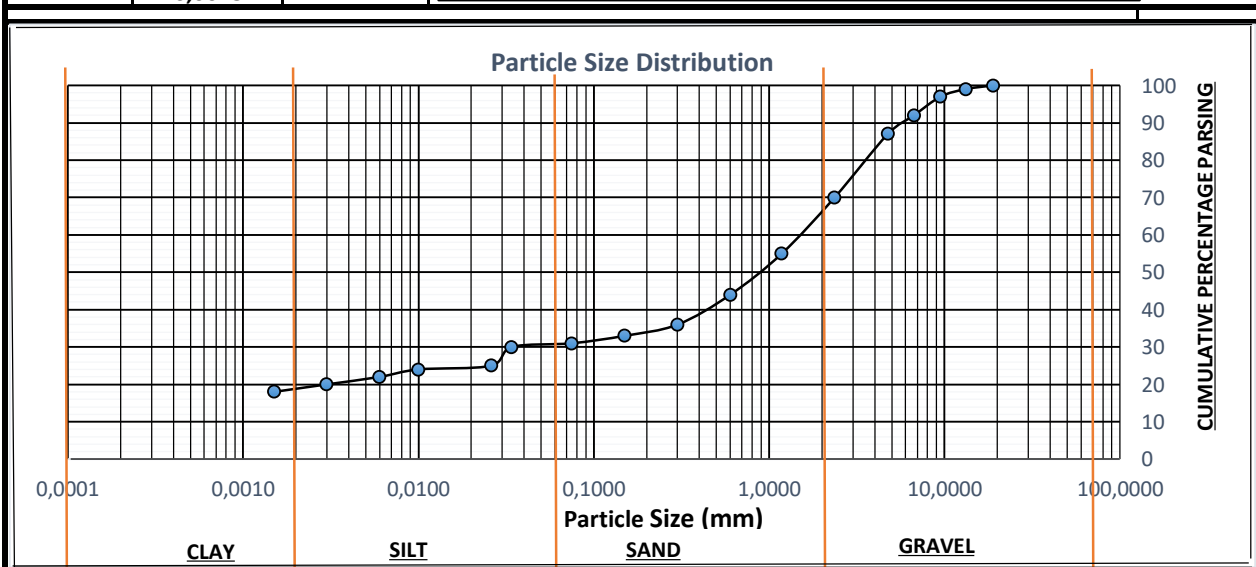
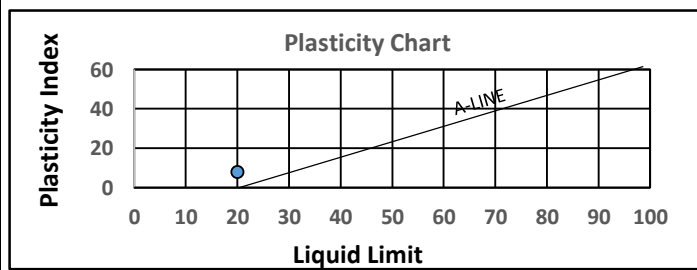
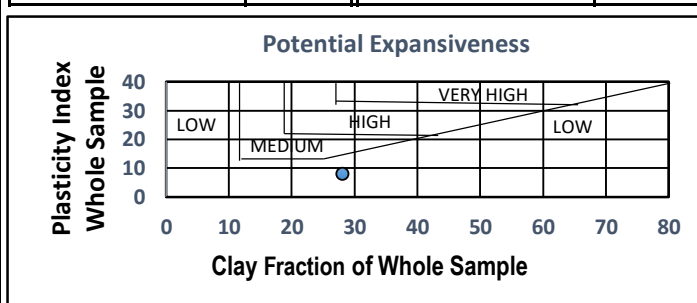
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Project:	PAULSHOEK	Date	
Client:	ICEBURG TRADING		

Sample/No. No.	PH24	Liquid Limit:	20	% Clay:	28
Depth (mm)	220-420	Plasticity Index	8	% Silt	3
Position		Linear Shrinkage	4	% Sand	36
		Moisture contnt	2,2	% Gravel	33
		GRADING MODULES	1,63		
Description of Material	BROWN CLAYEY SAND + DECOMPOSED GRANITE + QUARTZ				

Screen Analysis (% Passing)	Screen Size	% Passed
	26,5000	
	19,0000	100
	13,2000	99
	9,5000	97
	6,7000	92
	4,7500	87
	2,3600	70
	1,1800	55
	0,6000	44
Mechanical Analysis	0,3000	36
	0,1500	33
	0,0750	31
	0,0340	30
	0,0260	25
	0,0100	24
	0,0060	22
	0,0030	20
	0,0015	18



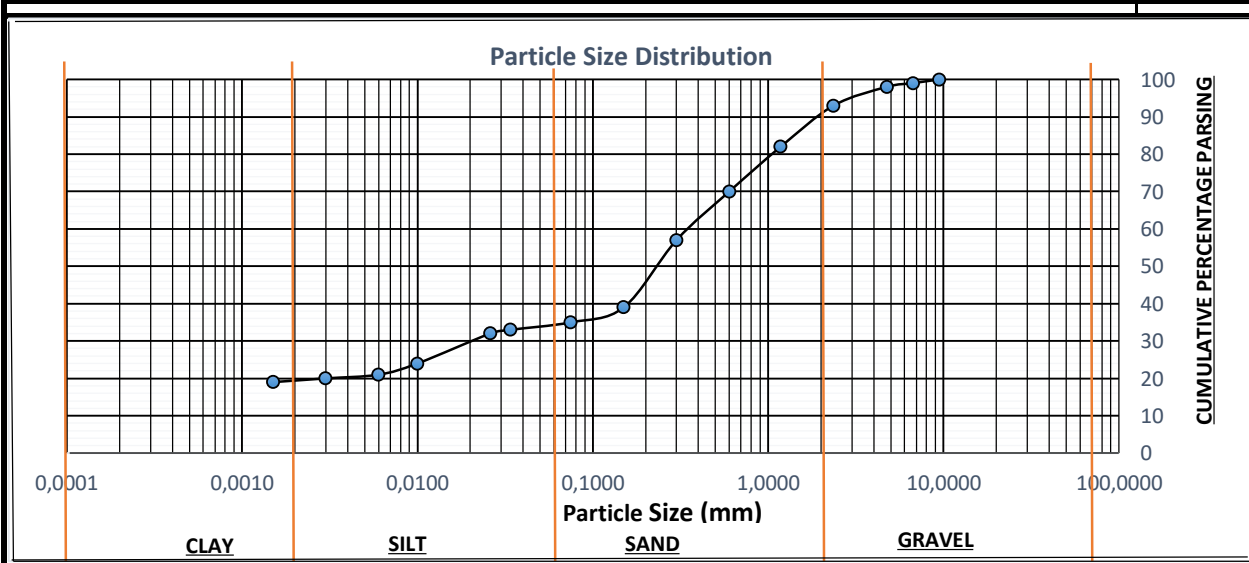


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Project:		PAULSHOEK		Date	
Client:		ICEBURG TRADING			
Sample/hole No.		PH25		Liquid Limit: 27	
Depth (mm)		1850-2300		Plasticity Index 6	
Position				Linear Shrinkage 3	
Description of Material		LT/BROWN CLAYEY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt 14,2	
				GRADING MODULES 1,11	
				% Clay: 19	
				% Silt 15	
				% Sand 57	
				% Gravel 9	
				PH VALUE (Ph) 5,9	
				CONDUCTIVITY (S/m) 2,92	
Screen Analysis (% Passing)	Screen Size	% Passed		<div><p>Potential Expansiveness</p><p>Plasticity Index Whole Sample</p><p>Clay Fraction of Whole Sample</p></div>	
	26,5000				
	19,0000				
	13,2000				
	9,5000	100			
	6,7000	99			
	4,7500	98			
	2,3600	93			
	1,1800	82			
	0,6000	70			
Mechanical Analysis	0,3000	57		<div><p>Plasticity Chart</p><p>Plasticity Index</p><p>Liquid Limit</p></div>	
	0,1500	39			
	0,0750	35			
	0,0340	33			
	0,0260	32			
	0,0100	24			
	0,0060	21			
	0,0030	20			
	0,0015	19			



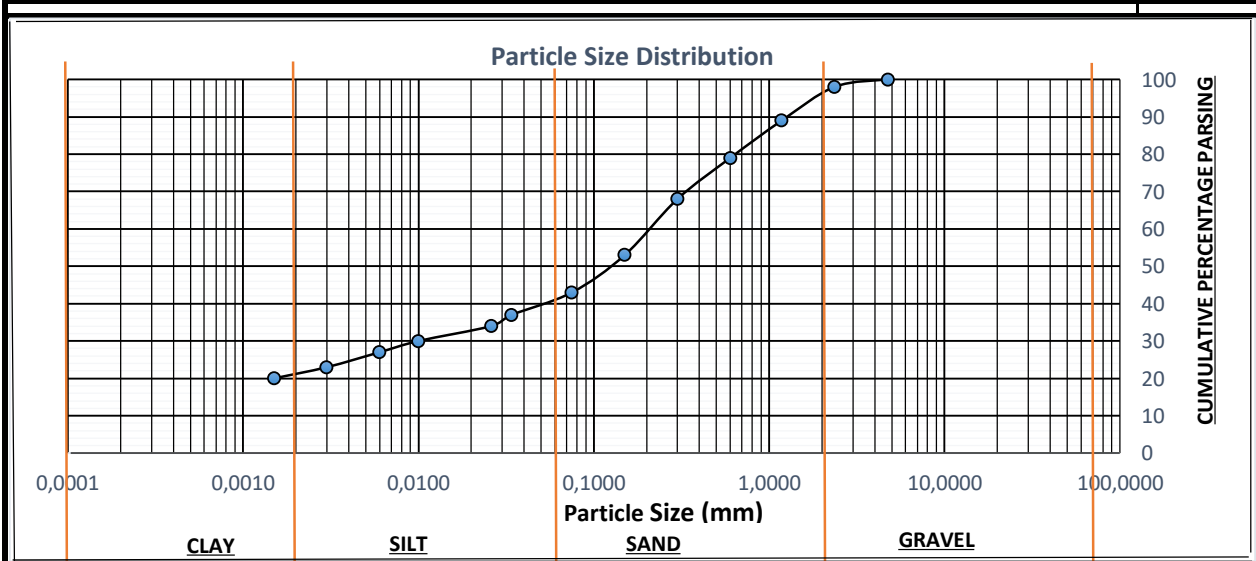


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Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/hole No.		PH28		Liquid Limit:		29		% Clay:		21	
Depth (mm)		200-500		Plasticity Index		10		% Silt		20	
Position				Linear Shrinkage		5		% Sand		55	
Description of Material		RD/BROWN CLAYEY SAND + DECOMPOSED GRANITE + QUARTZ		Moisture contnt		5,6		% Gravel		4	
				GRADING MODULES		0,88					
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> <p>Plasticity Index Whole Sample</p> <p>Clay Fraction of Whole Sample</p>							
	26,5000										
	19,0000										
	13,2000										
	9,5000										
	6,7000										
	4,7500	100									
	2,3600	98									
	1,1800	89									
	0,6000	79									
Mechanical Analysis	0,3000	68		<div>Plasticity Chart</div> <p>Plasticity Index</p> <p>Liquid Limit</p>							
	0,1500	53									
	0,0750	43									
	0,0340	37									
	0,0260	34									
	0,0100	30									
	0,0060	27									
	0,0030	23									
	0,0015	20									



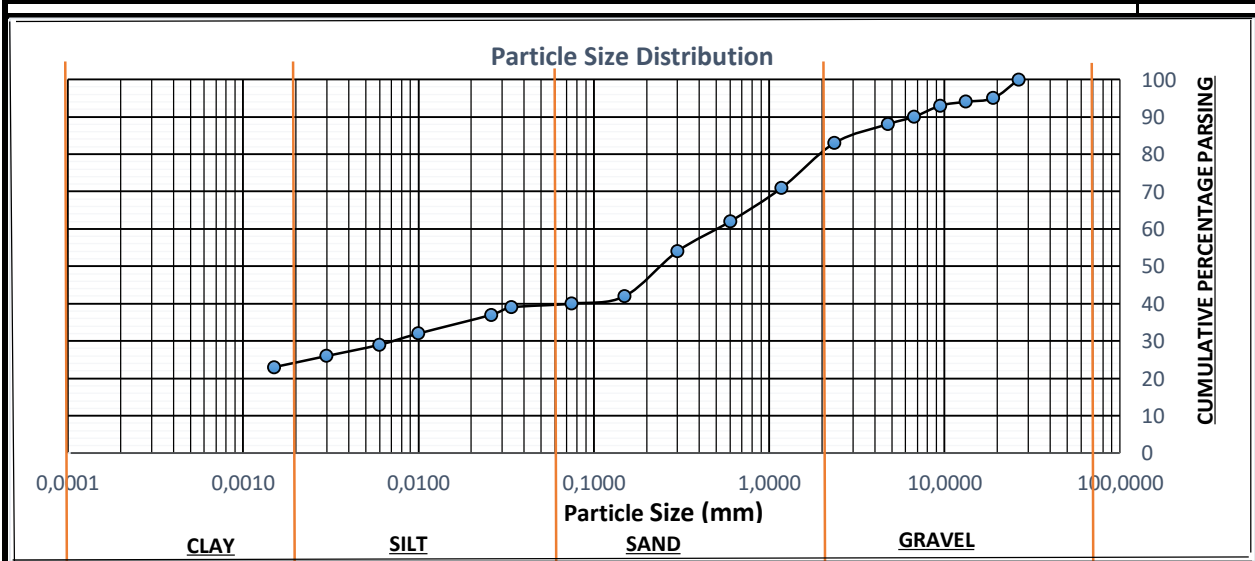


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Project:		PAULSHOEK		Date							
Client:		ICEBURG TRADING									
Sample/No. No.		PH29		Liquid Limit:		23		% Clay:		24	
Depth (mm)		300-800		Plasticity Index		8		% Silt		16	
Position				Linear Shrinkage		4		% Sand		41	
Description of Material		BROWN CLAYEY SAND + DECOMPOSED GRANITE		Moisture contnt		4		% Gravel		19	
				GRADING MODULES		1,23					
Screen Analysis (% Passing)	Screen Size	% Passed		<div>Potential Expansiveness</div> <p>Plasticity Index Whole Sample</p> <p>Clay Fraction of Whole Sample</p>							
	26,5000	100									
	19,0000	95									
	13,2000	94									
	9,5000	93									
	6,7000	90									
	4,7500	88									
	2,3600	83									
	1,1800	71									
	0,6000	62									
	0,3000	54									
	0,1500	42									
Mechanical Analysis	0,0750	40		<div>Plasticity Chart</div> <p>Plasticity Index</p> <p>Liquid Limit</p>							
	0,0340	39									
	0,0260	37									
	0,0100	32									
	0,0060	29									
	0,0030	26									
	0,0015	23									





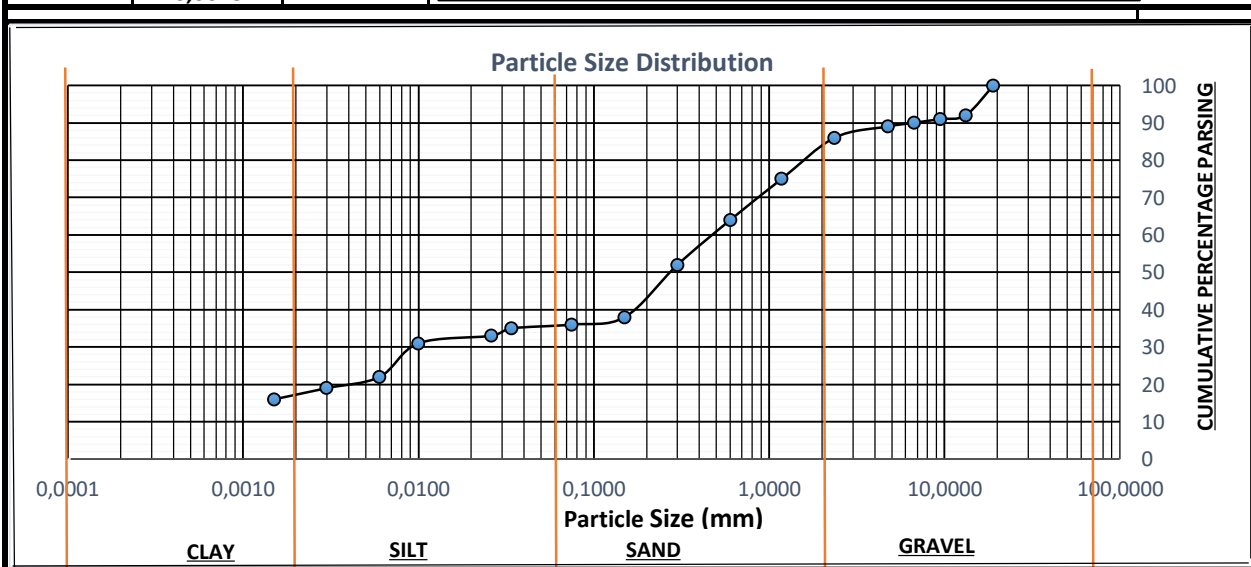
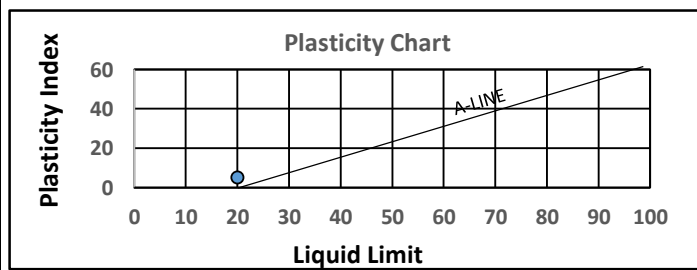
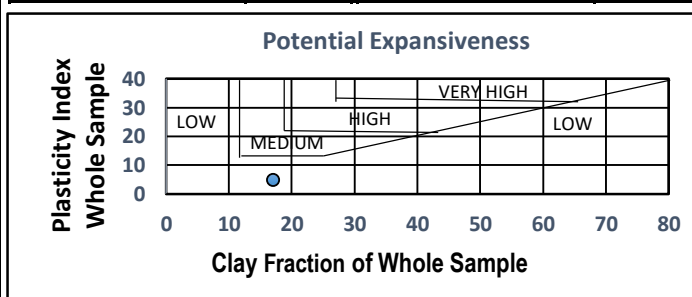
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Project:	PAULSHOEK	Date			
Client:	ICEBURG TRADING				
Sample/No. No.	PH30	Liquid Limit:	20	% Clay:	17
Depth (mm)	0-500	Plasticity Index	5	% Silt	19
Position		Linear Shrinkage	2,5	% Sand	48
Description of Material	DRK/BROWN SILTY SAND + DECOMPOSED GRANITE	Moisture contnt	7,3	% Gravel	16
		GRADING MODULES	1,24	PH VALUE (Ph)	5,4
				CONDUCTIVITY (S/m)	0,78

Screen Analysis (% Passing)	Screen Size	% Passed
	26,5000	
	19,0000	100
	13,2000	92
	9,5000	91
	6,7000	90
	4,7500	89
	2,3600	86
	1,1800	75
	0,6000	64
Mechanical Analysis	0,3000	52
	0,1500	38
	0,0750	36
	0,0340	35
	0,0260	33
	0,0100	31
	0,0060	22
	0,0030	19
	0,0015	16





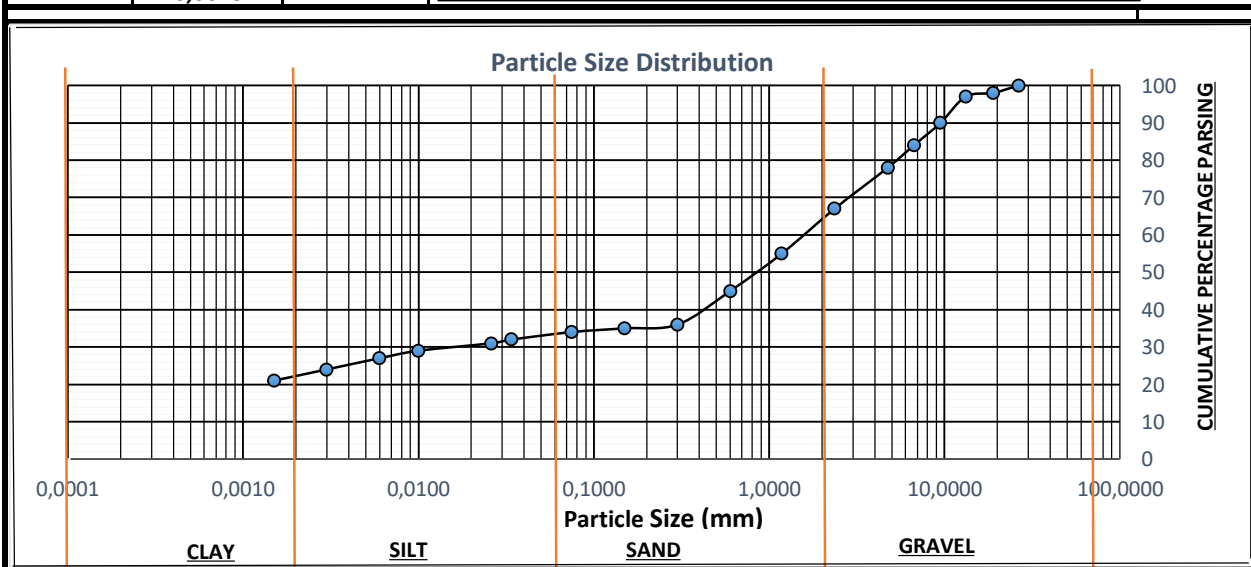
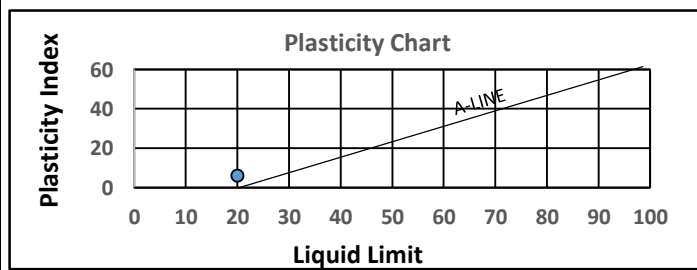
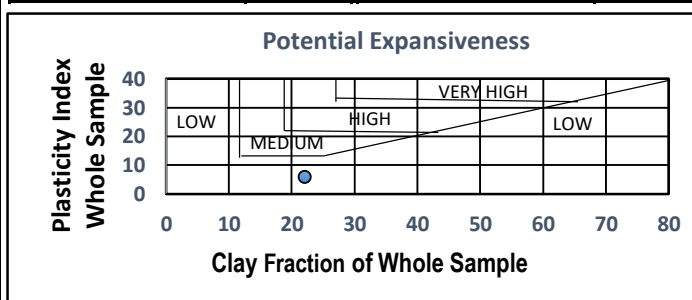
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Project:	PAULSHOEK	Date	
Client:	ICEBURG TRADING		
Sample/No. No.	PH31	Liquid Limit:	20
Depth (mm)	320-400	Plasticity Index	6
Position		Linear Shrinkage	3
		Moisture contnt	1,7
		GRADING MODULES	1,62
Description of Material	Y/BROWN CLAYEY SAND + DECOMPOSED GRANITE + QUARTZ	% Clay:	22
		% Silt	11
		% Sand	31
		% Gravel	36
		PH VALUE (Ph)	5,4
		CONDUCTIVITY (S/m)	0,59

Screen Analysis (% Passing)	Screen Size	% Passed
	26,5000	100
	19,0000	98
	13,2000	97
	9,5000	90
	6,7000	84
	4,7500	78
	2,3600	67
	1,1800	55
	0,6000	45
Mechanical Analysis	0,3000	36
	0,1500	35
	0,0750	34
	0,0340	32
	0,0260	31
	0,0100	29
	0,0060	27
	0,0030	24
	0,0015	21





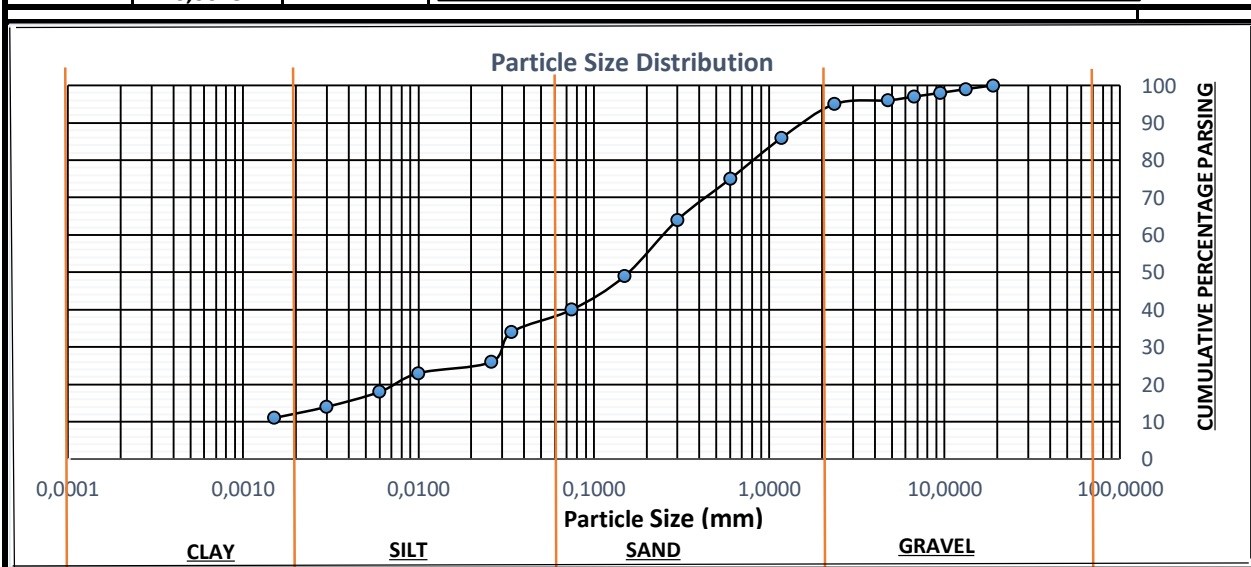
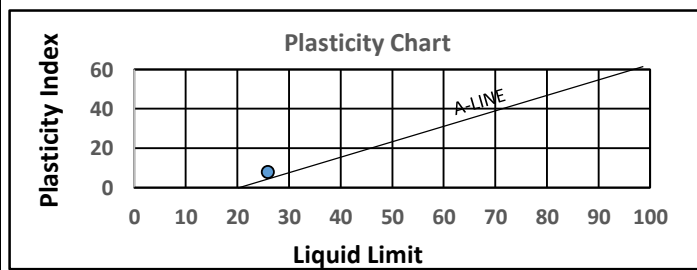
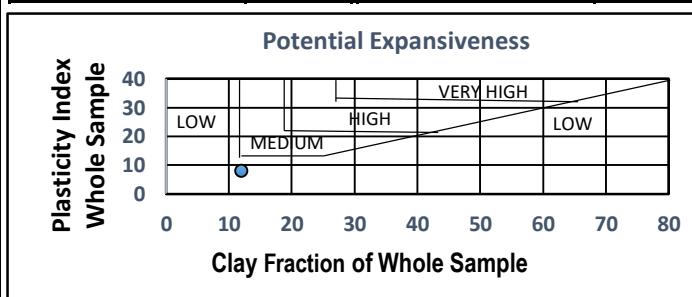
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Project:	PAULSHOEK	Date			
Client:	ICEBURG TRADING				
Sample/No. No.	PH32	Liquid Limit:	26	% Clay:	12
Depth (mm)	0-470	Plasticity Index	8	% Silt	26
Position		Linear Shrinkage	4	% Sand	56
Description of Material	LT/BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ	Moisture contnt	2,4	% Gravel	6
		GRADING MODULES	0,98	PH VALUE (Ph)	5,7
				CONDUCTIVITY (S/m)	0,92

Screen Analysis (% Passing)	Screen Size	% Passed
	26,5000	
	19,0000	100
	13,2000	99
	9,5000	98
	6,7000	97
	4,7500	96
	2,3600	95
	1,1800	86
	0,6000	75
Mechanical Analysis	0,3000	64
	0,1500	49
	0,0750	40
	0,0340	34
	0,0260	26
	0,0100	23
	0,0060	18
	0,0030	14
	0,0015	11



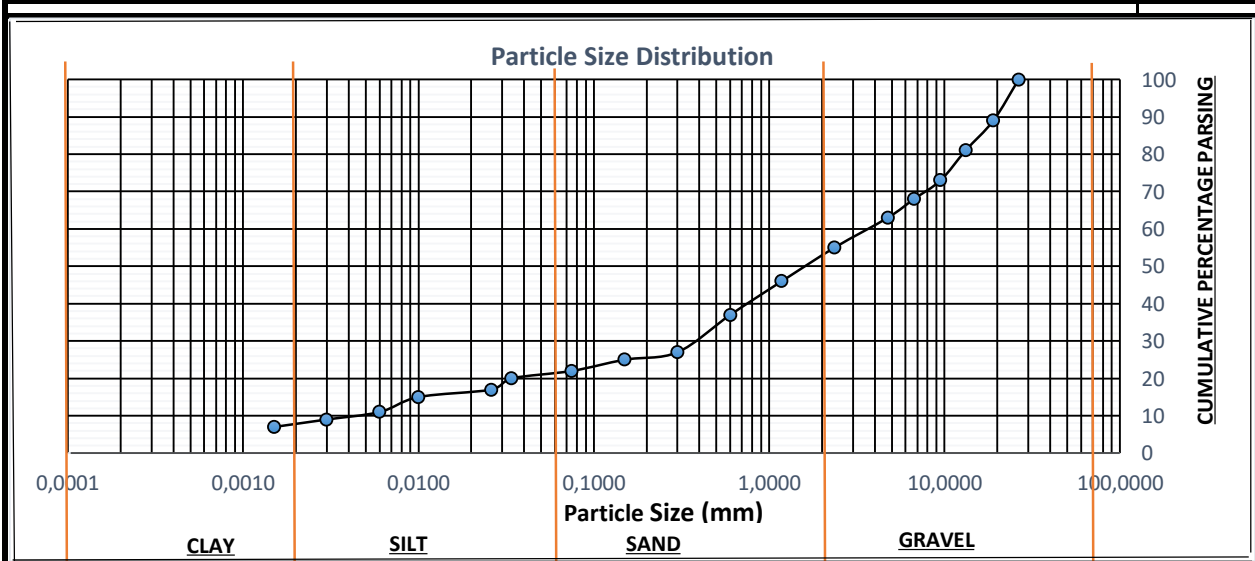


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Project:		PAULSHOEK		Date	
Client:		ICEBURG TRADING			
Sample/hole No.		PH33		Liquid Limit:	
Depth (mm)		190-300		14	
Position				Plasticity Index	
Description of Material		BROWN SILTY SAND + DECOMPOSED GRANITE + QUARTZ		Linear Shrinkage	
				1	
				Moisture contnt	
				1,1	
		GRADING MODULES		1,07	
Screen Analysis (% Passing)	Screen Size	% Passed		Potential Expansiveness	
	26,5000	100			
	19,0000	89			
	13,2000	81			
	9,5000	73			
	6,7000	68			
	4,7500	63			
	2,3600	55			
	1,1800	46			
	0,6000	37			
	0,3000	27			
	0,1500	25			
Mechanical Analysis	0,0750	22			
	0,0340	20			
	0,0260	17			
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TRIMAC SOILS LABORATORY cc REG. NO. 2008/113124/23

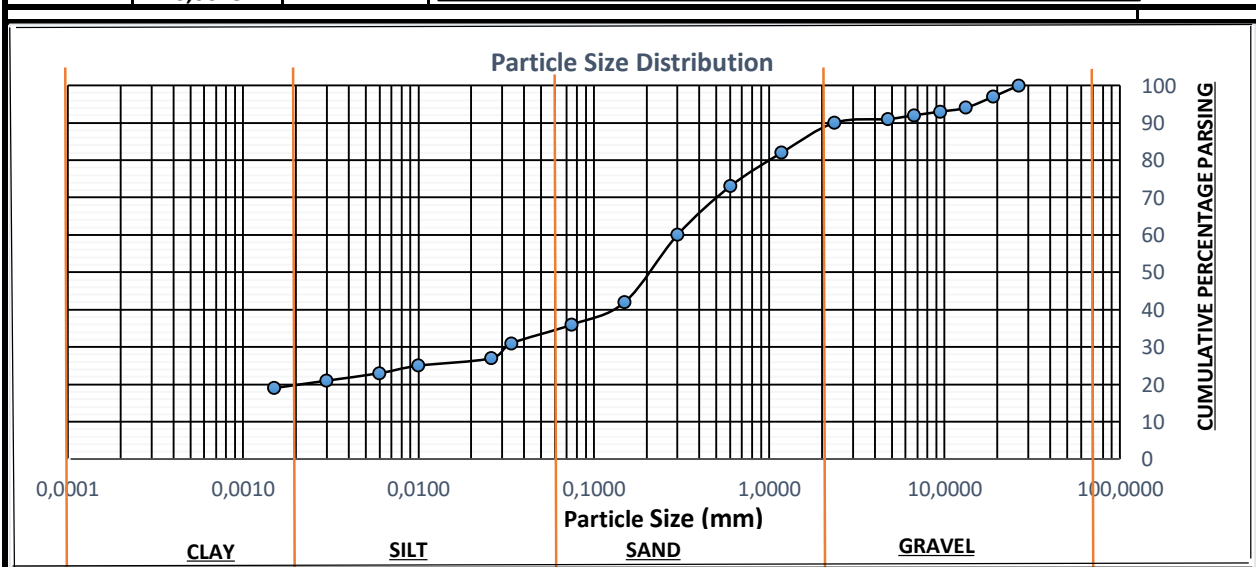
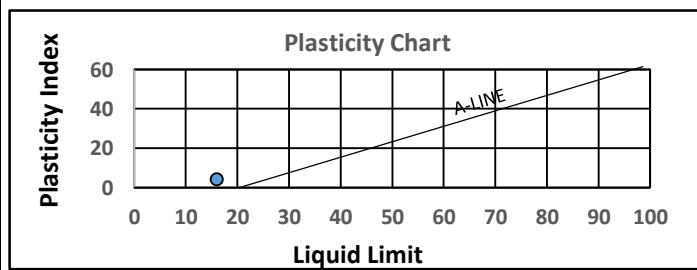
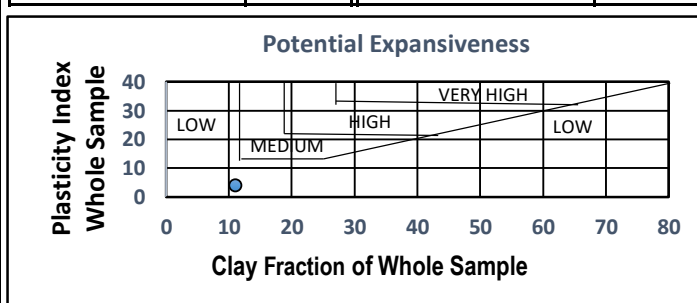
Unit 4, Zinfandel Road
Saxenburg Park 2
Blackheath
7580

Cell: 082 953 3110
Tel: 021 905 4790
Fax: 021 905 4791
e-mail: trimac@gmail.com

Project:	PAULSHOEK	Date	
Client:	ICEBURG TRADING		

Sample/No. No.	PH34	Liquid Limit:	16	% Clay:	11
Depth (mm)	270-440	Plasticity Index	4	% Silt	55
Position		Linear Shrinkage	2	% Sand	14
		Moisture contnt	4,2	% Gravel	20
		GRADING MODULES	1,07		
Description of Material	BROWN SANDY SILT + DECOMPOSED GRANITE				

Screen Analysis (% Passing)	Screen Size	% Passed
	26,5000	100
	19,0000	97
	13,2000	94
	9,5000	93
	6,7000	92
	4,7500	91
	2,3600	90
	1,1800	82
	0,6000	73
Mechanical Analysis	0,3000	60
	0,1500	42
	0,0750	36
	0,0340	31
	0,0260	27
	0,0100	25
	0,0060	23
	0,0030	21
	0,0015	19



Appendix D

GEOTECHNICAL CLASSIFICATION FOR URBAN
DEVELOPMENT(after Partridge, Wood and Brink
1993)GEOTECHNICAL CLASSIFICATION FOR URBAN
DEVELOPMENT(after Partridge, Wood and Brink 1993)

CONSTRAINT		Most Favourable (1)	Intermediate (2)	Least favourable (3)
A	Collapsible Soil	Any collapsible horizon or consecutive horizons totalling a depth of less than 750mm in thickness.*	Any collapsible horizon or consecutive horizons with a depth of more than 750mm in thickness.	A least favourable situation for this constraint does not occur.
B	Seepage	Permanent or perched water table more than 1,5m below ground surface	Permanent or perched water table less than 1,5m below ground surface.	Swamps and marshes
C	Active Soil	Low soil-heave potential predicted*	Moderate soil heave potential predicted.	High soil heave potential predicted.
D	Highly compressible soil	Low soil compressibility expected *	Moderate soil compressibility expected	High soil compressibility expected
E	Erodibility of soil	Low.	Intermediate	High
F	Difficulty of excavation to 1,5m depth	Scattered or occasional boulders less than 10% of the total volume	Rock or hardpan pedocretes between 10 and 40% of the total volume.	Rock or hardpan pedocretes more than 40% of the total volume.
G	Undermined ground	Undermining at a depth greater than 100m below surface (except where total extraction mining has not occurred).	Old undermined areas to a depth of 100m below surface where stope closure has ceased	Mining within less than 100m of surface or where total extraction mining has taken place.
H	Instability in areas of soluble rock	Possibly unstable	Probably unstable	Known sinkholes and dolines
I	Steep slopes	Between 2 and 6 degrees (all regions)	Slopes between 6 and 18 degrees and less than 2 degrees (Natal and Western Cape). Slopes between 6 and 12 degrees and less than 2 degrees (all other regions)	More than 18 degrees (Natal and Western Cape) More than 12 degrees (all other regions)
J	Areas of unstable natural slopes	Low risk	Intermediate risk	High risk (especially in areas subject to seismic activity)
K	Areas subject to seismic activity	10% probability of an event less than 100 cm/s ² within 50 years	Mining-induced seismic activity more than 100 cm/s ²	Natural seismic activity more than 100 cm/s ²
L	Areas subject to flooding	A “most favourable” situation for this constraint does not occur.	Areas adjacent to a known drainage channel or floodplain with slope less than 1%.	Areas within a known drainage channel or floodplain.

Appendix E

RESIDENTIAL SITE CLASS DESIGNATIONS

(NHBRC Home Building Manual, Revision 1, February
1999)

TYPICAL FOUNDATION MATERIAL	CHARACTER OF MATERIAL	EXPECTED RANGE OF TOTAL SOIL MOVEMENTS (mm)	ASSUMED DIFFERENTIAL MOVEMENT (% OF TOTAL)	SITE CLASS
Rock (excluding mud rocks which exhibit swelling to some depth)	STABLE	NEGLIGIBLE		R
Fine-grained soils with moderate to very high plasticity (clays, silty clays, clayey silts and sandy clays)	EXPANSIVE SOILS	<7,5 7,5 – 15 15 – 30 >30	50% 50% 50% 50%	H H1 H2 H3
Silty sands, sands, sandy and gravelly soils	COMPRESSIBLE AND POTENTIALLY COLLAPSIBLE SOILS	< 5 5 – 10 > 10	75% 75% 75%	C C1 C2
Fine-grained soils (clayey silts and clayey sands of low plasticity), sands, sandy and gravelly soils	COMPRESSIBLE SOIL	<10 15-20 > 20	50% 50% 50%	S S1 S2
Contaminated soils Controlled fill Dolomitic areas Land fill Marshy areas Mine waste fill Mining subsidence Reclaimed areas Very soft silty clays Uncontrolled fill	VARIABLE	VARIABLE		p

NOTES:

- The classifications C, H, R and S are not intended for dolomitic area sites unless specific investigations are carried out to assess the stability (risk of sinkholes and doline formation) of the dolomites. Where this risk is found to be acceptable, the site shall be designated as Class P (dolomitic areas).
- Site classes are based on the assumption that differential movements, experienced by single-storey residential buildings, expressed as a percentage of the total soil movements are equal to about 50% for soils that exhibit expansive or compressive characteristics and 75% for soils that exhibit both compressible and collapse characteristics. Where this assumption is incorrect or inappropriate, the total soil movements must be adjusted so that the resultant different movement implied by the table is equal to that which is expected in the field.
- In some instances, it may be more appropriate to use a composite description to describe a site more fully e.g. C1/H2 or S1 and/or H2. Composite Site Classes may lead to higher differential movements and result in design solutions appropriate to a higher range of differential movement e.g. a Class R/S1 site. Alternatively, a further site investigation may be necessary since the final design solution may depend on the location of the building on a particular site.
- Where it is not possible to provide a single site designation and a composite description is inappropriate, sites may be given multiple descriptions to indicate the range of possible conditions e.g. H-H1-H2 or C1-C2.
- Soft silts and clays usually exhibit high consolidation and low bearing characteristics. Structures founded on these horizons may experience high settlements and such sites should be designated as Class S1 or S2 as relevant and appropriate.
- Sites containing contaminated soils include those associated with reclaimed mine land, land down-slope of mine tailings and old land fills.
- Where a site is designated as Class P, full particulars relating to the founding conditions on the site must be provided.
- Where sites are designated as being Class P, the reason for such classification shall be placed in brackets immediately after the suffix - i.e. P(contaminated soils). Under certain circumstances, composite description may be more appropriate - e.g. P(dolomite areas)-C1. Certain fills may contain contaminants which present a health risk. The nature of such fill should be evaluated and should be clearly demarcated as such.

Appendix F

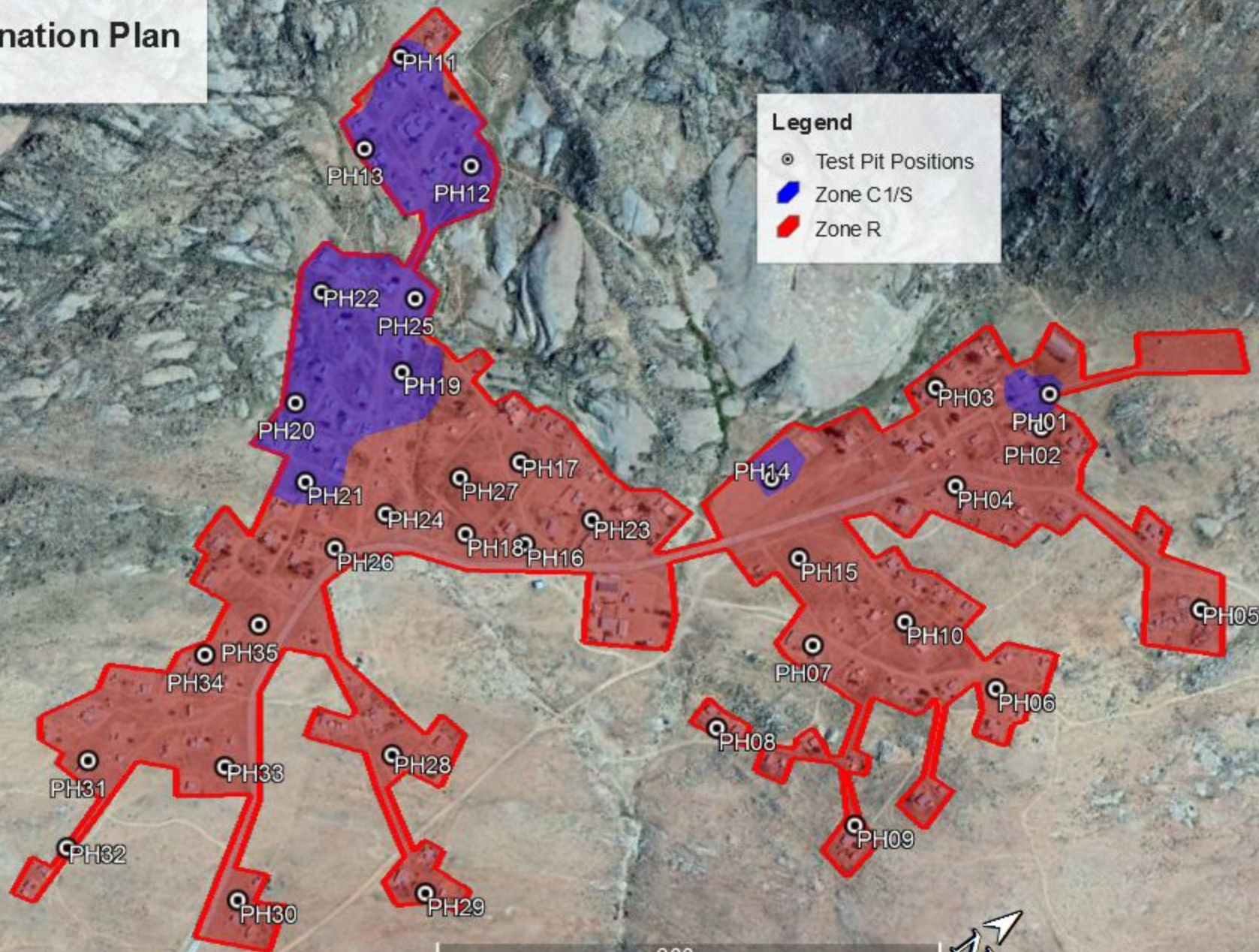
Site Zonation Plan

Geological Zonation Plan

Paulshoek

Legend

- Test Pit Positions
- Zone C 1/S
- Zone R



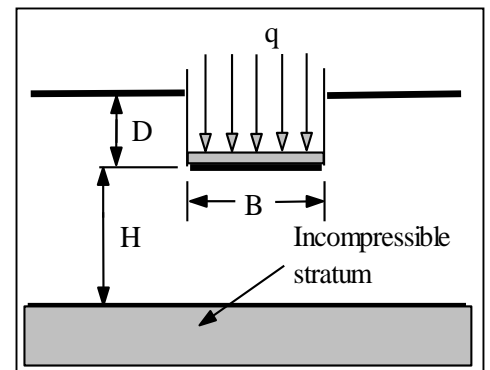
Appendix G

Settlement Calculations

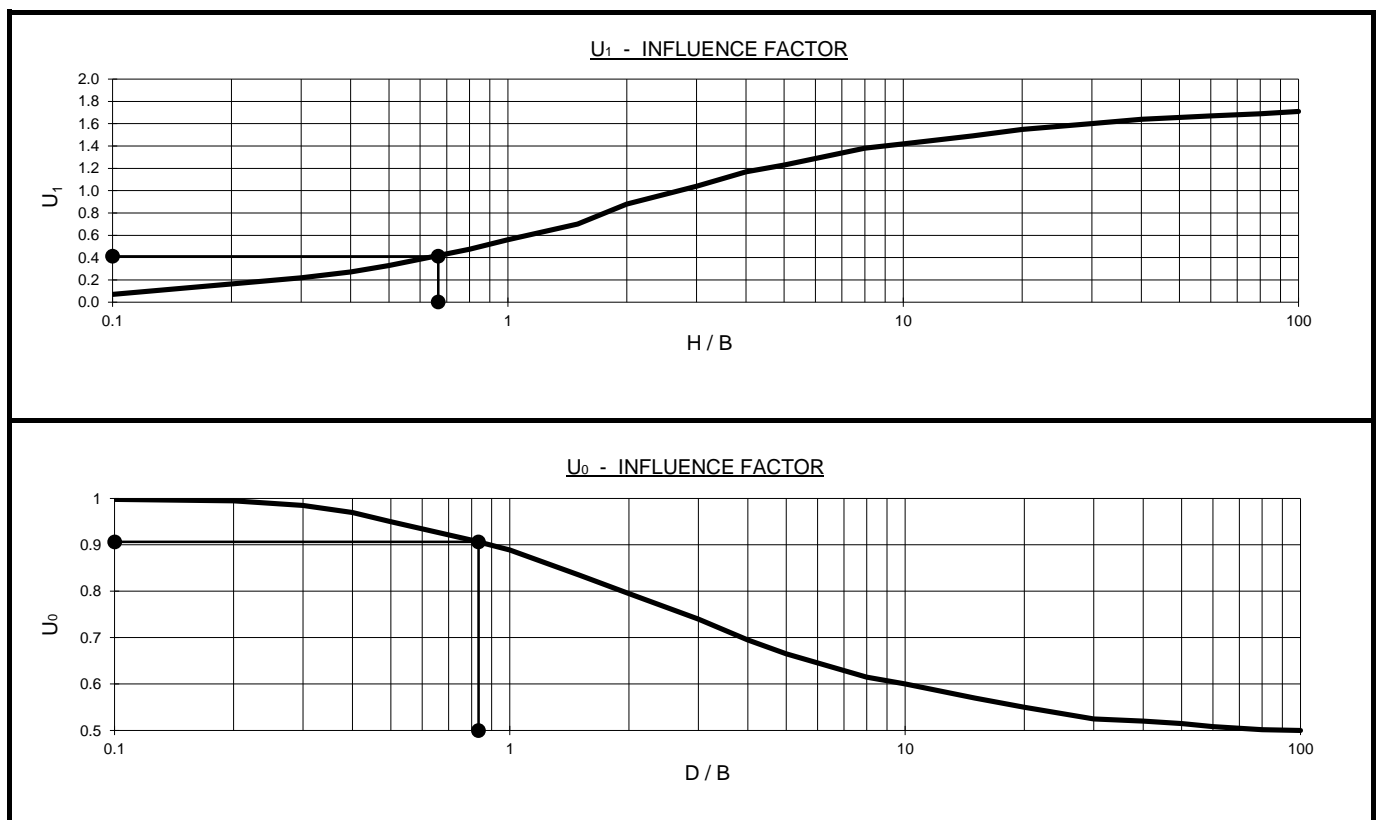
PREDICTION OF THE AVERAGE ELASTIC SETTLEMENT OF A STRIP FOOTING

PROJECT NAME	Paulshoek
PROJECT NUMBER	100077
PROBLEM DESCRIPTION	Settlement on in-situ material
LOCATION	Northern Cape

FOUNDING DEPTH (D)	0.5 m
WIDTH OF THE FOOTING (B)	0.6 m
THICKNESS OF COMPRESSIBLE STRATUM (H)	0.4 m
STIFFNESS OF COMPRESSIBLE STRATUM	7 MPa
FOUNDATION PRESSURE (q)	150 kPa
H / B	0.67
D / B	0.83
U ₁ - INFLUENCE FACTOR	0.41
U ₀ - INFLUENCE FACTOR	0.91
AVERAGE IMMEDIATE SETTLEMENT ***	5 mm

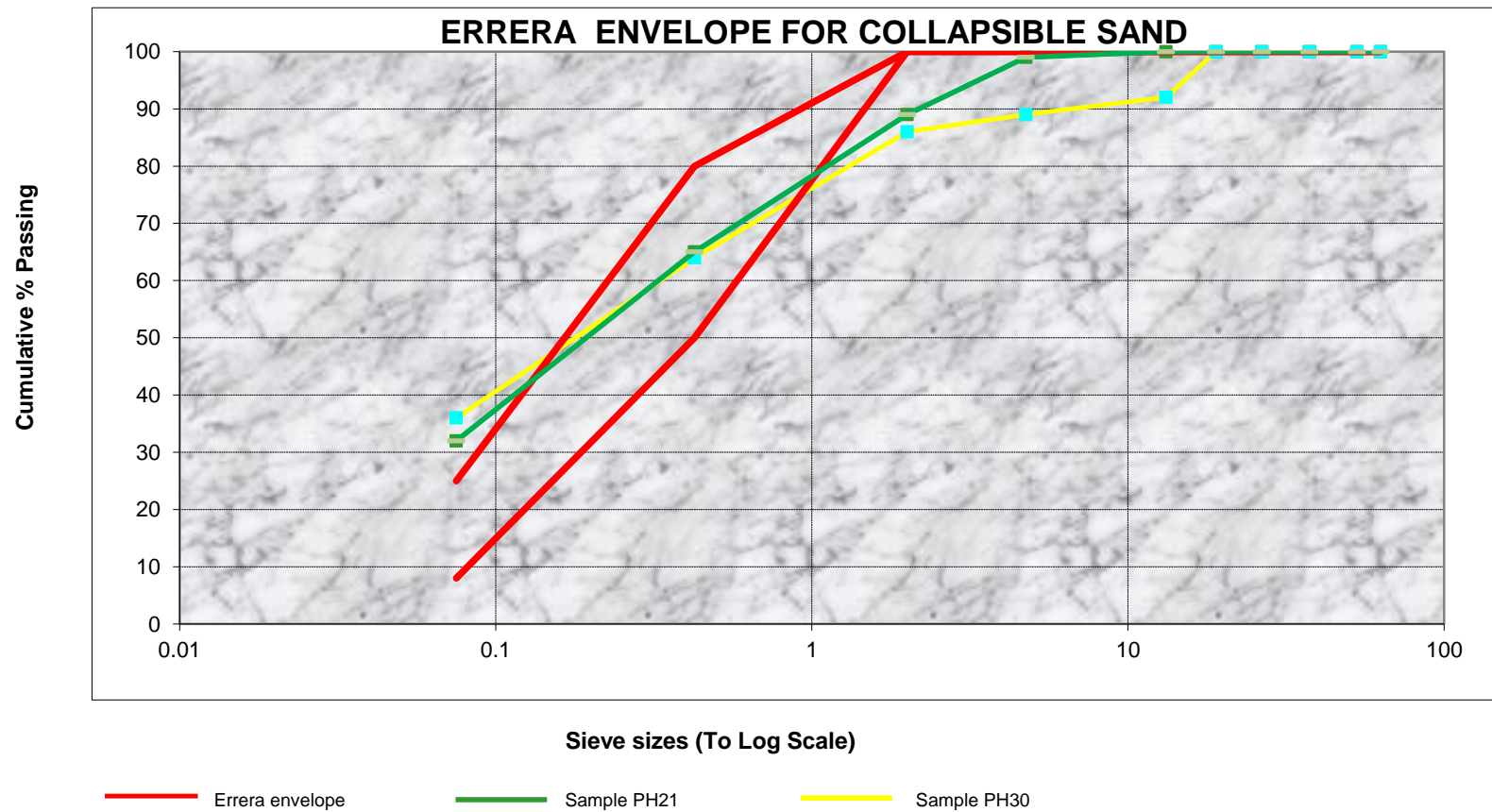


*** - After Janbu, Bjerrum and Kjaernsli for $L/D < 10$ only



Appendix H

Errera Envelope Graph



PART C 4:

SITE INFORMATION

- C 4.1 Scope**
- C 4.2 Subsoil Investigations, Borehole Records
and Test Results**
- C 4.3 Information about Piped and Other Services
Below the Surface of the Site**

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

C 4: SITE INFORMATION

C 4.1 SCOPE

The documentation included describes the site as at the time of tender to enable the Tenderer to price his tender and to decide upon his method of working and programming.

Work will be executed in a residential area and the Contractor will take **all** necessary steps to ensure the safety of people, animals and/or property.

C 4.2 SUBSOIL INVESTIGATIONS, BOREHOLE RECORDS AND TEST RESULTS

The material on site varies.(But Rock and Hard excavation is expected)

Trail holes were excavated. See C 3.1.3.

C 4.3 INFORMATION ABOUT PIPED AND OTHER SERVICES BELOW THE SURFACE OF THE SITE FOR CONTRACTS INVOLVING GROUND WORKS, AND ABOUT HOOK-UP AND BOUNDARY DETAILS FOR CONTRACTS WITH PLANT INTERFACES, IN ADDITION TO ANYTHING ABOUT THE PHYSICAL SITE WHICH IMPACTS UPON THE CONTRACT

All existing services that could be indicated by the Employer are shown on the Drawings. The Contractor will however investigate on site with the Engineer to identify any existing services that are not indicated on the Drawings before any work commences in an area.

VOLUME 2

DRAWINGS

4.7 Sewage lifts

Where a building is at such a level in relation to the nearest connecting sewer that a drainage installation serving such building cannot discharge into such connecting sewer by gravitation, a suitable appliance, so designed and located as not to be offensive or to be injurious or dangerous to health, shall be installed. Where required by the local authority, standby facilities, for the purpose of raising sewage to a level that will enable it to gravitate to such connecting sewer, shall also be provided.

NOTE The owner of the building is responsible for ensuring that the drainage discharges into the connecting sewer. The owner is also responsible for the operation and maintenance of such arrangements.

4.8 Conservancy tanks, septic tanks and french drains

4.8.1 Conservancy tanks shall, subject to the clearing services provided by the local authority in question,

- a) have a capacity as prescribed by such local authority,
- b) be constructed with a means of access for cleaning, and
- c) be provided with a means for clearing as prescribed by such local authority.

4.8.2 A conservancy tank or septic tank to be used on a site for the reception of sewage shall

- a) be so designed and constructed that it will be impervious to liquid,
- b) be so sited
 - 1) that there will be a ready means of access for the clearing of such tank,
 - 2) that it is not less than 2,0 m from the property boundary, or another structure,
- c) be so designed and sited that it is not likely to become a source of nuisance or a danger to health or the structural integrity of adjacent buildings,
- d) satisfy one of the following criteria:
 - 1) it shall be the subject of an Agrément certificate and be used within the scope, conditions and limitations prescribed in the certificate;
 - 2) it shall be rationally designed by a competent person (sanitation);
 - 3) it shall be designed and constructed in accordance with standard drawings issued by a local authority; or
 - 4) it shall be in accordance with the requirements of 4.8.3, 4.8.5, or 4.8.6, as relevant, and
- e) be vented at the building.

NOTE 1 The siting of conservancy tanks should be approved by the local authority. Generally tanks should be located near driveways to facilitate cleaning by a vacuum tanker.

NOTE 2 The function of the septic tank is to condition raw sewage, which has a clogging effect on soil, thereby reducing the effective absorption capacity of the subsoil. When the raw sewage enters the tank some of the suspended solids settle to the bottom of the tank and some collect at the surface, with the result that three distinct layers are formed in the tank: a layer of sludge at the bottom, a floating layer of scum on the top

and a relatively clear liquid layer in between. The organic solids and dissolved material in the sewage are attacked by bacteria so that the volume of scum and sludge is reduced by liquification and gasification. The only function of the final disposal system is to get rid of the effluent from the septic tank in a safe and inoffensive way.

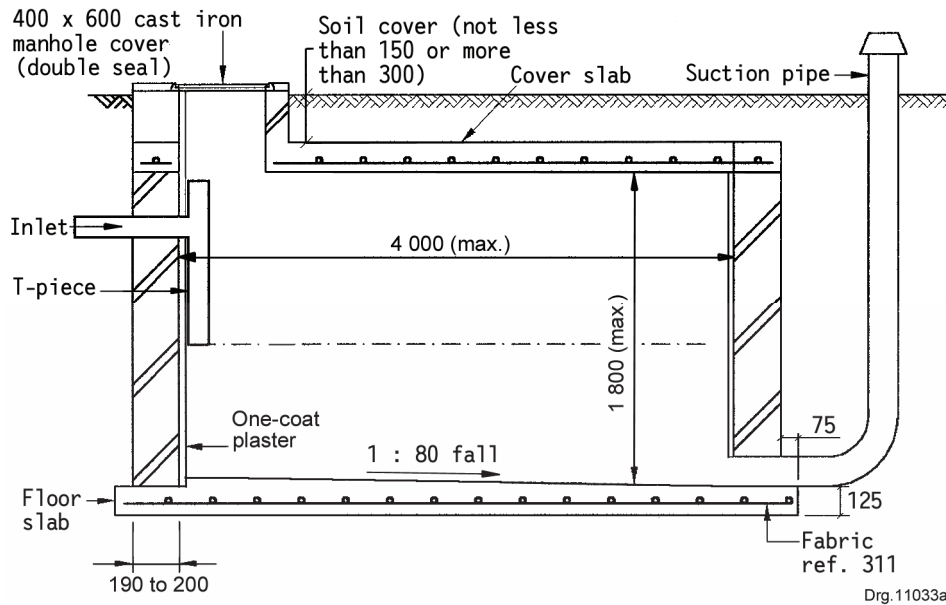
NOTE 3 Septic tanks and conservancy tanks should be constructed to prevent contamination of water supplies by leakage or spillage. Accordingly, such tanks should be impermeable to their contents and to sub-soil water.

NOTE 4 The vents should extend above the eaves level of the building.

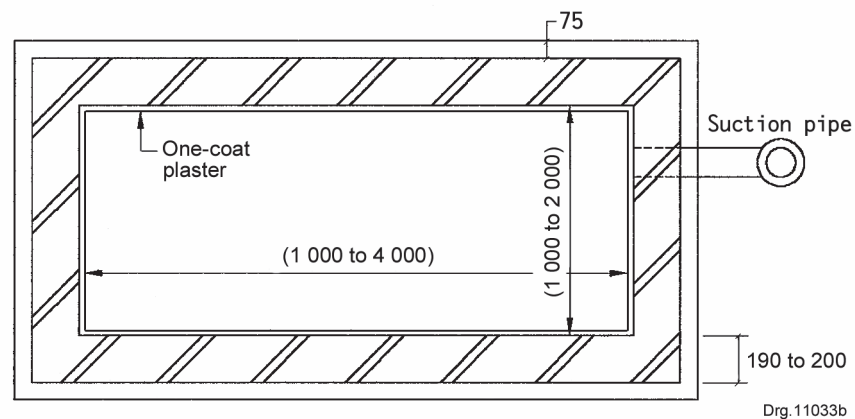
4.8.3 Masonry conservancy tanks shall be constructed in accordance with the details shown in figures 1 and 2 provided that they are constructed above the water table in accordance with the requirements of SANS 2001-CC1 or SANS 2001-CC2, SANS 2001-CM1 and SANS 2001-EM1, and shall comply with the following:

- a) solid and hollow concrete and calcium silicate masonry units shall have a nominal compressive strength of not less than 10,5 MPa and 7,0 MPa, respectively;
- b) burnt clay masonry units shall have a nominal compressive strength of not less than 14,0 MPa and a water absorption of not more than 12 %;
- c) the accuracy of the setting out shall be achieved by positive control measures;
- d) excavations shall be deepened locally, where necessary, to remove soft spots;
- e) hard spots, wherever practicable, shall be removed;
- f) excessive excavations shall be avoided;
- g) excavations shall be kept free of surface water;
- h) where the bottom of the excavation has dried out excessively due to exposure or it has softened due to rain or ground water, the excavation shall be rebottomed before concreting;
- i) backfill, that complies with the requirements of SANS 1200 DB, shall be maintained before compaction, so that a small quantity squeezed in the hand is firm, but does not show signs of moisture;
- j) fill shall be placed in uncompacted layers that do not exceed 100 mm in respect of hand compaction, and 150 mm in respect of compaction by mechanical means; and
- k) each uncompacted layer shall be well compacted before additional fill material is added.

Dimensions in millimetres



a) Section through conservancy tank



b) Plan of conservancy tank

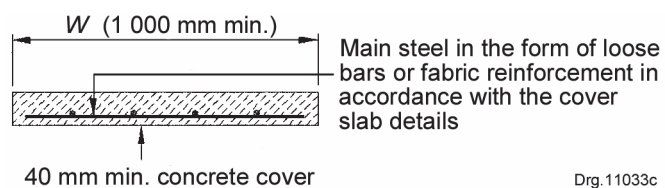
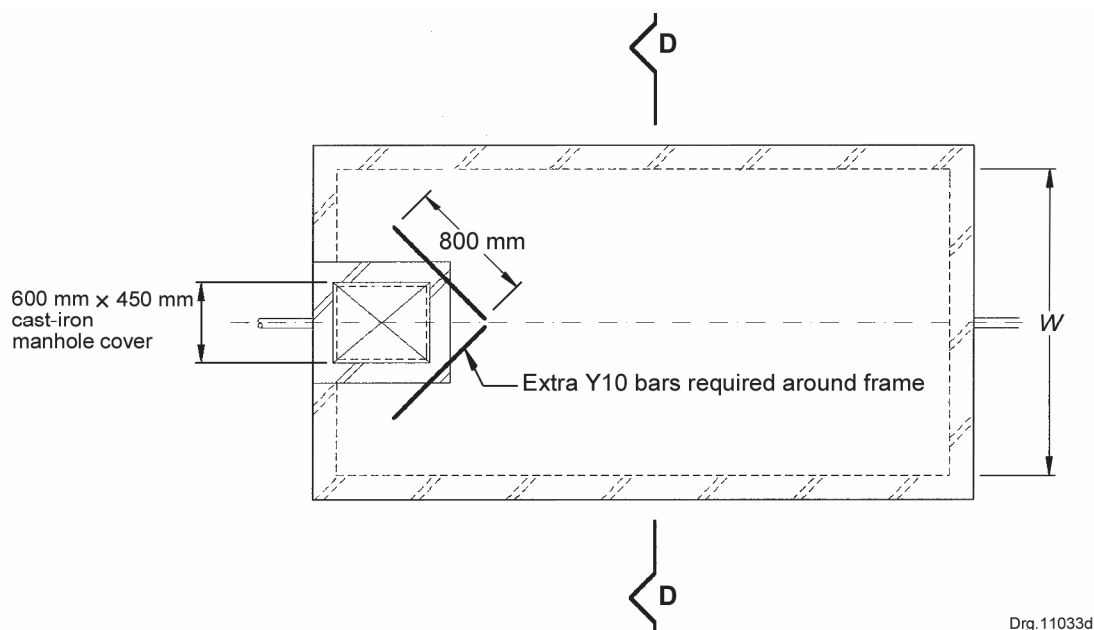
The suction pipe and coupling details shall be in accordance with local authority requirements.

Hollow units shall be filled with grade 10 infill concrete.

A competent person shall provide construction details for tanks founded below perched or permanent water tables.

NOTE See figure 2 for cover slab details.

Figure 1 — Masonry construction details for conservancy tanks

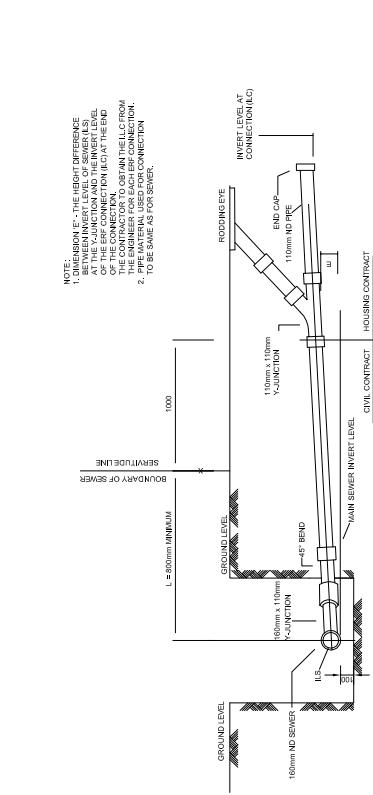


Section D – D
(Through cover slab of septic tank)

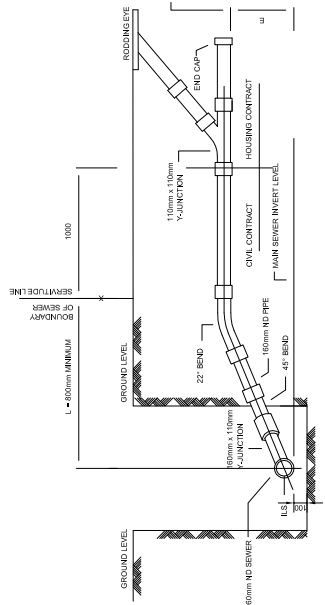
Cover slab details

W m	Slab thickness mm	Reinforcement		Fabric reinforcement (see SANS 1024)
		Short span (main)	Long span (distribution)	
$\geq 1,0$ but $\leq 1,7$	125	Y10 bars at 250 mm centres	Y10 bars at 300 mm centres	Ref. 359
$> 1,7$ but $\leq 2,0$	125	Y12 bars at 250 mm centres	Y12 bars at 300 mm centres	Ref. 617
W = internal width of conservancy tank				
NOTE The slab design is for a maximum of 300 mm soil cover.				

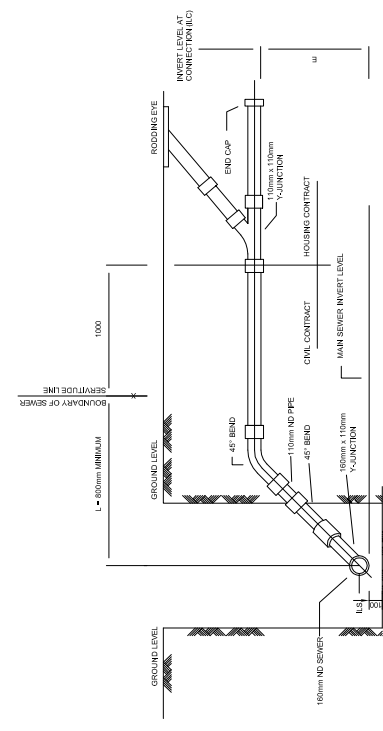
Figure 2 — Reinforced concrete cover slab details for conservancy tanks



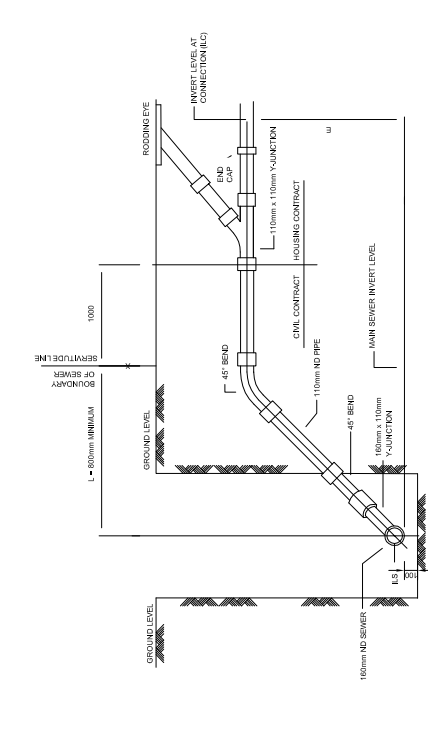
ERF CONNECTION DETAILS : TYPE 1 DETAILS FOR "E" VARYING BETWEEN 150mm AND 405mm



ERF CONNECTION DETAILS : TYPE 2 DETAILS FOR "E" VARYING BETWEEN 405mm AND 710mm



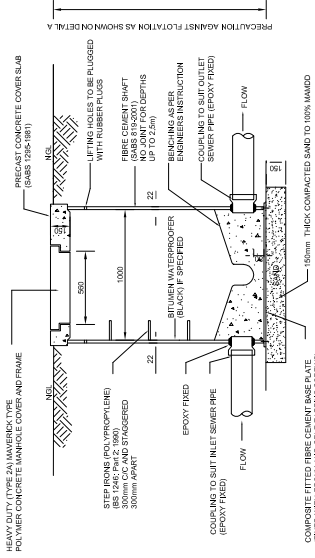
ERF CONNECTION DETAILS : TYPE 3 DETAILS FOR "E" VARYING BETWEEN 710 AND 1015mm



ERF CONNECTION DETAILS : TYPE 4 DETAILS FOR "E" VARYING BETWEEN 1015mm AND 1500mm

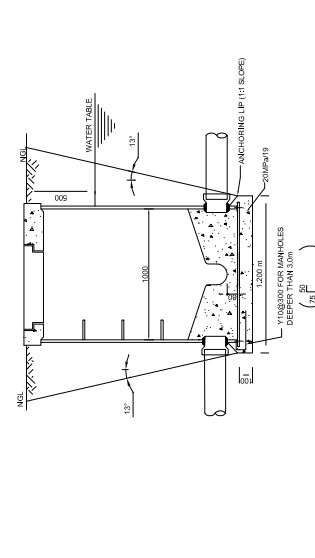
Dimension of Anchoring (mm B.S.)									
D	10	15	20	25	30	35	40	45	50
0-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20-25	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
25-30	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
30-35	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
35-40	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
40-45	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
45-50	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
50-55	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
55-60	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

- NOTE: 1. THE INVERT LEVELS OF THE MAIN SEWER AND THE BRANCH SEWER SHALL BE THE SAME AT THE POINT OF CONNECTION. 2. THE INVERT LEVEL OF THE BRANCH SEWER SHALL BE THE SAME AS THE INVERT LEVEL OF THE MAIN SEWER. 3. THE INVERT LEVEL OF THE BRANCH SEWER SHALL BE THE SAME AS THE INVERT LEVEL OF THE MAIN SEWER.

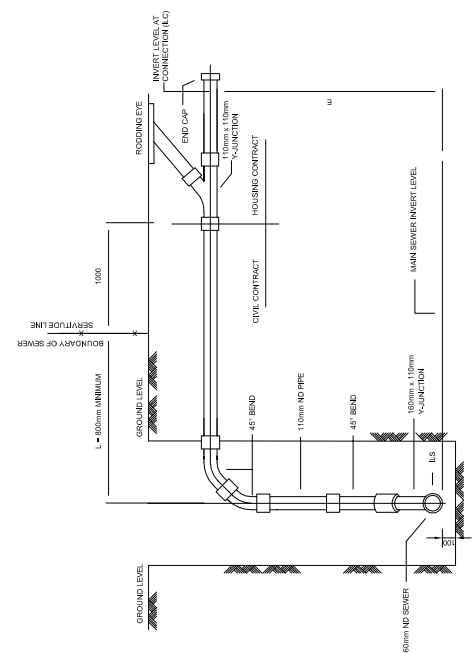


TYPICAL SECTION OF FIBRE CEMENT MANHOLE

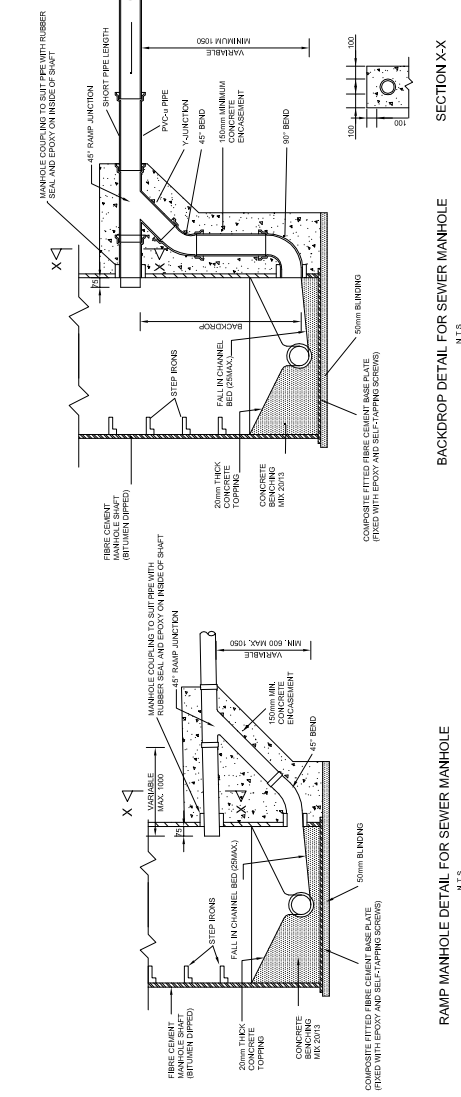
- NOTE: 1. THE INVERT LEVELS OF THE MAIN SEWER AND THE BRANCH SEWER SHALL BE THE SAME AT THE POINT OF CONNECTION. 2. THE INVERT LEVEL OF THE BRANCH SEWER SHALL BE THE SAME AS THE INVERT LEVEL OF THE MAIN SEWER. 3. THE INVERT LEVEL OF THE BRANCH SEWER SHALL BE THE SAME AS THE INVERT LEVEL OF THE MAIN SEWER.



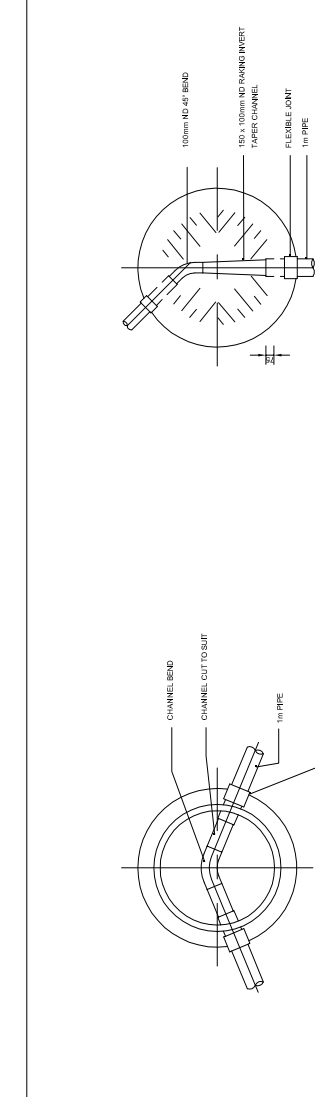
DETAIL A TYPICAL FLOTATION PRECAUTION FOR MANHOLES IN HIGH WATER TABLE AREAS



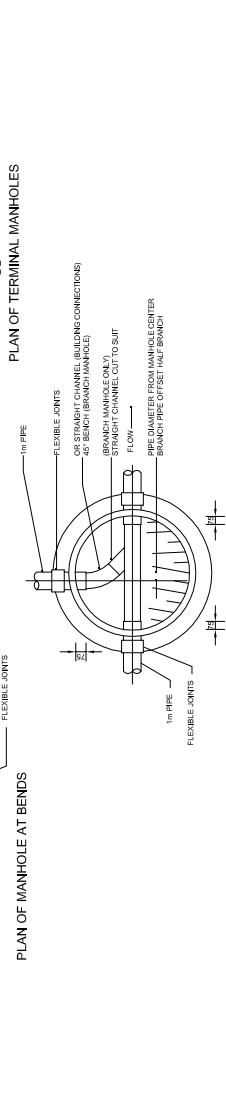
ERF CONNECTION DETAILS : TYPE 5 DETAILS FOR "E" GREATER THAN 1500



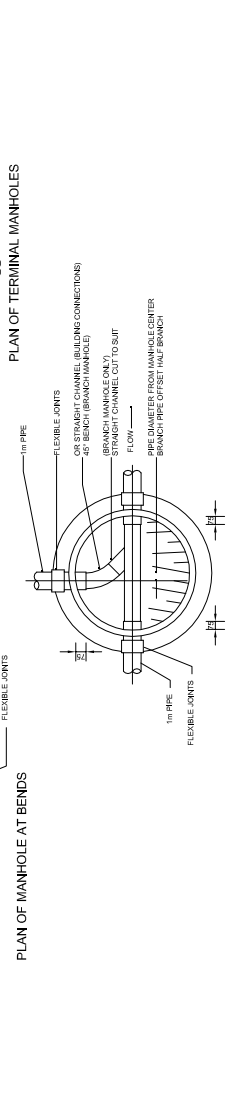
RAMP MANHOLE DETAIL FOR SEWER MANHOLE



BACKDROP DETAIL FOR SEWER MANHOLE



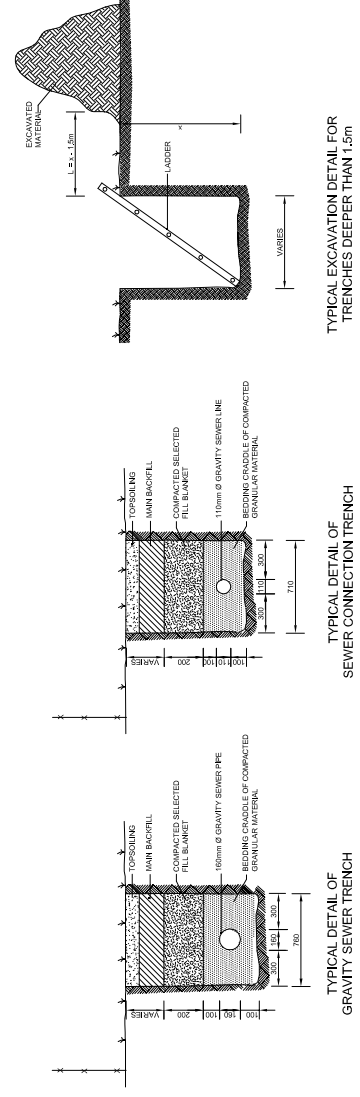
PLAN OF MANHOLE AT BENDS



PLAN OF TERMINAL MANHOLES

PLAN OF 90° BRANCH & BUILDING CONNECTION

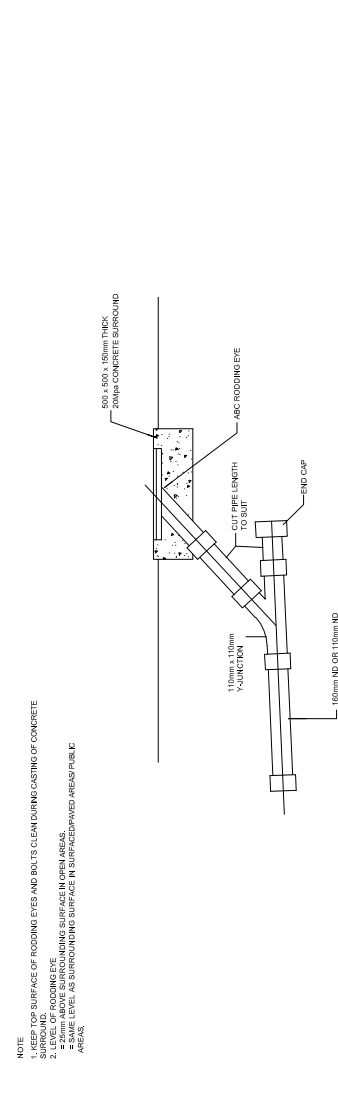
TYPICAL CHANNEL LAYOUTS MANHOLES



TYPICAL DETAIL OF GRAVITY SEWER TRENCH

TYPICAL DETAIL OF SEWER CONNECTION TRENCH

TYPICAL EXCAVATION DETAIL FOR TRENCHES DEEPER THAN 1.5m



TYPICAL DETAIL OF ROODING EYE

NOTES:

- ALL CONSTRUCTION MUST BE DONE IN ACCORDANCE WITH SANS 1201.

100 MILLIMETRES ON ORIGINAL DRAWING

BEFORE CONTRACT COMMENCES

AFTER CONTRACT HAS COMMENCED

DATE

AMENDMENTS

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COGHSTA

Department: Cooperative Governance, Human Settlements and Traditional Affairs

NORTHERN CAPE PROVINCE

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F : +27 (0) 83 831 2460
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PO Box 1178, Kimberley, 8300, South Africa

CESA

PROJECT

DRAWING DESCRIPTION

SEWER: DETAILS

DRAWING NO.

MV-SD-100

SCALE AS SHOWN A1

CHECKED

DATE OCT 2016

DRAWN RUDI BEESMAAR

**DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND
TRADITIONAL AFFAIRS OF THE NORTHERN CAPE**

TENDER NO. NC/20/2022

**KAMIESBERG 20: THE CONSTRUCTION OF 20 BNG HOUSES IN THE KAMIESBERG
MUNICIPALITY, 10 IN PAULSHOEK AND 10 IN SOEBATSFONTEIN**

DRAWINGS NOTES

The client accepts the fact that the contractor is a Professional builder and a master of his trade. It is accepted that he has visited the site and has familiarized himself with the local conditions before his tender was submitted, to eliminate any possible chance that a misunderstanding might arise at a later stage due to his limited knowledge of the site.

All work to be carried out strictly in accordance with the local authority building regulations and by-laws.

All materials to be SABS approved (stamped). Proof of which to be supplied (official certification) on request when applicable.

Workmanship to comply with the relevant National Building Regulations and Building Standards Act (Act 103 of 1977 as amended) and the NHBRC home building Manual.

Foundations to be inspected and approved by the engineer before concrete is poured. This also applies to services in the ground.

Wall plate inspection and timber truss fixing to be approved before walls are plastered.

Trade names specified are purely to indicate the quality and standard required. These can be substituted with any product matching the quality subject to the engineer's approval.

The contractor must check all the measurements and levels indicated on the drawings on site prior to the work commencing.

The setting out of the building work remains the sole responsibility of the contractor.

Do not scale the drawing. If uncertain about any of the dimensions, contact the Engineer.

Report any discrepancies between the drawings and/or contract documentation to the Engineer prior to the commencement of the work.

All the materials used must be of the best quality obtainable. The work must be done by skilled artisans and carried out in such a way as to ensure the highest quality workmanship obtainable in the local industry. The standard must at least be acceptable to members of the BIA and the M.B.A. Work not complying with afore said will be condemned and redone at the contractor's expense.

All the materials, fittings and equipment used on the project must be applied/installed strictly according to the manufacturer's specifications and guidelines.

Great care must be taken when installing the damp proof courses to ensure that no damaged material is used. All joints to have 150mm overlaps and to be taped.

It is important to note that the safety of any material brought onto the site and paid for by the client remains the responsibility of the Contractor even though ownership has been transferred to the Client.

All materials on site must be stored properly to minimize any damage that might occur. Planning the work sequence is of the utmost importance when ordering materials to ensure that they are not stored for too long a period.

Plastered wall surfaces must be given sufficient time to dry out before any paintwork commences.

The contractor must insist that all site instructions be noted in writing in the site instruction book to avoid any later disputes.

Contractor must familiarize himself with the 'Occupational Health and Safety act no. 85 of 1993' and fully comply with the contents thereof. The safety of the public, visitors and of the workers on site is of the utmost importance and remains his sole responsibility for the duration of the contract.

The site must be kept clean at all times and builders rubble removed from time to time Temporary toilet facilities must be provided by the contractor for the workers and kept clean at all times.

Contractor must not deviate from the plans and must notify the Engineer of any problems immediately as they arise.

This is to certify that I / we

of (Tenderer)

of (Address)

Telephone Number

Fax Number

on (Date)

have examined the drawing notes and its surroundings for which I/we am/are submitting this tender and have, so far as is practicable, familiarized myself/ourselves with all the information, risks, contingencies and other circumstances which may influence or affect my/our tender.

SIGNED ON BEHALF OF THE TENDERER:

SIGNED ON BEHALF OF THE CONSULTANT:

DATE: