

Corrigendum 2 dated March 02, 2020 to Tender Specification BHEL PSSR SCT 1887

Corrigendum 2 dated March 02, 2020 to Tender Specification BHEL PSSR SCT 1887 for the work of Civil and Architectural works of AHP, LHP & GHP at 5X800MW Yadadri Thermal Power Project, Veerlapalem village, Dameracherla Mandal, Nalgonda District, Telangana

A) Extension of due date of Offer Submission: -

Sl. No	Published In	Existing	Revised As
1)	Techno-Commercial Bid Volume I Book I Notice Inviting tender (NIT) Clause 1.0 Salient Features of NIT, SI No. v) Due Date & Time of Offer Submission and vide Corrigendum 1 dated February 24, 2020 to Tender Specification BHEL PSSR SCT 1887	Date: March 02, 2020, Time: 15.00 Hrs	Date: March 09, 2020, Time: 15.00 Hrs
2)	Techno-Commercial Bid Volume I Book I Notice Inviting tender (NIT) Clause 1.0 Salient Features of NIT, SI No.vi) Opening of Tender and vide Corrigendum 1 dated February 24, 2020 to Tender Specification BHEL PSSR SCT 1887	Date: March 02, 2020, Time: 15.30 Hrs	Date: March 09, 2020, Time: 15.30 Hrs

B) Some of the Bidders had asked queries in the published Tender Specification. The clarifications issued by BHEL are furnished herewith: -

Sl. No	Reference Clause	Existing Provision	Bidder's Query	BHEL Reply
1.	Permits	.	Bidder understands that all permits & clearance required for construction has been obtained by BHEL & any future clearance is not in Bidder's scope. Kindly confirm.	Bidder shall obtain all permits required to complete the scope of work.
2.	Geological report: Volume II bore logs, Trial pits, Field	Geotechnical report has details of bore holes upto 12.5m & a generalized profile of various soil/ rock layers encountered at site up to 20m.	Bidder requests the employer to kindly provide the bore hole details up to the maximum depth of excavation (approximately 20-30mts). Also kindly	Geo technical report attached for reference purpose. Maximum depth of excavation shall be approximately 23m.

Corrigendum 2 dated March 02, 2020 to Tender Specification BHEL PSSR SCT 1887

Sl. No	Reference Clause	Existing Provision	Bidder's Query	BHEL Reply
	permeability test Double packer and laboratory tests results		provide the rock strength parameters to access for excavation plan.	
3.	Excavation, Backfilling: Volume II B Section D Sub section D1 Earthwork in excavation and backfilling	5.2.0 Measurements a) The length, breadth and depth shall be measured correct to the nearest centimetre if measurement are taken by tape. d) In case of open footings (rafts/ pile caps/ drains/ cable trench/ pipe trench/ sub soil beams etc.) at a depth of more than 2.0 metre from ground level, around excavation of 75 cm beyond the outer dimension of footing (not the PCC dimension below footing) shall be measured for payment to make allowances for centering and shuttering.	The measurement clause mentioned in the technical specification is for shallow depth excavation works and applicable for building works wherein the depth of excavation is not more than 3mts. For deep excavation works, generally excavation plan with required side slope shall be prepared and work will be executed based on the same. Hence, bidder request to consider this as a special case and consider the measurement for the actual excavation quantity including required slope for payment purpose. Since backfilling works required selected/ approved material to meet the compaction requirement as per technical specification, bidder request to consider the actual volume of backfilling quantity including the slopes for payment purpose.	Following changes are made in mode of payment for excavation. a) For structures other than deep underground structures mentioned in point b, vendor will prepare excavation plan giving due provision for working space and necessary side slope as per soil condition which shall be certified by BHEL Engineer at site before execution. Payment shall be made based on this excavation drawing/ or as per actuals whichever is less b) For deep underground structures such as Wagon tippler, Track hopper, Tunnels, Underground Transfer point, Emergency Reclaim Hopper, Raw coal Emergency Reclaim Hopper BHEL will provide excavation drawing to vendor. Payment shall be made based on this excavation drawing/or as per

Corrigendum 2 dated March 02, 2020 to Tender Specification BHEL PSSR SCT 1887

Sl. No	Reference Clause	Existing Provision	Bidder's Query	BHEL Reply
				actuals whichever is less. Hence the technical Specification Section D for Earthwork and back filling shall be as per the specification attached with this Corrigendum and the existing clause for earthwork and backfilling is withdrawn.
4.	Volume II price bid		With respect to the technical specification/ special condition of works (Deep excavation works)/ current market rate, weightages provided for the following items are very much on the lower side: 1. Excavation works (Item no. 101, 103, 104, 105 & 106) 2. Reinforcement fabrication & fixing (Item no. 403) Hence, bidder requests the employer to revisit the estimate and provide with the revised estimate considering current schedule of rates/ market prices.	Tender condition prevails

Corrigendum 2 dated March 02, 2020 to Tender Specification BHEL PSSR SCT 1887

Sl. No	Reference Clause	Existing Provision	Bidder's Query	BHEL Reply
5.	Volume II price bid		With respect to the shapes of the hopper shutter/ depth of shuttering works/ technical specification, weightages provided for shuttering/ formwork item are very much on the lower side compare to the actual execution of the works. (Item no. 300, 301, ISG301, 302, ISG303, 304, 305, A305) Hence, bidder requests the employer to revisit the estimate and provide with the revised estimate considering current schedule of rates/ market prices.	Tender condition prevails
6.	River sand		Bidder requests the employer to kindly allow the usage of M-sand for construction works, since the sand mining is being operated by a single agency with special approvals, which may lead to create the monopoly situation after award of contract and create huge demand ahead to delay the project process.	Tender condition prevails
7.	Ref No.: ISG 1850 of Part C of Bill of Quantities (Page No:64 of pdf file) of SCT 1887 VOLUME II PRICE BID	Providing and laying coal stock yard area as per the following specification: The ground surface in the coal stock yard area shall be leveled, graded and compacted and provided with proper slopes for drainage. The prepared sub-grade shall be laid over with layer of 150mm thick murrum duly compacted. The compacted earth shall be treated with a mixture of fly ash and lime of 50mm thickness in order to enhance imperviousness. The coal stock yard area shall be as follows: i. 300mm thick compacted soil (Subgrade layer). ii. 150mm thick murrum.	Whether soil to be used for preparation of subgrade will be available in this project area or to be sourced from outside (i.e. Borrowed soil). Coal Stock yard will be as follows by the contractor i. 300mm thick compacted soil (Subgrade layer). ii. 150mm thick murrum. iii. 50mm thick Fly ash & lime The above finished surface will be used for dead stock yard by others	1. Soil to be used for preparation of subgrade to be sourced from outside (i.e. Borrowed soil) 2. Dead coal of 200 mm thickness should be brought from outside and laid as the top layer Quoted rate shall be inclusive of all cost towards supply of murrum, fly ash & lime, dead coal, etc., all materials, labour, compaction to required density to make an impervious layer, tools & tackles etc

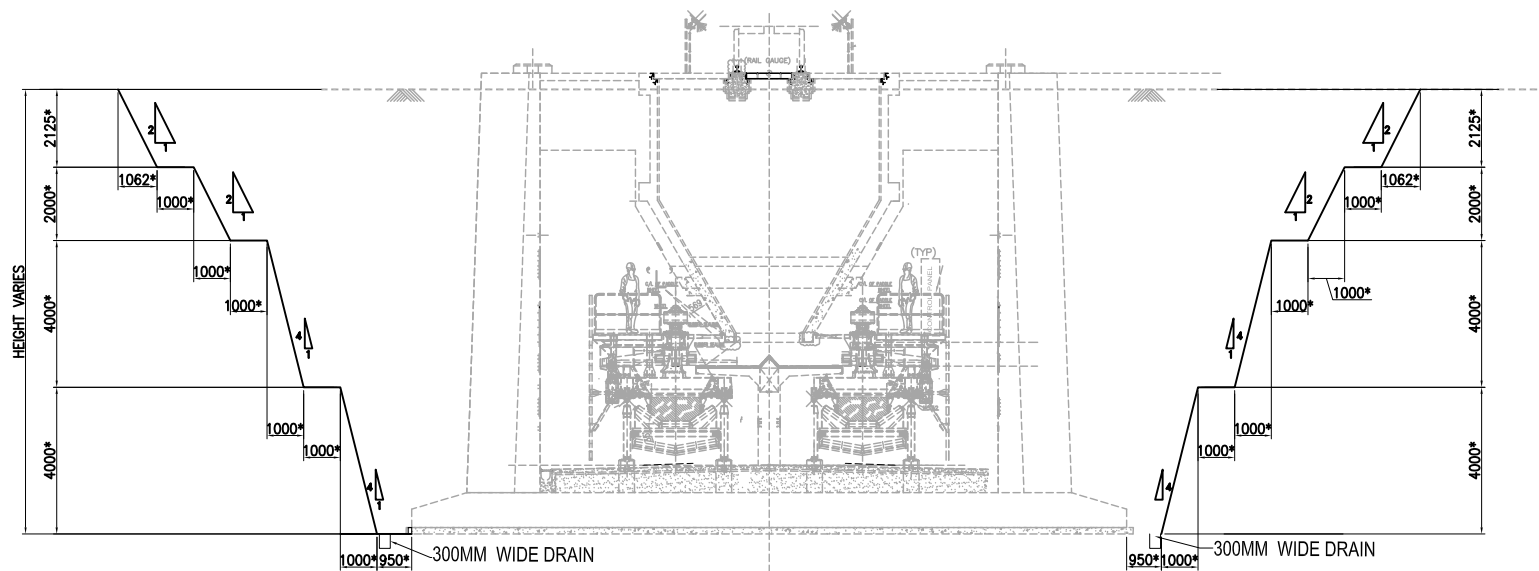
Corrigendum 2 dated March 02, 2020 to Tender Specification BHEL PSSR SCT 1887

Sl. No	Reference Clause	Existing Provision	Bidder's Query	BHEL Reply
		iii. 50mm thick Fly ash & lime iv. Dead coal stock Quoted rate shall be inclusive of all cost towards supply of moorum, fly ash & lime, etc., all materials, labour, compaction to required density to make an impervious layer, tools & tackles etc complete as per the direction of engineer-in-charge. (Levelling, grading and compacting to proper slope for drainage shall be paid separately)		complete as per the direction of engineer-in-charge.

ALL OTHER CONDITIONS REMAIN UNCHANGED.

BIDDERS ARE REQUESTED TO CONSIDER THIS CORRIGENDUM AS PART OF TENDER SPECIFICATION AND QUOTE ACCORDINGLY.

-Sd-
Vinod Jaseja
Sr. Dy. Gen. Manager / SCT



TYPICAL EXCAVATION DRAWING FOR DEEP UNDERGROUND STRUCTURE

* DIMENSIONS INDICATED ARE TENTATIVE TO ACCESS NATURE OF EXCAVATION WORK.

NOTES:

1. SAFETY SHALL BE ENSURED DURING EXCAVATION AND WATER TABLE SHALL BE MAINTAINED 0.5M BELOW THE EXCAVATION LEVEL BY PROPER DEWATERING ARRANGEMENT.
2. THE SURFACE NEEDS TO BE FREE FROM ACCUMULATION OF GROUND WATER BEFORE START OF RCC STRUCTURE. TO ACHIEVE THIS, ADEQUATE SUMP PIT MUST BE CONSTRUCTED WITH PUMPING ARRANGEMENT FOR DEWATERING. NUMBER OF PITS MAY BE INCREASED DEPENDING UPON THE GROUND WATER FLOW.
3. SURFACE SLOPE AND SMALL SAUCER DRAINS SHALL BE MADE IN THE CATCHMENT AREA TO FACILITATE THE GROUND WATER FLOW TOWARDS PIT.
4. SUBMERSIBLE PUMP OF SUITABLE CAPACITY SHALL BE PLACED INSIDE THE PITS.
5. CONTINUOUS MONITORING SHALL BE DONE DURING EXCAVATION AND IF ANY SIGN OF COLLAPSE/SLIDING OF SIDE SLOPE OF PIT IS OBSERVED, THE SLOPE OF EXCAVATION SHALL BE REVIEWED & NECESSARY CHANGE IN EXCAVATION PROFILE WILL BE INTIMATED TO THE EXECUTION AGENCY.
6. DEWATERING PROCESS SHALL BE CONTINUED TILL THE CONSTRUCTION OF PROPOSED UNDERGROUND STRUCTURE AND RELEASING THE AREA FOR BACKFILLING.



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION – D1

REV.NO. 00 DATE 02/12/2015

SHEET 1 OF 21

SECTION - D

SUB-SECTION – D1

EARTHWORK IN EXCAVATION AND BACKFILLING

SPECIFICATION NO. PE-TS-999-600-C001



Bharat Heavy Electricals Limited
Project Engineering Management
PPEI Building, Power Sector,
Plot No. 25, Sector 16A,
Noida (U.P.)-201301



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 2 OF 21

C O N T E N T

CLAUSE NO.	DESCRIPTION	SHEET NO.
1.00.0	SCOPE	3
2.00.00	GENERAL	3
3.00.00	EXECUTION	6
4.00.00	TESTING AND ACCEPTANCE CRITERIA	19
5.00.00	RATES AND MEASUREMENTS	19
6.00.00	INFORMATION TO BE SUBMITTED BY THE BIDDER	20



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 3 OF 21

**STANDARD TECHNICAL SPECIFICATION FOR EARTHWORK IN
EXCAVATION AND BACKFILLING**

1.0.0 SCOPE

This specification covers earth work excavation in all types of soil, soft rock and hard rock including setting out, clearing and grubbing, shoring, dewatering, back filling around foundations/pipelines to grade, watering, compaction of fills, testing, approaches, disposal of surplus earth, protective fencing, lighting etc relevant to the structures and locations covered under this contract.

2.0.0 GENERAL

2.1.0 Work to be provided for by the Contractor

The work to be provided for by the contractor unless specified otherwise shall include but not be limited to the following.

a) Supplying and providing all labour, supervision services, earth moving machineries, surveying instruments including facilities as required under statutory labour regulations, materials, scaffolds, equipment, tools and plants, transportation, etc. required for the work.

b) Preparation and submission of working drawings showing the approaches, slopes, berms, shoring, sumps for dewatering including drainage, space for temporary stacking of soils, disposal area, fencing etc and all other details as may be required by the engineer.

c) To carry tests and submit to the Engineer, test results of fill materials and degree of soil compaction of fill whenever required by the Engineer to assess the quality of fill.

d) Design, construction and maintenance of Magazine of proper capacity for storage of explosives for blasting work and removal of the same after completion of the work etc. including procurement of necessary licenses from proper authorities.

2.2.0 Work to be provided by others

No work under this specification will be provided by any agency other than the contractor unless specifically mentioned elsewhere in the contract.



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 4 OF 21

2.3.0 Codes and Standards

All works shall be carried out as per this specification and shall conform to the latest revision and/or replacements of the following or any other Indian Standard (IS) Codes unless specified otherwise.

IS-1200	Method of measurement of building and civil engineering works, Part-I: Earthwork
IS-2720	Method of test for soils (Relevant parts)
IS-3764	Excavation work - Code of safety
IS-4081	Safety code for blasting and related drilling operations
IS-4701	Indian Standard Code of Practice for earthwork on Canals
IS:6922	Criteria for safety and design of structures subject to underground blasts

In case of conflict between this specification and those (IS Codes) referred to herein, the former shall prevail. In case any particular aspect of work is not covered specifically by this specification/IS Codes, any other standard practice as may be specified by the engineer shall be followed.

2.4.0 Conformity with Designs

The contractor shall carry out the work as per the approved drawings, specification and as directed by the engineer.

2.5.0 Materials

2.5.1 General

All materials required for the work shall be of the best commercial variety and approved by the engineer.

2.5.2 Material for Excavation

For the purpose of identifying the various strata encountered during the course of excavation, refer clause no. 3.4.0 for the classification of earth strata.

2.5.3 Material for Filling

Material to be used for back filling shall be free from vegetations, roots, salts, rubbish, lumps, organic matter and any other harmful chemicals etc and shall be got approved by the engineer. Normally excavated earth shall be used for back filling. In case such earth contains deleterious salts, the same shall not be used. All clods of earth shall be broken or removed. Where the excavated material is mostly rock and if filling with the same is permitted by the engineer in writing, then the filling with rock shall be done in the following manner. The boulders shall be broken into pieces not exceeding 150mm size



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 5 OF 21

in any direction and mixed with fine materials consisting of decomposed rock, moorum or any approved earth to fill the voids as far as possible and the mixture shall then be used for filling.

In case the earth required for backfilling is over and above the earth available from the compulsory excavations within the project area, then borrow areas for obtaining suitable fill material shall be arranged by the contractor himself from outside the plant boundary limits and all expenses including royalties, taxes, duties etc shall be borne by him. The selected earth from the borrow areas shall be got approved by the engineer. The borrowed material shall be free from roots, vegetations, decayed organic matter, harmful salts and chemicals, free from lumps and clods etc. The contractor shall obtain and submit necessary clearances/permissions from the concerned authorities for the borrow areas/materials acquired to the engineer.

If specified, the back filling shall be done with clean well graded sand from approved quarries free from harmful and deleterious materials.

2.6.0 Quality Control

All works shall conform to the lines, levels, grades, cross sections and dimensions shown on the approved drawings and/or as directed by the engineer. The contractor shall establish and maintain quality control for the various aspects of the work, method of construction, materials and equipments used etc. The quality control operation shall include but not be limited to the following.

Sl. No.	Activity	Check
1	Lines, levels & grades	a) By periodic surveys b) By establishing markers, boards etc
2	Back filling	(a) On quality of fill material (b) On moisture content of back fill (c) On degree of compaction achieved

2.7.0 Information regarding site conditions

Surface and Sub-surface data regarding the nature of soil, rock, sub-soil water etc. shown on drawing or otherwise furnished to the Contractor shall be taken as a guidance only and variation therefrom shall not affect the terms of the contract. The Contractor must satisfy himself regarding the character and volume of all work under this contract and expected surface, sub-surface and / or sub-soil water to be encountered. He must also satisfy himself about the general conditions of site and ascertain the existing and future construction likely to come up during the execution of the contract so that he may evolve a realistic programme of execution.



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 6 OF 21

3.0.0 EXECUTION

The contractor shall prepare and submit the detailed drawings/schemes for excavation and back filling works as proposed to be executed by him showing the dimensions as per the construction drawings and specification adding his proposal of slopes, shoring, approaches, dewatering, drainage, berms etc. for the approval of engineer.

3.1.0 Setting out

On receiving the approval from the engineer with modifications and corrections if any, the contractor shall set out the work from the control points furnished by the engineer and fix permanent points and markers for ease of periodic checking as the work proceeds. These permanent points and markers shall be fixed at the interval as prescribed by the engineer and shall be got checked and certified by the engineer after whom the contractor shall proceed with the work. It should be noted that this checking by the engineer prior to the start of the work will in no way relieve the contractor of his responsibility of carrying out the work to true lines, levels and grades as per the drawings and specification. If any errors are noticed in the contractor's work at any stage, the same shall be rectified by the contractor at his own risk and cost.

3.2.0 Initial Levels

Initial levels of the ground either in a definite grid pattern or as directed by the Engineer will be taken by the Contractor jointly with the Engineer over the original ground prior to starting actual excavation work and after setting out. These initial levels will be used for preparing cross-sections for volume measurement or for cross-checking the depths obtained from tape measurements. All records of levels, measurements etc. and also any drawing, cross-section etc. made therefrom, shall be jointly signed by the authorised representative of the contractor and the Engineer before the commencement of work and they shall form the basis of all payments in future.

3.3.0 Clearing and Grubbing

The area to be excavated shall be cleared out of fences, trees, logs, stumps, bushes, vegetation, rubbish, slush etc. Trees upto 300mm girth shall be uprooted. Trees above 300mm girth to be cut shall be approved by the engineer and marked. Cutting of trees shall include removing roots as well. After the tree is cut and roots taken out, the pot holes formed shall be filled with good earth in 250mm layers and compacted unless directed otherwise by the engineer. The trees shall be cut in to suitable pieces as instructed by the engineer. Before earthwork is started, all the spoils, unserviceable materials and rubbish shall be burnt or removed and disposed to the approved disposal



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 7 OF 21

area(s) as specified by the engineer. Useful materials, saleable timber, fire woods etc shall be the property of the owner and shall be stacked properly at the worksite in a manner as directed by the engineer.

3.4.0

Classification

All earthwork shall be classified under the following categories:

No distinction will be made whether the material is dry or wet.

a) Ordinary Soil

This shall comprise vegetable or organic soil, turf, sand, silt, loam, clay, mud, peat, black cotton soil, soft shale or loose moorum, a mixture of these and similar material which yields to the ordinary application of pick and shovel, rake or other ordinary digging implement. Removal of gravel or any other nodular material having diameter in any one direction not exceeding 75 mm occurring in such strata shall be deemed to be covered under this category.

b) Hard Soil

This shall include :

- i) stiff heavy clay, hard shale, or compact moorum requiring grafting tool or pick or both and shovel, closely applied ;
- ii) gravel and cobble stone having maximum diameter in any one direction between 75 and 300 mm ;
- iii) soling of roads, paths, etc., and hard core ;
- iv) macadam surfaces such as water bound, and bitumen/tar bound;
- v) lime concrete, stone masonry in lime mortar and brick work in lime/cement mortar, below ground level ;
- vi) soft conglomerate, where the stones may be detached from the matrix with picks ; and
- vii) generally any material which requires the close application of picks, or scarifiers to loosen and not affording resistance to digging greater than the hardest of any soil mentioned in (i) and (vi) above.

c) Soft and Decomposed Rock

This shall include :

- i) limestone, sandstone, laterite, hard conglomerate or other soft or disintegrated rock which may be quarried or split with crowbars ;
- ii) unreinforced cement concrete which may be broken up with crowbars or picks and stone masonry in cement mortar below ground level ;
- iii) boulders which do not require blasting having maximum diameter in any direction of more than 300 mm, found lying loose on the surface or embedded in river bed, soil, talus, slope wash and terrace material of dissimilar origin ; and



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 8 OF 21

iv) any rock which in dry state may be hard, requiring blasting, but which when wet becomes soft and manageable by means other than blasting.

d) Hard Rock (requiring blasting)

This shall include :

- i) any rock or cement concrete for the excavation of which the use of mechanical plant or blasting is required ;
- ii) reinforced cement concrete (reinforcement cut through but not separated from the concrete) below ground level; and
- iii) boulders requiring blasting.

e) Hard Rock (blasting prohibited)

Hard rock requiring blasting as described under (d) but where blasting is prohibited for any reason and excavation has to be carried out by chiselling, wedging or any other agreed method.

In case of any dispute regarding classification, the decision of the Engineer shall be final.

3.5.0 Excavation for Foundations and Trenches

3.5.1 General

All excavation shall be done to the minimum dimensions as required for the safety and working facility. In each individual case, the contractor shall obtain prior approval of the engineer for the method he proposes to adopt for the excavation including dimensions, side slopes, shoring, dewatering, drainage and disposal etc. This approval however shall not in any way make the engineer responsible for any consequent loss or damage. The excavation must be carried out in the most expeditious and efficient manner. All excavation in open cuts shall be made true to the line, slopes and grades as shown on the drawings and/or as directed by the engineer. No material shall project within the dimension of minimum excavation lines marked. Boulders (if any) projecting out of the excavated surfaces shall be removed if they are likely to be a hindrance to the work/workers in the opinion of the engineer.

Method of excavation shall in every case be subject to the approval of the engineer. The contractor shall ensure the stability and safety of the excavation, adjacent structures, services and works etc including the safety of the workmen. If any slip occurs, the contractor shall remove all the slipped materials from the excavated pit without any extra cost to the engineer/owner. All loose boulders and semi detached rocks which are not inside but so close to the area to be excavated and may liable to fall or otherwise endanger the workmen, equipment of the work etc during excavation in the opinion of the engineer shall be stripped off and removed away from the area of excavation.



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 9 OF 21

The method to be used for removal shall be such that it should not shatter or render unstable or unsafe the portion which was originally sound and safe. In case any material not required to be removed initially but later to become loose or unstable in the opinion of the engineer shall also be promptly and satisfactorily removed.

The rough excavation may be carried out upto a maximum depth of 150 mm above the final level. The balance shall be excavated with special care. If directed by the engineer, soft and undesirable spots shall be removed even below the final level. The extra excavation shall be filled up as instructed by the engineer. If the excavation (in all types of soil and rock) is done to a depth greater than that shown on the drawing or as directed by the engineer, the excess depth up to the required level shall be filled with cement concrete not leaner than 1:4:8 or richer as directed by the engineer at the own risk and cost of the contractor. In case where excavation in soil, soft rock (including weathered rock) and hard rock are involved, the excavation in each stratum shall be carried out separately with the approved methodology and as per the instructions of the engineer.

All excavated materials such as rock, boulders, bricks, dismantled concrete blocks etc shall be the property of the owner and shall be stacked separately as directed by the engineer. All gold, silver, oil, minerals, archeological and other findings of importance, trees cut or other materials of any description and all precious stones, coins, treasures, relics, antiquities and other similar things which may be found in or upon the site shall be the property of the owner and the contractor shall duly preserve the same to the satisfaction of the engineer/owner. The contractor shall deliver the same to such person or persons as may be authorized or appointed from time to time by the owner to receive the same.

Prior to starting the excavation, the ground level at the location shall be checked jointly with the engineer.

3.5.2 Excavation in All Type of Soil and in Soft Rock

The excavation in all type of soil, soft rock including decomposed rock etc shall be carried out as per the approved proposal and as directed by the engineer. The work shall be carried out in a workmanlike manner without endangering the safety of nearby structures/services or works and without causing hindrance to any other activities in the area. Foundation pits shall not be excavated to the full depth unless construction is imminent. The last 150mm depth shall be excavated once concreting work is imminent. At the discretion of the engineer, the full depth may be excavated and the bed be covered with lean concrete as specified after watering and compacting the bed. As the excavation reaches the required dimensions, lines, levels and grades etc, the work shall be got checked and approved by the engineer. In cases where deterioration of the ground, upheaval, slips etc are expected, the



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 10 OF 21

engineer may order to suspend the work at any stage and instruct the contractor to carry out the protection works before the excavation will be restarted.

3.5.3 Excavation in Hard Rock

Hard rocks shall normally be excavated by means of blasting. In case where blasting is prohibited for any reasons, the excavation shall be carried out by chiselling or any other approved method as directed by the engineer. Personnel deployed for rock excavation shall be protected from all hazards such as loose rock/boulder rolling down and from general slips of excavated surfaces. Where the excavated surface is not stable against sliding, necessary supports such as props, bracings or bulkheads shall be provided and maintained during the period of construction. Where the danger of falling loose rock/boulder from the excavated surfaces deeper than 2m exist, steel mesh anchored to the lower edge of the excavation and extending over and above the rock face adequate to retain the dislodged material shall be provided and maintained.

3.5.4 Blasting

Storage, handing and use of explosives shall be governed by the current explosive rules/regulations laid down by the Central and the State Governments. The contractor shall ensure that these rules/regulations are strictly adhere to. The following instructions are also to be strictly followed and the instructions wherever found in variance with the above said rules/regulations, the former (instructions) shall be superseded with the later (above said rules/regulations).

No child under the age of 16 and no person who is in a state of intoxication shall be allowed to enter the premises where explosives are stored nor they shall be allowed to handle the explosives. The contractor shall obtain licence from the District Authorities for undertaking the blasting work as well as for obtaining and storing the explosives as per Explosives Rules, 1940 corrected upto date. The contractor shall purchase the explosives, fuses, detonators etc only from a licensed dealer and shall be responsible for the safe custody and proper accounting of the explosive materials. The engineer or his authorized representative shall have the access to check the contractor's store of explosives and his accounts at any time. It is the full responsibility of the contractor to transport the explosives as and when required for the work in a safe manner to the work spot.

Further, the engineer may issue modifications, alterations and new instructions to the contractor from time to time. The contractor shall comply with the same without these being made a cause for any extra claim.



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 11 OF 21

3.5.4.1 Materials

All materials such as explosives, detonators, fuses, tamping materials etc proposed to be used in the blasting operation shall have the prior approval of the engineer. Only explosives of approved make and strength are to be used. The fuses known as instantaneous fuse must not be used. The issue of fuse with only one protective coat is prohibited. The fuse shall be sufficiently water resistant as to be unaffected when immersed in water for 30 minutes. The rate of burning of the fuse shall be uniform and shall be not less than 4 seconds per inch of length with 10% tolerance on either side. Before use, the fuse shall be inspected. Moist, damaged or broken ones shall be discarded. When the fuses are in stock for long, the rate of burning of fuses shall be tested before use. The detonators shall be capable of giving an effective blasting of the explosives. Moist and damaged detonators shall be discarded.

3.5.4.2 Storage of Explosives

The current Explosive Rules shall govern the storage of explosives. Explosives shall be stored in a clean, dry and well ventilated magazine to be specially built for the purpose. Under no circumstances should a magazine be erected within 400m of the actual work site or any source of fire. The space surrounding the magazine shall be fenced and the ground inside shall be kept clear and free from trees, bushes etc. The admission to this fenced space shall be through a single gate only and no person shall be allowed without the permission of the officer-in-charge. The clear space between the fence and the magazine shall not be less than 90m. The magazine shall be well drained. Two lightning conductors, one at each end shall be provided to the magazine. The lightning conductors shall be tested once in every year.

Explosives, fuses and detonators shall each be separately stored. Cases of explosives must be kept clear of the walls and floors for free circulation of air on all sides. Special care shall be taken to keep the floor free from any grains of explosives. Cases containing explosives shall not be opened inside the magazine and the explosives in open cases shall not be received into a magazine. Explosives which appear to be in a damaged or dangerous condition are not to be kept in any magazine but must be removed without delay to a safe distance and be destroyed.

Artificial light, matches, inflammable materials, oily cotton, rag waste and articles liable to spontaneous ignition shall not be allowed inside the magazine. Illumination shall be obtained from an electric storage battery lantern. No smoking shall be allowed within 100m distance from any magazine.

Magazine shoes without nails shall be used while entering the magazine. The persons entering the magazine must put on the magazine shoes which shall be



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 12 OF 21

provided at the magazine for this purpose and should be careful

- * not to put their feet on the clean floor unless the magazine shoes on.
- * not to touch the magazine shoes on ground outside the clean floor.
- * not to allow any dirt or grit to fall on the clean floor.

Persons with bare feet shall dip their feet in water before entering the magazine and then step directly from the tub to the clean floor. No person having article of steel or iron with/on him shall be allowed to enter the magazine. Workmen shall be examined before entering the magazine to check none of the prohibited articles are with them. A brush broom shall be kept in the lobby of the magazine for cleaning the magazine. Cleaning shall be done immediately after each occasion whenever the magazine is opened for receipt, delivery or inspection of the explosives.

The mallets, levers, wedges etc for opening the barrels or cases shall be of wood. The cases of explosives are to be carried by hand and shall not be rolled or dragged inside the magazine. Explosives which have been issued and returned to the magazine are to be issued first; otherwise those which have been stored long in the store are to be issued first. Neither the magazine shall be opened nor any person shall be allowed in the vicinity of the magazine during any dust storm or thunderstorm. All magazines shall be officially inspected at definite intervals and a record of such inspections shall be kept.

3.5.4.3 Carriage of Explosives

Detonators and explosives shall be transported separately to the blast site. Explosives shall be kept dry and away from direct rays of the sun, artificial lights, steam pipes or heated metal and other sources of heat. Before explosives are removed, each case or package shall be carefully examined to ascertain that it is properly closed and shows no sign of leakage.

No person except the driver shall be allowed to travel on the vehicle conveying explosives. No explosive shall be transported in a carriage or vessel unless all iron or steel therein the carriage or vessel which are likely to contact the package containing explosives are effectually covered with lead, leather, wood, cloth or any other suitable material. No light shall be carried on the vehicle carrying explosives and no operation connected with the loading, unloading and handling of explosives shall be conducted after sunset.

3.5.4.4 Use of Explosives

The contractor shall appoint an agent who shall personally superintend the firing and all operations connected therewith. The contractor shall satisfy himself that the person so appointed is fully acquainted with his



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 13 OF 21

responsibilities.

Holes for charging the explosives shall be drilled with pneumatic drills and the drilling pattern shall be so planned that the rock pieces after blasting will be suitable for handling. The hole diameter shall be of such a size that the cartridges can easily pass down through them and any undue force is not required during charging. Charging operation shall be carried out by or under the personal supervision of the shot firer. Wrappings shall never be removed from the explosive cartridges. Only one cartridge at a time shall be inserted in a hole and wooden rods shall only be used for loading and stemming the shot holes. Only such quantities of explosives as are required for a particular work shall be brought to the work site. Should any surplus remain when all the holes have been charged shall be carefully removed to a point at least 300m away from the firing point.

The authorized shot firer himself shall make all the connections. The shot firing cable shall not be dragged along the ground to avoid any damage to the insulation. The shot firing cable shall be tested each time for its continuity and possible short circuiting. The shot firer shall always carry the exploder handle with him until he is ready to fire shots. The number of shots fired at a time shall not exceed the permissible limits. Before any blasting is carried out it shall be ensured that all workmen, vehicles and equipment on the site are cleared from an area of minimum 300m radius from the firing point or as required by the statutory regulations at least 10 minutes before the time of firing by sounding a warning siren and the area shall be encircled by red flags.

The explosives shall be fired by means of an electric detonator placed inside the cartridge. For simultaneous firing of a number of charges, the electric detonators shall be connected with the exploder through the shot firing cable in a simple series circuit. Due precautions shall be taken to keep the firing circuit insulated from the ground, bare wires, rails, pipes or any other path of stray current etc and keep the lead wires short circuited until it is ready to fire. Any kink in the detonator leading wire shall be avoided. For simultaneous firing of a large number of shot holes, use of cordtex may be done. An electric detonator attached to its side with adhesive tape shall initiate cordtex connecting wire or string. Blasting shall only be carried out at certain specified times to be agreed jointly by the contractor and the engineer.

At least five minutes after the blast has been fired in case of electric firing or as stipulated in the regulations, the authorized shot firer shall return to the blast area and inspect carefully the work and satisfy himself that all the charged holes have exploded. Cases of misfired unexploded charges shall be exploded by drilling a parallel fresh hole at a distance of not less than 600mm from the misfired hole and by exploding a new charge. The authorized shot firer shall be present during the removal of debris as it may contain unexploded explosives near the misfired hole. The workmen shall not return to the site of firing until at least half an hour after firing.



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 14 OF 21

Where blasting is to be carried out in proximity of other structures, controlled blasting by drilling shallow shot holes and proper muffling arrangements with steel plates loaded with sand bags etc shall be used on top of the blast holes to prevent the rock fragments from causing any damage to the adjacent structures and other properties. Adequate safety precautions as per building byelaws, safety codes, statutory regulations etc shall be taken during blasting operations.

3.5.4.5 Restrictions in Blasting

- a) Blasting which may disturb or endanger the stability, safety or quality of the adjacent structures/foundations shall not be permitted.
- b) Blasting within 200m of a permanent structure or construction work in progress shall not be permitted.
- c) Progressive blasting shall be limited to two third of the total remaining depth of excavation.
- d) No large scale blasting operations will be resorted to when the excavation reaches the last one metre and only small charge preferably black powder may be allowed so as not to shatter the parent rock.
- e) The last blast shall not be more than 0.50 m in depth.
- f) In rocky formations, at locations where specifically indicated or ordered in writing by the engineer, the use of explosives shall be discontinued and excavation shall be completed by chiselling or any other suitable method as approved by the engineer.

3.5.5 Disposal

The excavated spoils shall be disposed of in any (or all) of the following manner as directed by the engineer.

- a) By using it straightway for backfilling.
- b) By stacking it temporarily to use for backfilling at a later date during execution of the contract.
- c)
 - i) By either spreading
 - or
 - ii) By spreading and compacting at designated disposal areas.
- a) By selecting the useful material and stacking it neatly in designated areas as indicated by the engineer for use in backfilling by some other agency.

3.5.6 Disposal of Surplus Materials

All surplus material from excavation shall be removed and disposed of from the excavation site to the designated disposal area indicated by the engineer.



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 15 OF 21

All good and sound rocks obtained from excavations and all assorted materials of dismantled structures are the property of the owner and if the contractor wants to use it, he shall have to obtain it from the engineer at a mutually agreed rate. All sound rocks and other assorted materials like excavated bricks etc shall be stacked separately.

3.5.7 Protection

The contractor shall notify the engineer as soon as the excavation is expected to be completed within a day so that he shall inspect it at the earliest. Immediately after approval of the engineer, the excavation must be covered up in a shortest possible time. But in no case the excavation shall be covered up or worked on before approval by the engineer. Excavated material shall be placed 1.5m or half the depth (of excavation) whichever is more from the edge of the excavation or further away if directed by the engineer. Excavation shall not be carried out below the foundation level of the structure close by until the required precautions are taken. Adequate fencing is to be made enclosing the excavation. The contractor shall protect all the underground services exposed during excavation. All existing surface drains in the work area shall be suitably diverted by the contractor before taking up excavation to maintain the working area neat and clean.

3.5.8 Dealing with Surface Water

All working areas shall be kept free of surface water as far as reasonably practicable. Works in the vicinity of cut areas shall be controlled to prevent the ingress of surface water.

No works shall commence until surface water streams have been properly intercepted , redirected or otherwise dealt with.

Where works are undertaken in the monsoon period, the Contractor may need to construct temporary drainage systems to drain surface water from working areas.

3.5.9 Dewatering

All excavation shall be kept free of water and slush. Grading in the vicinity shall be controlled to prevent the surface water running into the excavations. The contractor shall remove any water inclusive of rain water and subsoil water etc accumulated in the excavation by pumping or other means as approved by the engineer and keep the excavations dewatered and/or lower the subsoil water level to 300mm below the founding level until the construction of foundation and backfilling are completed in all respects.

Sumps made for dewatering must be kept clear of the foundations. The engineer's prior approval on the method of pumping to be adopted shall be



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 16 OF 21

taken; but in any case, the pumping arrangement shall be such that there shall be no movement or blowing in of subsoil due to the differential head of water during pumping.

3.5.10 Timber Shoring

Close or open type timber shoring as approved by the engineer depending on the nature of sub-soil, depth of pit or trench and the type of timbering shall be adopted. Timbers made out of approved quality shall only be used. It shall be the responsibility of the contractor to take all necessary steps to prevent the sides of trenches and pits from collapsing.

3.5.10.1 Close Timbering

Close timbering shall be done by completely covering the sides of the trenches and pits generally with short, upright members called "polling boards". These shall be of 250mm wide(min.) and 40mm thick(min.) sections as directed by the engineer. The boards shall generally be placed vertically in pairs, one on each side of the cut and shall be kept apart (maximum spacing is limited to 1.20m) by horizontal walers of strong wood cross strutted with wooden struts or as directed by the engineer. The length of wooden struts shall depend on the width of the trench or pit.

In case where the soil is very soft and loose, the boards shall be placed horizontally against the sides of excavation and supported by vertical walers which shall be strutted to similar timber pieces on the opposite face of the trench or pit. The lowest board supporting the sides shall be taken into the ground. No portion of the vertical side of the trench or pit shall remain exposed to avoid any slipping out of earth.

The withdrawal of the timber shall be done very carefully to prevent the collapse of the pit or trench. It shall be started from one end and proceeded systematically to the other end. Concrete or masonry shall not be damaged during the removal of the timber. No claim shall be entertained for any timber which cannot be withdrawn and is lost or buried.

3.5.10.2 Open Timbering

In case of open timbering, vertical board of 250mm wide(min.) and 40mm thick(min.) shall be spaced sufficiently apart to leave unsupported strips of maximum 500mm average width. The detailed arrangement, size of timber and the spacing etc shall be subjected to the approval of the engineer. In all other respects, the specification for close timbering shall apply to open timbering as well.



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 17 OF 21

3.6.0 Treatment of Slips

The contractor shall take all precautions to avoid high surcharges and provide proper surface drainage to prevent flow of water over the sides of the excavations. These precautions along with proper slopes, berms, shoring and control of ground water should cause no slips to occur. If however slips still occur, the same shall be removed by the contractor with his own risk and cost.

3.7.0 Backfilling

3.7.1 General

The material to be used for backfilling shall be approved by the engineer which shall be obtained directly from the excavation, from the nearby areas where excavation work by the same agency is in progress, from the temporary stacks of excavated spoils or from the borrow pits as directed by the engineer. The material shall be free from lumps and clods, roots and vegetations, harmful salts and chemicals, organic materials etc.

In locations where sand filling is required, the sand used should be clean, well graded and be of the quality normally acceptable for use in concrete.

3.7.2 Filling and Compaction in Pits and Trenches all Around the Structures

As soon as the work in foundation has been accepted, the spaces around the foundation in pits and trenches shall be cleared of all debris, brick bats, mortar droppings etc and filled with approved earth in layers not exceeding 250mm (in loose thickness). Each layer(loose) shall be watered, rammed and properly compacted to the required degree to the satisfaction of the engineer. Earth shall be compacted with approved mechanized compaction machine. Usually, no manual compaction shall be allowed unless specifically permitted by the engineer. The moisture content of the fill material during compaction shall be controlled near to its optimum moisture content so as to obtain the required degree of compaction. The final surface shall be trimmed and levelled to proper profile as desired by the engineer.

3.7.3 Plinth Filling

The plinth shall be filled with earth in layers not exceeding 250mm (in loose thickness) and each layer shall be watered and compacted to the required degree with approved compaction machine or manually if specifically permitted by the engineer. When the filling reaches the finished level, the surface shall be flooded with water for at least 24 hours, allowed to dry and then rammed and compacted in order to avoid any settlement at a later stage. The finished surface of fill shall be trimmed to the slope intended to be provided for the floor.



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 18 OF 21

3.7.4 Filling in Trenches for Water Pipes and Drains

Filling in trenches for pipes and drains shall be commenced as soon as the joints of pipes and drains have been tested and passed. Where the trenches are excavated in soil, the filling shall be done with earth on the sides and top of pipes in layers not exceeding 150mm, watered, rammed and compacted taking care that no damage is caused to the pipe below.

In case of trenches excavated in rock, the filling upto a height of 300mm or the diameter of the pipe whichever is more above the crown of the pipe or barrel shall be done with fine material such as earth, moorum, disintegrated rock or ash as per the availability at site and shall be filled in compacted layers not exceeding 150mm. The remaining filling shall be done in layers with the mixture of boulders (of size not exceeding 150mm) and fine material as specified elsewhere in the specification. Each layer shall be watered, rammed and compacted to the required degree and to the satisfaction of the engineer.

3.7.5 Filling in Disposal Area

Surplus materials from excavation which are not required for backfilling shall be disposed of in the designated disposal areas. The spoils shall not be dumped haphazardly but should be spread in layers approximately 250mm thick when loose, watered and compacted with the help of a compacting equipment as per the directions of the engineer. In wide areas, rollers shall be employed and compaction shall be done to the satisfaction of the engineer at the optimum moisture content which shall be checked and controlled by the contractor. In certain cases the engineer may direct the contractor to dispose the surplus materials without compaction which can be done by tipping the spoils from a high bench neatly maintaining a proper level and grade of the bench.

3.8.0 Approaches and Fencing

The contractor should provide and maintain proper approaches for the workmen and inspection. The roads and approaches around the excavation should be kept clear at all times so that there is no hindrance to the movement of men, material and equipment of various agencies connected with the project. Sturdy and elegant fencing is to be provided around the top edge of the excavation as well as around the bottom of the fill at the surplus disposal area where dumping from a high bench is in progress.

3.9.0 Lighting

Full scale area lighting is to be provided if night work is permitted or directed by the engineer. If no night work is in progress, red warning lights should be provided at the corners of the excavated pit and the edges of the fill.



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 19 OF 21

4.0.0 TESTING AND ACCEPTANCE CRITERIA

4.1.0 Excavation

On completion of excavation, the dimension of the pits will be checked as per the drawings after the pits are completely dewatered. The work will be accepted after all undercuts have been set right and all over excavations are filled back to the required lines, levels and grades by placing ordinary cement concrete of 1:4:8 proportion and/or richer and/or by compacted earth as directed by the engineer. The choice of the grade of concrete will be a matter of unfettered discretion of the engineer. Over excavation of the sides shall be made good by the contractor while carrying out the backfilling. The excavation work will be accepted after the above requirements are fulfilled and all the temporary approaches encroaching inside the excavation have been removed.

4.2.0 Backfilling

The degree of compaction required will be as per the stipulation laid down in IS:4701 and the actual method of measuring the degree of compaction will be as decided by the engineer. The work of back filling will be accepted after the engineer is satisfied with the degree of compaction achieved.

5.0.0 RATES AND MEASUREMENTS

5.1.0 Rates

a) The item of work in the schedule of quantities describe the work very briefly. The various items of the schedule of quantities shall be read in conjunction with the corresponding section in the technical specification including amendments and additions if any. For each item in the schedule of quantities, the bidder's rate shall include all the activities covered in the description of the items as well as for all necessary operations in detail as described in the technical specification.

b) No claims shall be entertained if the details shown on the released for construction drawings differ in any way from those shown on the tender drawings.

c) The unit rate quoted shall include minor details which are obviously and fairly intended and which may not have been included in these documents but are essential for the satisfactory completion of the work.

d) The bidder's quoted rate shall be inclusive of supplying and providing all labour, men, materials, equipments, tools and plants, supervision, services, approaches, schemes etc.



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 20 OF 21

5.2.0

e) In case blasting in hard rock is envisaged, the unit rate quoted for earth work shall include the cost of storage and safety arrangements for the materials required for blasting. No separate payment will be made on this account.

Measurements

Method of measurements are specified in the proceeding sections. Where not so specified, the latest version of IS:1200, Part-1 shall be applicable.

a) The length, breadth and depth shall be measured correct to the nearest centimetre if measurements are taken by tape. Rounding of numericals shall be as per relevant IS Codes. If the measurements are taken with staff and level, the levels shall be recorded correct to 5mm. The area and volume shall be worked out in square meter and cubic meter respectively correct to the nearest of two decimal places.

b) For earth work in excavation, the ground levels shall be taken before and after completion of the work in the actually excavated area. The quantity of earth work in excavation shall be computed from these levels in cubic meter.

c) Where soft rock and hard rock are mixed, the measurement shall be done as follows. The two types of rock shall be stacked separately and measured in stacks. The net quantity of each type of rock shall be so arrived by applying a deduction of 50% for looseness/voids in the stacks. If the sum of net quantity of the two types of rock so arrived exceeds the total quantity of excavation, then the quantity of each type of rock shall be worked out from the total quantity (from excavation) in the ratio of net quantities in stack measurements of the two types of rock. If stacking is not feasible, the method as suggested by the engineer shall be followed.

d) Where soil, soft rock and hard rock are mixed, the measurement shall be done as follows. The soft and hard rock shall be removed from the excavated material and stacked separately and measured in stacks. The net quantity of each type of rock shall be so arrived by applying a deduction of 50% for looseness/voids in stacks. The difference between the entire excavation and the sum of the quantities of soft and hard rock so arrived shall be taken as soil.

6.0.0

INFORMATION TO BE SUBMITTED BY THE BIDDER

6.1.0

With Tender

Detail of equipments and machineries proposed to be used for excavation, backfilling and compaction shall be submitted along with the tender.



TITLE:
**TECHNICAL SPECIFICATION FOR
EARTHWORK IN EXCAVATION AND
BACKFILLING**

SPECIFICATION NO. PE-TS-999-600-C001

SECTION - D | SUB-SECTION - D1

REV.NO. 00 DATE 02/12/2015

SHEET 21 OF 21

6.2.0

After Award

After award of the contract the successful bidder shall submit the following for approval.

a) Within 30 days of the award of contract, the contractor shall submit a detailed programme of the work as proposed to be executed giving completion dates of excavation for the various foundations and the time required for backfilling and compaction after completion of foundation for the structures. The earthwork programme shall be planned in accordance with the foundation programme. The programme should also show how the excavation and backfilling quantities will be balanced minimizing the temporary stacking of spoils. It is to be noted that the engineer even after initial approval of the programme may instruct the contractor to enhance or to retard the progress of work during the actual execution in order to match with the progress of foundations. The initial programme being submitted by the contractor should have sufficient flexibility to take care of such reasonable variations.

b) Within 15 days of the award of contract, the contractor shall submit the drawings for earth work in excavation and backfilling showing detail of slopes, shoring, approaches, sump pits, dewatering lines, fencing etc for the approval of the engineer.



VOLUME II



Geotechnical Investigation report of 5X800MW Yadadri thermal Power station at Veerlapalem, Telangana state for Main plant area consists of three volumes as per details given below:

VOLUME –I – Methodology, Analysis & Recommendations

VOLUME – II – Bore logs, Trial pits, field permeability test(Packer test) and laboratory tests results

VOLUME – III – Plate load test,Cyclic plate load test,Cross hole shear test, Pressuremeter test,Block vibration test and Seismic refraction test

This Volume consists of Field Bore logs, Trial pits, field permeability test(Packer Test) and laboratory tests result for proposed power plant.

Contents

BORELOGS..... 8

PACKER PERMEABILITY TEST 279

PHOTOGRAPHS 296



Bore/Test no	Northing	Easting	Ground level (G.L.) in terms of RL(+)	Water Table below (G.L.)	Termination depth (m)
BH 1	0	-100	79.603	3	10.0
BH 2	0	-25	81.496	5.5	20.0
BH 3	0	29	81.699	4.5	15.0
BH 4	0	99	82.495	4.00	10.0
BH 5	-69	-112	78.408	3	10.0
BH 6	-69	29	78.761	2.5	10.0
BH 7	-99	-137	78.107	3.5	10.0
BH 8	-99	-71	78.052	3.30	20.0
BH 9	-99	70	78.694	3	20.0
BH 10	-99	136	78.049	-	10.0
BH 11	-126	-22	77.865	2	10.0
BH 12	-126	105	78.447	-	10.0
BH 13	-157	-69	77.753	2.8	20.0
BH 14	-157	71	78.347	-	20.0
BH 15	-191	-105	77.500	2.5	10.0
BH 16	-191	-36	79.707	4.5	10.0
BH 17	-191	36	80.085	-	10.0
BH 18	-191	105	80.011	-	10.0
BH 19	-205	-70	77.474	2.5	15.0
BH 20	-205	70	81.187	4	15.0
BH 21	-220	-144	77.770	2	10.0
BH 22	-232	-104	77.359	2.5	10.0
BH 23	-232	-36	78.126	-	15.0
BH 24	-233	0	79.318	-	10.0
BH 25	-232	36	82.371	-	10.0
BH 26	-232	105	81.759	-	15.0
BH 27	-232	141	82.207	5.3	10.0
BH 28	-263	-74	77.210	2.5	15.0
BH 29	-271	-389	80.715	4	15.0
BH 30	-283	-98	76.958	3.5	15.0
BH 31	-283	-55	77.195	2.8	20.0
BH 32	-283	32	79.000	-	10.0
BH 33	-283	87	79.734	5	20.0
BH 34	-279	135	81.070	5	10.0
BH 35	-302	182	81.078	2.5	15.0
BH 36	-302	-74	76.971	3	15.0
BH 37	-302	68	79.856	4	15.0
BH 38	-329	-3	78.670	6	10.0
BH 39	-330	110	80.260	4.5	10.0
BH 40	-357	-149	76.395	3.90	10.0
BH 41	-356	-88	76.093	2.5	10.0
BH 42	-360	45	78.812	3.60	15.0
BH 43	-369	-5	78.327	3.50	10.0



Bore/Test no	Northing	Easting	Ground level (G.L.) in terms of RL(+)	Water Table below (G.L.)	Termination depth (m)
BH 44	0	334	82.005	-	10.0
BH 45	0	-408	83.598	4.90	10.0
BH 46	0	454	84.067	3.10	20.0
BH 47	0	530	83.363	4.10	10.0
BH 48	0	627	84.008	3.70	15.0
BH 49	0	666	84.354	4.20	20.0
BH 50	-487	1295	84.900		10.0
BH 51	-69	317	80.521	-	15.0
BH 52	-69	454	82.157	3	10.0
BH 53	-69	604	85.112	5.80	15.0
BH 54	-69	711	85.770	4.20	10.0
BH 55	-83	284	80.120	3	10.0
BH 56	-543	1231	84.900	-	15.0
BH 57	-99	361	81.690	3.00	20.0
BH 58	-99	501	83.333		20.0
BH 59	-99	569	84.475	3.90	10.0
BH 60	-99	644	86.233	3.00	20.0
BH 61	-126	406	82.160	3.5	15.0
BH 62	-126	548	84.171	4.30	15.0
BH 63	-126	691	86.090	4.80	15.0
BH 64	-157	362	81.578	3	10.0
BH 65	-157	502	83.770	3.5	15.0
BH 66	157	645	85.885	3.50	20.0
BH 67	-191	327	81.425	3.5	15.0
BH 68	-196	361	82.630	5.5	20.0
BH 69	-191	395	82.540	4	15.0
BH 70	-191	467	83.155	3.5	15.0
BH 71	-191	536	85.365	4.20	15.0
BH 72	-191	610	85.340	-	15.0
BH 73	-191	629	85.731	3.80	9.5
BH 74	-205	501	84.824	3	20.0
BH 75	-205	644	85.487	-	10.0
BH 76	-229	273	82.479	3.5	10.0
BH 77	-232	327	82.160	5	15.0
BH 78	-232	-396	82.520	4	15.0
BH 79	-232	431	82.735	4.5	10.0
BH 80	-232	468	83.262	4.2	15.0
BH 81	-232	536	84.400	-	10.0
BH 82	-235	574	84.900	-	10.0
BH 83	-232	611	85.157	-	10.0
BH 84	-232	679	86.274	-	15.0
BH 85	-241	822	86.254	3.2	10.0
BH 86	-263	358	82.533	4.5	15.0
BH 87	-263	501	84.160	3.80	15.0
BH 88	-263	642	85.222	-	15.0
BH 89	-287	290	82.970	-	10.0
BH 90	-283	334	83.560	4	15.0



Bore/Test no	Northing	Easting	Ground level (G.L.) in terms of RL(+)	Water Table below (G.L.)	Termination depth (m)
BH 91	-283	377	83.106	3	20.0
BH 92	-283	477	82.697	3.5	15.0
BH 93	-283	520	84.460	3.60	7.5
BH 94	-283	618	85.095	3	15.0
BH 95	-283	661	85.390	3	20.0
BH 96	-302	358	83.713	3.2	15.0
BH 97	-302	501	83.987	3	15.0
BH 98	-302	642	85.014	3.5	15.0
BH 99	-330	431	83.842	3	10.0
BH 100	-330	541	84.416	3	10.0
BH 101	-357	341	83.513	3.8	10.0
BH 102	357	479	84.299	3.5	10.0
BH 103	-357	599	84.499	2.5	10.0
BH 104	-350	877	85.572	5	10.0
BH 105	-363	695	85.005	4	10.0
BH 106	-370	423	84.000	-	10.0
BH 107	-370	538	84.375	4	10.0
BH 108	-375	790	85.345	4	15.0
BH 109	908	226	88.560		10.0
BH 110	416	485	87.289		15.0
BH 111	272	472	84.192	4.00	10.0
BH 112	141	644	83.383		10.0
BH 113	-129	-443	82.601	3.80	15.0
BH 114	187	294	79.583	5	10.0
BH 115	-196	-461	82.040	3.80	15.0
BH 116	-214	-529	82.650	4.30	10.0
BH 117	-246	-412	81.215	5	15.0
BH 118	-269	-244	78.400	6.5	15.0
BH 119	-359	-443	80.580	4	15.0
BH 120	-328	-228	79.250	3	15.0
BH 121	-426	-461	79.756	5	15.0
BH 122	-355	-325	79.784	3	10.0
BH 123	-444	-529	79.563	-	10.0
BH 124	-476	-412	80.210	-	15.0
BH 125	-527	-692	81.818	-	15.0
BH 126	-586	-283	76.260	-	10.0
BH 127	-615	-440	76.640	-	10.0
BH 128	-336	1073	86.545	4.50	15.0
BH 129	-404	1055	85.756	4	6.0
BH 130	-422	987	85.187	5.5	10.0
BH 131	-196	361	85.180	5	10.0
BH 132	-468	778	84.301	3	15.0
BH 133	-510,	-18	78.501	3.70	10.0
BH 134	-500	312	79.834	-	10.0
BH 135	-530	428	82.422	-	10.0
BH 136	-532	543	83.328	-	10.0
BH 137	-574	580	81.893	-	10.0



Bore/Test no	Northing	Easting	Ground level (G.L.) in terms of RL(+)	Water Table below (G.L.)	Termination depth (m)
BH 138	-596	19	76.065	4.10	10.0
BH 139	-675	-30	73.623	3.00	10.0
BH 140	-673	57	73.329	3.80	10.0
BH 141	-662	428	79.740	4.20	10.0
BH 142	-665	543	80.602	3.50	10.0
BH 143	-543	-888	83.705	-	10.0
BH 144	-564	1117	84.230	-	10.0
BH 145	-611	870	83.402	-	15.0
BH 146	-629	802	82.342	-	15.0
BH 147	-631	1099	83.822	-	15.0
BH 148	-660	919	83.164	-	10.0
BH 149	-649	1031	83.580	-	10.0
BH 150	-915	1400	81.626	3.50	8.3
BH 151	-681	1148	83.500	-	10.0
BH 152	-830	1155	82.419	-	9.0
BH 153	74	997	87.057	3.50	10.0
BH 154	-113	1200	90.195	3.80	10.0
BH 155	-911	1164	81.867	-	11.0
BH 156	-911	1164	81.116	4.30	9.8
BH 157	-200	1400	87.225	4.50	15.0
BH 158	-1178	1122	79.697	3.20	7.5
BH 159	-961	890	80.537	3.50	6.0
BH 160	-1040	1021	80.977	-	10.0
BH 161	-434	1627	89.075	3.80	15.0
BH 162	-314	1182	87.298	4.10	10.0
BH 163	-1413	1173	76.742	3.90	5.0



BORELOGS

BH NO. :		1	EGL(EXISTING GROUND LEVEL) R.L.(+)		79.603						
LOCATION :		N = 00, E =-100	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		12/31/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		1/3/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	79.60		Highly weathered grey, fine grained Quartzite	0.00						20	Nil
0.50	78.85			0.75							
1.00	78.60			1.25							
1.50	78.35									23	Nil
2.00	77.60		Slightly weathered grey, fine grained Quartzite	2.00						56	16
2.50	77.10		Fresh grey, fine grained Quartzite							83	63
3.00	76.85			2.75							
3.50	75.85			3.75							
4.00	75.60										
4.50	75.10										
5.00	74.60										
5.50	74.35	5.25						71	Nil		
6.00	73.60		Fresh black, fine grained shale							61	Nil
6.50	73.10										
7.00	72.85			6.75							
7.50	72.10		Fresh black, fine grained Shale							73	34
8.00	71.60										
8.50	71.35			8.25							
9.00	70.60										
9.50	69.85			9.75							
10.00	69.60			10							
										72	66
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		2		EGL(EXISTING GROUND LEVEL) R.L.(+)		81.496					
LOCATION :		N = 00, E = -25		WATER TABLE below EGL (m) :		5.50					
				CASING Depth (m) :		1.50					
START DATE :		1/5/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/10/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00 0.50	81.50 80.75		Dark Brownish Grey Highly weathered Quartzite	0.75						24	Nil
1.00 1.50 2.00 2.50 3.00	80.50 80.00 79.50 79.25 78.50		Moderately weathered grey, fine grained Quartzite	1.50 2.25 3.00						38 34 38	38 Nil 13
3.50 4.00 4.50 5.00 5.50 6.00	78.00 77.75 77.00 76.50 76.00 75.50		Fresh grey, fine grained Quartzite	3.75 4.50 6.00						91 95 66	79 66 25
6.50 7.00 7.50	75.00 74.50 74.00		Fresh black, fine grained Shale	7.50						60	Nil
8.00 8.50 9.00	73.50 73.00 72.50		Fresh black, fine grained Shale	9.00						73	Nil



BH NO. :		2		EGL(EXISTING GROUND LEVEL) R.L.(+)		81.496					
LOCATION :		N = 00, E = -25		WATER TABLE below EGL (m) :		5.50					
				CASING Depth (m) :		1.50					
START DATE :		1/5/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/10/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
9.50	72.00		Slightly weathered black, fine grained Shale	10.50						50	Nil
10.00	71.50										
10.50	71.00										
11.00	70.50										
11.50	70.00										
12.00	69.50										
12.50	69.00		Fresh black, fine grained Shale							71	Nil
13.00	68.50										
13.50	68.00										
14.00	67.50										
14.50	67.00										
15.00	66.50										
15.50	66.00										
16.00	65.50										
16.50	65.00										
17.00	64.50										
17.50	64.00										
18.00	63.50										
18.50	63.00										
19.00	62.50										
19.50	62.00										
20.00	61.50										
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											

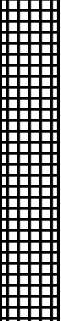


BH NO. :		3		EGL(EXISTING GROUND LEVEL) R.L.(+)		81.699					
LOCATION :		N = 00, E = 29		WATER TABLE below EGL (m) :		4.50					
				CASING Depth (m) :		1.50					
START DATE :		1/14/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/16/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	81.70		Moderately weathered grey, fine grained Quartzite	0.75					29	Nil	
0.50	80.95			1.50					26	Nil	
1.00	80.70			2.25					27	Nil	
1.50	80.20			3.00					21	Nil	
2.00	79.70										
2.50	79.45										
3.00	78.70										
3.50	78.20		Fresh grey, fine grained Quartzite	3.75					85	19	
4.00	77.95			4.50					89	61	
4.50	77.20										
5.00	76.70		Slightly weathered grey, fine grained Quartzite	6.00					52	20	
5.50	76.20										
6.00	75.70			7.50					56	17	
6.50	75.20										
7.00	74.70										
7.50	74.20										
8.00	73.70		Slightly weathered grey, fine grained Limestone	9.00					53	Nil	
8.50	73.20			10.50					47	Nil	
9.00	72.70			12.00					49	7	
9.50	72.20										
10.00	71.70										
10.50	71.20										
11.00	70.70										
11.50	70.20										
12.00	69.70		Slightly weathered black, fine grained Shale	13.50					59	Nil	
12.50	69.20			15.00					78	44	
13.00	68.70										
13.50	68.20										
14.00	67.70										
14.50	67.20										
15.00	66.70										
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

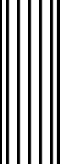
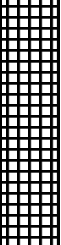
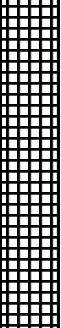


BH NO. :		4		EGL(EXISTING GROUND LEVEL) R.L.(+)		82.495					
LOCATION :		N = 00, E =99		WATER TABLE below EGL (m) :		4.00					
				CASING Depth (m) :		NA					
START DATE :		3/27/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/28/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.50		Highly weathered grey, fine grained Quartzite	0.00							
0.50	81.75		0.75					21	Nil		
1.00	82.50		Moderately weathered grey, fine grained Quartzite	1.50					44	Nil	
1.50	81.00			2.25					32	16	
2.00	80.25			3.00					29	Nil	
2.50	82.50			3.75					64	20	
3.00	79.50			4.50					36	14	
3.50	78.75										
4.00	82.50										
4.50	78.00										
5.00	82.50		Slightly weathered grey, fine grained Quartzite	5.25					60	49	
5.50	77.25			6.00					56	17	
6.00	76.50			6.75					52	Nil	
6.50	82.50			7.50					53	44	
7.00	75.75			8.25					53	36	
7.50	75.00			9.00					41	14	
8.00	82.50			9.75					31	29	
8.50	74.25			10					52	Nil	
9.00	73.50										
9.50	72.75										
10.00	72.50										
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

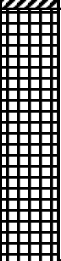
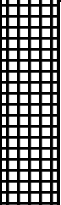


BH NO. :		5	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		78.408						
LOCATION :		N = -69, E =-112	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		12/26/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/27/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	78.41		Fine to medium Sandy silt with weathered rock fragments								
0.50	77.91										
1.00	77.41			1.00	SPT1	18	27	31	58		
1.50	76.91			1.50	SPT2	52	>100		R		
2.00	76.41		Slightly weathered grey, fine grained Quartzite			2					
2.50	76.16			2.25					43	23	
3.00	75.41			3.00					57	Nil	
3.50	74.91		Moderately weathered grey, fine grained Quartzite								
4.00	74.66			3.75					37	35	
4.50	73.91			4.50					32	42	
5.00	73.41										
5.50	73.16		5.25					25	33		
6.00	72.41		Slightly weathered grey, fine grained Quartzite	6.00					54	19	
6.50	71.91		Fresh black, fine grained Shale								
7.00	71.66			6.75					97	59	
7.50	70.91			7.50					83	18	
8.00	70.41										
8.50	69.91										
9.00	69.41			9.00					76	60	
9.50	68.91										
10.00	68.41		10.00					75	44		
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

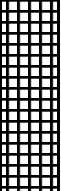
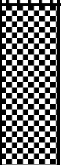


BH NO. :		6		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		78.761					
LOCATION :		N = -69, E = 29		WATER TABLE below EGL (m) :		2.50					
				CASING Depth (m) :		1.50					
START DATE :		1/11/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/13/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	78.76		Highly weathered grey, fine grained Quartzite								
0.50	78.26										
1.00	78.01			0.75					23	Nil	
1.50	77.26			1.50					23	Nil	
2.00	76.76		Moderately weathered grey, fine grained Quartzite								
2.50	76.51			2.25					35	15	
3.00	75.76			3.00					41	Nil	
3.50	75.26		Fresh grey, fine grained Quartzite								
4.00	75.01			3.75					83	Nil	
4.50	74.26			4.50					87	71	
5.00	73.76										
5.50	73.26										
6.00	72.76			6.00					74	18	
6.50	72.26		Fresh black, fine grained Shale								
7.00	71.76										
7.50	71.26			7.50					75	23	
8.00	70.76										
8.50	70.26										
9.00	69.76			9.00					68	27	
9.50	69.26										
10.00	68.76			10.00					56	22	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		7	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		78.107						
LOCATION :		N = -99, E = -137	WATER TABLE below EGL (m) :		3.50						
			CASING Depth (m) :		1.50						
START DATE :		12/28/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/30/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	78.11		Greyish Brownish very stiff Sandy silt								
0.50	77.61										
1.00	77.11			1.00	SPT1	21	22	25	47		
1.50	76.61		Completely weathered Quartzite	1.50	SPT2	52			R		
2.00	76.11		Moderately weathered grey, fine grained Quartzite								
2.50	75.86			2.25						23	Nil
3.00	75.11			3.00						38	15
3.50	74.61		Slightly weathered grey, fine grained Quartzite								
4.00	74.36			3.75						44	Nil
4.50	73.61			4.50						54	43
5.00	73.11		Fresh grey, fine grained Quartzite								
5.50	72.86			5.25						80	15
6.00	72.11			6.00						86	51
6.50	71.61										
7.00	71.11										
7.50	70.61			7.50						65	30
8.00	70.11		Fresh black, fine grained Shale								
8.50	69.61										
9.00	69.11			9.00						74	45
9.50	68.61										
10.00	68.11			10.00						63	Nil
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		8	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		78.052						
LOCATION :		N = -99, E = -71	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		12/28/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		1/4/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	78.05		Completely weathered grey, fine grained Quartzite								
0.50	77.55										
1.00	77.30			0.75	SPT1	52	>50	>50		R	
1.50	76.55		Moderately weathered grey, fine grained Quartzite	1.50						24	Nil
2.00	76.05										
2.50	75.80			2.25						30	Nil
3.00	75.05			3.00						29	Nil
3.50	74.55										
4.00	74.30			3.75						33	Nil
4.50	73.55		Fresh grey, fine grained Quartzite	4.50						91	44
5.00	73.05										
5.50	72.80			5.25						86	75
6.00	72.05										
6.50	71.30			6.75						79	25
7.00	71.05		Moderately weathered black, fine grained Shale								
7.50	70.55			7.50							
8.00	70.05										
8.50	69.80			8.25						40	Nil



BH NO. :		8		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		78.052					
LOCATION :		N = -99, E = -71		WATER TABLE below EGL (m) :		3.00					
				CASING Depth (m) :		1.50					
START DATE :		12/28/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/4/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
9.00	69.05		Fresh black, fine grained Shale	9.75					78	26	
9.50	68.30										
10.00	68.05										
10.50	67.55										
11.00	67.05										
11.50	66.80										
12.00	66.05										
12.50	65.55										
13.00	65.30										
13.50	64.55										
14.00	64.05										
14.50	63.80										
15.00	63.05										
15.50	62.55										
16.00	62.30										
16.50	61.55										
17.00	61.05										
17.50	60.80										
18.00	60.05										
18.50	59.55										
19.00	59.30		18.75					81	39		
19.50	58.55										
20.00	58.05		20.00					80	66		
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											

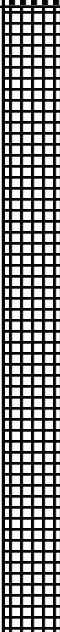


BH NO. :		9	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		78.694						
LOCATION :		N = -99, E = 70	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		12/18/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/21/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	78.69		Highly weathered grey, fine grained Quartzite								
0.50	78.19										
1.00	77.94			0.75					25	Nil	
1.50	77.19			1.50					24	Nil	
2.00	76.69		Fresh grey, fine grained Quartzite								
2.50	76.44			2.25					91	15	
3.00	75.69			3.00					90	Nil	
3.50	75.19										
4.00	74.69										
4.50	74.19			4.50					61	40	
5.00	73.69										
5.50	73.19										
6.00	72.69			6.00					73	25	
6.50	72.19		Fresh grey, fine grained limestone								
7.00	71.69										
7.50	71.19			7.50					79	Nil	
8.00	70.69										
8.50	70.19										
9.00	69.69			9.00					74	Nil	

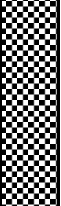
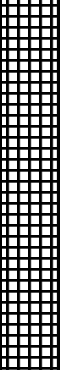
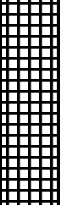


BH NO. :		9	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		78.694						
LOCATION :		N = -99, E = 70	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		12/18/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/21/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
9.50	69.19		Fresh black, fine grained Shale								
10.00	68.69										
10.50	68.19			10.50					67	28	
11.00	67.69										
11.50	67.19										
12.00	66.69			12.00					77	9	
12.50	66.19										
13.00	65.69										
13.50	65.19			13.50					72	32	
14.00	64.69										
14.50	64.19										
15.00	63.69			15.00					78	40	
15.50	63.19										
16.00	62.69										
16.50	62.19			16.50					76	43	
17.00	61.69										
17.50	61.19										
18.00	60.69			18.00					75	44	
18.50	60.19										
19.00	59.69										
19.50	59.19			19.50					92	76	
20.00	58.69			20.00					49	49	
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											



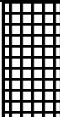
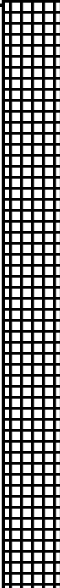
BH NO. :		10		EGL(EXISTING GROUND LEVEL) R.L.+(m)		78.049					
LOCATION :		N = -99, E = 136		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		1.50					
START DATE :		12/12/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		12/14/2015		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	78.05		Completely weathered grey, fine grained Quartzite								
0.50	77.55										
1.00	77.05			1.00	SPT1	>50	>50	>50	R		
1.50	76.55		Highly weathered grey, fine grained Quartzite	1.50						24	Nil
2.00	76.05		Moderately weathered grey, fine grained Fractured Quartzite								
2.50	75.80			2.25						45	16
3.00	75.05			3.00						86	49
3.50	74.55		Fresh black, fine grained Fractured Shale								
4.00	74.30			3.75						81	38
4.50	73.55										
5.00	73.05										
5.50	72.80			5.25						64	19
6.00	72.05										
6.50	71.55										
7.00	71.30			6.75						67	26
7.50	70.55										
8.00	70.05										
8.50	69.80			8.25						77	9
9.00	69.05										
9.50	68.80			9.25						73	47
10.00	68.05			10.00						82	Nil
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



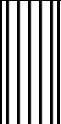
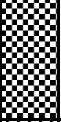
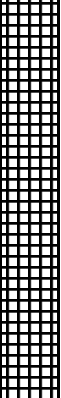
BH NO. :		11	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		77.865						
LOCATION :		N = -126, E = -22	WATER TABLE below EGL (m) :		2.00						
			CASING Depth (m) :		1.50						
START DATE :		12/26/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/27/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	77.87		Moderately weathered grey, fine grained Limestone	0.75 1.50					28 36	Nil Nil	
0.50	77.37										
1.00	77.12										
1.50	76.37										
2.00	75.87										
2.50	75.62		Moderately grey, fine grained Quartzite	2.25 3.00					29 41	Nil Nil	
3.00	74.87										
3.50	74.37		Fresh grey, fine grained Quartzite	3.75 4.50 6.00 7.50					85 93 57 64	13 77 55 49	
4.00	74.12										
4.50	73.37										
5.00	72.87										
5.50	72.37										
6.00	71.87										
6.50	71.37										
7.00	70.87										
7.50	70.37										
8.00	69.87		Fresh black, fine grained Shale	9.00 10.00					71 83	33 76	
8.50	69.37										
9.00	68.87										
9.50	68.37										
10.00	67.87										

THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.



BH NO. :		12	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		78.447						
LOCATION :		N = -126, E = 105	WATER TABLE below EGL (m) :		Not struck						
			CASING Depth (m) :		1.50						
START DATE :		12/15/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/17/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	78.45		Completely weathered rock								
0.50	77.95					10					
1.00	77.70			0.75	SPT1	52	>100		R		
1.50	76.95			1.50	SPT2	52	>100		R		
2.00	76.45		Fresh grey, fine grained Quartzite								
2.50	76.20			2.25					83	16	
3.00	75.45			3.00					81	28	
3.50	74.95		Fresh grey, fine grained Fractured Quartzite								
4.00	74.45										
4.50	73.95			4.50					74	51	
5.00	73.45										
5.50	72.95										
6.00	72.45			6.00					63	23	
6.50	71.95										
7.00	71.45										
7.50	70.95			7.50					51	17	
8.00	70.45										
8.50	69.95										
9.00	69.45			9.00					84	58	
9.50	68.95										
10.00	68.45			10.00					73	21	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

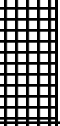
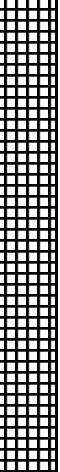


BH NO. : 13		EGL(EXISTING GROUND LEVEL) R.L.(+) (m) 77.753														
LOCATION : N = -157, E = -69		WATER TABLE below EGL (m) : 2.80														
		CASING Depth (m) : 1.50														
START DATE : 12/22/2015		BORING/ DRILLING METHOD : Rotary														
END DATE : 12/24/2015		DRILLING : NX SIZE double tube core barrel														
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)					
				Depth	Type	cm										
						m	15	30		45	%	%				
0.00	77.75		Highly weathered grey, fine grained, Fractured Quartzite	0.75						23	Nil					
0.50	77.25															
1.00	77.00															
1.50	76.25		Moderately weathered grey, fine grained, Fractured Limestone	2.25						27	Nil					
2.00	75.75															
2.50	75.50															
3.00	74.75		Fresh grey, fine grained, Fractured Quartzite	6.00						86	34					
3.50	74.25															
4.00	74.00															
4.50	73.25			7.50						78	15					
5.00	72.75															
5.50	72.25															
6.00	71.75															
6.50	71.25															
7.00	70.75															
7.50	70.25															



BH NO. :		13		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		77.753					
LOCATION :		N = -157, E = -69		WATER TABLE below EGL (m) :		2.80					
				CASING Depth (m) :		1.50					
START DATE :		12/22/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		12/24/2015		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
8.00	69.75		Fresh black, fine grained Fractured Shale	9.00						85	7
8.50	69.25										
9.00	68.75										
9.50	68.25										
10.00	67.75			10.50						84	7
10.50	67.25										
11.00	66.75										
11.50	66.25										
12.00	65.75			12.00						82	29
12.50	65.25										
13.00	64.25										
13.50	64.25										
14.00	63.75			15.00						75	26
14.50	63.25										
15.00	62.75										
15.50	62.25										
16.00	61.75			16.75						88	7
16.50	61.25										
17.00	61.00										
17.50	59.75									77	Nil
18.00	59.75			19.50						85	39
18.50	59.25										
19.00	58.25										
19.50	58.25										
20.00	57.75			20.00						83	23
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											

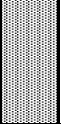
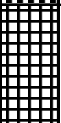
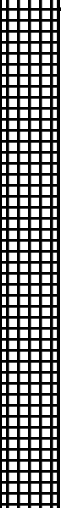


BH NO. :		14		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		78.347					
LOCATION :		N = -157, E = 71		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		0.75					
START DATE :		12/22/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		12/24/2015		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
				m		15	30	45		%	%
0.00	78.35		Completely weathered brown, fine grained rock								
0.50	77.85										
1.00	77.60			0.75						2	Nil
1.50	76.85		Fresh grey, fine grained Quartzite	1.50						84	67
2.00	76.35										
2.50	76.10			2.25						96	88
3.00	75.35		Fresh grey, fine grained, Fractured Quartzite								
3.50	74.85										
4.00	74.60			3.75						75	36
4.50	73.85										
5.00	73.35										
5.50	73.10			5.25						85	47
6.00	72.35										
6.50	71.85										
7.00	71.60			6.75						59	45
7.50	70.85										
8.00	70.35										
8.50	70.10			8.25						79	71



BH NO. :		14		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		78.347					
LOCATION :		N = -157, E = 71		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		0.75					
START DATE :		12/22/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		12/24/2015		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
9.00	69.35		Fresh grey, fine grained Fractured Quartzite	9.75					76	Nil	
9.50	68.85										
10.00	68.60										
10.50	67.85										
11.00	67.35										
11.50	67.10										
12.00	66.35										
12.50	65.85										
13.00	65.60										
13.50	64.85										
14.00	64.35										
14.50	64.10										
15.00	63.35										
15.50	62.85										
16.00	62.60										
16.50	61.85										
17.00	61.35										
17.50	61.10										
18.00	60.35										
18.50	59.85										
19.00	59.60										
19.50	58.85										
20.00	58.35							83	23		
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											



BH NO. :		15		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		77.500					
LOCATION :		N = -191, E = -105		WATER TABLE below EGL (m) :		2.50					
				CASING Depth (m) :		1.50					
START DATE :		12/29/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/2/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	77.50		Dense Dark Grey Sandy silt								
0.50	77.00										
1.00	76.75			0.75	SPT1	8	14	28	42		
1.50	76.00		Completely weathered Rock	1.50	SPT2	52	R		R		
2.00	75.50		Moderately weathered grey, fine grained Limestone								
2.50	75.25			2.25						33	Nil
3.00	74.50			Fresh grey, fine grained Limestone	3.00						93
3.50	74.00										
4.00	73.75	3.75								32	Nil
4.50	73.00		Fresh grey, fine grained Quartzite	4.50						59	Nil
5.00	72.50										
5.50	72.25			5.25						86	28
6.00	71.50			6.00						99	31
6.50	71.00										
7.00	70.50										
7.50	70.00			7.50						48	Nil
8.00	69.50										
8.50	69.00										
9.00	68.50			9.00						67	44
9.50	68.00										
10.00	67.75			9.75						80	54
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		16	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		79.707						
LOCATION :		N = -191, E = -36	WATER TABLE below EGL (m) :		4.50						
			CASING Depth (m) :		1.50						
START DATE :		1/5/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		1/6/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	79.71		Moderately weathered grey, fine grained Limestone								
0.50	79.21										
1.00	78.96			0.75					29	Nil	
1.50	78.21		Slightly weathered Rock	1.50					51	Nil	
2.00	77.71		Fresh grey, fine grained Limestone								
2.50	77.46			2.25					91	Nil	
3.00	76.71			3.00					84	23	
3.50	76.21										
4.00	75.71										
4.50	75.21			4.50					71	16	
5.00	74.71										
5.50	74.21										
6.00	73.71			6.00					65	Nil	
6.50	73.21										
7.00	72.71										
7.50	72.21			7.50					69	15	
8.00	71.71										
8.50	71.21										
9.00	70.71			9.00					75	68	
9.50	70.21										
10.00	69.96			9.75					74	64	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

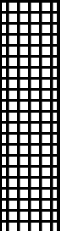
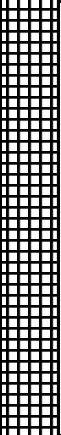
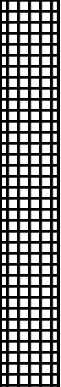


BH NO. :		17	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		80.085						
LOCATION :		N = -191, E = 36	WATER TABLE below EGL (m) :		Not struck						
			CASING Depth (m) :		3.00						
START DATE :		12/10/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/12/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	80.09		Fresh grey, fine grained Limestone								
0.50	79.59										
1.00	79.34		0.75						81	Nil	
1.50	78.59		Fresh grey, fine grained Quartzite with Conglomerate	1.50						87	31
2.00	78.09										
2.50	77.59										
3.00	77.09		3.00						96	40	
3.50	76.59		Fresh grey, fine grained Fractured Quartzite								
4.00	76.09										
4.50	75.59		4.50						71	47	
5.00	75.09										
5.50	74.59										
6.00	74.09		6.00						71	32	
6.50	73.59										
7.00	73.09										
7.50	72.59		7.50						63	Nil	
8.00	72.09										
8.50	71.59										
9.00	71.09		9.00						61	16	
9.50	70.59		Fresh black, fine grained, Fractured Shale								
10.00	70.34		9.75						69	Nil	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

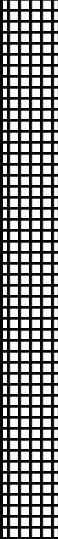
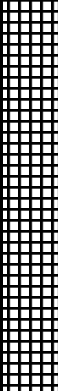


BH NO. :		18	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		80.011						
LOCATION :		N = -191, E = 105	WATER TABLE below EGL (m) :		Not struck						
			CASING Depth (m) :		1.50						
START DATE :		12/5/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/7/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	80.01		Yellowish Completely weathered rock								
0.50	79.51										
1.00	79.26			0.75	SPT1	32	51	>100		R	
1.50	78.51			1.50	SPT2	39	50	>100		R	
2.00	78.01		Moderately weathered grey, fine grained, fractured Limestone								
2.50	77.76			2.25					25	Nil	
3.00	77.01			3.00					39	Nil	
3.50	76.51		Slightly weathered red, fine grained, Fractured Sandstone								
4.00	76.26			3.75					51	29	
4.50	75.51			4.50					59	13	
5.00	75.01		Fresh red, fine grained, Fractured Sandstone								
5.50	74.76			5.25					96	35	
6.00	74.01			6.00					57	13	
6.50	73.51										
7.00	73.26			6.75					67	Nil	
7.50	72.51			7.50					67	Nil	
8.00	72.01		Fresh black, fine grained, Fractured Shale								
8.50	71.76			8.25					66	Nil	
9.00	71.01			9.00					67	Nil	
9.50	70.51										
10.00	70.26			9.75					77	11	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

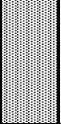
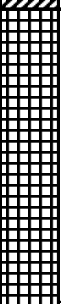
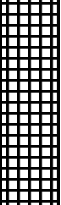


BH NO. :		19		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		77.474					
LOCATION :		N = -205, E = -70		WATER TABLE below EGL (m) :		2.50					
				CASING Depth (m) :		1.50					
START DATE :		12/24/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		12/28/2015		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	77.47		Completely weathered, brown rock								
0.50	76.97										
1.00	76.72			0.75	SPT1	7				R	
1.50	75.97		Moderately weathered grey, fine grained Limestone	1.50						34	Nil
2.00	75.47		Fresh grey, fine grained Limestone								
2.50	75.22			2.25						84	13
3.00	74.72			2.75						90	28
3.50	73.97										
4.00	73.47										
4.50	72.97			4.50						73	15
5.00	72.47		Fresh grey, fine grained Quartzite								
5.50	71.97										
6.00	71.72			5.75						67	Nil
6.50	70.97										
7.00	70.47										
7.50	69.97			7.50						77	27
8.00	69.47										
8.50	77.47										
9.00	68.47			9.00						59	14
9.50	67.97										
10.00	67.47										
10.50	66.97		Fresh black, fine grained Shale	10.50						67	26
11.00	66.47										
11.50	65.97										
12.00	65.47			12.00						66	Nil
12.50	64.97										
13.00	64.47										
13.50	63.97			13.50						75	31
14.00	63.47										
14.50	62.97										
15.00	62.47			15.00						80	39
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

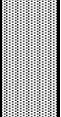
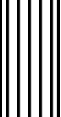
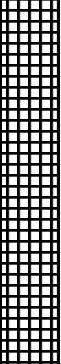
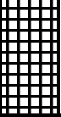


BH NO. :		20		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)							
LOCATION :		N = -205, E = 70		WATER TABLE below EGL (m) :							
				CASING Depth (m) :		3.00					
START DATE :		12/1/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		12/4/2015		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	81.19		Completely weathered, brown rock								
0.50	80.69					7					
1.00	80.44			0.75	SPT1	34	50	>100		R	
1.50	79.69			1.50	SPT2	50	>100			R	
2.00	79.19										
2.50	78.94			2.25	SPT3	>100				R	
3.00	78.44			2.75	SPT4	>100				R	
3.50	77.69		Fresh grey, fine grained Quartzite								
4.00	77.44			3.75						63	13
4.50	76.69			4.50						43	Nil
5.00	76.19										
5.50	75.94			5.25						57	20
6.00	75.19			6.00						49	24
6.50	74.69										
7.00	74.44			6.75						67	43
7.50	73.69			7.50						62	20
8.00	73.19										
8.50	72.94			8.25						73	37
9.00	72.19			9.00						89	24
9.50	71.69										
10.00	71.44			9.75						79	37
10.50	70.69		Fresh grey, fine grained Basalt	10.50						95	67
11.00	70.19										
11.50	69.94			11.25						81	32
12.00	69.19										
12.50	68.69										
13.00	68.44			12.75						42	23
13.50	67.69										
14.00	67.19										
14.50	66.94			14.25						65	42
15.00	66.19			15.00						100	100
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

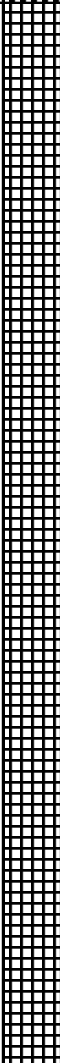


BH NO. :		21		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		77.770					
LOCATION :		N = -220, E = -144		WATER TABLE below EGL (m) :		2.00					
				CASING Depth (m) :		1.50					
START DATE :		12/26/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		12/28/2015		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	77.77		Very Stiff Sandy silt								
0.50	77.27										
1.00	77.02			0.75	SPT1	12	17	28	45		
1.50	76.27		Brownish Completely weathered rock	1.50	SPT2	52	>50	>50	R		
2.00	75.77		Slightly weathered grey, fine grained Limestone								
2.50	75.52			2.25						52	Nil
3.00	75.02			2.75						35	Nil
3.50	74.27										
4.00	74.02			3.75						51	Nil
4.50	73.27		Fresh grey, fine grained Quartzite	4.50						50	18
5.00	72.77										
5.50	72.52			5.25						91	25
6.00	71.77			6.00						83	59
6.50	71.27										
7.00	70.77										
7.50	70.27			7.50						76	42
8.00	69.77		Fresh black, fine grained Shale								
8.50	69.27										
9.00	68.77			9.00						66	27
9.50	68.27										
10.00	68.02			9.75						80	51
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

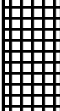
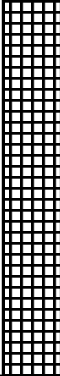


BH NO. :		22		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		77.359					
LOCATION :		N = -232, E = -104		WATER TABLE below EGL (m) :		2.50					
				CASING Depth (m) :		1.50					
START DATE :		12/23/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		12/25/2015		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	77.36		Sandy silt with Gravels								
0.50	76.86										
1.00	76.61			0.75	SPT1	52	>100		R		
1.50	75.86		Highly weathered grey, fine grained Limestone	1.50						24	Nil
2.00	75.36										
2.50	75.11			2.25						25	Nil
3.00	74.36		Slightly weathered grey, fine grained Limestone	3.00						37	Nil
3.50	73.86										
4.00	73.61			3.75						43	Nil
4.50	72.86		Fresh grey, fine grained Quartzite	4.50						85	13
5.00	72.36										
5.50	72.11			5.25						89	15
6.00	71.36										
6.50	70.86										
7.00	70.61			6.75						71	52
7.50	69.86										
8.00	69.36										
8.50	69.11			8.25						58	18
9.00	68.36		Fresh black, fine grained Shale								
9.50	67.61			9.75						71	8
10.00	67.36			10.00						64	Nil
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

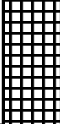
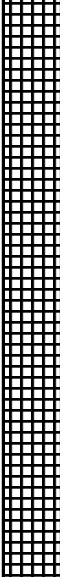


BH NO. :		23		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		78.126					
LOCATION :		N = -232, E = -36		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		1.50					
START DATE :		12/15/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		12/17/2015		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	78.13		Completely brown weathered rock								
0.50	77.63										
1.00	77.38			0.75	SPT1	52	>100		R		
1.50	76.63		Moderately weathered grey, fine grained Quartzite	1.50						37	Nil
2.00	76.13		Fresh grey, fine grained Quartzite								
2.50	75.88			2.25						83	Nil
3.00	75.38			2.75						80	Nil
3.50	74.63										
4.00	74.13										
4.50	73.63			4.50						64	23
5.00	73.13										
5.50	72.63										
6.00	72.13			6.00						64	15
6.50	71.63										
7.00	71.13										
7.50	70.63			7.50						60	23
8.00	70.13										
8.50	69.63										
9.00	69.13			9.00						69	9
9.50	68.63										
10.00	68.13										
10.50	67.63			10.50						70	19
11.00	67.13										
11.50	66.63										
12.00	66.38			11.75						49	Nil
12.50	65.63										
13.00	65.13										
13.50	64.63			13.50						61	52
14.00	64.13										
14.50	63.63										
15.00	63.13			15.00						70	33
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

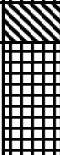
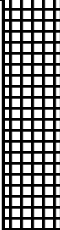
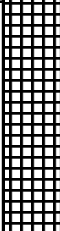
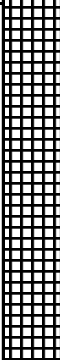


BH NO. :		24	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		79.318						
LOCATION :		N = -233, E = 00	WATER TABLE below EGL (m) :		Not struck						
			CASING Depth (m) :		1.50						
START DATE :		12/13/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/14/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	79.32		Completely weathered, grey, fine grained Limestone								
0.50	78.82										
1.00	78.57			0.75	SPT1	52	>100		R		
1.50	77.82		Moderately weathered grey, fine grained Limestone	1.50					31	Nil	
2.00	77.32		Fresh brownish grey, fine grained Limestone								
2.50	77.07			2.25					83	Nil	
3.00	76.32			3.00					80	15	
3.50	75.82		Slightly weathered greyish white, fine grained Quartzite								
4.00	75.32										
4.50	74.82			4.50					57	26	
5.00	74.32		Fresh greyish white, fine grained Quartzite								
5.50	73.82										
6.00	73.32			6.00					75	73	
6.50	72.82										
7.00	72.32										
7.50	71.82			7.50					82	28	
8.00	71.32										
8.50	70.82										
9.00	70.32			9.00					77	68	
9.50	69.82		Fresh black, fine grained Shale								
10.00	69.32			10.00					84	61	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

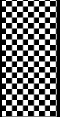
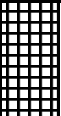
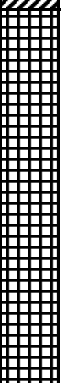


BH NO. :		25	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		82.371						
LOCATION :		N = -232, E = 36	WATER TABLE below EGL (m) :		Not struck						
			CASING Depth (m) :		3.00						
START DATE :		11/12/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/13/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.37		Completely weathered brown Limestone								
0.50	81.87										
1.00	81.62			0.75	SPT1	52	>100		R		
1.50	80.87		Moderately weathered Limestone	1.50						33	Nil
2.00	80.37		Fresh grey, fine grained Limestone								
2.50	80.12			2.25						89	Nil
3.00	79.37			3.00						83	Nil
3.50	78.87		Fresh grey, fine grained Quartzite								
4.00	78.37										
4.50	77.87			4.50						68	8
5.00	77.37										
5.50	76.87										
6.00	76.37			6.00						60	Nil
6.50	75.87										
7.00	75.37										
7.50	74.87			7.50						76	76
8.00	74.37										
8.50	73.87										
9.00	73.37			9.00						84	43
9.50	72.87										
10.00	72.37			10.00						73	26
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

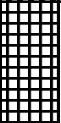
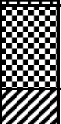
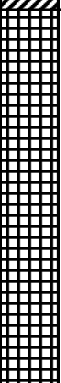


BH NO. :		26		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		82.207									
LOCATION :		N = -232, E = 105		WATER TABLE below EGL (m) :		Not struck									
				CASING Depth (m) :		3.00									
START DATE :		7/12/2015		BORING/ DRILLING METHOD :		Rotary									
END DATE :		10/12/2015		DRILLING : NX SIZE double tube core barrel											
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)				
				Depth	Type	cm									
						m	15	30		45	%	%			
0.00	82.21		Completely weathered brown Limestone		SPT1				R						
0.50	81.71														
1.00	81.46			0.75		50	53	55							
1.50	80.71			1.50		SPT2	>100					R			
2.00	80.21		Fresh grey, fine grained Limestone							67	Nil				
2.50	79.96			2.25											
3.00	79.21		Completely weathered grey, fine grained Limestone	3.00		>100			R						
3.50	78.71														
4.00	78.46			Fresh grey, fine grained Fractured Limestone		3.75								85	23
4.50	77.71					4.50									
5.00	77.21		Fresh red, fine grained Fractured Sandstone							72	26				
5.50	76.71														
6.00	76.21			6.00											
6.50	75.71														
7.00	75.21														
7.50	74.71			7.50									41	17	
8.00	74.21		Fresh grey, fine grained Fractured Quartzite							64	35				
8.50	73.71														
9.00	73.21			9.00											
9.50	72.71														
10.00	72.21														
10.50	71.71			10.50									70	44	
11.00	71.21		Fresh black, fine grained Fractured Shale							86	19				
11.50	70.71														
12.00	70.46			11.75									66	14	
12.50	69.71														
13.00	69.21														
13.50	68.71			13.50									86	19	
14.00	68.21														
14.50	67.71														
15.00	67.21			15.00									75	47	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.															

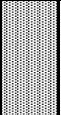
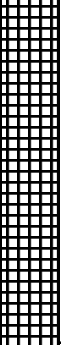
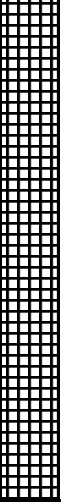


BH NO. :		27		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		77.210					
LOCATION :		N = -232, E = 141		WATER TABLE below EGL (m) :		5.30					
				CASING Depth (m) :		2.00					
START DATE :		12/22/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/1/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	77.21		Moderately weathered grey, fine grained Limestone	0.75					28	Nil	
0.50	76.71										
1.00	76.46										
1.50	75.71		Fresh grey, fine grained Limestone	1.50					87	19	
2.00	75.21										
2.50	74.96										
3.00	74.21		Moderately weathered grey, fine grained Limestone	2.25					83	Nil	
3.50	73.71										
4.00	73.21										
4.50	72.71		Slightly weathered grey, fine grained Limestone	3.50					45	Nil	
5.00	72.21										
5.50	71.96										
6.00	71.21		Fresh grey, fine grained Quartzite	5.25					59	7	
6.50	70.71										
7.00	70.46			6.75					87	75	
7.50	69.71										
8.00	69.21			8.25					87	32	
8.50	68.96										
9.00	68.21			9.75					53	34	
9.50	67.46										
10.00	67.21			10.00					76	48	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		27		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		77.210					
LOCATION :		N = -232, E = 141		WATER TABLE below EGL (m) :		5.30					
				CASING Depth (m) :		2.00					
START DATE :		12/22/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/1/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	77.21		Moderately weathered grey, fine grained Limestone								
0.50	76.71										
1.00	76.46			0.75					28	Nil	
1.50	75.71		Fresh grey, fine grained Limestone	1.50					87	19	
2.00	75.21										
2.50	74.96			2.25					83	Nil	
3.00	74.21		Moderately weathered grey, fine grained Limestone								
3.50	73.71			3.50					45	Nil	
4.00	73.21										
4.50	72.71		Slightly weathered grey, fine grained Limestone								
5.00	72.21										
5.50	71.96			5.25					59	7	
6.00	71.21		Fresh grey, fine grained Quartzite								
6.50	70.71										
7.00	70.46			6.75					87	75	
7.50	69.71										
8.00	69.21										
8.50	68.96			8.25					87	32	
9.00	68.21										
9.50	67.46			9.75					53	34	
10.00	67.21			10.00					76	48	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		28		EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		80.715						
LOCATION :		N = -263, E = -74		WATER TABLE below EGL (m) :		2.50						
				CASING Depth (m) :		1.50						
START DATE :		12/28/2015		BORING/ DRILLING METHOD :		Rotary						
END DATE :		3/1/2016		DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)	
				Depth	Type	cm						
						15	30	45				
				m						%	%	
0.00	80.72		Dark Brown very stiff Sandy silt									
0.50	80.22											
1.00	79.97			0.75	SPT1	12	52	>50	R			
1.50	79.22		Completely Weathered grey, fine grained Quartzite	1.50	SPT2	52			R			
2.00	78.72		Moderately weathered grey, fine grained Quartzite									
2.50	78.47			2.25						26	Nil	
3.00	77.72			3.00						33	Nil	
3.50	77.22		Slightly weathered grey, fine grained Quartzite									
4.00	76.97			3.75						43	43	
4.50	76.22		Fresh grey, fine grained Quartzite	4.50						85	40	
5.00	75.72											
5.50	75.47			5.25						81	14	
6.00	74.72											
6.50	74.22											
7.00	73.72											
7.50	73.22											
8.00	72.72											
8.50	72.22											
9.00	71.72		Fresh dark grey, fine grained Shale									
9.50	71.22											
10.00	70.72			10.00						76	48	
10.50	70.22											
11.00	69.72											
11.50	69.47			11.25						77	Nil	
12.00	68.72											
12.50	68.22											
13.00	67.97			12.75						76	19	
13.50	67.22											
14.00	66.72											
14.50	66.47			14.25						71	27	
15.00	65.72			15.00						75	47	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.												

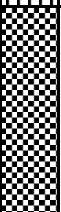
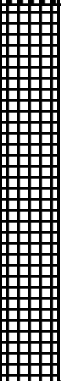
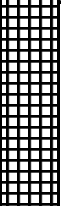


BH NO. :		29		EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		76.958					
LOCATION :		N = -263, E = 68		WATER TABLE below EGL (m) :		4.00					
				CASING Depth (m) :		1.50					
START DATE :		7/1/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		12/1/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	76.96		Completely weathered grey, fine grained Limestone								
0.50	76.46		0.75						24	Nil	
1.00	76.96		Slightly weathered grey, fine grained Limestone								
1.50	75.71		1.25						45	Nil	
2.00	74.96		Moderately weathered grey, fine grained Limestone								
2.50	74.71			2.25						39	Nil
3.00	73.96			3.00						35	Nil
3.50	73.46										
4.00	73.21			3.75						30	Nil
4.50	72.46			4.50						37	14
5.00	71.96										
5.50	71.71			5.25						33	Nil
6.00	70.96		Fresh grey, fine grained Limestone	6.00						84	75
6.50	70.46										
7.00	70.21			6.75						82	45
7.50	69.46										
8.00	68.96										
8.50	68.71			8.25						68	58
9.00	67.96										
9.50	67.46										
10.00	66.96			10.00						67	43
10.50	66.46										
11.00	65.96										
11.50	65.71			11.25						68	22
12.00	64.96		Fresh black, fine grained Shale								
12.50	64.46										
13.00	64.21			12.75						71	Nil
13.50	63.46										
14.00	62.96										
14.50	62.71			14.25						72	Nil
15.00	61.96			15.00						65	Nil
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		30		EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		77.195					
LOCATION :		N = -283, E = -98		WATER TABLE below EGL (m) :		3.50					
				CASING Depth (m) :		1.50					
START DATE :		12/18/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		12/20/2015		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	77.20		Highly weathered grey, fine grained Quartzite	0.75						21	Nil
0.50	76.45										
1.00	76.20		Moderately weathered Fractured grey, fine grained Quartzite	1.50						25	Nil
1.50	75.70			2.25						38	Nil
2.00	75.20										
2.50	74.95										
3.00	74.20		Slightly weathered grey, fine grained Quartzite	3.00						66	Nil
3.50	73.70			3.75						57	17
4.00	73.45			4.50						60	29
4.50	72.70										
5.00	72.20		Fresh grey, fine grained Quartzite	5.25						88	76
5.50	71.95			6.00						87	47
6.00	71.20										
6.50	70.70										
7.00	70.20										
7.50	69.70			7.50						62	26
8.00	69.20		Fresh dark greyish black, fine grained Shale	9.00						97	Nil
8.50	68.70										
9.00	68.20										
9.50	67.70										
10.00	67.20			10.50						41	Nil
10.50	66.70										
11.00	66.20										
11.50	65.70			12.00						46	18
12.00	65.20										
12.50	64.70										
13.00	64.20			13.50						63	55
13.50	63.70										
14.00	63.20										
14.50	62.70										
15.00	62.20			15.00						63	23
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		31		EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		79.000						
LOCATION :		N = -283, E = -55		WATER TABLE below EGL (m) :		2.80						
				CASING Depth (m) :		1.50						
START DATE :		12/21/2015		BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/24/2015		DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)	
				Depth	Type	cm						
						m		15		30	45	%
0.00	79.00		Highly weathered grey, fine grained Quartzite									
0.50	78.25			0.75						21	Nil	
1.00	78.00		Moderately weathered grey, fine grained Quartzite	1.50						37	Nil	
1.50	77.50											
2.00	77.00			2.25						29	Nil	
2.50	76.75			3.00						29	Nil	
3.00	76.00		Fresh grey, fine grained Quartzite									
3.50	75.50			3.75						93	30	
4.00	75.25			4.50						86	37	
4.50	74.50											
5.00	74.00											
5.50	73.50											
6.00	73.25			5.75						63	26	
6.50	72.50											
7.00	72.00											
7.50	71.50			7.50						74	17	
8.00	71.00		Fresh dark greyish black, fine grained Shale									
8.50	70.50											
9.00	70.00			9.00						62	Nil	
9.50	69.50											
10.00	69.00											



BH NO. :		31	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		79.000						
LOCATION :		N = -283, E = -55	WATER TABLE below EGL (m) :		2.80						
			CASING Depth (m) :		1.50						
START DATE :		12/21/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/24/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
10.50	68.50		Fresh dark greyish black,fine grained Shale	10.50					71	22	
11.00	68.00										
11.50	67.50										
12.00	67.00			12.00					66	7	
12.50	66.50		Fresh dark greyish black,fine grained Shale								
13.00	66.00										
13.50	65.50			13.50					74	22	
14.00	65.00										
14.50	64.50										
15.00	64.00			15.00					66	31	
15.50	63.50										
16.00	63.00										
16.50	62.50			16.50					79	58	
17.00	62.00										
17.50	61.50										
18.00	61.00			18.00					79	32	
18.50	60.50										
19.00	60.00										
19.50	59.50			19.50					85	39	
20.00	59.00			20.00					67	20	
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											



BH NO. :		32		EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		79.734					
LOCATION :		N= -283 E= 43		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		NA					
START DATE :		1/15/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/18/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	79.73		Moderately Weathered grey, fine grained Quartzite								
0.50	79.23										
1.00	78.98			0.75					32	Nil	
1.50	78.23			1.50					22	Nil	
2.00	77.73										
2.50	77.48			2.25					37	16	
3.00	76.73			3.00					25	20	
3.50	76.23		Fresh grey, fine grained Quartzite								
4.00	75.98			3.75					80	48	
4.50	75.23			4.50					80	Nil	
5.00	74.73										
5.50	74.23										
6.00	73.73			6.00					72	22	
6.50	73.23		Slightly Weathered grey, fine grained Limestone								
7.00	72.73										
7.50	72.23			7.50					50	Nil	
8.00	71.73		Fresh grey, fine grained Limestone								
8.50	71.23										
9.00	70.73			9.00					68	20	
9.50	70.23		Slightly Weathered grey, fine grained Limestone								
10.00	69.73										
10.50	69.23			10.50					56	21	
11.00	68.73		Fresh grey, fine grained Limestone								
11.50	68.23										
12.00	67.73			12.00					64	44	
12.50	67.23		Slightly Weathered grey, fine grained Limestone								
13.00	66.73										
13.50	66.23			13.50					45	10	
14.00	65.73		Fresh grey, fine grained Limestone								
14.50	65.23										
15.00	64.73			15.00					64	20	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		33		EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		81.070					
LOCATION :		N = -283, E = 87		WATER TABLE below EGL (m) :		5.00					
				CASING Depth (m) :		1.50					
START DATE :		1/7/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/12/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	81.07		Moderately weathered grey, fine grained Limestone	0.75						30	Nil
0.50	80.32			1.50						37	Nil
1.00	80.07			2.25						25	Nil
1.50	79.57										
2.00	79.07		Moderately weathered grey, fine grained Quartzite	3.00						29	Nil
2.50	78.82			3.75						23	Nil
3.00	78.07	4.50							33	Nil	
3.50	77.57										
4.00	77.32		Slightly weathered grey, fine grained Quartzite	5.25						45	18
4.50	76.57			6.00						39	Nil
5.00	76.07			6.75						50	18
5.50	75.82										
6.00	75.07		Fresh dark grey, fine grained Quartzite	7.50						81	47
6.50	74.57			8.25						92	72
7.00	74.32			9.75						65	14
7.50	73.57										
8.00	73.07										
8.50	72.82										
9.00	72.07										
9.50	71.57										
10.00	71.32										

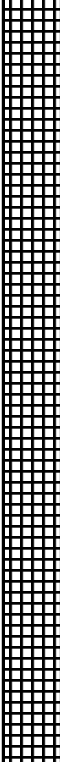


BH NO. :		33	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		81.070						
LOCATION :		N = -283, E = 87	WATER TABLE below EGL (m) :		5.00						
			CASING Depth (m) :		1.50						
START DATE :		1/7/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		1/12/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
10.50	70.57		Fresh black, fine grained Shale								
11.00	70.07										
11.50	69.82			11.25					75	8	
12.00	69.07										
12.50	68.57										
13.00	68.32			12.75					78	31	
13.50	67.57										
14.00	67.07										
14.50	66.82			14.25					72	17	
15.00	66.07										
15.50	65.57										
16.00	65.50			15.57					79	52	
16.50	64.57										
17.00	64.07										
17.50	63.82			17.25					77	50	
18.00	63.07										
18.50	62.57										
19.00	62.32			18.75					68	42	
19.50	61.57										
20.00	61.07			20.00					52	Nil	
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											

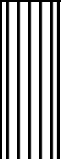
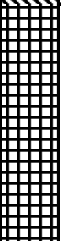
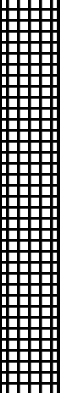


BH NO. :		34		EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		81.078					
LOCATION :		N = -279, E =135		WATER TABLE below EGL (m) :		5.00					
				CASING Depth (m) :		1.50					
START DATE :		1/4/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/6/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	81.08		Highly weathered greyish brown , fine grained Limestone								
0.50	80.33			0.75					25	Nil	
1.00	80.08										
1.50	79.58			1.50					23	Nil	
2.00	79.08										
2.50	78.83			2.25					24	Nil	
3.00	78.08			3.00					21	Nil	
3.50	77.58										
4.00	77.33			3.75					22	Nil	
4.50	76.58		Fresh grey, fine grained Quartzite	4.50					81	51	
5.00	76.08										
5.50	75.83			5.25					80	40	
6.00	75.08										
6.50	74.58										
7.00	74.33			6.75					66	27	
7.50	73.58										
8.00	73.08										
8.50	72.83			8.25					77	39	
9.00	72.08										
9.50	71.33			9.75					81	81	
10.00	71.33			9.75					74	74	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

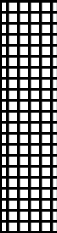
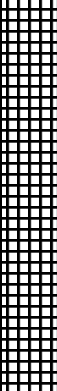


BH NO. :		35	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		76.971							
LOCATION :		N = -283 E = 182		WATER TABLE below EGL (m) :		2.50						
				CASING Depth (m) :		1.50						
START DATE :		2/22/2016		BORING/ DRILLING METHOD :		Rotary						
END DATE :		2/23/2016		DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)	
				Depth	Type	cm						
						m	15	30		45	%	%
0.00	76.97		Moderately Weathered,Fractured grey, fine grained Quartzite	0.75						35	35	
0.50	76.47											
1.00	76.22											
1.50	75.47		Moderately Weathered grey, fine grained Quartzite	1.50						31	Nil	
2.00	74.97											
2.50	74.72											
3.00	73.97											
3.50	73.47											
4.00	73.22											
4.50	72.47											
5.00	71.97		Fresh grey, fine grained Quartzite	5.25						82	37	
5.50	71.72											
6.00	70.97			6.00							91	79
6.50	70.47											
7.00	69.97			7.50							58	58
7.50	69.47											
8.00	68.97			9.00							73	27
8.50	68.47											
9.00	67.97			10.50							66	9
9.50	67.47											
10.00	66.97			12.00							49	13
10.50	66.47											
11.00	65.97			13.50							56	23
11.50	65.47											
12.00	64.97			15.00							81	15
12.50	64.47											
13.00	63.97											
13.50	63.47											
14.00	63.47											
14.50	62.47											
15.00	61.97											
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.												



BH NO. : 36		EGL(EXISTING GROUND LEVEL)R.L.(+) (m) 79.856									
LOCATION : N = -302, E = -74		WATER TABLE below EGL (m) : 3.00									
		CASING Depth (m) : 1.50									
START DATE : 2/14/2016		BORING/ DRILLING METHOD : Rotary									
END DATE : 2/16/2016		DRILLING : NX SIZE double tube core barrel									
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	79.86		Highly weathered grey, fine grained Quartzite	0.75						24	Nil
0.50	79.11										
1.00	78.86										
1.50	78.36			1.50						23	23
2.00	77.86		Moderately weathered grey, fine grained Quartzite								
2.50	77.61			2.25						33	23
3.00	76.86		Slightly weathered grey, fine grained Quartzite	3.00						43	Nil
3.50	76.36										
4.00	76.11		Fresh grey, fine grained Quartzite	3.75						83	46
4.50	75.36			4.50						85	26
5.00	74.86										
5.50	74.36										
6.00	73.86			6.00						53	33
6.50	73.36										
7.00	72.86		Slightly weathered grey, fine grained Quartzite	7.50						73	25
7.50	72.36										
8.00	71.86										
8.50	71.36										
9.00	70.86			9.00						59	7
9.50	70.36										
10.00	69.86										
10.50	69.36		Fresh black, fine grained Shale	10.5						71	7
11.00	68.86			12.00						55	15
11.50	69.36										
12.00	67.86										
12.50	67.36										
13.00	66.86										
13.50	66.36			13.50						67	26
14.00	65.86										
14.50	65.36										
15.00	64.86			15.00						72	57
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		37		EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		78.670					
LOCATION :		N = -302, E =68		WATER TABLE below EGL (m) :		4.00					
				CASING Depth (m) :		1.50					
START DATE :		1/13/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/17/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	78.67		Highly weathered grey, fine grained Quartzite	0.75					27	Nil	
0.50	77.92										
1.00	77.67										
1.50	77.17			1.50					21	Nil	
2.00	76.67		Slightly weathered grey, fine grained Quartzite								
2.50	76.42			2.25					45	37	
3.00	75.92		Moderately weathered grey, fine grained Quartzite	2.75					36	16	
3.50	75.17			3.50					37	37	
4.00	74.67		Fresh grey, fine grained Quartzite	4.50					83	19	
4.50	74.17										
5.00	73.67										
5.50	73.17			5.25					93	42	
6.00	78.67										
6.50	72.17			6.50					65	19	
7.00	71.67		Slightly weathered grey, fine grained Quartzite								
7.50	78.67										
8.00	70.67										
8.50	70.17			8.25					57	15	
9.00	78.67										
9.50	69.17										
10.00	68.92			9.75					52	26	
10.50	68.17		Fresh black, fine grained Shale								
11.00	67.67										
11.50	67.42			11.25					75	25	
12.00	66.67										
12.50	66.17										
13.00	65.92			12.75					68	16	
13.50	65.17										
14.00	64.67										
14.50	64.42			14.25					68	7	
15.00	63.67								49	49	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		38	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		80.260						
LOCATION :		N = -329 E = -3		WATER TABLE below EGL (m) :		6.00					
				CASING Depth (m) :		1.50					
START DATE :		2/23/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/25/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	80.26		Moderately Weathered grey, fine grained Fractured Quartzite								
0.50	79.76										
1.00	79.51			0.75					24	Nil	
1.50	78.76			1.50					28	Nil	
2.00	78.26		Slightly Weathered grey, fine grained Fractured Quartzite								
2.50	78.01			2.25					56	33	
3.00	77.26			3.00					41	Nil	
3.50	76.76										
4.00	76.51			3.75					39	Nil	
4.50	75.76			4.50					49	Nil	
5.00	75.26										
5.50	75.01			5.25					90	13	
6.00	74.26			6.00					53	13	
6.50	73.76										
7.00	73.51			6.75					47	13	
7.50	72.76			7.50					39	Nil	
8.00	72.26										
8.50	72.01			8.25					41	Nil	
9.00	71.26			9.00					31	Nil	
9.50	70.51			9.75					30	Nil	
10.00	70.26			10.00					62	44	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

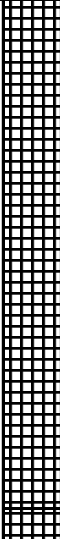


BH NO. :		39	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		76.395						
LOCATION :		N = -330, E =110	WATER TABLE below EGL (m) :		4.50						
			CASING Depth (m) :		1.50						
START DATE :		1/18/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		1/21/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	76.40		Slightly weathered grey, fine grained Quartzite								
0.50	75.65			0.75					44	44	
1.00	75.40										
1.50	74.90			1.50					45	Nil	
2.00	74.40										
2.50	74.15			2.25					55	25	
3.00	73.40			3.00					43	Nil	
3.50	72.90		Fresh grey, fine grained Quartzite								
4.00	72.65			3.75					67	24	
4.50	71.90			4.50					69	16	
5.00	71.40										
5.50	71.15			5.25					75	Nil	
6.00	70.40			6.00					79	17	
6.50	69.90										
7.00	69.65			6.75					79	57	
7.50	68.90			7.50					55	34	
8.00	68.40										
8.50	68.15			8.25					81	43	
9.00	67.40		Fresh black, fine grained Shale	9.00					80	44	
9.50	66.90										
10.00	66.65			9.75					62	62	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		40		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		76.093						
LOCATION :		N = -357, E =-149		WATER TABLE below EGL (m) :		3.90						
				CASING Depth (m) :		NA						
START DATE :		3/17/2016		BORING/ DRILLING METHOD :		Rotary						
END DATE :		3/18/2016		DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)	
				Depth	Type	cm						
						m		15		30	45	%
0.00	76.09		Highly weathered grey, fine grained Quartzite	0.00								
0.50	75.59			0.75						26	Nil	
1.00	75.09		Moderately weathered grey, fine grained Quartzite									
1.50	74.59			1.50						29	Nil	
2.00	74.09		Slightly weathered grey, fine grained Quartzite	2.25						42	Nil	
2.50	73.59											
3.00	73.09				3.00						54	34
3.50	72.59				3.75						49	18
4.00	72.09											
4.50	71.59				4.50						66	Nil
5.00	71.09											
5.50	70.59				5.25						46	26
6.00	70.09				6.00						42	Nil
6.50	69.59											
7.00	69.09				6.75						41	Nil
7.50	68.59				7.50						50	36
8.00	68.09											
8.50	67.59				8.25						57	26
9.00	67.09		Moderately weathered grey, fine grained Quartzite	9.00						26	14	
9.50	66.59				9.75						28	Nil
10.00	66.09				10						36	Nil
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.												



BH NO. : 41											EGL(EXISTING GROUND LEVEL) R.L.(+) (m)											78.812										
LOCATION : N = -356 E = -88											WATER TABLE below EGL (m) :											2.50										
											CASING Depth (m) :											1.50										
START DATE : 2/18/2016											BORING/ DRILLING METHOD :											Rotary										
END DATE : 2/20/2016											DRILLING : NX SIZE double tube core barrel																					
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)																					
				Depth	Type	cm																										
						m	15	30		45	%	%																				
0.00	78.81		Moderately Weathered grey, fine grained Quartzite																													
0.50	78.31																															
1.00	78.06			0.75						26	Nil																					
1.50	77.31			1.50						25	Nil																					
2.00	76.81																															
2.50	76.56			2.25						32	13																					
3.00	75.81			3.00					43	43																						
3.50	75.31		Fresh grey, fine grained Quartzite																													
4.00	75.06			3.75						84	73																					
4.50	74.31			4.50						92	55																					
5.00	73.81																															
5.50	73.31																															
6.00	72.81			6.00						72	34																					
6.50	72.31																															
7.00	71.81																															
7.50	71.31			7.50						71	53																					
8.00	70.81																															
8.50	70.31																															
9.00	69.81			9.00						75	66																					
9.50	69.31																															
10.00	68.81			10.00						65	65																					
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.																																



BH NO. :		42		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		78.327					
LOCATION :		N = -360, E =45		WATER TABLE below EGL (m) :		3.60					
				CASING Depth (m) :		NA					
START DATE :		3/26/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/28/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	78.33		Slightly weathered grey, fine grained Quartzite	0.00							
0.50	77.83			0.75					44	Nil	
1.00	77.33										
1.50	76.83			1.50					45	Nil	
2.00	76.33			2.25					68	Nil	
2.50	75.83										
3.00	75.33			3.00					45	26	
3.50	74.83	3.75					44	29			
4.00	74.33		Moderately weathered grey, fine grained Quartzite								
4.50	73.83			4.50					37	14	
5.00	73.33		Slightly weathered grey, fine grained Quartzite								
5.50	72.83			5.25					52	17	
6.00	72.33			6.00					46	Nil	
6.50	71.83										
7.00	71.33			6.75					36	Nil	
7.50	70.83			7.50					40	Nil	
8.00	70.33										
8.50	69.83	8.25					56	Nil			
9.00	69.33		Moderately weathered grey, fine grained Quartzite`	9.00					37	Nil	
9.50	68.83										
10.00	68.33			10.00					25	Nil	
10.50	67.83		Slightly weathered black, fine grained Shale	10.50					58	32	
11.00	67.33										
11.50	66.83			11.25					40	Nil	
12.00	66.33			12.00					53	Nil	
12.50	65.83										
13.00	65.33			12.75					41	Nil	
13.50	64.83			13.50					61	Nil	
14.00	64.33										
14.50	63.83			14.25					53	Nil	
15.00	63.33			15.00					40	14	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		43	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		82.005											
LOCATION :		N = -369, E =-5	WATER TABLE below EGL (m) :		3.50											
			CASING Depth (m) :		1.50											
START DATE :		3/19/2016	BORING/ DRILLING METHOD :		Rotary											
END DATE :		3/22/2016	DRILLING : NX SIZE double tube core barrel													
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)					
				Depth	Type	cm										
						m	15	30		45	%	%				
0.00	82.01		Moderately weathered grey, fine grained Quartzite	0.00						26	Nil					
0.50	81.51			0.75												
1.00	81.01															
1.50	80.51			1.50											27	13
2.00	80.01			2.25											34	Nil
2.50	79.51															
3.00	79.01			3.00											38	Nil
3.50	78.51			3.75											38	Nil
4.00	78.01		Slightly weathered grey, fine grained Quartzite							44	20					
4.50	77.51			4.50												
5.00	77.01															
5.50	76.51			5.25											42	Nil
6.00	76.01			6.00											52	Nil
6.50	75.51															
7.00	75.01			6.75											46	13
7.50	74.51			7.50											53	32
8.00	74.01															
8.50	73.51			8.25											45	Nil
9.00	73.01			9.00											38	30
9.50	72.26			9.75											54	54
10.00	72.01			10											56	Nil
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.																



BH NO. :		44	EGL(EXISTING GROUND LEVEL) R.L.(+)		83.598											
LOCATION :		N=0 E=334	WATER TABLE below EGL (m) :		Not struck											
			CASING Depth (m) :		NA											
START DATE :		3/10/2016	BORING/ DRILLING METHOD :		Rotary											
END DATE :		3/12/2016	DRILLING : NX SIZE double tube core barrel													
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)					
				Depth	Type	cm										
						m		15		30	45	%	%			
0.00	83.60		Moderately Weathered grey, fine grained Limestone	0.75						24	Nil					
0.50	83.10															
1.00	82.85															
1.50	82.10		Moderately Weathered grey, fine grained Limestone	1.50						36	Nil					
2.00	81.60															
2.50	81.35															
3.00	80.60		Slightly Weathered grey, fine grained Quartzite	3.00						48	48					
3.50	80.10			3.75						46	Nil					
4.00	79.85															
4.50	79.10			4.50						32	Nil					
5.00	78.60			5.25						42	33					
5.50	78.35															
6.00	77.60			6.00						45	26					
6.50	76.85			6.75						56	Nil					
7.00	76.60			7.50						53	32					
7.50	76.10															
8.00	75.60		Fresh black, fine grained Shale	8.25						90	Nil					
8.50	75.35			9.00						84	Nil					
9.00	74.60															
9.50	74.10		Slightly Weathered black, fine grained Shale	10.00						54	Nil					
10.00	73.60															
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.																



BH NO. :		45	EGL(EXISTING GROUND LEVEL) R.L.(+)		84.067						
LOCATION :		N = 0, E = 408	WATER TABLE below EGL (m) :		4.90						
			CASING Depth (m) :		0.50						
START DATE :		3/8/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		3/9/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.07		Moderately weathered grey, fine grained Quartzite	0.00							
0.50	83.57			0.75					24	Nil	
1.00	83.07										
1.50	82.57			1.50					34	16	
2.00	82.07			2.25					45	29	
2.50	81.57										
3.00	81.07			3.00					45	45	
3.50	80.57			3.75				29	20		
4.00	80.07		Slightly weathered grey, fine grained Quartzite								
4.50	79.57			4.50					42	26	
5.00	79.07										
5.50	78.57			5.25					20	Nil	
6.00	78.07			6.00					22	Nil	
6.50	77.57										
7.00	77.07			6.75					36	36	
7.50	76.57			7.50					36	13	
8.00	76.07										
8.50	75.57			8.25					38	24	
9.00	75.07			9.00					38	28	
9.50	74.57			9.75					62	Nil	
10.00	74.07			10.0					40	40	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

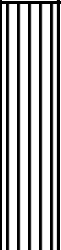
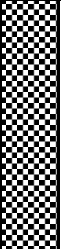


BH NO. :		46	EGL(EXISTING GROUND LEVEL) R.L.(+)		83.363						
LOCATION :		N= 0, E= 454	WATER TABLE below EGL (m) :		3.10						
			CASING Depth (m) :		1.50						
START DATE :		4/25/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		4/26/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	83.36		Highly weathered grey, fine grained Limestone								
0.50	82.86										
1.00	82.61			0.75					21	Nil	
1.50	81.86			1.50					25	Nil	
2.00	81.36										
2.50	81.11			2.25					25	13	
3.00	80.36		3.00					24	13		
3.50	79.86		Moderately weathered grey, fine grained Limestone								
4.00	79.61			3.75					24	Nil	
4.50	78.86			4.50					24	Nil	
5.00	78.36										
5.50	78.11			5.25					21	Nil	
6.00	77.36			6.00					22	Nil	
6.50	76.86										
7.00	76.61			6.75					34	Nil	
7.50	75.86			7.50					24	Nil	
8.00	75.36										
8.50	74.86			8.25					33	Nil	
9.00	74.36		9.00					38	Nil		

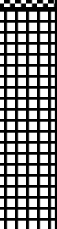


BH NO. :		46	EGL(EXISTING GROUND LEVEL) R.L.(+)		83.363						
LOCATION :		N= 0, E= 454	WATER TABLE below EGL (m) :		3.10						
			CASING Depth (m) :		1.50						
START DATE :		4/25/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		4/26/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
9.50	73.86		Moderately weathered grey, fine grained Quartzite								
10.00	73.61			9.75					37	Nil	
10.50	72.86			10.50					32	Nil	
11.00	72.36										
11.50	71.86			11.25					37	13	
12.00	71.36			12.00					28	Nil	
12.50	70.86										
13.00	70.61			12.75					36	Nil	
13.50	69.86			13.50					32	Nil	
14.00	69.36										
14.50	68.86			14.25					54	30	
15.00	68.36			15.00					50	Nil	
15.50	67.86										
16.00	67.61			15.75					33	Nil	
16.50	66.86			16.50					40	Nil	
17.00	66.36										
17.50	65.86	17.25					50	16			
18.00	65.36		Slightly weathered black, fine grained Shale	18.00					40	Nil	
18.50	64.86										
19.00	64.61			18.75					37	13	
19.50	63.86			19.50					54	Nil	
20.00	63.36			20.00					44	24	
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											



BH NO. :		47		EGL(EXISTING GROUND LEVEL) R.L.(+)		84.008						
LOCATION :		N= 0, E= 530		WATER TABLE below EGL (m) :		4.10						
				CASING Depth (m) :		1.00						
START DATE :		4/18/2016		BORING/ DRILLING METHOD :		Rotary						
END DATE :		4/20/2016		DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)	
				Depth	Type	cm						
						m	15	30		45	%	%
0.00	84.01		Highly weathered grey, fine grained Limestone									
0.50	83.51											
1.00	83.26			0.75					22	Nil		
1.50	82.51			1.50					27	Nil		
2.00	82.01											
2.50	81.76			2.25					23	Nil		
3.00	81.01		Moderately weathered grey, fine grained Limestone	3.00					30	Nil		
3.50	80.51											
4.00	80.26			3.75					30	Nil		
4.50	79.51			4.50					32	Nil		
5.00	79.01											
5.50	78.76			5.25					33	Nil		
6.00	78.01		Slightly weathered grey, fine grained Limestone	6.00					44	Nil		
6.50	77.51											
7.00	77.26			6.75					57	Nil		
7.50	76.51		Moderately weathered grey, fine grained Limestone	7.50					34	13		
8.00	76.01											
8.50	75.51			8.25					28	Nil		
9.00	75.01			9.00					37	14		
9.50	74.51		Moderately weathered grey, fine grained Quartzite	9.75					42	33		
10.00	74.01			10.00					32	Nil		
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.												

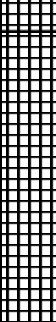


BH NO. :		48		EGL(EXISTING GROUND LEVEL) R.L.(+)		84.354					
LOCATION :		N = 0, E = 627		WATER TABLE below EGL (m) :		3.70					
				CASING Depth (m) :		NA					
START DATE :		3/13/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/17/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.35		Moderately weathered grey, fine grained Quartzite	0.00							
0.50	83.85			0.75					21	Nil	
1.00	83.35										
1.50	82.85			1.50					32	Nil	
2.00	82.35			2.25					29	Nil	
2.50	81.85										
3.00	81.35			3.00					34	14	
3.50	80.85		Slightly weathered grey, fine grained Quartzite	3.75					53	17	
4.00	80.35										
4.50	79.85			4.50					52	17	
5.00	79.35		Moderately weathered black, fine grained Shale								
5.50	78.85			5.25					33	16	
6.00	78.35			6.00					30	Nil	
6.50	77.85										
7.00	77.35			6.75					40	Nil	
7.50	76.85			7.50					48	17	
8.00	76.35				Fresh black, fine grained Shale						
8.50	75.85	8.25							88	Nil	
9.00	75.35	9.00							84	Nil	
9.50	74.85										
10.00	74.35										
10.50	73.85	10.50							73	Nil	
11.00	73.35		Slightly weathered black, fine grained Shale								
11.50	72.85										
12.00	72.35			12.00					54	10	
12.50	71.85										
13.00	71.35										
13.50	70.85			13.50					58	20	
14.00	70.35				Fresh grey, fine grained Quartzite						
14.50	69.85										
15.00	69.35	15.00							68	38	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

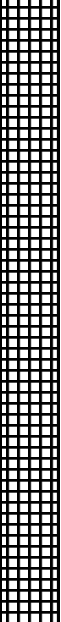


BH NO. :		49		EGL(EXISTING GROUND LEVEL) R.L.(+)						
LOCATION :		N = 0, E = 666		WATER TABLE below EGL (m) :						
				CASING Depth (m) :						
START DATE :		3/18/2016		BORING/ DRILLING METHOD :						
END DATE :		3/22/2016		DRILLING : NX SIZE double tube core barrel						
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%
				Depth	Type	cm				
						m	15	30		45
0.00	84.90		Highly weathered grey, fine grained Quartzite	0.00						21
0.50	84.40			0.75						
1.00	83.90									
1.50	83.40			1.50						
2.00	82.90			2.25						
2.50	82.40		Moderately weathered grey, fine grained Quartzite							28
3.00	81.90			3.00						
3.50	81.40			3.75						
4.00	80.90									
4.50	80.40			4.50						
5.00	79.90									
5.50	79.40			5.25						
6.00	78.90		Moderately weathered grey, fine grained Limestone	6.00						25
6.50	78.40									
7.00	77.90			6.75						
7.50	77.40			7.50						
8.00	76.90									
8.50	76.40			8.25						
9.00	75.90			9.00						
9.50	75.40									
10.00	74.90			9.75						
10.50	74.40			10.50						



BH NO. :		49		EGL(EXISTING GROUND LEVEL) R.L.(+)		84.900					
LOCATION :		N = 0, E = 666		WATER TABLE below EGL (m) :		4.20					
				CASING Depth (m) :		NA					
START DATE :		3/18/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/22/2016		DRILLING : NX SIZE double		tube core barrel					
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
11.00	73.90		Highly weathered black, fine grained Shale	11.25 12.00						24	Nil
11.50	73.40									24	Nil
12.00	72.90									24	Nil
12.50	72.40		Moderately weathered black, fine grained Shale	12.75 13.50 14.25						26	Nil
13.00	71.90									30	30
13.50	71.40										
14.00	70.90										
14.50	70.40									34	Nil
15.00	69.90		Slightly weathered black, fine grained Shale	15.00 15.75						42	Nil
15.50	69.40									58	Nil
16.00	68.90										
16.50	68.40		Fresh black, fine grained Shale	16.50						80	Nil
17.00	67.90		Fresh black, fine grained Quartzite	17.25 18.75 20.00						86	13
17.50	67.40										
18.00	66.90										
18.50	66.40										
19.00	65.90									72	18
19.50	65.40										
20.00	64.90	67	37								
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											

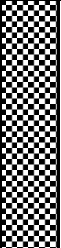
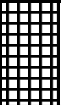


BH NO. :		50	EGL(EXISTING GROUND LEVEL)R.L.(+)(m)		80.521						
LOCATION :		N = -487, E =1295	WATER TABLE below EGL (m) :		4.00						
			CASING Depth (m) :		1.50						
START DATE :		12/15/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/19/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	80.52		Highly weathered grey, fine grained Limestone								
0.50	79.77			0.75					22	Nil	
1.00	79.52										
1.50	79.02			1.50					33	15	
2.00	78.52		Fresh pink grey, fine grained Limestone								
2.50	78.27			2.25					93	59	
3.00	77.52			3.00					97	49	
3.50	77.02										
4.00	76.52										
4.50	76.02			4.50					79	50	
5.00	75.52										
5.50	75.02										
6.00	74.52			6.00					74	47	
6.50	74.02										
7.00	73.52										
7.50	73.02			7.50					82	65	
8.00	72.52										
8.50	72.02										
9.00	71.52			9.00					85	47	
9.50	71.02		Fresh pink grey, fine grained Limestone								
10.00	70.77			9.75					83	28	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

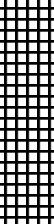


BH NO. :		51		EGL(EXISTING GROUND LEVEL) R.L.+(m)		82.157					
LOCATION :		N= -69 E= 317		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		NA					
START DATE :		1/30/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/1/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.16		Highly Weathered grey, fine grained Quartzite								
0.50	81.66										
1.00	81.41			0.75					21	Nil	
1.50	80.66			1.50					21	Nil	
2.00	80.16										
2.50	79.91			2.25					26	Nil	
3.00	79.16		Slightly Weathered grey, fine grained Quartzite	3.00					55	14	
3.50	78.66										
4.00	78.41			3.75					44	18	
4.50	77.66			4.50					52	16	
5.00	77.16		Moderately Weathered grey, fine grained Quartzite								
5.50	76.91			5.25					26	Nil	
6.00	76.16			6.00					28	18	
6.50	75.66										
7.00	75.41			6.75					33	33	
7.50	74.66			7.50					33	Nil	
8.00	74.16		Slightly Weathered grey, fine grained Quartzite								
8.50	73.91			8.25					50	Nil	
9.00	73.16		Fresh grey, fine grained Limestone	9.00					92	Nil	
9.50	72.41			9.75					90	Nil	
10.00	72.16		Fresh black, fine grained Shale								
10.50	71.66			10.50					85	46	
11.00	71.16										
11.50	70.16			12.00					75	Nil	
12.00	70.16										
12.50	69.66										
13.00	69.16										
13.50	68.66			13.50					84	72	
14.00	68.16										
14.50	67.66										
15.00	67.16			15.00					75	63	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		52	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		85.112						
LOCATION :		N = -69 E = 454	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		2/2/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		2/4/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	85.11		Moderately Weathered grey, fine grained Quartzite								
0.50	84.61										
1.00	84.36			0.75					34	Nil	
1.50	83.61			1.50					28	Nil	
2.00	83.11										
2.50	82.86			2.25					27	Nil	
3.00	82.11		Slightly Weathered grey, fine grained Quartzite	3.00					49	39	
3.50	81.61										
4.00	81.36			3.75					45	Nil	
4.50	80.61			4.50					57	Nil	
5.00	80.11		Slightly Weathered grey, fine grained Fractured Quartzite								
5.50	79.86			5.25					46	Nil	
6.00	79.11			6.00					45	45	
6.50	78.61										
7.00	78.36			6.75					31	Nil	
7.50	77.61			7.50					35	Nil	
8.00	77.11										
8.50	76.86			8.25					39	28	
9.00	76.11		Fresh grey, fine grained Quartzite	9.00					78	23	
9.50	75.36			9.75					60	53	
10.00	75.11			10.00					23	Nil	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

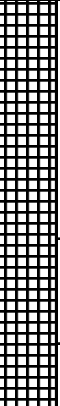


BH NO. :		53		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		85.770					
LOCATION :		N = -69, E = 604		WATER TABLE below EGL (m) :		5.80					
				CASING Depth (m) :		0.50					
START DATE :		3/25/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/27/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	85.77		Highly weathered grey, fine grained Quartzite	0.00						22	Nil
0.50	85.27			0.75							
1.00	84.77										
1.50	84.27			1.50							
2.00	83.77			2.25							
2.50	83.27		Moderately weathered grey, fine grained Quartzite	3.00						29	13
3.00	82.77			3.75							
3.50	82.27										
4.00	81.77										
4.50	81.27			4.50							
5.00	80.77		Highly weathered grey, fine grained Limestone	5.25						29	Nil
5.50	80.27			6.00							
6.00	79.77										
6.50	79.27		Slightly weathered grey, fine grained Limestone	6.75						54	Nil
7.00	78.77			7.50							
7.50	78.27										
8.00	77.77		Moderately weathered grey, fine grained Limetstone	8.25						25	Nil
8.50	77.27			9.00							
9.00	76.77										
9.50	76.27		Slightly weathered grey, fine grained Limestone	9.75						54	Nil
10.00	75.77			10.50							
10.50	75.27										
11.00	74.77		Slightly weatherd black, fine grained Shale	11.25						44	Nil
11.50	74.27										
12.00	73.77		Fresh black, fine grained Shale	12.00						64	Nil
12.50	73.27										
13.00	72.77			12.75							
13.50	72.27			13.50							
14.00	71.77										
14.50	71.27			14.25							
15.00	70.77			15.00							
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

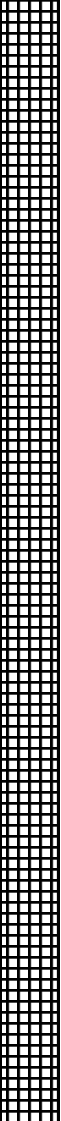


BH NO. :		54		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		80.120					
LOCATION :		N = -69, E = 711		WATER TABLE below EGL (m) :		4.20					
				CASING Depth (m) :		NA					
START DATE :		3/26/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/27/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	80.12		Moderately weathered grey, fine grained Limestone	0.00						28	Nil
0.50	79.62			0.75							
1.00	79.12										
1.50	78.62			1.50							
2.00	78.12			2.25							
2.50	77.62		Highly weathered grey, fine grained Limestone	3.00						22	Nil
3.00	77.12			3.75							
3.50	76.62										
4.00	76.12			4.50							
4.50	75.62										
5.00	75.12		Highly weathered grey, fine grained Limestone	5.25						22	Nil
5.50	74.62			6.00							
6.00	74.12										
6.50	73.62			Slightly weathered grey, fine grained Limestone	6.75						48
7.00	73.12	7.50									
7.50	72.62										
8.00	72.12	8.25									
8.50	71.62	9.00									
9.00	71.12	9.75									
9.50	70.62										
10.00	70.12		Fresh grey, fine grained Limestone	10.00						76	Nil
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		55		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		84.900					
LOCATION :		N = -83 E = 284		WATER TABLE below EGL (m) :		3.00					
				CASING Depth (m) :		1.50					
START DATE :		1/22/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/28/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.90		Moderately Weathered grey, fine grained Quartzite								
0.50	84.40										
1.00	84.15			0.75					25	15	
1.50	83.40			1.50					34	22	
2.00	82.90										
2.50	82.65			2.25					29	Nil	
3.00	81.90		Highly Weathered grey, fine grained Quartzite	3.00					21	Nil	
3.50	81.40										
4.00	80.90			3.75					24	Nil	
4.50	80.40			4.50					22	Nil	
5.00	79.90		Fresh grey, fine grained Quarzite								
5.50	79.40			5.25					63	51	
6.00	78.90			6.00					67	32	
6.50	78.40										
7.00	77.90			6.75					86	17	
7.50	77.40			7.50					97	32	
8.00	76.90		Fresh black, fine grained Shale								
8.50	76.40										
9.00	75.90	9.00						89	Nil		
9.50	75.40	Fresh black, fine grained Shale									
10.00	74.90		10.00					77	32		
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. : 56		EGL(EXISTING GROUND LEVEL)R.L.(+)(m) 81.690									
LOCATION : N = -545, E =1231		WATER TABLE below EGL (m) : Not struck									
START DATE : 12/11/2015		CASING Depth (m) : 1.50									
END DATE : 12/14/2015		BORING/ DRILLING METHOD : Rotary									
		DRILLING : NX SIZE double tube core barrel									
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	81.69		Slightly weathered pink grey, fine grained Fractured Limestone								
0.50	80.94			0.75					53	Nil	
1.00	80.69		Fresh pink grey, fine grained Limestone								
1.50	80.19			1.50					70	26	
2.00	79.69										
2.50	79.44			2.25					81	33	
3.00	78.69			3.00					95	56	
3.50	78.19										
4.00	77.69										
4.50	77.19			4.50					77	34	
5.00	76.69										
5.50	76.19										
6.00	75.69			6.00					65	9	
6.50	75.19										
7.00	74.69										
7.50	74.19			7.50					80	Nil	
8.00	73.69										
8.50	73.19										
9.00	72.69			9.00					79	Nil	
9.50	72.19										
10.00	71.69										
10.50	71.19			10.50					81	21	
11.00	70.69										
11.50	70.19										
12.00	69.69	12.00					83	Nil			
12.50	69.19										
13.00	68.69										
13.50	68.19	13.50					91	Nil			
14.00	67.69										
14.50	67.19										
15.00	66.69	15.00					88	Nil			
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

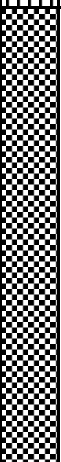


BH NO. :		57	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		83.333						
LOCATION :		N = -99, E = 361	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		1/28/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		2/1/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	83.33		Moderately weathered grey, fine grained Limestone	0.00							
0.50	82.83			0.75						30	Nil
1.00	82.33										
1.50	81.83			1.50						34	Nil
2.00	81.33		Moderately weathered grey, fine grained Limestone	2.25						40	13
2.50	80.83		Moderately weathered grey, fine grained Quartzite								
3.00	80.33			3.00						33	16
3.50	79.83			3.75						41	Nil
4.00	79.33										
4.50	78.83			4.50						33	Nil
5.00	78.33		Fresh grey, fine grained Quartzite								
5.50	77.83			5.25						69	60
6.00	77.33			6.00						86	21
6.50	76.83		Moderately weathered grey, fine grained Quartzite								
7.00	76.33			6.75						32	Nil
7.50	75.83			7.50						26	Nil
8.00	75.33										
8.50	74.83			8.25						42	Nil
9.00	74.33			9.00						30	30



BH NO. :		57		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		83.333					
LOCATION :		N = -99, E = 361		WATER TABLE below EGL (m) :		3.00					
				CASING Depth (m) :		1.50					
START DATE :		1/28/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/1/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
9.50	73.83		Fresh black, fine grained Shale								
10.00	73.33			9.75					94	29	
10.50	72.83			10.50					85	29	
11.00	72.33										
11.50	71.83										
12.00	71.33			12.00					72	Nil	
12.50	70.83										
13.00	70.33										
13.50	69.83			13.50					64	28	
14.00	69.33										
14.50	68.83										
15.00	68.33			15.00					76	59	
15.50	67.83										
16.00	67.33										
16.50	66.83			16.50					72	54	
17.00	66.33										
17.50	65.83										
18.00	65.33			18.00					72	67	
18.50	64.83										
19.00	64.33										
19.50	63.83			19.50					73	24	
20.00	63.33			20.00					62	28	
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											

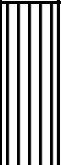
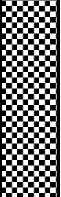


BH NO. :		58		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		84.475					
LOCATION :		N = -99, E = 501		WATER TABLE below EGL (m) :		4.10					
				CASING Depth (m) :		1.50					
START DATE :		4/15/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		4/20/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.48		Highly weathered grey, fine grained Limestone	0.00							
0.50	83.73		0.75						21	Nil	
1.00	84.48		Moderately weathered grey, fine grained Limestone	1.50						41	Nil
1.50	82.98			2.25						38	Nil
2.00	82.23			3.00						40	Nil
2.50	84.48			3.75						30	Nil
3.00	81.48			4.50						34	Nil
3.50	80.73			5.25						38	Nil
4.00	84.48			6.00						38	Nil
4.50	79.98										
5.00	84.48		Slightly weathered grey, fine grained Limestone	6.75						46	24
5.50	79.23			7.50						42	42
6.00	78.48			8.25						46	22
6.50	84.48			9.00						38	Nil
7.00	77.73			9.75						43	14
7.50	76.98										
8.00	84.48										
8.50	76.23										
9.00	75.48										
9.50	84.48										
10.00	74.73										



BH NO. :		58		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		84.475					
LOCATION :		N = -99, E = 501		WATER TABLE below EGL (m) :		4.10					
				CASING Depth (m) :		1.50					
START DATE :		4/15/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		4/20/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
10.50	73.98		Slightly weathered grey, fine grained Limestone	10.50						43	Nil
11.00	84.48		Slightly weathered grey, fine grained Quartzite	11.25						44	Nil
11.50	73.23										
12.00	72.48		Highly weathered grey, fine grained Quartzite	12.00						21	Nil
12.50	84.48			12.75						21	Nil
13.00	71.73										
13.50	70.98		Slightly weathered grey, fine grained Quartzite	13.50						49	14
14.00	84.48			14.25						54	Nil
14.50	70.23										
15.00	69.48		Moderately weathered grey, fine grained Quartzite	15.00						34	Nil
15.50	84.48			15.75						32	Nil
16.00	68.73			16.50						33	Nil
16.50	67.98										
17.00	84.48		Slightly weathered grey, fine grained Quartzite	17.25						42	Nil
17.50	67.23									18.00	46
18.00	66.48										
18.50	84.48		Moderately weathered grey, fine grained Quartzite	18.75						32	20
19.00	65.73			19.50						34	25
19.50	64.98			20.00						32	20
20.00	64.48										
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											



BH NO. :		59		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		86.233					
LOCATION :		N=-99, E= 569		WATER TABLE below EGL (m) :		3.90					
				CASING Depth (m) :		1.50					
START DATE :		4/12/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		4/13/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	86.23		Highly weathered grey, fine grained Limestone								
0.50	85.73										
1.00	85.48			0.75					22	Nil	
1.50	84.73			1.50					25	Nil	
2.00	84.23		Moderately weathered grey, fine grained Limestone								
2.50	83.98			2.25					40	Nil	
3.00	83.23			3.00					42	Nil	
3.50	82.73										
4.00	82.48			3.75					33	Nil	
4.50	81.73		Moderately weathered grey, fine grained Quartzite	4.50					34	Nil	
5.00	81.23										
5.50	80.98			5.25					33	Nil	
6.00	80.23			6.00					32	Nil	
6.50	79.73										
7.00	79.48			6.75					33	Nil	
7.50	78.73			7.50					40	Nil	
8.00	78.23										
8.50	77.73			8.25					40	40	
9.00	77.23			9.00					38	30	
9.50	76.73			9.75					42	42	
10.00	76.23			10.00					32	Nil	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		60		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		82.160					
LOCATION :		N = -99, E = 644		WATER TABLE below EGL (m) :		3.00					
				CASING Depth (m) :		1.50					
START DATE :		3/15/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/18/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.16		Highly weathered grey, fine grained Quartzite	0.00							
0.50	81.66			0.75					21	Nil	
1.00	81.16										
1.50	80.66			1.50					16	Nil	
2.00	80.16			2.25					10	Nil	
2.50	79.66										
3.00	79.16			3.00					20	Nil	
3.50	78.66			3.75					21	Nil	
4.00	78.16										
4.50	77.66			4.50					20	Nil	
5.00	77.16										
5.50	76.66			5.25					26	Nil	
6.00	76.16		6.00					25	Nil		
6.50	75.66										
7.00	75.16		6.75					24	Nil		
7.50	74.66		Moderately weathered grey, fine grained Quartzite	7.50					30	Nil	
8.00	74.16										
8.50	73.66			8.25					50	34	
9.00	73.16			9.00					32	Nil	

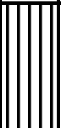
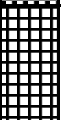
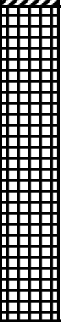
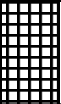


BH NO. :		60		EGL(EXISTING GROUND LEVEL) R.L.+(m)		82.160					
LOCATION :		N = -99, E = 644		WATER TABLE below EGL (m) :		3.00					
				CASING Depth (m) :		1.50					
START DATE :		3/15/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/18/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
9.50	72.66		Slightly weathered grey, fine grained Quartzite								
10.00	72.16			9.75					50	33	
10.50	71.66		Fresh grey, fine grained Quartzite	10.50						72	33
11.00	71.16										
11.50	70.66			11.25					63	13	
12.00	70.16			12.00					69	Nil	
12.50	69.66		Moderately weathered grey, fine grained Quartzite								
13.00	69.16			12.75					56	21	
13.50	68.66			13.50					38	Nil	
14.00	68.16										
14.50	67.66			14.25					22	Nil	
15.00	67.16			15.00					34	Nil	
15.50	66.66		Slightly weathered grey, fine grained Quartzite								
16.00	66.16			15.75					53	Nil	
16.50	65.66			16.50					53	Nil	
17.00	65.16										
17.50	64.66			17.25					40	Nil	
18.00	64.16		Moderately weathered grey, fine grained Quartzite	18.00						32	Nil
18.50	63.66										
19.00	63.16			18.75					33	Nil	
19.50	62.66			19.50					46	Nil	
20.00	62.16			20.00					46	Nil	
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											



BH NO. :		61		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		84.171					
LOCATION :		N = -126 E = 406		WATER TABLE below EGL (m) :		3.50					
				CASING Depth (m) :		1.50					
START DATE :		2/2/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/6/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.17		Highly weathered grey, fine grained Quartzite								
0.50	83.67										
1.00	83.42			0.75					27	Nil	
1.50	82.67			1.50					42	Nil	
2.00	82.17		Slightly weathered grey, fine grained Quartzite								
2.50	81.92		Fresh grey, fine grained Quartzite	2.25					49	31	
3.00	81.17			3.00					67	33	
3.50	80.67										
4.00	80.42			3.75					68	Nil	
4.50	79.67			4.50					53	13	
5.00	79.17										
5.50	78.92			5.25					45	Nil	
6.00	78.17		Fresh black, fine grained shale	6.00					62	39	
6.50	77.67										
7.00	77.42			6.75					51	35	
7.50	76.67		Fresh black, fine grained Shale	7.50					80	68	
8.00	76.17										
8.50	75.92			8.25					44	33	
9.00	75.17			9.00					48	44	
9.50	74.67										
10.00	74.42			9.75					47	17	
10.50	73.67			10.50					51	Nil	
11.00	73.17										
11.50	72.92			11.25					81	49	
12.00	72.17			12.00					83	70	
12.50	71.67										
13.00	71.17										
13.50	70.67										
14.00	70.67			13.50					70	48	
14.50	69.67										
15.00	69.17			15.00					61	Nil	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

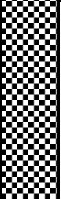
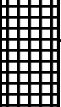


BH NO. :		62		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		86.090					
LOCATION :		N=-126, E= 548		WATER TABLE below EGL (m) :		4.30					
				CASING Depth (m) :		1.50					
START DATE :		4/15/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		4/17/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	86.09		Highly weathered grey, fine grained Limestone								
0.50	85.59										
1.00	85.34			0.75					24	Nil	
1.50	84.59		Slightly grey, fine grained weathered Limestone	1.50						26	Nil
2.00	84.09										
2.50	83.84			2.25					44	Nil	
3.00	83.09			3.00					53	Nil	
3.50	82.59										
4.00	82.34			3.75					28	Nil	
4.50	81.59			4.50					44	Nil	
5.00	81.09										
5.50	80.84			5.25					41	Nil	
6.00	80.09		Moderately weathered grey, fine grained Limestone	6.00						42	Nil
6.50	79.59		Fresh Quartzite and grey, fine grained Limestone								
7.00	79.34			6.75					82	Nil	
7.50	78.59			7.50					86	44	
8.00	78.09		Slightly weathered grey, fine grained Qaurtzite								
8.50	77.59										
9.00	77.09			9.00					48	24	
9.50	76.59		Fresh black, fine grained Shale								
10.00	76.09										
10.50	75.59			10.50					70	24	
11.00	75.09										
11.50	74.59										
12.00	74.09			12.00					69	43	
12.50	73.59										
13.00	73.09										
13.50	72.59			13.50					63	14	
14.00	72.09		Fresh black, fine grained Shale								
14.50	71.59										
15.00	71.09			15.00					89	14	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		63		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		81.578					
LOCATION :		N = -126, E = 691		WATER TABLE below EGL (m) :		4.80					
				CASING Depth (m) :		1.00					
START DATE :		3/16/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/17/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	81.58		Moderately weathered grey, fine grained Limestone	0.00							
0.50	81.08			0.75					36	Nil	
1.00	80.58										
1.50	80.08			1.50					42	Nil	
2.00	79.58			2.25					17	Nil	
2.50	79.08										
3.00	78.58			3.00					32	Nil	
3.50	78.08			3.75					40	Nil	
4.00	77.58		Slightly weathered grey, fine grained Limestone	4.50						49	Nil
4.50	77.08										
5.00	76.58			5.25					57	24	
5.50	76.08										
6.00	75.58		Fresh grey, fine grained Quartzite	6.00						77	17
6.50	75.08										
7.00	74.58			6.75					61	32	
7.50	74.08			7.50					62	Nil	
8.00	73.58										
8.50	73.08			8.25					53	14	
9.00	72.58			9.00					74	42	
9.50	72.08		Slightly weathered grey, fine grained Quartzite	9.75						52	Nil
10.00	71.58			10.50					42	22	
10.50	71.08										
11.00	70.58			11.25					44	Nil	
11.50	70.08										
12.00	69.58		Fresh grey, fine grained Quartzite	12.00						68	36
12.50	69.08		Slightly weathered grey, fine grained Quartzite	12.75						32	Nil
13.00	68.58			13.50					56	Nil	
13.50	68.08										
14.00	67.58			14.25					41	34	
14.50	67.08			15.00					40	20	
15.00	66.58										
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		64	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		83.770						
LOCATION :		N = -157 E = 362	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		1/22/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		1/26/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	83.77		Moderately Weathered grey, fine grained Limestone	0.75						24	Nil
0.50	83.27										
1.00	83.02										
1.50	82.27										
2.00	81.77		Moderately Weathered grey, fine grained Quartzite	2.25						35	Nil
2.50	81.52										
3.00	80.77										
3.50	80.27										
4.00	80.02										
4.50	79.27		Slightly Weathered grey, fine grained Quartzite	4.50						44	Nil
5.00	78.77										
5.50	78.52										
6.00	77.77										
6.50	77.27										
7.00	77.02										
7.50	76.27										
8.00	75.77										
8.50	75.52										
9.00	74.77		Fresh black, fine grained Shale	9.00						82	Nil
9.50	74.02		Fresh black, fine grained Shale	9.75						95	19
10.00	73.77										
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		65		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		85.885					
LOCATION :		N = -157 E = 502		WATER TABLE below EGL (m) :		3.50					
				CASING Depth (m) :		1.50					
START DATE :		2/12/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/14/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	85.89		Highly Weathered grey, fine grained Limestone								
0.50	85.39										
1.00	85.14			0.75					21	Nil	
1.50	84.39		Moderately Weathered grey, fine grained Limestone	1.50						33	Nil
2.00	83.89										
2.50	83.64			2.25					30	13	
3.00	82.89		Slightly Weathered grey, fine grained Limestone	3.00						36	Nil
3.50	82.39										
4.00	82.14			3.75					44	Nil	
4.50	81.39		Fresh grey, fine grained Limestone	4.50						49	19
5.00	80.89										
5.50	80.64			5.25					86	35	
6.00	79.89		Fresh grey, fine grained Limestone	6.00						83	45
6.50	79.39										
7.00	78.89										
7.50	78.39		Fresh grey, fine grained Limestone	7.50						74	28
8.00	77.89										
8.50	77.39										
9.00	76.89		Freshgrey, fine grained Limestone	9.00						80	62
9.50	76.39										
10.00	75.89										
10.50	75.39		Fresh grey, fine grained Quarzite	10.50						77	21
11.00	74.89										
11.50	74.39										
12.00	73.89		Fresh black, fine grained Shale	12.00						67	22
12.50	73.39										
13.00	72.89										
13.50	72.39		Slightly Weathered black, fine grained Shale	13.50						73	17
14.00	71.89										
14.50	71.39										
15.00	70.89			15.00						57	Nil
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

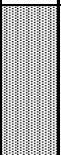
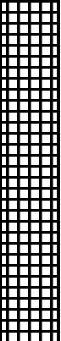


BH NO. :		66		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		81.425										
LOCATION :		N = -157, E = 645		WATER TABLE below EGL (m) :		3.50										
				CASING Depth (m) :		NA										
START DATE :		3/12/2016		BORING/ DRILLING METHOD :		Rotary										
END DATE :		3/16/2016		DRILLING : NX SIZE double tube core barrel												
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)					
				Depth	Type	cm										
						m	15	30		45	%	%				
0.00	81.43		Slightly weathered grey, fine grained Limestone	0.00						49	16					
0.50	80.93			0.75												
1.00	80.43															
1.50	79.93			1.50											56	33
2.00	79.43			2.25											53	14
2.50	78.93															
3.00	78.43			3.00											48	Nil
3.50	77.93			3.75											44	Nil
4.00	77.43															
4.50	76.93			4.50											53	Nil
5.00	76.43															
5.50	75.93			5.25											52	32
6.00	75.43			6.00											45	Nil
6.50	74.93															
7.00	74.43			6.75											53	13
7.50	73.93			7.50											53	Nil
8.00	73.43		Moderately weathered grey, fine grained Limestone													
8.50	72.93			8.25					37	Nil						
9.00	72.43		Fresh grey, fine grained Limestone	9.00						85	30					



BH NO. :		66		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		81.425					
LOCATION :		N = -157, E = 645		WATER TABLE below EGL (m) :		3.50					
				CASING Depth (m) :		NA					
START DATE :		3/12/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/16/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
9.50	71.93		Fresh grey, fine grained limestone	9.75						86	Nil
10.00	71.43										
10.50	70.93										
11.00	70.43										
11.50	69.93										
12.00	69.43		Fresh grey, fine grained Quartzite	12.75						75	22
12.50	68.93										
13.00	68.43										
13.50	67.93										
14.00	67.43										
14.50	66.93										
15.00	66.43										
15.50	65.93										
16.00	65.43										
16.50	64.93		Fresh black, fine grained Shale	17.25						78	8
17.00	64.43										
17.50	63.93										
18.00	63.43		Fresh black, fine grained Shale	18.75						68	42
18.50	62.93										
19.00	62.43										
19.50	61.93										
20.00	61.43										
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											



BH NO. :		67		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		82.630					
LOCATION :		N = -191, E =327		WATER TABLE below EGL (m) :		3.50					
				CASING Depth (m) :		1.50					
START DATE :		1/16/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/21/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.63		Brownish Grey Fine to Medium Sandy silt								
0.50	82.13										
1.00	81.63			1.00	SPT1	52	>50	>50	R		
1.50	81.13			1.50	SPT2	52	>50	>50	R		
2.00	80.63		Highly weathered grey, fine grained Quartzite								
2.50	80.38			2.25						20	Nil
3.00	79.63		Slightly weathered grey, fine grained Limestone	3.00						40	Nil
3.50	79.13										
4.00	78.88			3.75						42	16
4.50	78.13			4.50						51	Nil
5.00	77.63										
5.50	77.38			5.25						45	29
6.00	76.63			6.00						48	15
6.50	76.13										
7.00	75.88			6.75						36	36
7.50	75.13			7.50						32	32
8.00	74.63										
8.50	74.38			8.25						33	15
9.00	73.63			9.00						51	Nil
9.50	73.13										
10.00	72.88			9.75						56	Nil
10.50	72.13			10.50						60	33
11.00	71.63		Fresh black, fine grained Shale								
11.50	71.38			11.25						86	Nil
12.00	70.63			12.00						91	19
12.50	70.13										
13.00	69.63										
13.50	69.13			13.50						80	7
14.00	68.63										
14.50	68.13										
15.00	67.63			15.00						62	17
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		68		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		82.540					
LOCATION :		N = -196, E =361		WATER TABLE below EGL (m) :		5.50					
				CASING Depth (m) :		1.50					
START DATE :		1/16/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/21/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.54		Highly weathered grey, fine grained Limestone								
0.50	82.04										
1.00	81.79			0.75					21	Nil	
1.50	81.04		Moderately weathered grey, fine grained Limestone	1.50					31	Nil	
2.00	80.54										
2.50	80.29			2.25					27	Nil	
3.00	79.54			3.00					39	Nil	
3.50	79.04										
4.00	78.79			3.75					36	Nil	
4.50	78.04										
5.00	77.54										
5.50	77.29			5.25					33	Nil	
6.00	76.54			6.00					28	21	
6.50	76.04		Fresh grey, fine grained Limestone								
7.00	75.79			6.75					81	Nil	
7.50	75.04			7.50					86	17	
8.00	74.54										
8.50	74.04										
9.00	73.54			9.00					65	33	
9.50	73.04										
10.00	72.54										

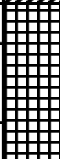
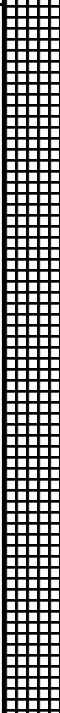


BH NO. :		68	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		82.540						
LOCATION :		N = -196, E =361	WATER TABLE below EGL (m) :		5.50						
			CASING Depth (m) :		1.50						
START DATE :		1/16/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		1/21/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
10.50	72.04		Fresh black, fine grained Shale	10.50						79	15
11.00	71.54										
11.50	71.04										
12.00	70.54			12.00						67	17
12.50	70.04										
13.00	69.54										
13.50	69.04			13.50						75	24
14.00	68.54										
14.50	68.04										
15.00	67.54			15.00						66	47
15.50	67.04										
16.00	66.54										
16.50	66.04			16.50						72	33
17.00	65.54										
17.50	65.04										
18.00	64.54			18.00						78	28
18.50	64.04										
19.00	63.54										
19.50	63.04			19.50						83	75
20.00	62.54			20.00						40	40
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											



BH NO. :		69		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		83.155								
LOCATION :		N = -191, E =395		WATER TABLE below EGL (m) :		4.00								
				CASING Depth (m) :		1.50								
START DATE :		1/14/2016		BORING/ DRILLING METHOD :		Rotary								
END DATE :		1/16/2016		DRILLING : NX SIZE double tube core barrel										
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)			
				Depth	Type	cm								
						m	15	30		45	%	%		
0.00	83.16		Moderately weathered grey, fine grained Limestone	0.75					28	Nil				
0.50	82.66													
1.00	82.41													
1.50	81.66		Moderately weathered grey, fine grained Limestone	1.50					35	Nil				
2.00	81.16			2.25					36	Nil				
2.50	80.91													
3.00	80.16													
3.50	79.66													
4.00	79.41		Fresh grey, fine grained Limestone	3.75					81	31				
4.50	78.66			4.50					95	21				
5.00	78.16			6.00					66	14				
5.50	83.16													
6.00	77.16													
6.50	76.66		Fresh grey, fine grained Limestone	7.50					63	Nil				
7.00	83.16								9.00	68	53			
7.50	75.66													
8.00	75.16													
8.50	74.66													
9.00	74.16													
9.50	73.66			10.50									60	20
10.00	73.16													
10.50	72.66													
11.00	72.16													
11.50	71.66		Fresh black, fine grained Shale	12.00					38	Nil				
12.00	71.16								13.50	69	22			
12.50	70.66													
13.00	70.16													
13.50	69.66													
14.00	69.16													
14.50	68.66			15.00									73	16
15.00	68.16													
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.														



BH NO. :		70		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		85.365					
LOCATION :		N = -191 E = 467		WATER TABLE below EGL (m) :		3.50					
				CASING Depth (m) :		1.50					
START DATE :		2/7/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/12/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	85.37		Moderately Weathered grey, fine grained Limestone								
0.50	84.87										
1.00	84.62			0.75					29	Nil	
1.50	83.87		Slightly Weathered grey, fine grained Limestone	1.50						43	Nil
2.00	83.37										
2.50	83.12			2.25					47	Nil	
3.00	82.37			3.00					39	Nil	
3.50	81.87										
4.00	81.37			3.75					41	14	
4.50	80.87		Fresh grey, fine grained Limestone	4.50						45	Nil
5.00	80.37										
5.50	79.87			5.25					87	28	
6.00	79.37			6.00					88	29	
6.50	78.87		Fresh grey, fine grained Quartzite								
7.00	78.37										
7.50	77.87			7.50					61	Nil	
8.00	77.37										
8.50	76.87										
9.00	76.37			9.00					61	25	
9.50	75.87										
10.00	75.37										
10.50	74.87			10.50					71	55	
11.00	74.37										
11.50	73.87										
12.00	73.37			12.00					67	19	
12.50	72.87										
13.00	72.37										
13.50	71.87			13.50					74	46	
14.00	71.87										
14.50	70.87										
15.00	70.37	15.00					84	73			
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

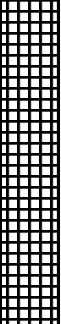
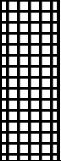


BH NO. :		71		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		85.340					
LOCATION :		N=-191 E= 536		WATER TABLE below EGL (m) :		4.20					
				CASING Depth (m) :		1.50					
START DATE :		4/18/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		4/22/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	85.34		Highly weathered grey, fine grained Limestone								
0.50	84.84										
1.00	84.59			0.75					21	Nil	
1.50	83.84		Moderately weathered grey, fine grained Limestone	1.50					24	Nil	
2.00	83.34										
2.50	83.09			2.25					32	Nil	
3.00	82.34			3.00					29	Nil	
3.50	81.84										
4.00	81.59			3.75					41	Nil	
4.50	80.84			4.50					29	Nil	
5.00	80.34		Fresh grey, fine grained Limestone								
5.50	80.09			5.25					81	Nil	
6.00	79.34			6.00					93	Nil	
6.50	78.84		Slightly weathered grey, fine grained Limestone								
7.00	78.34										
7.50	77.84			7.50					58	14	
8.00	77.34		Fresh grey, fine grained Limestone								
8.50	76.84										
9.00	76.34			9.00					65	34	
9.50	75.84										
10.00	75.34										
10.50	74.84			10.50					80	43	
11.00	74.34		Fresh grey, fine grained Quartzite								
11.50	73.84										
12.00	73.34			12.00					67	24	
12.50	72.84										
13.00	72.34										
13.50	71.84			13.50					73	7	
14.00	71.34										
14.50	70.84										
15.00	70.34			15.00					78	50	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		72		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		85.731					
LOCATION :		N= -191 E= 610		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		NA					
START DATE :		3/2/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/4/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	85.73		Slightly Weathered grey, fine grained Limestone								
0.50	85.23										
1.00	84.98			0.75					42	Nil	
1.50	84.23			1.50					42	32	
2.00	83.73										
2.50	83.48			2.25					40	35	
3.00	82.73			3.00					49	Nil	
3.50	82.23										
4.00	81.98			3.75					58	Nil	
4.50	81.23		Fresh grey, fine grained Limestone	4.50					73	Nil	
5.00	80.73										
5.50	80.48			5.25					90	72	
6.00	79.73			6.00					85	14	
6.50	79.23										
7.00	78.73										
7.50	78.23			7.50					75	57	
8.00	77.73										
8.50	77.23										
9.00	76.73	9.00					76	19			
9.50	76.23		Fresh grey, fine grained Limestone								
10.00	75.73										
10.50	75.23			10.50					73	15	
11.00	74.73										
11.50	74.23										
12.00	73.73			12.00					75	71	
12.50	73.23		Fresh grey, fine grained Quartzite								
13.00	72.73										
13.50	72.23			13.50					59	11	
14.00	71.73										
14.50	71.23										
15.00	70.73			15.00					90	90	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		73	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		84.824						
LOCATION :		N = -191, E =629		WATER TABLE below EGL (m) :		3.80					
				CASING Depth (m) :		NA					
START DATE :		3/13/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/14/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.82		Slightly weathered grey, fine grained Limestone	0.00							
0.50	84.32			0.75						45	17
1.00	83.82										
1.50	83.32			1.50						34	22
2.00	82.82			2.25						52	41
2.50	82.32		Fresh grey, fine grained Limestone								
3.00	81.82			3.00						70	70
3.50	81.32			3.75						81	68
4.00	80.82										
4.50	80.32			4.50						82	38
5.00	79.82										
5.50	79.32			6.00						83	71
6.00	78.82										
6.50	78.32		Slightly weathered grey, fine grained Limestone								
7.00	77.82										
7.50	77.32			7.50						76	73
8.00	76.82		Fresh grey, fine grained Limestone								
8.50	76.32										
9.00	75.82			9.00						80	65
9.50	75.32			9.50						76	76
THE BOREHOLE IS TERMINATED AT 9.50m BELOW G.L.											



BH NO. : 74												EGL(EXISTING GROUND LEVEL) R.L.(+) (m) 85.487											
LOCATION : N = -205 E = 501												WATER TABLE below EGL (m) : 3.00											
												CASING Depth (m) : 1.50											
START DATE : 2/23/2016												BORING/ DRILLING METHOD : Rotary											
END DATE : 2/25/2016												DRILLING : NX SIZE double tube core barrel											
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)												
				Depth	Type	cm																	
						m	15	30		45	%	%											
0.00	85.49		Highly weathered grey, fine grained Limestone	0.75						27	Nil												
0.50	84.99																						
1.00	84.74																						
1.50	83.99			1.50						21	Nil												
2.00	83.49																						
2.50	83.24																						
3.00	82.49		Fresh grey, fine grained Limestone	3.00						60	17												
3.50	81.99																						
4.00	81.74																						
4.50	80.99																						
5.00	80.49																						
5.50	79.99																						
6.00	79.49																						
6.50	78.99																						
7.00	78.49																						
7.50	77.99																						
8.00	77.49		Fresh grey, fine grained Limestone	9.00						72	44												
8.50	76.99																						
9.00	76.49																						
9.50	75.99		Fresh grey, fine grained Limestone	10.50						76	76												
10.00	75.49																						
10.50	74.99																						



BH NO. :		74	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		85.487											
LOCATION :		N = -205 E = 501	WATER TABLE below EGL (m) :		3.00											
			CASING Depth (m) :		1.50											
START DATE :		2/23/2016	BORING/ DRILLING METHOD :		Rotary											
END DATE :		2/25/2016	DRILLING : NX SIZE double tube core barrel													
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)					
				Depth	Type	cm										
						m		15		30	45	%	%			
11.00	74.49		Moderately Weathered grey, fine grained Fractured Limestone	12.00						46	Nil					
11.50	73.99															
12.00	73.49															
12.50	72.99		Fresh grey, fine grained Limestone	13.50						75	25					
13.00	72.49															
13.50	71.99															
14.00	71.49		Fresh grey, fine grained Quartzite	15.00						77	59					
14.50	70.99															
15.00	70.49															
15.50	69.99															
16.00	69.49															
16.50	68.99			16.50						77	57					
17.00	68.49															
17.50	67.99															
18.00	67.49			18.00						79	45					
18.50	66.99															
19.00	66.49															
19.50	65.99			19.50											67	44
20.00	65.49		Fresh black, fine grained Shale	20.00						86	50					
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.																



BH NO. :		75		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		82.479					
LOCATION :		N= -205 E= 644		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		NA					
START DATE :		3/10/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/12/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.48		Moderately Weathered black, fine grained Shale								
0.50	81.98										
1.00	81.73			0.75					36	Nil	
1.50	80.98			1.50					35	22	
2.00	80.48		Fresh black, fine grained Shale								
2.50	80.23			2.25					64	52	
3.00	79.48			3.00					75	54	
3.50	78.98										
4.00	78.73			3.75					53	37	
4.50	77.98			4.50					70	Nil	
5.00	77.23			5.25					84	28	
5.50	76.98										
6.00	76.48										
6.50	75.98										
7.00	75.73			6.75					90	40	
7.50	74.98										
8.00	74.48										
8.50	74.23			8.25					90	51	
9.00	73.48										
9.50	72.73			9.75					93	48	
10.00	72.48			10.00					88	64	
THE BOREHOLE IS TERMINATED AT 10.00 m BELOW G.L.											

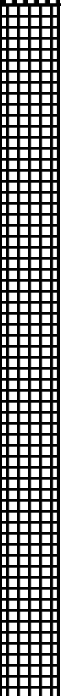
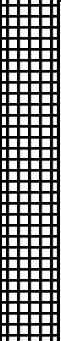


BH NO. :		76		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		82.160					
LOCATION :		N = -229 E = 273		WATER TABLE below EGL (m) :		3.50					
				CASING Depth (m) :		1.50					
START DATE :		2/24/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/25/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.16		Moderately Weathered grey, fine grained Fractured Quartzite								
0.50	81.66										
1.00	81.41			0.75					25	Nil	
1.50	80.66		Moderately Weathered grey, fine grained Quartzite	1.50					31	Nil	
2.00	80.16										
2.50	79.91			2.25					37	37	
3.00	79.16			3.00					32	Nil	
3.50	78.66										
4.00	78.41			3.75					38	Nil	
4.50	77.66			4.50					39	Nil	
5.00	77.16		Fresh grey, fine grained Quartzite								
5.50	76.91			5.25					94	24	
6.00	76.16			6.00					97	60	
6.50	75.66		Slightly Weathered grey, fine grained Quartzite								
7.00	75.16										
7.50	74.66			7.50					43	13	
8.00	74.16										
8.50	73.66										
9.00	73.16			9.00					43	25	
9.50	72.66										
10.00	72.16	10.00					47	Nil			
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

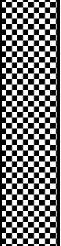
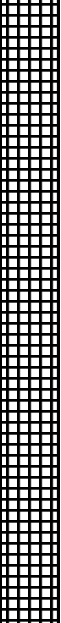


BH NO. : 77		EGL(EXISTING GROUND LEVEL) R.L.(+) (m) 82.520									
LOCATION : N = -232, E =327		WATER TABLE below EGL (m) : 5.00									
		CASING Depth (m) : 1.50									
START DATE : 1/16/2016		BORING/ DRILLING METHOD : Rotary									
END DATE : 1/18/2016		DRILLING : NX SIZE double tube core barrel									
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.52		Moderately weathered grey, fine grained Limestone								
0.50	82.02										
1.00	81.77			0.75					33	Nil	
1.50	81.02			1.50					29	Nil	
2.00	80.52										
2.50	80.27			2.25					27	Nil	
3.00	79.52			3.00					27	Nil	
3.50	79.02		Slightly weathered grey, fine grained Limestone								
4.00	78.77			3.75					41	31	
4.50	78.02			4.50					43	21	
5.00	77.52										
5.50	77.27			5.25					39	19	
6.00	76.52		Fresh grey, fine grained Limestone	6.00					83	Nil	
6.50	76.02										
7.00	75.77			6.75					86	Nil	
7.50	82.52										
8.00	74.52										
8.50	74.02			8.25					76	7	
9.00	82.52										
9.50	73.02										
10.00	72.52			9.75					49	Nil	
10.50	82.52										
11.00	71.52										
11.50	71.02			11.25					65	49	
12.00	82.52										
12.50	70.02										
13.00	69.52			12.75					61	37	
13.50	82.52										
14.00	68.52										
14.50	68.02			14.25					77	65	
15.00	67.52			15.00					31	27	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		78	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		82.735						
LOCATION :		N = -232, E =396	WATER TABLE below EGL (m) :		4.00						
			CASING Depth (m) :		1.50						
START DATE :		1/12/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		1/14/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.74		Moderately weathered grey, fine grained Limestone								
0.50	82.24										
1.00	81.99			0.75					33	Nil	
1.50	81.24			1.50					46	Nil	
2.00	80.74		Fresh grey, fine grained Limestone								
2.50	80.49			2.25					90	Nil	
3.00	79.74			3.00					89	28	
3.50	79.24										
4.00	78.74										
4.50	78.24			4.50					79	9	
5.00	77.74										
5.50	77.24										
6.00	76.74			6.00					72	43	
6.50	76.24										
7.00	75.74										
7.50	75.24			7.50					78	60	
8.00	74.74										
8.50	74.24										
9.00	73.74			9.00					62	34	
9.50	73.24										
10.00	72.74										
10.50	72.24			10.50					71	67	
11.00	71.74		Fresh black, fine grained Shale								
11.50	71.24										
12.00	70.74			12.00					68	27	
12.50	70.24										
13.00	69.74										
13.50	69.24			13.50					73	23	
14.00	68.74										
14.50	68.24										
15.00	67.74	15.00					83	50			
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

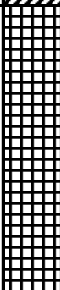
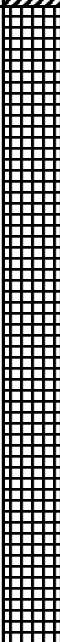


BH NO. :		79	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		83.262						
LOCATION :		N = -232, E =431	WATER TABLE below EGL (m) :		4.50						
			CASING Depth (m) :		1.50						
START DATE :		1/19/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		1/22/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	83.26		Moderately weathered grey, fine grained Limestone								
0.50	82.76										
1.00	82.51			0.75					25	Nil	
1.50	81.76			1.50					32	Nil	
2.00	81.26										
2.50	81.01		2.25					37	Nil		
3.00	80.51		Fresh grey, fine grained Limestone	2.75					82	28	
3.50	79.76			3.50					87	Nil	
4.00	79.26										
4.50	78.76										
5.00	78.26										
5.50	78.01			5.25					69	21	
6.00	77.26										
6.50	76.76										
7.00	76.51			6.75					67	25	
7.50	75.76										
8.00	75.26										
8.50	75.01			8.25					80	33	
9.00	74.26										
9.50	73.51			9.75					80	22	
10.00	73.26			10.00					68	68	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

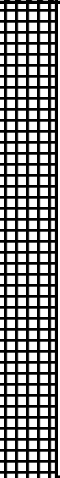


BH NO. :		80	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		84.400						
LOCATION :		N = -232, E =468	WATER TABLE below EGL (m) :		4.20						
			CASING Depth (m) :		1.50						
START DATE :		1/21/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		1/25/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
				m		15	30	45		%	%
0.00	84.40		Moderately weathered grey, fine grained Limestone								
0.50	83.90										
1.00	83.65			0.75					34	Nil	
1.50	82.90			1.50					51	Nil	
2.00	82.40		Fresh grey, fine grained Limestone								
2.50	82.15			2.25					87	Nil	
3.00	81.40			3.00					81	69	
3.50	80.90										
4.00	80.40										
4.50	79.90			4.50					63	43	
5.00	79.40										
5.50	78.90										
6.00	78.40			6.00					57	44	
6.50	77.90		Fresh grey, fine grained Limestone								
7.00	77.40										
7.50	76.90			7.50					63	12	
8.00	76.40										
8.50	75.90										
9.00	75.40			9.00					64	Nil	
9.50	74.90										
10.00	74.40										
10.50	73.90			10.50					73	33	
11.00	73.40		Fresh black, fine grained Shale								
11.50	72.90										
12.00	72.40			12.00					70	35	
12.50	71.90										
13.00	71.40										
13.50	70.90			13.50					71	39	
14.00	70.40										
14.50	69.90										
15.00	69.40			15.00					75	Nil	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		81	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		84.900						
LOCATION :		N= -232 E= 536	WATER TABLE below EGL (m) :		Not struck						
			CASING Depth (m) :		NA						
START DATE :		2/25/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		2/28/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.90		Slightly Weathered black, fine grained Shale								
0.50	84.40										
1.00	84.15			0.75					49	49	
1.50	83.40		Fresh black, fine grained Shale	1.50						76	22
2.00	82.90										
2.50	82.40			2.25					57	Nil	
3.00	81.90			3.00					64	56	
3.50	81.40										
4.00	80.90			3.75					92	Nil	
4.50	80.40			4.50					86	20	
5.00	79.90		Slightly Weathered black, fine grained Shale								
5.50	79.40										
6.00	78.90			6.00					56	34	
6.50	78.40		Fresh black, fine grained Shale								
7.00	77.90										
7.50	77.40			7.50					61	29	
8.00	76.90										
8.50	76.40										
9.00	75.90			9.00					69	19	
9.50	75.40										
10.00	74.90										
10.50	74.40			10.50					72	29	
11.00	73.90										
11.50	73.40										
12.00	72.90			12.00					61	46	
12.50	72.40										
13.00	71.90										
13.50	71.40			13.50					68	51	
14.00	70.90										
14.50	70.40										
15.00	69.90	15.00					80	73			
THE BOREHOLE IS TERMINATED AT 15.00 m BELOW G.L.											



BH NO. :		82	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		85.157						
LOCATION :		N= -235 E=574	WATER TABLE below EGL (m) :		Not struck						
			CASING Depth (m) :		NA						
START DATE :		2/29/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		3/2/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	85.16		Moderately Weathered grey, fine grained Limestone								
0.50	84.66										
1.00	84.41			0.75					32	13	
1.50	83.66			1.50					40	Nil	
2.00	83.16										
2.50	82.91			2.25					34	Nil	
3.00	82.16			3.00					40	13	
3.50	81.41		Fresh grey, fine grained Limestone	3.75					97	16	
4.00	81.16										
4.50	80.66			4.50					82	26	
5.00	80.16										
5.50	79.66										
6.00	79.16			6.00					73	34	
6.50	78.66										
7.00	78.16										
7.50	77.66			7.50					85	83	
8.00	77.16										
8.50	76.66										
9.00	76.16			9.00					81	71	
9.50	75.66		Fresh grey, fine grained Limestone								
10.00	75.16			10.00					86	74	
THE BOREHOLE IS TERMINATED AT 10.00 m BELOW G.L.											

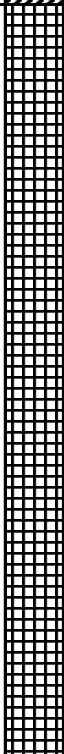


BH NO. :		83		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		86.274					
LOCATION :		N= -232 E= 611		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		NA					
START DATE :		2/28/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/29/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	86.27		Moderately Weathered grey, fine grained Limestone								
0.50	85.77										
1.00	85.52			0.75					30	Nil	
1.50	84.77			1.50					32	13	
2.00	84.27		Slightly Weathered grey, fine grained Limestone								
2.50	84.02			2.25					49	16	
3.00	83.27			3.00					53	30	
3.50	82.52			3.75					57	46	
4.00	82.27										
4.50	81.77			4.50					50	29	
5.00	81.27										
5.50	81.02			5.25					58	13	
6.00	80.27			6.00					44	36	
6.50	79.77										
7.00	79.52			6.75					37	Nil	
7.50	78.77			7.50					44	20	
8.00	78.27										
8.50	78.02			8.25					58	14	
9.00	77.27		Fresh grey, fine grained Limestone	9.00					69	37	
9.50	76.52			9.75					68	37	
10.00	76.27			10.00					68	60	
THE BOREHOLE IS TERMINATED AT 10.00 m BELOW G.L.											

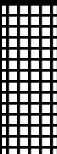
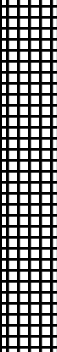


BH NO. :		84		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		86.254					
LOCATION :		N= -232 E= 679		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		1.50					
START DATE :		3/3/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/6/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	86.25		Highly Weathered black, fine grained Shale								
0.50	85.75										
1.00	85.50			0.75					24	Nil	
1.50	84.75			1.50					24	Nil	
2.00	84.25		Moderately Weathered black, fine grained Shale								
2.50	84.00			2.25					30	Nil	
3.00	83.25			3.00					34	Nil	
3.50	82.75										
4.00	82.50			3.75					30	Nil	
4.50	81.75			4.50					34	Nil	
5.00	81.25										
5.50	81.00			5.25					36	Nil	
6.00	80.25	6.00					42	Nil			
6.50	79.75		Fresh black, fine grained Shale								
7.00	79.50			6.75					80	Nil	
7.50	78.75			7.50					86	81	
8.00	78.25										
8.50	77.75										
9.00	77.25			9.00					68	26	
9.50	76.75										
10.00	76.25										
10.50	75.75			10.50					74	51	
11.00	75.25										
11.50	74.75										
12.00	74.25			12.00					60	32	
12.50	73.75		Fresh grey, fine grained Quartzite								
13.00	73.25										
13.50	72.75			13.50					71	20	
14.00	72.25										
14.50	71.75										
15.00	71.25			15.00					59	32	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

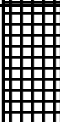
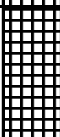
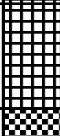
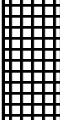


BH NO. :		85	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		82.533						
LOCATION :		N = -241, E =822	WATER TABLE below EGL (m) :		3.20						
			CASING Depth (m) :		1.50						
START DATE :		12/20/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/21/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.53		Slightly weathered grey pink, fine grained fractured Limestone								
0.50	82.03										
1.00	81.78		0.75						47	23	
1.50	81.03		Fresh pink, fine grained Fractured Limestone	1.50						63	63
2.00	80.53										
2.50	80.28			2.25						83	49
3.00	79.53			3.00						97	67
3.50	79.03										
4.00	78.53										
4.50	78.03			4.50						76	28
5.00	77.53										
5.50	77.03										
6.00	76.53			6.00						80	57
6.50	76.03										
7.00	75.53										
7.50	75.03			7.50						76	43
8.00	74.53										
8.50	74.03										
9.00	73.53			9.00						80	48
9.50	73.03										
10.00	72.53			10.00						83	49
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. : 86		EGL(EXISTING GROUND LEVEL)R.L.(+) (m) 84.160									
LOCATION : N = -263, E =358		WATER TABLE below EGL (m) : 4.50									
		CASING Depth (m) : 1.50									
START DATE : 1/9/2016		BORING/ DRILLING METHOD : Rotary									
END DATE : 1/11/2016		DRILLING : NX SIZE double tube core barrel									
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.16		Highly weathered grey, fine grained Limestone								
0.50	83.66										
1.00	83.41			0.75					21	Nil	
1.50	82.66		Slightly Weathered grey, fine grained Quartzite	1.50					46	Nil	
2.00	82.16										
2.50	81.91			2.25					49	17	
3.00	81.16			3.00					47	14	
3.50	80.66										
4.00	80.41			3.75					35	Nil	
4.50	79.66			4.50					51	28	
5.00	79.16										
5.50	78.91			5.25					49	28	
6.00	78.16			6.00					68	Nil	
6.50	77.66										
7.00	77.41			6.75					39	Nil	
7.50	76.66		Fresh grey, fine grained Quartzite	7.50					69	Nil	
8.00	76.16										
8.50	75.91			8.25					84	77	
9.00	75.16			9.00					90	79	
9.50	74.66		Fresh red, fine grained Sandstone								
10.00	74.16										
10.50	73.66			10.50					64	10	
11.00	73.16		Fresh black, fine grained Shale								
11.50	72.66										
12.00	72.16			12.00					69	15	
12.50	71.66										
13.00	71.16										
13.50	70.66			13.50					74	15	
14.00	70.16										
14.50	69.66										
15.00	69.16			15.00					75	9	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		87	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		85.222						
LOCATION :		N=-263 E= 501	WATER TABLE below EGL (m) :		3.80						
			CASING Depth (m) :		1.00						
START DATE :		4/15/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		4/18/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	85.22		Moderately weathered grey, fine grained Limestone	0.75						36	Nil
0.50	84.72										
1.00	84.47										
1.50	83.72		Slightly weathered grey, fine grained Limestone	1.50						54	Nil
2.00	83.22			2.25						53	Nil
2.50	82.97										
3.00	82.22			3.00						58	28
3.50	81.72										
4.00	81.47										
4.50	80.72		Fresh grey, fine grained Limestone	4.50						78	29
5.00	80.22			4.50						68	57
5.50	79.97										
6.00	79.22		Fresh grey, fine grained Limestone	6.00						73	62
6.50	78.72			6.75						85	49
7.00	78.47										
7.50	77.72		Fresh grey, fine grained Limestone	7.50						50	29
8.00	77.22			8.25						81	81
8.50	76.72										
9.00	76.22		Fresh grey, fine grained Limestone	9.00						81	81
9.50	75.72			10.50						51	14
10.00	75.22										
10.50	74.72		Moderately weathered grey, fine grained Quartzite	12.00						32	Nil
11.00	74.22										
11.50	73.72										
12.00	73.22		Fresh grey, fine grained Quartzite	13.50						58	23
12.50	72.72										
13.00	72.22										
13.50	71.72			15.00						57	31
14.00	71.22										
14.50	70.72										
15.00	70.22	THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.									

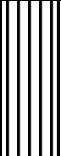
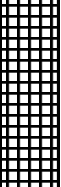
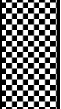
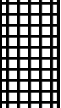
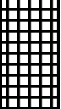


BH NO. :		88	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		82.970						
LOCATION :		N= -263 E= 642	WATER TABLE below EGL (m) :		Not struck						
			CASING Depth (m) :		NA						
START DATE :		3/1/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		3/3/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.97		Fresh grey, fine grained Limestone								
0.50	82.47										
1.00	82.22			0.75					63	36	
1.50	81.47			1.50					58	50	
2.00	80.97										
2.50	80.72			2.25					44	13	
3.00	79.97			3.00					68	14	
3.50	79.47										
4.00	79.22			3.75					53	29	
4.50	78.47			4.50					34	40	
5.00	77.97										
5.50	77.72			5.25					90	74	
6.00	76.97			6.00					82	68	
6.50	76.47										
7.00	75.97										
7.50	75.47			7.50					75	45	
8.00	74.97										
8.50	74.47										
9.00	73.97			9.00					72	45	
9.50	73.47		Fresh grey, fine grained Limestone								
10.00	72.97										
10.50	72.47			10.50					70	37	
11.00	71.97										
11.50	71.47										
12.00	70.97		12.00					78	10		
12.50	70.47		Slightly Weathered grey, fine grained Limestone								
13.00	69.97										
13.50	69.47			13.50					49	19	
14.00	68.97		Fresh grey, fine grained Limestone								
14.50	68.47										
15.00	67.97			15.00					67	37	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

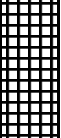
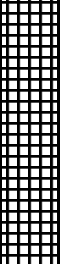


BH NO. : 89		EGL(EXISTING GROUND LEVEL)R.L.(+) (m) 83.560									
LOCATION : N= -287 E= 290		WATER TABLE below EGL (m) : Not struck									
START DATE : 2/27/2016		CASING Depth (m) : NA									
END DATE : 2/29/2016		BORING/ DRILLING METHOD : Rotary									
		DRILLING : NX SIZE double tube core barrel									
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	83.56		Moderately Weathered black, fine grained Shale	0.75						30	Nil
0.50	83.06										
1.00	82.81										
1.50	82.06		Moderately Weathered black, fine grained Shale	1.50						30	Nil
2.00	81.56										
2.50	81.31										
3.00	80.56		Moderately Weathered grey, fine grained Quartzite	3.00						34	20
3.50	80.06										
4.00	79.81										
4.50	79.06		Highly Weathered grey, fine grained Quartzite	4.50						24	Nil
5.00	78.56										
5.50	78.31										
6.00	77.56		Moderately Weathered grey, fine grained Quartzite	6.00						25	Nil
6.50	77.06										
7.00	76.81										
7.50	76.06		Slightly Weathered grey, fine grained Quartzite	7.50						44	16
8.00	75.56										
8.50	75.31										
9.00	74.56										
9.50	73.81		Fresh grey, fine grained Quartzite	9.75						56	29
10.00	73.56										
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		90		EGL(EXISTING GROUND LEVEL)R.L.(+) (m)				83.106			
LOCATION :		N = -283, E =334		WATER TABLE below EGL (m) :				4.00			
				CASING Depth (m) :				1.50			
START DATE :		1/10/2016		BORING/ DRILLING METHOD :				Rotary			
END DATE :		1/24/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	83.11		Highly weathered grey, fine grained Limestone								
0.50	82.61										
1.00	82.36			0.75					21	Nil	
1.50	81.61			1.50					23	Nil	
2.00	81.11		Fresh grey, fine grained Limestone								
2.50	80.86			2.25					71	17	
3.00	80.11			3.00					51	Nil	
3.50	79.61										
4.00	79.36			3.75					80	80	
4.50	78.61		Moderately weathered grey, fine grained Limestone	4.50					25	20	
5.00	78.11										
5.50	77.86			5.25					37	13	
6.00	77.11		Slightly weathered grey, fine grained Limestone	6.00					61	24	
6.50	76.61										
7.00	76.36			6.75					29	Nil	
7.50	75.61			7.50					51	Nil	
8.00	75.11										
8.50	74.86			8.25					40	Nil	
9.00	74.11			9.00					49	17	
9.50	73.61										
10.00	73.36			9.75					45	15	
10.50	72.61			10.50					56	53	
11.00	72.11		Moderately weathered grey, fine grained Limestone								
11.50	71.86			11.25					40	Nil	
12.00	71.11			12.00					31	Nil	
12.50	70.61		Fresh grey, fine grained Limestone								
13.00	70.36			12.75					85	56	
13.50	69.61			13.50					59	13	
14.00	69.11		Fresh black, fine grained Shale								
14.50	68.86			14.25					63	Nil	
15.00	68.11			15.00					57	Nil	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. : 91		EGL(EXISTING GROUND LEVEL)R.L.(+) (m) 82.697									
LOCATION : N = -283, E =377		WATER TABLE below EGL (m) : 3.00									
		CASING Depth (m) : 1.50									
START DATE : 1/4/2016		BORING/ DRILLING METHOD : Rotary									
END DATE : 1/8/2016		DRILLING : NX SIZE double tube core barrel									
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.70		Moderately weathered grey, fine grained Limestone								
0.50	82.20										
1.00	81.95			0.75						29	Nil
1.50	81.20		Slightly weathered red, fine grained Sandstone	1.50						45	Nil
2.00	80.70										
2.50	80.45			2.25						34	Nil
3.00	79.70			3.00						42	19
3.50	79.20										
4.00	78.95			3.75						54	19
4.50	78.20		Moderately to Slightly weathered red, fine grained Conglomerate Sandstone	4.50						31	15
5.00	77.70										
5.50	77.45			5.25						51	16
6.00	76.70		Fresh grey, fine grained Quartzite	6.00						73	57
6.50	76.20										
7.00	75.95			6.75						65	15
7.50	75.20			7.50						42	Nil
8.00	74.70										
8.50	74.45			8.25						81	15
9.00	73.70			9.00						83	67
9.50	73.20										
10.00	72.70										
10.50	72.20			10.50						93	58

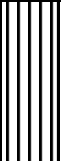
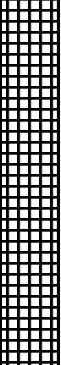
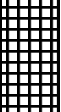


BH NO. :		91		EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		82.697					
LOCATION :		N = -283, E =377		WATER TABLE below EGL (m) :		3.00					
				CASING Depth (m) :		1.50					
START DATE :		1/4/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/8/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m		15		30	45
11.00	71.70		Fresh black, fine grained Shale								
11.50	71.20										
12.00	70.70			12.00						84	16
12.50	70.20		Fresh black, fine grained Shale								
13.00	69.70										
13.50	69.20			13.50						85	30
14.00	68.70										
14.50	68.20										
15.00	67.70			15.00						86	46
15.50	67.20										
16.00	66.70										
16.50	66.20			16.50						77	25
17.00	65.70										
17.50	65.20										
18.00	64.70			18.00						84	47
18.50	64.20										
19.00	63.70										
19.50	63.20		Slightly weathered black, fine grained Shale	19.50						51	Nil
20.00	62.70			20.00						50	41
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											



BH NO. :		92		EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		84.460					
LOCATION :		N = -283 E = 477		WATER TABLE below EGL (m) :		3.50					
				CASING Depth (m) :		1.50					
START DATE :		1/25/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/28/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.46		Moderately Weathered grey, fine grained Limestone	0.75 1.50						30	Nil
0.50	83.96									32	Nil
1.00	83.71										
1.50	82.96										
2.00	82.46		Moderately Weathered grey, fine grained Limestone	2.25 3.00						31	Nil
2.50	82.21									37	Nil
3.00	81.46										
3.50	80.96										
4.00	80.71		Fresh grey, fine grained Limestone	3.75 4.50						81	Nil
4.50	79.96									83	16
5.00	79.46										
5.50	78.96										
6.00	78.46		Fresh grey, fine grained Limestone	6.00						76	52
6.50	77.96										
7.00	77.46										
7.50	76.96									74	43
8.00	76.46		Slightly weathered grey, fine grained Limestone	9.00						56	33
8.50	75.96										
9.00	75.46										
9.50	74.96										
10.00	74.46		Fresh grey, fine grained Quartzite	10.50						78	53
10.50	73.96										
11.00	73.46										
11.50	72.96										
12.00	72.46		Fresh grey, fine grained Quartzite	12.00						86	37
12.50	71.96										
13.00	71.46										
13.50	70.96										
14.00	70.46		Fresh grey, fine grained Quartzite	13.50						76	50
14.50	69.96										
15.00	69.46										
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

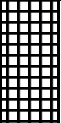
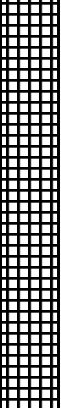


BH NO. :		93		EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		85.095					
LOCATION :		N=-283 E= 520		WATER TABLE below EGL (m) :		3.60					
				CASING Depth (m) :		1.00					
START DATE :		4/15/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		4/17/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	85.10		Highly weathered grey, fine grained Limestone								
0.50	84.60										
1.00	84.35			0.75					22	Nil	
1.50	83.60			1.50					22	Nil	
2.00	83.10		Fresh grey, fine grained Limestone								
2.50	82.85			2.25					88	37	
3.00	82.10			3.00					81	73	
3.50	81.60										
4.00	81.10										
4.50	80.60			4.50					77	61	
5.00	80.10										
5.50	79.60										
6.00	79.10			6.00					91	77	
6.50	78.60		Fresh grey, fine grained Limestone								
7.00	78.10										
7.50	77.60			7.50					88	75	
THE BOREHOLE IS TERMINATED AT 7.50m BELOW G.L.											



BH NO. :		94	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		85.390						
LOCATION :		N = -283 E = 618	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		2/23/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		2/27/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	85.39		Moderately Weathered grey, fine grained Fractured Limestone								
0.50	84.89										
1.00	84.64			0.75					31	31	
1.50	83.89		Slightly Weathered grey, fine grained Limestone	1.50					41	29	
2.00	83.39										
2.50	83.14			2.25					51	35	
3.00	82.39			3.00					61	Nil	
3.50	81.89		Fresh grey, fine grained Limestone								
4.00	81.64			3.75					81	46	
4.50	80.89			4.50					89	65	
5.00	80.39										
5.50	79.89										
6.00	79.39			6.00					57	40	
6.50	78.89										
7.00	78.39										
7.50	77.89	7.50					67	37			
8.00	77.39		Fresh grey, fine grained Limestone								
8.50	76.89										
9.00	76.39			9.00					95	91	
9.50	75.89		Fresh grey, fine grained Limestone								
10.00	75.39										
10.50	74.89			10.50					75	61	
11.00	74.39		Slightly Weathered grey, fine grained Quartzite								
11.50	73.89										
12.00	73.39			12.00					54	20	
12.50	72.89		Slightly Weathered grey, fine grained Quartzite								
13.00	72.39										
13.50	71.89										
14.00	71.89			13.50					43	Nil	
14.50	70.89										
15.00	70.39			15.00					66	33	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		95	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		83.713						
LOCATION :		N = -283, E =661	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		2/12/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		2/15/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	83.71		Moderately weathered grey, fine grained Limestone								
0.50	83.21										
1.00	82.96		0.75						31	Nil	
1.50	82.21		Slightly weathered red, fine grained Sandstone	1.50						53	36
2.00	81.71										
2.50	81.46			2.25						43	36
3.00	80.71			3.00						43	13
3.50	80.21										
4.00	79.96			3.75						51	13
4.50	79.21		Fresh red, fine grained Conglomerate Sandstone	4.50						83	35
5.00	78.71										
5.50	78.46			5.25						87	51
6.00	83.71		Fresh grey, fine grained Quartzite								
6.50	77.21										
7.00	76.96			6.75						79	63
7.50	83.71										
8.00	75.71										
8.50	75.46			8.25						82	46
9.00	83.71										
9.50	74.21										
10.00	73.71			9.75						75	37
10.50	83.71										



BH NO. :		95	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		83.713						
LOCATION :		N = -283, E =661	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		2/12/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		2/15/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
11.00	72.71		Fresh black, fine grained Shale	11.25						73	62
11.50	72.21										
12.00	83.71										
12.50	71.21		Fresh black, fine grained Shale	12.75						72	41
13.00	70.71										
13.50	83.71										
14.00	69.71										
14.50	69.21										
15.00	83.71										
15.50	68.21										
16.00	67.71										
16.50	83.71										
17.00	66.71										
17.50	66.21										
18.00	83.71										
18.50	65.21										
19.00	64.71										
19.50	83.71										
20.00	63.71										
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											



BH NO. :		95	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		83.713						
LOCATION :		N = -283, E =661	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		2/12/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		2/15/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
11.00	72.71		Fresh black, fine grained Shale	11.25					73	62	
11.50	72.21										
12.00	83.71										
12.50	71.21		Fresh black, fine grained Shale	12.75					72	41	
13.00	70.71										
13.50	83.71										
14.00	69.71										
14.50	69.21								77	34	
15.00	83.71										
15.50	68.21										
16.00	67.71										
16.50	83.71								52	Nil	
17.00	66.71										
17.50	66.21										
18.00	83.71										
18.50	65.21										
19.00	64.71								69	Nil	
19.50	83.71										
20.00	63.71								70	31	
THE BOREHOLE IS TERMINATED AT 20.00m BELOW G.L.											



BH NO. :		96		EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		83.987					
LOCATION :		N = -302 E = 358		WATER TABLE below EGL (m) :		3.20					
				CASING Depth (m) :		1.50					
START DATE :		1/24/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/25/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	83.99		Slightly Weathered grey, fine grained Limestone								
0.50	83.49										
1.00	83.24			0.75					42	Nil	
1.50	82.49			1.50					45	21	
2.00	81.99		Fresh Weathered grey, fine grained Limestone								
2.50	81.74		2.25					89	51		
3.00	80.99		Fresh grey, fine grained fractured Limestone	3.00					89	Nil	
3.50	80.49		Fresh grey, fine grained Limestone								
4.00	79.99										
4.50	79.49			4.50					60	Nil	
5.00	78.99										
5.50	78.49										
6.00	77.99			6.00					70	24	
6.50	77.49		Fresh grey, fine grained Quartzite								
7.00	76.99										
7.50	76.49			7.50					69	9	
8.00	75.99										
8.50	75.49										
9.00	74.99			9.00					62	26	
9.50	74.49										
10.00	73.99										
10.50	73.49			10.50					71	40	
11.00	72.99										
11.50	72.49										
12.00	71.99			12.00					66	27	
12.50	71.49										
13.00	70.99										
13.50	70.49										
14.00	70.49			13.50					70	Nil	
14.50	69.49										
15.00	68.99			15.00					65	Nil	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

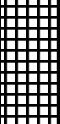
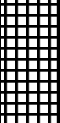
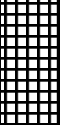
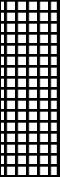


BH NO. :		97	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		85.014						
LOCATION :		N = -302 E = 501	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		1/29/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		1/31/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	85.01		Moderately Weathered grey, fine grained Limestone								
0.50	84.51										
1.00	84.26			0.75					32	Nil	
1.50	83.51		Fresh grey, fine grained Limestone	1.50					60	Nil	
2.00	83.01										
2.50	82.76			2.25					57	13	
3.00	82.01			3.00					63	Nil	
3.50	81.51										
4.00	81.26			3.75					83	47	
4.50	80.51			4.50					89	61	
5.00	80.01										
5.50	79.51										
6.00	79.01			6.00					71	Nil	
6.50	78.51		Fresh grey, fine grained Limestone								
7.00	78.01										
7.50	77.51			7.50					63	Nil	
8.00	77.01		Fresh grey, fine grained Limestone								
8.50	76.51										
9.00	76.01			9.00					75	46	
9.50	75.51		Fresh greyish brown, fine grained Quartzite								
10.00	75.01										
10.50	74.51			10.50					66	40	
11.00	74.01										
11.50	73.51										
12.00	73.01			12.00					78	37	
12.50	72.51										
13.00	72.01										
13.50	71.51										
14.00	71.51			13.50					78	69	
14.50	70.51										
15.00	70.01			15.00					83	83	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		98	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		83.842						
LOCATION :		N = -302 E = 642	WATER TABLE below EGL (m) :		3.50						
			CASING Depth (m) :		1.50						
START DATE :		2/8/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		2/11/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	83.84		Moderately Weathered grey, fine grained Limestone								
0.50	83.34										
1.00	83.09			0.75					32	Nil	
1.50	82.34			1.50					37	16	
2.00	81.84		Fresh grey, fine grained Limestone								
2.50	81.59			2.25					51	Nil	
3.00	80.84			3.00					32	Nil	
3.50	80.34										
4.00	79.84			3.75					86	35	
4.50	79.34			4.50					92	44	
5.00	78.84										
5.50	78.34										
6.00	77.84			6.00					86	51	
6.50	77.34		Fresh grey, fine grained Limestone								
7.00	76.84										
7.50	76.34			7.50					80	28	
8.00	75.84										
8.50	75.34										
9.00	74.84	9.00					83	53			
9.50	74.34		Fresh grey, fine grained Limestone								
10.00	73.84										
10.50	73.34			10.50					63	Nil	
11.00	72.84		Fresh grey, fine grained Quartzite								
11.50	72.34										
12.00	71.84			12.00					66	18	
12.50	71.34		Fresh black, fine grained Shale								
13.00	70.84										
13.50	70.34										
14.00	70.34			13.50					67	31	
14.50	69.34		Fresh black, fine grained Shale								
15.00	68.84			15.00					71	40	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

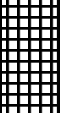
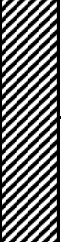


BH NO. :		99	EGL(EXISTING GROUND LEVEL)R.L.(+) (m)		83.842						
LOCATION :		N = -330 E = 431	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		1/28/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		2/2/2016	DRILLING : NX SIZE double tube core barrel								
SCALE	RL	Graphic Log	Description	Sample		Penetration,				CR/N	RQD
			Approximate Surface Elevation: Existing Surface Elevation	Depth	Type	cm					
				M		15	30	45	60	%	%
0.00	83.84		Moderately Weathered Pink Limestone								
0.50	83.84										
1.00	83.09			0.75						27	Nil
1.50	82.34		Slightly Weathered Pink Limestone	1.50						45	Nil
2.00	83.84										
2.50	81.59		Fresh Pinkish Limestone	2.25						91	Nil
3.00	80.84			3.00						87	Nil
3.50	83.84		Fresh Pinkish Limestone and Greyish Limestone								
4.00	83.84										
4.50	79.34			4.50						76	9
5.00	83.84		Fresh Greyish Limestone								
5.50	83.84										
6.00	77.84			6.00						88	67
6.50	83.84		Fresh Greyish Limestone and Greyish Quartzite								
7.00	83.84										
7.50	76.34			7.50						68	22
8.00	83.84		Fresh Greyish Quartzite								
8.50	83.84										
9.00	74.84			9.00						76	11
9.50	83.84										
10.00	73.84			10.00						70	30
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

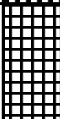
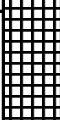
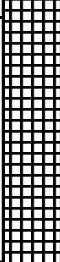
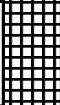


BH NO. :		100		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		84.416					
LOCATION :		N = -330 E = 541		WATER TABLE below EGL (m) :		3.00					
				CASING Depth (m) :		1.50					
START DATE :		2/1/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/2/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.42		Moderately grey, fine grained Limestone	0.75 1.50 2.25 3.00					25 34 35 50	Nil Nil Nil Nil	
0.50	83.92										
1.00	83.67										
1.50	82.92										
2.00	82.42										
2.50	82.17										
3.00	81.42										
3.50	80.92		Fresh grey, fine grained Limestone	3.75 4.50					87 81	17 13	
4.00	80.67										
4.50	79.92										
5.00	79.42		Fresh Pinkish, fine grained Limestone and Limestone	6.00					74	8	
5.50	78.92										
6.00	78.42										
6.50	77.92		Fresh grey, fine grained Limestone	7.50					63	Nil	
7.00	77.42										
7.50	76.92										
8.00	76.42		Fresh grey, fine grained Quartzite	9.00 10.00					69 73	40 73	
8.50	75.92										
9.00	75.42										
9.50	74.92										
10.00	74.42										
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

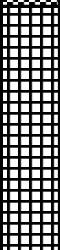


BH NO. :		101		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		83.513					
LOCATION :		N = -357 E = 341		WATER TABLE below EGL (m) :		3.80					
				CASING Depth (m) :		1.50					
START DATE :		1/23/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/27/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	83.51		Moderately Weathered Pink, fine grained Limestone								
0.50	83.01										
1.00	82.76			0.75					31	Nil	
1.50	82.01			1.50					45	Nil	
2.00	81.51		Fresh Pink, fine grained Limestone								
2.50	81.26			2.25					81	Nil	
3.00	80.51			3.00					81	Nil	
3.50	80.01		Slightly Weathered Greyish Pink, fine grained Limestone								
4.00	79.51										
4.50	79.01			4.50					48	Nil	
5.00	78.51		Slightly Weathered Grey, fine grained Limestone								
5.50	78.01										
6.00	77.51			6.00					52	Nil	
6.50	77.01		Moderately Weathered grey, fine grained Quartzite								
7.00	76.51										
7.50	76.01			7.50					27	Nil	
8.00	75.51		Fresh grey, fine grained Quartzite								
8.50	75.01										
9.00	74.51			9.00					69	64	
9.50	74.01										
10.00	73.51			10.00					69	59	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		102		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		84.299					
LOCATION :		N = -357 E = 479		WATER TABLE below EGL (m) :		3.50					
				CASING Depth (m) :		1.50					
START DATE :		1/26/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/28/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.30		Moderately Weathered Pinkish Grey, fine grained Limestone								
0.50	83.80										
1.00	83.55			0.75					24	Nil	
1.50	82.80			1.50					20	Nil	
2.00	82.30		Fresh Pinkish Grey, fine grained Limestone								
2.50	82.05			2.25					84	13	
3.00	81.30			3.00					92	55	
3.50	80.80		Fresh Pinkish Grey, fine grained Limestone								
4.00	80.30										
4.50	79.80			4.50					72	20	
5.00	79.30		Fresh grey, fine grained Limestone								
5.50	78.80										
6.00	78.30			6.00					75	13	
6.50	77.80										
7.00	77.30										
7.50	76.80			7.50					78	8	
8.00	76.30		Fresh grey, fine grained Limestone								
8.50	75.80										
9.00	75.30			9.00					77	Nil	
9.50	74.80		Slightly Weathered grey, fine grained Quartzite								
10.00	74.30			10.00					50	Nil	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

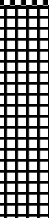


BH NO. :		103		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		84.499					
LOCATION :		N = -357 E = 599		WATER TABLE below EGL (m) :		2.50					
				CASING Depth (m) :		1.50					
START DATE :		2/5/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/8/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.50		Moderately Weathered Pinkish, fine grained Limestone	0.75						29	Nil
0.50	84.00			1.50						32	16
1.00	83.75										
1.50	83.00										
2.00	82.50										
2.50	82.25										
3.00	81.50										
3.50	81.00		Fresh Pinkish, fine grained Limestone	3.75						85	23
4.00	80.75			4.50						89	53
4.50	80.00										
5.00	79.50										
5.50	79.00										
6.00	78.50										
6.50	78.00		Fresh Pinkish Grey, fine grained Limestone								
7.00	77.50										
7.50	77.00			7.50						67	28
8.00	76.50		Fresh grey, fine grained Limestone								
8.50	76.00										
9.00	75.50			9.00						70	68
9.50	75.00		Slightly Weathered grey, fine grained Limestone								
10.00	74.50			10.00						53	22
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

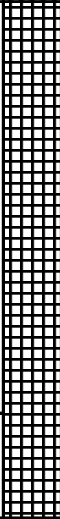
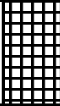


BH NO. :		104	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		85.572						
LOCATION :		N = -350, E =877	WATER TABLE below EGL (m) :		5.00						
			CASING Depth (m) :		1.50						
START DATE :		12/18/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		12/19/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	85.57		Slightly weathered pink, fine grained Limestone								
0.50	85.07										
1.00	84.82			0.75					56	19	
1.50	84.07		Fresh pink, fine grained Limestone	1.50					61	53	
2.00	83.57										
2.50	83.32			2.25					72	72	
3.00	82.57			3.00					83	67	
3.50	82.07										
4.00	81.57										
4.50	81.07			4.50					78	67	
5.00	80.57										
5.50	80.07										
6.00	79.57			6.00					76	30	
6.50	79.07										
7.00	78.57										
7.50	78.07			7.50					87	42	
8.00	77.57										
8.50	77.07										
9.00	76.57			9.00					85	46	
9.50	76.07										
10.00	75.57			10.00					64	64	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		105		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		85.005					
LOCATION :		N = -363 E = 695		WATER TABLE below EGL (m) :		4.00					
				CASING Depth (m) :		1.50					
START DATE :		2/18/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/19/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	85.01		Highly Weathered Pinkish Grey, fine grained Limestone	0.75						20	Nil
0.50	84.51										
1.00	84.26										
1.50	83.51		Slightly Weathered Pinkish grey, fine grained Limestone	1.50						43	Nil
2.00	83.01										
2.50	82.76										
3.00	82.01		Moderately Weathered Pinkish grey, fine grained Limestone	3.00						35 21	Nil Nil
3.50	81.51										
4.00	81.26										
4.50	80.51		Fresh Pinkish grey, fine grained Limestone	4.50						88 85	13 17
5.00	80.01										
5.50	79.51										
6.00	79.01		Fresh Pinkish grey, fine grained Limestone	6.00						64	32
6.50	78.51										
7.00	78.01										
7.50	77.51		Fresh Pinkish grey, fine grained Limestone	7.50						72	Nil
8.00	77.01										
8.50	76.51										
9.00	76.01		Fresh grey, fine grained Limestone	9.00						68	8
9.50	75.51										
10.00	75.01										
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		106	EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		84.000						
LOCATION :		N= -370 E= 423		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		NA					
START DATE :		3/2/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/3/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.00		Slightly Weathered black, fine grained Shale								
0.50	83.50										
1.00	83.25			0.75					44	Nil	
1.50	82.50			1.50					42	Nil	
2.00	82.00										
2.50	81.75			2.25					40	13	
3.00	81.00		Fresh black, fine grained Shale	3.00						74	29
3.50	80.50										
4.00	80.25			3.75						77	30
4.50	79.50			4.50						62	17
5.00	79.00										
5.50	78.75			5.25						82	38
6.00	78.00			6.00						32	Nil
6.50	77.50										
7.00	77.25			6.75						88	28
7.50	76.50			7.50						96	26
8.00	76.00		Fresh black, fine grained Shale								
8.50	75.50										
9.00	75.00			9.00						77	30
9.50	74.50		Slightly Weathered grey, fine grained Quartzite								
10.00	74.00			10.00						49	Nil
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		107		EGL(EXISTING GROUND LEVEL) R.L.(+) (m)		84.375					
LOCATION :		N = -370 E = 538		WATER TABLE below EGL (m) :		4.00					
				CASING Depth (m) :		1.50					
START DATE :		2/3/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/4/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.38		Moderately Weathered Pink, fine grained Limestone								
0.50	83.88										
1.00	83.63										
1.50	82.88										
2.00	82.38										
2.50	82.13										
3.00	81.38		Slightly Weathered Pink, fine grained Limestone	3.00					59	53	
3.50	80.88										
4.00	80.63			3.75					41	28	
4.50	79.88			4.50					37	Nil	
5.00	79.38		Fresh Pink, fine grained Limestone								
5.50	79.13			5.25					70	51	
6.00	78.38			6.00					60	Nil	
6.50	77.88										
7.00	77.63			6.75					86	32	
7.50	76.88			7.50					81	17	
8.00	76.38		Fresh Pink, fine grained Limestone								
8.50	75.88										
9.00	75.38			9.00					73	55	
9.50	74.88		Fresh grey, fine grained Limestone								
10.00	74.38			10.00					55	12	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		108	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		85.345						
LOCATION :		N = -375 E = 790	WATER TABLE below EGL (m) :		4.00						
			CASING Depth (m) :		1.50						
START DATE :		2/23/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		2/24/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	85.35		Moderately Weathered pink, fine grained Limestone								
0.50	84.85										
1.00	84.60			0.75					25	Nil	
1.50	83.85			1.50					35	Nil	
2.00	83.35		Slightly Weathered grey pink, fine grained Limestone								
2.50	83.10			2.25					43	17	
3.00	82.35			3.00					49	Nil	
3.50	81.85		Fresh grey pink, fine grained Limestone								
4.00	81.60			3.75					84	16	
4.50	80.85			4.50					80	Nil	
5.00	80.35										
5.50	79.85										
6.00	79.35			6.00					64	37	
6.50	78.85										
7.00	78.35										
7.50	77.85			7.50					80	31	
8.00	77.35										
8.50	76.85										
9.00	76.35			9.00					65	13	
9.50	75.85										
10.00	75.35										
10.50	74.85			10.50					65	30	
11.00	74.35		Fresh grey, fine grained Quartzite								
11.50	73.85										
12.00	73.35			12.00					63	63	
12.50	72.85										
13.00	72.35										
13.50	71.85			13.50					57	55	
14.00	71.35										
14.50	70.85										
15.00	70.35			15.00					71	71	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		109		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		88.560					
LOCATION :		N = 908 E = 226		WATER TABLE below EGL (m) :		5.60					
				CASING Depth (m) :		1.50					
START DATE :		5/19/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		5/21/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	88.56		Moderately Weathered pink grey, fine grained Limestone	0.75						30	Nil
0.50	88.06										
1.00	87.81										
1.50	87.06		Slightly Weatheredpink grey, fine grained Limestone	2.25						37	Nil
2.00	86.56										
2.50	86.31										
3.00	85.56		Fresh grey, fine grained Limestone	3.00						57	Nil
3.50	85.06		Moderately weathered grey, fine grained Limestone	7.00						36	Nil
4.00	84.81										
4.50	84.06										
5.00	83.56										
5.50	83.06										
6.00	82.56										
6.50	82.06										
7.00	81.56										
7.50	81.06		Moderately weathered grey, fine grained Quartzite	8.25						24	Nil
8.00	80.56										
8.50	80.06										
9.00	79.56		Highly weathered grey, fine grained Quartzite	10.00						21	Nil
9.50	79.06										
10.00	78.56										
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		110		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		87.289					
LOCATION :		N = 416 E = 485		WATER TABLE below EGL (m) :		5.00					
				CASING Depth (m) :		1.50					
START DATE :		5/7/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		5/10/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	87.29		Highly weathered grey, fine grained Quartzite								
0.50	86.79										
1.00	86.54			0.75					14	Nil	
1.50	85.79			1.50					25	Nil	
2.00	85.29										
2.50	85.04		2.25					21	Nil		
3.00	84.29		Moderately weathered grey, fine grained Quartzite	3.00					26	Nil	
3.50	83.79										
4.00	83.54			3.75					29	Nil	
4.50	82.79			4.50					26	Nil	
5.00	82.29										
5.50	81.79			5.25					24	Nil	
6.00	81.29		6.00					25	Nil		
6.50	80.79		Highly weathered grey, fine grained Quartzite								
7.00	80.29			7.00					23	Nil	
7.50	79.79			7.50					21	Nil	
8.00	79.29										
8.50	78.79			8.25					21	Nil	
9.00	78.29		9.00					24	Nil		
9.50	77.79		Moderately weathered grey, fine grained Quartzite	9.75					26	Nil	
10.00	77.29										
10.50	76.79			10.50					28	Nil	
11.00	76.29			11.25					28	Nil	
11.50	75.79										
12.00	75.29			12.00					28	Nil	
12.50	74.79		12.75					25	Nil		
13.00	74.29		Highly weathered grey, fine grained Quartzite								
13.50	73.79			13.50					22	Nil	
14.00	73.29			14.25					24	Nil	
14.50	72.79		Moderately weathered grey, fine grained Quartzite								
15.00	72.29			15.00					34	Nil	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		111		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		84.192								
LOCATION :		N=272 E= 472		WATER TABLE below EGL (m) :		4.00								
				CASING Depth (m) :		1.50								
START DATE :		4/22/2016		BORING/ DRILLING METHOD :		Rotary								
END DATE :		4/24/2016		DRILLING : NX SIZE double tube core barrel										
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)			
				Depth	Type	cm								
						m	15	30		45	%	%		
0.00	84.19		Brownish Sand		SPT1	>50			R	Nil	Nil			
0.50	83.69													
1.00	83.44			0.75										
1.50	82.69			1.50								SPT2	>50	
2.00	82.19		Moderately weathered grey, fine grained Limestone							26	Nil			
2.50	81.94			2.25										
3.00	81.19			3.00									21	Nil
3.50	80.69													
4.00	80.44			3.75									24	Nil
4.50	79.69			4.50									28	17
5.00	79.19													
5.50	78.94			5.25									28	Nil
6.00	78.19			6.00									28	Nil
6.50	77.69													
7.00	77.44			6.75									32	Nil
7.50	76.69			7.50									24	Nil
8.00	76.19		Moderately weathered grey, fine grained Quartzite							24	13			
8.50	75.69			8.25										
9.00	75.19			9.00									37	13
9.50	74.69		Fresh grey, fine grained Quartzite							80	80			
10.00	74.19													
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.														

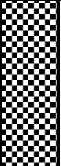
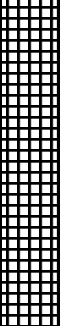


BH NO. :		112		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		83.383					
LOCATION :		N=141 E= 644		WATER TABLE below EGL (m) :		4.00					
				CASING Depth (m) :		1.50					
START DATE :		4/29/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		4/30/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	83.38		Highly weathered grey, fine grained Quartzite								
0.50	82.88										
1.00	82.63			0.75					21	Nil	
1.50	81.88		Moderately weathered grey, fine grained Quartzite	1.50					36	Nil	
2.00	81.38										
2.50	81.13			2.25					36	Nil	
3.00	80.38			3.00					37	Nil	
3.50	79.88										
4.00	79.63			3.75					34	Nil	
4.50	78.88			4.50					26	17	
5.00	78.38										
5.50	78.13			5.25					29	Nil	
6.00	77.38		Highly weathered grey, fine grained Quartzite	6.00					21	Nil	
6.50	76.88										
7.00	76.63			6.75					21	Nil	
7.50	75.88			7.50					21	Nil	
8.00	75.38										
8.50	74.88			8.25					22	Nil	
9.00	74.38			9.00					17	Nil	
9.50	73.88			9.75					17	Nil	
10.00	73.38			10.00					21	Nil	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

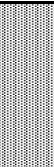


BH NO. :		113		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		82.601					
LOCATION :		N= -129 E= -443		WATER TABLE below EGL (m) :		3.80					
				CASING Depth (m) :		1.00					
START DATE :		4/17/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		4/20/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	82.60		Grid								
0.50	82.10										
1.00	81.85			0.75					13	Nil	
1.50	81.10			1.50					19	Nil	
2.00	80.60										
2.50	80.35			2.25					21	Nil	
3.00	79.60			3.00					21	Nil	
3.50	79.10		Highly weathered pink grey, fine grained Quartzite								
4.00	78.85		3.75					22	Nil		
4.50	78.10		Highly weathered pink grey, fine grained Limestone	4.50					23	Nil	
5.00	77.60										
5.50	77.35		Highly weathered grey, fine grained Quartzite	5.25					21	Nil	
6.00	76.60		6.00					23	Nil		
6.50	76.10		Moderately weathered grey, fine grained Quartzite								
7.00	75.85			6.75					35	Nil	
7.50	75.10			7.50					35	Nil	
8.00	74.60										
8.50	74.10			8.25					28	Nil	
9.00	73.60			9.00					40	Nil	
9.50	73.10										
10.00	72.60	9.75					30	Nil			
10.50	72.10		Moderately weathered black, fine grained Shale	10.50					26	Nil	
11.00	71.60										
11.50	71.10			11.25					28	Nil	
12.00	70.60			12.00					21	Nil	
12.50	70.10										
13.00	69.60			12.75					26	Nil	
13.50	69.10			13.50					28	Nil	
14.00	68.60										
14.50	68.10			14.25					40	Nil	
15.00	67.60			15.00					42	13	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

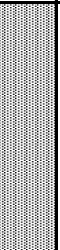


BH NO. :		114	EGL(EXISTING GROUND LEVEL)R.L.(+)(m)		79.583						
LOCATION :		N = -187, E = -294	WATER TABLE below EGL (m) :		5.00						
			CASING Depth (m) :		1.50						
START DATE :		1/12/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		1/14/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	79.58		Moderatetly weathered grey, fine grained Quartzite								
0.50	79.08										
1.00	78.83			0.75					26	Nil	
1.50	78.08			1.50					27	Nil	
2.00	77.58		Slightly weathered grey, fine grained Quartzite								
2.50	77.33			2.25					59	47	
3.00	76.58			3.00					40	29	
3.50	76.08		Moderately weathered grey, fine grained Quartzite								
4.00	75.83			3.75					33	15	
4.50	75.08			4.50					32	Nil	
5.00	74.58										
5.50	74.33			5.25					33	56	
6.00	73.58			6.00					89	23	
6.50	73.08		Fresh pink grey, fine grained Shale								
7.00	72.58										
7.50	72.08			7.50					70	48	
8.00	71.58										
8.50	71.08										
9.00	70.58			9.00					76	33	
9.50	70.08										
10.00	69.58			10.00					58	Nil	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

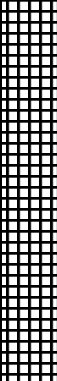


BH NO. :		115		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		82.040					
LOCATION :		N= -196 E= -461		WATER TABLE below EGL (m) :		3.80					
				CASING Depth (m) :		1.50					
START DATE :		4/12/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		4/14/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.04		Grid								
0.50	81.54										
1.00	81.29			0.75					21	Nil	
1.50	80.54			1.50					24	Nil	
2.00	80.04		Moderately weathered grey, fine grained Quartzite								
2.50	79.79			2.25					36	Nil	
3.00	79.04			3.00					32	Nil	
3.50	78.54										
4.00	78.29			3.75					44	13	
4.50	77.54			4.50					40	17	
5.00	77.04		Completely weathered grey, fine grained Quartzite								
5.50	76.79			5.25				R	16	Nil	
6.00	76.04			6.00				R	8	Nil	
6.50	75.54										
7.00	75.29			6.75				R	6	Nil	
7.50	74.54			7.50				R	6	Nil	
8.00	74.04		Slightly weathered greyish pink, fine grained Limestone								
8.50	73.54			8.25					41	Nil	
9.00	73.04			9.00					41	Nil	
9.50	72.54										
10.00	72.04			9.75					34	Nil	
10.50	71.54			10.50					53	Nil	
11.00	71.04										
11.50	70.54			11.25					50	Nil	
12.00	70.04			12.00					49	Nil	
12.50	69.54										
13.00	69.04			12.75					60	42	
13.50	68.54			13.50					46	34	
14.00	68.04										
14.50	67.54			14.25					65	38	
15.00	67.04			15.00					62	28	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

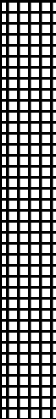


BH NO. :		116		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		82.650					
LOCATION :		N= -214, E= -529		WATER TABLE below EGL (m) :		4.30					
				CASING Depth (m) :		1.50					
START DATE :		4/15/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		4/17/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.65		Grit								
0.50	82.15										
1.00	81.90			0.75	SPT1	>50			R	10	Nil
1.50	81.15			1.50	SPT2	>50			R	9	Nil
2.00	80.65										
2.50	80.40		2.25	SPT3	>50			R	16	Nil	
3.00	79.65		Highly weathered grey, fine grained Quartzite	3.00						22	Nil
3.50	79.15		Moderately weathered grey, fine grained Quartzite								
4.00	78.90			3.75						29	16
4.50	78.15			4.50						28	17
5.00	77.65										
5.50	77.40			5.25						26	Nil
6.00	76.65			6.00						32	Nil
6.50	76.15										
7.00	75.90			6.75						26	Nil
7.50	75.15			7.50						32	17
8.00	74.65										
8.50	74.15	8.25						32	Nil		
9.00	73.65	9.00						26	21		
9.50	73.15		Fresh grey, fine grained Quartzite						44	18	
10.00	72.65								32	Nil	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

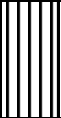
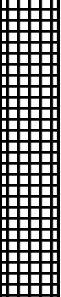
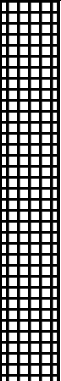


BH NO. :		117		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		81.215					
LOCATION :		N = -246, E =-412		WATER TABLE below EGL (m) :		5.00					
				CASING Depth (m) :		1.50					
START DATE :		1/16/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		1/19/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	81.22		Highly weathered grey, fine grained Quartzite								
0.50	80.72										
1.00	80.47			0.75					23	Nil	
1.50	79.72			1.50					24	20	
2.00	79.22		Moderately weathered grey, fine grained Quartzite								
2.50	78.97			2.25					32	Nil	
3.00	78.22			3.00					25	Nil	
3.50	77.72		Slightly weathered grey, fine grained Quartzite								
4.00	77.47			3.75					45	45	
4.50	76.72			4.50					69	69	
5.00	76.22										
5.50	75.97			5.25					45	Nil	
6.00	75.22			6.00					44	32	
6.50	74.72										
7.00	74.47			6.75					37	Nil	
7.50	73.72	7.50					51	51			
8.00	73.22		Moderately weathered grey, fine grained Quartzite								
8.50	72.97			8.25					39	13	
9.00	72.22			9.00					37	20	
9.50	71.72		Fresh grey, fine grained Quartzite								
10.00	71.47			9.75					87	41	
10.50	70.72		Fresh grey, fine grained Shale	10.50					85	14	
11.00	70.22										
11.50	69.72										
12.00	69.22			12.00					63	Nil	
12.50	68.72										
13.00	68.22										
13.50	67.72			13.50					71	39	
14.00	67.22										
14.50	66.72										
15.00	66.22			15.00					65	15	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		118		EGL(EXISTING GROUND LEVEL)R.L.(+)(m)		78.400						
LOCATION :		N = -269, E =-244		WATER TABLE below EGL (m) :		6.50						
				CASING Depth (m) :		1.50						
START DATE :		1/5/2016		BORING/ DRILLING METHOD :		Rotary						
END DATE :		1/11/2016		DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)	
				Depth	Type	cm						
						15	30	45				
				m						%	%	
0.00	78.40		Highly weathered grey, fine grained Limestone									
0.50	77.90											
1.00	77.65			0.75						21	Nil	
1.50	76.90		Moderately weathered grey, fine grained Limestone	1.50						45	27	
2.00	76.40											
2.50	76.15			2.25						81	31	
3.00	75.40			3.00						82	53	
3.50	74.90											
4.00	78.40											
4.50	73.90			4.25						73	74	
5.00	73.40											
5.50	78.40											
6.00	72.40			6.00						65	13	
6.50	71.90		Fresh grey, fine grained Limestone									
7.00	78.40											
7.50	70.90			7.50						47	Nil	
8.00	70.40											
8.50	69.90											
9.00	69.40			9.00						66	7	
9.50	68.90											
10.00	68.40											
10.50	67.90		Fresh black, fine grained Shale	10.50						69	61	
11.00	67.40											
11.50	66.90											
12.00	66.40			12.00						73	39	
12.50	65.90											
13.00	65.40											
13.50	64.90			13.50						82	20	
14.00	64.40											
14.50	63.90											
15.00	78.40											
15.50	62.90	15.00						88	42			
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.												

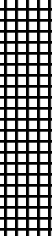


BH NO. : 119		EGL(EXISTING GROUND LEVEL) R.L.(+)(m) 80.580														
LOCATION : N = -359, E = -443		WATER TABLE below EGL (m) : 4.00														
START DATE : 1/20/2016		CASING Depth (m) : 1.50														
END DATE : 1/23/2016		BORING/ DRILLING METHOD : Rotary														
		DRILLING : NX SIZE double tube core barrel														
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)					
				Depth	Type	cm										
						m	15	30		45	%	%				
0.00	80.58		Highly weathered pink, fine grained Limestone	0.75						24	Nil					
0.50	80.08															
1.00	79.83															
1.50	79.08		Moderately weathered pink, fine grained Limestone	1.50						23	Nil					
2.00	78.58			2.25										27	13	
2.50	78.33															
3.00	77.58			3.00										49	34	
3.50	77.08															
4.00	76.83			3.75										84	64	
4.50	76.08			4.50												
5.00	75.58													61	44	
5.50	75.08															
6.00	74.58			6.00												
6.50	74.08		Fresh grey, fine grained Limestone	7.50						64	Nil					
7.00	73.58															
7.50	73.08															
8.00	72.58															
8.50	72.08			9.00											61	Nil
9.00	71.58															
9.50	71.08															
10.00	70.58															
10.50	70.08		Fresh black, fine grained Shale	10.50						64	16					
11.00	69.58			12.00										71	21	
11.50	69.08															
12.00	68.58															
12.50	68.08			13.50											72	23
13.00	67.58															
13.50	67.08															
14.00	66.58			15.00											66	17
14.50	66.08															
15.00	65.58															
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.																



BH NO. :		120		EGL(EXISTING GROUND LEVEL)R.L.(+)(m)		79.250					
LOCATION :		N = -328 E = -228		WATER TABLE below EGL (m) :		3.00					
				CASING Depth (m) :		1.50					
START DATE :		2/8/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/10/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	79.25		Moderately Weathered grey, fine grained Quartzite								
0.50	78.75										
1.00	78.50			0.75						31	Nil
1.50	77.75		Slightly Weathered grey, fine grained Quartzite	1.50						39	Nil
2.00	77.25										
2.50	77.00			2.25						49	17
3.00	76.25			3.00						59	21
3.50	75.75										
4.00	75.50			3.75						43	27
4.50	74.75			4.50						45	13
5.00	74.25										
5.50	74.00										
6.00	73.25			6.00						58	27
										45	37
6.50	72.75		Fresh grey, fine grained Fractured Quartzite								
7.00	72.50										
7.50	71.75			6.75						75	Nil
				7.50						44	24
8.00	71.25		Fresh pink grey, fine grained Limestone								
8.50	71.00			8.25						60	23
9.00	70.25										
				9.00						54	Nil
9.50	69.75		Fresh dark grey, fine grained Shale								
10.00	69.50										
10.50	68.75			9.75						71	Nil
11.00	68.25			10.50						69	15
11.50	68.00			11.25						69	13
12.00	67.25			12.00						69	56
12.50	66.75		Slightly Weathered dark grey, fine grained Shale								
13.00	66.50			12.75						53	47
13.50	65.75										
14.00	65.75			13.50						57	38
14.50	65.00			14.25						49	32
15.00	64.25			15.00						55	Nil
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

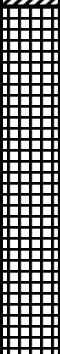


BH NO. :		121		EGL(EXISTING GROUND LEVEL) R.L.+(m)		79.756					
LOCATION :		N = -426 E = -461		WATER TABLE below EGL (m) :		5.00					
				CASING Depth (m) :		1.50					
START DATE :		2/17/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/24/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	79.76		Highly Weathered grey, fine grained Fractured Quartzite								
0.50	79.26										
1.00	79.01			0.75					24	Nil	
1.50	78.26			1.50					23	Nil	
2.00	77.76										
2.50	77.51			2.25					29	Nil	
3.00	76.76		Slightly Weathered grey, fine grained Quartzite	3.00						44	39
3.50	76.26										
4.00	76.01			3.75						47	36
4.50	75.26			4.50						83	71
5.00	74.76										
5.50	74.51			5.25						85	57
6.00	73.76										
6.50	73.26										
7.00	73.01			6.75						61	45
7.50	72.26										
8.00	71.76										
8.50	71.51			8.25						59	40
9.00	70.76		Slightly Weathered Dark Grey, fine grained Shale								
9.50	70.26										
10.00	70.01			9.75						59	15
10.50	69.26										
11.00	68.76										
11.50	68.51			11.25						47	13
12.00	67.76		Fresh Dark grey, fine grained Shale								
12.50	67.26										
13.00	67.01			12.75						70	14
13.50	66.26										
14.00	65.76										
14.50	65.51			14.25						77	58
15.00	64.76			15.00						87	71
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		122	EGL(EXISTING GROUND LEVEL)R.L.(+)(m)		79.784						
LOCATION :		N = -355 E = -325	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		1.50						
START DATE :		2/3/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		2/6/2016	DRILLING :		NX SIZE double tube core barrel						
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	79.78		Moderately Weathered grey, fine grained Quartzite								
0.50	79.28										
1.00	79.03			0.75					31	Nil	
1.50	78.28		Moderately Weathered grey, fine grained Quartzite	1.50					37	Nil	
2.00	77.78										
2.50	77.53			2.25					22	Nil	
3.00	76.78			3.00					32	Nil	
3.50	76.28										
4.00	76.03			3.75					47	39	
4.50	75.28			4.50					33	Nil	
5.00	74.78		Slightly Weathered grey, fine grained Quartzite								
5.50	74.53			5.25					52	52	
6.00	73.78			6.00					44	31	
6.50	73.28										
7.00	73.03		Fresh grey, fine grained Quartzite	6.75					82	65	
7.50	72.28			7.50					80	49	
8.00	71.78										
8.50	71.28										
9.00	70.78			9.00					65	53	
9.50	70.28										
10.00	69.78			10.00					82	82	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

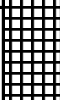


BH NO. :		123		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		79.563					
LOCATION :		N= -444 E= -529		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		NA					
START DATE :		2/26/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/28/2016		DRILLING : NX SIZE double		tube core barrel					
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	79.56		Slightly Weathered grey, fine grained Quartzite	0.75 1.50 2.25 3.00 3.75					41 45 33 44 52	Nil Nil Nil 20 Nil	
0.50	79.06										
1.00	78.81										
1.50	78.06										
2.00	77.56										
2.50	77.31										
3.00	76.56										
3.50	76.06										
4.00	75.81										
4.50	75.06		Fresh grey, fine grained Quartzite	4.50 5.25 6.00 6.75 7.50 8.25					72 70 50 66 56 64	45 Nil 33 60 34 40	
5.00	74.56										
5.50	74.31										
6.00	73.56										
6.50	73.06										
7.00	72.81										
7.50	72.06										
8.00	71.56										
8.50	71.31										
9.00	70.56		Slightly Weathered grey, fine grained Quartzite	9.00 9.75 10.00					50 48 40	Nil Nil Nil	
9.50	69.81										
10.00	69.56										
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		124		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		80.210					
LOCATION :		N = -476, E = -412		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		1.50					
START DATE :		2/11/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		2/15/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	80.21		Light Brown Grit and fine grained Quartzite	0.75					23	Nil	
0.50	79.71										
1.00	79.46										
1.50	78.71		Moderately weathered grey, fine grained Quartzite	1.50					27	13	
2.00	78.21			2.25					3.00	27	Nil
2.50	77.96										
3.00	77.21										
3.50	76.71										
4.00	76.46										
4.50	75.71			4.50					33	23	
5.00	75.21	Slightly Weathered grey, fine grained Quartzite	5.25					50	Nil		
5.50	74.96		6.00					71	Nil		
6.00	74.21										
6.50	73.71	Moderately weathered grey, fine grained Quartzite	6.75					33	Nil		
7.00	73.46		7.50					39	Nil		
7.50	72.71										
8.00	72.21	Fresh grey, fine grained Quartzite	8.25					93	Nil		
8.50	71.96		9.00					92	Nil		
9.00	71.21										
9.50	70.71	Fresh black, fine grained Shale	10.50					70	17		
10.00	70.21										
10.50	69.71										
11.00	69.21		Fresh Dark Gray, fine grained Shale	12.00					75	47	
11.50	68.71										
12.00	68.21										
12.50	67.71										
13.00	67.21										
13.50	66.71			13.50					76	31	
14.00	66.21										
14.50	65.71										
15.00	65.21										
15.00	65.21										
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		125		EGL(EXISTING GROUND LEVEL) R.L.+(m)		81.818					
LOCATION :		N= -527 E= -692		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		NA					
START DATE :		3/2/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/5/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	81.82		Slightly Weathered grey, fine grained Quartzite								
0.50	81.32										
1.00	81.07			0.75					50	40	
1.50	80.32			1.50					48	38	
2.00	79.82										
2.50	79.57			2.25					41	Nil	
3.00	78.82			3.00					22	Nil	
3.50	78.32										
4.00	78.07			3.75					49	Nil	
4.50	77.32		Moderately Weathered grey, fine grained Quartzite	4.50					26	13	
5.00	76.82										
5.50	76.57			5.25					70	33	
6.00	75.82			6.00					38	30	
6.50	75.32										
7.00	75.07		Slightly Weathered grey, fine grained Quartzite	6.75					45	33	
7.50	74.32			7.50					36	Nil	
8.00	73.82										
8.50	73.57			8.25					70	14	
9.00	72.82			9.00					46	Nil	
9.50	72.32										
10.00	72.07	9.75					46	16			
10.50	71.32		Fresh grey, fine grained Quartzite	10.50					76	Nil	
11.00	70.82										
11.50	70.57			11.25					85	28	
12.00	69.82			12.00					74	Nil	
12.50	69.32		Fresh pink, fine grained Limestone								
13.00	69.07			12.75					80	Nil	
13.50	68.32			13.50					61	Nil	
14.00	67.82		Fresh grey, fine grained Limestone								
14.50	67.57			14.25					66	13	
15.00	66.82			15.00					53	Nil	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		126	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		76.260						
LOCATION :		N= -586 E= -283	WATER TABLE below EGL (m) :		Not struck						
			CASING Depth (m) :		NA						
START DATE :		3/9/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		3/11/2016	DRILLING : NX SIZE double		tube core barrel						
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	76.26		Moderately grey, fine grained Quartzite								
0.50	75.76										
1.00	75.26			0.75					34	Nil	
1.50	74.76			1.50					21	Nil	
2.00	74.26										
2.50	74.01			2.25					48	16	
3.00	73.26			3.00					37	Nil	
3.50	72.76										
4.00	72.51			3.75					38	Nil	
4.50	71.76			4.50					24	Nil	
5.00	71.26										
5.50	71.01			5.25					33	15	
6.00	70.26			6.00					44	33	
6.50	69.76										
7.00	69.51			6.75					34	Nil	
7.50	68.76		Slightly Weathered grey, fine grained Quartzite	7.50					54	15	
8.00	68.26										
8.50	68.01			8.25					49	Nil	
9.00	67.26			9.00					61	Nil	
9.50	66.51			9.75					54	Nil	
10.00	66.26			10.00					52	Nil	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



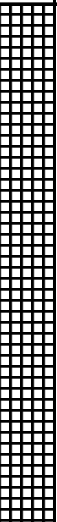
BH NO. :		127		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		76.640					
LOCATION :		N= -615 E= -440		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		NA					
START DATE :		3/7/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/8/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	76.64		Moderately Weathered grey, fine grained Quartzite								
0.50	76.14										
1.00	75.89			0.75					24	Nil	
1.50	75.14			1.50					32	Nil	
2.00	74.64										
2.50	74.39			2.25					34	Nil	
3.00	73.64			3.00					45	17	
3.50	73.14										
4.00	72.89			3.75					34	Nil	
4.50	72.14			4.50					38	Nil	
5.00	71.64										
5.50	71.14			5.25					46	Nil	
6.00	70.64			6.00					36	Nil	
6.50	70.14			6.75					38	Nil	
7.00	76.64										
7.50	69.14			7.50					36	Nil	
8.00	68.64		Slightly Weathered grey, fine grained Quartzite								
8.50	68.39			8.25					52	28	
9.00	67.64			9.00					48	Nil	
9.50	66.89		Fresh grey, fine grained Quartzite	9.75					70	21	
10.00	66.64			10.00					80	25	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



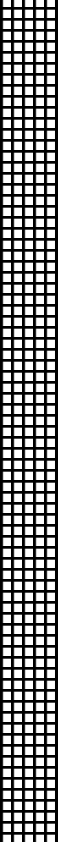


BH NO. :		128		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		86.545					
LOCATION :		N= -336, E= 1073		WATER TABLE below EGL (m) :		4.50					
				CASING Depth (m) :							
START DATE :		15-04-2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		17-04-2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	86.55		Highly weathered pink, fine grained Limestone								
0.50	86.05										
1.00	85.55			0.75						24	Nil
1.50	85.05		Moderately weathered pink, fine grained Limestone	1.50						29	13
2.00	84.55										
2.50	84.05			2.25						25	18
3.00	83.55		Slightly weathered pink, fine grained Limestone	3.00						46	46
3.50	83.05										
4.00	82.55			3.75						33	30
4.50	82.05			4.50						52	48
5.00	81.55										
5.50	81.05			5.25						58	50
6.00	80.55		Fresh pink, fine grained Limestone	6.00						70	14
6.50	80.05										
7.00	79.55			6.75						88	88
7.50	79.05			7.50						98	54
8.00	78.55										
8.50	78.05										
9.00	77.55			9.00						87	71
9.50	77.05										
10.00	76.55			10.25						74	55
10.50	76.05										
11.00	75.55		Fresh pink grey, fine grained Limestone								
11.50	75.05										
12.00	74.55			12.00						77	35
12.50	74.05		Fresh grey, fine grained Limestone								
13.00	73.55										
13.50	73.05			13.50						80	47
14.00	72.55		Fresh grey, fine grained Limestone								
14.50	72.05										
15.00	71.55			15.00						68	24
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		129	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		85.756						
LOCATION :		N = -404 E = 1055	WATER TABLE below EGL (m) :		4.00						
			CASING Depth (m) :								
START DATE :		26-01-2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		27-01-2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	85.76		Fresh Pink grey, fine grained Limestone								
0.50	85.26										
1.00	84.76			0.75						81	69
1.50	84.26			1.50						87	81
2.00	83.76										
2.50	83.26										
3.00	82.76			3.00						77	74
3.50	82.26										
4.00	81.76										
4.50	81.26			4.50						80	68
5.00	80.76										
5.50	80.26										
6.00	79.76			6.00						48	36
THE BOREHOLE IS TERMINATED AT 6.00m BELOW G.L.											



BH NO. :		130	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		85.187						
LOCATION :		N = -422, E=987	WATER TABLE below EGL (m) :		5.50						
			CASING Depth (m) :								
START DATE :		14/12/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		15/12/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	85.19		Fresh pink grey, fine grained fractured limestone								
0.50	84.69										
1.00	84.19			0.75					85	29	
1.50	83.69			1.50					95	48	
2.00	83.19										
2.50	82.69										
3.00	82.19			3.00					78	47	
3.50	81.69										
4.00	81.19										
4.50	80.69			4.50					93	43	
5.00	80.19										
5.50	79.69										
6.00	79.19			6.00					82	35	
6.50	78.69										
7.00	78.19										
7.50	77.69			7.50					83	30	
8.00	77.19										
8.50	76.69										
9.00	76.19			9.00					87	58	
9.50	75.69										
10.00	75.19			10.00					56	33	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

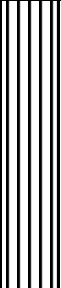
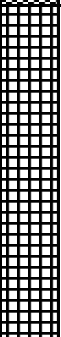


BH NO. :		131	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		85.18						
LOCATION :		N = -453, E = 1104	WATER TABLE below EGL (m) :		5.00						
			CASING Depth (m) :								
START DATE :		20/12/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		21/12/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	85.18		Moderately weathered pink grey, fine grained Limestone								
0.50	84.68										
1.00	84.18			0.75						31	Nil
1.50	83.68			1.50						35	13
2.00	83.18		Fresh pink grey, fine grained Limestone								
2.50	82.68			2.25						95	80
3.00	82.18			3.00						87	44
3.50	81.68										
4.00	81.18										
4.50	80.68			4.50						80	60
5.00	80.18										
5.50	79.68										
6.00	79.18			6.00						76	73
6.50	78.68										
7.00	78.18										
7.50	77.68			7.50						87	44
8.00	77.18										
8.50	76.68										
9.00	76.18			9.00						90	82
9.50	75.68										
10.00	75.18			10.00						76	44
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

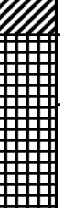


BH NO. :		132		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		84.301												
LOCATION :		N = -468 E = 778		WATER TABLE below EGL (m) :		3.00												
				CASING Depth (m) :		1.50												
START DATE :		2/20/2016		BORING/ DRILLING METHOD :		Rotary												
END DATE :		2/22/2016		DRILLING : NX SIZE double tube core barrel														
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)							
				Depth	Type	cm												
						m	15	30		45	%	%						
0.00	84.30		Fresh pink grey, fine grained Limestone															
0.50	83.80																	
1.00	83.55			0.75						91	76							
1.50	82.80			1.50						89	45							
2.00	82.30																	
2.50	81.80																	
3.00	81.30			3.00						78	33							
3.50	80.80																	
4.00	80.30																	
4.50	79.80			4.50						70	28							
5.00	79.30																	
5.50	78.80																	
6.00	78.30			6.00						70	30							
6.50	77.80																	
7.00	77.30																	
7.50	76.80			7.50						71	52							
8.00	76.30		Fresh pink grey, fine grained Limestone															
8.50	75.80																	
9.00	75.30			9.00						64	41							
9.50	74.80																	
10.00	74.30																	
10.50	73.80										10.50						88	59
11.00	73.30		Moderately Weathered grey, fine grained Quartzite															
11.50	72.80																	
12.00	72.30										12.00						37	9
12.50	71.80		Fresh grey, fine grained Quartzite															
13.00	71.30																	
13.50	70.80										13.50						59	31
14.00	70.30																	
14.50	69.80																	
15.00	69.30										15.00						81	38
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.																		



BH NO. :		133		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		78.501					
LOCATION :		N = -510, E =-18		WATER TABLE below EGL (m) :		3.70					
				CASING Depth (m) :		NA					
START DATE :		3/25/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/26/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	78.50		Highly weathered grey, fine grained Quartzite	0.00						20	Nil
0.50	78.00			0.75							
1.00	77.50										
1.50	77.00			1.50							
2.00	76.50			2.25							
2.50	76.00										
3.00	75.50			3.00							
3.50	75.00		Moderately weathered grey, fine grained Quartzite	3.75						28	Nil
4.00	74.50										
4.50	74.00			4.50							
5.00	73.50										
5.50	73.00			5.25							
6.00	72.50			6.00							
6.50	72.00		Fresh grey, fine grained Quartzite								
7.00	71.50			6.75							
7.50	71.00			7.50							
8.00	70.50										
8.50	70.00			8.25							
9.00	69.50			9.00							
9.50	69.00			9.75							
10.00	68.50			10.00							
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

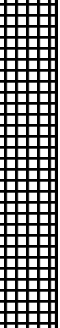


BH NO. :		134		EGL(EXISTING GROUND LEVEL) R.L.+(m)		79.834					
LOCATION :		N= -500 E= 312		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		1.50					
START DATE :		3/4/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/5/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	79.83		Completely Weathered grey, fine grained Limestone								
0.50	79.33										
1.00	79.08			0.75		>50	>50	>50	R		
1.50	78.33			1.50		>50	>50	>50	R		
2.00	77.83		Fresh grey, fine grained Limestone								
2.50	77.58			2.25						66	14
3.00	76.83		Moderately Weathered grey, fine grained Limestone	3.00						38	Nil
3.50	76.33										
4.00	76.08		Slightly Weathered grey, fine grained Quartzite	3.75						48	29
4.50	75.33			4.50						90	13
5.00	74.83		Fresh grey, fine grained Quartzite								
5.50	74.33			5.25						76	14
6.00	73.83		Slightly Weathered grey, fine grained Quartzite	6.00						57	24
6.50	73.33										
7.00	73.08			6.75						58	17
7.50	72.33		Fresh pink grey, fine grained Limestone	7.50						74	62
8.00	71.83										
8.50	71.58		Fresh black, fine grained Shale	8.25						78	Nil
9.00	70.83			9.00						76	21
9.50	70.08			9.75						74	40
10.00	69.83			10.00						72	Nil
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		135		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		82.422					
LOCATION :		N= -530 E= 428		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		1.00					
START DATE :		3/7/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/8/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.42		Highly Weathered black, fine grained Shale								
0.50	81.92										
1.00	81.67			0.75						21	Nil
1.50	80.92		Moderately Weathered black, fine grained Shale	1.50						29	Nil
2.00	80.42										
2.50	80.17			2.25						34	Nil
3.00	79.42			3.00						36	Nil
3.50	78.92										
4.00	78.67			3.75						33	Nil
4.50	77.92			4.50						38	13
5.00	77.42		Slightly Weathered black, fine grained Shale								
5.50	76.92			5.25						45	Nil
6.00	76.42			6.00						50	20
6.50	75.92		Slightly Weathered grey, fine grained Quartzite								
7.00	75.67			6.75						52	16
7.50	74.92			7.50						48	Nil
8.00	74.42										
8.50	74.17			8.25						60	Nil
9.00	73.42			9.00						45	Nil
9.50	72.67			9.75						53	Nil
10.00	72.42		Fresh grey, fine grained Quartzite	10.00						64	64
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		136		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		83.328					
LOCATION :		N= -532 E= 543		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		NA					
START DATE :		3/8/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/9/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	83.33		Moderately Weathered black, fine grained Shale								
0.50	82.83										
1.00	82.58			0.75					24	Nil	
1.50	81.83			1.50					37	30	
2.00	81.33										
2.50	81.08			2.25					30	Nil	
3.00	80.33			3.00					21	Nil	
3.50	79.83										
4.00	79.58		Slightly Weathered black, fine grained Shale	3.75					49	32	
4.50	78.83			4.50					46	33	
5.00	78.33										
5.50	78.08			5.25					42	22	
6.00	77.33		Fresh black, fine grained Shale	6.00					86	44	
6.50	76.83										
7.00	76.58			6.75					74	13	
7.50	75.83			7.50					85	54	
8.00	75.33										
8.50	75.08			8.25					60	50	
9.00	74.33			9.00					61	29	
9.50	73.58			9.75					61	30	
10.00	73.33			10.00					60	Nil	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		137		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		81.893					
LOCATION :		N= -574 E= 580		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		NA					
START DATE :		3/10/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/11/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	81.89		Moderately Weathered black, fine grained Shale								
0.50	81.39										
1.00	81.14			0.75					39	Nil	
1.50	80.39		Slightly Weathered black, fine grained Shale	1.50					48	22	
2.00	79.89										
2.50	79.64			2.25					62	57	
3.00	78.89			3.00					45	20	
3.50	78.39										
4.00	78.14			3.75					53	32	
4.50	77.39			4.50					48	38	
5.00	76.89										
5.50	76.64			5.25					52	51	
6.00	75.89		Fresh black, fine grained Shale	6.00					64	41	
6.50	75.39										
7.00	75.14			6.75					84	66	
7.50	74.39			7.50					85	68	
8.00	73.89										
8.50	73.39										
9.00	72.89			9.00					76	67	
9.50	72.39										
10.00	71.89			10.00					59	50	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		138	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		76.065						
LOCATION :		N = -596, E =19	WATER TABLE below EGL (m) :		4.10						
			CASING Depth (m) :		NA						
START DATE :		3/20/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		3/22/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	76.07		Moderately weathered grey, fine grained Quartzite	0.00						24	Nil
0.50	75.57			0.75							
1.00	75.07										
1.50	74.57			1.50							
2.00	74.07			2.25							
2.50	73.57										
3.00	73.07	3.00				25	Nil				
3.50	72.57		Slightly weathered grey, fine grained Quartzite	3.75						48	16
4.00	72.07										
4.50	71.57			4.50							
5.00	71.07										
5.50	70.57			5.25							
6.00	70.07			6.00							
6.50	69.57										
7.00	69.07			6.75							
7.50	68.57			7.50							
8.00	68.07										
8.50	67.57			8.25							
9.00	67.07			9.00							
9.50	66.57			9.75							
10.00	66.07			10.00							
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

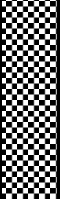


BH NO. :		139	EGL(EXISTING GROUND LEVEL) R.L.+(m)		73.623						
LOCATION :		N = -675, E =-30	WATER TABLE below EGL (m) :		3.00						
			CASING Depth (m) :		NA						
START DATE :		3/19/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		3/20/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	73.62		Moderately weathered grey, fine grained Quartzite	0.00							
0.50	73.12			0.75						21	13
1.00	72.62										
1.50	72.12			1.50						21	14
2.00	71.62			2.25						28	Nil
2.50	71.12										
3.00	70.62			3.00						26	Nil
3.50	70.12			3.75						40	Nil
4.00	69.62										
4.50	69.12			4.50						33	Nil
5.00	68.62										
5.50	68.12			5.25						34	13
6.00	67.62		Fresh grey, fine grained Quartzite	6.00						66	13
6.50	67.12										
7.00	66.62			6.75						65	Nil
7.50	66.12			7.50						60	29
8.00	65.62		Slightly weathered black, fine grained Shale								
8.50	65.12			8.25						58	Nil
9.00	64.62			9.00						60	17
9.50	64.12		Moderately weathered black, fine grained Shale	9.75						38	Nil
10.00	63.62			10.00						40	Nil
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		140		EGL(EXISTING GROUND LEVEL) R.L.+(m)		73.329					
LOCATION :		N = -673, E =57		WATER TABLE below EGL (m) :		3.80					
				CASING Depth (m) :		NA					
START DATE :		3/17/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/18/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	73.33		Highly weathered grey, fine grained Quartzite	0.00							
0.50	72.83		0.75						20	Nil	
1.00	72.33		Moderately weathered grey, fine grained Quartzite	1.50						32	16
1.50	71.83			2.25						37	17
2.00	71.33										
2.50	70.83										
3.00	70.33			3.00						36	14
3.50	69.83		Slightly weathered grey, fine grained Quartzite	3.75						48	20
4.00	69.33										
4.50	68.83			4.50						46	29
5.00	68.33										
5.50	67.83			5.25						48	13
6.00	67.33			6.00						56	13
6.50	66.83		Fresh grey, fine grained Quartzite								
7.00	66.33			6.75						61	Nil
7.50	65.83		Slightly weathered grey, fine grained Quartzite	7.50						33	Nil
8.00	65.33										
8.50	64.83			8.25						49	49
9.00	64.33		Fresh grey, fine grained Quartzite	9.00						68	45
9.50	63.83		Moderately weathered grey, fine grained Quartzite	9.75						53	Nil
10.00	63.33			10.00						32	Nil
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

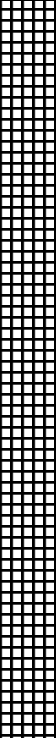


BH NO. :		141		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		79.740					
LOCATION :		N = -662, E =428		WATER TABLE below EGL (m) :		4.20					
				CASING Depth (m) :		1.00					
START DATE :		3/13/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/16/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	79.74		Highly weathered pink, fine grained Limestone	0.00						36	Nil
0.50	79.24			0.75							
1.00	78.74		Moderately weathered pink, fine grained Limestone	1.50						54	28
1.50	78.24			2.25						52	33
2.00	77.74			3.00						52	Nil
2.50	77.24										
3.00	76.74										
3.50	76.24		Slightly weathered pinkish grey, fine grained Limestone	3.75						49	37
4.00	75.74			4.50						57	45
4.50	75.24			5.25						42	13
5.00	74.74			6.00						72	28
5.50	74.24										
6.00	73.74										
6.50	73.24		Fresh pink, fine grained Limestone							68	32
7.00	72.74			6.75							
7.50	72.24		Slightly weathered grey, fine grained Quartzite	7.50						62	40
8.00	71.74			8.25						37	Nil
8.50	71.24										
9.00	70.74		Fresh grey, fine grained Quartzite	9.00						22	Nil
9.50	70.24		Moderately weathered grey, fine grained Quartzite	9.75						42	Nil
10.00	69.74			10.00						64	Nil
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

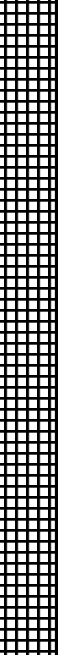


BH NO. :		142	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		80.602						
LOCATION :		N = -665, E =543	WATER TABLE below EGL (m) :		3.50						
			CASING Depth (m) :		1.50						
START DATE :		3/12/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		3/13/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	80.60		Highly weathered pink, fine grained Limestone	0.00							
0.50	80.10			0.75					24	Nil	
1.00	79.60		Moderately weathered pink, fine grained Limestone								
1.50	79.10			1.50					41	28	
2.00	78.60			2.25					49	49	
2.50	78.10										
3.00	77.60			3.00					38	17	
3.50	77.10			3.75					49	38	
4.00	76.60										
4.50	76.10			4.50					46	13	
5.00	75.60										
5.50	75.10			5.25					54	16	
6.00	74.60			6.00					44	16	
6.50	74.10										
7.00	73.60			6.75					50	Nil	
7.50	73.10			7.50					54	Nil	
8.00	72.60										
8.50	72.10			8.25					48	16	
9.00	71.60			9.00					45	Nil	
9.50	71.10	9.75					46	20			
10.00	70.60		Fresh pink, fine grained Limestone	10.00					64	Nil	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

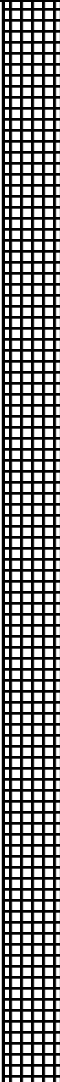


BH NO. :		143	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		83.705						
LOCATION :		N = -543, E = 888	WATER TABLE below EGL (m) :		Not struck						
			CASING Depth (m) :								
START DATE :		14/12/2015	BORING/ DRILLING METHOD :		Rotary						
END DATE :		13/12/2015	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	83.705		Slightly weathered pink grey, fine grained fractured limestone								
0.50	83.205										
1.00	82.705			0.75					47	17	
1.50	82.205		Fresh pink grey, fine grained fractured limestone	1.50					80	17	
2.00	81.705										
2.50	81.205			2.25					93	56	
3.00	80.705										
3.50	80.205										
4.00	79.705			3.75					72	13	
4.50	79.205										
5.00	78.705										
5.50	78.205			5.25					83	38	
6.00	77.705										
6.50	77.205										
7.00	76.705			6.75					86	45	
7.50	76.205										
8.00	75.705										
8.50	75.205			8.25					78	38	
9.00	74.705										
9.50	74.205			9.75					84	68	
10.00	73.705	10.00					78	Nil			
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		144		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		84.23					
LOCATION :		N = -564, E =1117		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :							
START DATE :		8/12/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		10/12/2015		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	84.23		Moderately Weathered grey red, fine grained limestone	0.75						37	Nil
0.50	83.73			1.25						47	Nil
1.00	83.48										
1.50	82.73										
2.00	84.23										
2.50	81.73		Fresh grey red, fine grained limestone	2.25						83	27
3.00	81.23			3.00						89	41
3.50	80.73										
4.00	84.23										
4.50	79.73			4.50						78	19
5.00	84.23										
5.50	78.73										
6.00	78.23			6.00						85	27
6.50	77.73										
7.00	84.23										
7.50	76.73			7.50						88	23
8.00	84.23										
8.50	75.73										
9.00	75.23			9.00						94	13
9.50	74.73										
10.00	74.23	10.00						87	29		
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		145		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		83.402						
LOCATION :		N = -611, E =870		WATER TABLE below EGL (m) :		Not struck						
				CASING Depth (m) :								
START DATE :		11/12/2015		BORING/ DRILLING METHOD :		Rotary						
END DATE :		13/12/2015		DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)	
				Depth	Type	cm						
						m		15		30	45	%
0.00	83.40		Slightly weathered pink, fine grained limestone	0.75						53	15	
0.50	82.90			1.50						82	69	
1.00	82.65											
1.50	81.90		Fresh pink grey, fine grained limestone	1.50						82	69	
2.00	83.40											
2.50	80.90				2.25						81	43
3.00	83.40											
3.50	79.90											
4.00	79.65				3.75						71	22
4.50	78.90											
5.00	83.40											
5.50	77.90				5.25						75	25
6.00	83.40											
6.50	76.90											
7.00	76.65				6.75						74	41
7.50	75.90											
8.00	83.40											
8.50	74.90				8.25						80	9
9.00	83.40											
9.50	73.90											
10.00	73.65				9.75						77	33
10.50	72.90											
11.00	83.40											
11.50	71.90				11.25						85	43
12.00	83.40											
12.50	70.90											
13.00	70.65				12.75						67	34
13.50	69.90											
14.00	83.40											
14.50	68.90				14.25						73	Nil
15.00	68.40				15.00						63	Nil
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.												



BH NO. :		146		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		82.342						
LOCATION :		N = -629, E = 802		WATER TABLE below EGL (m) :		Not stuck						
				CASING Depth (m) :								
START DATE :		12/12/2015		BORING/ DRILLING METHOD :		Rotary						
END DATE :		13/12/2015		DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)	
				Depth	Type	cm						
						m	15	30		45	%	%
0.00	82.34		Moderately wetahered pink grey, fine grained limestone									
0.50	81.84											
1.00	81.59											
1.50	80.84											
2.00	82.34		Fresh pink grey, fine grained limestone									
2.50	79.84											
3.00	82.34											
3.50	78.84											
4.00	78.59											
4.50	77.84											
5.00	82.34		Fresh pink grey, fine grained fractured limestone									
5.50	76.84											
6.00	82.34											
6.50	75.84											
7.00	82.34											
7.50	74.84											
8.00	82.34											
8.50	73.84											
9.00	82.34											
9.50	72.84											
10.00	72.34											
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.												

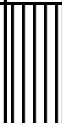
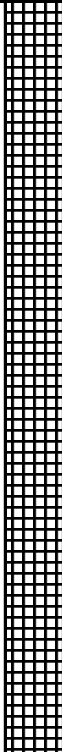


BH NO. :		147		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		83.822					
LOCATION :		N = -631, E =1099		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :							
START DATE :		7/12/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		9/12/2015		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	83.82		Highly weathered pink, fine grained fractured limestone								
0.50	83.32			0.75						23	Nil
1.00	83.07			1.50						96	79
1.50	82.32		Fresh pink grey, fine grained fine grained limestone	2.25						89	33
2.00	83.82			3.75						96	70
2.50	81.32			5.25						74	30
3.00	83.82			6.75						77	40
3.50	80.32			8.25						40	15
4.00	80.07			9.75						61	20
4.50	79.32			11.25						66	26
5.00	83.82			12.75						71	53
5.50	78.32			14.25						72	38
6.00	83.82			15.00						70	59
6.50	77.32										
7.00	77.07										
7.50	76.32										
8.00	83.82										
8.50	75.32										
9.00	83.82										
9.50	74.32										
10.00	74.07										
10.50	73.32										
11.00	83.82										
11.50	72.32										
12.00	83.82										
12.50	71.32										
13.00	71.07										
13.50	70.32										
14.00	83.82										
14.50	69.32										
15.00	68.82										
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		148		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		83.164					
LOCATION :		N = -660, E= 919		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		3.00					
START DATE :		11/12/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		12/12/2015		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	83.16		Fresh pink grey, fine grained limestone								
0.50	82.66			0.50							
1.00	82.41			0.75					51	23	
1.50	81.66			1.50					70	35	
2.00	81.16										
2.50	80.91			2.25					85	50	
3.00	80.16								97	43	
3.50	79.66										
4.00	79.41			3.75							
4.50	78.66								80	42	
5.00	78.16			5.25							
5.50	77.91										
6.00	77.16								88	37	
6.50	76.66										
7.00	76.41			6.75							
7.50	75.66								75	74	
8.00	75.16										
8.50	74.91			8.25							
9.00	74.16								89	78	
9.50	73.41			9.75							
10.00	73.16	10.00					81	81			
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		149		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		83.58					
LOCATION :		N = -649, E = 1031		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :							
START DATE :		7/12/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		9/12/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
				m		15	30	45		%	%
0.00	83.58		Highly weathered grey, fine grained Limestone	0.50	DS1						
0.50	83.08			0.75						21	Nil
1.00	82.83										
1.50	82.08		Fresh pink grey, fine grained Limestone	1.50						81	64
2.00	83.58			2.25						93	79
2.50	81.08			3.75						73	39
3.00	83.58										
3.50	80.08										
4.00	79.83										
4.50	79.08			5.25						68	41
5.00	83.58										
5.50	78.08										
6.00	83.58										
6.50	77.08			6.75						81	37
7.00	76.83										
7.50	76.08										
8.00	83.58										
8.50	75.08			8.25						75	33
9.00	83.58										
9.50	74.08					9.75					71
10.00	73.58	10.00							72	Nil	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		150	EGL(EXISTING GROUND LEVEL)R.L.+(m)		81.626						
LOCATION :		N= -915, E= 1400	WATER TABLE below EGL (m) :		3.50						
			CASING Depth (m) :		1.50						
START DATE :		4/20/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		4/21/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	81.63		Moderately weathered pink, fine grained Limestone								
0.50	81.13										
1.00	80.63			0.75					28	Nil	
1.50	80.13			1.50					38	Nil	
2.00	79.63										
2.50	79.13			2.25					36	Nil	
3.00	78.63			3.00					32	Nil	
3.50	78.13		Slightly weathered pink, fine grained Limestone								
4.00	77.63			3.75					53	53	
4.50	77.13			4.50					60	50	
5.00	76.63										
5.50	76.13			5.25					50	50	
6.00	75.63		Fresh pink, fine grained Limestone	6.00					73	73	
6.50	75.13										
7.00	74.63			6.75					70	70	
7.50	74.13			7.50					81	69	
8.00	73.63										
8.50	73.13			8.25					88	88	
THE BOREHOLE IS TERMINATED AT 8.25m BELOW G.L.											

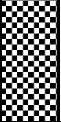


BH NO. :		151		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		83.5					
LOCATION :		N = -681, E = 1148		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :							
START DATE :		4/12/2015		BORING/ DRILLING METHOD :		Rotary					
END DATE :		6/12/2015		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	83.50		Highly weathered pink, fine grained Limestone								
0.50	83.00										
1.00	82.50			0.75					24	Nil	
1.50	82.00		Fresh pink grey, fine grained Limestone	1.50					68	34	
2.00	81.50										
2.50	81.00			2.25					90	Nil	
3.00	80.50			3.00					86	77	
3.50	80.00										
4.00	79.50										
4.50	79.00			4.50					100	21	
5.00	78.50										
5.50	78.00										
6.00	77.50			6.00					74	31	
6.50	77.00										
7.00	76.50										
7.50	76.00			7.50					22	Nil	
8.00	75.50										
8.50	75.00										
9.00	74.50			9.00					73	41	
9.50	74.00										
10.00	73.50			10.00					95	80	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. : 152		EGL (EXISTING GROUND LEVEL)R.L.(+)(m) 82.419									
LOCATION : N= -830 E= 1155		WATER TABLE below EGL (m) : Not struck									
START DATE : 3/3/2016		CASING Depth (m) : 1.00									
END DATE : 3/5/2016		BORING/ DRILLING METHOD : Rotary									
		DRILLING : NX SIZE double tube core barrel									
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	82.42		Highly Weathered black, fine grained Shale								
0.50	81.92										
1.00	81.67			0.75					20	Nil	
1.50	80.92		Slightly Weathered black, fine grained Shale	1.50						44	Nil
2.00	80.42										
2.50	80.17			2.25					53	Nil	
3.00	79.42		Fresh black, fine grained Shale	3.00						38	Nil
3.50	78.92										
4.00	78.67			3.75						84	Nil
4.50	77.92			4.50						81	81
5.00	77.42										
5.50	76.92										
6.00	76.42			6.00						87	40
6.50	75.92										
7.00	74.92			7.50						86	84
7.50	74.92										
8.00	74.42										
8.50	73.92										
9.00	73.42			9.00						75	64
THE BOREHOLE IS TERMINATED AT 9.00m BELOW G.L.											



BH NO. :		153		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		87.057					
LOCATION :		N = 74, E =997		WATER TABLE below EGL (m) :		3.50					
				CASING Depth (m) :		NA					
START DATE :		4/2/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		4/4/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	87.06		Highly weathered pink grey, fine grained Limestone	0.00							
0.50	86.31		0.75						26	Nil	
1.00	87.06		Slightly weathered pink grey, fine grained Limestone	1.50						44	Nil
1.50	85.56			2.25						46	Nil
2.00	84.81			3.00						45	Nil
2.50	87.06			3.75						41	Nil
3.00	84.06			4.50						60	Nil
3.50	83.31			5.25						41	Nil
4.00	87.06			6.00						44	Nil
4.50	82.56										
5.00	87.06		Moderately weathered pink , fine grained Limestone	5.25						41	Nil
5.50	81.81			6.00						44	Nil
6.00	81.06										
6.50	87.06		Moderately weathered pink , fine grained Limestone	6.75						37	Nil
7.00	80.31			7.50						38	17
7.50	79.56										
8.00	87.06		Slightly weathered grey, fine grained Quartzite	8.25						41	34
8.50	78.81			9.00						44	13
9.00	78.06			9.75						41	Nil
9.50	77.31										
10.00	77.06		Moderately weathered grey, fine grained Quartzite	10.00						36	Nil
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		154		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		90.195					
LOCATION :		N= -113, E= 1200		WATER TABLE below EGL (m) :		3.80					
				CASING Depth (m) :		1.00					
START DATE :		4/10/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		4/12/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	90.20		Highly weathered grey, fine grained Limestone								
0.50	89.70										
1.00	89.20			0.75						24	Nil
1.50	88.70		Moderately weathered grey, fine grained Limestone	1.50						32	Nil
2.00	88.20										
2.50	87.95			2.25						28	Nil
3.00	87.20			3.00						34	Nil
3.50	86.70										
4.00	86.45			3.75						32	Nil
4.50	85.70			4.50						22	Nil
5.00	85.20										
5.50	84.95			5.25						40	Nil
6.00	84.20			6.00						46	Nil
6.50	83.70										
7.00	83.45			6.75						32	Nil
7.50	82.70			7.50						24	Nil
8.00	82.20										
8.50	81.95			8.25						41	Nil
9.00	81.20			9.00						44	Nil
9.50	80.45			9.75						42	Nil
10.00	80.20		10.00						36	Nil	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



BH NO. :		155		EGL (EXISTING GROUND LEVEL)R.L.(+)(m)		81.867					
LOCATION :		N= -911 E= 1164		WATER TABLE below EGL (m) :		Not struck					
				CASING Depth (m) :		NA					
START DATE :		3/5/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		3/7/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	81.87		Moderately Weathered black, fine grained Shale								
0.50	81.37										
1.00	81.12			0.75					26	13	
1.50	80.37			1.50					33	Nil	
2.00	79.87		Slightly Weathered black, fine grained Shale								
2.50	79.62			2.25					45	22	
3.00	78.87		Fresh black, fine grained Shale	3.00					61	53	
3.50	78.37										
4.00	78.12			3.75					81	13	
4.50	77.37			4.50					85	Nil	
5.00	76.87										
5.50	76.37										
6.00	75.87			6.00					73	30	
6.50	75.37										
7.00	74.87										
7.50	74.37			7.50					73	56	
8.00	73.87										
8.50	73.37										
9.00	72.87			9.00					85	78	
9.50	72.37										
10.00	71.87										
10.50	71.37			10.50					74	74	
11.00	70.87			11.00					98	98	
THE BOREHOLE IS TERMINATED AT 11.00m BELOW G.L.											



BH NO. :		156		EGL(EXISTING GROUND LEVEL)R.L.(+)(m)		81.116							
LOCATION :		N= -823, E= 1571		WATER TABLE below EGL (m) :		4.30							
				CASING Depth (m) :		1.00							
START DATE :		4/22/2016		BORING/ DRILLING METHOD :		Rotary							
END DATE :		4/23/2016		DRILLING : NX SIZE double tube core barrel									
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)		
				Depth	Type	cm							
						m	15	30		45	%	%	
0.00	81.12		Highly weathered pink, fine grained Limestone										
0.50	80.62												
1.00	80.37			0.75					24	Nil			
1.50	79.62		Moderately weathered pink, fine grained Limestone	1.50						37	16		
2.00	79.12												
2.50	78.87			2.25					37	28			
3.00	78.12		Slightly weathered pink, fine grained Limestone	3.00						44	18		
3.50	77.62												
4.00	77.37			3.75					50	30			
4.50	76.62			4.50					49	13			
5.00	76.12		Fresh pink, fine grained Limestone										
5.50	75.87			5.25					64	64			
6.00	75.12			6.00					58	58			
6.50	74.62												
7.00	74.37			6.75					81	81			
7.50	73.62			7.50					84	73			
8.00	73.12												
8.50	72.62												
9.00	72.12			9.00					67	62			
9.50	71.62			9.75					81	81			
THE BOREHOLE IS TERMINATED AT 9.75m BELOW G.L.													

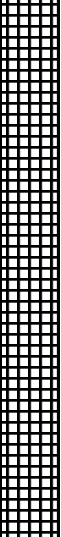


BH NO. :		157		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		87.225					
LOCATION :		N= -200, E= 1400		WATER TABLE below EGL (m) :		5.00					
				CASING Depth (m) :		1.50					
START DATE :		4/6/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		4/10/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	87.23		Highly weathered pink , fine grained Limestone								
0.50	86.73										
1.00	86.23			0.75					21	Nil	
1.50	85.73			1.50					24	Nil	
2.00	85.23		Moderately weathered grey, fine grained Quartzite								
2.50	84.73			2.25					30	Nil	
3.00	84.23		Slightly weathered grey, fine grained Quartzite	3.00					52	Nil	
3.50	83.73		Highly weathered grey, fine grained Quartzite								
4.00	83.23			3.75					21	Nil	
4.50	82.73			4.50					22	Nil	
5.00	82.23			Highly weathered grey, fine grained Limestone							
5.50	81.73	5.25						22	Nil		
6.00	81.23		Moderately weathered pink grey, fine grained Limestone	6.00					30	Nil	
6.50	80.73										
7.00	80.23			6.75					38	Nil	
7.50	79.73		Slightly weathered grey, fine grained Limestone	7.50					38	Nil	
8.00	79.23										
8.50	78.73			8.25					48	Nil	
9.00	78.23			9.00					46	Nil	
9.50	77.73			9.75					53	Nil	
10.00	77.23										
10.50	76.73			10.50					46	Nil	
11.00	76.23										
11.50	75.73		Slightly weathered grey, fine grained Quartzite	11.25					58	13	
12.00	75.23			12.00					48	Nil	
12.50	74.73										
13.00	74.23			12.75					73	Nil	
13.50	73.73		Moderately weathered grey, fine grained Quartzite	13.50					29	Nil	
14.00	73.23										
14.50	72.73			14.25					34	Nil	
15.00	72.23			15.00					32	13	
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											



BH NO. :		158	EGL (EXISTING GROUND LEVEL)R.L.(+)(m)		79.697						
LOCATION :		N= -1178, E= 1122	WATER TABLE below EGL (m) :		3.20						
			CASING Depth (m) :		1.00						
START DATE :		4/20/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		4/22/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	79.70		Moderately weathered pink, fine grained Limestone								
0.50	79.20										
1.00	78.95		0.75						33	Nil	
1.50	78.20		Fresh pink, fine grained Limestone	1.50						65	54
2.00	77.70										
2.50	77.45			2.25						49	38
3.00	76.70			3.00						68	60
3.50	76.20										
4.00	75.95			3.75						81	81
4.50	75.20			4.50						92	92
5.00	74.70										
5.50	74.20										
6.00	73.70			6.00						74	61
6.50	73.20										
7.00	72.70										
7.50	72.20			7.50						55	55
THE BOREHOLE IS TERMINATED AT 7.50m BELOW G.L.											



BH NO. :		159	EGL (EXISTING GROUND LEVEL)R.L.(+)(m)		80.537						
LOCATION :		N= -961, E= 890	WATER TABLE below EGL (m) :		3.50						
			CASING Depth (m) :		1.00						
START DATE :		4/20/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		4/22/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m		15		30	45
0.00	80.54		Fresh pink, fine grained Limestone								
0.50	80.04										
1.00	79.79			0.75					61	61	
1.50	79.04			1.50					78	68	
2.00	78.54										
2.50	78.29			2.25					89	89	
3.00	77.54			3.00					84	84	
3.50	77.04										
4.00	80.54										
4.50	76.04			4.50					86	83	
5.00	75.54										
5.50	75.04										
6.00	74.54			6.00					83	83	
THE BOREHOLE IS TERMINATED AT 6.00m BELOW G.L.											

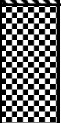
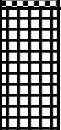


BH NO. :		160	EGL (EXISTING GROUND LEVEL)R.L.(+)(m)		80.977						
LOCATION :		N= -1040 E= 1021	WATER TABLE below EGL (m) :		Not struck						
			CASING Depth (m) :		1.50						
START DATE :		3/8/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		3/10/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designati on (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	80.98		Moderately Weathered black, fine grained Shale								
0.50	80.48										
1.00	80.23			0.75					36	Nil	
1.50	79.48			1.50					26	Nil	
2.00	78.98		Slightly Weathered black, fine grained Shale								
2.50	78.73			2.25					42	13	
3.00	77.98			3.00					52	Nil	
3.50	77.48		Fresh black, fine grained Shale								
4.00	77.23			3.75					62	14	
4.50	76.48			4.50					76	29	
5.00	75.98										
5.50	75.73			5.25					94	94	
6.00	74.98			6.00					93	93	
6.50	74.48										
7.00	73.98										
7.50	73.48			7.50					91	91	
8.00	72.98										
8.50	72.48										
9.00	71.98			9.00					77	77	
9.50	71.48										
10.00	70.98			10.00					91	91	
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											



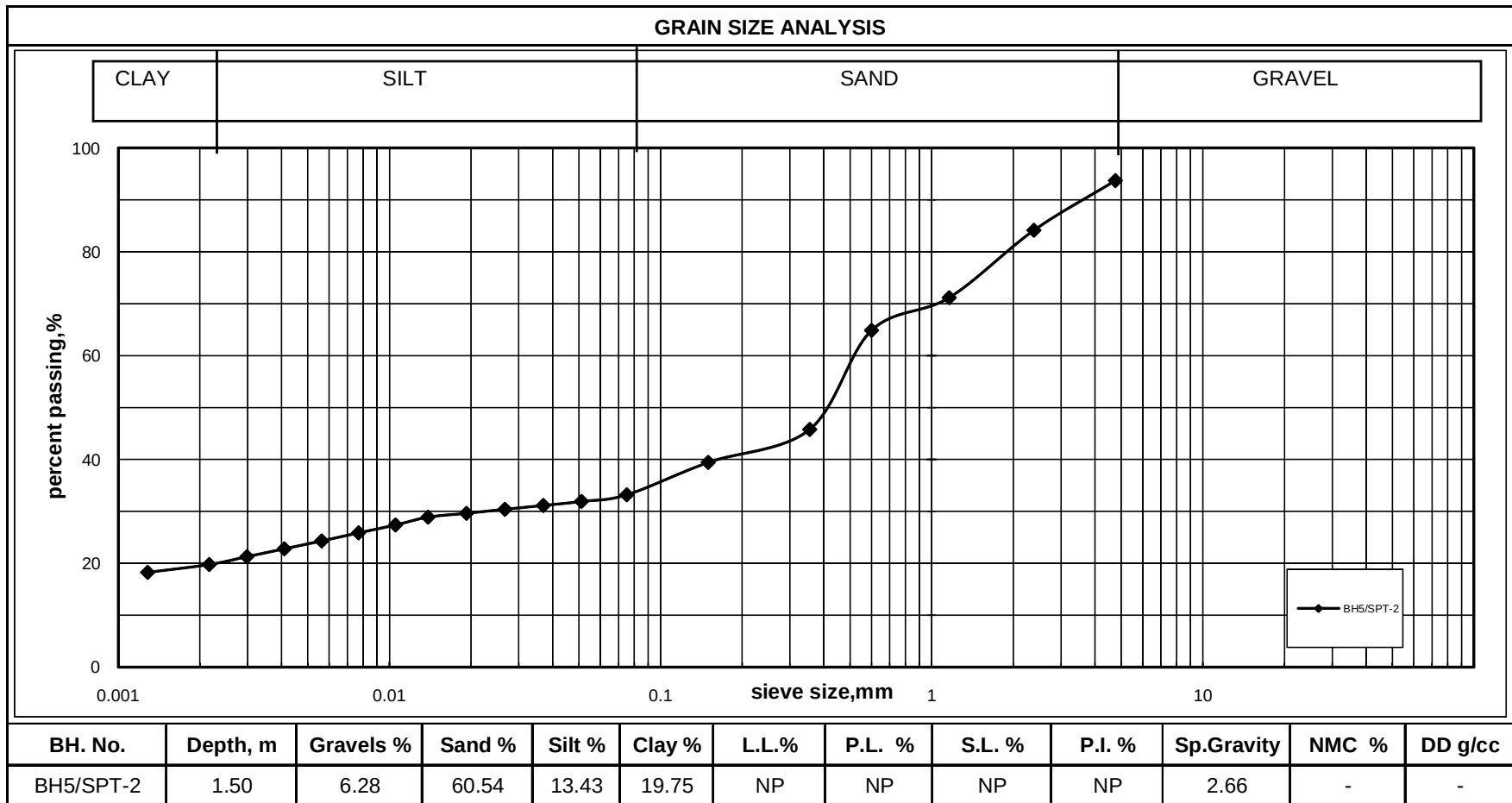
BH NO. :		161	EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		89.075						
LOCATION :		N= -434, E= 1627	WATER TABLE below EGL (m) :		3.80						
			CASING Depth (m) :		1.50						
START DATE :		4/11/2016	BORING/ DRILLING METHOD :		Rotary						
END DATE :		4/14/2016	DRILLING : NX SIZE double tube core barrel								
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	89.08		Completely weathered grey, fine grained Quartzite								
0.50	88.58										
1.00	88.08			0.75		>50	>50	>50	R	4	Nil
1.50	87.58		Highly weathered grey, fine grained Quartzite	1.50						21	Nil
2.00	87.08										
2.50	86.58			2.25						21	Nil
3.00	86.08			3.00						21	Nil
3.50	85.58		Moderately weathered grey, fine grained Quartzite								
4.00	85.08			3.75						32	Nil
4.50	84.58			4.50						24	Nil
5.00	84.08										
5.50	83.58			5.25						22	Nil
6.00	83.08			6.00						22	Nil
6.50	82.58										
7.00	82.08			6.75						26	Nil
7.50	81.58			7.50						28	Nil
8.00	81.08										
8.50	80.58			8.25						40	Nil
9.00	80.08			9.00						37	28
9.50	79.58			9.75						41	Nil
10.00	79.08										
10.50	78.58			10.50						32	16
11.00	78.08		Slightly weathered grey, fine grained Quartzite								
11.50	77.58			11.25						42	32
12.00	77.08			12.00						48	16
12.50	76.58										
13.00	76.08			12.75						40	18
13.50	75.58			13.50						36	13
14.00	75.08										
14.50	74.58			14.25						56	56
15.00	74.08			15.00						64	Nil
THE BOREHOLE IS TERMINATED AT 15.00m BELOW G.L.											

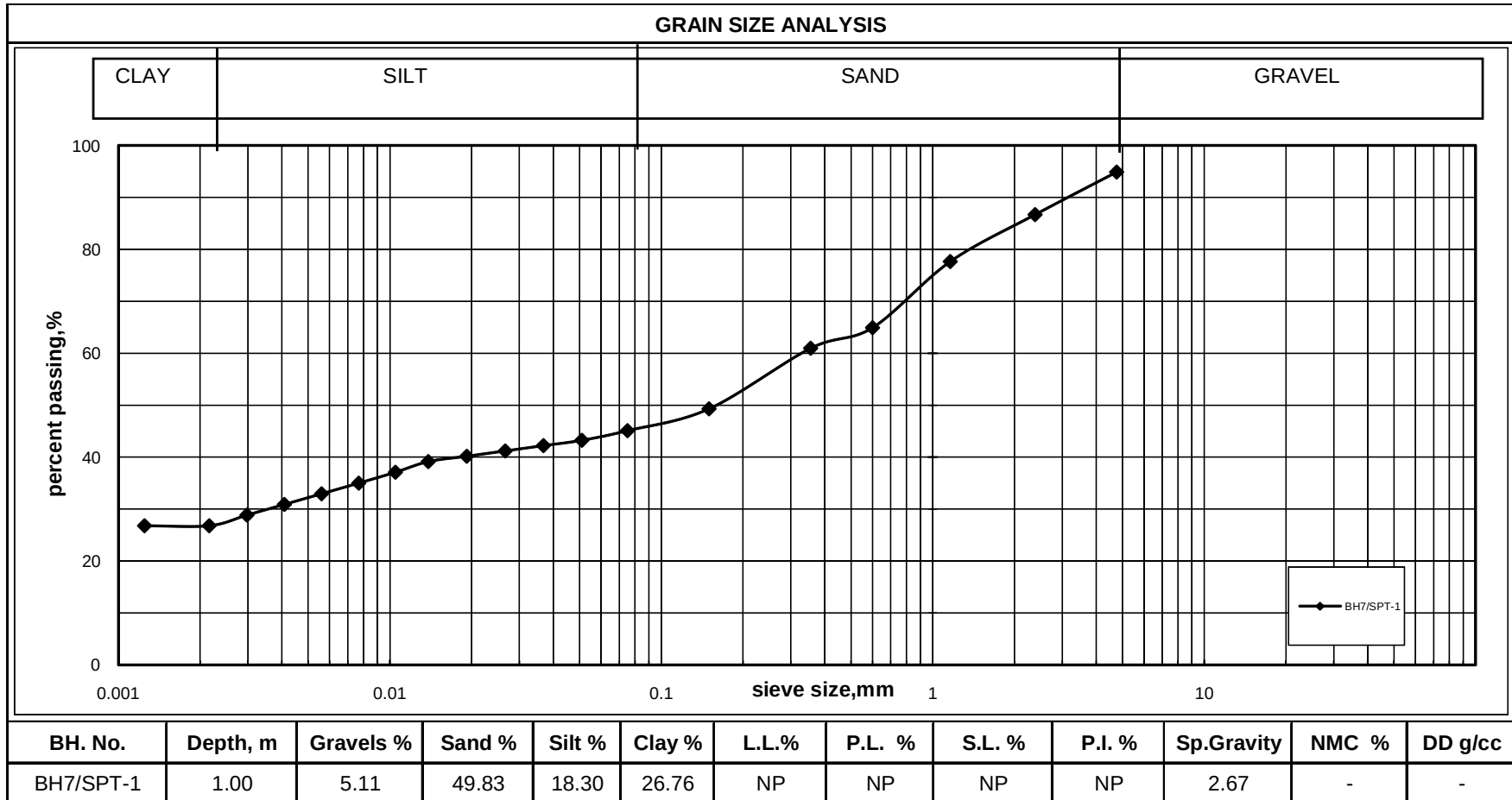


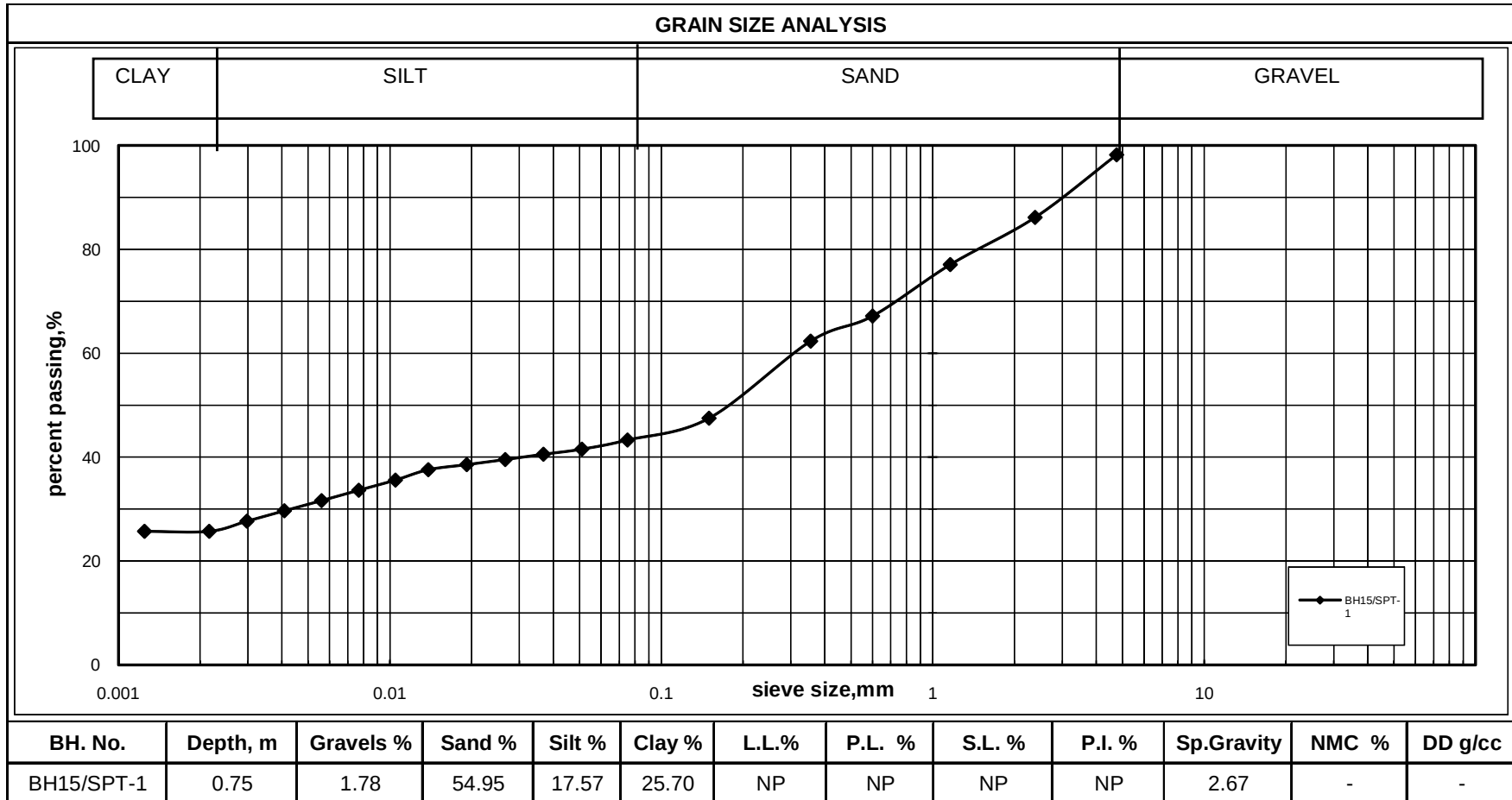
BH NO. :		162		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		87.298					
LOCATION :		N = -314, E =1182		WATER TABLE below EGL (m) :		4.10					
				CASING Depth (m) :		1.00					
START DATE :		4/1/2016		BORING/ DRILLING METHOD :		Rotary					
END DATE :		4/2/2016		DRILLING : NX SIZE double tube core barrel							
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	87.30		Completely weathered pink , fine grained Limestone	0.00	SPT1	>52	>50	>50	R	4	Nil
0.50	86.80			0.75		>52	>50	>50	R	2	Nil
1.00	86.30			1.50		>52	>50	>50	R	Nil	Nil
1.50	85.80			2.25		>52	>50	>50	R	4	Nil
2.00	85.30			3.00		>52	>50	>50	R	Nil	Nil
2.50	84.80			3.75		>52	>50	>50	R	2	Nil
3.00	84.30			4.50		>52	>50	>50	R	Nil	Nil
3.50	83.80			5.25		>52	>50	>50	R	Nil	Nil
4.00	83.30			6.00		>52	>50	>50	R	Nil	Nil
4.50	82.80		Moderately weathered pink , fine grained Limestone	4.50	SPT6	>52	>50	>50	R	37	Nil
5.00	82.30			5.25	SPT7	>52	>50	>50	R	37	Nil
5.50	81.80			6.00	SPT8	>52	>50	>50	R	68	13
6.00	81.30		Fresh grey, fine grained Limestone	6.75	SPT9	>52	>50	>50	R	64	Nil
6.50	80.80			7.50					92	Nil	
7.00	80.30			8.25							
7.50	79.80				7.50						
8.00	79.30				8.25						
8.50	78.80				9.00						
9.00	78.30			9.00							
9.50	77.80			9.75							
10.00	77.30			10.00							
THE BOREHOLE IS TERMINATED AT 10.00m BELOW G.L.											

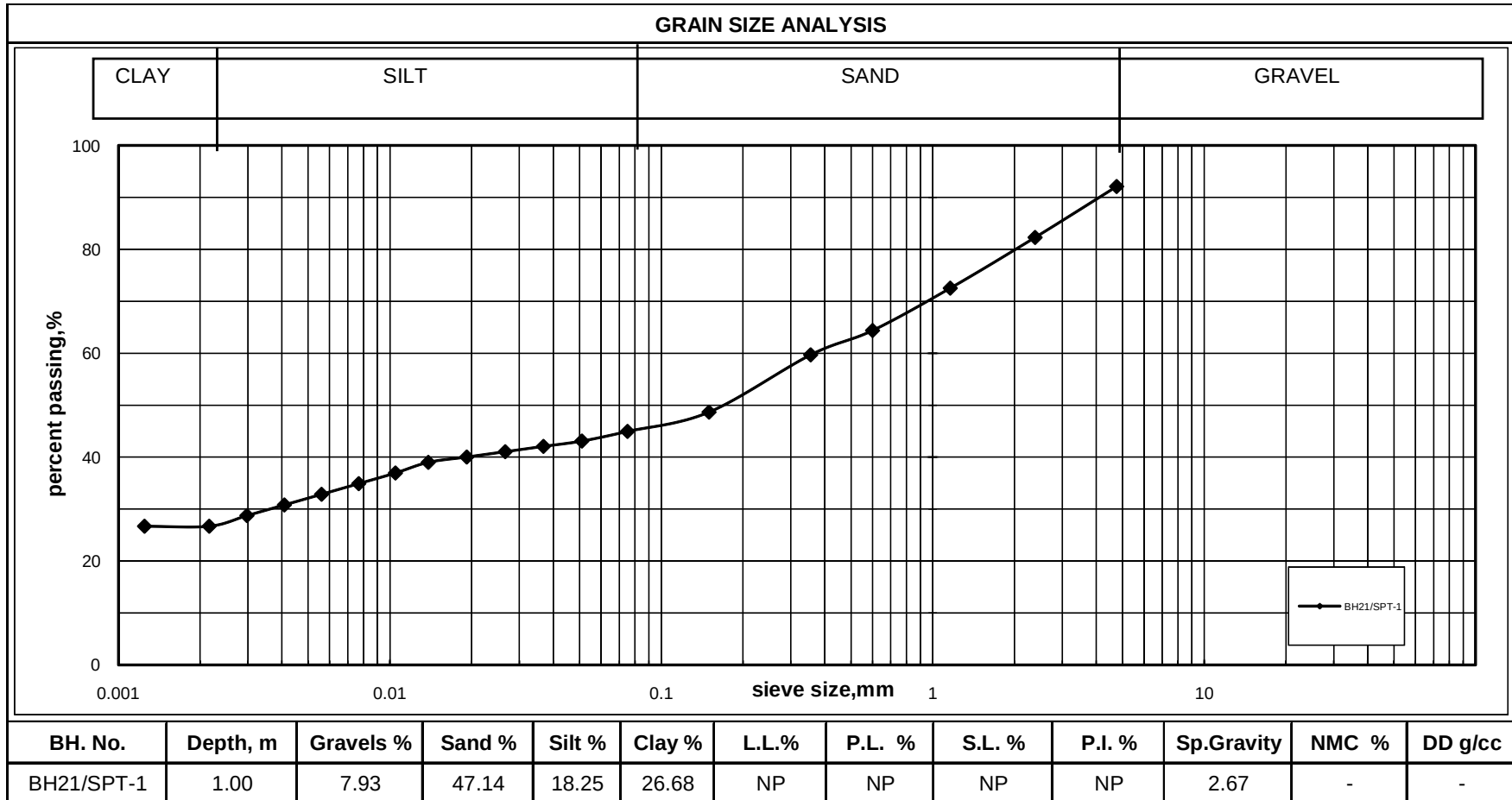


BH NO. : 163EGL (EXISTING GROUND LEVEL)R.L.(+)(m)76.742											
LOCATION : N= -1413, E= 1173WATER TABLE below EGL (m) :3.90											
CASING Depth (m) :1.00											
START DATE : 4/24/2016BORING/ DRILLING METHOD :Rotary											
END DATE : 4/26/2016DRILLING : NX SIZE double tube core barrel											
Depth,m	RL, m	Graphical Log	Description	Sample		Penetration,			SPT N value	Core Recovery (CR)%	Rock Quality Designation (RQD)
				Depth	Type	cm					
						m	15	30		45	%
0.00	76.74		Fresh pink , fine grained Limestone								
0.50	76.24										
1.00	75.74			0.75					80	80	
1.50	75.24			1.50					80	73	
2.00	74.74										
2.50	74.24										
3.00	73.74			3.00					94	82	
3.50	73.24										
4.00	72.74										
4.50	72.24			4.50					96	96	
5.00	71.74			5.00					74	52	
THE BOREHOLE IS TERMINATED AT 5.00m BELOW G.L.											

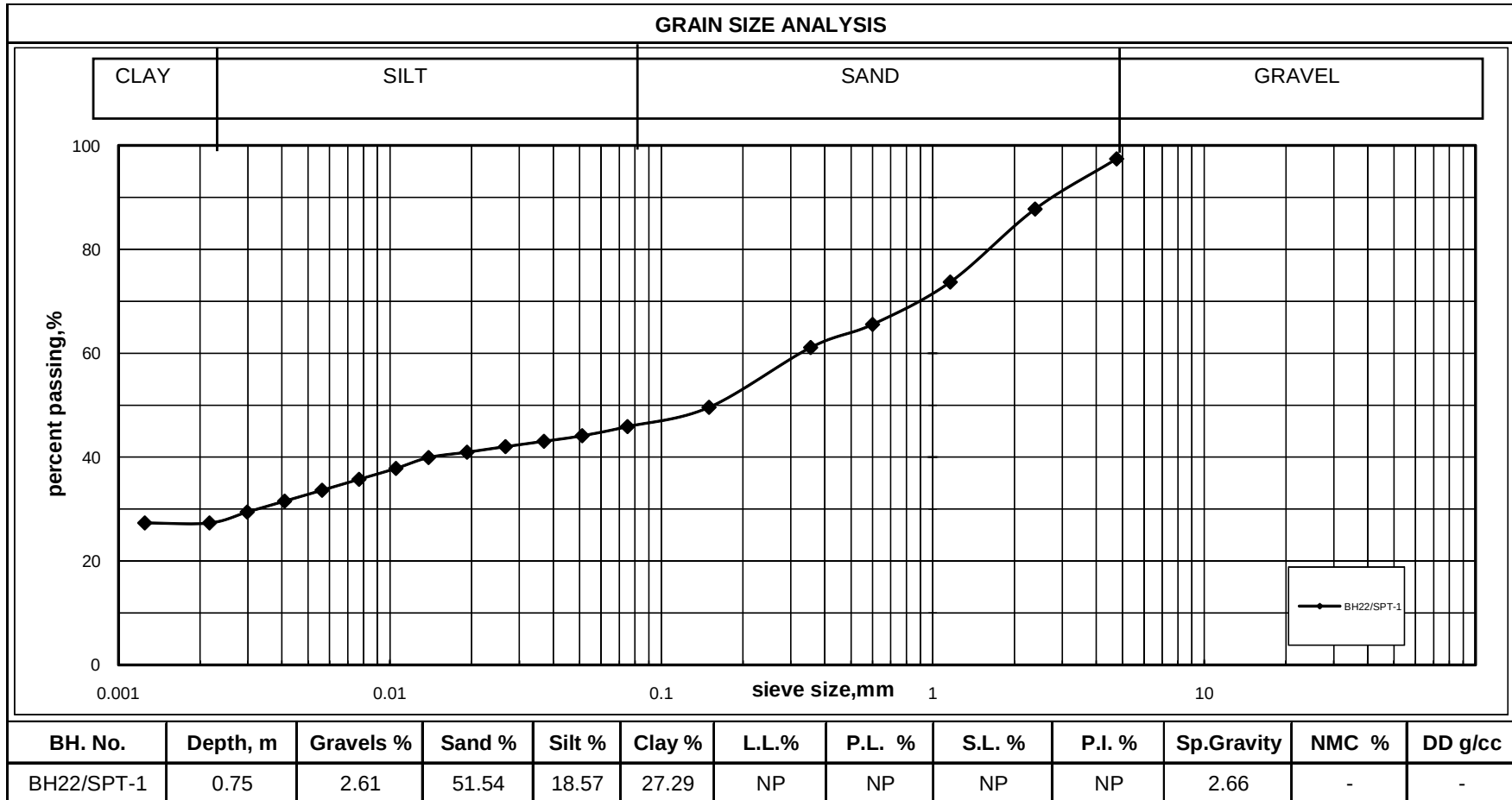


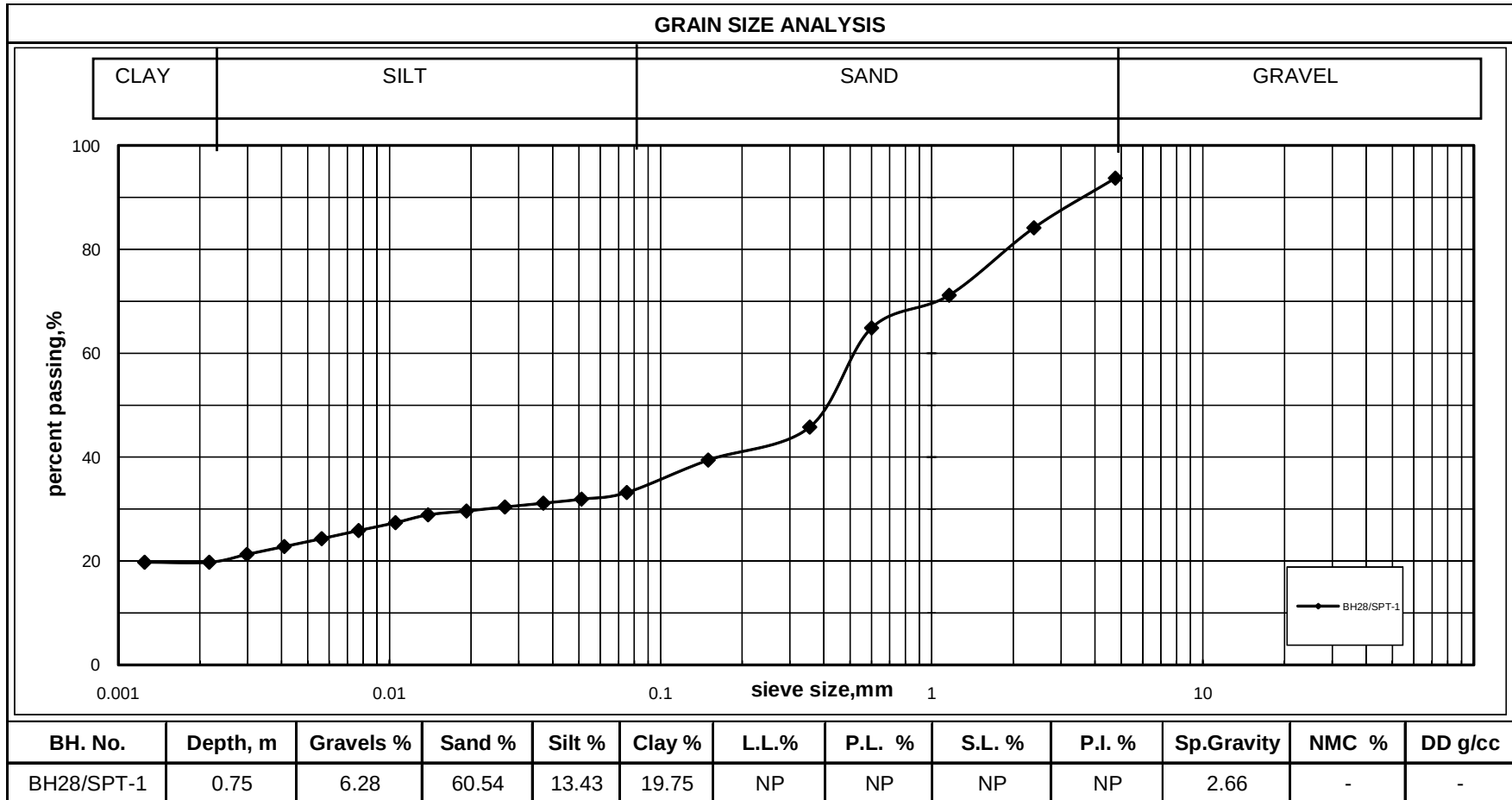


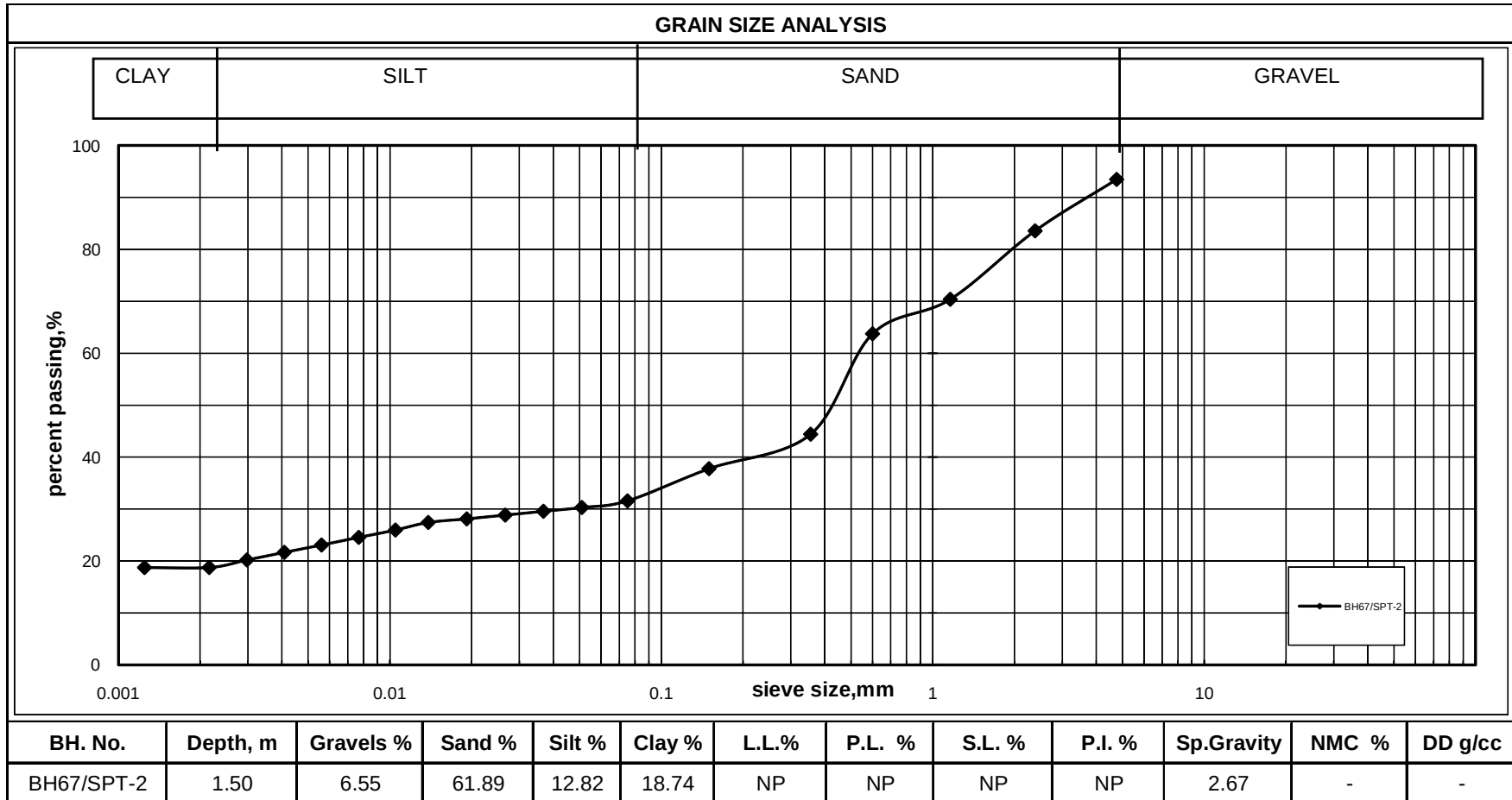




Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
 Noble Geo-Structs Project No. S 16022
 June 7, 2016







Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
Noble Geo-Structs Project No. S 16022
June 7, 2016



Sr. No.	Borehole No.	Depth (m)	Core Piece No.	Water Absorption or Moisture content (%)	Specific Gravity	Hardness Mohs Scale	Soundness %	Porosity (%)	Dry Density (g/cc)	Slake Durability (I _d)	Point Load Index at in situ water content (kg/cm ²)	Point Load Index at saturated water content (kg/cm ²)	Deformability or Evalve (Mpa) at in situ water content	Deformability or Evalve (Mpa) at saturated water content	UCS (kg/cm ²) at in situ water content	UCS (kg/cm ²) at saturated water content	Core Description
1	1	2.25 to 3.00	11	0.13	2.60			1.15	2.57								Quartzite
2	1	8.25 to 9.75	92							15			1.46E+04		537		Shale
3	2	4.50 to 6.00	29			6	10				45						Quartzite
4	2	9.00 to 10.50	118							16				8.21E+03		294	Shale
5	3	4.50 to 6.00	32			7									1320		Quartzite
6	3	7.00 to 9.00	60				12					42					Limestone
7	3	13.50 to 15.00	123	0.32	2.52	7		1.19	2.49				1.70E+05		624		Limestone
8	4	3.75 to 4.50	23	0.25	2.60			1.15	2.57	17	31						Quartzite
9	5	5.25 to 6.00	43							18		67		1.622.E+04		1470	Quartzite
10	5	9.00 to 10.00	82				12								182		Shale
11	6	3.75 to 4.50	37	0.98	2.59	6		1.16	2.56						2090		Quartzite
12	6	6.00 to 7.50	69							20				1.16E+04		218	Shale
13	7	7.50 to 9.00	71				10				14				317		Shale
14	8	3.75 to 4.50	22	0.60	2.60	7		1.16	2.57	16							Quartzite
15	8	14.25 to 15.00	117				12				15			1.00E+04		309	Shale
16	9	7.50 to 9.00	81			7									174		Shale
17	9	13.50 to 15.00	167							18	25		1.45E+04		560		Shale
18	10	3.75 to 5.25	30				4					51	2.301.E+04			1098	Shale
19	10	8.25 to 9.75	93	0.46	2.65	4		1.13	2.62								Shale
20	11	4.50 to 6.00	43							20					747		Quartzite
21	12	6.00 to 7.50	56			7	12								1175		Quartzite
22	12	9.00 to 10.00	76								11			1.09E+04		232	Quartzite
23	13	1.50 to 2.25	14	1.45	2.54			1.18	2.51	22					78		Limestone
24	13	3.00 to 4.50	42			7					61				1345		Quartzite
25	13	13.50 to 15.00	198				12				14		1.16E+04		320		Shale
26	14	9.75 to 11.25	86									14	8.22E+03		287		Basalt
27	14	11.25 to 12.75	91	0.29	2.57			1.17	2.54								Basalt
28	15	4.50 to 6.00	53							15		73				1551	Limestone
29	15	9.00 to 10.00	94			7							1.478.E+04		1324		Quartzite
30	16	0.00 to 0.75	6	1.33	2.53		8	1.19	2.50						78		Limestone

Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
Noble Geo-Structs Project No. S 16022
June 7, 2016



Sr. No.	Borehole No.	Depth (m)	Core Piece No.	Water Absorption or Moisture content (%)	Specific Gravity	Hardness Mohs Scale	Soundness %	Porosity (%)	Dry Density (g/cc)	Slake Durability (I _d)	Point Load Index at in situ water content (kg/cm ²)	Point Load Index at saturated water content (kg/cm ²)	Deformability or Evalve (Mpa) at in situ water content	Deformability or Evalve (Mpa) at saturated water content	UCS (kg/cm ²) at in situ water content	UCS (kg/cm ²) at saturated water content	Core Description
31	16	1.50 to 2.25	34			3									75		Limestone
32	16	3.00 to 4.50	54							15					235		Limestone
33	16	9.00 to 10.00	124										1.429E+04		1462		Limestone
34	17	4.50 to 6.00	60			7	4				26					591	Quartzite
35	18	3.00 to 3.75	12	1.03	2.56			1.17	2.53	17					116		Limestone
36	18	3.75 to 5.25	30			5							1.523.E+04		1283		Sandstone
37	18	9.00 to 10.00	85				10			15					377		Basalt
38	19	3.00 to 4.50	19	0.76	2.66	7		1.13	2.63			10		8.210E+03		204	Quartzite
39	19	13.50 to 15.00	147							18					420		Shale
40	20	14.00 to 15.00	110				8				39			1.304E+04	860		Basalt
41	21	3.00 to 3.75	29			3									75		Limestone
42	21	9.00 to 10.00	85							16	11					233	Shale
43	22	3.00 to 3.75	12				11				21				151		Limestone
44	22	5.25 to 6.75	48	0.44	2.66		6	1.13	2.63								Quartzite
45	22	9.00 to 10.00	82			4				20				8.214E+03	211		Shale
46	23	1.50 to 2.25	11							15		24				505	Quartzite
47	23	9.00 to 10.50	125			6							7.326E+03		721		Quartzite
48	23	13.50 to 15.00	169	1.04	2.52		7	1.19	2.49						91		Quartzite
49	24	1.50 to 2.25	14			7						13			182		Limestone
50	24	9.00 to 10.00	86							18			1.200E+04		355		Shale
51	25	1.50 to 2.25	18				3				9			8.20E+03		196	Limestone
52	25	3.00 to 4.50	58	1.04	2.54	3		1.18	2.51						128		Limestone
53	25	7.50 to 9.00	108								64			1.26E+04	1402		Quartzite
54	26	3.00 to 3.75	15				11			20					142		Limestone
55	26	4.50 to 6.00	35			4									711		Limestone
56	27	0.75 to 1.50	15			30				15					219		Limestone
57	27	2.25 to 3.75	49	0.83	2.61		8	1.15	2.58			10	1.46E+04		220		Limestone
58	28	3.75 to 4.50	21										1.67E+04		1562		Quartzite
59	28	12.75 to 14.25	145				12								473		Shale
60	29	1.50 to 2.25	33			7										128	Limestone

Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
Noble Geo-Structs Project No. S 16022
June 7, 2016



Sr. No.	Borehole No.	Depth (m)	Core Piece No.	Water Absorption or Moisture content (%)	Specific Gravity	Hardness Mohs Scale	Soundness %	Porosity (%)	Dry Density (g/cc)	Slake Durability (I _d)	Point Load Index at in situ water content (kg/cm ²)	Point Load Index at saturated water content (kg/cm ²)	Deformability or Evalue (Mpa) at in situ water content	Deformability or Evalue (Mpa) at saturated water content	UCS (kg/cm ²) at in situ water content	UCS (kg/cm ²) at saturated water content	Core Description
61	29	6.75 to 8.25	67	3.33	2.53			1.32	2.25	15				1.51E+05		340	Limestone
62	30	12.00 to 13.5	418			4									754		Shale
63	30	4.50 to 5.25	35				7			18	76			1.54E+04		1718	Quartzite
64	31	10.50 to 12.00	107												1520		Shale
65	31	15.00 to 16.50	163			7							1.67E+04		1252		Shale
66	31	18.00 to 19.50	197	0.54	2.67		10	1.12	2.64						400		Shale
67	32	4.50 to 6.00	42	0.77	2.63			1.14	2.60	17	11			1.09E+04		233	Quartzite
68	33	2.25 to 3.00	12				5									218	Limestone
69	33	17.25 to 18.75	170								37		1.25E+05		987		Shale
70	34	0.75 to 2.29	8				2			15					88		Limestone
71	34	5.25 to 6.75	53	0.17	2.65	4		1.05	2.62			76				1635	Quartzite
72	35	0.00 to 0.75	1			6	11										Quartzite
73	35	2.25 to 3.00	3								20		1.92E+04		835		Quartzite
74	36	0.75 to 1.50	4				12										Quartzite
75	36	3.00 to 3.75	7									32					Quartzite
76	37	2.25 to 3.00	11			7									985		Quartzite
77	37	8.25 to 9.75	86							20		52				1109	Quartzite
78	37	14.25 to 15.00	134	0.32	2.62		12	0.61	2.61								Quartzite
79	38	1.50 to 2.25	8							23				5.53E+03		277	Quartzite
80	38	4.50 to 5.25	12	0.34	2.56			1.17	2.53		37						Quartzite
81	39	3.00 to 3.75	21			6										1164	Quartzite
82	39	9.00 to 10.00	94							15					371		Shale
83	40	1.50 to 2.25	6			7	10								1013		Quartzite
84	41	2.25 to 3.00	4										1.33E+04		370		Quartzite
85	41	3.75 to 4.50	9							18						1064	Quartzite
86	42	2.25 to 3.00	20				6				36						Limestone
87	43	3.75 to 4.50	28				7						1.46E+04		577		Quartzite
88	44	3.75 to 4.50	17	1.65	2.45		8	1.22	2.42					1.30E+04		350	Quartzite
89	45	3.75 to 4.50	15	0.65	2.61			1.15	2.58								Limestone
90	46	1.50 to 2.25	9	0.35	2.63		14	1.14	2.60								Limestone

Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
Noble Geo-Structs Project No. S 16022
June 7, 2016



Sr. No.	Borehole No.	Depth (m)	Core Piece No.	Water Absorption or Moisture content (%)	Specific Gravity	Hardness Mohs Scale	Soundness %	Porosity (%)	Dry Density (g/cc)	Slake Durability (I _d)	Point Load Index at in situ water content (kg/cm ²)	Point Load Index at saturated water content (kg/cm ²)	Deformability or Evalue (Mpa) at in situ water content	Deformability or Evalue (Mpa) at saturated water content	UCS (kg/cm ²) at in situ water content	UCS (kg/cm ²) at saturated water content	Core Description
91	46	2.25 to 3.00	12							16				1.724E+04		1154	Limestone
92	47	6.75 to 7.50	45							19	42						Shale
93	47	8.25 to 9.00	56			4	10					46					Shale
94	48	2.25 to 3.00	11	0.78	2.54	3		1.23	2.41								Quartzite
95	49	2.25 to 3.00	13							22	29						Quartzite
96	50	2.25 to 3.00	17								24						Limestone
97	50	7.50 to 9.00	62			30				22							Limestone
98	51	2.25 to 3.00	8							15						975	Quartzite
99	51	12.00 to 13.50	134	0.29	2.57	7		1.17	2.54					1.15E+04			Shale
100	52	2.25 to 3.00	18				6								1170		Quartzite
101	52	9.00 to 10.00	71							21			1.67E+04		1542		Quartzite
102	53	1.50 to 2.25	3				4					22					Quartzite
103	54	8.25 to 9.00	99			30	9								644		Limestone
104	55	4.50 to 5.25	22	0.14	2.56	6		1.17	2.53								Quartzite
105	56	3.75 to 5.25	40				4			15		56	1.44E+04			1233	Limestone
106	56	13.50 to 15.00	165												360		Limestone
107	57	4.50 to 5.25	21			7	11							1.74E+04			Quartzite
108	58	9.00 to 9.75	57				13							2.857E+03		241	Limestone
109	58	12.75 to 13.50	83	0.67	2.53			1.19	2.50		11						Limestone
110	59	7.50 to 8.25	39			6	10										Quartzite
111	59	9.00 to 9.75	45	0.44	2.58			1.16	2.55	15							Quartzite
112	60	7.50 to 8.25	26			6	12									897	Quartzite
113	61	0.75 to 1.50	10			7									130		Quartzite
114	61	2.25 to 3.00	20	1.69	2.54			1.34	2.21	15							Quartzite
115	61	6.75 to 8.25	62				8									1142	Shale
116	62	6.75 to 7.50	50											1.43E+04		1151	Shale
117	62	7.50 to 9.00	64			5	12										Shale
118	63	4.50 to 5.25	42	0.29	2.57			1.22	2.44	21			1.96E+04				Limestone
119	64	0.75 to 1.50	4			29	4								134		Limestone
120	64	6.75 to 7.50	47			7					55		1.26E+04		1216		Shale

Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
Noble Geo-Structs Project No. S 16022
June 7, 2016



Sr. No.	Borehole No.	Depth (m)	Core Piece No.	Water Absorption or Moisture content (%)	Specific Gravity	Hardness Mohs Scale	Soundness %	Porosity (%)	Dry Density (g/cc)	Slake Durability (I _d)	Point Load Index at in situ water content (kg/cm ²)	Point Load Index at saturated water content (kg/cm ²)	Deformability or Evalve (Mpa) at in situ water content	Deformability or Evalve (Mpa) at saturated water content	UCS (kg/cm ²) at in situ water content	UCS (kg/cm ²) at saturated water content	Core Description
121	64	9.00 to 9.75	81	1.63	2.52			1.35	2.19	18							Shale
122	65	3.75 to 4.50	25							15							Limestone
123	65	4.50 to 5.25	27								29						Limestone
124	66	0.75 to 1.50	7				11						1.60E+04		807		Limestone
125	67	9.75 to 10.50	70				10					39				1065	Shale
126	68	3.00 to 3.75	31	0.45	2.50			1.20	2.47						113		Limestone
127	68	7.50 to 9.00	91							16	27						Shale
128	69	2.25 to 3.00	15			4									211		Limestone
129	69	13.50 to 15.00	146	0.42	2.51		12	1.20	2.48	22		17		1.30E+04		143	Shale
130	70	2.25 to 3.00	32										1.67E+04		1088		Limestone
131	70	3.75 to 4.50	44			30	7					32					Limestone
132	71	6.00 to 7.50	46	0.30	2.62			1.14	2.59	15							Limestone
133	71	7.50 to 9.00	56			7					38			1.30E+04		981	Limestone
134	72	1.50 to 2.25	16	0.30	2.77	3		1.08	2.74			56		1.44E+04		1163	Limestone
135	73	0.00 to 0.75	3	1.70	2.54			1.18	2.51	19							Limestone
136	75	3.00 to 3.75	16	0.52	2.51			1.30	2.28	16						128	Shale
137	76	3.00 to 4.50	13	0.82							32						Quartzite
138	77	4.50 to 5.25	49				12				22				478		Limestone
139	77	9.75 to 11.25	129			28							1.67E+04				Limestone
140	78	3.00 to 4.50	44				5			20			8.23E+03		204		Limestone
141	78	6.00 to 7.50	86			4								1.30E+04			Limestone
142	78	13.50 to 15.00	151	0.83	2.54		10	1.23	2.41								Limestone
143	79	1.50 to 2.25	19							18			5.53E+03		233		Limestone
144	79	8.25 to 9.75	133			3					88						Limestone
145	80	2.25 to 3.00	30				11								549		Limestone
146	80	6.00 to 7.50	75							19				1.15E+04		770	Quartzite
147	80	10.50 to 12.00	132	0.27	2.55			1.18	2.52								Quartzite
148	81	2.25 to 3.00	23	0.31	2.61	4		1.15	2.58							218	Shale
149	82	3.75 to 4.50	43	0.73	2.52			1.19	2.49	17		52				1109	Limestone
150	83	1.50 to 2.25	9				9			20	17						Limestone

Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
Noble Geo-Structs Project No. S 16022
June 7, 2016



Sr. No.	Borehole No.	Depth (m)	Core Piece No.	Water Absorption or Moisture content (%)	Specific Gravity	Hardness Mohs Scale	Soundness %	Porosity (%)	Dry Density (g/cc)	Slake Durability (I _d)	Point Load Index at in situ water content (kg/cm ²)	Point Load Index at saturated water content (kg/cm ²)	Deformability or Evalve (Mpa) at in situ water content	Deformability or Evalve (Mpa) at saturated water content	UCS (kg/cm ²) at in situ water content	UCS (kg/cm ²) at saturated water content	Core Description
151	83	3.25 to 4.50	21	0.30	2.55			1.18	2.52				1.932E+04		558		Limestone
152	84	6.75 to 7.50	53	0.33	2.59		6	1.16	2.56					1.54E+04		1164	Shale
153	85	9.00 to 10.00	89			3							8.21E+03		226		Limestone
154	86	1.50 to 2.25	12								15				331		Quartzite
155	86	8.25 to 9.00	65							17	28		1.67E+04		2505		Quartzite
156	86	13.50 to 15.00	127	0.48	2.51		8	1.20	2.48								Quartzite
157	87	2.25 to 3.00	26				7			15							Limestone
158	87	3.75 to 4.50	39			29						26					Limestone
159	88	3.00 to 3.75	27	0.32	2.55	4		1.18	2.52			39				1065	Limestone
160	89	6.15 to 4.50	38	0.59	2.57		7	1.22	2.44	16	70		1.67E+04		1542		Quartzite
161	90	1.50 to 2.25	11												70		Limestone
162	90	12.00 to 12.75	88							15	31		1.46E+05		694		Shale
163	91	0.75 to 1.50	6	1.78	2.54	3		1.40	2.51								Limestone
164	91	1.50 to 2.25	23				5			16					121		Limestone
165	91	9.00 to 10.50	838									41		1.54E+04		1090	Quartzite
166	92	3.00 to 3.75	38	0.71	2.50	4		1.20	2.47						158		Limestone
167	93	2.25 to 3.00	16			30				20							Limestone
168	93	3.00 to 4.50	23	0.30	2.62			1.15	2.59								Limestone
169	94	0.00 to 0.75	2									44					Limestone
170	94	3.00 to 3.75	19							15							Limestone
171	95	0.75 to 1.50	5										1.429E+04		1147		Limestone
172	95	2.25 to 3.00	14			28	4			22							Limestone
173	96	3.00 to 4.50	48							22				8.21E+03		234	Limestone
174	97	1.50 to 2.25	23				8								113		Limestone
175	97	6.00 to 7.50	74	0.44	2.54	3		1.18	2.51								Quartzite
176	97	7.50 to 9.00	106							20	19		1.66E+05		386		Quartzite
177	97	13.50 to 15.00	141			7	10									576	Quartzite
178	98	3.00 to 3.75	21	1.01	2.65			1.13	2.62								Limestone
179	98	3.75 to 4.50	31							21							Limestone
180	99	4.50 to 6.00	72			4					27				596		Limestone

Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
Noble Geo-Structs Project No. S 16022
June 7, 2016



Sr. No.	Borehole No.	Depth (m)	Core Piece No.	Water Absorption or Moisture content (%)	Specific Gravity	Hardness Mohs Scale	Soundness %	Porosity (%)	Dry Density (g/cc)	Slake Durability (I _d)	Point Load Index at in situ water content (kg/cm2)	Point Load Index at saturated water content (kg/cm2)	Deformability or Evalue (Mpa) at in situ water content	Deformability or Evalue (Mpa) at saturated water content	UCS (kg/cm ²) at in situ water content	UCS (kg/cm ²) at saturated water content	Core Description
181	100	3.00 to 3.75	57	0.29	2.57		11	1.17	2.54							106	Limestone
182	100	7.50 to 9.00	125							15		32	1.75E+04				Quartzite
183	101	4.50 to 6.00	90				12								143		Limestone
184	102	2.25 to 3.00	20			3								7.48E+04		196	Limestone
185	102	9.00 to 10.00	114	0.29	2.56			1.22	2.43								Quartzite
186	103	0.75 to 4.50	5							18				1.43E+04		1193	Limestone
187	103	2.25 to 3.00	11			30	4										Limestone
188	104	7.50 to 9.00	66							18	40			1.24E+04		853	Limestone
189	105	3.00 to 3.75	10	0.74	2.60			1.15	2.57								Limestone
190	105	4.50 to 6.00	12							20							Limestone
191	106	2.25 to 3.00	27	0.68	2.64			1.14	2.61					7.48E+04		128	Shale
192	106	4.50 to 5.25	51	0.34	2.56	4	9	1.17	2.53		37		1.25E+05		702	Shale	
193	107	3.00 to 3.75	20			4									106		Limestone
194	108	1.50 to 2.25	4										1.15E+04		702		Limestone
195	108	3.00 to 3.75	5							15							Limestone
196	109	1.50 to 2.25	6	0.68	2.64			1.14	2.61				8.22E+03		241		Quartzite
197	109	3.00 to 3.75	15				8				28						Limestone
198	110	0.75 to 1.50	5	1.64	2.64			1.13	2.61								Quartzite
199	110	6.00 to 6.75	23			7				20						400	Quartzite
200	111	2.75 to 3.50	9	0.80	2.65			1.13	2.62								Quartzite
201	111	8.00 to 8.75	32							24							Quartzite
202	112	1.50 to 2.25	5	0.49	2.52		11	1.10	2.69								Quartzite
203	113	6.00 to 6.75	10				10			16							Quartzite
204	113	6.75 to 7.50	11			7	12										Quartzite
205	114	6.00 to 7.50	47							20	20				521		Shale
206	114	9.00 to 10.00	75	0.53	2.62			1.14	2.59								Shale
207	115	3.00 to 3.75	9							17							Quartzite
208	115	12.00 to 12.75	50										1.60E+04			1120	Limestone
209	116	3.00 to 3.75	9			7	11				42						Quartzite
210	116	6.75 to 7.50	27	1.14	2.53			1.19	2.50	22							Quartzite

Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
Noble Geo-Structs Project No. S 16022
June 7, 2016



Sr. No.	Borehole No.	Depth (m)	Core Piece No.	Water Absorption or Moisture content (%)	Specific Gravity	Hardness Mohs Scale	Soundness %	Porosity (%)	Dry Density (g/cc)	Slake Durability (I _d)	Point Load Index at in situ water content (kg/cm ²)	Point Load Index at saturated water content (kg/cm ²)	Deformability or Evalve (Mpa) at in situ water content	Deformability or Evalve (Mpa) at saturated water content	UCS (kg/cm ²) at in situ water content	UCS (kg/cm ²) at saturated water content	Core Description
211	117	6.75 to 7.50	31				7			18			1.67E+04			1539	Quartzite
212	118	2.25 to 3.00	18			3					55				1207		Limestone
213	118	13.50 to 15.00	152							23	51		1.60E+04		1071		Limestone
214	118	13.50 to 15.00	152			30	4										Limestone
215	119	4.50 to 6.00	31							17		46				1216	Limestone
216	119	6.00 to 7.50	53	0.39	2.58	4		1.16	2.55								Limestone
217	120	2.25 to 3.00	16			7	9										Quartzite
218	120	3.75 to 4.50	27							18							Quartzite
219	121	2.25 to 3.00	12							15							Quartzite
220	121	5.25 to 6.75	30			7							1.88E+04		1044		Quartzite
221	122	4.50 to 5.25	31	0.30	2.53		4	1.19	2.50	15						1086	Quartzite
222	122	7.50 to 9.00	55			7								1.67E+04			Quartzite
223	123	3.75 to 4.50	27	0.60	2.59			1.16	2.56	22		67	1.622.E+04			1325	Quartzite
224	124	3.00 to 3.75	13							16							Quartzite
225	124	3.75 to 4.50	15			6					38						Quartzite
226	125	4.50 to 5.25	23	0.43	2.51			1.20	2.48		50		1.26E+04		1120		Quartzite
227	125	6.00 to 6.75	33	0.60	2.66	7		1.13	2.63						355		Quartzite
228	126	4.50 to 5.25	29	0.30	2.53		6	1.18	2.50								Quartzite
229	127	7.50 to 8.25	54	0.67	2.63			1.14	2.60	20	31			1.09E+04		246	Quartzite
230	128	1.50 to 2.25	7	0.40	2.65			1.13	2.62								Limestone
231	128	3.75 to 4.50	14							22							Limestone
232	129	0.75 to 1.50	10								27						Limestone
233	129	2.25 to 3.00	19			30								1.43E+04		379	Limestone
234	130	9.00 to 10.00	98A & 98B	0.43	2.63	4		1.14	2.60						279		Limestone
235	131	9.00 to 10.00	63				8					56	1.60E+04			1230	Limestone
236	132	0.00 to 0.75	2			29	5										Limestone
237	132	1.50 to 3.00	7				11			27							Limestone
238	133	2.25 to 3.00	10				5									427	Quartzite
239	134	4.50 to 5.25	49	0.44	2.68			1.12	2.65	18			1.46E+05		520		Quartzite
240	135	3.75 to 4.50	38	0.36	2.54	4		1.18	2.51					8.21E+03		264	Shale

Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
Noble Geo-Structs Project No. S 16022
June 7, 2016



Sr. No.	Borehole No.	Depth (m)	Core Piece No.	Water Absorption or Moisture content (%)	Specific Gravity	Hardness Mohs Scale	Soundness %	Porosity (%)	Dry Density (g/cc)	Slake Durability (I _d)	Point Load Index at in situ water content (kg/cm ²)	Point Load Index at saturated water content (kg/cm ²)	Deformability or Evalve (Mpa) at in situ water content	Deformability or Evalve (Mpa) at saturated water content	UCS (kg/cm ²) at in situ water content	UCS (kg/cm ²) at saturated water content	Core Description
241	136	6.00 to 7.50	45	0.32	2.78		10	1.08	2.75				1.67E+04		1345		Shale
242	136	9.00 to 7.50	90	0.43	2.64	4	10	1.14	2.61								Shale
243	137	5.25 to 6.00	24	0.99	2.56			1.17	2.53	15					142		Shale
244	138	3.00 to 3.75	14							22							Quartzite
245	138	3.75 to 4.50	18	1.15	2.61			1.15	2.58								Quartzite
246	139	0.75 to 1.50	3				9						1.30E+04				Quartzite
247	140	2.25 to 3.00	8			6	12										Quartzite
248	140	4.50 to 5.25	23			7	9			15							Quartzite
249	141	0.75 to 1.50	12				2					33					Limestone
250	142	1.50 to 2.25	6	0.32	2.76			1.09	2.73								Limestone
251	143	9.00 to 10.00	91			3									633		Limestone
252	144	7.50 to 9.00	90	0.33	2.70		8	1.11	2.67		28			1.15E+04		596	Limestone
253	145	3.75 to 5.25	39							18			1.54E+04		1056		Limestone
254	145	12.75 to 14.25	135				12								1298		Limestone
255	146	2.25 to 3.75	19			4									1253		Limestone
256	146	6.75 to 8.25	71	0.47	2.66			1.13	2.63	15		18	1.20E+04			377	Limestone
257	147	3.00 to 3.75	25				12								781		Limestone
258	147	11.25 to 12.75	84			3				20		34	1.15E+04		757		Limestone
259	148	3.00 to 4.50	32	0.15	2.73		7	1.10	2.70						943		Limestone
260	148	9.00 to 10.00	67							17	37			1.15E+04		789	Limestone
261	149	2.25 to 3.75	16								44				963		Limestone
262	149	8.25 to 9.75	67			4					35				775		Limestone
263	150	3.00 to 3.75	15							16							Limestone
264	150	4.50 to 5.25	21	0.77	2.62			1.15	2.59								Limestone
265	151	2.25 to 3.00	20	0.45	2.50			1.20	2.47	18							Limestone
266	151	4.50 to 6.00	46											1.57E+04		1064	Limestone
267	152	3.25 to 4.50	32	0.34	2.57		6	1.17	2.54		28		1.67E+04		2055		Shale
268	152	4.50 to 6.00	38	0.32	2.54			1.09	2.51	18	53				1175		Shale
269	153	7.50 to 8.25	76				3						7.73E+03				Quartzite
270	154	3.00 to 3.75	15							18							Limestone

Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
Noble Geo-Structs Project No. S 16022
June 7, 2016



Sr. No.	Borehole No.	Depth (m)	Core Piece No.	Water Absorption or Moisture content (%)	Specific Gravity	Hardness Mohs Scale	Soundness %	Porosity (%)	Dry Density (g/cc)	Slake Durability (I _d)	Point Load Index at in situ water content (kg/cm ²)	Point Load Index at saturated water content (kg/cm ²)	Deformability or Evalve (Mpa) at in situ water content	Deformability or Evalve (Mpa) at saturated water content	UCS (kg/cm ²) at in situ water content	UCS (kg/cm ²) at saturated water content	Core Description
271	154	5.25 to 6.00	29			29						36	1.16E+04		247		Limestone
272	155	1.5 to 2.25	11	0.49	2.65	4		1.13	2.62		16				360		Shale
273	156	0.75 to 1.50	3				12					11					Limestone
274	157	10.50 to 11.25	72								62						Limestone
275	157	14.25 to 15.00	101							14							Limestone
276	158	0.75 to 1.50	5							23							Limestone
277	158	2.25 to 3.00	10			30	4										Limestone
278	159	0.00 to 0.75	1							16							Limestone
279	159	1.50 to 2.25	7			30	3					23					Limestone
280	160	5.25 to 6.00	35	1.23	2.53			1.19	2.50	15					75		Shale
281	161	8.25 to 9.00	28			7								1.55E+04		1622	Quartzite
282	161	9.75 to 10.50	34								53						Quartzite
283	162	8.25 to 9.00	13			30					44						Limestone
284	163	0.00 to 0.75	3	0.45	2.50		5	1.20	2.47								Limestone



Date : 10.03.2016.

Name of the Client **Bharat Heavy Electricals Limited**

Nature of the Sample Water

Project Geotechnical Investigation and Topographical survey for
5x800MW Yadari Thermal Power Station at Veerlapalem Village,
Dameracherla Mandal, Nalgonda District, Telangana Site

Results of Analysis

W a t e r
BH 20

Depth (m):
4.00

Total Carbonates (as CaCO₃)	154	ppm
Sulphate (as SO₄)	34	ppm
Sulphite (as SO₃)	28.33	ppm
Chloride (as Cl)	110	ppm
Nitrate (as NO₃)	0.032	ppm
Nitrite (as NO₂)	0.024	ppm
p H Value (By Digital p H Meter)	7.63	6.50 – 8.30
Turbidity (as N T U)	350	max 1000
Total Organic matter	54	ppm



Date : 10.03.2016.

Name of the Client	Bharat Heavy Electricals Limited
Nature of the Sample	Water
Project	Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Results of Analysis

	<i>W a t e r</i> <i>BH 50</i>	Depth (m): 4.00
Total Carbonates (as CaCO ₃)	150	ppm
Sulphate (as SO ₄)	35	ppm
Sulphite (as SO ₃)	29.17	ppm
Chloride (as Cl)	111	ppm
Nitrate (as NO ₃)	0.034	ppm
Nitrite (as NO ₂)	0.025	ppm
p H Value (By Digital p H Meter)	7.71	6.50 – 8.30
Turbidity (as N T U)	355	max 1000
Total Organic matter	51	ppm



Date : 10.03.2016.

Name of the Client **Bharat Heavy Electricals Limited**

Nature of the Sample Water

Project Geotechnical Investigation and Topographical survey for
5x800MW Yadari Thermal Power Station at Veerlapalem Village,
Dameracherla Mandal, Nalgonda District, Telangana Site

Results of Analysis

W a t e r
BH 74

Depth (m):
3.00

Total Carbonates (as CaCO₃)	160	ppm
Sulphate (as SO₄)	41	ppm
Sulphite (as SO₃)	34.17	ppm
Chloride (as Cl)	121	ppm
Nitrate (as NO₃)	0.039	ppm
Nitrite (as NO₂)	0.029	ppm
p H Value (By Digital p H Meter)	7.82	6.50 – 8.30
Turbidity (as N T U)	360	max 1000
Total Organic matter	56	ppm



Date : 10.03.2016.

Name of the Client	Bharat Heavy Electricals Limited
Nature of the Sample	Water
Project	Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Results of Analysis

	<i>W a t e r</i> <i>BH 110</i>	Depth (m): 5.00
Total Carbonates (as CaCO ₃)	160	ppm
Sulphate (as SO ₄)	44	ppm
Sulphite (as SO ₃)	36.67	ppm
Chloride (as Cl)	127	ppm
Nitrate (as NO ₃)	0.044	ppm
Nitrite (as NO ₂)	0.033	ppm
p H Value (By Digital p H Meter)	7.87	6.50 – 8.30
Turbidity (as N T U)	387	max 1000
Total Organic matter	61	ppm



Date : 10.03.2016.

Name of the Client	Bharat Heavy Electricals Limited
Nature of the Sample	Water
Project	Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Results of Analysis

W a t e r
BH 118

Depth (m):
6.50

Total Carbonates (as CaCO₃)	163	ppm
Sulphate (as SO₄)	43	ppm
Sulphite (as SO₃)	35.83	ppm
Chloride (as Cl)	124	ppm
Nitrate (as NO₃)	0.041	ppm
Nitrite (as NO₂)	0.030	ppm
p H Value (By Digital p H Meter)	7.68	6.50 – 8.30
Turbidity (as N T U)	362	max 1000
Total Organic matter	59	ppm



Date : 10.03.2016.

Name of the Client	Bharat Heavy Electricals Limited
Nature of the Sample	Water
Project	Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Results of Analysis

W a t e r
BH 140

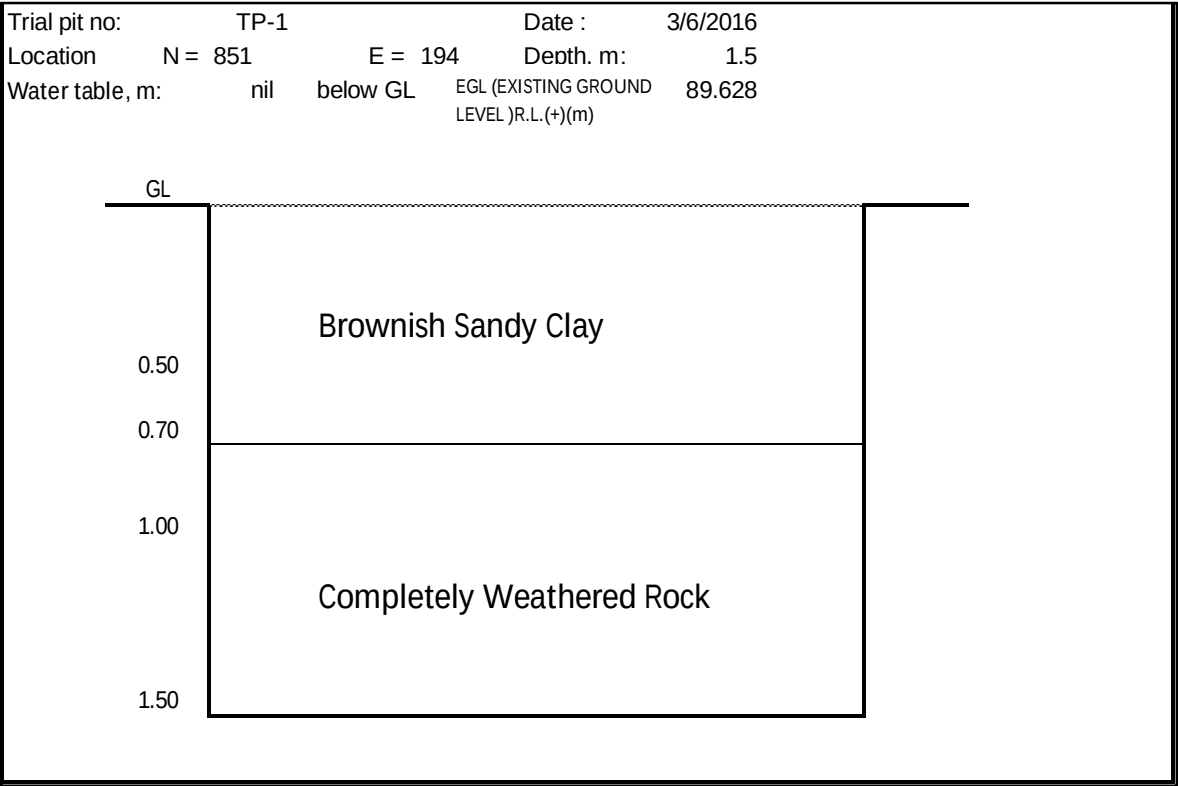
Depth (m):
3.80

Total Carbonates (as CaCO₃)	151	ppm
Sulphate (as SO₄)	30	ppm
Sulphite (as SO₃)	25.00	ppm
Chloride (as Cl)	108	ppm
Nitrate (as NO₃)	0.028	ppm
Nitrite (as NO₂)	0.021	ppm
p H Value (By Digital p H Meter)	7.3	6.50 – 8.30
Turbidity (as N T U)	333	max 1000
Total Organic matter	49	ppm

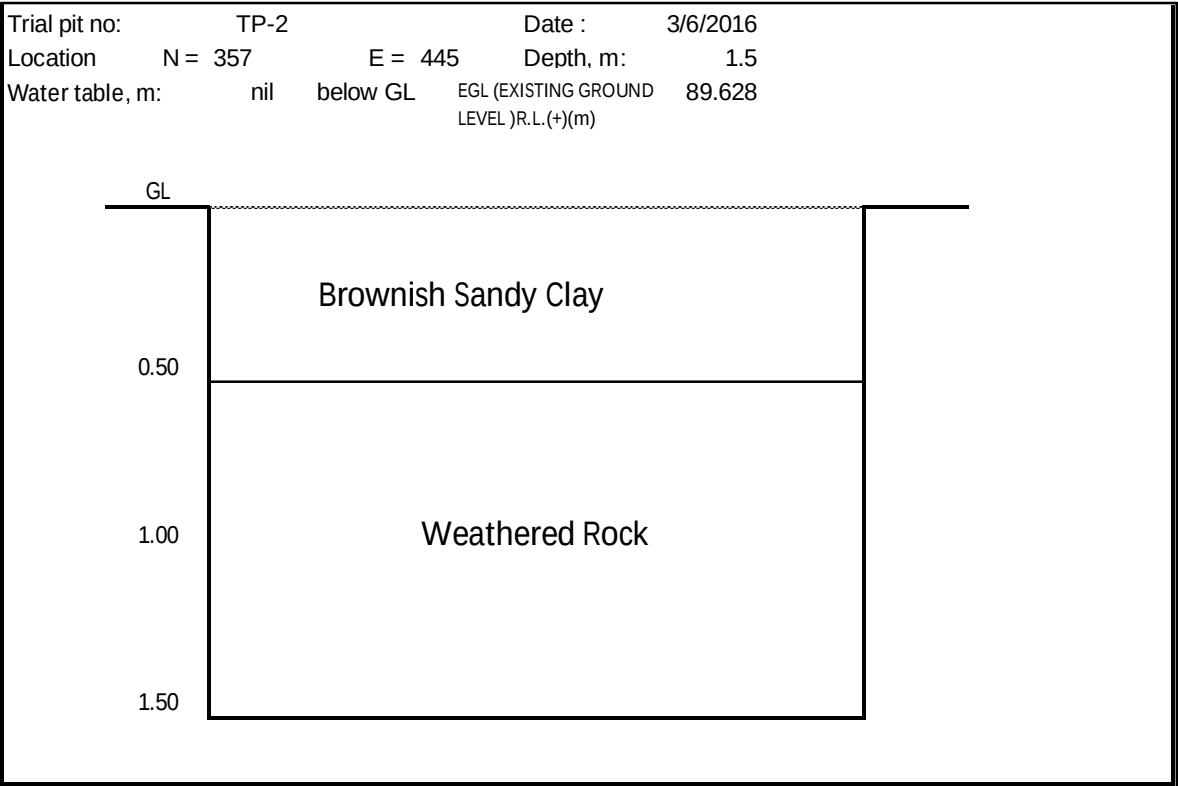


BH. NO.	Depth	Sulphate (as SO₄)	Chloride (as Cl)	p H Value (By Digital p H Meter)
	(m)	%	%	6.50 – 8.30
BH 15	1.00	0.027	0.180	7.650
BH 21	1.00	0.032	0.160	7.800
BH 22	1.00	0.030	0.170	7.560
BH 28	1.00	0.033	0.160	7.560
BH 67	1.00	0.036	0.150	7.300

TRIAL PIT LOG NO ---1-

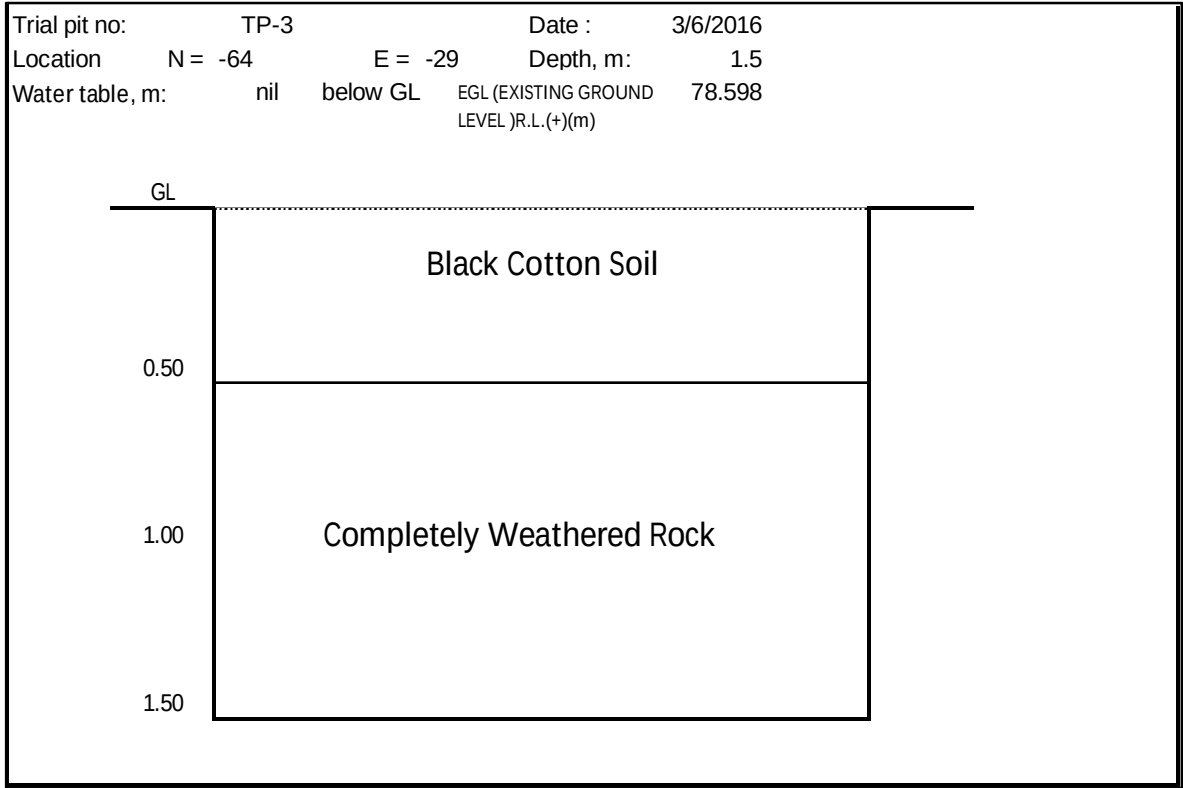


TRIAL PIT LOG NO ---2





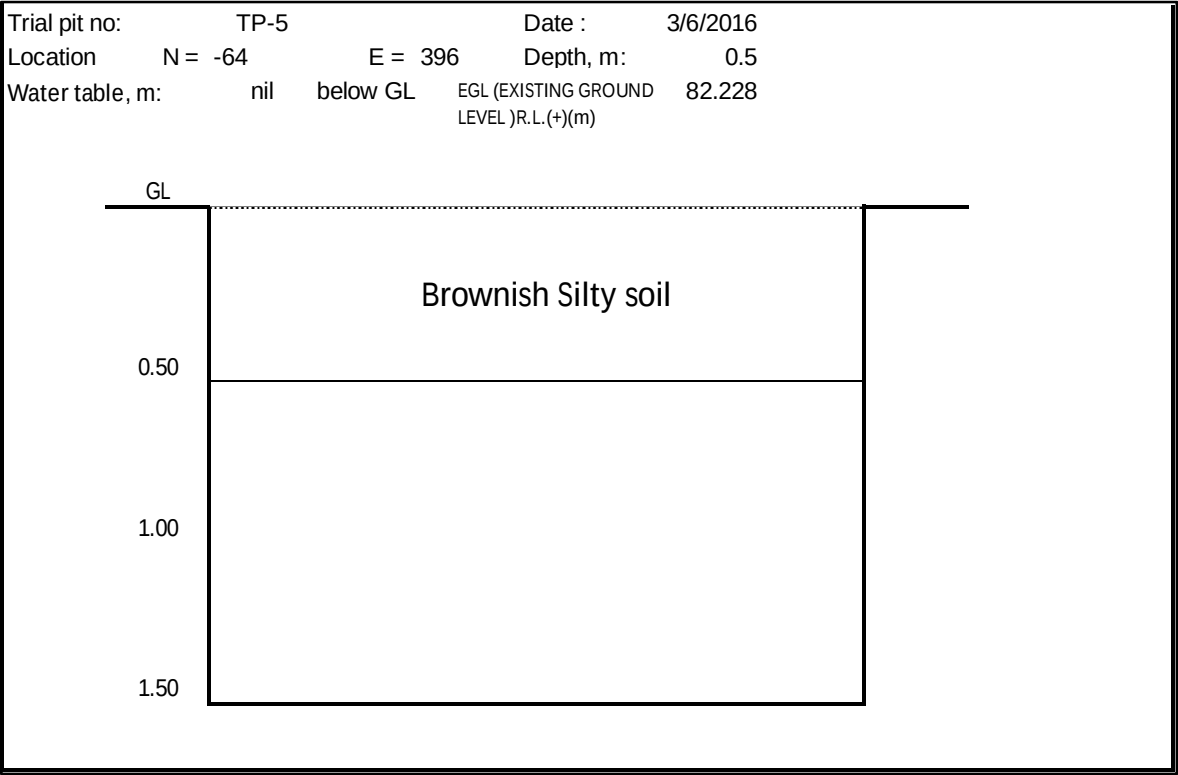
TRIAL PIT LOG NO --3



Trial pit no:	TP-4	Date :	3/6/2016
Location	N = -64	E = 99	Depth, m: 0.6
Water table, m:	nil	below GL	EGL (EXISTING GROUND LEVEL)R.L.(+)(m) 79.902

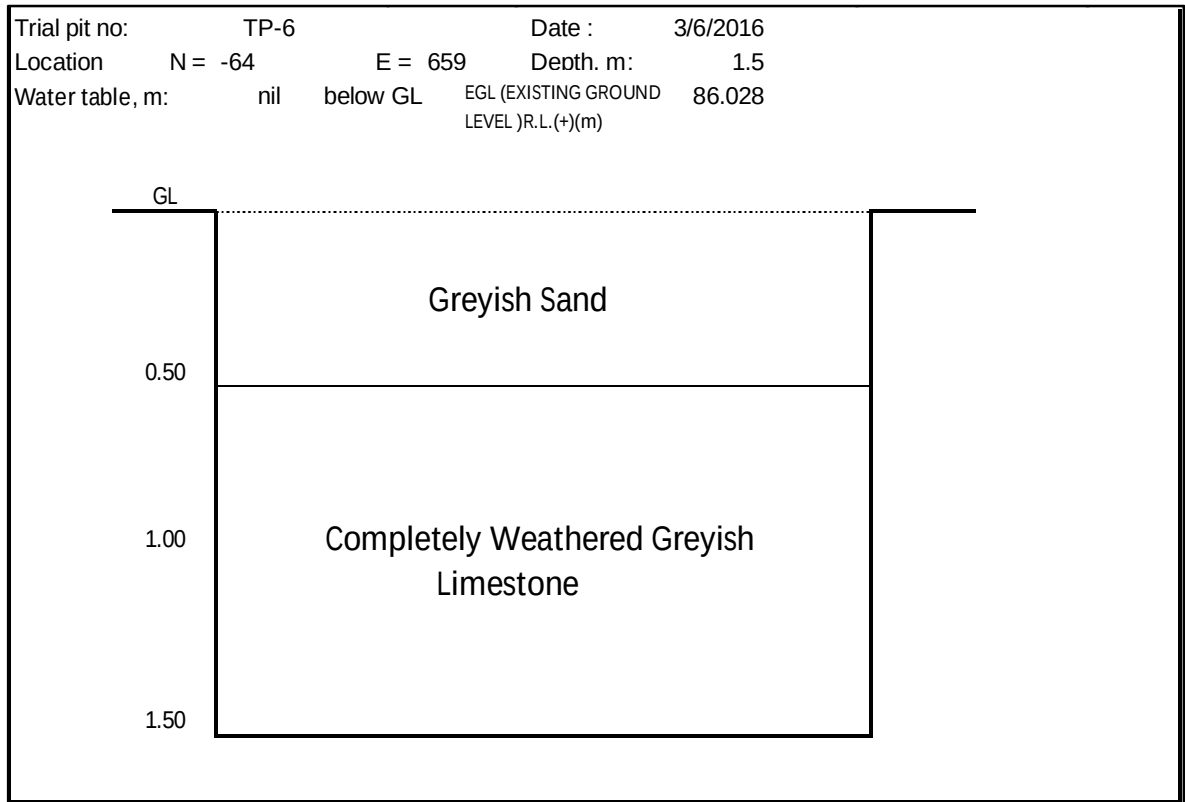
The diagram illustrates a cross-section of trial pit TP-4. The pit is rectangular, with its top surface at the Ground Level (GL). The soil within the pit is identified as 'Brownish Sandy Clay'. On the left side of the pit, depth markers are indicated at 0.50, 0.60, 1.00, and 1.50 meters. A horizontal line is drawn at the 0.60 meter depth, representing the water table level. The pit is shown to be 0.6 meters deep, as indicated by the 'Depth, m: 0.6' in the table above.

TRIAL PIT LOG NO --5





TRIAL PIT LOG NO --6

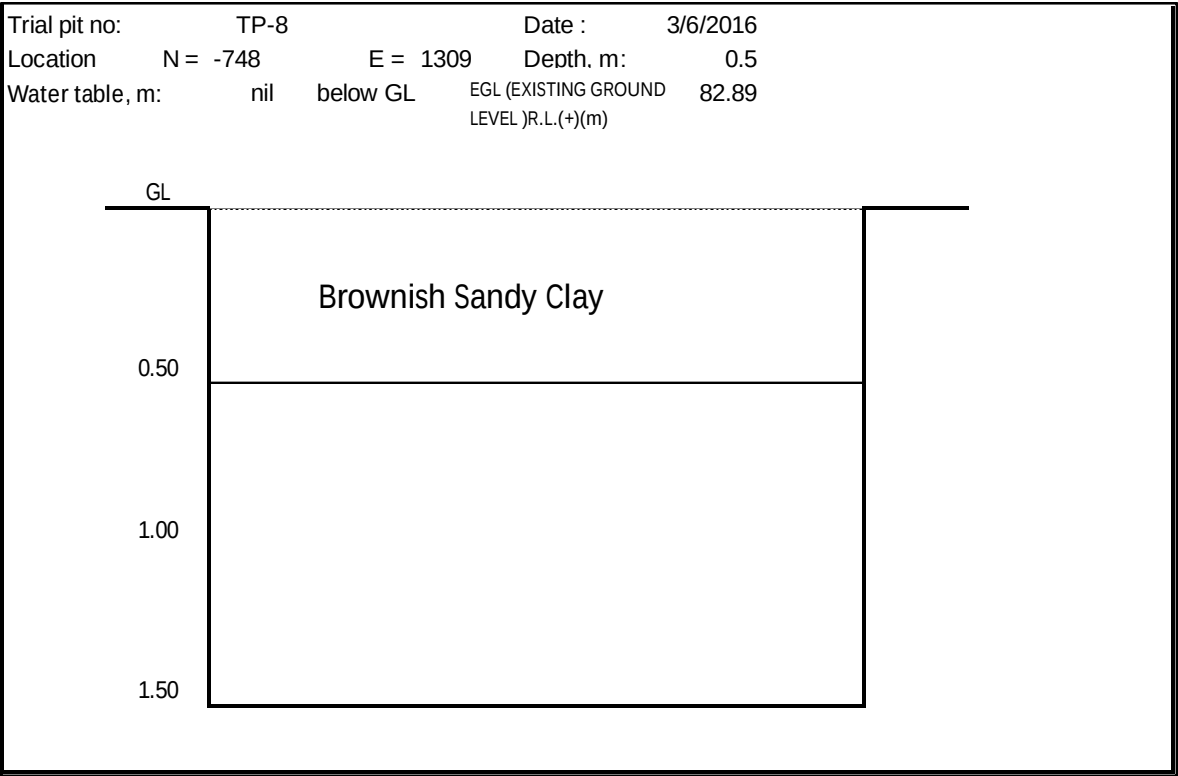




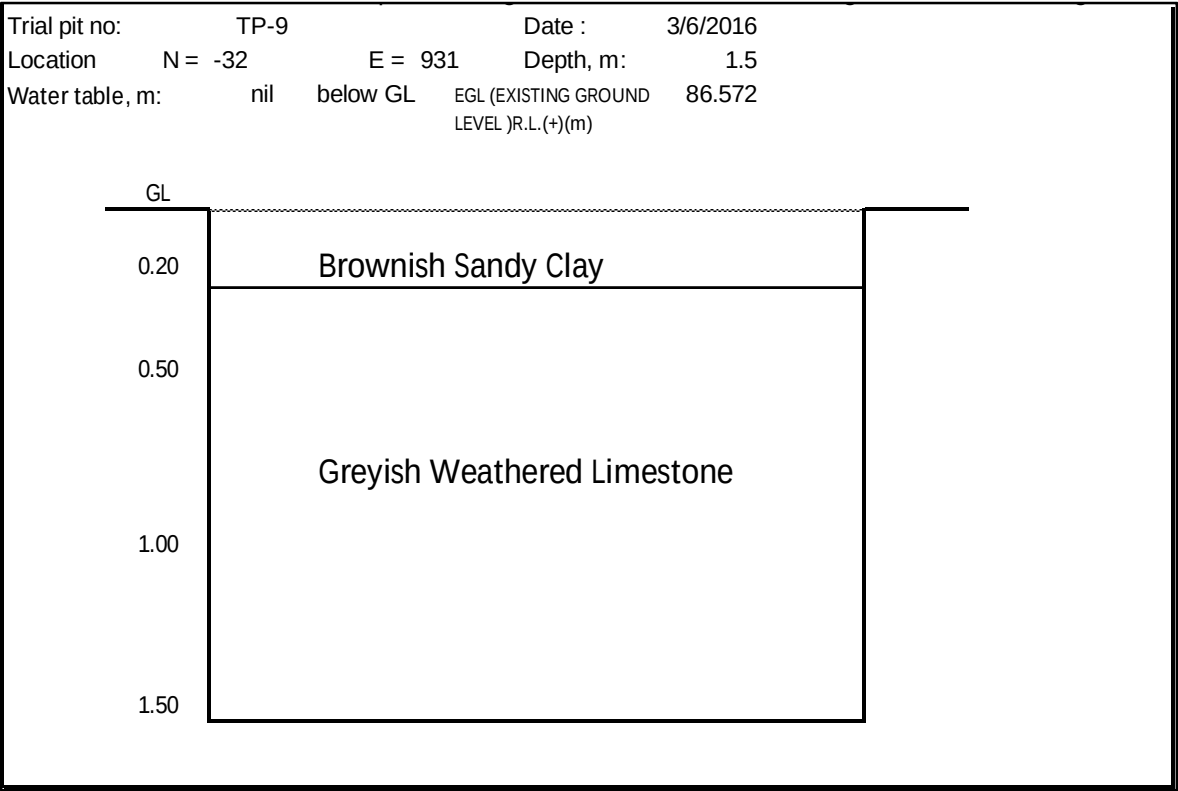
TRIAL PIT LOG NO --7

Trial pit no:	TP-7	Date :	3/6/2016
Location	N = -236	E = 236	Depth, m: 1.4
Water table, m:	nil	below GL	EGL (EXISTING GROUND LEVEL)R.L.(+)(m) 82.038
GL			
	Greyish Sandy Clay		
0.30			
0.50	Weathered rock Pinkish Limestone		
0.80			
1.00	Weathered rock Pinkish Limestone		
1.40			
1.50			

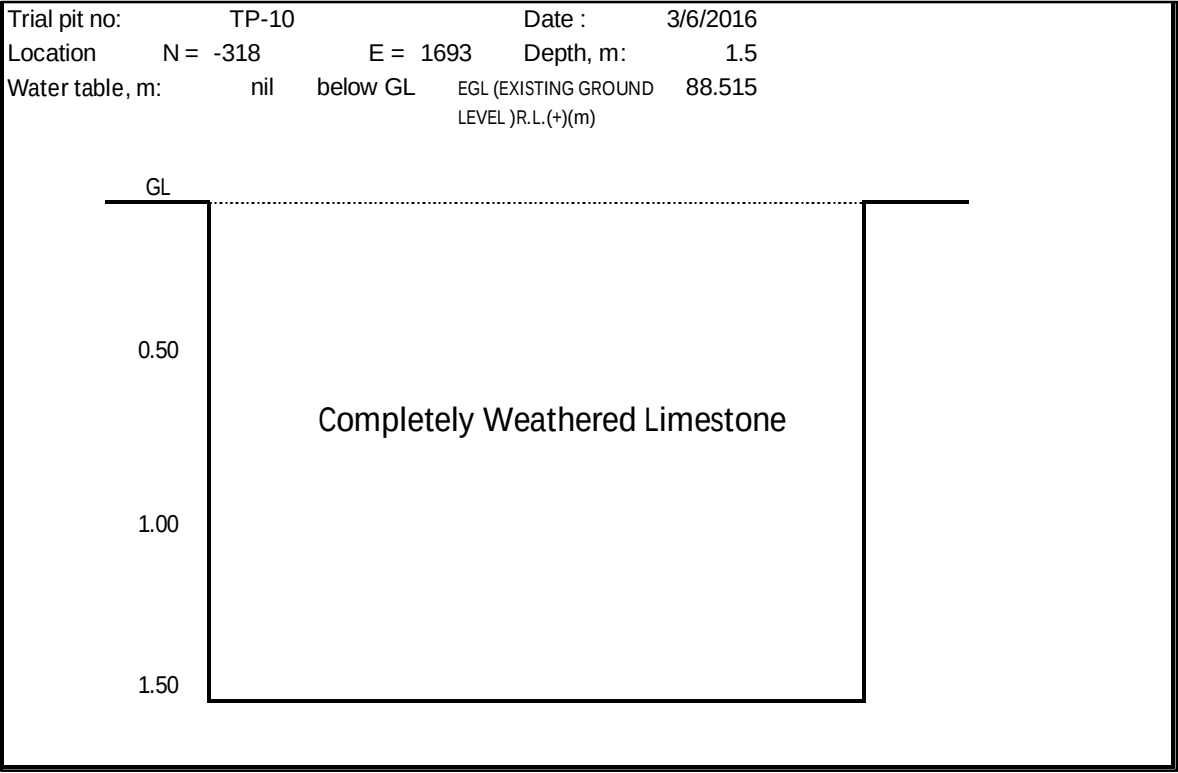
TRIAL PIT LOG NO --8



TRIAL PIT LOG NO ---9



TRIAL PIT LOG NO ---10





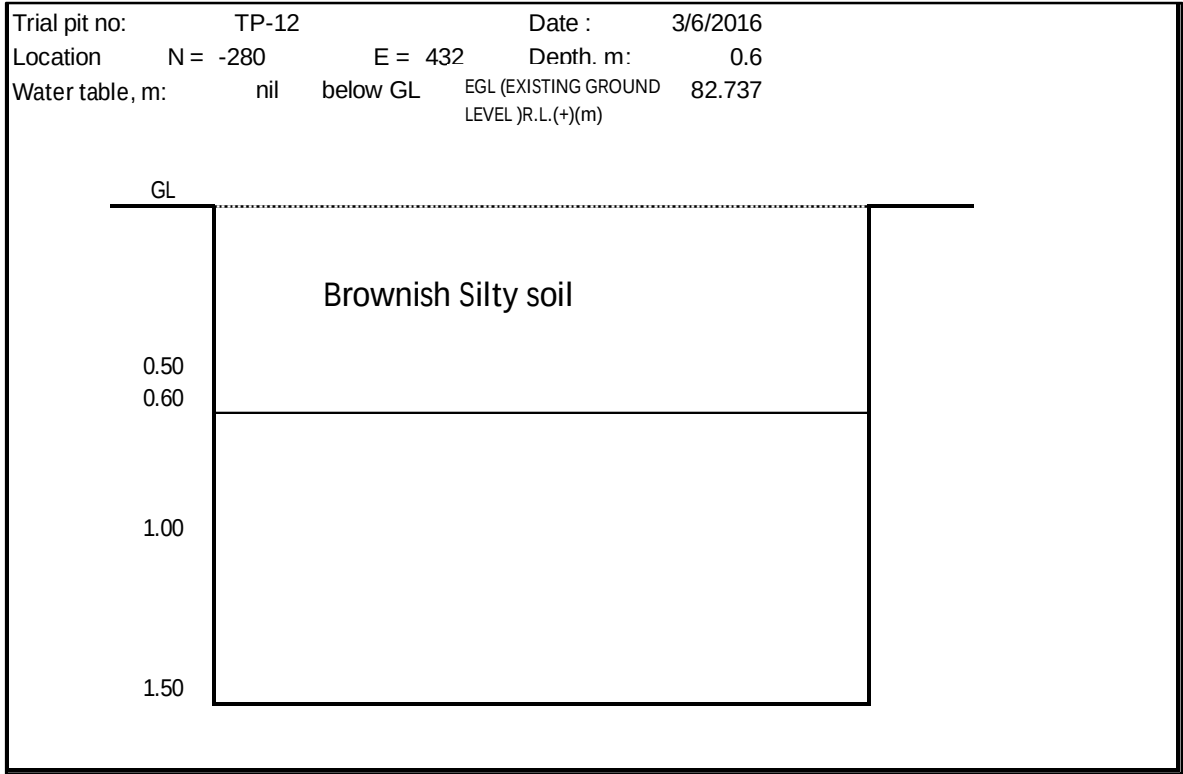
TRIAL PIT LOG NO --11

Trial pit no:	TP-11	Date :	27/01/2016
Location	N = 280	E = 1	Depth. m: 0.35
Water table, m:	nil	below GL	EGL (EXISTING GROUND LEVEL)R.L.(+)(m) 78.505

Depth (m)	Soil Description
GL	
0.35	Greyish brown, medium to coarse grained silty sand with gravels
0.50	Quartzite (not excavated) (level not achieved)
1.00	
1.50	

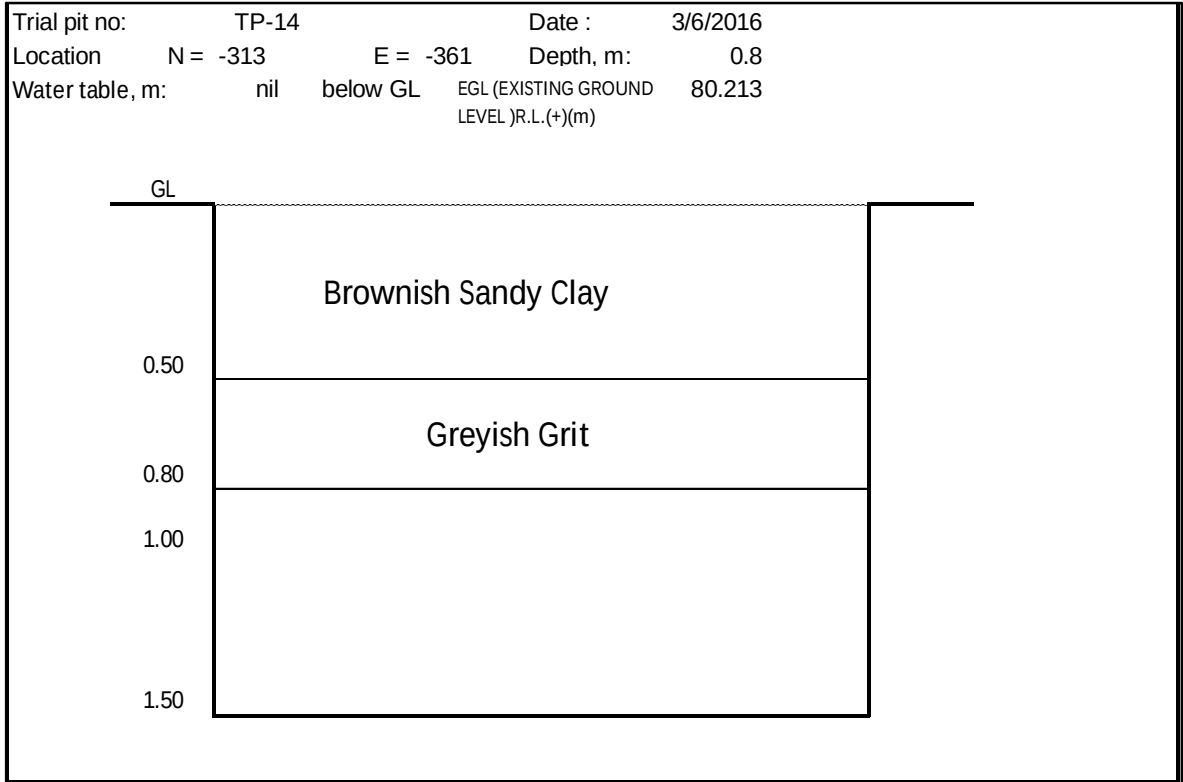


TRIAL PIT LOG NO --12

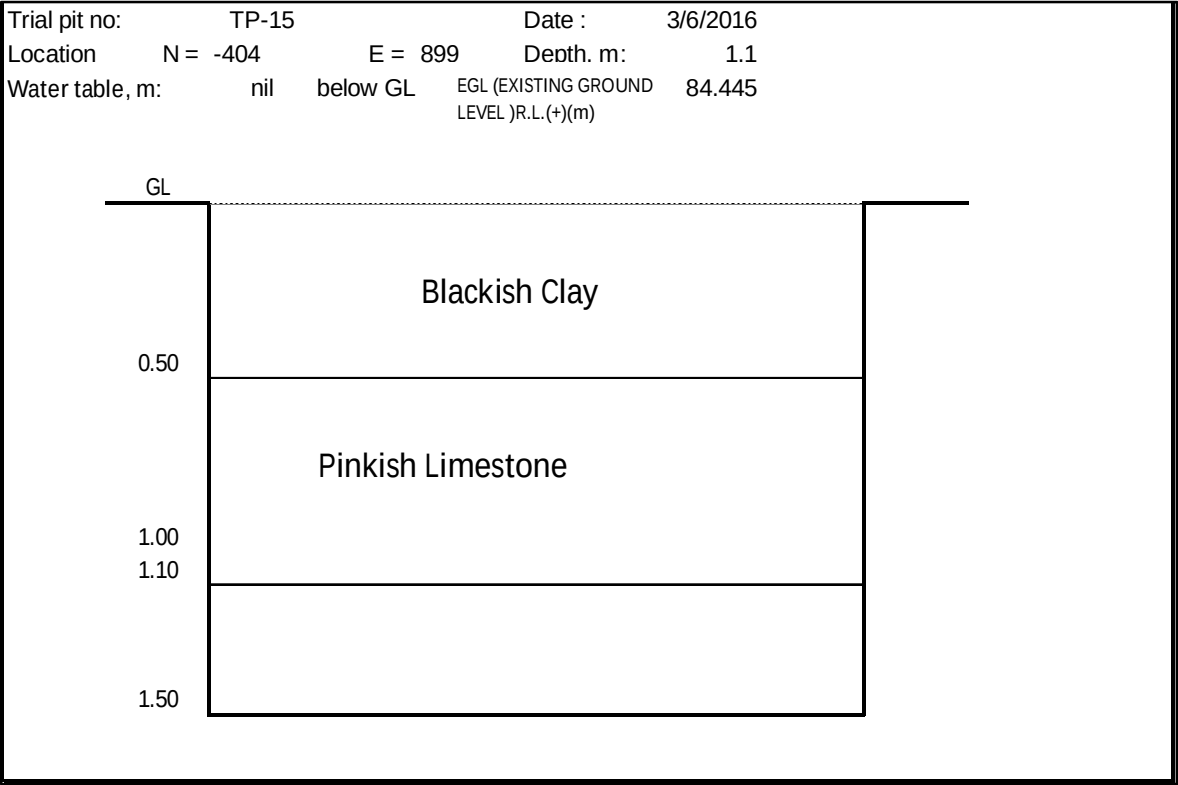




TRIAL PIT LOG NO --14



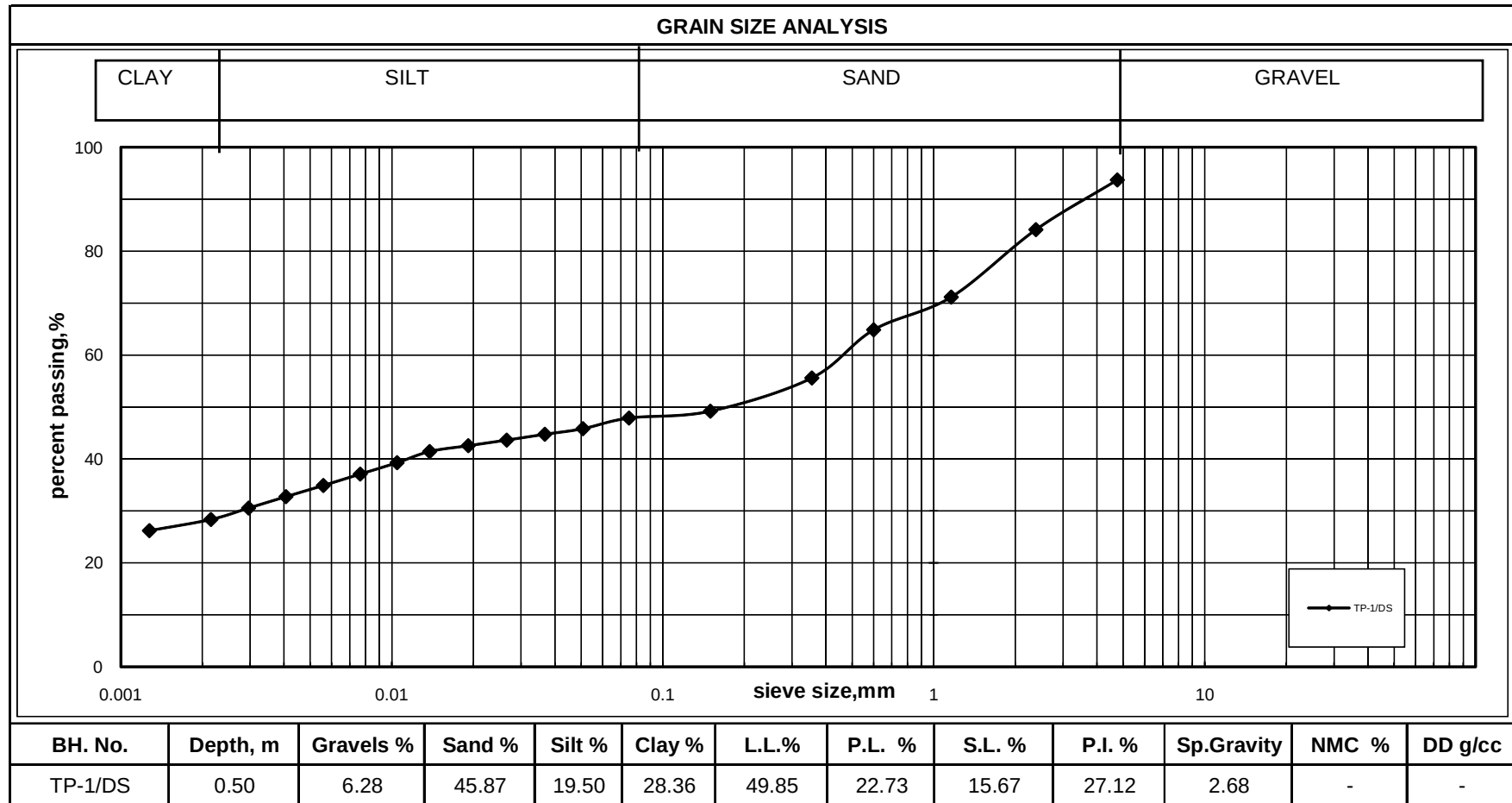
TRIAL PIT LOG NO ---15

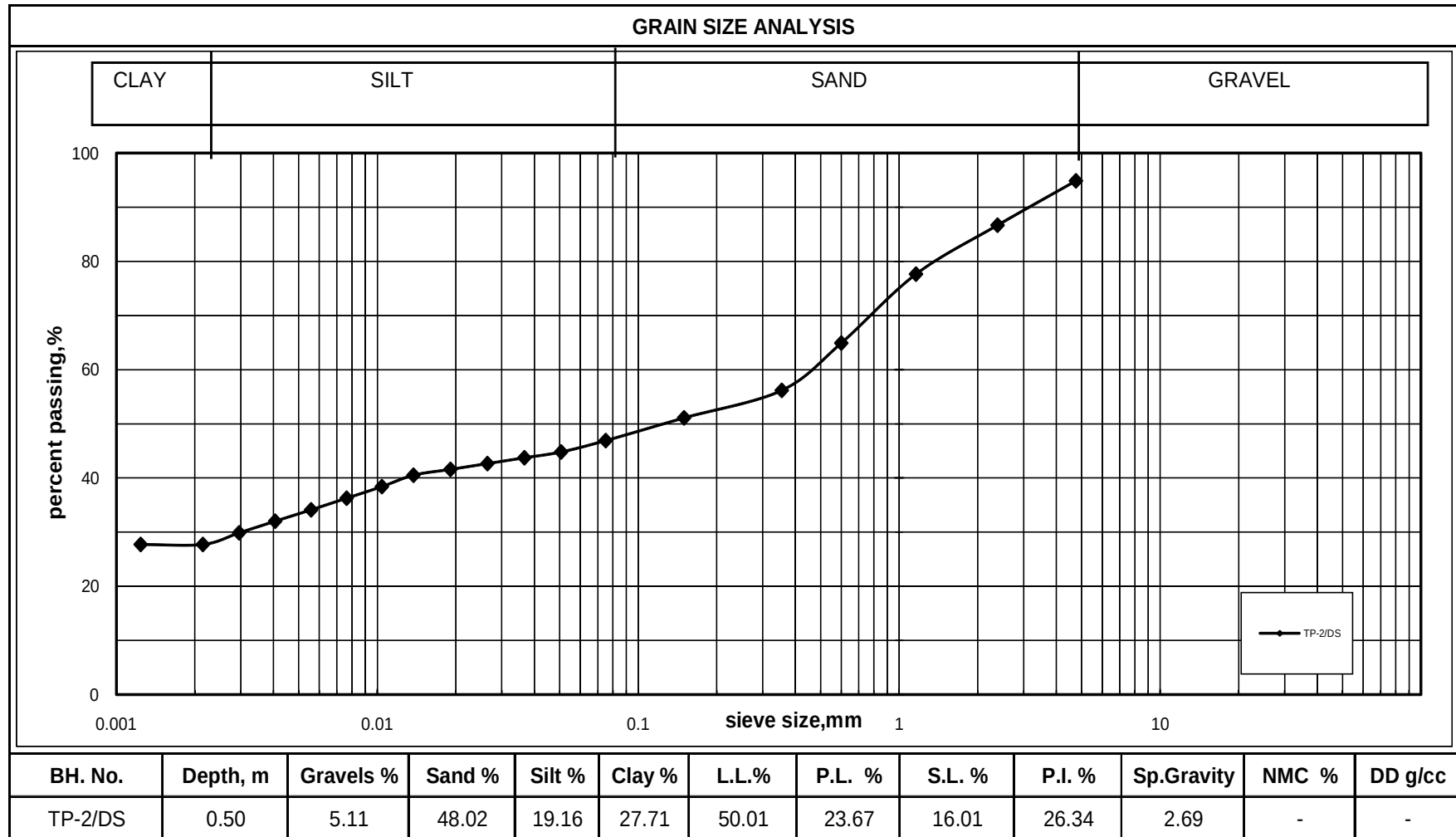


Trial pit no:	TP-16	Date :	3/6/2016
Location	N = 926	E = 194	Depth, m: 0.6
Water table, m:	nil	below GL	EGL (EXISTING GROUND LEVEL)R.L.(+)(m) 84.402

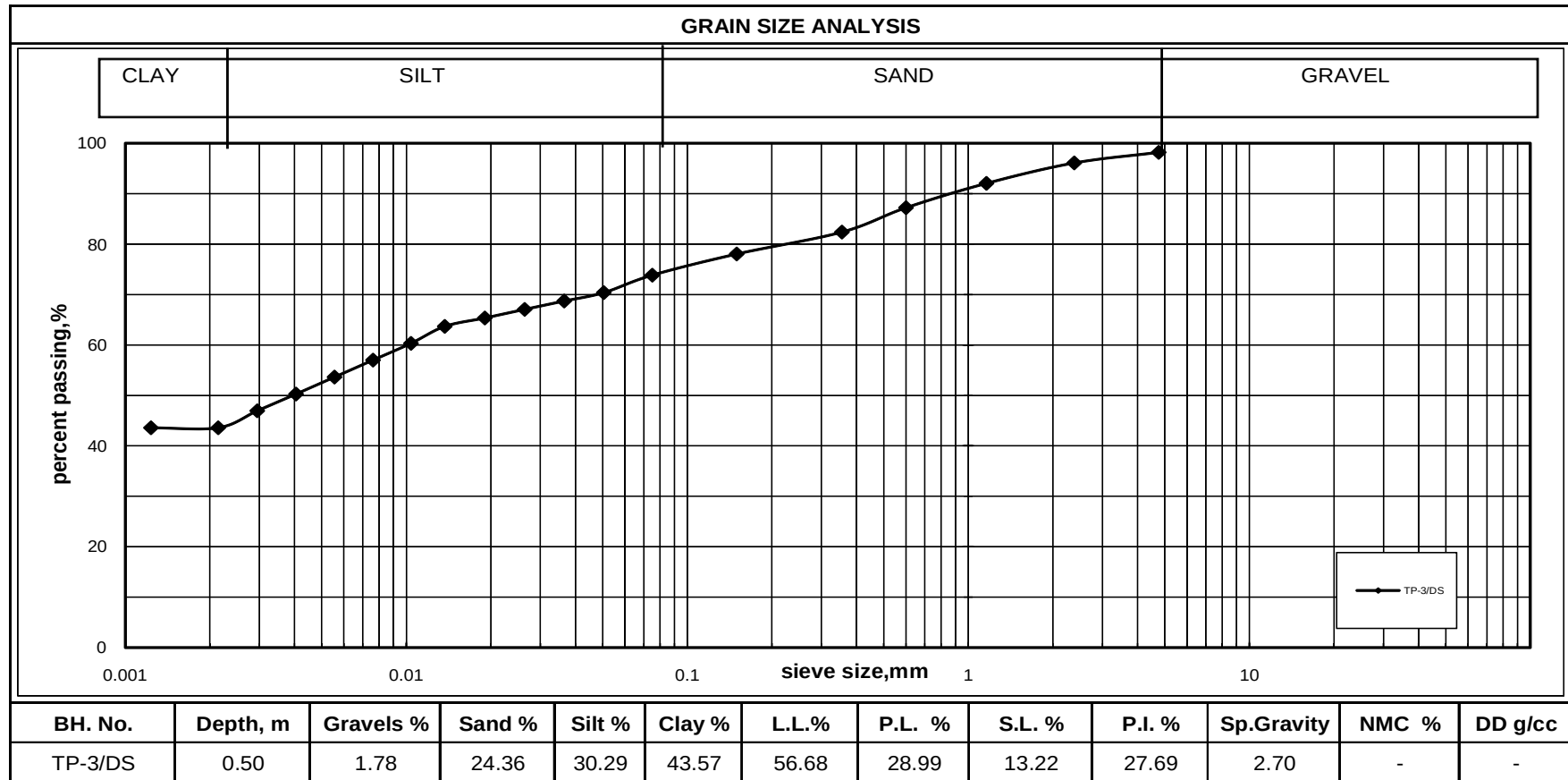
The diagram illustrates a cross-section of a trial pit. The pit is rectangular, with a depth of 0.60 m. The soil is labeled 'Brownish Sandy Clay'. The ground level (GL) is indicated at the top. The water table is 'nil' (below GL). The pit is located at N = 926 and E = 194. The depth is 0.6 m. The existing ground level (EGL) is 84.402 m R.L. (+)(m).

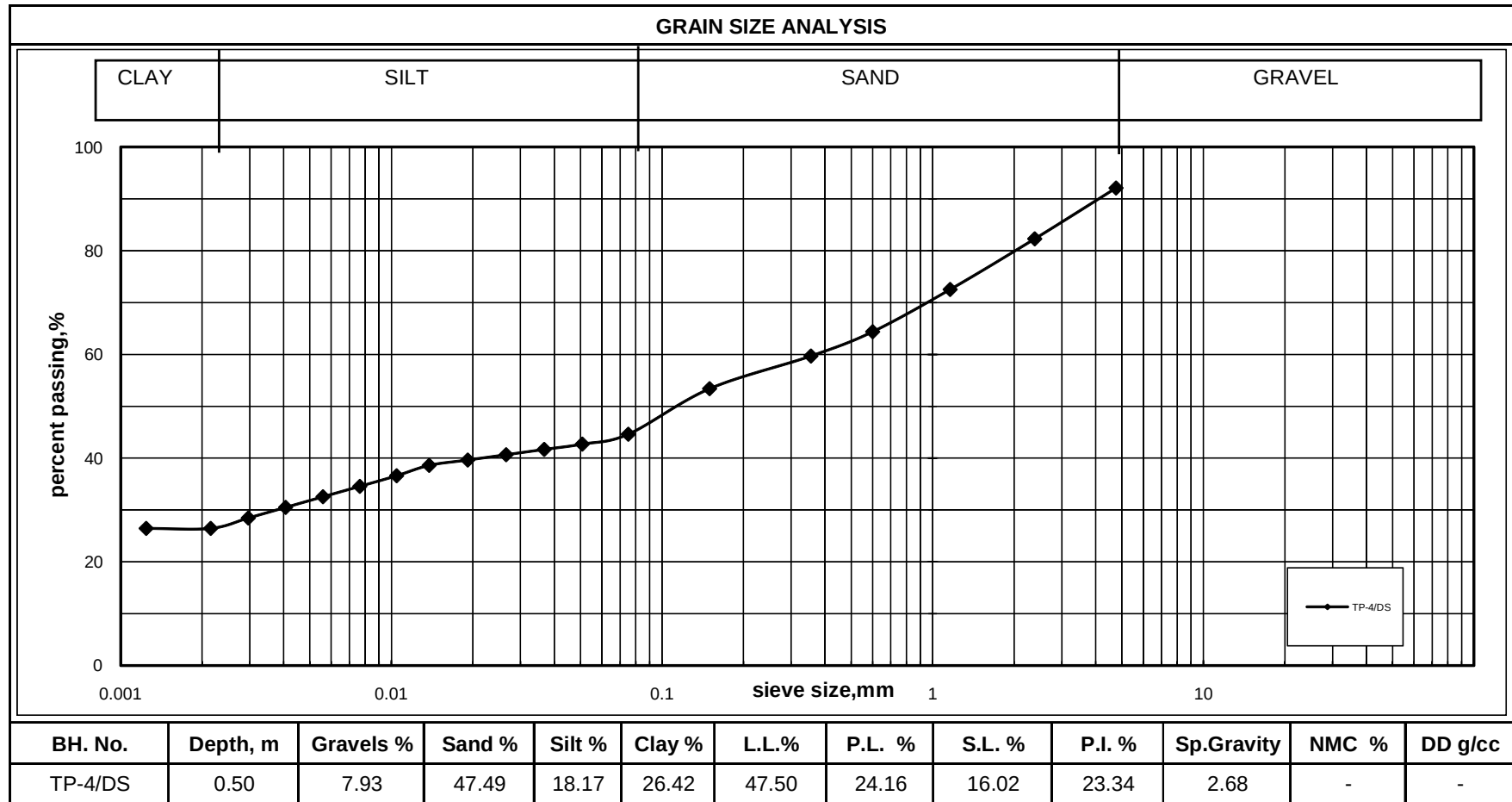
Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
 Noble Geo-Structs Project No. S 16022
 June 7, 2016

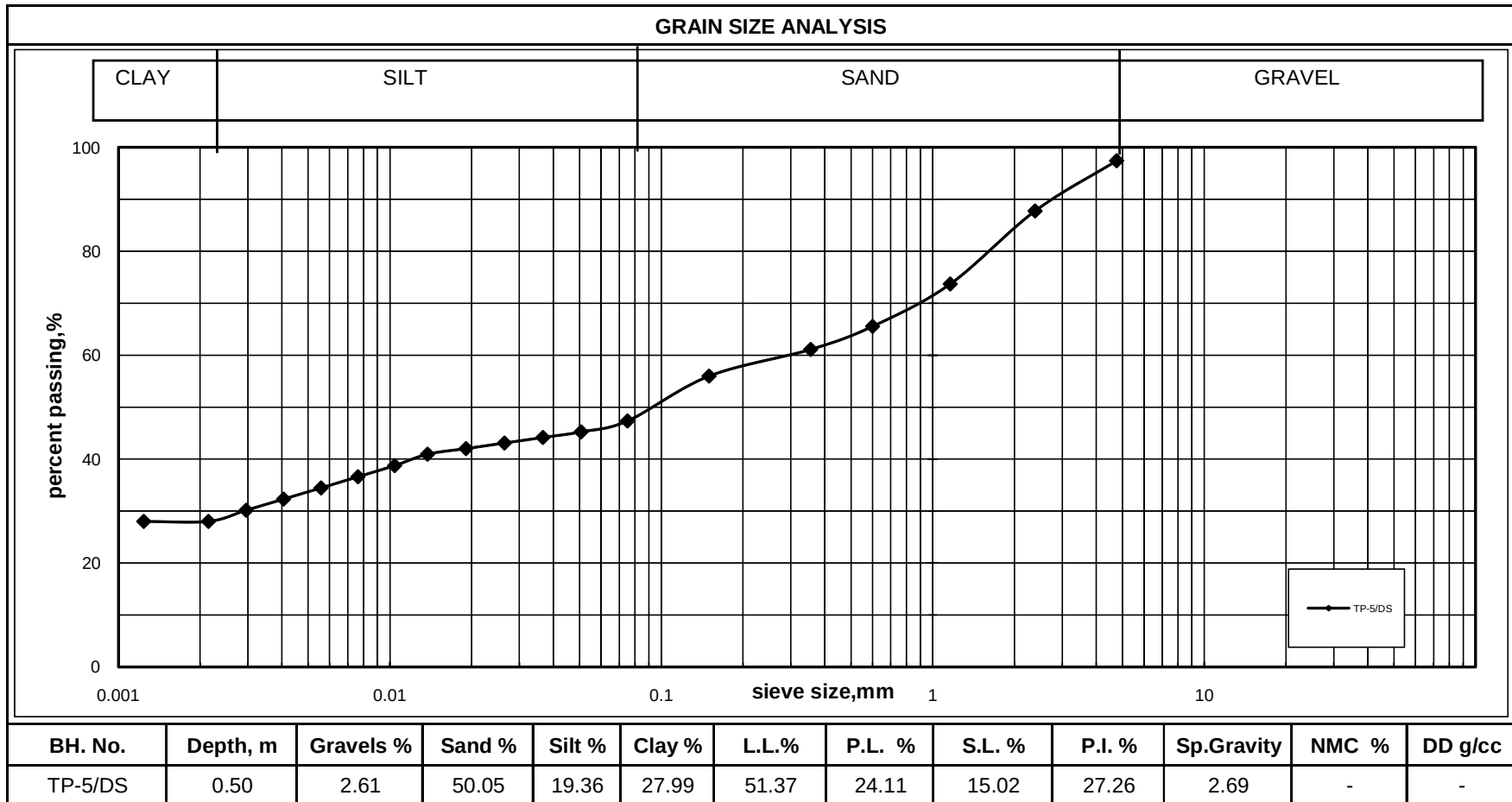


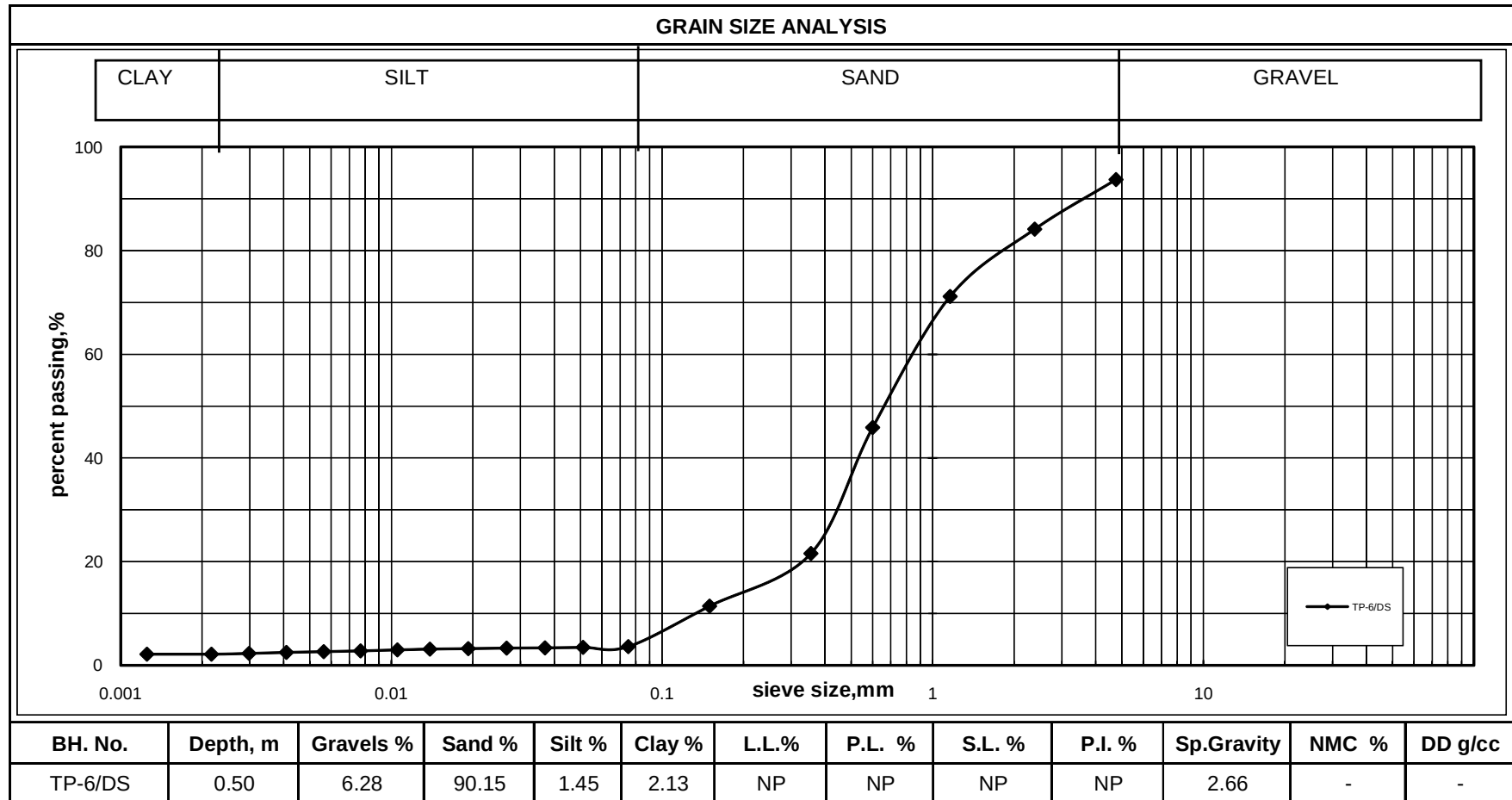


Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
 Noble Geo-Structs Project No. S 16022
 June 7, 2016

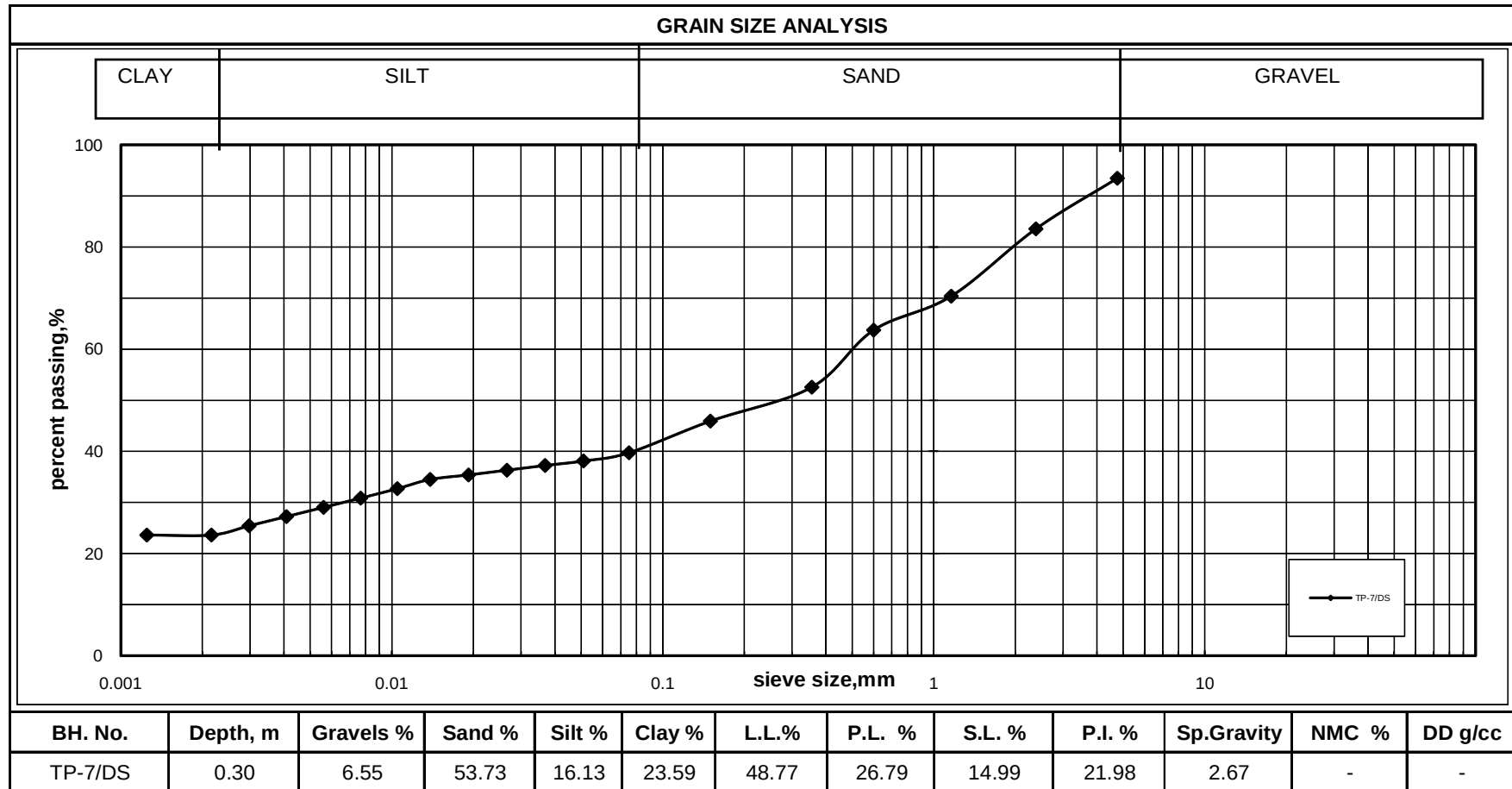




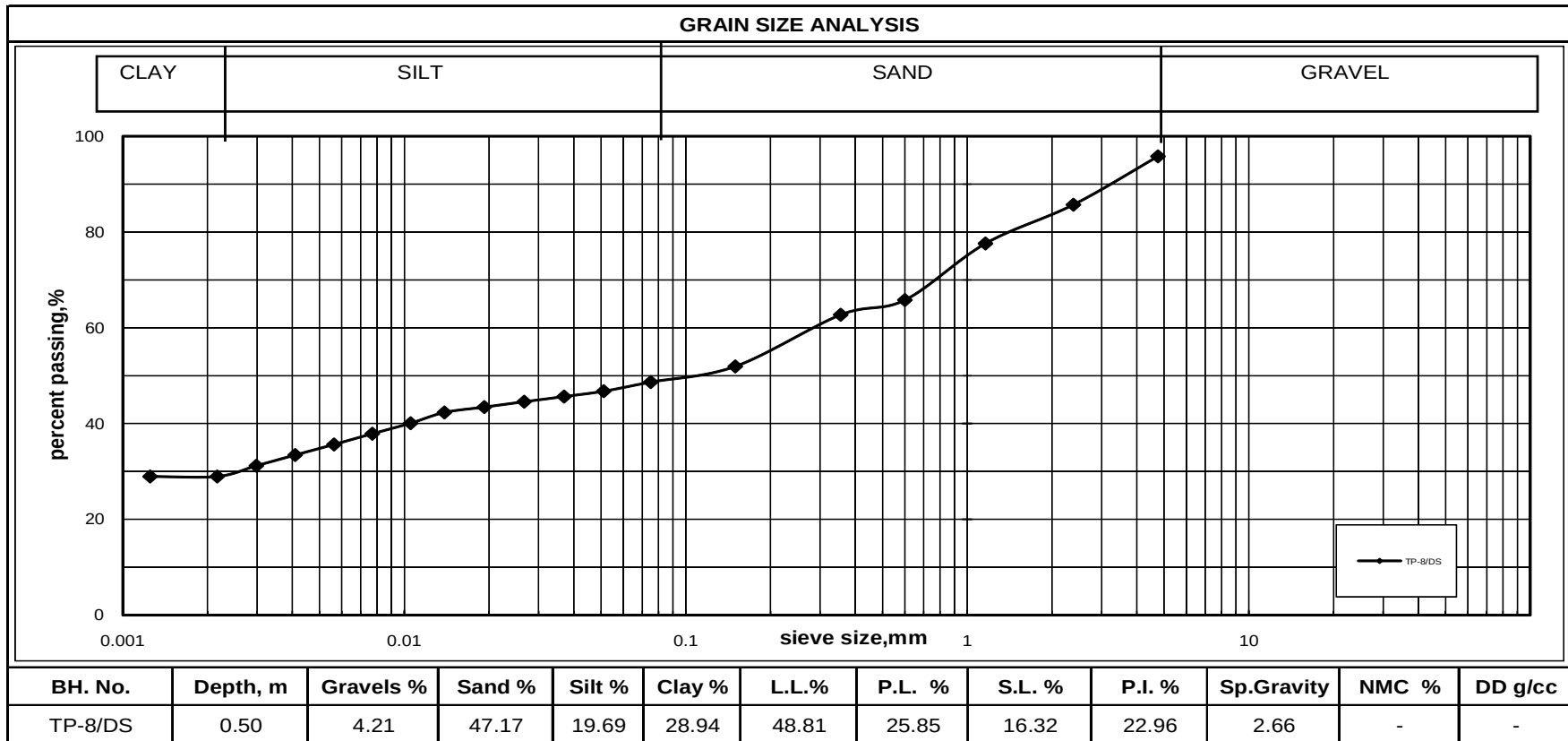




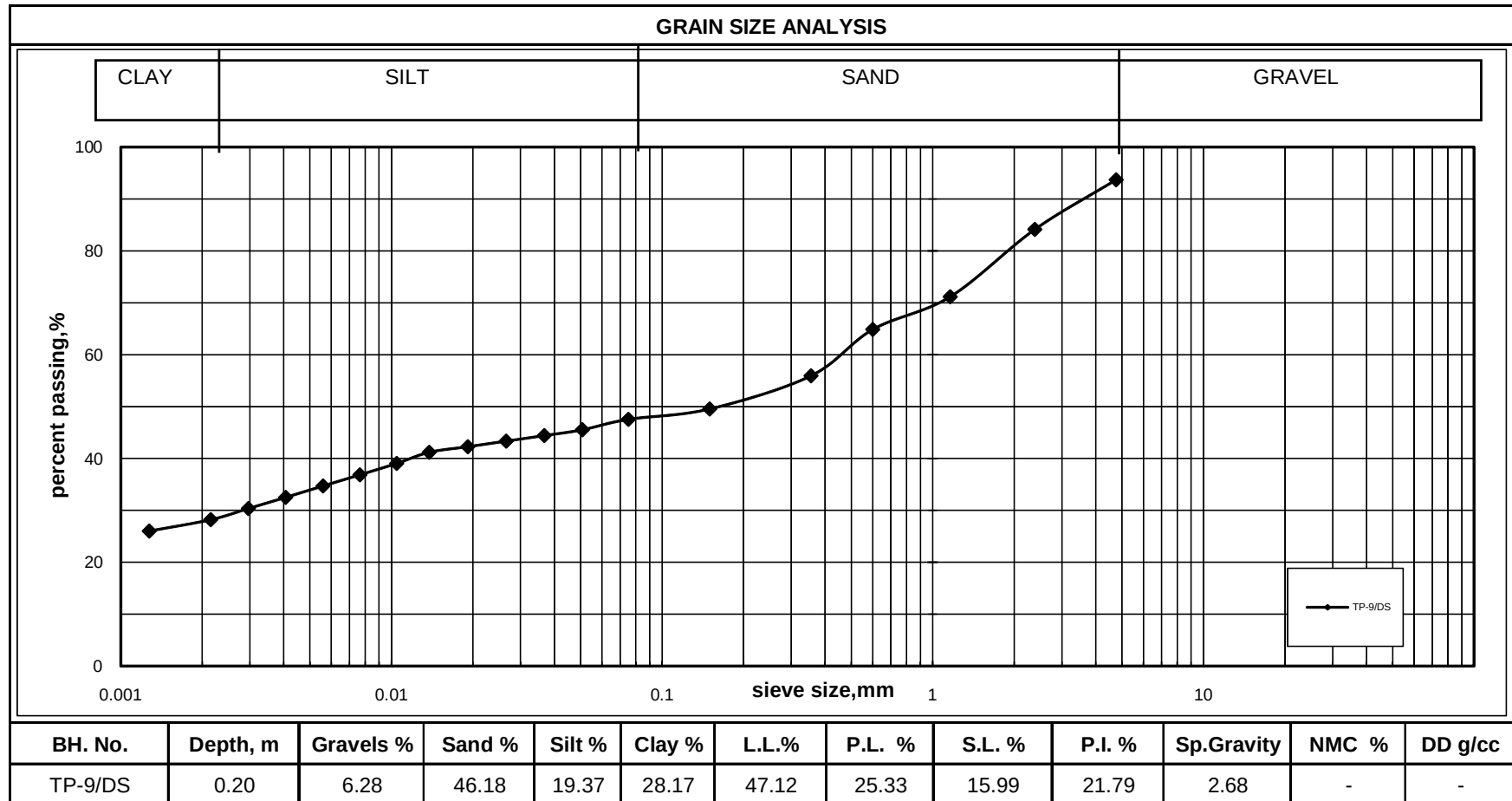
Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
 Noble Geo-Structs Project No. S 16022
 June 7, 2016

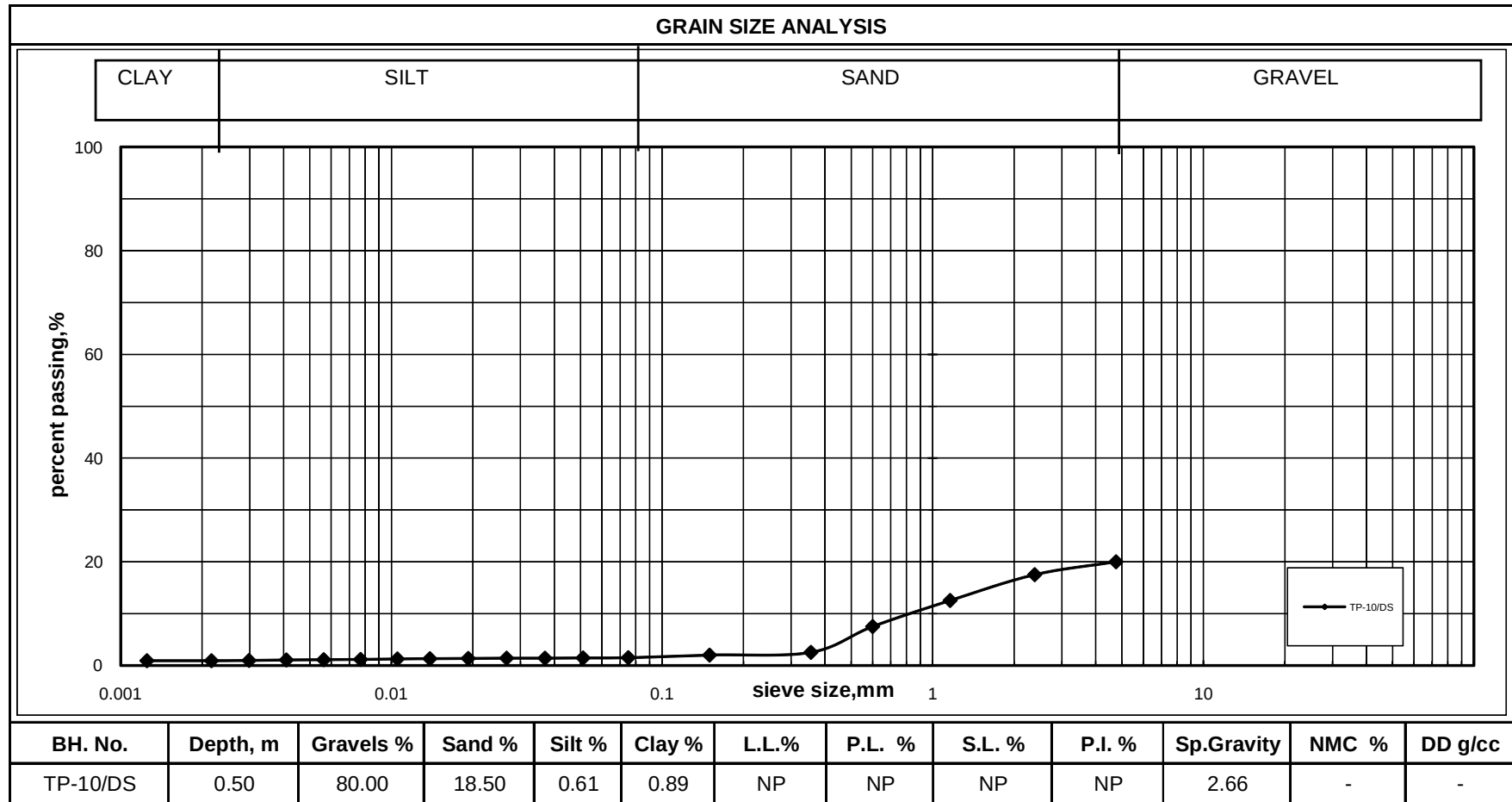


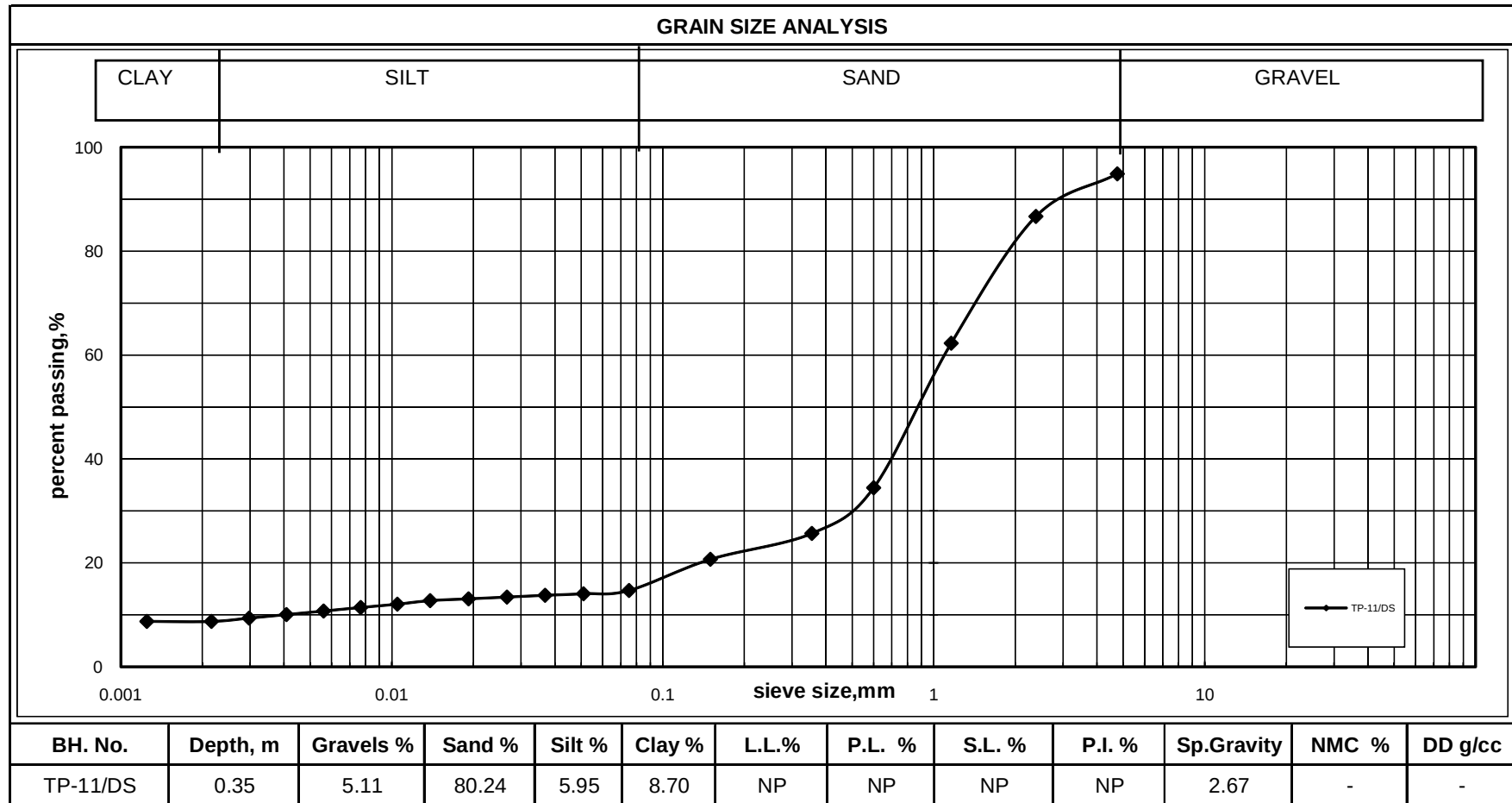
Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
 Noble Geo-Structs Project No. S 16022
 June 7, 2016



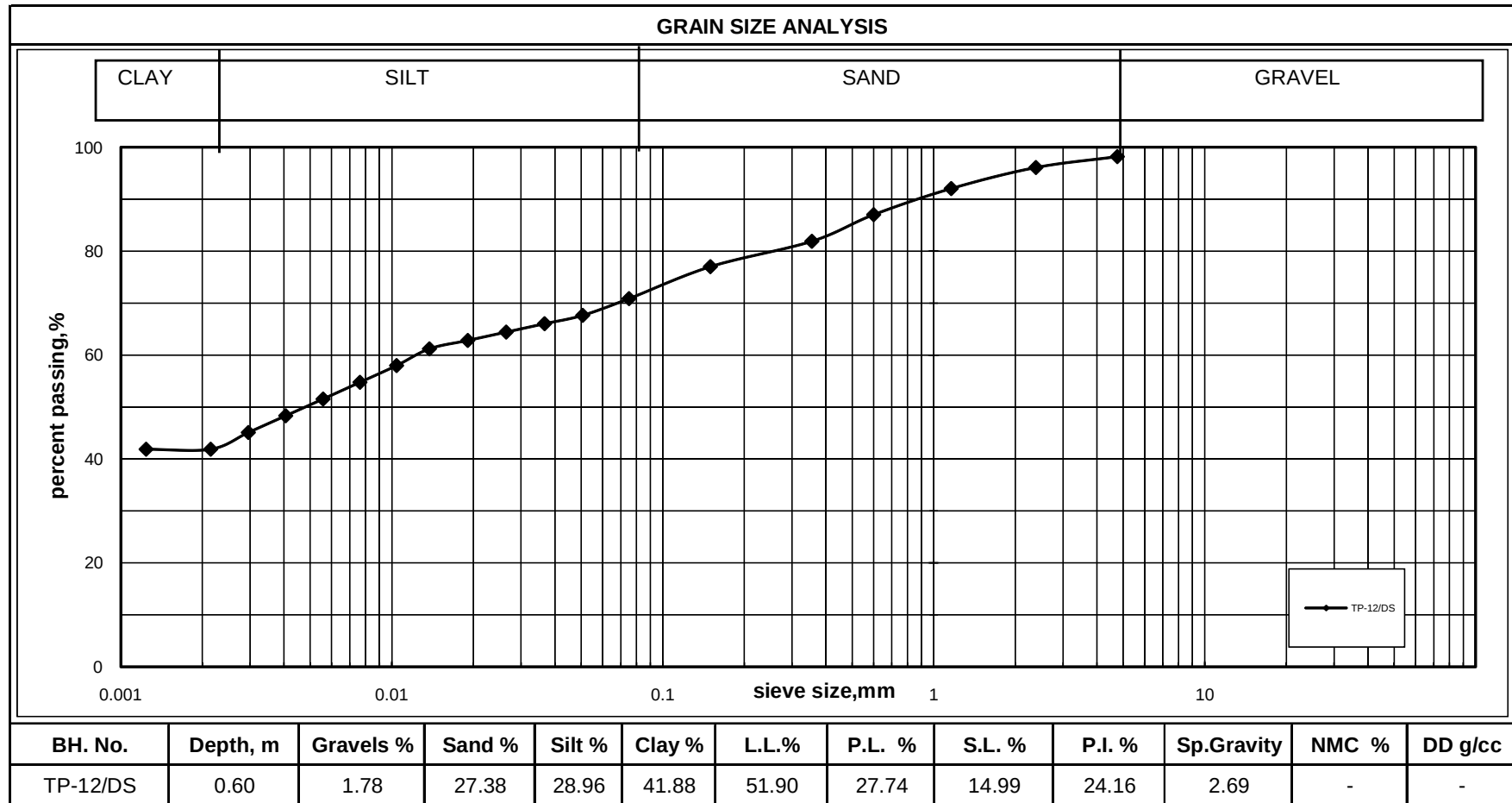
Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
 Noble Geo-Structs Project No. S 16022
 June 7, 2016



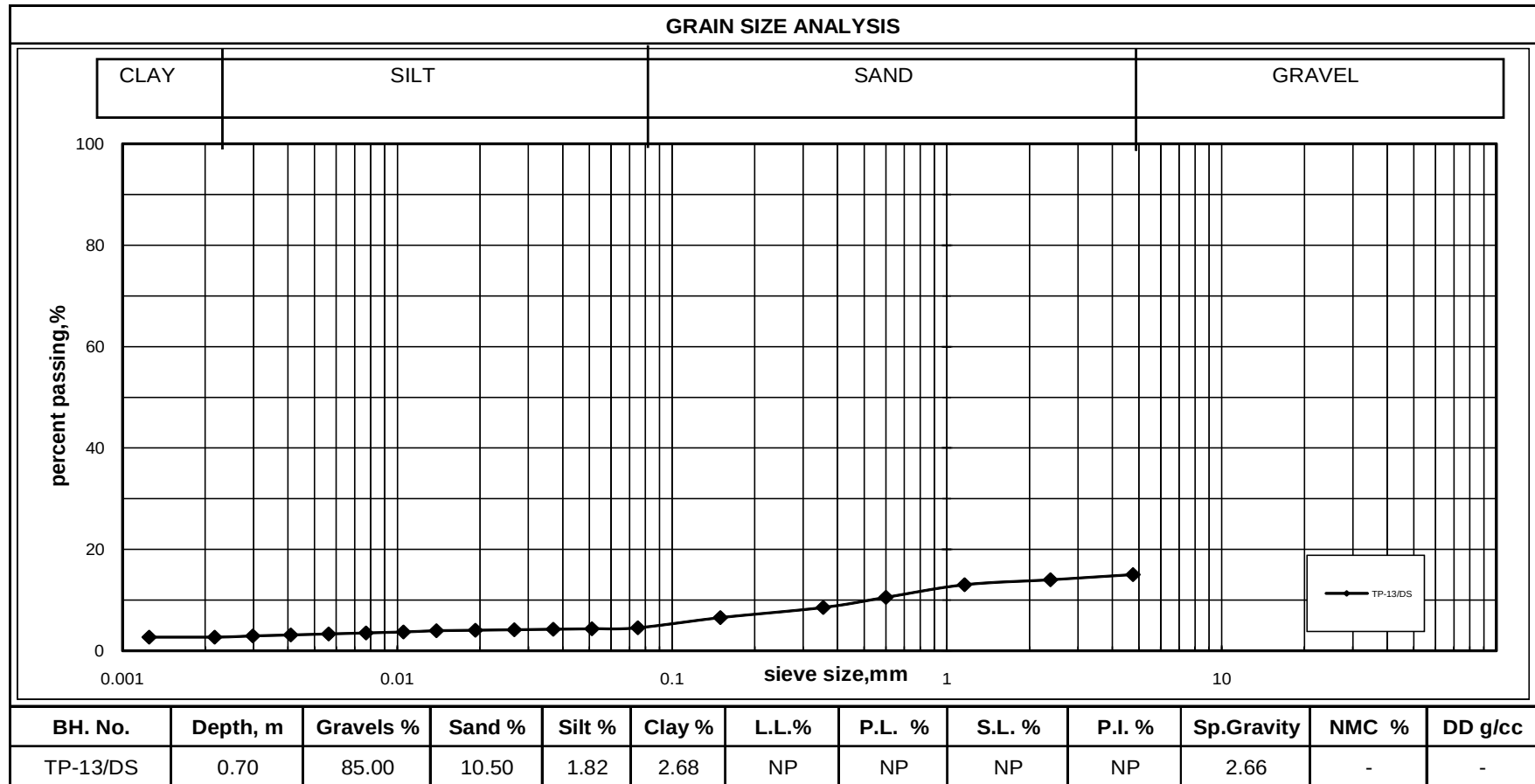




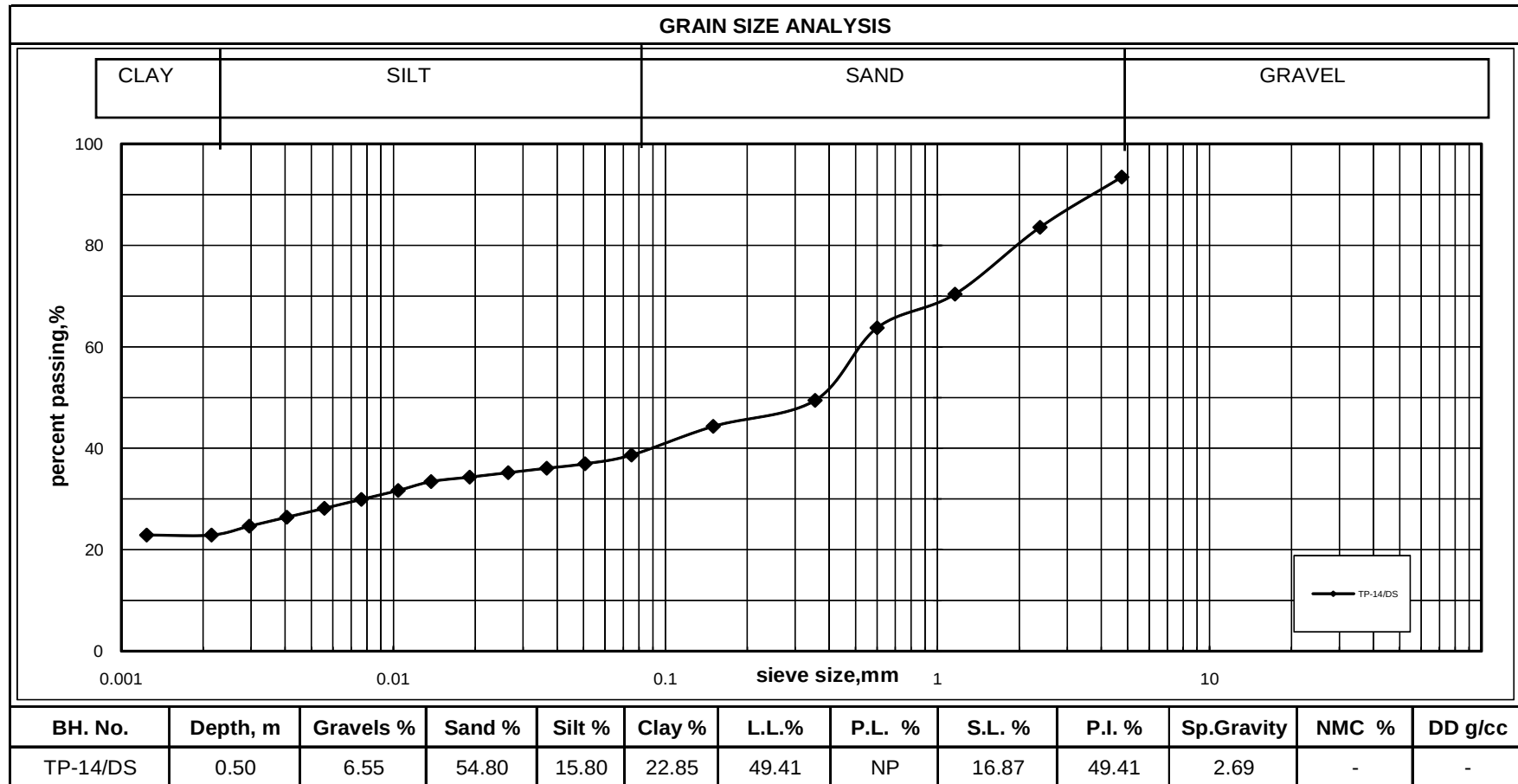
Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
 Noble Geo-Structs Project No. S 16022
 June 7, 2016



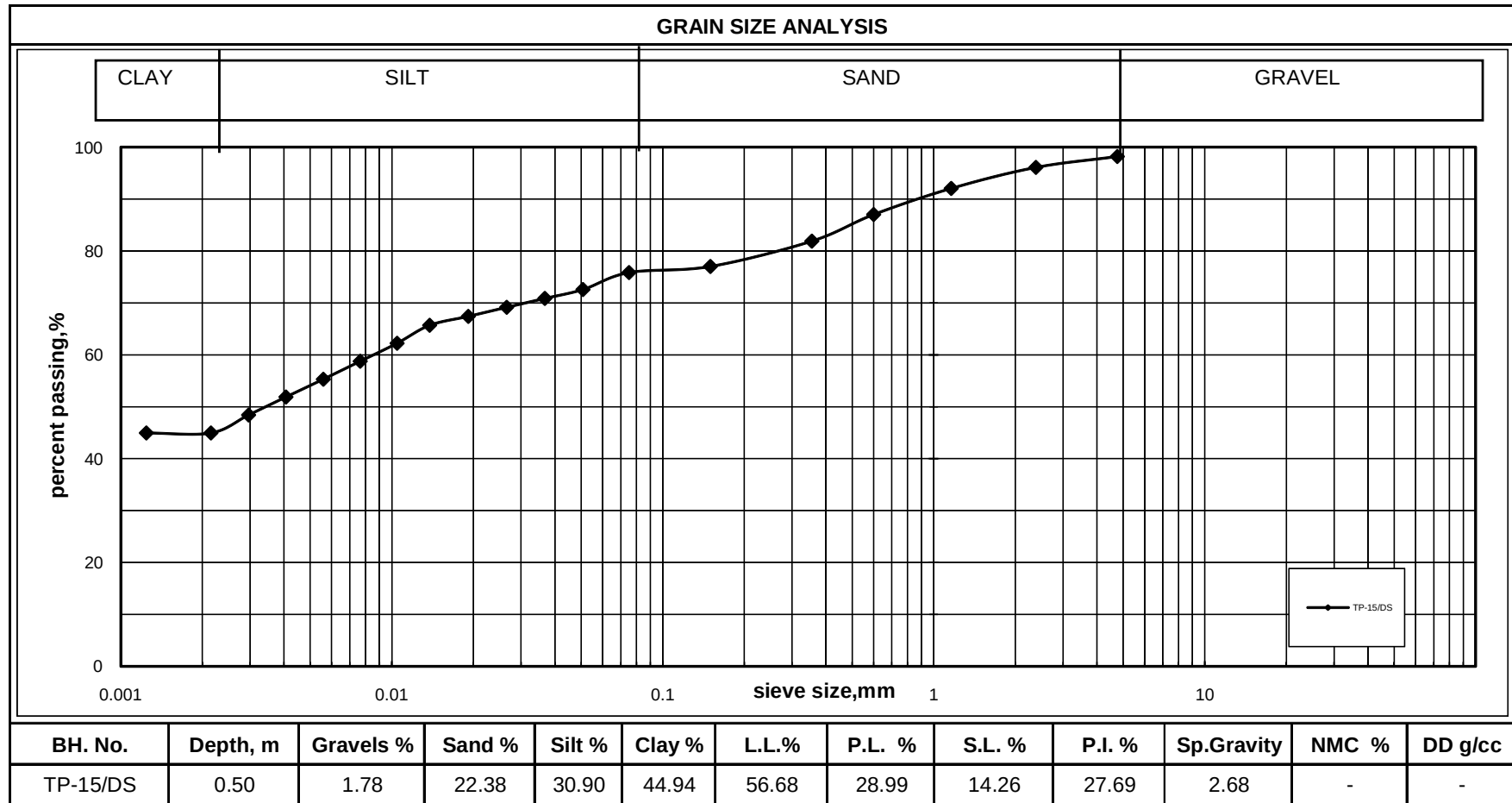
Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
 Noble Geo-Structs Project No. S 16022
 June 7, 2016



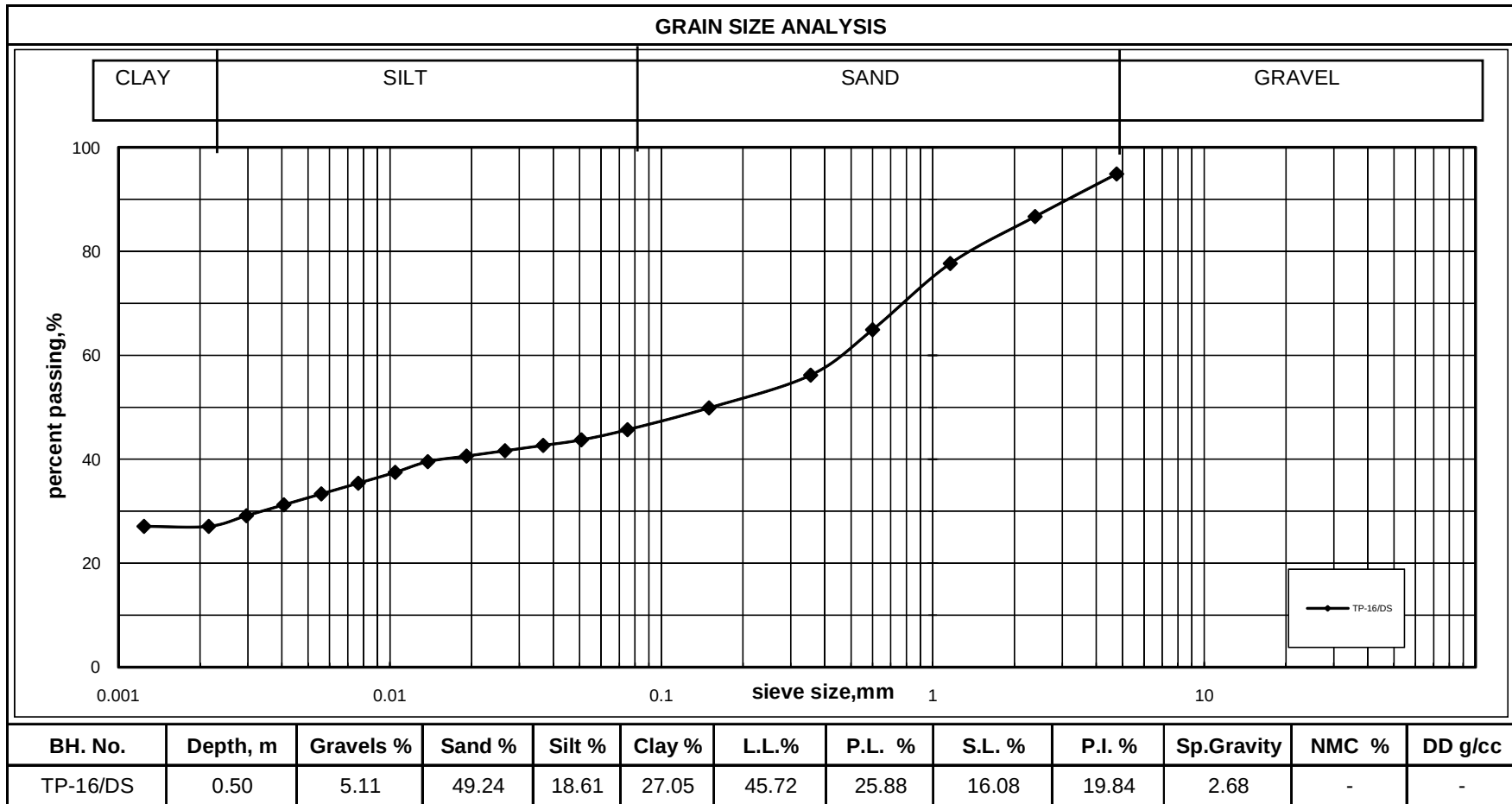
Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
 Noble Geo-Structs Project No. S 16022
 June 7, 2016



Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
 Noble Geo-Structs Project No. S 16022
 June 7, 2016



Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
 Noble Geo-Structs Project No. S 16022
 June 7, 2016





Summary results

SR. No.	Trial Pit No	Depth (m)	Specific Gravity	Field			Swelling	free swell Index(%)	Relative Density (%)
				Moisture Content(%)	Bulk Density(g/cc)	Dry Density(g/cc)	kg/cm ²		
1	TP-1	0.50	2.68	7.36	1.85	1.72	Nil	25	-
2	TP-2	0.50	2.69	7.52	1.88	1.75	Nil	25	-
3	TP-3	0.50	2.70	7.87	1.79	1.66	Nil	30	-
4	TP-4	0.50	2.68	8.74	1.85	1.70	Nil	20	-
5	TP-5	0.50	2.69	9.74	1.82	1.66	Nil	25	-
6	TP-6	0.50	2.66	8.33	1.95	1.80	Nil	10	0.76
7	TP-7	0.30	2.67	9.19	1.83	1.68	Nil	25	-
8	TP-8	0.50	2.66	7.75	1.86	1.73	Nil	20	-
9	TP-9	0.20	2.68	8.07	1.83	1.69	Nil	20	-
10	TP-10	0.50	2.66	4.84	1.95	1.86	Nil	10	0.60
11	TP-11	0.35	2.67	5.72	1.93	1.83	Nil	10	0.76
12	TP-12	0.60	2.69	10.68	1.8	1.63	Nil	35	-
13	TP-13	0.70	2.66	7.55	1.97	1.83	Nil	10	0.60
14	TP-14	0.50	2.69	8.37	1.84	1.70	Nil	15	-
15	TP-15	0.50	2.68	6.53	1.78	1.67	Nil	30	-
16	TP-16	0.50	2.68	7.58	1.84	1.71	Nil	15	-



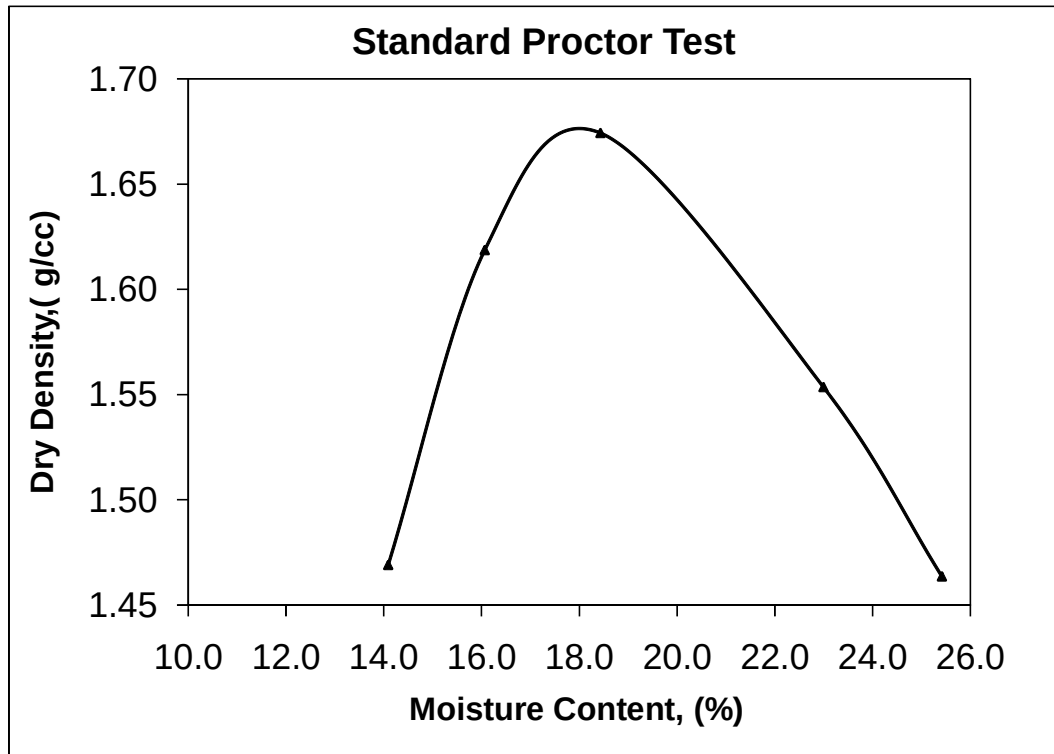
STANDARD PROCTOR TEST

Pit No. : TP-1

Co-Ordinates : N = 851 E = 194

Sample ID. DS

DEPTH = 0.5 m

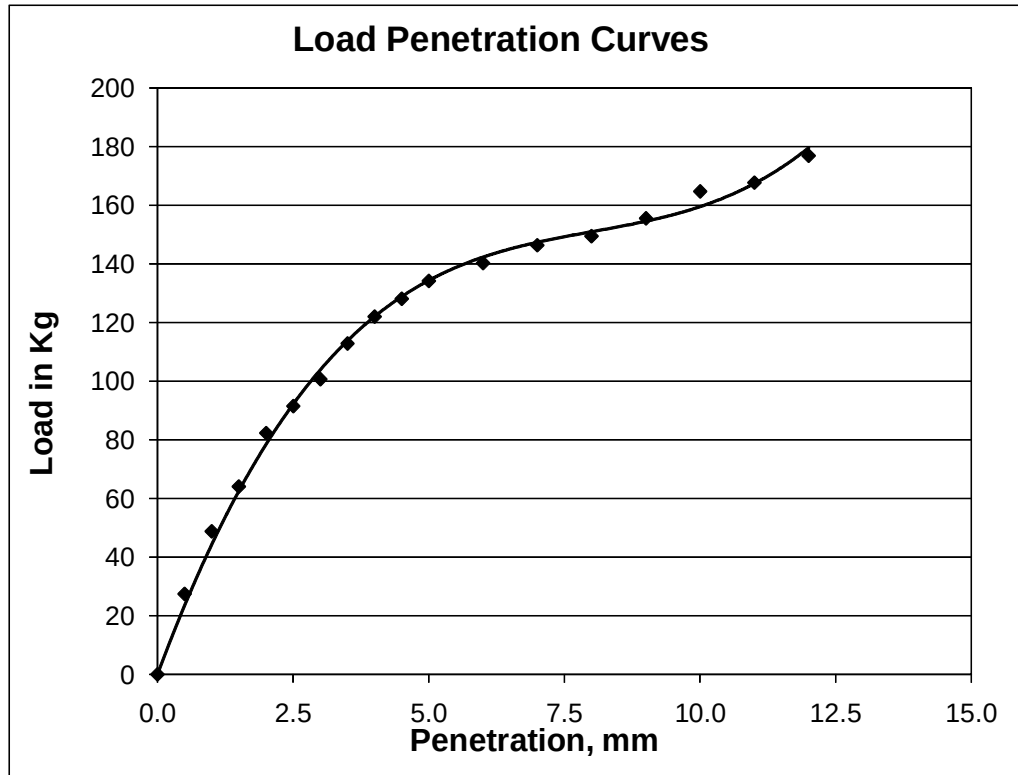


Optimum Moisture Content, %	18.43
Maximum Dry Density, g/cc	1.67



LABORATORY CALIFORNIA BEARING RATIO TEST (SOAKED)

Pit No. : TP-1 **Co-Ordinates : N = 851 E = 194**
Sample ID. DS DEPTH = 0.5 m
OMC : % 18.43 **MDD , g/cc :** 1.67
 Proving Ring constant: 3.05



Test Results :

LOAD AT 2.5MM PENETRATION	91.5
LOAD AT 5 MM PENETRATION	134.2
C.B.R AT 2.5MM PENETRATION	6.68
C.B.R. AT 5 MM PENETRATION	6.53



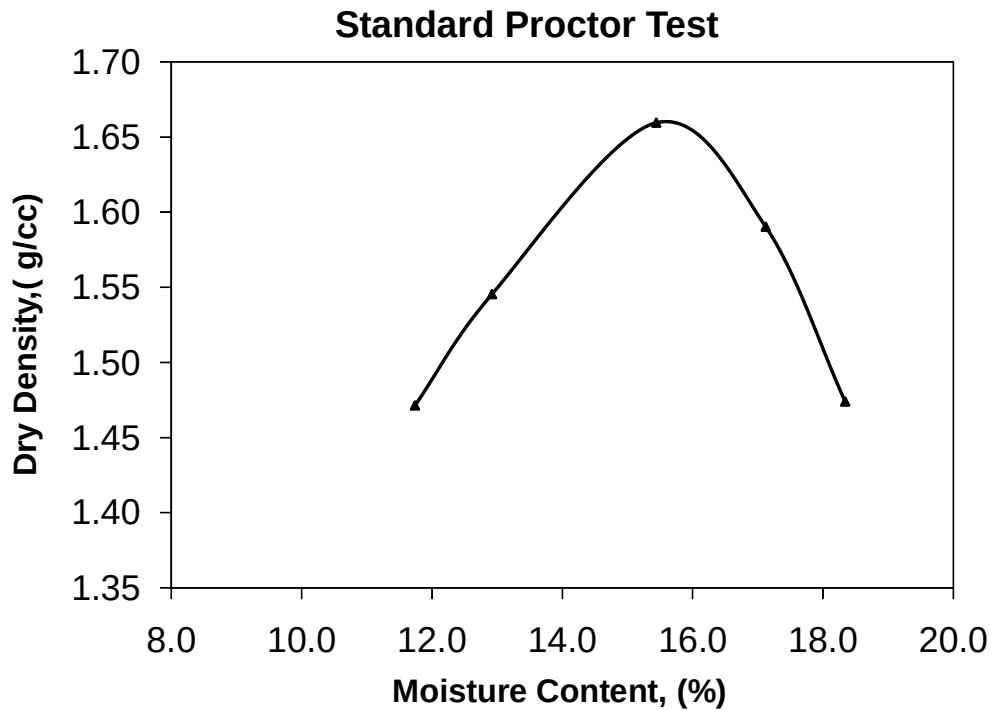
STANDARD PROCTOR TEST

Pit No. : TP-2

Co - Ordinates : N = 357 E = 445

Sample ID. DS

DEPTH = 0.5 m

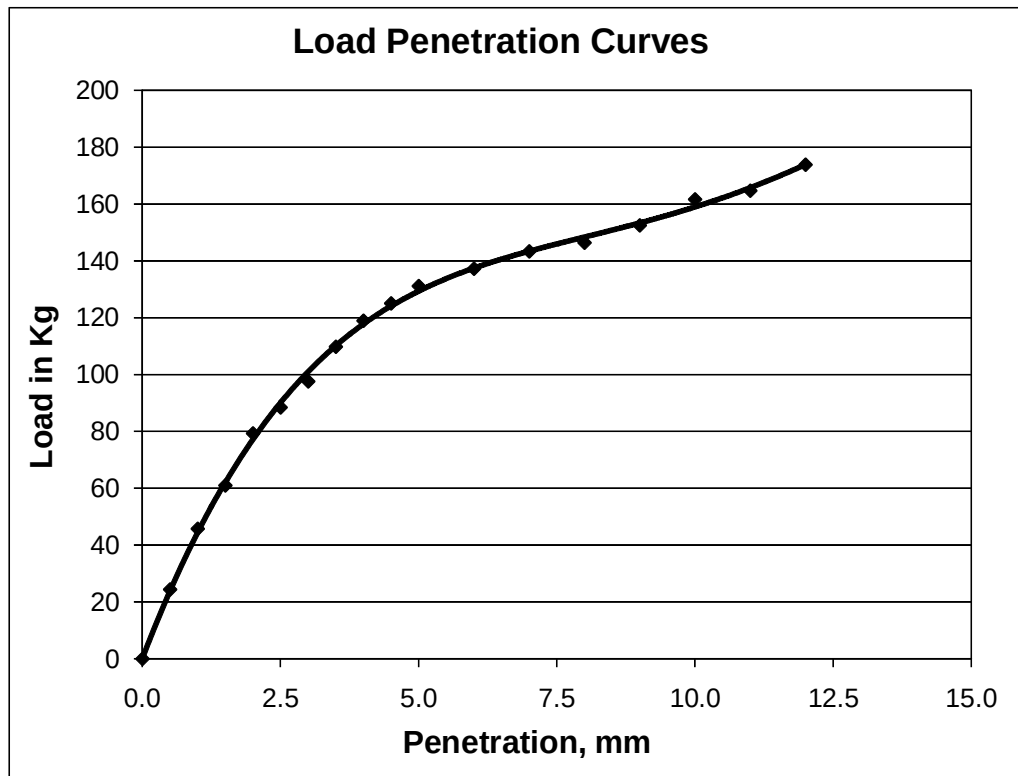


Optimum Moisture Content, %	15.44
Maximum Dry Density, g/cc	1.66

LABORATORY CALIFORNIA BEARING RATIO TEST (SOAKED)



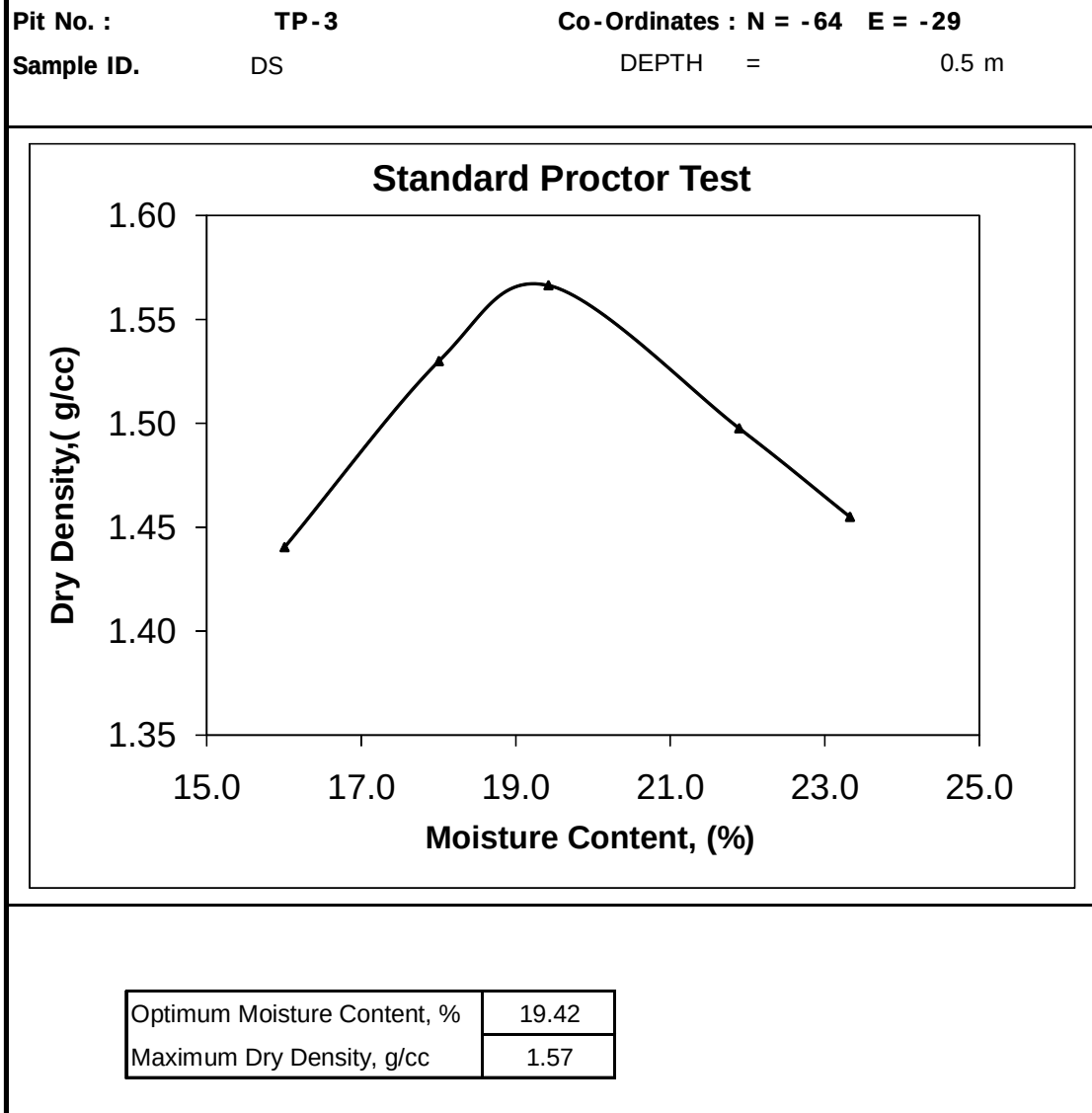
Pit No. : **Tp-2** Co-Ordinates : **N = 357 E = 445**
Sample ID. **DS** DEPTH = **0.5 m**
OMC : % **15.44** MDD , g/cc : **1.66**
Proving Ring constant: **3.05**



Test Results :

LOAD AT 2.5MM PENETRATION	88.5
LOAD AT 5 MM PENETRATION	131.2
C.B.R AT 2.5MM PENETRATION	6.46
C.B.R. AT 5 MM PENETRATION	6.38

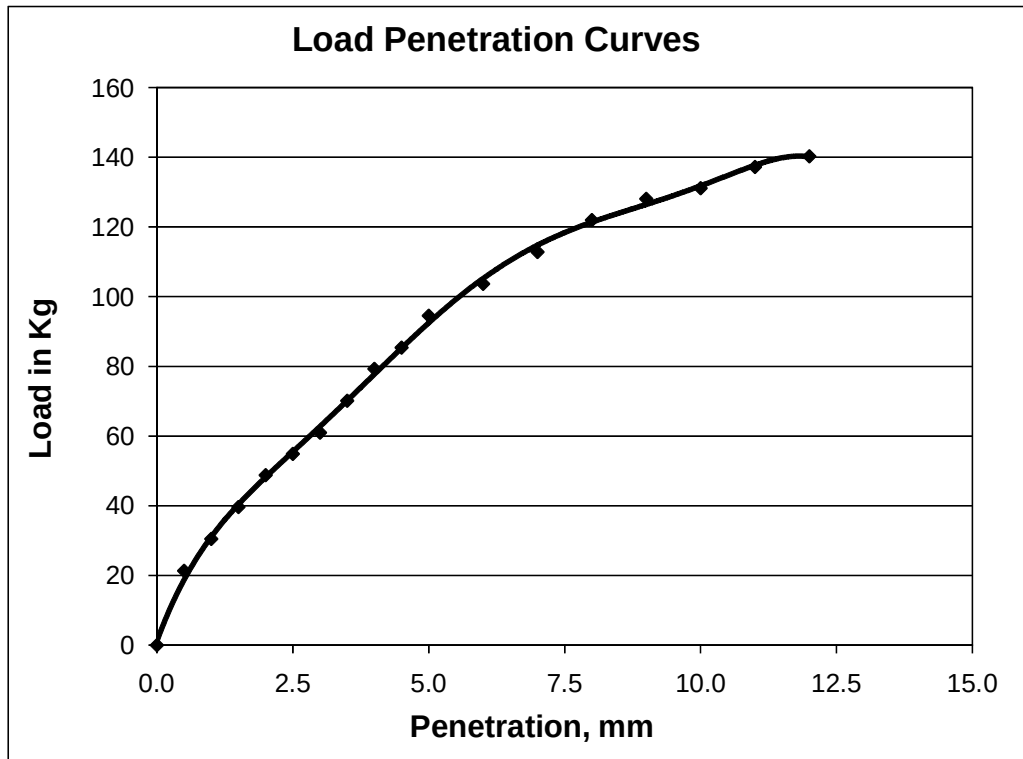
STANDARD PROCTOR TEST





LABORATORY CALIFORNIA BEARING RATIO TEST (SOAKED)

Pit No. : TP - 3 Co-Ordinates : N = - 64 E = - 29
Sample ID. DS DEPTH = 0.5 m
OMC : % 19.42 MDD , g/cc : 1.57
Proving Ring constant: 3.05



Test Results :

LOAD AT 2.5MM PENETRATION	54.9
LOAD AT 5 MM PENETRATION	94.6
C.B.R AT 2.5MM PENETRATION	4.01
C.B.R. AT 5 MM PENETRATION	4.60



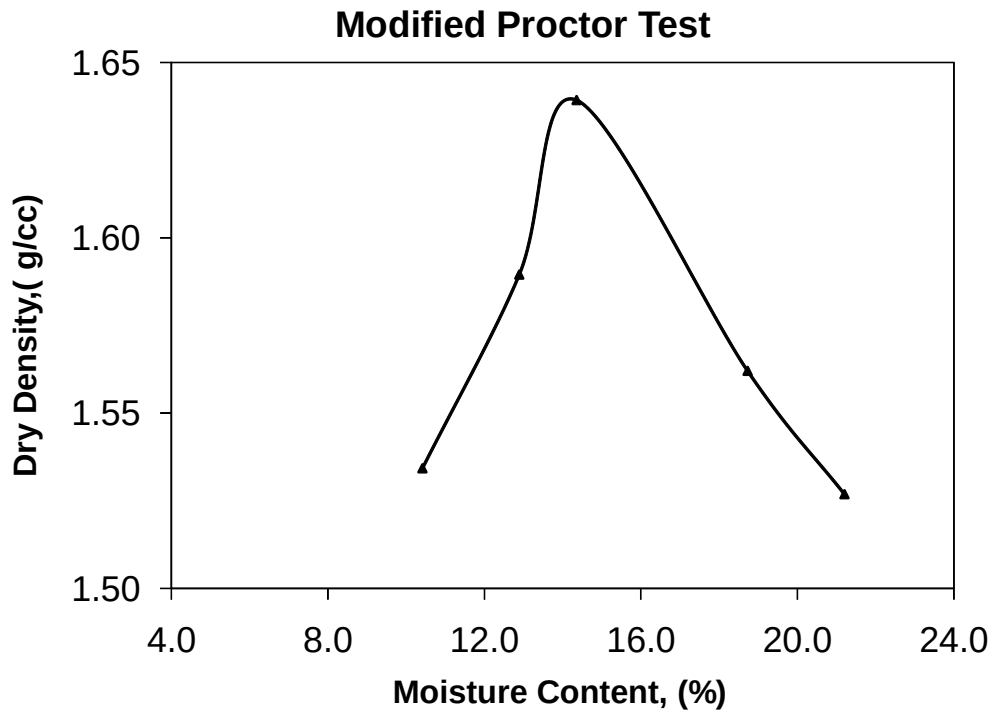
MODIFIED PROCTOR TEST

Pit No. : TP-4

Co-Ordinates : N = -64 E = 99

Sample ID. DS

DEPTH = 0.5 m

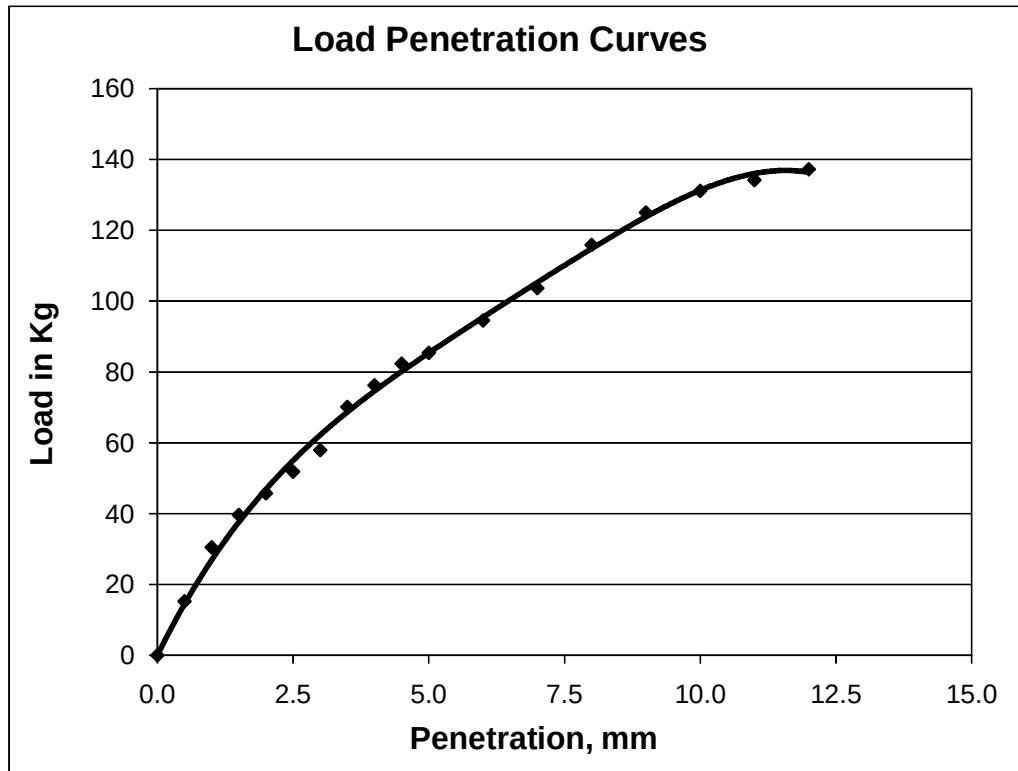


Optimum Moisture Content, %	14.35
Maximum Dry Density, g/cc	1.64



LABORATORY CALIFORNIA BEARING RATIO TEST (SOAKED)

Pit No. : TP-4 **Co-Ordinates : N = -64 E = 99**
Sample ID. DS DEPTH = 0.5 m
OMC : % 14.35 **MDD , g/cc :** 1.64
 Proving Ring constant: 3.05



Test Results :

LOAD AT 2.5MM PENETRATION	51.9
LOAD AT 5 MM PENETRATION	85.4
C.B.R AT 2.5MM PENETRATION	3.78
C.B.R. AT 5 MM PENETRATION	4.16



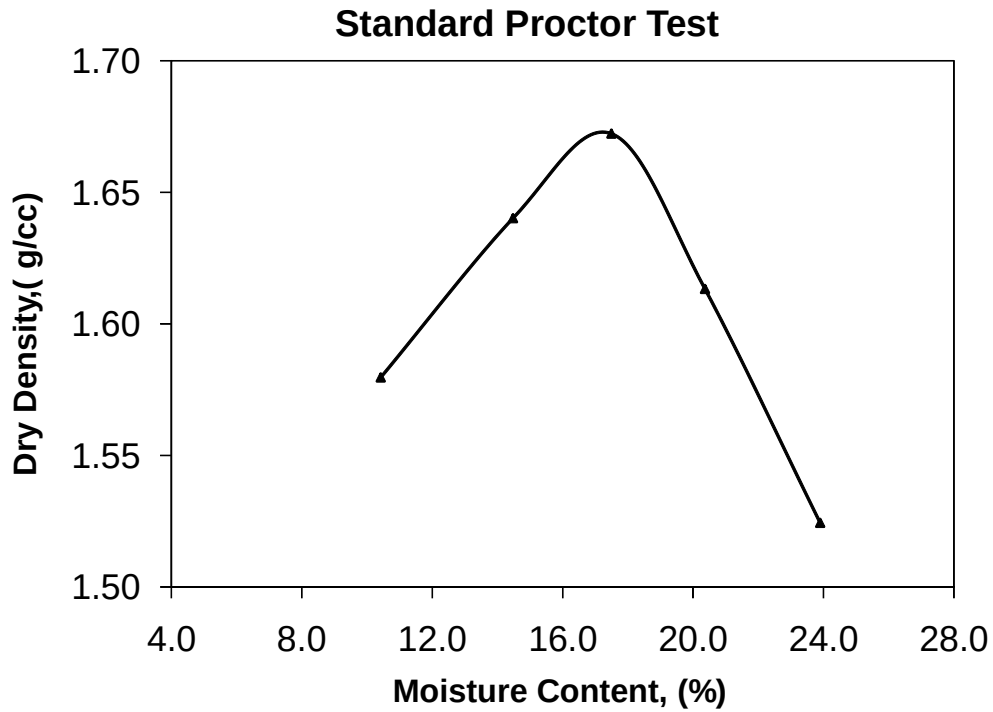
STANDARD PROCTOR TEST

Pit No. : TP-5

Co-Ordinates : N = -64 E = 396

Sample ID. DS

DEPTH = 0.5 m

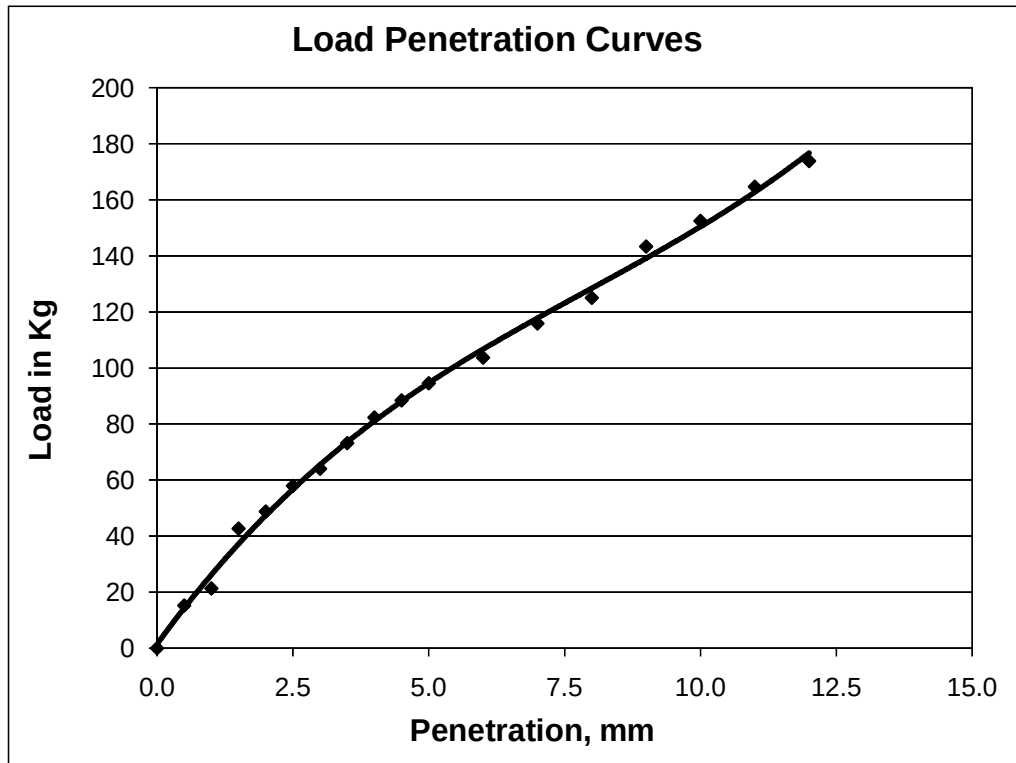


Optimum Moisture Content, %	17.49
Maximum Dry Density, g/cc	1.67



LABORATORY CALIFORNIA BEARING RATIO TEST (SOAKED)

Pit No. : TP-5 Co-Ordinates : N = -64 E = 396
Sample ID. DS DEPTH = 0.5 m
OMC : % 17.49 MDD , g/cc : 1.67
Proving Ring constant: 3.05



Test Results :

LOAD AT 2.5MM PENETRATION	58.0
LOAD AT 5 MM PENETRATION	94.6
C.B.R AT 2.5MM PENETRATION	4.23
C.B.R. AT 5 MM PENETRATION	4.60



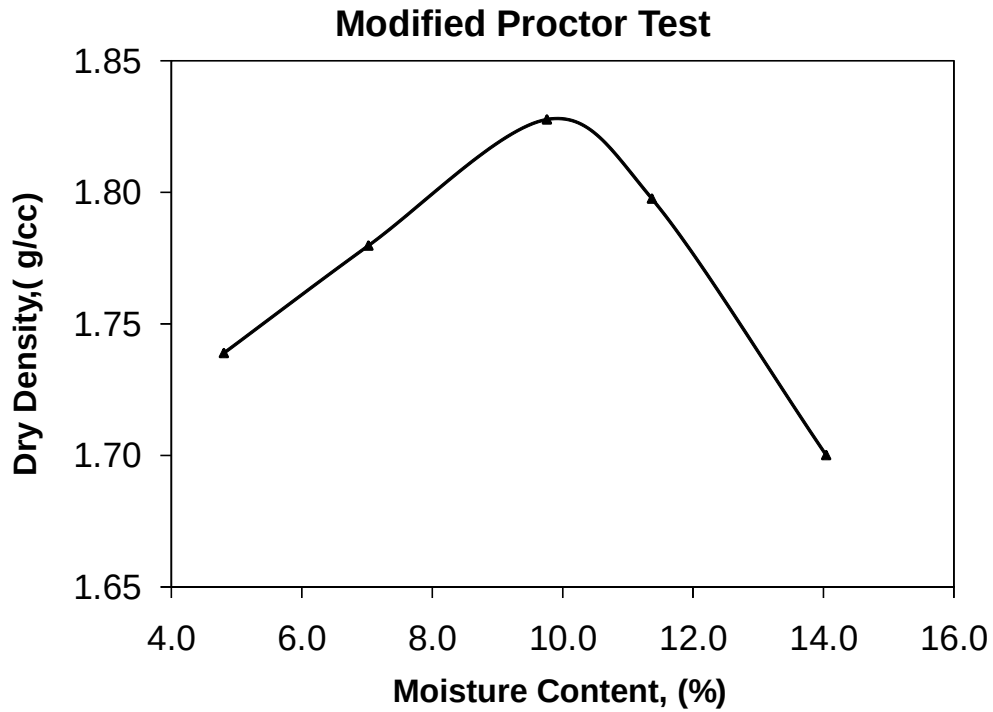
MODIFIED PROCTOR TEST

Pit No. : TP-6

Co-Ordinates : N = -64 E = 659

Sample ID. DS

DEPTH = 0.5 m

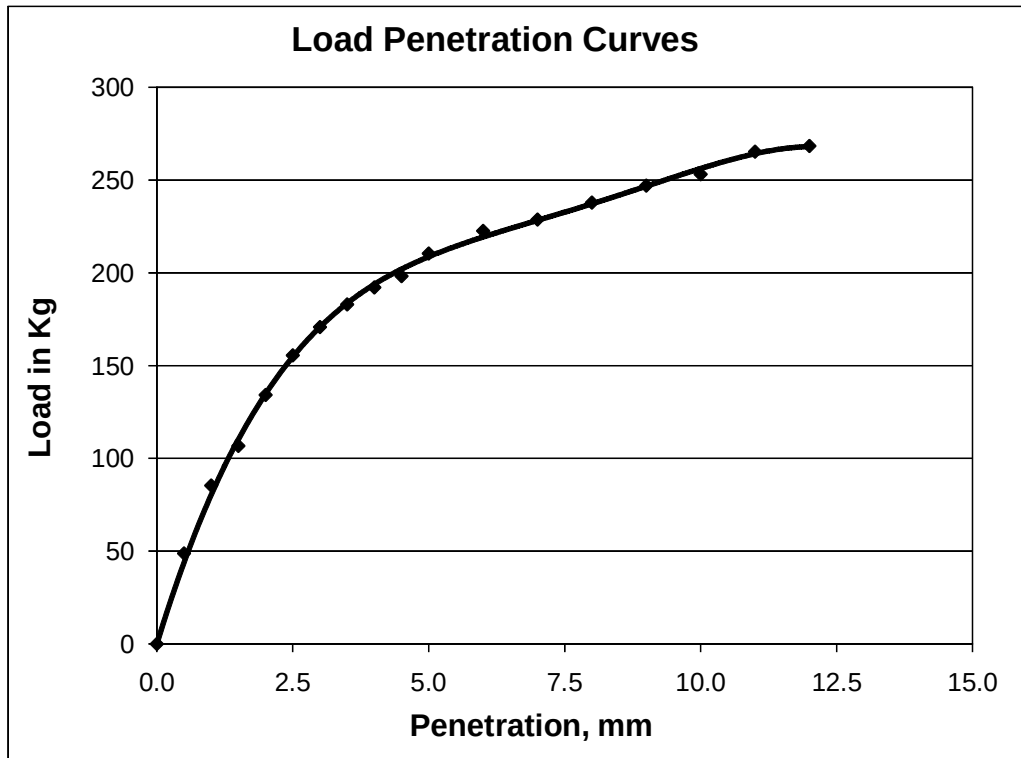


Optimum Moisture Content, %	9.76
Maximum Dry Density, g/cc	1.83



LABORATORY CALIFORNIA BEARING RATIO TEST (SOAKED)

Pit No. : TP-6 Co-Ordinates : N = -64 E = 659
Sample ID. DS DEPTH = 0.5 m
OMC : % 9.76 MDD , g/cc : 1.83
Proving Ring constant: 3.05



Test Results :

LOAD AT 2.5MM PENETRATION	155.6
LOAD AT 5 MM PENETRATION	210.5
C.B.R AT 2.5MM PENETRATION	11.35
C.B.R. AT 5 MM PENETRATION	10.24



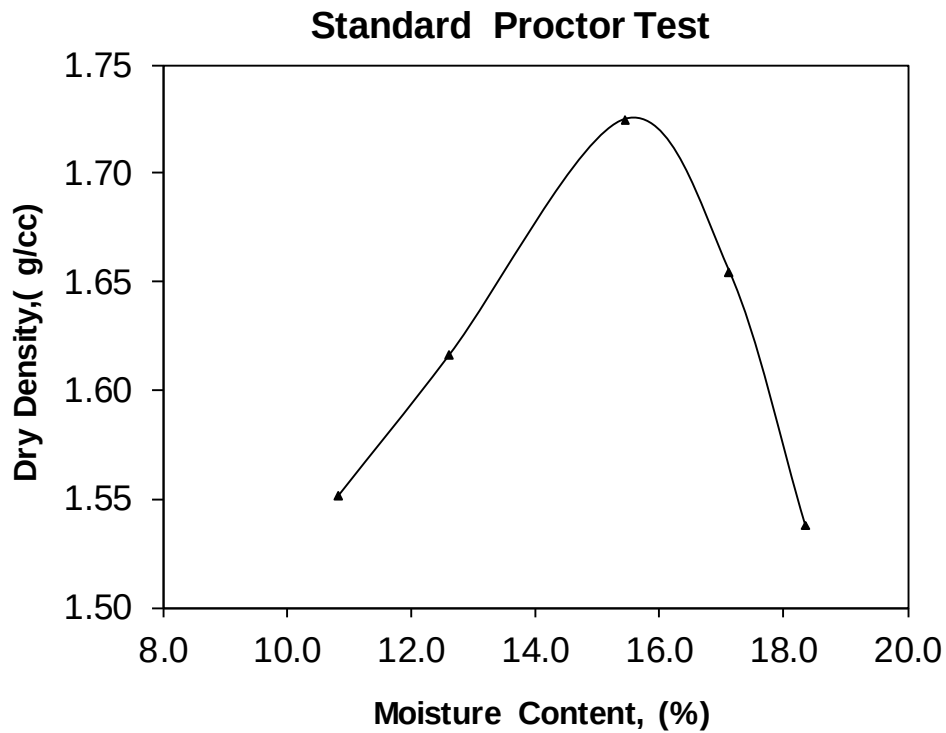
STANDARD PROCTOR TEST

Pit No. : TP-7

Co-Ordinates : N = -236 E = 236

Sample ID. DS

DEPTH = 0.3 m

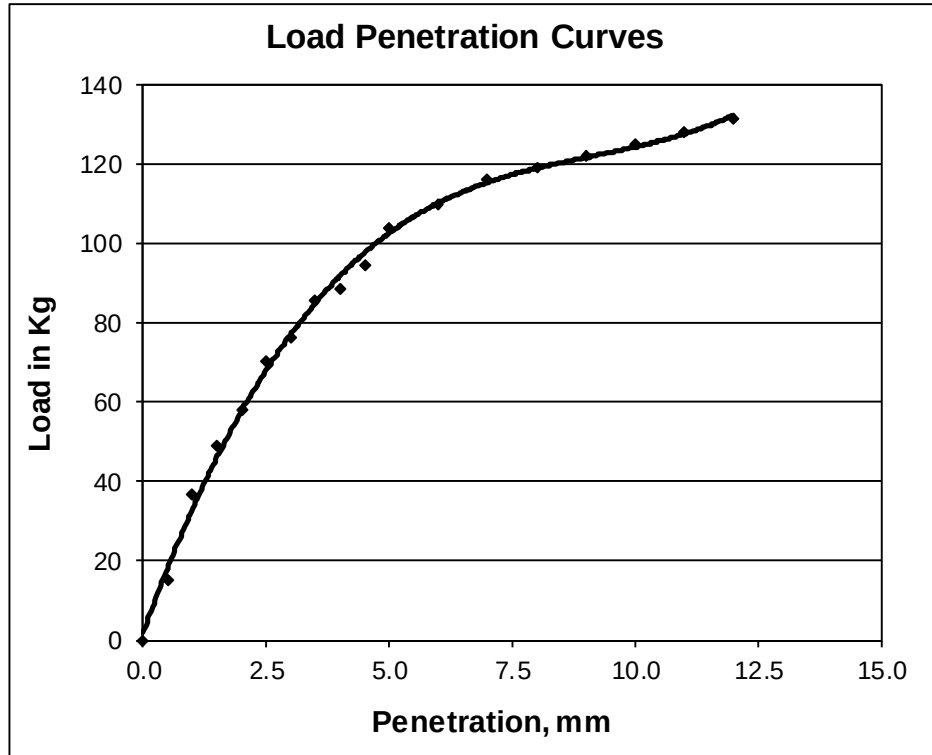


Optimum Moisture Content, %	15.44
Maximum Dry Density, g/cc	1.73



LABORATORY CALIFORNIA BEARING RATIO TEST (SOAKED)

Pit No. : TP-7 Co-Ordinates : N = -236 E = 236
Sample ID. DS DEPTH = 0.3 m
OMC : % 15.44 MDD , g/cc : 1.73
Proving Ring constant: 3.05



Test Results :

LOAD AT 2.5MM PENETRATION	70.2
LOAD AT 5 MM PENETRATION	103.7
C.B.R AT 2.5MM PENETRATION	5.12
C.B.R. AT 5 MM PENETRATION	5.05



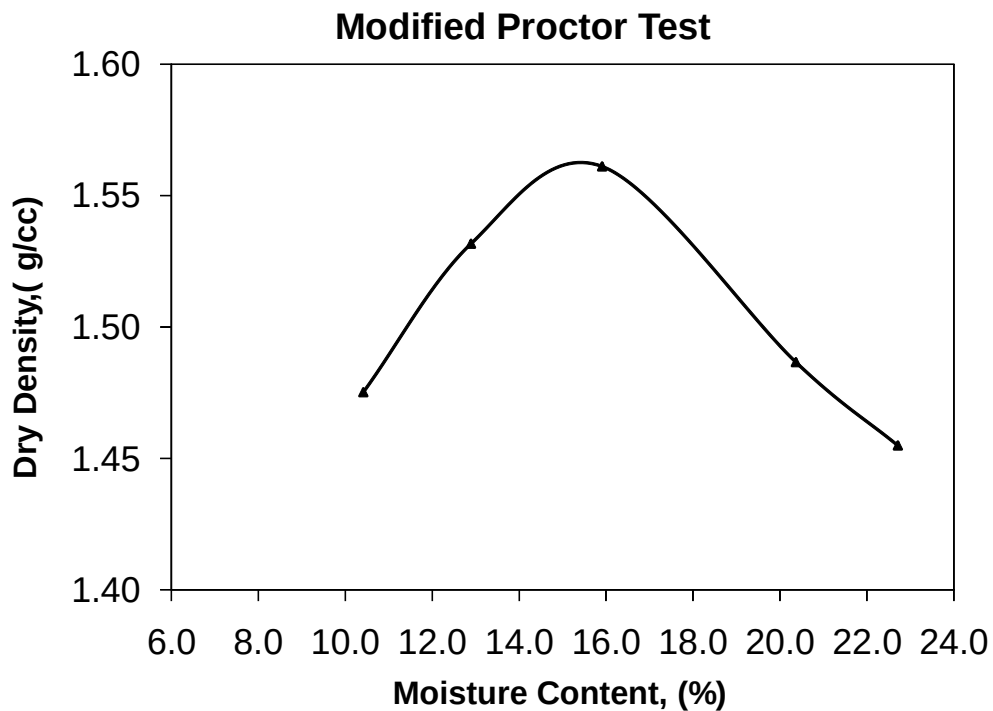
MODIFIED PROCTOR TEST

Pit No. : TP-8

Co-Ordinates : N = -748 E = 1309

Sample ID. DS

DEPTH = 0.5 m

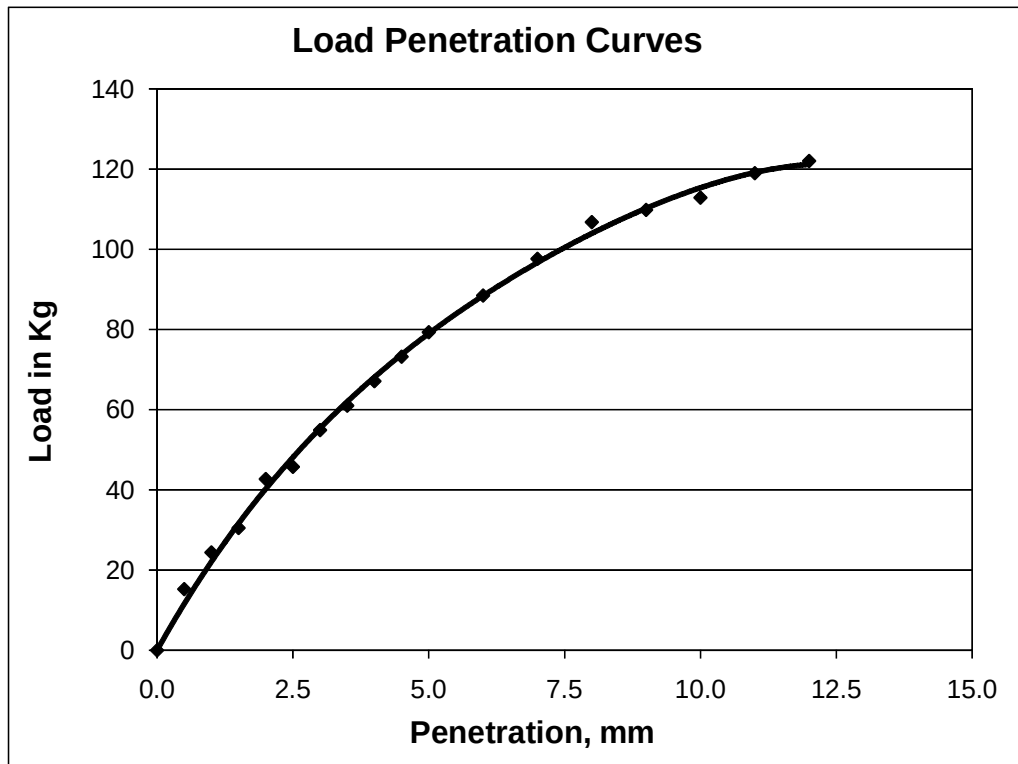


Optimum Moisture Content, %	15.90
Maximum Dry Density, g/cc	1.56



LABORATORY CALIFORNIA BEARING RATIO TEST (SOAKED)

Pit No. : TP-8 **Co-Ordinates : N = -748 E = 1309**
Sample ID. DS **DEPTH =** 0.5 m
OMC : % 15.90 **MDD , g/cc :** 1.56
 Proving Ring constant: 3.05

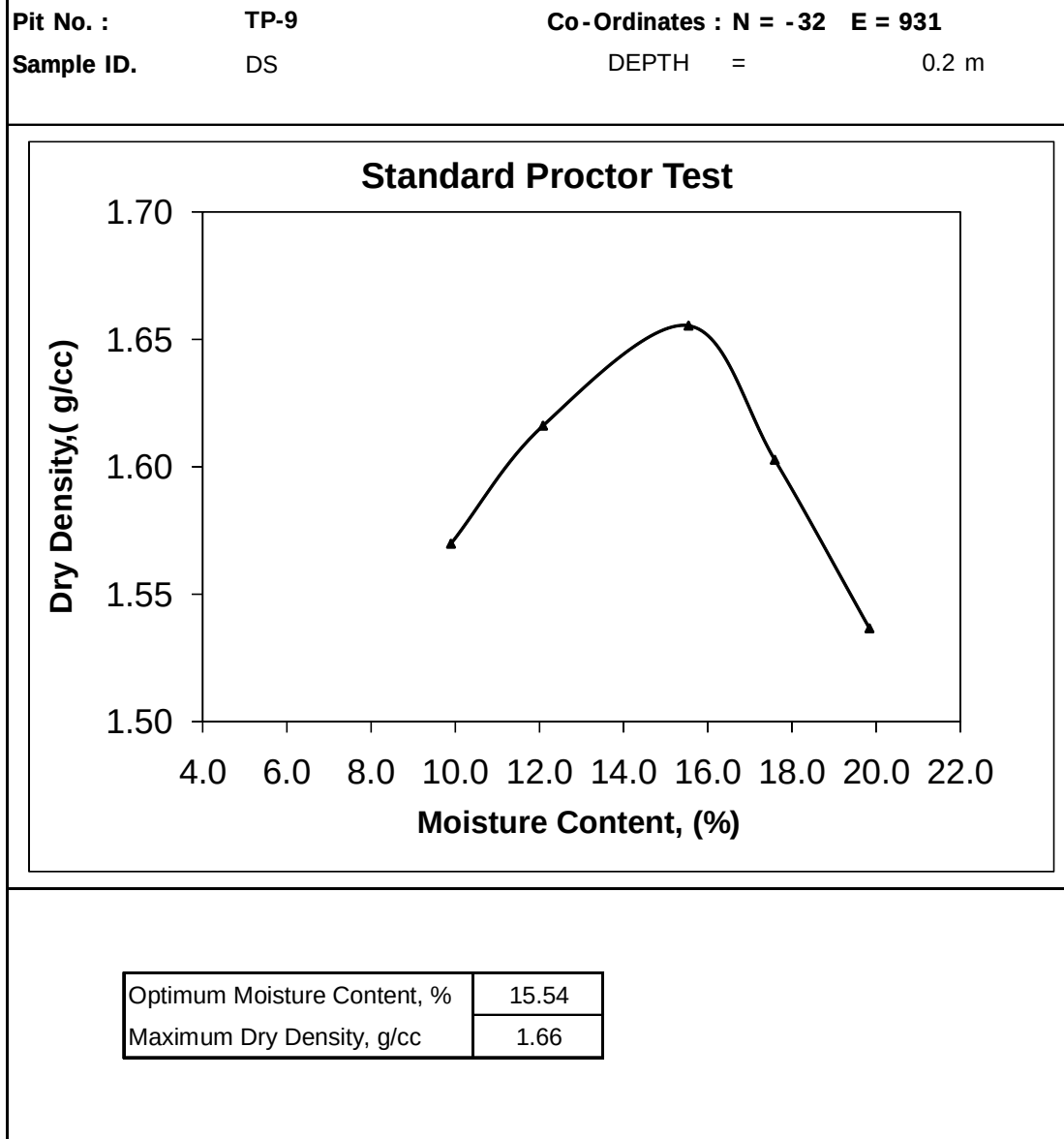


Test Results :

LOAD AT 2.5MM PENETRATION	45.8
LOAD AT 5 MM PENETRATION	79.3
C.B.R AT 2.5MM PENETRATION	3.34
C.B.R. AT 5 MM PENETRATION	3.86



STANDARD PROCTOR TEST



Pit No. :	TP-9	Co-Ordinates : N = -32 E = 931
Sample ID.	DS	DEPTH = 0.2 m
OMC : %	15.54	MDD , g/cc : 1.66
		Proving Ring constant: 3.05

Load Penetration Curves

Penetration (mm)	Load (Kg)
0.0	0.0
0.5	20.0
1.0	40.0
1.5	45.0
2.0	60.0
2.5	67.1
3.0	70.0
3.5	80.0
4.0	82.0
4.5	88.0
5.0	94.6
6.0	110.0
7.0	120.0
8.0	125.0
9.0	130.0
10.0	135.0
11.0	138.0
12.0	140.0

Test Results :

LOAD AT 2.5MM PENETRATION	67.1
LOAD AT 5 MM PENETRATION	94.6
C.B.R AT 2.5MM PENETRATION	4.90
C.B.R. AT 5 MM PENETRATION	4.60



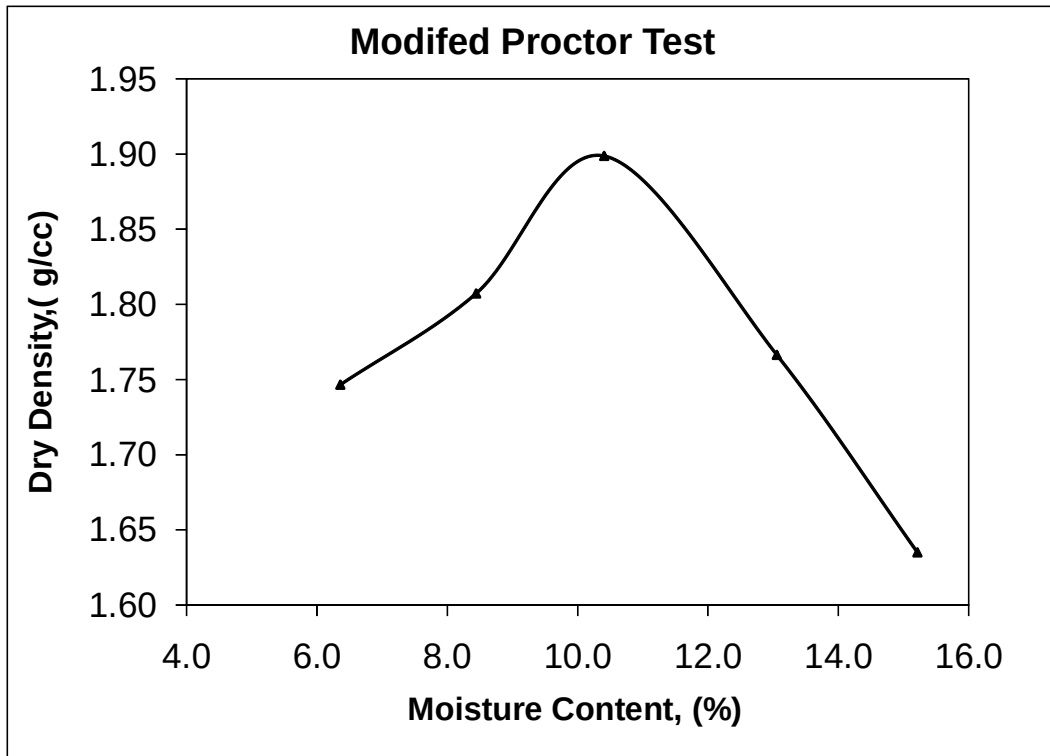
MODIFIED PROCTOR TEST

Pit No. : TP-10

Co-Ordinates : N = -318 E = 1693

Sample ID. DS

DEPTH = 0.5 m

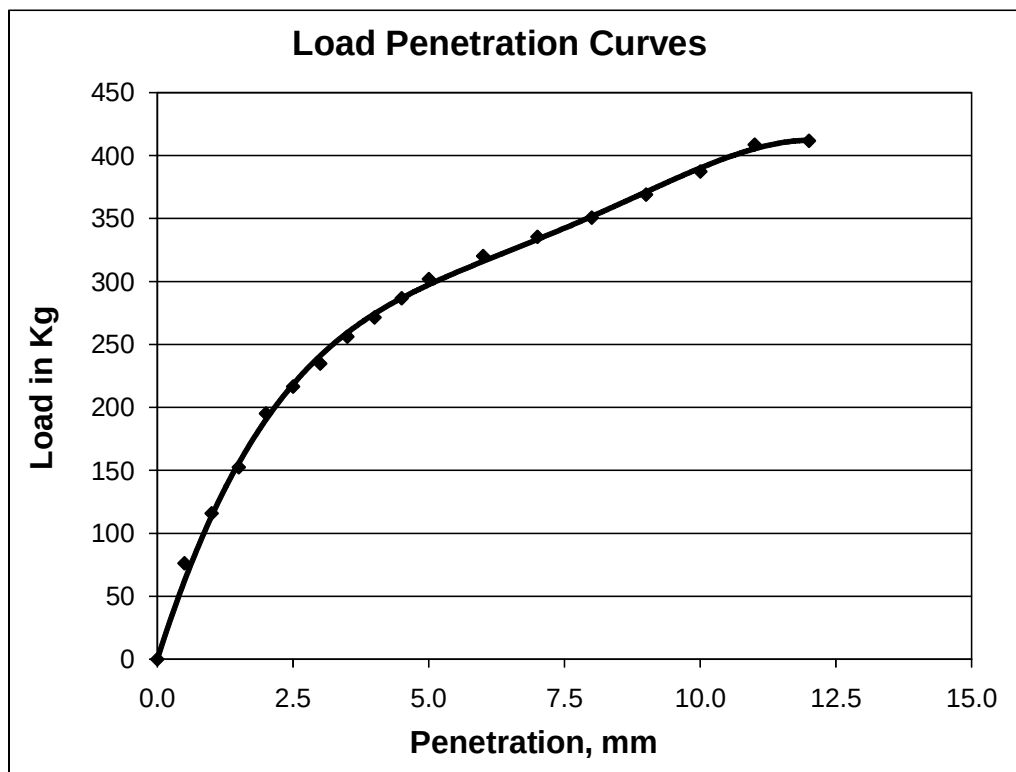


Optimum Moisture Content, %	10.40
Maximum Dry Density, g/cc	1.90



LABORATORY CALIFORNIA BEARING RATIO TEST (SOAKED)

Pit No. : TP-10 **Co-Ordinates : N = -318 E = 1693**
Sample ID. DS DEPTH = 0.5 m
OMC : % 10.40 **MDD , g/cc :** 1.90
 Proving Ring constant: 3.05



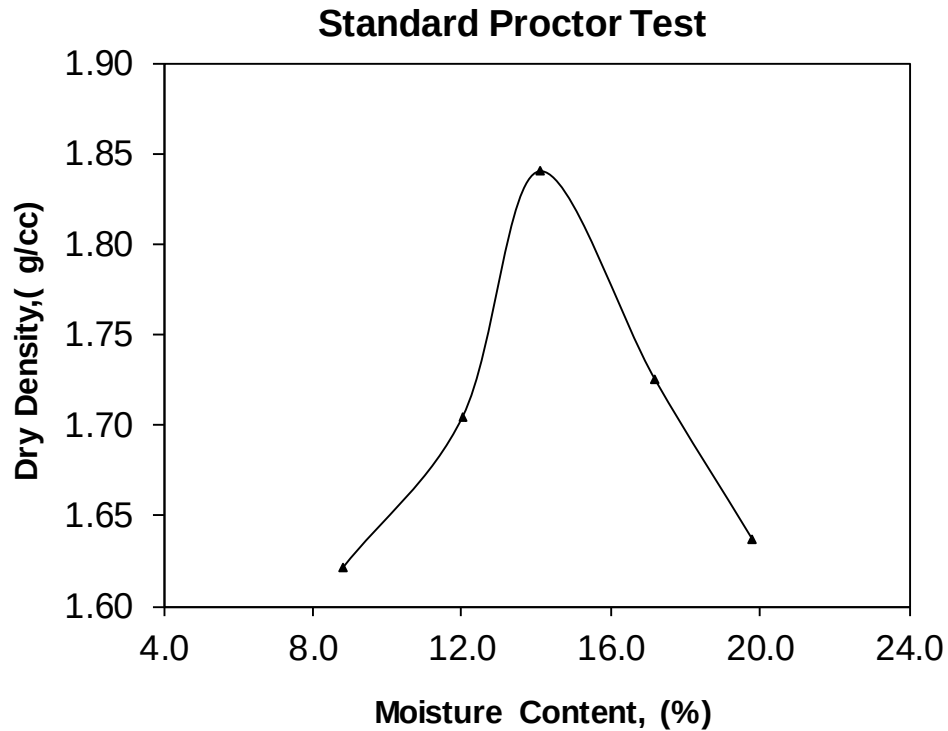
Test Results :

LOAD AT 2.5MM PENETRATION	216.6
LOAD AT 5 MM PENETRATION	302.0
C.B.R AT 2.5MM PENETRATION	15.81
C.B.R. AT 5 MM PENETRATION	14.69



STANDARD PROCTOR TEST

Pit No. : TP-11 Co-Ordinates : N = -280 E = 1.0
Sample ID. DS DEPTH = 0.35 m

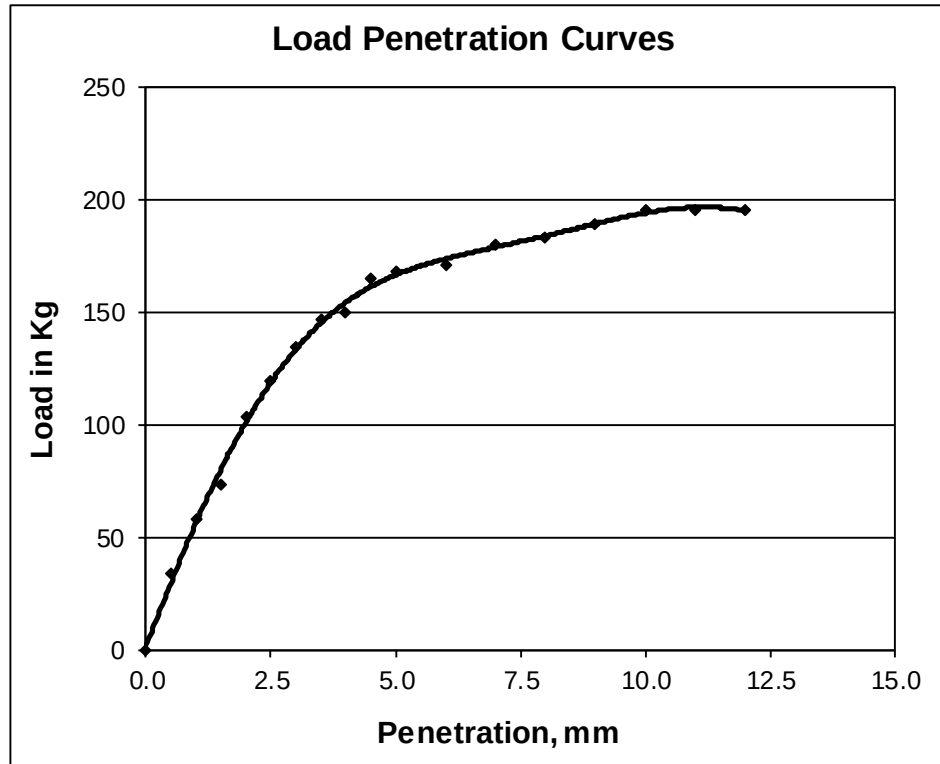


Optimum Moisture Content, %	14.08
Maximum Dry Density, g/cc	1.84



LABORATORY CALIFORNIA BEARING RATIO TEST (SOAKED)

Pit No. : TP-11 Co-Ordinates : N = -280 E = 1.0
Sample ID. DS DEPTH = 0.35 m
OMC : % 14.08 MDD , g/cc : 1.84
Proving Ring constant: 3.05



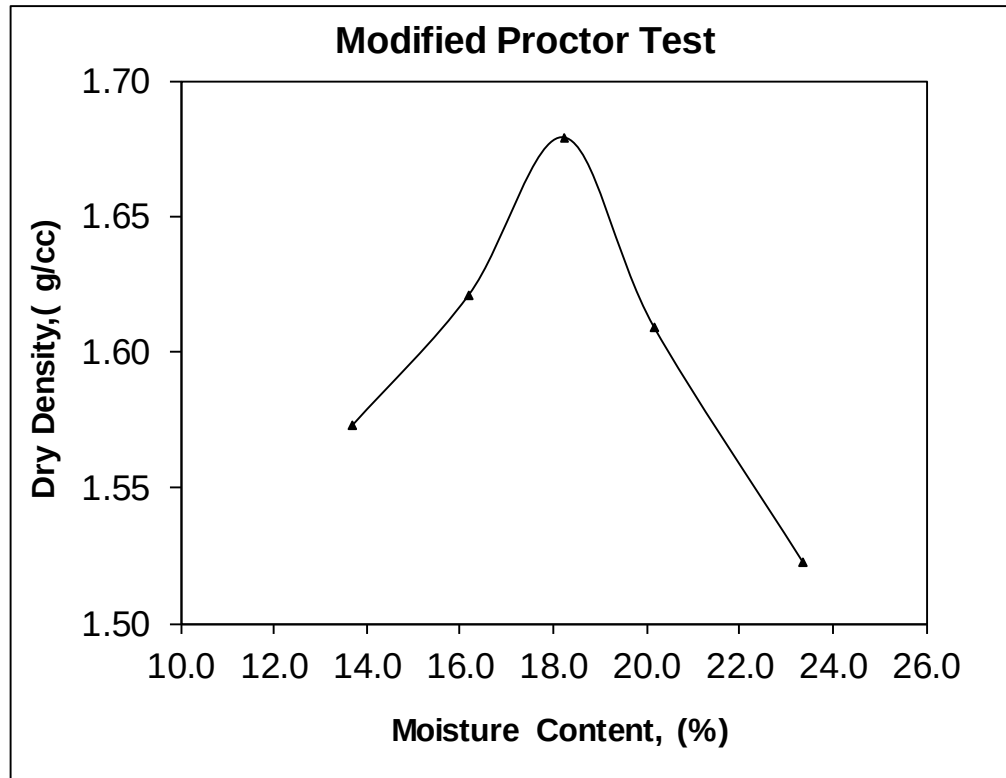
Test Results :

LOAD AT 2.5MM PENETRATION	119.0
LOAD AT 5 MM PENETRATION	167.8
C.B.R AT 2.5MM PENETRATION	8.68
C.B.R. AT 5 MM PENETRATION	8.16



MODIFIED PROCTOR TEST

Pit No. : TP -12 **Co - Ordinates :** N = -280 E = 432
Sample ID. DS **DEPTH** = 0.6 m

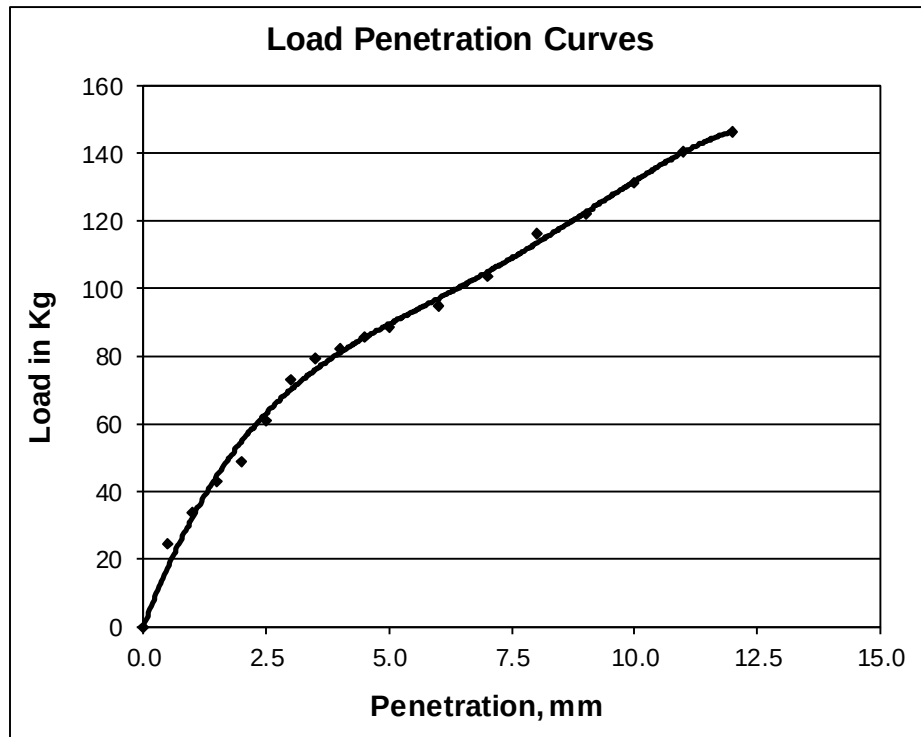


Optimum Moisture Content, %	18.24
Maximum Dry Density, g/cc	1.68



LABORATORY CALIFORNIA BEARING RATIO TEST (SOAKED)

Pit No. : TP-12 **Co-Ordinates : N = -280 E = 432**
Sample ID. DS DEPTH = 0.6 m
OMC : % 18.24 **MDD , g/cc :** 1.68
 Proving Ring constant: 3.05



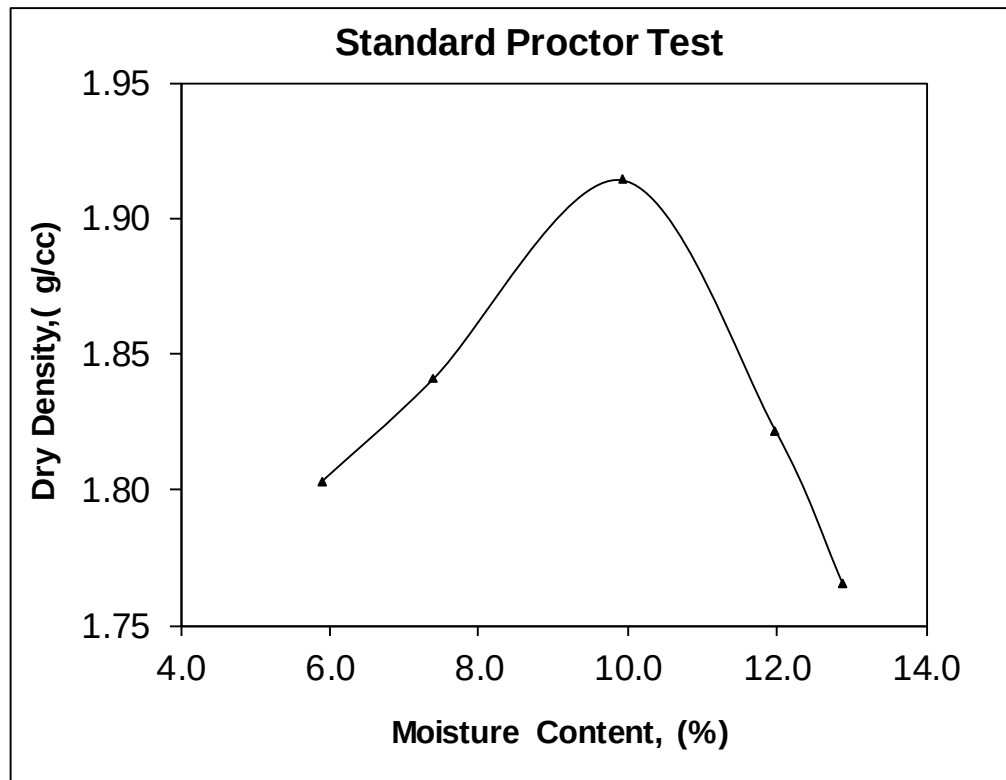
Test Results :

LOAD AT 2.5MM PENETRATION	61.0
LOAD AT 5 MM PENETRATION	88.5
C.B.R AT 2.5MM PENETRATION	4.45
C.B.R. AT 5 MM PENETRATION	4.30



STANDARD PROCTOR TEST

Pit No. : TP-13 Co-Ordinates : N = -280 E = 585
 Sample ID. DS DEPTH = 0.7 m

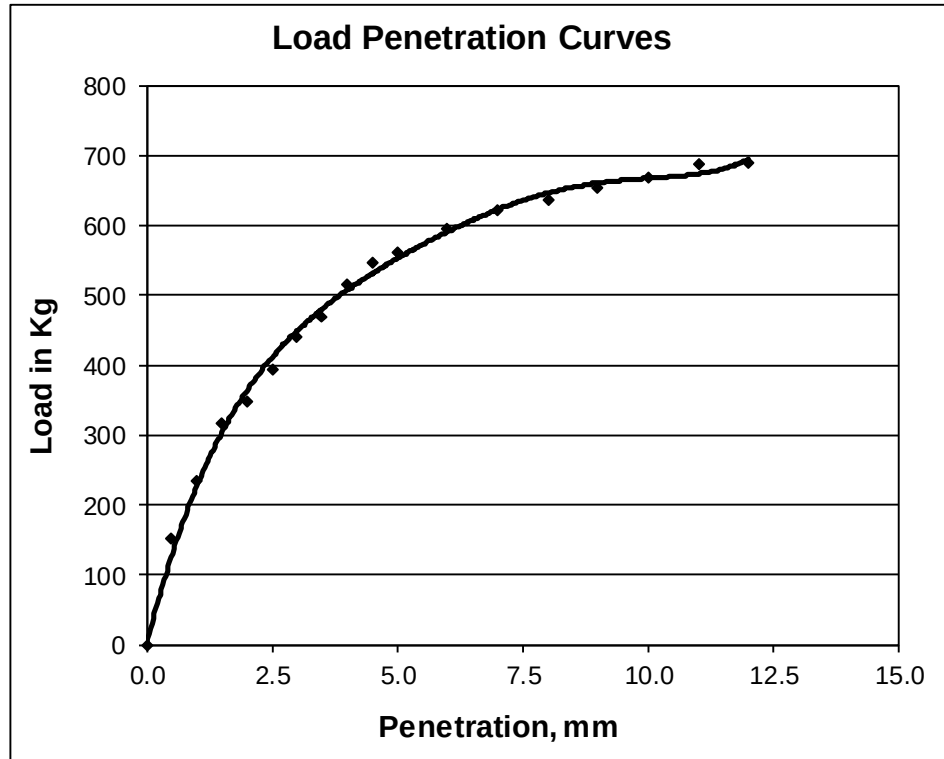


Optimum Moisture Content, %	9.93
Maximum Dry Density, g/cc	1.91



LABORATORY CALIFORNIA BEARING RATIO TEST (SOAKED)

Pit No. : TP-13 **Co-Ordinates :** N = -280 E = 585
Sample ID. DS DEPTH = 0.7 m
OMC : % 9.93 **MDD , g/cc :** 1.91
 Proving Ring constant: 3.05



Test Results :

LOAD AT 2.5MM PENETRATION	393.5
LOAD AT 5 MM PENETRATION	561.2
C.B.R AT 2.5MM PENETRATION	28.72
C.B.R. AT 5 MM PENETRATION	27.31



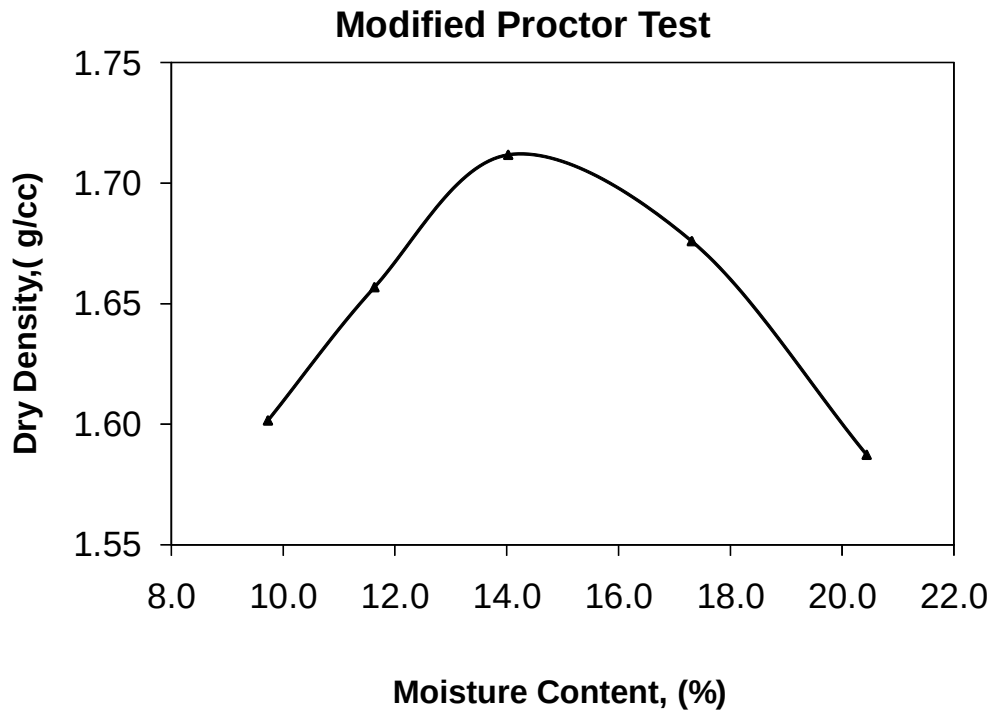
MODIFIED PROCTOR TEST

Pit No. : TP-14

Co-Ordinates : N = -313 E = -361

Sample ID. DS

DEPTH = 0.8 m

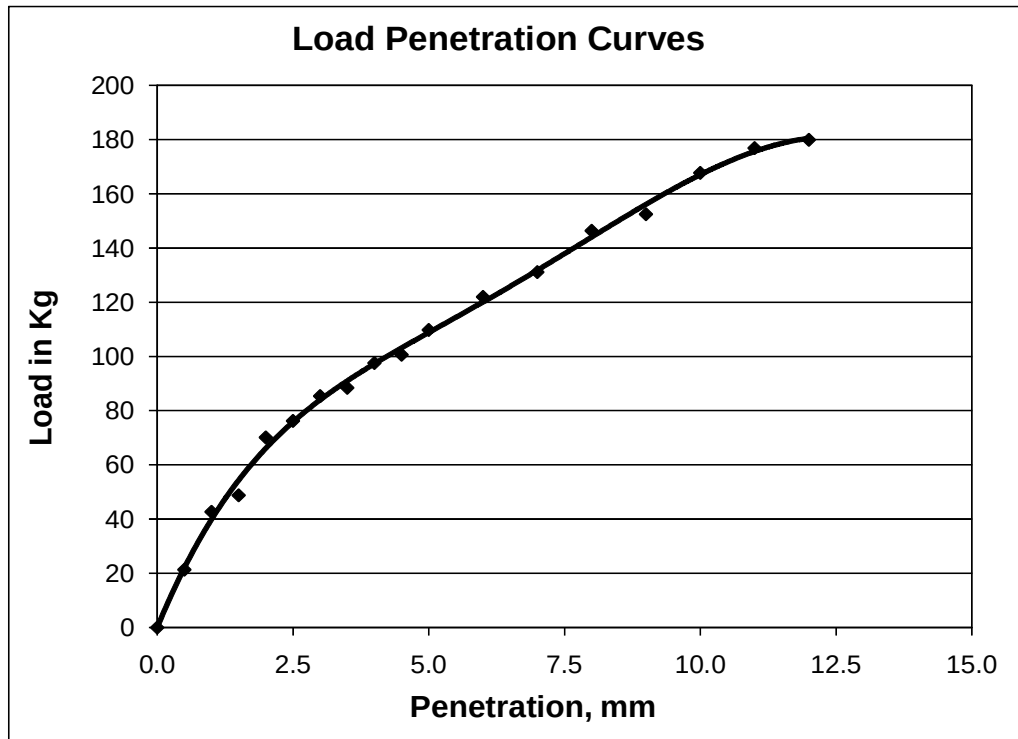


Optimum Moisture Content, %	14.03
Maximum Dry Density, g/cc	1.71



LABORATORY CALIFORNIA BEARING RATIO TEST (SOAKED)

Pit No. : TP-14 **Co-Ordinates : N = -313 E = -361**
Sample ID. DS DEPTH = 0.8 m
OMC : % 14.03 **MDD , g/cc :** 1.71
 Proving Ring constant: 3.05



Test Results :

LOAD AT 2.5MM PENETRATION	76.3
LOAD AT 5 MM PENETRATION	109.8
C.B.R AT 2.5MM PENETRATION	5.57
C.B.R. AT 5 MM PENETRATION	5.34



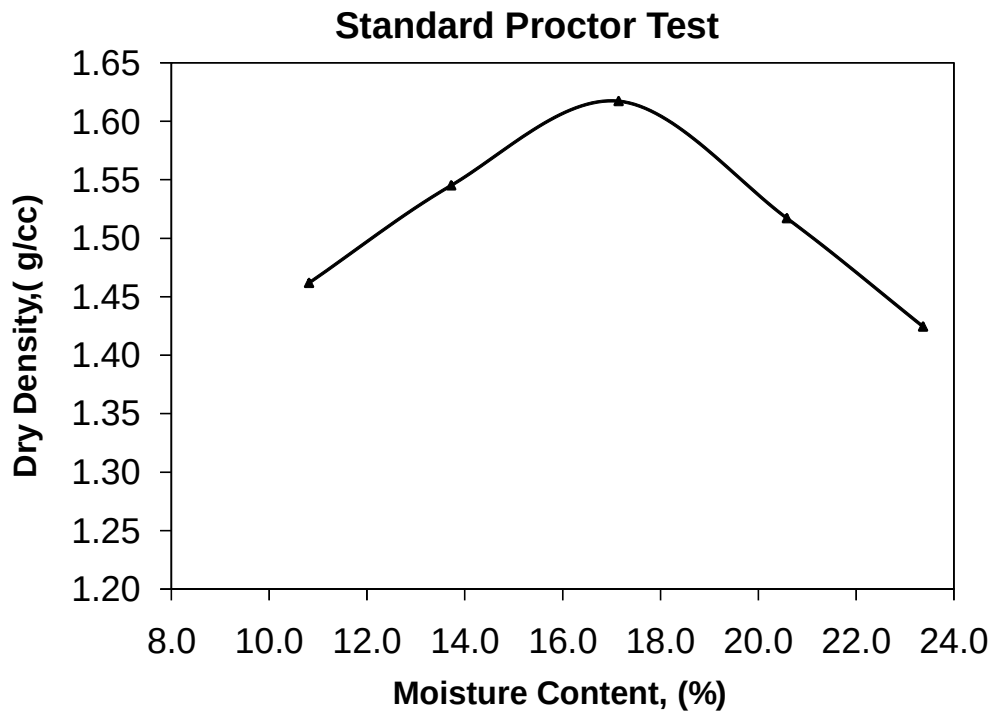
STANDARD PROCTOR TEST

Pit No. : TP-15

Co-Ordinates : N = -404 E = 899

Sample ID. DS

DEPTH = 0.5 m



Optimum Moisture Content, %	17.14
Maximum Dry Density, g/cc	1.62



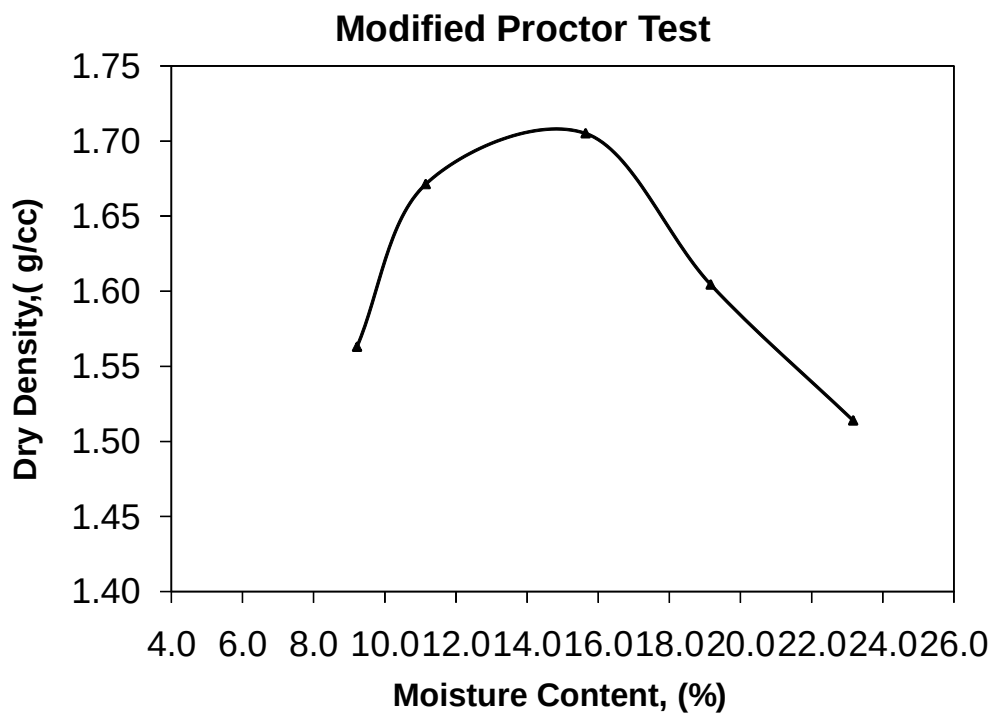
MODIFIED PROCTOR TEST

Pit No. : TP-16

Co-Ordinates : N = 926 E = 194

Sample ID. DS

DEPTH = 0.5 m

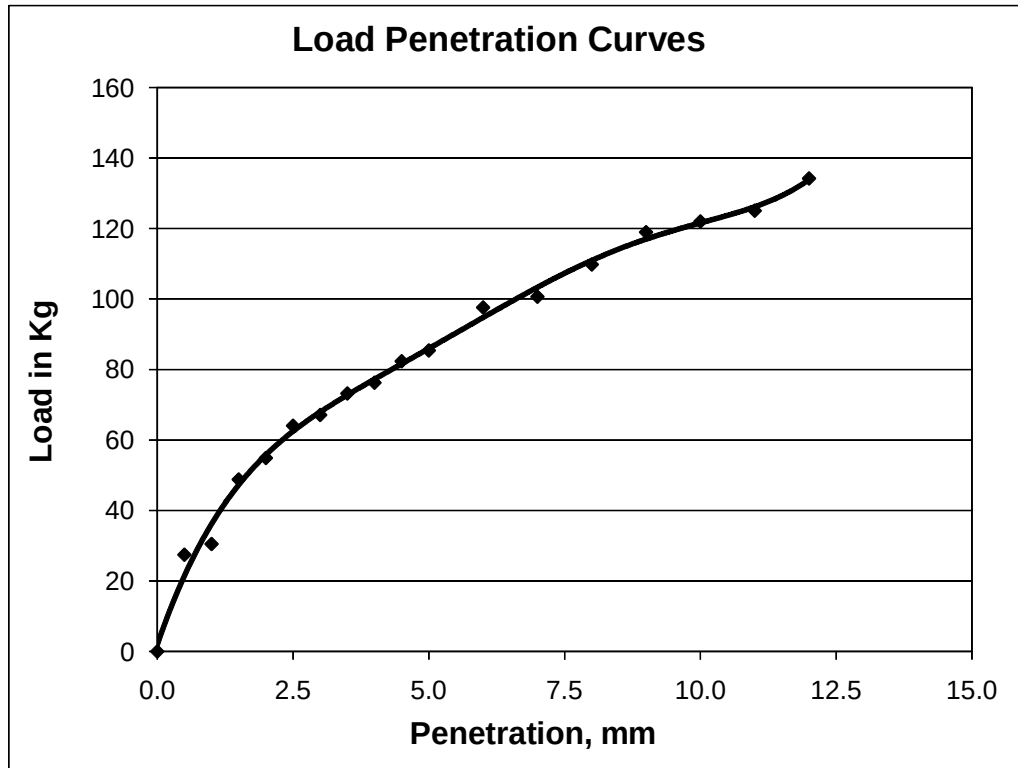


Optimum Moisture Content, %	15.65
Maximum Dry Density, g/cc	1.71



LABORATORY CALIFORNIA BEARING RATIO TEST (SOAKED)

Pit No. : TP-15 **Co-Ordinates : N = -404 E = 899**
Sample ID. DS DEPTH = 0.5 m
OMC : % 17.14 **MDD , g/cc :** 1.62
 Proving Ring constant: 3.05



Test Results :

LOAD AT 2.5MM PENETRATION	64.1
LOAD AT 5 MM PENETRATION	85.4
C.B.R AT 2.5MM PENETRATION	4.68
C.B.R. AT 5 MM PENETRATION	4.16



PACKER PERMEABILITY TEST

PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 3

Date : 25-02-2016

Location N = 0.00, E = 29

Weather : Summer season

EGL ,RL(+),(m)= 81.699

Gauge Height Above Ground Level,m : 1.70 m

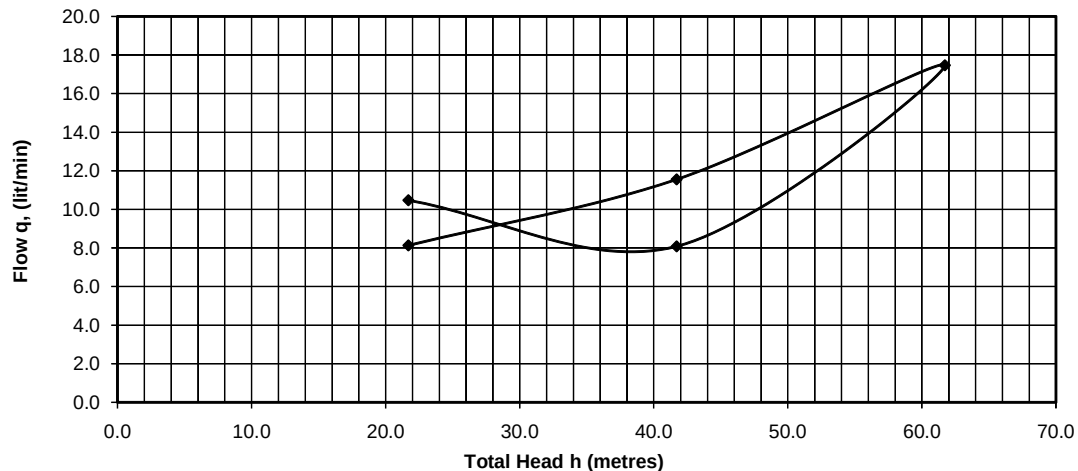
Test Depth, m 4 m

Length of Test Section : 1.5 m

Water table : 7.5 m

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	8.1	4268.3	4319.45	4359.2	4399.85	24.98	21.7
2 nd	4	40	11.6	4399.85	4450.2	4503.55	4561.3	18.47	41.7
3 rd	6	60	17.5	4561.3	4640.4	4729.85	4817.15	18.87	61.7
4 th	4	40	8.1	4817.15	4859.3	4898.6	4939	12.92	41.7
5 th	2	20	10.5	4939	4962.1	4999.65	5052	32.17	21.7

Flow Vs Total head



Comments:

1] $K_{av} = 21.48 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 3

Date : 24-02-2016

Location N = 0.00, E = 29

Weather : Summer season

EGL ,RL(+),(m)= 81.699

Gauge Height Above Ground Level,m : 1.10 m

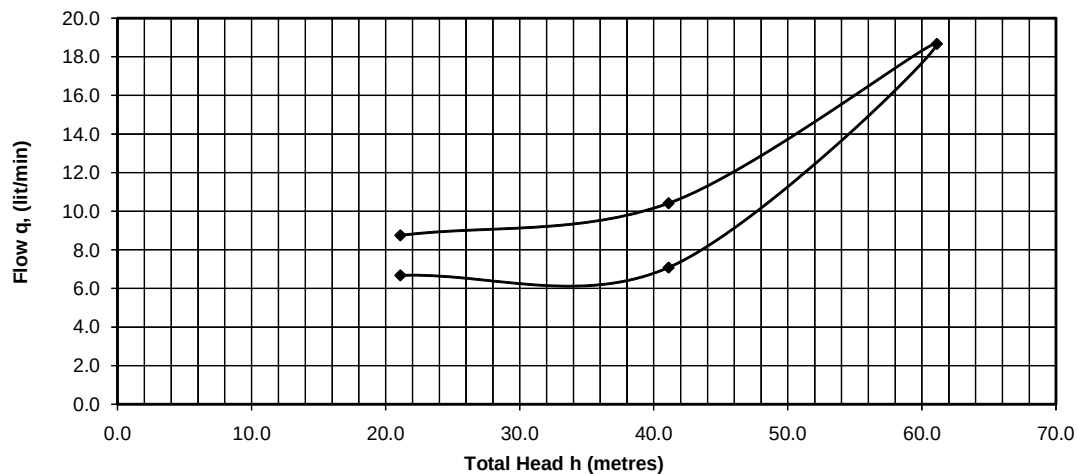
Test Depth, m 8 m

Length of Test Section : 1.5 m

Water table : 7.5 m

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	6.7	3475	3526.45	3564.75	3598.15	21.11	21.1
2 nd	4	40	7.1	3598.15	3649.3	3687.6	3723	11.48	41.1
3 rd	6	60	18.7	3723	3767.55	3837.1	3930.4	20.36	61.1
4 th	4	40	10.4	3930.4	3997.25	4045.15	4097.2	16.89	41.1
5 th	2	20	8.8	4097.2	4143.6	4187.35	4231.1	27.65	21.1

Flow Vs Total head



Comments:

1] $K_{av} = 19.50 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 20

Date : 24-02-2016

Location N = -205, E = 70

Weather : Summer season

EGL ,RL(+),(m)= 81.187

Gauge Height Above Ground Level,m : 1.75 m

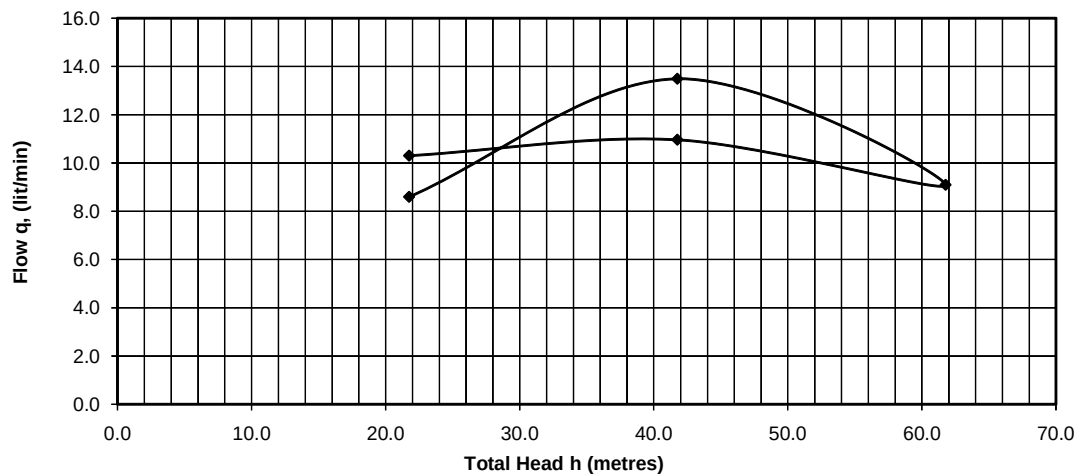
Test Depth, m 4 m

Length of Test Section : 1.5 m

Water table : 9.50 m

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	8.6	2408	2461.2	2512.55	2555.5	26.33	21.8
2 nd	4	40	13.5	2555.5	2604.65	2661.1	2728.55	21.54	41.8
3 rd	6	60	9.1	2728.55	2821.7	2926.9	2972.35	9.81	61.8
4 th	4	40	11.0	2972.35	3011.85	3066.4	3121.2	17.50	41.8
5 th	2	20	10.3	3121.2	3173.9	3222.35	3273.85	31.57	21.8

Flow Vs Total head



Comments:

1] $K_{av} = 21.35 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 20

Date : 23-02-2016

Location N = -205, E = 70

Weather : Summer season

EGL ,RL(+),(m)= 81.187

Gauge Height Above Ground Level,m : 1.00 m

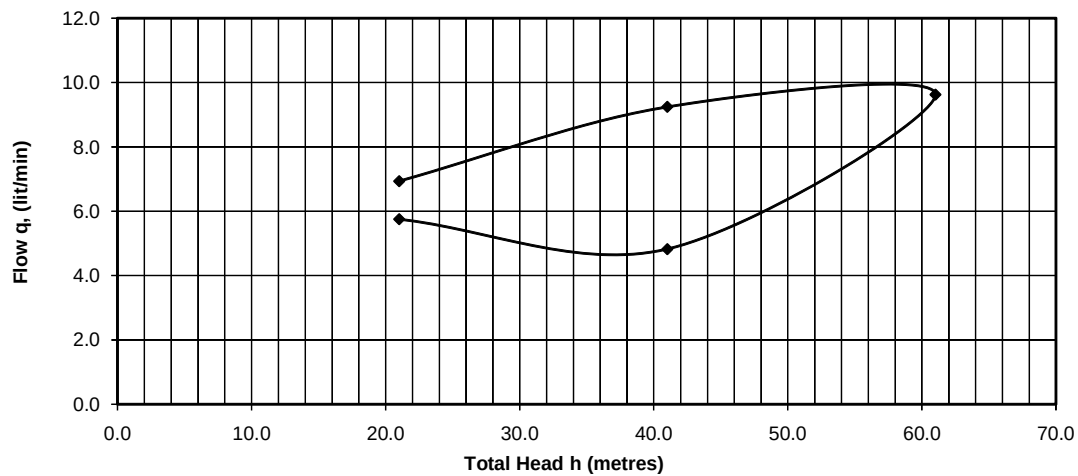
Test Depth, m 8 m

Length of Test Section : 1.5 m

Water table : 9.50 m

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	6.9	161	187.9	224.4	259.05	22.00	21.0
2 nd	4	40	9.2	259.05	320.7	366.15	412.35	15.02	41.0
3 rd	6	60	9.6	412.35	451.15	477.35	525.45	10.51	61.0
4 th	4	40	4.8	525.45	580.25	624.1	648.2	7.84	41.0
5 th	2	20	5.8	648.2	669.8	705.5	734.25	18.25	21.0

Flow Vs Total head



Comments:

1] $K_{av} = 14.73 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 48

Date : 03-04-2016

Location N = 0.00, E = 627

Weather : Summer season

EGL ,RL(+),(m)= 84.008

Gauge Height Above Ground Level,m : 1.25 m

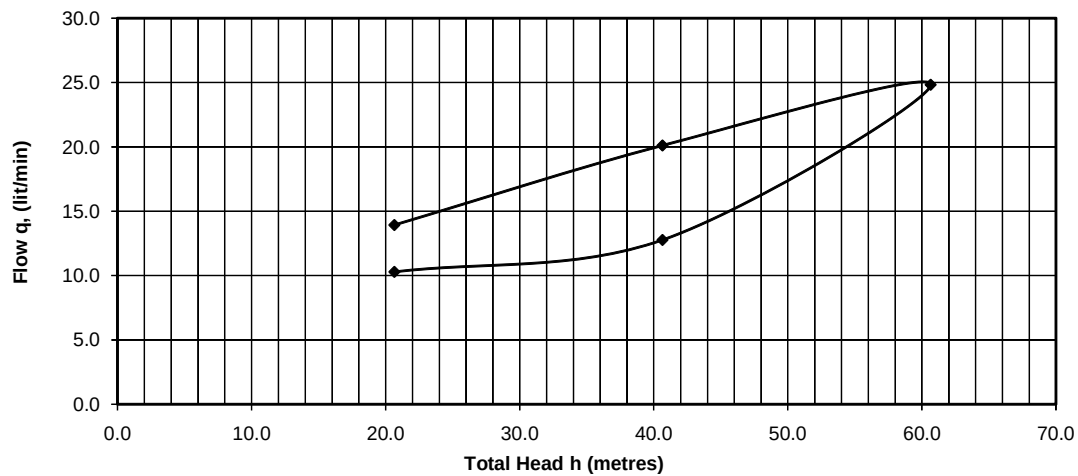
Test Depth, m 4 m

Length of Test Section : 1.5 m

Water table :

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	7.8	17310	17350	17391.3	17430.5	24.60	21.3
2 nd	4	40	10.8	17430.5	17485.6	17543.2	17597.4	17.52	41.3
3 rd	6	60	17.0	17597.4	17686.1	17772.6	17857.4	18.46	61.3
4 th	4	40	10.9	17857.4	17911.6	17963.8	18018.4	17.65	41.3
5 th	2	20	8.0	18018.4	18062.7	18105.3	18145.1	24.97	21.3

Flow Vs Total head



Comments:

1] $K_{av} = 20.64 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 48

Date : 03-04-2016

Location N = 0.00, E = 627

Weather : Summer season

EGL ,RL(+),(m)= 84.008

Gauge Height Above Ground Level,m : 0.65 m

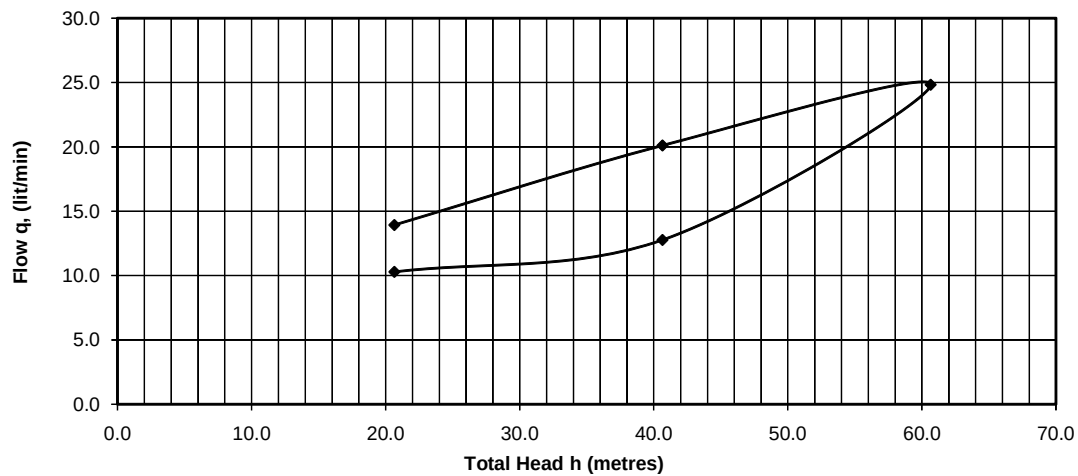
Test Depth, m 8 m

Length of Test Section : 1.5 m

Water table :

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	13.9	16098	16118.5	16163.2	16232.8	44.94	20.7
2 nd	4	40	20.1	16232.8	16410	16472.5	16573	32.96	40.7
3 rd	6	60	24.8	16573	16721.1	16853.2	16977.3	27.28	60.7
4 th	4	40	12.8	16977.3	17036.5	17098	17161.8	20.93	40.7
5 th	2	20	10.3	17161.8	17210.8	17253.4	17304.8	33.19	20.7

Flow Vs Total head



Comments:

1] $K_{av} = 31.86 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 66

Date : 07-04-2016

Location N = -157, E = 645

Weather : Summer season

EGL ,RL(+),(m)= 85.885

Gauge Height Above Ground Level,m : 1.20 m

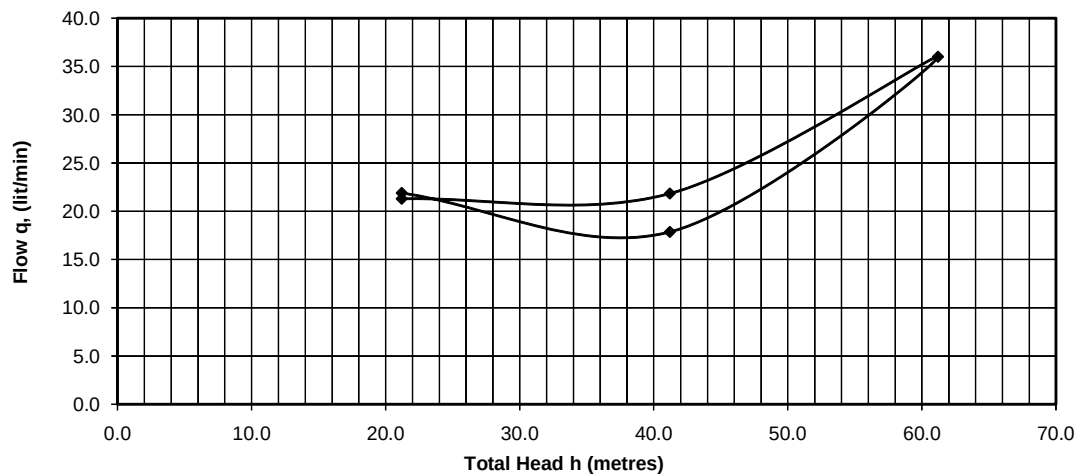
Test Depth, m 4 m

Length of Test Section : 1.5 m

Water table :

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	21.3	20222	20299	20412.4	20518.8	66.92	21.2
2 nd	4	40	21.8	20518.8	20631.1	20742.3	20851.4	35.31	41.2
3 rd	6	60	36.0	20851.4	20976.2	21122.3	21302.3	39.22	61.2
4 th	4	40	17.8	21302.3	21403.6	21499	21588.2	28.87	41.2
5 th	2	20	21.9	21588.2	21677.5	21769.2	21878.6	68.81	21.2

Flow Vs Total head



Comments:

1] $K_{av} = 47.82 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 66

Date : 06-04-2016

Location N = -157, E = 645

Weather : Summer season

EGL ,RL(+),(m)= 85.885

Gauge Height Above Ground Level,m : 1.20 m

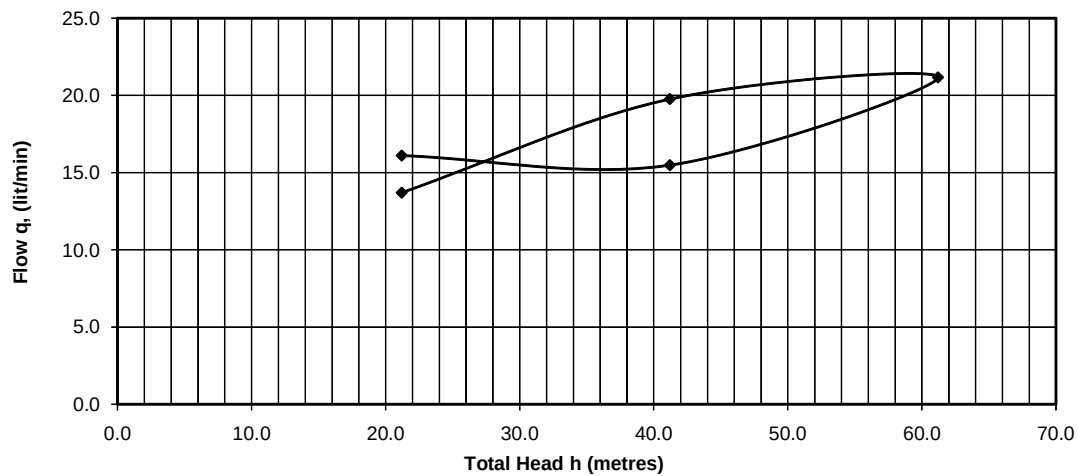
Test Depth, m 8 m

Length of Test Section : 1.5 m

Water table :

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	16.1	18760	18852	18940.5	19021	50.63	21.2
2 nd	4	40	15.5	19021	19152.2	19224.2	19301.6	25.05	41.2
3 rd	6	60	21.2	19301.6	19546.3	19641.3	19747.1	23.05	61.2
4 th	4	40	19.8	19747.1	19821.2	19878.4	19977.2	31.97	41.2
5 th	2	20	13.7	19977.2	20039.1	20130.1	20198.6	43.08	21.2

Flow Vs Total head



Comments:

1] $K_{av} = 34.76 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 121

Date : 03-03-2016

Location N = -426, E = -461

Weather : Summer season

EGL ,RL(+),(m)= 79.756

Gauge Height Above Ground Level,m : 1.60 m

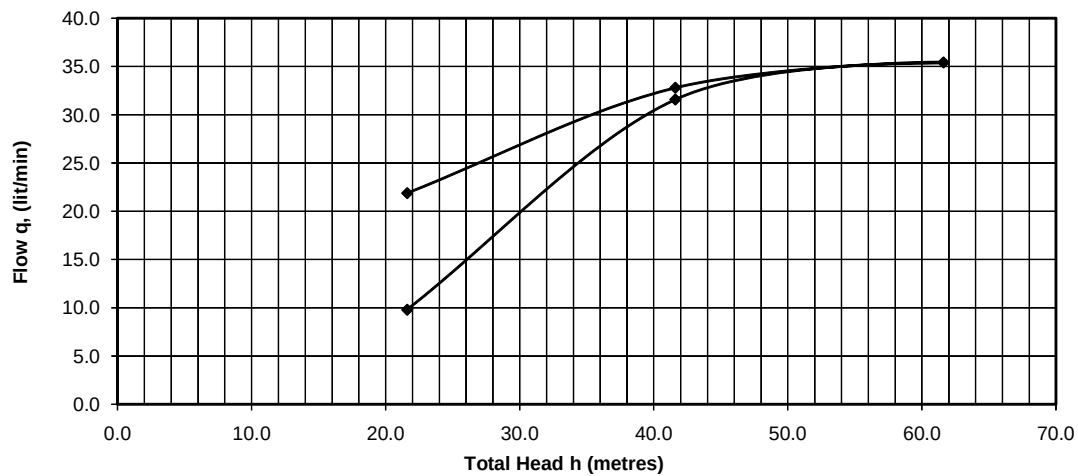
Test Depth, m 4 m

Length of Test Section : 1.5 m

Water table : 5.2 m

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	9.8	7606	7665.4	7721.3	7770.2	30.19	21.6
2 nd	4	40	31.6	7770.2	7809	7960.2	8118	50.58	41.6
3 rd	6	60	35.4	8118	8306.1	8504.5	8681.5	38.31	61.6
4 th	4	40	32.8	8681.5	8851.5	9000.3	9164.2	52.53	41.6
5 th	2	20	21.9	9164.2	9283.7	9396.9	9506.2	67.47	21.6

Flow Vs Total head



Comments:

1] $K_{av} = 47.81 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 121

Date : 03-03-2016

Location N = -426, E = -461

Weather : Summer season

EGL ,RL(+),(m)= 79.756

Gauge Height Above Ground Level,m : 1.00 m

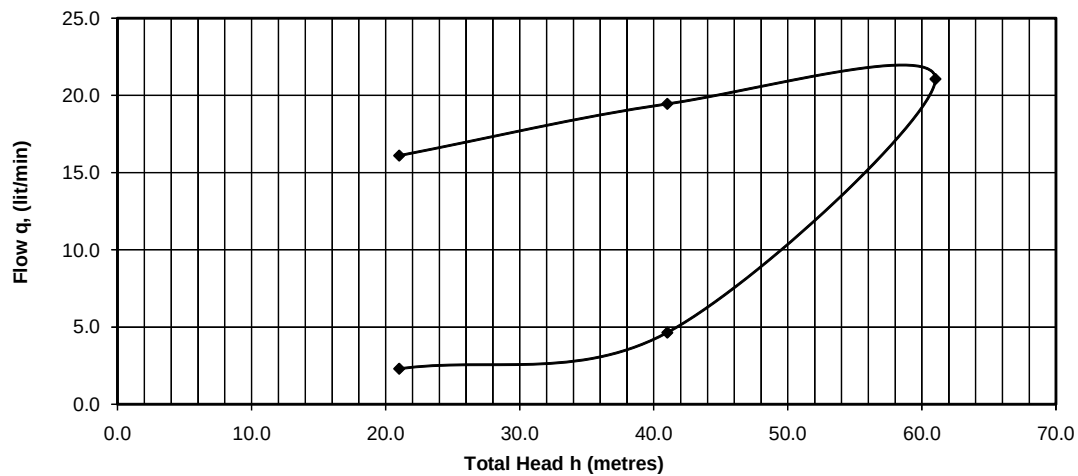
Test Depth, m 8 m

Length of Test Section : 1.5 m

Water table : 5.2 m

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	16.1	6588.3	6670.8	6744.2	6824.7	51.11	21.0
2 nd	4	40	19.5	6824.7	6935.2	7041.35	7138.6	31.63	41.0
3 rd	6	60	21.1	7138.6	7233.45	7320.9	7426.2	23.02	61.0
4 th	4	40	4.6	7426.2	7478.9	7511.4	7534.6	7.54	41.0
5 th	2	20	2.3	7534.6	7551.4	7562.6	7574.1	7.30	21.0

Flow Vs Total head



Comments:

1] $K_{av} = 24.12 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 135

Date : 20/4/16

Location N = -530, E = 428

Weather : Summer season

EGL ,RL(+),(m)= 82.422

Gauge Height Above Ground Level, m : 1.50

m

Test Depth, m 4 m

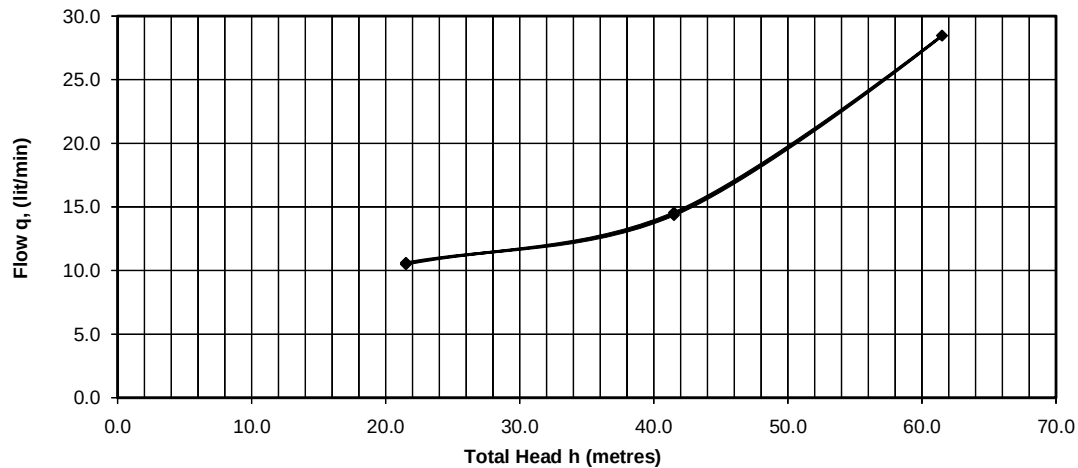
Length of Test Section : 1.5

m

Water table :

Period	Gauge Pressure		Flow, q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	10.6	23192.5	23252.8	23308.3	23361.3	32.87	21.5
2 nd	4	40	14.4	23361.3	23450	23525.1	23596.9	23.07	41.5
3 rd	6	60	28.5	23596.9	23739.4	23879.5	24021.8	30.85	61.5
4 th	4	40	14.5	24021.8	24102	24178.3	24251	23.36	41.5
5 th	2	20	10.5	24251	24309.4	24365.5	24418	32.56	21.5

Flow Vs Total head



Comments:

1] $K_{av} = 28.54 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 135

Date : 20/4/16

Location N = -530, E = 428

Weather : Summer season

EGL ,RL(+),(m)= 82.422

Gauge Height Above Ground Level,m : 1.60

m

Test Depth, m 8 m

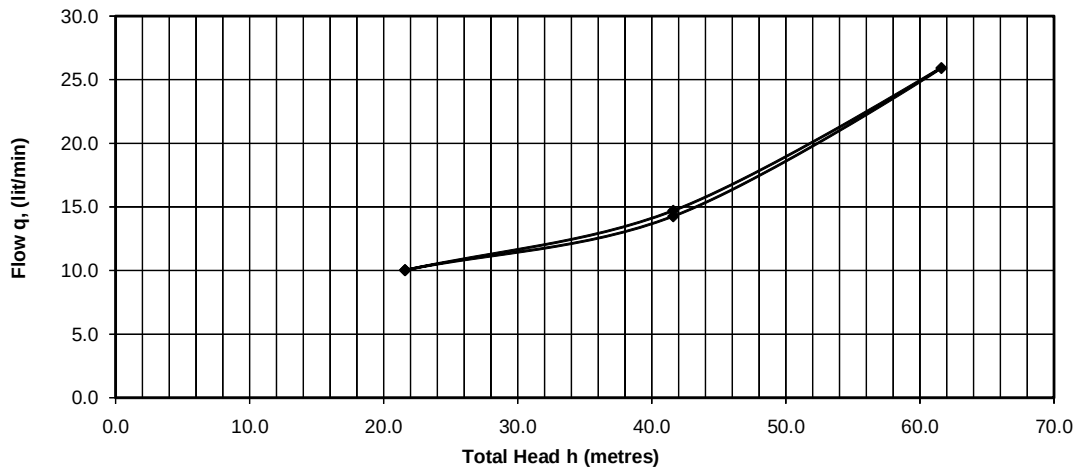
Length of Test Section : 1.5

m

Water table :

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	10.0	21980	22050.8	22103.1	22153.2	30.93	21.6
2 nd	4	40	14.7	22153.2	2224.6	22306.8	22380.3	23.56	41.6
3 rd	6	60	25.9	22380.3	22521	22656	22785.6	28.05	61.6
4 th	4	40	14.3	22785.6	22860.9	22931.7	23003	22.85	41.6
5 th	2	20	10.0	23003	23059.2	23113.8	23164	30.99	21.6

Flow Vs Total head



Comments:

1] $K_{av} = 27.28 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 150

Date : 05-04-2016

Location N = -915, E = 1400

Weather : Summer season

EGL ,RL(+),(m)= 81.626

Gauge Height Above Ground Level,m : 2.50

m

Test Depth, m 1.5

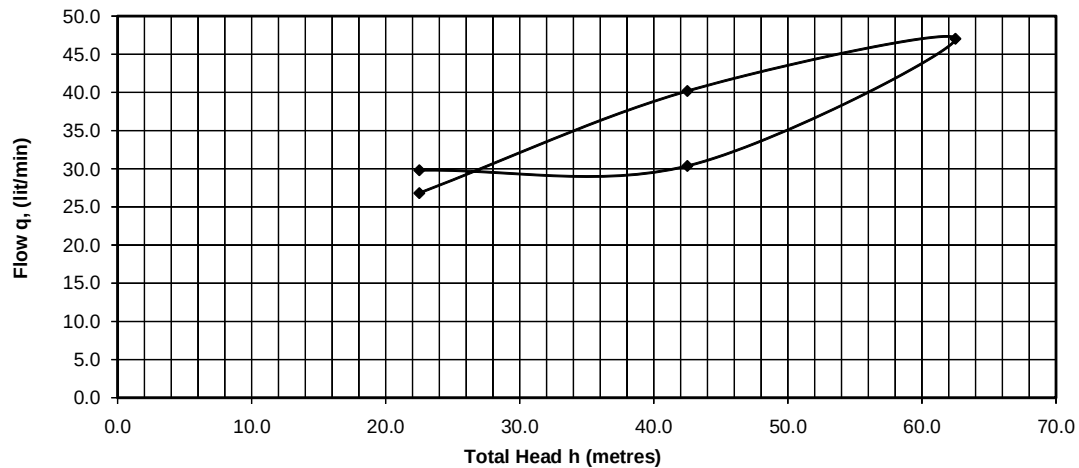
Length of Test Section : 1.5

m

Water table :

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	26.8	27548.8	27653.5	27794.5	27928.5	79.41	22.5
2 nd	4	40	40.2	27928.5	28078.5	28265.9	28466.8	63.03	42.5
3 rd	6	60	47.0	28466.8	28692.5	28921.6	29156.7	50.15	62.5
4 th	4	40	30.4	29156.7	29378.4	29536.7	29688.5	47.62	42.5
5 th	2	20	29.8	29688.5	29857.8	30002.5	30151.5	88.30	22.5

Flow Vs Total head



Comments:

1] $K_{av} = 65.70 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 150

Date : 05-04-2016

Location N = -915, E = 1400

Weather : Summer season

EGL ,RL(+),(m)= 81.626

Gauge Height Above Ground Level,m : 1.20

m

Test Depth, m 4

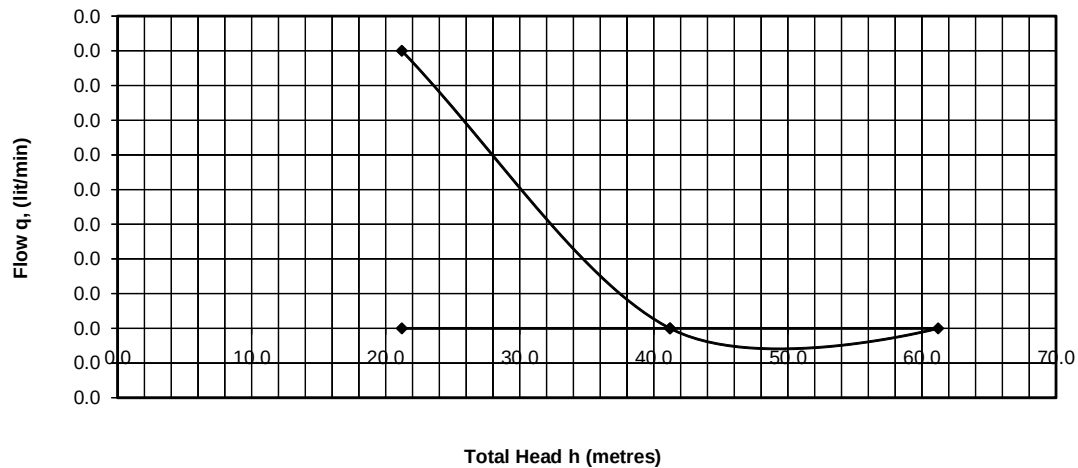
Length of Test Section : 1.5

m

Water table :

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	0.0	27491.9	27492.4	27492.7	27492.9	0.13	21.2
2 nd	4	40	0.0	27492.9	27493.4	27493.4	27493.4	0.00	41.2
3 rd	6	60	0.0	27493.4	27493.6	27493.6	27493.6	0.00	61.2
4 th	4	40	0.0	27493.6	27493.7	27493.7	27493.7	0.00	41.2
5 th	2	20	0.0	27493.7	27494.5	27494.5	27494.5	0.00	21.2

Flow Vs Total head



Comments:

1] $K_{av} = 0.03 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 150

Date : 05-04-2016

Location N = -915, E = 1400

Weather : Summer season

EGL ,RL(+),(m)= 81.626

Gauge Height Above Ground Level,m : 2.10

m

Test Depth, m 8

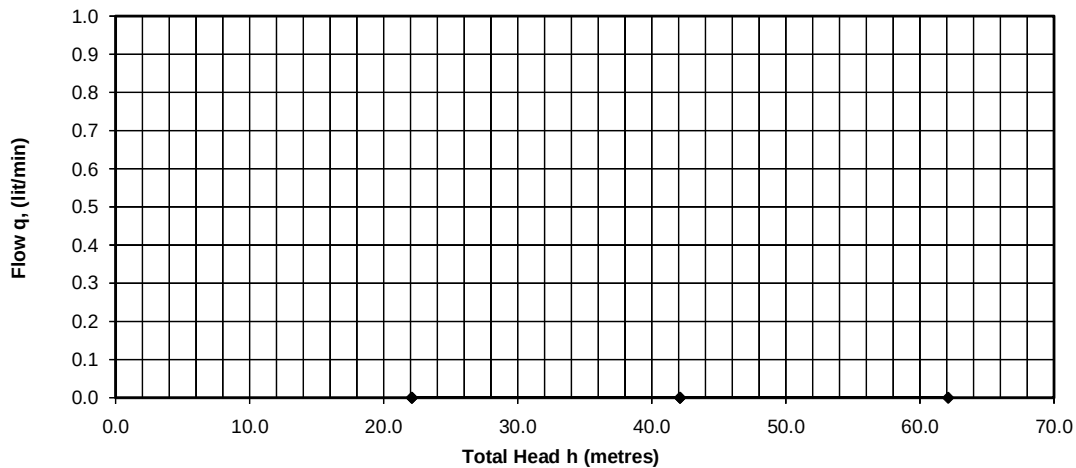
Length of Test Section : 1.5

m

Water table :

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	0.0	27444.5	27444.5	27444.5	27444.5	0.00	22.1
2 nd	4	40	0.0	27444.5	27444.8	27444.8	27444.8	0.00	42.1
3 rd	6	60	0.0	27444.8	27445	27445	27445	0.00	62.1
4 th	4	40	0.0	27445	27445	27445	27445	0.00	42.1
5 th	2	20	0.0	27445	27445	27445	27445	0.00	22.1

Flow Vs Total head



Comments:

1] $K_{av} = 0.00 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 161

Date : 29/4/16

Location N = -434, E = 1627

Weather : Summer season

EGL ,RL(+),(m)= 89.075

Gauge Height Above Ground Level,m : 1.40

m

Test Depth, m 4

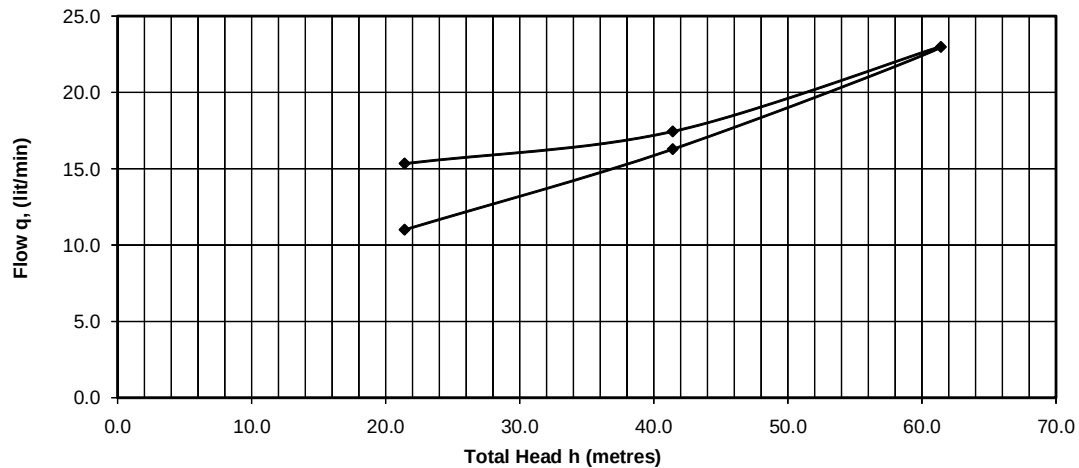
Length of Test Section : 1.5

m

Water table :

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	15.3	26156.3	26225.3	26295.4	26372.1	47.79	21.4
2 nd	4	40	17.4	26372.1	26472.9	26561.7	26648.9	28.08	41.4
3 rd	6	60	23.0	26648.9	26748.1	26858.9	26973.8	24.95	61.4
4 th	4	40	16.3	26973.8	27050.6	27134.5	27215.9	26.22	41.4
5 th	2	20	11.0	27215.9	27266.3	27316.3	27371.3	34.27	21.4

Flow Vs Total head



Comments:

1] $K_{av} = 32.26 \times 10^{-5}$ m/sec



PACKER PERMEABILITY TEST

Client : Bharat Heavy Electricals Limited

Project : Geotechnical Investigation and Topographical survey for 5x800MW Yadari Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana Site

Bore Hole No : 161

Date : 29/4/16

Location N = -434, E = 1627

Weather : Summer season

EGL ,RL(+),(m)= 89.075

Gauge Height Above Ground Level,m : 1.45

m

Test Depth, m 8

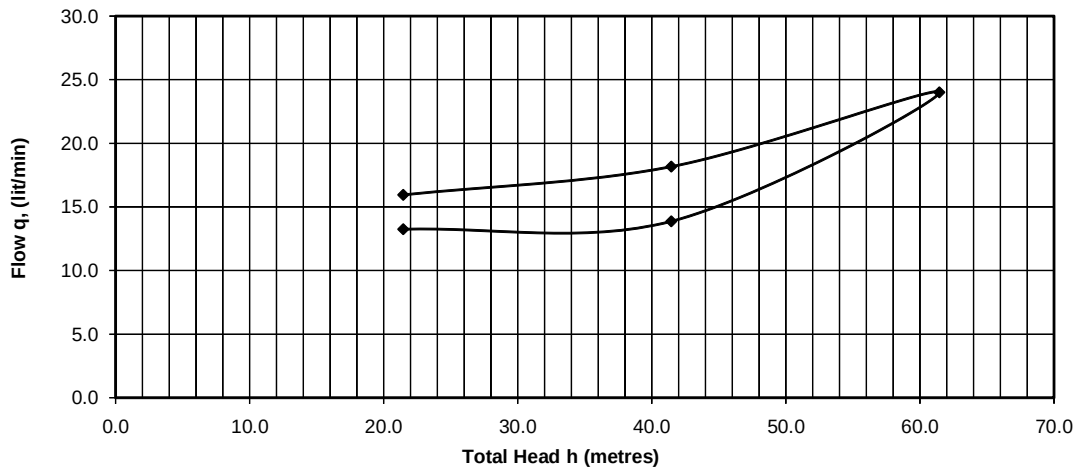
Length of Test Section : 1.5

m

Water table :

Period	Gauge Pressure		Flow,q lit/min	READING AFTER				Permeability	Total head, m
	Gauge Pressure kg/cm ²	Head of Water m		t =0 MIN	5 MIN	10 MIN	15 MIN	Lugeon, L lit/min/m/m	
1 st	2	20	15.9	24890	24967.2	25048.3	25128	49.54	21.5
2 nd	4	40	18.2	25128	25213.9	25301.8	25392.6	29.21	41.5
3 rd	6	60	24.0	25392.6	25502.6	25616.7	25736.7	26.04	61.5
4 th	4	40	13.9	25736.7	25811.3	25881.7	25951	22.29	41.5
5 th	2	20	13.2	25951	26018.9	26083.1	26149.3	41.15	21.5

Flow Vs Total head



Comments:

1] $K_{av} = 33.65 \times 10^{-5}$ m/sec

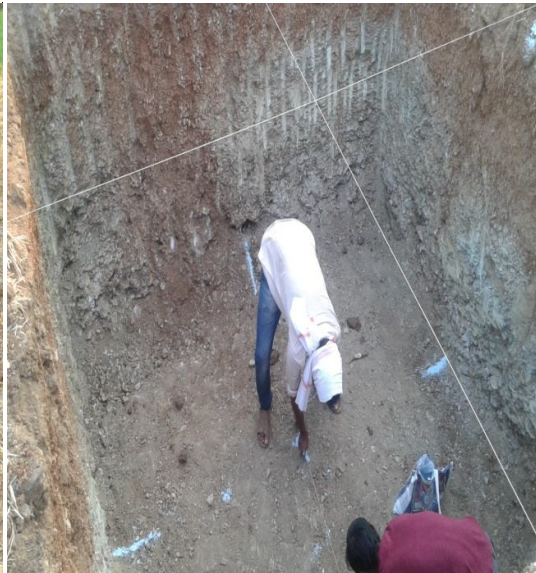


PHOTOGRAPHS

Boreholes drilled



Trial Pit





BH1-1



BH1-2



BH2-1



BH2-2



BH2-3



BH4-1



BH5-1



BH5-2



BH7-1



BH7-2



BH8-1



BH8-2



BH8-3



BH9-1



BH9-2



BH9-4



BH10-1



BH10-2



BH11-1



BH11-2



BH12-1



BH12-2



BH13-1



BH13-2



BH13-3



BH13-4



BH14-1



BH14-2



BH14-3



BH14-4



BH15-1



BH15-2



BH16-1



BH16-2



BH17-1



BH17-2



BH18-1



BH18-2



BH19-1



BH19-2



BH19-3



BH20-1



BH20-2

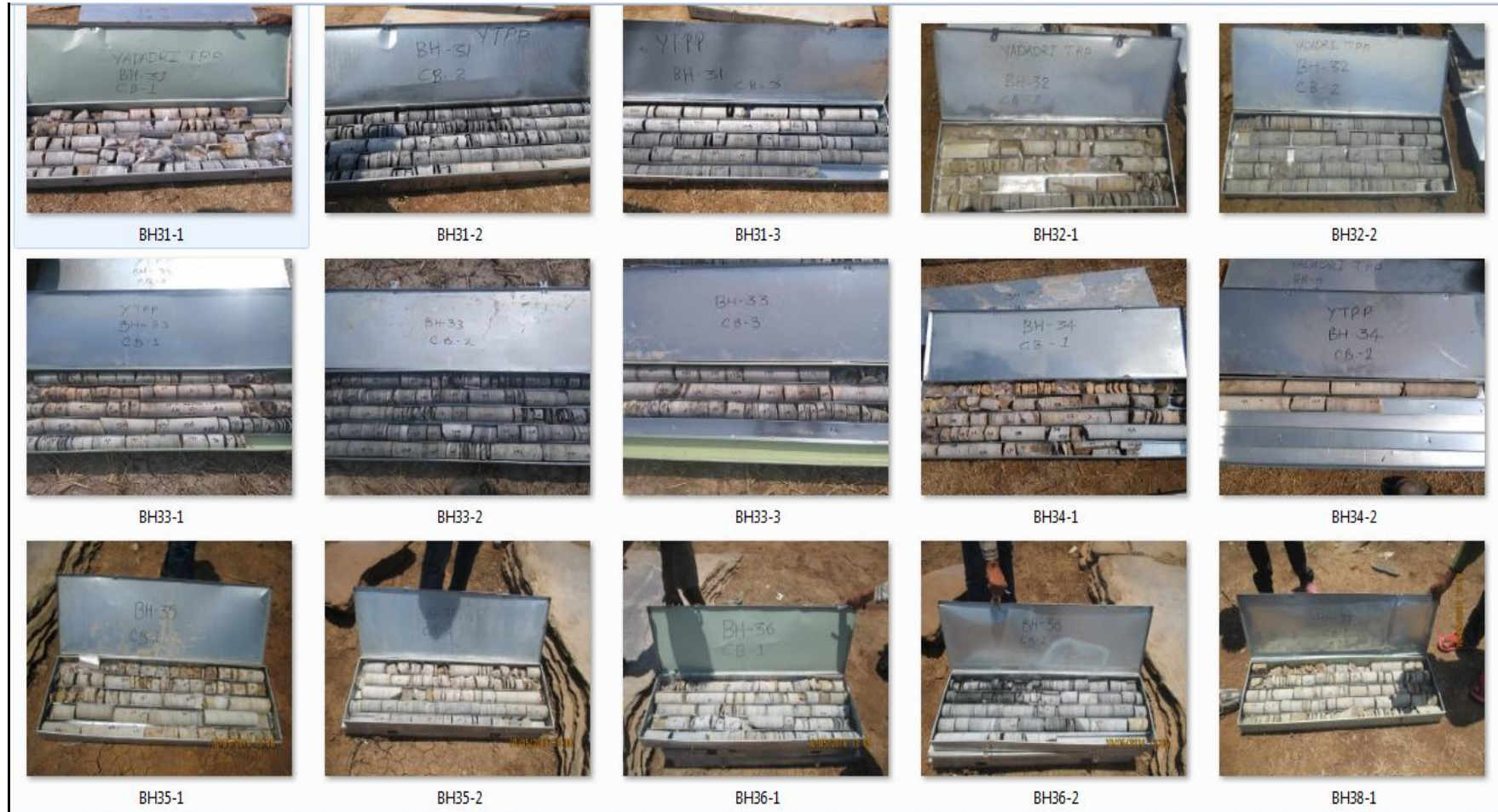


BH21-1



BH21-2







BH40-1



BH40-2



BH41-1



BH41-2



BH42-1



BH42-2



BH43-1



BH44-1



BH44-2



BH45-1



BH45-2



BH46-1



BH46-2



BH47-1



BH48-1



BH48-2



BH49-1



BH49-2



BH50-1



BH50-2



BH53-1



BH53-2



BH54



BH56-1



BH56-2



BH56-3



BH58-1



BH58-2



BH59-1



BH60-1



BH60-2



BH62-1



BH62-2



BH63-1



BH63-2



BH65-1



BH65-2



BH65-3



BH66-1



BH66-2



BH66-3



BH70-1



BH70-2



BH70-3



BH71-1



BH71-2



BH72-1



BH72-2



BH72-3



BH73-1



BH73-2



BH74-2



BH74-3



BH75-1



BH75-2



BH76-1



BH81-1



BH81-2

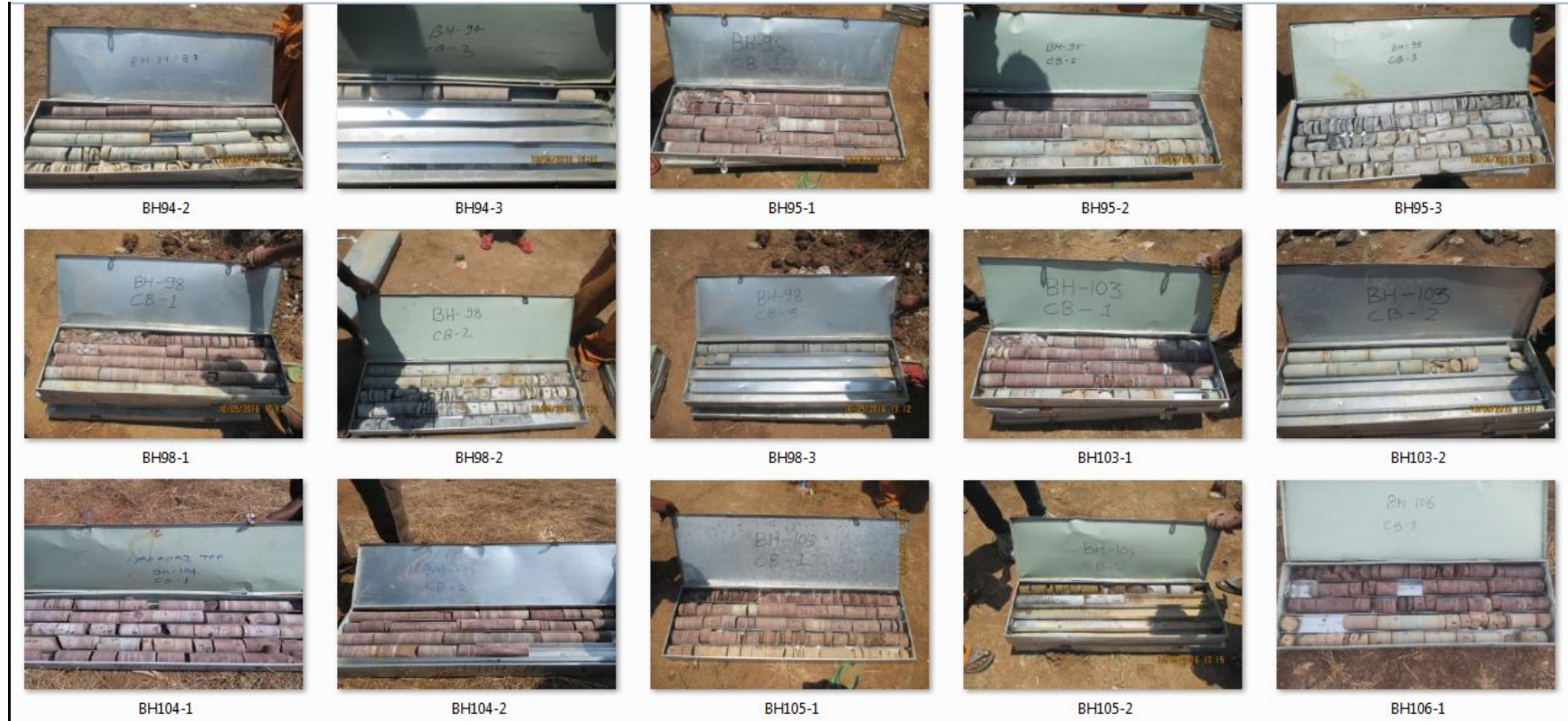


BH81-3



BH82-1









BH120-1



BH120-2



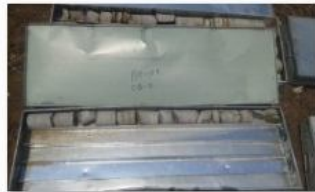
BH121-1



BH121-2



BH123-1



BH123-2



BH124-1



BH124-2



BH125-1



BH125-2



BH126



BH127-1



BH128-1



BH128-2



BH129-1



BH130-1



BH130-2



BH131-1



BH131-2



BH132-1



BH132-2



BH132-3



BH133-1



BH134-2



BH135-1



BH136-1



BH136-2



BH137-1



BH137-2



BH138-1



BH139-1



BH140-1



BH141-1



BH141-2



BH142-1



BH142-2



BH143-1



BH143-2



BH144-1



BH144-2



BH145-1



BH145-2



BH145-3



BH146-1



BH146-2



BH147-1



BH147-1-1



BH147-2



BH147-3



BH148-1



BH148-2



BH149-1



BH149-2



BH150-1



BH151-1



BH151-2



BH152-1



BH152-2



BH153-1



BH154-1



BH155-1



BH155-2



BH156-1



BH156-2



BH157-1



BH157-2



BH158-1



BH159-1



BH160-1



BH160-2



BH161-1



BH161-2



BH162-1



BH163-1



IBH1



VOLUME III



Geotechnical Investigation report of 5X800MW Yadadri thermal Power station at Veerlapalem, Telangana state for Main plant area consists of three volumes as per details given below:

VOLUME –I – Methodology, Analysis & Recommendations

VOLUME – II – Bore logs, Trial pits, field permeability test(Packer test) and laboratory tests results

VOLUME – III – Plate load test,Cyclic plate load test,Cross hole shear test, Pressuremeter test,Block vibration test and Seismic refraction test

This volume consist of Plate load test, Cyclic plate load test, Cross hole shear test, Pressuremeter test, Block vibration test and Seismic refraction test for the proposed power plant



Contents

PLATE LOAD TEST	4
CYCLIC PLATE LOAD TEST	39
ELECTRICAL RESISTIVITY TEST	80
PRESSUREMETER TEST	130
SEISMIC REFRACTION TEST	213
CROSS-HOLE SHEAR-WAVE TEST	247
BLOCK VIBRATION TEST	262
PHOTOGRAPHS	287



PLATE LOAD TEST

Date :	05-07-2016		PLT no. :		1	
Location :	N=	177	E=	552	Plate size :	600 x 600 mm ²
Depth :	1.50	m	Jack Dia :		230 mm	
EGL (existing ground level) RL(+) =	83.64		m			
DG no.	S0465	Position :	L	Least Count of Dial Gauge		0.01 mm

Observations										
Pressure kg/cm ²	Ton	Load T/m ²	Readings in mints. Interval							
			1	2.25	4	6.25	9	16	25	60
0	0.0	0	25.00							
5	2.1	10.26	23.98	23.89	23.35	23.35	23.34	23.34	23.34	23.32
10	4.2	20.52	23.10	23.08	23.06	23.05	23.03	23.00	22.99	22.47
15	6.2	30.78	22.70	22.68	22.66	22.65	22.64	22.62	22.62	22.61
20	8.3	41.03	22.38	22.37	22.37	22.35	22.34	22.32	22.30	22.29
25	10.4	51.29	22.08	22.06	22.05	22.05	22.05	22.05	22.04	22.02
35	14.5	71.81	21.50	21.45	21.43	21.40	21.38	21.36	21.33	21.27
45	18.7	92.33	20.68	20.63	20.56	20.54	20.52	20.51	2050.00	20.12
50	20.8	102.59	19.90	19.85	19.80	19.80	19.77	19.65	19.61	19.42
60	24.9	123.10	19.08	18.90	18.81	18.63	18.52	18.40	18.30	18.11
70	29.1	143.62	17.40	17.38	17.38	17.38	17.30	17.30	17.30	16.85
75	31.2	153.88	16.85	16.65	16.65	16.65	16.4	16.4	16.39	15.75

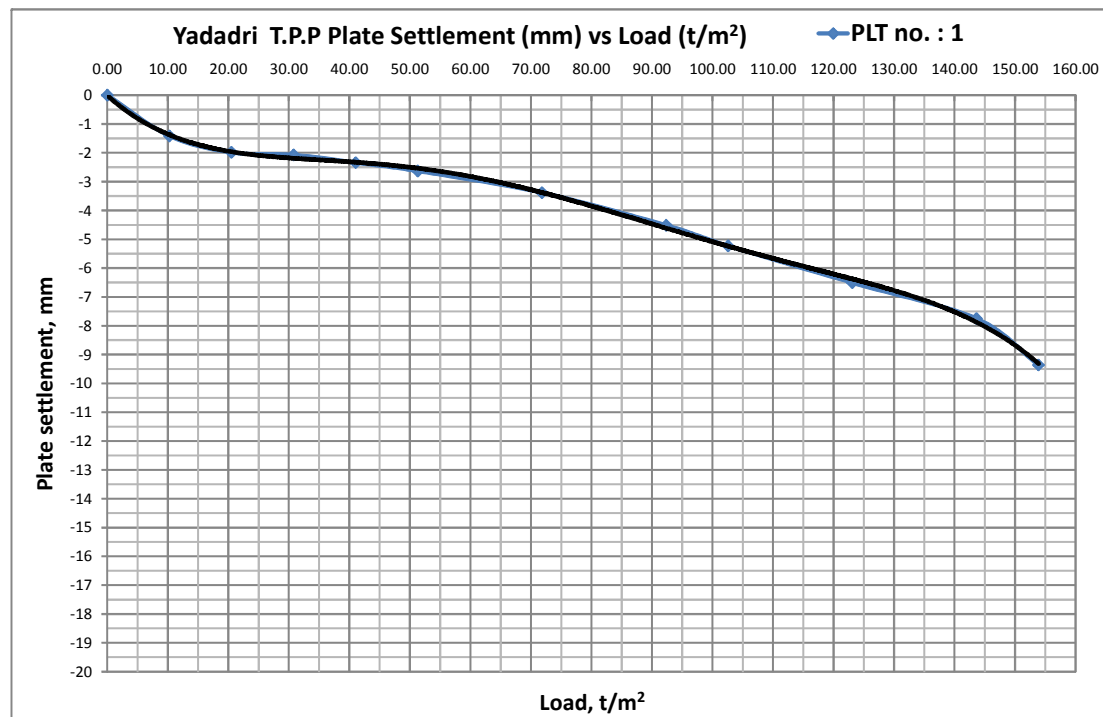
DG no.	R5159	Position :	R	Least Count of Dial Gauge		0.01 mm
--------	-------	------------	---	---------------------------	--	---------

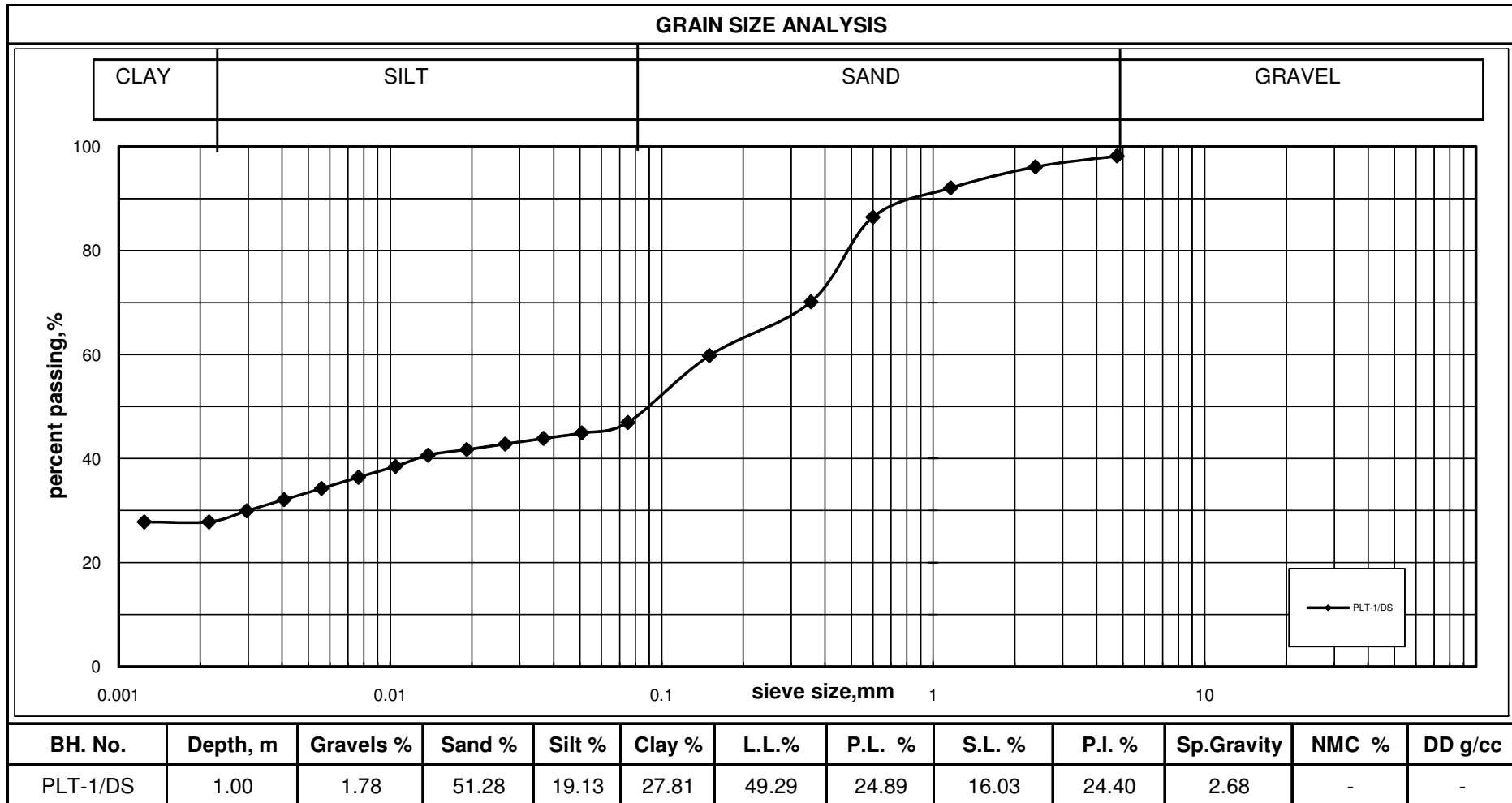
Observations										
Pressure kg/cm ²	Ton	Load t/m ²	Readings in mints. Interval							
			1	2.25	4	6.25	9	16	25	60
0	0.0	0.00	25.00							
5	2.1	10.26	23.90	23.89	23.88	23.88	23.87	23.87	23.86	23.86
10	4.2	20.52	23.70	23.65	23.62	23.60	23.59	23.58	23.57	23.56
15	6.2	30.78	23.31	23.30	23.29	23.27	23.26	23.26	23.26	23.25
20	8.3	41.03	23.05	23.05	23.05	23.03	23.03	23.03	23.03	23.03
25	10.4	51.29	22.77	22.76	22.75	22.75	22.75	22.75	22.74	22.72
35	14.5	71.81	22.21	22.19	22.18	22.11	22.11	22.09	22.06	21.97
45	18.7	92.33	21.40	21.34	21.29	21.26	21.24	21.23	21.22	20.85
50	20.8	102.59	20.70	20.69	20.65	20.56	20.50	20.45	20.40	20.13
60	24.9	123.10	19.80	19.60	19.53	19.41	19.32	19.10	18.96	18.88
70	29.1	143.62	18.20	18.18	18.18	18.14	18.14	18.14	17.75	17.65
75	31.2	153.88	17.45	17.45	17.45	17.40	17.38	17.10	17.08	15.53



Load t/m ²	Dial Gauge (DG) no.		Average mm	Sp, Plate Settlement mm
	S0465 (L)	R5159 (R)		
	mm	mm		
0.00	25.00	25.00	25.00	0
10.26	23.32	23.86	23.59	-1.41
20.52	22.47	23.56	23.02	-1.985
30.78	22.61	23.25	22.93	-2.07
41.03	22.29	23.03	22.66	-2.34
51.29	22.02	22.72	22.37	-2.63
71.81	21.27	21.97	21.62	-3.38
92.33	20.12	20.85	20.49	-4.515
102.59	19.42	20.13	19.78	-5.225
123.10	18.11	18.88	18.50	-6.505
143.62	16.85	17.65	17.25	-7.75
153.88	15.75	15.53	15.64	-9.36

SBC table for PLT 1 at Yadadri T.P.P.				
Bf m	Bp m	Sf mm	Sp mm	SBC t/m ²
2	0.6	12	7.05	130
4	0.6	12	6.16	118
6	0.6	12	5.88	112
8	0.6	12	5.74	110
10	0.6	12	5.66	108
12	0.6	12	5.60	106







Date :	25-02-2016		PLT no. :	2	
Location :	N=	-118	E=	-105	
Depth :	1.80	m	Plate size :	450	x 450 mm ²
EGL (existing ground level) RL(+) =	77.86	m	Jack Dia :	230	mm

DG no.	S0465	Position :	L	Least Count of Dial Gauge	0.01	mm
--------	-------	------------	---	---------------------------	------	----

Observations										
Pressure kg/cm ²	Ton	Load T/m ²	Readings in mints. Interval							
			1	2.25	4	6.25	9	16	25	60
0	0.0	0	25.00							
5	2.1	10.26	23.10	23.09	23.09	23.09	23.08	23.08	23.08	23.08
10	4.2	20.52	22.73	22.72	22.71	22.69	22.68	22.66	22.66	22.66
15	6.2	30.78	22.28	22.27	22.25	22.23	22.22	22.18	22.16	22.16
20	8.3	41.03	21.69	21.65	21.63	21.62	21.60	21.57	21.57	21.57
25	10.4	51.29	21.15	21.09	21.06	21.04	21.01	20.97	20.97	20.97
30	12.5	61.55	20.56	20.51	20.48	20.44	20.42	20.33	20.29	20.29
35	14.5	71.81	19.91	19.86	19.79	19.76	19.73	19.65	19.58	19.58
45	18.7	92.33	18.60	18.53	18.48	18.36	18.32	18.23	18.18	17.99
55	22.9	112.85	16.99	16.91	16.85	16.78	16.74	16.65	16.56	16.41
75	31.2	153.88	14.85	14.74	14.66	14.57	14.51	14.41	13.83	11.89

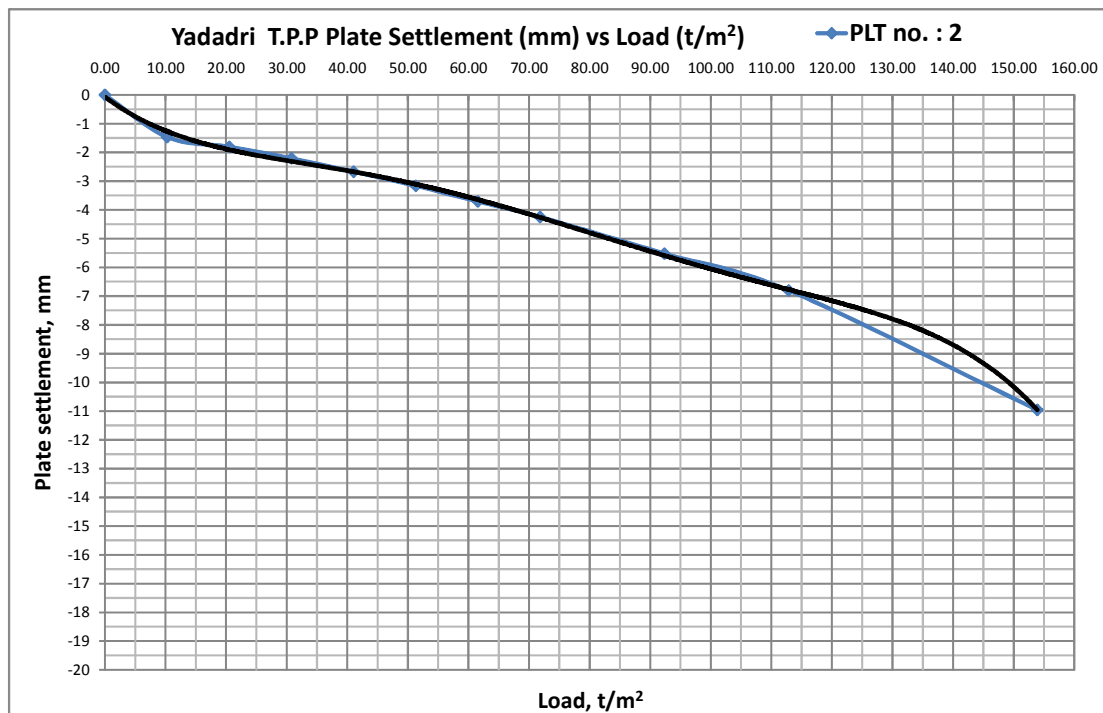
DG no.	R5159	Position :	R	Least Count of Dial Gauge	0.01	mm
--------	-------	------------	---	---------------------------	------	----

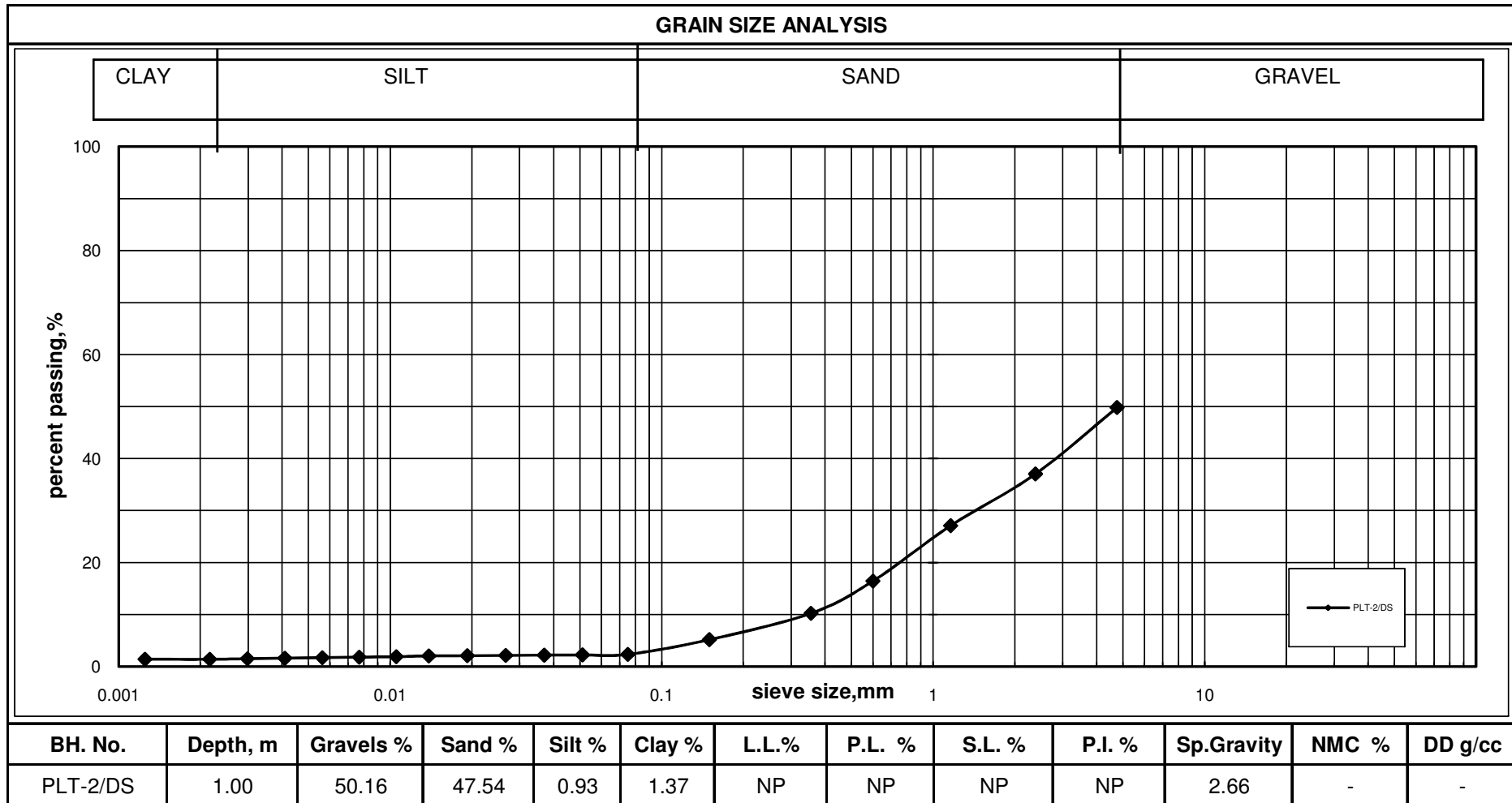
Observations										
Pressure kg/cm ²	Ton	Load t/m ²	Readings in mints. Interval							
			1	2.25	4	6.25	9	16	25	60
0	0.0	0.00	23.00							
5	2.1	10.26	22.03	22.03	22.01	22.02	22.01	22.00	22.00	21.99
10	4.2	20.52	21.76	21.75	21.75	21.75	21.74	21.73	21.72	21.72
15	6.2	30.78	21.49	21.48	21.46	21.46	21.45	21.44	21.43	21.43
20	8.3	41.03	21.15	21.14	21.12	21.11	21.10	21.08	21.08	21.08
25	10.4	51.29	20.83	20.80	20.78	20.76	20.75	20.72	20.70	20.70
30	12.5	61.55	20.46	20.46	20.42	20.39	20.38	20.36	20.30	20.30
35	14.5	71.81	20.10	20.08	20.05	20.02	19.99	19.95	19.92	19.92
45	18.7	92.33	19.30	19.28	19.22	19.17	19.15	19.08	19.05	18.97
55	22.9	112.85	18.36	18.32	18.28	18.23	18.21	18.15	18.09	17.98
75	31.2	153.88	17.02	16.95	16.90	16.84	16.79	16.70	16.41	14.20



Calculations				
Load t/m ²	Dial Gauge (DG) no.		Average	Sp, Plate Settlement
	S0465 (L)	R5159 (R)		
	mm	mm	mm	mm
0.00	25.00	23.00	24.00	0
10.26	23.08	21.99	22.54	-1.465
20.52	22.66	21.72	22.19	-1.81
30.78	22.16	21.43	21.80	-2.205
41.03	21.57	21.08	21.33	-2.675
51.29	20.97	20.70	20.84	-3.165
61.55	20.29	20.30	20.30	-3.705
71.81	19.58	19.92	19.75	-4.25
92.33	17.99	18.97	18.48	-5.52
112.85	16.41	17.98	17.20	-6.805
153.88	11.89	14.20	13.05	-10.955

SBC table for PLT 2 at Yadadri T.P.P.				
Bf	Bp	Sf	Sp	SBC
m	m	mm	mm	t/m ²
2	0.45	12	5.71	95
4	0.45	12	4.99	85
6	0.45	12	4.76	80
8	0.45	12	4.65	78
10	0.45	12	4.58	76
12	0.45	12	4.54	75







Date :		15/4/16		PLT no. :		3	
Location :		N= -124		E= 600		Plate size : 600 x 600 mm ²	
Depth :		1.60 m		Jack Dia :		230 mm	
EGL (existing ground level) RL(+) =		85.12 m					
DG no.		R5159		Position :		L	
				Least Count of Dial Gauge		0.01 mm	

Observations										
Pressure kg/cm ²	Ton	Load T/m ²	Readings in mints. Interval							
			1	2.25	4	6.25	9	16	25	60
0	0.0	0	25.00							
5	2.1	10.26	24.45	24.44	24.44	24.44	24.44	24.43	24.43	24.43
10	4.2	20.52	23.98	23.96	23.96	23.96	23.95	23.95	23.95	23.94
15	6.2	30.78	23.36	23.35	23.34	23.33	23.33	23.32	23.32	23.30
20	8.3	41.03	22.83	22.81	22.80	22.79	22.77	22.76	22.75	22.74
25	10.4	51.29	22.45	22.44	22.41	22.41	22.40	22.39	22.37	22.31
35	14.5	71.81	21.52	21.52	21.52	21.52	21.43	21.41	21.39	21.25
45	18.7	92.33	20.25	20.21	20.21	20.15	20.15	20.11	20.02	19.93
50	20.8	102.59	19.63	19.55	19.51	19.38	19.33	19.27	19.12	19.09
60	24.9	123.10	17.40	17.35	17.25	17.17	17.06	16.97	16.84	16.62
70	29.1	143.62	13.70	13.69	13.67	13.50	13.42	13.13	13.08	12.77
75	31.2	153.88	11.6	11.59	11.48	11.33	11.17	10.99	10.87	10.05

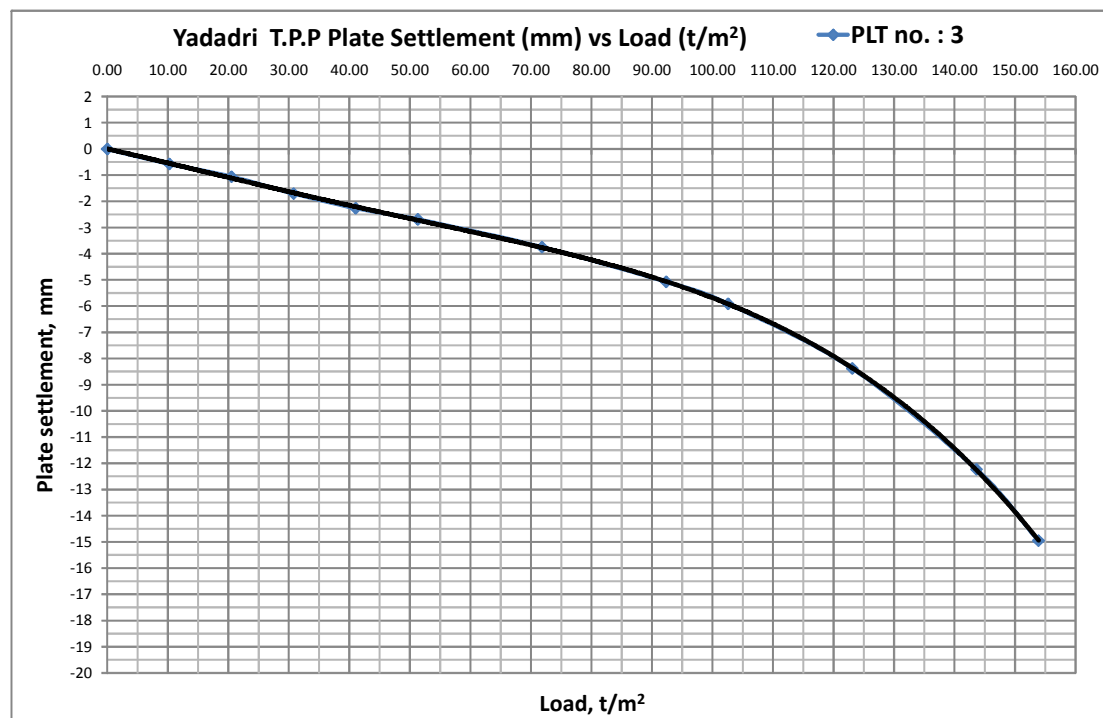
DG no.		S0465		Position :		R	
				Least Count of Dial Gauge		0.01 mm	

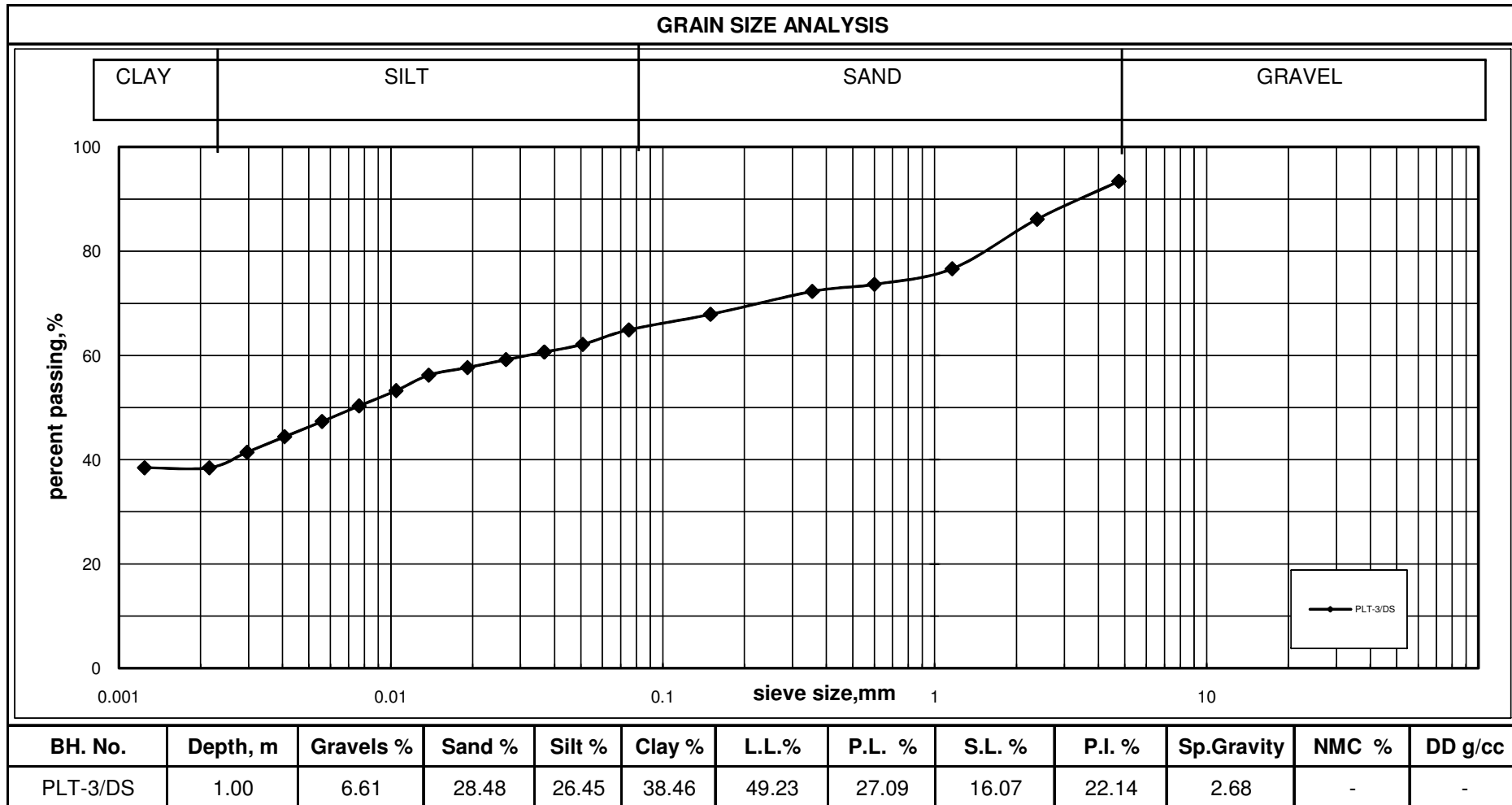
Observations										
Pressure kg/cm ²	Ton	Load t/m ²	Readings in mints. Interval							
			1	2.25	4	6.25	9	16	25	60
0	0.0	0.00	25.00							
5	2.1	10.26	24.52	24.51	24.51	24.51	24.51	24.50	24.50	24.50
10	4.2	20.52	24.14	24.13	24.13	24.13	24.12	24.12	24.12	24.12
15	6.2	30.78	23.63	23.61	23.60	23.59	23.59	23.58	23.57	23.57
20	8.3	41.03	23.16	23.15	23.15	23.15	23.11	23.11	23.10	23.10
25	10.4	51.29	22.83	22.83	22.81	22.80	22.79	22.77	22.77	22.71
35	14.5	71.81	21.98	21.98	21.95	21.94	21.92	21.90	21.89	21.73
45	18.7	92.33	21.30	21.95	20.87	20.79	20.74	20.71	20.63	20.55
50	20.8	102.59	20.26	20.20	20.19	20.09	20.05	19.99	19.85	19.83
60	24.9	123.10	18.45	18.43	18.29	18.21	18.10	18.02	17.90	17.71
70	29.1	143.62	15.23	15.15	15.09	14.98	14.93	14.84	14.62	14.28
75	31.2	153.88	13.30	13.26	13.13	13.13	12.85	12.69	12.59	11.99



Calculations				
Load	Dial Guage (DG) no.		Average	Sp, Plate Settlement
	R5159 (L)	S0465 (R)		
t/m ²	mm	mm	mm	mm
0.00	25.00	25.00	25.00	0
10.26	24.43	24.43	24.43	-0.57
20.52	23.94	23.94	23.94	-1.06
30.78	23.30	23.30	23.30	-1.7
41.03	22.74	22.74	22.74	-2.26
51.29	22.31	22.31	22.31	-2.69
71.81	21.25	21.25	21.25	-3.75
92.33	19.93	19.93	19.93	-5.07
102.59	19.09	19.09	19.09	-5.91
123.10	16.62	16.62	16.62	-8.38
143.62	12.77	12.77	12.77	-12.23
153.88	10.05	10.05	10.05	-14.95

SBC table for PLT 3 at Yadadri T.P.P.				
Bf	Bp	Sf	Sp	SBC
m	m	mm	mm	t/m ²
2	0.6	12	7.05	113
4	0.6	12	6.16	106
6	0.6	12	5.88	102
8	0.6	12	5.74	98
10	0.6	12	5.66	98
12	0.6	12	5.60	97







Date :	28/4/16		PLT no. :	4						
Location :	N=	-568	E=	1299	Plate size :	450	x	450	mm ²	
Depth :	1.50	m	Jack Dia :	230	mm					
EGL (existing ground level) RL(+)=	84.27		m							
DG no.	S0465	Position :	R	Least Count of Dial Gauge				0.01	mm	
Observations										
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval							
		T/m2	1	2.25	4	6.25	9	16	25	60
0	0.0	0	25.00							
5	2.1	10.26	23.98	23.98	23.98	23.98	23.98	23.98	23.98	23.98
10	4.2	20.52	23.95	23.95	23.95	23.95	23.95	23.95	23.95	23.95
15	6.2	30.78	23.92	23.92	23.92	23.92	23.92	23.92	23.92	23.92
20	8.3	41.03	23.90	23.90	23.90	23.90	23.90	23.90	23.90	23.90
25	10.4	51.29	23.88	23.88	23.88	23.88	23.88	23.88	23.88	23.88
35	14.5	71.81	23.83	23.83	23.83	23.83	23.83	23.83	23.83	23.83
45	18.7	92.33	23.80	23.80	23.80	23.80	23.80	23.80	23.80	23.80
50	20.8	102.59	23.79	23.79	23.79	23.79	23.79	23.79	23.79	23.79
60	24.9	123.10	23.79	23.79	23.76	23.76	23.76	23.75	23.75	23.75
70	29.1	143.62	23.75	23.73	23.73	23.73	23.73	23.73	23.73	23.73
75	31.2	153.88	23.71	23.71	23.71	23.71	23.71	23.71	23.71	23.65

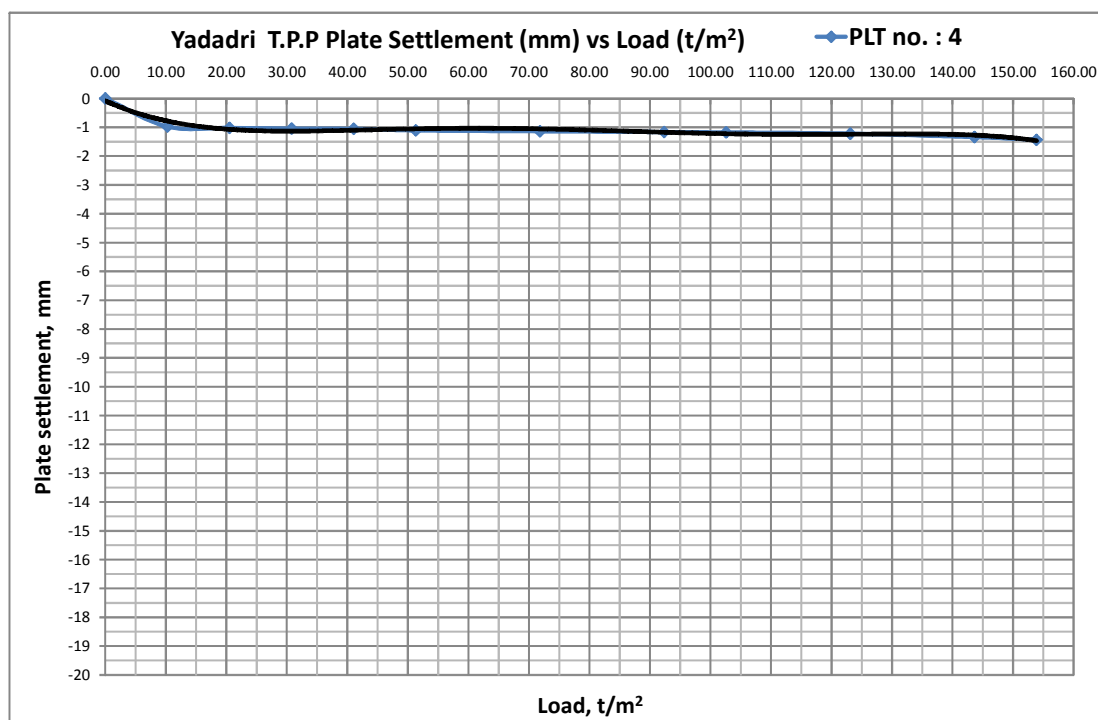
DG no.	R5159	Position :	L	Least Count of Dial Gauge				0.01	mm	
Observations										
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval							
		t/m ²	1	2.25	4	6.25	9	16	25	60
0	0.0	0.00	25.00							
5	2.1	10.26	24.07	24.07	24.07	24.07	24.07	24.07	24.07	24.07
10	4.2	20.52	24.02	24.02	24.02	24.02	24.02	24.02	24.02	24.02
15	6.2	30.78	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
20	8.3	41.03	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
25	10.4	51.29	23.91	23.91	23.91	23.91	23.91	23.91	23.91	23.91
35	14.5	71.81	23.91	23.91	23.90	23.90	23.90	23.90	23.90	23.90
45	18.7	92.33	23.89	23.89	23.89	23.89	23.89	23.89	23.89	23.88
50	20.8	102.59	23.87	23.87	23.87	23.86	23.86	23.86	23.86	23.86
60	24.9	123.10	23.86	23.86	23.81	23.81	23.81	23.81	23.81	23.81
70	29.1	143.62	23.65	23.65	23.64	23.64	23.63	23.63	23.63	23.60
75	31.2	153.88	23.59	23.59	23.58	23.56	23.55	23.55	23.55	23.49

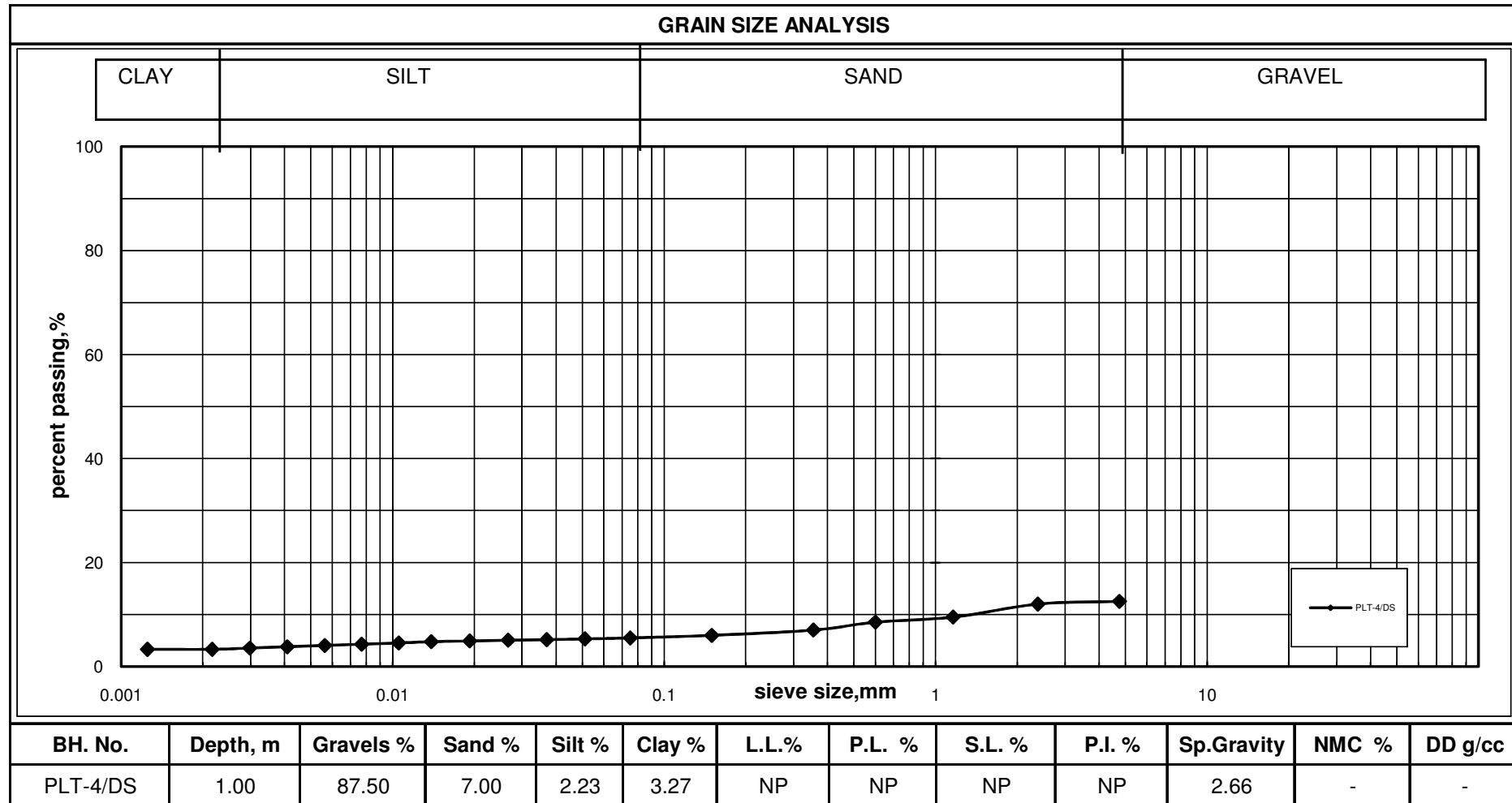


Calculations				
Load	Dial Guage (DG) no.		Average	Sp, Plate Settlement
	S0465 (R)	R5159 (L)		
t/m ²	mm	mm	mm	mm
0.00	25.00	25.00	25.00	0
10.26	23.98	24.07	24.03	-0.975
20.52	23.95	24.02	23.99	-1.015
30.78	23.92	24.00	23.96	-1.04
41.03	23.90	24.00	23.95	-1.05
51.29	23.88	23.91	23.90	-1.105
71.81	23.83	23.90	23.87	-1.135
92.33	23.80	23.88	23.84	-1.16
102.59	23.79	23.86	23.83	-1.175
123.10	23.75	23.81	23.78	-1.22
143.62	23.73	23.60	23.67	-1.335
153.88	23.65	23.49	23.57	-1.43

SBC table for PLT 4 at Yadadri T.P.P.				
Bf	Bp	Sf	Sp	SBC
m	m	mm	mm	t/m ²
2	0.45	12	5.71	155
4	0.45	12	4.99	155
6	0.45	12	4.76	155
8	0.45	12	4.65	155
10	0.45	12	4.58	155
12	0.45	12	4.54	155

Note: Recommended SBC =100 t/m²







Date :22/02/2016

Location :N=-221E=-227

Depth :1.70m

EGL (existing ground level) RL(+) =78.68m

PLT no. :5

Plate size :450x450mm²

Jack Dia :230mm

DG no.S0465

Position :L

Least Count of Dial Gauge0.01mm

Observations										
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval							
		T/m2	1	2.25	4	6.25	9	16	25	60
0	0.0	0	24.00							
5	2.1	10.26	23.26	23.24	23.23	23.23	23.22	23.22	23.22	23.22
10	4.2	20.52	22.95	22.94	22.93	22.93	22.92	22.91	22.90	22.90
15	6.2	30.78	22.67	22.64	22.63	22.63	22.61	22.60	22.59	22.59
20	8.3	41.03	22.42	22.39	22.38	22.37	22.36	22.35	22.34	22.34
25	10.4	51.29	22.21	22.18	22.16	22.15	22.14	22.13	22.13	22.13
35	14.5	71.81	21.58	21.53	21.52	21.51	21.49	21.48	21.47	21.47
45	18.7	92.33	21.05	20.97	20.96	20.94	20.93	20.92	20.91	20.91
50	20.8	102.59	20.79	20.72	20.70	20.67	20.65	20.63	20.62	20.62
60	24.9	123.10	20.04	19.94	19.88	19.83	19.80	19.74	19.72	19.72
70	29.1	143.62	19.12	19.08	19.07	19.03	19.02	18.99	18.97	18.96
75	31.2	153.88	18.89	18.85	18.81	18.79	18.76	18.74	18.71	18.51

DG no.R5159

Position :R

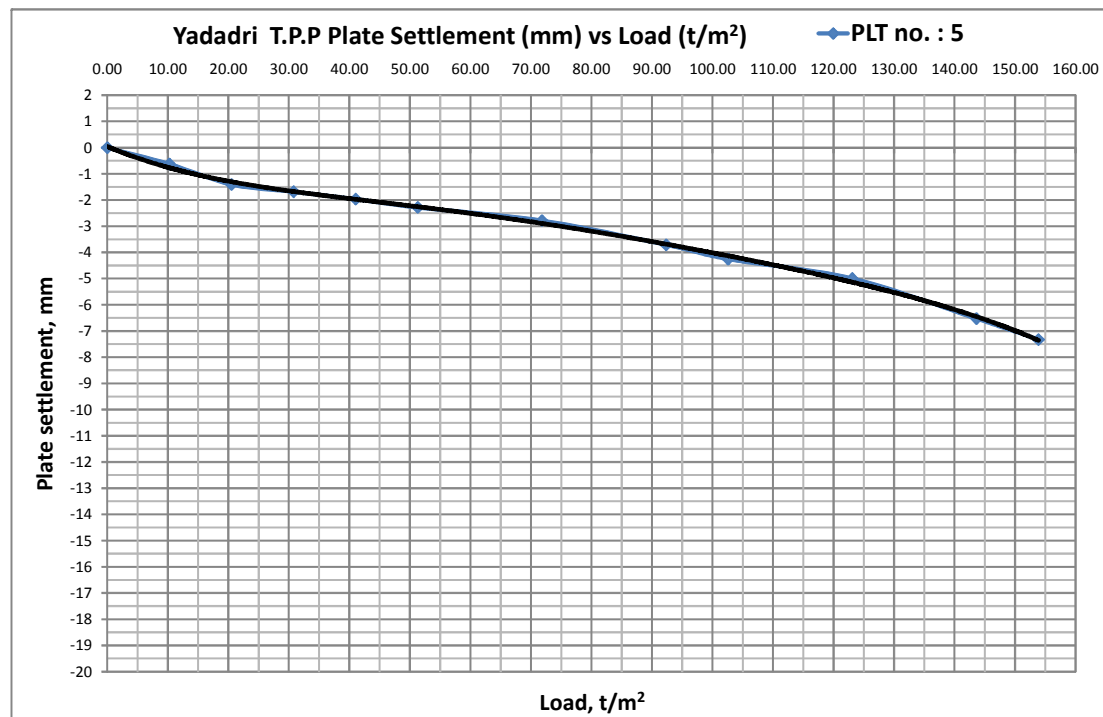
Least Count of Dial Gauge0.01mm

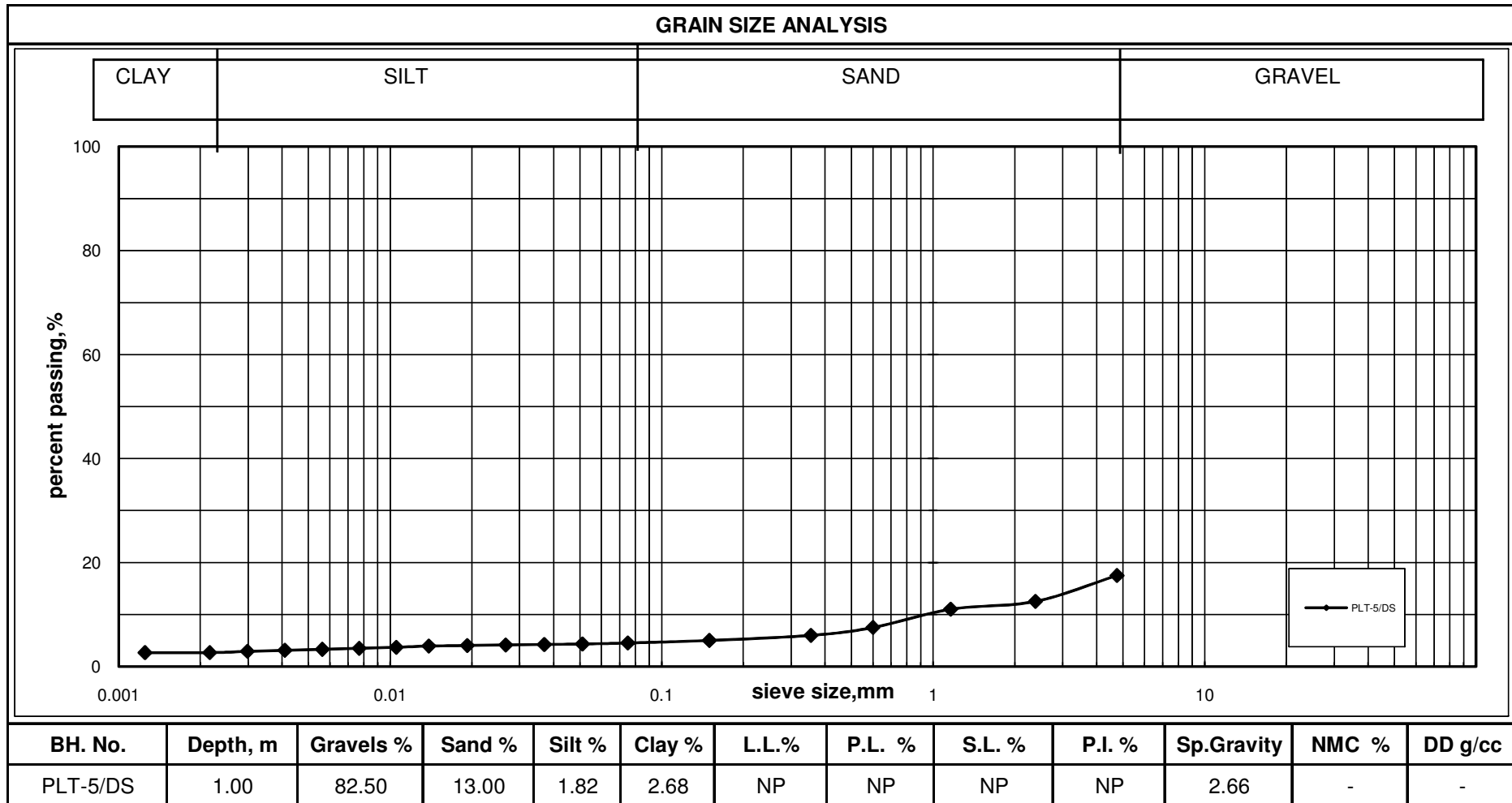
Observations										
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval							
		t/m ²	1	2.25	4	6.25	9	16	25	60
0	0.0	0.00	25.00							
5	2.1	10.26	24.54	24.54	24.54	24.53	24.53	24.53	24.52	24.52
10	4.2	20.52	23.33	23.32	23.31	23.31	23.30	23.30	23.29	23.29
15	6.2	30.78	23.13	23.13	23.09	23.08	23.06	23.05	23.04	23.04
20	8.3	41.03	22.96	22.82	22.80	22.77	22.75	22.74	22.73	22.73
25	10.4	51.29	22.56	22.54	22.44	22.40	22.38	22.34	22.31	22.31
35	14.5	71.81	22.25	22.18	22.17	22.14	22.10	21.97	21.96	21.96
45	18.7	92.33	20.98	20.91	20.80	20.78	20.76	20.70	20.68	20.68
50	20.8	102.59	20.28	20.24	20.16	20.07	19.98	19.90	19.87	19.87
60	24.9	123.10	19.72	19.61	19.58	19.56	19.43	19.33	19.28	19.28
70	29.1	143.62	17.43	17.37	17.33	17.26	17.20	17.15	17.08	16.99
75	31.2	153.88	16.91	16.87	16.83	16.80	16.76	16.73	16.66	15.84



Calculations				
Load	Dial Guage (DG) no.		Average	Sp, Plate Settlement
	S0465 (L)	R5159 (R)		
t/m ²	mm	mm	mm	mm
0.00	24.00	25.00	24.50	0
10.26	23.22	24.52	23.87	-0.63
20.52	22.90	23.29	23.10	-1.405
30.78	22.59	23.04	22.82	-1.685
41.03	22.34	22.73	22.54	-1.965
51.29	22.13	22.31	22.22	-2.28
71.81	21.47	21.96	21.72	-2.785
92.33	20.91	20.68	20.80	-3.705
102.59	20.62	19.87	20.25	-4.255
123.10	19.72	19.28	19.50	-5
143.62	18.96	16.99	17.98	-6.525
153.88	18.51	15.84	17.18	-7.325

SBC table for PLT 5 at Yadadri T.P.P.				
Bf	Bp	Sf	Sp	SBC
m	m	mm	mm	t/m ²
2	0.45	12	5.71	135
4	0.45	12	4.99	120
6	0.45	12	4.76	115
8	0.45	12	4.65	112
10	0.45	12	4.58	110
12	0.45	12	4.54	106







Date :		19/2/2016		PLT no. :		6	
Location :		N=	-262	E=	-113	Plate size :	600 x 600 mm ²
Depth :		1.70	m	Jack Dia :		230	mm
EGL (existing ground level) RL(+) = 77.24 m							

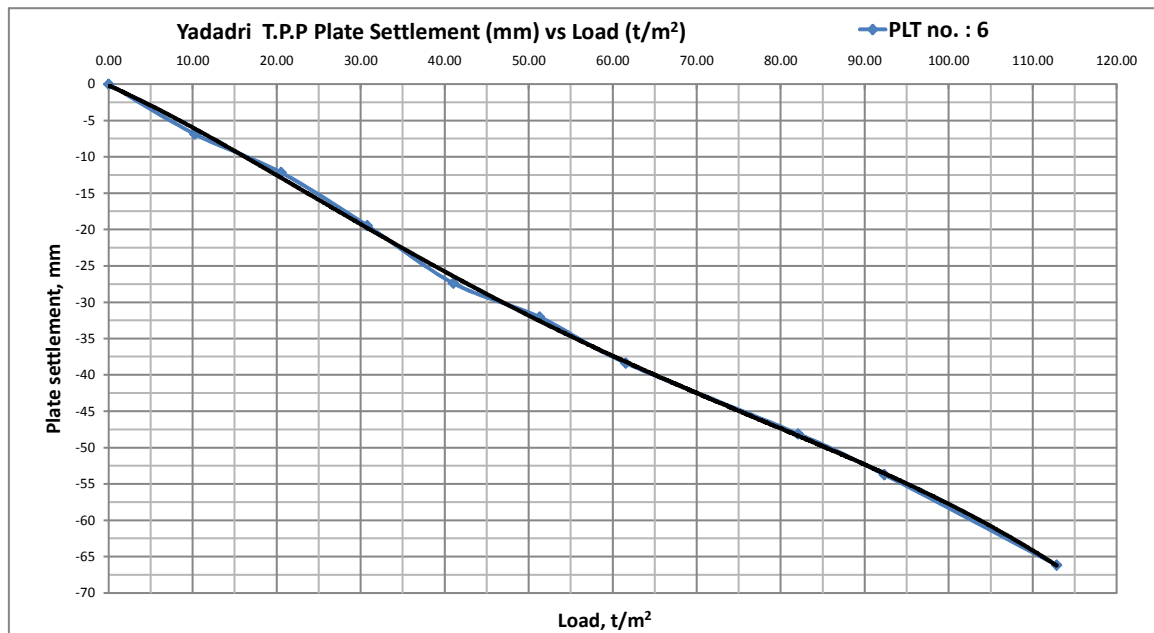
DG no.	R5159	Position :	R	Least Count of Dial Gauge						0.01	mm
Observations											
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval								
		T/m ²	1	2.25	4	6.25	9	16	25	60	
0	0.0	0	25.00								
5	2.1	10.26	21.13	21.12	21.14	21.10	21.06	20.98	20.94	20.86	
10	4.2	20.52	16.71	16.62	16.52	16.40	16.36	16.33	16.28	16.12	
15	6.2	30.78	19.08	18.96	18.73	18.67	18.36	18.52	18.36	18.19	
20	8.3	41.03	11.05	10.96	10.94	10.90	10.65	10.62	10.52	10.35	
25	10.4	51.29	21.59	21.54	21.42	21.35	21.25	21.22	21.13	20.97	
30	12.5	61.55	16.56	16.26	15.90	15.79	15.48	14.83	14.35	14.31	
40	16.6	82.07	15.78	15.54	15.41	15.07	15.04	15.00	14.96	14.90	
45	18.7	92.33	10.98	10.70	10.21	10.09	9.99	9.94	9.77	9.77	
55	22.9	112.85	18.30	16.65	16.08	15.50	15.28	15.23	13.72	12.41	
75	31.2	153.88	12.5	11.49	19.22	10.85	10.62				

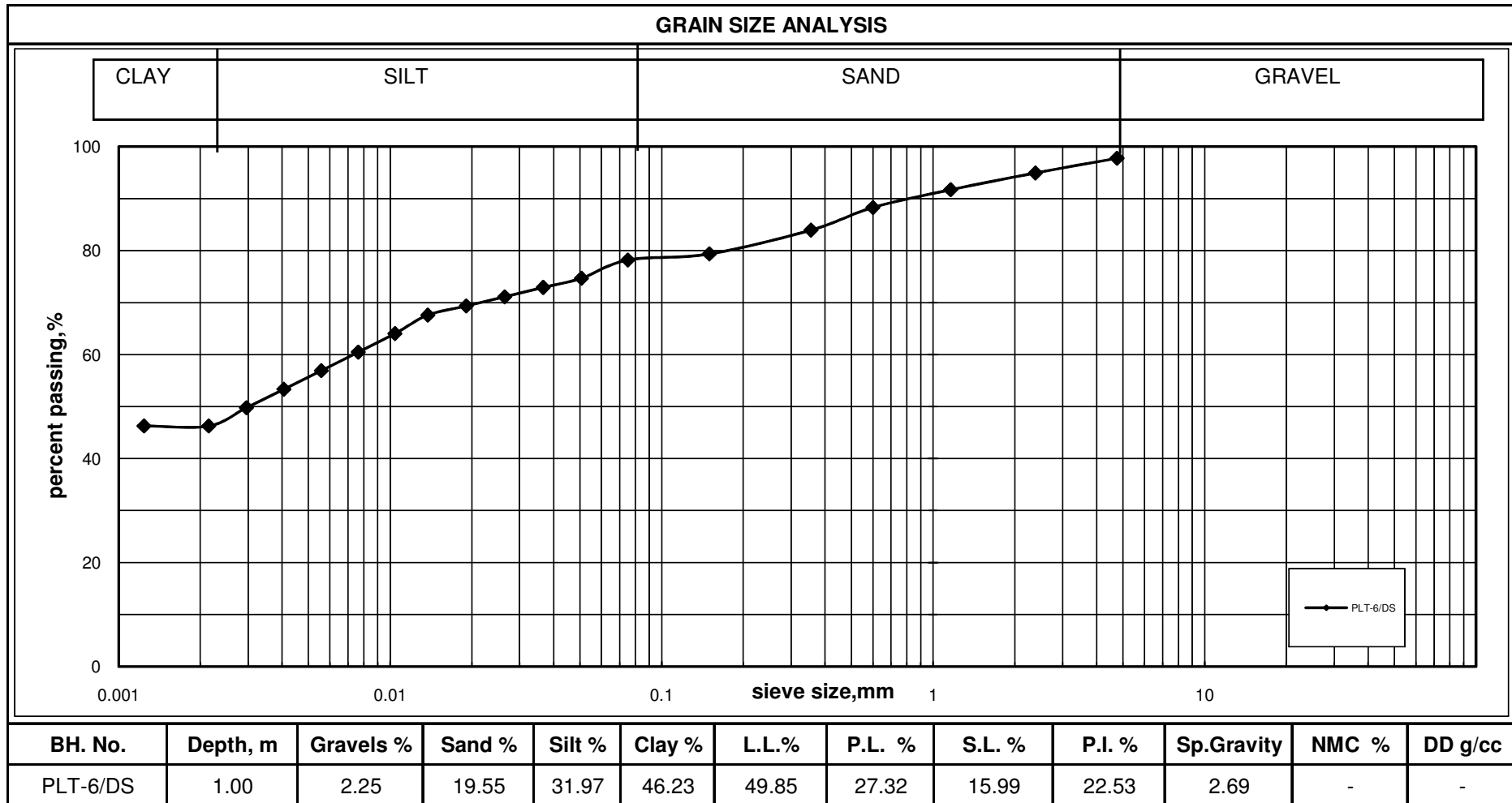
DG no.	S0465	Position :	L	Least Count of Dial Gauge						0.01	mm
Observations											
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval								
		t/m ²	1	2.25	4	6.25	9	16	25	60	
0	0.0	0.00	25.00								
5	2.1	10.26	15.86	15.80	15.73	15.68	15.65	15.58	15.53	15.43	
10	4.2	20.52	10.12	10.04	9.95	9.83	9.79	9.76	9.72	9.58	
15	6.2	30.78	17.97	17.79	17.62	17.57	17.53	17.44	17.31	17.16	
20	8.3	41.03	9.85	9.73	9.69	9.64	9.54	9.42	9.33	9.19	
25	10.4	51.29	20.32	20.16	20.11	20.02	19.96	19.91	19.83	19.69	
30	12.5	61.55	15.90	15.55	15.24	15.05	14.82	14.21	13.75	13.70	
40	16.6	82.07	16.40	16.04	15.99	15.97	15.93	15.68	15.64	15.63	
45	18.7	92.33	10.50	9.98	9.84	9.79	9.69	9.67	9.61	9.53	
55	22.9	112.85	17.09	16.80	16.20	15.70	15.32	15.44	13.98	12.68	
75	31.2	153.88	11.25	10.35	10.08	9.88	9.74				



Calculations						
Load	Dial Guage (DG) no.		Average	Settlement (dial guage)	Sp. Plate Settlement	Remarks
	R5159 (R)	S0465 (L)				
t/m ²	mm	mm	mm	mm	mm	for dial guage
0.00	25.00	25.00	25.00	0	0	
10.26	20.86	15.43	18.15	-6.855	-6.855	
20.52	16.12	9.58	12.85	-12.15	-12.15	
30.78	18.19	17.16	17.68	-7.33	-19.48	reset to 25
41.03	10.35	9.19	9.77	-15.23	-27.38	
51.29	20.97	19.69	20.33	-4.67	-32.05	reset to 25
61.55	14.31	13.70	14.01	-11.00	-38.38	
82.07	14.90	15.63	15.27	-9.74	-48.11	reset to 25
92.33	9.77	9.53	9.65	-15.35	-53.73	
112.85	12.41	12.68	12.55	-12.46	-66.18	reset to 25
153.88						reset to 25

SBC table for PLT 6 at Yadadri T.P.P.				
Bf m	Bp m	Sf mm	Sp mm	SBC t/m ²
2	0.6	25	14.69	23
4	0.6	25	12.84	22
6	0.6	25	12.25	18
8	0.6	25	11.96	17
10	0.6	25	11.79	16
12	0.6	25	11.67	16







Date :19/3/2016

Location :N=-279E=252

Depth :0.60m

EGL (existing ground level) RL(+) =82.00m

PLT no. :7

Plate size :450x450mm²

Jack Dia :230mm

DG no.S0465Position :L

Least Count of Dial Gauge0.01mm

Observations										
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval							
		T/m2	1	2.25	4	6.25	9	16	25	60
0	0.0	0	25.00							
5	2.1	10.26	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
10	4.2	20.52	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
15	6.2	30.78	24.98	24.98	24.97	24.97	24.97	24.97	24.97	24.97
20	8.3	41.03	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97
25	10.4	51.29	24.46	24.46	24.46	24.46	24.46	24.46	24.46	24.46
35	14.5	71.81	24.46	24.46	24.46	24.46	24.46	24.46	24.46	24.46
45	18.7	92.33	24.46	24.46	24.45	24.45	24.45	24.45	24.45	24.45
50	20.8	102.59	24.44	24.44	24.44	24.44	24.43	24.43	24.42	24.40
60	24.9	123.10	24.40	24.40	24.40	24.40	24.40	24.40	24.40	24.38
70	29.1	143.62	24.37	24.37	24.36	24.36	24.34	24.34	24.34	24.33
75	31.2	153.88	24.32	24.32	24.32	24.32	24.32	24.32	24.31	24.18

DG no.R5159Position :R

Least Count of Dial Gauge0.01mm

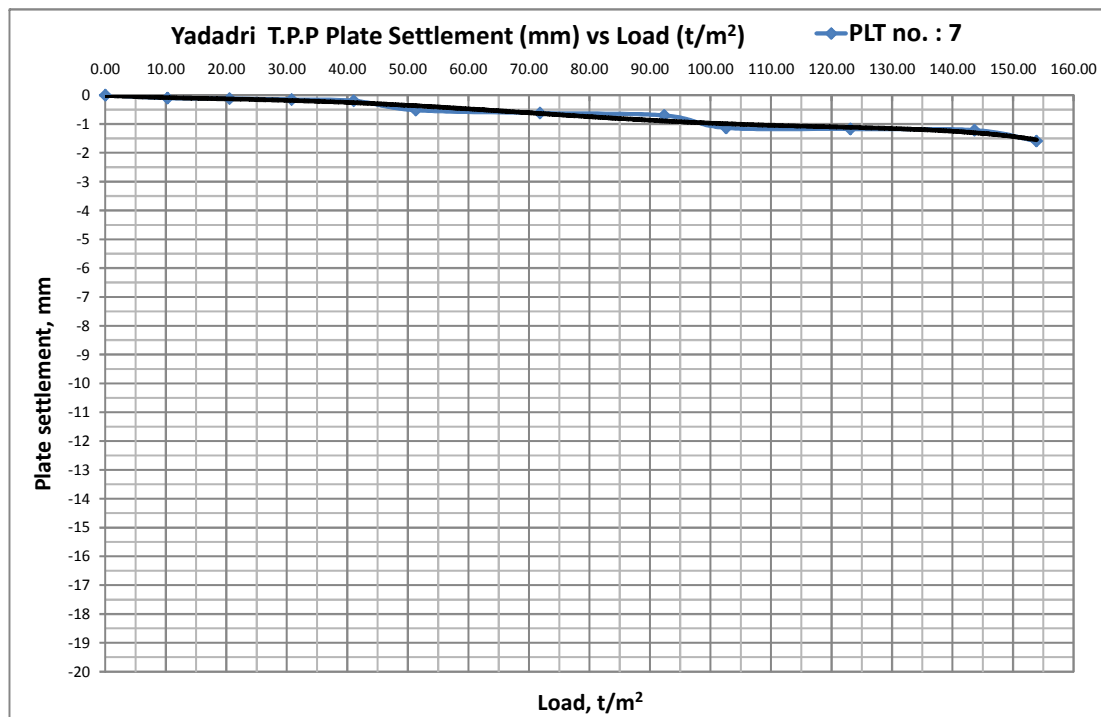
Observations										
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval							
		t/m ²	1	2.25	4	6.25	9	16	25	60
0	0.0	0.00	20.00							
5	2.1	10.26	19.82	19.82	19.81	19.80	19.80	19.80	19.80	19.80
10	4.2	20.52	19.78	19.78	19.70	19.77	19.77	19.77	19.77	19.77
15	6.2	30.78	19.77	19.73	19.73	19.73	19.73	19.73	19.73	19.73
20	8.3	41.03	19.69	19.69	19.68	19.68	19.67	19.67	19.67	19.65
25	10.4	51.29	19.62	19.62	19.60	19.60	19.59	19.57	19.55	19.51
35	14.5	71.81	19.43	19.42	19.38	19.36	19.36	19.36	19.34	19.31
45	18.7	92.33	19.24	19.24	19.23	19.23	19.23	19.22	19.21	19.15
50	20.8	102.59	19.12	19.09	19.07	19.06	19.04	19.03	19.01	18.34
60	24.9	123.10	18.34	18.34	18.34	18.34	18.30	18.28	18.28	18.28
70	29.1	143.62	18.28	18.27	18.26	18.26	18.26	18.26	18.26	18.25
75	31.2	153.88	17.88	17.88	17.88	17.80	17.80	17.80	17.60	17.65

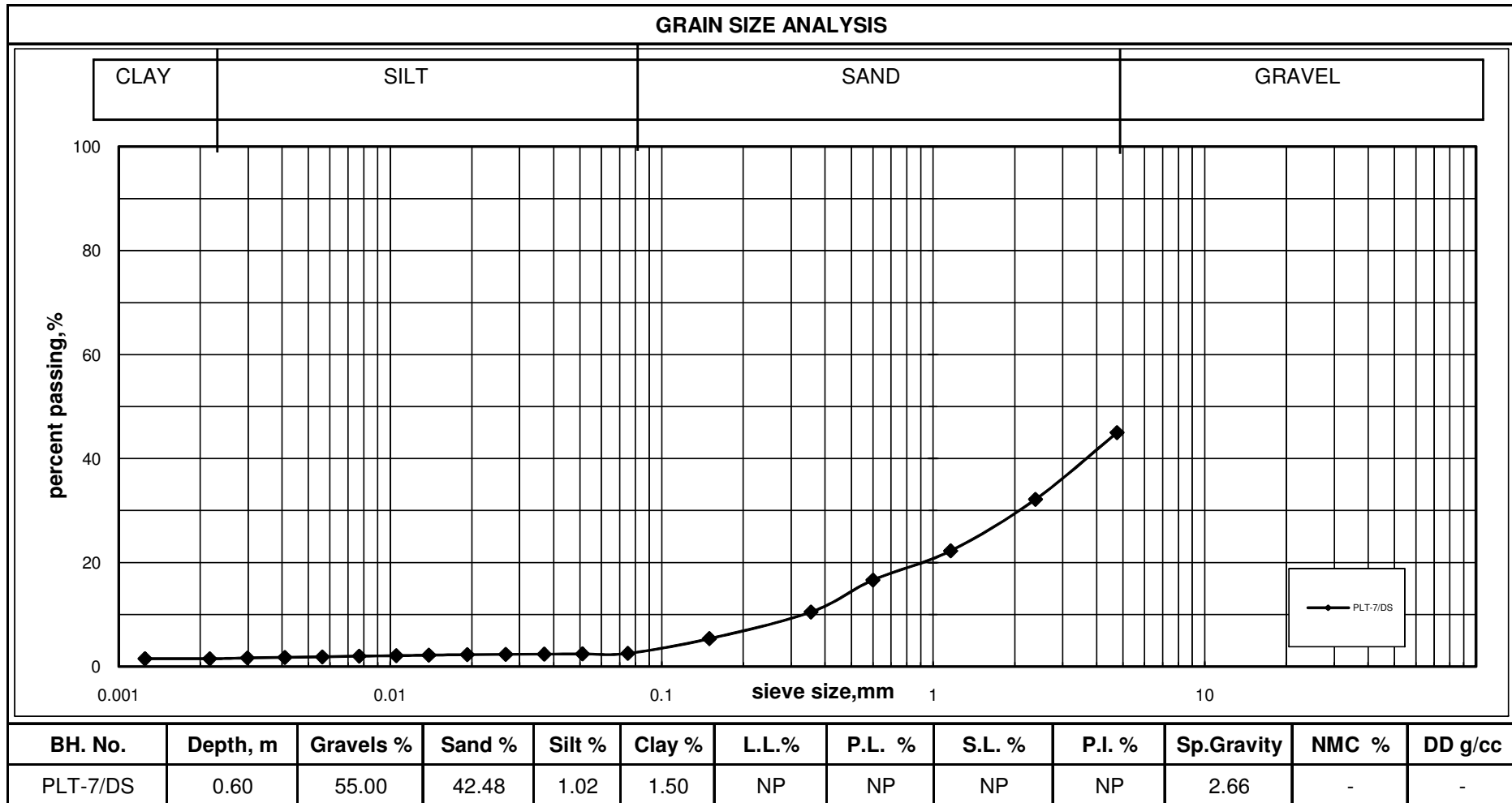


Load t/m ²	Dial Guage (DG) no.		Average mm	Sp, Plate Settlement mm
	S0465 (L)	R5159 (R)		
	mm	mm		
0.00	25.00	20.00	22.50	0
10.26	25.00	19.80	22.40	-0.1
20.52	25.00	19.77	22.39	-0.115
30.78	24.97	19.73	22.35	-0.15
41.03	24.97	19.65	22.31	-0.19
51.29	24.46	19.51	21.99	-0.515
71.81	24.46	19.31	21.89	-0.615
92.33	24.45	19.15	21.80	-0.7
102.59	24.40	18.34	21.37	-1.13
123.10	24.38	18.28	21.33	-1.17
143.62	24.33	18.25	21.29	-1.21
153.88	24.18	17.65	20.92	-1.585

SBC table for PLT 7 at Yadadri T.P.P.				
Bf m	Bp m	Sf mm	Sp mm	SBC t/m ²
2	0.45	12	5.71	155
4	0.45	12	4.99	155
6	0.45	12	4.76	155
8	0.45	12	4.65	155
10	0.45	12	4.58	155
12	0.45	12	4.54	155

Note: Recommended SBC =100 t/m²







Date :04-04-2016

PLT no. :8

Location :N=-262E=681

Plate size :450x450mm²

Depth :0.50m

Jack Dia :230mm

EGL (existing ground level) RL(+)=85.59m

DG no.S0465

Position :R

Least Count of Dial Gauge0.01mm

Observations										
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval							
		T/m2	1	2.25	4	6.25	9	16	25	60
0	0.0	0	25.00							
5	2.1	10.26	25.00	24.94	24.94	24.94	24.94	24.94	24.94	24.94
10	4.2	20.52	24.94	24.94	24.94	24.94	24.94	24.93	24.93	24.93
15	6.2	30.78	24.92	24.92	24.92	24.92	24.92	24.92	24.92	24.89
20	8.3	41.03	24.80	24.79	24.73	24.69	24.68	24.67	24.66	24.65
25	10.4	51.29	24.60	24.60	24.58	24.58	24.55	24.55	24.54	24.54
35	14.5	71.81	24.32	24.32	24.32	24.32	24.32	24.31	24.31	24.31
45	18.7	92.33	24.24	24.22	24.22	24.22	24.20	24.18	24.16	24.16
50	20.8	102.59	24.15	24.15	24.14	24.12	24.11	24.11	24.10	24.10
60	24.9	123.10	23.95	23.90	23.90	23.90	23.90	23.88	23.87	23.87
70	29.1	143.62	23.77	23.71	23.67	23.67	23.66	23.66	23.64	23.62
75	31.2	153.88	23.60	23.58	23.56	23.53	23.51	23.5	23.5	23.29

DG no.R5159

Position :L

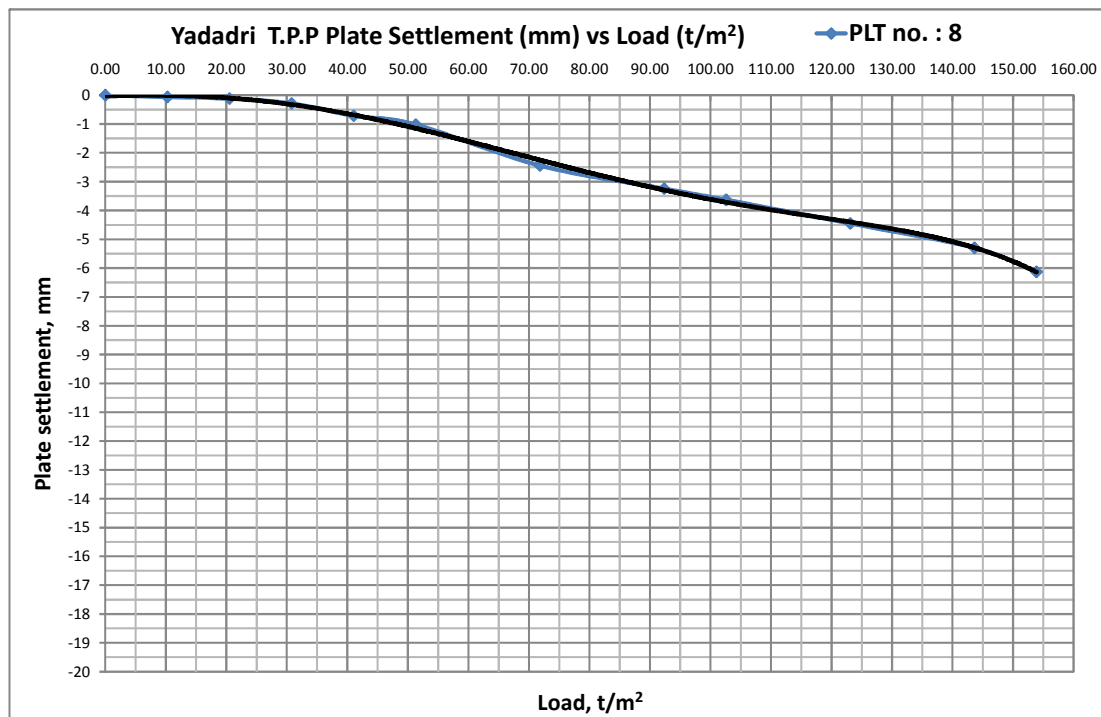
Least Count of Dial Gauge0.01mm

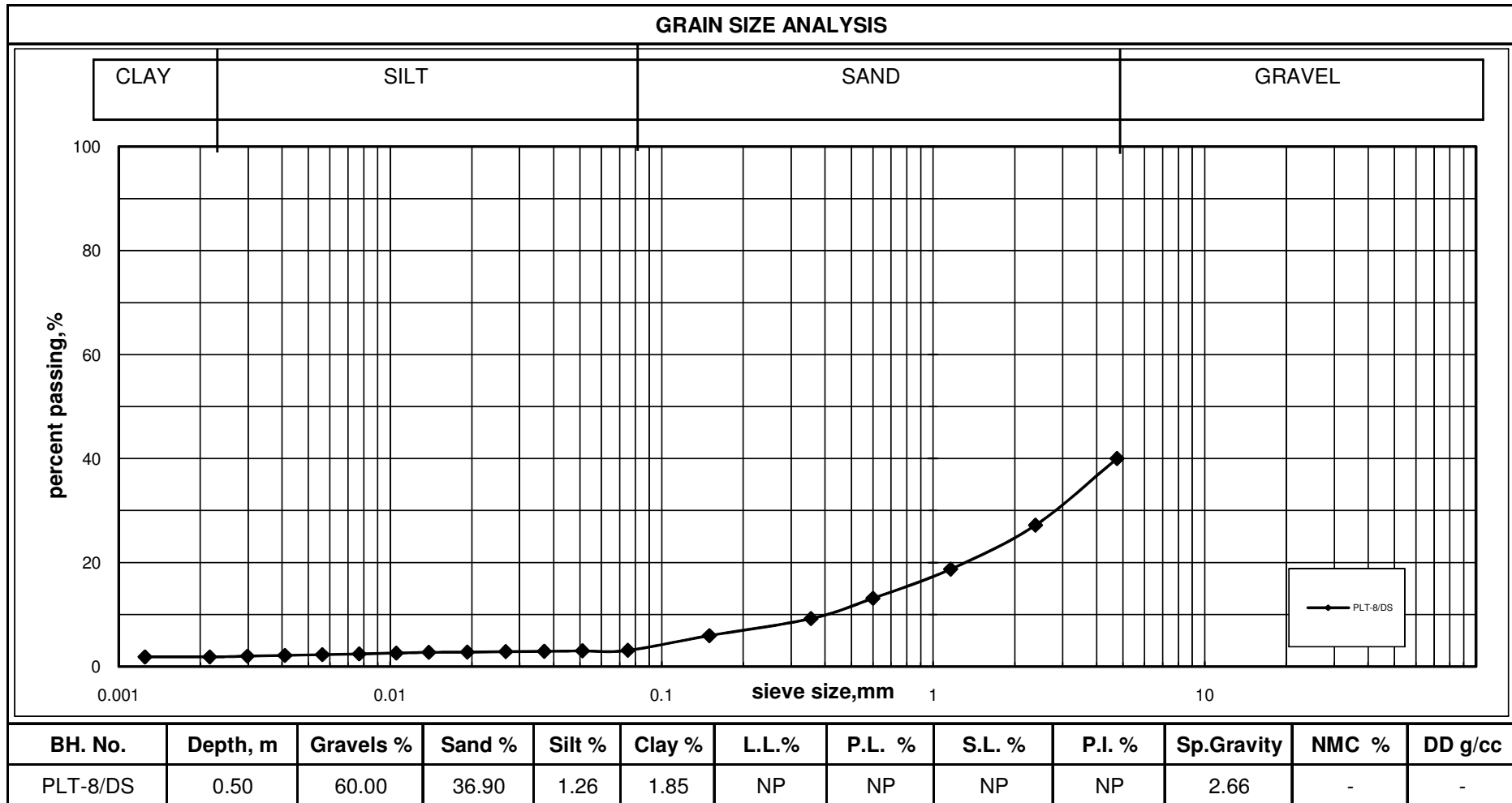
Observations										
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval							
		t/m ²	1	2.25	4	6.25	9	16	25	60
0	0.0	0.00	25.00							
5	2.1	10.26	24.96	24.96	24.95	24.95	24.94	24.94	24.94	24.94
10	4.2	20.52	24.87	24.87	24.87	24.87	24.86	24.85	24.84	24.84
15	6.2	30.78	24.70	24.70	24.68	24.68	24.67	24.64	24.62	24.54
20	8.3	41.03	24.40	24.31	24.12	24.09	24.09	24.09	23.98	23.93
25	10.4	51.29	23.70	23.65	23.63	23.60	23.52	23.48	23.45	23.43
35	14.5	71.81	21.09	21.04	21.03	21.02	20.99	20.90	20.87	20.81
45	18.7	92.33	19.95	19.90	19.85	19.82	19.65	19.54	19.47	19.36
50	20.8	102.59	18.70	18.70	18.72	18.72	18.65	18.65	18.65	18.64
60	24.9	123.10	17.64	17.51	17.50	17.50	17.49	17.48	17.31	17.23
70	29.1	143.62	16.40	16.35	16.13	16.13	16.10	16.07	15.92	15.79
75	31.2	153.88	15.63	15.48	15.45	15.40	15.25	15.18	15.18	14.45



Calculations				
Load t/m ²	Dial Gauge (DG) no.		Average	Sp, Plate Settlement
	S0465 (R)	R5159 (L)		
	mm	mm	mm	mm
0.00	25.00	25.00	25.00	0
10.26	24.94	24.94	24.94	-0.06
20.52	24.93	24.84	24.89	-0.115
30.78	24.89	24.54	24.72	-0.285
41.03	24.65	23.93	24.29	-0.71
51.29	24.54	23.43	23.99	-1.015
71.81	24.31	20.81	22.56	-2.44
92.33	24.16	19.36	21.76	-3.24
102.59	24.10	18.64	21.37	-3.63
123.10	23.87	17.23	20.55	-4.45
143.62	23.62	15.79	19.71	-5.295
153.88	23.29	14.45	18.87	-6.13

SBC table for PLT 8 at Yadadri T.P.P.				
Bf	Bp	Sf	Sp	SBC
m	m	mm	mm	t/m ²
2	0.45	12	5.71	150
4	0.45	12	4.99	135
6	0.45	12	4.76	130
8	0.45	12	4.65	127
10	0.45	12	4.58	125
12	0.45	12	4.54	125







Date :04-09-2016

Location :N=-513E=63

Depth :0.60m

EGL (existing ground level) RL(+) =78.56m

PLT no. :9

Plate size :450x450mm²

Jack Dia :230mm

DG no.S0465Position :R

Least Count of Dial Gauge0.01mm

Observations										
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval							
		T/m2	1	2.25	4	6.25	9	16	25	60
0	0.0	0	25.00							
5	2.1	10.26	24.74	24.74	24.74	24.73	24.73	24.73	24.62	24.62
10	4.2	20.52	24.48	24.48	24.48	24.48	24.48	24.48	24.48	24.47
15	6.2	30.78	24.31	24.31	24.30	24.30	24.30	24.29	24.28	24.82
20	8.3	41.03	24.18	24.13	24.12	24.12	24.11	24.11	24.11	24.11
25	10.4	51.29	24.03	24.02	24.01	24.01	24.01	24.01	24.01	24.01
35	14.5	71.81	23.76	23.75	23.75	23.75	23.74	23.72	23.72	23.72
45	18.7	92.33	23.53	23.52	23.52	23.51	23.51	23.50	23.50	23.50
50	20.8	102.59	23.45	23.43	23.42	23.41	23.41	23.40	23.40	24.39
60	24.9	123.10	23.23	23.11	23.10	23.08	23.08	23.08	23.04	23.04
70	29.1	143.62	22.84	22.80	22.79	22.77	22.75	22.73	22.72	22.67
75	31.2	153.88	22.6	22.6	22.59	22.59	22.59	22.59	22.59	22.32

DG no.R5159Position :L

Least Count of Dial Gauge0.01mm

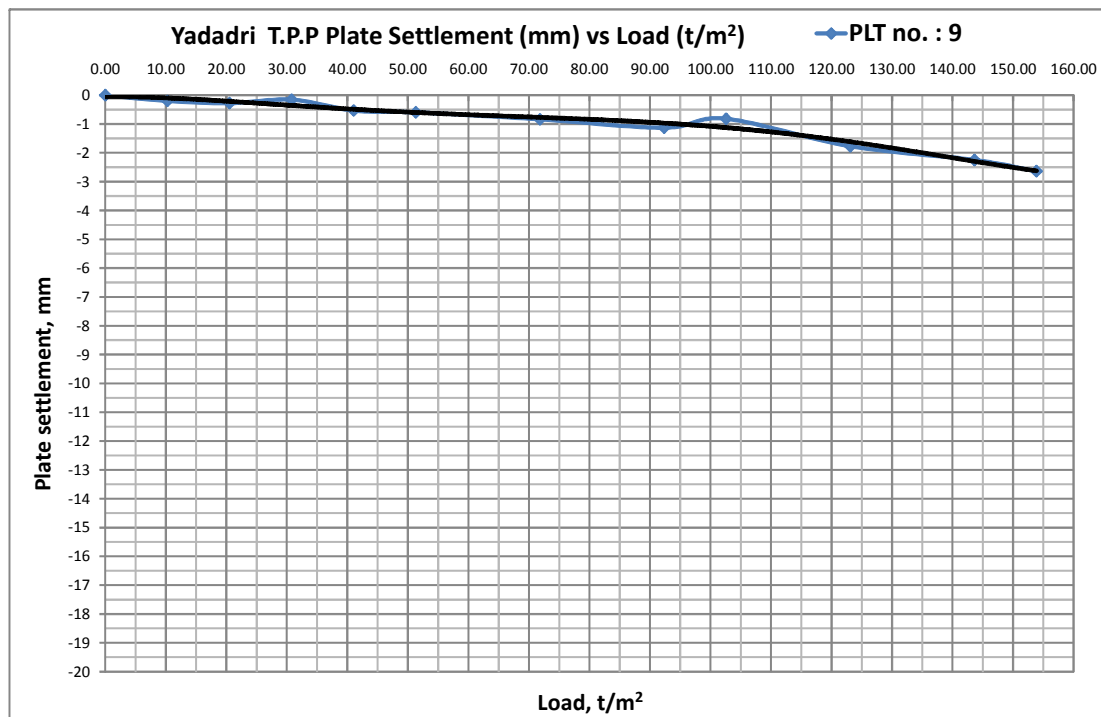
Observations										
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval							
		t/m ²	1	2.25	4	6.25	9	16	25	60
0	0.0	0.00	25.00							
5	2.1	10.26	25.00	25.00	25.00	25.00	25.00	25.00	24.99	24.99
10	4.2	20.52	24.99	24.99	24.99	24.99	24.99	24.99	24.99	24.99
15	6.2	30.78	24.89	24.89	24.87	24.87	24.87	24.87	24.87	24.87
20	8.3	41.03	24.85	24.84	24.84	24.84	24.83	24.83	24.83	24.83
25	10.4	51.29	24.81	24.81	24.80	24.80	24.80	24.80	24.80	24.80
35	14.5	71.81	24.66	24.66	24.66	24.66	24.65	24.63	24.62	24.61
45	18.7	92.33	24.31	24.31	24.30	24.28	24.28	24.26	24.26	24.25
50	20.8	102.59	24.08	24.06	24.05	24.03	24.02	24.02	24.02	23.98
60	24.9	123.10	23.50	23.46	23.45	23.45	23.44	23.43	23.42	23.42
70	29.1	143.62	23.02	23.00	22.99	22.98	22.96	22.94	24.92	22.84
75	31.2	153.88	22.84	22.71	22.70	22.69	22.69	22.68	22.65	22.41

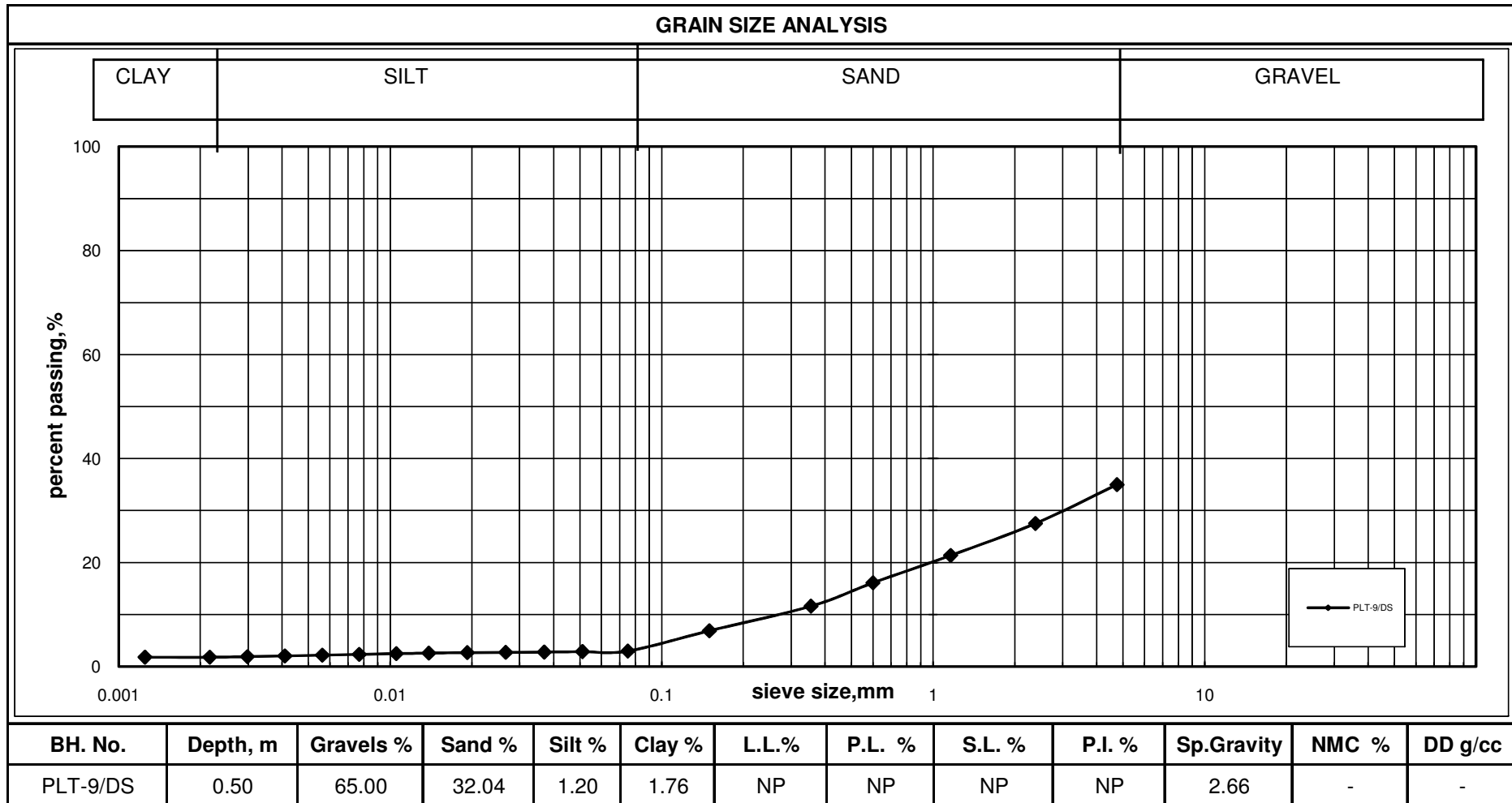


Load t/m ²	Dial Guage (DG) no.		Average mm	Sp, Plate Settlement mm
	S0465 (R)	R5159 (L)		
	mm	mm		
0.00	25.00	25.00	25.00	0
10.26	24.62	24.99	24.81	-0.195
20.52	24.47	24.99	24.73	-0.27
30.78	24.82	24.87	24.85	-0.155
41.03	24.11	24.83	24.47	-0.53
51.29	24.01	24.80	24.41	-0.595
71.81	23.72	24.61	24.17	-0.835
92.33	23.50	24.25	23.88	-1.125
102.59	24.39	23.98	24.19	-0.815
123.10	23.04	23.42	23.23	-1.77
143.62	22.67	22.84	22.76	-2.245
153.88	22.32	22.41	22.37	-2.635

SBC table for PLT 9 at Yadadri T.P.P.				
Bf m	Bp m	Sf mm	Sp mm	SBC t/m ²
2	0.45	12	5.71	155
4	0.45	12	4.99	155
6	0.45	12	4.76	155
8	0.45	12	4.65	155
10	0.45	12	4.58	155
12	0.45	12	4.54	155

Note: Recommended SBC =100 t/m²







Date :05-02-2016

Location :N=-600E=477

Depth :0.50m

EGL (existing ground level) RL(+) =81.47m

PLT no. :10

Plate size :450x450mm²

Jack Dia :230mm

DG no.S0465Position :LLeast Count of Dial Gauge0.01mm

Observations										
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval							
		T/m2	1	2.25	4	6.25	9	16	25	60
0	0.0	0	24.00							
5	2.1	10.26	23.95	23.95	23.95	23.95	23.95	23.95	23.95	23.95
10	4.2	20.52	23.68	23.68	23.68	23.68	23.68	23.68	23.68	23.68
15	6.2	30.78	23.67	23.67	23.60	23.60	23.60	23.56	23.53	23.45
20	8.3	41.03	22.31	22.30	22.30	22.28	22.25	22.25	22.22	22.20
25	10.4	51.29	22.00	22.00	21.99	21.98	21.95	21.95	21.91	21.89
35	14.5	71.81	21.10	21.09	21.08	21.05	20.95	20.95	20.91	20.84
45	18.7	92.33	19.05	19.05	19.05	19.03	18.95	18.95	18.91	18.86
50	20.8	102.59	18.70	18.70	18.66	18.66	18.59	18.59	18.55	18.45
60	24.9	123.10	17.87	17.87	17.87	17.80	16.75	16.75	16.40	15.10
70	29.1	143.62	14.76	14.76	14.74	14.70	14.60	14.60	14.55	14.45
75	31.2	153.88	14.25	14.23	14.18	14.13	13.98	13.98	13.93	13.33

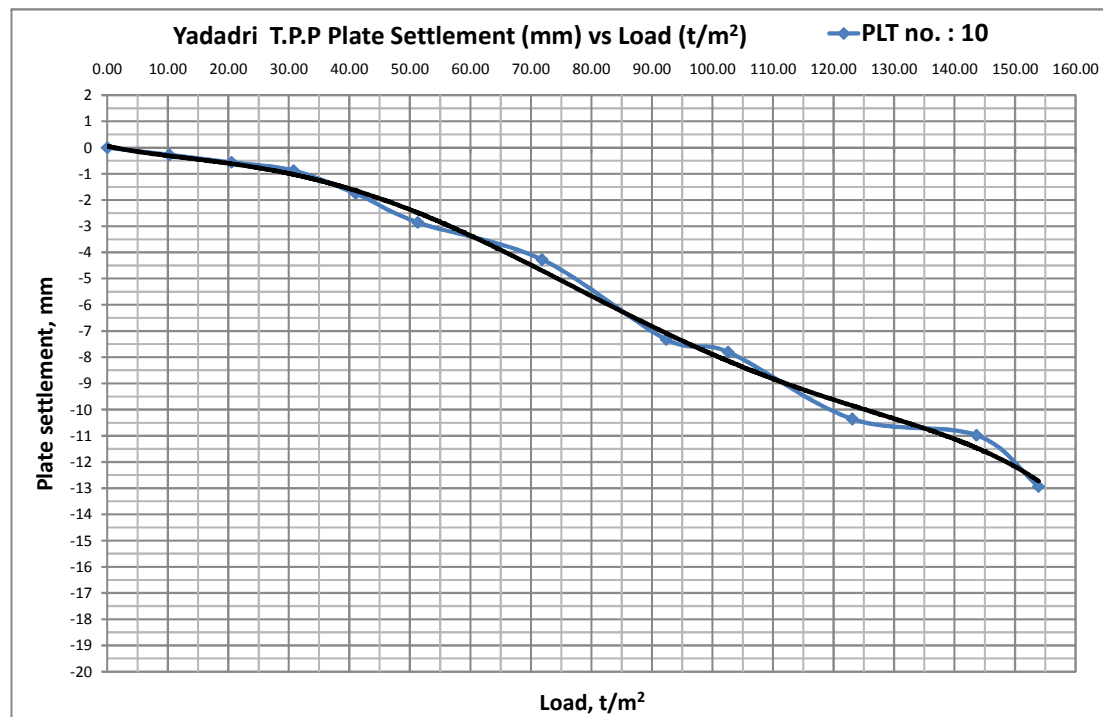
DG no.R5159Position :RLeast Count of Dial Gauge0.01mm

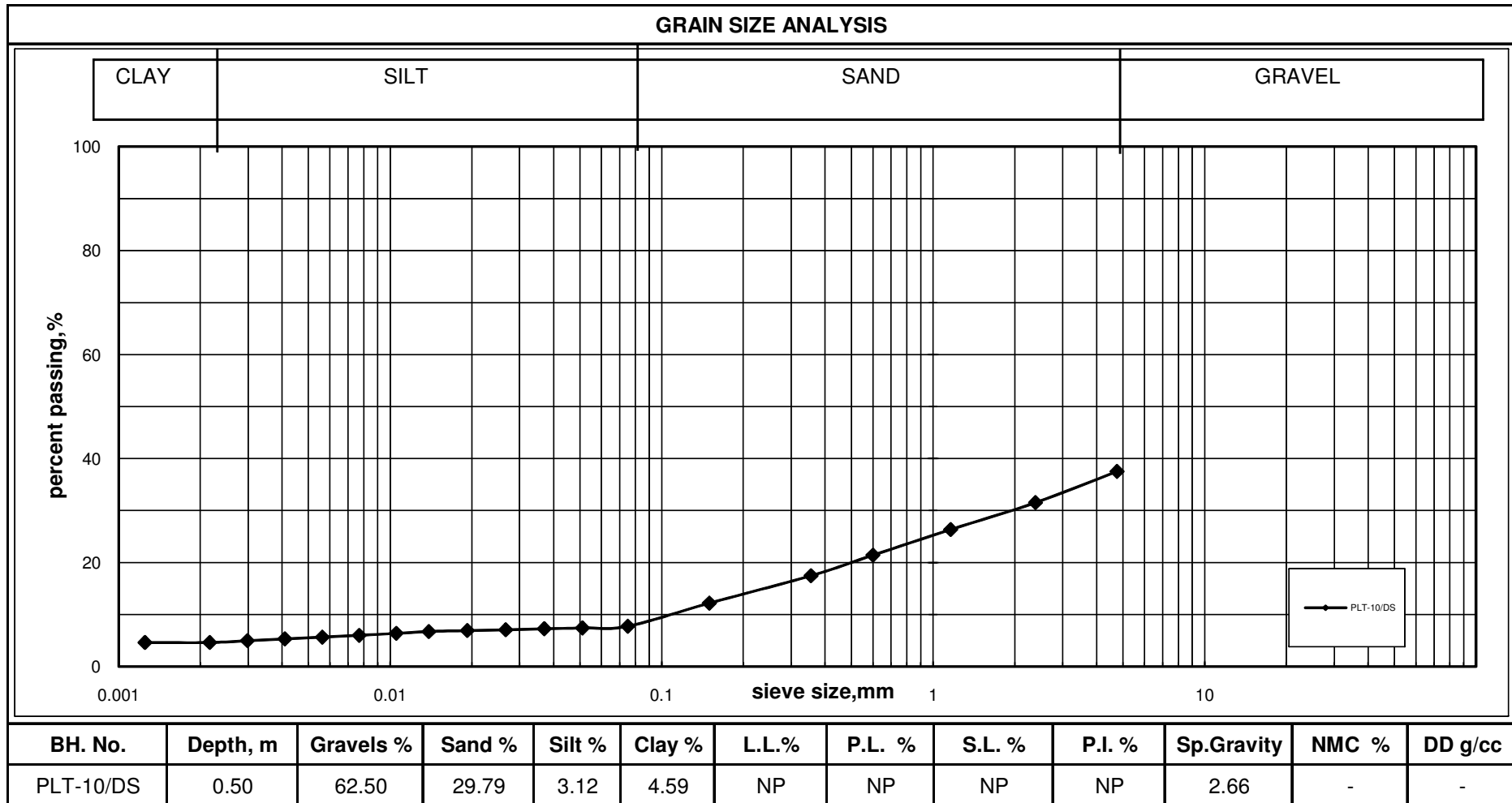
Observations										
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval							
		t/m ²	1	2.25	4	6.25	9	16	25	60
0	0.0	0.00	24.00							
5	2.1	10.26	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50
10	4.2	20.52	23.22	23.20	23.20	23.20	23.20	23.20	23.20	23.20
15	6.2	30.78	22.95	22.95	22.90	22.89	22.88	22.87	22.86	22.80
20	8.3	41.03	22.53	22.52	22.49	22.47	22.44	22.41	22.35	22.30
25	10.4	51.29	20.73	20.72	20.67	20.60	20.56	20.50	20.47	20.40
35	14.5	71.81	19.00	18.97	18.91	18.89	18.89	18.87	18.81	18.61
45	18.7	92.33	15.00	15.00	15.00	14.97	14.83	14.75	14.64	14.50
50	20.8	102.59	14.25	14.25	14.18	14.10	14.05	14.00	13.95	13.95
60	24.9	123.10	12.80	12.80	12.80	12.72	12.60	12.57	12.39	12.18
70	29.1	143.62	11.95	11.94	11.92	11.89	11.80	11.77	11.69	11.60
75	31.2	153.88	10.40	10.35	10.29	10.20	10.16	10.02	9.98	8.80



Calculations				
Load	Dial Guage (DG) no.		Average	Sp. Plate Settlement
	S0465 (L)	R5159 (R)		
t/m ²	mm	mm	mm	mm
0.00	24.00	24.00	24.00	0
10.26	23.95	23.50	23.73	-0.275
20.52	23.68	23.20	23.44	-0.56
30.78	23.45	22.80	23.13	-0.875
41.03	22.20	22.30	22.25	-1.75
51.29	21.89	20.40	21.15	-2.855
71.81	20.84	18.61	19.73	-4.275
92.33	18.86	14.50	16.68	-7.32
102.59	18.45	13.95	16.20	-7.8
123.10	15.10	12.18	13.64	-10.36
143.62	14.45	11.60	13.03	-10.975
153.88	13.33	8.80	11.07	-12.935

SBC table for PLT 10 at Yadadri T.P.P.				
Bf	Bp	Sf	Sp	SBC
m	m	mm	mm	t/m ²
2	0.45	12	5.71	80
4	0.45	12	4.99	75
6	0.45	12	4.76	73
8	0.45	12	4.65	72
10	0.45	12	4.58	70
12	0.45	12	4.54	70







Date :30/4/2016

Location :N=-1121E=1142

Depth :0.30m

EGL (existing ground level) RL(+)=80.23m

PLT no. :11

Plate size :450x450mm²

Jack Dia :230mm

DG no.S0465

Position :L

Least Count of Dial Gauge0.01mm

Observations										
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval							
		T/m2	1	2.25	4	6.25	9	16	25	60
0	0.0	0	25.00							
5	2.1	10.26	24.74	24.74	24.74	24.74	24.74	24.74	24.74	24.74
10	4.2	20.52	24.64	24.64	24.60	24.60	24.60	24.60	24.60	24.60
15	6.2	30.78	24.63	24.63	24.63	24.63	24.63	24.63	24.63	24.62
20	8.3	41.03	24.55	24.55	24.55	24.55	24.55	24.55	24.55	24.55
25	10.4	51.29	24.47	24.47	24.47	24.46	24.44	24.43	24.43	24.41
35	14.5	71.81	24.18	24.18	24.16	24.13	24.13	24.12	24.12	24.11
45	18.7	92.33	23.83	23.83	23.83	23.80	23.75	23.74	23.73	23.73
50	20.8	102.59	23.70	23.70	23.69	23.69	23.68	23.65	23.64	23.63
60	24.9	123.10	23.53	23.53	23.52	23.51	23.50	23.50	23.49	23.48
70	29.1	143.62	23.47	23.45	23.44	23.42	23.38	23.33	23.30	23.28
75	31.2	153.88	23.08	23.08	23.08	23.05	23.03	23	22.99	22.77

DG no.R5159

Position :R

Least Count of Dial Gauge0.01mm

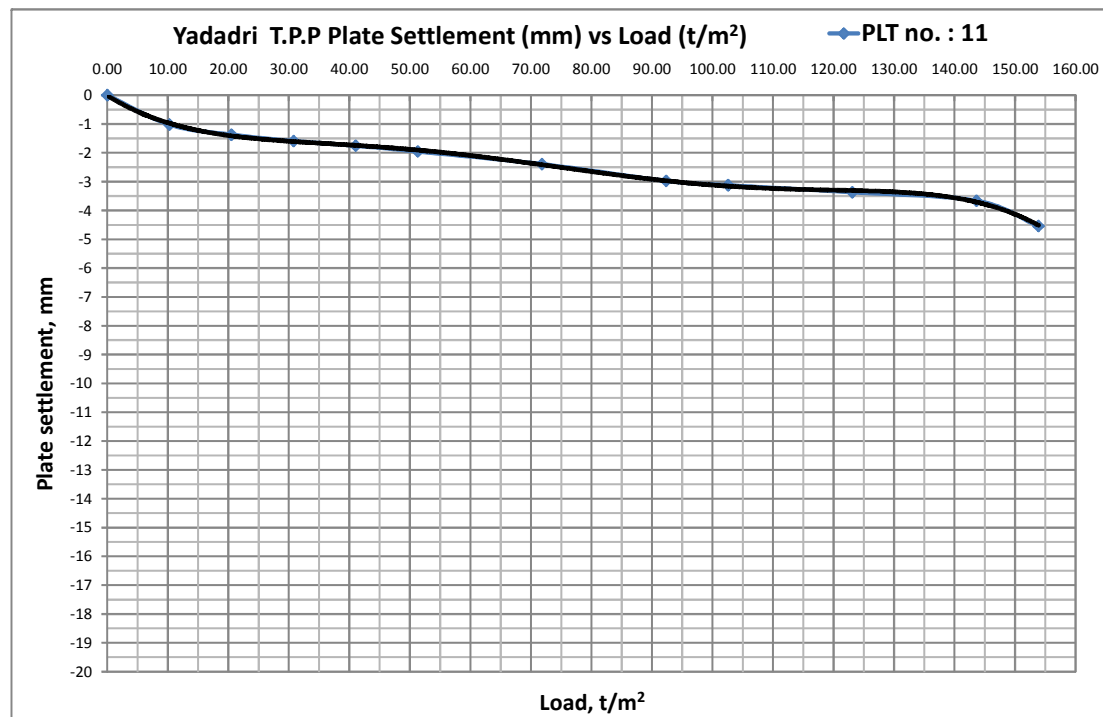
Observations										
Pressure kg/cm ²	Ton	Load	Readings in mints. Interval							
		t/m ²	1	2.25	4	6.25	9	16	25	60
0	0.0	0.00	21.00							
5	2.1	10.26	19.22	19.22	19.22	19.22	19.22	19.22	19.22	19.22
10	4.2	20.52	18.68	18.68	18.67	18.67	18.66	18.66	18.66	18.66
15	6.2	30.78	18.25	18.25	18.25	18.25	18.25	18.25	18.25	18.21
20	8.3	41.03	17.98	17.98	17.98	17.97	17.96	17.96	17.95	17.95
25	10.4	51.29	17.77	17.75	17.73	17.72	17.71	17.70	17.70	17.69
35	14.5	71.81	17.20	17.19	17.15	17.13	17.13	17.12	17.12	17.11
45	18.7	92.33	16.65	16.65	16.62	16.59	16.55	16.50	16.41	16.33
50	20.8	102.59	16.26	16.26	16.25	16.22	16.20	16.17	16.15	16.12
60	24.9	123.10	15.93	15.92	15.91	15.90	15.87	15.80	15.80	15.79
70	29.1	143.62	15.70	15.69	15.60	15.50	15.48	15.42	15.40	15.40
75	31.2	153.88	14.92	14.92	14.88	14.87	14.82	14.78	14.76	14.16

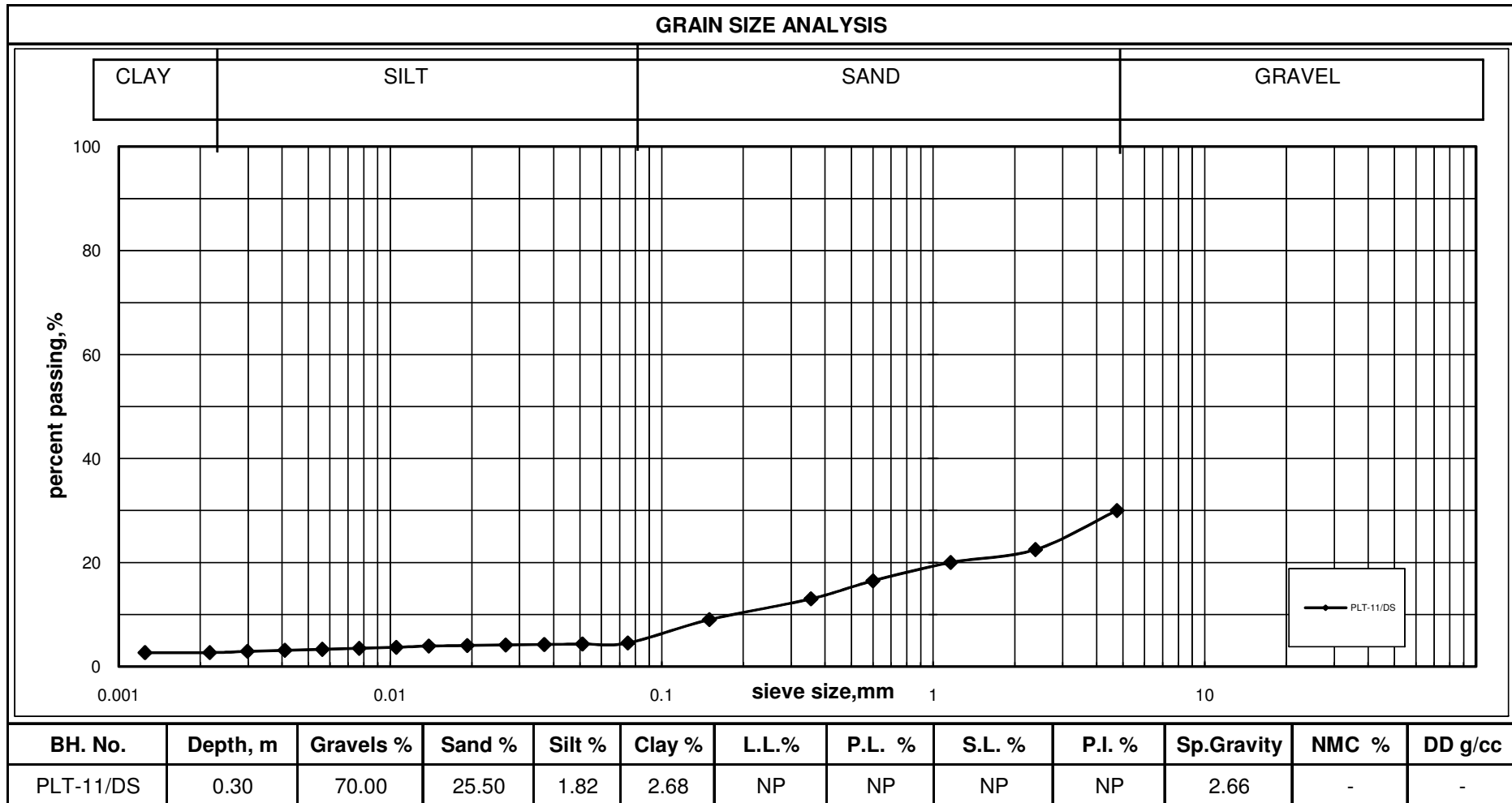


Load t/m ²	Dial Guage (DG) no.		Average mm	Sp, Plate Settlement mm
	S0465 (L)	R5159 (R)		
	mm	mm		
0.00	25.00	21.00	23.00	0
10.26	24.74	19.22	21.98	-1.02
20.52	24.60	18.66	21.63	-1.37
30.78	24.62	18.21	21.42	-1.585
41.03	24.55	17.95	21.25	-1.75
51.29	24.41	17.69	21.05	-1.95
71.81	24.11	17.11	20.61	-2.39
92.33	23.73	16.33	20.03	-2.97
102.59	23.63	16.12	19.88	-3.125
123.10	23.48	15.79	19.64	-3.365
143.62	23.28	15.40	19.34	-3.66
153.88	22.77	14.16	18.47	-4.535

SBC table for PLT 11 at Yadadri T.P.P.				
Bf m	Bp m	Sf mm	Sp mm	SBC t/m ²
2	0.45	12	5.71	155
4	0.45	12	4.99	155
6	0.45	12	4.76	155
8	0.45	12	4.65	155
10	0.45	12	4.58	155
12	0.45	12	4.54	155

Note: Recommended SBC =100 t/m²







Conclusion:

Safe Bearing Capacity (SBC) by Plate Load Test (PLT)								
Sr. no	Structure name	Test no	Northing	Easting	Testing depth (m)	Width of footing (m)	SBC (t/m ²)	Settlement of footing (mm)
1	Fuel Oil Complex, DM Plant & CPU Regen, Chem Lab	PLT 1	177	552	1.5	2	130	12
2						4	118	
3						6	112	
4						8	110	
5						10	108	
6						12	106	
7	ESP and ESP control room	PLT 2	-118	-105	1.8	2	95	12
8						4	85	
9						6	80	
10						8	78	
11						10	76	
12						12	75	
13	ESP and ESP control room	PLT 3	-124	600	1.6	2	113	12
14						4	106	
15						6	102	
16						8	98	
17						10	98	
18						12	97	
19	Clarified water tank, fire water tank, clarified cum fire water PH, PT plant	PLT 4	-568	1299	1.5	2	155	12
20						4	155	
21						6	155	
22						8	155	
23						10	155	
24						12	155	
25	CW PH and forebay, CW channel, chlorination and CW treatment plant, side stream filtration (unit 1,2)	PLT 5	-221	-227	1.7	2	135	12
26						4	120	
27						6	115	
28						8	112	
29						10	110	
30						12	106	
31	PH including TG, service building and compressor house	PLT 6	-262	-113	1.7	2	23	25
32						4	22	
33						6	18	
34						8	17	
35						10	16	
36						12	16	
37	PH including TG, service building and compressor house	PLT 7	-279	252	0.6	2	155	12
38						4	155	
39						6	155	
40						8	155	
41						10	155	
42						12	155	
43	PH including TG, service building and compressor house	PLT 8	-262	681	0.5	2	150	12
44						4	135	
45						6	130	
46						8	127	
47						10	125	
48						12	125	
49	Switchyard and Control room	PLT 9	-513	63	0.6	2	155	12
50						4	155	
51						6	155	
52						8	155	
53						10	155	
54						12	155	
55	Switchyard and Control room	PLT 10	-600	477	0.5	2	80	12
56						4	75	
57						6	73	
58						8	72	
59						10	70	
60						12	70	
61	Fire station building, Workshop, Admin bldg, AAQMS, Canteen, Permanent Store, Gate Complex	PLT 11	-1121	1142	0.3	2	155	12
62						4	155	
63						6	155	
64						8	155	
65						10	155	
66						12	155	



Design SBC Table

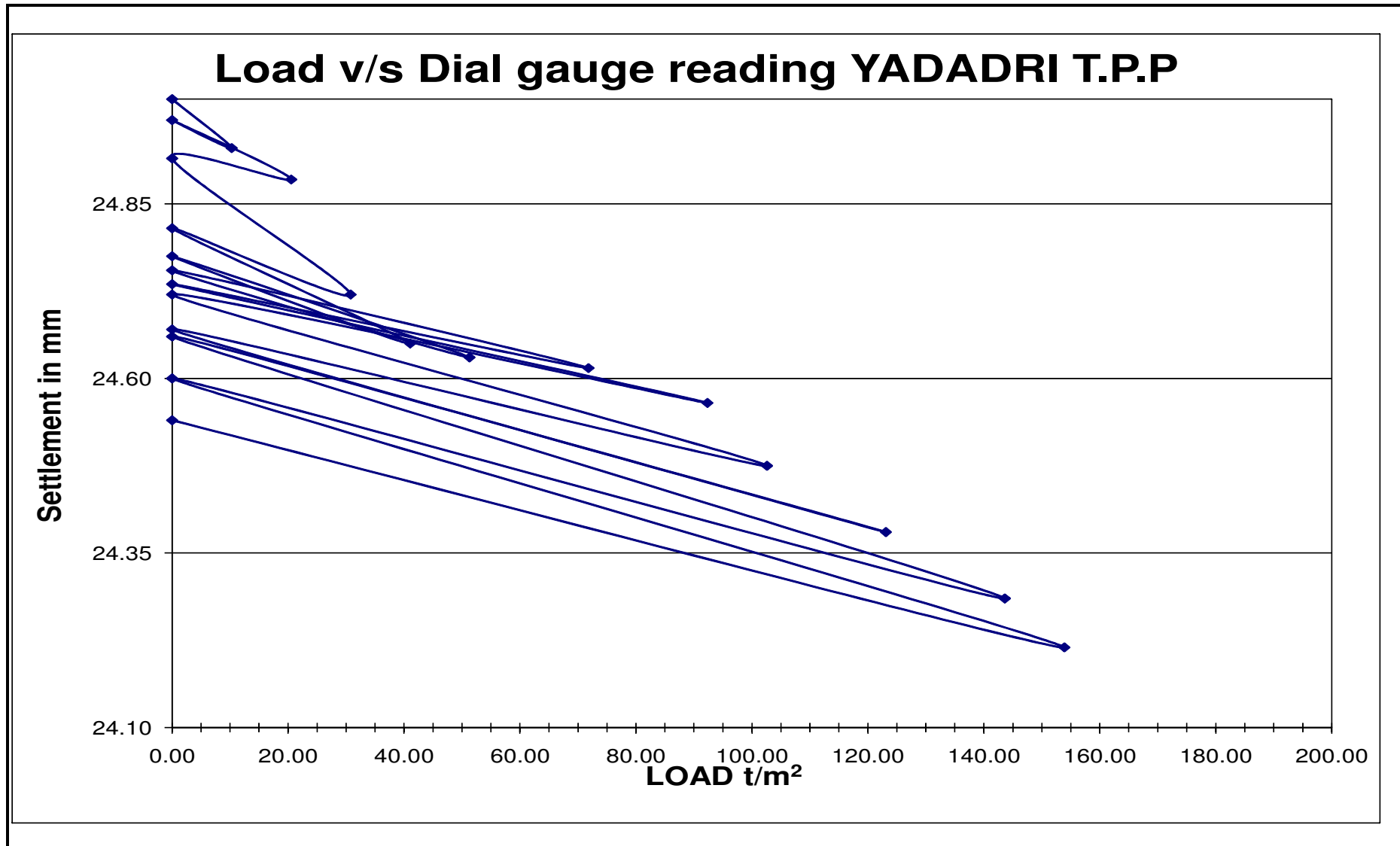
Sr.no	Width of footing (m)	Depth of foundation(m)	Min SBC (t/m ²)	Design SBC(t/m ²)	Settlement	Remarks
1	2	1.50	80	70	12	Rocky Strata
2	4	1.50	75	70	12	
3	6	1.50	73	70	12	
4	8	1.50	72	70	12	
5	12	1.50	70	70	12	

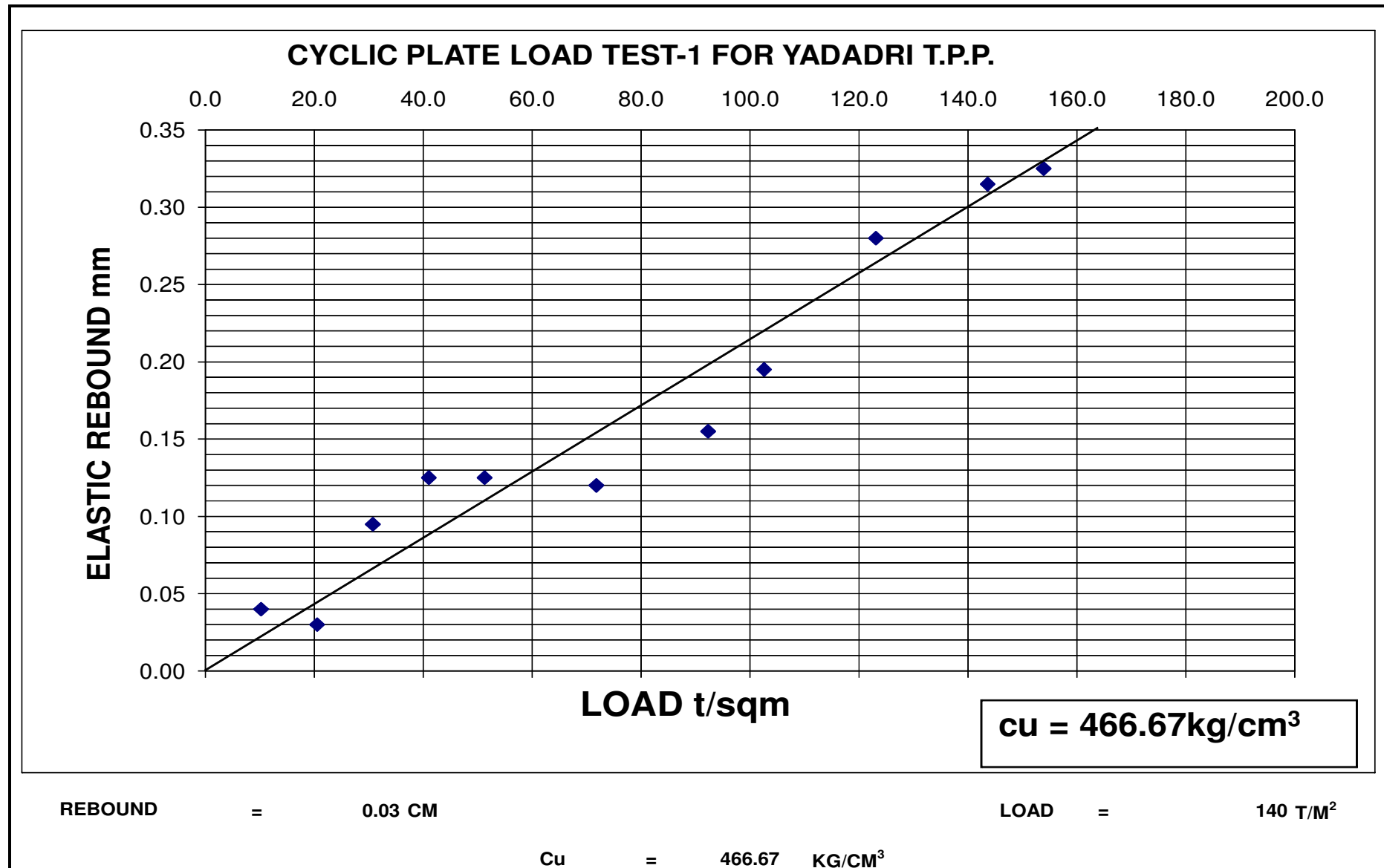
Based on the above Plate Load Test results, it is concluded that the design Safe Bearing Capacity (SBC) for the rocky strata is 70t/m².

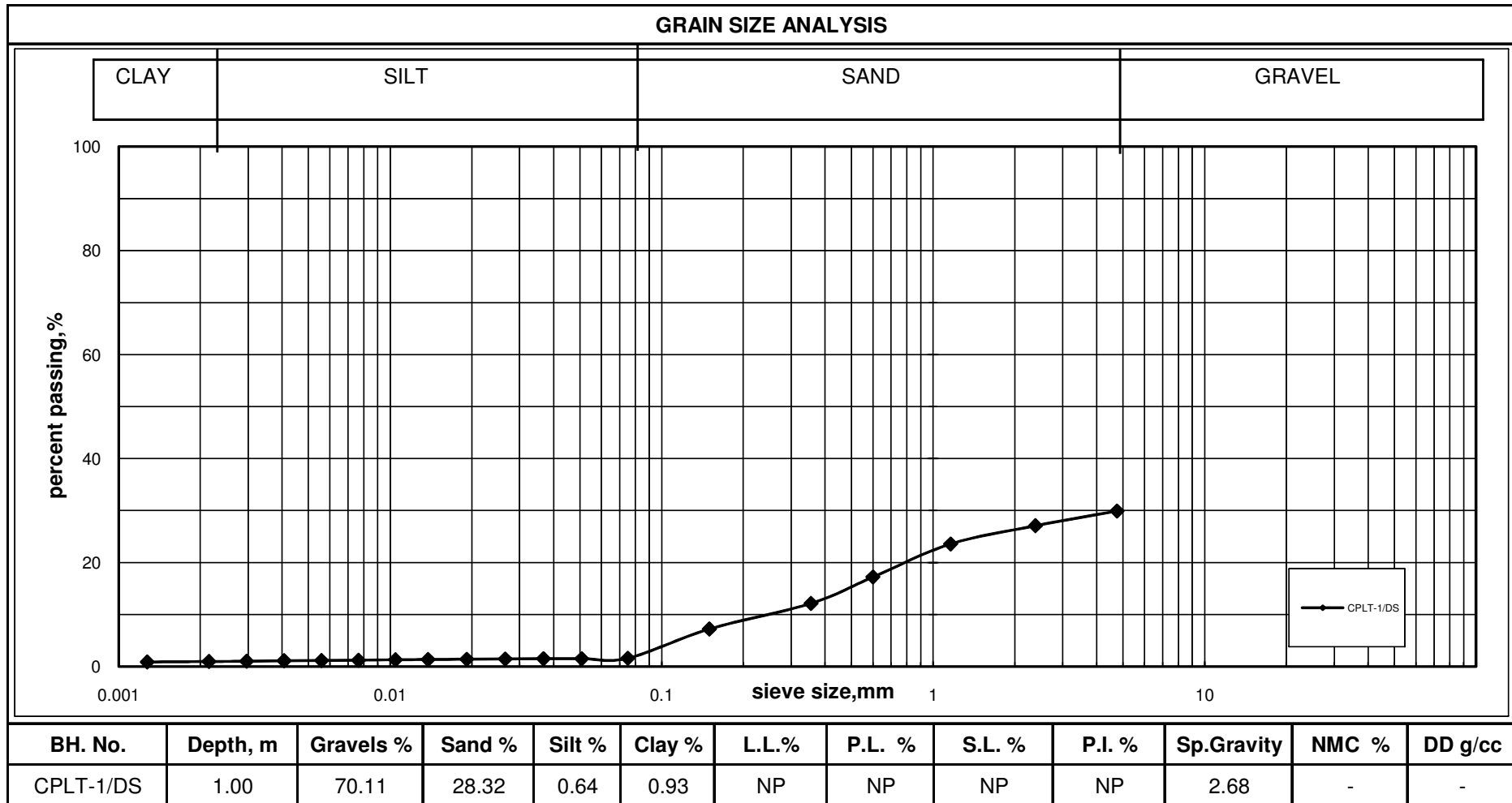


CYCLIC PLATE LOAD TEST

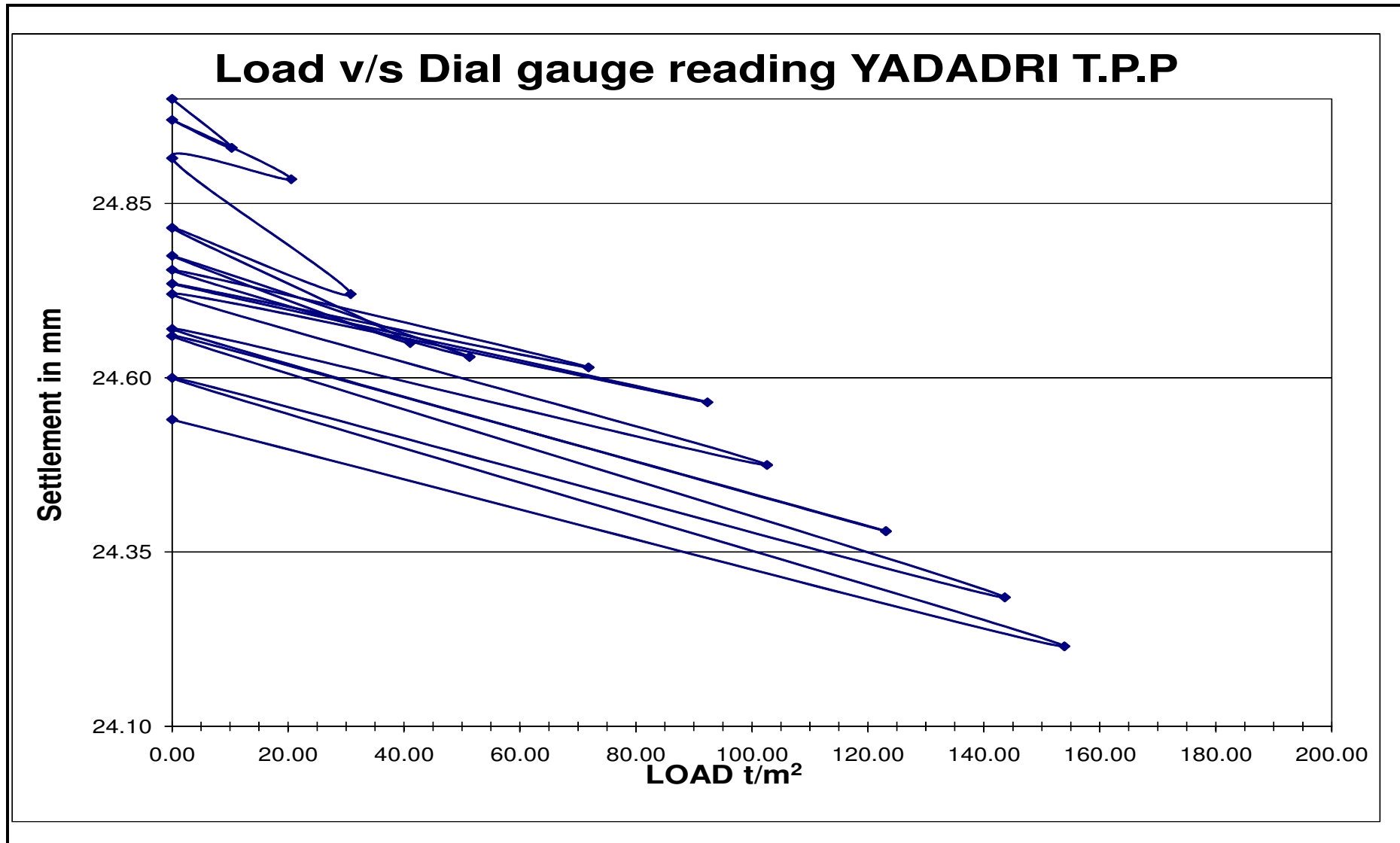
TEST NO.		CPLT-1			SIZE OF PLATE		450mm	x	450mm	N/S:	0			
SIZE OF PIT		3x3x1.5	m3		SIZE OF JACK		230	mm	diameter	E:	-70			
EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		80.85			LEAST COUNT OF DIAL GUAGE			0.01	mm					
Date of Testing :		28-03-2016			INITIAL READING OF DIAL GUAGE			25.00	mm	DEPTH :	1.00	m		
PRESSURE		CYCLE 1	CYCLE 2	CYCLE 3	CYCLE 4	CYCLE 5	CYCLE 6	CYCLE 7	CYCLE 8	CYCLE 9	CYCLE 10	CYCLE 11	CYCLE 12	
kg/sq.cm	t/m ²	DIAL GAUGE READING MM												
0	0.00	25.00												
5	10.26	24.93												
0	0.00		24.97											
10	20.52		24.89											
0	0.00			24.92										
15	30.78			24.72										
0	0.00				24.82									
20	41.03				24.65									
0	0.00					24.78								
25	51.29					24.63								
0	0.00						24.76							
35	71.81						24.62							
0	0.00							24.74						
45	92.33							24.57						
0	0.00								24.72					
50	102.59								24.48					
0	0.00									24.67				
60	123.10									24.38				
0	0.00										24.66			
70	143.62										24.29			
0	0.00											24.60		
75	153.88											24.22		
0	0.00												24.54	





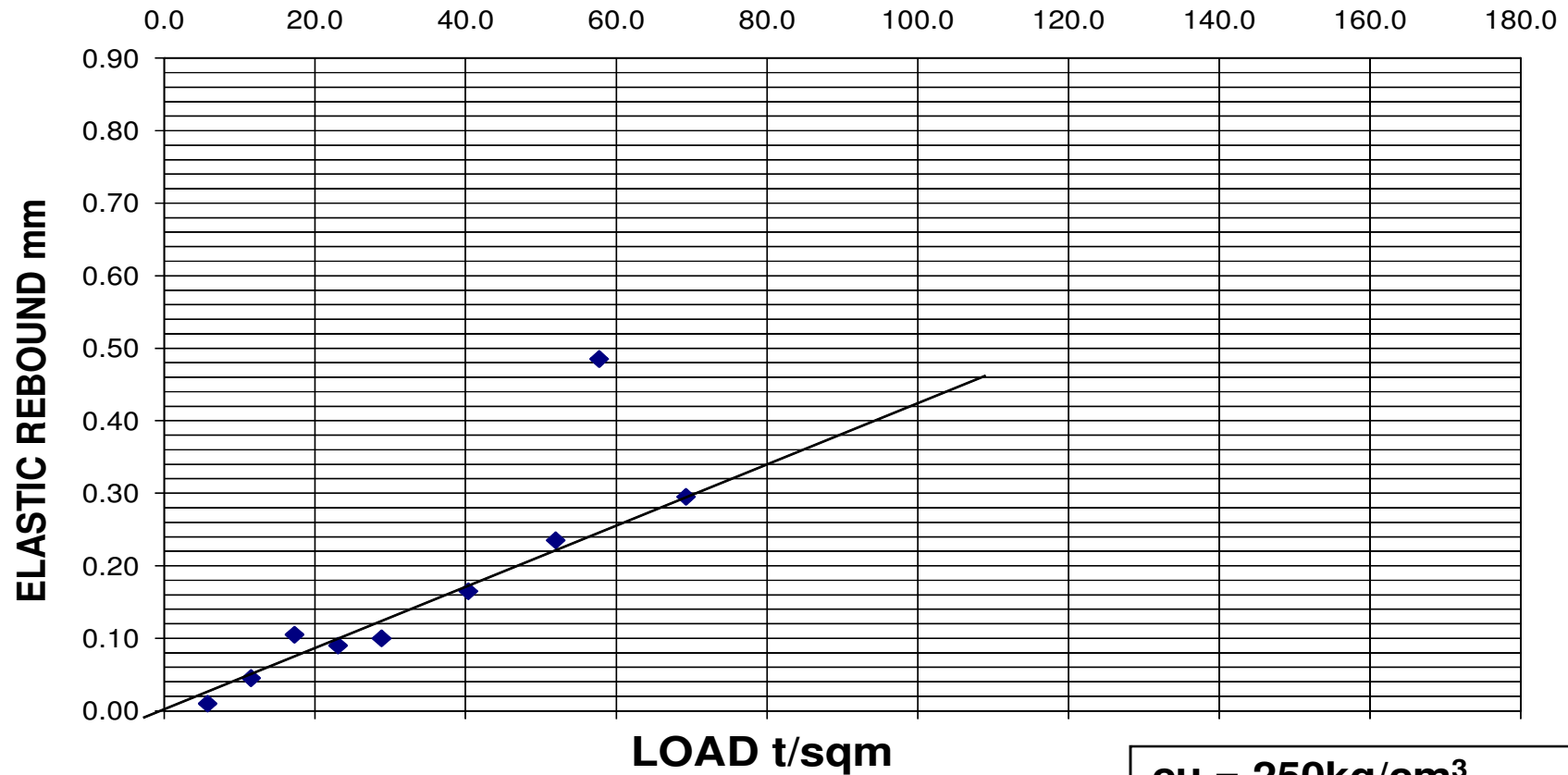


Page 43





CYCLIC PLATE LOAD TEST-2 FOR YADADRI T.P.P.

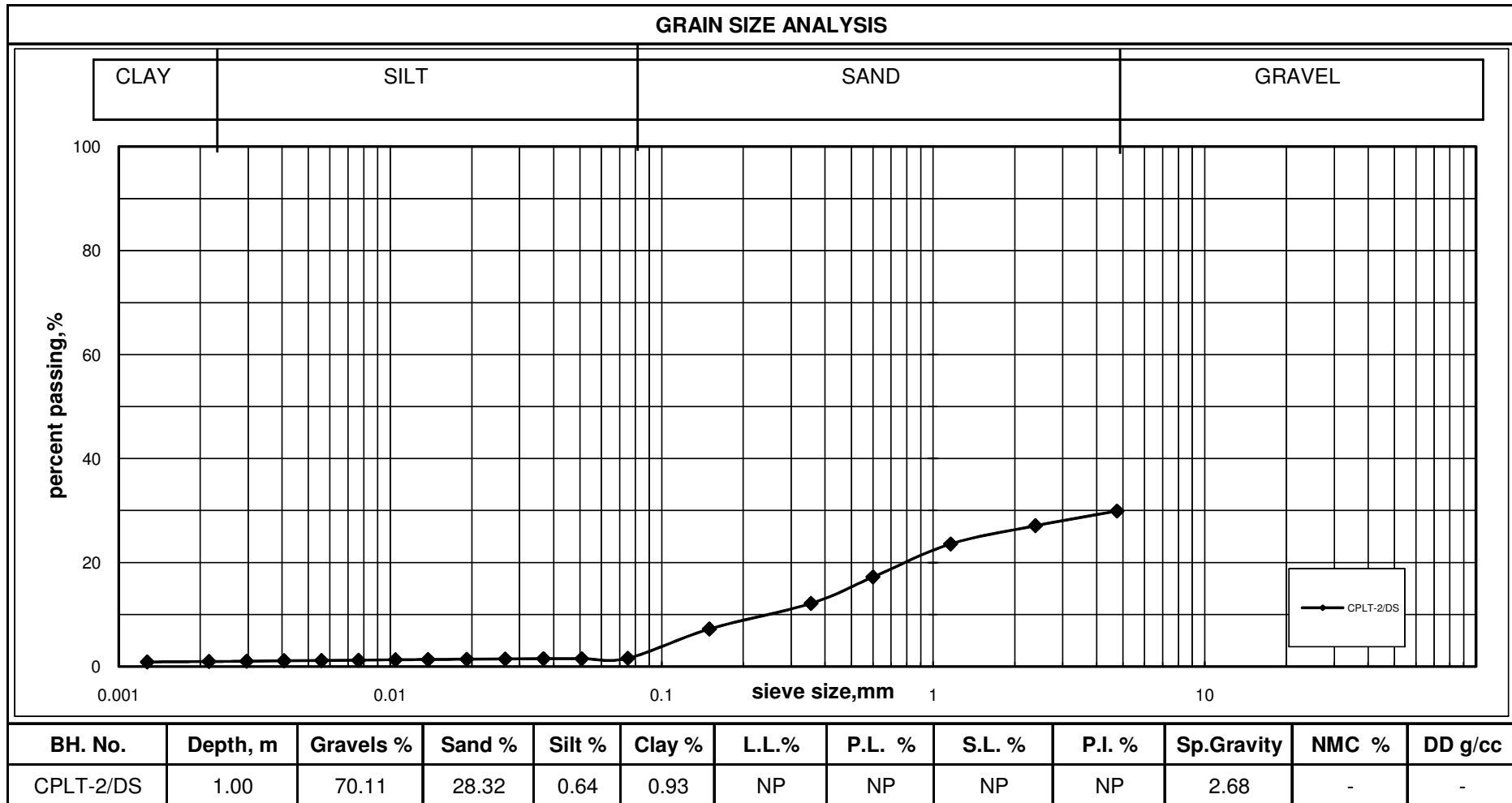


cu = 250kg/cm³

REBOUND = 0.016 CM

LOAD = 40 T/M²

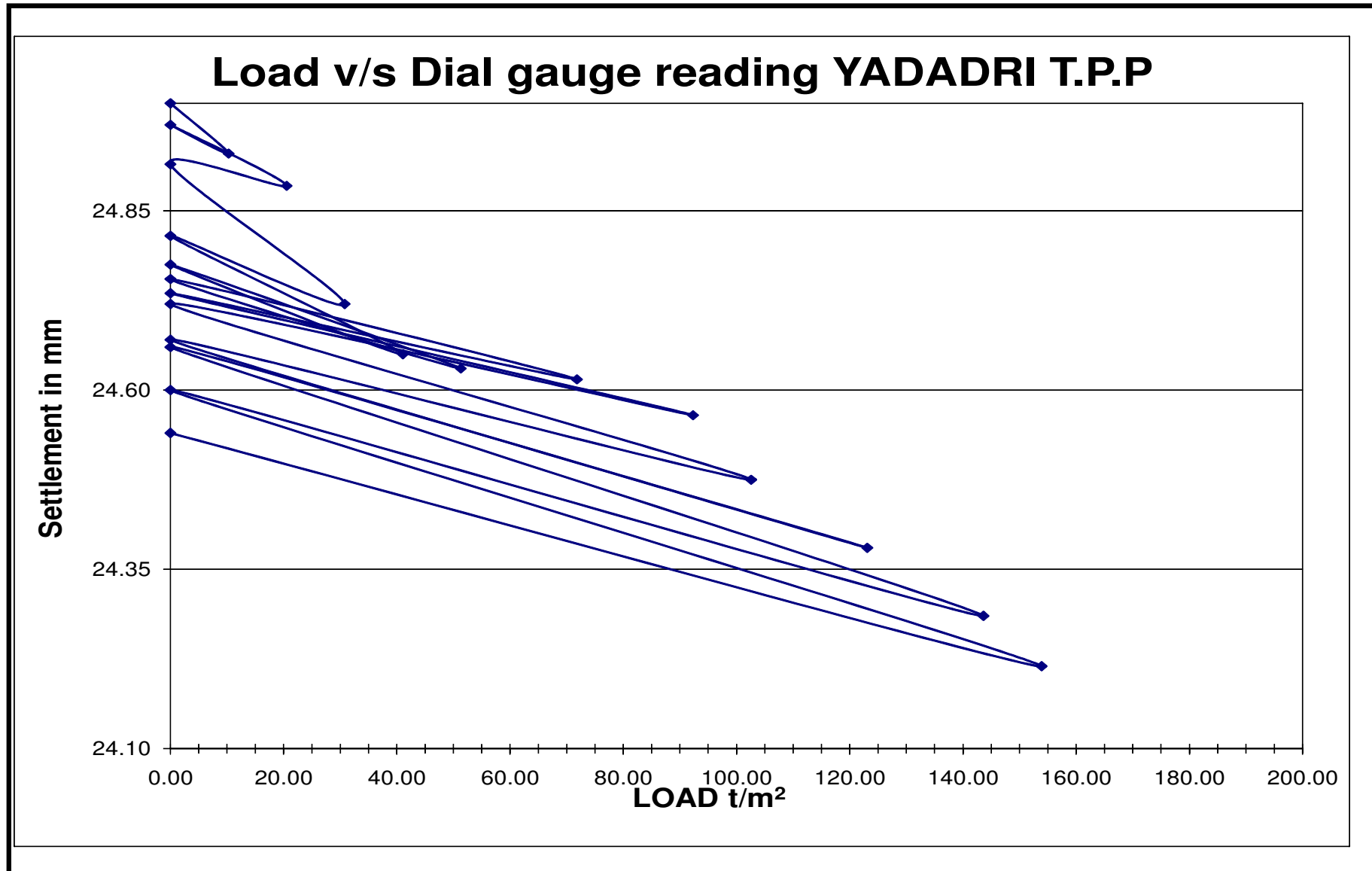
Cu = 250.00 KG/CM³



Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
Noble Geo-Structs Project No. S 16022
June 7, 2016

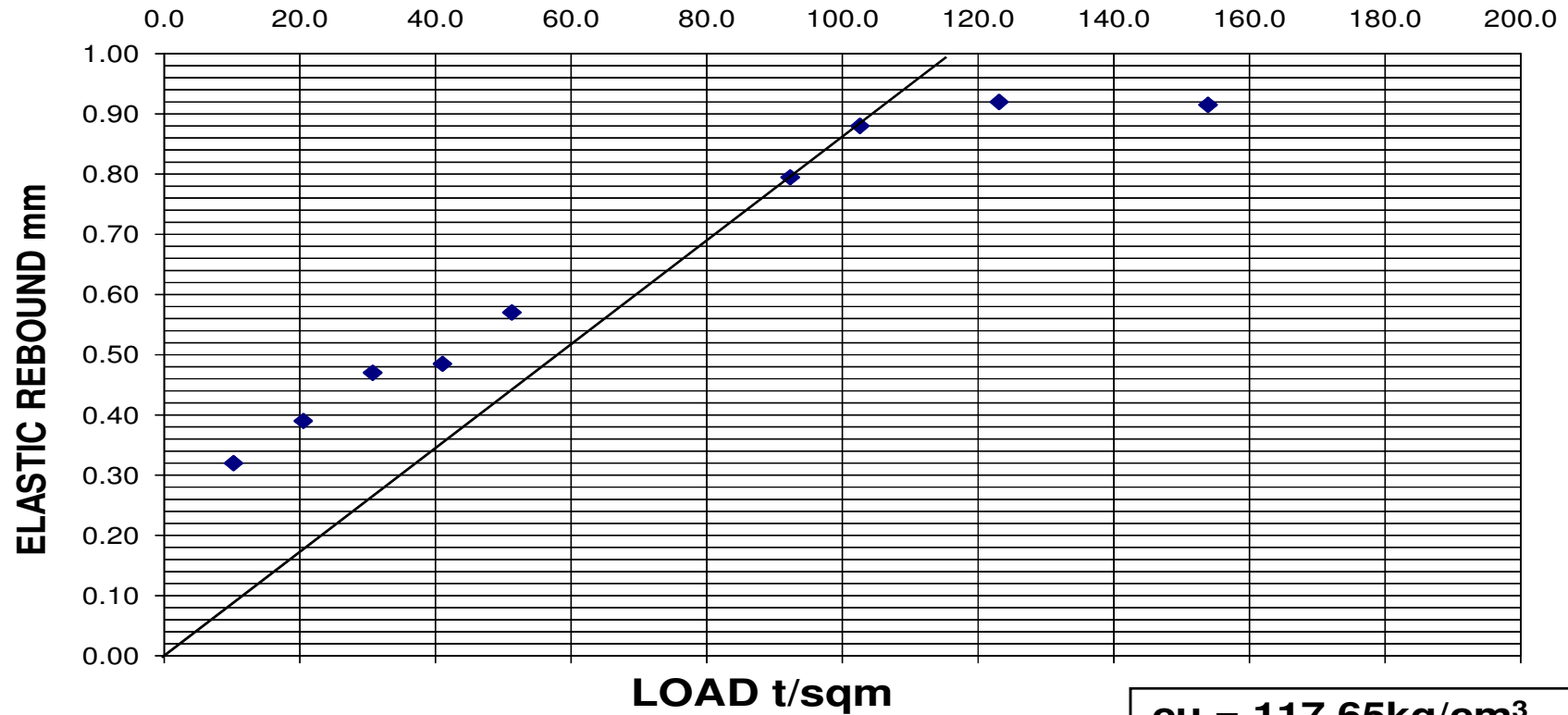


TEST NO.		CPLT-3			SIZE OF PLATE		450mm	x	450mm	N:	-152			
SIZE OF PIT		3x3x1.5	m3		SIZE OF JACK		230	mm	diameter	E:	90			
EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		78.47			LEAST COUNT OF DIAL GUAGE			0.01	mm					
Date of Testing :		08-03-2016			INITIAL READING OF DIAL GUAGE			25.00	mm	DEPTH :	1.50	m		
PRESSURE		CYCLE 1	CYCLE 2	CYCLE 3	CYCLE 4	CYCLE 5	CYCLE 6	CYCLE 7	CYCLE 8	CYCLE 9	CYCLE 10	CYCLE 11	CYCLE 12	
kg/sq.cm	t/m²	DIAL GAUGE READING MM												
0	0.00	25.00												
5	10.26	21.57												
0	0.00		21.89											
10	20.52		21.27											
0	0.00			21.66										
15	30.78			20.68										
0	0.00				21.15									
20	41.03				20.25									
0	0.00					20.74								
25	51.29					19.59								
0	0.00						20.16							
35	71.81						18.31							
0	0.00							19.46						
45	92.33							17.82						
0	0.00								18.62					
50	102.59								17.04					
0	0.00									17.92				
60	123.10									15.95				
0	0.00										16.87			
70	143.62										15.04			
0	0.00											16.16		
75	153.88											14.49		
0	0.00												15.41	





CYCLIC PLATE LOAD TEST-3 FOR YADADRI T.P.P.

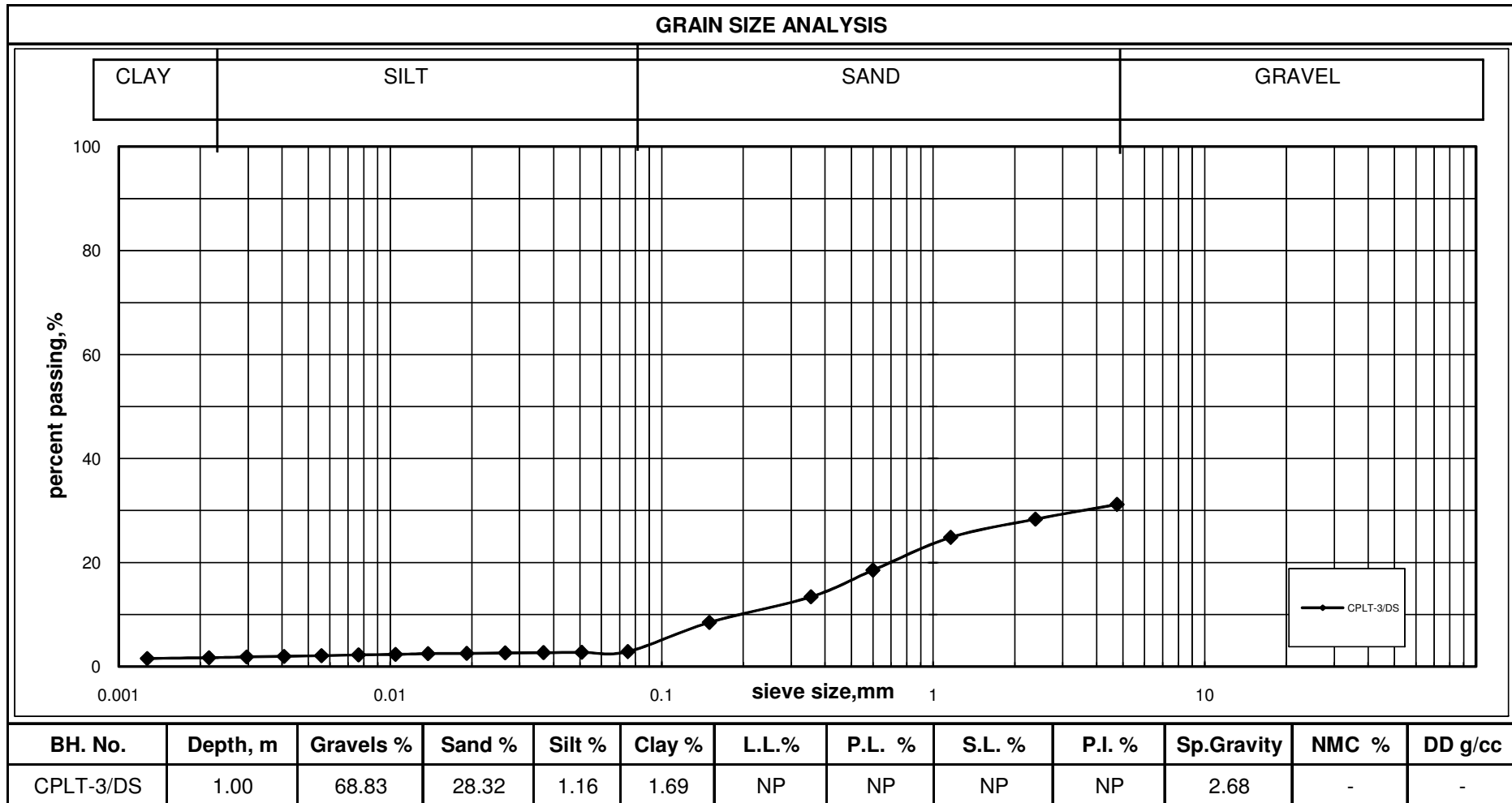


cu = 117.65kg/cm³

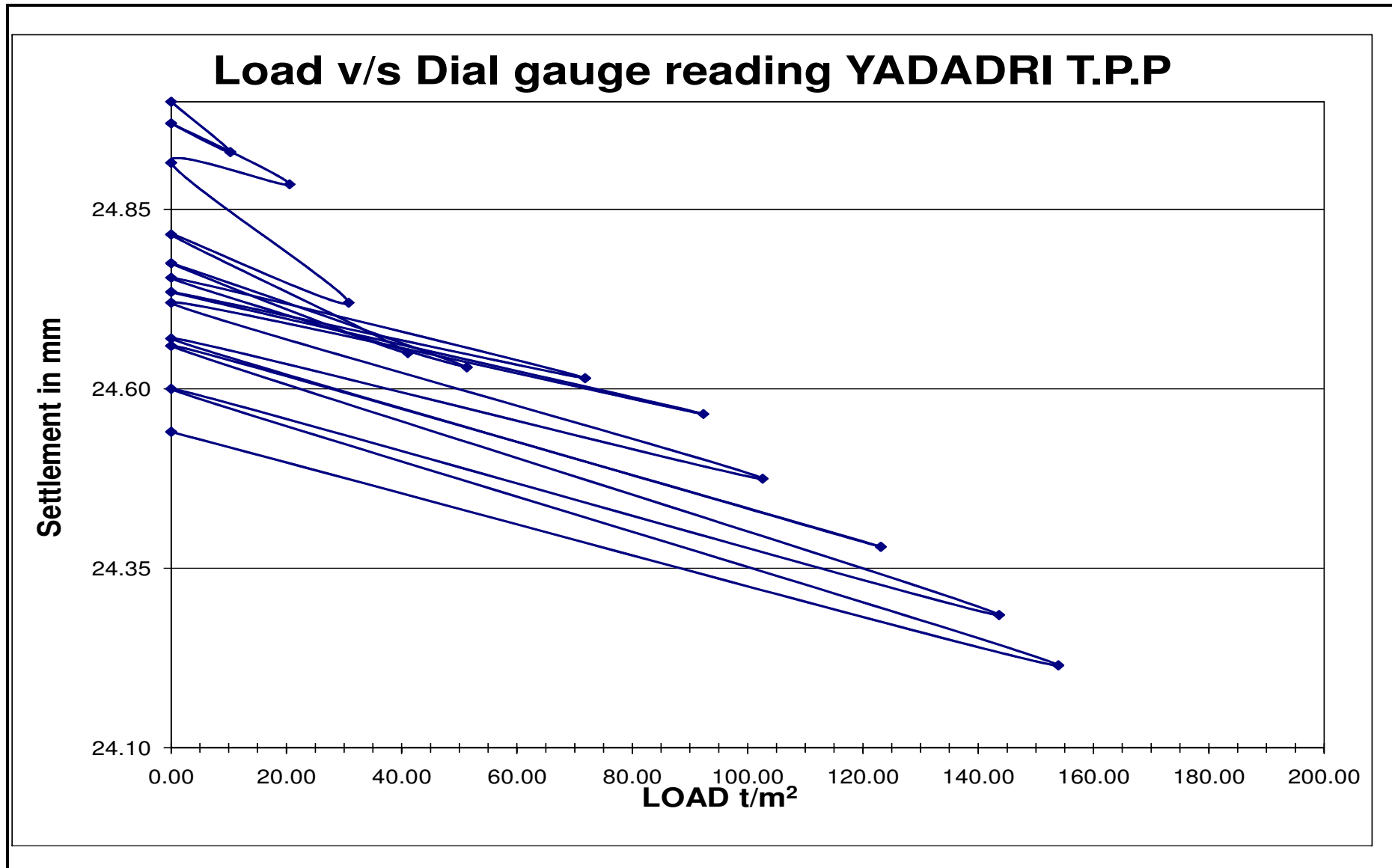
REBOUND = 0.051 CM

LOAD = 60 T/M²

Cu = 117.65 KG/CM³

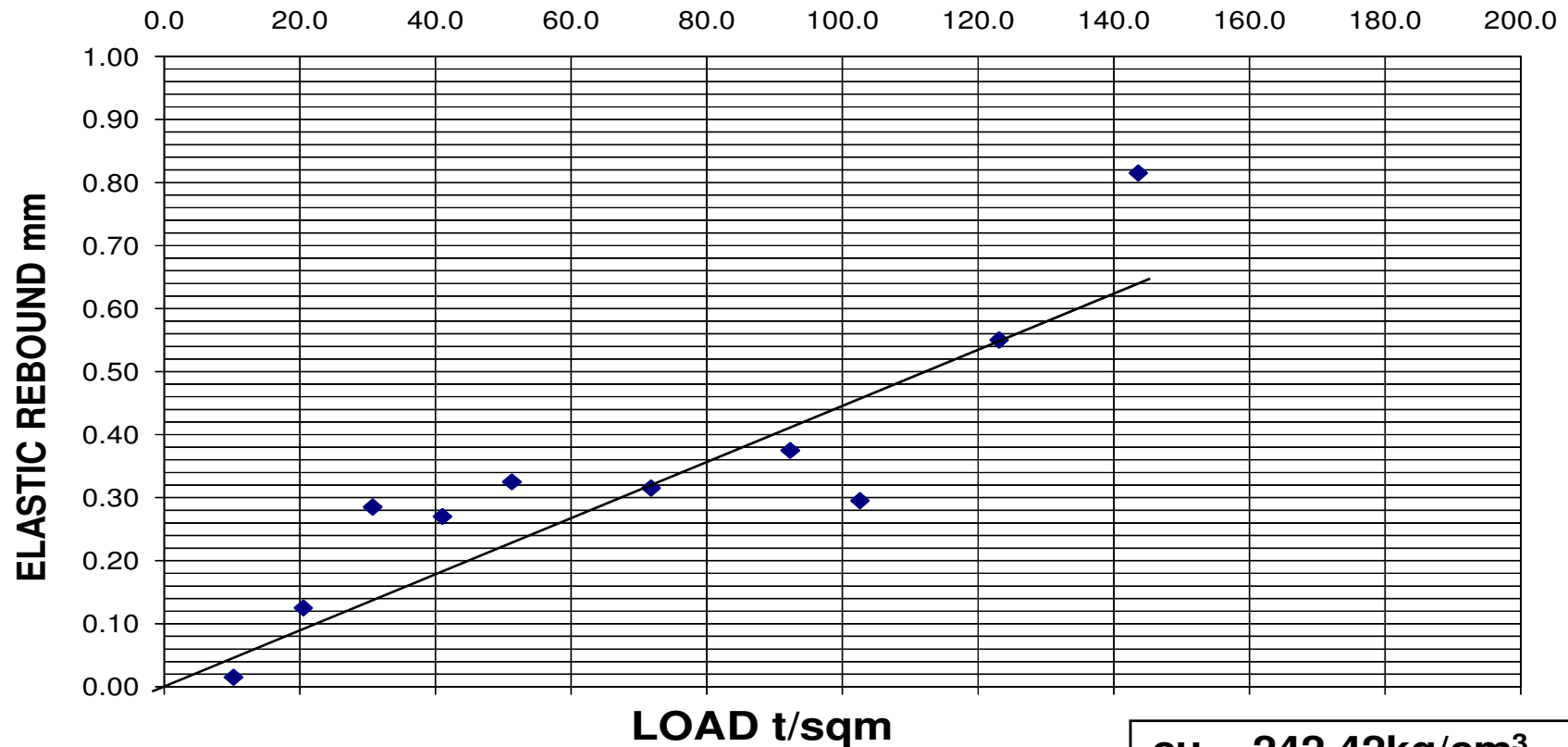


Page 51





CYCLIC PLATE LOAD TEST-4 FOR YADADRI T.P.P.

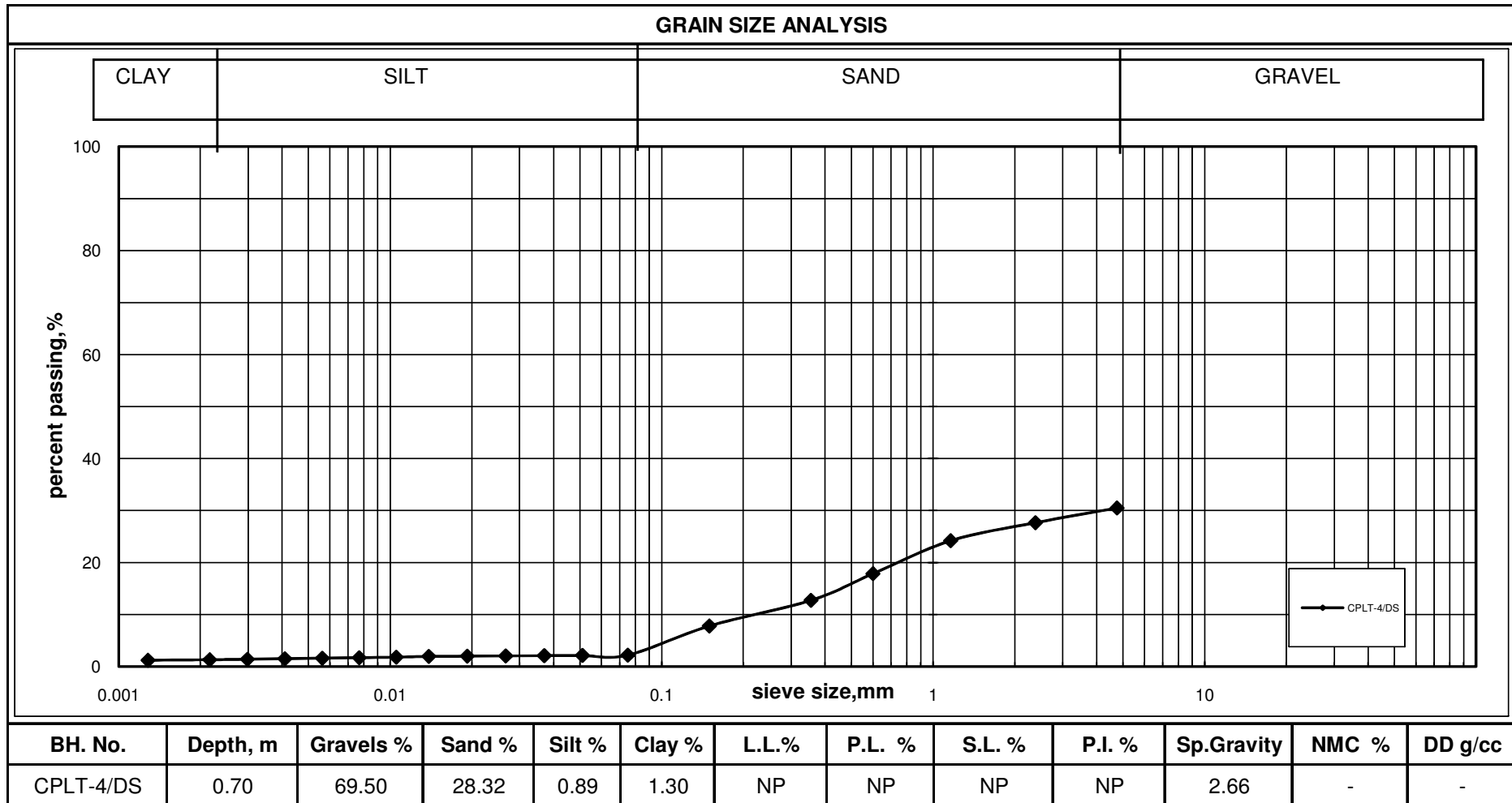


cu = 242.42kg/cm³

REBOUND = 0.033 CM

LOAD = 80 T/M²

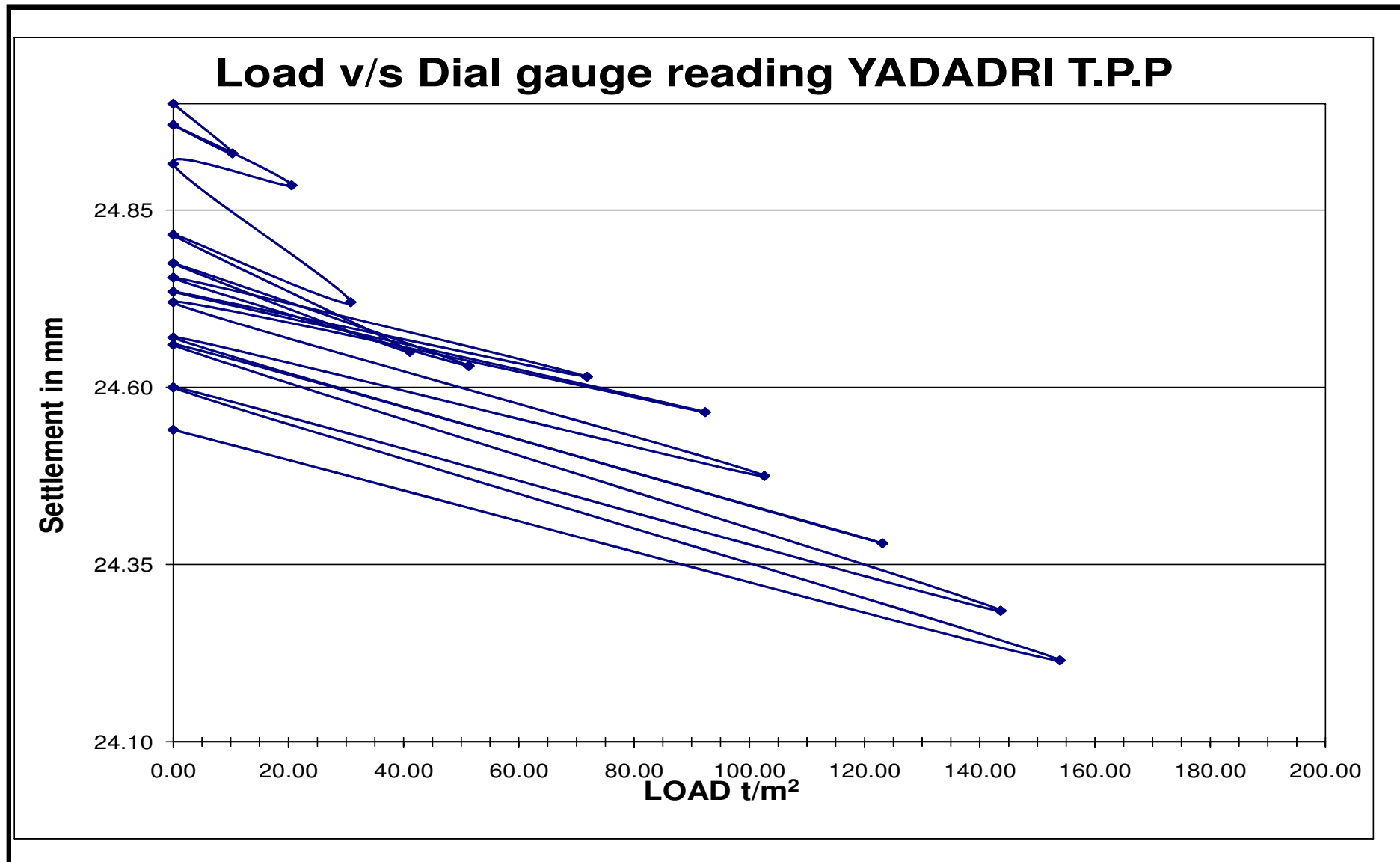
Cu = 242.42 KG/CM³



Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
Noble Geo-Structs Project No. S 16022
June 7, 2016

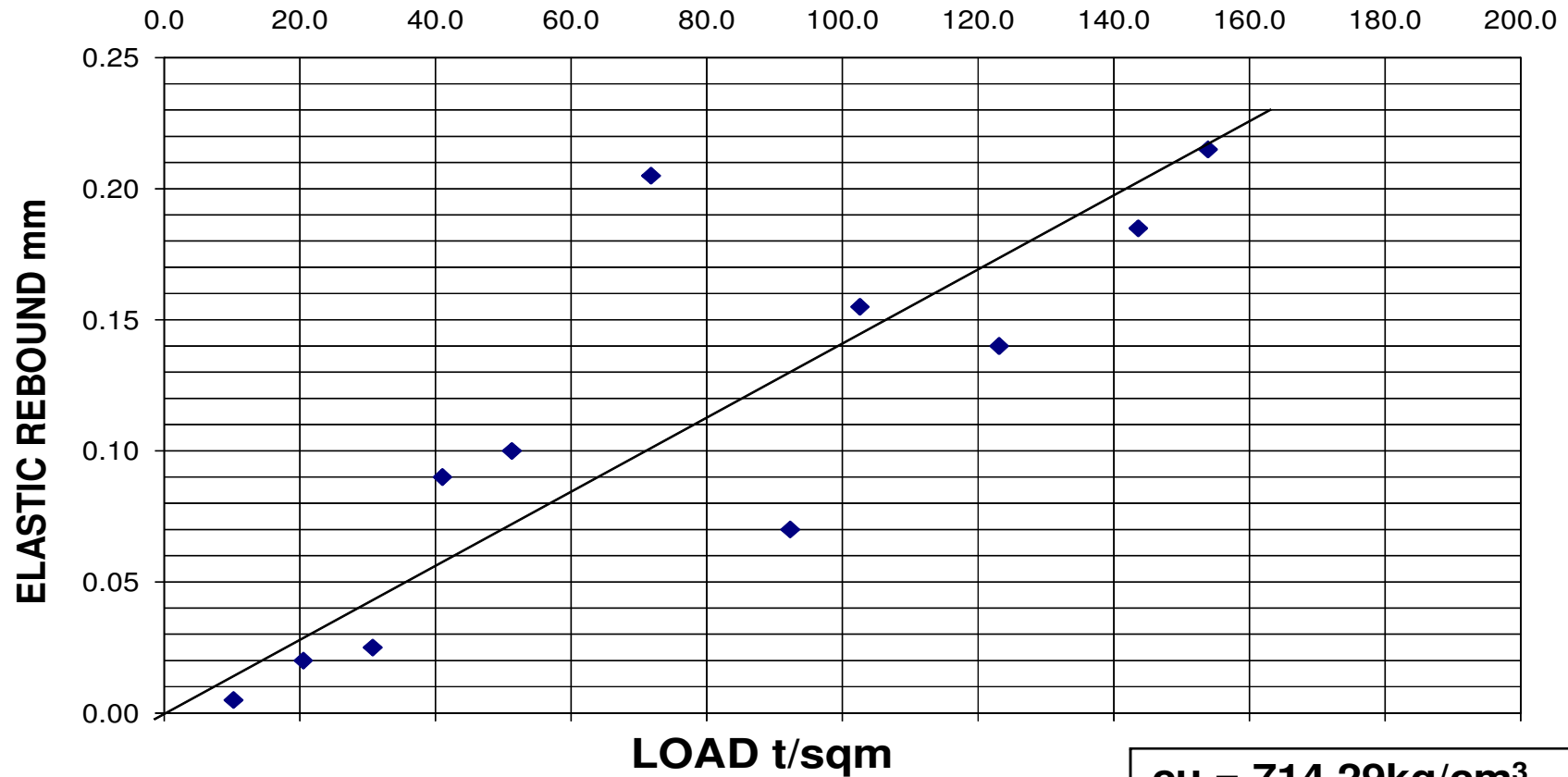


TEST NO.		CPLT-5			SIZE OF PLATE	450mm	x	450mm	N/S:	-151			
SIZE OF PIT		3x3x1.5	m3		SIZE OF JACK	230	mm	diameter	E:	666			
EGL(EXISTING GROUND LEVEL) R.L.(+)(m)		86.27			LEAST COUNT OF DIAL GAUGE	0.01	mm						
Date of Testing :		02-04-2016			INITIAL READING OF DIAL GAUGE	25.00	mm		DEPTH :	1.30	m		
PRESSURE		CYCLE 1	CYCLE 2	CYCLE 3	CYCLE 4	CYCLE 5	CYCLE 6	CYCLE 7	CYCLE 8	CYCLE 9	CYCLE 10	CYCLE 11	CYCLE 12
kg/sq.cm	t/m ²	DIAL GAUGE READING MM											
0	0.00	25.00											
5	10.26	24.86											
0	0.00		24.86										
10	20.52		24.81										
0	0.00			24.83									
15	30.78			24.69									
0	0.00				24.71								
20	41.03				24.58								
0	0.00					24.67							
25	51.29					24.43							
0	0.00						24.53						
35	71.81						24.19						
0	0.00							24.39					
45	92.33							24.00					
0	0.00								24.07				
50	102.59								23.92				
0	0.00									24.07			
60	123.10									23.74			
0	0.00										23.88		
70	143.62										23.55		
0	0.00											23.73	
75	153.88											23.45	
0	0.00												23.66





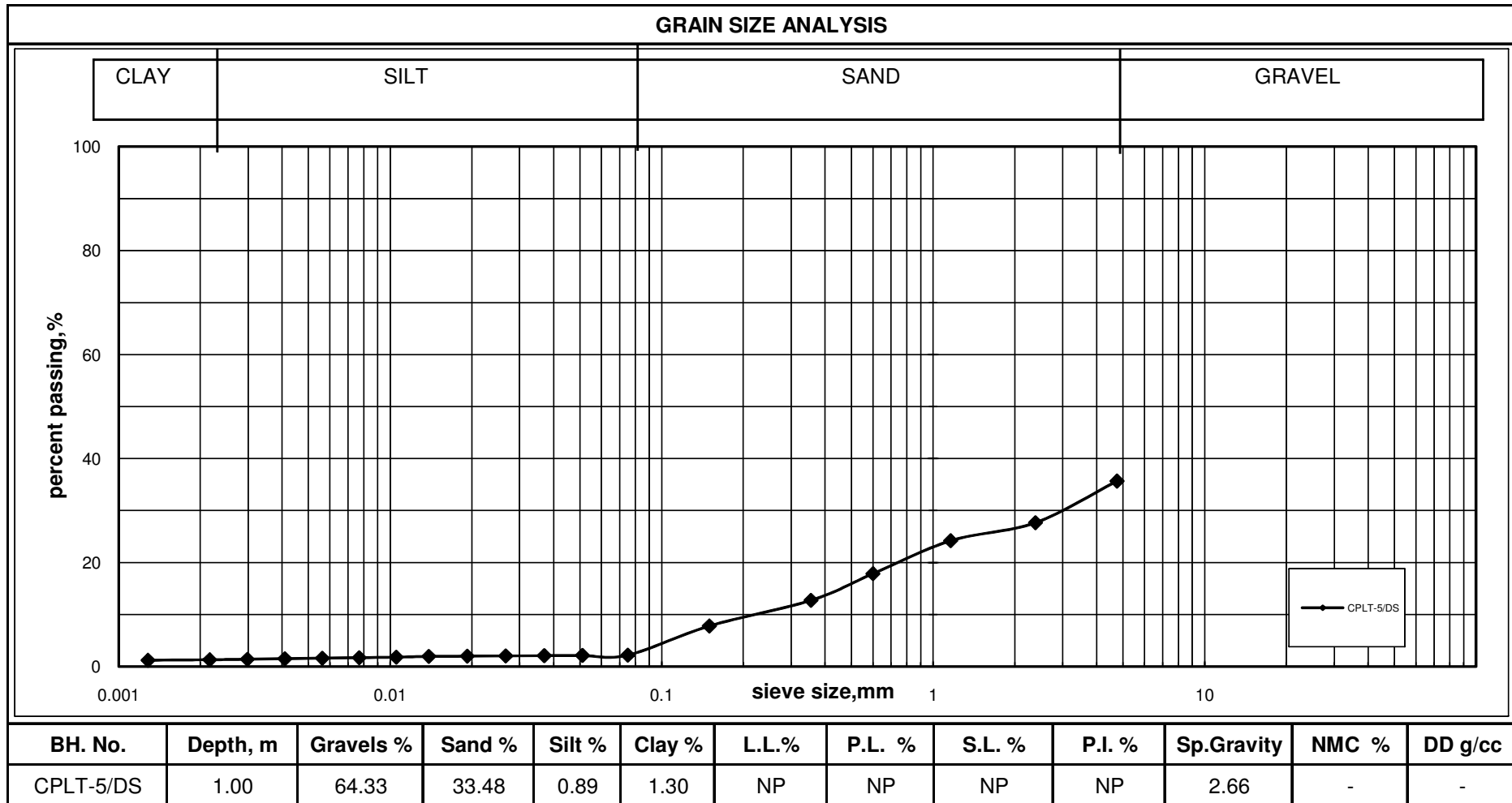
CYCLIC PLATE LOAD TEST-5 FOR YADADRI T.P.P.



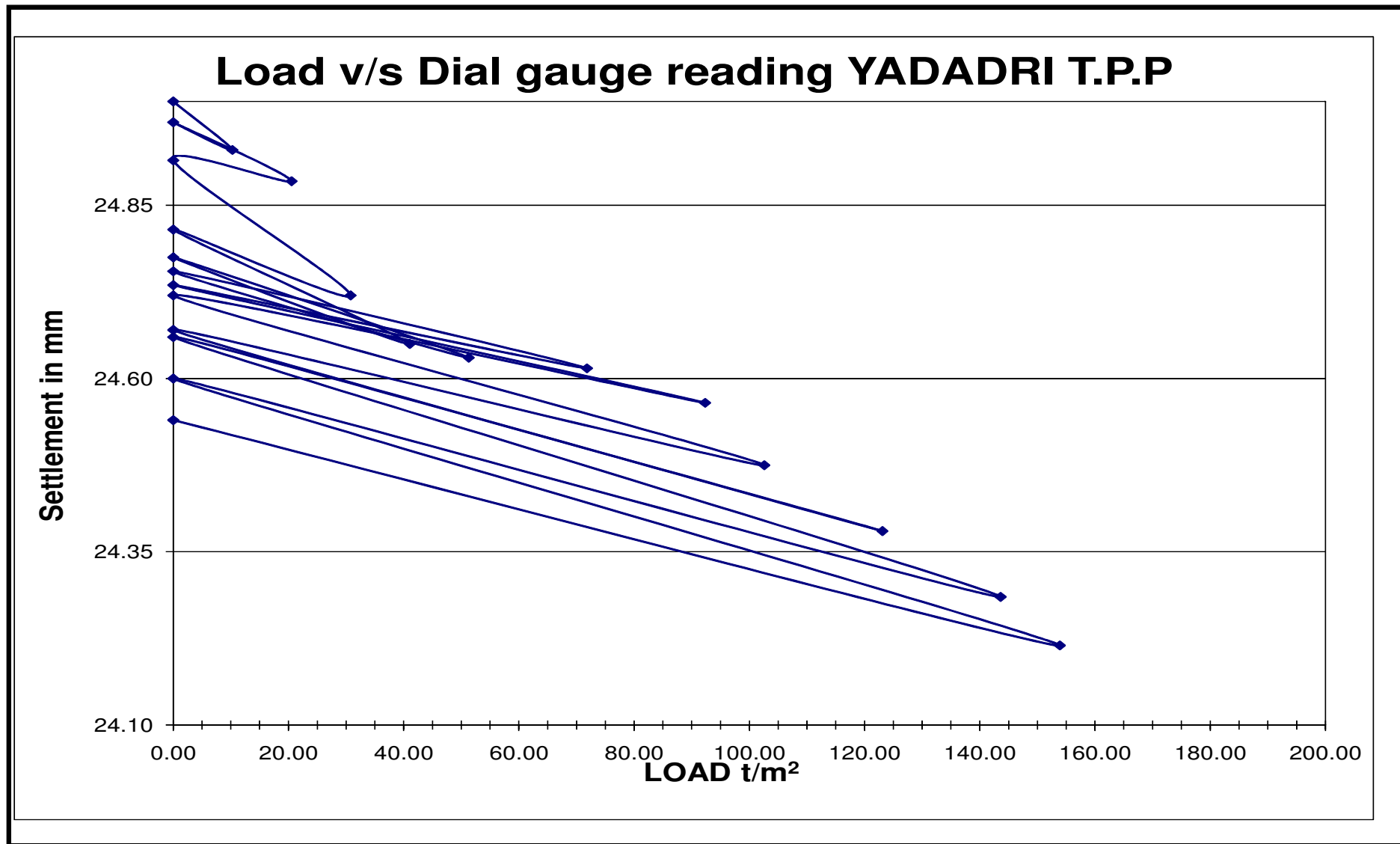
REBOUND = 0.014 CM

LOAD = 100 T/M²

Cu = 714.29 KG/CM³

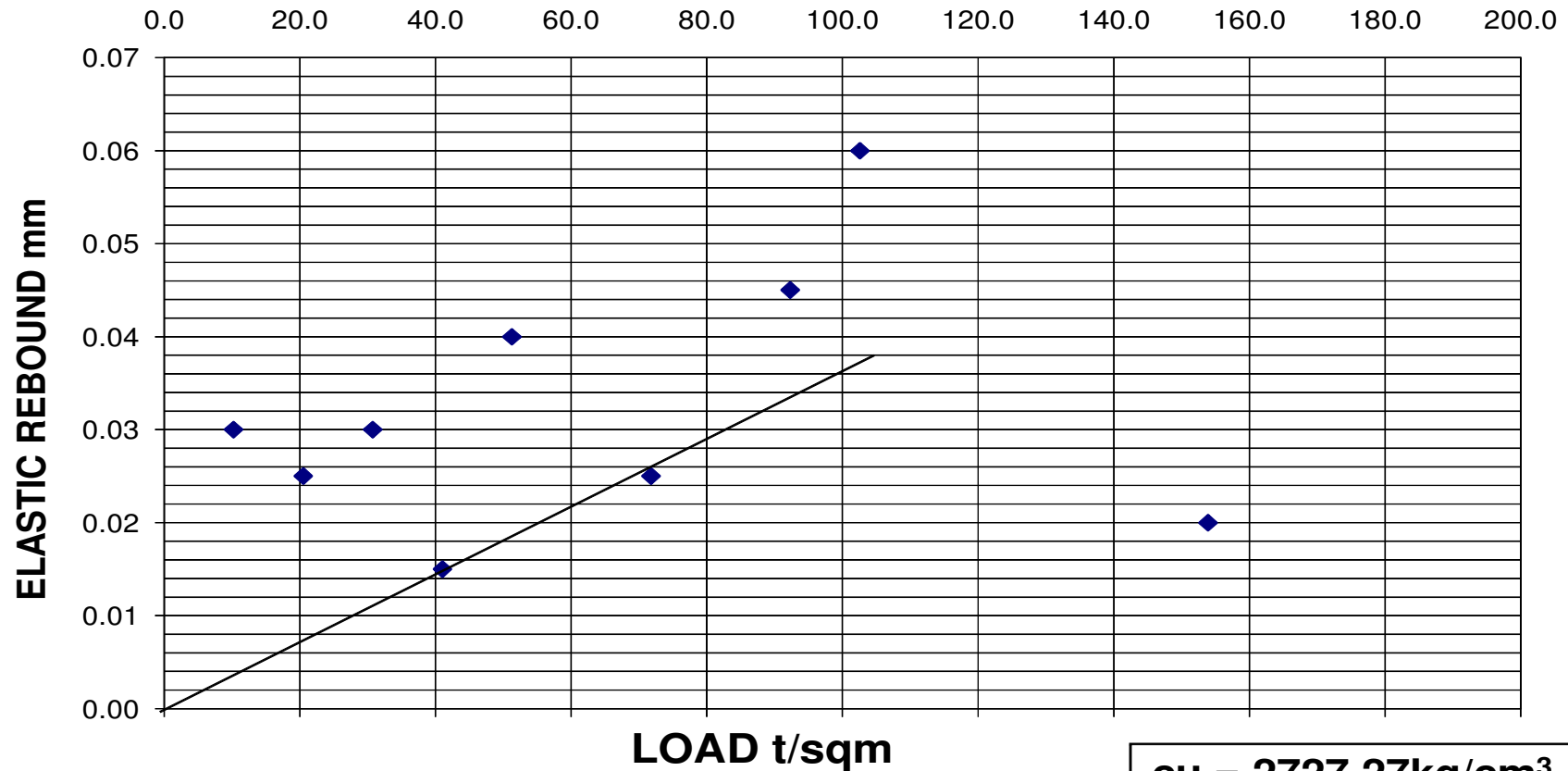


[illegible]





CYCLIC PLATE LOAD TEST-6 FOR YADADRI T.P.P.

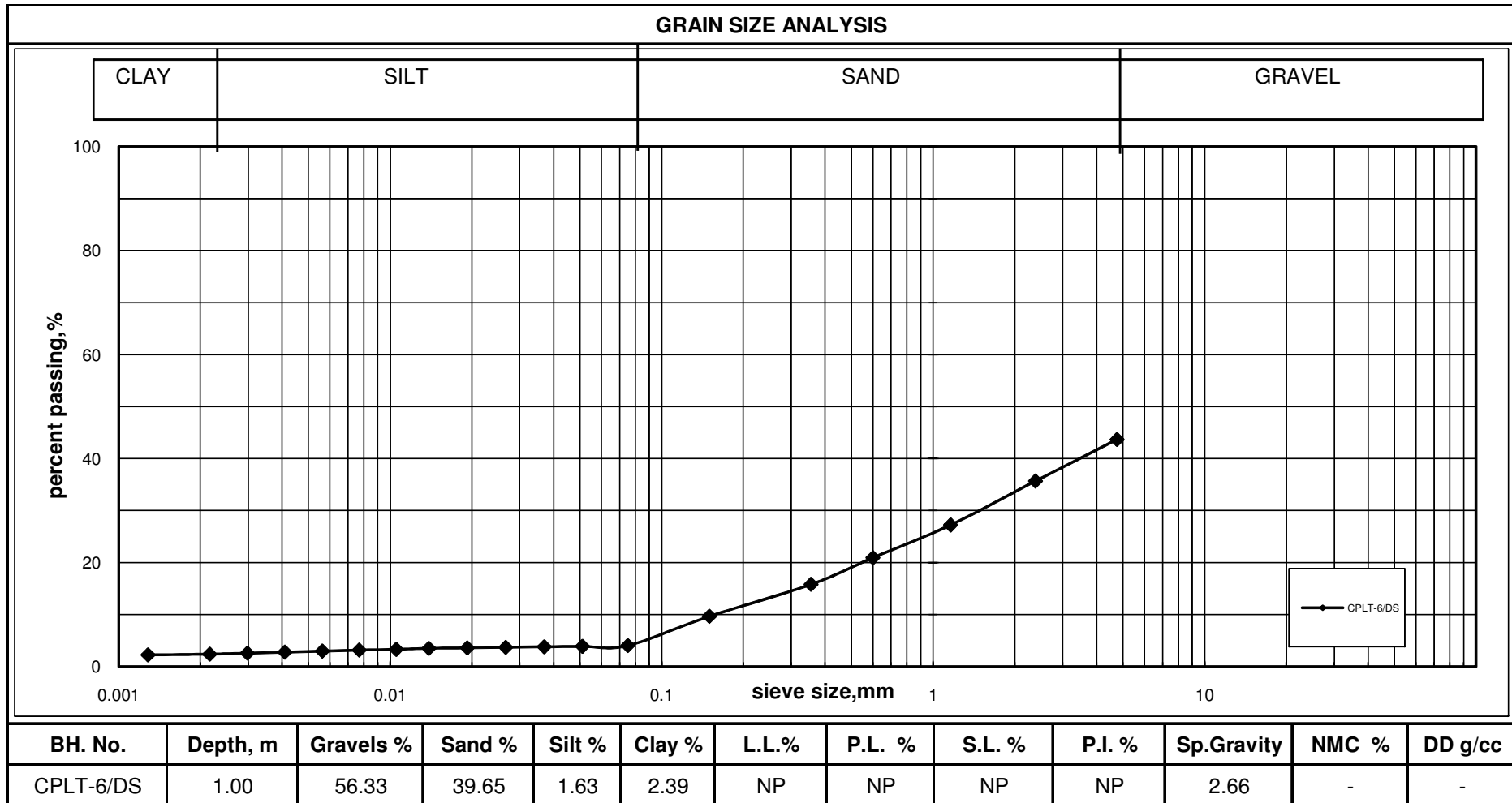


cu = 2727.27kg/cm³

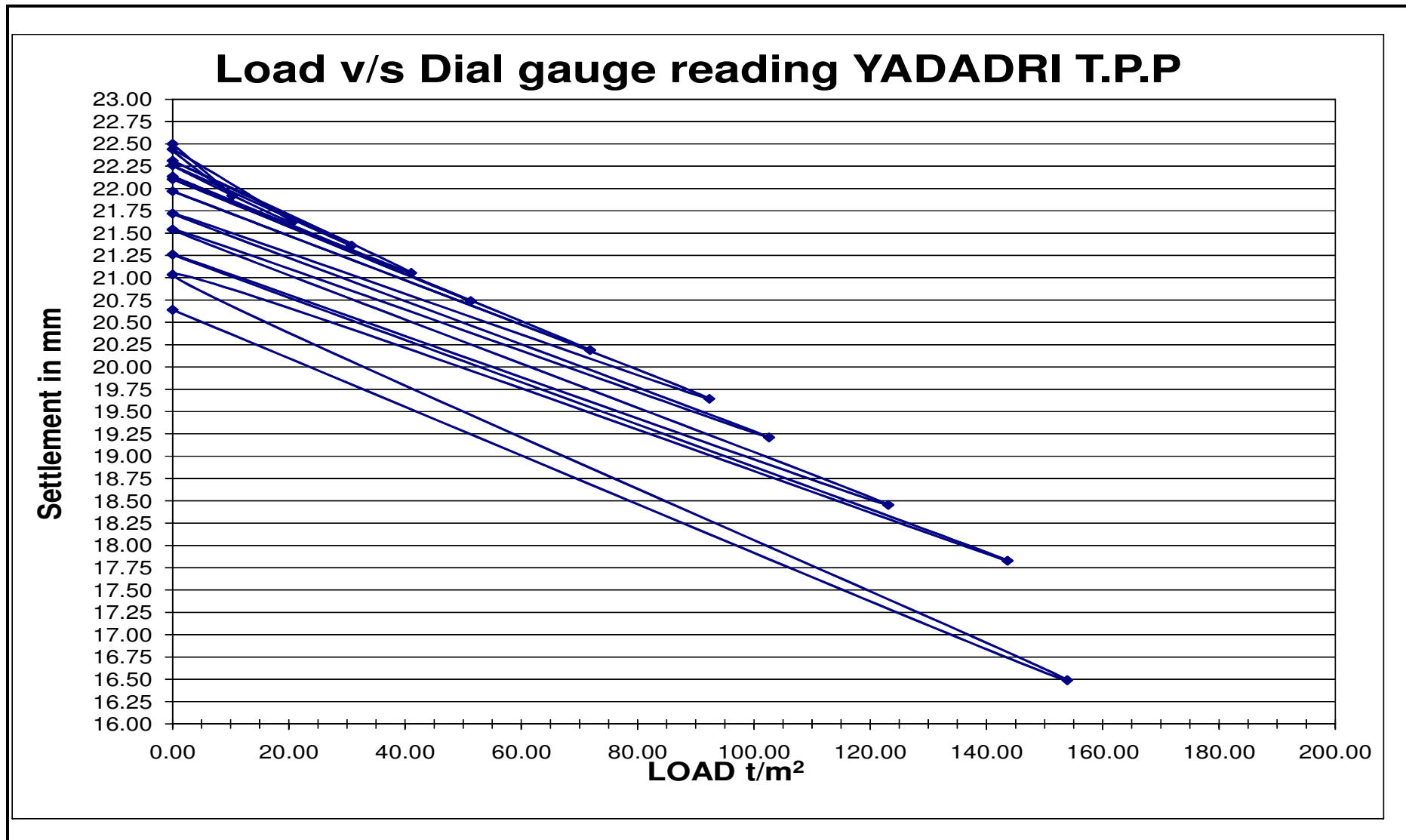
REBOUND = 0.0022 CM

LOAD = 60 T/M²

Cu = 2727.27 KG/CM³

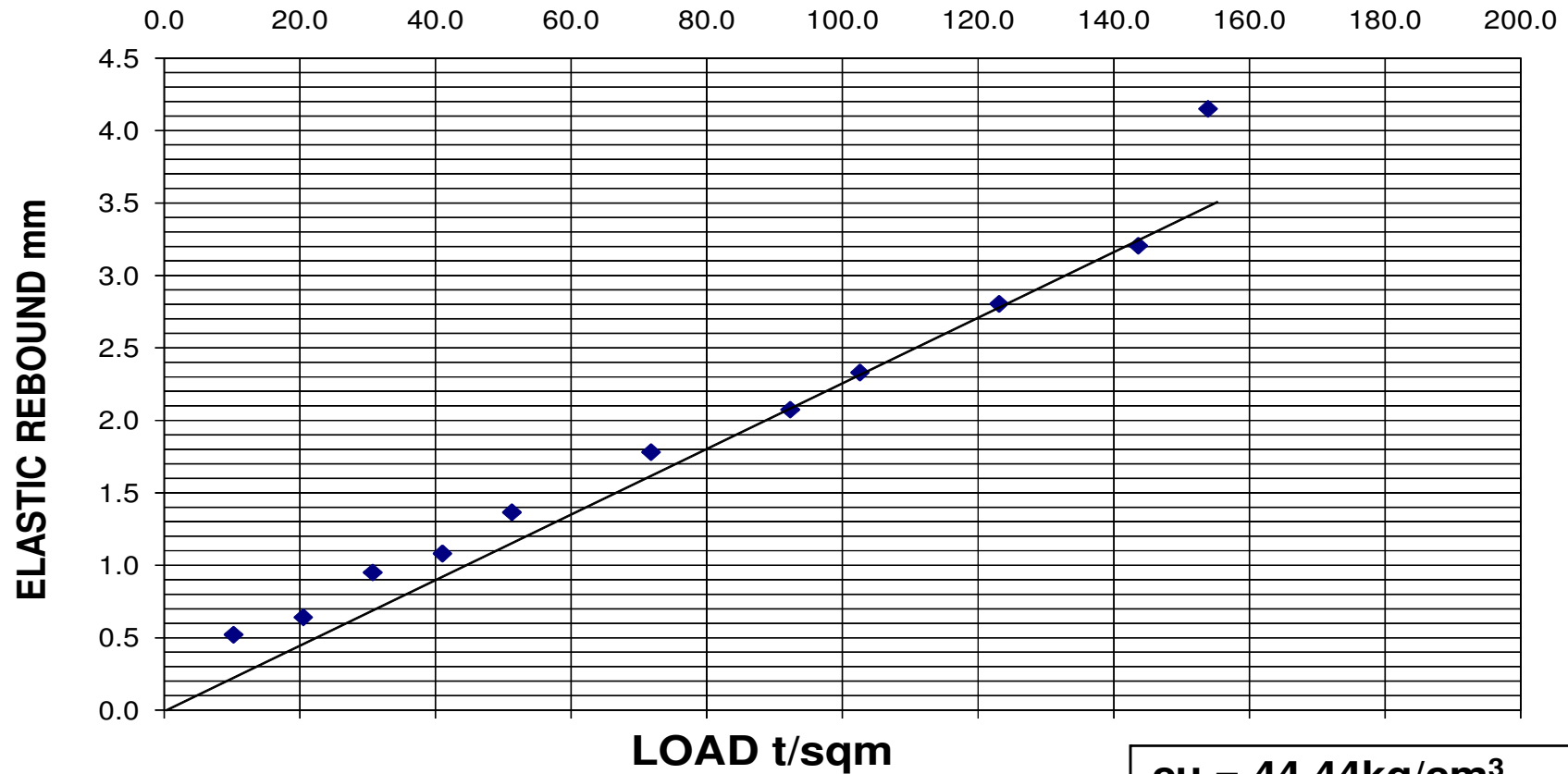


Page 63





CYCLIC PLATE LOAD TEST-7 FOR YADADRI T.P.P.

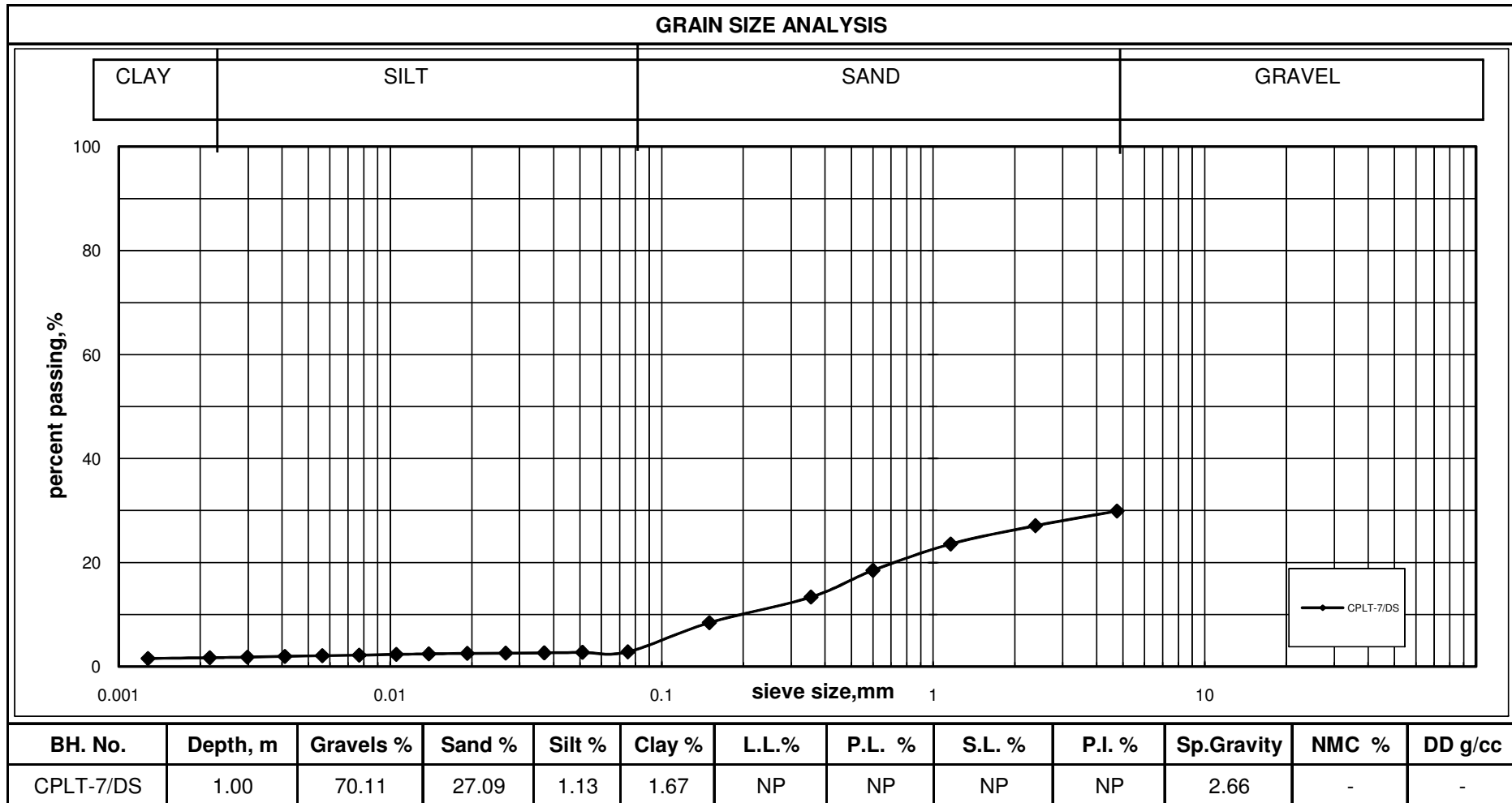


cu = 44.44kg/cm³

REBOUND = 0.27 CM

LOAD = 120 T/M²

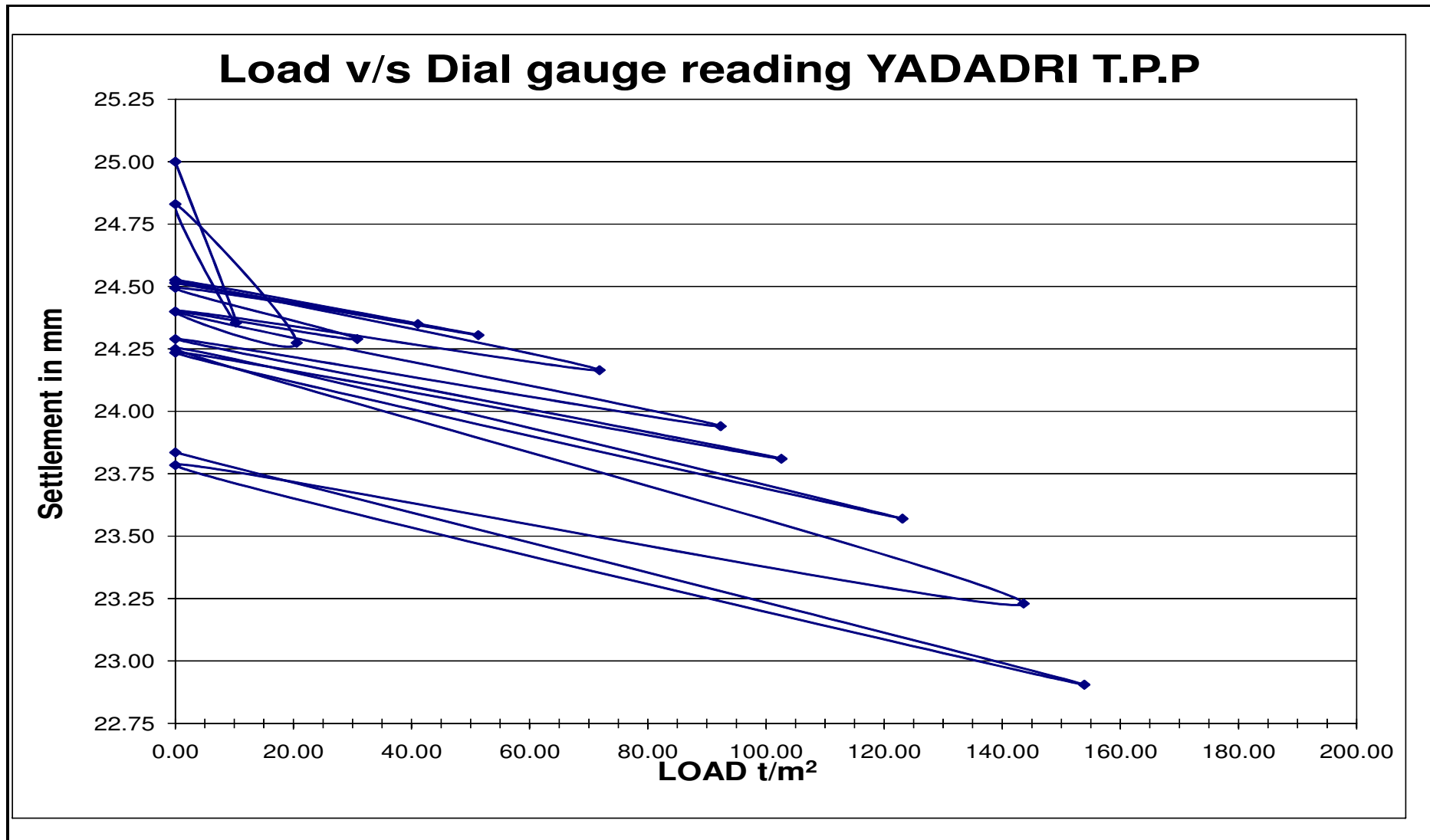
Cu = 44.44 KG/CM³



Project :5x800MW Yadadri Thermal Power Station at Veerlapalem, Telangana State.
Noble Geo-Structs Project No. S 16022
June 7, 2016

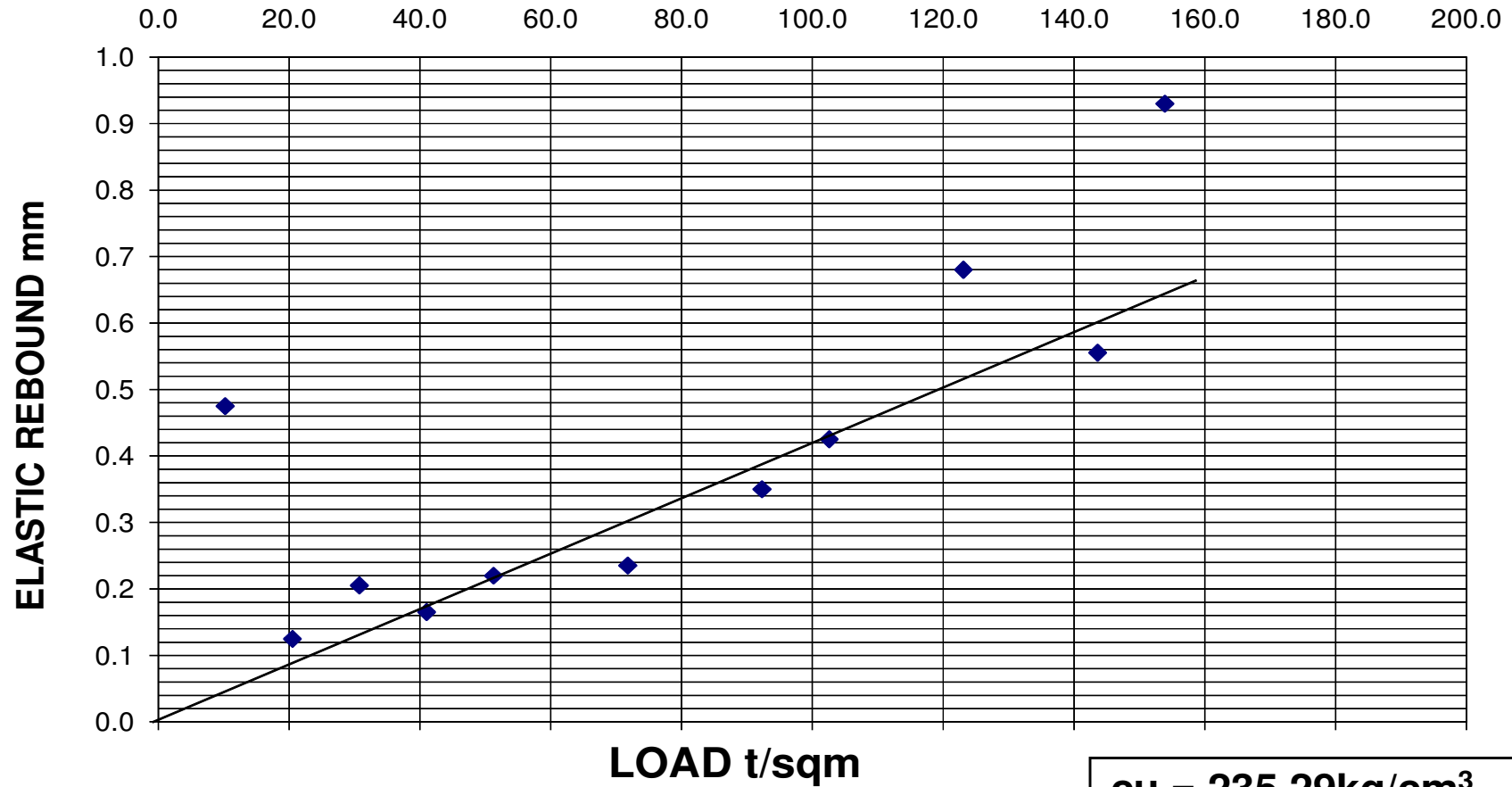


TEST NO.		CPLT-8			SIZE OF PLATE		450mm	x	450mm		N/S:	0	
SIZE OF PIT		3x3x1.5	m3		SIZE OF JACK			230	mm	diameter	E:	70	
EGL(EXISTING GROUND LEVEL)		R.L.(+)(m)	83.17		LEAST COUNT OF DIAL GUAGE			0.01	mm				
Date of Testing :		13-04-2016			INITIAL READING OF DIAL GUAGE			25.00	mm		DEPTH :	1.50	m
PRESSURE		CYCLE 1	CYCLE 2	CYCLE 3	CYCLE 4	CYCLE 5	CYCLE 6	CYCLE 7	CYCLE 8	CYCLE 9	CYCLE 10	CYCLE 11	CYCLE 12
kg/sq.cm	t/m ²	DIAL GAUGE READING MM											
0	0.00	25.00											
5	10.26	24.36											
0	0.00		24.83										
10	20.52		24.28										
0	0.00			24.40									
15	30.78			24.29									
0	0.00				24.50								
20	41.03				24.35								
0	0.00					24.52							
25	51.29					24.31							
0	0.00						24.53						
35	71.81						24.17						
0	0.00							24.40					
45	92.33							23.94					
0	0.00								24.29				
50	102.59								23.81				
0	0.00									24.24			
60	123.10									23.57			
0	0.00										24.25		
70	143.62										23.23		
0	0.00											23.79	
75	153.88											22.91	
0	0.00												23.84





CYCLIC PLATE LOAD TEST-8 FOR YADADRI T.P.P.

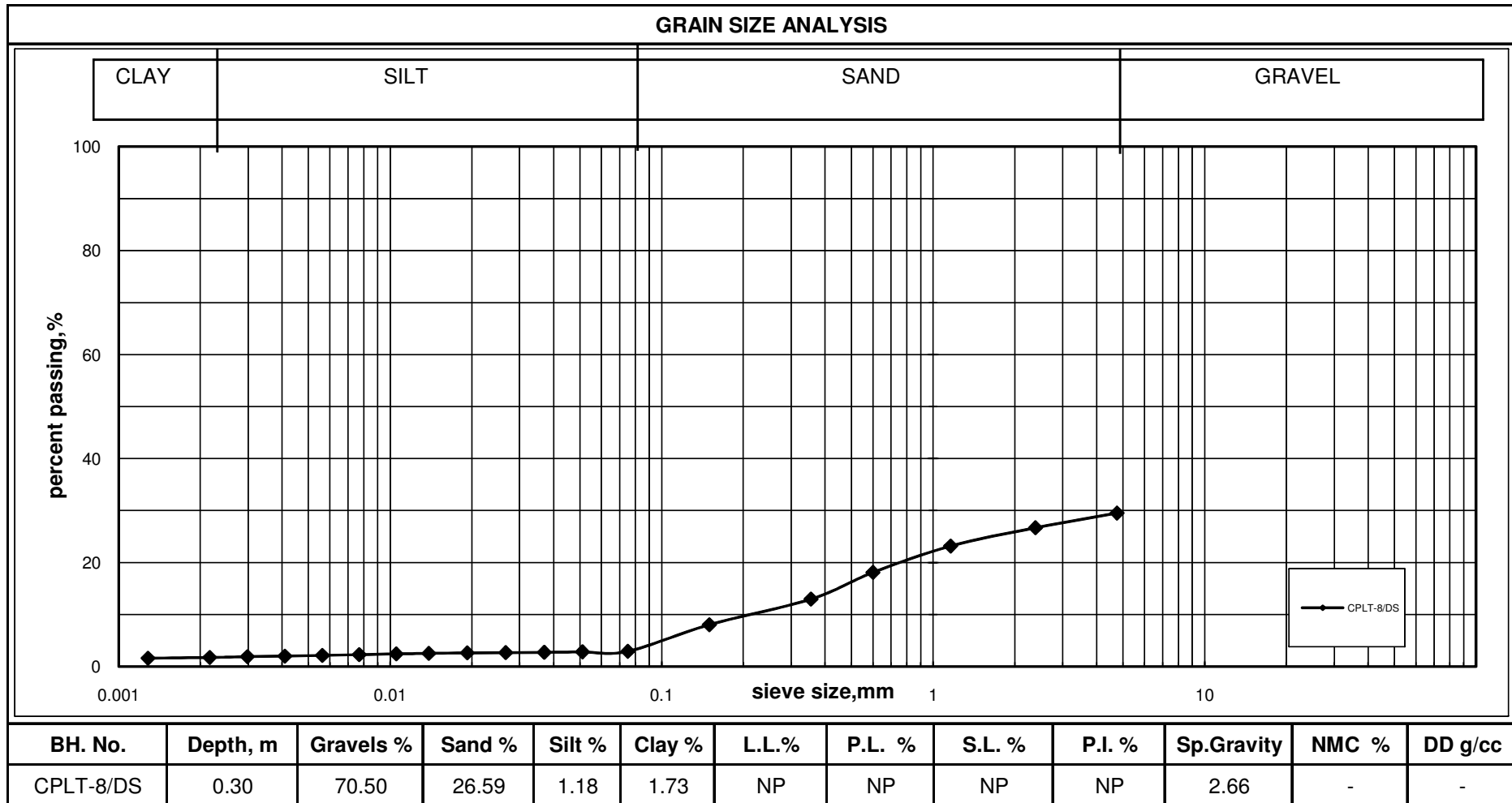


cu = 235.29kg/cm³

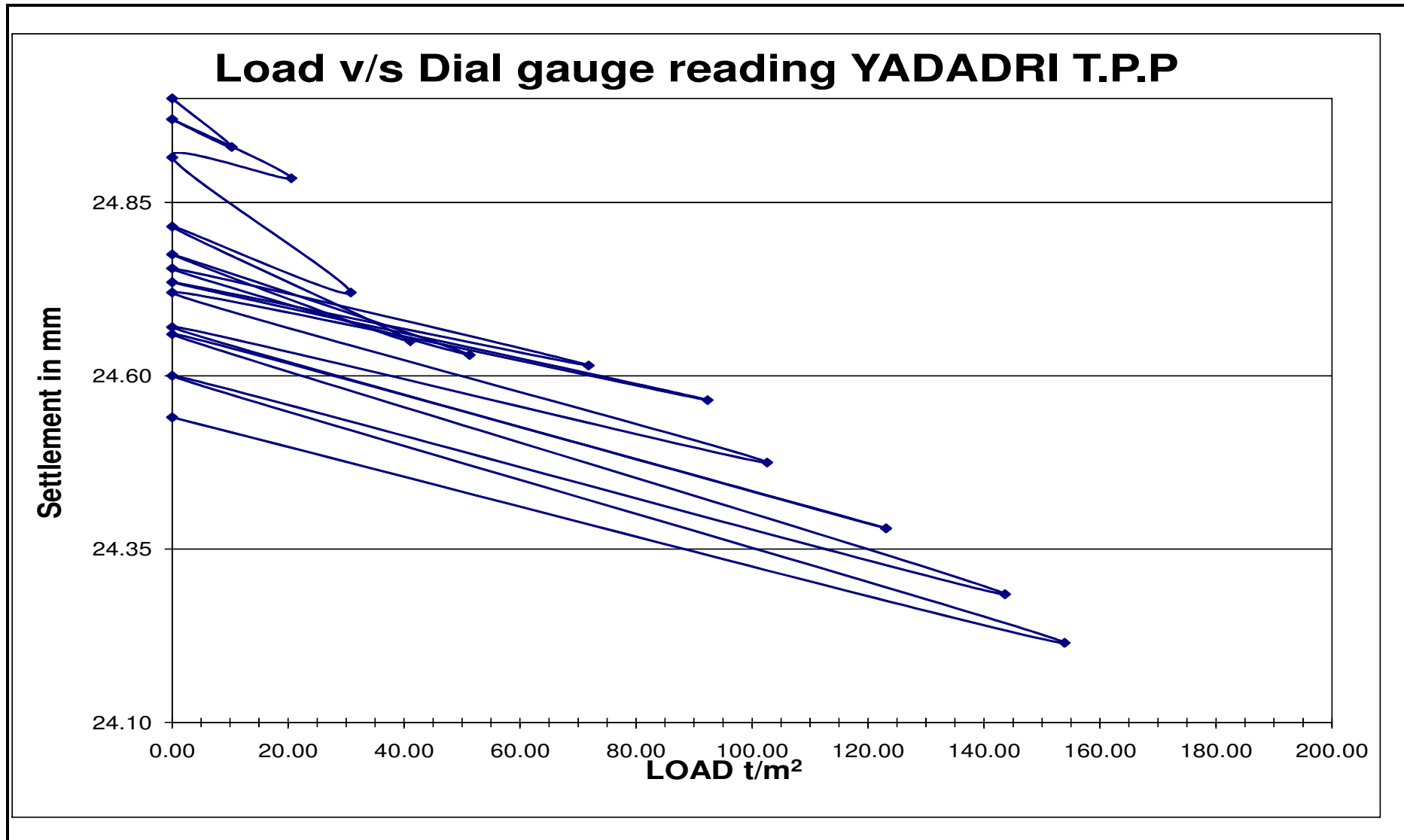
REBOUND = 0.034 CM

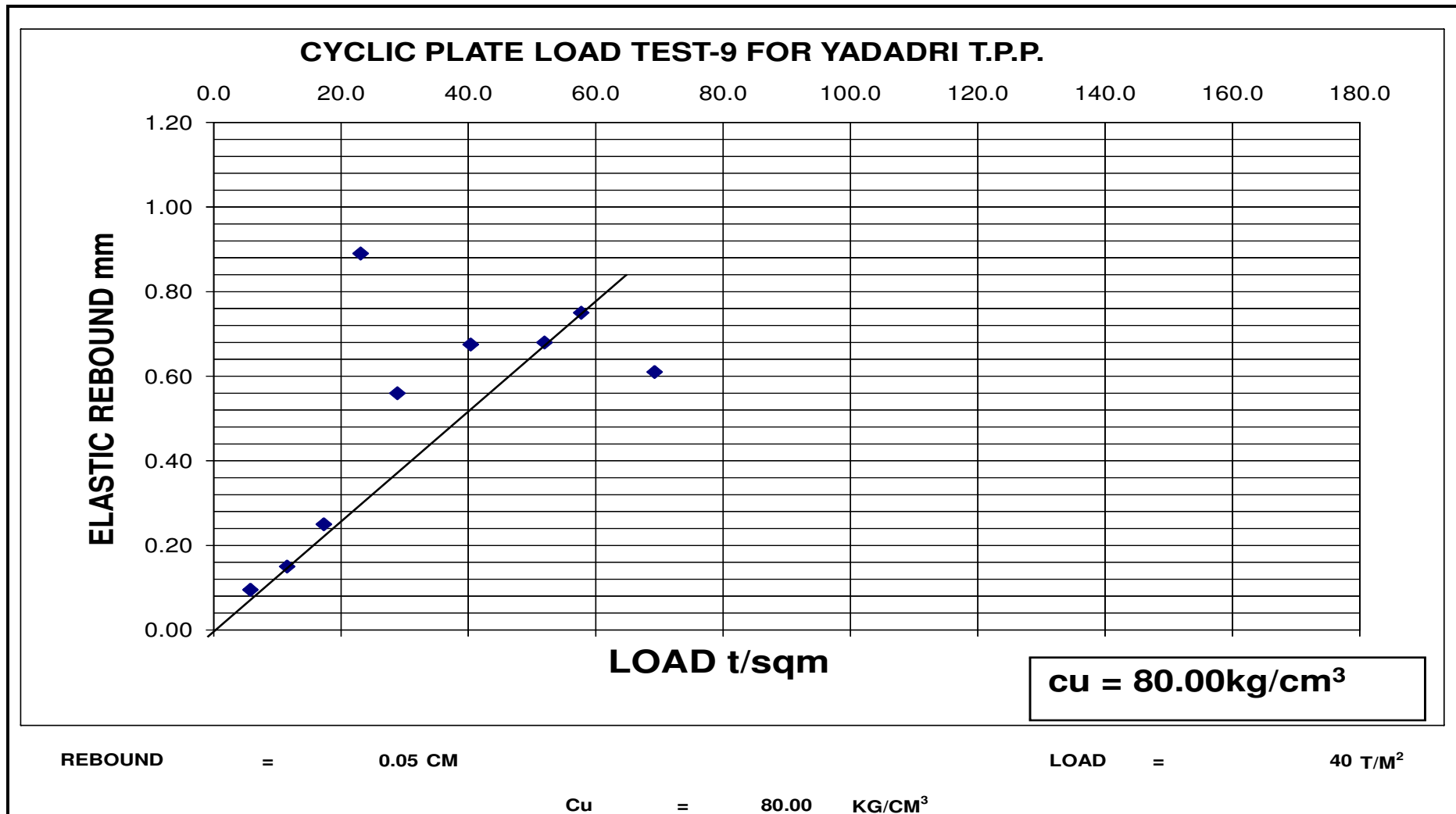
LOAD = 80 T/M²

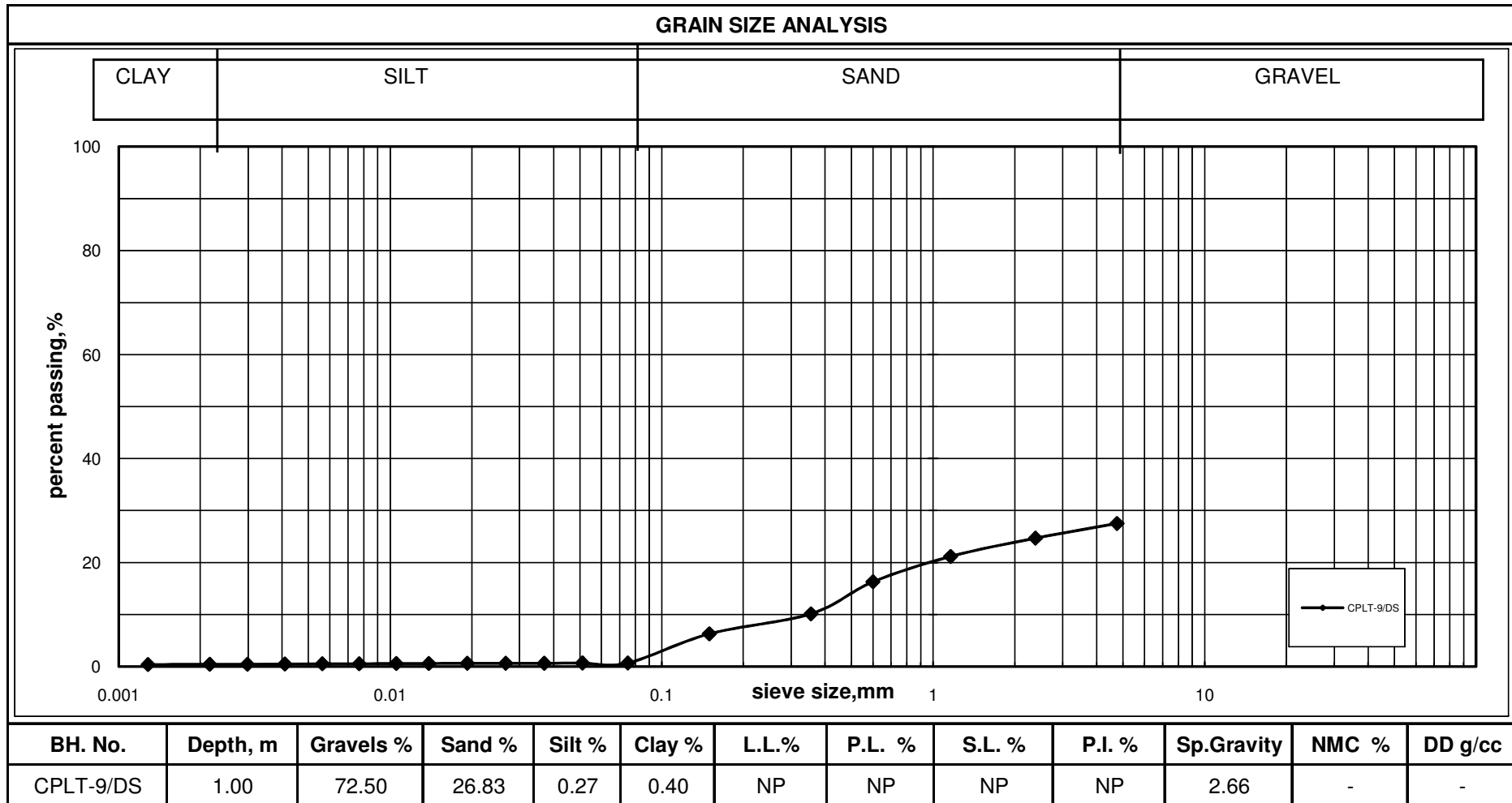
Cu = 235.29 KG/CM³



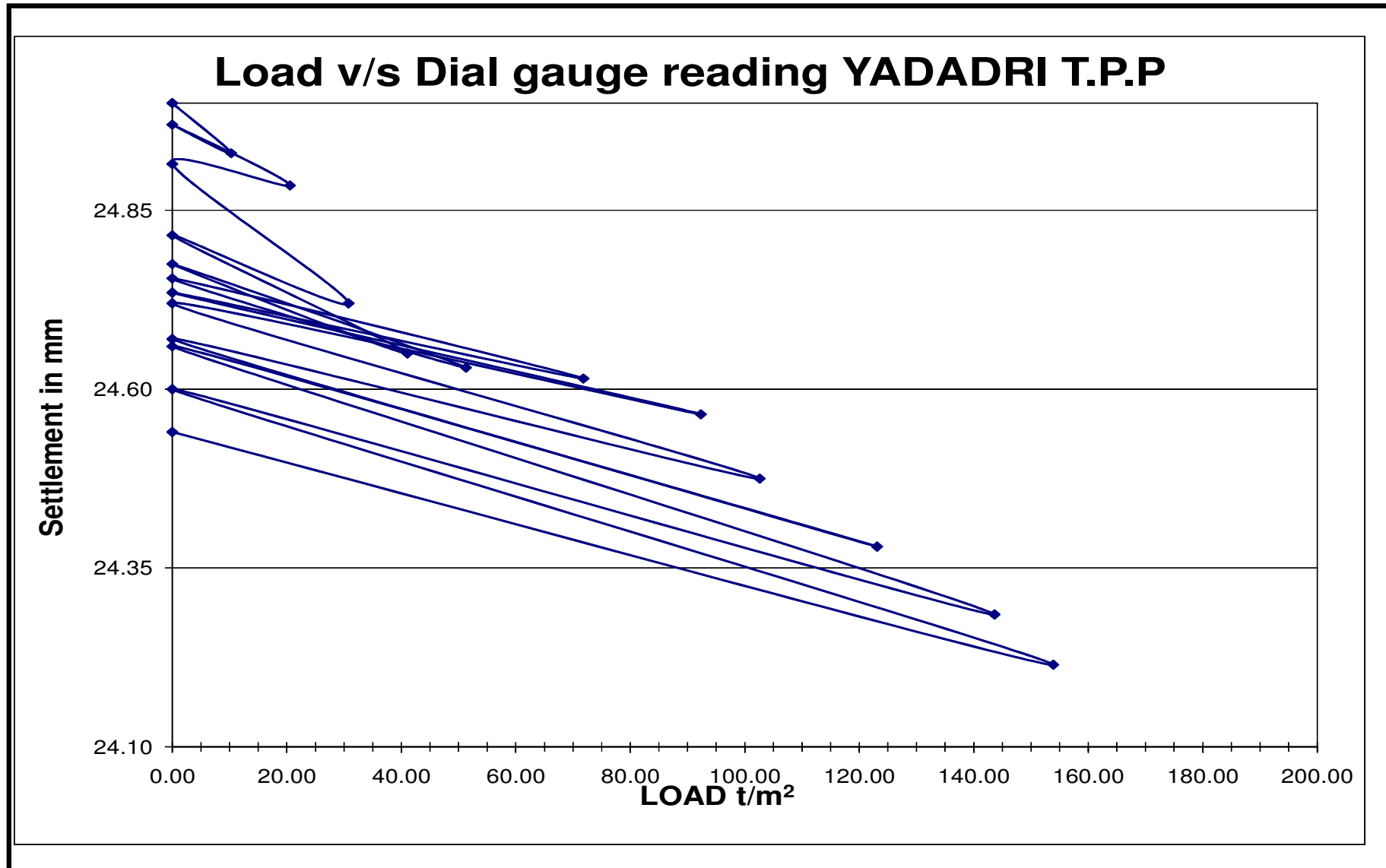
Page 71





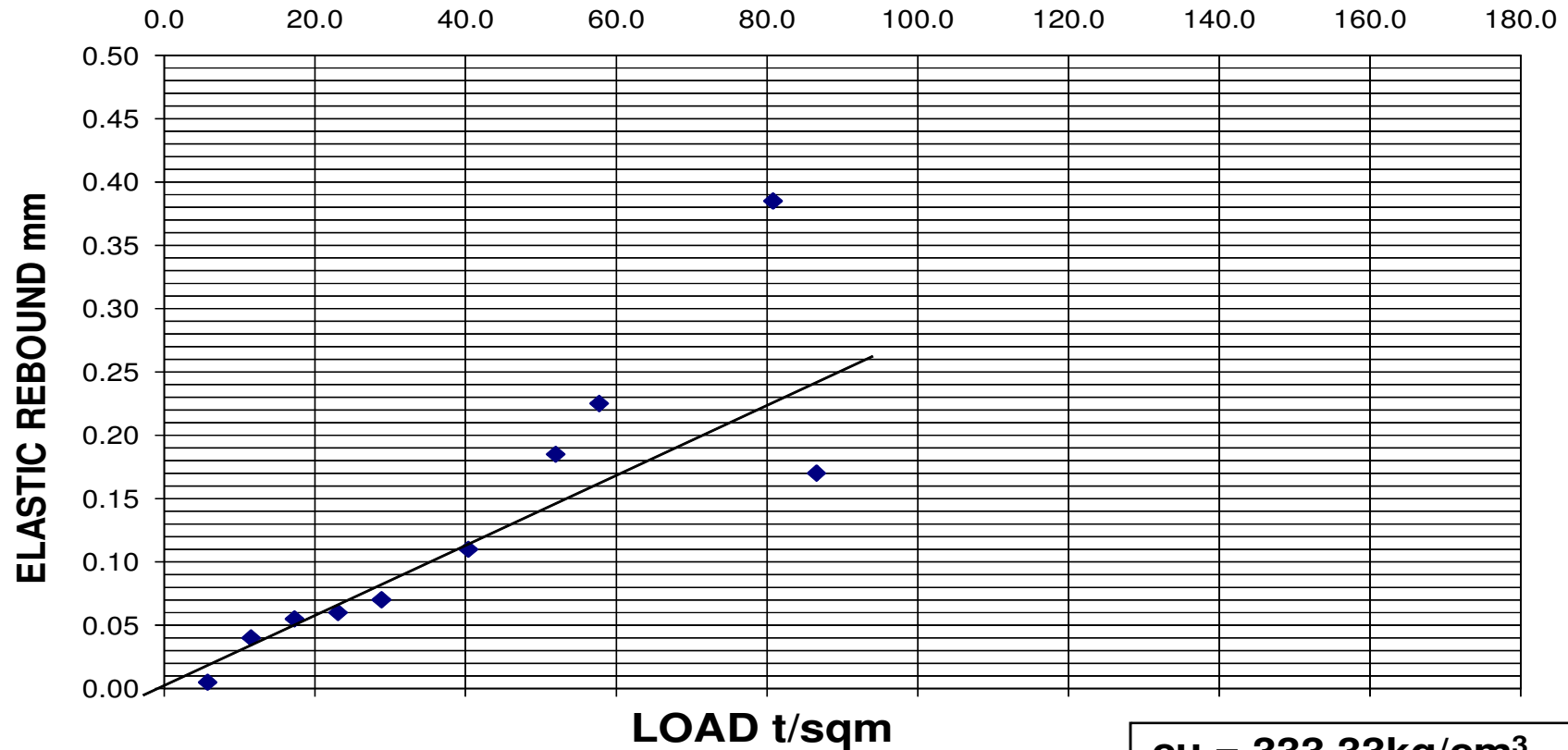


[illegible]





CYCLIC PLATE LOAD TEST-10 FOR YADADRI T.P.P.

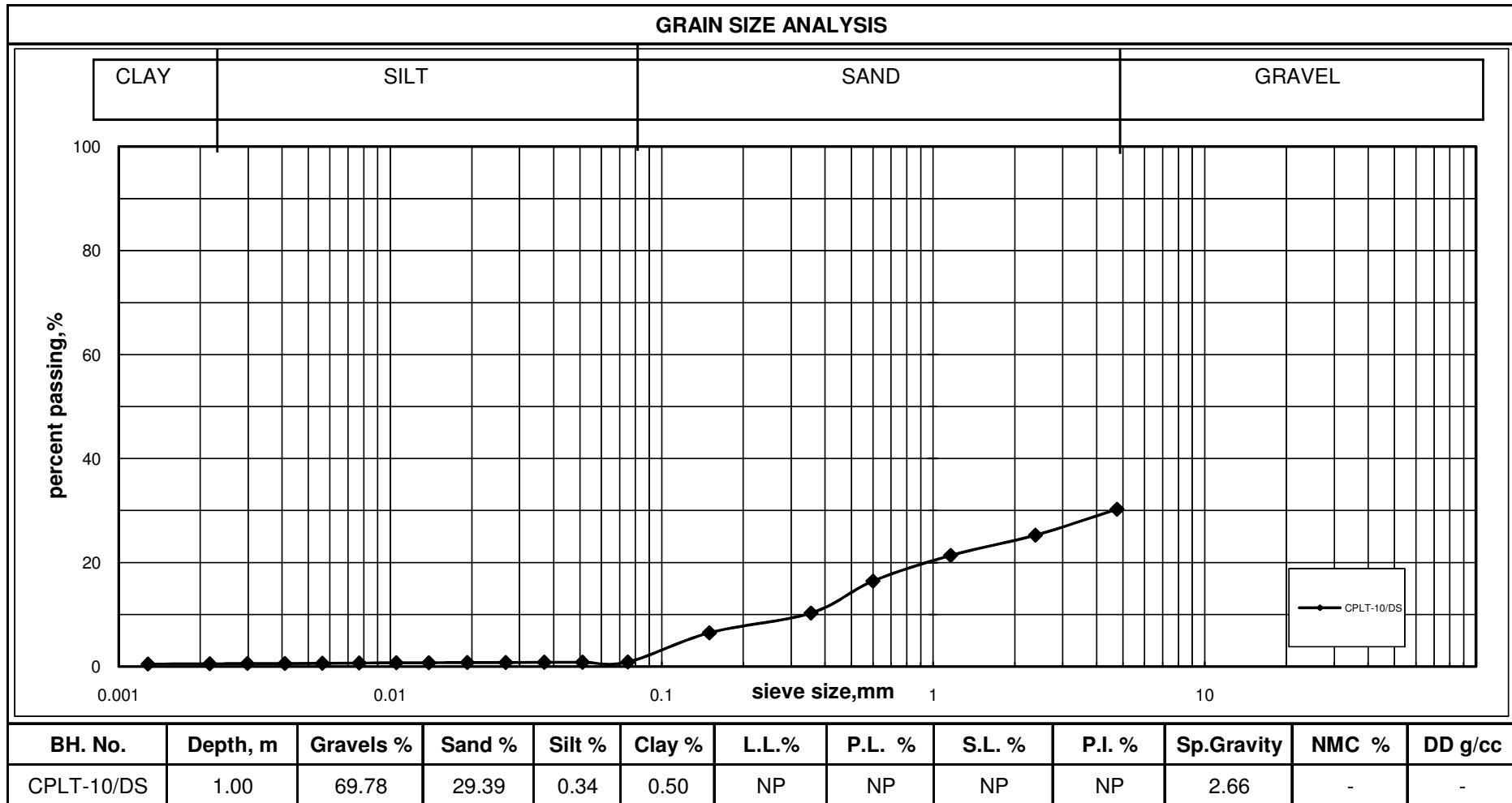


cu = 333.33kg/cm³

REBOUND = 0.012 CM

LOAD = 40 T/M²

Cu = 333.33 KG/CM³





Subgarde modulus (Ks) by Cyclic Plate Load Test (CPLT)					
Sr. no	Structure name	Test no	Northing	Easting	subgrade modulus Cu (kg/cm ³)
1	Chimney and ID fan area	CPLT 1	0	-70	466.67
2	Chimney and ID fan area	CPLT 2	-27	615	250.00
3	Boiler, Aux boiler, CST tank and pump house	CPLT 3	-152	90	117.65
4	Boiler, Aux boiler, CST tank and pump house	CPLT 4	-148	523	242.42
5	Boiler, Aux boiler, CST tank and pump house	CPLT 5	-151	666	714.29
6	Boiler, Aux boiler, CST tank and pump house	CPLT 6	-210	397	2727.27
7	PH including TG, service building and compressor house	CPLT 7	-262	101	44.44
8	Chimney and ID fan area	CPLT 8	0	70	235.29
9	Chimney and ID fan area	CPLT 9	0	361	80.00
10	Chimney and ID fan area	CPLT 10	0	501	333.33

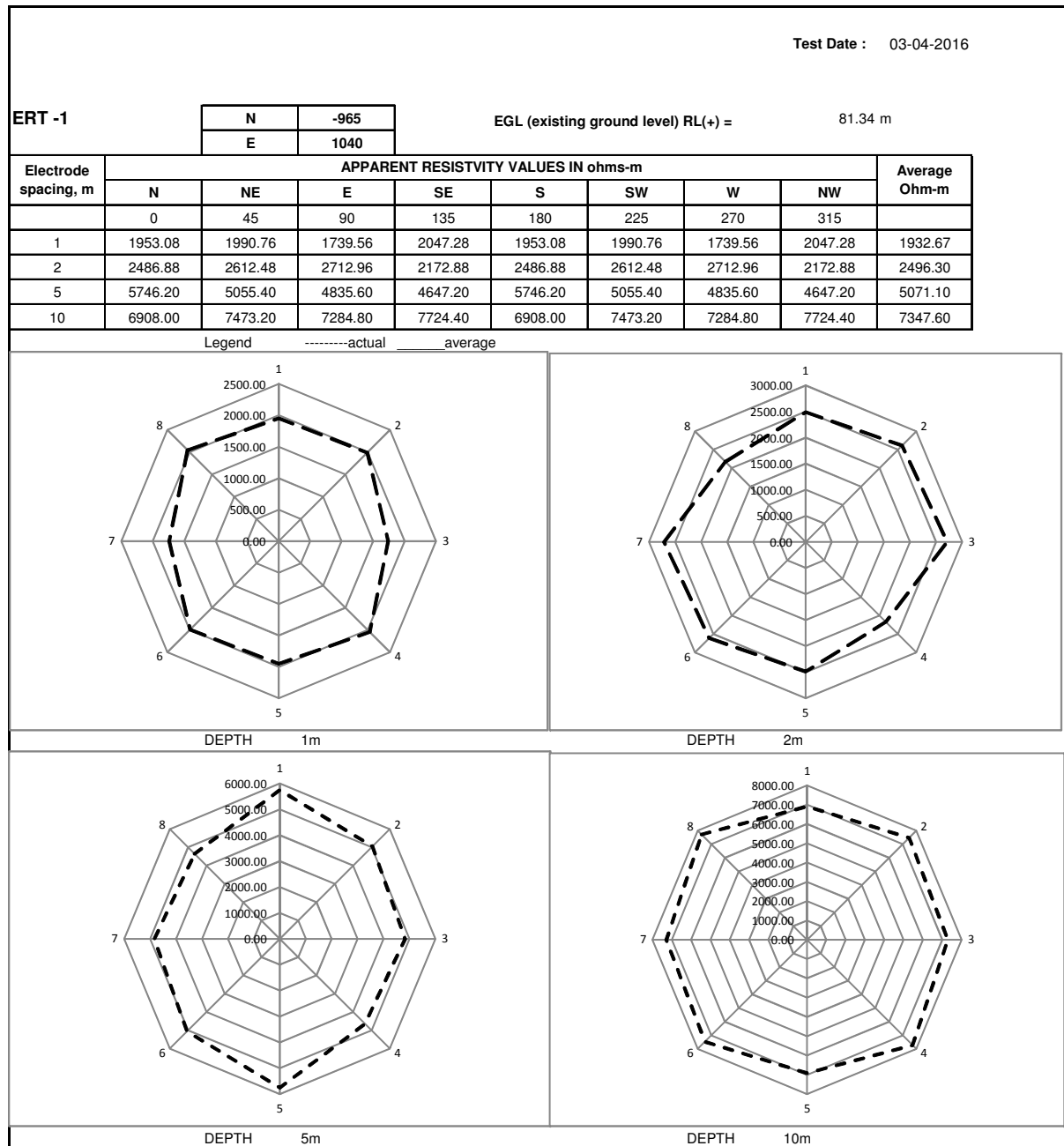
Conclusion:

Based on the above cyclic plate load test results, it is concluded that the sub grade modulus for the design purpose can be taken as 40kg/cm³.



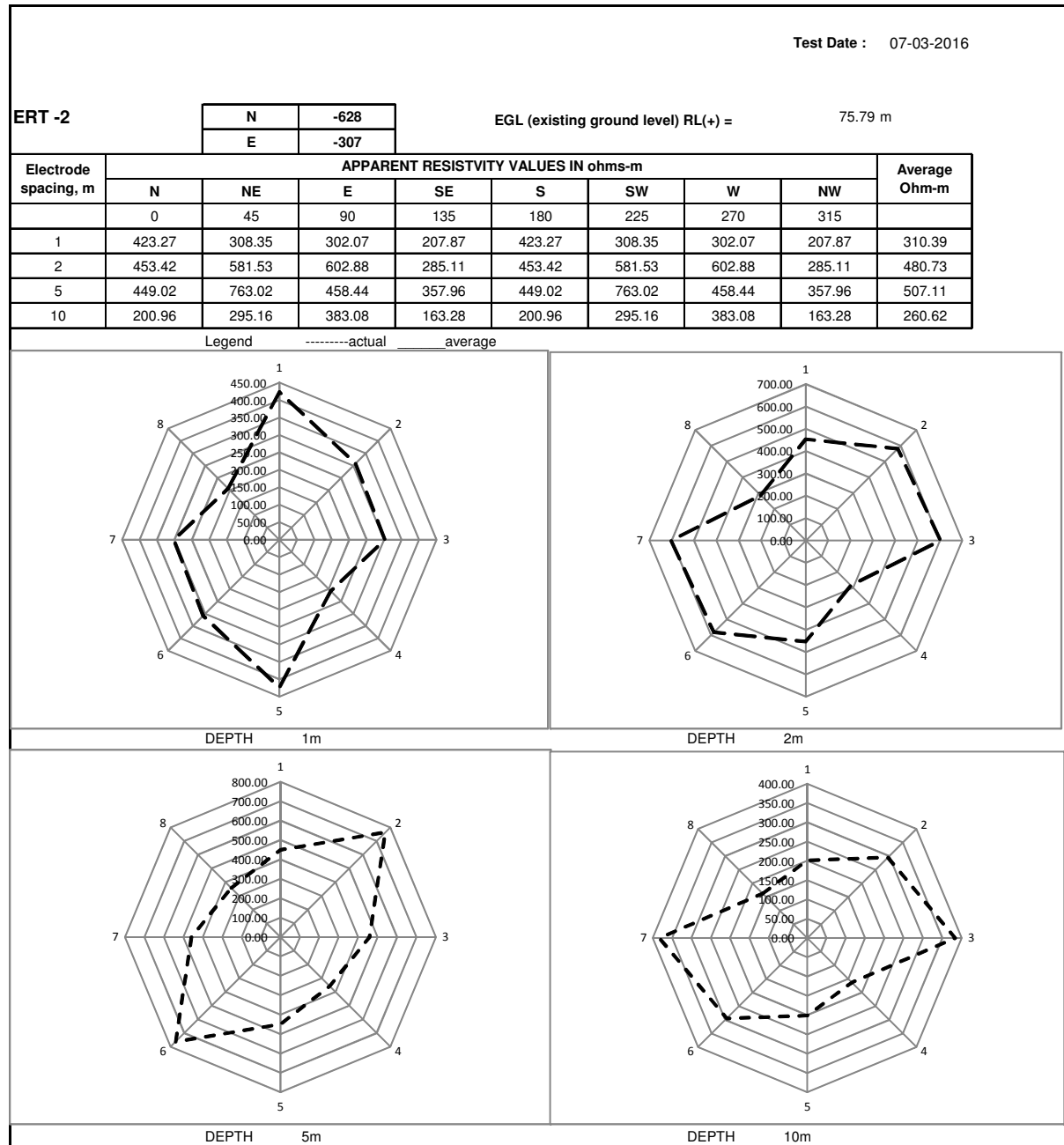
ELECTRICAL RESISTIVITY TEST

ERT -1							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\frac{1}{a}(m)$	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ωm)	Electrode spacing a(m)	K = 2 $\frac{1}{a}(m)$	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ωm)
1	6.28	277.00	1739.56	1	6.28	311.00	1953.08
2	12.56	216.00	2712.96	2	12.56	198.00	2486.88
5	31.4	154.00	4835.60	5	31.4	183.00	5746.20
10	62.8	116.00	7284.80	10	62.8	110.00	6908.00
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\frac{1}{a}(m)$	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ωm)	Electrode spacing a(m)	K = 2 $\frac{1}{a}(m)$	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ωm)
1	6.28	326.00	2047.28	1	6.28	317.00	1990.76
2	12.56	173.00	2172.88	2	12.56	208.00	2612.48
5	31.4	148.00	4647.20	5	31.4	161.00	5055.40
10	62.8	123.00	7724.40	10	62.8	119.00	7473.20



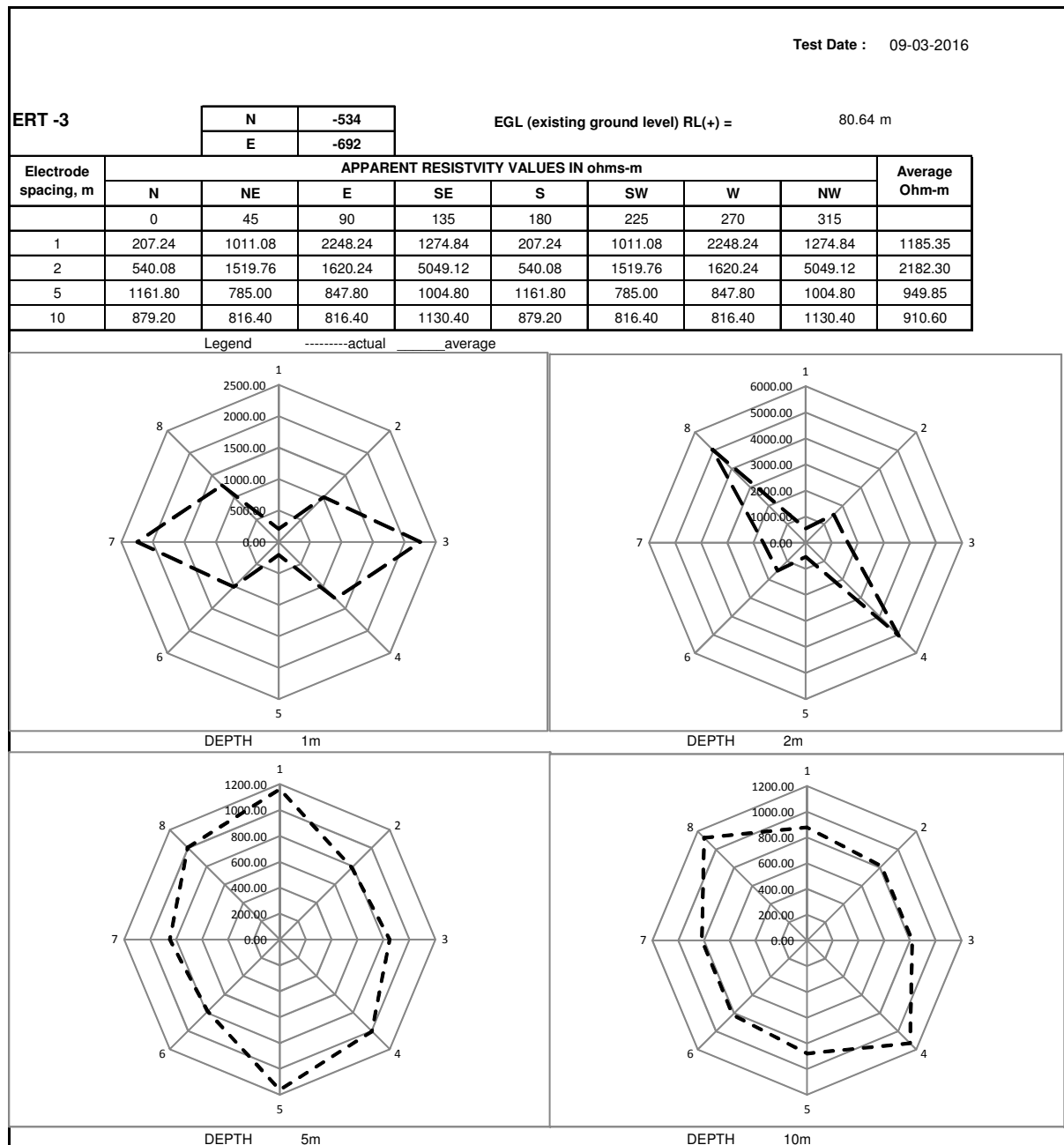


ERT -2							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	48.10	302.07	1	6.28	67.40	423.27
2	12.56	48.00	602.88	2	12.56	36.10	453.42
5	31.4	14.60	458.44	5	31.4	14.30	449.02
10	62.8	6.10	383.08	10	62.8	3.20	200.96
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	33.10	207.87	1	6.28	49.10	308.35
2	12.56	22.70	285.11	2	12.56	46.30	581.53
5	31.4	11.40	357.96	5	31.4	24.30	763.02
10	62.8	2.60	163.28	10	62.8	4.70	295.16



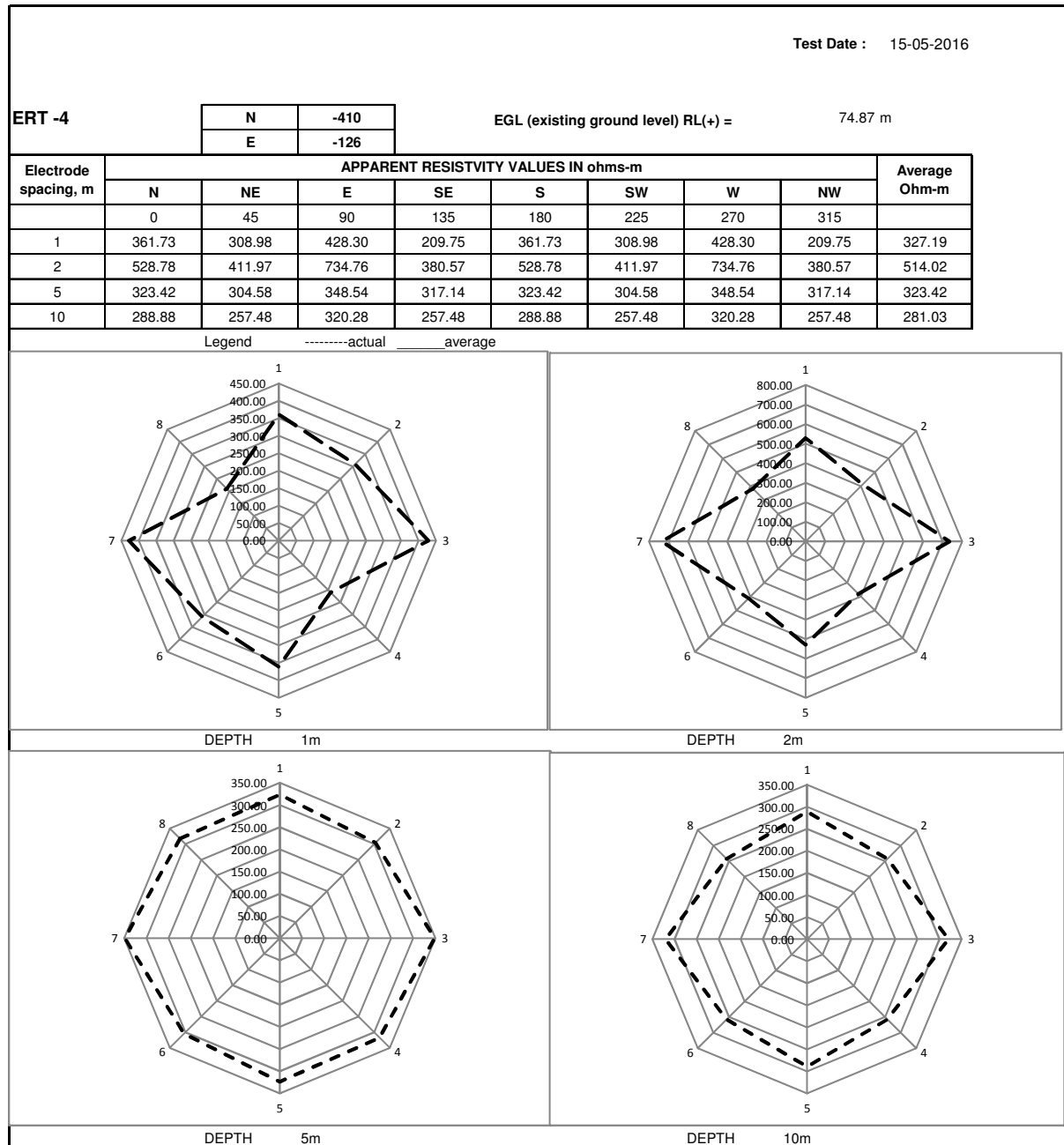


ERT -3							
E-W				S-N			
Electrode spacing a(m)	K = 2 a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$	Electrode spacing a(m)	K = 2 a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$
1	6.28	358.00	2248.24	1	6.28	33.00	207.24
2	12.56	129.00	1620.24	2	12.56	43.00	540.08
5	31.4	27.00	847.80	5	31.4	37.00	1161.80
10	62.8	13.00	816.40	10	62.8	14.00	879.20
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$	Electrode spacing a(m)	K = 2 a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$
1	6.28	203.00	1274.84	1	6.28	161.00	1011.08
2	12.56	402.00	5049.12	2	12.56	121.00	1519.76
5	31.4	32.00	1004.80	5	31.4	25.00	785.00
10	62.8	18.00	1130.40	10	62.8	13.00	816.40





ERT -4							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	68.20	428.30	1	6.28	57.60	361.73
2	12.56	58.50	734.76	2	12.56	42.10	528.78
5	31.4	11.10	348.54	5	31.4	10.30	323.42
10	62.8	5.10	320.28	10	62.8	4.60	288.88
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	33.40	209.75	1	6.28	49.20	308.98
2	12.56	30.30	380.57	2	12.56	32.80	411.97
5	31.4	10.10	317.14	5	31.4	9.70	304.58
10	62.8	4.10	257.48	10	62.8	4.10	257.48





ERT -5							
E-W				S-N			
Electrode spacing a(m)	K = 2 πa(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 πa(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	10.50	65.94	1	6.28	11.30	70.96
2	12.56	11.60	145.70	2	12.56	10.90	136.90
5	31.4	7.30	229.22	5	31.4	7.50	235.50
10	62.8	3.10	194.68	10	62.8	3.20	200.96
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 πa(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 πa(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	14.90	93.57	1	6.28	13.10	82.27
2	12.56	11.50	144.44	2	12.56	11.40	143.18
5	31.4	8.20	257.48	5	31.4	7.80	244.92
10	62.8	3.50	219.80	10	62.8	2.90	182.12

Test Date : 15-05-2016

ERT -5

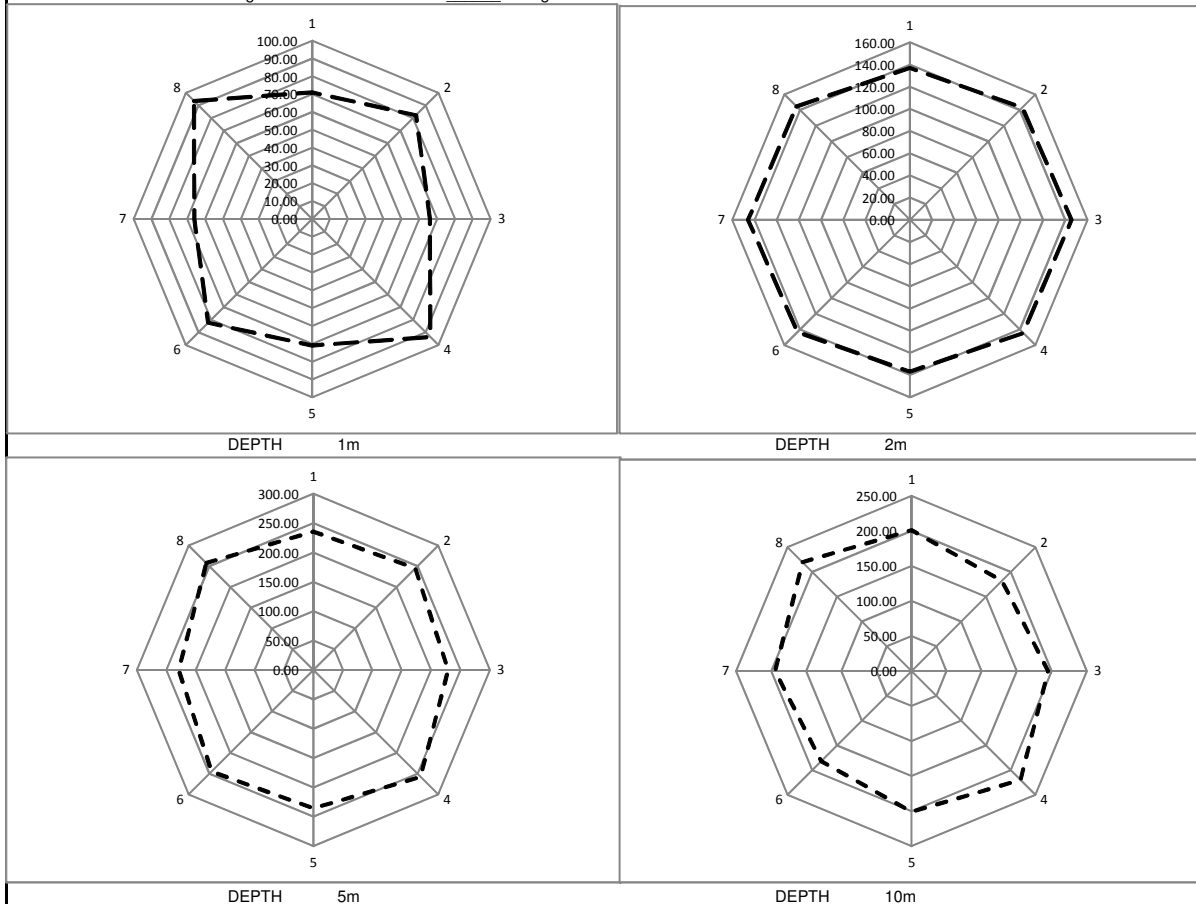
N	-357
E	-80

EGL (existing ground level) RL(+) =

76.48 m

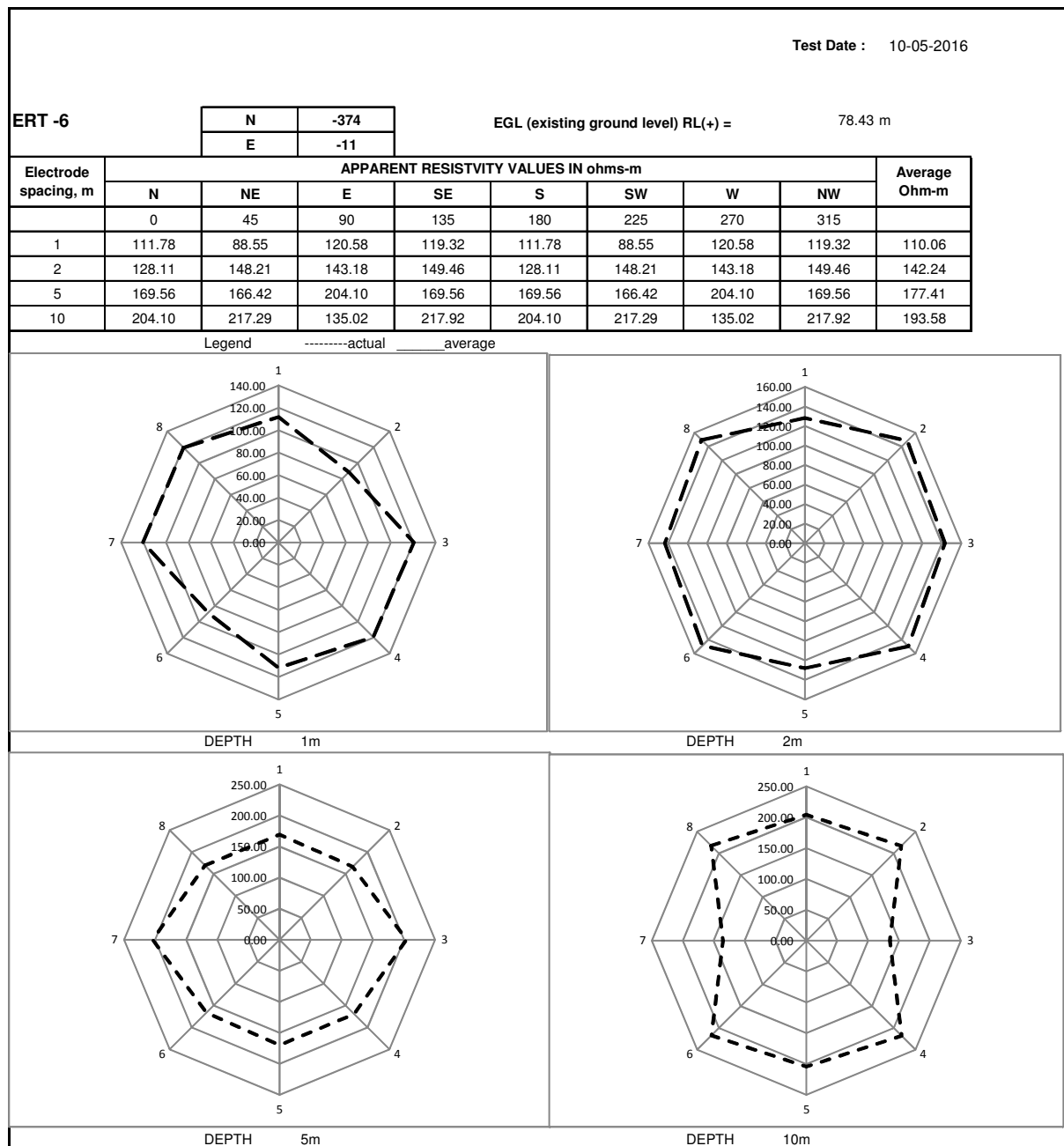
Electrode spacing, m	APPARENT RESISTIVITY VALUES IN ohms-m								Average Ohm-m
	N	NE	E	SE	S	SW	W	NW	
	0	45	90	135	180	225	270	315	
1	70.96	82.27	65.94	93.57	70.96	82.27	65.94	93.57	78.19
2	136.90	143.18	145.70	144.44	136.90	143.18	145.70	144.44	142.56
5	235.50	244.92	229.22	257.48	235.50	244.92	229.22	257.48	241.78
10	200.96	182.12	194.68	219.80	200.96	182.12	194.68	219.80	199.39

Legend -----actual -----average



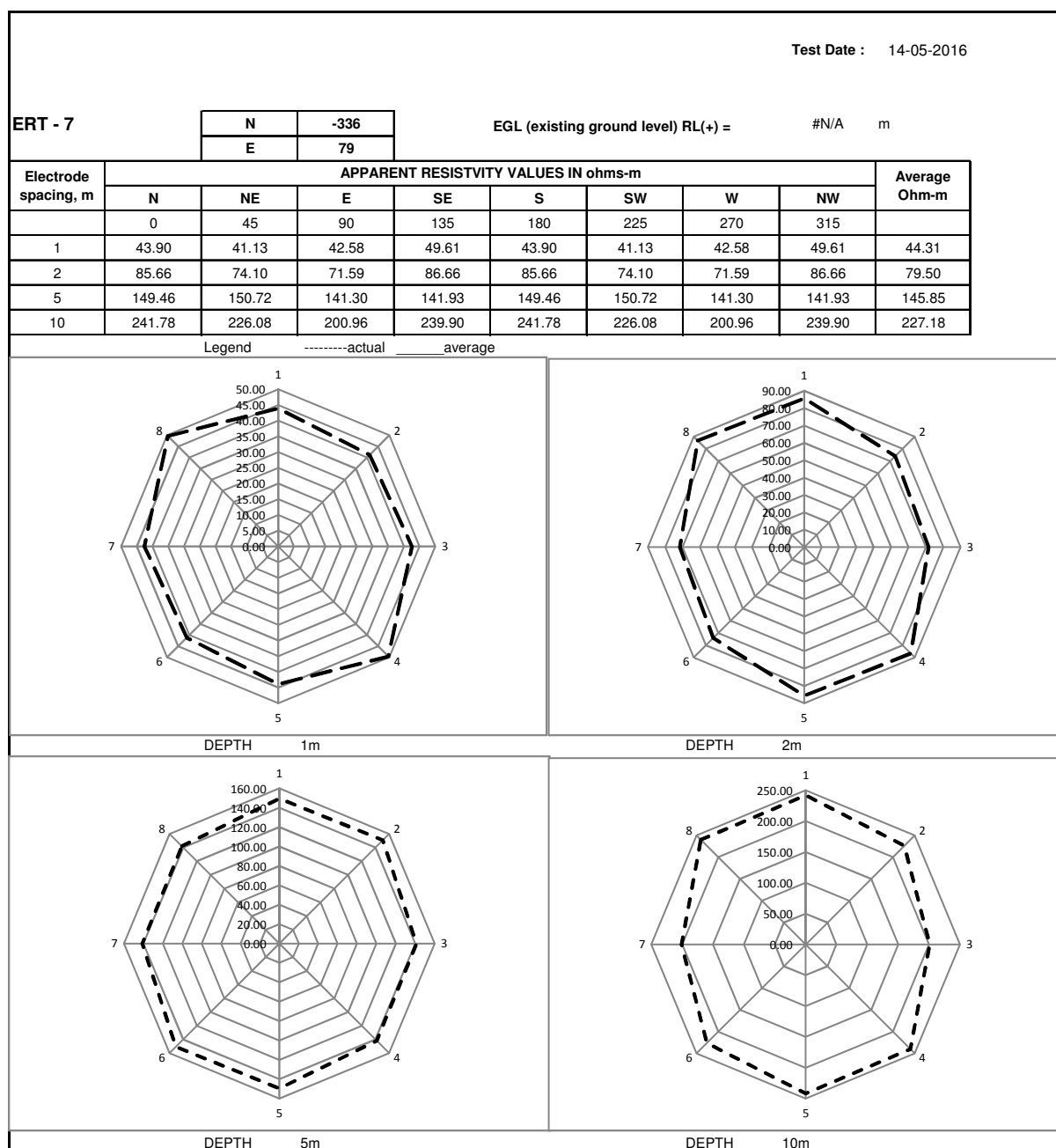


ERT -6							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\frac{\rho}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\frac{\rho}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	19.20	120.58	1	6.28	17.80	111.78
2	12.56	11.40	143.18	2	12.56	10.20	128.11
5	31.4	6.50	204.10	5	31.4	5.40	169.56
10	62.8	2.15	135.02	10	62.8	3.25	204.10
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\frac{\rho}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\frac{\rho}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	19.00	119.32	1	6.28	14.10	88.55
2	12.56	11.90	149.46	2	12.56	11.80	148.21
5	31.4	5.40	169.56	5	31.4	5.30	166.42
10	62.8	3.47	217.92	10	62.8	3.46	217.29



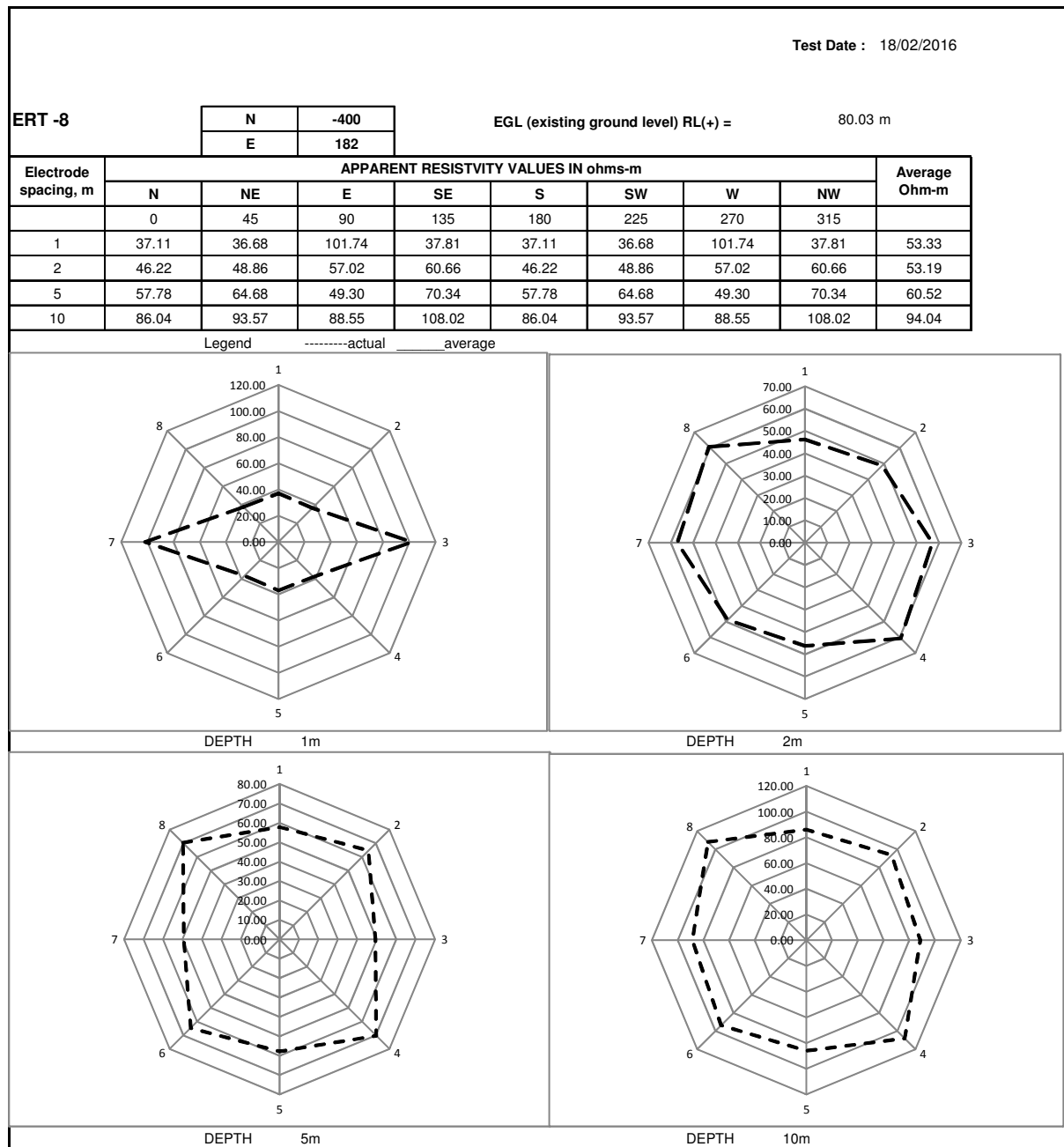


ERT - 7							
E-W				S-N			
Electrode spacing a(m)	K = 2 a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	6.78	42.58	1	6.28	6.99	43.90
2	12.56	5.70	71.59	2	12.56	6.82	85.66
5	31.4	4.50	141.30	5	31.4	4.76	149.46
10	62.8	3.20	200.96	10	62.8	3.85	241.78
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	7.90	49.61	1	6.28	6.55	41.13
2	12.56	6.90	86.66	2	12.56	5.90	74.10
5	31.4	4.52	141.93	5	31.4	4.80	150.72
10	62.8	3.82	239.90	10	62.8	3.60	226.08



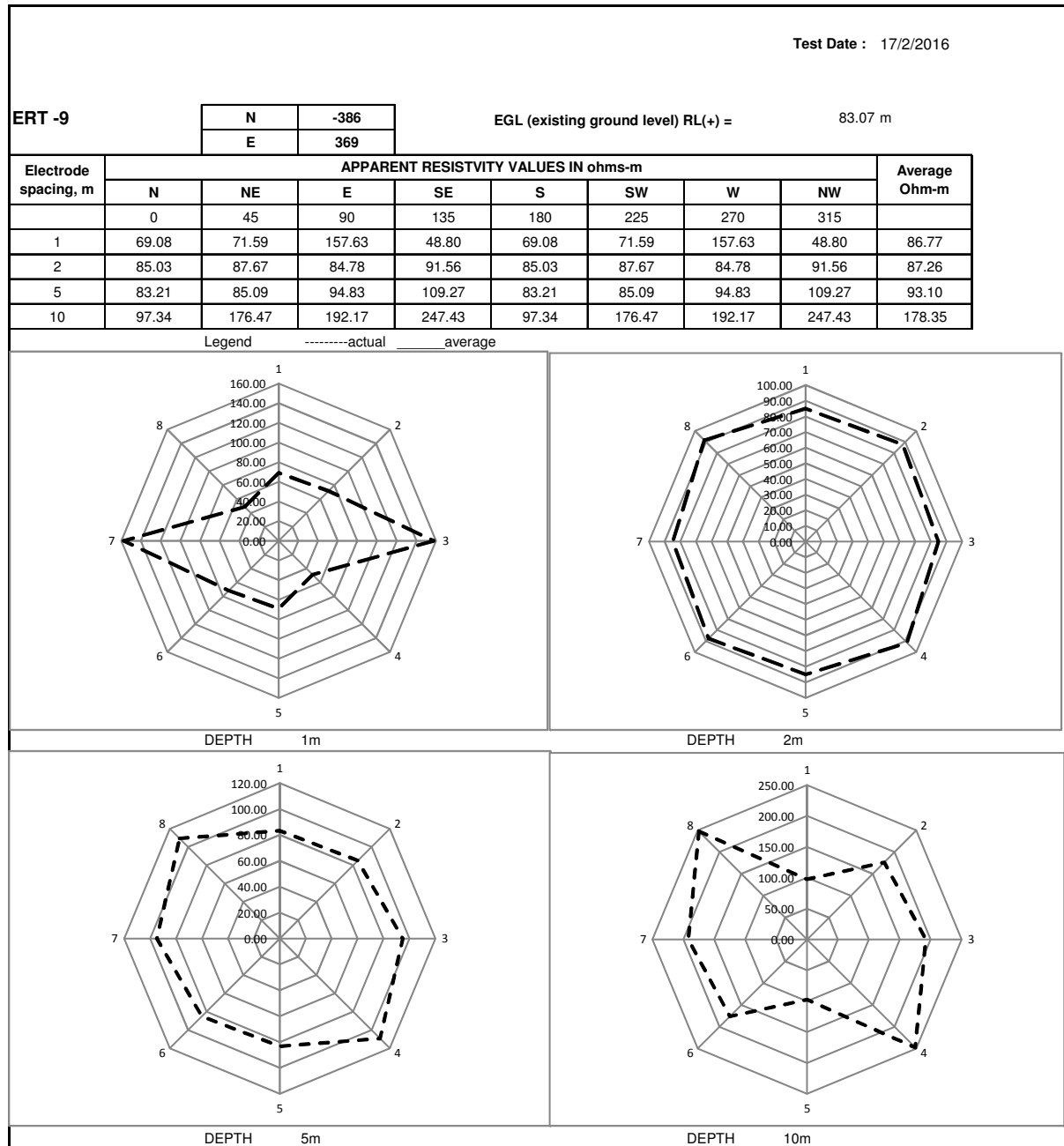


ERT -8							
E-W				S-N			
Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	16.20	101.74	1	6.28	5.91	37.11
2	12.56	4.54	57.02	2	12.56	3.68	46.22
5	31.4	1.57	49.30	5	31.4	1.84	57.78
10	62.8	1.41	88.55	10	62.8	1.37	86.04
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	6.02	37.81	1	6.28	5.84	36.68
2	12.56	4.83	60.66	2	12.56	3.89	48.86
5	31.4	2.24	70.34	5	31.4	2.06	64.68
10	62.8	1.72	108.02	10	62.8	1.49	93.57



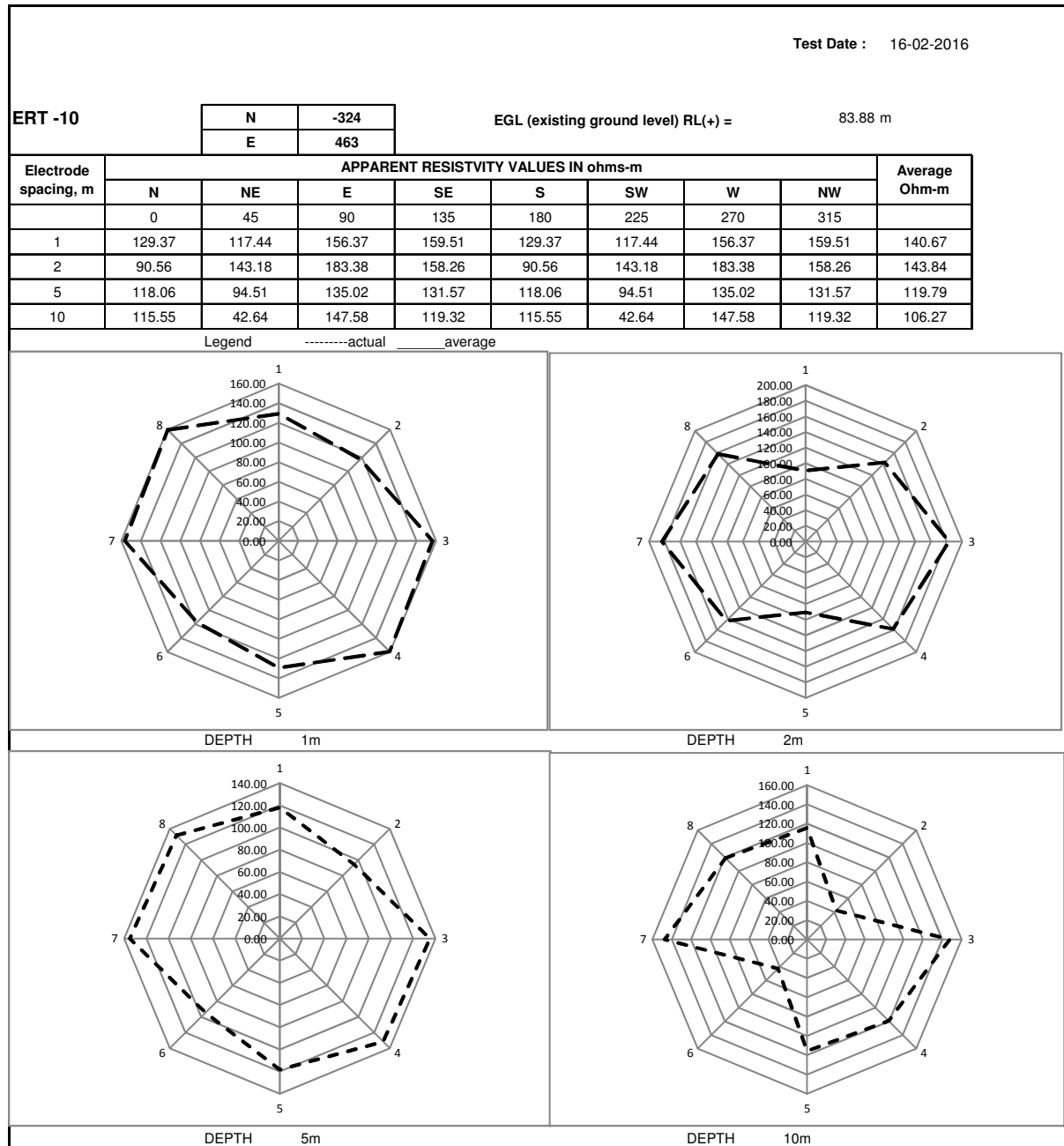


ERT -9							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	25.10	157.63	1	6.28	11.00	69.08
2	12.56	6.75	84.78	2	12.56	6.77	85.03
5	31.4	3.02	94.83	5	31.4	2.65	83.21
10	62.8	3.06	192.17	10	62.8	1.55	97.34
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	7.77	48.80	1	6.28	11.40	71.59
2	12.56	7.29	91.56	2	12.56	6.98	87.67
5	31.4	3.48	109.27	5	31.4	2.71	85.09
10	62.8	3.94	247.43	10	62.8	2.81	176.47



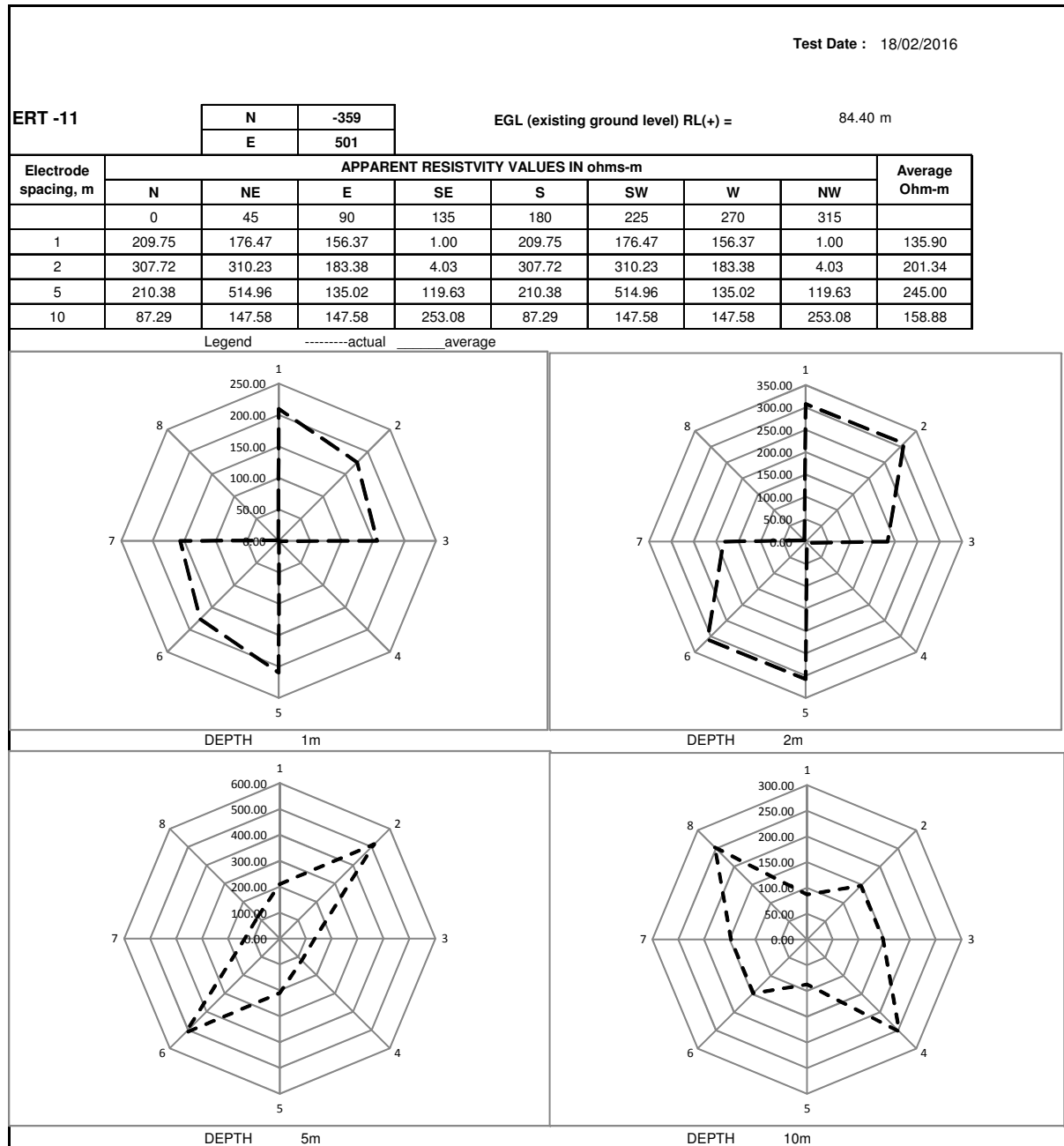


ERT -10							
E-W				S-N			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	24.90	156.37	1	6.28	20.60	129.37
2	12.56	14.60	183.38	2	12.56	7.21	90.56
5	31.4	4.30	135.02	5	31.4	3.76	118.06
10	62.8	2.35	147.58	10	62.8	1.84	115.55
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	25.40	159.51	1	6.28	18.70	117.44
2	12.56	12.60	158.26	2	12.56	11.40	143.18
5	31.4	4.19	131.57	5	31.4	3.01	94.51
10	62.8	1.90	119.32	10	62.8	0.68	42.64



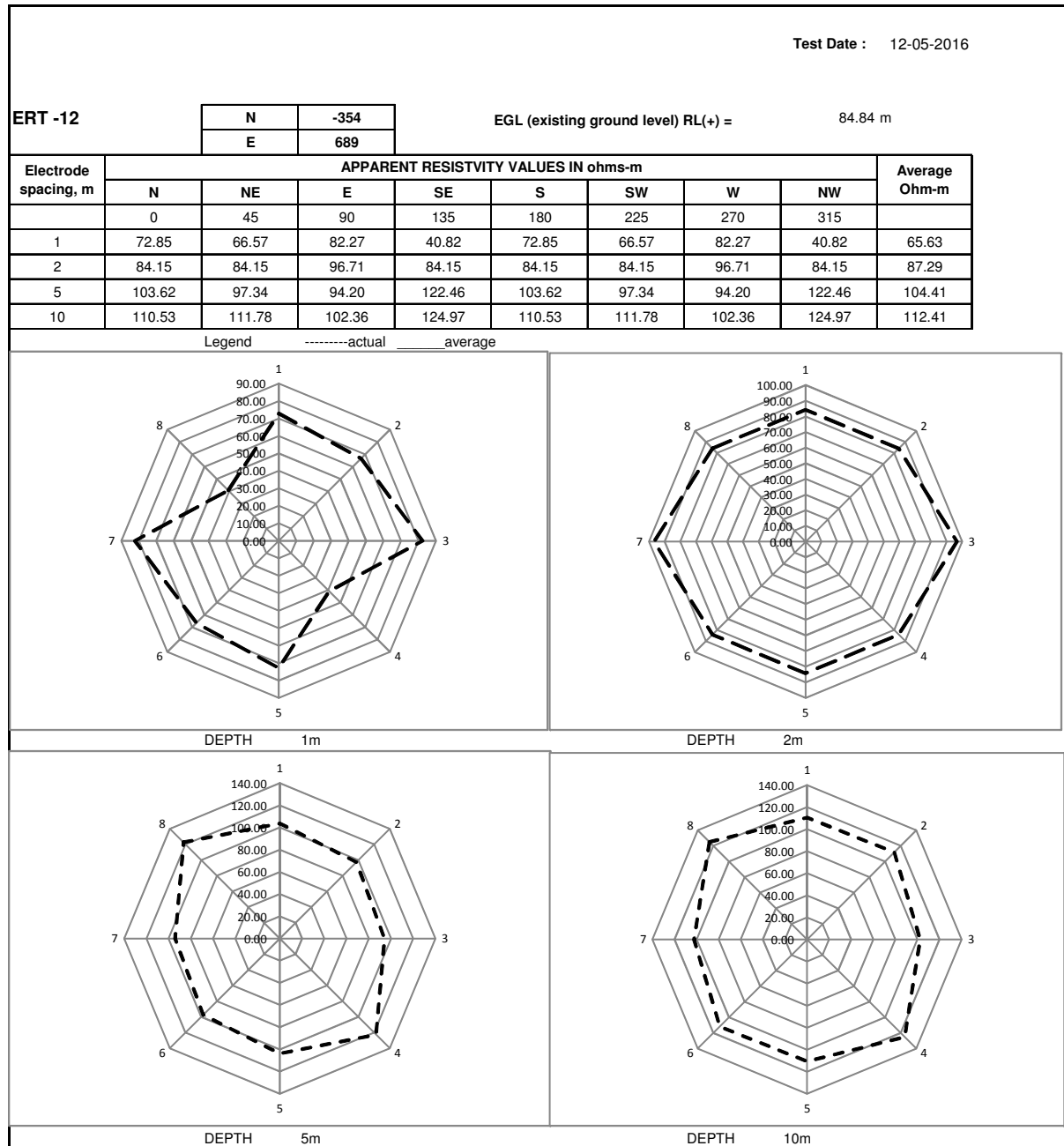


ERT -11							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	24.90	156.37	1	6.28	33.40	209.75
2	12.56	14.60	183.38	2	12.56	24.50	307.72
5	31.4	4.30	135.02	5	31.4	6.70	210.38
10	62.8	2.35	147.58	10	62.8	1.39	87.29
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	0.16	1.00	1	6.28	28.10	176.47
2	12.56	0.32	4.03	2	12.56	24.70	310.23
5	31.4	3.81	119.63	5	31.4	16.40	514.96
10	62.8	4.03	253.08	10	62.8	2.35	147.58



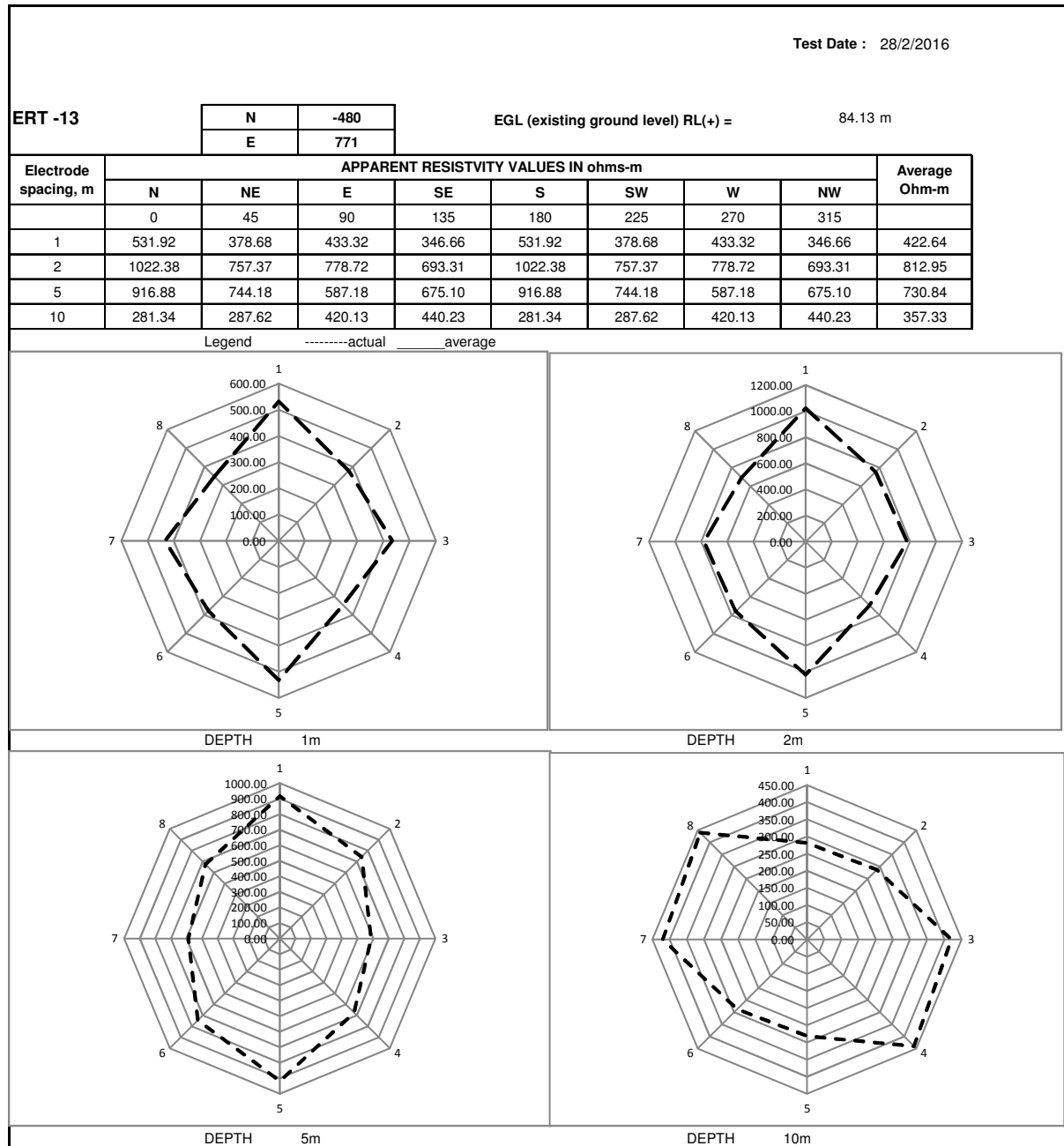


ERT -12							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	13.10	82.27	1	6.28	11.60	72.85
2	12.56	7.70	96.71	2	12.56	6.70	84.15
5	31.4	3.00	94.20	5	31.4	3.30	103.62
10	62.8	1.63	102.36	10	62.8	1.76	110.53
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	6.50	40.82	1	6.28	10.60	66.57
2	12.56	6.70	84.15	2	12.56	6.70	84.15
5	31.4	3.90	122.46	5	31.4	3.10	97.34
10	62.8	1.99	124.97	10	62.8	1.78	111.78



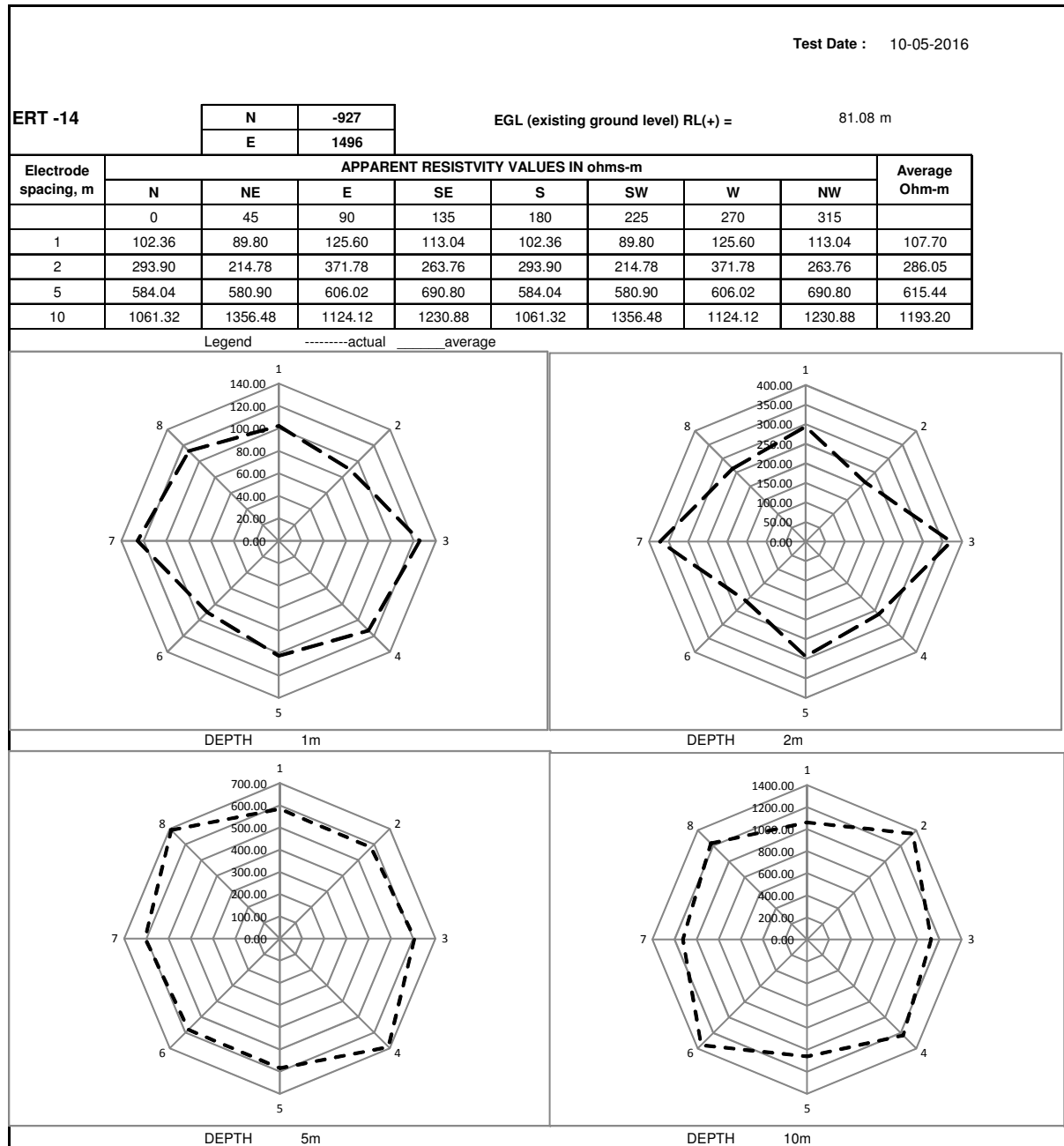


ERT -13							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	69.00	433.32	1	6.28	84.70	531.92
2	12.56	62.00	778.72	2	12.56	81.40	1022.38
5	31.4	18.70	587.18	5	31.4	29.20	916.88
10	62.8	6.69	420.13	10	62.8	4.48	281.34
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	55.20	346.66	1	6.28	60.30	378.68
2	12.56	55.20	693.31	2	12.56	60.30	757.37
5	31.4	21.50	675.10	5	31.4	23.70	744.18
10	62.8	7.01	440.23	10	62.8	4.58	287.62



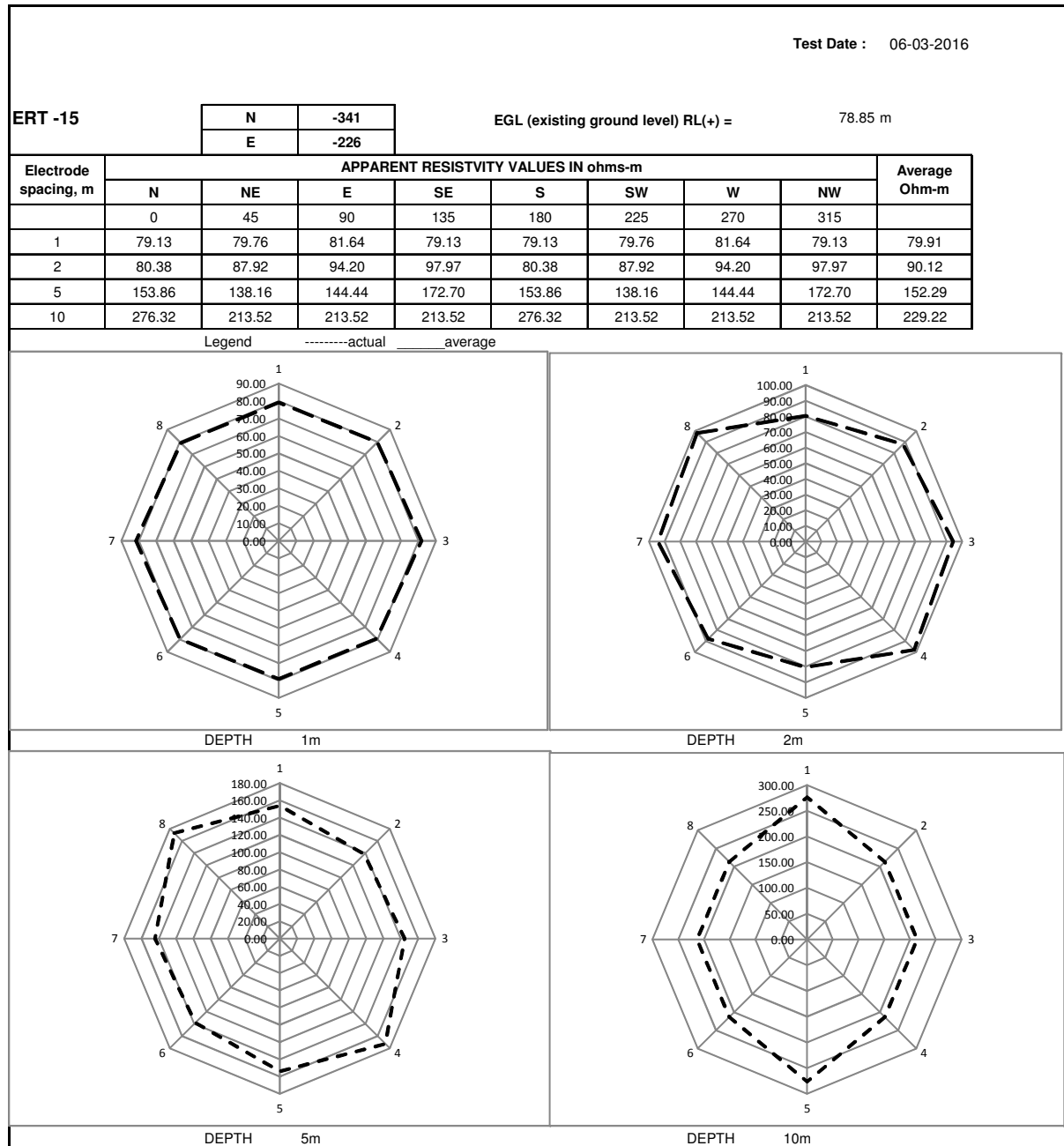


ERT -14							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	20.00	125.60	1	6.28	16.30	102.36
2	12.56	29.60	371.78	2	12.56	23.40	293.90
5	31.4	19.30	606.02	5	31.4	18.60	584.04
10	62.8	17.90	1124.12	10	62.8	16.90	1061.32
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	18.00	113.04	1	6.28	14.30	89.80
2	12.56	21.00	263.76	2	12.56	17.10	214.78
5	31.4	22.00	690.80	5	31.4	18.50	580.90
10	62.8	19.60	1230.88	10	62.8	21.60	1356.48



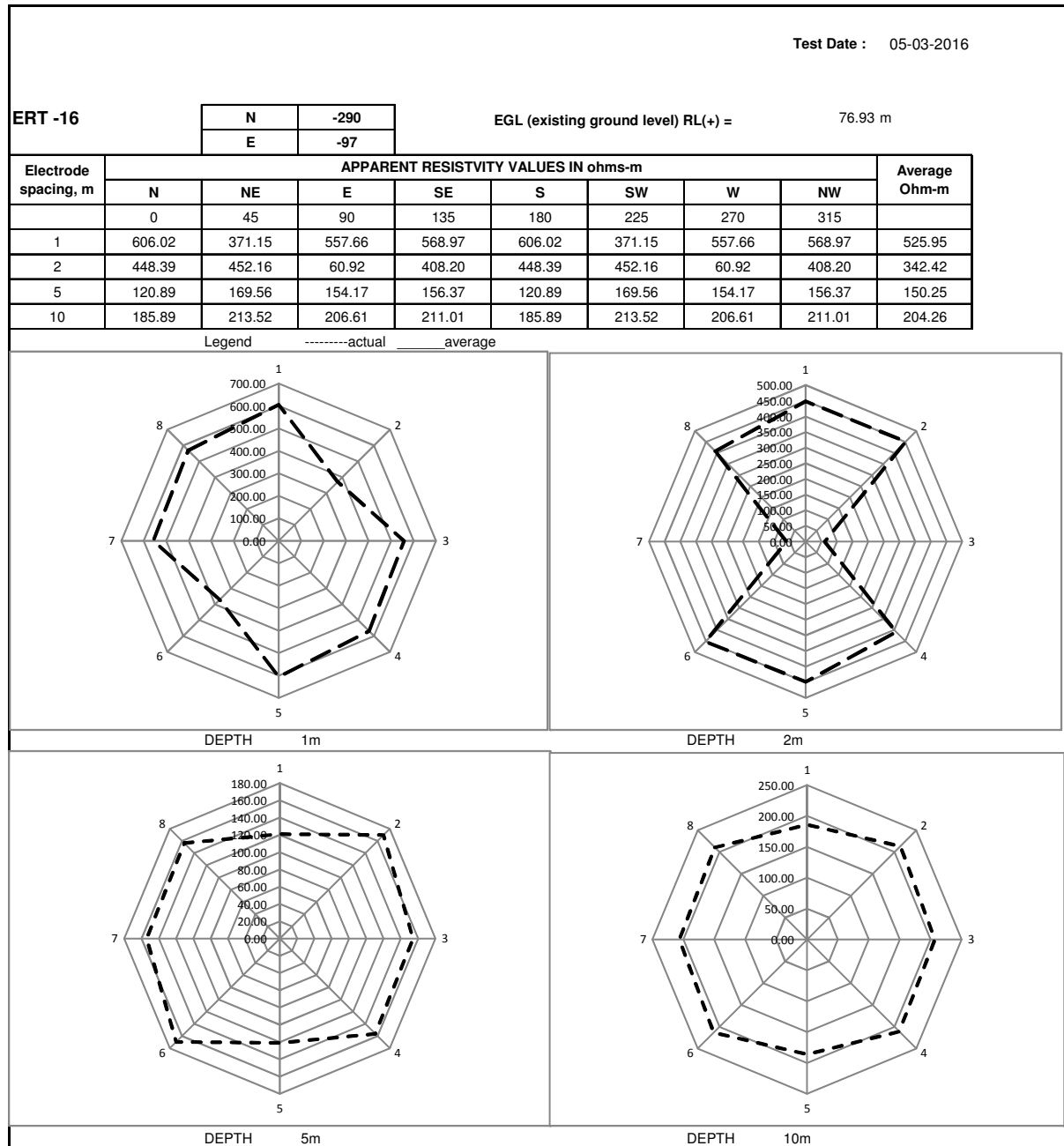


ERT -15							
E-W				S-N			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	13.00	81.64	1	6.28	12.60	79.13
2	12.56	7.50	94.20	2	12.56	6.40	80.38
5	31.4	4.60	144.44	5	31.4	4.90	153.86
10	62.8	3.40	213.52	10	62.8	4.40	276.32
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	12.60	79.13	1	6.28	12.70	79.76
2	12.56	7.80	97.97	2	12.56	7.00	87.92
5	31.4	5.50	172.70	5	31.4	4.40	138.16
10	62.8	3.40	213.52	10	62.8	3.40	213.52



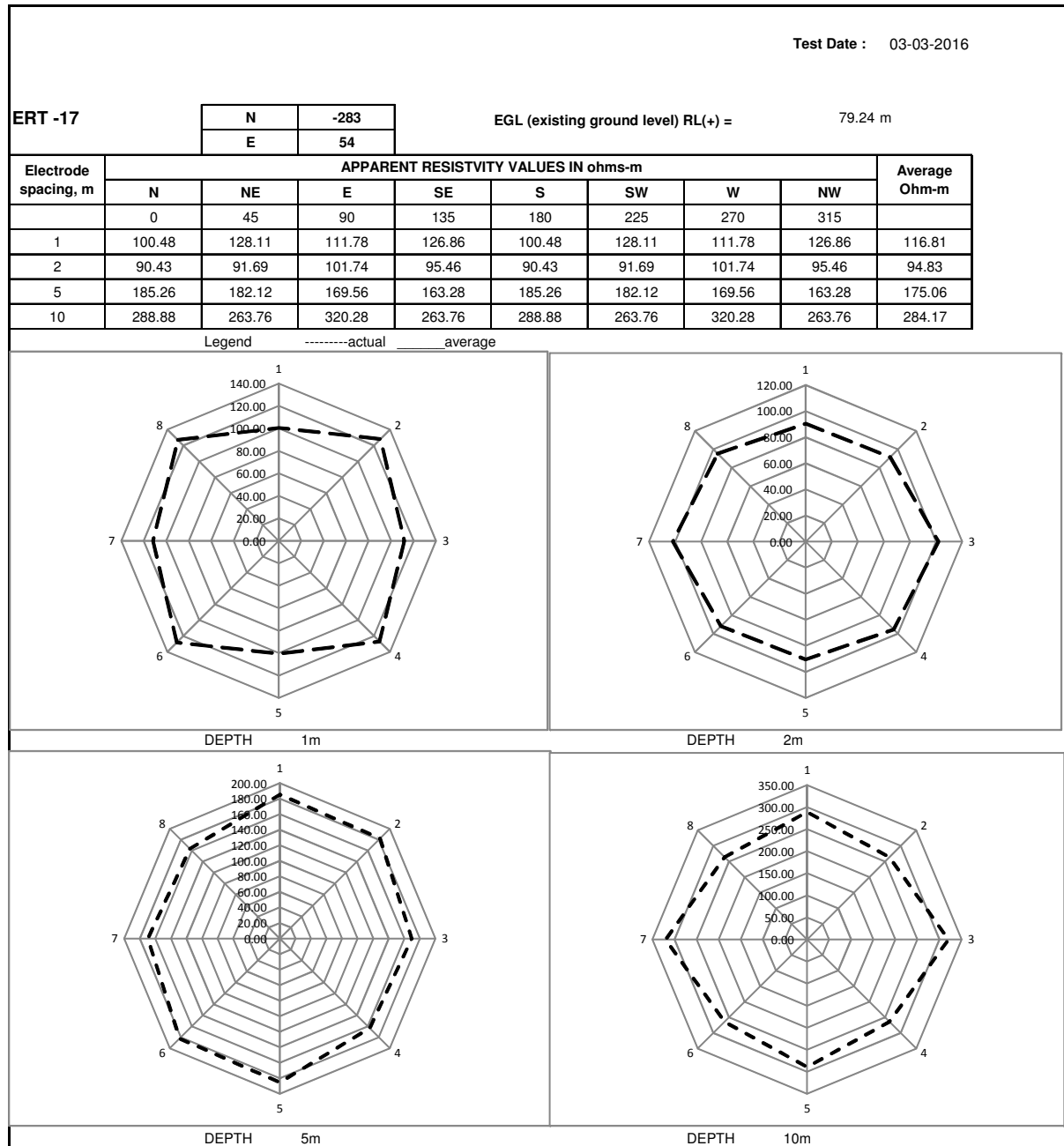


ERT -16							
E-W				S-N			
Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$	Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$
1	6.28	88.80	557.66	1	6.28	96.50	606.02
2	12.56	4.85	60.92	2	12.56	35.70	448.39
5	31.4	4.91	154.17	5	31.4	3.85	120.89
10	62.8	3.29	206.61	10	62.8	2.96	185.89
SE -NW				SW-NE			
Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$	Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$
1	6.28	90.60	568.97	1	6.28	59.10	371.15
2	12.56	32.50	408.20	2	12.56	36.00	452.16
5	31.4	4.98	156.37	5	31.4	5.40	169.56
10	62.8	3.36	211.01	10	62.8	3.40	213.52



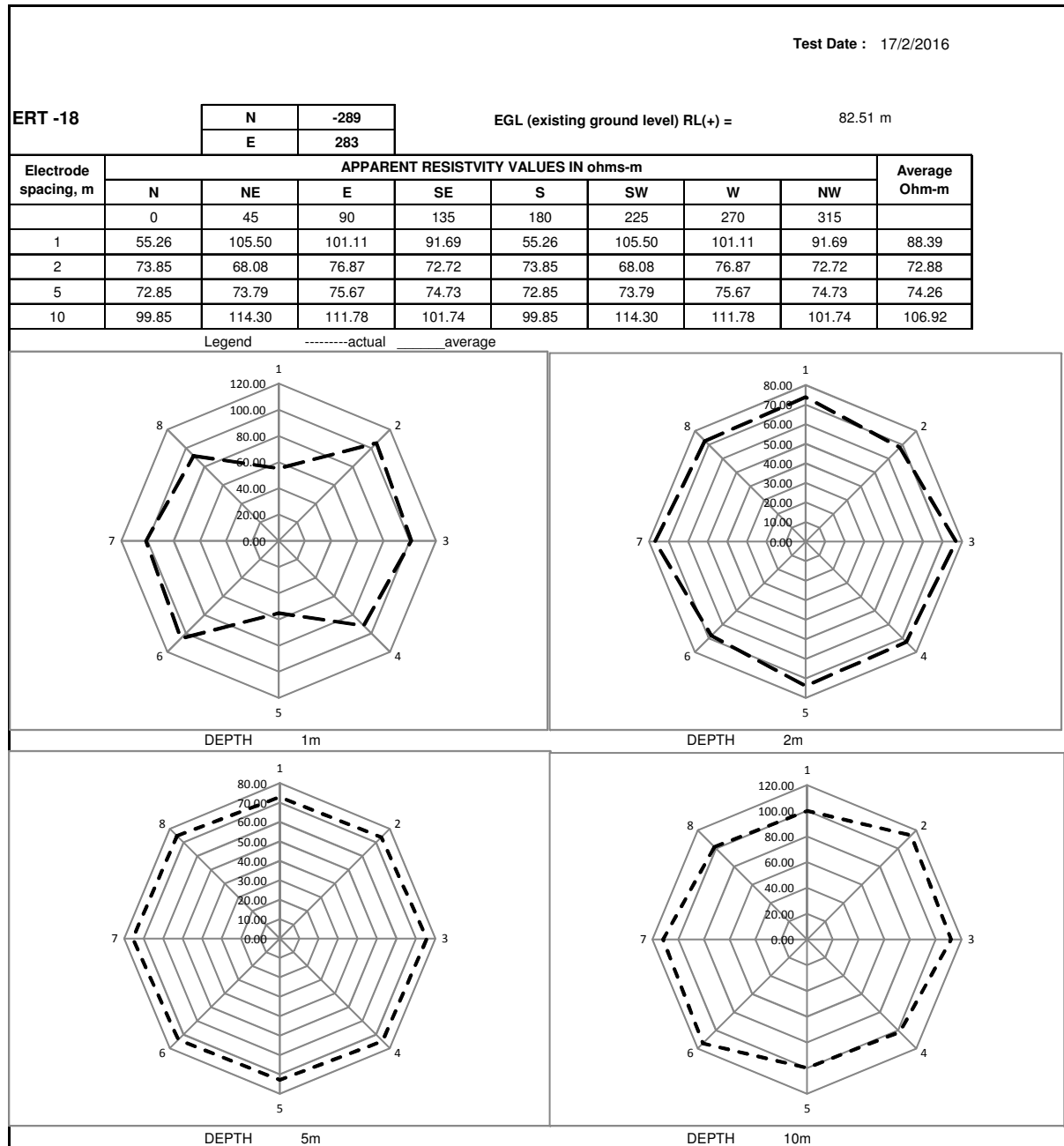


ERT -17							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	17.80	111.78	1	6.28	16.00	100.48
2	12.56	8.10	101.74	2	12.56	7.20	90.43
5	31.4	5.40	169.56	5	31.4	5.90	185.26
10	62.8	5.10	320.28	10	62.8	4.60	288.88
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	20.20	126.86	1	6.28	20.40	128.11
2	12.56	7.60	95.46	2	12.56	7.30	91.69
5	31.4	5.20	163.28	5	31.4	5.80	182.12
10	62.8	4.20	263.76	10	62.8	4.20	263.76



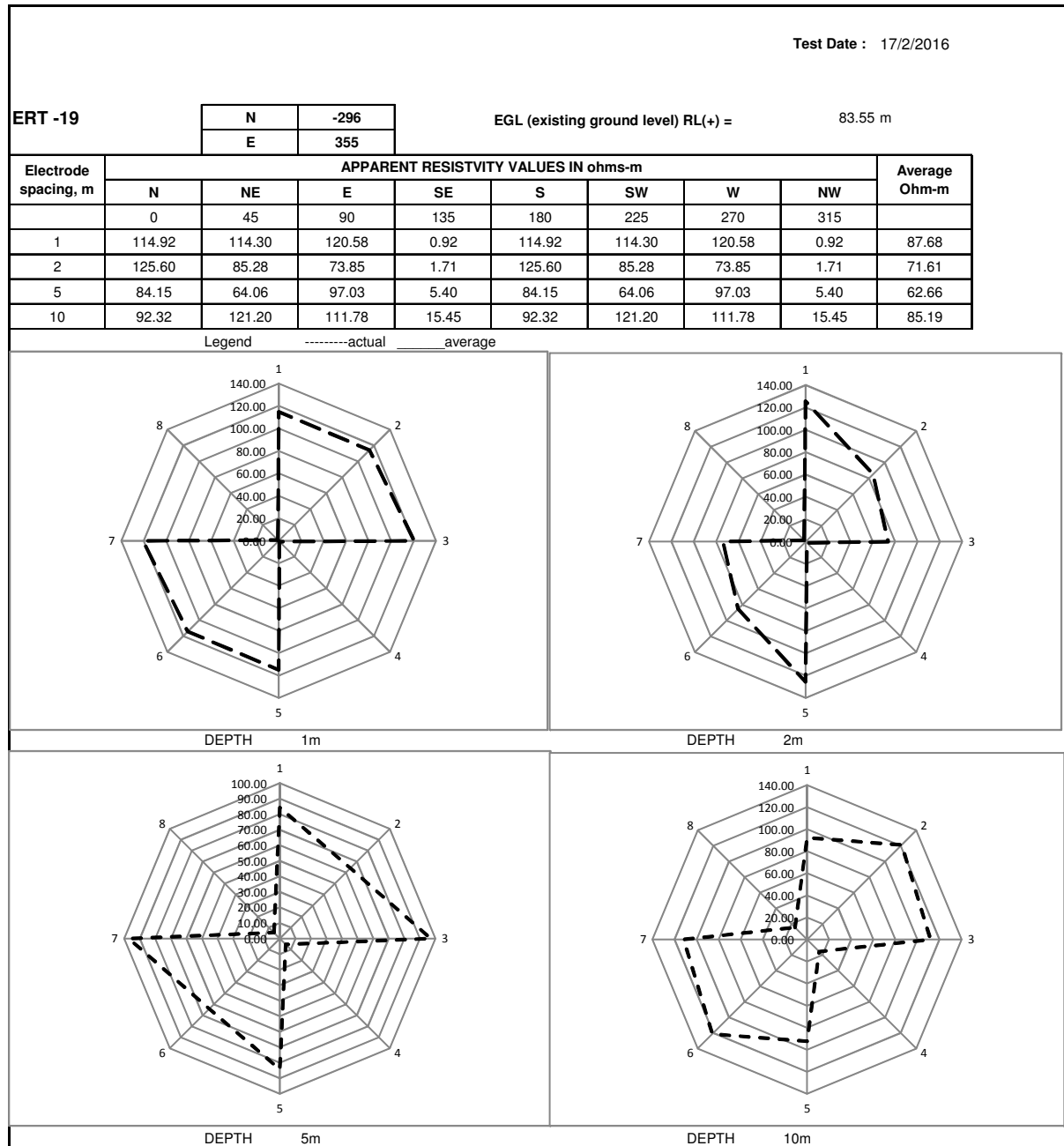


ERT -18							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	16.10	101.11	1	6.28	8.80	55.26
2	12.56	6.12	76.87	2	12.56	5.88	73.85
5	31.4	2.41	75.67	5	31.4	2.32	72.85
10	62.8	1.78	111.78	10	62.8	1.59	99.85
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	14.60	91.69	1	6.28	16.80	105.50
2	12.56	5.79	72.72	2	12.56	5.42	68.08
5	31.4	2.38	74.73	5	31.4	2.35	73.79
10	62.8	1.62	101.74	10	62.8	1.82	114.30



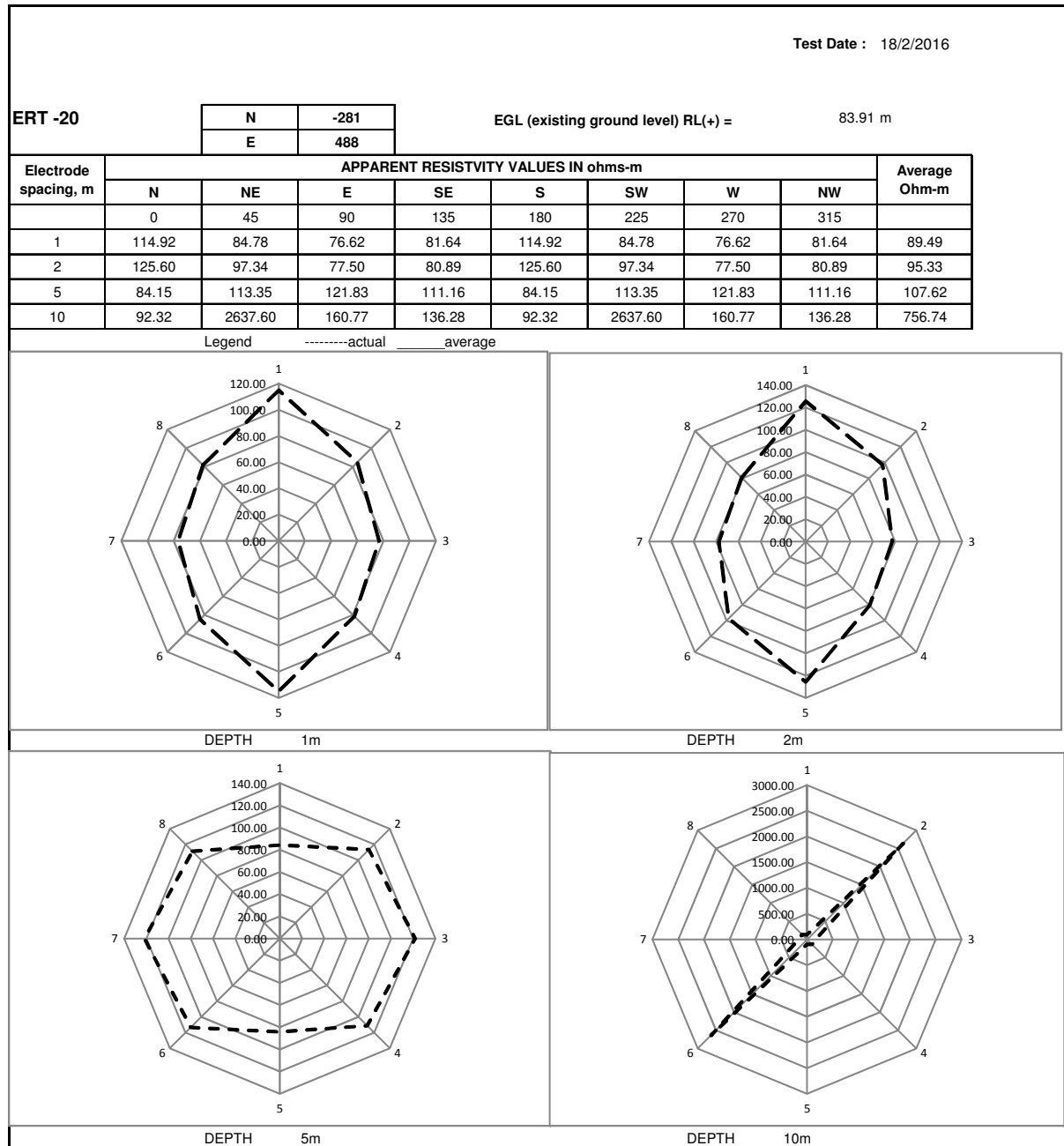


ERT -19							
E-W				S-N			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	19.20	120.58	1	6.28	18.30	114.92
2	12.56	5.88	73.85	2	12.56	10.00	125.60
5	31.4	3.09	97.03	5	31.4	2.68	84.15
10	62.8	1.78	111.78	10	62.8	1.47	92.32
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	0.15	0.92	1	6.28	18.20	114.30
2	12.56	0.14	1.71	2	12.56	6.79	85.28
5	31.4	0.17	5.40	5	31.4	2.04	64.06
10	62.8	0.25	15.45	10	62.8	1.93	121.20



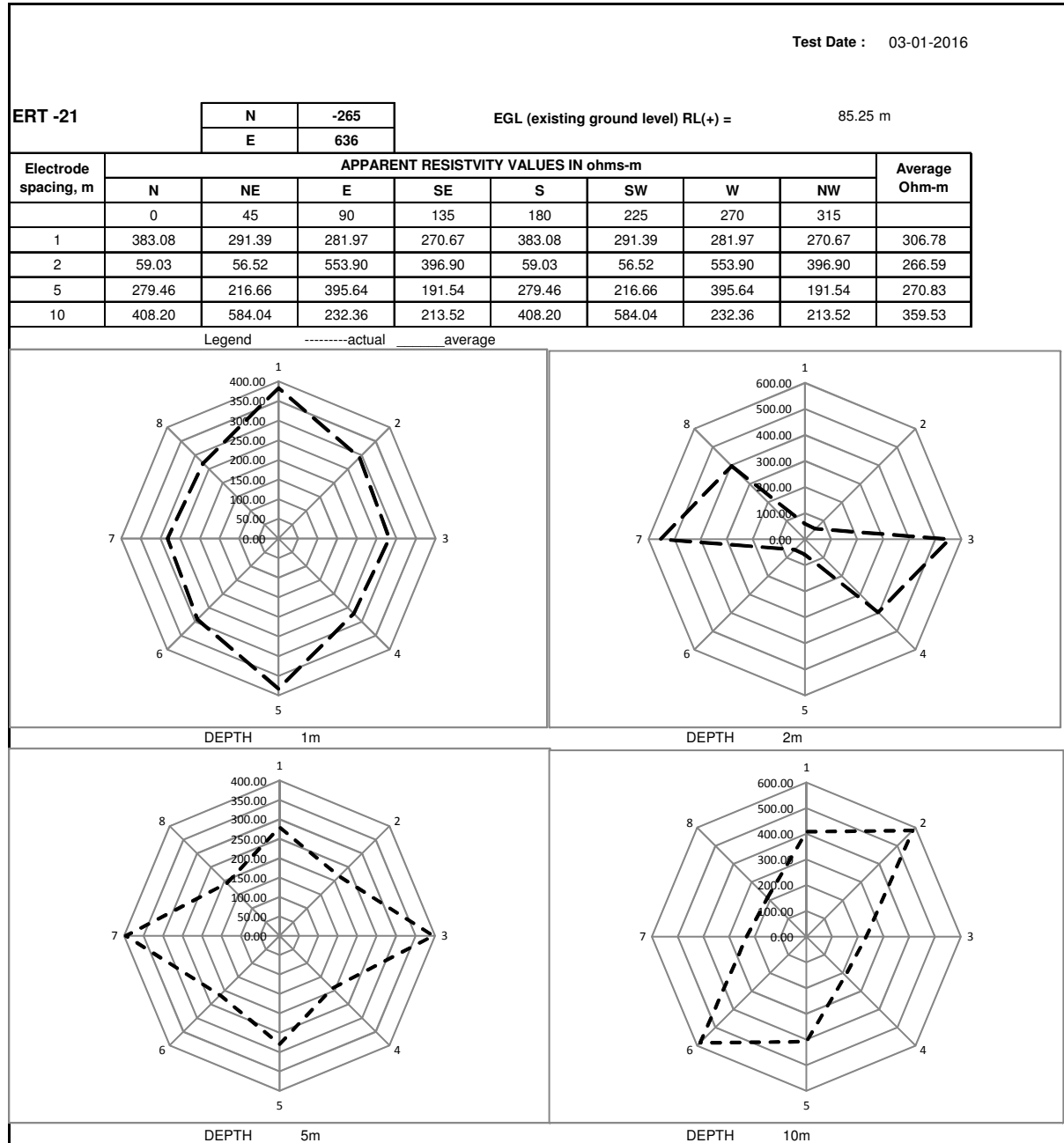


ERT -20							
E-W				S-N			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	12.20	76.62	1	6.28	18.30	114.92
2	12.56	6.17	77.50	2	12.56	10.00	125.60
5	31.4	3.88	121.83	5	31.4	2.68	84.15
10	62.8	2.56	160.77	10	62.8	1.47	92.32
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	13.00	81.64	1	6.28	13.50	84.78
2	12.56	6.44	80.89	2	12.56	7.75	97.34
5	31.4	3.54	111.16	5	31.4	3.61	113.35
10	62.8	2.17	136.28	10	62.8	42.00	2637.60



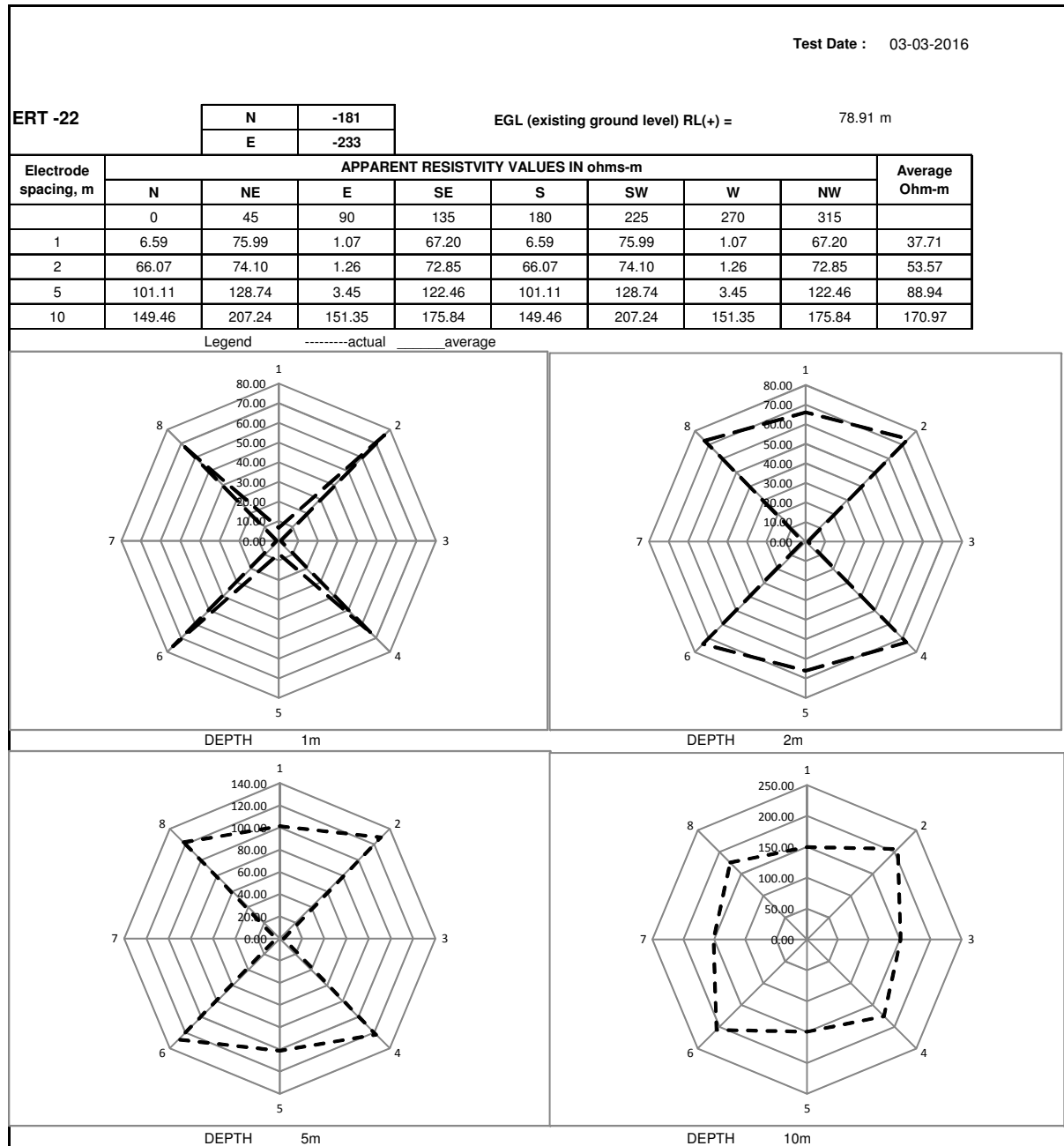


ERT -21							
E-W				S-N			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	44.90	281.97	1	6.28	61.00	383.08
2	12.56	44.10	553.90	2	12.56	4.70	59.03
5	31.4	12.60	395.64	5	31.4	8.90	279.46
10	62.8	3.70	232.36	10	62.8	6.50	408.20
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	43.10	270.67	1	6.28	46.40	291.39
2	12.56	31.60	396.90	2	12.56	4.50	56.52
5	31.4	6.10	191.54	5	31.4	6.90	216.66
10	62.8	3.40	213.52	10	62.8	9.30	584.04



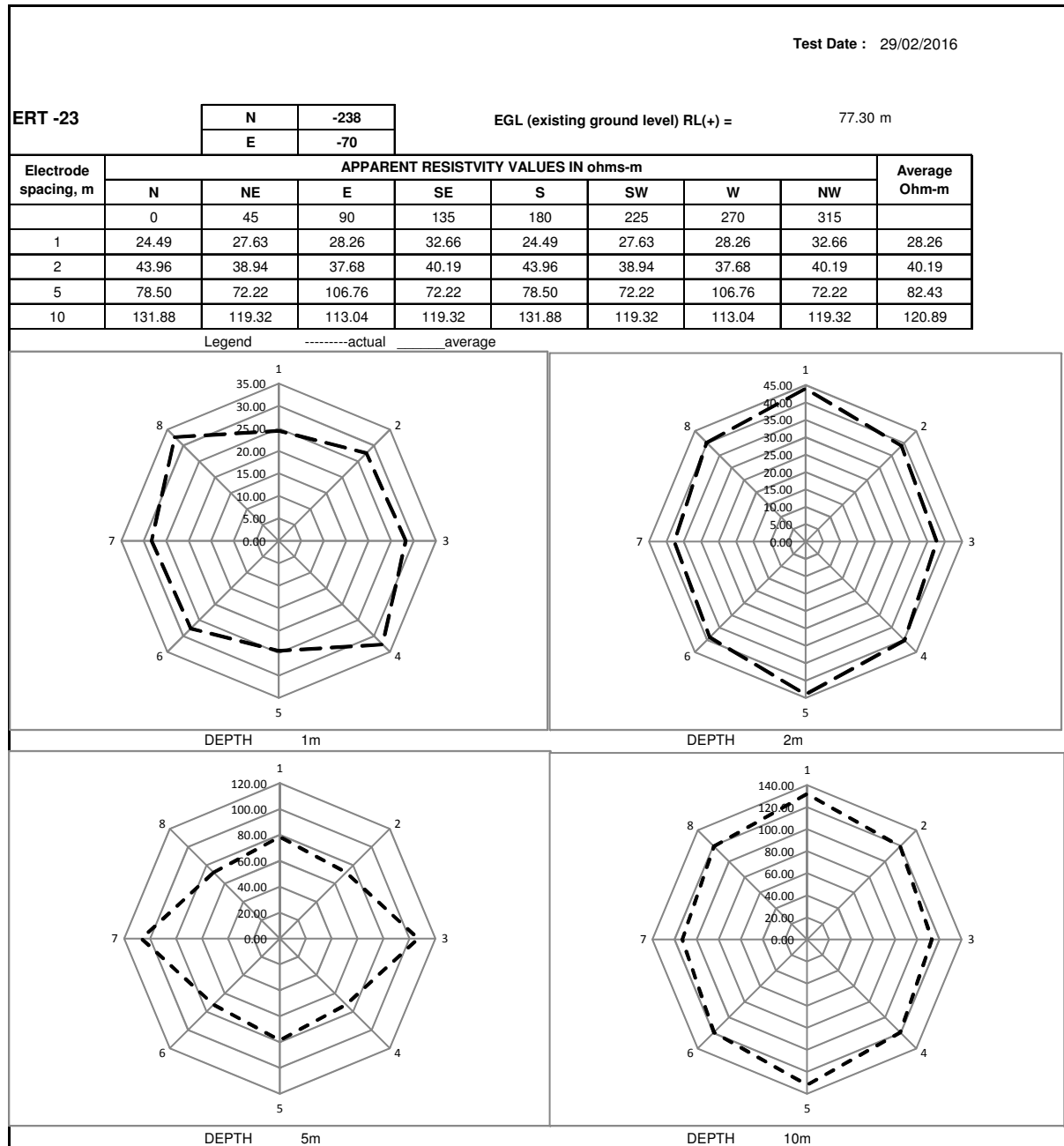


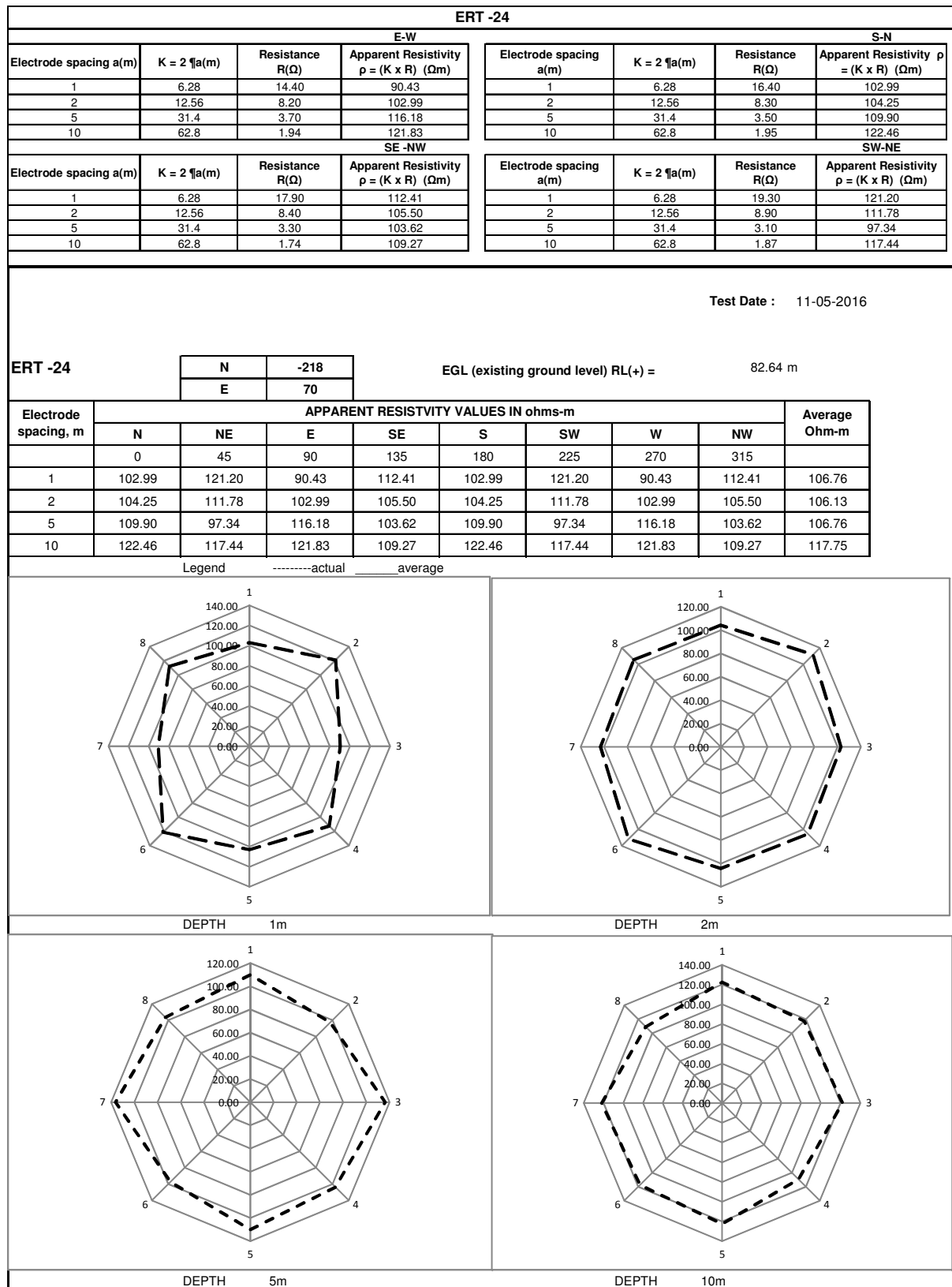
ERT -22							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	0.17	1.07	1	6.28	1.05	6.59
2	12.56	0.10	1.26	2	12.56	5.26	66.07
5	31.4	0.11	3.45	5	31.4	3.22	101.11
10	62.8	2.41	151.35	10	62.8	2.38	149.46
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	10.70	67.20	1	6.28	12.10	75.99
2	12.56	5.80	72.85	2	12.56	5.90	74.10
5	31.4	3.90	122.46	5	31.4	4.10	128.74
10	62.8	2.80	175.84	10	62.8	3.30	207.24

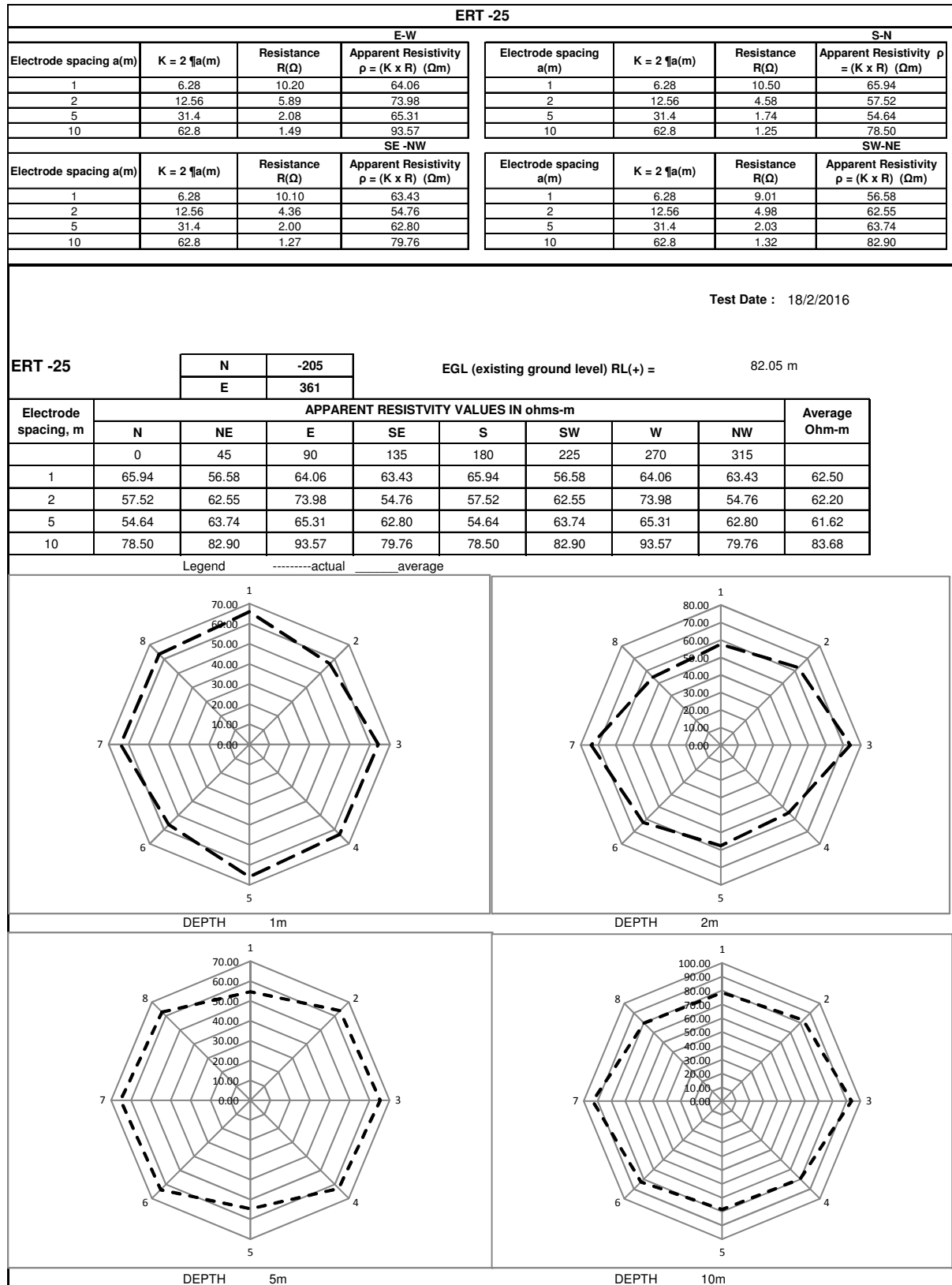


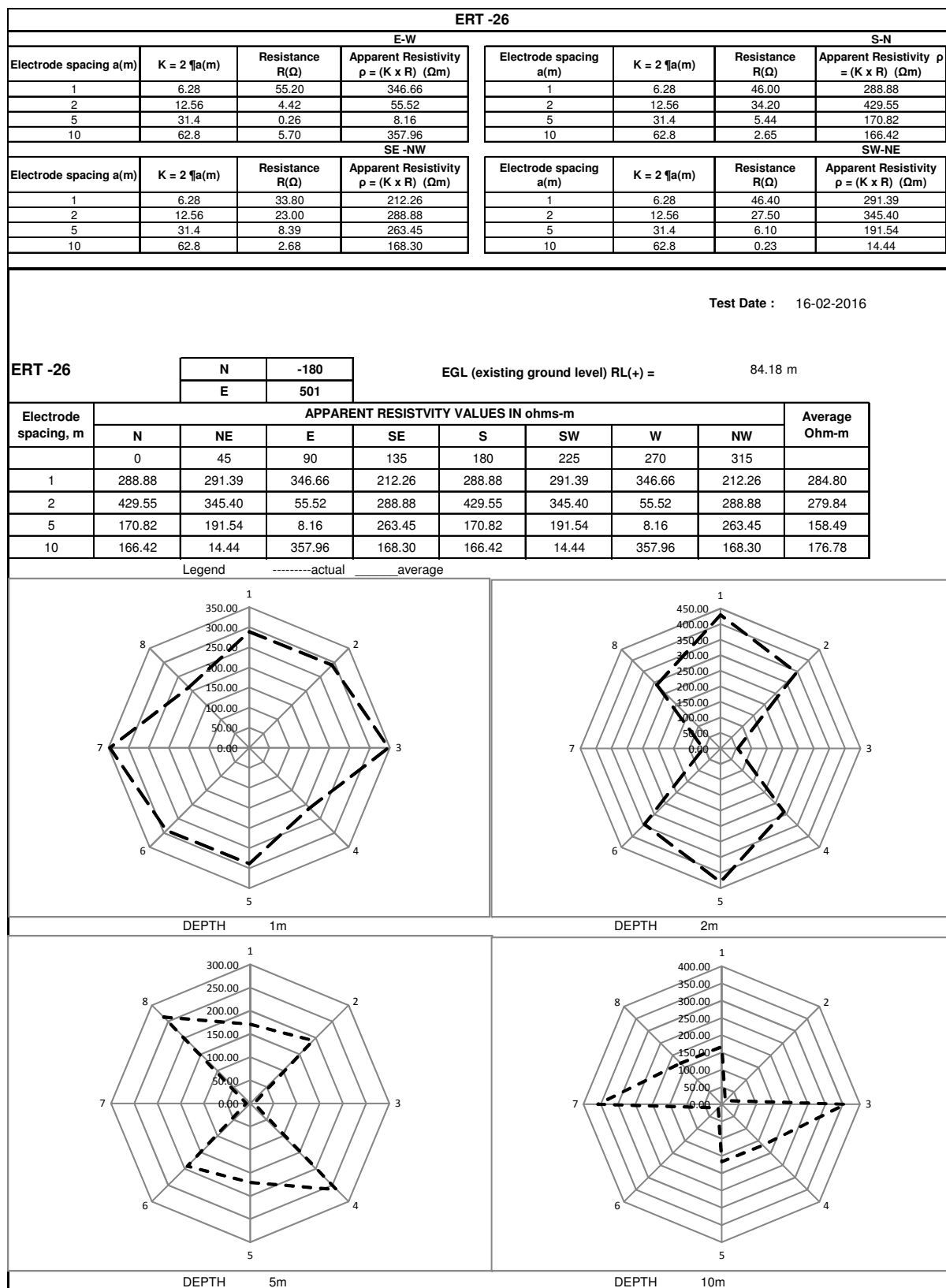


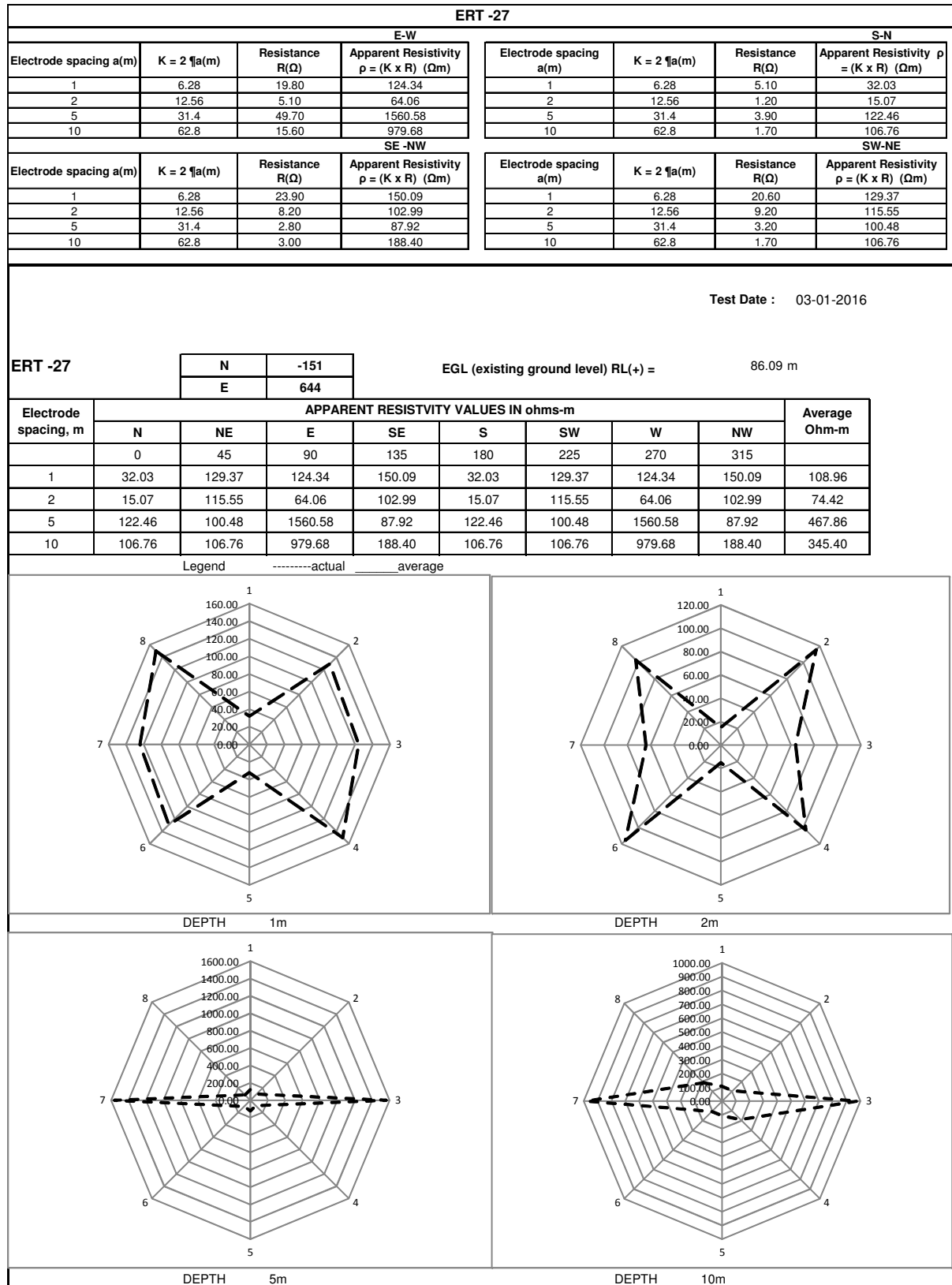
ERT -23							
E-W				S-N			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	4.50	28.26	1	6.28	3.90	24.49
2	12.56	3.00	37.68	2	12.56	3.50	43.96
5	31.4	3.40	106.76	5	31.4	2.50	78.50
10	62.8	1.80	113.04	10	62.8	2.10	131.88
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	5.20	32.66	1	6.28	4.40	27.63
2	12.56	3.20	40.19	2	12.56	3.10	38.94
5	31.4	2.30	72.22	5	31.4	2.30	72.22
10	62.8	1.90	119.32	10	62.8	1.90	119.32

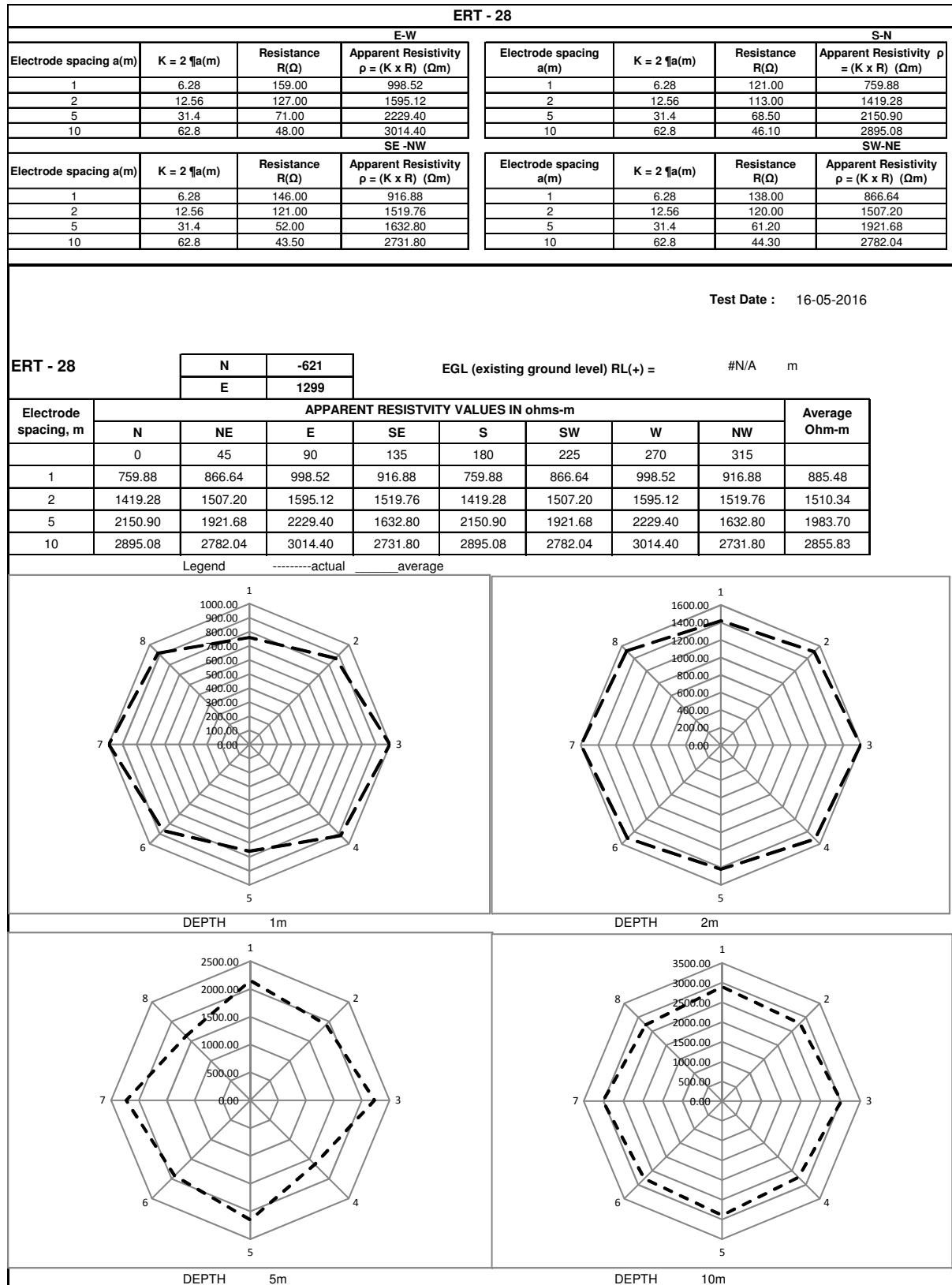


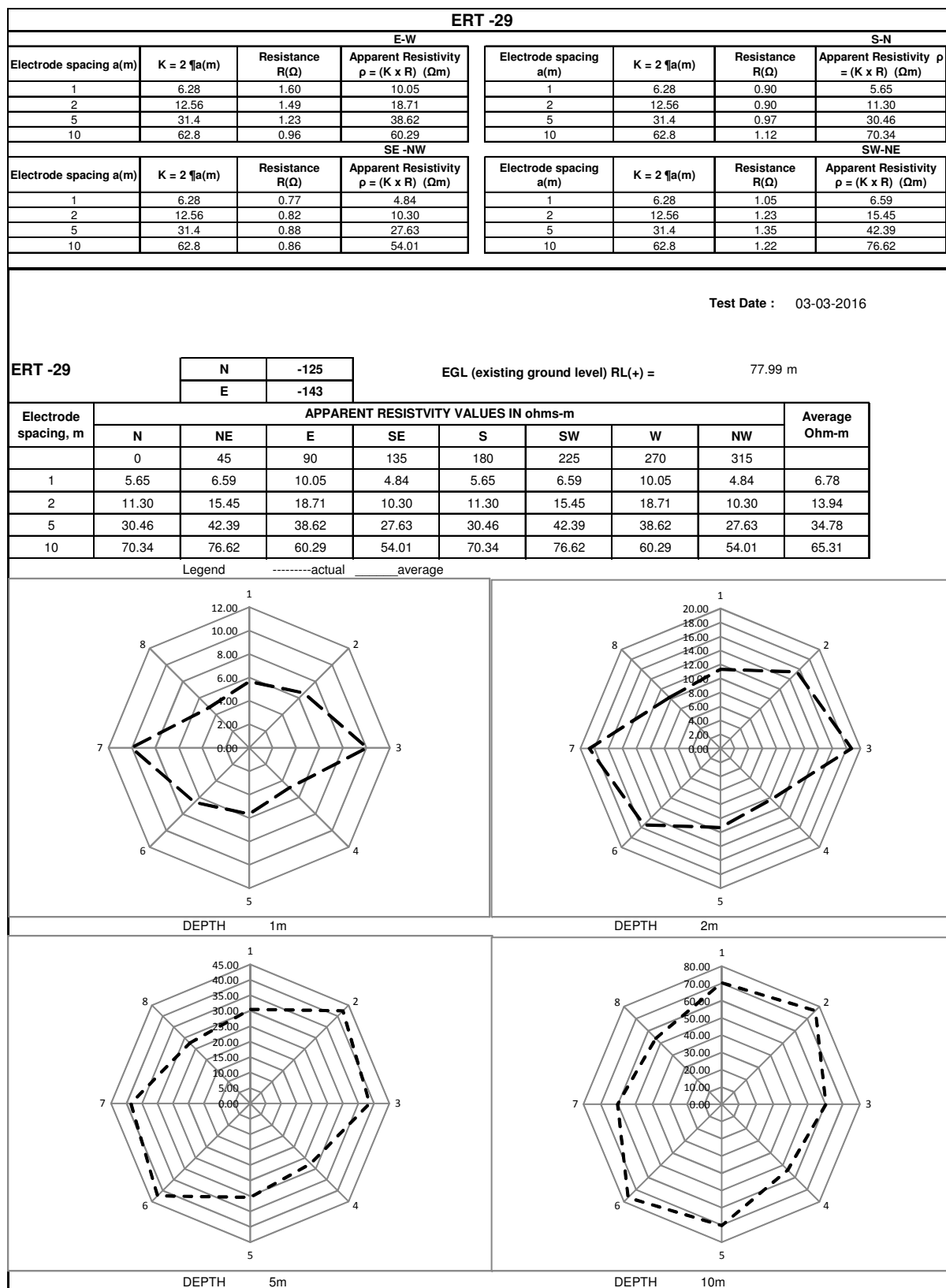


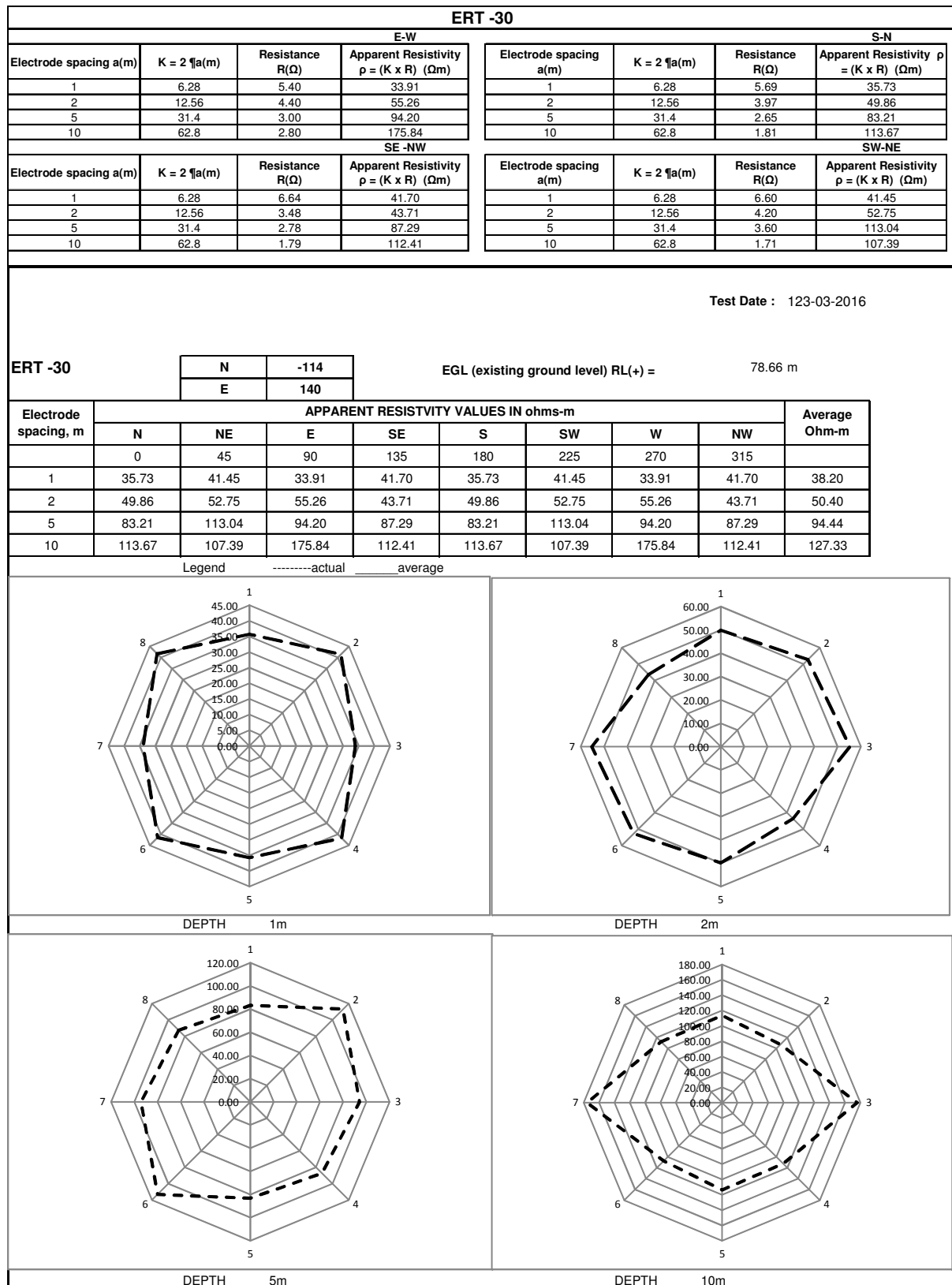


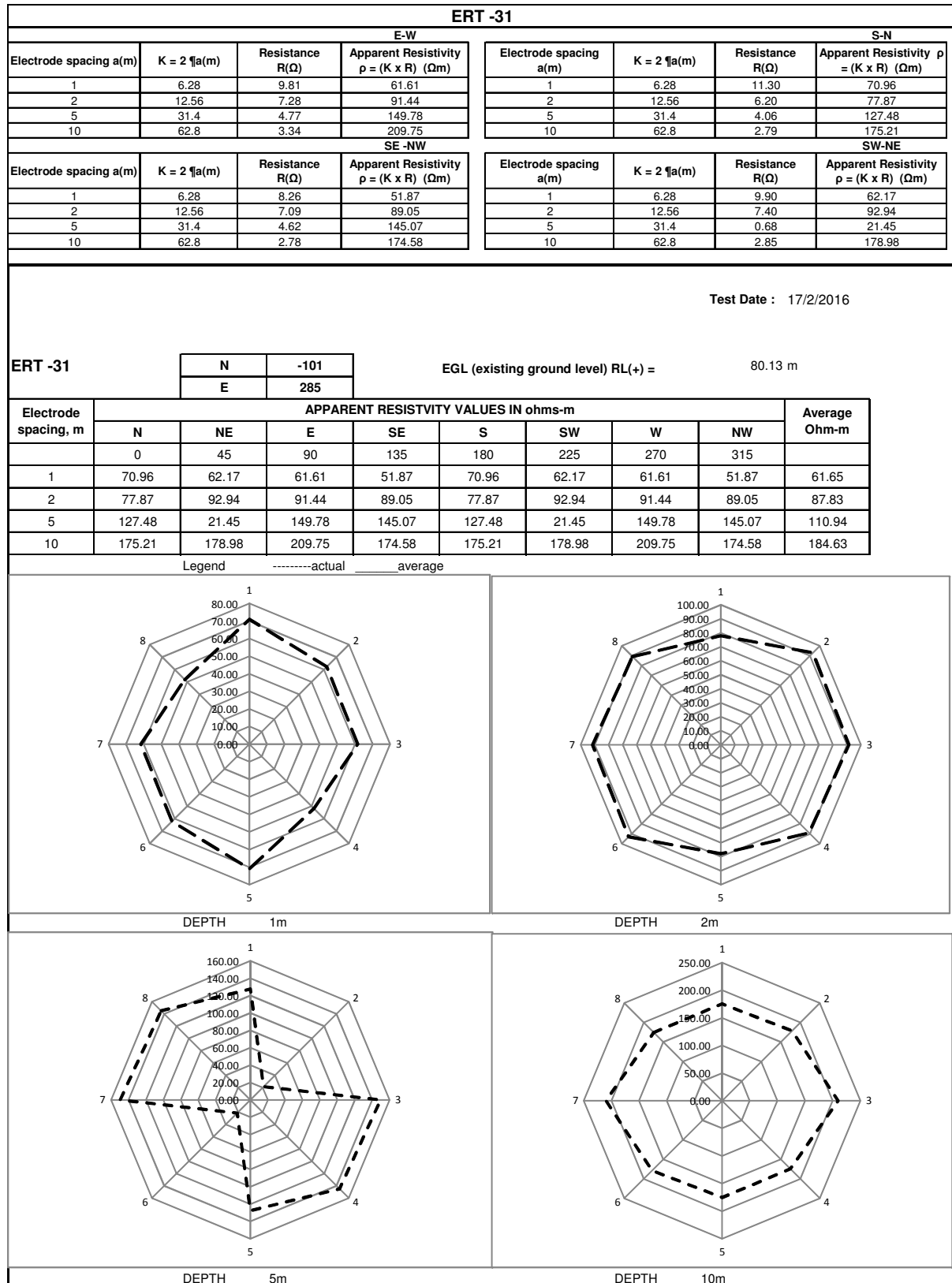


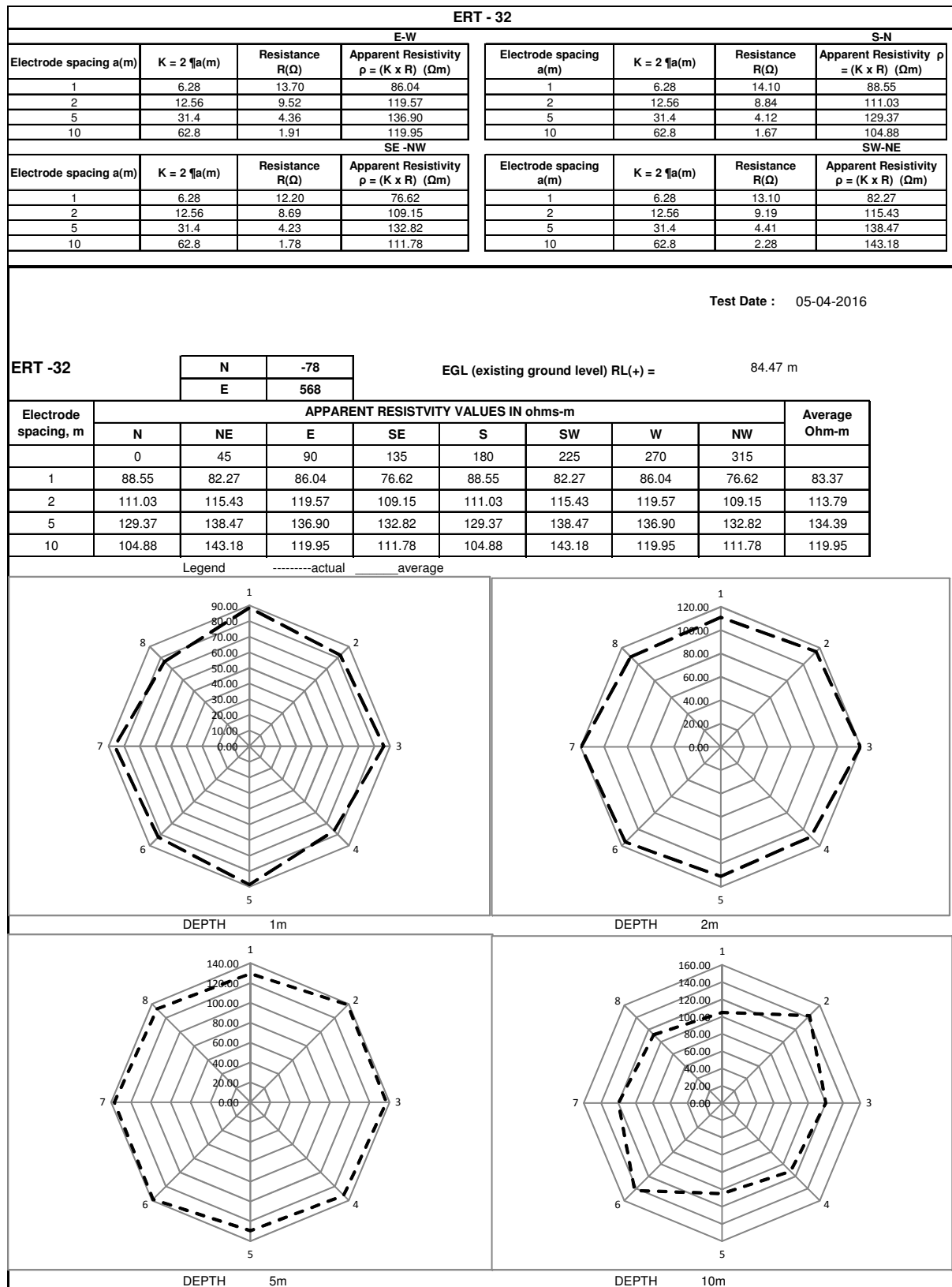


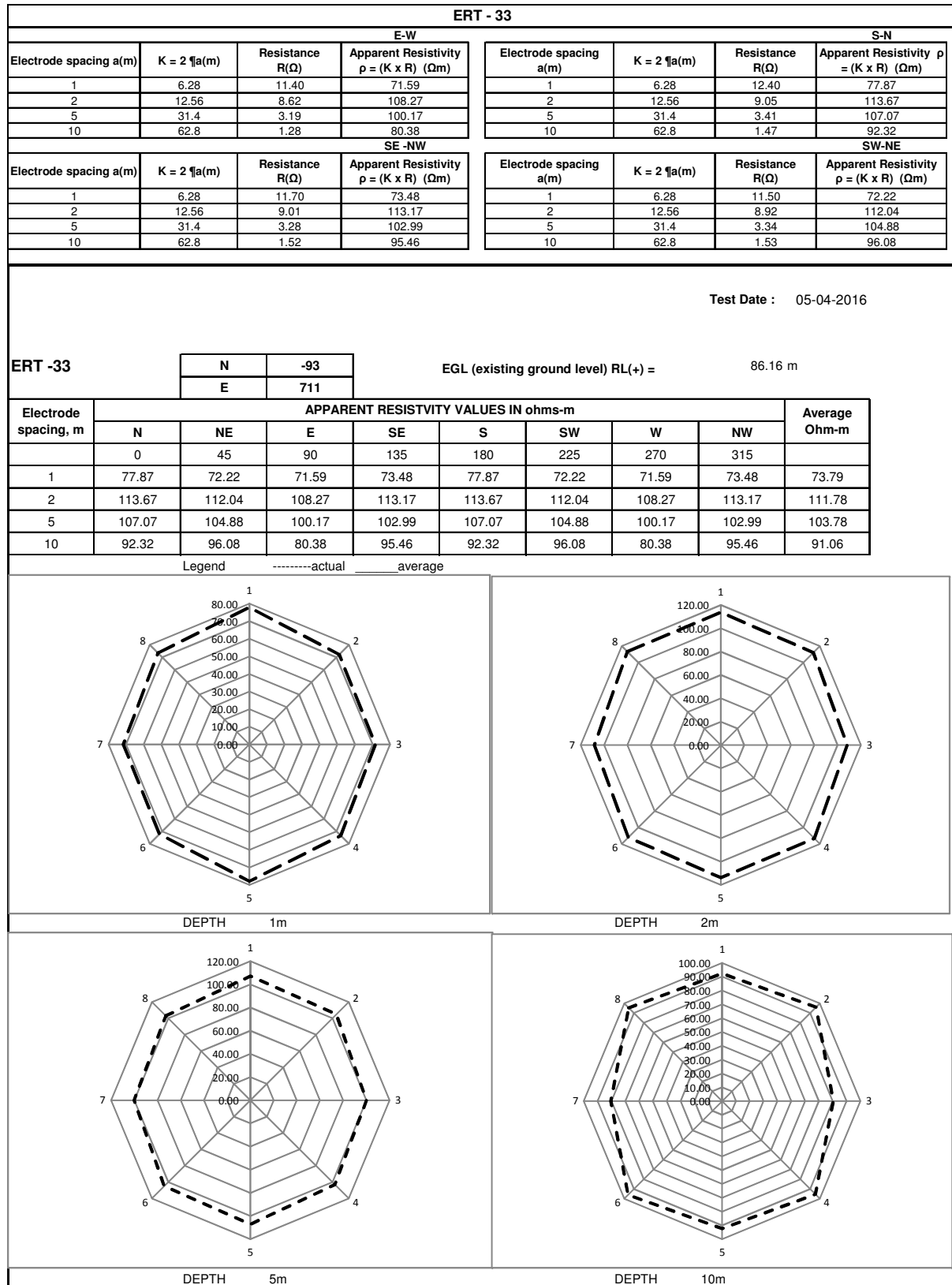


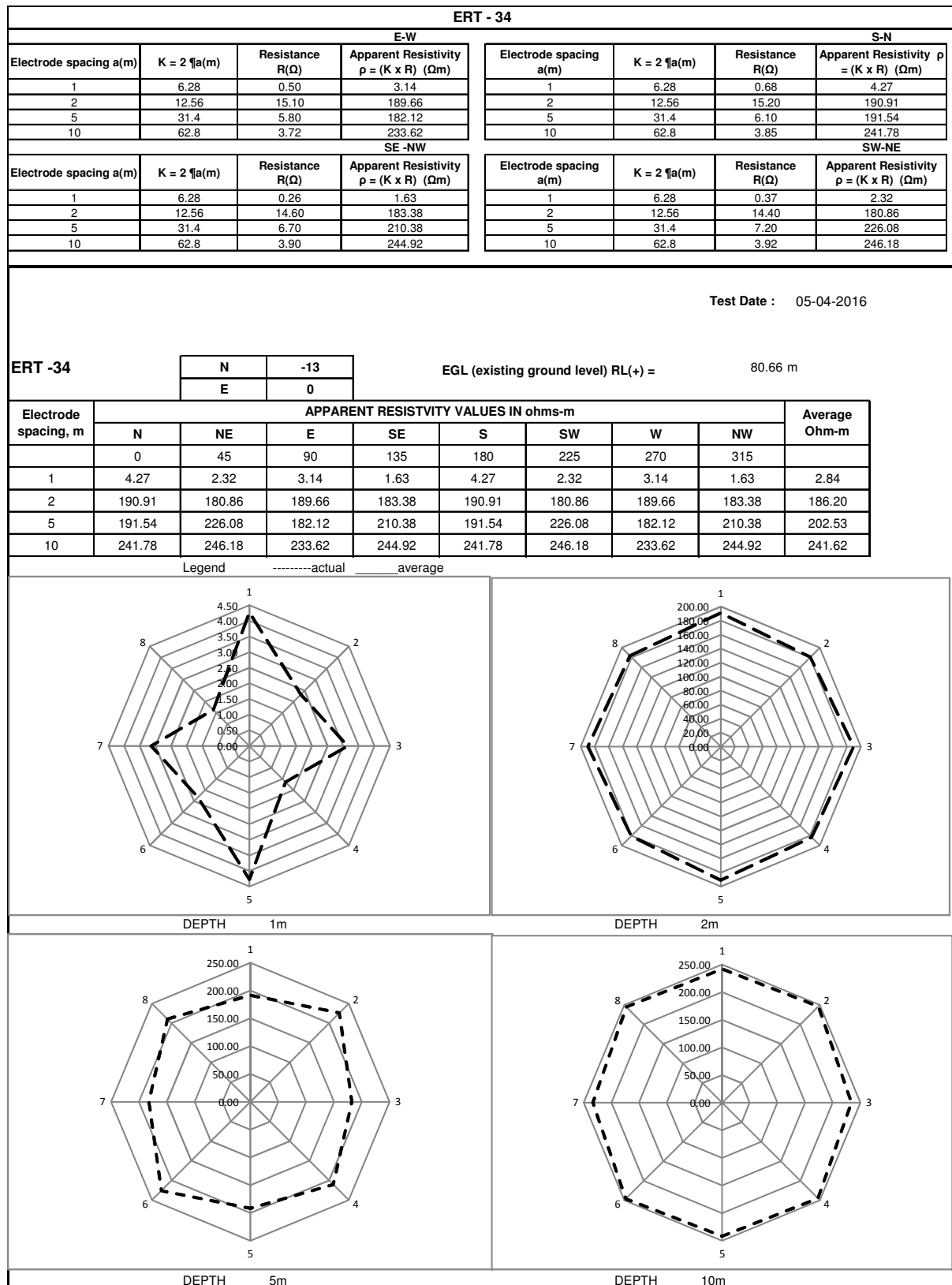


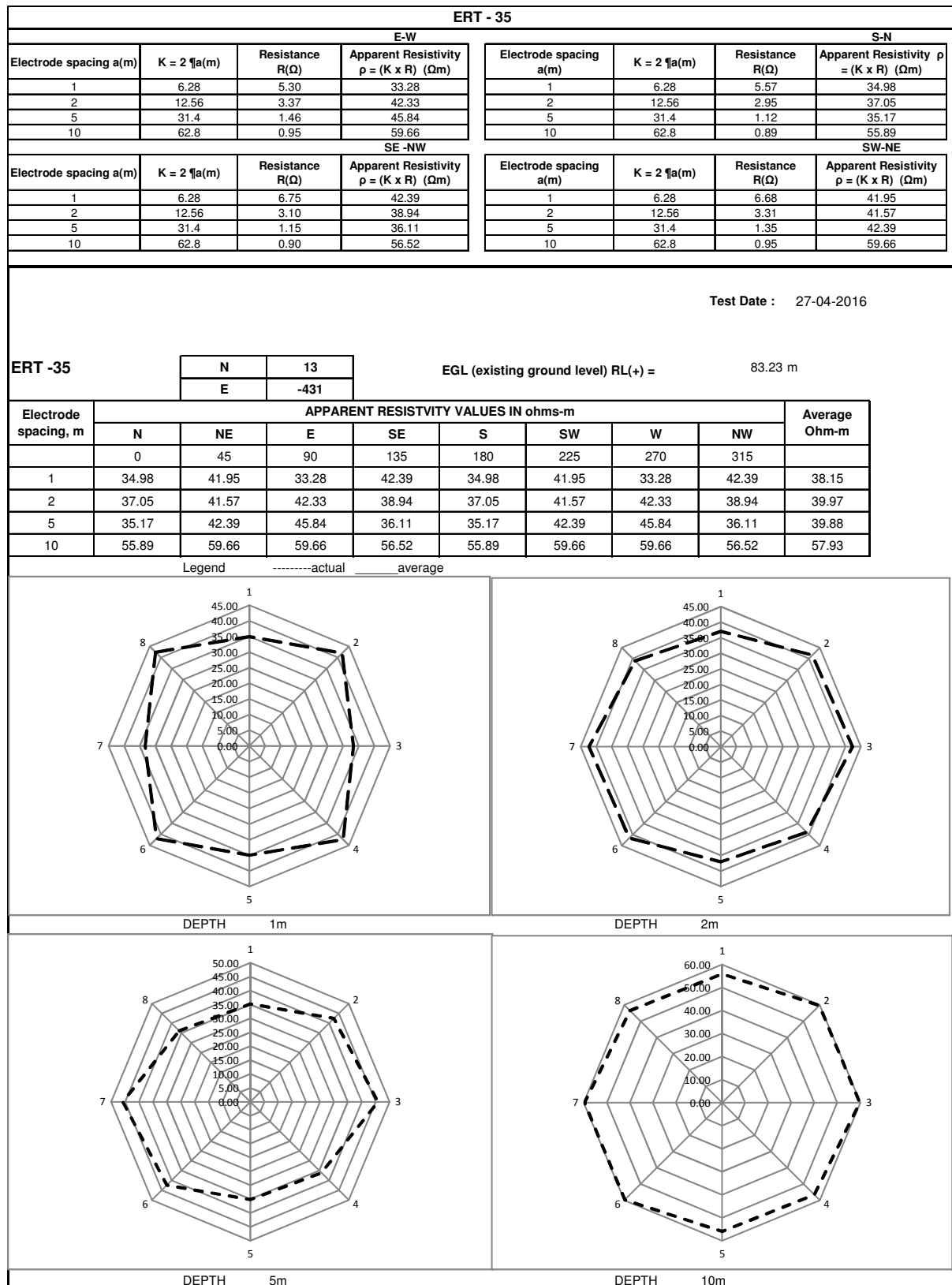


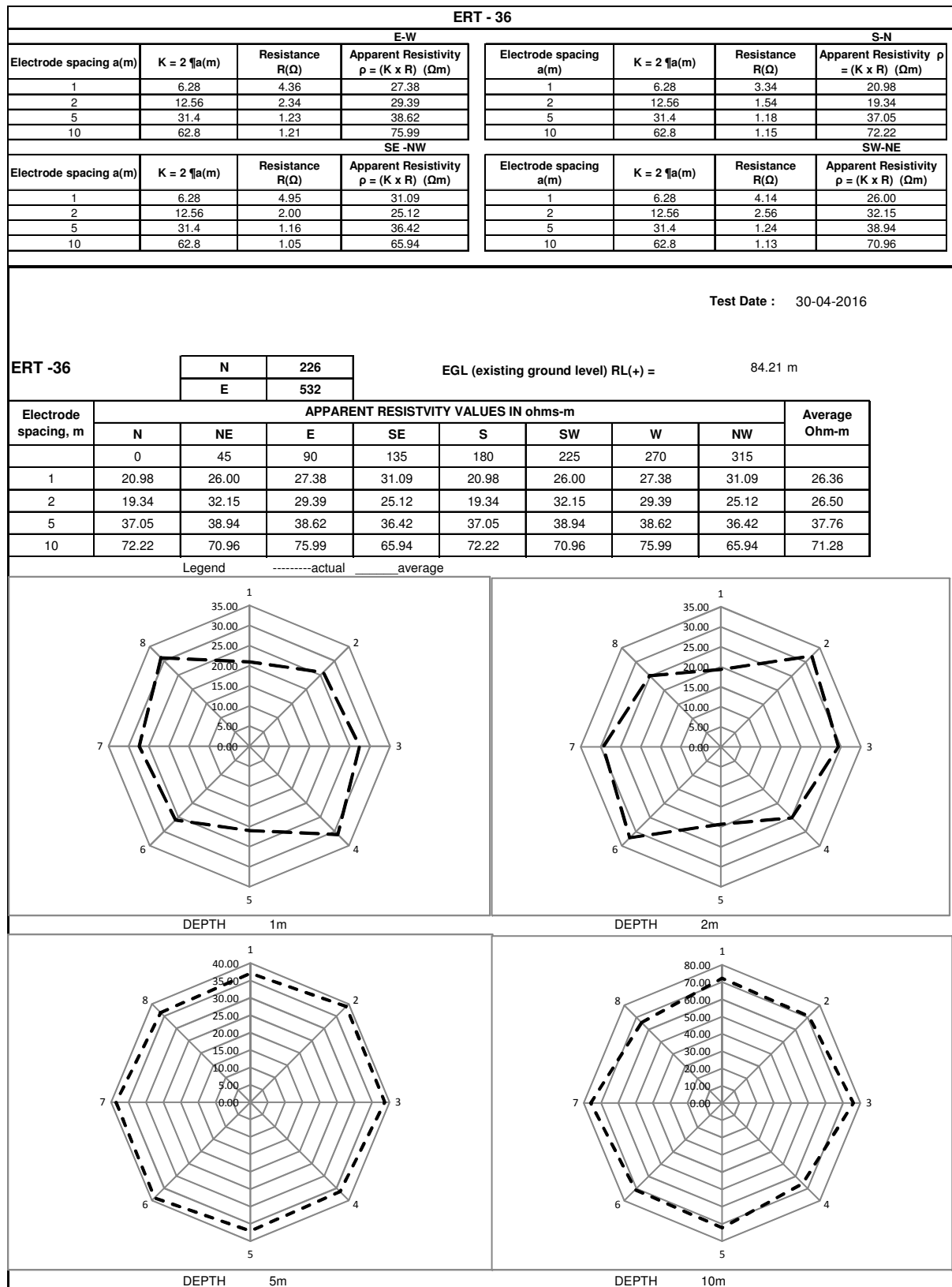














ERT - 37							
E-W				S-N			
Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$	Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$
1	6.28	19.00	119.32	1	6.28	13.90	87.29
2	12.56	14.70	184.63	2	12.56	9.60	120.58
5	31.4	5.00	157.00	5	31.4	3.30	103.62
10	62.8	1.77	111.16	10	62.8	0.84	52.75
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$	Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$
1	6.28	15.10	94.83	1	6.28	12.80	80.38
2	12.56	8.90	111.78	2	12.56	12.20	153.23
5	31.4	2.46	77.24	5	31.4	3.30	103.62
10	62.8	0.93	58.40	10	62.8	1.19	74.73

Test Date : 10-05-2016

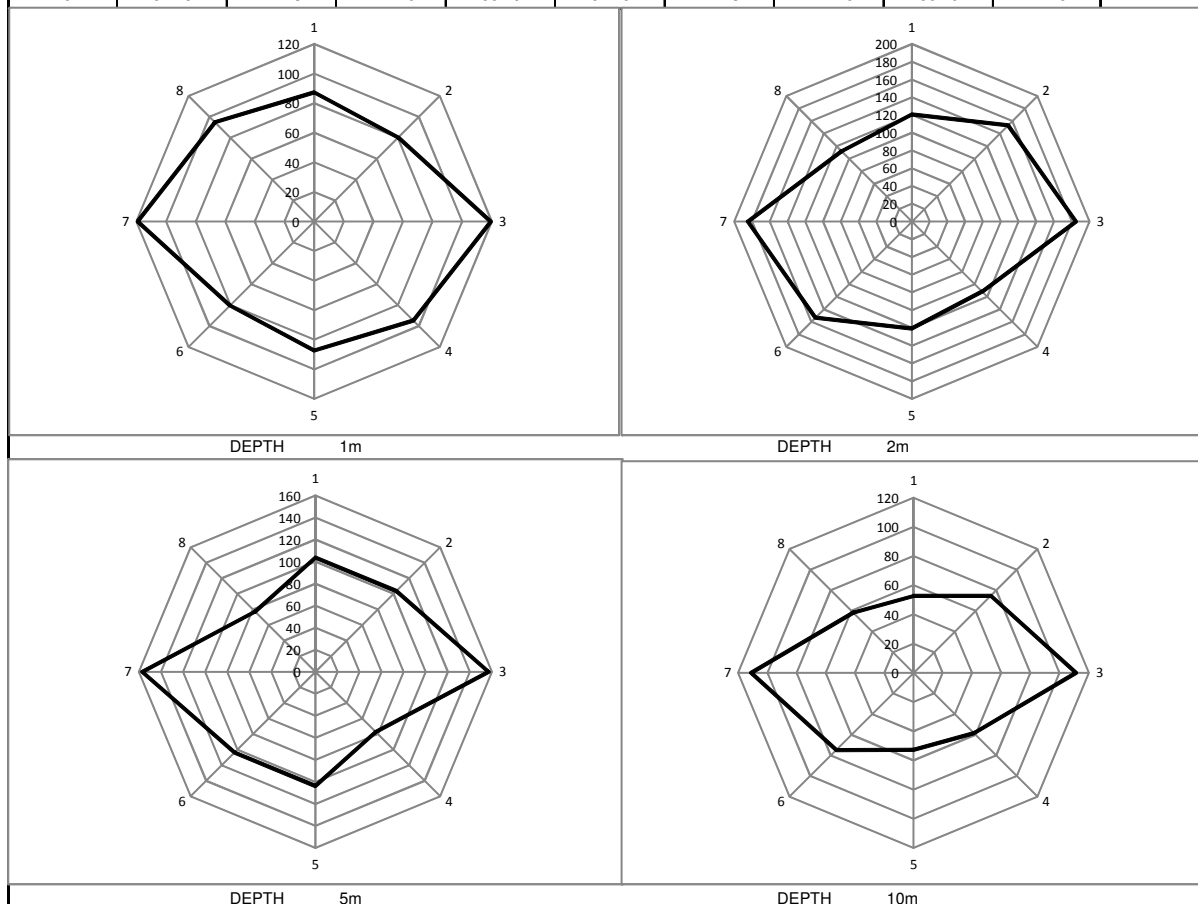
ERT -37

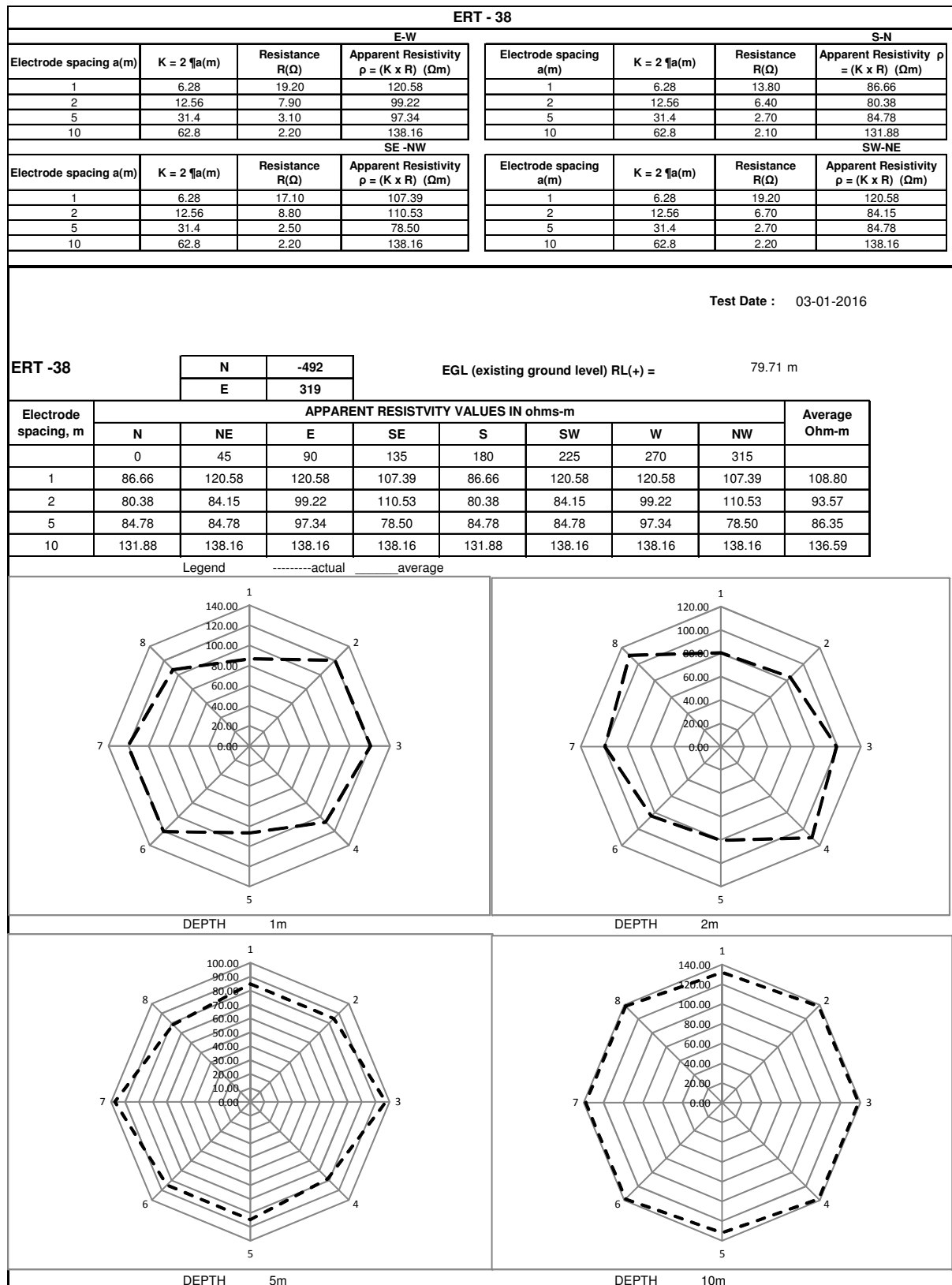
N	922
E	261

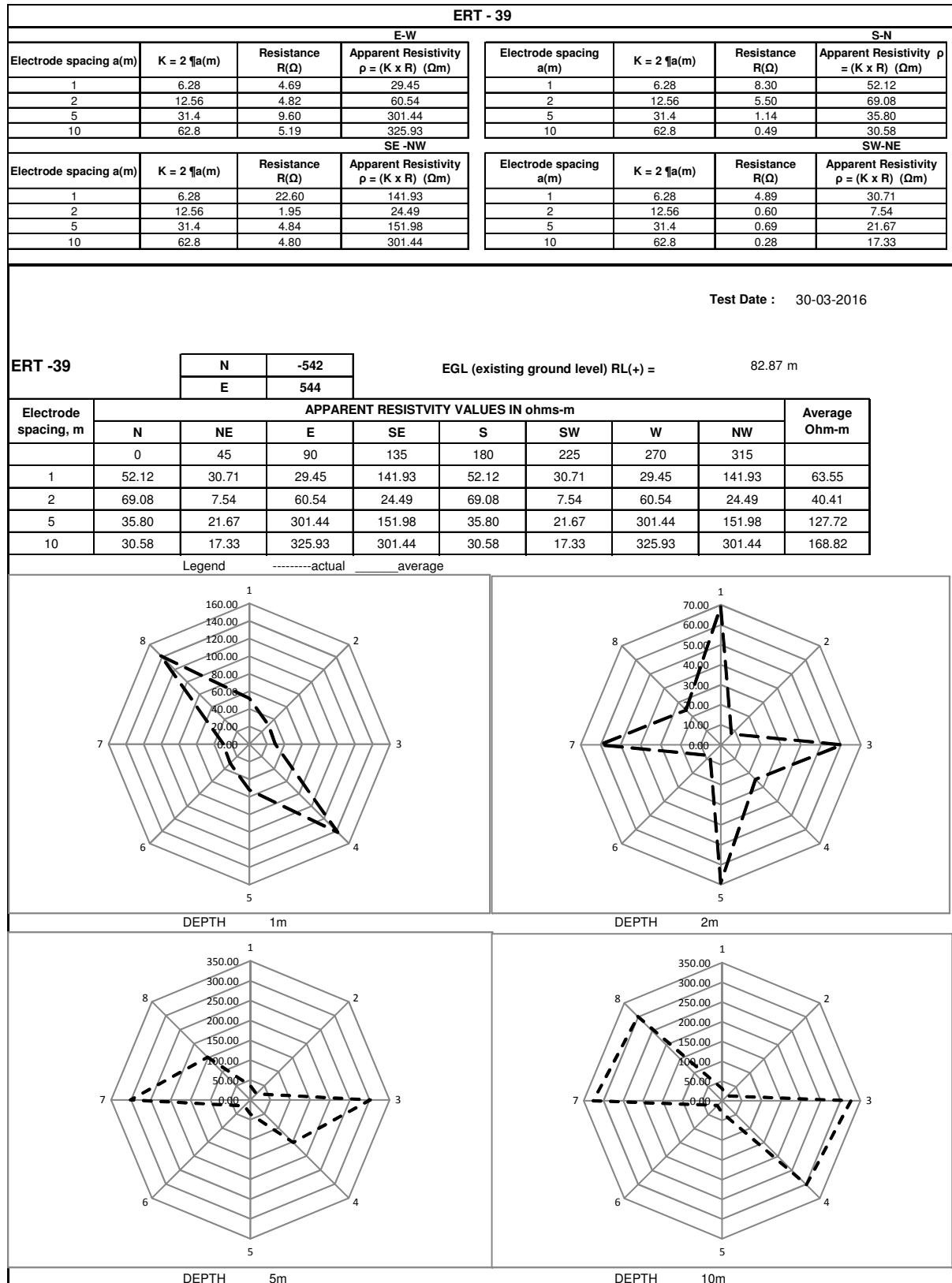
EGL (existing ground level) RL(+) =

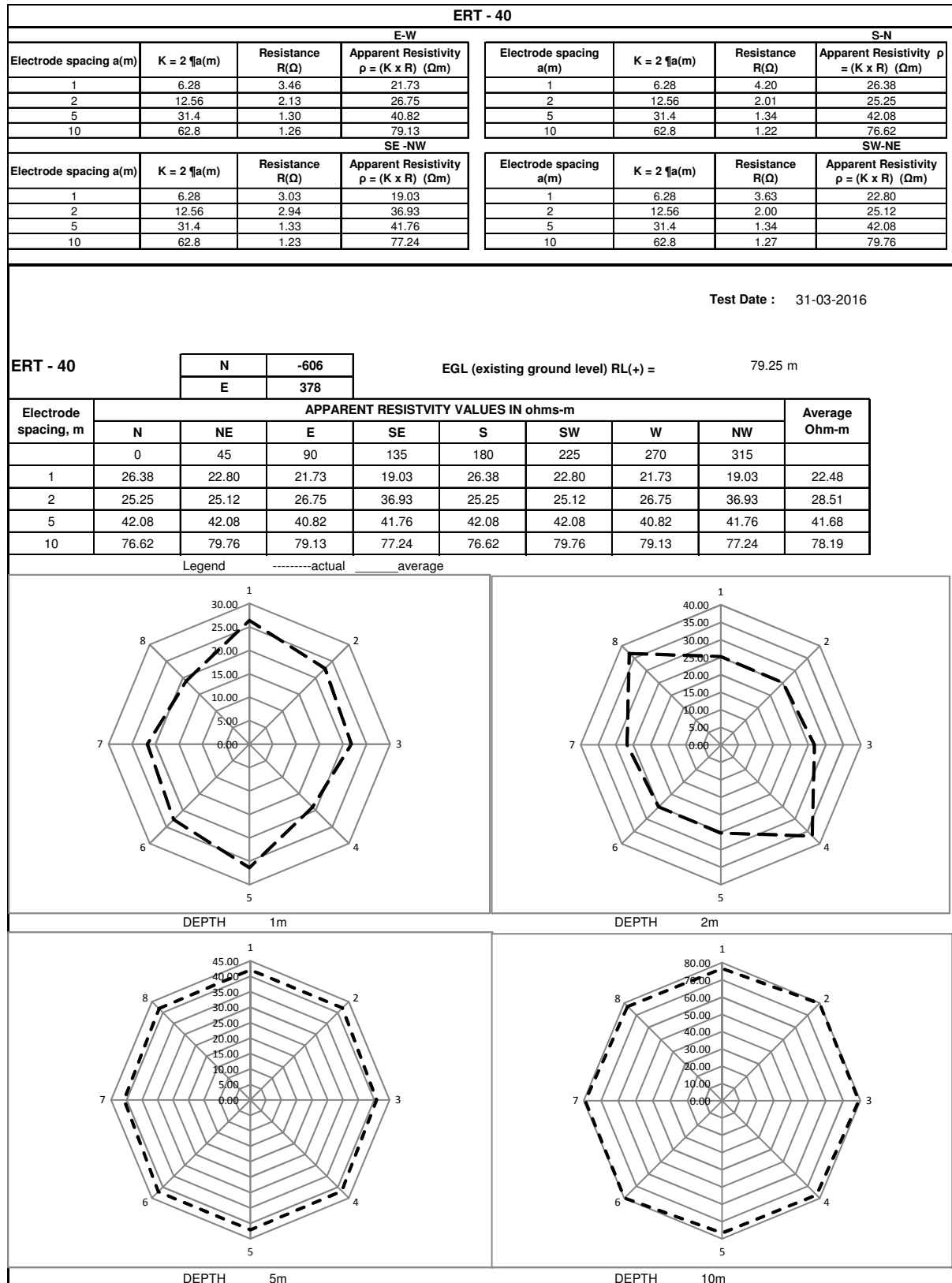
89.29 m

Electrode spacing, m	APPARENT RESISTIVITY VALUES IN ohms-m								Average Ohm-m
	N	NE	E	SE	S	SW	W	NW	
	0	45	90	135	180	225	270	315	
1	87.29	80.38	119.32	94.83	87.29	80.38	119.32	94.83	95.46
2	120.58	153.23	184.63	111.78	120.58	153.23	184.63	111.78	142.56
5	103.62	103.62	157.00	77.24	103.62	103.62	157.00	77.24	110.37
10	52.75	74.73	111.16	58.40	52.75	74.73	111.16	58.40	74.26











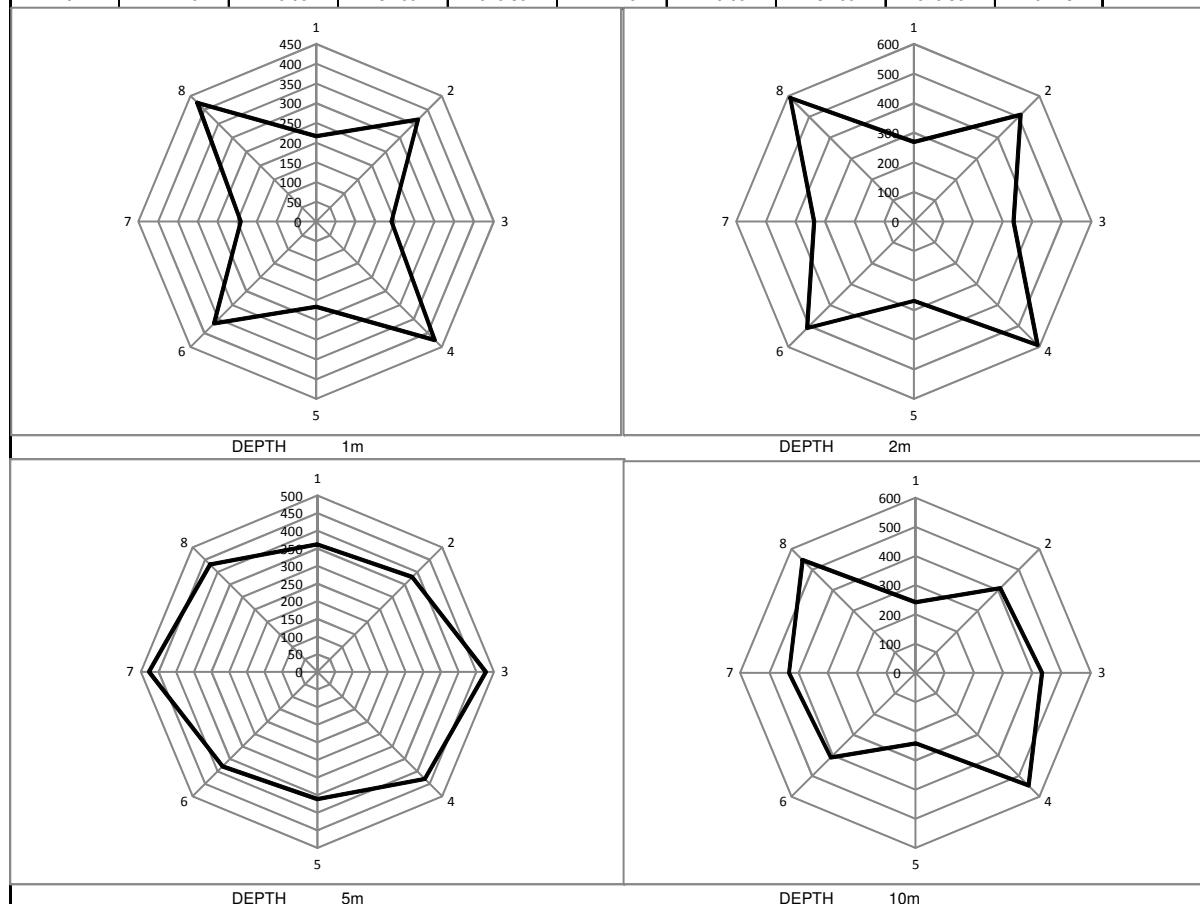
ERT -41							
E-W				S-N			
Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$	Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$
1	6.28	30.40	190.91	1	6.28	34.40	216.03
2	12.56	26.80	336.61	2	12.56	21.40	268.78
5	31.4	15.20	477.28	5	31.4	11.50	361.10
10	62.8	6.89	432.69	10	62.8	3.85	241.78
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$	Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R) (\Omega m)$
1	6.28	67.70	425.16	1	6.28	58.20	365.50
2	12.56	47.00	590.32	2	12.56	40.60	509.94
5	31.4	13.70	430.18	5	31.4	12.10	379.94
10	62.8	8.70	546.36	10	62.8	6.53	410.08

Test Date : 14-05-2016

ERT -41	N	-642
	E	528

EGL (existing ground level) RL(+) = 80.93 m

Electrode spacing, m	APPARENT RESISTIVITY VALUES IN ohms-m								Average Ohm-m
	N	NE	E	SE	S	SW	W	NW	
	0	45	90	135	180	225	270	315	
1	216.03	365.50	190.91	425.16	216.03	365.50	190.91	425.16	299.40
2	268.78	509.94	336.61	590.32	268.78	509.94	336.61	590.32	426.41
5	361.10	379.94	477.28	430.18	361.10	379.94	477.28	430.18	412.13
10	241.78	410.08	432.69	546.36	241.78	410.08	432.69	546.36	407.73





ERT - 42							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	60.00	376.80	1	6.28	59.40	373.03
2	12.56	54.80	688.29	2	12.56	51.50	646.84
5	31.4	21.40	671.96	5	31.4	19.70	618.58
10	62.8	7.70	483.56	10	62.8	7.51	471.63
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\frac{1}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	53.50	335.98	1	6.28	52.80	331.58
2	12.56	42.20	530.03	2	12.56	43.60	547.62
5	31.4	17.40	546.36	5	31.4	18.10	568.34
10	62.8	7.00	439.60	10	62.8	7.20	452.16

Test Date : 16-05-2016

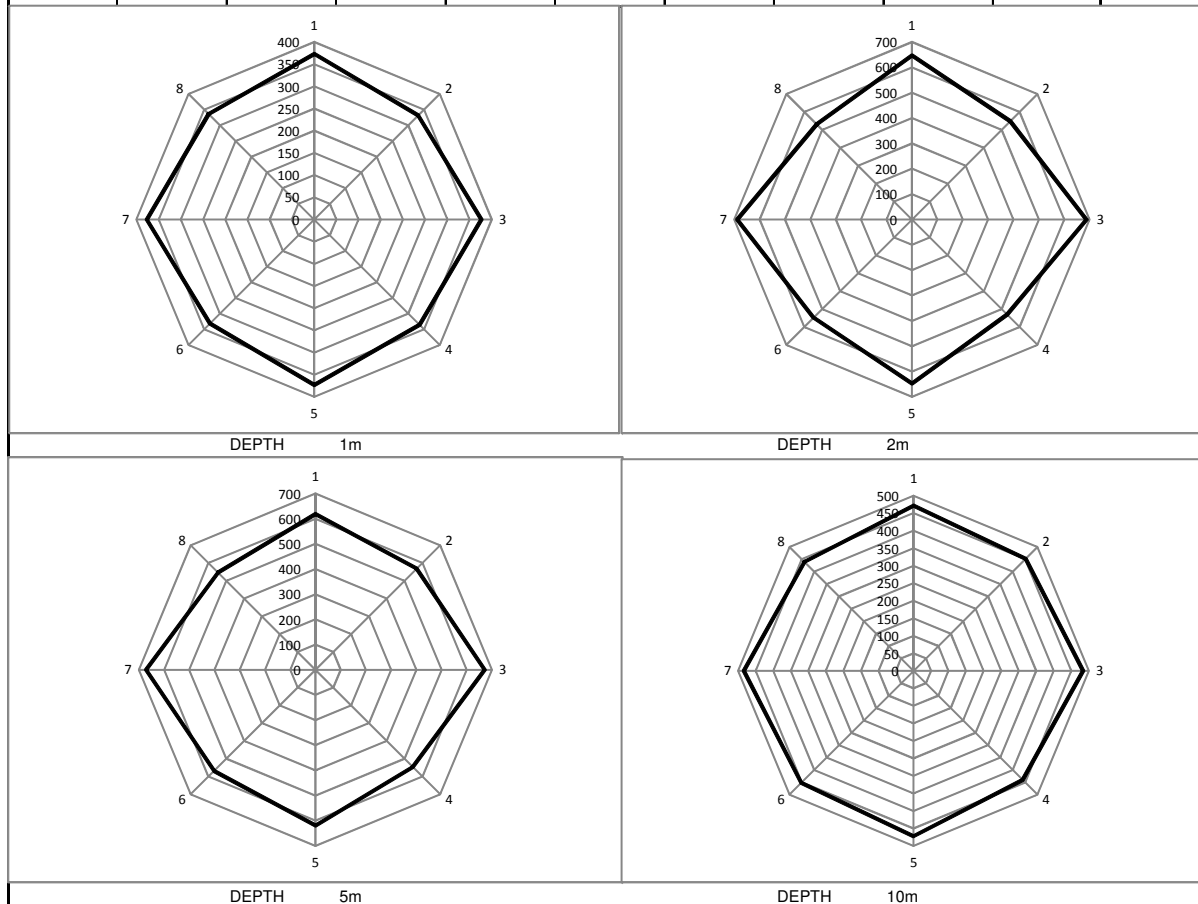
ERT - 42

N	-590
E	13

EGL (existing ground level) RL(+) =

76.07 m

Electrode spacing, m	APPARENT RESISTIVITY VALUES IN ohms-m								Average Ohm-m
	N	NE	E	SE	S	SW	W	NW	
	0	45	90	135	180	225	270	315	
1	373.03	331.58	376.80	335.98	373.03	331.58	376.80	335.98	354.35
2	646.84	547.62	688.29	530.03	646.84	547.62	688.29	530.03	603.19
5	618.58	568.34	671.96	546.36	618.58	568.34	671.96	546.36	601.31
10	471.63	452.16	483.56	439.60	471.63	452.16	483.56	439.60	461.74





ERT -43							
E-W				S-N			
Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	1.31	8.23	1	6.28	1.00	6.28
2	12.56	0.33	4.14	2	12.56	0.41	5.15
5	31.4	0.27	8.48	5	31.4	0.29	9.11
10	62.8	0.21	13.19	10	62.8	0.17	10.68
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 π a(m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	1.11	6.97	1	6.28	0.40	2.51
2	12.56	0.31	3.89	2	12.56	1.00	12.56
5	31.4	0.29	9.11	5	31.4	0.27	8.48
10	62.8	0.22	13.82	10	62.8	0.25	15.70

Test Date : 07-04-2016

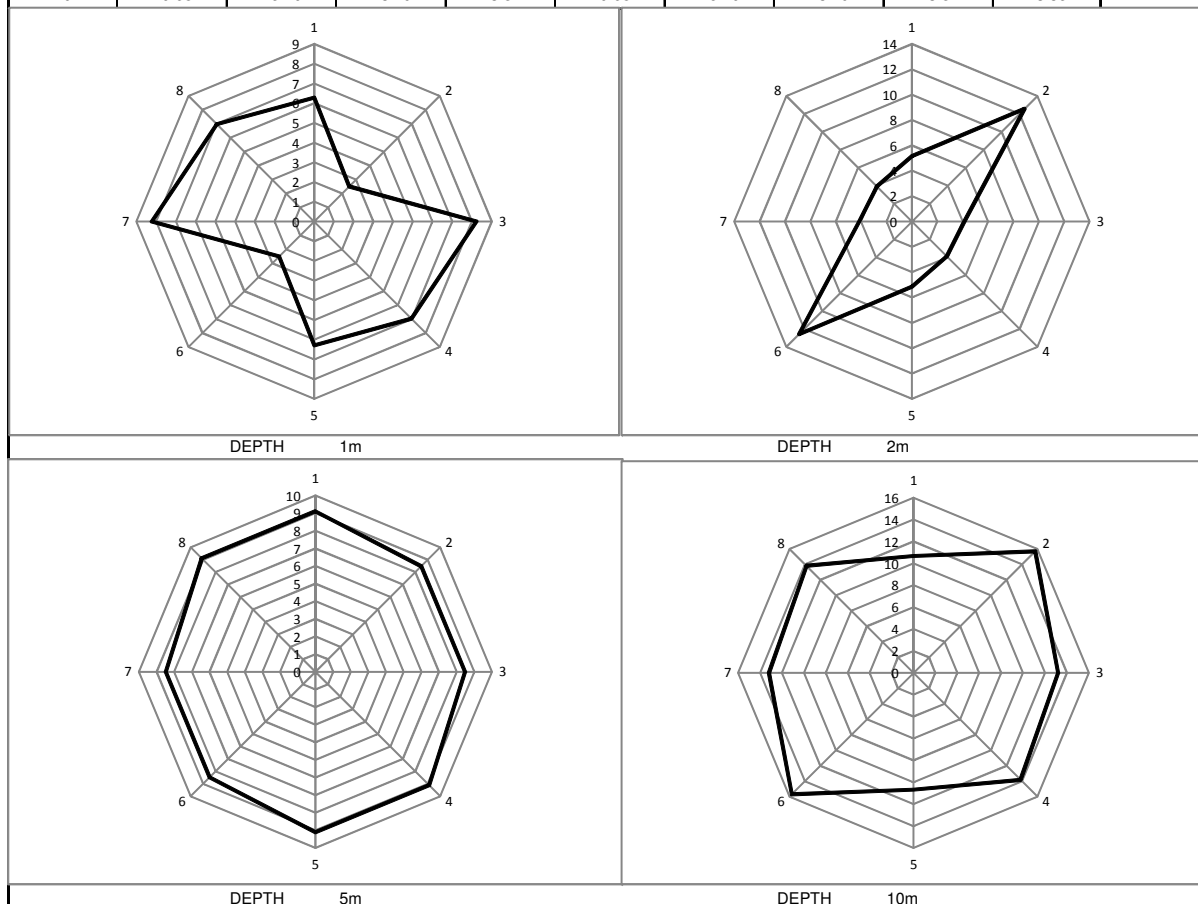
ERT -43

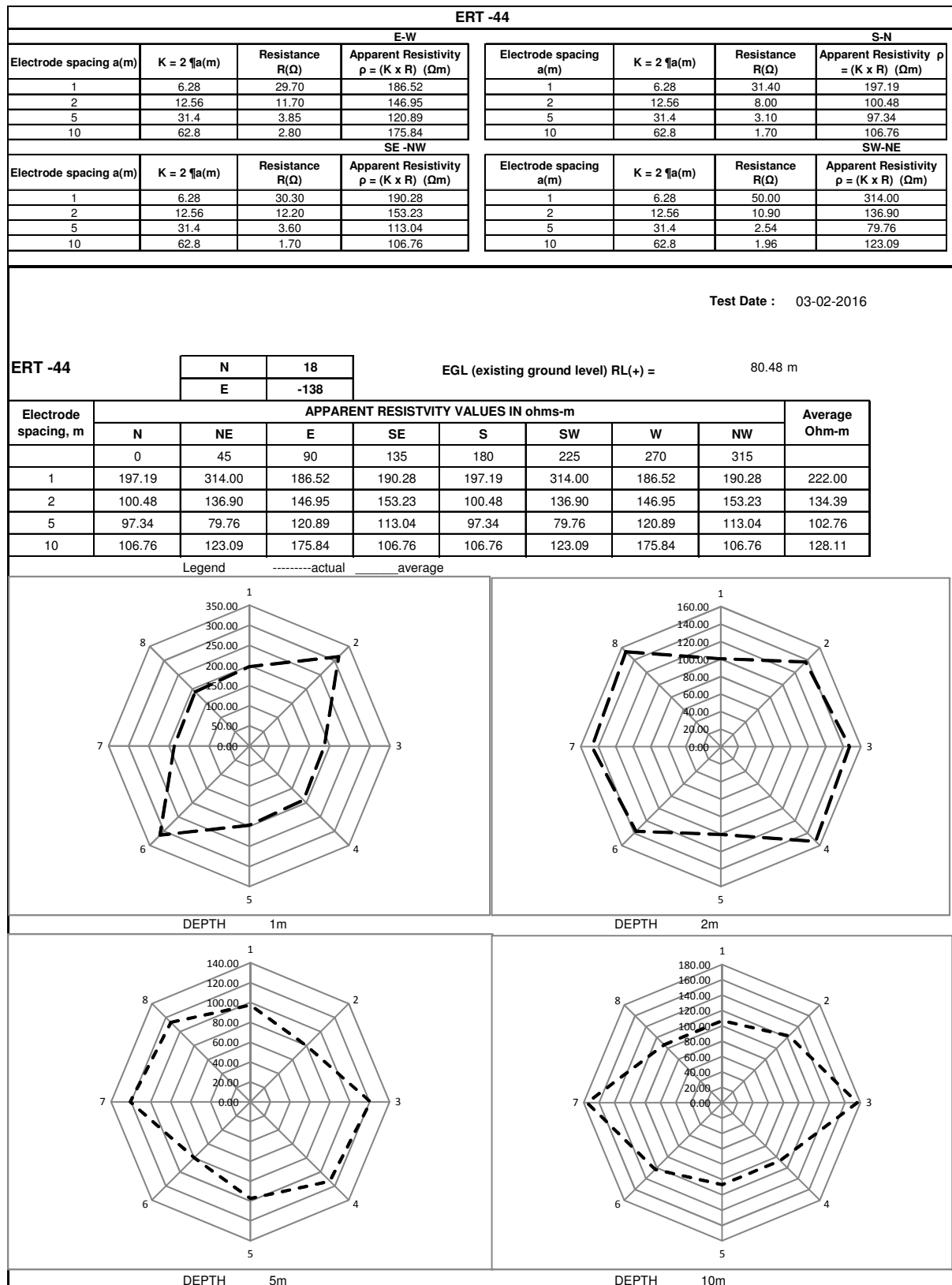
N	-673
E	21

EGL (existing ground level) RL(+) =

73.36 m

Electrode spacing, m	APPARENT RESISTIVITY VALUES IN ohms-m								Average Ohm-m
	N	NE	E	SE	S	SW	W	NW	
	0	45	90	135	180	225	270	315	
1	6.28	2.51	8.23	6.97	6.28	2.51	8.23	6.97	6.00
2	5.15	12.56	4.14	3.89	5.15	12.56	4.14	3.89	6.44
5	9.11	8.48	8.48	9.11	9.11	8.48	8.48	9.11	8.79
10	10.68	15.70	13.19	13.82	10.68	15.70	13.19	13.82	13.35







ERT -45							
E-W				S-N			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	16.10	101.11	1	6.28	18.00	113.04
2	12.56	7.75	97.34	2	12.56	6.33	79.50
5	31.4	3.30	103.62	5	31.4	3.13	98.28
10	62.8	1.75	109.90	10	62.8	1.81	113.67
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	11.10	69.71	1	6.28	12.40	77.87
2	12.56	7.77	97.59	2	12.56	7.71	96.84
5	31.4	3.45	108.33	5	31.4	3.52	110.53
10	62.8	1.77	111.16	10	62.8	1.76	110.53

Test Date : 06-04-2016

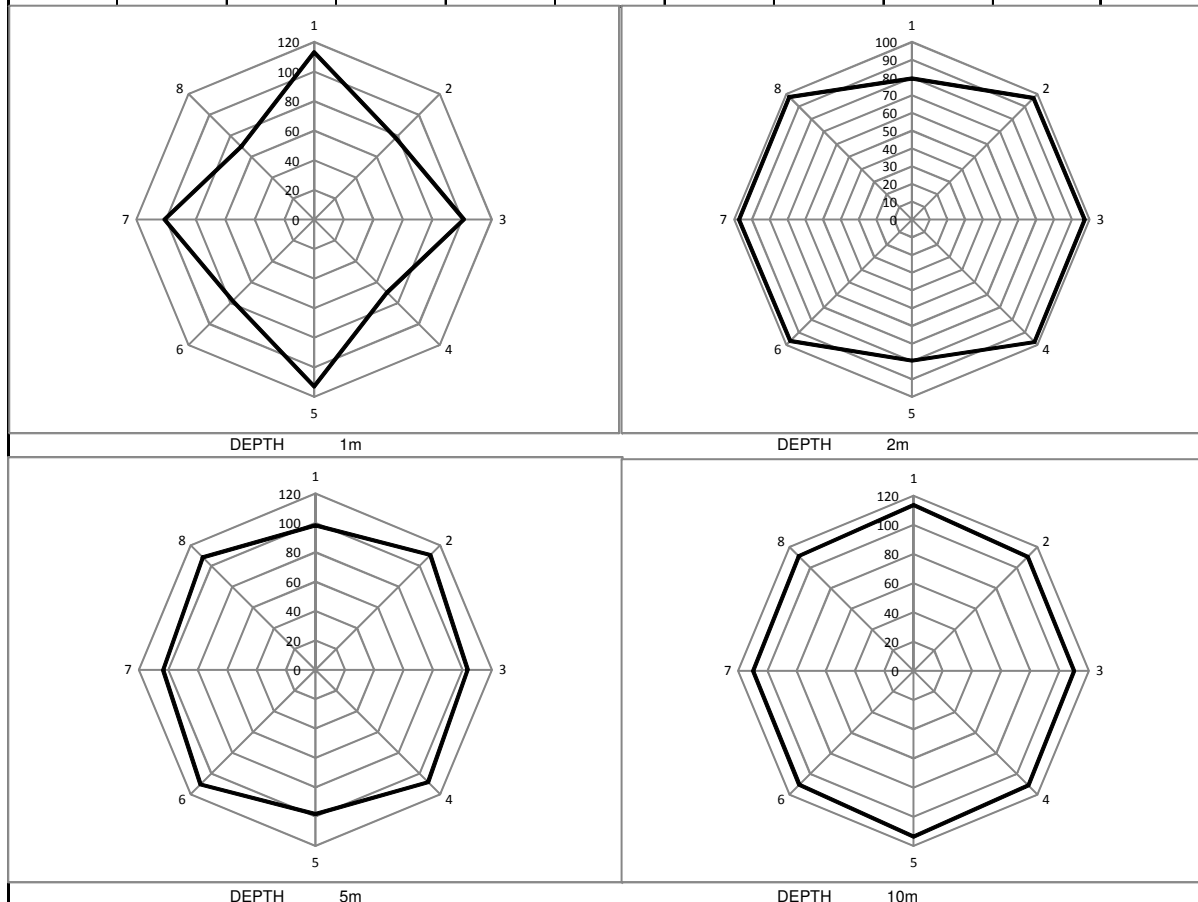
ERT -45

N	37
E	213

EGL (existing ground level) RL(+) =

82.17 m

Electrode spacing, m	APPARENT RESISTIVITY VALUES IN ohms-m								Average Ohm-m
	N	NE	E	SE	S	SW	W	NW	
	0	45	90	135	180	225	270	315	
1	113.04	77.87	101.11	69.71	113.04	77.87	101.11	69.71	90.43
2	79.50	96.84	97.34	97.59	79.50	96.84	97.34	97.59	92.82
5	98.28	110.53	103.62	108.33	98.28	110.53	103.62	108.33	105.19
10	113.67	110.53	109.90	111.16	113.67	110.53	109.90	111.16	111.31





ERT -46							
E-W				S-N			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	11.20	70.34	1	6.28	11.60	72.85
2	12.56	8.11	101.86	2	12.56	8.91	111.91
5	31.4	5.65	177.41	5	31.4	4.92	154.49
10	62.8	3.11	195.31	10	62.8	2.88	180.86
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)	Electrode spacing a(m)	K = 2 √a(m)	Resistance R(Ω)	Apparent Resistivity ρ = (K x R) (Ωm)
1	6.28	13.80	86.66	1	6.28	13.20	82.90
2	12.56	8.15	102.36	2	12.56	8.22	103.24
5	31.4	4.54	142.56	5	31.4	4.78	150.09
10	62.8	2.18	136.90	10	62.8	2.06	129.37

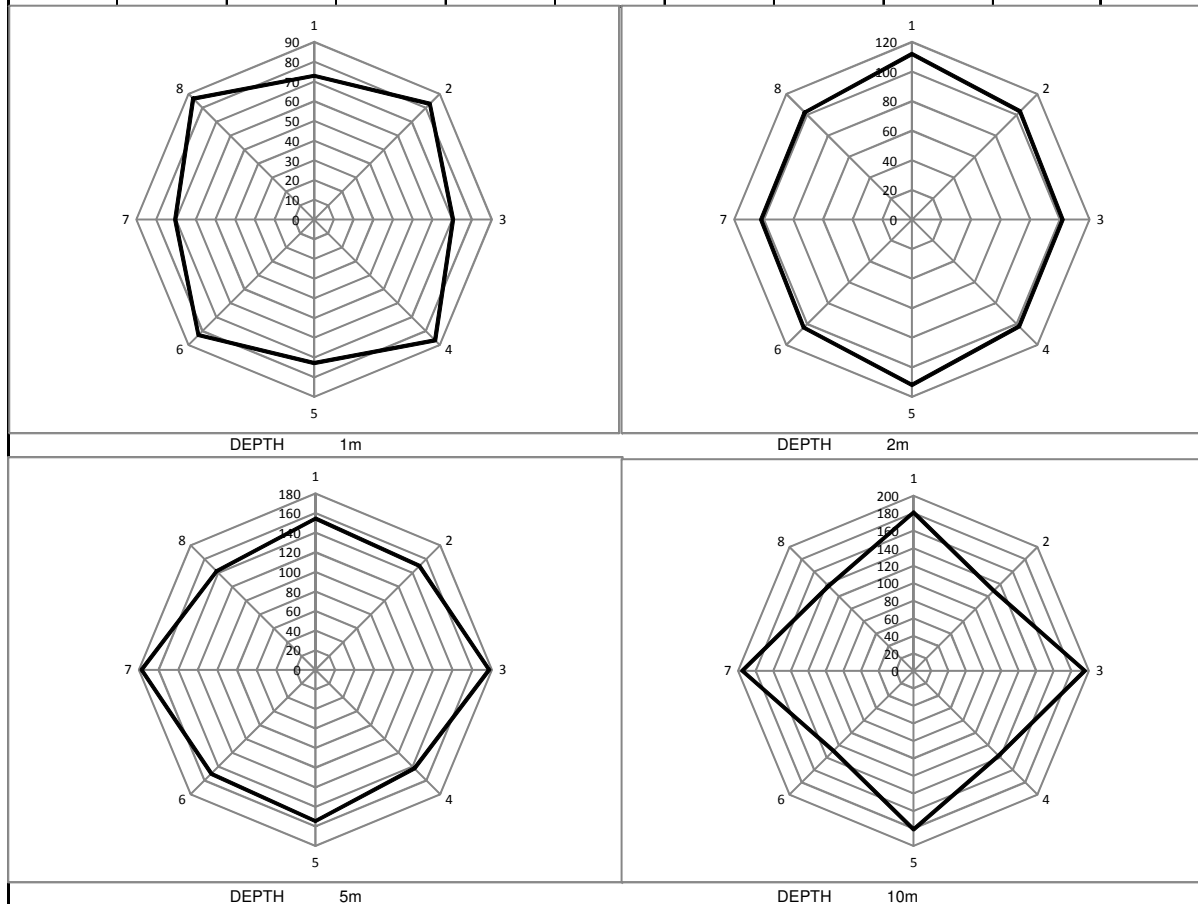
Test Date : 07-04-2016

ERT -46

N	-24
E	299

EGL (existing ground level) RL(+) = 80.48 m

Electrode spacing, m	APPARENT RESISTIVITY VALUES IN ohms-m								Average Ohm-m
	N	NE	E	SE	S	SW	W	NW	
	0	45	90	135	180	225	270	315	
1	72.85	82.90	70.34	86.66	72.85	82.90	70.34	86.66	78.19
2	111.91	103.24	101.86	102.36	111.91	103.24	101.86	102.36	104.84
5	154.49	150.09	177.41	142.56	154.49	150.09	177.41	142.56	156.14
10	180.86	129.37	195.31	136.90	180.86	129.37	195.31	136.90	160.61





ERT - 47							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\frac{a}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\frac{a}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	120.00	753.60	1	6.28	126.00	791.28
2	12.56	76.10	955.82	2	12.56	85.00	1067.60
5	31.4	54.70	1717.58	5	31.4	57.50	1805.50
10	62.8	32.30	2028.44	10	62.8	25.40	1595.12
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\frac{a}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\frac{a}{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	74.70	469.12	1	6.28	149.00	935.72
2	12.56	70.10	880.46	2	12.56	73.60	924.42
5	31.4	58.00	1821.20	5	31.4	55.90	1755.26
10	62.8	28.60	1796.08	10	62.8	31.80	1997.04

Test Date : 12-05-2016

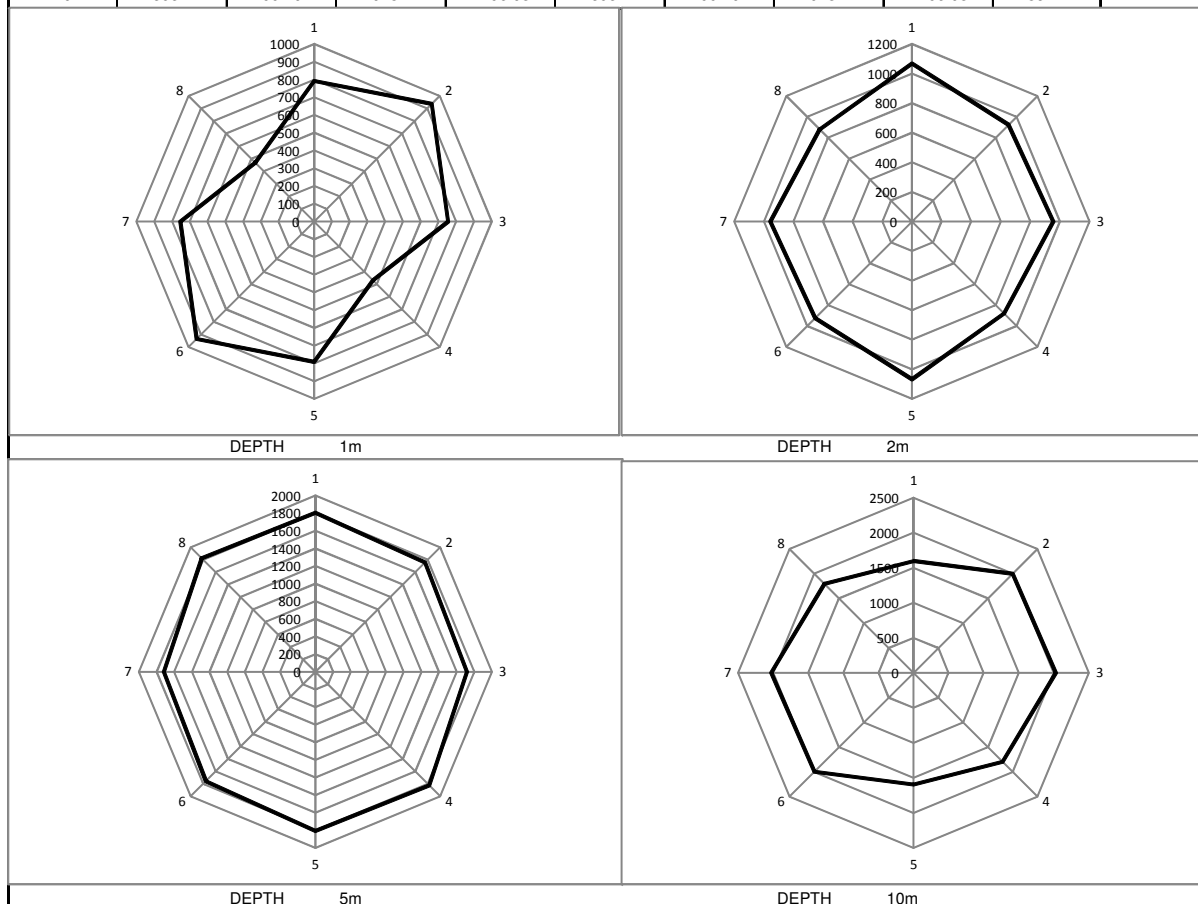
ERT - 47

N	-478
E	1232

EGL (existing ground level) RL(+) =

85.12 m

Electrode spacing, m	APPARENT RESISTIVITY VALUES IN ohms-m								Average Ohm-m
	N	NE	E	SE	S	SW	W	NW	
	0	45	90	135	180	225	270	315	
1	791.28	935.72	753.60	469.12	791.28	935.72	753.60	469.12	737.43
2	1067.60	924.42	955.82	880.46	1067.60	924.42	955.82	880.46	957.07
5	1805.50	1755.26	1717.58	1821.20	1805.50	1755.26	1717.58	1821.20	1774.89
10	1595.12	1997.04	2028.44	1796.08	1595.12	1997.04	2028.44	1796.08	1854.17





ERT -48							
E-W				S-N			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	33.00	207.24	1	6.28	33.50	210.38
2	12.56	13.70	172.07	2	12.56	14.60	183.38
5	31.4	3.30	103.62	5	31.4	3.68	115.55
10	62.8	2.08	130.62	10	62.8	1.99	124.97
SE-NW				SW-NE			
Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)	Electrode spacing a(m)	K = 2 $\sqrt{a}$ (m)	Resistance R(Ω)	Apparent Resistivity $\rho = (K \times R)$ (Ω m)
1	6.28	44.80	281.34	1	6.28	33.30	209.12
2	12.56	15.90	199.70	2	12.56	16.00	200.96
5	31.4	4.30	135.02	5	31.4	4.40	138.16
10	62.8	2.25	141.30	10	62.8	2.48	155.74

Test Date : 28-04-2016

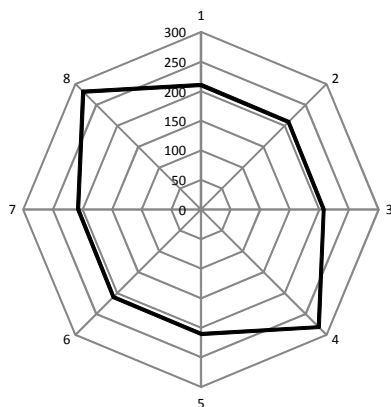
ERT -48

N	367
E	473

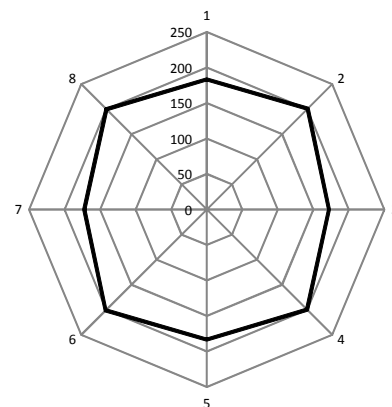
EGL (existing ground level) RL(+) =

86.33 m

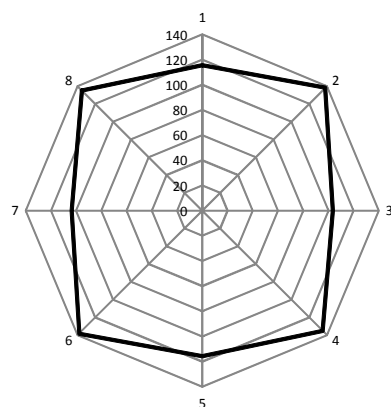
Electrode spacing, m	APPARENT RESISTIVITY VALUES IN ohms-m								Average Ohm-m
	N	NE	E	SE	S	SW	W	NW	
0	0	45	90	135	180	225	270	315	
1	210.38	209.12	207.24	281.34	210.38	209.12	207.24	281.34	227.02
2	183.38	200.96	172.07	199.70	183.38	200.96	172.07	199.70	189.03
5	115.55	138.16	103.62	135.02	115.55	138.16	103.62	135.02	123.09
10	124.97	155.74	130.62	141.30	124.97	155.74	130.62	141.30	138.16



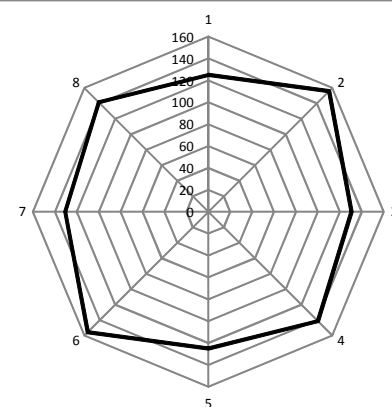
DEPTH 1m



DEPTH 2m



DEPTH 5m



DEPTH 10m



Apparent Resistivity by Electrical Resistivity Test (ERT)								
Sr no	Structure name	Test no	Northing	Easting	Average Ohm-m for electrode spacing in m			
					1	2	5	10
1	Fire station building, Workshop, Admin bldg, AAQMS, Canteen, Permanent Store, Gate Complex	ERT 1	-965	1040	1932.67	2496.30	5071.10	7347.60
2	ETP & STP, H2 GEN & SHED	ERT 2	-628	-307	310.39	480.73	507.11	260.62
3	ETP & STP, H2 GEN & SHED	ERT 3	-534	-692	1185.35	2182.30	949.85	910.60
4	Transformer yard and DG building	ERT 4	-410	-126	327.19	514.02	323.42	281.03
5	Transformer yard and DG building	ERT 5	-357	-80	78.19	142.56	241.78	199.39
6	Transformer yard and DG building	ERT 6	-374	-11	110.06	142.24	177.41	193.58
7	Transformer yard and DG building	ERT 7	-338	79	44.31	79.50	145.85	227.18
8	Transformer yard and DG building	ERT 8	-400	182	53.33	53.19	60.52	94.04
9	Transformer yard and DG building	ERT 9	-386	396	86.77	87.26	93.10	178.35
10	Transformer yard and DG building	ERT 10	-324	463	140.67	143.84	119.79	106.27
11	Transformer yard and DG building	ERT 11	-359	501	135.90	201.34	245.00	158.88
12	Transformer yard and DG building	ERT 12	354	689	65.63	87.29	104.41	112.41
13	CW PH and forebay, CW channel, chlorination and CW treatment plant, side stream filtration (unit 3,4,5)	ERT 13	-480	771	422.64	812.95	730.84	357.33
14	Clarified water tank, fire water tank, clarified cum fire water PH, PT plant	ERT 14	-927	1496	107.70	286.05	615.44	1193.20
15	CW PH and forebay, CW channel, chlorination and CW treatment plant, side stream filtration (unit 1,2)	ERT 15	-341	-226	79.91	90.12	152.29	229.22
16	PH including TG, service building and compressor house	ERT 16	-290	-97	525.95	342.42	150.25	204.26
17	PH including TG, service building and compressor house	ERT 17	-283	54	116.81	94.83	175.06	284.17
18	PH including TG, service building and compressor house	ERT 18	-289	283	88.39	72.88	74.26	106.92
19	PH including TG, service building and compressor house	ERT 19	-296	355	87.68	71.61	62.66	85.19
20	PH including TG, service building and compressor house	ERT 20	-281	488	89.49	95.33	107.62	756.74
21	PH including TG, service building and compressor house	ERT 21	-265	636	306.78	266.59	270.83	359.53
22	CW PH and forebay, CW channel, chlorination and CW treatment plant, side stream filtration (unit 1,2)	ERT 22	-181	-233	37.71	53.57	88.94	170.97
23	Boiler, Aux boiler, CST tank and pump house	ERT 23	-238	-70	28.26	40.19	82.43	120.89
24	Boiler, Aux boiler, CST tank and pump house	ERT 24	-218	70	106.76	106.13	106.76	117.75



Apparent Resistivity by Electrical Resistivity Test (ERT)								
Sr no	Structure name	Test no	Northing	Easting	Average Ohm-m for electrode spacing in m			
					1	2	5	10
25	Boiler, Aux boiler, CST tank and pump house	ERT 25	-205	361	62.50	62.20	61.62	83.68
26	Boiler, Aux boiler, CST tank and pump house	ERT 26	-180	501	284.80	279.84	158.49	176.78
27	Boiler, Aux boiler, CST tank and pump house	ERT 27	-151	644	108.96	74.42	467.86	345.40
28	Clarified water tank, fire water tank, clarified cum fire water PH, PT plant	ERT 28	-621	1299	885.48	1510.34	1983.70	2855.83
29	ESP and ESP control room	ERT 29	-125	-143	6.78	13.94	34.78	65.31
30	ESP and ESP control room	ERT 30	-114	140	38.20	50.40	94.44	127.33
31	ESP and ESP control room	ERT 31	-101	285	61.65	87.83	110.94	184.63
32	ESP and ESP control room	ERT 32	-78	568	83.37	113.79	134.39	119.95
33	ESP and ESP control room	ERT 33	-93	711	73.79	111.78	103.78	91.06
34	Chimney and ID fan area	ERT 34	-13	0	2.84	186.20	202.53	241.62
35	Chimney and ID fan area	ERT 35	13	431	38.15	39.97	39.88	57.93
36	Fuel Oil Complex, DM Plant & CPU Regen, Chem Lab	ERT 36	226	532	26.36	26.50	37.76	71.28
37	Fuel Oil Unloading, AAQMS	ERT 37	922	261	95.46	142.56	110.37	74.26
38	Switchyard and Control room	ERT 38	-492	319	108.80	93.57	86.35	136.59
39	Switchyard and Control room	ERT 39	-542	544	63.55	40.41	127.72	168.82
40	Switchyard and Control room	ERT 40	-606	378	22.48	28.51	41.68	78.19
41	Switchyard and Control room	ERT 41	-642	528	299.40	426.41	412.13	407.73
42	Switchyard and Control room	ERT 42	-590	13	354.35	603.19	601.31	461.74
43	Switchyard and Control room	ERT 43	-673	21	6.00	6.44	8.79	13.35
44	Chimney and ID fan area	ERT 44	18	-138	222.00	134.39	102.76	128.11
45	Chimney and ID fan area	ERT 45	37	213	90.43	92.82	105.19	111.31
46	Chimney and ID fan area	ERT 46	-24	299	78.19	104.84	156.14	160.61
47	Clarified water tank, fire water tank, clarified cum fire water PH, PT plant	ERT 47	-478	1232	737.43	957.07	1774.89	1854.17
48	Fuel Oil Complex, DM Plant & CPU Regen, Chem Lab	ERT 48	367	473	227.02	189.03	123.09	138.16



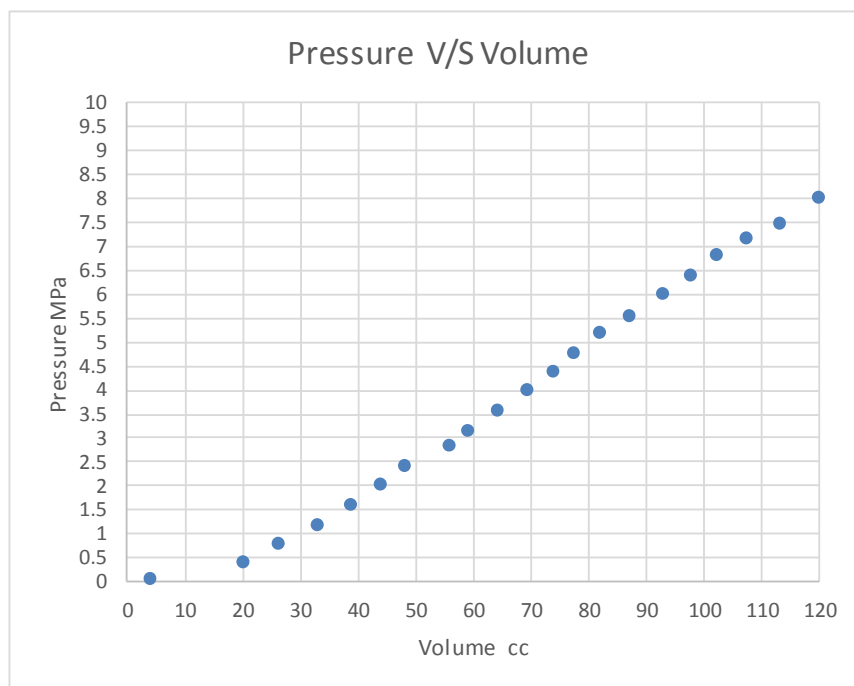
PRESSUREMETER TEST

Test no	PMT 1
Northing	-382
Easting	-485
Ground level (G.L.) in terms of RL(+)	79.95

Probex Companion Dataset information

Borehole Name:	PMT/1-8
Date: --:--	5/20/2016
Probe:	PROBEX
Depth:	3.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.104692 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
4.12	0.08
20.22	0.42
26.18	0.82
33.00	1.22
38.95	1.63
43.88	2.06
48.18	2.42
55.79	2.87
59.08	3.19
64.18	3.61
69.41	4.02
73.98	4.41
77.55	4.8
82.01	5.22
87.10	5.58
92.81	6.02
97.63	6.41
102.11	6.83
107.18	7.18
113.09	7.51
119.75	8.03



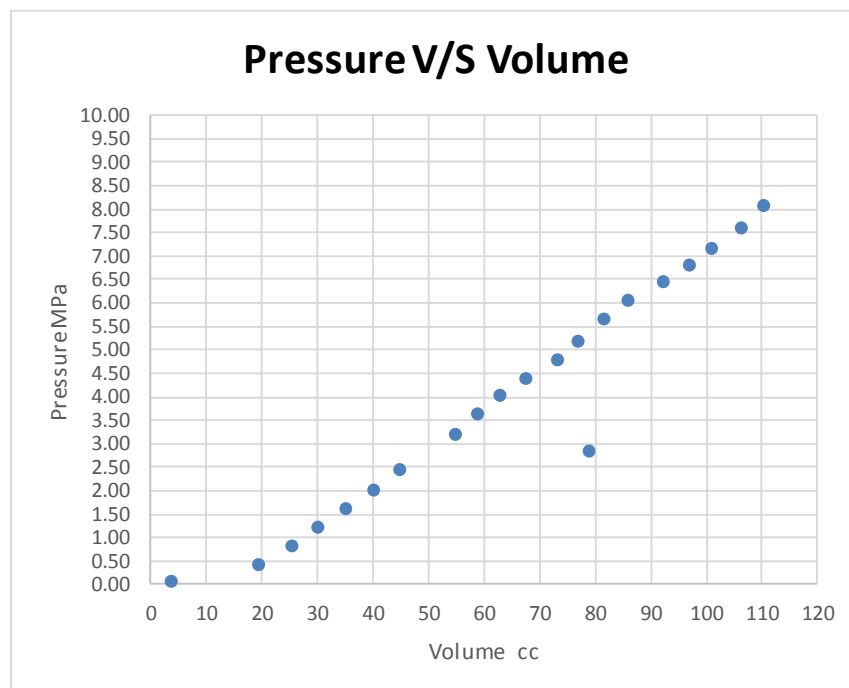
$$E = 460.6789 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/1-7
Date: --:-- 5/20/2016
Probe: PROBEX
Depth: 5.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.104692 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
3.45	0.06
19.15	0.40
25.18	0.81
30.12	1.21
35.02	1.59
40.01	2.01
44.75	2.42
78.94	2.82
54.62	3.20
58.79	3.61
62.82	4.04
67.34	4.39
72.95	4.78
76.69	5.17
81.50	5.64
85.78	6.03
92.23	6.44
96.82	6.79
100.98	7.17
106.21	7.60
110.03	8.08



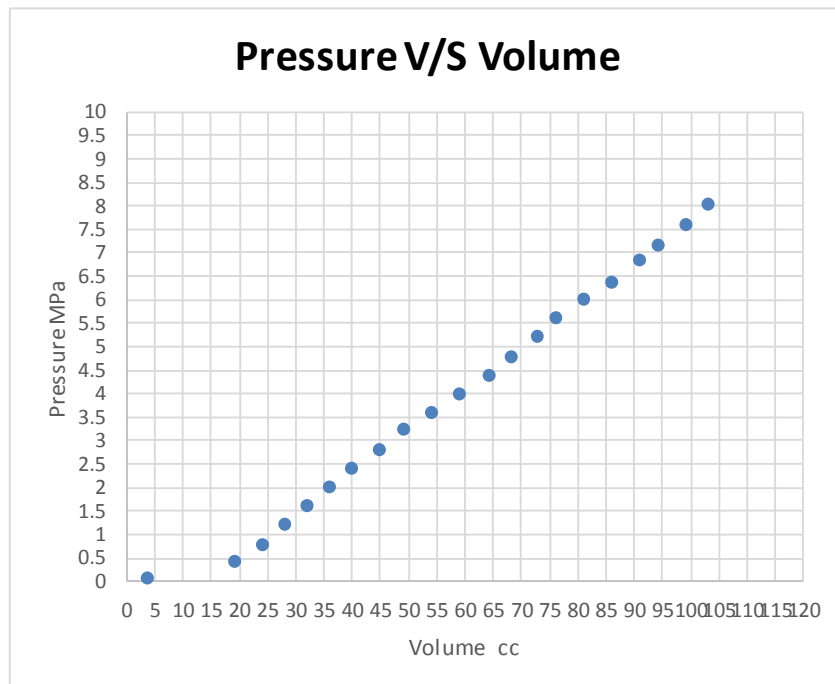
$E = 666.1609 \text{ MPa}$



Probex Companion Dataset information

Borehole Name: PMT/1-6
Date: --:-- 5/20/2016
Probe: PROBEX
Depth: 7.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.104692 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
3.72	0.08
19.1	0.43
24.11	0.81
28.15	1.23
32.02	1.62
35.95	2.02
39.95	2.42
44.75	2.8
49.08	3.24
54.18	3.62
58.99	4.01
64.17	4.42
68.11	4.81
72.72	5.25
76.15	5.62
80.95	6.03
86.09	6.4
91.02	6.85
94.22	7.19
99.02	7.6
103.11	8.04



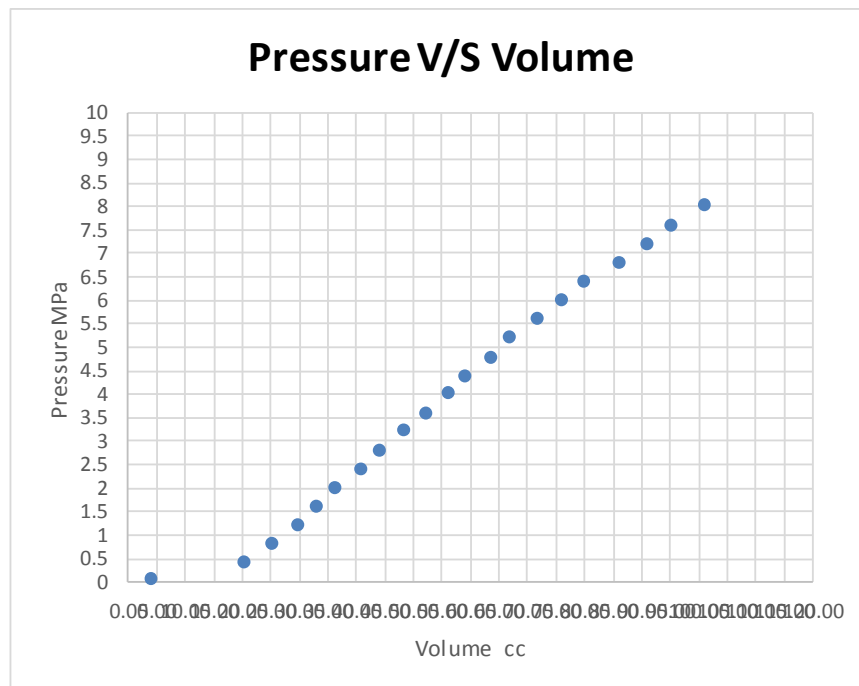
$$E = 546.5975 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/1-5
Date: --:-- 5/20/2016
Probe: PROBEX
Depth: 9.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.104692 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
4.10	0.09
20.42	0.43
25.10	0.83
29.75	1.23
33.08	1.64
36.19	2.02
40.90	2.42
44.15	2.81
48.29	3.25
52.19	3.6
56.33	4.05
59.12	4.4
63.72	4.81
66.98	5.23
71.91	5.63
76.01	6.04
79.99	6.41
86.01	6.83
91.10	7.22
95.18	7.6
101.08	8.04



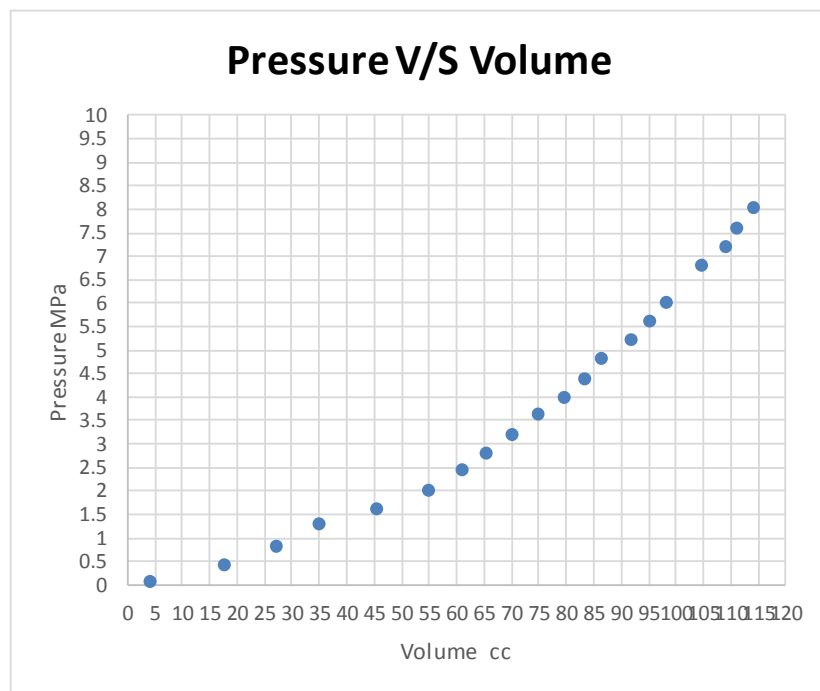
$$E = 454.3636 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name:	PMT/1-.4
Date: --:--	5/20/2016
Probe:	PROBEX
Depth:	12.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.104692 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
4.12	0.09
17.72	0.41
27.12	0.82
35.1	1.28
45.26	1.6
54.99	2.01
61.1	2.44
65.5	2.8
70.12	3.2
74.98	3.62
79.75	4
83.19	4.4
86.25	4.81
91.93	5.21
95.15	5.62
98.28	6.01
121.76	6.43
104.52	6.81
108.88	7.22
111.09	7.61
114.27	8.02



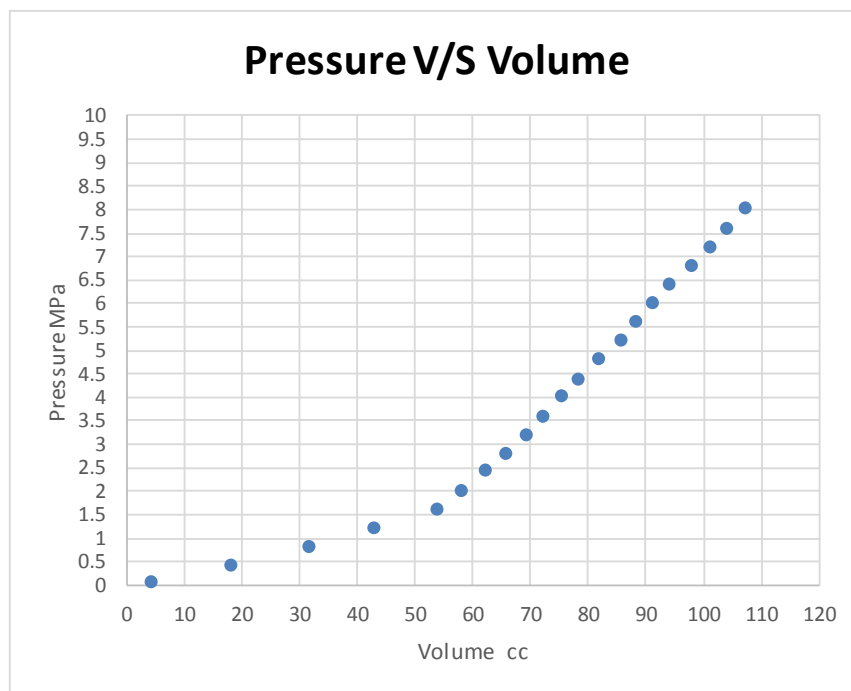
$$E = 1021.277 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/1-3
Date: --:-- 5/20/2016
Probe: PROBEX
Depth: 15.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.104692 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
4.19	0.07
18.1	0.43
31.72	0.82
43.02	1.22
53.73	1.62
58.01	2.02
62.11	2.44
65.79	2.8
69.22	3.22
72.15	3.6
75.28	4.05
78.22	4.4
81.92	4.83
85.73	5.21
88.23	5.6
91.24	6.02
94.12	6.4
97.75	6.8
101.1	7.19
104.15	7.6
107.29	8.02



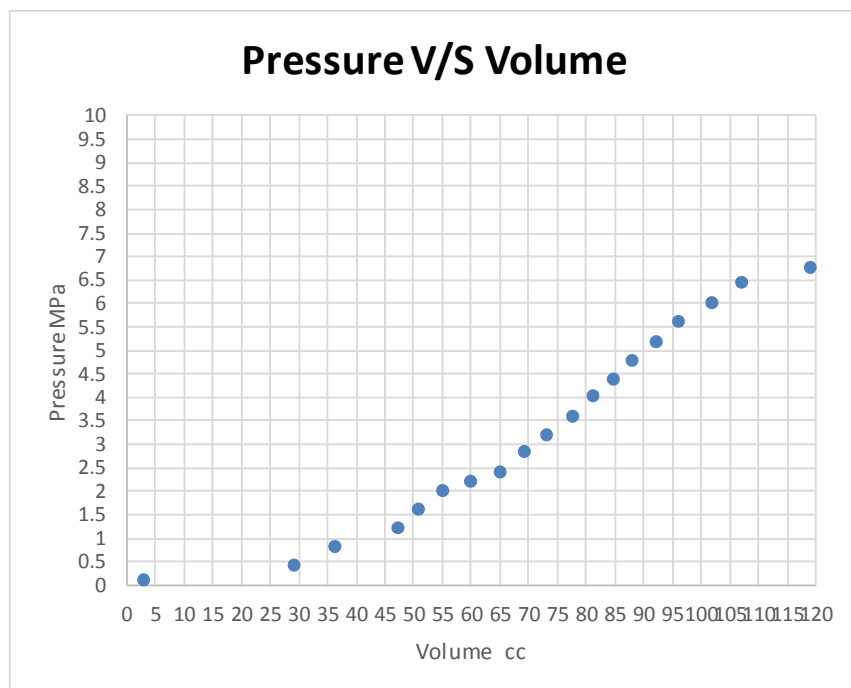
$E = 857.3873 \text{ MPa}$



Probex Companion Dataset information

Borehole Name: PMT/1-2
Date: --:-- 5/20/2016
Probe: PROBEX
Depth: 18.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.104692 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
2.98	0.1
29.15	0.44
36.12	0.81
47.18	1.22
50.98	1.62
55.18	2.02
59.78	2.22
65.01	2.42
69.15	2.83
73.23	3.2
77.66	3.6
81.08	4.03
84.76	4.4
88.09	4.79
92.11	5.2
96.17	5.63
101.77	6
106.98	6.44
119.13	6.75
121.78	7.21
122.48	7.6
123.03	8



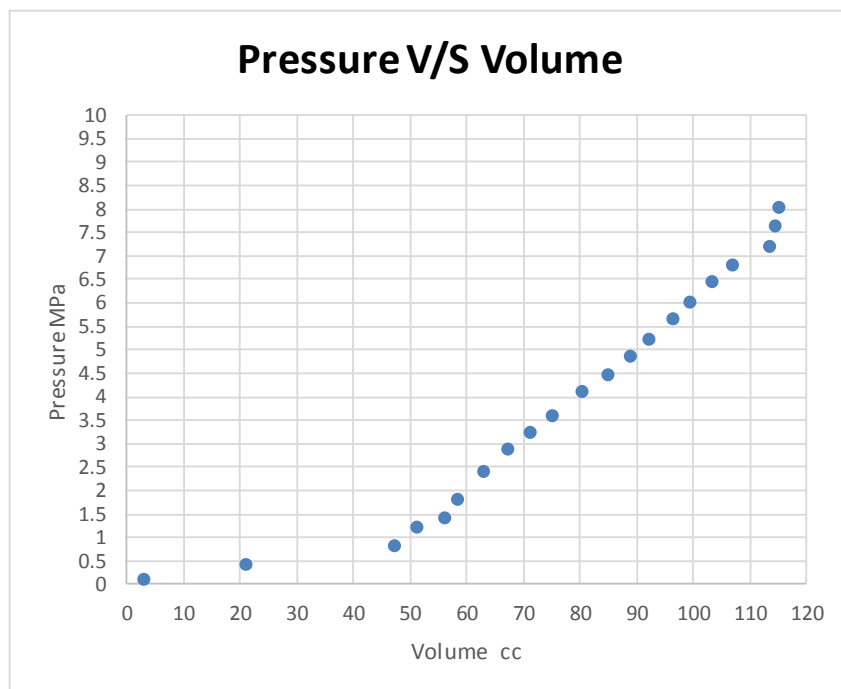
$E = 1004.93 \text{ MPa}$



Probex Companion Dataset information

Borehole Name:	PMT/1-1
Date: --:--	5/20/2016
Probe:	PROBEX
Depth:	20.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.104692 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
3.06	0.11
20.95	0.4
47.12	0.81
51.1	1.22
55.98	1.41
58.18	1.8
62.75	2.4
67.11	2.89
71.18	3.21
75.01	3.6
80.18	4.1
84.78	4.44
88.88	4.86
92.11	5.22
96.19	5.63
99.12	6
103.1	6.42
106.78	6.78
113.25	7.2
114.4	7.61
115.02	8.02



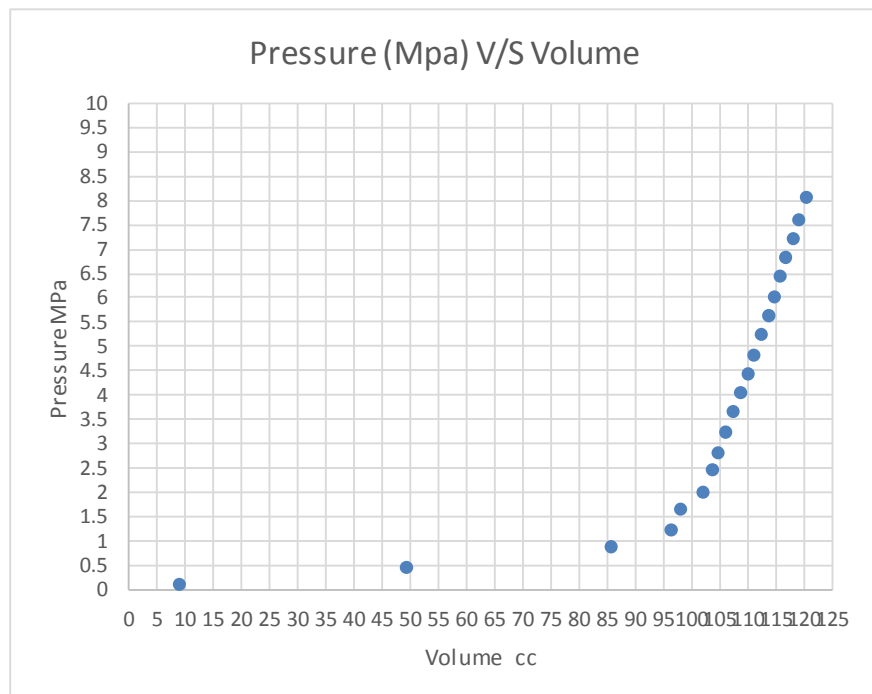
$$E = 2803.368 \text{ MPa}$$

Test no	PMT 2
Northing	-211
Easting	36
Ground level (G.L.) in terms of RL(+)	81.60

Probex Companion Dataset information

Borehole Name: PMT/2-8
 Date: --:-- 2/5/2016
 Probe: PROBEX
 Depth: 3.00 m
 Units: Metric
 Delay: 60 s
 Volume Correction: system/i(C = 1.069797 cc/Mpa)
 Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
9.19	0.12
49.26	0.44
85.61	0.89
96.28	1.21
98.11	1.65
101.94	2.01
103.62	2.45
104.91	2.82
106.02	3.24
107.54	3.65
108.78	4.05
109.99	4.43
111.12	4.82
112.57	5.23
113.71	5.62
114.84	6.03
115.92	6.45
116.87	6.84
118.01	7.22
119.07	7.62
120.31	8.06



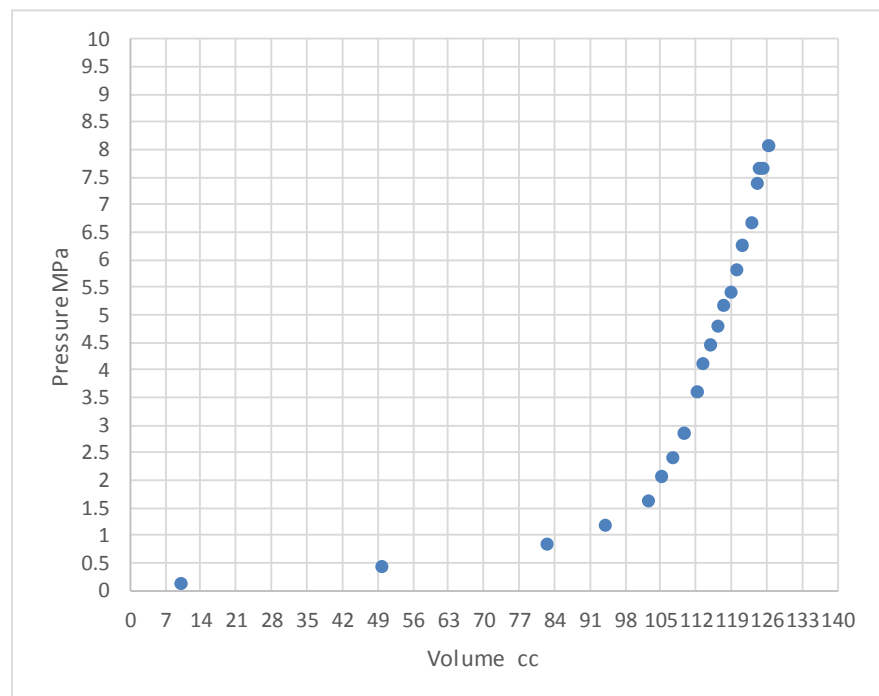
$$E = 3047.012 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/2-7
Date: --:-- 2/5/2016
Probe: PROBEX
Depth: 5.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.069797 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume	Pressure
(cc)	(Mpa)
10.27	0.12
49.88	0.42
82.43	0.85
94.04	1.2
102.59	1.62
105.23	2.06
107.38	2.42
109.57	2.85
112.17	3.62
113.21	4.13
114.86	4.46
116.31	4.8
117.61	5.18
118.89	5.41
119.96	5.82
121.12	6.25
123.01	6.67
124.27	7.38
125.37	7.66
124.61	7.66
126.22	8.05



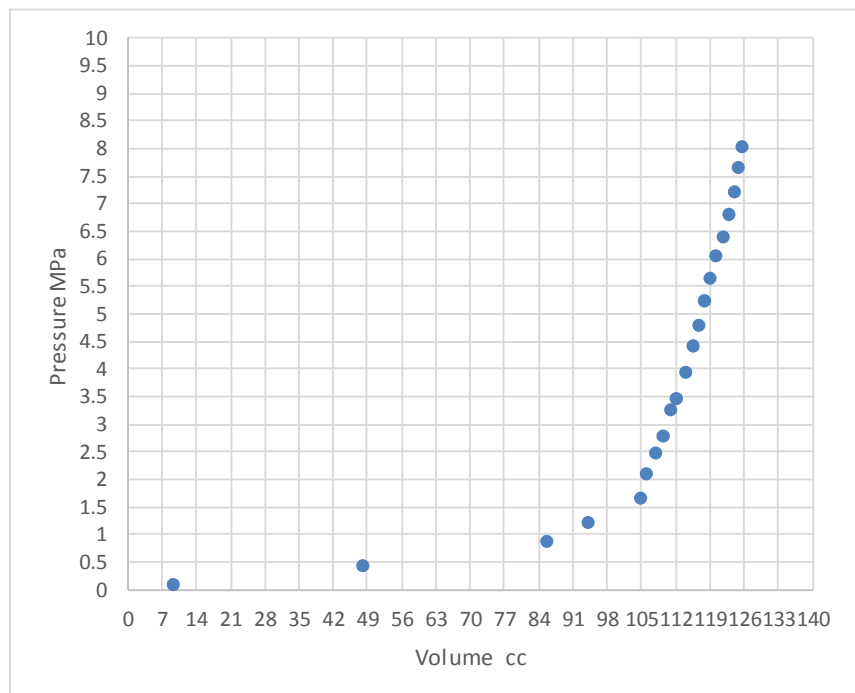
$$E = 1559.388 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/2-6
Date: --:-- 2/5/2016
Probe: PROBEX
Depth: 7.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.069797 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
9.38	0.1
47.92	0.44
85.68	0.88
94.19	1.22
104.84	1.65
106.13	2.1
107.96	2.48
109.42	2.8
111.14	3.25
112.26	3.46
114.11	3.94
115.42	4.42
116.85	4.81
117.96	5.24
119.04	5.63
120.33	6.06
121.72	6.41
122.9	6.8
123.99	7.2
124.61	7.66
125.69	8.04



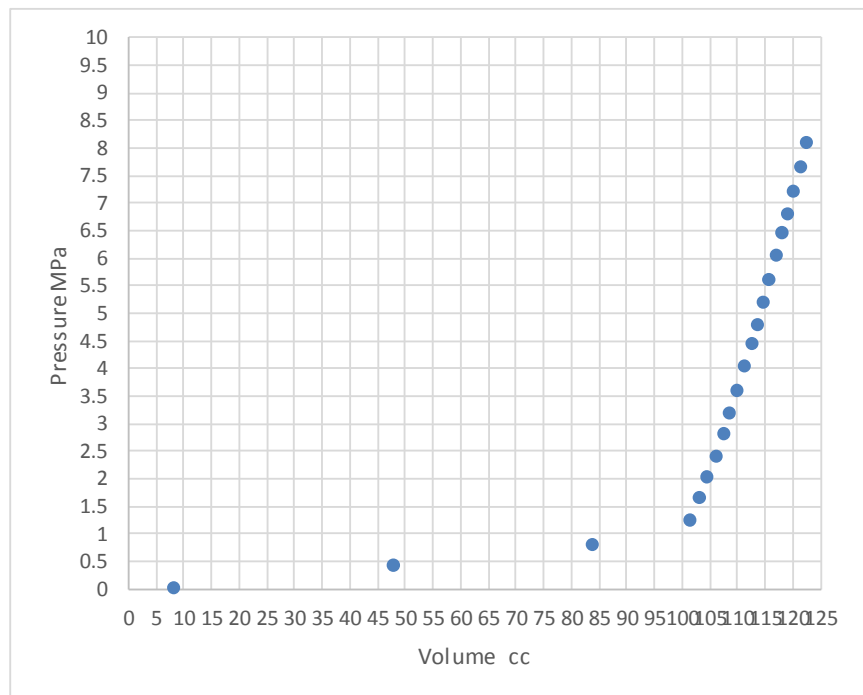
$$E = 2720.786 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/2-5
 Date: --:-- 2/5/2016
 Probe: PROBEX
 Depth: 9.00 m
 Units: Metric
 Delay: 60 s
 Volume Correction: system/i(C = 1.069797 cc/Mpa)
 Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
8.36	0.02
47.95	0.42
83.62	0.82
101.25	1.25
102.98	1.66
104.54	2.05
106.08	2.41
107.58	2.81
108.65	3.2
109.83	3.62
111.27	4.04
112.5	4.44
113.58	4.8
114.62	5.22
115.74	5.62
116.81	6.06
117.96	6.45
119.09	6.81
120.11	7.22
121.24	7.66
122.29	8.1



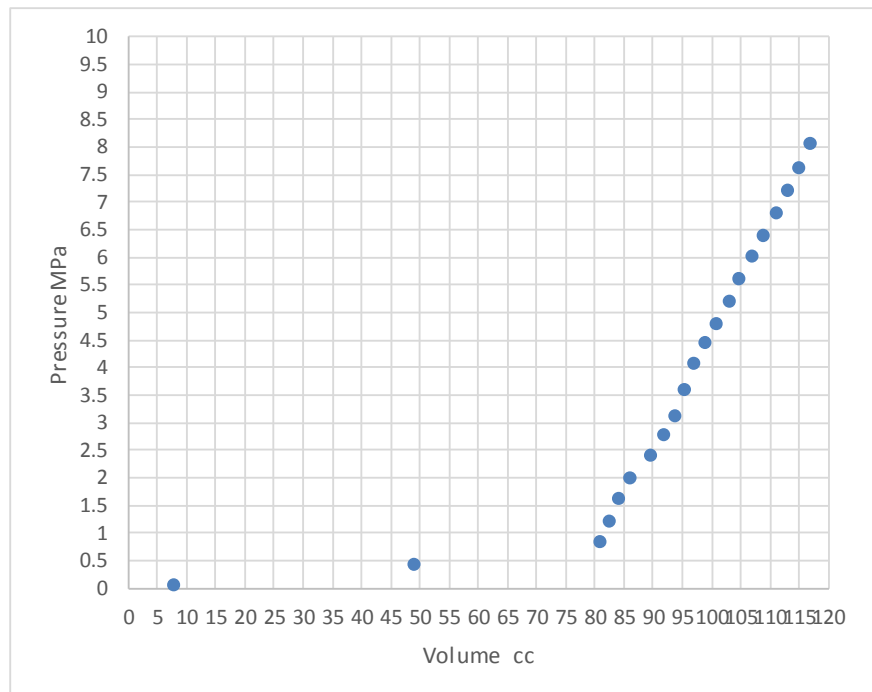
$$E = 3671.299 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/2-4
Date: --:-- 2/5/2016
Probe: PROBEX
Depth: 12.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.069797 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
7.65	0.05
48.9	0.44
80.85	0.83
82.5	1.21
83.96	1.64
85.88	2.01
89.44	2.4
91.79	2.78
93.8	3.11
95.4	3.59
96.79	4.09
98.91	4.44
100.66	4.78
103.12	5.21
104.72	5.61
106.75	6.01
108.88	6.39
111.02	6.79
113.06	7.21
114.9	7.61
116.73	8.05



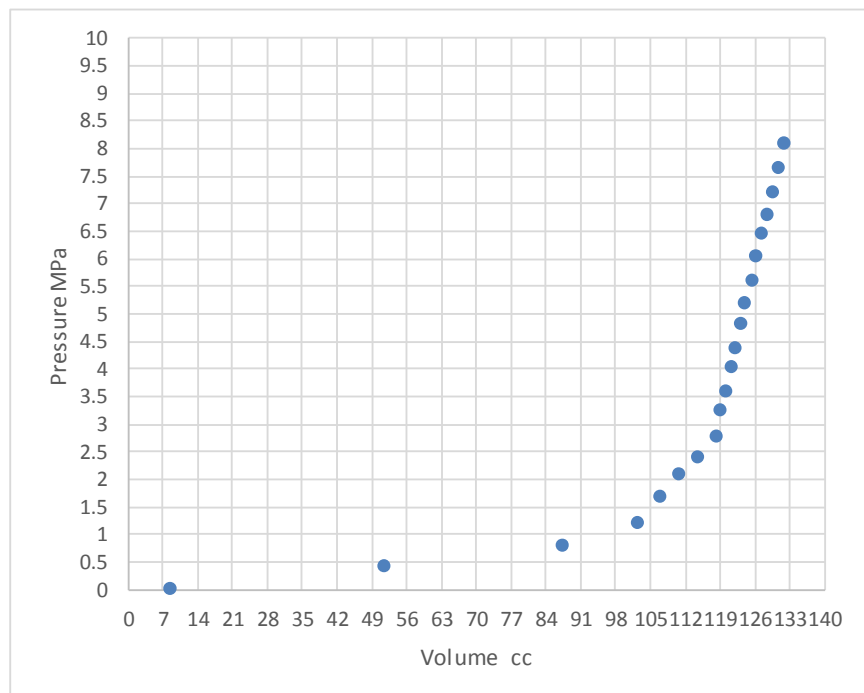
$$E = 1356.25 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/2-3
Date: --:-- 2/5/2016
Probe: PROBEX
Depth: 15.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.069797 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
8.41	0.04
51.6	0.44
87.43	0.82
102.52	1.22
106.95	1.68
110.65	2.1
114.39	2.41
118.3	2.79
119.12	3.25
120.27	3.62
121.08	4.05
122	4.38
123.14	4.82
124.05	5.22
125.28	5.6
126.22	6.05
127.19	6.45
128.33	6.82
129.41	7.22
130.57	7.66
131.65	8.1



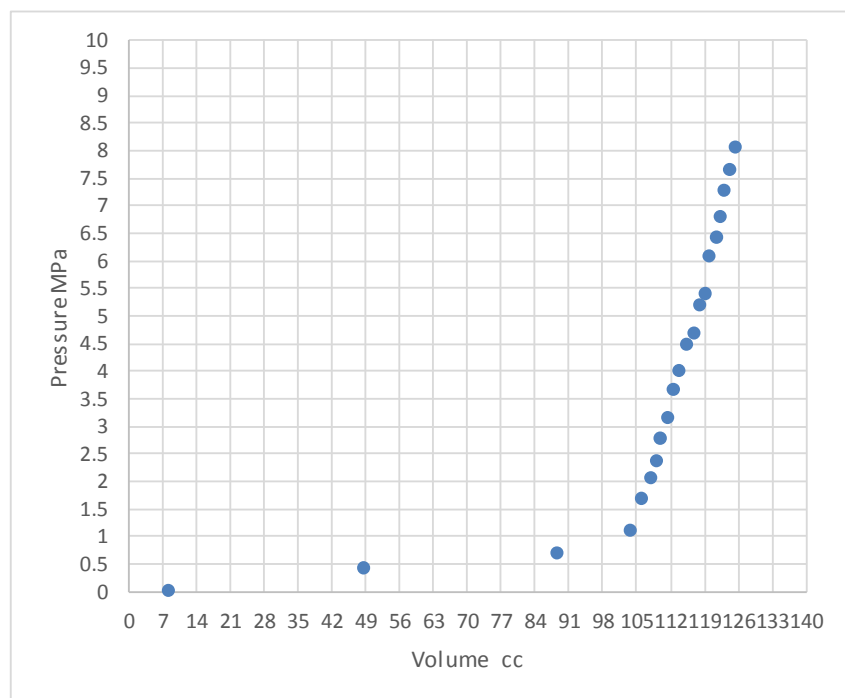
$$E = 3504.229 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/2-2
Date: --:-- 2/5/2016
Probe: PROBEX
Depth: 18.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.069797 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume	Pressure
(cc)	(Mpa)
8.11	0.02
48.55	0.45
88.4	0.71
103.68	1.12
106.1	1.69
107.8	2.08
109	2.38
110	2.78
111.4	3.17
112.72	3.68
113.9	4.02
115.48	4.48
116.8	4.7
118.01	5.2
119.1	5.42
120	6.1
121.49	6.42
122.13	6.8
123.21	7.28
124.2	7.65
125.28	8.06



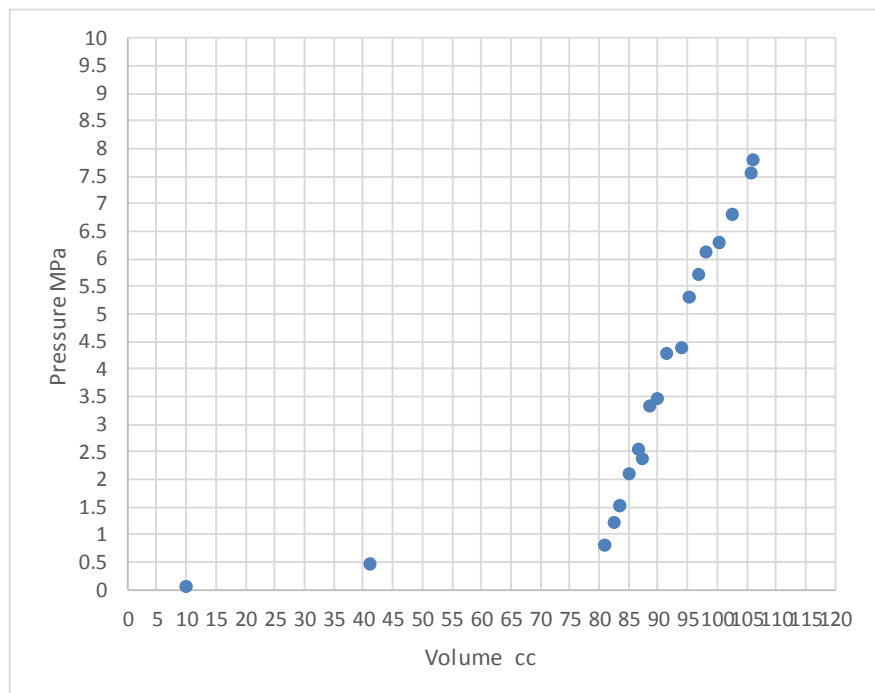
$$E = 3004.974 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/2-1
Date: --:-- 2/5/2016
Probe: PROBEX
Depth: 20.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.069797 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
9.8	0.07
40.99	0.46
80.95	0.8
82.45	1.23
83.54	1.51
84.98	2.12
86.82	2.54
87.38	2.38
88.48	3.32
89.9	3.48
91.29	4.28
93.85	4.38
95.38	5.29
96.88	5.7
98.2	6.14
100.2	6.29
102.48	6.82
105.64	7.54
106.11	7.78



E = 5419.061 MPa

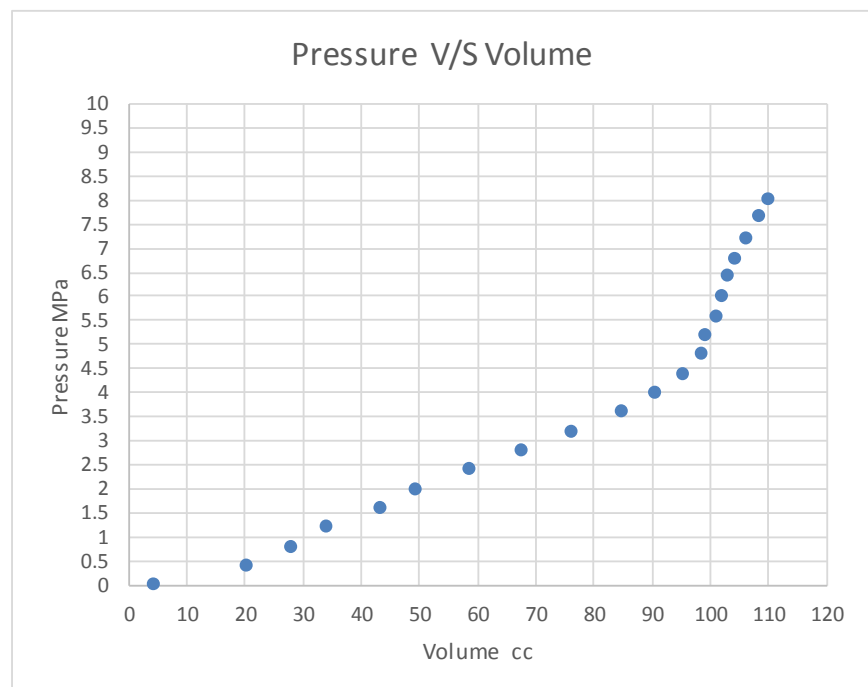


Test no	PMT 3
Northing	-600
Easting	1071
Ground level (G.L.) in terms of RL(+)	83.97

Probex Companion Dataset information

Borehole Name: PMT/3-8
Date: --:-- 5/21/2016
Probe: PROBEX
Depth: 3.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.017498 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
4.15	0.03
20.23	0.4
27.78	0.79
33.98	1.23
43.21	1.62
49.08	2.02
58.64	2.43
67.54	2.81
75.98	3.21
84.59	3.61
90.25	4.02
95.2	4.41
98.26	4.83
99.16	5.2
100.91	5.61
101.95	6.02
102.96	6.43
104.06	6.81
106.06	7.22
108.35	7.69
110.01	8.01



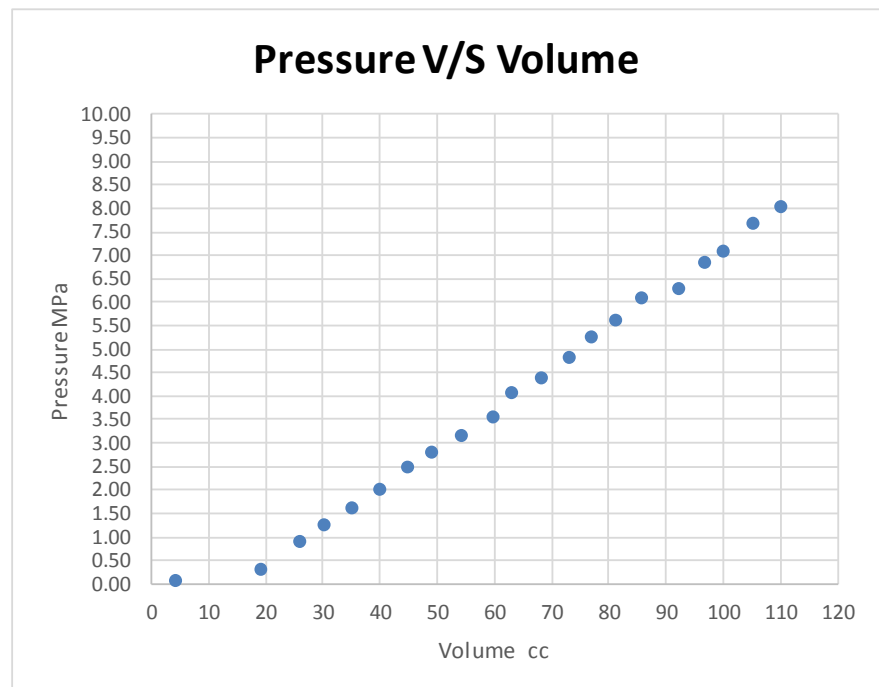
$$E = 1122.442 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name:	PMT/3-7
Date: --:--	5/21/2016
Probe:	PROBEX
Depth:	5.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.017498 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
4.19	0.07
19.08	0.31
26.01	0.89
30.12	1.25
35.07	1.63
40.08	2.00
44.68	2.49
49.01	2.80
54.23	3.16
59.68	3.54
62.85	4.08
68.01	4.41
73.08	4.83
76.89	5.26
81.08	5.60
85.78	6.09
92.06	6.31
96.85	6.85
100.05	7.10
105.21	7.70
110.06	8.05



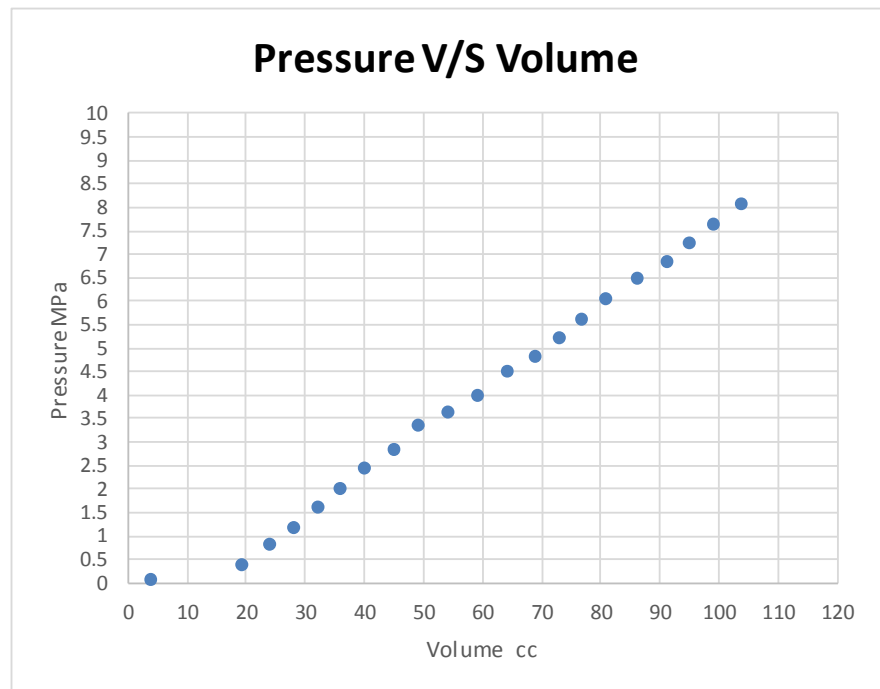
$E = 596.7743 \text{ MPa}$



Probex Companion Dataset information

Borehole Name: PMT/3-6
Date: --:-- 5/21/2016
Probe: PROBEX
Depth: 7.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.017498 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
3.73	0.08
19.15	0.4
24.09	0.83
28.05	1.2
32.08	1.62
35.99	2.03
39.91	2.44
44.98	2.84
49.23	3.36
54.1	3.62
58.99	4.01
64.07	4.51
68.77	4.82
72.82	5.22
76.85	5.61
80.92	6.04
86.08	6.49
91.06	6.85
95.11	7.24
99.11	7.64
103.81	8.06



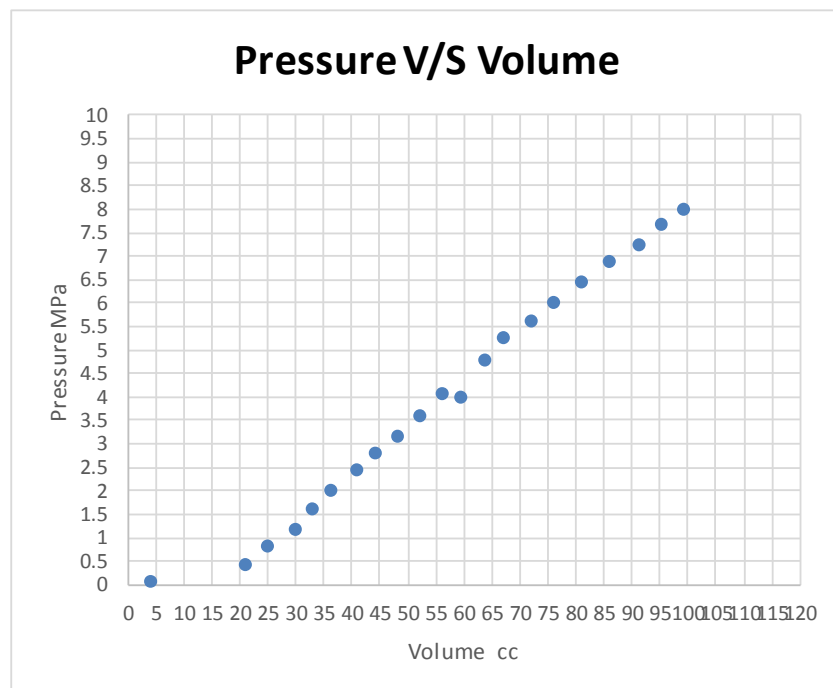
$E = 492.2325 \text{ MPa}$



Probex Companion Dataset information

Borehole Name:	PMT/3-5
Date: --:--	5/21/2016
Probe:	PROBEX
Depth:	9.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.017498 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
4.19	0.08
21.08	0.42
25.06	0.82
29.76	1.2
33.01	1.61
36.27	2.01
40.98	2.44
44.25	2.79
48.25	3.18
52.2	3.58
56.21	4.08
59.35	4.01
63.7	4.77
66.99	5.28
71.98	5.63
76.09	6.03
80.85	6.45
86	6.87
91.21	7.24
95.37	7.67
99.16	8.01



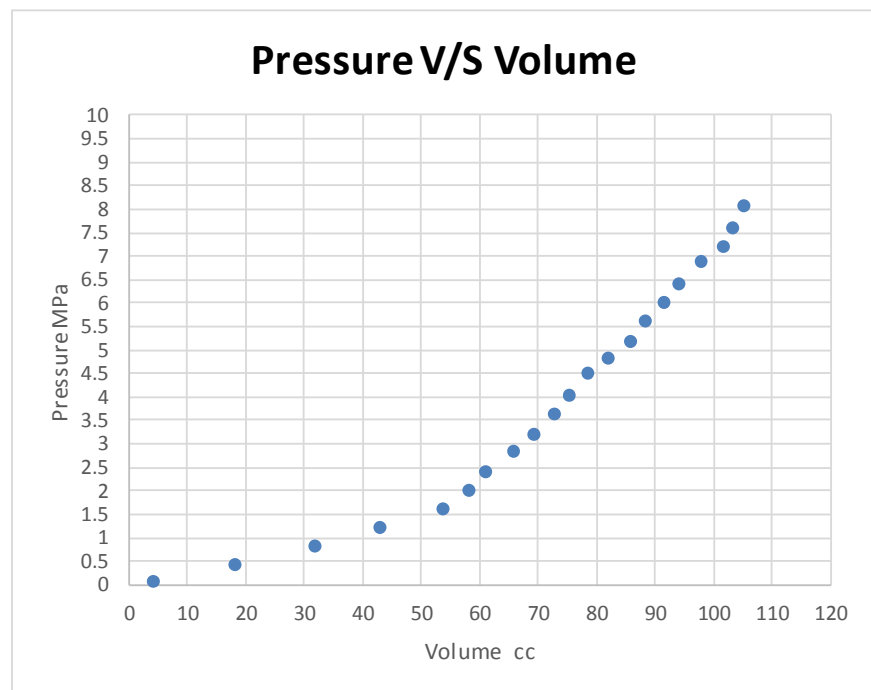
$$E = 1005.494 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name:	PMT/3-4
Date: --:--	5/21/2016
Probe:	PROBEX
Depth:	12.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.017498 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
4.23	0.07
18.15	0.42
31.75	0.81
43.06	1.22
53.71	1.63
58.09	2.02
61.07	2.41
65.71	2.84
69.27	3.21
72.85	3.62
75.23	4.03
78.39	4.49
81.98	4.84
85.83	5.2
88.24	5.61
91.63	6.03
94.2	6.43
97.98	6.89
101.57	7.2
103.16	7.6
105.08	8.07



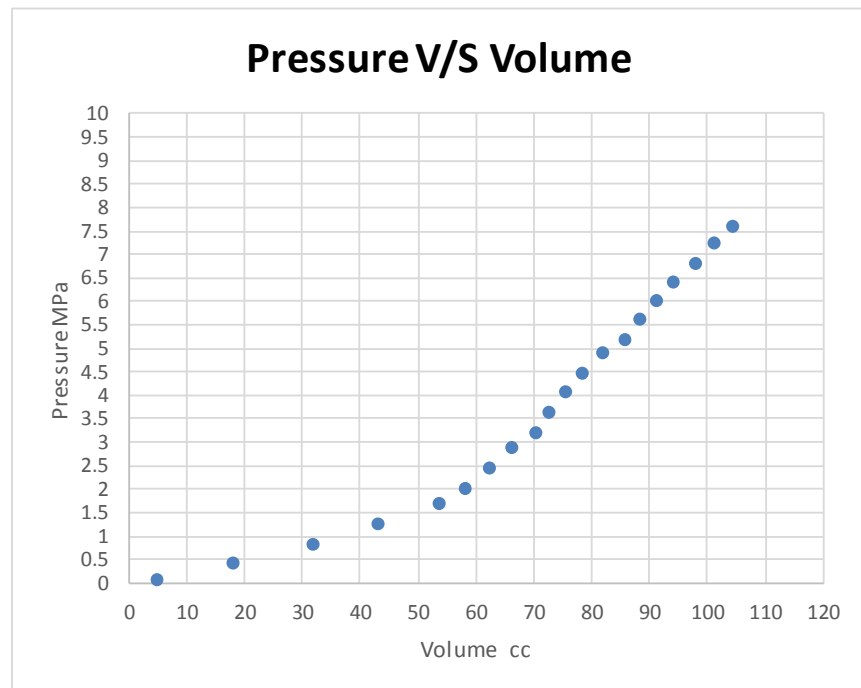
$$E = 1592.605 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/3-3
Date: --:-- 5/21/2016
Probe: PROBEX
Depth: 15.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.017498 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
5.02	0.06
18.09	0.41
31.73	0.83
43.03	1.27
53.78	1.68
58.06	2.03
62.35	2.44
66.08	2.87
70.33	3.22
72.54	3.63
75.39	4.09
78.48	4.47
81.99	4.89
85.79	5.2
88.25	5.62
91.29	6.01
94.15	6.42
97.8	6.81
101.07	7.24
104.39	7.6



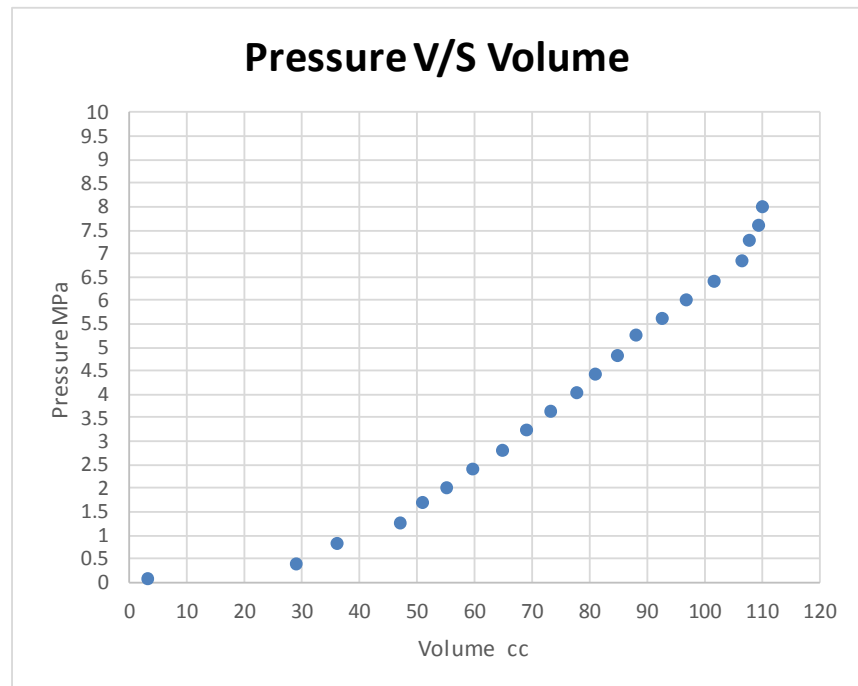
$E = 793.1006 \text{ MPa}$



Probex Companion Dataset information

Borehole Name: PMT/3-2
Date: --:-- 5/21/2016
Probe: PROBEX
Depth: 18.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.017498 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
3.15	0.07
29.16	0.4
36.13	0.83
47.2	1.25
50.93	1.69
55.28	2.01
59.71	2.39
65.03	2.81
69.08	3.23
73.25	3.62
77.69	4.02
81.08	4.43
84.79	4.82
88.19	5.25
92.73	5.61
96.78	6.03
101.71	6.41
106.45	6.85
107.98	7.29
109.49	7.61
110.01	8.01



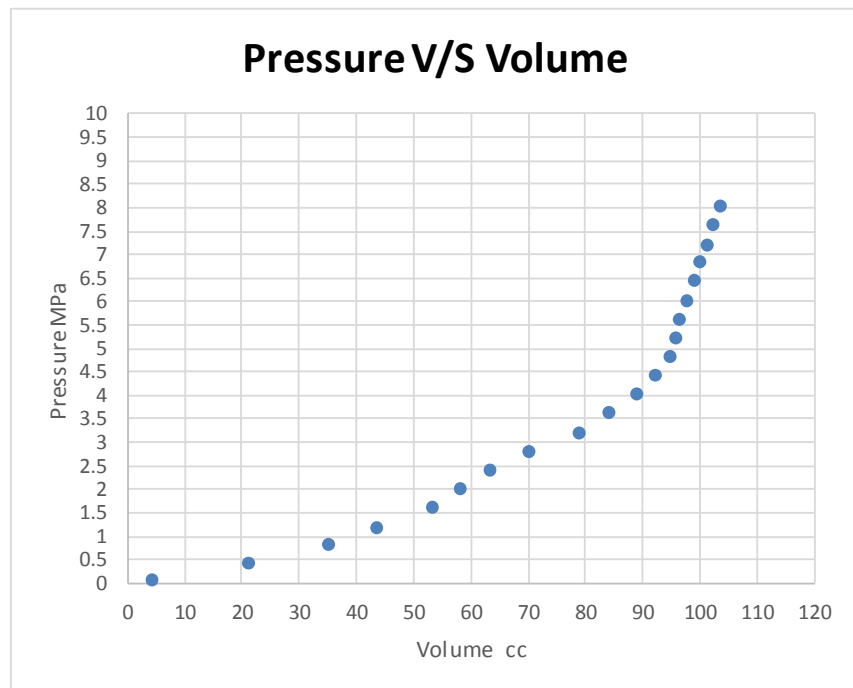
$$E = 1926.466 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name:	PMT/3-1
Date: --:--	5/21/2016
Probe:	PROBEX
Depth:	20.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.017498 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
4.2	0.06
21.06	0.42
35.19	0.81
43.62	1.19
53.28	1.62
58.01	2
63.22	2.41
70.18	2.8
78.95	3.2
83.98	3.62
89.01	4.04
92.05	4.43
94.68	4.82
95.74	5.24
96.5	5.63
97.72	6.02
99.05	6.47
100.03	6.83
101.36	7.21
102.26	7.63
103.43	8.03



$$E = 4230.319 \text{ MPa}$$

Test no	PMT 4
Northing	-211
Easting	467
Ground level (G.L.) in terms of RL(+)	83.14

Probex Companion Dataset information

Borehole Name:

PMT/4-8

Date: --:--

22-4-2016

Probe:

PROBEX

Depth:

3.00 m

Units:

Metric

Delay:

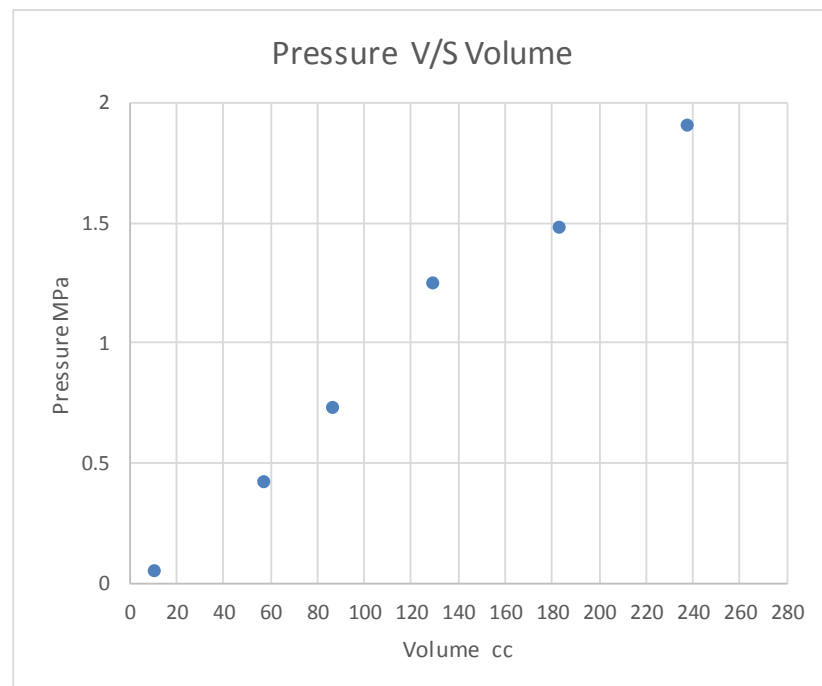
60 s

Volume Correction:

system/(C = 1.266211 cc/Mpa)

Membrane Inertia:

INERTIA/001

[illegible]

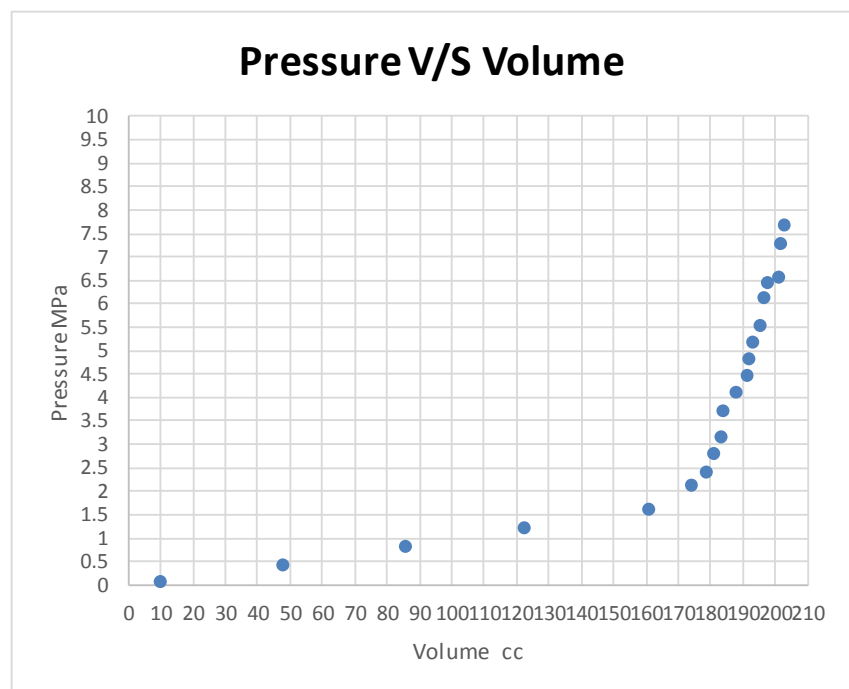
$$E = 19.92747 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name:	PMT/4-7
Date: --:--	22-4-2016
Probe:	PROBEX
Depth:	5.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.266211 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
9.67	0.07
47.99	0.42
85.45	0.81
122.62	1.22
160.84	1.61
174.13	2.12
178.61	2.4
180.93	2.82
182.98	3.17
184.01	3.73
188	4.13
191.4	4.46
191.82	4.81
192.75	5.17
195.07	5.55
196.38	6.14
197.65	6.45
200.92	6.56
201.28	7.28
202.85	7.7



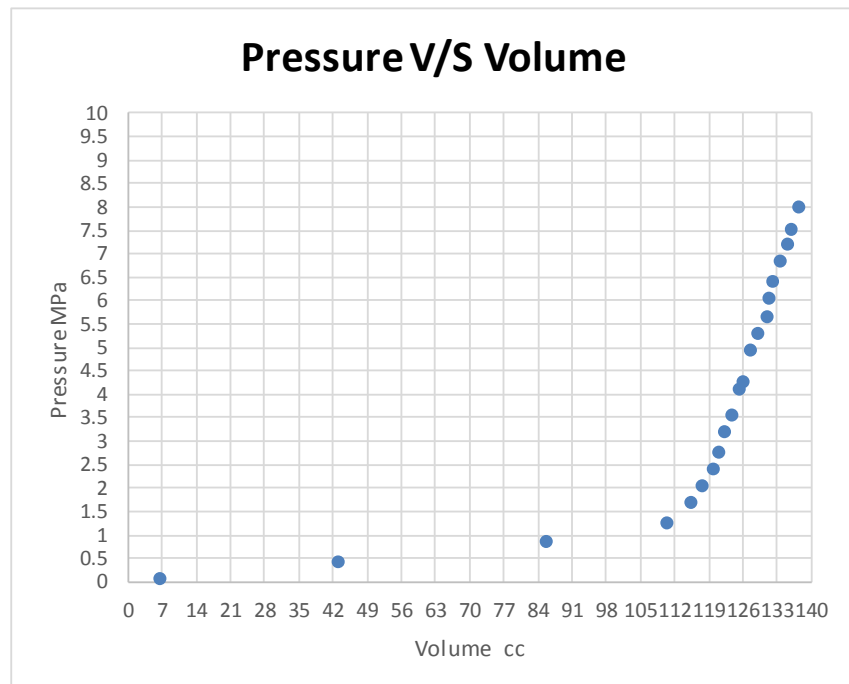
$$E = 2046.875 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/4-6
Date: --:-- 22-4-2016
Probe: PROBEX
Depth: 7.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.266211 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
6.45	0.06
43	0.41
85.85	0.85
110.37	1.27
115.4	1.69
117.61	2.05
120.02	2.41
121.07	2.77
122.23	3.2
123.86	3.55
125.19	4.1
126.22	4.27
127.47	4.93
128.9	5.31
130.92	5.66
131.21	6.05
132.26	6.4
133.66	6.86
135.1	7.2
136.11	7.54
137.55	8.01



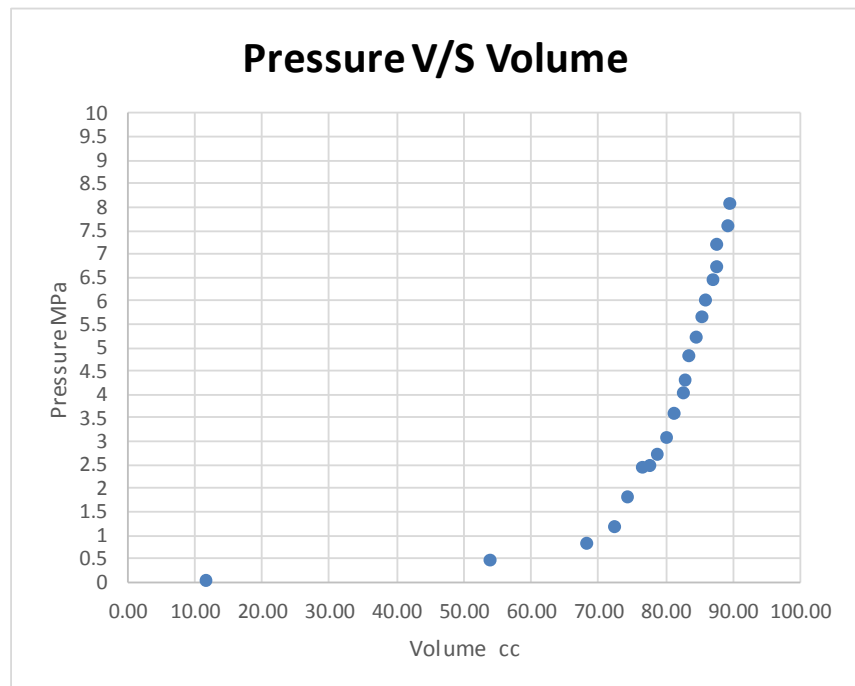
$$E = 2813.245 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/4-5
Date: --:-- 22-4-2016
Probe: PROBEX
Depth: 9.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.266211 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
11.67	0.04
53.79	0.45
68.34	0.84
72.36	1.2
74.18	1.82
76.63	2.44
77.68	2.47
78.63	2.72
80.03	3.08
81.08	3.6
82.56	4.05
82.80	4.33
83.36	4.83
84.60	5.24
85.25	5.64
86.00	6.02
86.86	6.45
87.59	6.71
87.68	7.2
89.20	7.61
89.59	8.06



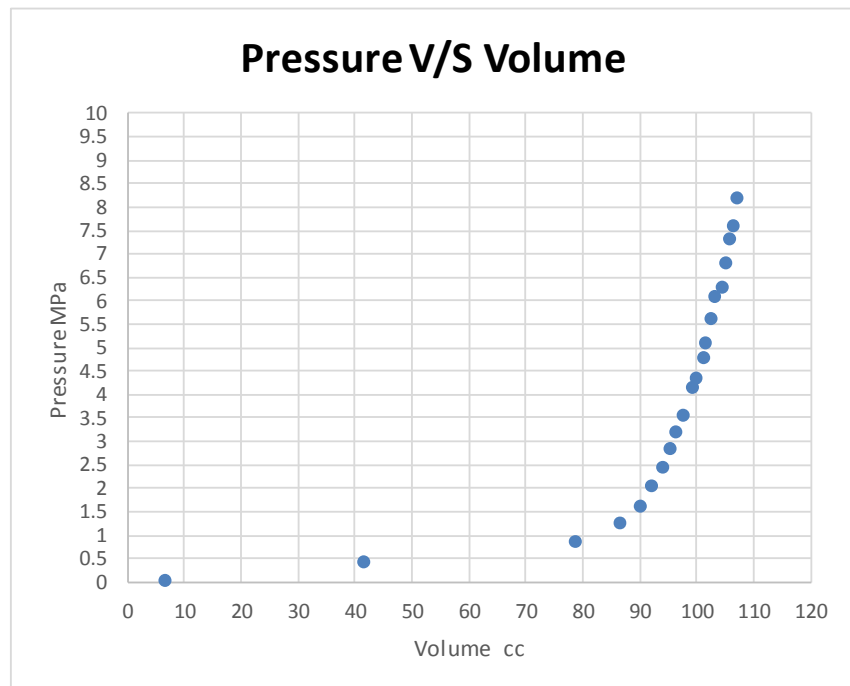
$$E = 6570.568 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/4-4
Date: --:--:-- 22-4-2016
Probe: PROBEX
Depth: 12.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.266211 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
6.75	0.05
41.5	0.44
78.57	0.87
86.6	1.27
90.02	1.63
91.95	2.06
93.93	2.44
95.22	2.83
96.29	3.22
97.52	3.55
99.07	4.14
99.92	4.34
101.28	4.79
101.6	5.09
102.33	5.63
103.06	6.08
104.29	6.29
104.97	6.82
105.77	7.31
106.31	7.61
107.19	8.21



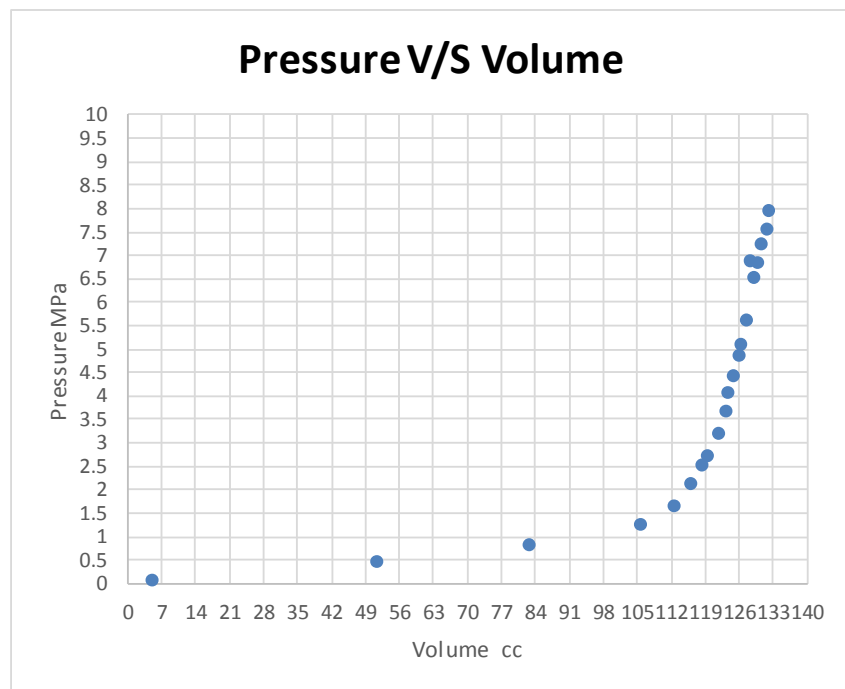
$$E = 8794.635 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/4-3
Date: --:--:-- 21-4-2016
Probe: PROBEX
Depth: 15.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.266211 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
5.18	0.06
51.3	0.48
82.76	0.84
105.6	1.25
112.47	1.65
116.13	2.15
118.47	2.52
119.37	2.71
121.61	3.22
123.18	3.68
123.5	4.08
124.68	4.45
125.95	4.85
126.44	5.11
127.58	5.62
128.1	6.88
129.17	6.55
129.71	6.85
130.61	7.26
131.66	7.56
132.16	7.97



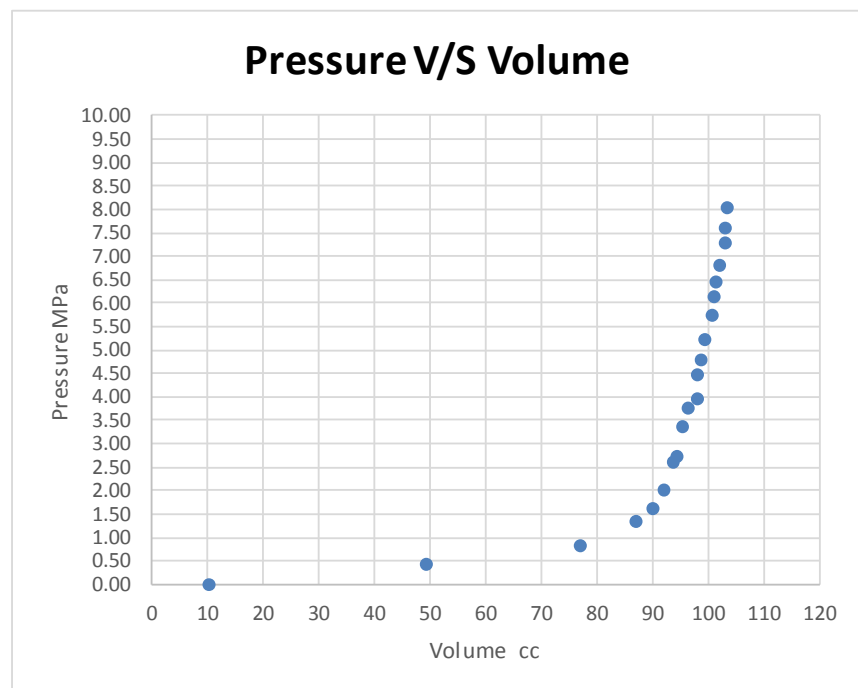
$E = 5149.325 \text{ MPa}$



Probex Companion Dataset information

Borehole Name: PMT/4-2
 Date: --:-- 21-4-2016
 Probe: PROBEX
 Depth: 18.00 m
 Units: Metric
 Delay: 60 s
 Volume Correction: system/(C = 1.266211 cc/Mpa)
 Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
10.36	0.01
49.26	0.41
76.95	0.83
87.16	1.34
90.04	1.60
92.04	2.01
93.59	2.59
94.25	2.74
95.41	3.35
96.53	3.76
97.97	3.96
97.99	4.47
98.7	4.80
99.56	5.21
100.72	5.72
101.02	6.12
101.47	6.44
102.07	6.80
103	7.27
103.15	7.62
103.43	8.04



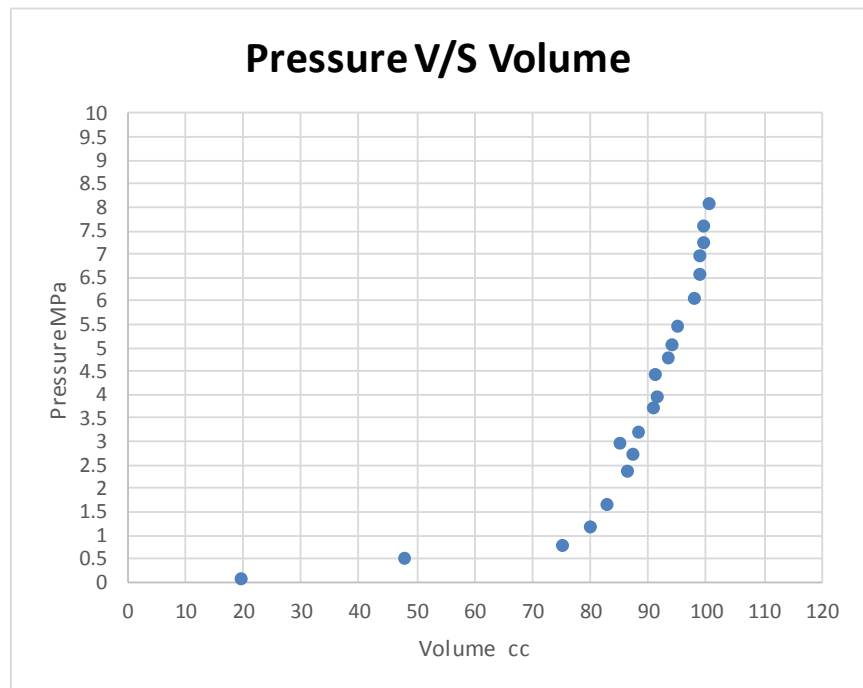
$$E = 6608.036 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/4-1
Date: --:--:-- 21-4-2016
Probe: PROBEX
Depth: 20.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.266211 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
19.52	0.07
47.9	0.49
75.32	0.8
79.92	1.19
82.95	1.64
85.1	2.96
86.52	2.38
87.42	2.72
88.45	3.22
90.88	3.7
91.54	3.96
91.25	4.43
93.39	4.77
94.2	5.05
95.03	5.47
97.88	6.05
98.94	6.56
99.07	6.97
99.6	7.25
99.71	7.61
100.42	8.06



$$E = 7455.21 \text{ MPa}$$

Test no	PMT 5
Northing	-211
Easting	610
Ground level (G.L.) in terms of RL(+)	85.30

Probex Companion Dataset information

Borehole Name:

PMT/5-8

Date: --:--

24-4-2016

Probe:

PROBEX

Depth:

1.00 m

Units:

Metric

Delay:

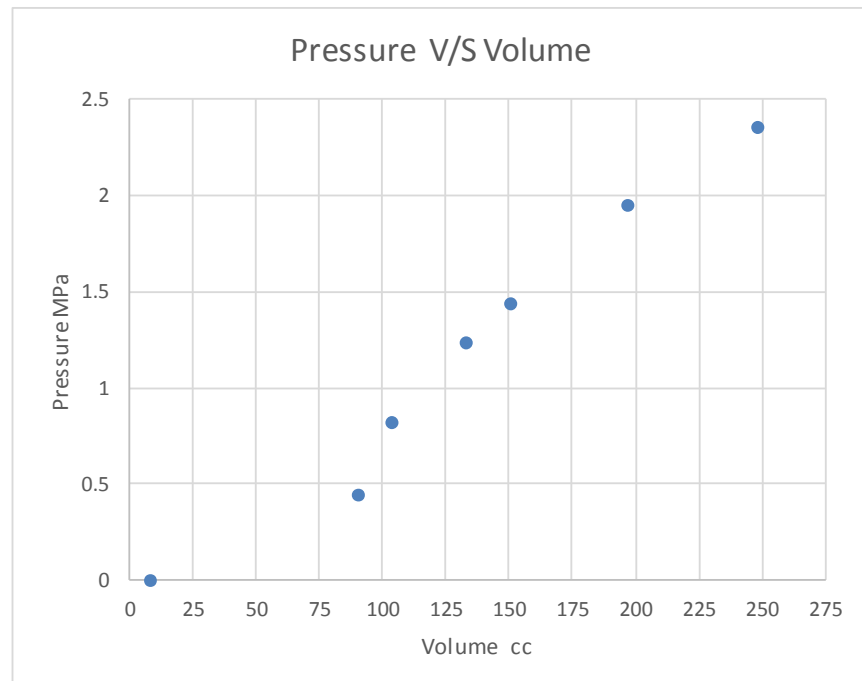
60 s

Volume Correction:

system/(C = 1.130339 cc/Mpa)

Membrane Inertia:

INERTIA/001

[illegible]

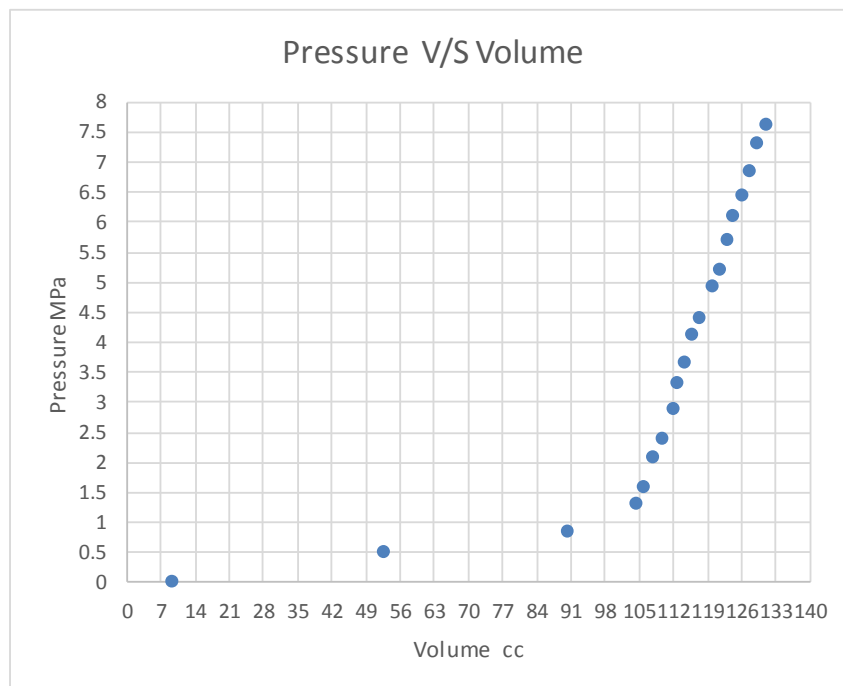
$$E = 31.21272 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/5-8
 Date: --:--: 24-4-2016
 Probe: PROBEX
 Depth: 3.00 m
 Units: Metric
 Delay: 60 s
 Volume Correction: system/(C = 1.130339 cc/Mpa)
 Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
9.3	0.01
52.78	0.51
90.29	0.84
104.34	1.3
105.92	1.6
107.87	2.08
109.72	2.4
111.88	2.9
112.89	3.31
114.1	3.66
115.88	4.11
117.45	4.41
119.82	4.92
121.39	5.2
123.02	5.71
124.25	6.11
125.98	6.45
127.62	6.85
129.05	7.3
130.81	7.62
131.24	8.11



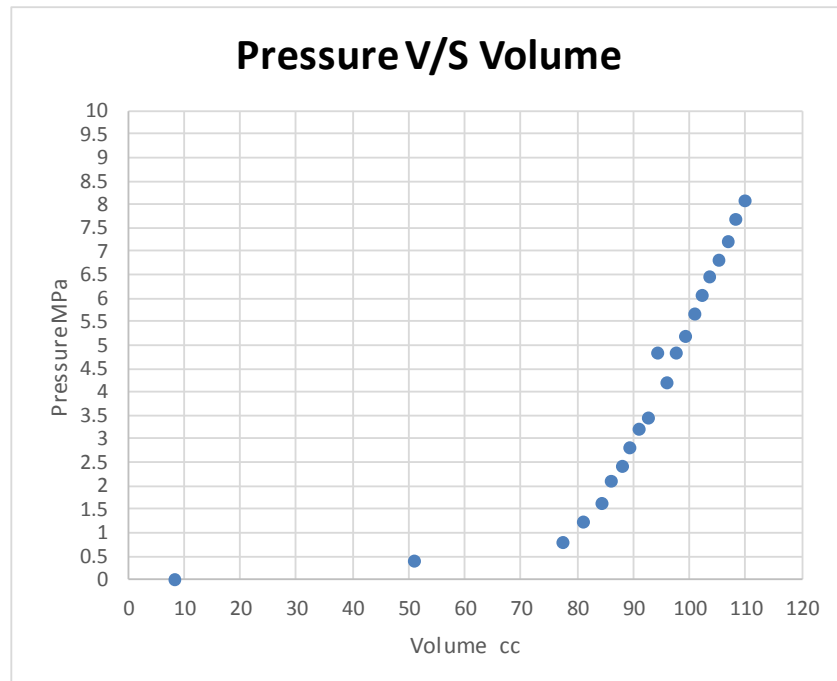
$$E = 2338.152 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/5-7
Date: --:--:-- 24-4-2016
Probe: PROBEX
Depth: 5.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.130339 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
8.41	0.01
50.92	0.39
77.44	0.81
80.93	1.22
84.25	1.62
86.12	2.1
88.01	2.44
89.38	2.81
91.06	3.22
92.68	3.47
94.21	4.84
96.04	4.19
97.65	4.85
99.14	5.2
100.92	5.66
102.24	6.05
103.59	6.48
105.26	6.81
106.85	7.2
108.23	7.69
109.92	8.1



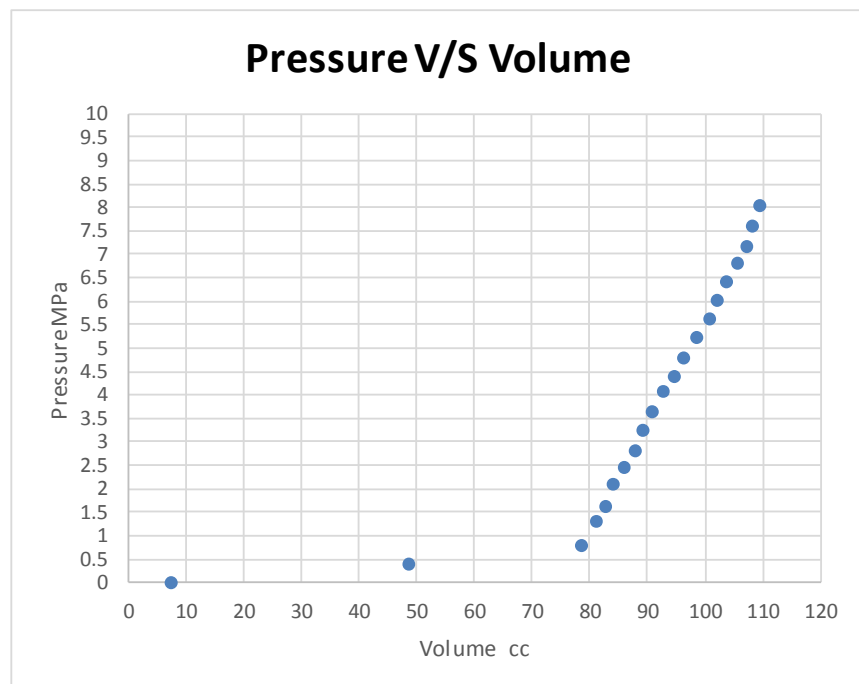
$$E = 2816.616 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/5-6
Date: --:-- 24-4-2016
Probe: PROBEX
Depth: 7.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.130339 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
7.55	0.01
48.61	0.42
78.57	0.81
81.05	1.3
82.89	1.63
84.06	2.1
86.01	2.48
87.93	2.81
89.12	3.25
90.95	3.64
92.9	4.1
94.67	4.42
96.41	4.81
98.62	5.25
100.75	5.62
102.13	6.01
103.79	6.42
105.75	6.81
107.24	7.18
108.22	7.62
109.35	8.04



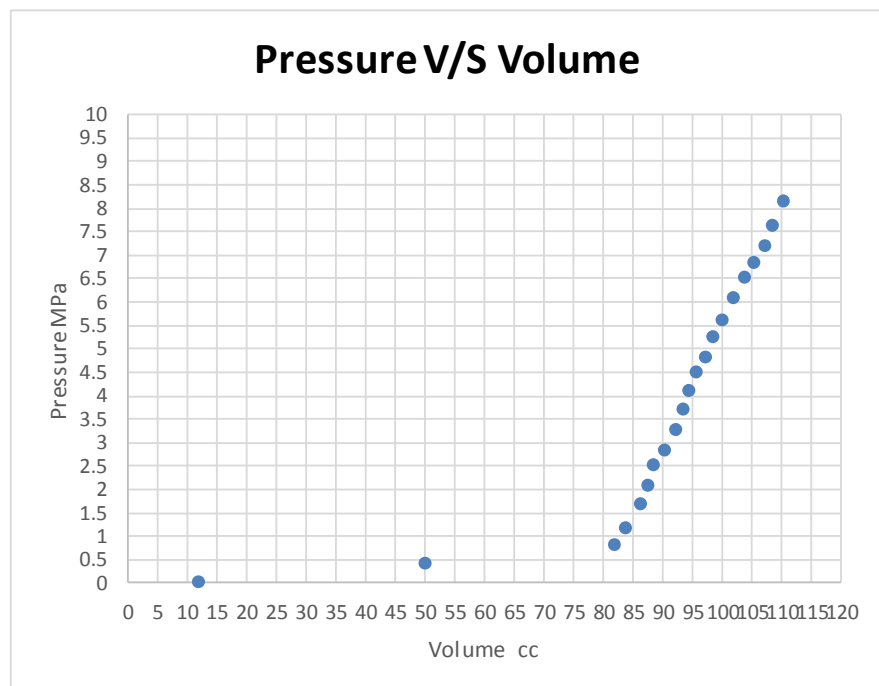
$$E = 3047.436 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/5-5
Date: --:--:-- 24-4-2016
Probe: PROBEX
Depth: 9.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.130339 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
12.05	0
49.88	0.41
81.67	0.82
83.72	1.18
86.03	1.68
87.55	2.07
88.47	2.51
90.22	2.82
92.03	3.25
93.24	3.71
94.39	4.11
95.68	4.5
97.02	4.82
98.45	5.25
99.88	5.61
101.73	6.07
103.54	6.5
105.31	6.82
106.95	7.21
108.48	7.62
110.24	8.15



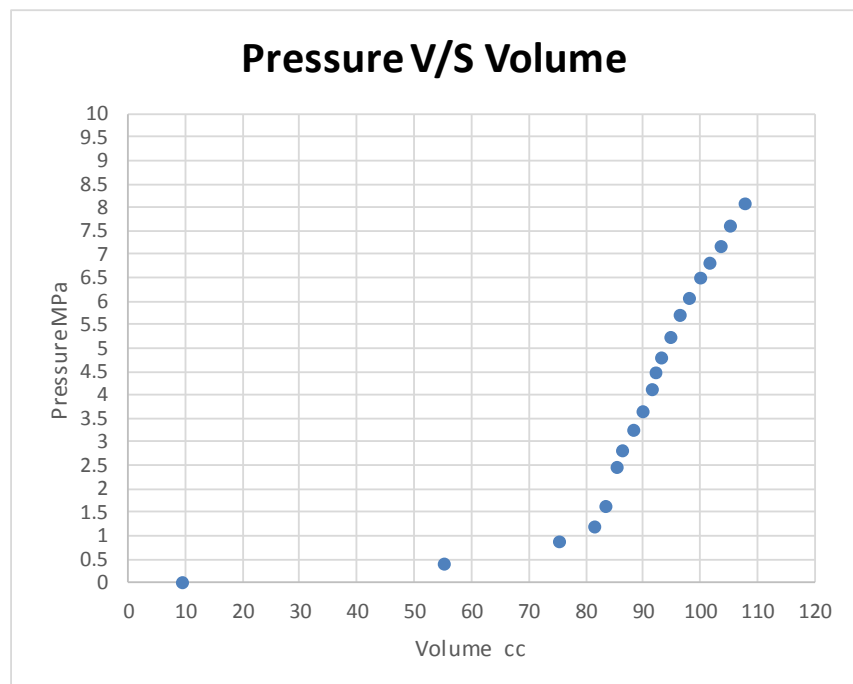
$$E = 2163.69 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/5-4
Date: --:--:-- 24-4-2016
Probe: PROBEX
Depth: 12.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.130339 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
9.42	0
55.13	0.42
75.38	0.88
81.55	1.21
83.26	1.62
85.22	2.46
86.48	2.81
88.13	3.25
89.87	3.66
91.58	4.12
92.06	4.47
93.27	4.81
94.82	5.24
96.38	5.71
98.17	6.08
100.03	6.51
101.74	6.82
103.66	7.18
105.28	7.63
107.64	8.1



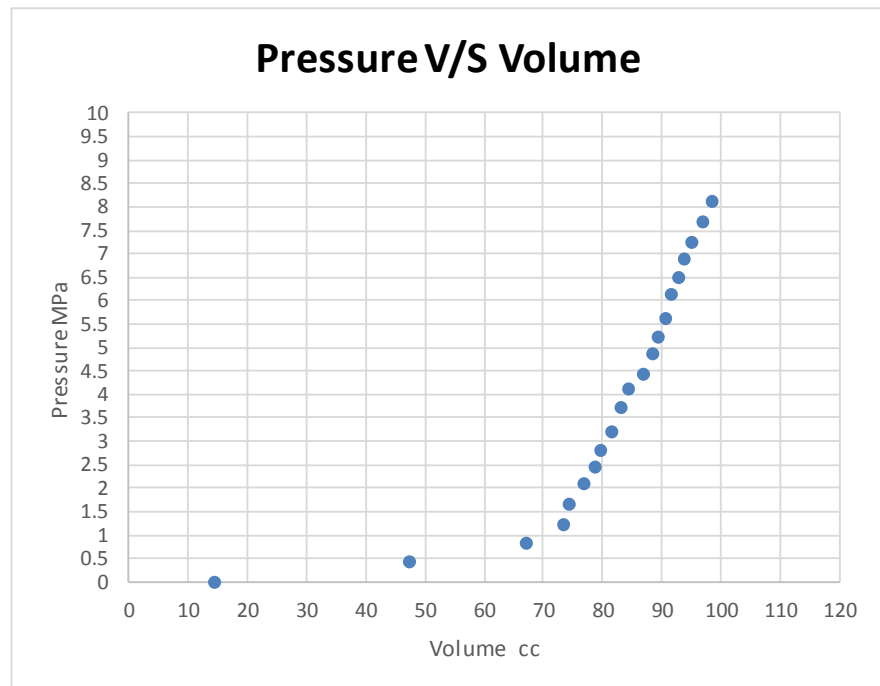
$$E = 2142.005 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/5-3
Date: --:--:-- 24-4-2016
Probe: PROBEX
Depth: 15.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.130339 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
14.4	0
47.44	0.42
67.05	0.84
73.16	1.22
74.33	1.66
76.59	2.11
78.47	2.45
79.42	2.82
81.56	3.22
83.12	3.7
84.41	4.13
86.92	4.42
88.19	4.88
89.23	5.22
90.48	5.61
91.58	6.12
92.85	6.51
93.77	6.89
95.03	7.26
96.82	7.68
98.46	8.1



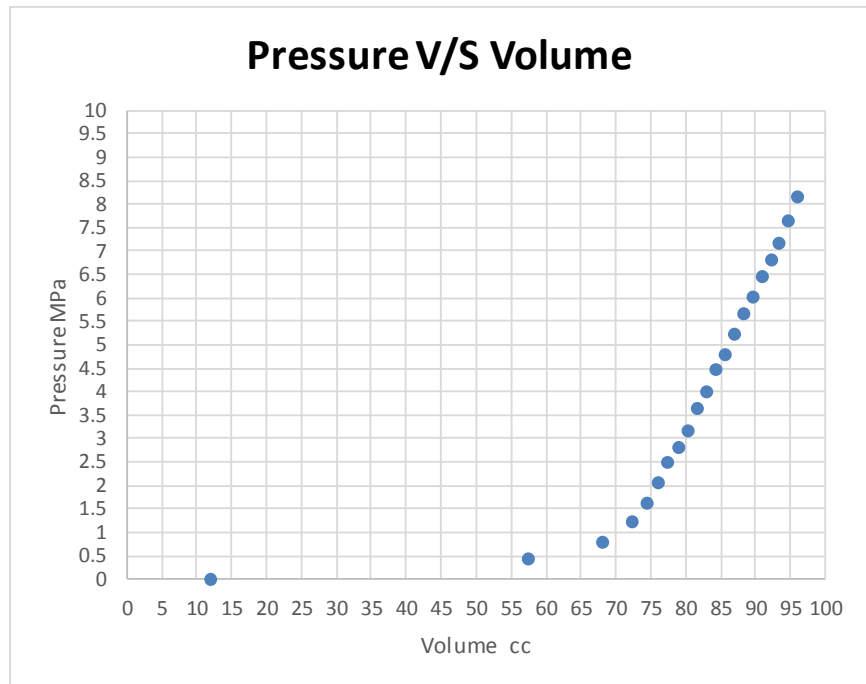
$$E = 2058.272 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/5-2
Date: --:-- 24-4-2016
Probe: PROBEX
Depth: 18.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.130339 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
12.08	0
57.51	0.46
68.1	0.78
72.38	1.22
74.46	1.63
76.18	2.07
77.49	2.52
78.95	2.81
80.3	3.19
81.64	3.64
82.95	4.02
84.25	4.48
85.56	4.8
86.88	5.22
88.21	5.66
89.54	6.03
90.86	6.47
92.17	6.81
93.31	7.18
94.64	7.64
95.96	8.15



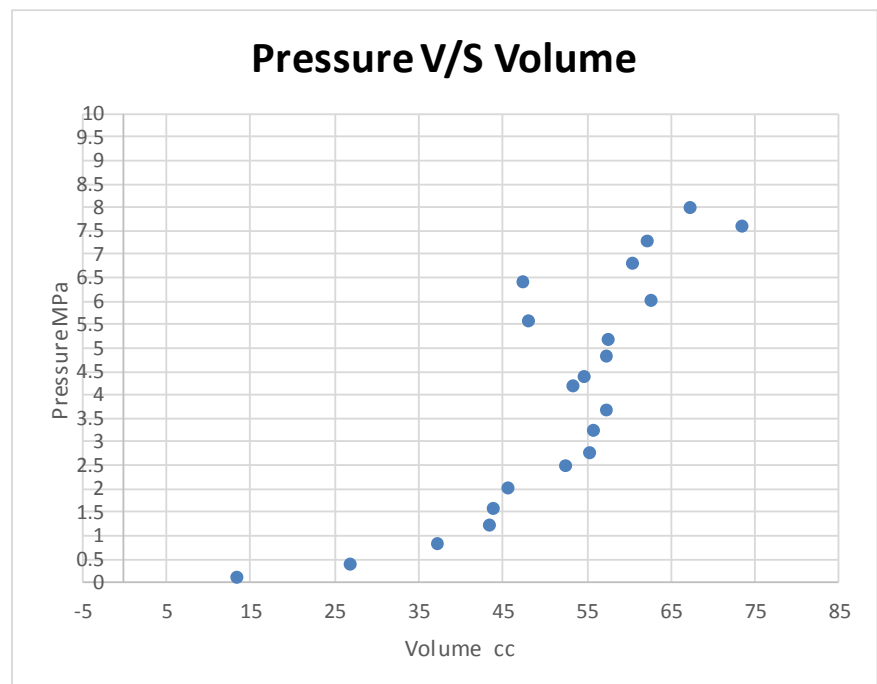
$E = 3228.978 \text{ MPa}$



Probex Companion Dataset information

Borehole Name: PMT/5-1
Date: --:--:-- 24-4-2016
Probe: PROBEX
Depth: 20.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.130339 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
13.41	0.11
26.82	0.39
37.2	0.82
43.3	1.23
43.78	1.61
45.58	2.03
52.56	2.49
55.42	2.77
55.75	3.25
57.29	3.7
53.42	4.2
54.61	4.4
57.35	4.83
57.64	5.21
48.07	5.6
62.62	6.03
47.44	6.41
60.37	6.83
62.13	7.3
73.49	7.6
67.18	8



$$E = 2070.642 \text{ MPa}$$

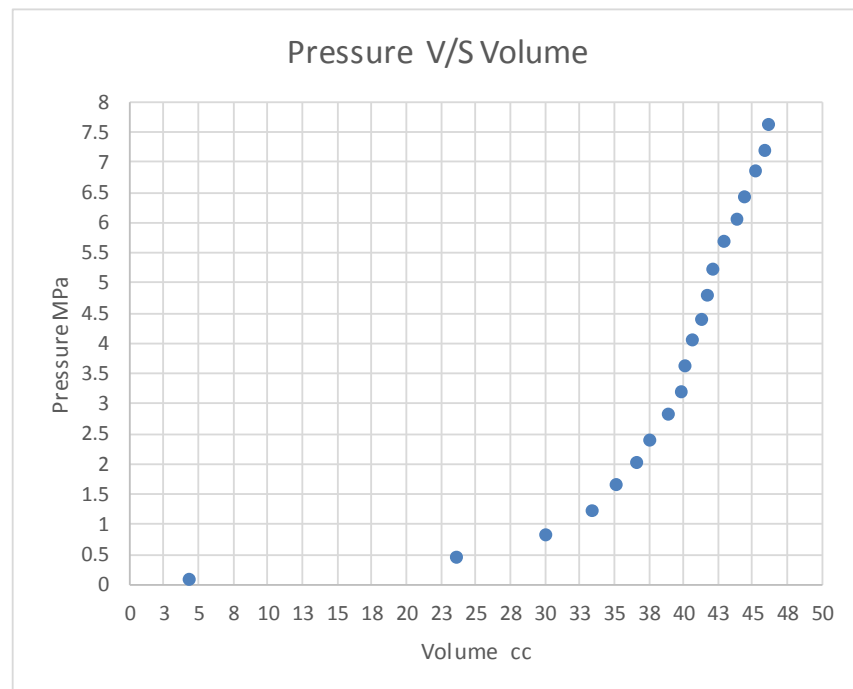


Test no	PMT 6
Northing	-283
Easting	-77
Ground level (G.L.) in terms of RL(+)	77.16

Probex Companion Dataset information

Borehole Name: PMT/6-8
Date: --:-- 5/5/2016
Probe: PROBEX
Depth: 3.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.061318 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
4.35	0.08
23.67	0.45
30.12	0.83
33.44	1.22
35.21	1.65
36.68	2.04
37.51	2.41
38.97	2.82
39.88	3.21
40.15	3.62
40.66	4.05
41.29	4.4
41.75	4.81
42.13	5.22
42.97	5.68
43.81	6.07
44.38	6.42
45.15	6.86
45.91	7.2
46.15	7.62
46.68	8.05



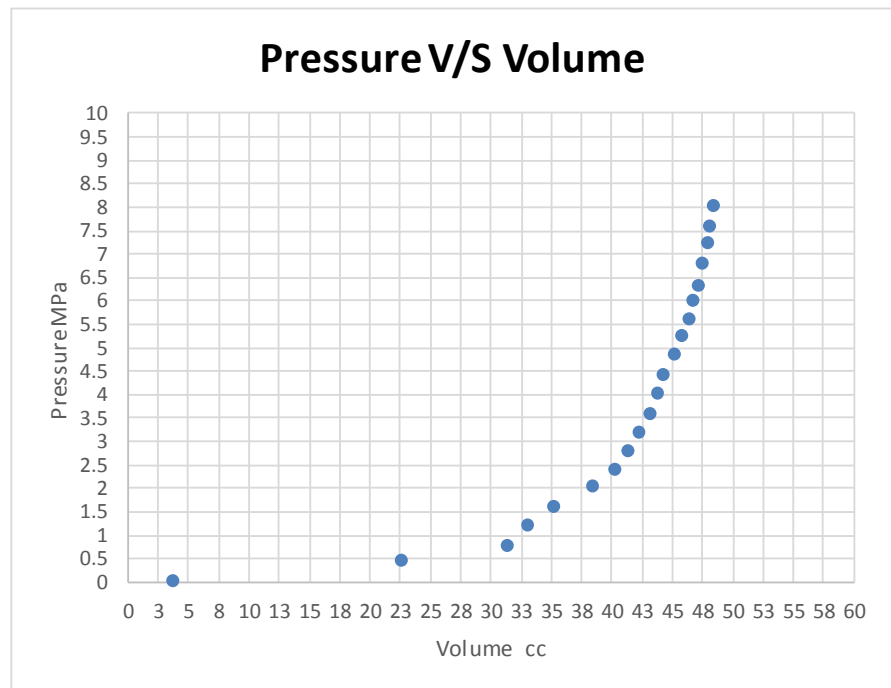
$$E = 4030.258 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/6-7
Date: --:-- 5/5/2016
Probe: PROBEX
Depth: 5.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.061318 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
3.7	0.04
22.65	0.45
31.27	0.8
33.1	1.24
35.18	1.62
38.46	2.05
40.24	2.41
41.37	2.82
42.18	3.22
43.12	3.61
43.79	4.03
44.28	4.43
45.14	4.85
45.71	5.27
46.31	5.62
46.67	6.01
47.08	6.33
47.49	6.82
47.86	7.25
48.11	7.62
48.31	8.05



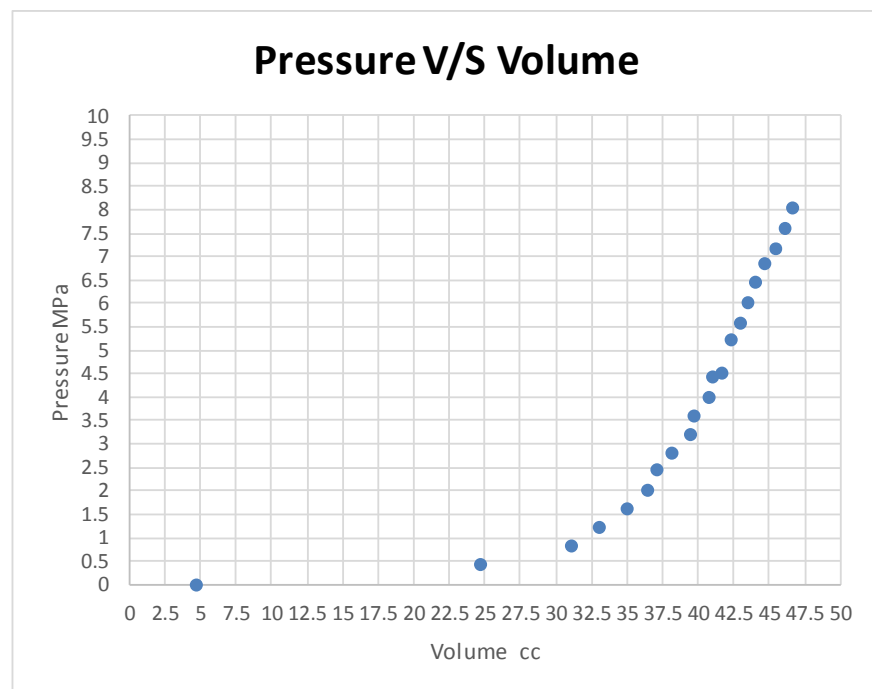
$$E = 7242.952 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/6-6
Date: --:-- 5/5/2016
Probe: PROBEX
Depth: 7.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.061318 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
4.73	0.01
24.69	0.42
31.08	0.81
33.12	1.22
35.05	1.61
36.51	2.03
37.07	2.44
38.1	2.81
39.41	3.2
39.74	3.61
40.73	4.01
41	4.42
41.62	4.51
42.27	5.22
43	5.59
43.45	6.02
44.03	6.44
44.72	6.86
45.5	7.18
46.16	7.59
46.61	8.04



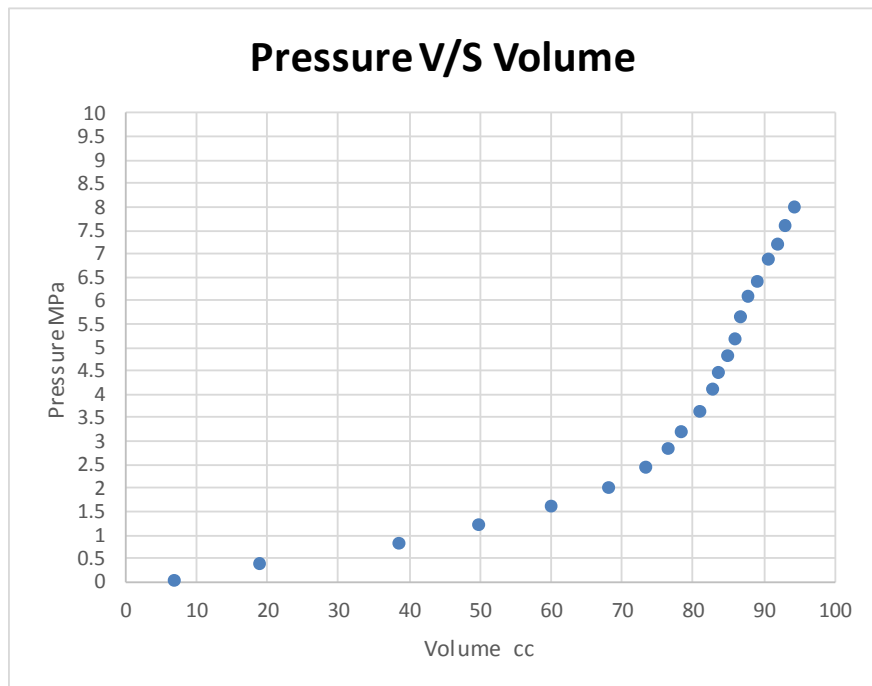
$$E = 8616.735 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/6-5
Date: --:-- 5/5/2016
Probe: PROBEX
Depth: 9.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.061318 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
6.88	0.05
18.96	0.39
38.67	0.82
49.73	1.22
60.11	1.61
68.05	2.01
73.26	2.43
76.54	2.84
78.37	3.21
80.86	3.65
82.73	4.1
83.66	4.48
84.77	4.82
85.93	5.2
86.79	5.66
87.82	6.09
89.03	6.4
90.56	6.88
91.88	7.2
92.99	7.6
94.33	7.98



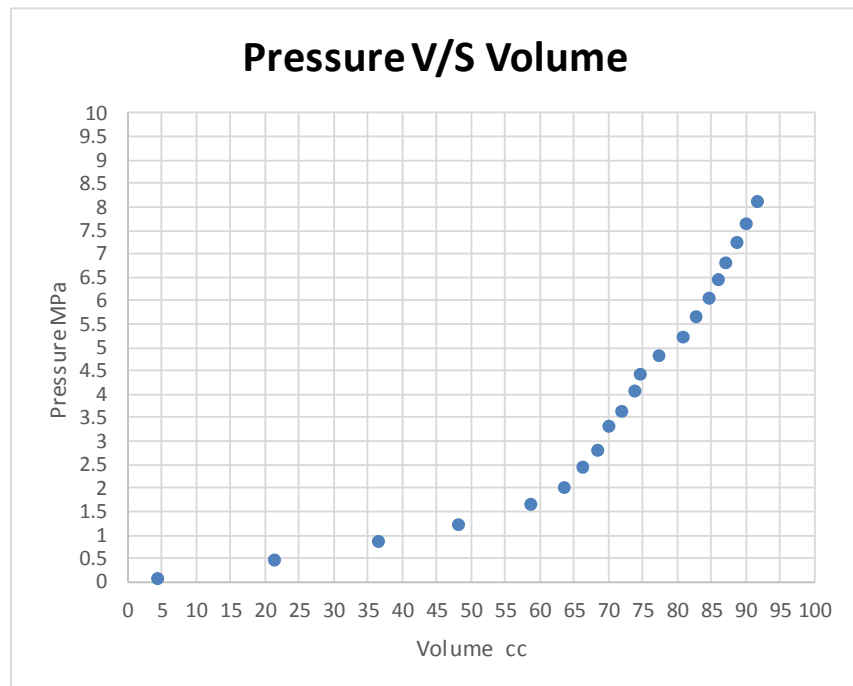
$$E = 2745.48 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/6-4
Date: --:-- 5/5/2016
Probe: PROBEX
Depth: 12.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.061318 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
4.52	0.09
21.47	0.48
36.58	0.85
48.31	1.22
58.66	1.65
63.68	2.01
66.19	2.45
68.51	2.82
70.18	3.31
72.01	3.62
73.82	4.06
74.69	4.43
77.35	4.81
80.91	5.22
82.76	5.65
84.65	6.05
85.98	6.44
87.13	6.81
88.68	7.25
90.11	7.65
91.59	8.1



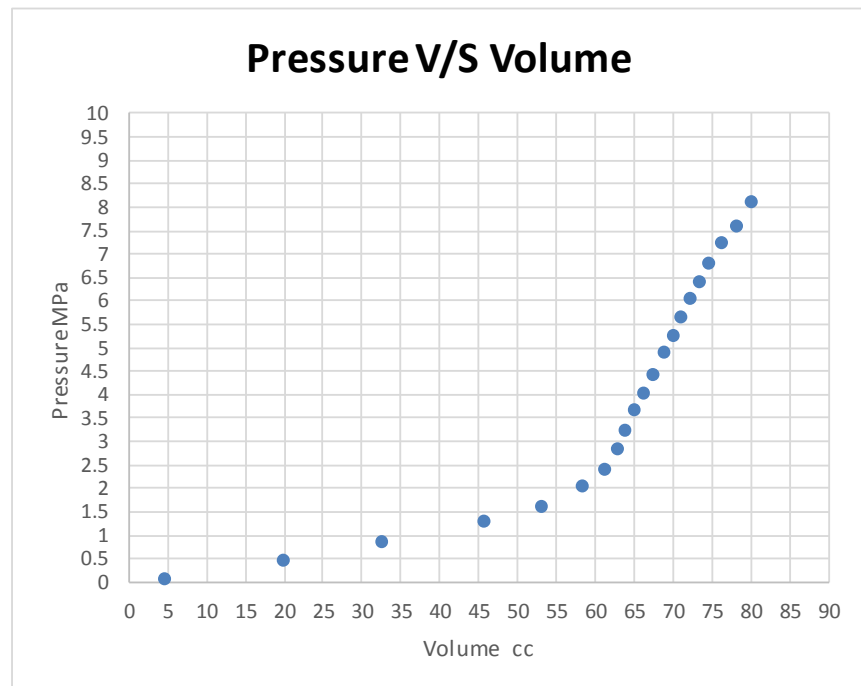
$E = 2287.078 \text{ MPa}$



Probex Companion Dataset information

Borehole Name: PMT/6-3
Date: --:-- 5/5/2016
Probe: PROBEX
Depth: 15.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.061318 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
4.61	0.07
19.88	0.48
32.57	0.86
45.66	1.3
53.11	1.62
58.24	2.06
61.29	2.41
62.96	2.85
63.87	3.26
64.95	3.69
66.13	4.02
67.4	4.45
68.74	4.89
69.98	5.25
70.91	5.66
72.05	6.06
73.24	6.41
74.61	6.81
76.19	7.26
78.04	7.61
80.01	8.1



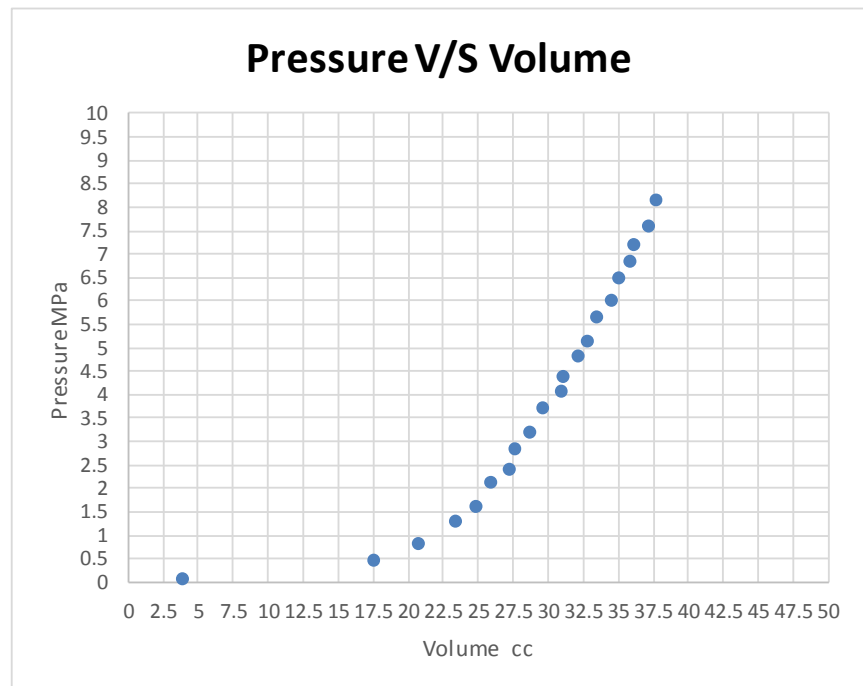
$$E = 2602.233 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/6-2
 Date: --:-- 5/5/2016
 Probe: PROBEX
 Depth: 18.00 m
 Units: Metric
 Delay: 60 s
 Volume Correction: system/(C = 1.061318 cc/Mpa)
 Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
3.92	0.07
17.56	0.47
20.78	0.84
23.41	1.31
24.78	1.61
25.89	2.12
27.19	2.41
27.68	2.84
28.63	3.19
29.64	3.72
30.88	4.08
31.12	4.41
32.13	4.81
32.84	5.16
33.44	5.64
34.49	6.02
34.98	6.49
35.83	6.85
36.13	7.2
37.14	7.59
37.65	8.16



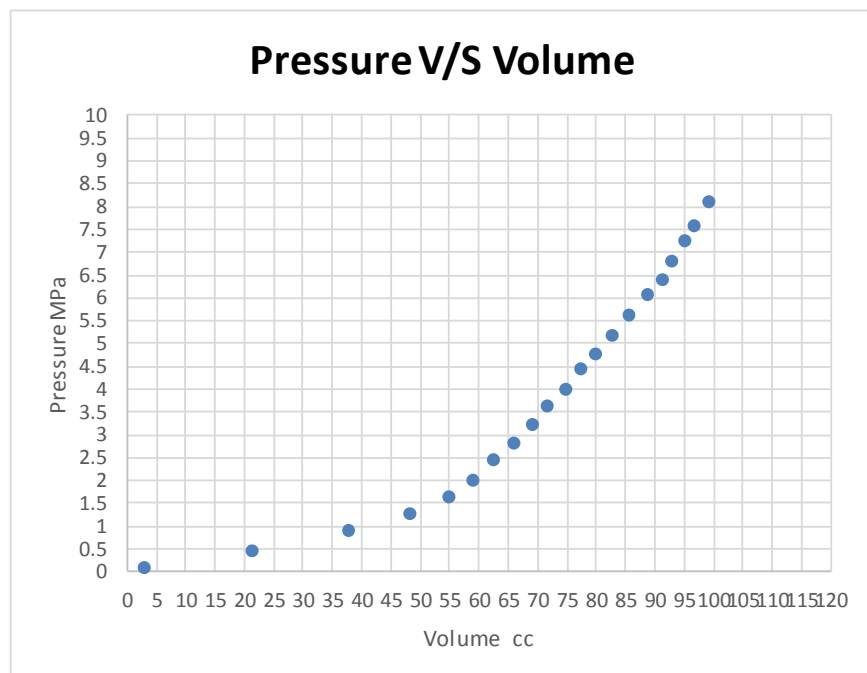
$$E = 3080.672 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/6-1
Date: --:-- 5/5/2016
Probe: PROBEX
Depth: 20.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/(C = 1.061318 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
2.93	0.1
21.32	0.44
37.74	0.9
48.07	1.28
54.78	1.64
59.03	2.02
62.58	2.45
65.89	2.83
69.11	3.22
71.73	3.63
74.87	4.01
77.49	4.44
79.98	4.78
82.88	5.18
85.7	5.61
88.86	6.09
91.24	6.38
92.85	6.82
95.15	7.27
96.81	7.58
99.17	8.12



$$E = 1266.171 \text{ MPa}$$

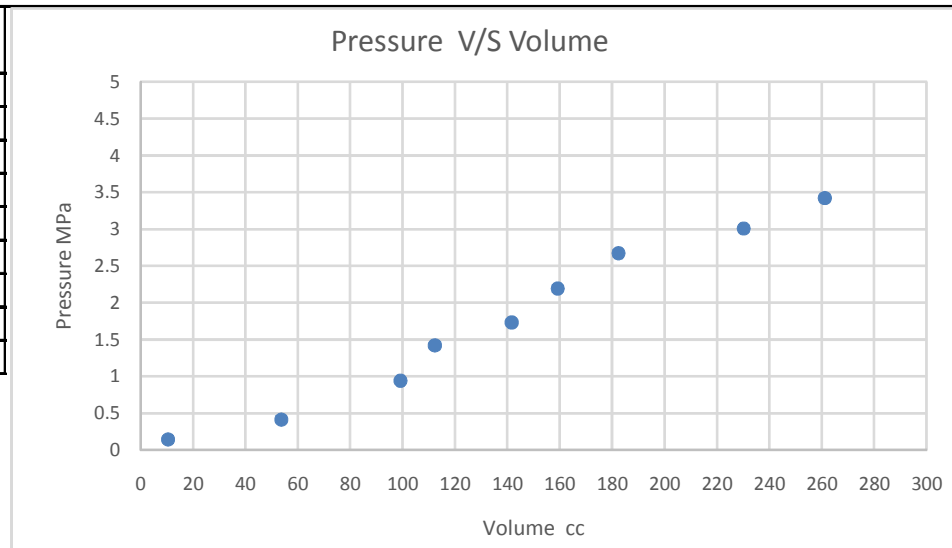


Test no	PMT 7
Northing	25
Easting	0
Ground level (G.L.) in terms of RL(+)	82.52

Probex Companion Dataset information

Borehole Name:	PMT/7-8
Date: --:--	05-07-2016
Probe:	PROBEX
Depth:	3.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.099883 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
10.41	0.14
53.67	0.41
99.11	0.94
112.32	1.42
141.67	1.73
159.12	2.19
182.32	2.67
230.11	3.01
261.14	3.42



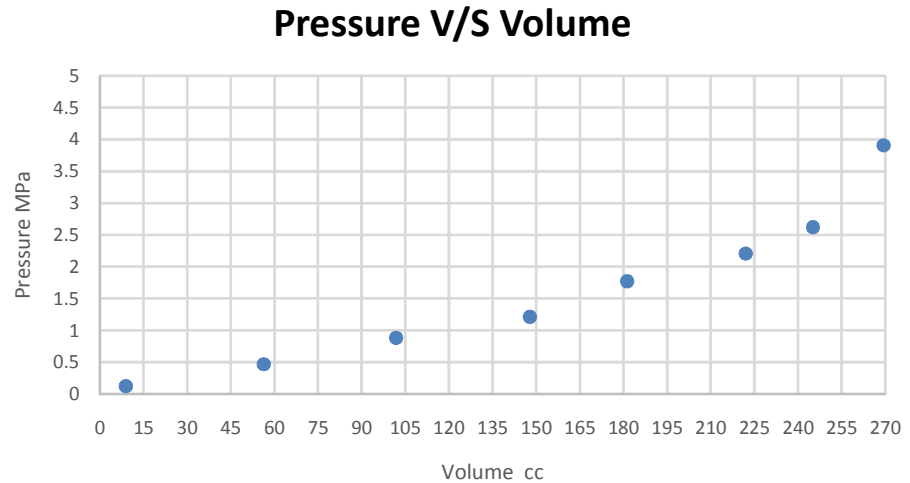
$$E = 96.45189 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name:	PMT/7-7
Date: --:--	05-07-2016
Probe:	PROBEX
Depth:	5.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.099883 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
9.01	0.12
56.38	0.47
101.87	0.88
147.88	1.21
181.32	1.77
222.11	2.21
245.12	2.62
269.49	3.91



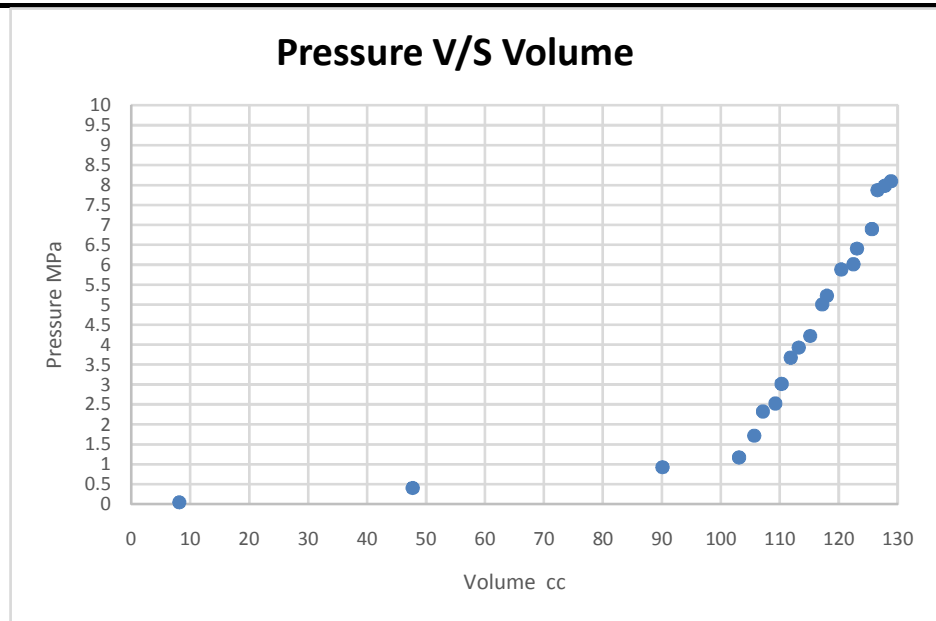
E = 278.9781 MPa



Probex Companion Dataset information

Borehole Name:	PMT/7-6
Date: --:--	05-07-2016
Probe:	PROBEX
Depth:	7.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.099883 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
8.12	0.05
47.74	0.41
90.12	0.93
103.11	1.17
105.67	1.72
107.11	2.32
109.21	2.52
110.33	3.01
111.88	3.67
113.21	3.93
115.12	4.22
117.21	5.01
118.01	5.22
120.45	5.88
122.52	6.01
123.12	6.41
125.65	6.89
126.59	7.87
127.85	7.98
128.88	8.1



$$E = 1128.565 \text{ MPa}$$

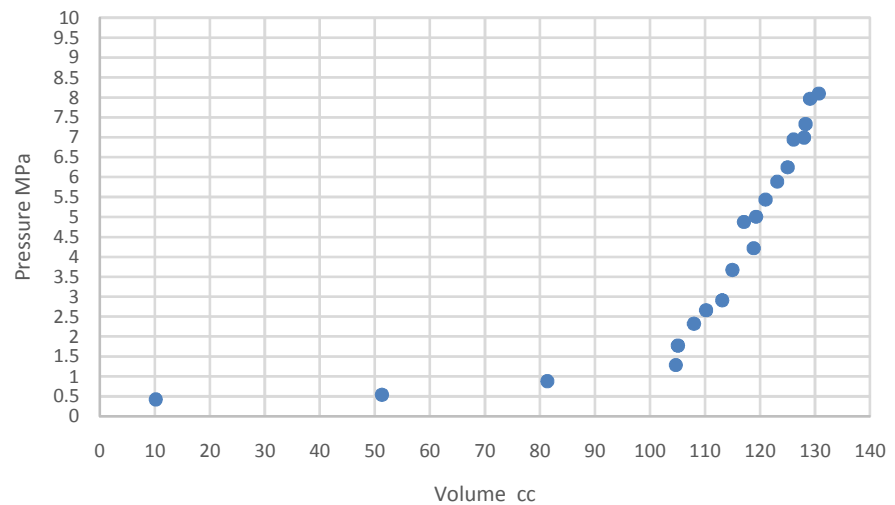


Probex Companion Dataset information

Borehole Name:	PMT/7-5
Date: --:--	05-07-2016
Probe:	PROBEX
Depth:	9.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.099883 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
----------------	-------------------

10.13	0.42
51.31	0.54
81.32	0.88
104.67	1.29
105.11	1.77
108.01	2.32
110.22	2.66
113.11	2.91
115.01	3.67
117.12	4.88
118.88	4.22
119.31	5.01
121.02	5.44
123.11	5.89
125.05	6.25
126.07	6.94
127.99	6.99
128.32	7.33
129.11	7.97
130.72	8.1



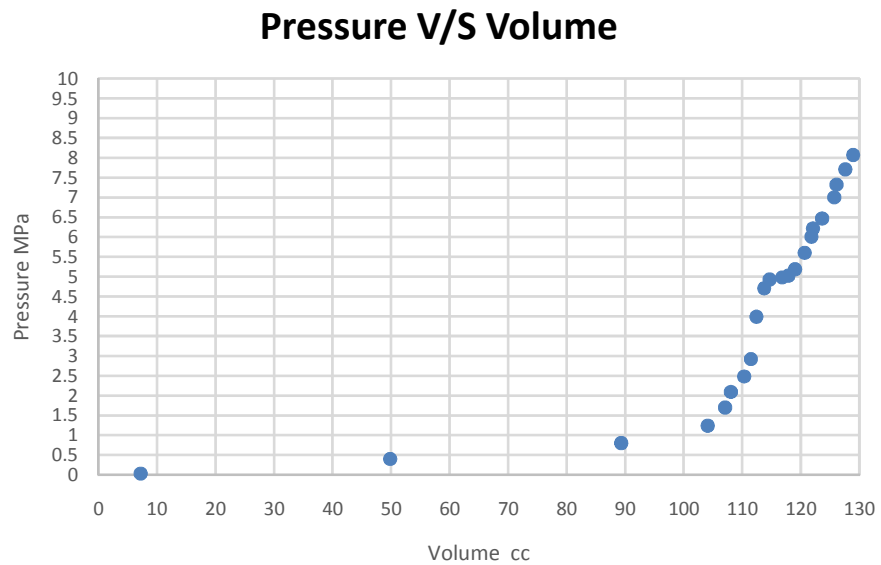
E = 1333.139 MPa



Probex Companion Dataset information

Borehole Name:	PMT/7-4
Date: --:--	05-07-2016
Probe:	PROBEX
Depth:	12.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.099883 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
7.23	0.04
49.88	0.41
89.32	0.8
104.11	1.24
107.07	1.7
108.09	2.1
110.33	2.49
111.45	2.93
112.39	3.99
113.71	4.71
114.67	4.93
116.79	4.99
117.87	5.03
119.03	5.19
120.67	5.61
121.79	6.01
122.09	6.22
123.67	6.47
125.72	7.01
126.11	7.33
127.61	7.71
128.92	8.07



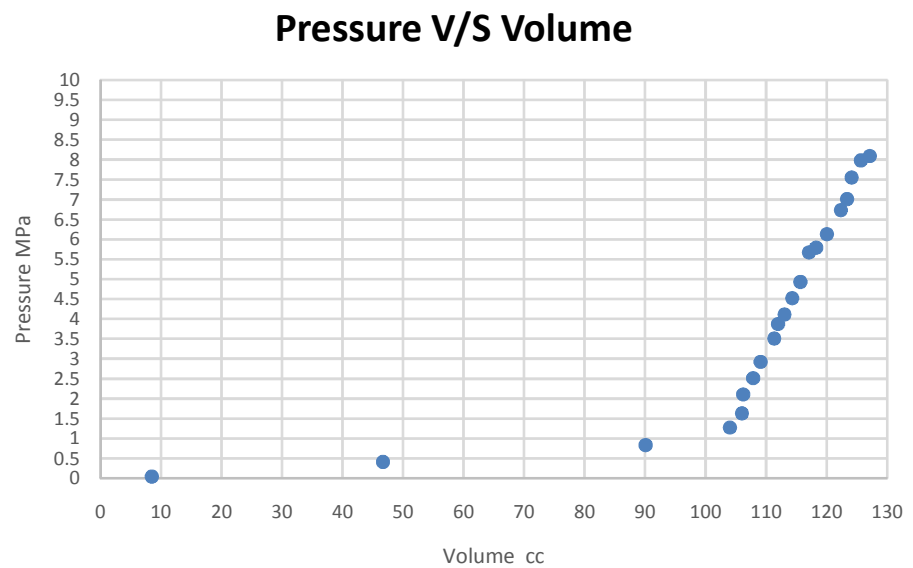
$$E = 1672.155 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name:	PMT/7-3
Date: --:--	05-07-2016
Probe:	PROBEX
Depth:	15.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.099883 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
8.51	0.04
46.67	0.41
90.11	0.83
104.05	1.28
105.98	1.63
106.22	2.11
107.88	2.52
109.09	2.93
111.32	3.51
111.99	3.88
113.01	4.11
114.29	4.52
115.67	4.93
117.09	5.67
118.29	5.79
120.05	6.13
122.32	6.73
123.39	7.01
124.11	7.55
125.67	7.98
127.13	8.09



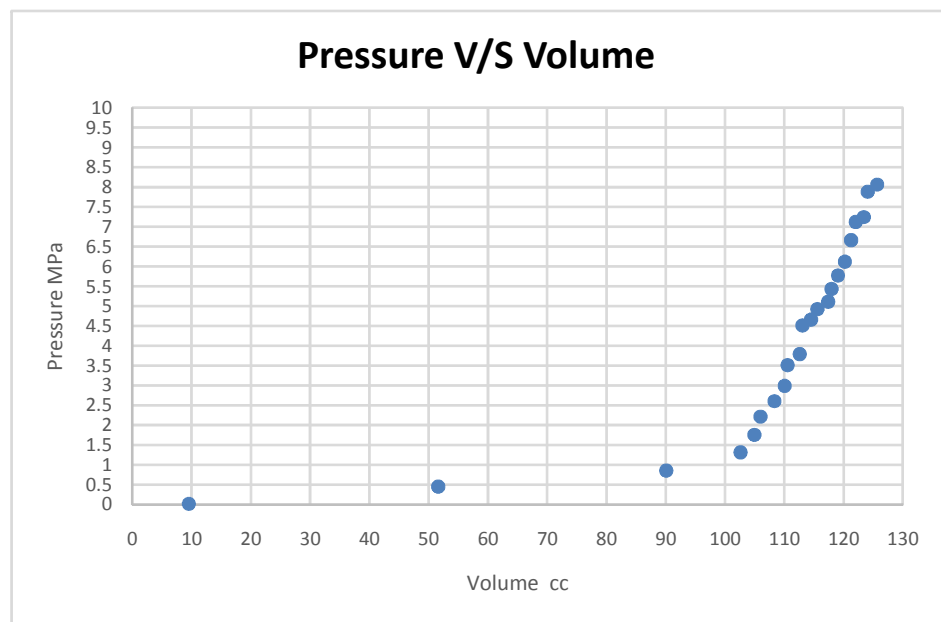
$$E = 1885.977 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name:	PMT/7-2
Date: --:--	05-07-2016
Probe:	PROBEX
Depth:	18.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.099883 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
9.51	0.02
51.66	0.45
90.11	0.85
102.66	1.31
104.99	1.76
106.01	2.22
108.32	2.61
110.05	2.99
110.57	3.51
112.63	3.79
113.09	4.51
114.55	4.66
115.61	4.92
117.44	5.11
118.00	5.43
119.05	5.77
120.21	6.12
121.32	6.66
122.11	7.12
123.44	7.25
124.12	7.89
125.67	8.07



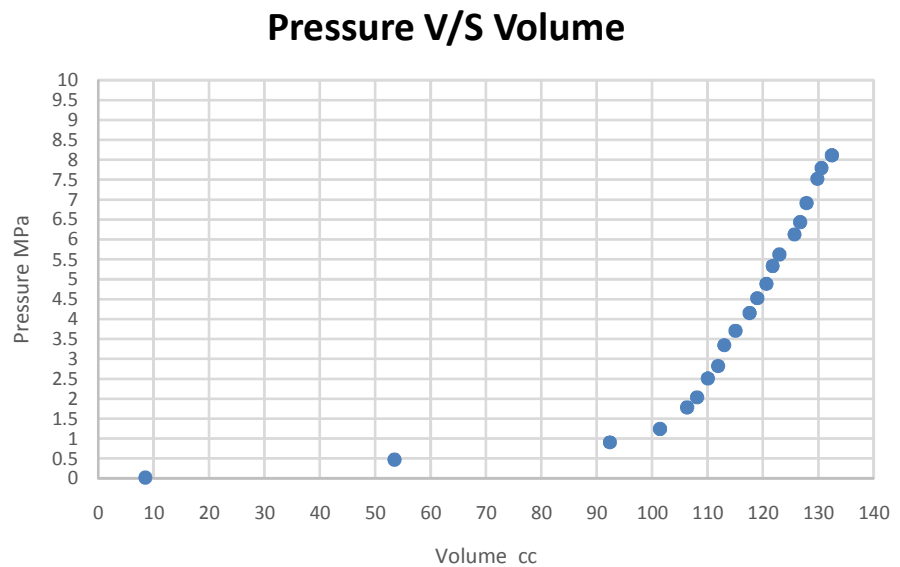
$$E = 7741.348 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name:	PMT/7-1
Date: --:--	05-07-2016
Probe:	PROBEX
Depth:	20.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/(C = 1.099883 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume (cc)	Pressure (Mpa)
8.45	0.02
53.47	0.47
92.33	0.91
101.44	1.24
106.32	1.78
108.11	2.04
110.05	2.51
111.92	2.82
112.99	3.35
115.05	3.71
117.59	4.15
119.01	4.53
120.65	4.89
121.72	5.33
122.99	5.62
125.66	6.13
126.73	6.43
127.88	6.91
129.8	7.52
130.55	7.79
132.47	8.11



$$E = 3708.331 \text{ MPa}$$

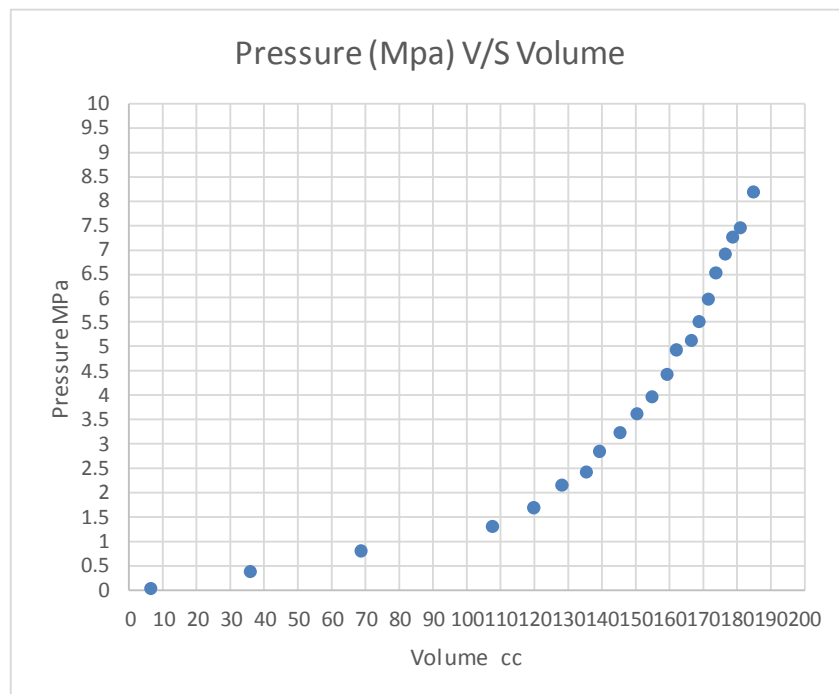


Test no	PMT 8
Northing	-283
Easting	355
Ground level (G.L.) in terms of RL(+)	83.25

Probex Companion Dataset information

Borehole Name:	PMT/8-8
Date: --:--	19-04-2016
Probe:	PROBEX
Depth:	3.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/i(C = 1.208877 cc/Mpa)
Membrane Inertia:	INERTIA/001

Volume	Pressure
(cc)	(Mpa)
6.34	0.03
35.7	0.37
68.92	0.81
107.77	1.32
119.99	1.68
128.35	2.15
135.6	2.44
139.68	2.84
145.52	3.22
150.74	3.63
155.17	3.97
159.79	4.44
162.54	4.95
166.54	5.12
168.97	5.51
172	5.99
174.21	6.51
176.98	6.89
179.02	7.25
181.15	7.45
185	8.2



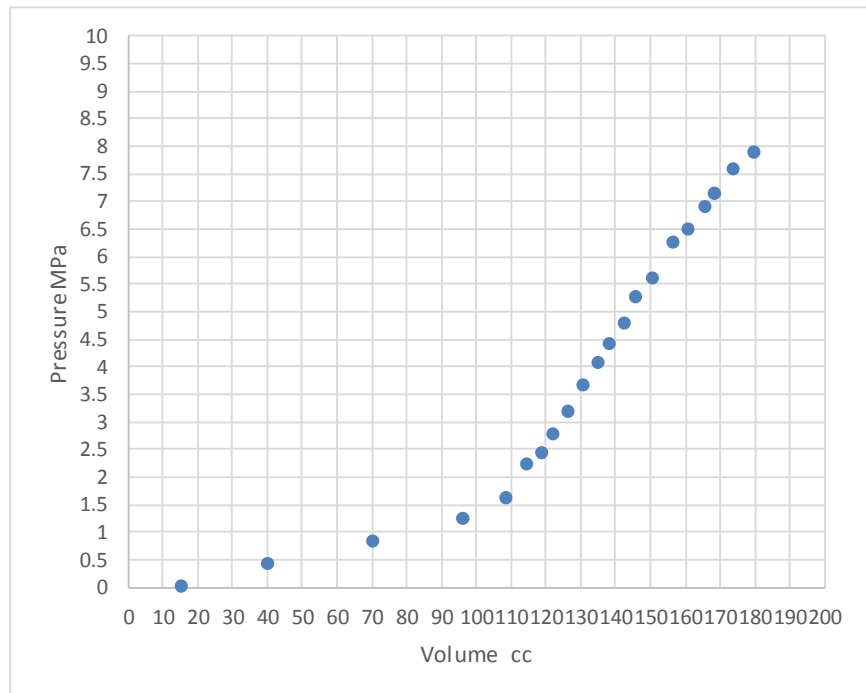
$$E = 1248.248 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/8-7
Date: --:-- 19-04-2016
Probe: PROBEX
Depth: 5.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.208877 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
15.35	0.04
39.89	0.44
70.44	0.86
96.08	1.24
108.39	1.63
114.19	2.24
118.6	2.46
121.86	2.79
126.27	3.2
130.67	3.68
134.74	4.09
138.41	4.41
142.49	4.81
145.76	5.28
150.42	5.6
156.44	6.26
160.89	6.49
165.38	6.89
168.19	7.16
173.71	7.58
179.69	7.9



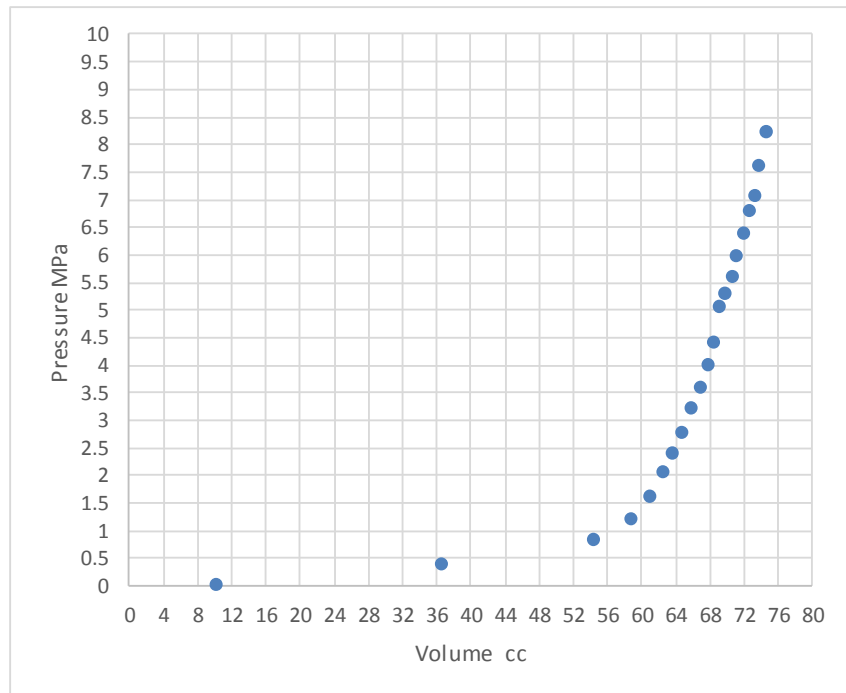
$$E = 814.0746 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/8-6
Date: --:-- 19-04-2016
Probe: PROBEX
Depth: 7.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.208877 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume	Pressure
(cc)	(Mpa)
10.28	0.03
36.71	0.4
54.39	0.85
58.73	1.24
61.03	1.63
62.62	2.09
63.59	2.41
64.71	2.78
65.76	3.23
66.96	3.62
67.74	4.04
68.44	4.44
69.11	5.08
69.84	5.33
70.68	5.62
71.04	5.99
72.1	6.4
72.76	6.81
73.24	7.09
73.69	7.63
74.59	8.26



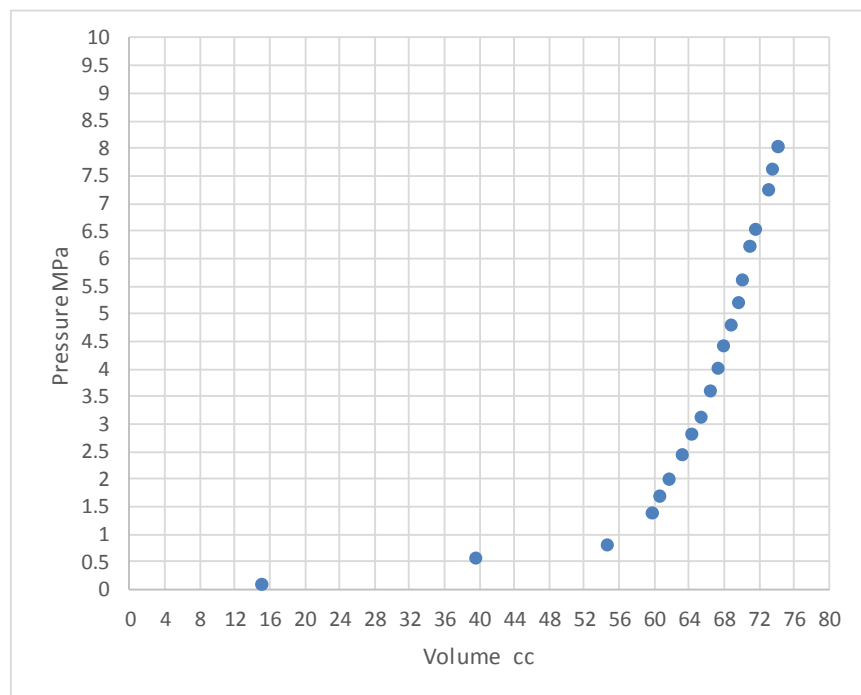
$$E = 3372.561 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/8-5
Date: --:-- 19-04-2016
Probe: PROBEX
Depth: 9.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.208877 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume	Pressure
(cc)	(Mpa)
15.15	0.09
39.69	0.57
54.8	0.83
59.81	1.4
60.77	1.7
61.87	2
63.27	2.44
64.34	2.82
65.35	3.13
66.42	3.6
67.39	4.03
68.01	4.42
68.79	4.79
69.71	5.23
70.16	5.64
71.11	6.23
71.69	6.54
73.17	7.26
73.64	7.64
74.35	8.05



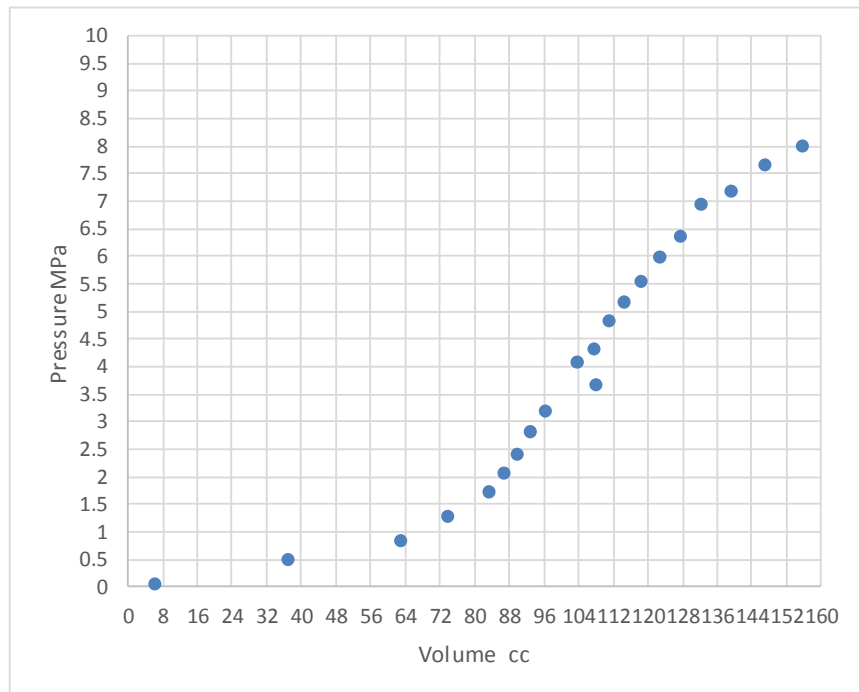
$$E = 8823.875 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/8-4
Date: --:-- 19-04-2016
Probe: PROBEX
Depth: 12.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.208877 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume	Pressure
(cc)	(Mpa)
5.97	0.06
36.6	0.48
62.71	0.82
73.63	1.29
83.01	1.72
86.77	2.05
89.83	2.39
92.77	2.81
96.29	3.19
107.74	3.65
103.56	4.06
107.32	4.32
110.93	4.82
114.34	5.16
118.23	5.54
122.72	5.99
127.41	6.36
131.92	6.94
139.18	7.16
146.98	7.63
155.62	8



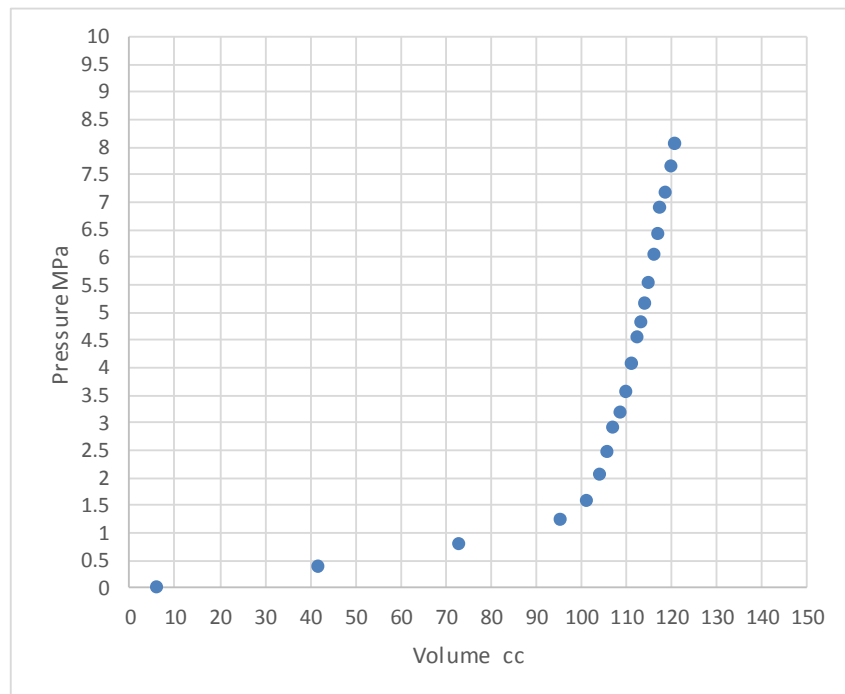
$$E = 702.7845 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/8-3
Date: --:-- 19-04-2016
Probe: PROBEX
Depth: 15.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.208877 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume	Pressure
(cc)	(Mpa)
6.15	0.01
41.73	0.4
73	0.81
95.22	1.24
101.39	1.59
104.01	2.07
105.68	2.48
107.19	2.9
108.63	3.2
109.94	3.55
111.36	4.08
112.41	4.56
113.33	4.83
114.25	5.15
114.92	5.54
116.06	6.03
116.92	6.41
117.29	6.91
118.85	7.17
120.06	7.63
120.55	8.04



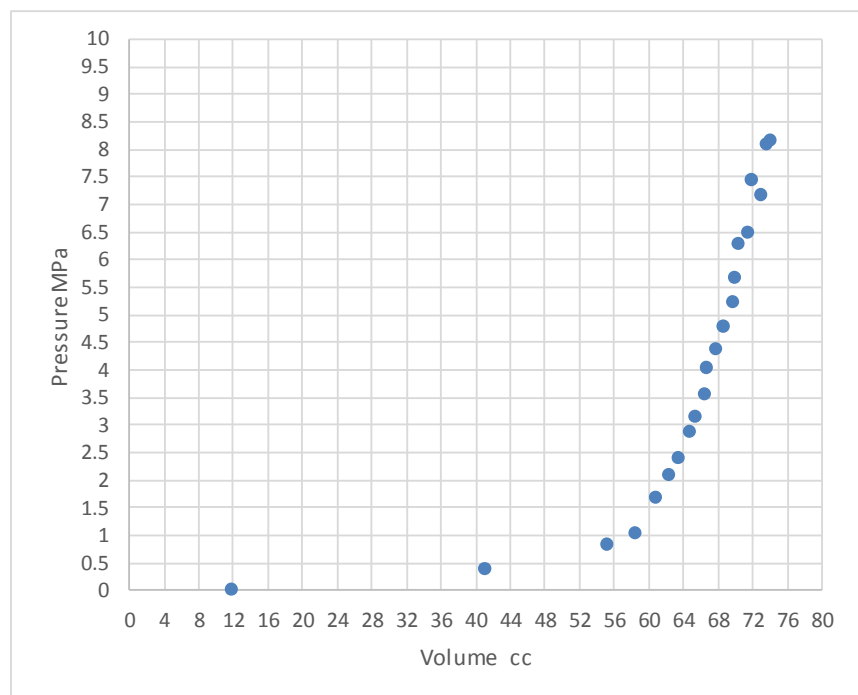
$$E = 6390.468 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/8-2
Date: --:-- 19-04-2016
Probe: PROBEX
Depth: 18.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.208877 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (Mpa)
11.59	0.02
41.06	0.4
54.97	0.84
58.3	1.03
60.59	1.67
62.23	2.11
63.39	2.41
64.6	2.87
65.15	3.14
66.3	3.55
66.45	4.02
67.56	4.36
68.49	4.79
69.63	5.21
69.71	5.66
70.29	6.29
71.28	6.49
71.83	7.44
72.72	7.16
73.49	8.1
73.82	8.15



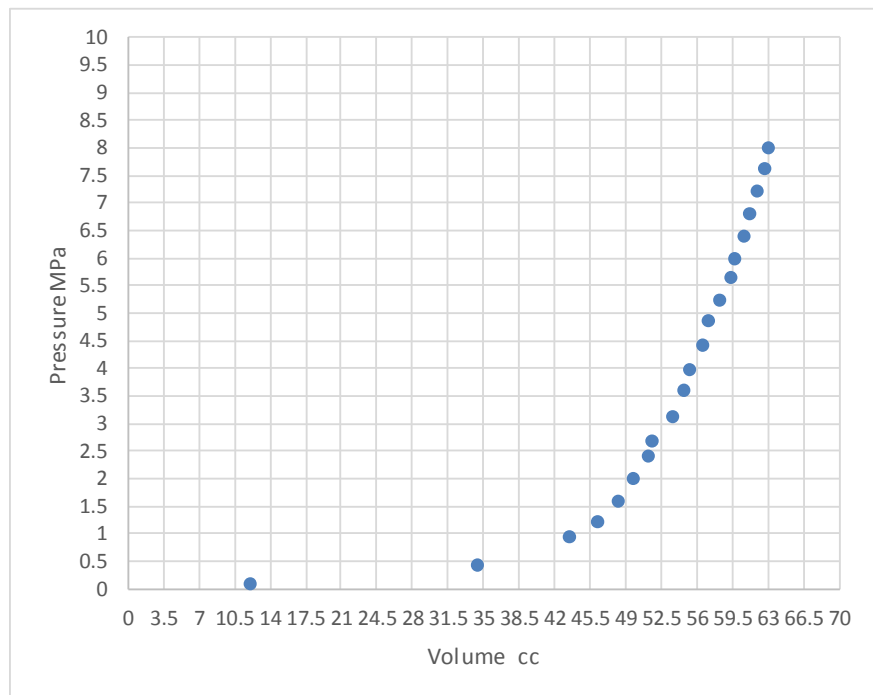
$$E = 5006.846 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/8-1
Date: --:-- 19-04-2016
Probe: PROBEX
Depth: 20.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.208877 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume	Pressure
(cc)	(Mpa)
12.04	0.09
34.49	0.43
43.45	0.94
46.25	1.23
48.2	1.61
49.66	2.01
51.25	2.41
51.6	2.68
53.64	3.13
54.69	3.61
55.34	3.97
56.54	4.42
57.1	4.86
58.28	5.23
59.31	5.64
59.63	6
60.58	6.38
61.12	6.8
61.93	7.22
62.62	7.61
63.09	8.01



$$E = 8483.365 \text{ MPa}$$

Test no	PMT 9
Northing	25
Easting	431
Ground level (G.L.) in terms of RL(+)	82.92

Probex Companion Dataset information

Borehole Name:

PMT/9-8

Date: --:--

28-04-2016

Probe:

PROBEX

Depth:

3.00 m

Units:

Metric

Delay:

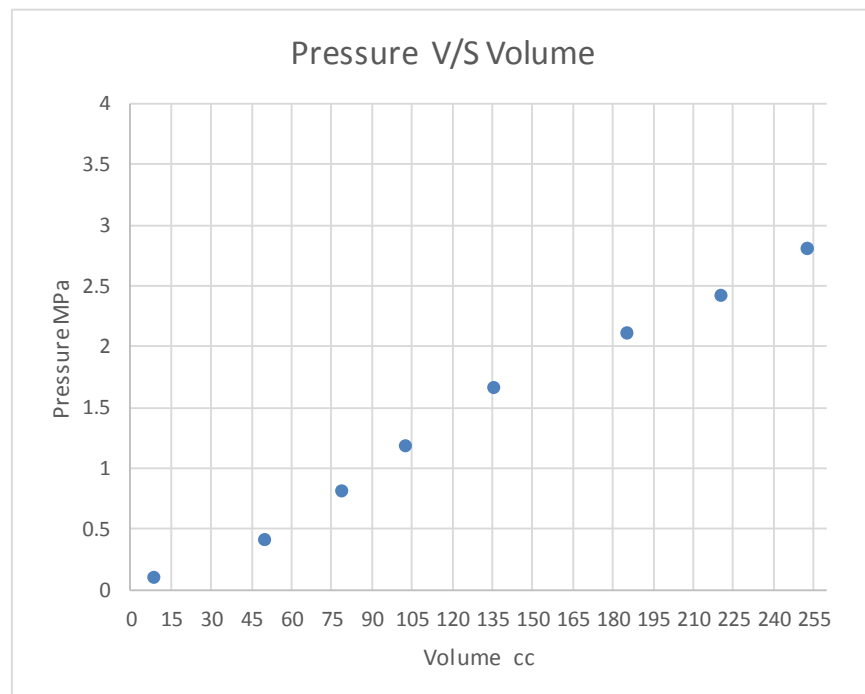
60 s

Volume Correction:

system/i(C = 1.047555 cc/Mpa)

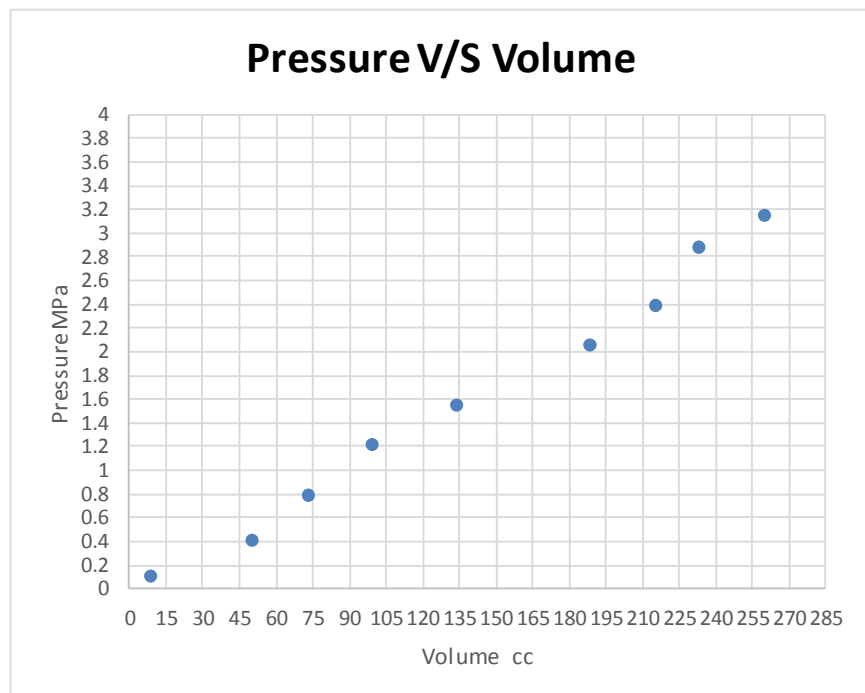
Membrane Inertia:

INERTIA/001

[illegible]

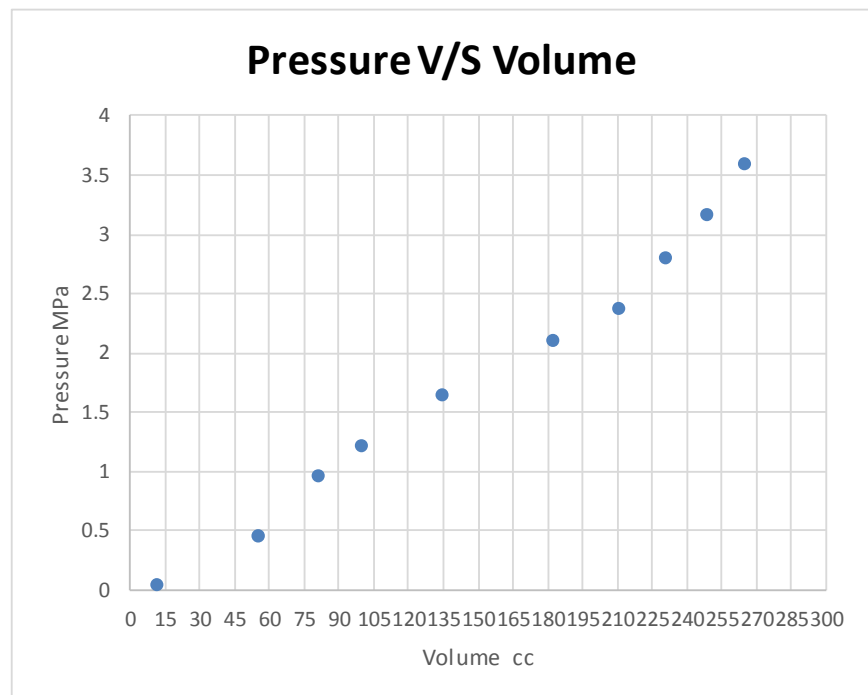
$$E = 1.83794 \text{ MPa}$$

Borehole Name:	PMT/9-7
Date: --:--	28-04-2016
Probe:	PROBEX
Depth:	5.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/i(C = 1.047555 cc/Mpa)
Membrane Inertia:	INERTIA/001

[illegible]

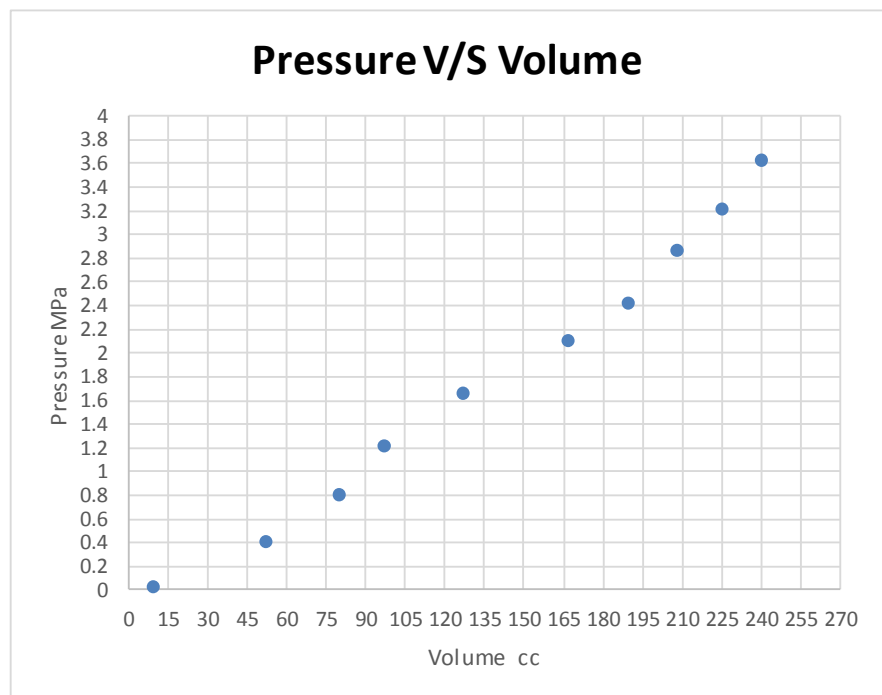
$$E = 110.17 \text{ MPa}$$

Borehole Name:	PMT/9-6
Date: --:--	28-04-2016
Probe:	PROBEX
Depth:	7.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/i(C = 1.047555 cc/Mpa)
Membrane Inertia:	INERTIA/001

[illegible]

$$E = 131.66 \text{ MPa}$$

Borehole Name:	PMT/9-5
Date: --:--	28-04-2016
Probe:	PROBEX
Depth:	9.00 m
Units:	Metric
Delay:	60 s
Volume Correction:	system/i(C = 1.047555 cc/Mpa)
Membrane Inertia:	INERTIA/001

[illegible]

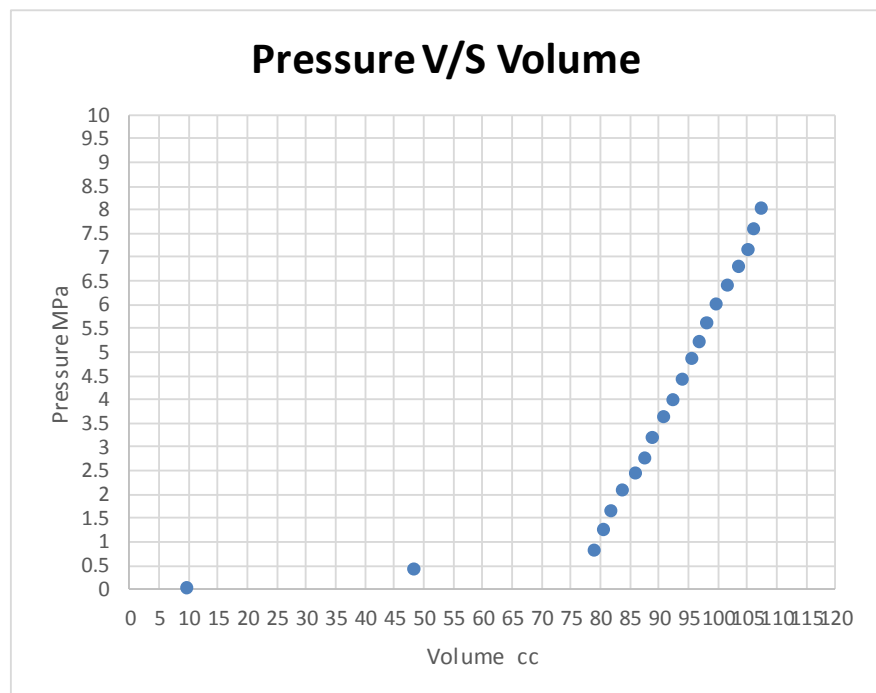
$$E = 3.43.704 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/9-4
Date: --:-- 28-04-2016
Probe: PROBEX
Depth: 12.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.047555 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume	Pressure
(cc)	(MPa)
9.65	0.03
48.29	0.44
78.94	0.82
80.66	1.28
82.05	1.65
83.71	2.1
85.89	2.46
87.62	2.78
89.05	3.23
90.84	3.65
92.38	4.02
93.96	4.43
95.67	4.88
96.88	5.24
98.31	5.62
99.82	6.01
101.67	6.42
103.74	6.81
105.13	7.18
106.28	7.61
107.41	8.05



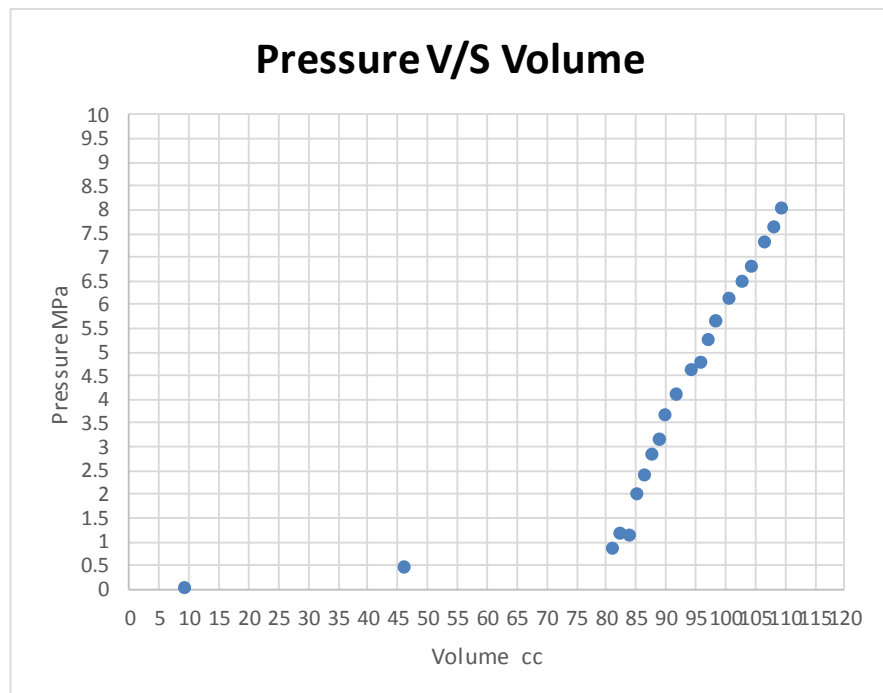
$$E = 131.46 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/9-3
Date: --:-- 28-04-2016
Probe: PROBEX
Depth: 15.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.047555 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (MPa)
9.41	0.02
46.28	0.46
81.25	0.88
82.5	1.18
83.91	1.16
85.08	2.03
86.39	2.41
87.78	2.86
88.95	3.16
90.11	3.69
91.94	4.1
94.32	4.62
95.89	4.8
97.05	5.26
98.61	5.64
100.58	6.12
102.75	6.48
104.53	6.82
106.78	7.31
108.11	7.65
109.54	8.02



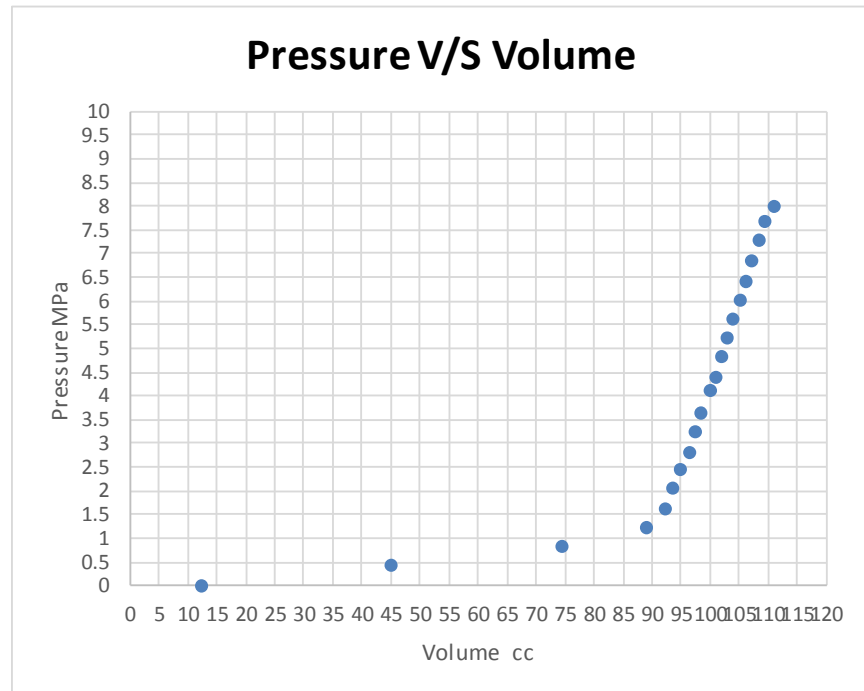
$$E = .677.77 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/9-2
Date: --:-- 28-04-2016
Probe: PROBEX
Depth: 18.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.047555 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (MPa)
12.38	0.01
45.13	0.45
74.39	0.82
89.03	1.24
92.18	1.62
93.55	2.05
94.99	2.46
96.45	2.81
97.46	3.24
98.38	3.65
100.05	4.11
100.98	4.42
102.05	4.84
102.93	5.22
103.9	5.65
105.1	6.01
106.12	6.42
107.25	6.85
108.49	7.28
109.56	7.71
111.16	8.0



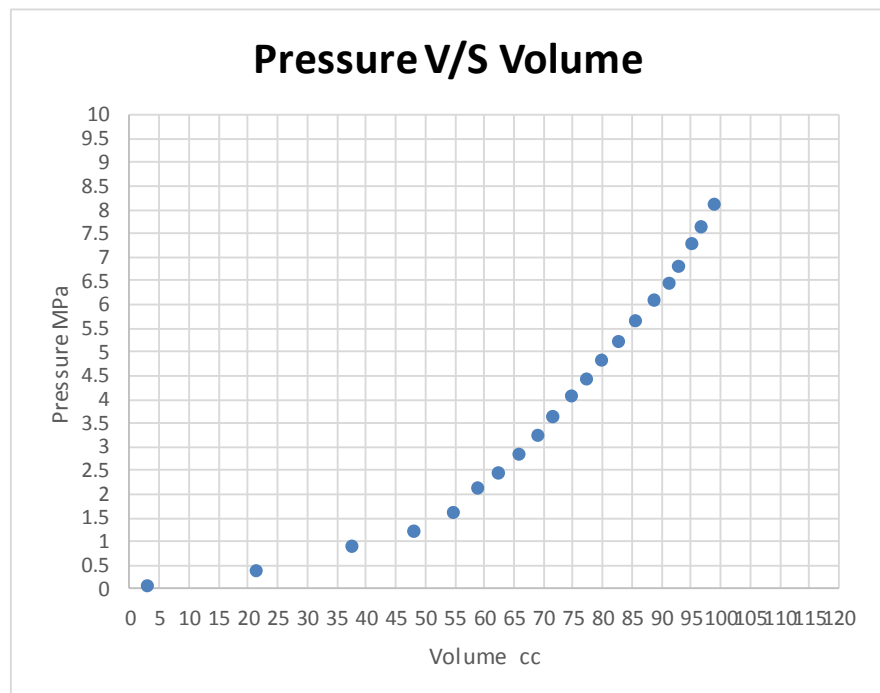
$E = 309.51 \text{ MPa}$



Probex Companion Dataset information

Borehole Name: PMT/9-1
Date: --:-- 28-04-2016
Probe: PROBEX
Depth: 20.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.047555 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume (cc)	Pressure (MPa)
2.93	0.07
21.32	0.38
37.74	0.88
48.07	1.22
54.78	1.61
59.03	2.1
62.58	2.45
65.89	2.82
69.11	3.21
71.73	3.64
74.87	4.05
77.49	4.4
79.98	4.81
82.88	5.22
85.7	5.64
88.86	6.07
91.24	6.42
92.85	6.81
95.15	7.26
96.81	7.62
99.17	8.1



$$E = 347.22 \text{ MPa}$$

INERTIA/001

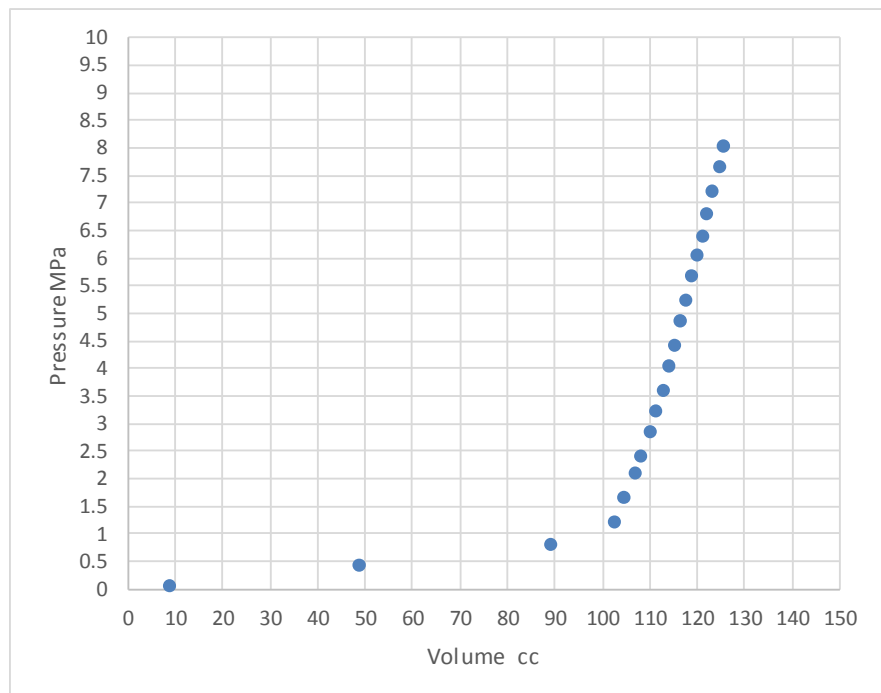
$$E = 68.47251 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/10-6
Date: --:-- 30-04-2016
Probe: PROBEX
Depth: 7.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.069797 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume	Pressure
(cc)	(MPa)
8.6	0.06
48.75	0.45
89.12	0.82
102.66	1.23
104.45	1.66
106.81	2.1
108.16	2.4
109.85	2.85
111.39	3.22
112.8	3.6
114.02	4.05
115.26	4.41
116.52	4.85
117.69	5.23
118.75	5.67
119.8	6.06
120.96	6.41
122.01	6.81
123.14	7.22
124.51	7.65
125.58	8.02



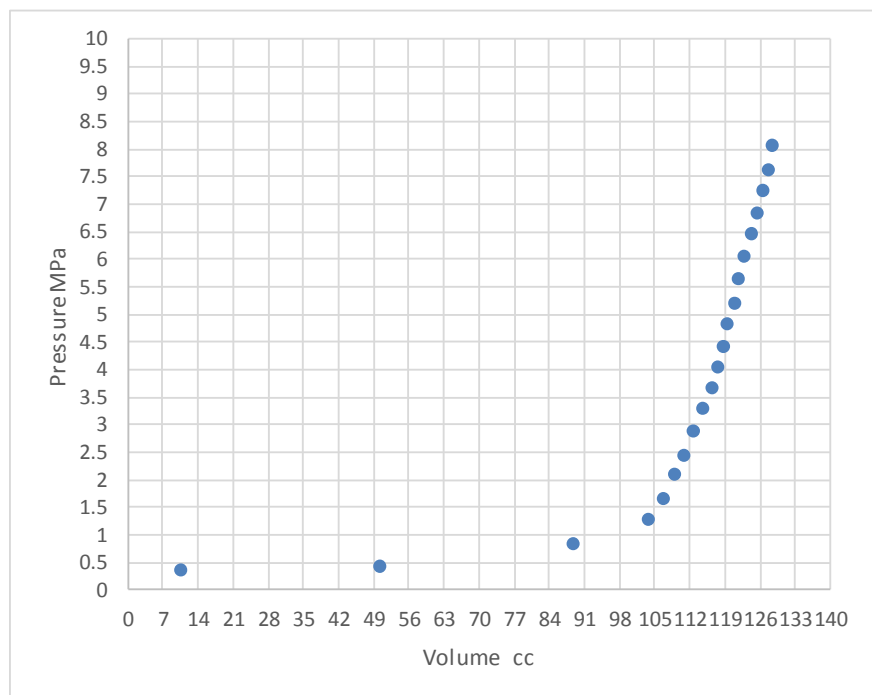
$$E = 3081.091 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/10-5
Date: --:-- 30-04-2016
Probe: PROBEX
Depth: 9.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.069797 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume	Pressure
(cc)	(MPa)
10.52	0.37
50.13	0.42
88.79	0.85
103.68	1.28
106.72	1.65
109.03	2.1
110.97	2.42
112.65	2.88
114.44	3.3
116.32	3.65
117.55	4.04
118.84	4.41
119.47	4.82
120.85	5.19
121.78	5.65
122.93	6.05
124.26	6.44
125.32	6.82
126.39	7.23
127.51	7.62
128.56	8.05



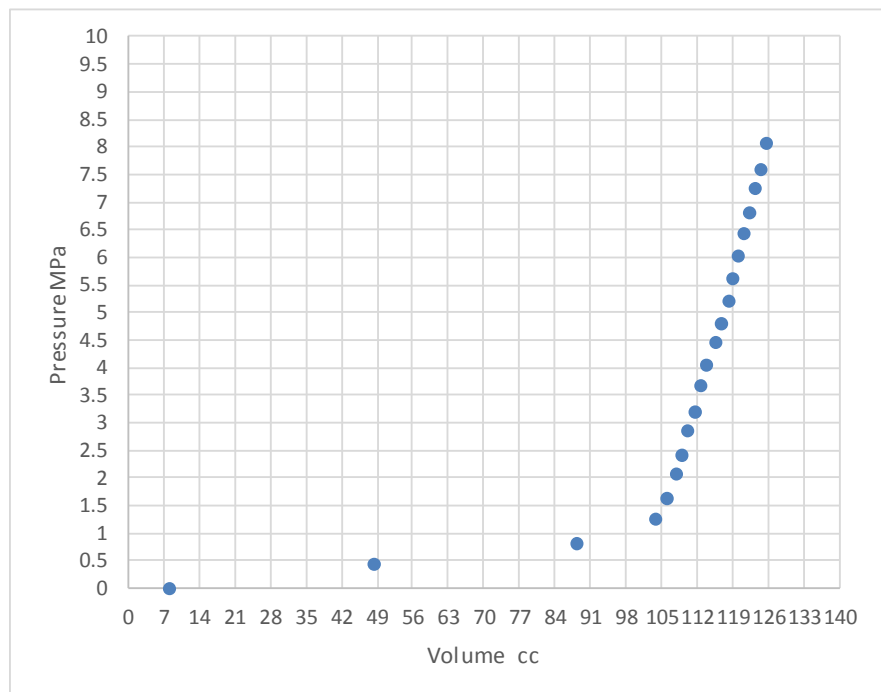
$$E = 3506.199 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/10-4
Date: --:-- 30-04-2016
Probe: PROBEX
Depth: 12.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.069797 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume	Pressure
(cc)	(MPa)
8.11	0.02
48.55	0.45
88.47	0.82
103.78	1.25
106.12	1.64
107.84	2.08
109.04	2.42
110.16	2.88
111.41	3.22
112.85	3.69
113.94	4.05
115.52	4.46
116.86	4.82
118.04	5.22
119.1	5.61
120.08	6.02
121.26	6.44
122.32	6.82
123.41	7.25
124.54	7.6
125.49	8.06



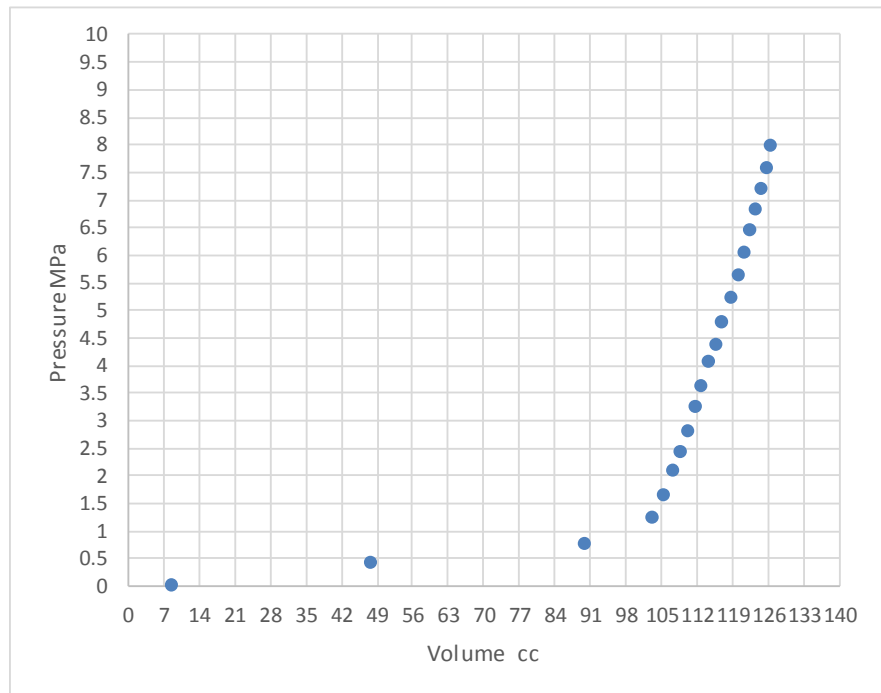
$$E = 4828.599 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/10-3
Date: --:-- 30-04-2016
Probe: PROBEX
Depth: 15.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.069797 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume	Pressure
(cc)	(MPa)
8.55	0.04
47.76	0.46
89.61	0.8
103.24	1.25
105.13	1.68
106.95	2.1
108.68	2.45
110.12	2.82
111.39	3.29
112.78	3.66
113.97	4.08
115.53	4.41
116.87	4.81
118.65	5.25
120.01	5.66
121.17	6.05
122.19	6.48
123.32	6.85
124.3	7.22
125.41	7.6
126.25	8.02



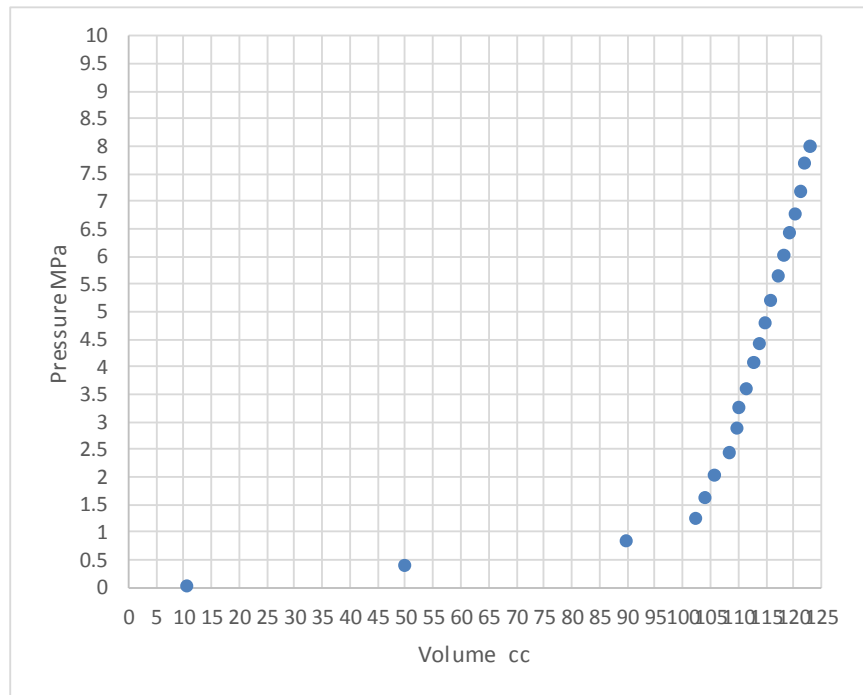
$$E = 5168.606 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/10-2
Date: --:-- 30-04-2016
Probe: PROBEX
Depth: 18.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.069797 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume	Pressure
(cc)	(MPa)
10.5	0.02
49.95	0.4
89.85	0.84
102.24	1.25
104.09	1.62
105.85	2.04
108.49	2.46
109.89	2.88
110.16	3.25
111.5	3.6
112.71	4.07
113.88	4.42
114.97	4.8
116.01	5.22
117.08	5.64
118.05	6.01
119.15	6.43
120.14	6.78
121.15	7.19
122.03	7.69
123.09	8.01



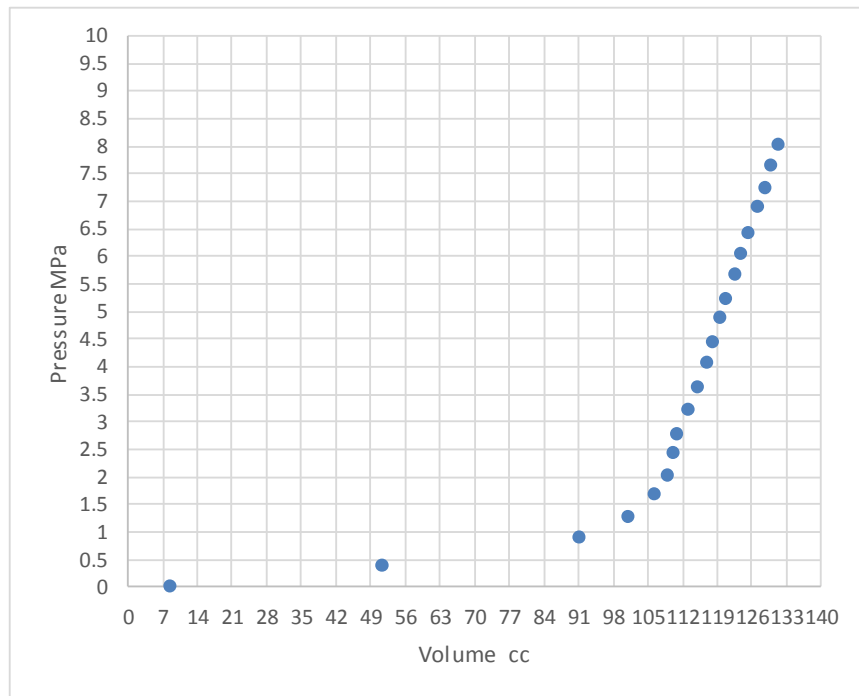
$$E = 6941.927 \text{ MPa}$$



Probex Companion Dataset information

Borehole Name: PMT/10-1
Date: --:-- 30-04-2016
Probe: PROBEX
Depth: 20.00 m
Units: Metric
Delay: 60 s
Volume Correction: system/i(C = 1.069797 cc/Mpa)
Membrane Inertia: INERTIA/001

Volume	Pressure
(cc)	(MPa)
8.41	0.01
51.19	0.4
90.99	0.89
100.98	1.28
106.05	1.67
108.77	2.01
109.72	2.44
110.78	2.78
112.97	3.22
114.85	3.61
116.56	4.07
118.04	4.45
119.52	4.9
120.71	5.21
122.42	5.68
123.64	6.06
125.13	6.41
126.78	6.88
128.65	7.22
129.77	7.66
131.28	8.02



$$E = 3260.516 \text{ MPa}$$

Deformability (E-value) by Pressure-meter test (PMT)											
Sr no	1	2	3	4	5	6	7	8	9	10	
Structure name	NDCT 1, 2	Boiler, Aux boiler, CST tank and pump house	NDCT 3, 4, 5	Boiler, Aux boiler, CST tank and pump house	Boiler, Aux boiler, CST tank and pump house	PH including TG, service building and compressor house	Chimney and ID fan area	PH including TG, service building and compressor house	Chimney and ID fan area	PH including TG, service building and compressor house	
Test no	PMT 1	PMT 2	PMT 3	PMT 4	PMT 5	PMT 6	PMT 7	PMT 8	PMT 9	PMT 10	
Northing	-382	-211	-600	-211	-211	-283	25	-283	25	-283	
Easting	-485	36	1071	467	610	-77	0	355	431	639	
Ground level (G.L.) in terms of RL(+)	79.883	81.268	85.224	83.230	85.409	77.236	82.291	83.083	82.889	85.128	
E value, MPa	20.00	2.80E+03	5.42E+03	4.23E+03	7.46E+03	2.07E+03	1.27E+03	3.71E+03	8.48E+03	4.35E+03	3.26E+03
	18.00	1.00E+03	3.00E+03	1.93E+03	6.61E+03	3.23E+03	3.08E+03	7.74E+03	5.01E+03	3.31E+03	6.94E+03
	15.00	8.57E+02	3.50E+03	7.93E+02	5.15E+03	2.06E+03	2.60E+03	1.89E+03	6.39E+03	1.68E+03	5.17E+03
	12.00	1.02E+03	1.54E+03	1.59E+03	8.79E+03	2.14E+03	2.29E+03	1.67E+03	7.03E+02	3.13E+03	4.83E+03
	9.00	4.54E+02	3.67E+03	1.01E+03	6.57E+03	2.16E+03	2.75E+03	1.33E+03	8.82E+03	1.53E+02	3.51E+03
	7.00	5.47E+02	2.72E+03	4.92E+02	2.81E+03	3.05E+03	8.62E+03	1.13E+03	3.37E+03	1.32E+02	3.08E+03
	5.00	6.66E+02	1.56E+03	5.97E+02	2.05E+03	2.82E+03	7.24E+03	2.79E+02	8.14E+02	1.10E+02	6.85E+01
	3.00	4.61E+02	3.05E+03	1.12E+03	1.99E+01	2.34E+03	4.03E+03	9.65E+01	1.25E+03	3.18E+01	7.82E+01
	1.00	-	-	-	-	3.12E+01	-	-	-	-	-

Conclusion: From the above test results, it is concluded that the young's modulii for the different depths are given in the table below .



Design Young's Modulus from PMT

Sr.No.	Depth,m	Young' modulus, MPa	Remarks
1	3.0	1.99E+01	Weathered Rock
2	5.0	6.85E+01	
3	7.0	1.32E+02	
4	9.0	1.53E+02	
5	12.0	7.03E+02	
6	15.0	7.93E+02	
7	18.0	1.00E+03	Fresh Rock
8	20.0	1.27E+03	

SEISMIC REFRACTION TEST

Geo-Seismic Line SRT-1

(Refer Figure: 01 for Tomogram, Figure : 01(A) for Depth Section (770 M))

A cumulative length of 770m have been covered with geophones placed at 10m interval covered under four overlapping profiles.

For each seismic spread, Two- Far shots, Two -End shots, Two - Intermediate shots and one-Mid shot. Intermediate shots are taken at 6th and 18th geophone location, mid shot is taken at 12th geophone all along the seismic spread.

The seismic velocities are estimated in the tomograms using Rayfract software calibrated accordingly to the boreholes logs corresponding to the variation in sub-surface lithology. However, it is expected that the first layer with compressional velocities in the range of 600m/s to 1000m/sec could be related to highly weathered strata / unconsolidated overburden materials, probably formed by decomposition of underlying rock. The second layer with recorded P-wave velocity in the range of 1000m/s to 2500m/s indicates the presence of moderately weathered rock.

The P-wave velocity is increasing gradually underneath indicating existence of fresh rock. Based on the velocities, it can be inferred that highly weathered zone exists upto a depth of 1.5m which is underlain by moderately weathered strata for a thickness of about 5.3m-13.6m. The rock is assumed to exist at a depth of 1.5m from the surface.

Table 1: Depth of various layers for SRT-1

Sl. No.	Description	Depth (m)	Thickness
1	Highly Weathered rock	0 - 1.5	1.5
2	Moderately weathered rock	6.8-15.1	5.3-13.6
3	Fresh rock	>15	



Table 2: Location of geophones for SRT-1 with inferred depth to rock

SURVEY OF SRT LINE-1						
Sl.No.	Chainage (m)	Code	Easting (m)	Northing (m)	Elevation (m)	Depth to Rock Line (m)
1	0	SRT-1/1	-98.973	-30.118	78.937	1.14
2	10	SRT-1/2	-88.973	-30.116	79.176	1.14
3	20	SRT-1/3	-68.973	-30.110	79.313	1.91
4	30	SRT-1/4	-58.973	-30.104	79.328	1.92
5	40	SRT-1/5	-48.973	-30.099	79.342	2.25
6	50	SRT-1/6	-38.973	-30.094	79.398	2.49
7	60	SRT-1/7	221.027	-30.068	79.465	2.49
8	70	SRT-1/8	-18.973	-30.085	79.492	2.31
9	80	SRT-1/9	-78.973	-30.113	79.500	1.90
10	90	SRT-1/10	231.028	-30.066	79.608	1.98
11	100	SRT-1/11	-28.973	-30.088	79.628	2.30
12	110	SRT-1/12	-8.974	-30.089	79.659	2.47
13	120	SRT-1/13	211.017	-30.074	79.733	2.37
14	130	SRT-1/14	241.024	-30.065	79.775	2.17
15	140	SRT-1/15	1.026	-30.095	79.875	2.07
16	150	SRT-1/16	251.022	-30.065	79.941	2.47
17	160	SRT-1/17	11.019	-30.099	80.018	3.37
18	170	SRT-1/18	21.023	-30.099	80.059	3.73
19	180	SRT-1/19	261.034	-30.065	80.063	2.91
20	190	SRT-1/20	31.018	-30.099	80.100	2.34
21	200	SRT-1/21	41.026	-30.099	80.142	2.12
22	210	SRT-1/22	201.016	-30.085	80.157	1.75
23	220	SRT-1/23	271.015	-30.064	80.160	1.66
24	230	SRT-1/24	51.026	-30.100	80.183	1.83
25	240	SRT-1/25	61.027	-30.100	80.225	2.31



26	250	SRT-1/26	281.021	-30.064	80.258	2.67
27	260	SRT-1/27	71.027	-30.100	80.266	2.9
28	270	SRT-1/28	81.027	-30.101	80.308	2.85
29	280	SRT-1/29	91.028	-30.101	80.349	2.93
30	290	SRT-1/30	291.023	-30.064	80.355	2.89
31	300	SRT-1/31	101.030	-30.101	80.390	2.25
32	310	SRT-1/32	111.028	-30.102	80.432	1.39
33	320	SRT-1/33	301.030	-30.063	80.452	0.72
34	330	SRT-1/34	121.027	-30.102	80.473	0.83
35	340	SRT-1/35	191.026	-30.095	80.589	1.10
36	350	SRT-1/36	131.027	-30.101	80.627	1.40
37	360	SRT-1/37	181.028	-30.091	80.777	1.47
38	370	SRT-1/38	311.029	-30.062	80.881	1.27
39	380	SRT-1/39	171.025	-30.088	80.966	1.19
40	390	SRT-1/40	141.023	-30.098	80.988	1.41
41	400	SRT-1/41	151.027	-30.095	81.275	1.67
42	410	SRT-1/42	161.027	-30.091	81.296	2.11
43	420	SRT-1/43	321.026	-30.061	81.317	2.24
44	430	SRT-1/44	331.029	-30.061	81.581	2.04
45	440	SRT-1/45	341.030	-30.060	81.738	1.82
46	450	SRT-1/46	351.014	-30.060	81.895	1.76
47	460	SRT-1/47	361.020	-30.060	82.044	1.76
48	470	SRT-1/48	371.028	-30.062	82.178	1.89
49	480	SRT-1/49	381.020	-30.064	82.311	1.70
50	490	SRT-1/50	391.031	-30.066	82.445	1.72
51	500	SRT-1/51	401.028	-30.066	82.632	1.72
52	510	SRT-1/52	411.027	-30.064	82.858	1.84
53	520	SRT-1/53	421.013	-30.062	83.087	2.04



54	530	SRT-1/54	431.030	-30.056	83.321	2.23
55	540	SRT-1/55	441.005	-30.053	83.574	2.40
56	550	SRT-1/56	461.027	-30.054	83.843	2.42
57	560	SRT-1/57	471.027	-30.055	83.871	2.29
58	570	SRT-1/58	491.027	-30.053	83.874	2.75
59	580	SRT-1/59	451.024	-30.053	83.888	2.55
60	590	SRT-1/60	511.027	-30.051	83.894	2.37
61	600	SRT-1/61	501.027	-30.052	83.934	2.06
62	610	SRT-1/62	481.027	-30.056	83.948	2.01
63	620	SRT-1/63	521.027	-30.051	83.973	2.12
64	630	SRT-1/64	531.027	-30.050	83.975	2.51
65	640	SRT-1/65	541.031	-30.053	84.059	2.96
66	650	SRT-1/66	551.027	-30.056	84.117	3.32
67	660	SRT-1/67	561.033	-30.059	84.176	3.06
68	670	SRT-1/68	571.035	-30.061	84.234	2.69
69	680	SRT-1/69	581.025	-30.064	84.293	2.57
70	690	SRT-1/70	591.021	-30.067	84.351	2.67
71	700	SRT-1/71	601.010	-30.070	84.410	2.93
72	710	SRT-1/72	611.024	-30.073	84.468	2.86
73	720	SRT-1/73	621.024	-30.075	84.535	2.54
74	730	SRT-1/74	631.027	-30.076	84.612	2.36
75	740	SRT-1/75	641.029	-30.076	84.690	2.61
76	750	SRT-1/76	651.023	-30.077	84.767	2.75
77	760	SRT-1/77	661.025	-30.078	84.844	3.04
78	770	SRT-1/78	671.032	-30.079	84.921	3.19



5 X 800 MW YADADRI THERMAL POWER STATION, VEERLA PALEM, DAMARCHERLA, TELANGANA.

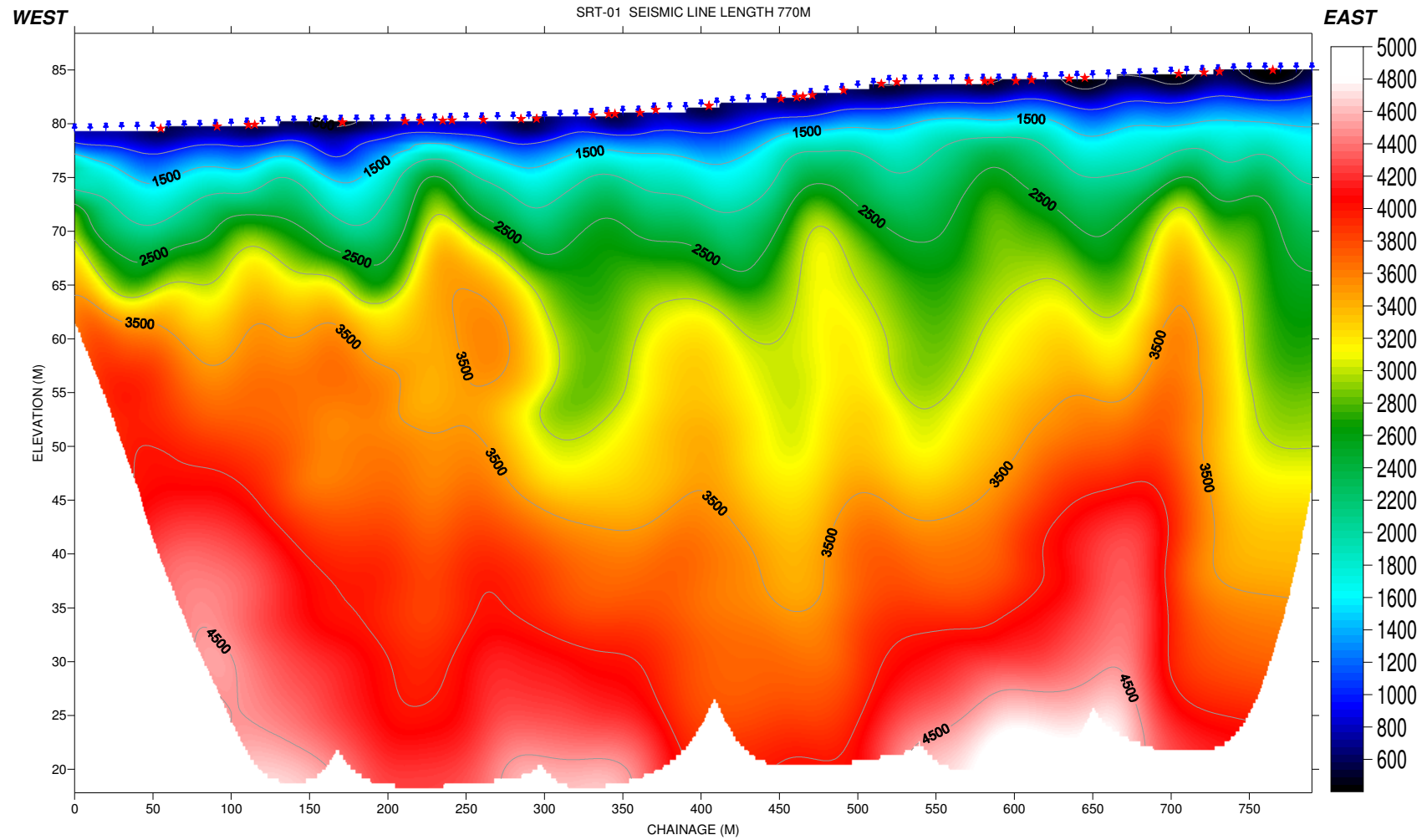


Figure – 01: Tomogram for SRT-1 line



Geo-Seismic Line SRT-2

(Refer Figure: 02 for Tomogram Figure 02 (A) for Depth section (770 M)

A cumulative length of 770m have been covered with geophones placed at 10m interval covered under four overlapping profiles.

For each seismic spread, Two- Far shots, Two -End shots, Two - Intermediate shots and one-Mid shot. Intermediate shots are taken at 6th and 18th geophone location, mid shot is taken at 12th geophone all along the seismic spread.

The seismic velocities are estimated in the tomograms using Rayfract software calibrated accordingly to the boreholes logs corresponding to the variation in sub-surface lithology. However, it is expected that the first layer with compressional velocities in the range of 600m/s to 1000m/sec could be related to highly weathered strata / unconsolidated overburden materials, probably formed by decomposition of underlying rock. The second layer with recorded P-wave velocity in the range of 1000m/s to 2500m/s indicates the presence of moderately weathered rock.

The P-wave velocity is increasing gradually underneath indicating existence of fresh rock. Based on the velocities, it can be inferred that highly weathered zone exists upto a depth of 2.3m which is underlain by moderately weathered strata for a thickness of about 3.5m-38.4m The rock is assumed to exist at a depth of 2.3m from the surface.

Table 3: Depth of various layers for SRT-2

Sl. No.	Description	Depth (m)	Thickness
1	Highly Weathered rock	0-2.3	2.3
2	Moderately Weathered Rock	5.86-40.7	3.5-38.4
3	Fresh Rock	6.0-41.0	



Table 4: Location of geophone for SRT-2 with inferred depth to rock

SURVEY OF SRT LINE-2						
Sl.No.	Chainage (m)	Code	Easting (m)	Northing (m)	Elevation (m)	Depth to Rock Line (m)
1	0	SRT-2/1	-98.973	-196.494	77.509	2.84
2	10	SRT-2/2	-88.973	-196.494	77.389	2.68
3	20	SRT-2/3	-78.973	-196.495	77.457	2.58
4	30	SRT-2/4	-68.973	-196.490	77.869	2.66
5	40	SRT-2/5	-58.973	-196.489	78.364	3.50
6	50	SRT-2/6	-48.972	-196.479	79.010	4.16
7	60	SRT-2/7	-38.972	-196.479	79.430	3.88
8	70	SRT-2/8	-28.972	-196.477	79.799	3.27
9	80	SRT-2/9	-18.976	-196.475	80.164	2.79
10	90	SRT-2/10	-8.975	-196.474	80.529	2.82
11	100	SRT-2/11	1.025	-196.475	80.823	2.90
12	110	SRT-2/12	11.027	-196.476	80.824	2.84
13	120	SRT-2/13	21.027	-196.479	80.924	2.75
14	130	SRT-2/14	31.027	-196.475	80.508	2.37
15	140	SRT-2/15	41.027	-196.472	80.482	2.37
16	150	SRT-2/16	51.027	-196.469	80.849	3.00
17	160	SRT-2/17	61.027	-196.466	80.947	3.86
18	170	SRT-2/18	71.027	-196.466	80.452	3.83
19	180	SRT-2/19	81.027	-196.465	80.401	3.95
20	190	SRT-2/20	91.027	-196.464	80.417	3.72
21	200	SRT-2/21	101.027	-196.464	80.447	3.27
22	210	SRT-2/22	111.027	-196.463	80.409	2.80
23	220	SRT-2/23	121.027	-196.463	80.411	2.62
24	230	SRT-2/24	131.026	-196.463	80.633	2.65
25	240	SRT-2/25	141.028	-196.464	80.831	2.64



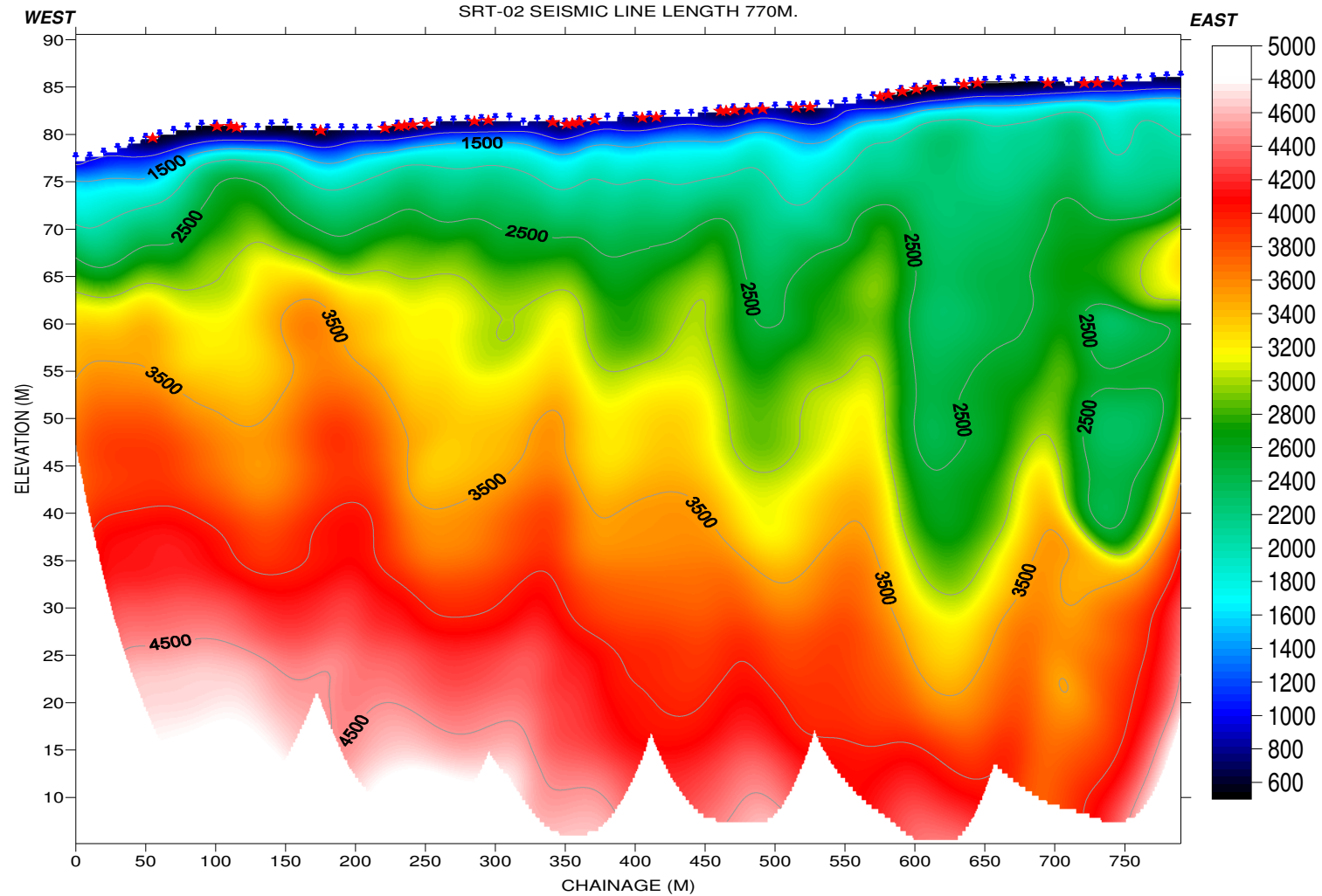
26	250	SRT-2/26	151.026	-196.465	81.012	2.61
27	260	SRT-2/27	161.027	-196.465	81.095	2.50
28	270	SRT-2/28	171.027	-196.465	81.177	2.58
29	280	SRT-2/29	181.031	-196.465	81.259	2.57
30	290	SRT-2/30	191.028	-196.465	81.342	2.52
31	300	SRT-2/31	201.020	-196.465	81.424	2.46
32	310	SRT-2/32	211.027	-196.465	81.521	2.50
33	320	SRT-2/33	221.027	-196.466	81.574	2.63
34	330	SRT-2/34	231.028	-196.452	81.058	2.66
35	340	SRT-2/35	241.027	-196.450	81.347	3.49
36	350	SRT-2/36	251.027	-196.450	81.298	3.99
37	360	SRT-2/37	261.026	-196.450	81.053	3.35
38	370	SRT-2/38	271.028	-196.450	81.280	3.12
39	380	SRT-2/39	281.025	-196.451	81.502	3.07
40	390	SRT-2/40	291.031	-196.451	81.571	3.24
41	400	SRT-2/41	301.028	-196.451	81.639	3.39
42	410	SRT-2/42	311.036	-196.451	81.708	3.30
43	420	SRT-2/43	321.023	-196.451	81.777	3.20
44	430	SRT-2/44	331.027	-196.451	81.846	3.11
45	440	SRT-2/45	341.016	-196.451	81.914	3.08
46	450	SRT-2/46	351.024	-196.452	81.983	3.15
47	460	SRT-2/47	361.022	-196.451	82.187	3.09
48	470	SRT-2/48	371.030	-196.451	82.435	3.48
49	480	SRT-2/49	381.026	-196.448	82.545	3.22
50	490	SRT-2/50	391.028	-196.445	82.606	2.84
51	500	SRT-2/51	401.032	-196.441	82.666	3.00
52	510	SRT-2/52	411.038	-196.438	82.727	3.37
53	520	SRT-2/53	421.023	-196.434	82.788	4.08



54	530	SRT-2/54	431.029	-196.431	82.849	4.18
55	540	SRT-2/55	441.040	-196.427	82.909	4.20
56	550	SRT-2/56	451.023	-196.424	82.970	3.25
57	560	SRT-2/57	460.989	-196.420	83.203	3.54
58	570	SRT-2/58	471.026	-196.414	83.568	2.52
59	580	SRT-2/59	481.027	-196.405	83.828	2.75
60	590	SRT-2/60	491.026	-196.400	84.124	2.79
61	600	SRT-2/61	501.032	-196.402	84.494	2.71
62	610	SRT-2/62	511.030	-196.408	84.746	2.60
63	620	SRT-2/63	521.014	-196.414	84.997	2.65
64	630	SRT-2/64	531.028	-196.405	85.112	2.66
65	640	SRT-2/65	541.023	-196.396	85.226	2.68
66	650	SRT-2/66	551.006	-196.387	85.340	2.78
67	660	SRT-2/67	561.020	-196.377	85.454	2.89
68	670	SRT-2/68	571.027	-196.376	85.514	2.95
69	680	SRT-2/69	581.027	-196.381	85.673	3.09
70	690	SRT-2/70	591.027	-196.384	85.457	2.66
71	700	SRT-2/71	601.027	-196.385	85.406	2.40
72	710	SRT-2/72	611.027	-196.387	85.394	2.35
73	720	SRT-2/73	621.027	-196.388	85.312	2.17
74	730	SRT-2/74	631.027	-196.390	85.387	2.22
75	740	SRT-2/75	641.027	-196.391	85.427	2.37
76	750	SRT-2/76	651.027	-196.392	85.478	2.58
77	760	SRT-2/77	661.021	-196.389	85.577	2.68
78	770	SRT-2/78	671.039	-196.382	85.698	2.30



5X800 YADADRI THERMAL POWER STATION, VEERLAPALEM,DAMERCHARLA, TELANGANA.





Geo-Seismic Line SRT-3

(Refer Figure: 03 for Tomogram, Figure : 03(A) for Depth Section (770 M)

A cumulative length of 770m have been covered with geophones placed at 10m interval covered under four overlapping profiles.

For each seismic spread, Two- Far shots, Two -End shots, Two - Intermediate shots and one-Mid shot. Intermediate shots are taken at 6th and 18th geophone location, mid shot is taken at 12th geophone all along the seismic spread.

The seismic velocities are estimated in the tomograms using Rayfract software calibrated accordingly to the boreholes logs corresponding to the variation in sub-surface lithology. However, it is expected that the first layer with compressional velocities in the range of 600m/s to 1000m/sec could be related to highly weathered strata / unconsolidated overburden materials, probably formed by decomposition of underlying rock. The second layer with recorded P-wave velocity in the range of 1000m/s to 2500m/s indicates the presence of moderately weathered rock.

The P-wave velocity is increasing gradually underneath indicating existence of fresh rock. Based on the velocities, it can be inferred that highly weathered zone exists upto a depth of 0.98m which is underlain by moderately weathered strata for a thickness of about 4.1m– 14.52m. The rock is assumed to exist at a depth of 1.0m from the surface.

Table 5: Depth and thickness of various layers for STR-3 line

Sl. No.	Description	Depth (m)	Thickness
1	Highly Weathered rock	0 – 0.98	0.98
2	Moderately Weathered Rock	5.0-15.5	4.1-14.52
3	Fresh Rock	>16	



Table 6: Location of geophones for SRT-3 and inferred depth of rock

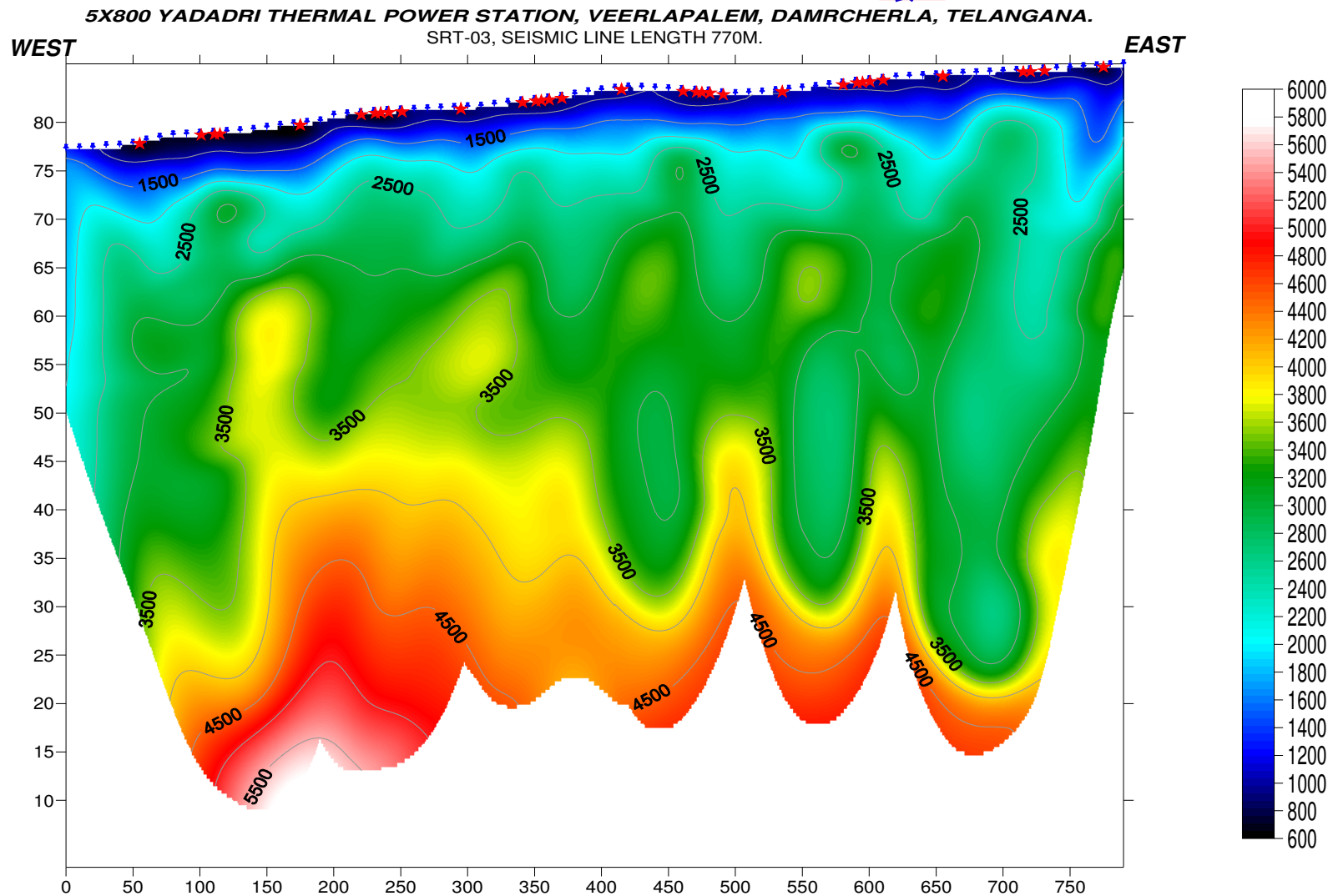
SURVEY OF SRT LINE-3						
Sl.No.	Chainage (m)	Code	Easting (m)	Northing (m)	Elevation (m)	Depth to Rock Line (m)
1	0	SRT-3/1	-98.973	-283.420	77.018	0.98
2	10	SRT-3/2	-88.973	-283.418	77.124	1.40
3	20	SRT-3/3	-78.973	-283.420	77.194	2.21
4	30	SRT-3/4	-68.973	-283.416	77.232	3.07
5	40	SRT-3/5	-58.973	-283.415	77.398	3.93
6	50	SRT-3/6	-48.973	-283.414	77.454	4.23
7	60	SRT-3/7	-38.973	-283.414	77.640	4.28
8	70	SRT-3/8	-28.973	-283.417	77.986	4.51
9	80	SRT-3/9	-18.973	-283.417	78.268	4.62
10	90	SRT-3/10	-8.973	-283.417	78.515	4.46
11	100	SRT-3/11	1.027	-283.417	78.602	4.06
12	110	SRT-3/12	11.027	-283.417	78.689	3.68
13	120	SRT-3/13	21.027	-283.417	78.776	3.77
14	130	SRT-3/14	31.027	-283.417	78.863	4.06
15	140	SRT-3/15	41.027	-283.417	78.951	4.15
16	150	SRT-3/16	51.027	-283.417	79.091	4.24
17	160	SRT-3/17	61.027	-283.417	79.301	4.51
18	170	SRT-3/18	71.027	-283.416	79.508	4.70
19	180	SRT-3/19	81.027	-283.416	79.659	4.42
20	190	SRT-3/20	91.027	-283.416	79.810	3.73
21	200	SRT-3/21	101.027	-283.416	79.961	3.04
22	210	SRT-3/22	111.027	-283.418	80.564	2.92
23	220	SRT-3/23	121.027	-283.418	80.685	2.62
24	230	SRT-3/24	131.027	-283.418	80.805	2.77
25	240	SRT-3/25	141.027	-283.417	80.926	3.14



26	250	SRT-3/26	151.027	-283.417	81.025	3.48
27	260	SRT-3/27	161.027	-283.417	81.092	3.38
28	270	SRT-3/28	171.027	-283.417	81.158	3.36
29	280	SRT-3/29	181.027	-283.417	81.225	3.25
30	290	SRT-3/30	191.027	-283.416	81.291	3.51
31	300	SRT-3/31	201.027	-283.416	81.358	3.53
32	310	SRT-3/32	211.027	-283.416	81.424	3.39
33	320	SRT-3/33	221.027	-283.416	81.491	3.21
34	330	SRT-3/34	231.027	-283.418	81.666	3.09
35	340	SRT-3/35	241.027	-283.420	81.858	3.04
36	350	SRT-3/36	251.027	-283.422	82.038	2.99
37	360	SRT-3/37	261.027	-283.422	82.184	2.96
38	370	SRT-3/38	271.027	-283.422	82.330	3.15
39	380	SRT-3/39	281.027	-283.422	82.476	3.17
40	390	SRT-3/40	291.027	-283.422	82.715	3.12
41	400	SRT-3/41	301.027	-283.422	82.971	3.06
42	410	SRT-3/42	311.027	-283.424	83.161	3.17
43	420	SRT-3/43	321.027	-283.425	83.342	3.20
44	430	SRT-3/44	331.027	-283.428	83.465	3.33
45	440	SRT-3/45	341.026	-283.433	83.442	3.38
46	450	SRT-3/46	351.025	-283.432	83.363	3.46
47	460	SRT-3/47	361.027	-283.431	83.284	3.67
48	470	SRT-3/48	371.026	-283.429	83.205	3.59
49	480	SRT-3/49	381.027	-283.428	83.127	3.57
50	490	SRT-3/50	391.025	-283.427	83.048	3.53
51	500	SRT-3/51	401.027	-283.427	82.867	3.33
52	510	SRT-3/52	411.027	-283.429	82.791	3.01
53	520	SRT-3/53	421.027	-283.431	82.871	2.80



54	530	SRT-3/54	431.027	-283.433	82.941	2.84
55	540	SRT-3/55	441.028	-283.434	83.090	2.84
56	550	SRT-3/56	451.028	-283.435	83.229	2.70
57	560	SRT-3/57	461.026	-283.436	83.367	2.66
58	570	SRT-3/58	471.027	-283.437	83.508	2.68
59	580	SRT-3/59	481.027	-283.436	83.696	2.87
60	590	SRT-3/60	491.028	-283.434	83.883	3.12
61	600	SRT-3/61	501.029	-283.433	84.056	3.38
62	610	SRT-3/62	511.025	-283.433	84.203	3.62
63	620	SRT-3/63	521.026	-283.433	84.351	3.85
64	630	SRT-3/64	531.027	-283.433	84.499	4.08
65	640	SRT-3/65	541.027	-283.432	84.574	4.26
66	650	SRT-3/66	551.024	-283.432	84.648	4.59
67	660	SRT-3/67	561.028	-283.432	84.722	4.09
68	670	SRT-3/68	571.026	-283.431	84.797	3.22
69	680	SRT-3/69	581.027	-283.431	84.871	2.51
70	690	SRT-3/70	591.027	-283.430	84.945	2.36
71	700	SRT-3/71	601.027	-283.430	85.020	2.42
72	710	SRT-3/72	611.027	-283.431	85.094	2.61
73	720	SRT-3/73	621.027	-283.431	85.169	2.80
74	730	SRT-3/74	631.025	-283.431	85.244	3.02
75	740	SRT-3/75	641.028	-283.432	85.319	3.10
76	750	SRT-3/76	651.028	-283.432	85.394	3.09
77	760	SRT-3/77	661.023	-283.432	85.469	4.83
78	770	SRT-3/78	671.025	-283.429	85.558	7.79





Geo-Seismic Line SRT-4

(Refer Figure: 04 for Tomogram, Figure : 04(A) for Depth Section (250 M)

A cumulative length of 250m have been covered with geophones placed at 10m interval covered under one profiles.

For each seismic spread, Two- Far shots, Two -End shots, Two - Intermediate shots and one-Mid shot. Intermediate shots are taken at 6th and 18th geophone location, mid shot is taken at 12th geophone all along the seismic spread.

The seismic velocities are estimated in the tomograms using Rayfract software calibrated accordingly to the boreholes logs corresponding to the variation in sub-surface lithology. However, it is expected that the first layer with compressional velocities in the range of 600m/s to 1000m/sec could be related to highly weathered strata / unconsolidated overburden materials, probably formed by decomposition of underlying rock. The second layer with recorded P-wave velocity in the range of 1000m/s to 2500m/s indicates the presence of moderately weathered rock.

The P-wave velocity is increasing gradually underneath indicating existence of fresh rock. Based on the velocities, it can be inferred that highly weathered zone exists upto a depth of 2.5m which is underlain by moderately weathered strata for a thickness of about 2.4m-13.3m. The rock is assumed to exist at a depth of 2.5m from the surface.

Table 7: Depth of various layers for SRT-4

Sl. No.	Description	Depth (m)	Thickness
1	Highly Weathered rock	0 - 2.5	2.5
2	Moderately Weathered rock	4.9-15.8	2.4-13.3
3	Fresh Rock	>16	



Table 8: Location of geophone for SRT-4 with inferred depth to rock.

SURVEY OF SRT LINE-4						
Sl.No.	Chainage (m)	Code	Easting (m)	Northing (m)	Elevation (m)	Depth to Rock Line (m)
1	0	SRT4/1	-98.973	-263.421	77.133	2.60
2	10	SRT4/2	-98.973	-253.421	77.190	3.00
3	20	SRT4/3	-98.973	-243.420	77.248	3.21
4	30	SRT4/4	-98.973	-233.437	77.305	3.32
5	40	SRT4/5	-98.973	-223.443	77.363	3.66
6	50	SRT4/6	-98.973	-213.458	77.420	4.14
7	60	SRT4/7	-98.973	-203.468	77.478	3.86
8	70	SRT4/8	-98.970	-193.473	77.534	3.93
9	80	SRT4/9	-98.970	-183.420	77.589	3.98
10	90	SRT4/10	-98.970	-173.420	77.644	4.02
11	100	SRT4/11	-98.971	-163.421	77.699	4.09
12	110	SRT4/12	-98.971	-153.420	77.754	4.21
13	120	SRT4/13	-98.971	-143.420	77.808	3.84
14	130	SRT4/14	-98.972	-133.420	77.863	3.86
15	140	SRT4/15	-98.972	-123.420	77.918	3.83
16	150	SRT4/16	-98.972	-113.420	77.973	4.17
17	160	SRT4/17	-98.972	-103.420	78.044	4.50
18	170	SRT4/18	-98.972	-93.420	78.131	4.59
19	180	SRT4/19	-98.973	-83.420	78.218	4.07
20	190	SRT4/20	-98.973	-73.420	78.305	3.45
21	200	SRT4/21	-98.973	-63.420	78.392	3.68
22	210	SRT4/22	-98.973	-53.420	78.479	3.63
23	220	SRT4/23	-98.974	-43.420	78.669	3.30
24	230	SRT4/24	-98.975	-33.420	78.891	3.13
25	240	SRT4/25	-98.990	-23.421	79.550	2.93
26	250	SRT4/26	-98.989	-13.421	79.701	2.55

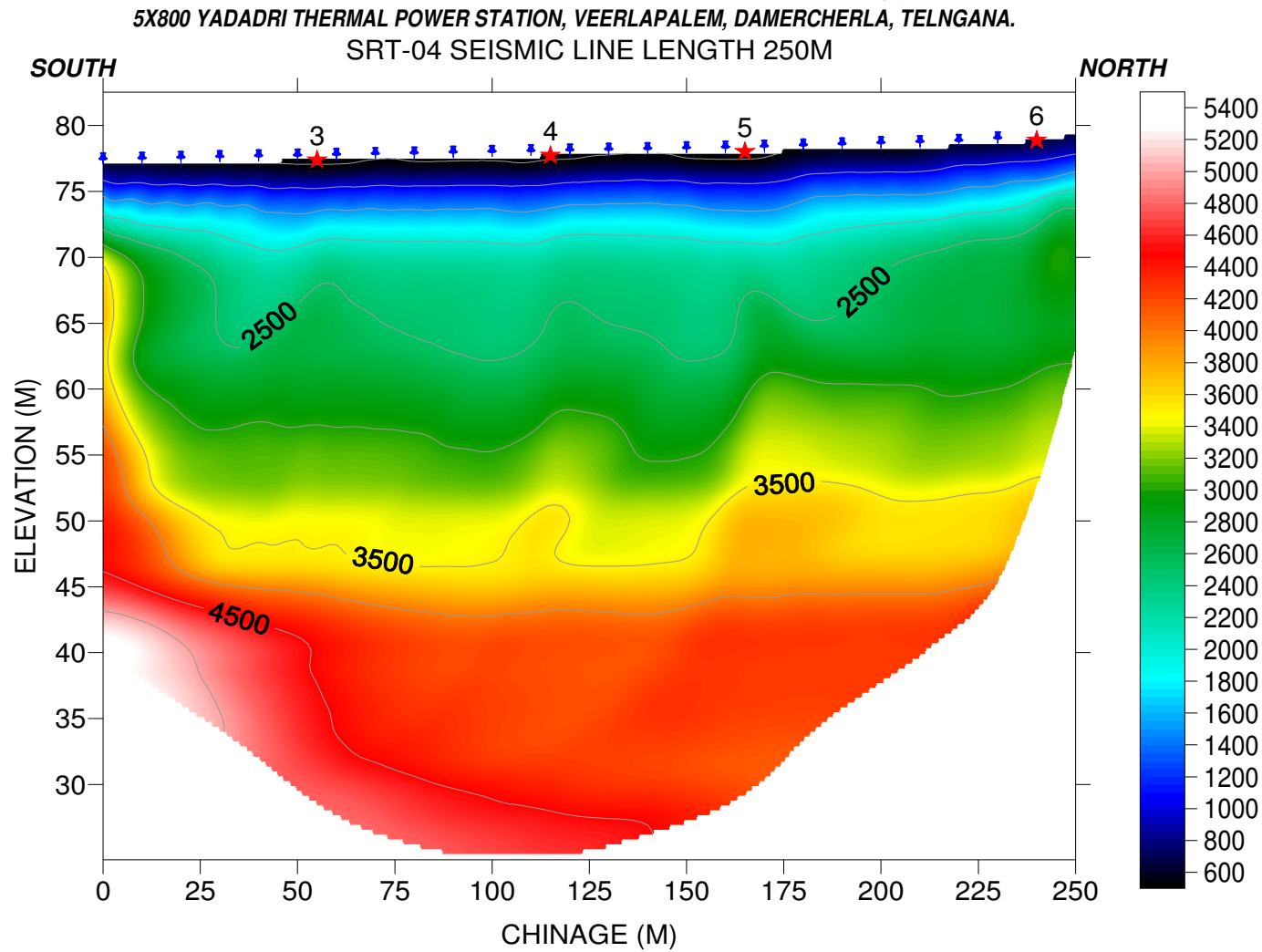


Figure – 04 Tomogram for SRT-4



Geo-Seismic Line SRT-5

(Refer Figure: 05 for Tomogram, Figure : 05(A) for Depth Section (250 M))

A cumulative length of 250m have been covered with geophones placed at 10m interval covered under four overlapping profiles.

For each seismic spread, Two- Far shots, Two -End shots, Two - Intermediate shots and one-Mid shot. Intermediate shots are taken at 6th and 18th geophone location, mid shot is taken at 12th geophone all along the seismic spread.

The seismic velocities are estimated in the tomograms using Rayfract software calibrated accordingly to the boreholes logs corresponding to the variation in sub-surface lithology. However, it is expected that the first layer with compressional velocities in the range of 600m/s to 1000m/sec could be related to highly weathered strata / unconsolidated overburden materials, probably formed by decomposition of underlying rock. The second layer with recorded P-wave velocity in the range of 1000m/s to 2500m/s indicates the presence of moderately weathered rock.

The P-wave velocity is increasing gradually underneath indicating existence of fresh rock. Based on the velocities, it can be inferred that highly weathered zone exists upto a depth of 2.2m which is underlain by moderately weathered strata for a thickness of about 4.6-9.7m. The rock is assumed to exist at a depth of 2.2m from the surface.

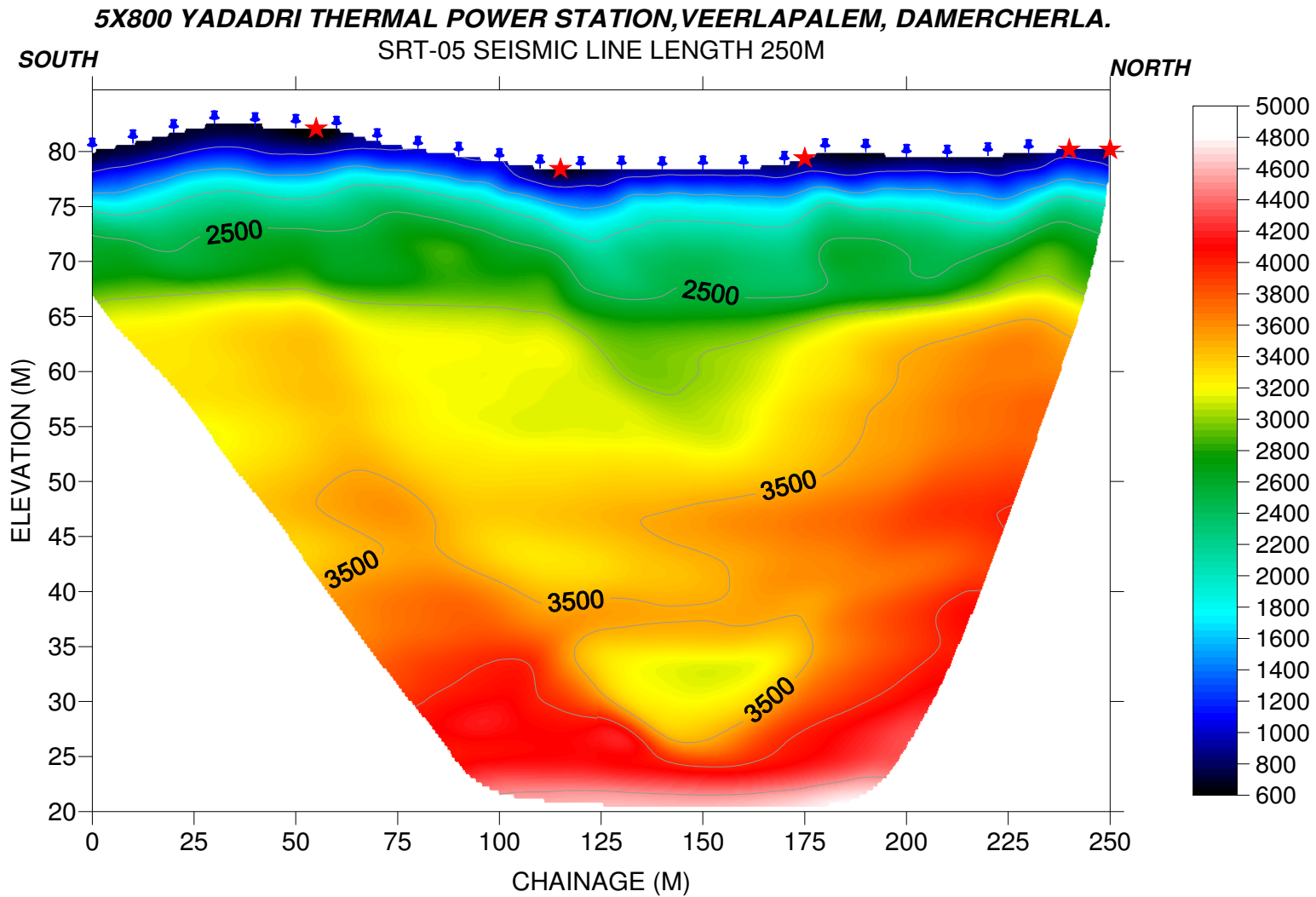
Table 9: Depth of various layers for SRT-5

Sl. No.	Description	Depth (m)	Thickness
1	Highly Weathered rock	0 – 2.2	2.2
2	Moderately Weathered rock	6.8- 11.9	4.6-9.7
3	Fresh rock	>12	



Table 10: Location of geophone for SRT-5 with inferred depth to rock.

SURVEY OF SRT LINE-5						
Sl.No.	Chainage (m)	Code	Easting (m)	Northing (m)	Elevation (m)	Depth to Rock Line (m)
1	0	SRT5/1	70.254	-263.420	80.756	3.31
2	10	SRT5/2	70.252	-253.420	81.687	3.64
3	20	SRT5/3	70.252	-243.420	82.484	3.34
4	30	SRT5/4	70.252	-233.420	82.322	3.45
5	40	SRT5/5	70.252	-223.420	82.160	4.66
6	50	SRT5/6	70.253	-213.420	81.991	4.77
7	60	SRT5/7	70.255	-203.420	80.864	4.03
8	70	SRT5/8	70.284	-193.420	80.166	4.76
9	80	SRT5/9	70.290	-183.420	79.634	3.02
10	90	SRT5/10	70.290	-173.425	79.056	3.89
11	100	SRT5/11	70.290	-163.420	78.471	3.02
12	110	SRT5/12	70.290	-153.420	78.335	3.59
13	120	SRT5/13	70.289	-143.420	78.378	3.84
14	130	SRT5/14	70.289	-133.420	78.308	3.22
15	140	SRT5/15	70.288	-123.420	78.387	2.49
16	150	SRT5/16	70.288	-113.420	78.421	2.49
17	160	SRT5/17	70.288	-103.420	78.802	2.55
18	170	SRT5/18	70.310	-93.421	79.954	2.67
19	180	SRT5/19	70.345	-83.421	79.901	2.20
20	190	SRT5/20	70.358	-73.411	79.441	3.77
21	200	SRT5/21	70.361	-63.418	79.359	3.51
22	210	SRT5/22	70.364	-53.416	79.590	3.31
23	220	SRT5/23	70.364	-43.417	79.861	3.68
24	230	SRT5/24	70.363	-33.422	80.165	3.50
25	240	SRT5/25	70.362	-23.420	80.505	2.61
26	250	SRT5/26	70.363	-13.419	81.223	3.52





Geo-Seismic Line SRT-6

(Refer Figure: 06 for Tomogram, Figure : 06(A) for Depth Section (250 M)

A cumulative length of 250m have been covered with geophones placed at 10m interval covered under four overlapping profiles.

For each seismic spread, Two- Far shots, Two -End shots, Two - Intermediate shots and one-Mid shot. Intermediate shots are taken at 6th and 18th geophone location, mid shot is taken at 12th geophone all along the seismic spread.

The seismic velocities are estimated in the tomograms using Rayfract software calibrated accordingly to the boreholes logs corresponding to the variation in sub-surface lithology. However, it is expected that the first layer with compressional velocities in the range of 600m/s to 1000m/sec could be related to highly weathered strata / unconsolidated overburden materials, probably formed by decomposition of underlying rock. The second layer with recorded P-wave velocity in the range of 1000m/s to 2500m/s indicates the presence of moderately weathered rock.

The P-wave velocity is increasing gradually underneath indicating existence of fresh rock. Based on the velocities, it can be inferred that highly weathered zone exists upto a depth of 1.8m which is underlain by moderately weathered strata for a thickness of about 18.6-21.8m. The rock is assumed to exists at a depth of 1.8m from the surface.

Table 11: Depth of various layers for SRT-6

Sl. No.	Description	Depth (m)	Thickness
1	Highly Weathered rock	1.8	1.8
2	Moderately Weathered Rock	19.4-22.6	18.6-21.8
3	Fresh Rock	>22	



Table 12: Location of geophone for SRT-6 with inferred depth to rock

SURVEY OF SRT LINE-4						
Sl.No.	Chainage (m)	Code	Easting (m)	Northing (m)	Elevation (m)	Depth to Rock Line (m)
1	0	SRT6/1	360.927	-263.421	82.936	1.88
2	10	SRT6/2	360.926	-253.420	82.831	2.22
3	20	SRT6/3	360.925	-243.420	82.726	2.37
4	30	SRT6/4	360.923	-233.420	82.621	3.70
5	40	SRT6/5	360.922	-223.420	82.516	2.92
6	50	SRT6/6	360.921	-213.420	82.417	2.30
7	60	SRT6/7	360.920	-203.420	82.319	2.72
8	70	SRT6/8	360.920	-193.420	82.222	4.08
9	80	SRT6/9	360.919	-183.421	82.124	5.24
10	90	SRT6/10	360.918	-173.420	82.026	5.89
11	100	SRT6/11	360.919	-163.420	81.787	6.65
12	110	SRT6/12	360.919	-153.420	81.469	6.79
13	120	SRT6/13	360.917	-143.420	81.487	6.31
14	130	SRT6/14	360.915	-133.420	81.481	5.68
15	140	SRT6/15	360.913	-123.420	81.452	5.59
16	150	SRT6/16	360.911	-113.420	81.409	5.52
17	160	SRT6/17	360.909	-103.420	81.397	5.19
18	170	SRT6/18	360.907	-93.420	81.428	5.11
19	180	SRT6/19	360.906	-83.421	81.535	5.01
20	190	SRT6/20	360.907	-73.421	81.627	4.53
21	200	SRT6/21	360.907	-63.422	81.719	4.19
22	210	SRT6/22	360.908	-53.423	81.812	4.06
23	220	SRT6/23	360.908	-43.423	81.904	4.10
24	230	SRT6/24	360.909	-33.420	81.996	3.98
25	240	SRT6/25	360.909	-23.421	82.220	3.33
26	250	SRT6/26	360.910	-13.420	82.450	3.81

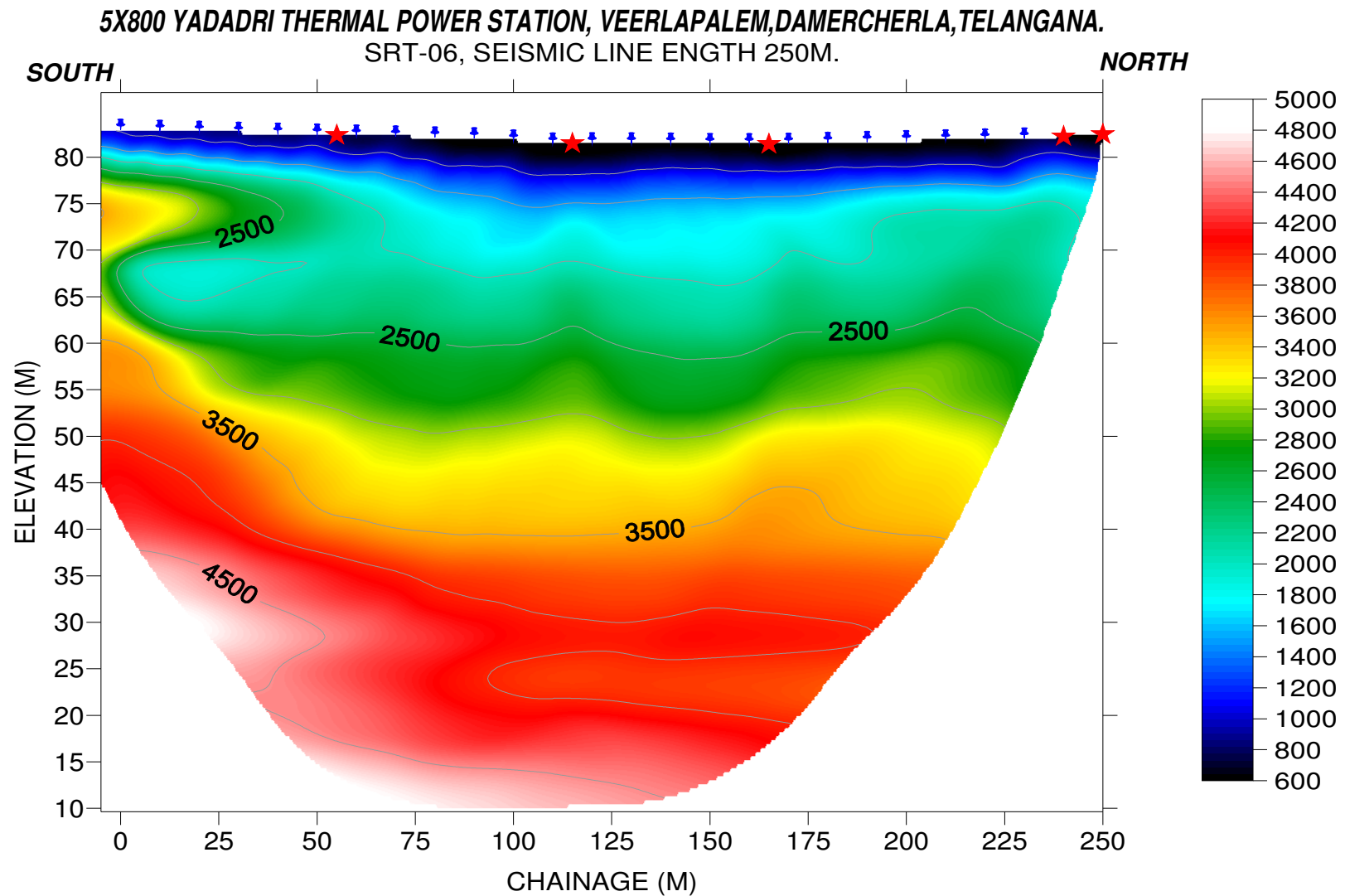


Figure – 06 Tomogram for SRT- 6



Geo-Seismic Line SRT-7

(Refer Figure: 07 for Tomogram, Figure : 07(A) for Depth Section (250 M)

A cumulative length of 250m have been covered with geophones placed at 10m interval covered under four overlapping profiles.

For each seismic spread, Two- Far shots, Two -End shots, Two - Intermediate shots and one-Mid shot. Intermediate shots are taken at 6th and 18th geophone location, mid shot is taken at 12th geophone all along the seismic spread.

The seismic velocities are estimated in the tomograms using Rayfract software calibrated accordingly to the boreholes logs corresponding to the variation in sub-surface lithology. However, it is expected that the first layer with compressional velocities in the range of 600m/s to 1000m/sec could be related to highly weathered strata / unconsolidated overburden materials, probably formed by decomposition of underlying rock. The second layer with recorded P-wave velocity in the range of 1000m/s to 2500m/s indicates the presence of moderately weathered rock.

The P-wave velocity is increasing gradually underneath indicating existence of fresh rock. Based on the velocities, it can be inferred that highly weathered zone exists upto a depth of 1.7m which is underlain by moderately weathered strata for a thickness of about 1.7m-15.8m. The rock is assumed to exist at a depth of 1.70m from the surface.

Table 13: Depth of various layers for SRT-7

Sl. No.	Description	Depth (m)	Thickness
1	Highly Weathered rock	0 – 1.7	1.7
2	Moderately weathered rock	3.4-17.5	1.7-15.8
3	Fresh rock	>18	



Table 14: Location of geophone for SRT-7 with inferred depth to rock

SURVEY OF SRT LINE-7					
Chainage (m)	Chainage (m)	Chainage (m)	Chainage (m)	Chainage (m)	Depth to Rock Line (m)
1	0	SRT7/1	498.175	-262.543	1.72
2	10	SRT7/2	498.175	-252.543	1.85
3	20	SRT7/3	498.175	-242.543	2.54
4	30	SRT7/4	498.176	-232.543	3.82
5	40	SRT7/5	498.180	-222.543	4.55
6	50	SRT7/6	498.184	-212.543	4.07
7	60	SRT7/7	498.183	-202.543	3.39
8	70	SRT7/8	498.183	-192.543	3.63
9	80	SRT7/9	498.182	-182.544	3.21
10	90	SRT7/10	498.185	-172.543	3.41
11	100	SRT7/11	498.187	-162.544	4.05
12	110	SRT7/12	498.190	-152.543	3.67
13	120	SRT7/13	498.193	-142.543	4.87
14	130	SRT7/14	498.196	-132.543	4.64
15	140	SRT7/15	498.198	-122.543	4.32
16	150	SRT7/16	498.201	-112.540	4.67
17	160	SRT7/17	498.201	-102.543	4.94
18	170	SRT7/18	498.200	-92.543	4.09
19	180	SRT7/19	498.199	-82.543	5.18
20	190	SRT7/20	498.200	-72.544	5.15
21	200	SRT7/21	498.200	-62.543	4.83
22	210	SRT7/22	498.201	-52.545	4.55
23	220	SRT7/23	498.202	-42.544	4.40
24	230	SRT7/24	498.201	-32.543	4.10
25	240	SRT7/25	498.201	-22.543	3.58
26	250	SRT7/26	498.202	-12.545	5.11



5X800 MW YADADRI THERMAL POWER STATION, VEERLAPALEN,DAMERCHERL,TELANGANA.

SRT-07 SEISMIC LINE LENGTH 250M.

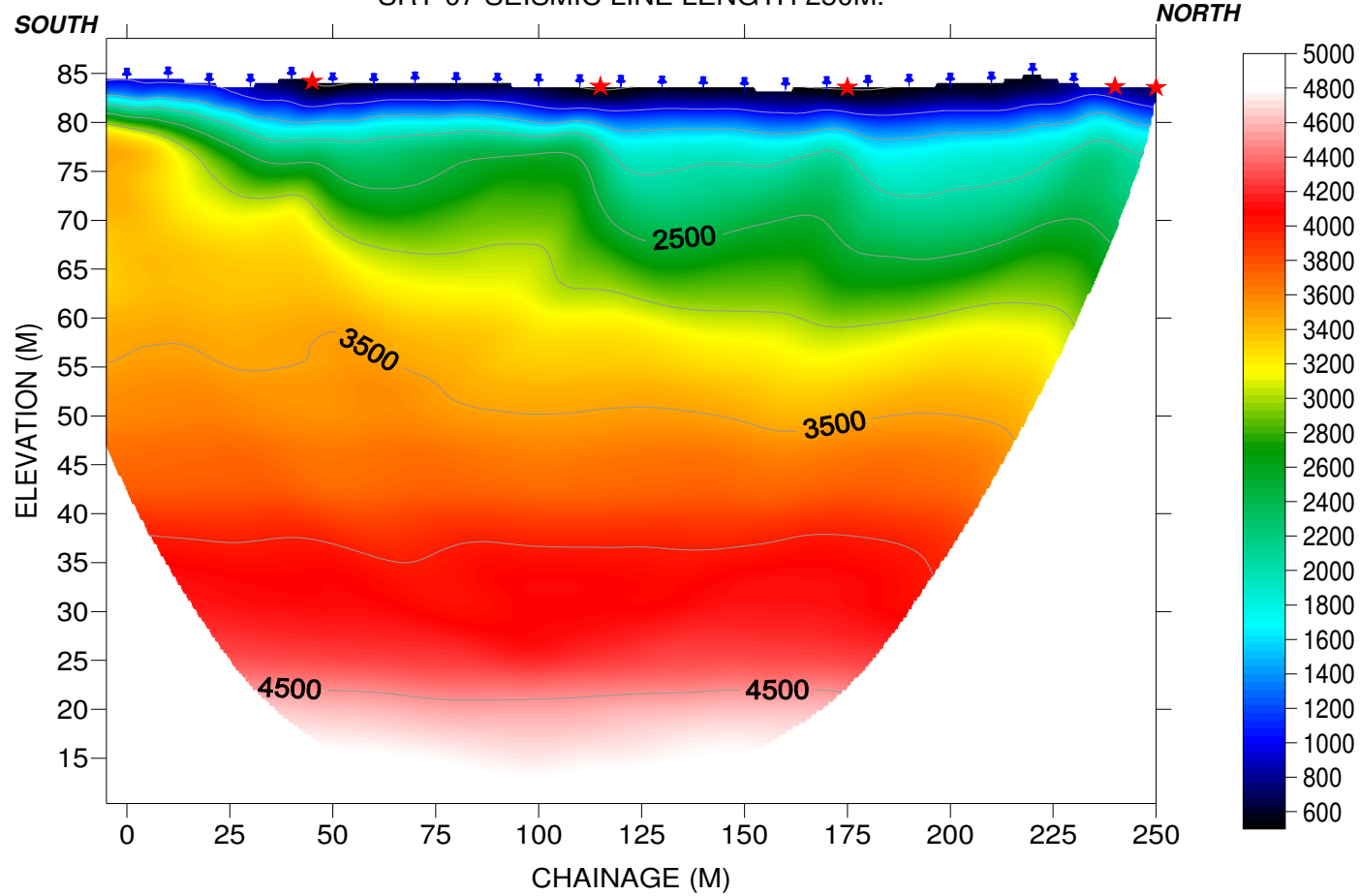


Figure – 07 Tomogram for SRT-7



Geo-Seismic Line SRT-8

(Refer Figure: 08 for Tomogram, Figure : 08(A) for Depth Section (250 M)

A cumulative length of 250m have been covered with geophones placed at 10m interval covered under four overlapping profiles.

For each seismic spread, Two- Far shots, Two -End shots, Two - Intermediate shots and one-Mid shot. Intermediate shots are taken at 6th and 18th geophone location, mid shot is taken at 12th geophone all along the seismic spread.

The seismic velocities are estimated in the tomograms using Rayfract software calibrated accordingly to the boreholes logs corresponding to the variation in sub-surface lithology. However, it is expected that the first layer with compressional velocities in the range of 600m/s to 1000m/sec could be related to highly weathered strata / unconsolidated overburden materials, probably formed by decomposition of underlying rock. The second layer with recorded P-wave velocity in the range of 1000m/s to 2500m/s indicates the presence of moderately weathered rock.

The P-wave velocity is increasing gradually underneath indicating existence of fresh rock. Based on the velocities, it can be inferred that highly weathered zone exists upto a depth of 1.3m which is underlain by moderately weathered strata for a thickness of about 1.9m-21.6m. The rock is assumed to exist at a depth of 3.2m from the surface.

Table 15: Depth of various layers for SRT-8

Sl. No.	Description	Depth (m)	Thickness
1	Highly Weathered rock	0 - 1.3	1.3
2	Moderately weathered rock	3.2-22.9	1.9-21.6
3	Fresh Rock	>23	



Table 16: Location of geophone for SRT-8 with inferred depth to rock

SURVEY OF SRT LINE-8					
Chainage (m)	Chainage (m)	Chainage (m)	Chainage (m)	Chainage (m)	Depth to Rock Line (m)
1	0	SRT8/1	675.076	-283.42	1.32
2	10	SRT8/2	675.076	-273.42	1.72
3	12	SRT8/3	675.076	-263.42	2.08
4	30	SRT8/4	675.075	-253.42	2.41
5	40	SRT8/5	675.075	-243.42	2.89
6	50	SRT8/6	675.075	-233.42	3.67
7	60	SRT8/7	675.08	-223.42	3.21
8	70	SRT8/8	675.08	-213.42	2.79
9	80	SRT8/9	675.081	-203.42	2.78
10	90	SRT8/10	675.081	-193.42	2.74
11	100	SRT8/11	675.081	-183.42	2.71
12	110	SRT8/12	675.081	-173.42	2.81
13	120	SRT8/13	675.087	-163.42	3.49
14	130	SRT8/14	675.086	-153.42	3.26
15	140	SRT8/15	675.081	-143.42	3.27



16	150	SRT8/16	675.081	-133.42	3.15
17	160	SRT8/17	675.081	-123.42	3.67
18	170	SRT8/18	675.081	-113.42	3.58
19	180	SRT8/19	675.081	-103.42	3.75
20	190	SRT8/20	675.082	-93.42	4.34
21	200	SRT8/21	675.082	-83.42	4.37
22	210	SRT8/22	675.084	-73.42	5.74
23	220	SRT8/23	675.084	-63.42	5.18
24	230	SRT8/24	675.086	-53.42	5.10
25	240	SRT8/25	675.086	-43.421	4.27
26	250	SRT8/26	675.087	-33.421	4.33

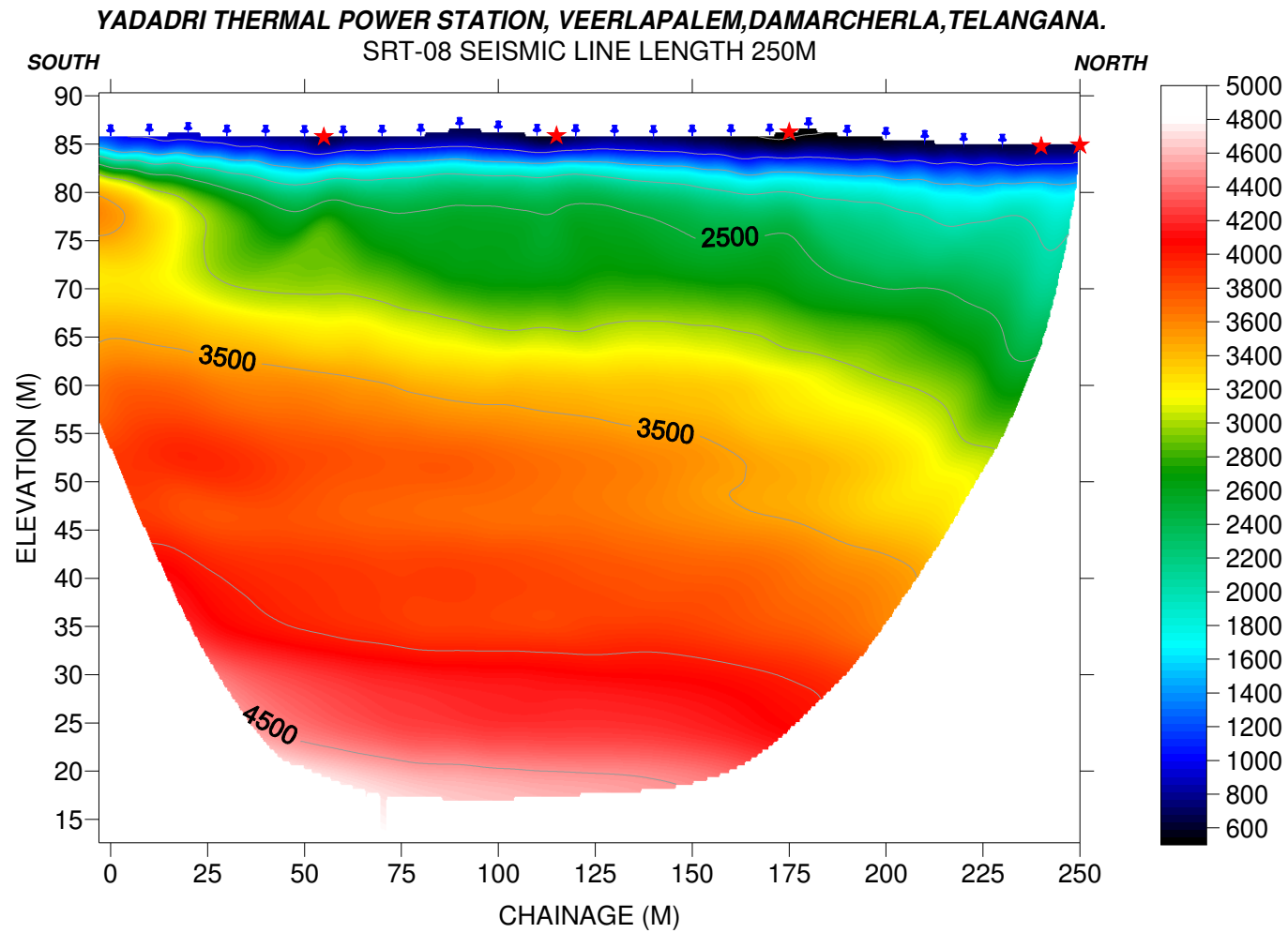


Figure – 08 Tomogram for SRT-8



Conclusion

The Seismic Refraction Survey conducted at Yadadri thermal Power station, Nalgonda District, Telangana has enabled recording of the Seismic P-wave velocities and inference on depths to subsurface material along eight (8) seismic lines over the site area.

In general, three (3) layers are deciphered in all the seismic lines. It is expected that the first layer with compressional velocities in the range of 400 m/s to 1000m/sec could be related to highly weathered strata / unconsolidated overburden materials. Based on the tomograms, it can be inferred that the depth of this particular layer ranges from 0.7m to 7.7m.

The second layer with recorded P-wave velocity in the range of 1000 m/sec to 2500m/sec indicates moderately weathered rock. The tomograms indicate a thickness in the range of 2.5 m to 33.0

The third layer has been interpreted below the moderately weathered strata has a gradual increase in P-wave velocity that indicates possible existence of fresh rock mass. As per the borehole logs available in the area, this may be correlated with medium to fine grained shale or quartzite with joints and fracturing.

DISCLAIMER: The results presented in this report are based on the Seismic Refraction Survey conducted by experienced personal of M/s Advanced Technology and Engineering Services according to the standards set for such survey. Interpretation given in the report are OPINIONS only based on the information collected and the borehole data available at the time of preparing this report.

However, due to inherent limitations of the technique and assumptions, there might be discrepancies and company does not own the responsibilities for any damage / loss arising out of such discrepancy



Sub-surface profile and stratification by Seismic Refraction Test (SRT)						
Sr. no	Test no	Northing	Easting	Layer description	Depth of layer (m)	Thickness of layer (m)
1	SRT 1	-30	-99 to 675	Highly weatherd rock	0 - 1.5	1.5
2				Moderately weathered rock	6.8-15.1	5.3-13.6
3				Fresh rock	>15	-
4	SRT 2	-196	-99 to 675	Highly weatherd rock	0-2.3	2.3
5				Moderately weathered rock	5.86-40.7	3.5-38.4
6				Fresh rock	6.0-41.0	-
7	SRT 3	-283	-99 to 675	Highly weatherd rock	0 – 0.98	0.98
8				Moderately weathered rock	5.0-15.5	4.1-14.52
9				Fresh rock	>16	-
10	SRT 4	-30	-99 to 283	Highly weatherd rock	0 - 2.5	2.5
11				Moderately weathered rock	4.9-15.8	2.4-13.3
12				Fresh rock	>16	-
13	SRT 5	-30 to 283	-70	Highly weatherd rock	0 – 2.2	2.2
14				Moderately weathered rock	6.8- 11.9	4.6-9.7
15				Fresh rock	>12	-
16	SRT 6	-30 to 283	361	Highly weatherd rock	1.8	1.8
17				Moderately weathered rock	19.4-22.6	18.6-21.8
18				Fresh rock	>22	-
19	SRT 7	-30 to -283	498	Highly weatherd rock	0 – 1.7	1.7
20				Moderately weathered rock	3.4-17.5	1.7-15.8
21				Fresh rock	>18	-
22	SRT 8	-30 to -283	675	Highly weatherd rock	0 - 1.3	1.3
23				Moderately weathered rock	3.2-22.9	1.9-21.6
24				Fresh rock	>23	-
Layer with compressional velocities in the range of 600m/s to 1000m/sec could be related to highly weathered strata / unconsolidated overburden materials, probably formed by decomposition of underlying rock. Layer with recorded P-wave velocity in the range of 1000m/s to 2500m/s indicates the presence of moderately weathered rock. Increase in P-wave velocity indicates existence of fresh rock.						



CROSS-HOLE SHEAR-WAVE TEST

N: -30

E: 0

EGL (existing ground level) RL(+) =

79.49 m

CST -1

Depth (m)	Vp (m/s)	Vs (m/s)	Density (kg/m ³)	m=vp/vs)	Poisson's Ratio	Young's Modulus (Mpa)	Shear Modulus (Mpa)	Bulk Modulus (MPa)
2	1398	762	2400	1.83	0.29	3.59E+03	1.39E+03	2.83E+03
4	1578	853	2500	1.85	0.29	4.71E+03	1.82E+03	3.80E+03
6	2258	1255	2600	1.80	0.28	1.05E+04	4.10E+03	7.80E+03
8	2558	1380	2600	1.85	0.29	1.28E+04	4.95E+03	1.04E+04
10	2758	1490	2600	1.85	0.29	1.49E+04	5.77E+03	1.21E+04
12	2813	1560	2600	1.80	0.28	1.62E+04	6.33E+03	1.21E+04
14	2898	1620	2600	1.79	0.27	1.74E+04	6.82E+03	1.27E+04
16	2888	1619	2600	1.78	0.27	1.73E+04	6.82E+03	1.26E+04
18	2886	1618	2600	1.78	0.27	1.73E+04	6.81E+03	1.26E+04
20	2895	1690	2600	1.71	0.24	1.84E+04	7.43E+03	1.19E+04



N: -30

E: 431

EGL (existing ground level) RL(+) =

83.24 m

CST-2

Depth (m)	Vp (m/s)	Vs (m/s)	Density (kg/m ³)	m=vp/vs	Poisson's Ratio	Young's Modulus (Mpa)	Shear Modulus (Mpa)	Bulk Modulus (MPa)
2	1259	686	2400	1.84	0.29	2.91E+03	1.13E+03	2.30E+03
4	1848	1037	2500	1.78	0.27	6.83E+03	2.69E+03	4.95E+03
6	1953	1105	2600	1.77	0.26	8.03E+03	3.17E+03	5.68E+03
8	2110	1161	2600	1.82	0.28	8.99E+03	3.50E+03	6.90E+03
10	2520	1361	2600	1.85	0.29	1.25E+04	4.82E+03	1.01E+04
12	2676	1395	2600	1.92	0.31	1.33E+04	5.06E+03	1.19E+04
14	2893	1592	2600	1.82	0.28	1.69E+04	6.59E+03	1.30E+04
16	2952	1658	2600	1.78	0.27	1.81E+04	7.15E+03	1.31E+04
18	2953	1665	2600	1.77	0.27	1.83E+04	7.21E+03	1.31E+04
20	2956	1670	2600	1.77	0.27	1.84E+04	7.25E+03	1.31E+04



N: -30

E: 644

EGL (existing ground level) RL(+) =

84.86 m

CST-3

Depth (m)	Vp (m/s)	Vs (m/s)	Density (kg/m ³)	m=vp/vs)	Poisson's Ratio	Young's Modulus (Mpa)	Shear Modulus (Mpa)	Bulk Modulus (MPa)
2	1253	681	2400	1.84	0.29	2872.48	1113.03	2283.99
4	1842	1032	2500	1.78	0.27	6769.57	2662.56	4932.33
6	1947	1100	2600	1.77	0.27	7963.01	3146.00	5661.44
8	2104	1156	2600	1.82	0.28	8921.04	3474.47	6877.09
10	2514	1356	2600	1.85	0.29	12380.62	4780.71	10058.22
12	2670	1390	2600	1.92	0.31	13202.73	5023.46	11837.19
14	2887	1587	2600	1.82	0.28	16809.26	6548.28	12939.36
16	2946	1653	2600	1.78	0.27	18048.39	7104.26	13092.83
18	2947	1660	2600	1.78	0.27	18163.95	7164.56	13027.76
20	2950	1665	2600	1.77	0.27	18253.93	7207.785	13016.12



N: -211

E: -35

EGL (existing ground level) RL(+) =

78.81 m

CST-4

Depth (m)	Vp (m/s)	Vs (m/s)	Density (kg/m ³)	m=vp/vs)	Poisson's Ratio	Young's Modulus (Mpa)	Shear Modulus (Mpa)	Bulk Modulus (MPa)
2	1125	561	2400	2.01	0.33	2.02E+03	7.55E+02	2.03E+03
4	1253	653	2500	1.92	0.31	2.80E+03	1.07E+03	2.50E+03
6	1852	1000	2600	1.85	0.29	6.73E+03	2.60E+03	5.45E+03
8	2195	1169	2600	1.88	0.30	9.25E+03	3.55E+03	7.79E+03
10	2385	1280	2600	1.86	0.30	1.11E+04	4.26E+03	9.11E+03
12	2510	1356	2600	1.85	0.29	1.24E+04	4.78E+03	1.00E+04
14	2543	1394	2600	1.82	0.29	1.30E+04	5.05E+03	1.01E+04
16	2989	1643	2600	1.82	0.28	1.80E+04	7.02E+03	1.39E+04
18	2992	1645	2600	1.82	0.28	1.81E+04	7.04E+03	1.39E+04
20	2998	1670	2600	1.80	0.28	1.85E+04	7.25E+03	1.37E+04



N: -211

E: 538

EGL (existing ground level) RL(+) =

84.70 m

CST-5

Depth (m)	Vp (m/s)	Vs (m/s)	Density (kg/m ³)	m=vp/vs)	Poisson's Ratio	Young's Modulus (Mpa)	Shear Modulus (Mpa)	Bulk Modulus (MPa)
2	952	640	2400	1.49	0.09	2.14E+03	9.83E+02	8.64E+02
4	1500	900	2500	1.67	0.22	4.94E+03	2.03E+03	2.93E+03
6	1986	1185	2600	1.68	0.22	8.93E+03	3.65E+03	5.39E+03
8	2155	1242	2600	1.74	0.25	1.00E+04	4.01E+03	6.73E+03
10	2178	1258	2600	1.73	0.25	1.03E+04	4.11E+03	6.85E+03
12	2199	1265	2600	1.74	0.25	1.04E+04	4.16E+03	7.03E+03
14	2238	1273	2600	1.76	0.26	1.06E+04	4.21E+03	7.40E+03
16	2250	1280	2600	1.76	0.26	1.07E+04	4.26E+03	7.48E+03
18	2279	1332	2600	1.71	0.24	1.14E+04	4.61E+03	7.35E+03
20	2290	1345	2600	1.70	0.24	1.16E+04	4.70E+03	7.36E+03



N: -211

E: 679

EGL (existing ground level) RL(+) =

85.78 m

CST-6

Depth (m)	Vp (m/s)	Vs (m/s)	Density (kg/m ³)	m=vp/vs)	Poisson's Ratio	Young's Modulus (Mpa)	Shear Modulus (Mpa)	Bulk Modulus (MPa)
2	1095	592	2400	1.85	0.29	2.18E+03	8.41E+02	1.76E+03
4	2165	1209	2500	1.79	0.27	9.31E+03	3.65E+03	6.85E+03
6	2195	1285	2600	1.71	0.24	1.06E+04	4.29E+03	6.80E+03
8	2315	1295	2600	1.79	0.27	1.11E+04	4.36E+03	8.12E+03
10	2368	1320	2600	1.79	0.27	1.15E+04	4.53E+03	8.54E+03
12	2525	1432	2600	1.76	0.26	1.35E+04	5.33E+03	9.47E+03
14	2875	1641	2600	1.75	0.26	1.76E+04	7.00E+03	1.22E+04
16	3005	1695	2600	1.77	0.27	1.89E+04	7.47E+03	1.35E+04
18	3007	1698	2600	1.77	0.27	1.90E+04	7.50E+03	1.35E+04
20	3020	1700	2600	1.78	0.27	1.91E+04	7.51E+03	1.37E+04



N: -290

E: -62

EGL (existing ground level) RL(+) =

77.24 m

CST-7

Depth (m)	Vp (m/s)	Vs (m/s)	Density (kg/m ³)	m=vp/vs	Poisson's Ratio	Young's Modulus (Mpa)	Shear Modulus (Mpa)	Bulk Modulus (MPa)
2	1125	561	2400	2.01	0.33	2.02E+03	7.55E+02	2.03E+03
4	1253	653	2500	1.92	0.31	2.80E+03	1.07E+03	2.50E+03
6	1852	1000	2600	1.85	0.29	6.73E+03	2.60E+03	5.45E+03
8	2195	1169	2600	1.88	0.30	9.25E+03	3.55E+03	7.79E+03
10	2385	1280	2600	1.86	0.30	1.11E+04	4.26E+03	9.11E+03
12	2510	1356	2600	1.85	0.29	1.24E+04	4.78E+03	1.00E+04
14	2543	1394	2600	1.82	0.29	1.30E+04	5.05E+03	1.01E+04
16	2989	1643	2600	1.82	0.28	1.80E+04	7.02E+03	1.39E+04
18	2992	1645	2600	1.82	0.28	1.81E+04	7.04E+03	1.39E+04
20	2998	1670	2600	1.80	0.28	1.85E+04	7.25E+03	1.37E+04



N: -290

E: 80

EGL (existing ground level) RL(+) =

79.68 m

CST-8

Depth (m)	Vp (m/s)	Vs (m/s)	Density (kg/m ³)	m=vp/vs)	Poisson's Ratio	Young's Modulus (Mpa)	Shear Modulus (Mpa)	Bulk Modulus (MPa)
2	1365	727	2400	1.88	0.30	3.30E+03	1.27E+03	2.78E+03
4	1456	781	2500	1.86	0.30	3.96E+03	1.52E+03	3.27E+03
6	2565	1422	2600	1.80	0.28	1.34E+04	5.26E+03	1.01E+04
8	2595	1485	2600	1.75	0.26	1.44E+04	5.73E+03	9.86E+03
10	2625	1380	2600	1.90	0.31	1.30E+04	4.95E+03	1.13E+04
12	2725	1580	2600	1.72	0.25	1.62E+04	6.49E+03	1.07E+04
14	2856	1600	2600	1.79	0.27	1.69E+04	6.66E+03	1.23E+04
16	3565	2064	2600	1.73	0.25	2.76E+04	1.11E+04	1.83E+04
18	3575	2066	2600	1.73	0.25	2.77E+04	1.11E+04	1.84E+04
20	3579	2068	2600	1.73	0.25	2.78E+04	1.11E+04	1.85E+04



N: -290

E: 371

EGL (existing ground level) RL(+) =

83.35 m

CST-9

Depth (m)	Vp (m/s)	Vs (m/s)	Density (kg/m ³)	m=vp/vs)	Poisson's Ratio	Young's Modulus (Mpa)	Shear Modulus (Mpa)	Bulk Modulus (MPa)
2	1198	643	2400	1.86	0.30	2.58E+03	9.92E+02	2.12E+03
4	1631	892	2500	1.83	0.29	5.12E+03	1.99E+03	4.00E+03
6	2146	1188	2600	1.81	0.28	9.39E+03	3.67E+03	7.08E+03
8	2296	1245	2600	1.84	0.29	1.04E+04	4.03E+03	8.33E+03
10	2299	1283	2600	1.79	0.27	1.09E+04	4.28E+03	8.04E+03
12	2506	1381	2600	1.81	0.28	1.27E+04	4.96E+03	9.72E+03
14	2607	1456	2600	1.79	0.27	1.40E+04	5.51E+03	1.03E+04
16	2762	1493	2600	1.85	0.29	1.50E+04	5.80E+03	1.21E+04
18	2817	1563	2600	1.80	0.28	1.62E+04	6.35E+03	1.22E+04
20	2902	1623	2600	1.79	0.27	1.74E+04	6.85E+03	1.28E+04



N: -290

E: 514

EGL (existing ground level) RL(+) =

85.06 m

CST-10

Depth (m)	Vp (m/s)	Vs (m/s)	Density (kg/m ³)	m=vp/vs)	Poisson's Ratio	Young's Modulus (Mpa)	Shear Modulus (Mpa)	Bulk Modulus (MPa)
2	1194	640	2400	1.87	0.30	2.55E+03	9.83E+02	2.11E+03
4	1627	889	2500	1.83	0.29	5.09E+03	1.98E+03	3.98E+03
6	2142	1185	2600	1.81	0.28	9.34E+03	3.65E+03	7.06E+03
8	2292	1242	2600	1.85	0.29	1.04E+04	4.01E+03	8.31E+03
10	2295	1280	2600	1.79	0.27	1.09E+04	4.26E+03	8.01E+03
12	2502	1378	2600	1.82	0.28	1.27E+04	4.94E+03	9.69E+03
14	2603	1453	2600	1.79	0.27	1.40E+04	5.49E+03	1.03E+04
16	2758	1490	2600	1.85	0.29	1.49E+04	5.77E+03	1.21E+04
18	2813	1560	2600	1.80	0.28	1.62E+04	6.33E+03	1.21E+04
20	2898	1620	2600	1.79	0.27	1.74E+04	6.82E+03	1.27E+04



N: -290

E: 655

EGL (existing ground level) RL(+) =

85.31 m

CST-11

Depth (m)	Vp (m/s)	Vs (m/s)	Density (kg/m ³)	m=vp/vs	Poisson's Ratio	Young's Modulus (Mpa)	Shear Modulus (Mpa)	Bulk Modulus (MPa)
2	1395	755	2400	1.85	0.29	3.54E+03	1.37E+03	1.37E+03
4	1685	914	2500	1.84	0.29	5.39E+03	2.09E+03	2.09E+03
6	2188	1232	2600	1.78	0.27	1.00E+04	3.95E+03	3.95E+03
8	2308	1305	2600	1.77	0.27	1.12E+04	4.43E+03	4.43E+03
10	2389	1365	2600	1.75	0.26	1.22E+04	4.84E+03	4.84E+03
12	2595	1456	2600	1.78	0.27	1.40E+04	5.51E+03	5.51E+03
14	2715	1546	2600	1.76	0.26	1.57E+04	6.21E+03	6.21E+03
16	3085	1785	2600	1.73	0.25	2.07E+04	8.28E+03	8.28E+03
18	3087	1788	2600	1.73	0.25	2.07E+04	8.31E+03	8.31E+03
20	3097	1790	2600	1.73	0.25	2.08E+04	8.33E+03	8.33E+03



Properties of sub-surface strata by Cross-hole Shear-wave Test (CST)													
Sr. no	Structure name	Test no	Northing	Easting	Depth (m)	Vp (m/s)	Vs (m/s)	Density (kg/m ³)	m= (Vp/Vs)	Poisson's Ratio	Young's Modulus (MPa)	Shear Modulus (MPa)	Bulk Modulus (MPa)
1	Chimney and ID fan area	CST 1	-30	0	2	1398	762	2400	1.83	0.29	3.59E+03	1.39E+03	2.83E+03
2					4	1578	853	2500	1.85	0.29	4.71E+03	1.82E+03	3.80E+03
3					6	2258	1255	2600	1.80	0.28	1.05E+04	4.10E+03	7.80E+03
4					8	2558	1380	2600	1.85	0.29	1.28E+04	4.95E+03	1.04E+04
5					10	2758	1490	2600	1.85	0.29	1.49E+04	5.77E+03	1.21E+04
6					12	2813	1560	2600	1.80	0.28	1.62E+04	6.33E+03	1.21E+04
7					14	2898	1620	2600	1.79	0.27	1.74E+04	6.82E+03	1.27E+04
8					16	2888	1619	2600	1.78	0.27	1.73E+04	6.82E+03	1.26E+04
9					18	2886	1618	2600	1.78	0.27	1.73E+04	6.81E+03	1.26E+04
10					20	2895	1690	2600	1.71	0.24	1.84E+04	7.43E+03	1.19E+04
11	Chimney and ID fan area	CST 2	-30	431	2	1259	686	2400	1.84	0.29	2.91E+03	1.13E+03	2.30E+03
12					4	1848	1037	2500	1.78	0.27	6.83E+03	2.69E+03	4.95E+03
13					6	1953	1105	2600	1.77	0.26	8.03E+03	3.17E+03	5.68E+03
14					8	2110	1161	2600	1.82	0.28	8.99E+03	3.50E+03	6.90E+03
15					10	2520	1361	2600	1.85	0.29	1.25E+04	4.82E+03	1.01E+04
16					12	2676	1395	2600	1.92	0.31	1.33E+04	5.06E+03	1.19E+04
17					14	2893	1592	2600	1.82	0.28	1.69E+04	6.59E+03	1.30E+04
18					16	2952	1658	2600	1.78	0.27	1.81E+04	7.15E+03	1.31E+04
19					18	2953	1665	2600	1.77	0.27	1.83E+04	7.21E+03	1.31E+04
20					20	2956	1670	2600	1.77	0.27	1.84E+04	7.25E+03	1.31E+04
21	Chimney and ID fan area	CST 3	-30	644	2	1253	681	2400	1.84	0.29	2872.48	1113.03	2283.99
22					4	1842	1032	2500	1.78	0.27	6769.57	2662.56	4932.33
23					6	1947	1100	2600	1.77	0.27	7963.01	3146.00	5661.44
24					8	2104	1156	2600	1.82	0.28	8921.04	3474.47	6877.09
25					10	2514	1356	2600	1.85	0.29	12380.62	4780.71	10058.22
26					12	2670	1390	2600	1.92	0.31	13202.73	5023.46	11837.19
27					14	2887	1587	2600	1.82	0.28	16809.26	6548.28	12939.36
28					16	2946	1653	2600	1.78	0.27	18048.39	7104.26	13092.83
29					18	2947	1660	2600	1.78	0.27	18163.95	7164.56	13027.76
30					20	2950	1665	2600	1.77	0.27	18253.93	7207.785	13016.12
31	Boiler, Aux boiler, CST tank and pump house	CST 4	-211	-35	2	1125	561	2400	2.01	0.33	2.02E+03	7.55E+02	2.03E+03
32					4	1253	653	2500	1.92	0.31	2.80E+03	1.07E+03	2.50E+03
33					6	1852	1000	2600	1.85	0.29	6.73E+03	2.60E+03	5.45E+03
34					8	2195	1169	2600	1.88	0.30	9.25E+03	3.55E+03	7.79E+03
35					10	2385	1280	2600	1.86	0.30	1.11E+04	4.26E+03	9.11E+03
36					12	2510	1356	2600	1.85	0.29	1.24E+04	4.78E+03	1.00E+04
37					14	2543	1394	2600	1.82	0.29	1.30E+04	5.05E+03	1.01E+04
38					16	2989	1643	2600	1.82	0.28	1.80E+04	7.02E+03	1.39E+04
39					18	2992	1645	2600	1.82	0.28	1.81E+04	7.04E+03	1.39E+04
40					20	2998	1670	2600	1.80	0.28	1.85E+04	7.25E+03	1.37E+04



Properties of sub-surface strata by Cross-hole Shear-wave Test (CST)													
Sr. no	Structure name	Test no	Northing	Easting	Depth (m)	Vp (m/s)	Vs (m/s)	Density (kg/m ³)	m= (Vp/Vs)	Poisson's Ratio	Young's Modulus (MPa)	Shear Modulus (MPa)	Bulk Modulus (MPa)
41	Boiler, Aux boiler, CST tank and pump house	CST 5	-211	538	2	952	640	2400	1.49	0.09	2.14E+03	9.83E+02	8.64E+02
42					4	1500	900	2500	1.67	0.22	4.94E+03	2.03E+03	2.93E+03
43					6	1986	1185	2600	1.68	0.22	8.93E+03	3.65E+03	5.39E+03
44					8	2155	1242	2600	1.74	0.25	1.00E+04	4.01E+03	6.73E+03
45					10	2178	1258	2600	1.73	0.25	1.03E+04	4.11E+03	6.85E+03
46					12	2199	1265	2600	1.74	0.25	1.04E+04	4.16E+03	7.03E+03
47					14	2238	1273	2600	1.76	0.26	1.06E+04	4.21E+03	7.40E+03
48					16	2250	1280	2600	1.76	0.26	1.07E+04	4.26E+03	7.48E+03
49					18	2279	1332	2600	1.71	0.24	1.14E+04	4.61E+03	7.35E+03
50					20	2290	1345	2600	1.70	0.24	1.16E+04	4.70E+03	7.36E+03
51	Boiler, Aux boiler, CST tank and pump house	CST 6	-211	679	2	1095	592	2400	1.85	0.29	2.18E+03	8.41E+02	1.76E+03
52					4	2165	1209	2500	1.79	0.27	9.31E+03	3.65E+03	6.85E+03
53					6	2195	1285	2600	1.71	0.24	1.06E+04	4.29E+03	6.80E+03
54					8	2315	1295	2600	1.79	0.27	1.11E+04	4.36E+03	8.12E+03
55					10	2368	1320	2600	1.79	0.27	1.15E+04	4.53E+03	8.54E+03
56					12	2525	1432	2600	1.76	0.26	1.35E+04	5.33E+03	9.47E+03
57					14	2875	1641	2600	1.75	0.26	1.76E+04	7.00E+03	1.22E+04
58					16	3005	1695	2600	1.77	0.27	1.89E+04	7.47E+03	1.35E+04
59					18	3007	1698	2600	1.77	0.27	1.90E+04	7.50E+03	1.35E+04
60					20	3020	1700	2600	1.78	0.27	1.91E+04	7.51E+03	1.37E+04
61	PH including TG, service building and compressor house	CST 7	-290	-62	2	1125	561	2400	2.01	0.33	2.02E+03	7.55E+02	2.03E+03
62					4	1253	653	2500	1.92	0.31	2.80E+03	1.07E+03	2.50E+03
63					6	1852	1000	2600	1.85	0.29	6.73E+03	2.60E+03	5.45E+03
64					8	2195	1169	2600	1.88	0.30	9.25E+03	3.55E+03	7.79E+03
65					10	2385	1280	2600	1.86	0.30	1.11E+04	4.26E+03	9.11E+03
66					12	2510	1356	2600	1.85	0.29	1.24E+04	4.78E+03	1.00E+04
67					14	2543	1394	2600	1.82	0.29	1.30E+04	5.05E+03	1.01E+04
68					16	2989	1643	2600	1.82	0.28	1.80E+04	7.02E+03	1.39E+04
69					18	2992	1645	2600	1.82	0.28	1.81E+04	7.04E+03	1.39E+04
70					20	2998	1670	2600	1.80	0.28	1.85E+04	7.25E+03	1.37E+04
71	PH including TG, service building and compressor house	CST 8	-290	80	2	1365	727	2400	1.88	0.30	3.30E+03	1.27E+03	2.78E+03
72					4	1456	781	2500	1.86	0.30	3.96E+03	1.52E+03	3.27E+03
73					6	2565	1422	2600	1.80	0.28	1.34E+04	5.26E+03	1.01E+04
74					8	2595	1485	2600	1.75	0.26	1.44E+04	5.73E+03	9.86E+03
75					10	2625	1380	2600	1.90	0.31	1.30E+04	4.95E+03	1.13E+04
76					12	2725	1580	2600	1.72	0.25	1.62E+04	6.49E+03	1.07E+04
77					14	2856	1600	2600	1.79	0.27	1.69E+04	6.66E+03	1.23E+04
78					16	3565	2064	2600	1.73	0.25	2.76E+04	1.11E+04	1.83E+04
79					18	3575	2066	2600	1.73	0.25	2.77E+04	1.11E+04	1.84E+04
80					20	3579	2068	2600	1.73	0.25	2.78E+04	1.11E+04	1.85E+04



Properties of sub-surface strata by Cross-hole Shear-wave Test (CST)													
Sr. no	Structure name	Test no	Northing	Easting	Depth (m)	Vp (m/s)	Vs (m/s)	Density (kg/m ³)	m= (Vp/Vs)	Poisson's Ratio	Young's Modulus (MPa)	Shear Modulus (MPa)	Bulk Modulus (MPa)
81	PH including TG, service building and compressor house	CST 9	-290	371	2	1198	643	2400	1.86	0.30	2.58E+03	9.92E+02	2.12E+03
82					4	1631	892	2500	1.83	0.29	5.12E+03	1.99E+03	4.00E+03
83					6	2146	1188	2600	1.81	0.28	9.39E+03	3.67E+03	7.08E+03
84					8	2296	1245	2600	1.84	0.29	1.04E+04	4.03E+03	8.33E+03
85					10	2299	1283	2600	1.79	0.27	1.09E+04	4.28E+03	8.04E+03
86					12	2506	1381	2600	1.81	0.28	1.27E+04	4.96E+03	9.72E+03
87					14	2607	1456	2600	1.79	0.27	1.40E+04	5.51E+03	1.03E+04
88					16	2762	1493	2600	1.85	0.29	1.50E+04	5.80E+03	1.21E+04
89					18	2817	1563	2600	1.80	0.28	1.62E+04	6.35E+03	1.22E+04
90					20	2902	1623	2600	1.79	0.27	1.74E+04	6.85E+03	1.28E+04
91	PH including TG, service building and compressor house	CST 10	-290	514	2	1194	640	2400	1.87	0.30	2.55E+03	9.83E+02	2.11E+03
92					4	1627	889	2500	1.83	0.29	5.09E+03	1.98E+03	3.98E+03
93					6	2142	1185	2600	1.81	0.28	9.34E+03	3.65E+03	7.06E+03
94					8	2292	1242	2600	1.85	0.29	1.04E+04	4.01E+03	8.31E+03
95					10	2295	1280	2600	1.79	0.27	1.09E+04	4.26E+03	8.01E+03
96					12	2502	1378	2600	1.82	0.28	1.27E+04	4.94E+03	9.69E+03
97					14	2603	1453	2600	1.79	0.27	1.40E+04	5.49E+03	1.03E+04
98					16	2758	1490	2600	1.85	0.29	1.49E+04	5.77E+03	1.21E+04
99					18	2813	1560	2600	1.80	0.28	1.62E+04	6.33E+03	1.21E+04
100					20	2898	1620	2600	1.79	0.27	1.74E+04	6.82E+03	1.27E+04
101	PH including TG, service building and compressor house	CST 11	-290	655	2	1395	755	2400	1.85	0.29	3.54E+03	1.37E+03	1.37E+03
102					4	1685	914	2500	1.84	0.29	5.39E+03	2.09E+03	2.09E+03
103					6	2188	1232	2600	1.78	0.27	1.00E+04	3.95E+03	3.95E+03
104					8	2308	1305	2600	1.77	0.27	1.12E+04	4.43E+03	4.43E+03
105					10	2389	1365	2600	1.75	0.26	1.22E+04	4.84E+03	4.84E+03
106					12	2595	1456	2600	1.78	0.27	1.40E+04	5.51E+03	5.51E+03
107					14	2715	1546	2600	1.76	0.26	1.57E+04	6.21E+03	6.21E+03
108					16	3085	1785	2600	1.73	0.25	2.07E+04	8.28E+03	8.28E+03
109					18	3087	1788	2600	1.73	0.25	2.07E+04	8.31E+03	8.31E+03
110					20	3097	1790	2600	1.73	0.25	2.08E+04	8.33E+03	8.33E+03



Conclusion : Based on the above results , it is concluded that the Young's Modulus, Shear Modulus and Bulk Modulus can be taken for design purpose from the table below:

Sr.No.	Depth ,m	Young's Modulus,MPa	Shear Modulus ,MPa	Bulk Modulus,MPa
1	2	2.02E+03	7.55E+02	8.64E+02
2	4	2.80E+03	1.07E+03	2.09E+03
3	6	6.73E+03	2.60E+03	3.95E+03
4	8	8.92E+03	3.47E+03	4.43E+03
5	10	1.03E+04	4.11E+03	4.84E+03
6	12	1.04E+04	4.16E+03	5.51E+03
7	14	1.06E+04	4.21E+03	6.21E+03
8	16	1.07E+04	4.26E+03	7.48E+03
9	18	1.14E+04	4.61E+03	7.35E+03
10	20	1.16E+04	4.70E+03	7.36E+03



BLOCK VIBRATION TEST

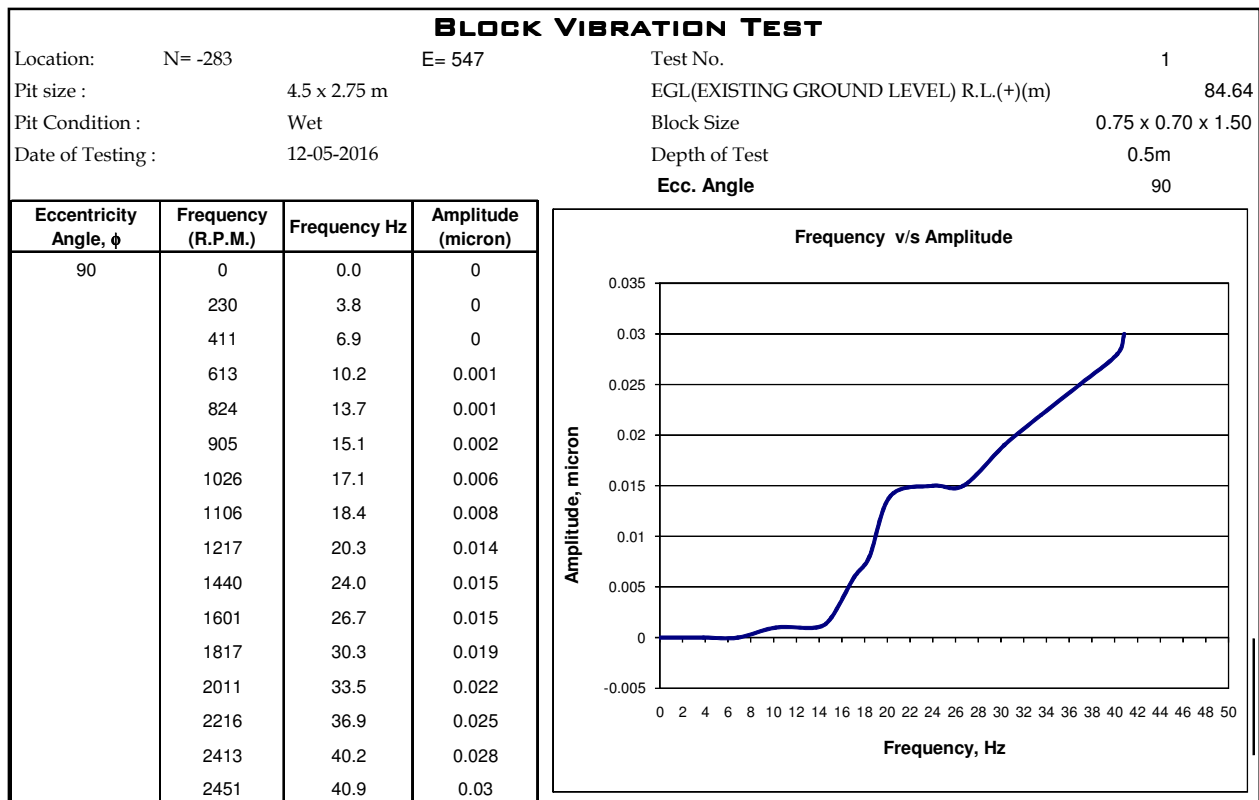
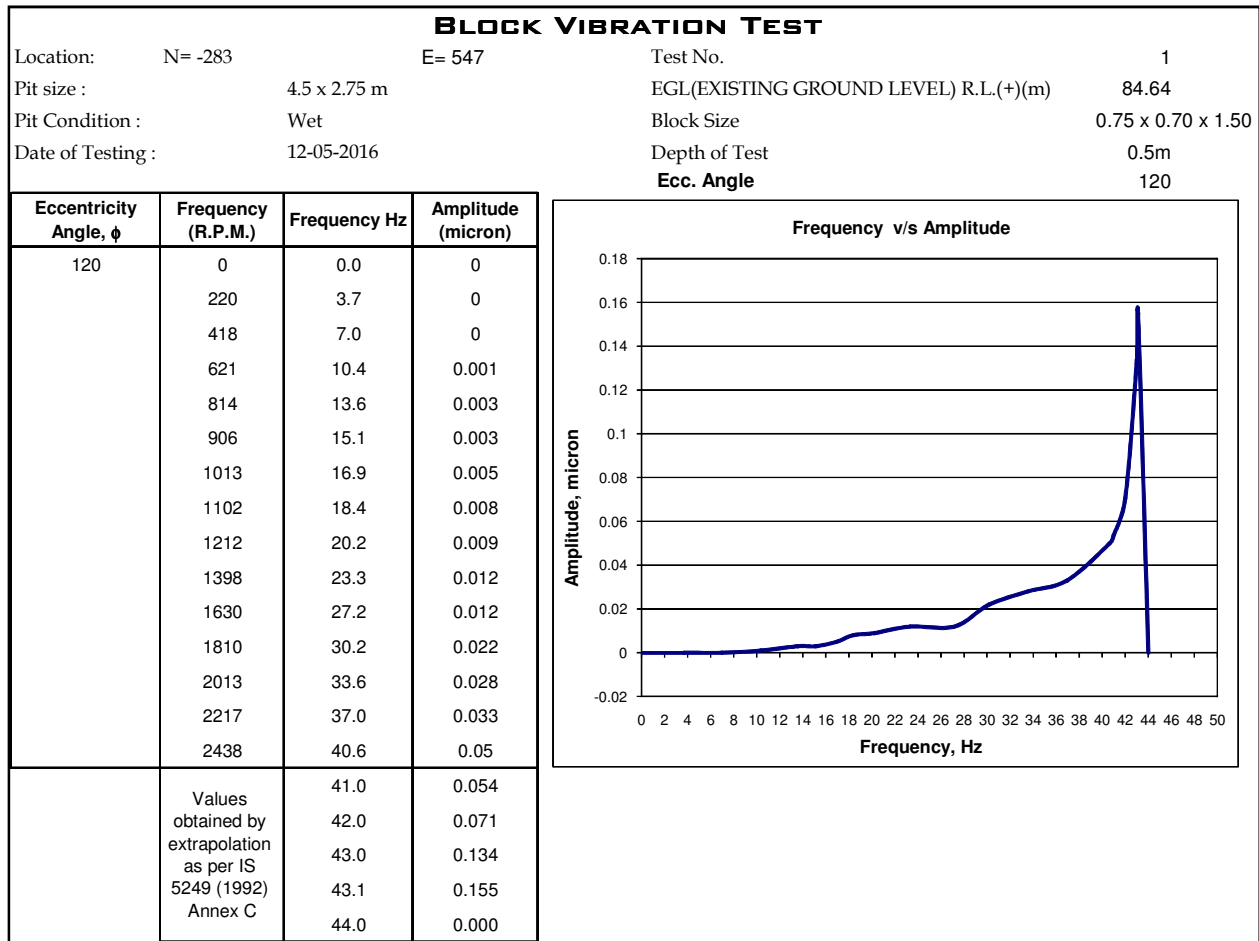
BVT 1

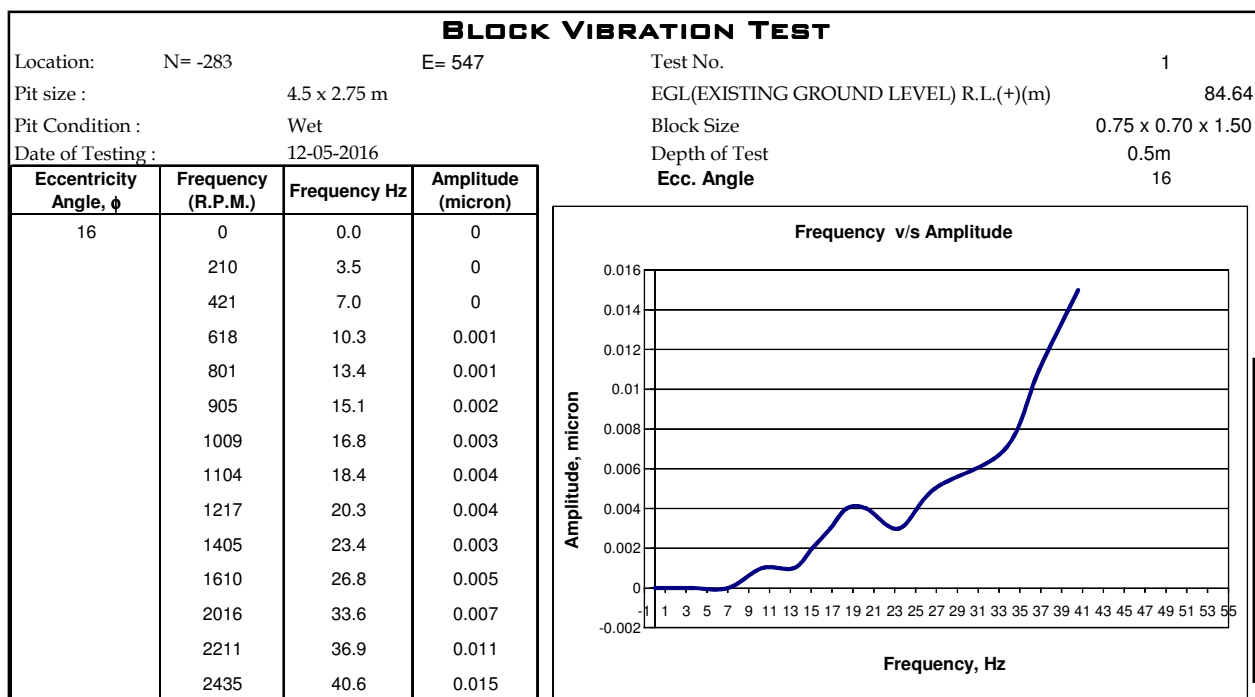
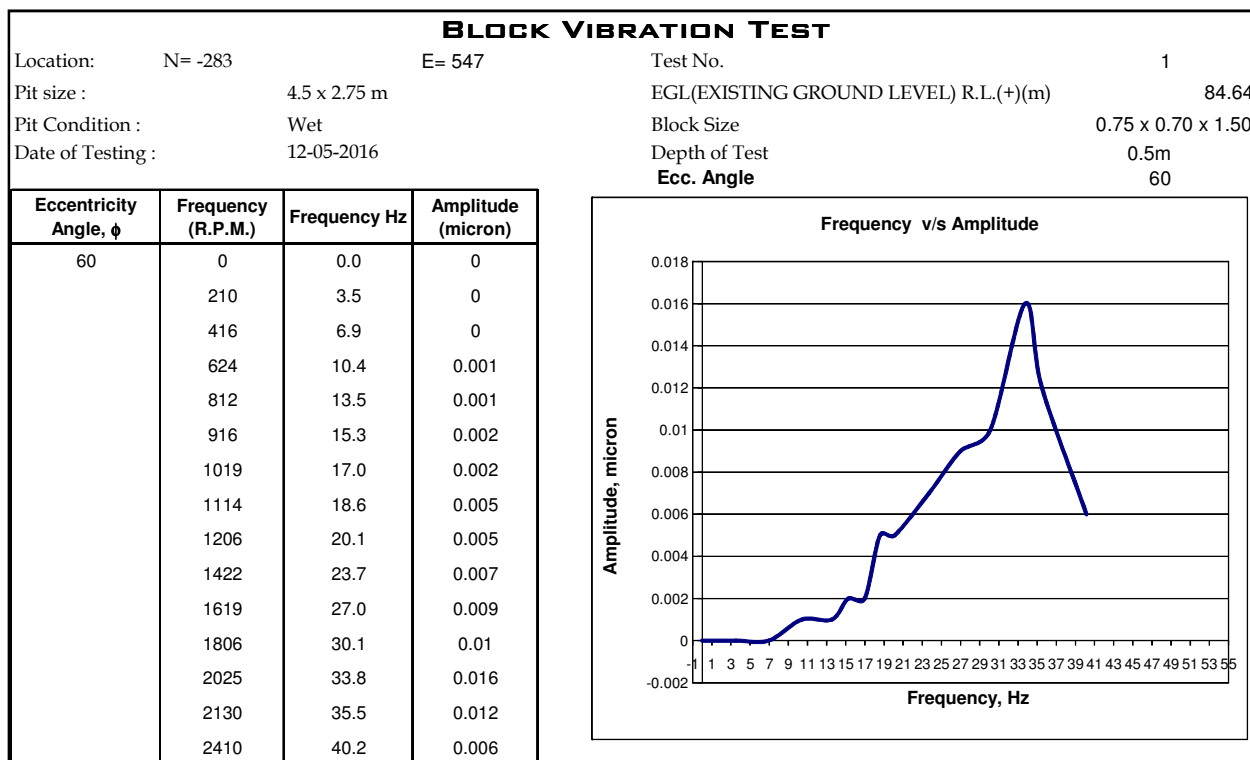
Sr. no	Eccentricity Angle, ϕ	Frequency Hz	Maximum amplitude (μ)
1	8	13.417	0.002
2	16	18.400	0.004
3	24	20.067	0.003
4	32	23.683	0.008
5	60	26.983	0.009
6	90	30.283	0.019
7	120	44.000	0.155

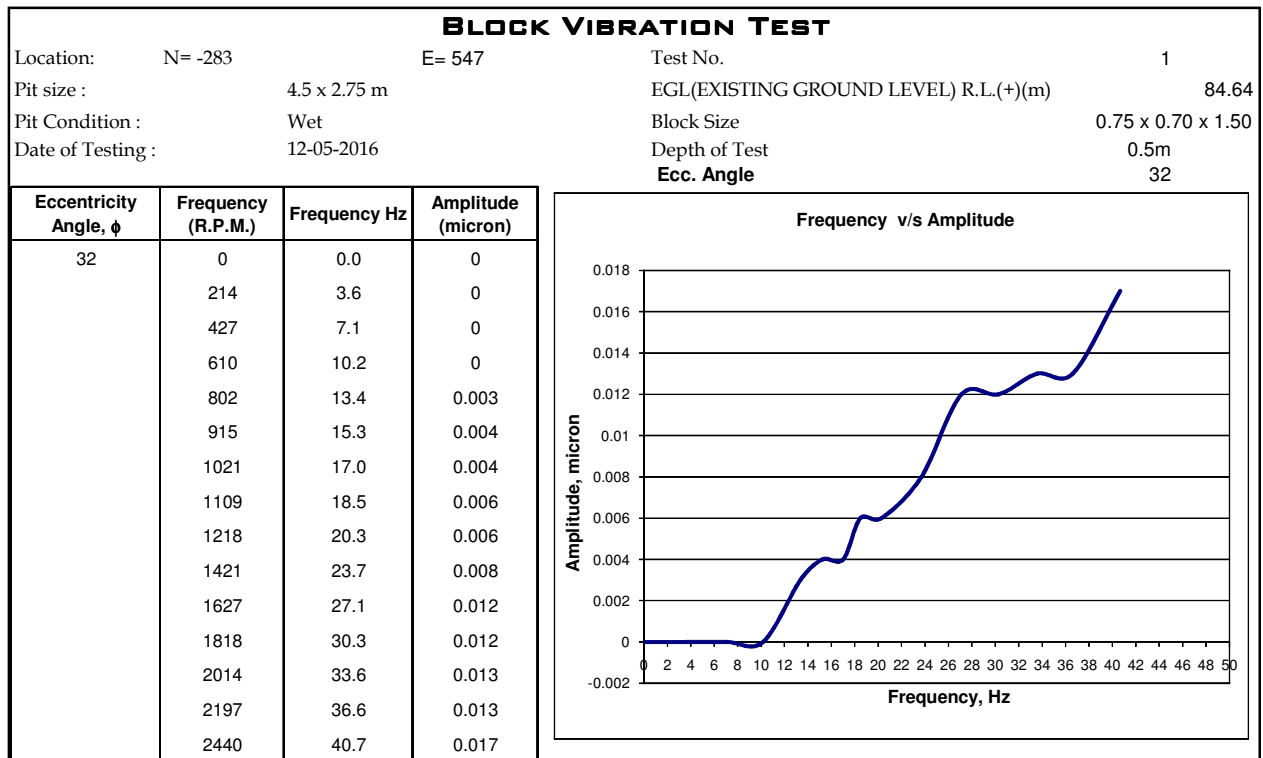
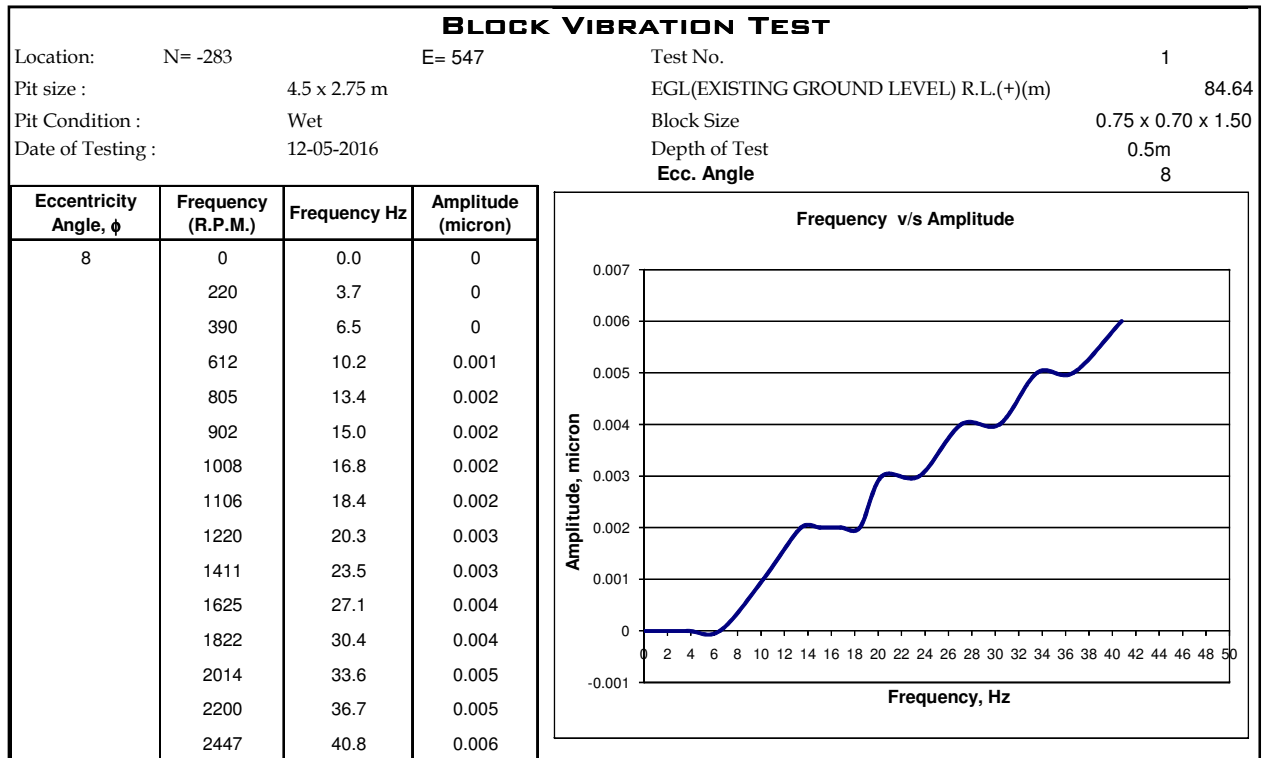
Block Vibration Test (Analysis)

Calculations for Test no. 1

Maximum amplitude A_m from Graph	0.00016 mm
$A_m/(2)^{0.5}$	0.000110 mm
Frequency at which amplitude is $A_m/(2)^{0.5}$, f_{n1} , from Graph	42.70 Hz
Frequency at which amplitude is $A_m/(2)^{0.5}$, f_{n2} , from Graph	49.00 Hz
Damping coeff	0.072
Mass of the block	1890
Mass of Oscillator = 23.5 kg	23.5
Mass of the Motor	70
Total mass M	1983.5
Frequency at which amplitude is maximum f_{nz} , from graph	44.00 Hz
Contact area of test block. A_1	5250 sqcm
Coefficient of elastic uniform compression $C_u = \frac{4 \times p_2 \times f_{nz}^2 \times M}{A \times 9.81}$	15.45
Contact area of actual foundation A	100000.0 sqcm
$C_{u1} = C_u \times (A_1 / A)^{0.5}$ For 10 m ²	
Coefficient of elastic uniform compression for the foundation area 10 m ² $C_{u1} =$	3.54 kg/cm³
Coefficient of elastic uniform shear for the foundation area 10 m ² $C_{t1} = C_{u1}/2$	1.77 kg/cm³
Coefficient of elastic non uniform compression $C_{f1} = 3.46 \times C_{t1}$	6.13 kg/cm³
Coefficient of elastic non uniform shear $C_{\psi} = 0.75 \times C_{u1}$	2.66 kg/cm³
Shear Modulus, $G = \frac{(1 - \epsilon) \times C_{\psi} \times (A)^{0.5}}{2.26}$	346.81 kg/sqcm
Young's Modulus, $E = G \times 2 \times (1 + \epsilon)$	901.72 kg/sqcm
Poisson's ratio of soil ϵ	0.30
The above values are reported for foundation base area of 10.00 sqm	





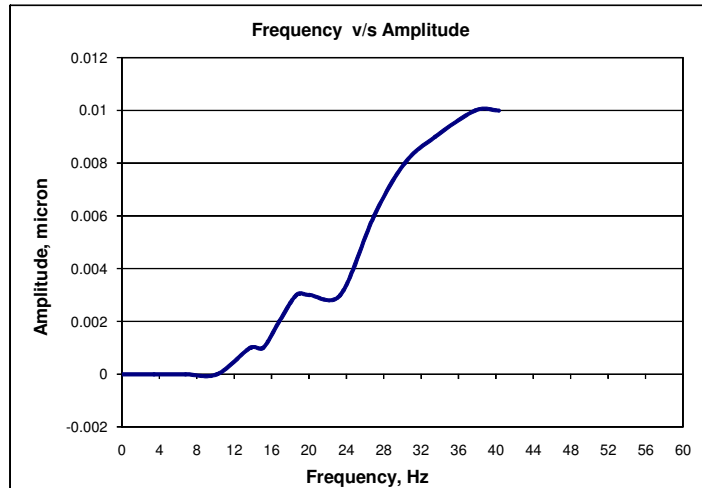




BLOCK VIBRATION TEST

Location:	N= -283	E= 547	Test No.	1
Pit size :	4.5 x 2.75 m		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)	84.64
Pit Condition :	Wet		Block Size	0.75 x 0.70 x 1.50
Date of Testing :	12-05-2016		Depth of Test	0.5m
			Ecc. Angle	24

Eccentricity Angle, ϕ	Frequency (R.P.M.)	Frequency Hz	Amplitude (micron)
24	0	0.0	0
	206	3.4	0
	409	6.8	0
	611	10.2	0
	823	13.7	0.001
	906	15.1	0.001
	1010	16.8	0.002
	1120	18.7	0.003
	1204	20.1	0.003
	1402	23.4	0.003
	1618	27.0	0.006
	1814	30.2	0.008
	2010	33.5	0.009
	2268	37.8	0.01
	2418	40.3	0.01





BVT 2

Sr. no	Eccentricity Angle, ϕ	Frequency Hz	Maximum amplitude (μ)
1	8	6.600	0.001
2	16	20.133	0.001
3	24	23.750	0.002
4	30	26.700	0.004
5	60	30.550	0.007
6	90	31.983	0.008
7	120	45.500	0.040
8	150	44.400	0.324

Block Vibration Test (Analysis)

Calculations for Test no. 2

Maximum amplitude A_m from Graph	0.00004 mm
$A_m/(2)^{0.5}$	0.00003 mm
Frequency at which amplitude is $A_m/(2)^{0.5}$, f_{n1} , from Graph	41.00 Hz
Frequency at which amplitude is $A_m/(2)^{0.5}$, f_{n2} , from Graph	51.50 Hz
Damping coeff	0.115
Mass of the block	1890
Mass of Oscillator = 23.5 kg	23.5
Mass of the Motor	70
Total mass M	1983.5
Frequency at which amplitude is maximum f_{nz} , from graph	45.50 Hz
Contact area of test block. A_1	5250 sqcm
Coefficient of elastic uniform compression $C_u = \frac{4 \cdot p_2 \cdot f_{nz}^2 \cdot M}{A \cdot 9.81}$	16.53
Contact area of actual foundation A	100000.0 sqcm
$C_{u1} = C_u \times (A_1 / A)^{0.5}$ For 10 m ²	

Coefficient of elastic uniform compression for the foundation area 10 m ² $C_{u1} =$	3.79 kg/cm³
Coefficient of elastic uniform shear for the foundation area 10 m ² $C_{t1} = C_{u1}/2$	1.89 kg/cm³
Coefficient of elastic non uniform compression $C_{f1} = 3.46 \cdot C_{t1}$	6.55 kg/cm³
Coefficient of elastic non uniform shear $C_{\psi} = 0.75 \cdot C_{u1}$	2.84 kg/cm³
Shear Modulus, $G = \frac{(1 - \epsilon) \cdot C_u \cdot (A)^{0.5}}{2.26}$	370.86 kg/sqcm
Young's Modulus, $E = \frac{G \cdot 2 \cdot (1 + \epsilon)}{1}$	964.25 kg/sqcm
Poisson's ratio of soil ϵ	0.30

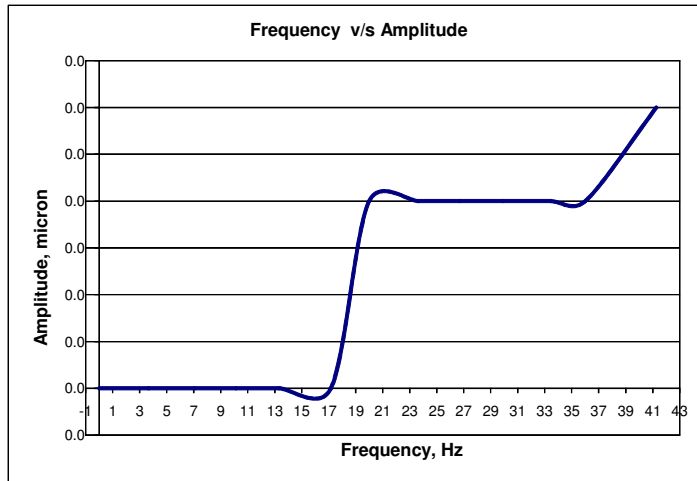
The above values are reported for foundation base area of 10.00 sqm



BLOCK VIBRATION TEST

Location: N=-283 E= -21 Test No. 2
Pit size : 4.5 x 2.75 m EGL(EXISTING GROUND LEVEL) R.L.(+)(m) 78.15
Pit Condition : Wet Block Size 0.75 x 0.70 x 1.50
Date of Testing : 09-05-2016 Depth of Test 0.00m
Ecc. Angle 30

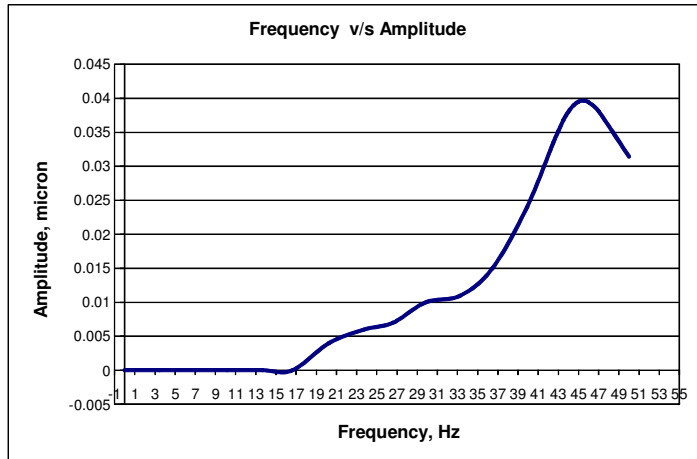
Eccentricity Angle, ϕ	Frequency (R.P.M.)	Frequency Hz	Amplitude (micron)
30	0	0.0	0
	220	3.7	0
	423	7.1	0
	608	10.1	0
	800	13.3	0
	1030	17.2	0
	1200	20.0	0.004
	1420	23.7	0.004
	1602	26.7	0.004
	1795	29.9	0.004
	2008	33.5	0.004
	2160	36.0	0.004
	2476	41.3	0.006

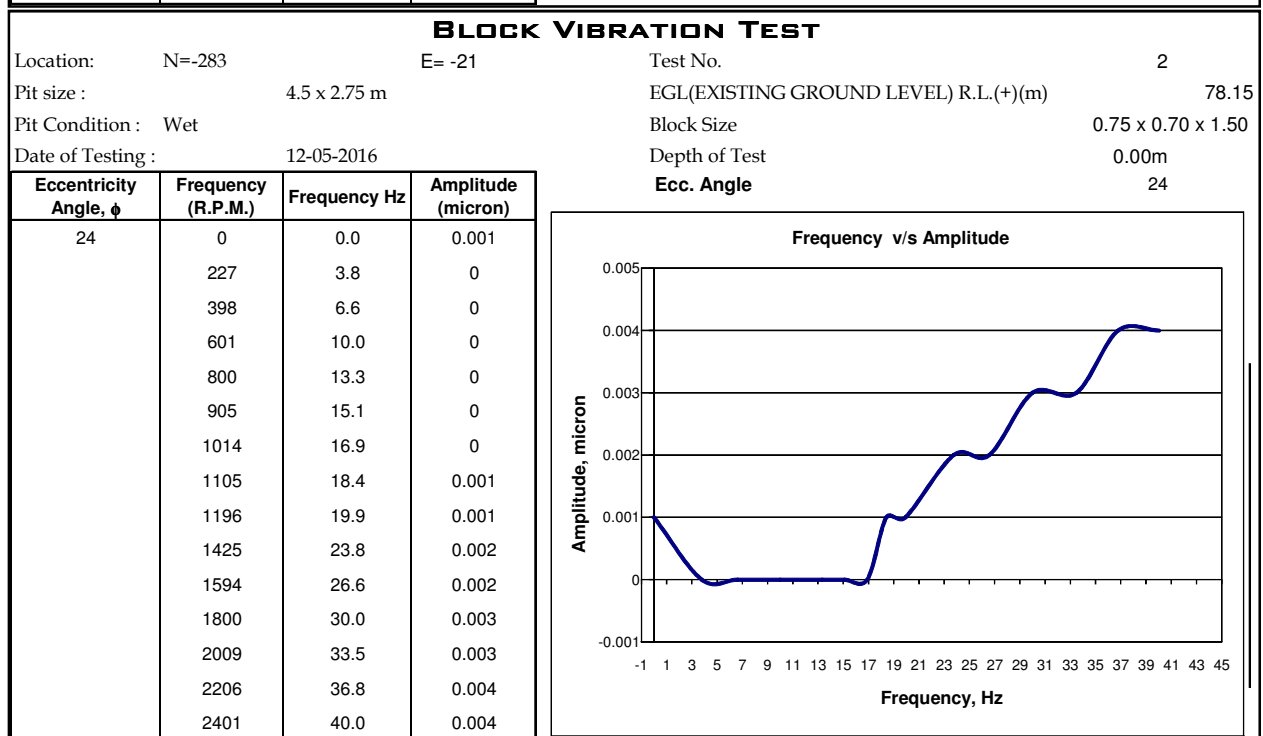
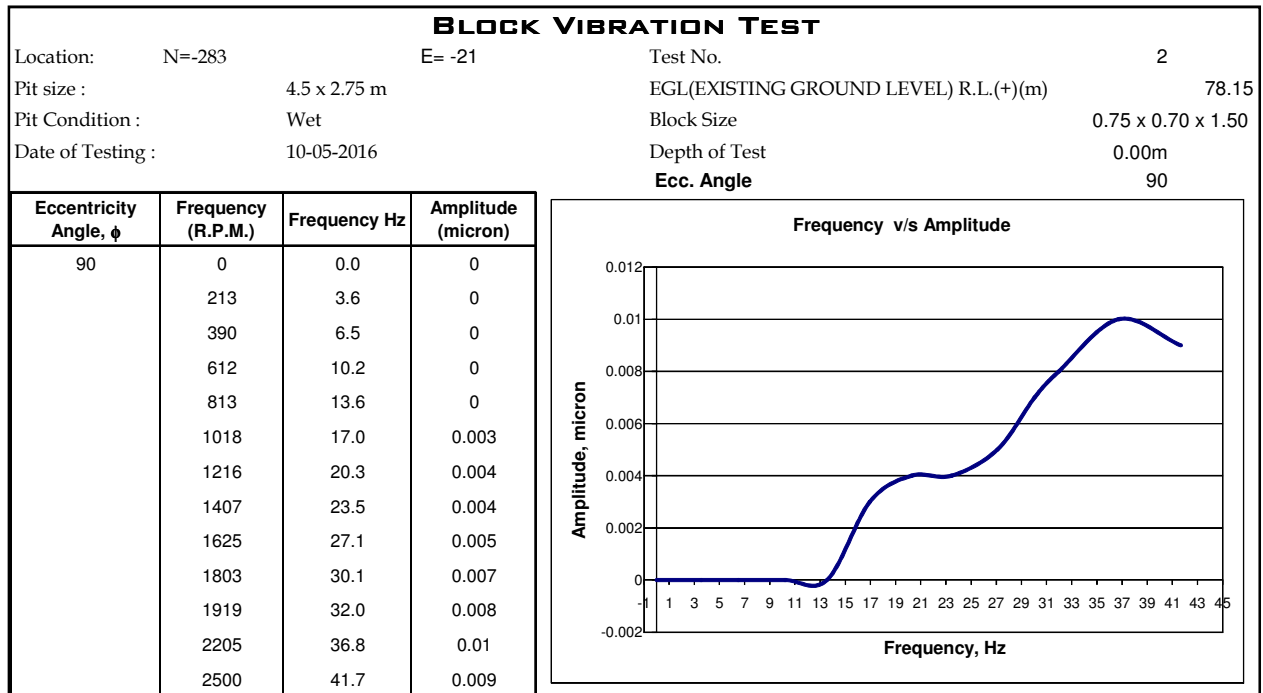


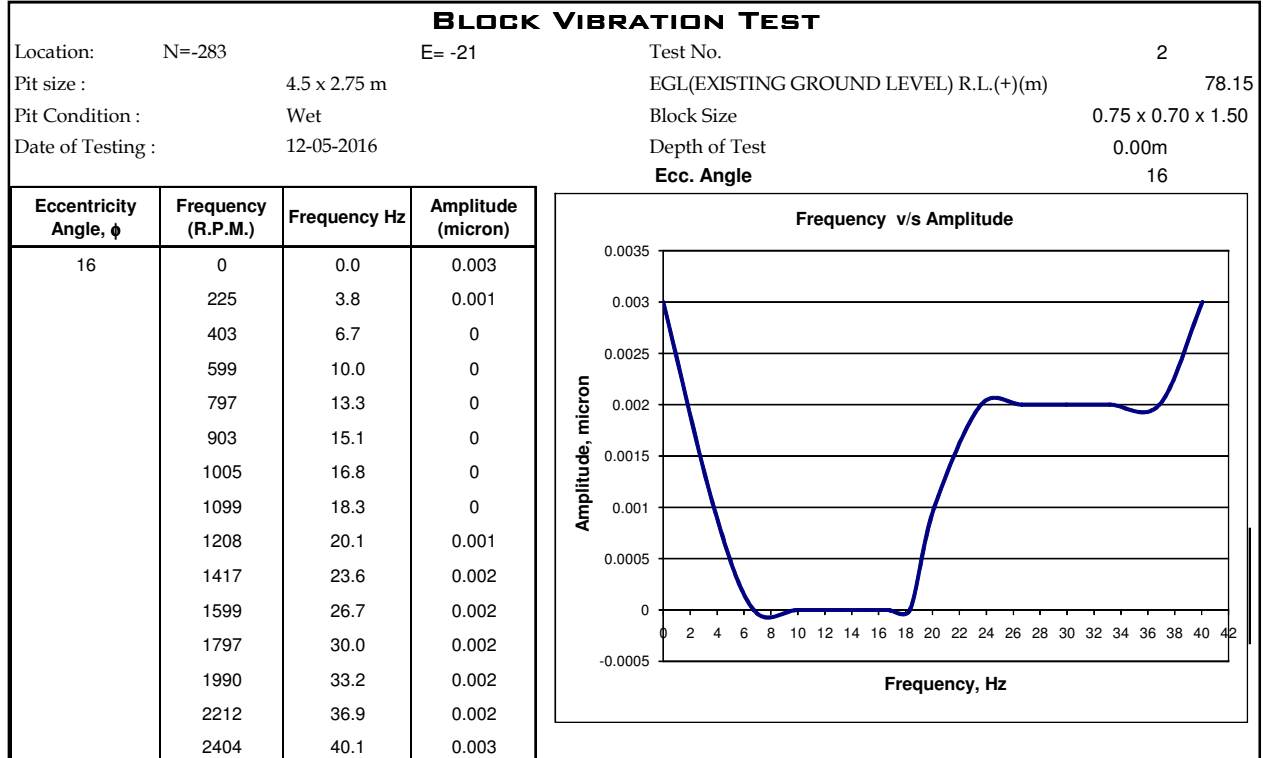
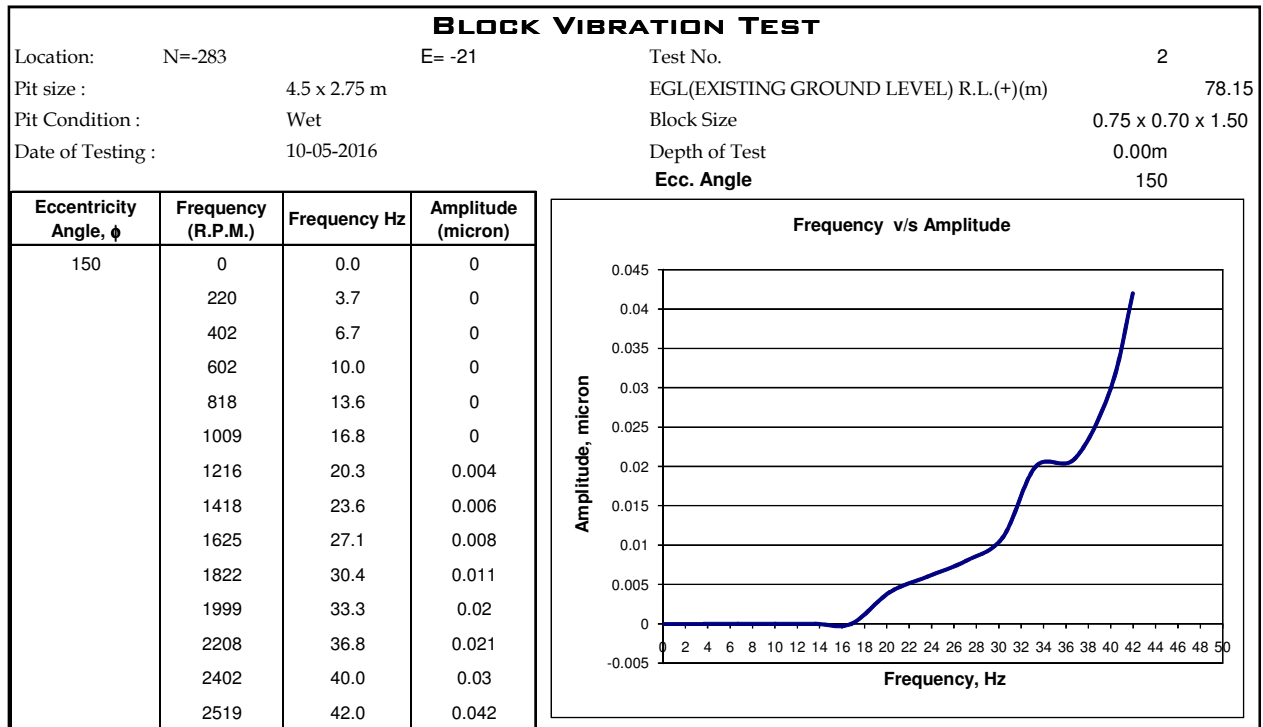
BLOCK VIBRATION TEST

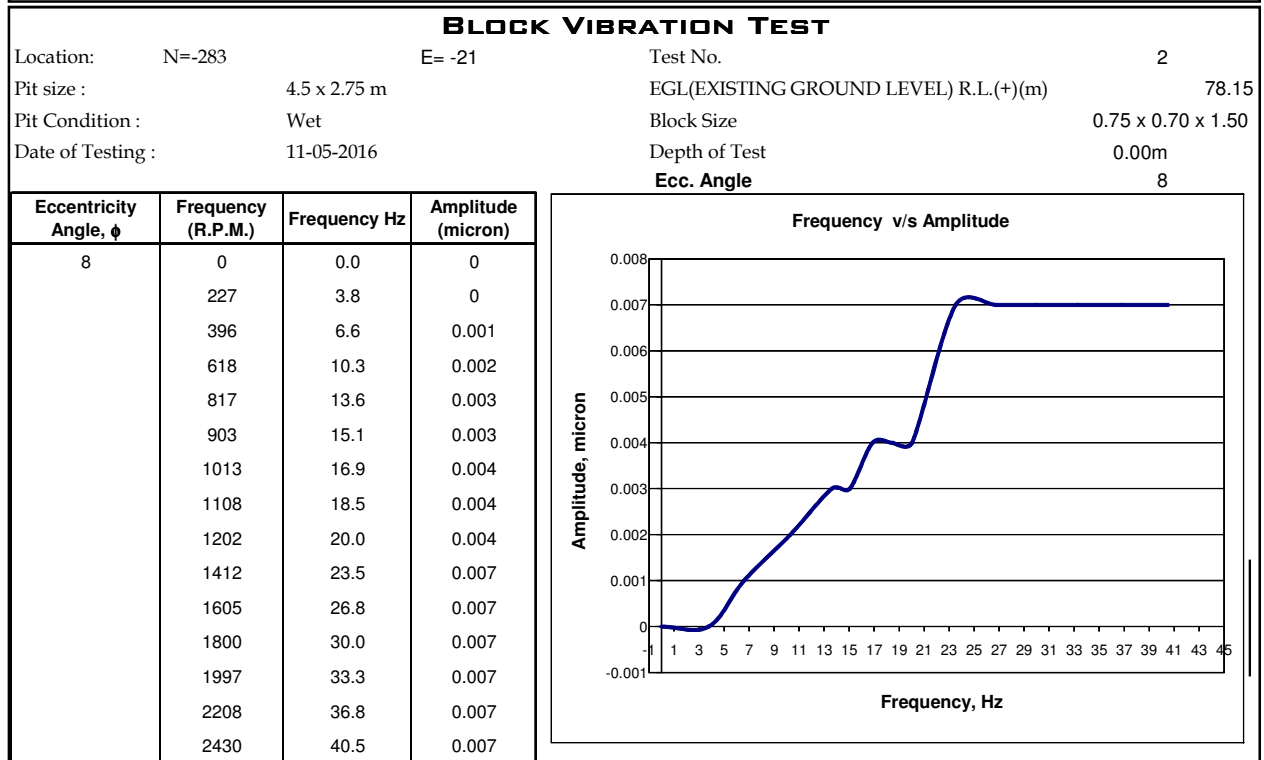
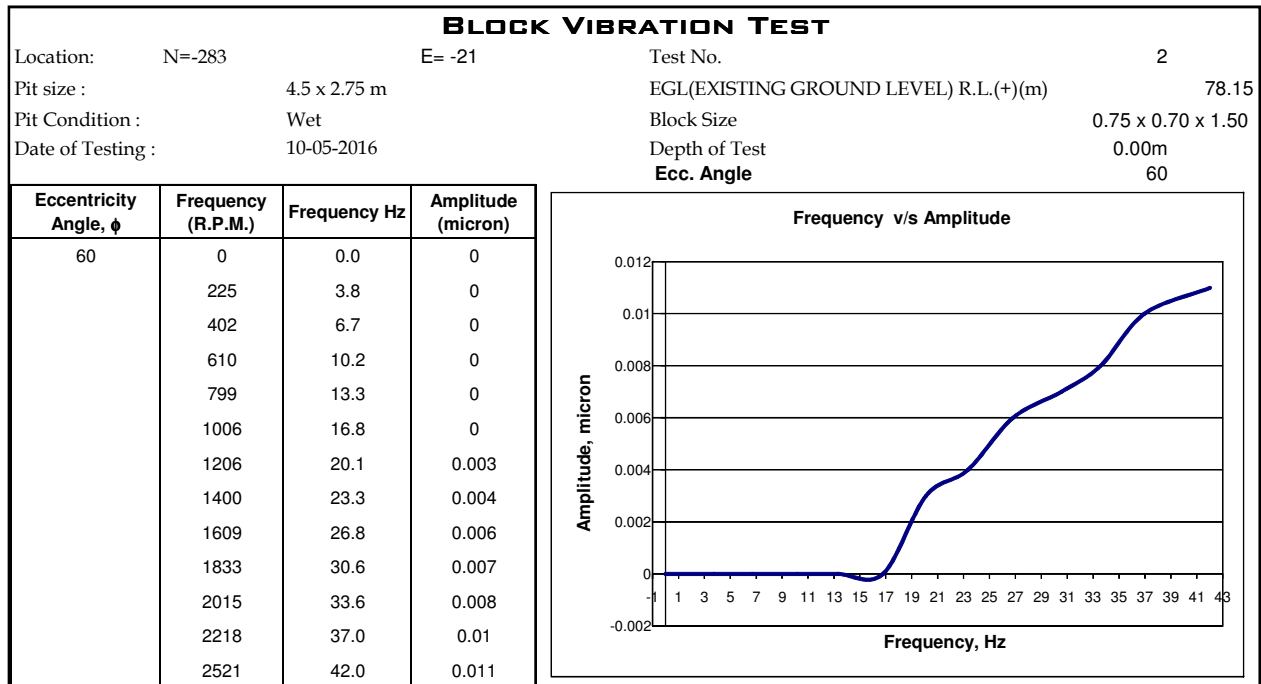
Location: N=-283 E= -21 Test No. 2
Pit size : 4.5 x 2.75 m EGL(EXISTING GROUND LEVEL) R.L.(+)(m) 78.15
Pit Condition : Wet Block Size 0.75 x 0.70 x 1.50
Date of Testing : 10-05-2016 Depth of Test 0.00m
Ecc. Angle 120

Eccentricity Angle, ϕ	Frequency (R.P.M.)	Frequency Hz	Amplitude (micron)
120	0	0.0	0
	206	3.4	0
	424	7.1	0
	611	10.2	0
	821	13.7	0
	998	16.6	0
	1215	20.3	0.004
	1423	23.7	0.006
	1596	26.6	0.007
	1790	29.8	0.01
	1997	33.3	0.011
	2188	36.5	0.015
	2394	39.9	0.024
	2542	42.4	0.033
Values obtained by extrapolation as per IS 5249 (1992) Annex C		42.5	0.033
		43.0	0.035
		43.5	0.037
		44.0	0.038
		44.5	0.039
		45.0	0.039
		45.5	0.040
		46.0	0.039
		47.0	0.038
		50.0	0.031











BVT 3

Sr. no	Eccentricity Angle, ϕ	Frequency Hz	Maximum amplitude (μ)
1	8	3.583	0.001
2	16	16.633	0.002
3	24	16.667	0.001
4	32	18.500	0.001
5	90	20.283	0.006
6	120	46.000	0.030

Block Vibration Test (Analysis)

Calculations for Test no. 3

Maximum amplitude A_m from Graph	0.00003 mm
$A_m/(2)^{0.5}$	0.000021 mm
Frequency at which amplitude is $A_m/(2)^{0.5}$, f_{n1} , from Graph	42.50 Hz
Frequency at which amplitude is $A_m/(2)^{0.5}$, f_{n2} , from Graph	52.50 Hz
Damping coeff	0.109
Mass of the block	1890
Mass of Oscillator = 23.5 kg	23.5
Mass of the Motor	70
Total mass M	1983.5
Frequency at which amplitude is maximum f_{nz} , from graph	46.00 Hz
Contact area of test block. A_1	5250 sqcm
Coefficient of elastic uniform compression $C_u = \frac{4 \cdot p_2 \cdot f_{nz}^2 \cdot M}{A \cdot 9.81}$	16.89
Contact area of actual foundation A	100000.0 sqcm
$C_{u1} = C_u \times (A_1 / A)^{0.5}$ For 10 m ²	

Coefficient of elastic uniform compression for the foundation area 10 m ² $C_{u1} =$	3.87 kg/cm³
Coefficient of elastic uniform shear for the foundation area 10 m ² $C_{t1} = C_{u1}/2$	1.94 kg/cm³
Coefficient of elastic non uniform compression $C_{f1} = 3.46 \cdot C_{t1}$	6.70 kg/cm³
Coefficient of elastic non uniform shear $C_{\psi} = 0.75 \cdot C_{u1}$	2.90 kg/cm³
Shear Modulus, $G = \frac{(1 - \epsilon) \cdot C_{\psi} \cdot (A)^{0.5}}{2.26}$	379.06 kg/sqcm
Young's Modulus, $E = \frac{G \cdot 2 \cdot (1 + \epsilon)}{1}$	985.56 kg/sqcm
Poisson's ratio of soil ϵ	0.30

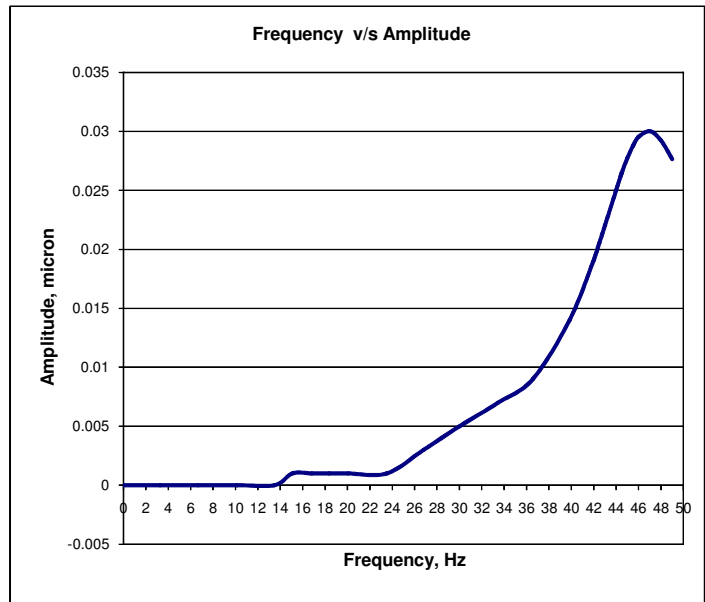
The above values are reported for foundation base area of 10.00 sqm



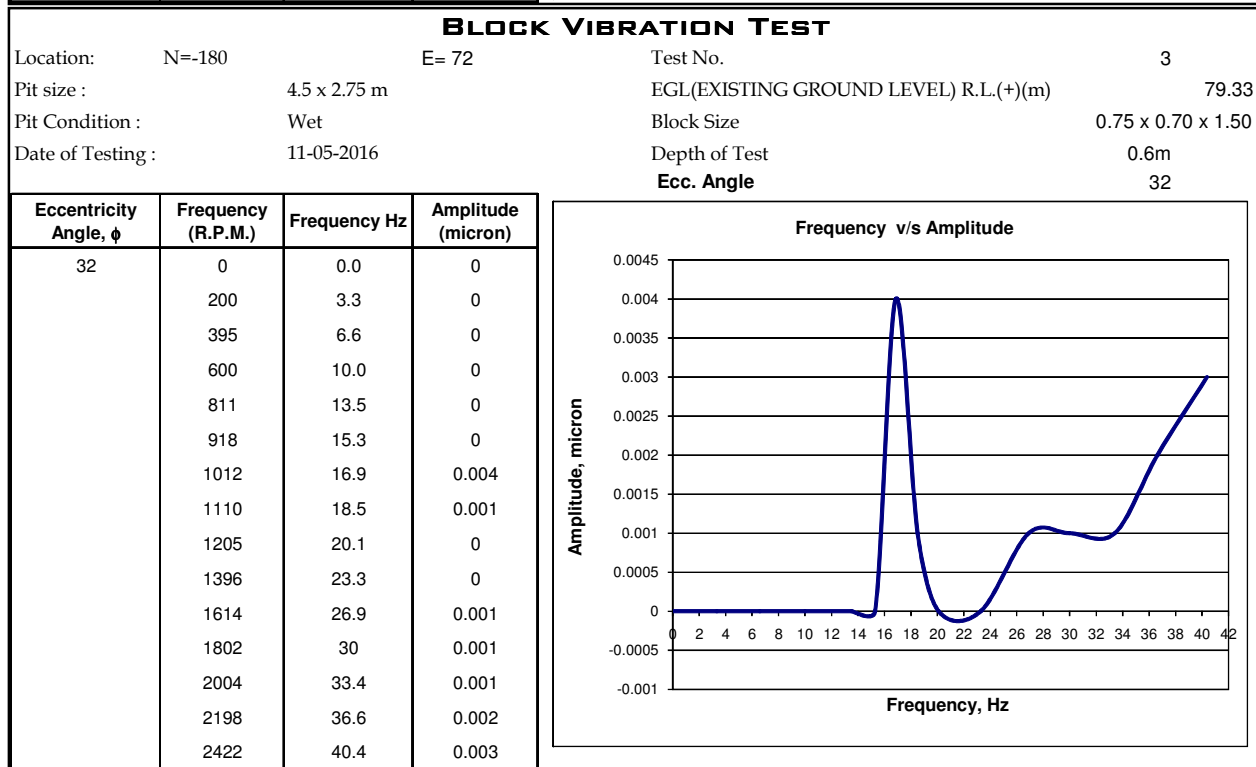
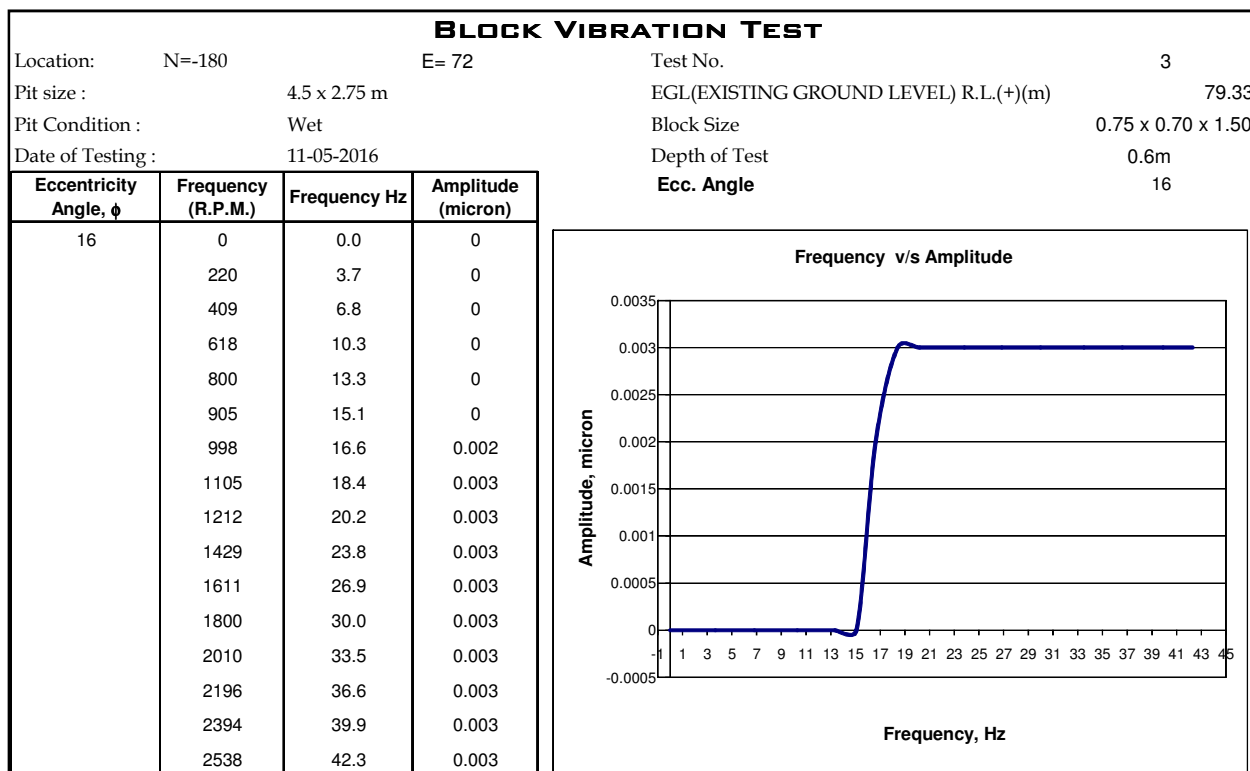
BLOCK VIBRATION TEST

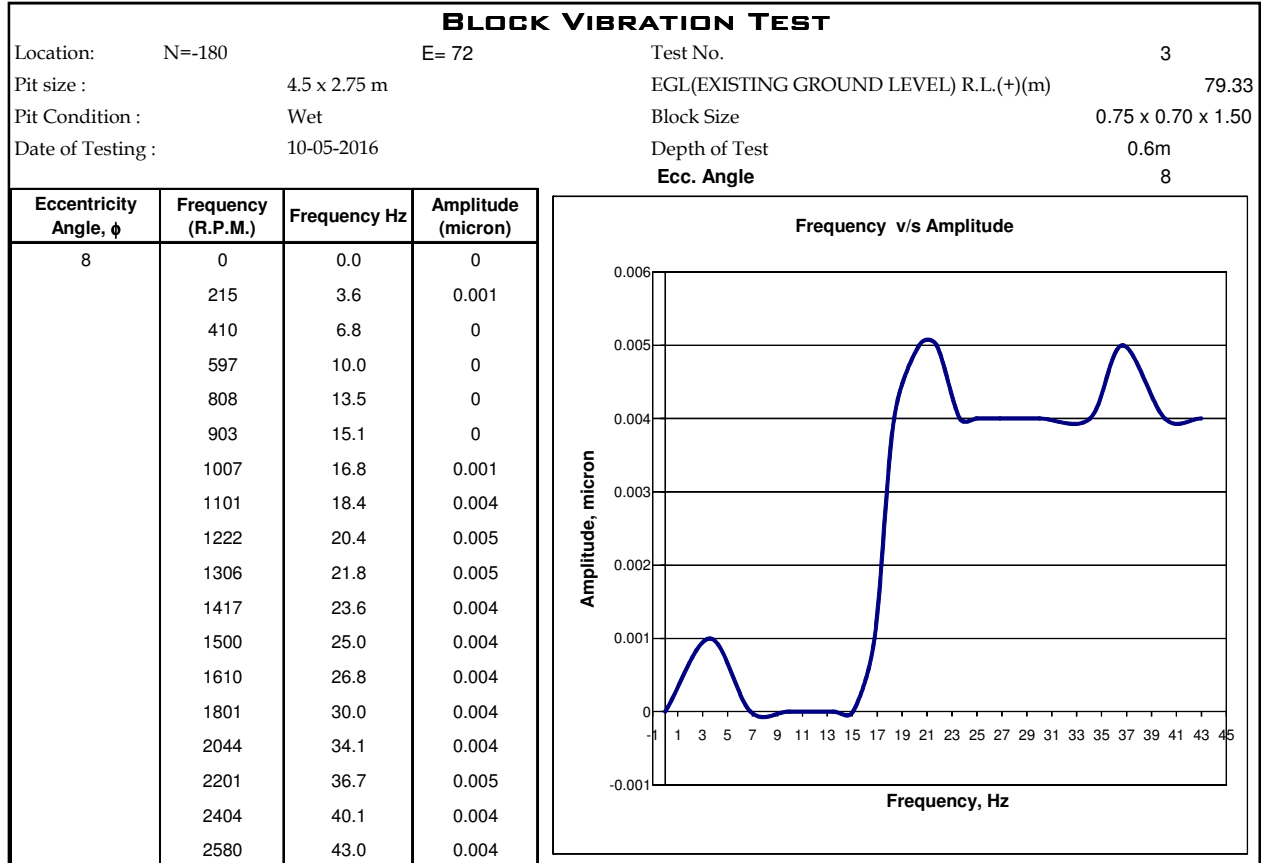
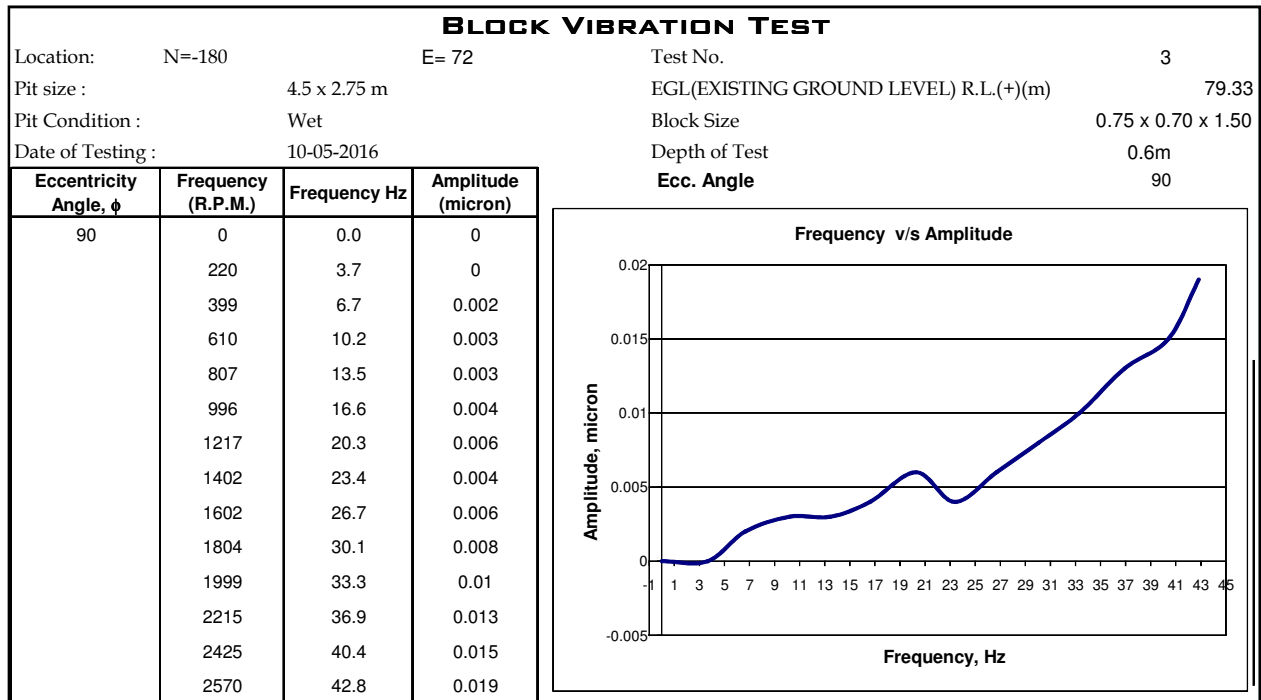
Location:	N=-180	E= 72	Test No.	3
Pit size :	4.5 x 2.75 m		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)	79.33
Pit Condition :	Wet		Block Size	0.75 x 0.70 x 1.50
Date of Testing :	11-05-2016		Depth of Test	0.6m
			Ecc. Angle	120

Eccentricity Angle, ϕ	Frequency (R.P.M.)	Frequency Hz	Amplitude (micron)
120	0	0.0	0
	196	3.3	0
	400	6.7	0
	606	10.1	0
	809	13.5	0
	906	15.1	0.001
	1010	16.8	0.001
	1102	18.4	0.001
	1204	20.1	0.001
	1411	23.5	0.001
	1609	26.8	0.003
	1800	30.0	0.005
	2007	33.5	0.007
	2193	36.6	0.009
	2390	39.8	0.014
	2517	42.0	0.019



		42.5	0.021
		43.0	0.022
		44.0	0.025
	Values obtained by extrapolation as per IS 5249 (1992) Annex C	44.5	0.026
		45.0	0.028
		45.5	0.029
		46.0	0.030
		47.0	0.030
		48.0	0.029
		49.0	0.028



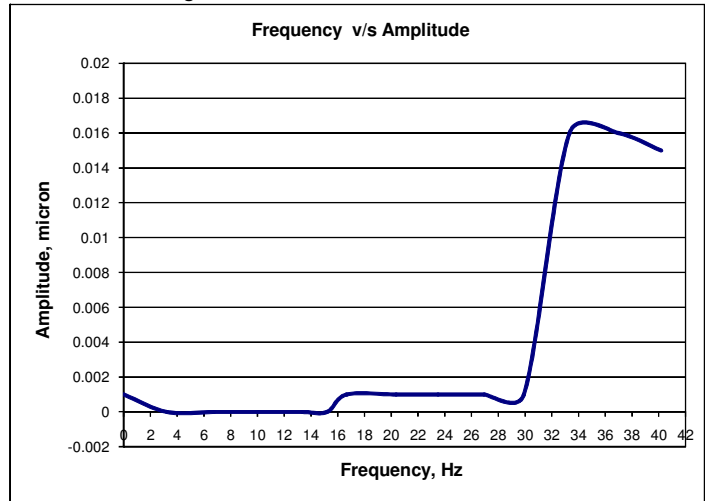




BLOCK VIBRATION TEST

Location:	N=-180	E= 72	Test No.	3
Pit size :	4.5 x 2.75 m		EGL(EXISTING GROUND LEVEL) R.L.(+)(m)	79.33
Pit Condition :	Wet		Block Size	0.75 x 0.70 x 1.50
Date of Testing :	12-05-2016		Depth of Test	0.6m
			Ecc. Angle	24

Eccentricity Angle, ϕ	Frequency (R.P.M.)	Frequency Hz	Amplitude (micron)
24	0	0.0	0.001
	194	3.2	0
	407	6.8	0
	602	10.0	0
	800	13.3	0
	912	15.2	0
	1000	16.7	0.001
	1222	20.4	0.001
	1410	23.5	0.001
	1617	27.0	0.001
	1795	29.9	0.001
	2000	33.3	0.016
	2218	37.0	0.016
	2410	40.2	0.015





BVT 4

Sr. no	Eccentricity Angle, ϕ	Frequency Hz	Maximum amplitude (μ)
1	8	13.483	0.001
2	16	16.900	0.003
3	24	20.333	0.004
4	32	23.633	0.009
5	60	30.167	0.019
6	90	33.567	0.025
7	120	45.900	0.058

Block Vibration Test (Analysis)

Calculations for Test no. 4

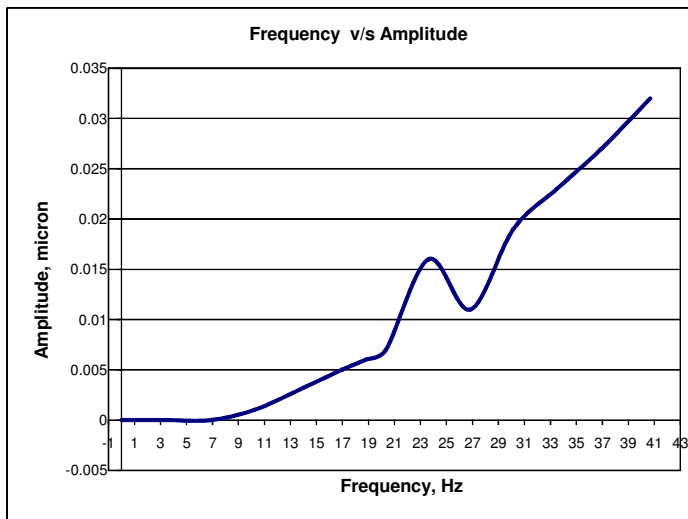
Maximum amplitude A_m from Graph	0.000058 mm
$A_m/(2)^{0.5}$	0.000041 mm
Frequency at which amplitude is $A_m/(2)^{0.5}$, f_{n1} , from Graph	35.00 Hz
Frequency at which amplitude is $A_m/(2)^{0.5}$, f_{n2} , from Graph	62.00 Hz
Damping coeff	0.294
Mass of the block	1890
Mass of Oscillator = 23.5 kg	23.5
Mass of the Motor	70
Total mass M	1983.5
Frequency at which amplitude is maximum f_{nz} , from graph	45.90 Hz
Contact area of test block. A_1	5250 sqcm
Coefficient of elastic uniform compression $C_u = \frac{4 \cdot p_2 \cdot f_{nz}^2 \cdot M}{A \cdot 9.81}$	16.82
Contact area of actual foundation A	100000.0 sqcm
$C_{u1} = C_u \times (A_1 / A)^{0.5}$ For 10 m ²	
Coefficient of elastic uniform compression for the foundation area 10 m ² $C_{u1} =$	3.85 kg/cm³
Coefficient of elastic uniform shear for the foundation area 10 m ² $C_{t1} = C_{u1}/2$	1.93 kg/cm³
Coefficient of elastic non uniform compression $C_{f1} = 3.46 \cdot C_{t1}$	6.67 kg/cm³
Coefficient of elastic non uniform shear $C_{\psi} = 0.75 \cdot C_{u1}$	2.89 kg/cm³
Shear Modulus, $G = \frac{(1 - \epsilon) \cdot C_u \cdot (A)^{0.5}}{2.26}$	377.41 kg/sqcm
Young's Modulus, $E = \frac{G \cdot 2 \cdot (1 + \epsilon)}{1}$	981.28 kg/sqcm
Poisson's ratio of soil ϵ	0.30
The above values are reported for foundation base area of 10.00 sqm	



BLOCK VIBRATION TEST

Location: N=-180 E= 644 Test No. 4
Pit size : 4.5 x 2.75 m EGL(EXISTING GROUND LEVEL) R.L.(+)(m) 85.44
Pit Condition : Wet Block Size 0.75 x 0.70 x 1.50
Date of Testing : 13-05-2016 Depth of Test 0.5m
Ecc. Angle 60

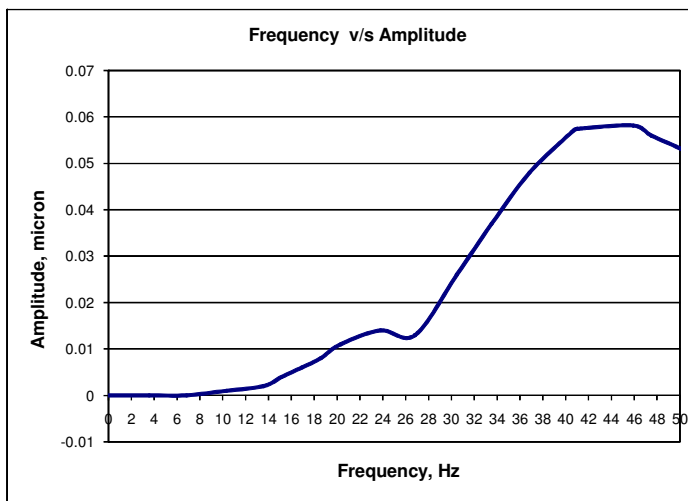
Eccentricity Angle, ϕ	Frequency (R.P.M.)	Frequency Hz	Amplitude (micron)
60	0	0.0	0
	217	3.6	0
	410	6.8	0
	612	10.2	0.001
	819	13.7	0.003
	1017	17.0	0.005
	1127	18.8	0.006
	1221	20.4	0.007
	1418	23.6	0.016
	1611	26.9	0.011
	1810	30.2	0.019
	2010	33.5	0.023
	2217	37.0	0.027
	2441	40.7	0.032

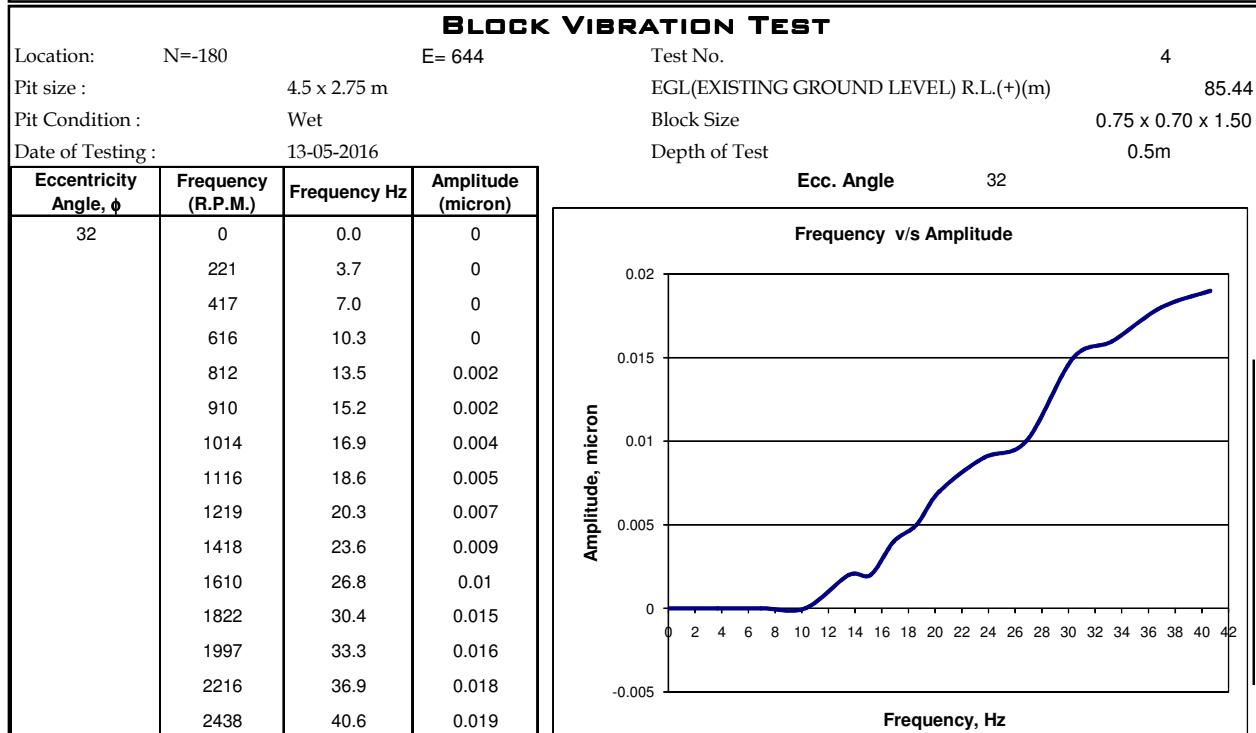
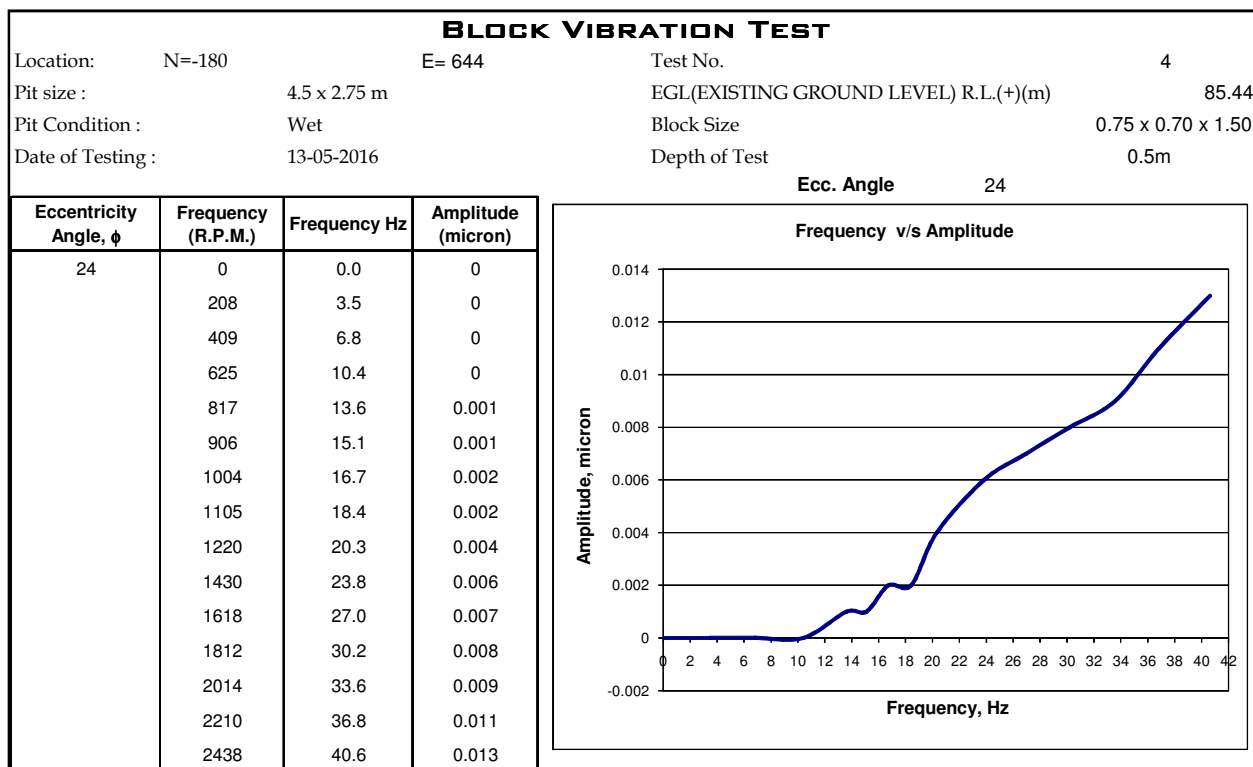


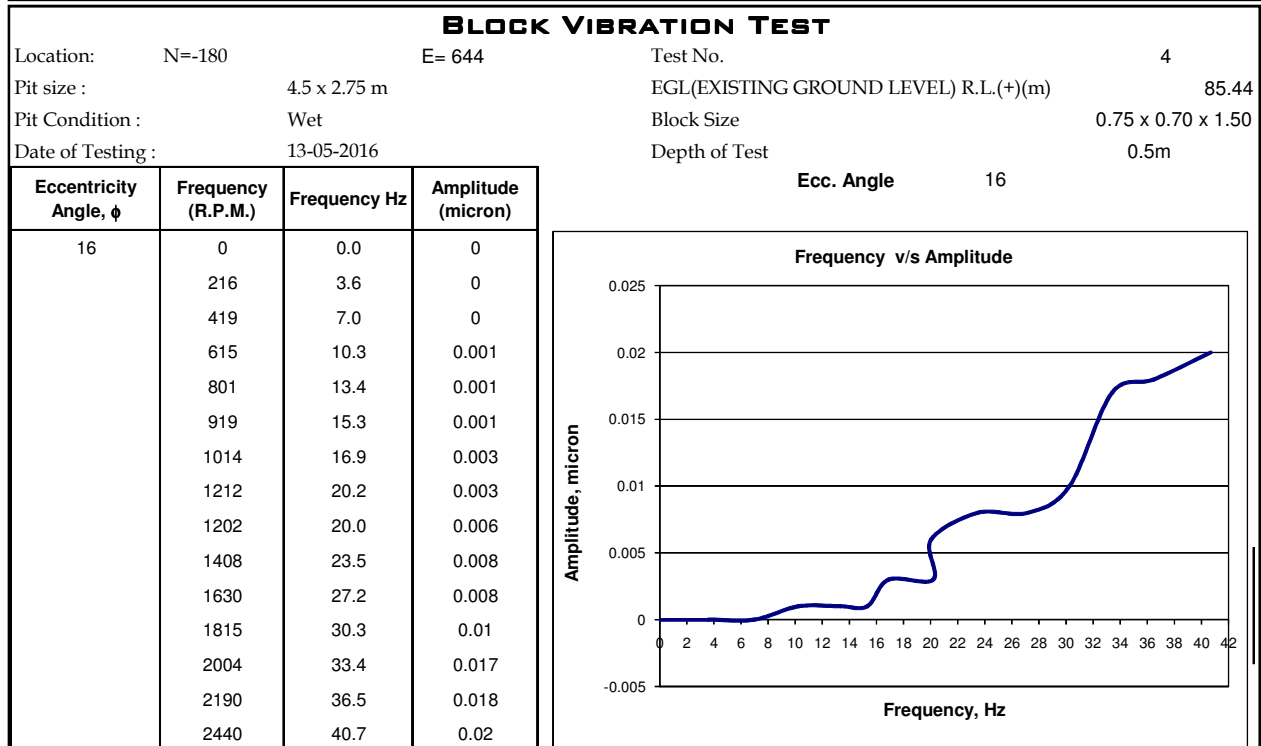
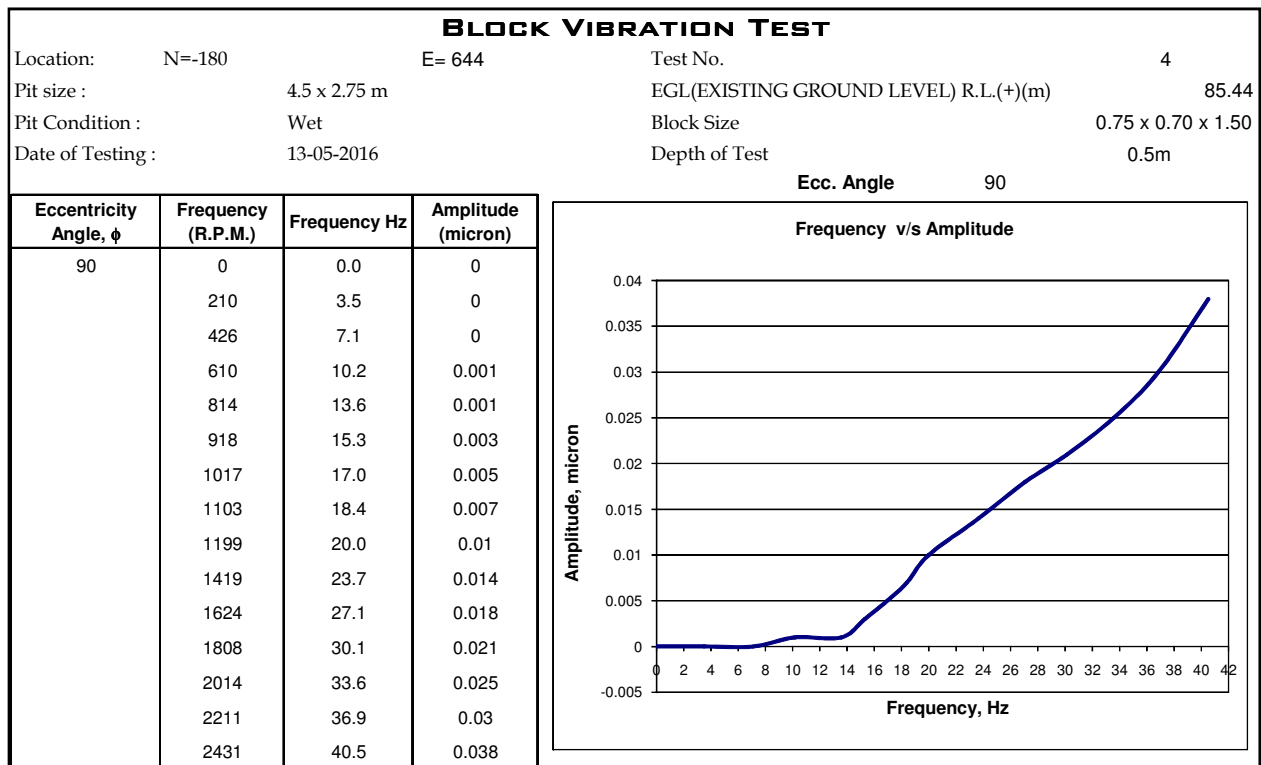
BLOCK VIBRATION TEST

Location: N=-180 E= 644 Test No. 4
Pit size : 4.5 x 2.75 m EGL(EXISTING GROUND LEVEL) R.L.(+)(m) 85.44
Pit Condition : Wet Block Size 0.75 x 0.70 x 1.50
Date of Testing : 10-05-2016 Depth of Test 0.5m
Ecc. Angle 120

Eccentricity Angle, ϕ	Frequency (R.P.M.)	Frequency Hz	Amplitude (micron)
120	0	0.0	0
	214	3.6	0
	411	6.9	0
	619	10.3	0.001
	814	13.6	0.002
	910	15.2	0.004
	1016	16.9	0.006
	1114	18.6	0.008
	1219	20.3	0.011
	1428	23.8	0.014
	1610	26.8	0.013
	1829	30.5	0.026
	2012	33.5	0.037
	2210	36.8	0.048
	2439	40.7	0.057
		41.0	0.057
		45.9	0.058
		47.5	0.056
		50.0	0.053
		52.5	0.051
		55.0	0.048
		57.5	0.046
		60.0	0.044
		63.0	0.042







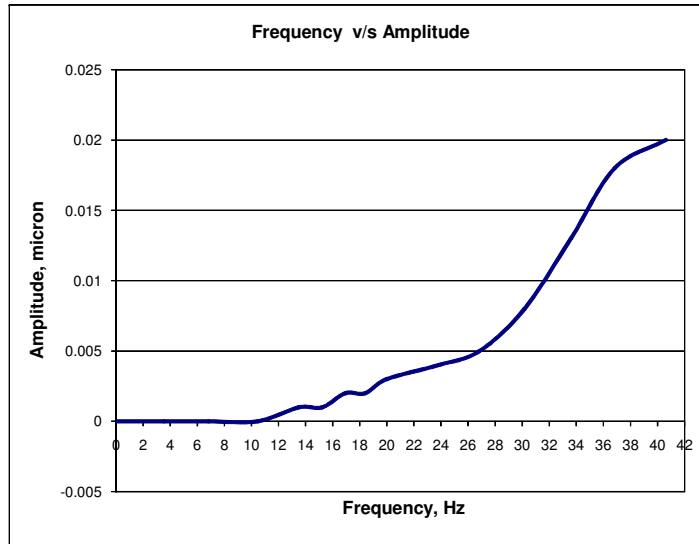


BLOCK VIBRATION TEST

Location: N=-180 E= 644 Test No. 4
Pit size : 4.5 x 2.75 m EGL(EXISTING GROUND LEVEL) R.L.(+)(m) 85.44
Pit Condition : Wet Block Size 0.75 x 0.70 x 1.50
Date of Testing : 13-05-2016 Depth of Test 0.5m

Ecc. Angle 8

Eccentricity Angle, ϕ	Frequency (R.P.M.)	Frequency Hz	Amplitude (micron)
8	0	0.0	0
	213	3.6	0
	410	6.8	0
	628	10.5	0
	809	13.5	0.001
	914	15.2	0.001
	1016	16.9	0.002
	1104	18.4	0.002
	1200	20.0	0.003
	1428	23.8	0.004
	1611	26.9	0.005
	1810	30.2	0.008
	2016	33.6	0.013
	2210	36.8	0.018
	2438	40.6	0.02





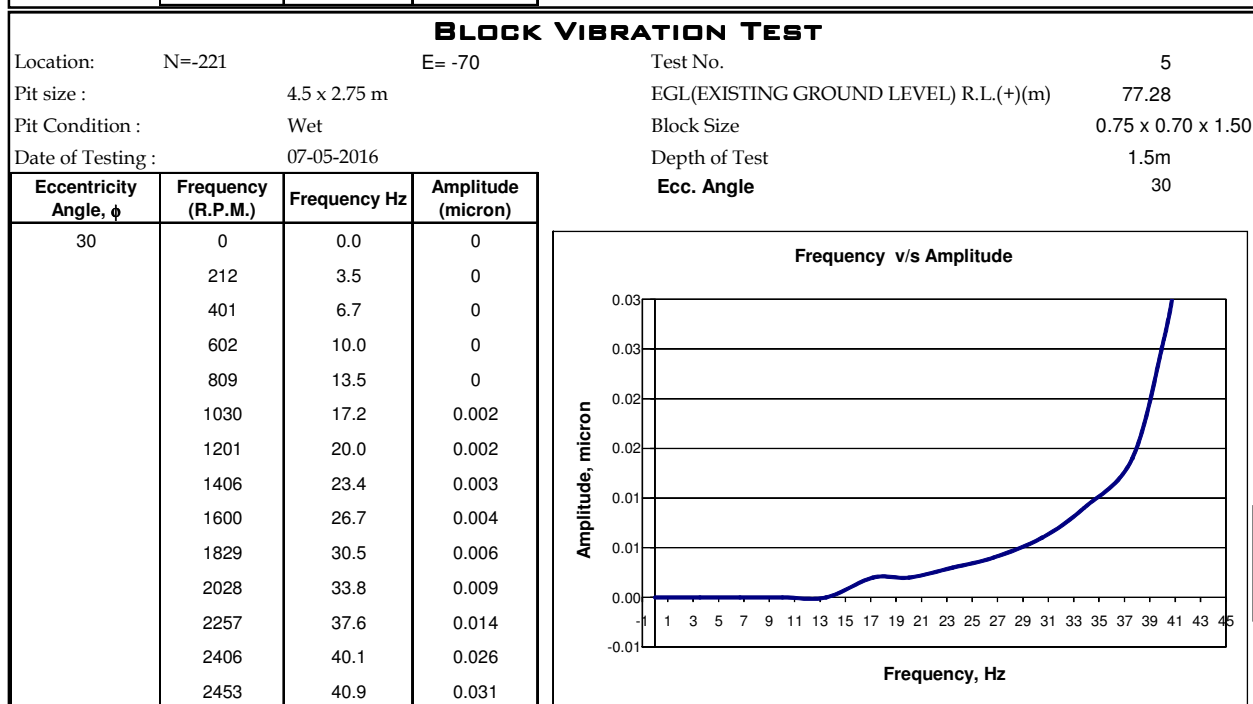
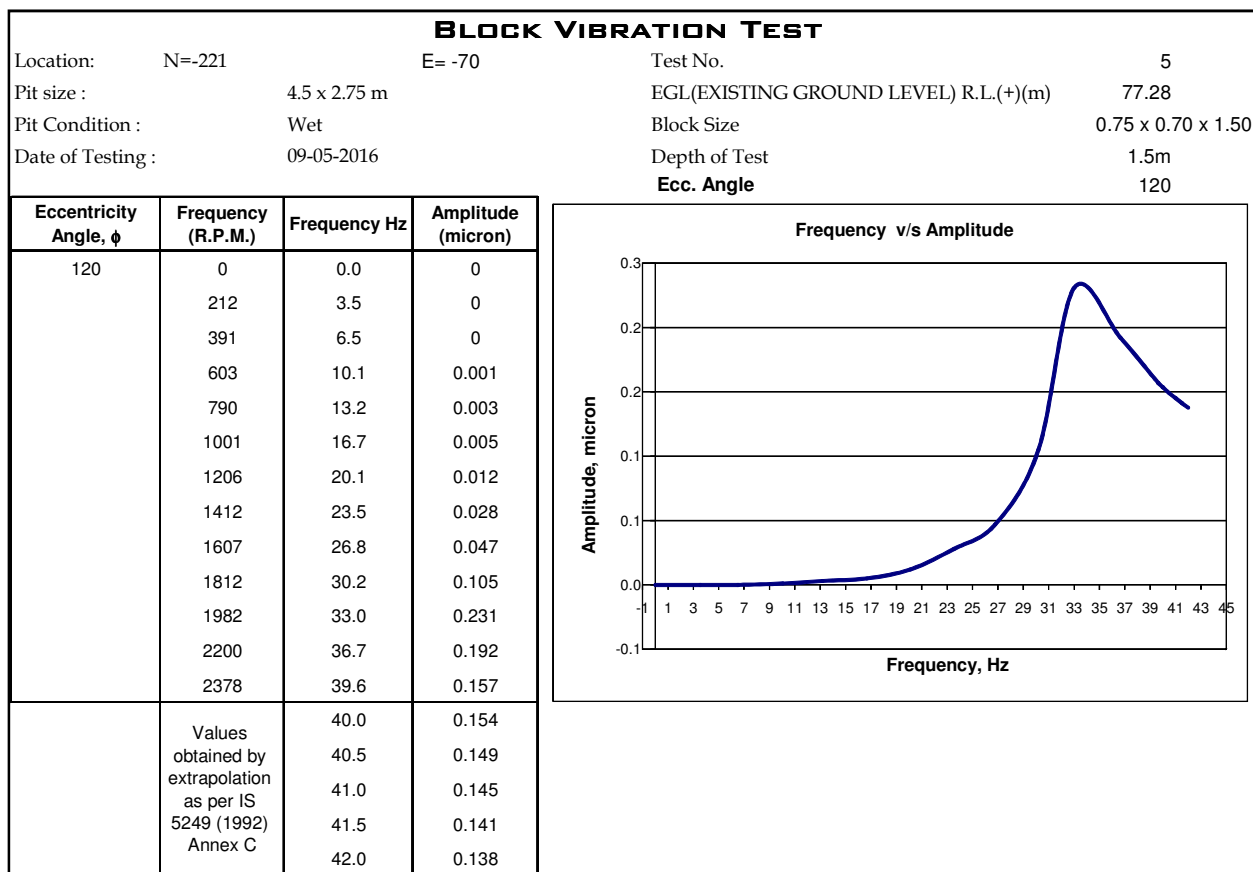
BVT 5

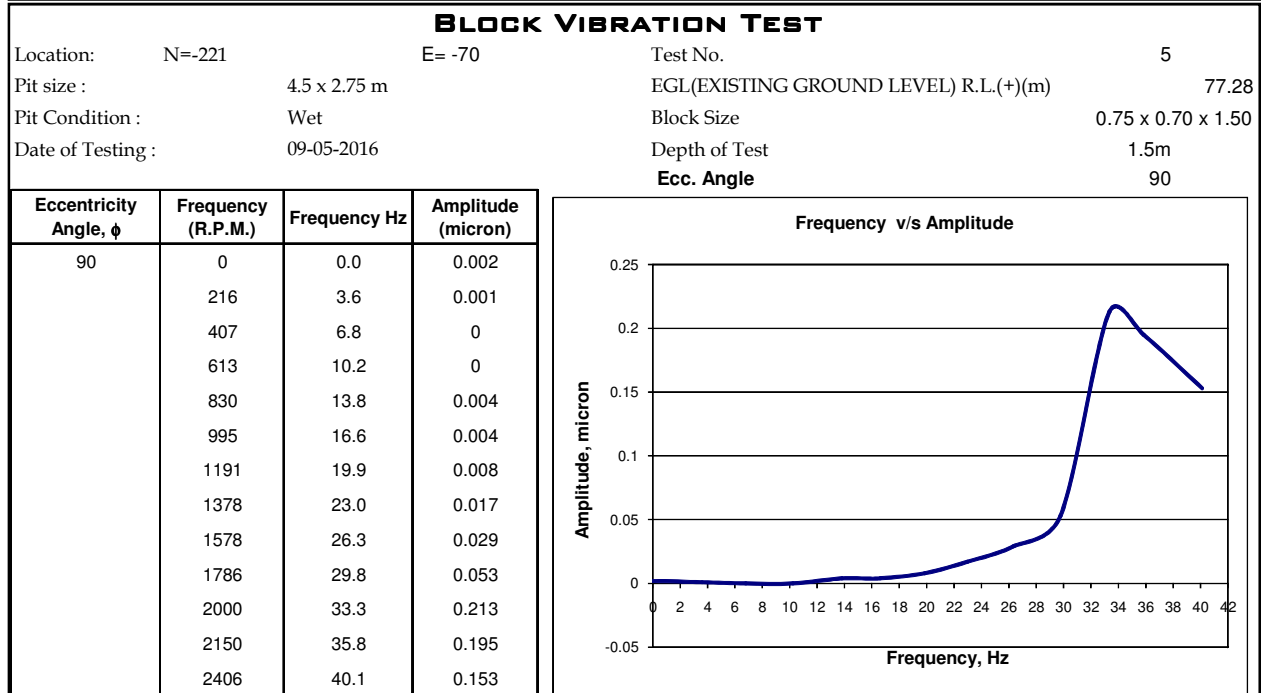
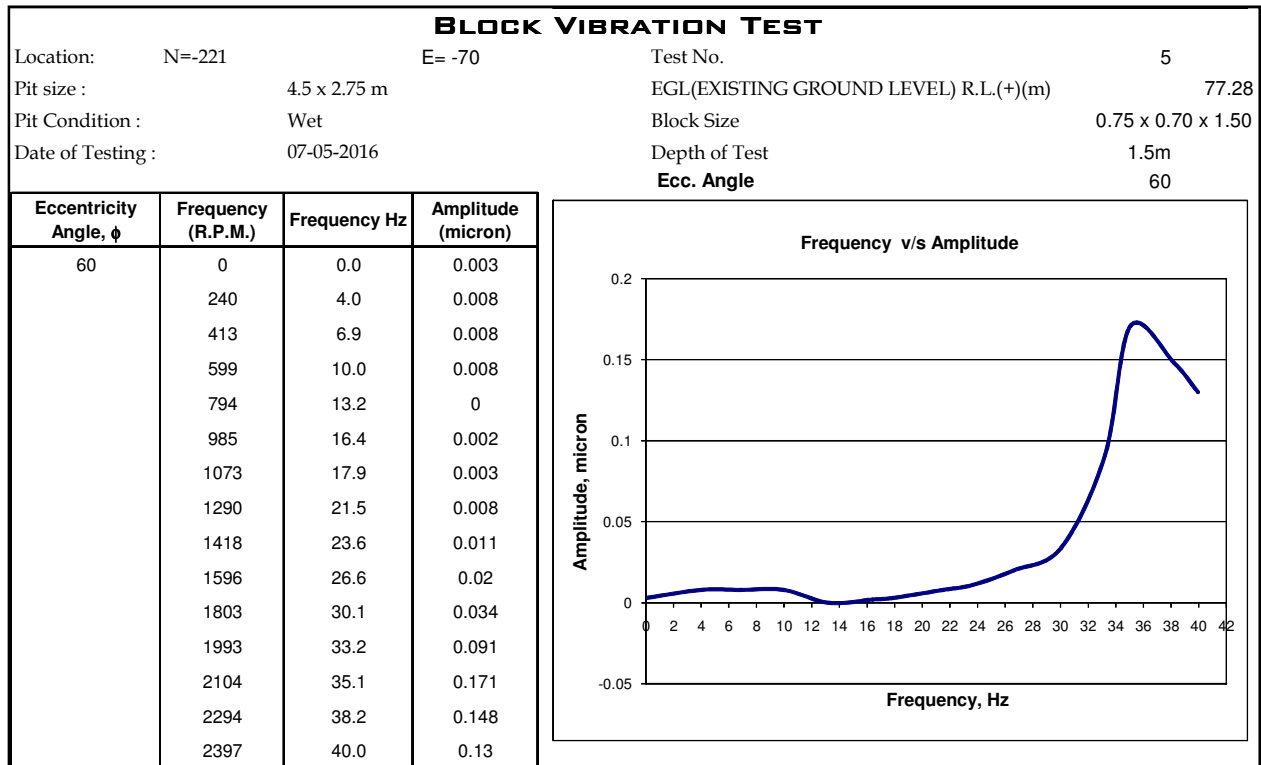
Sr. no	Eccentricity Angle, ϕ	Frequency Hz	Maximum amplitude (μ)
1	30	17.167	0.002
2	60	33.217	0.091
3	90	33.333	0.213
4	120	33.000	0.231

Block Vibration Test (Analysis)

Calculations for Test no. 5

Maximum amplitude Am from Graph	0.000231 mm
$Am/(2)^{0.5}$	0.0002 mm
Frequency at which amplitude is $Am/(2)^{0.5}$, fn1, from Graph	30.50 Hz
Frequency at which amplitude is $Am/(2)^{0.5}$, fn2, from Graph	39.00 Hz
Damping coeff	0.129
Mass of the block	1890
Mass of Oscillator = 23.5 kg	23.5
Mass of the Motor	70
Total mass M	1983.5
Frequency at which amplitude is maximum fnz, from graph	33.00 Hz
Contact area of test block. A1	5250 sqcm
Coefficient of elastic uniform compression $Cu = \frac{4 \cdot p_2 \cdot fnz^2 \cdot M}{A \cdot 9.81}$	8.69
Contact area of actual foundation A	100000.0 sqcm
$Cu1 = Cu \times (A1 / A)^{0.5}$ For 10 m2	
Coefficient of elastic uniform compression for the foundation area 10 m2 Cu1=	1.99 kg/cm3
Coefficient of elastic uniform shear for the foundation area 10 m2 Ct1=Cu1/2	1.00 kg/cm3
Coefficient of elastic non uniform compression Cf1=3.46* Ct1	3.45 kg/cm3
Coefficient of elastic non uniform shear 'C ψ =0.75*Cu1	1.49 kg/cm3
Shear Modulus, G= $(1-\epsilon) \cdot Cu \cdot ((A)^{0.5}) / 2.26$	195.08 kg/sqcm
Young's Modulus, E= $G \cdot 2 \cdot (1+\epsilon)$	507.22 kg/sqcm
Poisson's ratio of soil ϵ	0.30
The above values are reported for foundation base area of 10.00 sqm	







Conclusion:

Dynamic properties of strata by Block Vibraton Test (Test)																
Sr. no	Structure name	Test no	Northing	Easting	Eccentricity angle (degrees)	Maximum amplitude (mm)	Corresponding frequency (Hz)	Damping coefficient	Coefficient of elastic uniform compression Cu= (kg/cm3)	Coefficient of elastic uniform compression for the foundation area 10 m2 Cu1= (kg/cm3)	Coefficient of elastic uniform shear for the foundation area 10 m2 Ct1=Cu1/2 (kg/cm3)	Coefficient of elastic non uniform compression Cf1=3.46* Ct1 (kg/cm3)	Coefficient of elastic non uniform shear 'C _ψ =0.75*Cu1 (kg/cm3)	Shear Modulus, G= (kg/cm2)	Young's Modulus, E= (kg/cm2)	Poisson's ratio of soil
1	PH including TG, service building and compressor house	BVT 1	-283	547	120	0.000155	44.00	0.07	15.45	3.54	1.77	6.13	2.66	346.81	901.72	0.30
2	PH including TG, service building and compressor house	BVT 2	-283	-21	120	0.000040	45.50	0.12	16.53	3.79	1.89	6.55	2.84	370.86	964.25	0.30
3	Boiler, Aux boiler, CST tank and pump house	BVT 3	-180	72	120	0.000030	46.00	0.11	16.89	3.87	1.94	6.70	2.90	379.06	985.56	0.30
4	Boiler, Aux boiler, CST tank and pump house	BVT 4	-180	644	120	0.000058	45.90	0.29	16.82	3.85	1.93	6.67	2.89	377.41	981.28	0.30
5	Boiler, Aux boiler, CST tank and pump house	BVT 5	-221	-70	120	0.000231	33.00	0.13	8.69	1.99	1.00	3.45	1.49	195.08	507.22	0.30



Conclusion: Based on the above test results, it is concluded that the dynamic properties for design purpose are taken from the table below:

Sr.No.	Coefficient of elastic uniform compression for the foundation area 10 m ² Cu1= (kg/cm ³)	Coefficient of elastic uniform shear for the foundation area 10 m ² Ct1=Cu1/2 (kg/cm ³)	Coefficient of elastic non uniform compression Cf1=3.46* Ct1 (kg/cm ³)	Coefficient of elastic non uniform shear 'Cψ=0.75*Cu1 (kg/cm ³)	Shear Modulus, G= (kg/cm ²)	Young's Modulus, E= (kg/cm ²)	Remarks
1	1.99	1.00	3.45	1.49	195.08	507.22	Weathered rock



PHOTOGRAPHS

Pressuremeter test



Siesmic Test





Photo: 1 Fixing of Geophone in field





Photo: 2 Geophone fixed on the Land



Photo: 3 Hammer shot for data acquisition





Photo: 4 Connecting Hammer to RAS-24



Photo: 5 Laying of Seismic line

Photo: 6 Equipment setup





Photo:7 Generating the source using Hammer



Photo:8 Seismic line with cable and geophone



Photo:9 Equipment Setup and Display



Photo: 10 Hammer shot



Photo: 11 Mark on Ground



Photo: 12 Data Acquisition in Progress and Equipment Setup



Photo: 13 View of 4th Line Alignment



Photo: 14 Mark on Ground (SRT Line 5-1)



Photo: 15 Equipment Setup



Photo: 16 Geophone connected to seismic cable



Photo: 17 Hammer with Trigger Winch & Cable



Photo: 18 Seismic cable and Geophones



Photo: 19 EquipmentSetup



Photo: 20 laying of seismic cable and Geophones



Photo: 21 Seismic line